Kemps Creek Dual Pressure Mains

Community Agreement – HDD Extended Working Hours

Floribunda Avenue, Kemps Creek

Kemps Creek Dual Pressure Main

Community Agreement
Extended Working Hours

HDD – Floribunda Avenue, Kemps Creek

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Introduction

Sydney Water is constructing infrastructure to support the future population and economic growth of Western Sydney. This includes the delivery of 6.8km of dual wastewater pressure mains from the SP1211 sewage pumping station at Gurner Avenue, Austral to the Upper South Creek Advanced Water Recycling Centre (AWRC) at Kemps Creek, which is being built by John Holland Trility Joint Venture. The project is expected to be completed in July 2025 and is critical to the commissioning of the AWRC.

The Kemps Creek Pressure Mains (KCPM) project will improve wastewater services in the South Western Growth Area (SWGA), one of the NSW State Government's three designated growth areas in South Western Sydney. This area will see substantial growth over the coming years, increasing from 2,300 dwellings in 2022 to approximately 38,000 dwellings by 2056.

KCPM will do this by transferring wastewater that is collected from homes and businesses in Austral, East Leppington, Leppington North, parts of Catherine Fields North, Rossmore, and Kemps Creek (known as the Kemps Creek catchment area) to the AWRC to be treated there.

The AWRC is Sydney Water's largest infrastructure investment in Western Sydney. It will be a sophisticated wastewater treatment and resource recovery centre that will produce recycled water, renewable energy, and bio-resources. The AWRC will use reverse osmosis - the same technology used by the desalination plant - to treat water to a high-quality.

When completed in early 2026, the AWRC and associated pipelines will deliver sustainable wastewater services and high-quality recycled water to support a cooler, greener Western Parkland City.

Quickway are working under Sydney Waters Environmental Protection Licence (EPL 21886) from the NSW Protection Authority for the construction of the project. Quickway have developed this document for submission to the EPA as Quickway are proposing to undertake works outside of the approved construction hours following community consultation and agreement (EPL condition E1).

Kemps Creek Dual Pressure Main

Community Agreement
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HDD – Floribunda Avenue, Kemps Creek

Scope of Works and Further Details

Quickway are proposing to extend the standard construction hours outline in EPL 21886 condition L.5.1 at the Floribunda Horizontal Directional Drilling (HDD) entry pit compound and Gurner Avenue HDD exit pit compound, Kemps Creek via agreement from the community, in accordance with condition E1 of the EPL. The project is seeking a community agreement for the below:

- Saturday 1.00pm to 6.00pm – HDD and associated operations

The primary purpose of this community agreement is to enable the project to reduce the HDD construction timeframe and subsequently reduce the impact on surrounding residents.

E1 Community Agreement

Condition E1.1

Work outside standard construction hours - community consultation and agreement

The licensee may work outside standard construction hours (as defined in L5.1) in circumstances other than those permitted under conditions L5.3, L5.4, or any other condition of this licence if the Licensee:

a) undertakes community consultation and agreement as described in E1.2;

- Community consultation has been undertaken with the residents identified in the noise assessments to be potentially impacted by the works.

b) submits to the EPA a written request to work outside the standard construction hours attaching information set out in E1.3; and

- This document describes the proposal to extend working hours on Saturdays from 1.00pm to 6.00pm.
- The project is proposing an extension to these working hours for up to thirty-four (34) weeks. The community team will re-engage with the community every 3-months (90 days) to ensure the affected receivers still consent with the working hours.

c) obtains approval by the EPA to work outside standard construction hours. The EPA may, in exercising its discretion to approve the works outside standard construction

hours, review whether the licensee has obtained community agreement. Specifically, whether a substantial majority of the individual Noise Sensitive Receivers who together comprise the Community Affected Catchments and were contacted has consented to the planned works out of standard hours.

- Quickway understands the requirement for the EPA to approve these proposed works. Community consultation summary of consent is table below.

Site	Impacted Receivers	Agreement Status			Consent status	% of agreed
		Y	No	No response		
Entry Pit	18 impacted receivers	16	0	2	16/16 respondents consented	100%
Exit Pit	10 impacted receivers	8	0	2	8/8 respondents consented	100%

Condition E1.2

Requirements for community consultation and agreement

Any community consultation and agreement undertaken with respect to the proposed out of hours works (OOHW) must:

a) *be prepared and implemented in accordance with the Interim Construction Noise Guidelines (DEC 2009), the Noise Policy for Industry (EPA, 2017) and AS2436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites;*
   - The OoHW permit included in Appendix A has been developed in accordance with the Interim Construction Noise Guidelines (DEC, 2009), the Noise Policy for Industry (EPA, 2017) and AS22436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites and the project Noise and Vibration Management Plan (NVMP)

b) *include consultation of all noise sensitive receivers within the Community Affected Catchments. This includes Noise Sensitive Receivers that have declined to participate in previous agreements unless a community member has*

explicitly requested not to be involved in any future consultation about future OOHW;

- Community consultation has been undertaken with the noise affected receivers at both the entry and exit pit locations. KNOWnoise construction noise estimator tool was used to determine the predicted impacts from the works and has identified the below receivers:

Entry Pit

1. 115-125 Floribunda Road Kemps Creek (26dB(A) above NML)
2. 128 Floribunda Road Kemps Creek (24 dB(A) above NML)
3. 112 Floribunda Road Kemps Creek (20 dB(A) above NML)
4. 140 Floribunda Road Kemps Creek (15 dB(A) above NML)
5. 140A Floribunda Road Kemps Creek (18 dB(A) above NML)
6. 65 Floribunda Road Kemps Creek (7dB(A) above NML)
7. 90 Floribunda Road Kemps Creek (8dB(A) above NML)
8. 70 Floribunda Road Kemps Creek (6dB(A) above NML)
9. 80 Floribunda Road Kemps Creek (6dB(A) above NML)
10. 110 Floribunda Road Kemps Creek (14 dB(A) above NML)
11. 100 Floribunda Road Kemps Creek (12dB(A) above NML)
12. 85 Floribunda Road Kemps Creek (9dB(A) above NML)
13. 150 Floribunda Road Kemps Creek (12dB(A) above NML)
14. 154 Floribunda Road Kemps Creek (11dB(A) above NML)
15. 10 Grant Close Kemps Creek (14 dB(A) above NML)
16. *25 Grant Close Kemps Creek (14dB(A) above NML)*
17. 20 Grant Close Kemps Creek (12dB(A) above NML)
18. 30 Grant Close Kemps Creek (11dB(A) above NML)

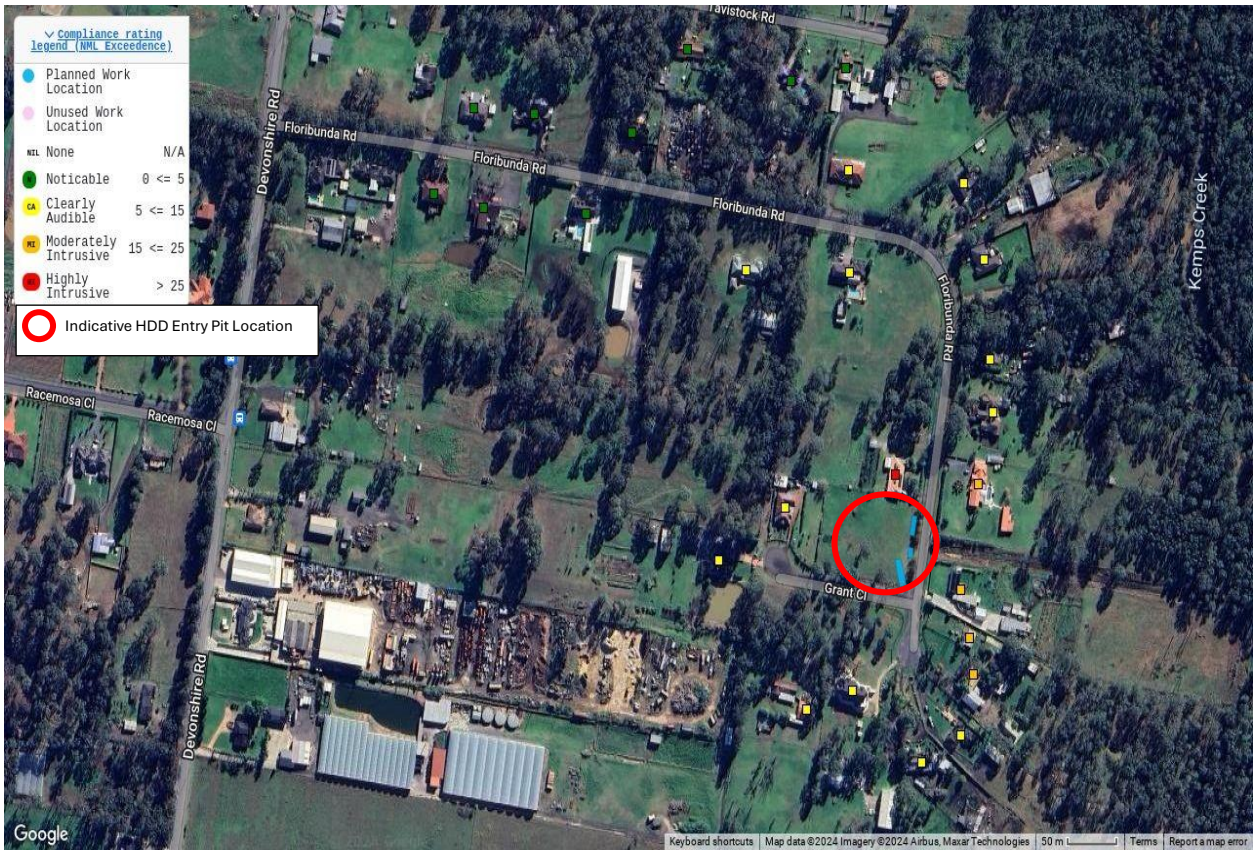

Figure 1 Impacted receivers for HDD entry pit

Exit Pit

19. 240 Gurner Avenue Kemps Creek (5dB(A) above NML)
20. 245 Gurner Avenue Kemps Creek (5dB(A) above NML)
21. 195 Gurner Avenue Kemps Creek (9dB(A) above NML)
22. 205 Gurner Avenue Kemps Creek (10dB(A) above NML)
23. 235 Gurner Avenue Kemps Creek (7dB(A) above NML)
24. 185 Gurner Avenue Kemps Creek (7dB(A) above NML)
25. 194 Gurner Avenue Kemps Creek (7dB(A) above NML)
26. 180 Gurner Avenue Kemps Creek (5dB(A) above NML)
27. 175 Gurner Avenue Kemps Creek (6dB(A) above NML)
28. 184 Gurner Avenue Kemps Creek (6dB(A) above NML)

