APA Technical Note - Western Outer Ring Main - Environment Effects Statement

TECHNICAL NOTE NUMBER: TN01

DATE: 13 September 2021

SUBJECT: Specialist Area: Noise
An update for the purposes of the *Environment Protection Act 2017 (Vic)* response to Inquiry RFIs 95 and 96 and response to Submission 9 (EPA)

SUMMARY

This Technical Note outlines the implications of the *Environment Protection Act 2017 (Vic)* (as amended by the *Environment Protection Amendment Act 2018*) which came into effect on 1 July 2021, specific to Technical Report F *Noise and vibration* of the Western Outer Ring Main (**WORM**) Environment Effects Statement (**EES**).

REQUESTS:

95. Advise whether and how Table 19-14 (noise and vibration) in the EMF will be updated as recommended by EPA (Submission 9) to:

- Apply the EP Act 2017, the EP Regulations 2021 and the ERS.
- Amend NV10 to replace the noise criteria table with noise management measures.
- Amend NV5 to include the appointment of an independent person to approve specified activities.

96. Advise whether a qualitative assessment of the environmental value within the ERS 'human tranquillity and enjoyment outdoors in natural areas' and the potential impacts from the Project will be undertaken as recommended by the EPA (Submission 9).

ATTACHMENTS: Changes to EMM NV1, NV2, NV5, NV9 and NV10

NOTE:

Background

1 EES Technical Report F *Noise and Vibration* and Chapter 12 of the WORM EES foreshadowed that the *Environment Protection Act 2017 (Vic)* would come into effect on 1 July 2021 and that this would introduce the new General Environmental Duty (**GED**).

2 This note outlines the key implications of the new Act and relevant regulations, guidelines or standards that will be relevant to the assessment of the environmental effects of the WORM Project during construction and/or operation.

3 This note also sets out changes recommended to the exhibited version of the Environmental Management Measures (**EMMs**) applicable to account for the new Act, regulations, guidelines or standards.

Implications of new GED

4 The new Act contains a GED that will be applicable to APA and all contractors carrying out the construction and operation of the WORM Project.

5 The GED (as defined in Section 25 of the new Act) requires a person or entity to:

- Identify risks and hazards that may impact the environment or human health that arise from its operations; and
- Eliminate or minimise those risks as far as reasonably practicable.

6 The Environmental Management Framework and Construction Environment Management Plan (CEMP) developed as part of the EES and Pipeline Licence Application responds to the identified risks to the environment and human health that may arise from the construction and operation of the WORM Project, responding to the first aspect of the GED. It is considered that the noise and vibration risk assessment prepared as part of EES Technical Report F *Noise and Vibration* does not need to be updated as it adequately identifies risks to the environment and human health from the Project. The risk assessment for Technical Report F *Noise and Vibration* considered the risks of adverse noise and vibration impacts associated with construction and operation of the Project. As the operation of the pipeline would not generate perceivable noise or vibration, this focused on the construction-phase risks. In assessing the risks, likelihood and consequence ratings were developed based on the existing conditions and values in the study area.

7 The EMMs relevant to noise and vibration as identified in EES Technical Report F *Noise and vibration* have been developed to manage the identified risks to human health and the environment. In this Technical Note, consideration has been given to whether the EMMs require updating to comply with the GED and whether the EMMs either eliminate or minimise the risks as far as reasonably practicable.

Other relevant provisions of the new Act and Regulations

8 Relevant provisions in the new Act and Regulations relating to Noise include:

- Section 166 of the *Environment Protection Act 2017* which prohibits a person from emitting an unreasonable noise or permitting an unreasonable noise to be emitted;
- Unreasonable noise is noise that is unreasonable having regard to:
  - its volume, intensity or duration;
  - its character, the time, place and other circumstances in which it is emitted;
  - how often it is emitted; or
  - any prescribed factors in the EP Regulations.
- Section 168 of the *Environment Protection Act 2017* makes it an offence for a person to emit or permit to be emitted noise that is prescribed to be aggravated noise; and
- Division 1 of Part 5.3 of the *Environment Protection Regulations 2021* (**Regulations**) which mandates that noise prediction, measurement, assessment

or analysis of noise within a noise sensitive area must be conducted in accordance with the *Noise Protocol - Noise limit and assessment protocol*, 2021 (EPA publication 1826.4, May 2021); and

- Division 3 of Part 5.3 of the *Environment Protection Regulations 2021* which prescribes:
  - the noise limit at which noise from a commercial, industrial or trade premises is determined to be unreasonable;
  - the operating time periods (day, evening, and night) during which noise limits apply and base noise limits for these periods;
  - a framework for considering cumulative noise from multiple premises;
  - a frequency spectrum as a consideration of unreasonable noise; and
  - noise limits at which noise from a commercial, industrial or trade premises becomes aggravated noise.

