

MORDIALLOC FREEWAY PROJECT

Independent Reviewer and Environmental Auditor

Quarterly Construction Audit

Report 4, December 2020

PROJECT

Mordialloc Freeway Project

Quarterly Construction Audit, December 2020

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EXECUTIVE SUMMARY

Introduction

This report summarises the audit findings of the Independent Reviewer and Environmental Auditor (IREA) for the Mordialloc Freeway Project (the Project) in Melbourne, Victoria. It covers the findings of the fourth audit and inspection carried out on the 14th and 15th December 2020 and will be provided to the Major Transport Infrastructure Authority (MTIA) and Victorian Minister for Planning, and made available to the public on the [Major Road Projects Victoria \(MRPV\) website](#).

The IREA has been appointed by McConnell Dowell Decmil Joint Venture (MCDDJV), the design and construction contractor, to provide independent oversight of the environmental performance of the Project. The IREA undertakes audits of the Project activities to assess whether conformance with Project requirements and approvals are being achieved. This includes the Environmental Management Framework (EMF), Environmental Performances Requirements (EPRs), Environmental Management Plans, site Environmental Control Plans (ECPs) and engineering designs developed by MCDDJV.

Construction on the Project has been underway since October 2019. Activities at the time of the audit consisted of earthworks, piling, asphaltting, installation of culverts and retention ponds, installation of services and utilities and landscaping. This audit has focused on these activities only.

Scope and Conduct of This Audit

This report details the results of environment audit and site inspection carried out on the 14th and 15th December 2020.

The audit reviewed MCDDJV's actions to address the previous audit findings. The audit also reviewed the implementation of the following documents as they apply to the works at the time of the audit:

- Construction Noise and Vibration Management Plan (EPR NV2)

Monitoring data collected to date was also reviewed to assess the adequacy of monitoring, the quality of discharges and emissions and their likely impacts.

A site inspection was also carried out to:

- Determine if the controls specified in the above plans and ECPs have been implemented, as they applied to the works to date.
- Identify any unsuitable work practices.
- Visually confirm monitoring and sampling locations.

The IREA is required to provide quarterly audit reports to MTIA and the Minister for Planning. These reports must be made available to the public. The audit and site inspection detailed in this report forms part of the IREA's reporting requirements.

Environmental Controls

Construction Noise and Vibration Management Plan (CNVMP):

Noise controls are being applied where possible as required by the CNVMP. A draft CNVMP, which had been produced just prior to this audit, was reviewed. The draft proposes to change the evening and night time trigger levels in line with the day time trigger levels, namely, the background $L_{eq(15min)}$ plus 10dB(A) for unavoidable works. For works which are not unavoidable, the previous targets based on the EPA noise control guidelines still apply. The 75dB(A) annoyance level is also retained.

The proposed amendments are far more realistic. The targets take into account the actual background levels and should no longer be exceeded when construction is not occurring. This provides meaningful trigger levels that can be used to assess the noise impact during construction.

Complaints Management:

A complaints management process is in place which has proactively engaged the community. Members of the community who have expressed concern over various aspects of the project have been regularly contacted by the projects Community Engagement personnel to discuss any recent issues and to provide information on upcoming activities. The process receives, records and responds to complaints concerning construction activities. The complaints management process that is in place is sound and the responses to complaints appear appropriate. The number of complaints has steadily decreased over the project period (121 in the March 2020 audit to 20 complaints in this December audit).

Incidents and Non-conformances:

MCDDJV has not recorded any incident since the previous audit. There were one non-conformances that related to a previous incident that had not been reported to MRPV within the required timeframe.

MCDDJV has encouraged all employees and its contractors to report actual and potential hazards along with reporting workplace observations, which are either positive or negative in nature. The Observation Reports are a useful and proactive tool to help avoid issues. It also provides employees with a method of communicating workplace issues of concern, or to highlight action which they believe have been beneficial to the project, to employees, the community or the environment.

Site Specific Environmental Control Plans

The site specific Environmental Control Plans (ECPs) provide detail of where control structures such as sediment fences, spill control kits and concrete wash down areas will be located. The audit did not identify any issues with the infrastructure that was required by the ECPs.