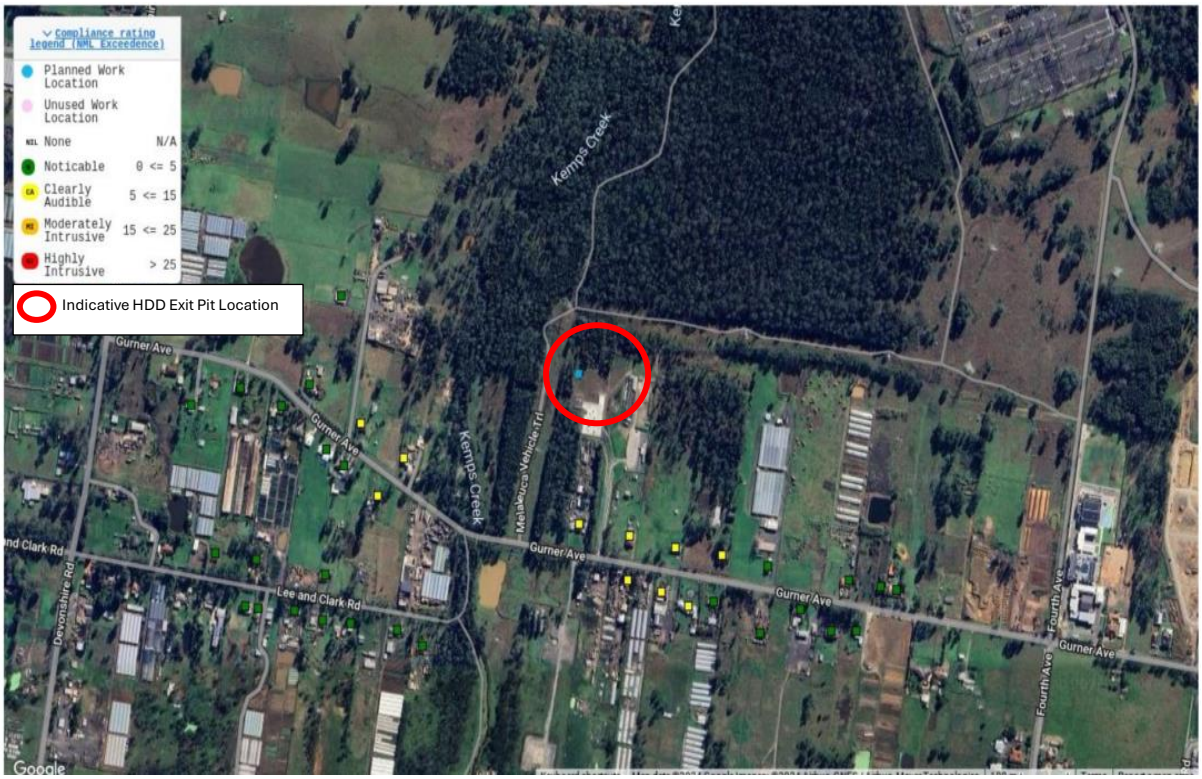

Figure 2 Impacted receivers for HDD exit pit'

c) *ensure that the noise sensitive receivers understand the nature of the works and any predicted impacts, including that consideration is made of additional requirements relevant to the needs of culturally and linguistically diverse Noise Sensitive Receivers, and include details for interpreting services for languages other than English where required.*

- The community relations team have used multiple methods of contact and have not required the need to engage a translator for any linguistically diverse or culturally sensitive receivers.
- Refer to Appendix B for all consultation evidence with each affected receiver.

d) *include in the community consultations with Noise Sensitive Receivers the following information:*

i. the actual works proposed;

- *Typical work activities to be carried out during the extended work hours would include: The first stage consists of directionally drilling a small diameter pilot hole along a designed directional path. The second stage involves enlarging this pilot hole to a diameter suitable for installation of the pipeline. The third stage consists of pulling the pipeline back into the enlarged hole.*

The types of equipment that can be used during this work include:

- *Excavators*
- *Dump Trucks and Truck and Dogs*
- *Horizontal Directional Drilling truck and equipment*
- *Water Cart*
- *Boring Rig*
- *Grader*
- *Semi-Trailer/ flatbed trucks*

ii. any expected impacts in clear, plain English based on noise modelling;

- During consultation with the affected residents, the Community Relations team described that construction noise will be generated during the works, and advised the residents that they would be affected by the noise which will be variable dependent on the constriction activity. Refer to Appendix B (scripts).

iii. the expected duration of the works;

The extended hours works (Saturday 1pm-6pm) are expected to commence in August 2024 and finish March 2025. Refer to scripts in Appendix B.

iv. any expected benefits for receivers;

- increased productivity on the work site with longer working hours during the day minimised disruption during the construction phase an accelerated construction program. We will be constructing two lines in Floribunda Avenue. Our modelling anticipates the following timeframes:

    - HDD1 - Current end date without Saturdays: 6 May 2025 - potential new with Saturdays Date 17 Mar 2025
    - HDD2 – Current end date is 10 Jan 25 - potential new date is 3 Dec 2024

v. any other known concurrent OOHW that will be occurring; and

- Quickway are not aware of any other contractor working within the area during the same time period.

vi. any other OOHW that will be occurring on the nights preceding and following the proposed works or, if the proposed work precedes or follows a weekend period, any other OOHW that will be occurring on the weekend.

- Quickway have no planned additional OOHW at the time of the community agreement which will impact the same receivers.

e) *request consent from the Noise Sensitive Receiver for their responses to be provided to the EPA;*
   - Consent has been received by all (100%) of the residents who responded to the request for community consultation. 24 of the 28 residents identified in the noise model predicted to be affected by the works responded with their consent for the extended hours to occur. Refer to Appendix B for consultation evidence with affected residents.
   - Clearly Audible (23 receivers: 19 yes consent, 4 no response) 100%
   - Moderately Intrusive (4 receivers: 4 yes consent) 100%
   - Highly Intrusive (1 receiver: 1 yes consent) 100%

f) *ensure that a record is kept when a licensee is unable to contact a noise sensitive receiver after three attempts, including leaving "sorry I missed you" cards explaining the reason for the visit and requesting a return phone call; and*
   - The below receivers have been contacted at least three times, though have not responded. Refer to Appendix B for detailed community consultation evidence.
   - 20 Grant Close, Kemps Creek, contacted on 17th July, 23rd July, 12th August and 13th August calling card left in mailbox.
   - 100 Floribunda Road, Kemps Creek, contacted on 17th July, 23rd July, 12th August and 13th August, calling card left in mailbox.
   - 241 Gurner Avenue, Kemps Creek, contacted on 24th July, 25th July, 30th July, and 13th August, calling card left in mailbox.
   - 184 Gurner, Kemps Creek, contacted on 25th July,, 30th July, 31st July and 14th August, calling card left in mailbox.

g) *demonstrate, where the OOHW is predicted to go on longer than 28 calendar days, that the licensee has consulted the community in relation to re-engagement periods for the purpose of determining agreement from the community is maintained and continuing.*
   - The community team will re-engage with the affected community each 90 days to ensure they still consent to the extended Saturday hours from 1pm to 6pm.

Kemps Creek Dual Pressure Main

Community Agreement
Extended Working Hours

HDD – Floribunda Avenue, Kemps Creek

Condition E1.3

Community Consultation EPA Reporting

The licensee must report to the EPA the community consultation and agreement process that was undertaken with the Community Affected Catchments. This report to the EPA must be:

a) *prepared in writing;*
   - This document has been prepared to address this condition.

b) *detail the steps taken to fulfil the requirements of condition E1.2;*
   - *Noise modelling for the proposed works was completed using KNOWnoise noise estimator software tool to identify the predicted receivers to be impacted by the works.*
   - *Following the noise modelling, the project Community Relations Team has contacted each affected resident and provided them with information regarding the works and the proposal to extend working hours on Saturdays.*
   - *A total of twenty-four (24) residents have provided their consent for the works, the community will be re-engaged every 90- days regarding the consent to continue with the extended hours on Saturdays from 1pm to 6pm.*

c) *demonstrate that the Noise Sensitive Receivers understood the nature of the works and any predicted impacts, including that consideration was made of additional requirements relevant to the needs of culturally and linguistically diverse Noise Sensitive Receivers;*
   - The community relations team have used multiple methods of contact such as in person contact, phone calls, text messaging and letter box drops. The notification provides an option to engage a translator to ensure the information is understood. The community team were not required to engage a translator for any linguistically diverse or culturally sensitive receivers. The noise sensitive receivers understand the nature of the works and predicted impacts.

d) *provide the script used during the community consultation with Noise Sensitive Receivers;*
   - *Initial script dated 17th July was communicated to the residents for the first two rounds of consultation. To provide additional detail, Quickway*

updated the initial script and re-engaged with all of the residents with the second script dated 13th August. The scripts used during the community consultation are provided in Appendix B.

e) *report community response and consent rates (including where no contact could be made) against the total community affected catchments, and must be broken down into response and consent rates based on sub-catchments that are delineated by affectation levels;*
   - Refer to detailed communication breakdown in Appendix B.

f) *include a noise validation monitoring plan as required by E1.4; and*
   - Refer to monitoring information in condition E1.4 below.

g) *be submitted to the EPA at least 15 business days prior to any works that are the subject of the agreement being undertaken unless prior arrangements have been made with the EPA.*
   - This document will provided to the EPA 15 days prior to the proposed commencement of this community agreement.

A copy of the report must be:

a) *kept by the licensee for the duration of this licence including on the premises, and made available to an EPA authorised officer on request; and*
   - Quickway acknowledges the requirement to maintain a copy of this report on the site premises and it be provided to an EPA Officer on request.

b) *be made available on the licensee's project website or another website approved in writing by the EPA for the duration of the OOHWs permitted under condition E1.1. (Personal details of Noise Sensitive Receivers must be omitted).*
   - A copy of the community agreement will be made available on the project website for the duration of the works as per E1.1. sydneywater.com.au/kempscreekmains.

Condition E1.4

Noise Validation Monitoring Plan submission

A noise validation monitoring plan must be submitted to the EPA for approval as part of the community agreement documentation prior to any OOHW occurring.

- Noise monitoring will be undertaken in accordance with the projects Noise and Vibration Management Plan.
- Attended noise monitoring at a representative distance of nearest sensitive receivers in the first instance of a construction activity with predicted NML exceedance triggering verification monitoring as prescribed with an approved OOHW application.
- Environmental noise monitoring (excluding spot checks of plant and equipment) will be recorded over 15-minute sample intervals, excluding periods of extraneous noise, until a representative sample has been obtained.
- A representative sample will be determined by the person monitoring, who will be competent, suitability trained and experienced in undertaking noise measurements.
- All environmental noise monitoring will be undertaken with a fast time constant (i.e. 125 milliseconds), and A-weighted frequency weighting. The minimum range of noise metrics to be stored in the memory for later retrieval include the following A-weighted noise levels: LA90, LAeq, LA10, LA (max).
- All outdoor noise measurements will be undertaken with a windscreen over the microphone and measurements of noise will be disregarded when it is raining and/or the wind speed is greater than 5 m/s (18 km/h).
- Where possible, noise monitoring is to be carried out at least 3.5 m from any reflective surface other than the ground and the preferred microphone/measurement height is 1.2-1.5 m above the ground.