9 Specifically, regulation 116 of the Regulations prescribes a new timeframe for the *evening period* on Saturday - 6pm to 10pm, which is consistent with the evening period specified for Monday to Friday. Previously, under SEPP N-1, the evening period on Saturday was 1pm to 10pm.

10 In addition, under the new Act, the definition of 'noise-sensitive areas' has been updated to explicitly include childcare centres, kindergartens, primary and secondary schools and tourist establishments, camping grounds and caravan parks in rural areas.

Relevant Standards or Guidelines

11 Technical Report F *Noise and Vibration* and Chapter 12 refer to some EPA documents that have been replaced by new guidance material.

12 Prior to the commencement of the *Environment Protection Act 2017*, the following noise standards and guidance material applied:

- State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 (**SEPP N-1**);
- Noise from industry in regional Victoria, 2011 (EPA publication 1411) (NIRV)
- SEPP N-1 and NIRV explanatory notes, 2011 (EPA publication 1412).
- A guide to the measurement and analysis of noise, 1991 (EPA publication 280); and
- Environmental Guidelines for Major Construction Sites, 1996 (EPA Publication 480)

13 Upon commencement of the *Environment Protection Act 2017*, the above noise guidance materials were replaced with the following:

- Noise Protocol - Noise limit and assessment protocol, 2021 (EPA publication 1826.4).
- Civil construction, building and demolition guide, 2020 (EPA Publication 1834).

- Construction guide to preventing harm to people and the environment (EPA Publication 1820.1 (Section 9))[1].

14 In relation to construction noise during evening and weekend periods and the night periods, the *Civil construction, building and demolition guide*, 2020 (EPA Publication 1834) replaced EPA Publication 480 (1996) and remains in force as guidance. EPA Publication 1834 provides guidance on working hours and noise levels from construction.

15 The information on the EPA Publication 1820.1 is for general guidance and describes approaches to managing risks during construction.

16 The Noise Protocol - Noise limit and assessment protocol, 2021 (EPA publication 1826.4) is applicable to noise from commercial, industrial, trade premises and entertainment venues. The Noise Protocol does not cover construction activities. The Noise Protocol outlines the basis for determining what is considered to be “unreasonable noise”.

17 Requirements in the Noise Protocol are applicable to the operation of the Wollert Compressor Station only as the underground pipe is not expected to produce audible noise after completion of construction.

18 In the absence of clear guidance in Victoria on day-time construction noise, the *NSW Interim Construction Noise Guidelines 2009* continue to be adopted for this Project.

19 In the absence of clear guidance in Victoria on inaudibility of construction noise during night-time, recommendations in the Civil construction, building and demolition guide (EPA Publication 1834) continue to be adopted for this Project and have been used to set night-time construction noise criteria.

Changes to EMMs

20 It is considered that EMM NV1, NV2 and NV4 assist the Project to meet the GED as these measures require:

- construction noise and vibration to be managed in accordance with Chapter 4 (Noise and vibration) of EPA Publication 1834 Civil Construction, building and demolition guide, which in turn references the GED and includes strategies to minimise noise emissions;
- the preparation and implementation of a Construction Noise and Vibration Plan that includes measures to minimise the emissions of noise to the extent reasonably practicable;
- the project to, as far as reasonably practicable, increase the distance between a sensitive receptor and the noise/vibration source to minimise impacts.

21 However, the following EMMs relating to noise and vibration require amendments to reference the latest EPA guidance documents or to update to better meet the GED:

- NV1 – Construction Noise and Vibration Plan
- NV2 –Further mitigation measures
- NV5 – Limit works to the ‘normal working hours’
- NV9 – Cumulative noise impacts
- NV10 -– Reasonable and practicable actions to comply with the construction noise and vibration criteria

[1] https://www.epa.vic.gov.au/about-epa/publications/1820-1

22 Attached is a mark-up of the relevant EMMs showing the changes needed to include the updated requirements of the new Act and Regulations and to reference the new guidelines and standards.

23 Consideration has also been given to whether the EMMs reduce the risk of harm to human health and the environment to the extent reasonably practicable and therefore meet the GED.