Monitoring

Dust:

The results from the real time dust monitors are all below the 10 micron 24 hour average legislative health limit (monthly maximum values of 17.4 to 32.4 $\mu\text{g}/\text{m}^3$ measured cf. the limit of 50 $\mu\text{g}/\text{m}^3$) and the 2.5 micron 24 hour average legislative health limit (monthly maximum values of 4.5 to 12.0 $\mu\text{g}/\text{m}^3$ measured cf. the limit of 25 $\mu\text{g}/\text{m}^3$). The monitoring also confirmed the measured dust levels were below the 10 micron 1 hour average target (monthly maximum values of 26.3 to 51.5 $\mu\text{g}/\text{m}^3$ measured cf. the target of 120 $\mu\text{g}/\text{m}^3$). In summary, dust monitoring has found the levels of off-site dust are below the health target limits and in most cases below the limits by a significant margin.

The continual sampling pump failures in one of the two real time dust monitors appears to be due to a batch of faulty spare pumps delivered to the local monitoring equipment supplier. Having identified the likely cause of the pump failures MCDDJV expects a greater level of reliability from the monitors and less down time. This will be reviewed at the following audit.

The dust directional gauges indicate the dust coming from the site at two of the three monitoring locations was higher than dust levels from other off-site directions. Dust deposit gauge 3 (behind the Parks Victoria office) measured a dust deposition rate of 5.3 $\text{g}/\text{m}^2/\text{month}$, which is above the 4 $\text{g}/\text{m}^2/\text{month}$ limit. The monitoring report notes “Extensive earthworks around gauge”. To the east of dust monitoring location 3 is extensive parkland and to the west is an industrial area. The two land use types are the least sensitive to high dust levels, however, the measured dust still represents an unacceptable level of off-site dust. Of note is the fact that the dust deposition exceedance at monitoring location 3 was not reported as a non-conformance with contractual requirements on the MCDDJV non-conformance system.

Water:

Based on a review of the monitoring data, it appears there may have been some low level impact on the Dingley Drain due to site run-off. Two additional high downstream readings were noted, but these do not appear to have been due to site activities. However, the three potential exceedances were not identified or investigated. Currently, the data is “eye-balled” to assess compliance. This can be difficult, especially with the Area 2 data, where the upstream level is an average of 4 sample locations. To assist in the identification of potential issues, macros could be added to the water monitoring spreadsheet that automatically identifies any issues.

There was one high rainfall event in October which should have triggered water monitoring. The rainfall occurred on a Saturday and it appears the event was overlooked and monitoring was not carried out. The site needs to review rainfall data if rain has occurred on weekends to ensure monitoring occurs after rainfall events that exceed the trigger values in the contract.

Noise Monitoring:

Spot noise measurements were carried out during one night and one day time period. The night time period levels were both above the trigger values, however, the observations noted that the majority of the noise was due to passing traffic. Half the day time readings were above the day time trigger levels and one measurement was above the 75dB(A) annoyance level. It was noted that the exceedance of the 75dB(A) was not recorded as a Hazard Observation so it could be investigated to determine it's likely impact at the closest sensitive receptor, and to identify if noise reduction controls should have been applied. This audit recommends that a non-conformance be raised for the omission and that future exceedances be logged as Hazard Observations.

It was also found that in many instances, noise levels cannot be measured at the residence due to various limitations, but instead are measured on-site and are an overestimation of the noise level experience by neighbouring residents. The audit report recommends that the noise level be estimated at the residence in order to more accurately assess the impact on the residence and compliance with the project trigger and target limits. The evening and night values are also being reviewed to take into account the actual noise levels being measured.

Vibration Monitoring:

Vibration monitoring in Area 2 (southern section of the site) did not identify an exceedance of target vibration levels for structural damage, or human comfort. However, MCDDJV should formalise a method to more accurately estimate the vibration at the sensitive receiver. A Recommendation has been included to address this issue.

No vibration monitoring was required in Area 1.

Site Inspection Findings

The site inspection only identified one issue related to the proper storage and labelling of chemical containers. The site inspection noted significant progress in road sealing, landscaping and grassing of the works area, particularly the northern section of the project site.