Condition E1.5

Validation monitoring must be undertaken for any OOHW that are the approved under condition E1.1 and must:

a) *be undertaken in accordance with the monitoring plan prepared under condition E1.4;*
   - Attended validation noise monitoring will be undertaken as described in condition E1.4.

b) *be performed by a Competent Person;*
   - Noise monitoring will be undertaken by Quickway Environmental Advisors who have demonstrated experience in construction noise monitoring. They all meet the definition of a Competent Person in the EPL Special Dictionary (E2.1).

c) *be performed on at least the first 2 occasions (day, evening, nights) where OOHW will be undertaken and are likely to impact Noise Sensitive Receivers;*

- Monitoring will be undertaken during the evening period on Saturdays (1pm-6pm) at both the HDD entry and exit pits on the first two occasions where noise sensitive receivers are predicted to be impacted.

d) *be performed on any other occasion (day, evening, night) where the nature of the works is likely to cause greater noise impacts than the first 2 occasions;*

- Monitoring will also be undertaken in the unlikely event that the works methods change which may result in greater impact than previously monitored. There are no works proposed or approved to occur during the night time period.

e) *be representative of the impacts in terms of monitoring locations, time and duration of measurements; and*

- Monitoring will be undertaken at multiple locations around the entry pit and exit pit sites, at the most affected receivers. Noise samples will be taken in 15-minute intervals with detailed notes being taken during the recording period.

f) be recorded and provided to an EPA officer upon request.

- All noise monitoring data will be retained and will be provided to the EPA upon request.

Condition E1.6

If validation monitoring undertaken under Condition E1.5 shows that noise levels are higher than those predicted by any noise modelling undertaken as part of the community agreement, 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:

a) *the licensee must report immediately to the EPA; and*

- Quickway will report exceedances of the predicted noise levels to the EPA.

b) *after considering the circumstances EPA may withdraw its permission under E1.1.*

- Quickway acknowledge and understand the EPA may withdraw its permissions and agree with the condition.

Condition E1.7

Ongoing community engagement and agreement

a) For any approval of OOHW under E1.1 predicted to take longer than 28 calendar days to remain valid, the licensee must be able to demonstrate agreement from the community is maintained and continuing.

b) To demonstrate agreement from the community is maintained and continuing the licensee must:

i. engage the community to determine if a substantial majority of Noise Sensitive Receivers continue to consent to the OOHW pursuant to the re-engagement period determined under condition E1.2(d);

- Quickway will re-engage with the community every 90 days to ensure they are still consenting to the proposed extension hours on Saturdays from 1pm to 6pm.

ii. provide the EPA with a report within 7 calendar days of the end of each re-engagement period summarising the community response including ongoing consent rates of the Noise Sensitive Receiver; and

- Quickway will provide the EPA with a report inclusive of evidence of re-engagement with the community and their consent to continue works.

c) Where the licensee is unable to demonstrate a substantial majority of agreement from Community Affected Catchment is maintained and continuing:

i. the licensee must report immediately to the EPA; and

- Quickway will report to the EPA as applicable.

ii. after considering the circumstances EPA may withdraw its permission under E1.1.

- Quickway understand and acknowledge this condition.

Kemps Creek Dual Pressure Main

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HDD – Floribunda Avenue, Kemps Creek

Conclusion

Quickway are proposing to extend working hours on Saturdays from 1.00pm – 6.00pm during the evening period of Out of Hours Works beginning in late August 2024. Quickway has an agreement with 100% of the residents who responded to the consultation for the works to proceed.

Appendix A – OoHW Permit (Draft)

PD & MP CONTRACTOR OUT OF HOURS WORKS (OOHW) Permit

Out of Hours Works (OoHW) Permit

Note: This permit is to be used to assess requests to extend approved project working hours for works (a) under 3 weeks in length and/or (b) with negligible environmental or community impacts. If the impacts associated with proposed OoHW does not comply with the project environmental approval an REF Addendum may be required.

Document Sign-off *(to be completed prior to submission)*			
	Name:	Signature:	Date:
Contractor Document Author:	Daniel Mutkins	[redacted]	29/08/2024
Contractor Community Representative:	Suzanna Jolak	[redacted]	29/08/2024
Contractor Environmental Representative:	Tom St Vincent Welch	[redacted]	29/08/2024
Contractor Project Manager:	Killian Koen	[redacted]	29/08/2024

Part A: Proposal			
Project name:	Kemps Creek Dual Pressure Main Project.		
Location: *(Street name(s) & suburb)*	125 Floribunda Road, Kemps Creek, NSW 2178 and 195 Gurner Ave Austral, NSW 2179.		
EIA Approval:	Review of Environmental Factors (REF), Sydney Water, Kemps Creek Pressure Mains (July 2023) Review of Environmental Factors (REF), National Parks and Wildlife Service NSW, Kemps Creek Pressure Mains (February 2024)		
Duration:	Extended Saturday shift starting late August 2024 – 31st May 2025.	**Days affected**	**Specific Timing**
Specific Details:	Extended Saturday shift for a total of 10 months during the out-of-hours (OOH) period between (1.00 pm – 6.00pm).	Monday(s)	0 nights
		Tuesday(s)	0 nights
		Wednesday(s)	0 nights
		Thursday(s)	0 nights
		Friday(s)	0 nights
		Saturday(s)	Extended evening hours
		Sunday(s)	0 nights

**Guidance from EPA Draft Construction Noise Guideline:*

"2.2.4. Hierarchy of working hours

The following hierarchy of working hours is only applicable where work cannot be scheduled during the recommended standard hours:

- *Saturday afternoon periods between 1300 and 1700*
- *Sundays between 0800 and 1800*
- *Weekday evening periods between 1800 and 2200*
- *Weekday night periods between 2200 and 0700*
- *All other times outside the recommended standard hours.*

The proponent should seek to minimise impacts by scheduling work during the above hierarchy of preferred working hours, as per community preferences or as approved by the relevant consent or regulatory authority."

**Note: Where high impact out-of-hours works are proposed (weekend nights or works affecting the same stakeholder for greater than 2 consecutive nights), negotiation with the community is required.*

***Note: an ROL does not inherently justify weekend night works if works can be scheduled on other days.*

Justification *(state approved working hours the hours that are required and then a justification of why OoHW required?)*	**Standard Hours:** - 7:00 am and 6:00 pm Monday to Friday; - 8:00 am and 1:00 pm Saturday; and - not be undertaken on Sundays or Public Holidays. **Required hours outside of standard hours** - 13:00pm - 18:00pm Saturdays; This OoHW Permit is for the assessment of the impacts of Out of Hours Works associated with: • Horizontal Directional Drilling (HDD) – Entry Pit: Trenchless drilling works from Floribunda Road HDD compound under the Kemps Creek Nature Reserve (Figure 1) • HDD – Exit Pit: Receival pit for HDD on Gurner Avenue for the installation of twin DN600 (Figure 2). The works is anticipated to take up to thirty-four (34) weeks to complete. **Justification** The works are programmed for outside of approved construction hours due to the following: - To fully commission the newly constructed Wastewater Pumping Station (SP1211) in Austral and the Advanced Water Recycling Centre (AWRC) this critical infrastructure will be required to ensure both these facilities are fully operational within the current program and minimise duration of works to impacted residents. - Community consultation and agreement will be conducted to all residents identified as clearly audible or above as identified in the Know Noise Application. *(outlined below).* As the works are beyond standard daytime hours, this OoHW Permit fulfils the requirements of the following REF safeguard: *If works beyond standard daytime hours are needed, Quickways environmental representative would:* - *Justify the need for out of standard daytime work.* - *Consider potential noise impacts and implement the relevant standard daytime hours safeguards; Sydney Water's Noise Management Code of Behaviour (SWEMS0056.01) and other reasonable and feasible management measures.* - *Identify community notification requirements.* - *Seek approval from the Sydney Water Project Manager.*

EPL OOHW Application Requirements (EPL 21886)

EPL OOH Approval Criteria

In consultation with Sydney Water Environmental Team Representative, assess compliance requirements for this OOHW Application. **Tick all that apply.**

Compliance against EPL	
L5.1 Standard construction hours	
Standard construction hours Unless permitted by another condition of this licence, works and activities must:	Are proposed OOHW works within standard

a) only be undertaken between the hours of 7:00 am and 6:00 pm Monday to Friday; b) only be undertaken between the hours of 8:00 am and 1:00 pm Saturday; and c) not be undertaken on Sundays or Public Holidays.	hours as outlined in L5.1? ☐ Yes ☒ No
L5.3 Exemptions to standard construction hours for low noise impact works	
Works and activities may be carried on outside of standard construction hours specified in condition L5.1 if the works and activities **do not cause**, when assessed at the boundary of the most affected Noise Sensitive Receiver: a) LAeq(15 minute) noise levels greater than 5dB(A) above the day, evening and night Rating Background Level(RBL) as applicable; b) LAmax noise levels greater than 15dB(A) above the night RBL for night works; c) the preferred continuous or impulsive vibration values greater than those for human exposure to vibration, set out for residences in Table 2.2 in Assessing Vibration: a technical guideline (DEC, 2006); and d) the preferred intermittent vibration values greater than those for human exposure to vibration, set out for residences in Table 2.4 in Assessing Vibration: a technical guideline (DEC,2006). For the purposes of this condition, the RBLs are those contained in an environmental assessment for the activities subject to this licence prepared under the Environmental Planning and Assessment Act 1979. Alternatively, the licensee may use another RBL determined in accordance with the Noise Policy for Industry(EPA, 2017) and provided to the EPA prior to carrying out any works or activities under this condition. The notification requirements under condition L5.8 do not apply to this condition.	Do proposed OOHW comply with the criteria of L5.3? ☐ Yes ☒ No If **no**, select other EPL OOHW condition.
L5.4 Exemptions to standard construction hours in exceptional circumstances	
a) The licensee may undertake works and activities outside of standard construction hours specified in condition L5.1 for: i. emergency works required to avoid the loss of life or property, or to prevent material harm to the environment; and ii. the delivery of oversized plant, structures or materials determined by the police or other authorised authorities to require special arrangements to transport along public roads. For the purposes of this condition, 'material harm to the environment' has the same meaning as in section 147 of the POEO Act. Emergency works do not require a notification under condition L5.8.	Do proposed OOHW comply with the criteria of L5.4 (a)? ☐ Yes ☒ No If **yes**, tick category which applies. ☐ i) ☐ ii)