Currency of Technical Report and Chapter

24 The replacement of the State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1 with new guidance material was foreshadowed at section 4.3 of the Technical Report (page 14):

> "*It is understood that policy SEPP N-1 will be replaced by Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues (EPA Publication 1826, March 2020) from 1 July 2021. Review of the document indicates that only minor amendments would be made to the current SEPP N-1 and NIRV methodology for determining criteria and assessing noise produced by commercial and industrial premises. It is acknowledged that the boundary of applicability of provisions under the new regulation may change. However, maps of the major urban areas under the new publication have not yet been published. Consequently, it is difficult to identify if there will be difference between the current and proposed methodologies in future*."

25 Having considered the new provisions referenced at paragraph 8 and the new guidance materials referenced at paragraph 11, of Technical Report F *Noise and Vibration* meets the requirements of the GED and aims to minimise and manage risk as far as reasonably practicable, and therefore is not considered necessary to supplement the report with additional analysis. The reasons for this are outlined below:

(a) As Technical Report F *Noise and Vibration* was prepared prior to the Noise Protocol (which came into effect on 1 July 2021), the operational noise assessment of the Project was undertaken in accordance with the requirements of the (now superseded) noise policy SEPP N-1. SEPP N-1 was applicable to sensitive receptors located within a Major Urban Area (MUA) which was defined as:

- The part of Melbourne that is within the SEPP N-1 boundary; or
- The part of Melbourne that extends beyond the SEPP N-1 boundary, but is within the Melbourne Urban Growth Boundary (UGB); or
- Land within the 'Major Urban Area' boundary of an Urban Centre with a population greater than 7000; or
- Land zoned either Residential Zone, Industrial Zone, Business Zone or Urban Growth Zone that is transected by the 'Major Urban Area' boundary of an Urban Centre with a population greater than 7000, then the whole of that zone shall be considered as part of the MUA.

As identified in Technical Report F *Noise and Vibration,* the Project fell within the SEPP N-1 boundary and was therefore within the MUA. The Noise Protocol uses a similar approach to SEPP N-1 in that it defines 'urban areas' and applies noise limits for these urban areas. While there are differences in the boundary for urban areas under the Noise Protocol when compared with that of the MUA boundary under the SEPP N-1, this does not affect the Project's operational noise assessment. This is because the area including and surrounding the Wollert

Compressor Station is within the defined 'urban area' under the Noise Protocol which is consistent with the MUA under SEPP N-1.

(b) While there has been a change to the definition of the 'evening' time in Regulation 116 of the new Regulations (Saturdays 6 pm-10 pm instead of 1 pm- 10 pm in SEPP N-1), this has not resulted in a change to the noise criteria used in Technical Report F *Noise and Vibration* as the noise criteria is determined by the night-time criteria, which has not changed. Specifically, the noise criteria under the Noise Protocol for the operation of the Wollert Compressor Station is the same as that used in Technical Report F *Noise and Vibration*, and the results of the operational noise assessment show that noise from the Wollert Compressor Station is expected to comply with strictest night-time limits without additional mitigation measures.

(c) Construction noise is not covered in the Noise Protocol 2021, therefore the basis of the construction noise assessment has not changed. The recommendations for the control and minimisation of construction noise and vibration impacts include limiting noisiest operations to day-time only (except of unavoidable works) and following general noise mitigation practices. Detailed noise and vibration mitigation measures will be incorporated into Construction Noise and Vibration Management Plans for each of the stages of the Project construction.

(d) As noted in Technical Report F *Noise and Vibration* potential future projects in the vicinity of the WORM Project that may be constructed at the same time include Major Road Projects Victoria's Sunbury Road Upgrade and Melbourne Water's Bald Hill to Yan Yean pipeline. As the details in terms of exact timing, pipeline construction methods and equipment are not known for these projects, it is difficult to predict the cumulative impacts between these projects and the WORM Project. However, the environmental management measures as detailed in Technical Report F *Noise and Vibration* including EMM NV9 which requires liaison with these other projects, as well as the other measures such as EMM NV1, NV2, NV4, NV5, NV6, NV7 and NV10 would avoid and minimise possible cumulative noise impacts to the extent reasonably practicable and thereby meet the new GED.

Response to RFI# 95 – Changes to EMMs as recommended by EPA (Submission 9)

26 RFI 95 asks whether and how Table 19-14 (Noise and Vibration) in the EMF will be updated to:

- Apply the EP Act 2017, the EP Regulations 2021 and the ERS.
- Amend NV10 to replace the noise criteria table with noise management measures.
- Amend NV5 to include the appointment of an independent person to approve specified activities.