1 INTRODUCTION

1.1 Purpose of this Report

Independently assess compliance with Project requirements and approvals.

1.2 Project Background

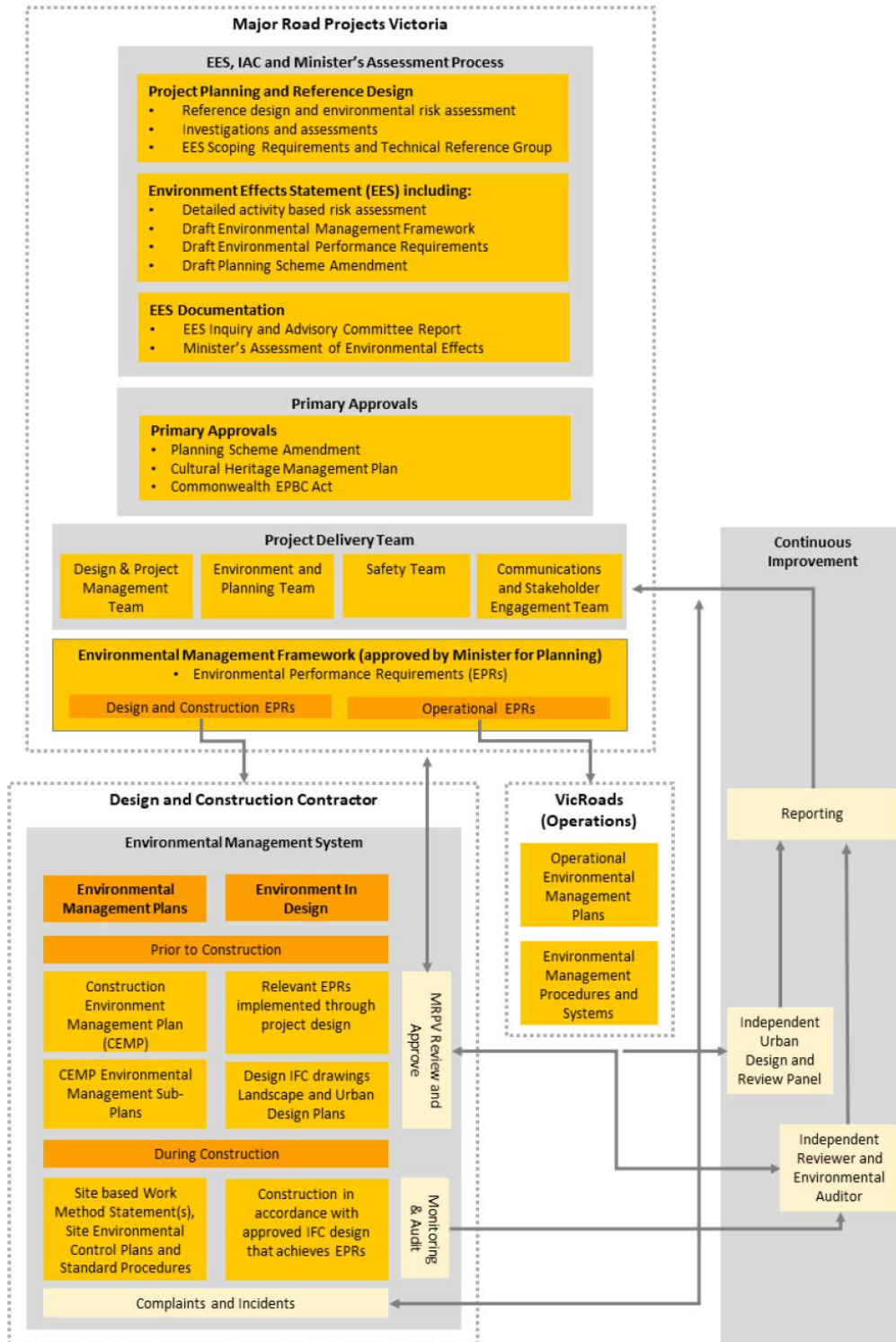
The Mordialloc Freeway will link the Mornington Peninsula Freeway to the Dingley Bypass and will:

- build bridges over Springvale, Governor, Lower Dandenong and Centre Dandenong Roads, including new freeway entry and exit ramps
- build bridges over Old Dandenong Road and the sensitive waterways area
- connect the freeway to Dingley Bypass with traffic lights
- upgrade the existing interchange at Thames Promenade, Chelsea, with the Mornington Peninsula Freeway to provide freeway entry and exit ramps
- build a new shared walking and cycling path along the entire freeway.