	If **no**, select other EPL OOHW condition.
L5.5 Works outside of standard construction hours	
Under this condition, works and activities may be undertaken outside of standard construction hours specified in condition L5.1 if any of the following circumstances apply: a) carrying on those works and activities during standard construction hours would result in a high risk to construction personnel or public safety, based on a risk assessment carried out in accordance with AS/NZSISO 31000:2018 "Risk Management"; b) the Relevant Road Network Operator has advised the licensee in writing that carrying out the works and activities during standard construction hours would result in a high risk to road network operational performance; c) a relevant utility service operator has advised the licensee in writing that carrying out the works and activities during standard construction hours would result in a high risk to the operation and integrity of the utility network; d) the TfNSW Transport Management Centre (or other road authority) have refused to issue a road occupancy licence during standard construction hours; or e) Sydney Trains (or other rail authority) requires a rail possession for the activities to be performed outside of standard construction hours. f) the Relevant Road Network Operator or utility service operator has directed the licensee to carry out works and activities outside of standard construction hours.	Do proposed OOHW comply with the criteria of L5.5? ☐ Yes ☒ No If **yes**, tick category which applies: ☐ a) ☐ b) ☐ c) ☐ d) ☐ e) ☐ f) If **no**, select other EPL OOHW condition.
E1.1 Work outside standard construction hours - community consultation and agreement	
The licensee may work outside standard construction hours (as defined in L5.1 in circumstances other than those permitted under conditions L5.3, L5.4, or any other condition of this licence if the Licensee: a) undertakes community consultation and agreement as described in E1.2; b) submits to the EPA a written request to work outside the standard construction hours attaching information set out in E1.3; and c) obtains approval by the EPA to work outside standard construction hours. The EPA may, in exercising its discretion to approve the works outside standard construction hours, review whether the licensee has obtained community agreement. Specifically, whether a substantial majority of the individual Noise Sensitive Receivers who together	Do proposed OOHW comply with the criteria of E1.1? ☒ Yes ☐ No If **yes**, tick all to confirm as complete. ☒ a) ☒ b) ☒ c)

	comprise the Community Affected Catchments and were contacted has consented to the planned works out of standard hours.	If **no**, select other EPL OOHW condition.

Approved working hours
Approved construction hours listed in the project environmental approval are 7:00 am to 6:00 pm Monday to Friday, and 8:00 am to 1:00 pm Saturday, with no working on Sundays or public holidays.

Extended Hours Proposed
Extended Saturday shift starting late August 2024 – 31st of May 2025 1:00 pm to 6:00 pm.

Respite Management
No night work is scheduled to occur. No working on Sundays.

Scheduling Proposed in both locations
- Generators running from 1:00 pm until 6:00 pm.
- Mud Pump running from 1:00 pm until 6:00 pm.
- Recycling system running from 1:00 pm until 6:00 pm.
- Excavator running for 15 minutes each hour from 1:00 pm until 6:00 pm.
- Trucks running when required for 15 minutes of each hour from running from 1:00 pm until 6:00 pm.
- LV used to exit after completion of shift 6:00 pm.
- Horizontal Direction Drill running from 1:00 pm – 6:00 pm.

Community Consultation
Community consultation with be provided by Quickways community representative in line with Sydney Waters community consultation guidelines.

Consultation summary is provided in Appendix A.

Scope of works, outside of approved working hours:

Tasks, including:
- Directionally drilling the pilot hole (Stage 1)
- Drilling the Pilot Hole (Stage 2)
- Pre-Reaming the horizontal boring (Stage 3)
- Pullback Operations – Installation of pipes (Stage 4)
- Equipment and machinery used to service works in both locations.

Equipment:

Equipment Type:	Y/N	Specific Mitigation to be utilised:
Horizontal Direction Drill	Y	Noise Barrier Wall installed around HDD sending pit.
Generator	Y	Noise Barrier Wall installed around entry pit. Noise blankets around compound at receival pit.
Mud Pump	Y	Noise Barrier Wall installed around entry pit. Noise blankets around compound at receival pit.
Excavator	Y	Noise Barrier Wall installed around entry pit. Noise blankets around compound at receival pit. Plant will be turned off when not in use.
Recycling System	Y	Noise Barrier Wall installed around entry pit. Noise blankets around compound at receival pit.
Trucks	Y	Noise Barrier Wall installed around entry pit. Noise blankets around compound at receival pit. Plant will be turned of when not in use.
LV	Y	Noise Barrier Wall installed around entry pit. Noise blankets around compound at receival pit. LV will only be used to enter and exit site.

Reasonable and Feasible Mitigation Table

A **feasible** mitigation measure is one that can be engineered and is practical to build and/or implement, given project constraints, such as safety, maintenance and reliability requirements.

Selecting **reasonable** measures involves judging whether the overall noise benefits from a feasible option outweigh the overall adverse social, economic and environmental effects.

Mitigation option	Feasible mitigation test	Reasonable mitigation test	Adopted Y/N and Comments
Planning the overall works			
Complete works within approved hours	Not - Feasible	Yes - Reasonable	**Not Adopted.** Given the time required to complete the works would extend the length of the job by an additional 40 days impacting the commissioning of the constructed Wastewater Pumping Station (SP1211) in Austral and the yet to be constructed Advanced Water Recycling Centre (AWRC). *Community consultation conducted between July 2024 and August 2024 indicated strong preference for reduced overall construction timeframe.*
Selection of Plant and Equipment			
Minimise use of noisy plant near residential receptors	Not Feasible Underbore alignment on critical path and cannot be relocated. Sending and receival shafts cannot be changed.	Yes – Reasonable	**Not Adopted.** A temporary noise wall will be utilised at both locations to reduce noise impacts to local residential receptors.
Noise Mitigation Measures			
Use ATF fencing with noise blankets	Yes - Feasible	Yes – Reasonable	**Adopted** A temporary noise wall utilised at both locations to reduce noise impacts to local residential receptors.

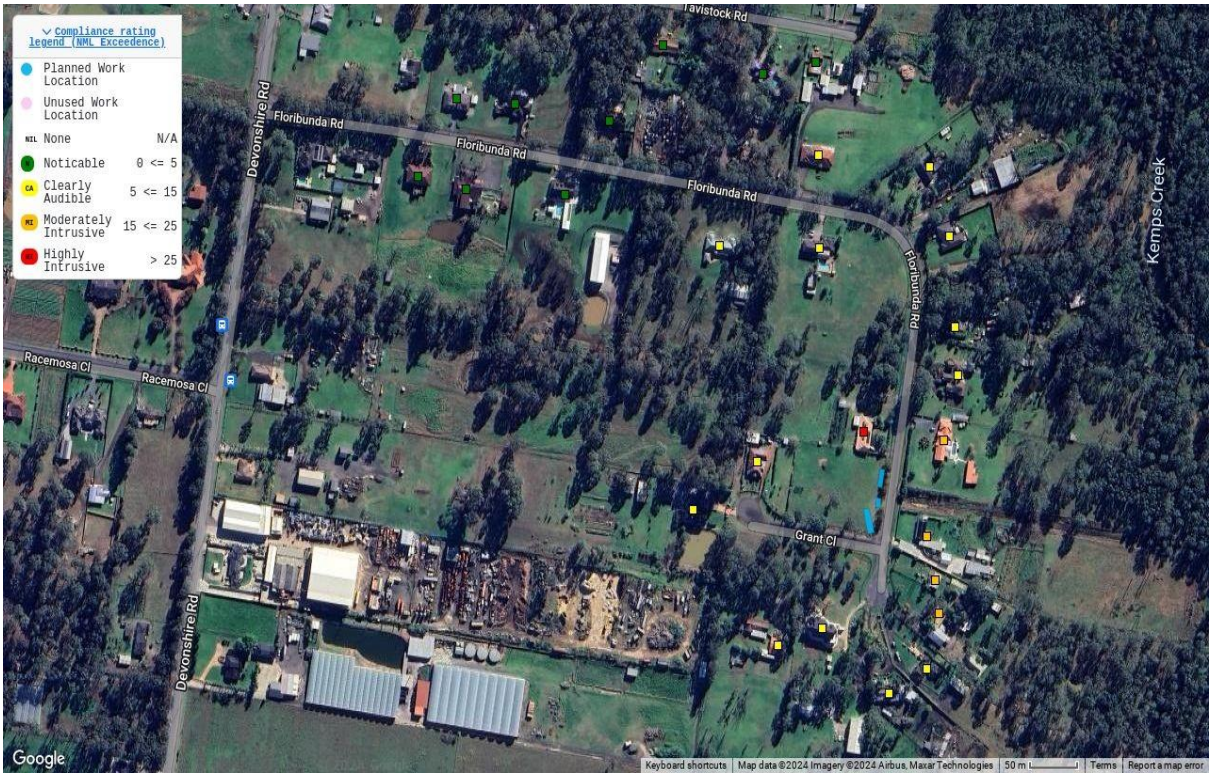


Figure 1 HDD Entry Location and predicted level of impact.

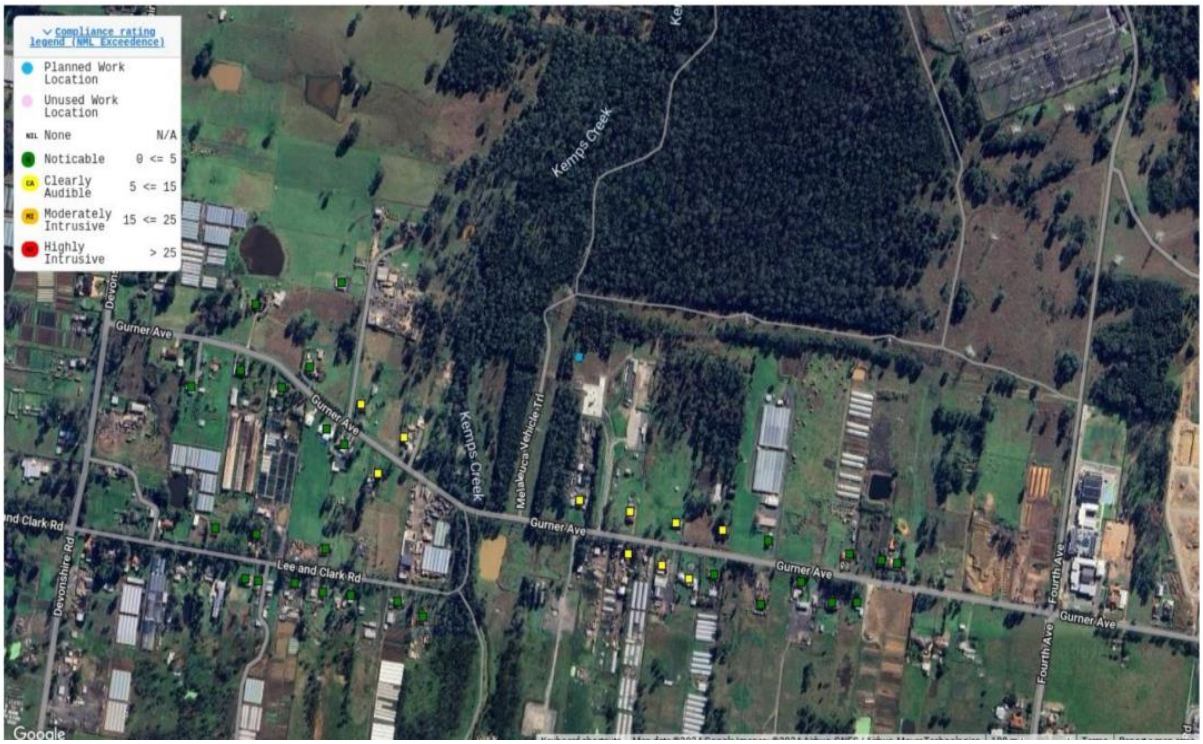


Figure 2 HDD Exit Location and predicted level of impact

Part B: Type of OoHW *Complete 'Y/N' and 'comment' cells where applicable. Proposal must align with at least 1 type below.*