27 The CEMP is proposed to be amended to apply the EP Act 2017, the EP Regulations 2021 and the ERS as set out in this Technical Note.

28 EMM NV10 has been amended to address the requirement to eliminate or minimise the risks as far as reasonably practicable. However, the construction noise criteria table within EMM NV10 has been retained as an assessment of the severity of impact cannot be undertaken on a qualitative basis alone. The limits identified in EMM NV10 provide measurable criteria to demonstrate compliance and reflect the requirements within EPA publication 1834 and other relevant documents and demonstrate that GED is met.

29 EMM NV5 has been amended to require the Pipeline Contractor to prepare a Noise and Vibration Management Plan and this will specify low-noise impact works, managed-impact works, and unavoidable works under EPA Publication 1834 that will occur outside of

normal working hours. EMM NV5 as amended requires the Noise and Vibration Management Plan to be verified by an independent acoustic consultant. This is considered to address the third dot point of RFI 95 as a noise and vibration management plan reviewed by a suitable qualified acoustic consultant or practitioner is included in Section 4.4 of EPA Publication 1834 as a requirement for managing noise and vibration outside of normal working hours.

Response to RFI# 96 – Qualitative assessment of environmental values as recommended by EPA (Submission 9)

30 In relation to Inquiry RFI 96, Clause 7 of the ERS sets out the environmental values for the ambient sound environment that are to be maintained in Victoria, including 'human tranquillity and enjoyment outdoors in natural areas'. A qualitative assessment of the Project's impacts to 'human tranquillity and enjoyment outdoors in natural areas' is not considered to be required as Technical Report F *Noise and vibration* undertook a quantitative assessment of construction and operational noise impacts against the requirements in the Noise Protocol and *Civil construction, building and demolition guide*, EPA Publication 1834, 2020. This assessment found that:

31 Residual noise and vibration amenity impacts at sensitive receptors are expected to be low, as the noise impact will be short term and noise EMMs proposed in Section 9 of Technical Report F *Noise and Vibration* would minimise residual impacts as far as reasonably practicable.

32 In terms of Project operation, as the WORM pipeline would be buried once construction has been completed, the operation of the Wollert Compressor Station is considered the only source of ongoing noise impacts. Residual noise impacts associated with the operation of the station is assessed as negligible and it is determined that no additional mitigation measures are required (Appendix A in Technical Report F). As the operation of the Project meets the criteria in the Noise Protocol, it is concluded that the requirements of the GED are met and residual impacts have been reduced as far as reasonably practicable.

Annexure 1
Changes to Noise and Vibration EMMs

NOISE AND VIBRATION MANAGEMENT		
Ref.	**Environmental controls**	**Project phase**
NV1	Manage construction noise and vibration in accordance with Chapter 4 (Noise and vibration) of EPA Publication 1834 Civil Construction, building and demolition guide. Prepare and implement a Construction Noise and Vibration Plan that includes the following ~~general good practice~~ measures to eliminate or minimise the emission of noise to the extent reasonably practicable: • Undertake preparatory work offsite where there is low potential for impacting people • Limit noise caused by people onsite, including the use of amplified systems such as radios • Use the lowest-noise and vibration work practices and equipment that meet the requirements of the job • Use broadband reversing alarms on construction vehicles and machinery in preference to 'beeper' reversing alarms. The site will be planned to minimise the need for reversing of vehicles. • Turn off equipment and vehicles when not being used • Take care not to drop spoil and construction materials that cause peak noise events • Ensure equipment is operated and maintained in accordance with manufacturers requirements, ensuring good working condition of mufflers and securing loose parts that may rattle • Limit works to the 'normal working hours' (as defined in EPA Publication 1834) as far as reasonably practicable • Minimise use of loud equipment, generation of unnecessary noise and vibration, and the movement of vehicles on the construction corridor as far as reasonably practicable • Outline designated vehicle routes, parking locations and delivery hours to minimise noise impact on sensitive receptors • To the extent reasonably practicable, ensure ~~Undertake all reasonable and practicable actions to comply~~ noise emissions do not exceed ~~with~~ the construction noise and vibration levels ~~criteria~~ as identified in EMM NV10.	**Construction**
NV2	Where the construction noise and/or vibration levels are predicted or measured to exceed ~~applicable criteria~~ noise limits (as identified in EMM NV10) after implementing the ~~general noise mitigation practices~~measures in NV1, further risk minimisation ~~mitigation~~ measures must be considered and implemented as far as reasonably practicable. These measures may include: • Adopting engineering noise controls at the source (e.g. silencer, mufflers, enclosures) by all practical means using current technology • Selection of quieter equipment • Installation of onsite barriers such as hoardings or temporary screens to provide a noise barrier between any particularly noisy construction works and the residences • Restricting the hours that the very noisy activities can occur (and offering respite periods to affected persons).	**Construction**