Construction commenced in October 2019 and is due to be completed by the end of 2021.



1.3 Project Approvals



The Project was assessed via a joint State and Commonwealth Environmental Effects Statement (EES) process. State approval was granted via a Planning Scheme Amendment (PSA) and associated conditions. A condition of the PSA required MRPV to prepare an Environmental Management Framework (EMF), inclusive of the Environmental Performance Requirements (EPRs) to the satisfaction of the Minister for Planning. The EMF and EPRs has been approved by the Minister for Planning and published on the MRPV

[website](#). The relationship between MRPV and MCDDJV from approvals through to delivery is outlined below.

MRPV also secured primary approvals under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Aboriginal Heritage Act 2006*. The obligation to comply with the EMF and design and construction EPRs, EPBC conditions and Cultural Heritage Management Plan (CHMP) conditions has been transferred to MCDDJV through a legally binding contract. MCDDJV is responsible for obtaining and complying with a range of secondary approvals and consents, as indicated below:

Summary of main statutory approvals and consents

Act	Requirements	Responsibility	Implementation
Primary Approvals			
<i>EPBC Act</i>	EPBC referral, assessment and approval	MRPV	MRPV will ensure that approval conditions are met by MCDDJV through contract conditions.
<i>Planning and Environment Act 1987</i>	Planning scheme amendment to permit use and development	MRPV	MRPV will ensure that approval conditions are met by MCDDJV through contract conditions.
<i>Aboriginal Heritage Act 2006</i>	CHMP	MRPV	MRPV will ensure approval conditions are met by MCDDJV through contract conditions.
Secondary Approvals and Consents			
<i>Environment Protection Act 1970</i>	Environmental Improvement Plan	MCDDJV	The MCDDJV will obtain and comply with EP Act permits.
<i>Flora and Fauna Guarantee Act 1988</i> (FFG Act)	Permit for the removal of listed flora from public land	MCDDJV	The MCDDJV will obtain and comply with FFG Act permits.
<i>Heritage Act 2017</i>	Permit and/or consent to disturb	MCDDJV	The MCDDJV will obtain and comply with all heritage permits and/or consents.
<i>Road Management Act 2004</i>	Consent for traffic management works on roads	MCDDJV	The MCDDJV will obtain and comply with all requisite <i>Road Management Act</i> consents.

Act	Requirements	Responsibility	Implementation
<i>Water Act 1989</i>	Approvals for works to be undertaken in relation to groundwater and waterways	MCDDJV	The MCDDJV obtain and comply with all permits and licenses under the <i>Water Act</i> .
<i>Wildlife Act 1975</i>	Permit to remove, salvage capture or relocate fauna	MCDDJV	The MCDDJV will obtain and comply with any permit that may be required.

1.4 Role of the IREA

The requirement and role for the IREA is outlined in EPR EM3, as follows:

“Appoint a suitably qualified Independent Reviewer and Environmental Auditor (IREA) to review and certify the CEMP and other management plans as required by the EPRs, in accordance with the Environmental Management Framework. The IREA must be an accredited Environmental Auditor. During construction audit reports must be provided to MTIA and the Minister for Planning on a regular basis as appropriate. Audit reports are to be made available to the public.”