Y/N	Description	Additional Notes	Comment(s)
N	Type 1: • Works will be <5 dBa above RBL.	• Noise Assessment / commentary demonstrating compliance with <5 dBa above RBL.	N/A
N	Type 2: • Undertaking works during standard construction hours would not be possible due to FIFM, flow-level, or Road Occupancy License constraints.	• Noise Assessment / commentary to determine impacts to sensitive receivers. • Respite documented, where applicable.	N/A
Y	Type 3: • Agreement with majority of local sensitive receivers has been reached following community consultation.	• Noise Assessment / commentary to determine impacts to sensitive receivers. • Record of agreement. • Respite documented, where applicable.	Consultation and agreement summary provided in Appendix A.
N	Type 4: • Oversize and/or overmass (OSOM) vehicle movement required, with road access permit restrictions.	• Documented contractor requirements.	N/A

Part C: Impacts, Mitigation and Communication Proposed

Noise Impacts

Detailed noise assessments have been undertaken to assess predicted noise impacts using advanced noise modelling software KNOWnoise. A summary of the outcomes of the noise assessments is described in Appendix B.

Other Impacts

- No other impacts are anticipated from the works.

Additional Mitigation Measures

All works would be undertaken in accordance with the requirements of the Industrial Noise Policy (INP) and Draft Construction Noise Guideline (CNG).

The mitigation measures already outlined within the Environmental Approval and CEMP will be implemented as required.

In addition, the following from the Sydney Water Noise Management Code of Behavior (SWEMS0056.01) will be implemented where appropriate:

- Switching off all truck radios (commercial) upon arrival at site and use truck communication radios with truck cabin doors closed.
- No unnecessary loud noises (e.g. talking loudly, slamming doors).
- Arranging the work site to minimise the use of movement alarms on vehicles and mobile plant and keep truck reversing to a minimum.
- Taking extra care to minimise noise while loading or unloading trucks with materials or equipment (e.g. avoid dropping materials from height and metal to metal contact).
- Turning off plant and equipment that is not being used and don't leave trucks idling near homes, unless required to maintain electrical power.
- Using all other reasonable and feasible noise mitigation measures (e.g. noise barriers) (refer to the NSW EPA's Draft Construction Noise Guideline).
- Pro-active supervision of work practices to ensure noise mitigation measures are effectively reducing impacts to surrounding receivers.

In addition to the controls already outlined within the Environmental Approval and CEMP, the following safeguards will be implemented, where appropriate:

- Acoustic barriers
- Briefing workers on the need to minimise noise
- Contractor will ensure that only vehicles and machinery in good working condition, with appropriate exhaust pollution controls that meet all relevant Australian Standards are used.
- Surrounding residences and businesses will be given reasonable notice of the proposed works (including proposed start date, work methods and works duration) in accordance with Sydney Water's community liaison and notification policies.
- Should excessive noise complaints be received during the construction phase, attended noise monitoring and/or assessment will be considered to further investigate noise levels arising from construction and appropriate controls to be implemented in response.

Community Notification

Refer to Appendix A.

All community notifications, consultation, agreements and complaints management will be undertaken in accordance with the requirements of the EPL as agreed with Sydney Water Environmental and Community Engagement teams. In summary:

Community notifications will be undertaken as per the approved Community and Stakeholder Engagement Plan, including;

- Letters notifying of work activities to be delivered 7 days before.
- A door knock will be done for the sensitive receivers immediately adjacent to the works.

In accordance with EPL E1.1, community agreement has been sought with the majority of responding affected receivers who agree that the works can take place.

In the event of a complaint, the Project hotline contact number has been made available to adjacent residential stakeholders –1300 989 496. This number is staffed 24 hrs/day.

All community complaints will be fully investigated, and any additional identified reasonable and feasible mitigation measures will be implemented, (including investigation of the feasibility of respite periods/alternative methodologies such as rescheduling of noisiest, adaptation of mitigation measures etc.)

Part D: Submission, Review and Approval

Document Submission Instructions

OoHW request requires endorsement in the following order:

1st - SW Environmental Representative / Delegate

2nd - SW Community Representative

3rd - SW Project Manager

RDC or MP Program: Contractors are to submit OoHW template to SW Environmental Representative / Delegate and Community Representative as "Reviewer" via an **InEight Workflow**, with the relevant SW Project / Contract Manager as the "Review Coordinator".

Legacy Program: Contractors are to submit OoHW template to SW Environmental Representative via a **SWDelivery Portal Workflow**, copying-in the relevant SW Community Representative and SW Project Manager (For older projects using SWDP for Document Mgmt).

Contractors to ensure Document Sign-off section (page 1) is completed by Contractor Representatives prior to submission
Works cannot proceed until SW Project Manager has approved the workflow.

SW Endorsement / Approval Instructions *(Signatures not required)*

RDC or MP Program - InEight: To mark document as endorsed, the document is to be "Reviewed" with a comment noting endorsement.

If updates are required, reviewer will add a comment requesting that workflow be rejected and provide comments for the Contractor to action prior to resubmission.

If document is determined to be fit-for-purpose;

- **SW Environmental Representative** is to complete review with a comment noting endorsement.
- **SW Project / Contract Manager** to Approve / Release document workflow.

Legacy Program - SWDelivery Portal: To mark document as endorsed, the reviewed document is to be "Reviewed" with "Further Review Required" – "Yes" (with a comment noting endorsement).

If updates are required, reviewer will reject workflow and provide comments for the Contractor to action prior to resubmission.

If document is determined to be fit-for-purpose;

- **SW Environmental Representative** is to forward document workflow to SW Community Representative, with a comment noting endorsement.
- **SW Community Representative** is to forward document workflow to SW Project Manager, with a comment noting endorsement.
- **SW Project / Contract Manager** to Approve document workflow.

Appendix A: Community Consultation and Agreement

17 July 2024

Proposed extended work hours | Kemps Creek Dual Pressure Mains

Dear Resident,

Sydney Water is delivering essential infrastructure to support the future population and economic growth of Western Sydney. This includes the construction of two 6.8km wastewater pipes (known as pressure mains) from a recently constructed sewage pumping station on Gurner Avenue in Austral to the Upper South Creek Advanced Water Recycling Centre (AWRC) currently under construction in Kemps Creek.

The Kemps Creek Pressure Mains will transfer wastewater to the AWRC for treatment and recycling into high quality recycled water, renewable energy and bio-resources, to support a cooler, greener Western Parkland City.

When will construction start?

Our contractor Quickway will be starting construction late-July 2024 and expected to finish mid to late 2025, pending weather conditions.

Current work hours

Our current approved hours are between 7 am to 6 pm Monday to Friday and 8 am to 1 pm Saturdays. There is no work planned on Sundays or Public Holidays.

We are currently not planning other night work activities in this area but should we need to we will re-engage with you.

Proposed extended hours

Part of this work requires Horizontal Directional Drilling (HDD) in Floribunda Avenue, Kemps Creek and Gurner Avenue, Austral.

Due to the nature of HDD activities required, we are unlikely to fully utilise our approved Saturday hours, between 8am- 1pm.

To better maximise our workers time on site we are seeking residents near the HDD activities for their agreement to extend our regular hours on Saturday from 1 pm to finish at 5 pm:

- **Current work hours from 8 am – 1 pm**
- **Proposed extended hours: Saturday 8 pm to 5 pm**

Should additional hours on a Saturday be accepted by the surrounding community, this will allow us to potentially complete more work over a shorter period.

We would like to implement these additional working hours from 29 July 2024 to end March 2025.

Sydney Water Corporation ABN 49 776 225 038
1 Smith Street, Parramatta, NSW 2150 | PO Box 399, Parramatta, NSW 2124
Telephone 13 20 92 **Media (24/7)** 8849 5151 **sydneywater.com.au**

What would this mean for you:

Typical work activities to be carried out during the extended working would include:

The first stage consists of directionally drilling a small diameter pilot hole along a designed directional path. The second stage involves enlarging this pilot hole to a diameter suitable for installation of the pipeline. The third stage consists of pulling the pipeline back into the enlarged hole.

The types of equipment that can be used during this work include:

- Excavators
- Dump Trucks and Truck and Dogs
- Horizontal Directional Drilling truck and equipment
- Water Cart
- Boring Rig
- Grader
- Semi-Trailer/ flatbed trucks

Additional benefits from extending work hours include:

- increased productivity on the work site with longer working hours during the day
- minimised disruption during the construction phase
- an accelerated construction program

We will be constructing 2 lines in Floribunda Avenue. Our modelling anticipates the following timesframes:

- HDD1 - Current end date without Saturdays 6 May 2025 - potential new with Saturdays Date 17 Mar 2025

- HDD2 – Current end date is 10 Jan 25 - potential new date is 3 Dec 2024

Traffic management will be in place to safely direct vehicles and pedestrians around work sites. We will maintain driveway access to properties during the work.

What you need to know

We know our work can be disruptive, and we will make every effort to reduce any impact this work may have on you.

Construction of the new wastewater mains will start later this year. Following completion, roads and footpaths will be restored. We will notify you again before we start construction, and we will contact landowners directly where access will be required.

Where do I get more information and help?

To learn more about the work, please call our Community Engagement Team on 1300 98 94 96, email kempscreekwastewater@sydneywater.com.au or visit the project website at sydneywater.com.au/kempscreekmains.

13 August 2024

Proposed extended work hours | Kemps Creek Dual Pressure Mains

Dear Resident,

Sydney Water is delivering essential infrastructure to support the future population and economic growth of Western Sydney. This includes the construction of two 6.8km wastewater pipes (known as pressure mains) from a recently constructed sewage pumping station on Gurner Avenue in Austral to the Upper South Creek Advanced Water Recycling Centre (AWRC) currently under construction in Kemps Creek.

The Kemps Creek Pressure Mains will transfer wastewater to the AWRC for treatment and recycling into high quality recycled water, renewable energy and bio-resources, to support a cooler, greener Western Parkland City.

When will construction start?

Our delivery partner, Quickway, have commenced construction in late July 2024 and expect to finish in mid-late 2025, weather permitting.