<table>
<tr>
<td>NV5</td>
<td>As far as reasonably practicable limit works to the 'normal working hours' (as defined in EPA Publication 1834). Identify activities required to be undertaken outside of normal working hours.
The Construction Noise and Vibration Plan must include a clear rationale for defining works as 'low-noise', ‘managed impact’, or ‘unavoidable’ (as defined in EPA Publication 1834) and response strategies to ~~mitigate the~~ minimise the risk of harm from noise emissions ~~impacts of these works~~as far as reasonably practicable having regard to EPA Publication 1834 Civil construction, building and demolition guide.
As far as reasonable and practicable, all Project activities will be limited to the normal working hours, as defined in the EPA publication 1834.
Activities that are anticipated to occur outside normal working hours are limited to horizontal drilling and hydrostatic testing due to continuous nature of these activities. These specific activities~~,~~ will be treated as “managed impact works” as per the EPA publication. For these activities,~~ T~~the pipeline contractor will prepare a Noise and Vibration Management Plan, which will be verified by an independent acoustic consultant.</td>
<td>Construction</td>
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<tr>
<td>NV9</td>
<td>Liaise with the Melbourne Water Bald Hill to Yan Yean pipeline and Major Road Projects Victoria Sunbury Road upgrade project teams to assess cumulative construction noise impacts, in accordance with Regulation 119 of the Environment Protection Regulations 2021. If the Project and Melbourne Water construction works are scheduled simultaneously, review the CNVMP for this section of the Project ~~Implement~~ to identify if additional noise mitigation measures ~~if required~~may be necessary in order to minimise the risk of harm from noise emissions as far as reasonably practicable.</td>
<td>Construction</td>
</tr>
<tr>
<td>NV10</td>
<td>Minimise the risk of harm from noise emissions from construction noise in accordance with the CNVMP and ensure the following noise levels are not exceeded as far as reasonably practicable: ~~Undertake all reasonable and practicable actions to comply with the construction noise criteria:~~
<table>
<tr><th>Sensitive receptor</th><th>Period</th><th>Noise ~~criteria~~Levels, L_{Aeq}</th></tr>
<tr><td>Residential</td><td rowspan="4">EPA normal working hours
Mon–Fri: 7 am – 6 pm
Sat: 7 am – 1 pm</td><td>75</td></tr>
<tr><td>Educational institutions</td><td>60</td></tr>
<tr><td>Parks and recreational areas</td><td>65</td></tr>
<tr><td>Community and commercial buildings</td><td>70</td></tr>
<tr><td>Residential</td><td>Evening and weekend
Mon–Fri: 6 pm – 10 pm
Sat: 1 pm – 10 pm
Sundays and public holidays 7 am to 10 pm</td><td>Noise level at any residential premises not to exceed background (L_{A90}, dB) noise by:
• 10 dBA or more for up to 18 months</td></tr>
<tr><td>Residential</td><td>Night-time
Mon–Sun and public holidays: 10 pm – 7 am</td><td>Noise inaudible within a habitable room of any residential premises.
Background +0 dB(A) (external)</td></tr>
</table>
</td>
<td>Construction</td>
</tr>
</table>

Implement management measures if vibration from construction is predicted to exceed the standards for structural damage as identified in the following:

Group	Type of structure	Vibration velocity (PPV) in mm/s			
		At foundation at a frequency of			Vibration at horizontal plane of highest floor (all frequencies)
		< 10 Hz	10 Hz–50 Hz	50 Hz–100 Hz	
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20–40	40–50	40
2	Dwellings and buildings of similar design and/or occupancy	5	5–15	15–20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (eg heritage-listed)	3	3–8	8–10	8

Implement management measures if vibration from construction is predicted to exceed the standards for structural damage to existing underground pipelines:

Pipe material	Guideline value on pipe (mm/s)
Steel (including welded pipes)	100
Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with/without flanges)	80
Masonry, plastic	50

Implement management measures if vibration from construction exceeds the human perception threshold of 0.3 mm/s at sensitive receptors.