Current work hours

Our current approved hours are between 7 am to 6 pm Monday to Friday and 8 am to 1 pm Saturdays. There is no work planned on Sundays or Public Holidays.

We are currently not planning any night work activities in this area but if we need to, we will re-engage with you.

Proposed extended hours

Part of this work requires Horizontal Directional Drilling (HDD) two long bores underground between Floribunda Avenue, Kemps Creek and Gurner Avenue, Austral. This activity requires operation of the horizontal direction drilling equipment at each end of the underground pipeline.

Due to the nature of HDD activities required and **to shorten the overall duration of impacts to the nearby community from the works, we are seeking residents near the HDD activities for their agreement to extend our regular hours on Saturdays to finish works 6pm, rather than 1pm.**

- **Current approved Saturday work hours: 8am to 1pm**
- **Proposed extended Saturday work hours: 8am to 6pm**

Should the surrounding community accept additional hours on a Saturday, this would allow us to complete more work over a shorter period, minimising the duration of impacts to the nearby community from the works.

We want to implement these additional working hours from late August 2024 to March 2025. This includes contingency for wet weather and unforeseen circumstances, with overall duration potentially shorter.

Sydney Water Corporation ABN 49 776 225 038
1 Smith Street, Parramatta, NSW 2150 | PO Box 399, Parramatta, NSW 2124
Telephone 13 20 92 **Media (24/7)** 8849 5151 **sydneywater.com.au**

What would this mean for you:

Typical HDD work activities to be carried out during the extended work hours would include:

The first stage of directionally drilling which consists of drilling a small diameter pilot hole underground along a designed directional path. The second stage then involves enlarging this pilot hole to a diameter suitable for installation of the pipeline. The third stage will then involve pulling the pipeline back through the enlarged hole to be connected to the broader pipelines at each end.

The types of equipment that may be used during this work include:

- Horizontal Directional Drilling rig and associated equipment
- Excavators
- Dump Trucks and Truck and Dogs
- Water Cart
- Semi-Trailer / flatbed trucks

What noise impacts will the work produce?

- The works will generate construction noise which can be categorised as between Quiet, similar to within a business office, to Noisy, similar to passing slow traffic 7 meters away, dependent on how close you are to the work, with

Additional benefits from extending work hours include:

- Increased productivity on the work site with longer working hours during the day resulting in shortening of the overall duration of impacts to the community from this activity. Our modelling anticipates the additional working hours each Saturday would reduce the overall duration of the works by approximately one month.

What you need to know

We know our work can be disruptive, and we will make every effort to reduce any impact this work may have on you. Traffic management will be in place to safely direct vehicles and pedestrians around work sites. We will maintain driveway access to properties during the work. Following completion, roads and footpaths will be restored. We will notify you again before we start construction, and we will contact landowners directly where access will be required.

There are no other nearby concurrent out of hours works scheduled to be undertaken which may add additional impact.

As part of our approval process, your responses will be provided to the EPA. Do you consent for this to occur?

Where do I get more information and help?

You can contact us on our 24hr complaints contact number below.
If you require a translator, please contact **13 14 50.**

To learn more about the work, please call our Community Engagement Team on 1300 98 94 96, email kempscreekwastewater@sydneywater.com.au or visit the project website at sydneywater.com.au/kempscreekmains.

Interpreter Service 13 14 50
Arabic • Chinese • Greek • Italian • Korean • Vietnamese
إذا كنت تحتاج إلى مترجم، يرجى الاتصال بالرقم أعلاه.
如果您需要傳譯員的協助，請致電以上的號碼。
Αν χρειάζεστε διερμηνέα, τηλεφωνήστε στον παραπάνω αριθμό.
Se vi serve un interprete, telefonate al numero indicato sopra.
통역사가 필요하시면 위의 번호로 전화하십시오.
Nếu quý vị cần thông dịch viên, hãy gọi đến số trên đây.

Sydney Water Corporation ABN 49 776 225 038
1 Smith Street, Parramatta, NSW 2150 | PO Box 399, Parramatta, NSW 2124
Telephone 13 20 92 **Media (24/7)** 8849 5151 **sydneywater.com.au**

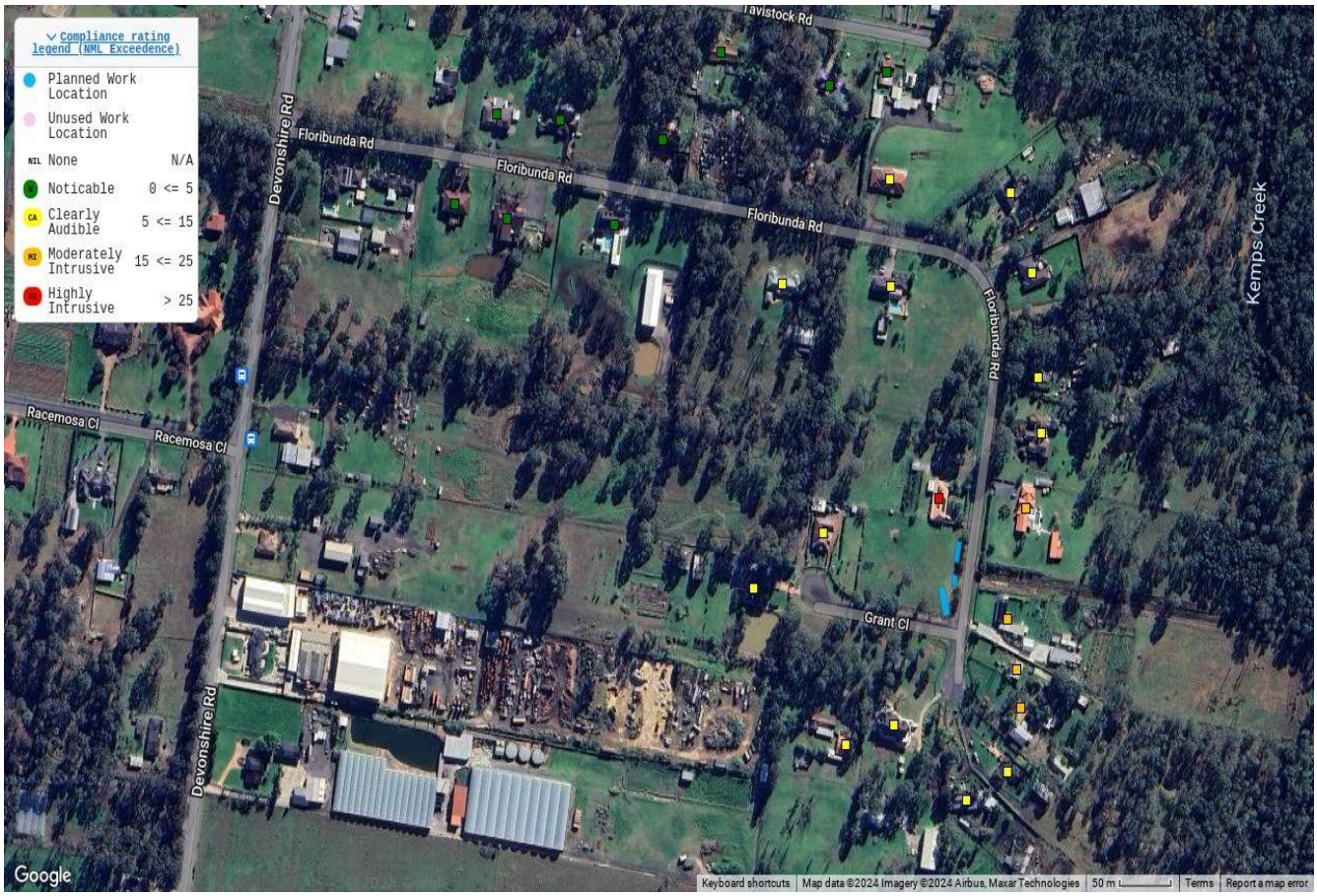
Appendix B: Noise Assessment Summary

HDD Works – Floribunda Road Entry Pit

Noise Assessment Inputs – Horizontal Directional Drilling

ID	Assessment Time	Equipment Type	Qty	Usage	Reduction	Sound Power Level (SWL)	
						LAeq	LAmax
1	Saturday Evening 13:00pm - 18:00pm	Horizontal Directional Drill	1	100%	8	95	98
2		Mud Pump	1	100%	8	109	112
3		Excavator (20 tonne)	1	40%	8	91	101
4		Recycling System	1	100%	8	99	102
5		Bogie	1	30%	8	87	97
6		Truck (HIAB)	1	30%	8	88	98
7		Light Vehicles	2	10%	8	70	82
8		Generator (6 kVA)	1	100%	8	81	84
Activity Sound Power Level			113				

Distribution of predicted Noise Impacted Receivers – HDD Entry Pit



Predicted Noise Impacts at each affected residential receiver – HDD Entry Pit

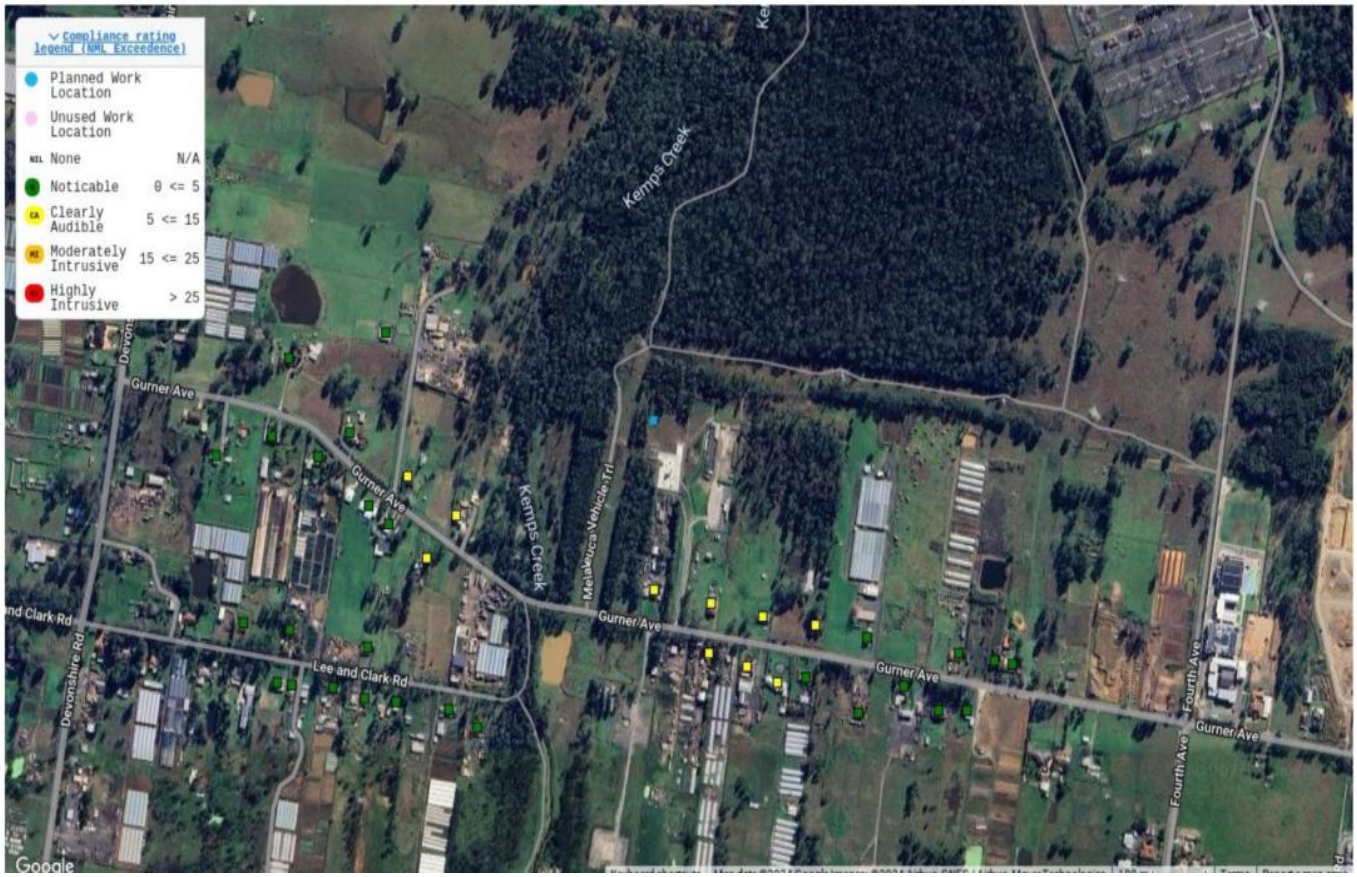
Address	Land use	NML	Predicted Noise Level (dB)		Impact
			LAeq	LAmax	
115-125 Floribunda Road Kemps Creek	RES	40	66	66	HI
128 Floribunda Road Kemps Creek	RES	40	64	66	MI
112 Floribunda Road Kemps Creek	RES	40	60	62	MI
140 Floribunda Road Kemps Creek	RES	40	55	58	MI
140A Floribunda Road Kemps Creek	RES	40	58	61	MI
65 Floribunda Road Kemps Creek	RES	40	47	49	CA
90 Floribunda Road Kemps Creek	RES	40	48	50	CA
70 Floribunda Road Kemps Creek	RES	40	46	48	CA
10 Grant Close Kemps Creek	RES	40	54	57	CA
80 Floribunda Road Kemps Creek	RES	40	46	48	CA
110 Floribunda Road Kemps Creek	RES	40	54	56	CA
85 Floribunda Road Kemps Creek	RES	40	49	51	CA
100 Floribunda Road Kemps Creek	RES	40	52	54	CA
20 Grant Close Kemps Creek	RES	40	52	54	CA
25 Grant Close Kemps Creek	RES	40	54	57	CA
30 Grant Close Kemps Creek	RES	40	50	53	CA
150 Floribunda Road Kemps Creek	RES	40	52	54	CA
154 Floribunda Road Kemps Creek	RES	40	51	54	CA

HDD Works – Gurner Avenue Exit Pit

Noise Assessment Inputs – Horizontal Directional Drilling Exit Pit

ID	Assessment Time	Equipment Type	Qty	Usage	Reduction	Sound Power Level (SWL)	
						LAeq	LAmax
1	Saturday Evening 13:00pm - 18:00pm	Generator (6 kVA)	1	100%	8	81	84
2		Mud Pump	1	100%	8	109	112
3		Excavator (20 tonne)	1	40%	8	91	101
4		Recycling System	1	100%	8	99	102
5		Bogie	1	30%	8	87	97
6		Truck (HIAB)	1	30%	8	88	98
7		Light Vehicles	2	10%	8	70	82
Activity Sound Power Level			113				

Distribution of predicted Noise Impacted Receivers – HDD Exit Pit



Predicted Noise Impacts at each affected residential receiver – HDD Exit Pit

Address	Land use	NML	Predicted Noise Level (dB)		Impact
			LAeq	LAmax	
240 Gurner Avenue Kemps Creek	RES	40	45	47	CA
245 Gurner Avenue Kemps Creek	RES	40	45	47	CA
195 Gurner Avenue Kemps Creek	RES	40	49	50	CA
205 Gurner Avenue Kemps Creek	RES	40	50	51	CA
235 Gurner Avenue Kemps Creek	RES	40	47	48	CA
185 Gurner Avenue Kemps Creek	RES	40	47	49	CA
194 Gurner Avenue Kemps Creek	RES	40	47	48	CA
180 Gurner Avenue Kemps Creek	RES	40	45	47	CA
175 Gurner Avenue Kemps Creek	RES	40	46	47	CA
184 Gurner Avenue Kemps Creek	RES	40	46	47	CA

Construction noise and vibration impact assessment

KCPM_HDD

Proposed works	KCPM_HDD		
Proponent	Quickway		
Assessment Date			
Prepared by	Tom St Vincent Welch	**Assessment Id**	KCPM_HDD

Introduction

This report has been prepared using the construction noise self-assessment platform KNOWnoise: *Minor Works* and presents an assessment of the likely noise impacts related to proposed works associated with the above project. Where possible, these works would be completed during standard construction hours; however, there may be a need to work outside these hours due to technical, community or access limitations. The location of the proposed works is illustrated in Appendix A.

Planned works

A description of the proposed works is as follows.

KCPM HDD Compound area, extension of working hours (Saturday post 1pm)

Proposed activities and equipment for the works are summarised in Appendix B.

Though subject to change, the works are expected to commence around 03/08/2024 and would be completed by 31/03/2025

Assessment criteria and mitigation requirements

Noise

The Interim Construction Noise Guideline (ICNG) (DECC 2009) describes noise more than the background level as potentially having an adverse impact on sensitive receivers and increasing the likelihood of complaint. During standard construction hours, where construction noise is within 10 dB(A) of the RBL, impacts would be acceptable.

Where construction noise is more than 10 dB(A) above the RBL during standard construction hours, a residential receiver is considered noise affected and the proponent should undertake all reasonable and feasible steps necessary to manage the impact and consult with the affected community.

Above a LAeq, 15 minute noise level of 75 dB(A), a receiver is highly affected, requiring consideration of additional mitigation measures including alternative accommodation in the night period.

Outside standard construction hours, construction noise at a residential receiver more than 5 dB(A) above the RBL is taken to be noise affected.

In addition, annoying noise such as rock hammers, impact piling, or other impulsive noise sources usually result in greater annoyance than continuous construction noise. A 5 dB(A) penalty is applicable to such activities prior to comparison with the NMLs.

Other sensitive land uses, such as schools and offices, typically find noise from construction disruptive when the properties are being used (such as during work and school times). Table 2 presents NMLs from the ICNG for sensitive land uses based on the principle that the characteristic activities for each of these land uses should not be unduly disturbed.

Table 1 Non-residential sensitive land uses noise management levels

Land use	Noise assessment location	NML ($L_{Aeq,15min}$)
Classrooms at schools and other educational institutions	Internal	45
Places of worship		
Active recreation areas (such as sporting activities and activities which generate their own noise or focus for participants)	External	65
Passive recreation areas (contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External	60
Industrial premises	External	75
Office, retail outlets	External	70

Vibration

Effects of vibration from construction may be segregated into:

- Human exposure – disturbance to building occupants: vibration in which the occupants or users of the building are inconvenienced or possibly disturbed.
- Effects on building contents – vibration where the building contents may be affected.
- Effects on building structures – vibration in which the integrity of the building or structure itself may be prejudiced.

Vibration criteria relating to human comfort applicable to this project are taken from the DEC (2006) document Assessing Vibration – A Technical Guideline for intermittent vibration – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously. Intermittent vibration is assessed as a vibration dose value (VDV) and relates to the level of vibration over time (cumulative over the night or day period). VDVs that may result in adverse comment from receivers are summarised in Table 5.

Table 2 Summary of vibration dose values which might result in adverse comment

Time	Low probability of adverse comment ($m/s^{1.75}$)	Adverse comment possible ($m/s^{1.75}$)	Adverse comment probable ($m/s^{1.75}$)
Day (6am to 10pm)	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6
Night (10pm to 6am)	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8

Guidance for the consideration of potential building damage from construction vibration is in line with BS 7385-1 *Evaluation and measurement for vibration in buildings - Guide for measurement of vibration and evaluation of their effects on buildings*. These guideline values are presented in Table 3.

Table 3 Building damage vibration guidelines (BS 7385-1)

Type of building	Guideline values for vibration (PPV mm/s)		
	4Hz to 15Hz	15Hz to 40Hz	40Hz and above
Reinforced or framed structures / Industrial and heavy commercial buildings	50		
Un-reinforced or light framed structures / Residential or light commercial type buildings	15 - 20	20 - 50	50

For heritage structures, criteria are in line with the German Standard *DIN 4150-3: Structural Vibration- effects of vibration on structures,* as summarised in Table 4.

Table 4 Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on heritage structures (DIN 4150-3).

Type of building	Guideline values for vibration (PPV mm/s)			
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz	Vibration at horizontal plane of highest floor at all frequencies
Structures that, because of their sensitivity to vibration, cannot be classified under lines 1 and 2 and are of great intrinsic value (e.g. listed buildings under preservation order)	3	3 to 8	8 to 10	8

The safe working distances presented in Table 5 are indicative and will vary depending on the item of plant and local geotechnical conditions. The cosmetic damage thresholds apply to typical buildings under typical geotechnical conditions and vibration monitoring is recommended at specific sites. Where structures are more sensitive, such as heritage items, more stringent conditions are applicable and should be considered individually.

In relation to human response, the safe working distances relate to continuous vibration. For most construction activities, vibration emissions are intermittent and higher vibration levels over shorter periods are acceptable. Additional assessment should be undertaken where the human response criteria are exceeded.

Table 5 Safe working distances for vibration intensive plant

Plant item	Rating/description	Safe working distance	
		Cosmetic damage (BS 7385-1)	Human response (DECCW)
Vibratory roller	<50 kN (typically 1-2 t) <100 kN (typically 2-4 t) <200 kN (typically 4-6 t) <300 kN (typically 7-13 t) >300 kN (typically 13-18 t) >300 kN (> 18 t)	5 m 6 m 12 m 15 m 20 m 25 m	15 m to 20 m 20 m 40 m 100 m 100 m 100 m
Small hydraulic hammer	300 kg – 5 to 12 t excavator	2 m	7 m
Medium hydraulic hammer	900 kg – 12 to 18t excavator	7 m	23 m
Large hydraulic hammer	1600 kg – 18 to 34 t excavator	22 m	73 m
Vibratory pile driver	Sheet piles	2 m to 20 m	20 m
Pile boring	≤800 mm	2 m	n/a
Jackhammer	Hand held	1 m	Avoid contact with structure

Existing environment and noise management levels

The proposed works would be undertaken in a predominantly Rural / Suburban, characterised as:

Areas with negligible transportation or very limited local traffic, typically light vehicles only.

100m or more from the road.

Background noise levels adopted for the project area and associated noise management levels (NMLs) are summarised in Table 6. NMLs have been established in line with the ICNG.

It is noted that the night hours and sleep disturbance are included in table 6 below as the software requires these values to be input regardless of the assessment period which is being assessed (e.g. day, evening or night).

Table 6 Construction NMLs

Land use	**Rural / Suburban**		**Using custom background noise data?**		**Yes**
Criterion	Day	Weekend Day	Evening	Night	Sleep
RBL	35	35	34	30	
NML	45	40	39	35	65

Sleep disturbance

Sleep disturbance has not been assessed based on the working hours being on Saturday during the evening period (1pm-6pm).

Assessment methodology

Based on the nominated works area (illustrated in Appendix A), proposed equipment and the minimum distance from the works to each sensitive receiver, noise levels were calculated based on ISO9613: 2 *Acoustics - Attenuation of sound during propagation outdoors.*

This method considers geometric spreading, atmospheric absorption, ground effects and is valid for meteorological conditions of a gentle breeze from source to receiver and stable atmosphere (temperature inversion).

KNOWnoise: Minor works is a 2-Dimensional assessment platform and does not consider terrain effects (e.g. hills, valleys) or the presence of solid structures such as homes or noise barriers. This will result in a conservative prediction, suitable for the project being assessed.

Considering the nature of the works and the type of surrounding land uses, sensitive receivers up to a radius of 1200 metres from the works have been included in the assessment.

Sound power levels and predicted noise levels depend on the number of plant items operating at any one time and their precise location relative to a sensitive receiver. Equipment was assumed to be working at the worst-case location relative to each receiver and represents a worst-case assessment. Where the activity is further away from receivers or less equipment is used the predicted levels will decrease.

Sound power levels for plant and equipment expected to be used for each activity has been estimated based on guidance in the following standards and guidelines as well as typical measured noise levels for specific equipment.

- AS2436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites
- British Standard 5228-1:2009 Code of practice for noise and vibration control on construction and open sites
- United Kingdom Department for Environment, Food and Rural Affairs (DEFRA) Noise database for prediction of noise on construction and open sites

Construction noise sources and associated sound power levels are listed in Appendix B. The maximum predicted LAeq noise level within the work area was identified for each receiver.

Predicted noise levels

Detailed predicted noise levels for each potentially affected receiver are presented Appendix C.

A summary of predicted noise levels in comparison with ICNG assessment criteria for the Weekend day period is presented in Table 4.

Table 7 Summary of predicted noise levels with comparison against ICNG criteria for the Weekend day period.

Criterion	Predicted number of receivers
Maximum cumulative predicted $L_{Aeq,\ 15\ minute}$ noise level	66 dB(A)
Number of highly noise affected receivers (>75 dB)	0
1 – 10 dB above NML	15
10 – 20 dB above NML	11
20+ dB above NML	2

Predicted impact classes for the Weekend day period are illustrated graphically in Appendix C. Each identified receiver in the study area has been coloured to highlight the predicted level of impact.

Sleep disturbance

Sleep disturbance has not been assessed based on the working hours being on Saturday during the evening period (1pm-6pm).

Predicted vibration impacts

The level of vibration impact on sensitive receivers (buildings and human comfort) will largely depend on the type of machinery in use and the distance from source to receiver.

Based on the proposed work locations and selected equipment, the following level of vibration impact is expected. A summary of vibration impacts is provided for each sensitive receiver in Appendix C.

Table 8 Vibration impact

Impact classification	Number of potentially affected receivers
Human comfort	0
Cosmetic damage	0
Heritage structure	0

Proposed noise mitigation measures

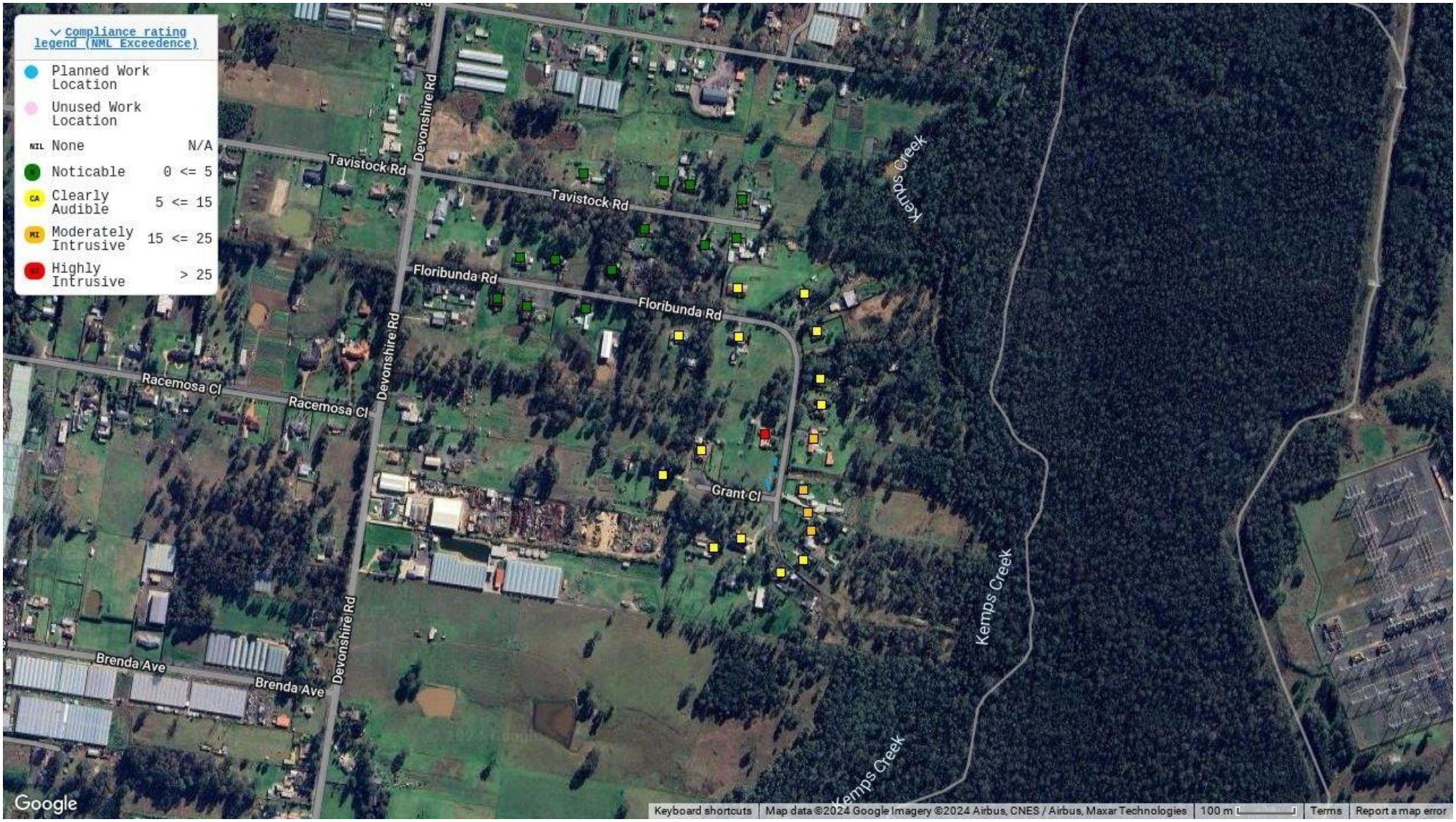
The safeguards and controls listed in Table 6 will be implemented where reasonable and feasible with the intention of achieving the project noise criteria and to maintain noise impacts at a practical minimum.

Table 9 Safeguards and controls

Action	Description
Community consultation or notification	Notify the affected community. The notification will detail work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone number. Notification should be a minimum of 7 calendar days prior to the start of works. For projects other than maintenance works more advanced consultation or notification may be required.
Site inductions	All employees, contractors and subcontractors are to receive an environmental induction. The induction would at least include: • all project specific and relevant standard noise and vibration mitigation measures • relevant licence and approval conditions • permissible hours of work • any limitations on high noise generating activities • location of nearest sensitive receivers • construction employee parking areas • designated loading/unloading areas and procedures site opening/closing times (including deliveries) environmental incident procedures
Behaviour	No swearing or unnecessary shouting or loud stereos/radios on site. Limit compression braking at night in residential areas. No dropping of materials from height, throwing of metal items and slamming of doors.
Verification	Where indicated in Appendix C, a noise verification program would be undertaken for the duration of the works.
Construction hours	Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating high noise and/or vibration levels should be scheduled during less sensitive time periods.
Respite for out-of-hours works	Respite from the works outside of standard working hours is being provided to receivers by only working on one evening period per week. Residents receive six days respite from OOHW each week. Furthermore, the overall duration of the works will be reduced as a result of the extended Saturday hours, providing duration respite to the receivers.
Equipment selection	Use quieter construction methods where feasible and reasonable. Ensure plant including the silencer is well maintained. Plant noise levels will have an operating noise emission level compliant with Appendix F of the CNVG
Use and siting of plant	The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers.

Action	Description
Plan worksites and activities to minimise noise and vibration.	Locate compounds away from sensitive receivers and discourage access from local roads. Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site. Where additional activities or plant may only result in a marginal noise increase and speed up works, consider limiting duration of impact by concentrating noisy activities at one location and move to another as quickly as possible. Very noise activities should be scheduled for normal working hours. If the work can not be undertaken during the day, it should be completed before 11:00pm. Where practicable, work should be scheduled to avoid major student examination periods when students are studying for examinations such as before or during Higher School Certificate and at the end of higher education semesters.
Non-tonal reverse alarms	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work.
Shield stationary noise sources such as pumps, generators, and compressors	These should be enclosed or shielded where reasonable and feasible.
Implement any project specific mitigation measures	
1	None

Appendix A Project location and predicted level of impact



Appendix B Proposed activities and equipment

KCPM_HDD

Equipment	Quantity	Usage	Reduction	SWL
Horizontal direction drill	1	100%	8	95

Activity Sound Power Level: 95

KCPM_Mud-Pump

Equipment	Quantity	Usage	Reduction	SWL
Mud Pump[1]	1	100%	8	109

Activity Sound Power Level: 109

KCPM_Recycling

Equipment	Quantity	Usage	Reduction	SWL
Generator (6 kVA)	1	100%	8	81
Recycling System[1]	1	100%	8	99
Excavator (20 tonne)	1	40%	8	92
Truck (10-15 tonne)	1	30%	8	87
Truck (HIAB)	1	30%	8	88
Ute	2	10%	8	70

Activity Sound Power Level: 100