The scope, role and responsibility of the IREA is further defined in the approved EMF as follows:

- a) *“Review the D&C Contractor’s Environment Management Strategy, CEMP and other management plans as required by the EMF*
- b) *Review and certify the D&C Contractors have implemented the relevant EPRs through project design in their drawings*
- c) *Monitor and audit the D&C Contractors compliance with the Environment Management Strategy, CEMP and other environmental management sub-plans as required by the EPRs*
- d) *Conduct audits of the D&C Contractors work to assess construction compliance with the approved IFC (issued for construction) design*
- e) *Assess compliance with project approvals, legislation, regulations, policies, guidelines, codes of practice and applicable industry standards.*
- f) *Review complaints which may highlight instances of non-conformance with applicable EPR*
- g) *Prepare audit reports and provide to MRPV quarterly.”*

1.4.1 Report Scope

As indicated above the IREA is responsible for reviewing the Construction Environment Management Plan (CEMP) and subplans (EMPs) and ECPs. The audit and inspection which is the subject of this report also included an assessment of compliance with the EPRs linked

to these CEMP and subplans. Any identified issues require the Plan/s in question to be updated by MCDDJV and resubmitted to the IREA for final approval.

The IREA is also required to review and certify the MCDDJV have implemented the relevant EPRs through project design in their drawings (e.g. noise wall, fauna underpasses or lighting design) and conduct audits of work to assess construction compliance with the approved IFC (issued for construction) design drawings (items b and d above). In addition, the IREA is required to review a number of other plans that do not relate to traditional CEMP matters, but are a requirement of the EPRs, such as the Business Disruption Plan, Traffic and the Lighting (operation) Plans. These engineering design EPRs and non-CEMP related ERP matters are the subject of a separate IREA report.

This scope of this report and subsequent quarterly reports relates to items c, e, f and g above (Section 1.4) and forms part of the IREA's reporting requirements.

1.4.2 Site Audits and Inspections

The IREA is required to independently assess whether the Plans and ECPs developed by MCDDJV are being implemented and that the implementation of these various plans meet the requirements of the relevant EPRs and other approval conditions. The IREA is also required to inspect the physical works and confirm the controls detailed in the Plans, subplans and ECPs are in place and they are effective in controlling the impact of the works on the surrounding environment and community.

1.4.3 Reporting

The IREA is responsible for preparing an audit report which MCDDJV must forward to Major Transport Infrastructure Authority (MTIA) and Minister for Planning during construction. This audit report, along with the report described in 1.4.1 above (Plans which are not part of the CEMP) will be provide to MTIA and the Minister and is the fourth of the quarterly reports. Reports will be published on the [MRPV project website](#). The audits described in this section have been undertaken by the lead Independent Auditor and Environmental Reviewer (IREA), Ken Fraser and Assistant Environment Auditor, Vic Natoli.

1.5 Report Structure

This report is divided into the following sections:

- Section 1: The role of the IREA – details the IREA's primary responsibilities and the IREA's report to the Minister
- Section 2: Conduct of Audits – details the scope of the IREA's audit activities undertaken prior to, during and after the audit.
- Sections 3 to 7: Audit Findings and Conclusion – provides the IREA's findings from the audit and conclusions on the MCDDJV's conformance with the requirements of the EMPs, relevant EPRs, ECPs, legislation and good practice.

2 SITE AUDIT

2.1 Audit Objectives

The objective was to assess:

- Actions taken to close previous audit findings;
- Water monitoring results and compliance. (EPRs W3, W5);
- Air Monitoring results and compliance (EPR AQ2);
- Noise monitoring results and compliance (EPR NV2);
- Incident reporting since previous audit and response;
- Community complaints since previous audit and response (EPRs EM2, LV5, S1) ;
- Soil Management Sub-plan (CL1, CL2, CL6); and
- Landfill Gas EMP (CL4).

The objective of the site inspection was to assess:

- the implementation of controls;
- compliance of field activities and controls with the requirements of the applicable Plans and EPRs as they applied to the works to date; and
- compliance with applicable regulatory and good practice requirements.

2.2 The Audit Process

The audit process for this particular audit consisted of the following steps:

Pre-audit –

- Preparation of an Audit Agenda¹ detailing the audit process and the documents to be reviewed.

Site Audit –

- Interview staff and review the various Plans and ECPs to assess the whether the controls required by the works to date were being implemented;
- Review of the monitoring data to assess compliance with legislation; and
- Inspect site to physically assess implementation of controls.

Post Audit –

- Issue a draft report along with recommendations for issues identified for review by MCDDJV and various authorities; and
- Issue final report incorporating comments received.

¹ The Audit Agenda is included in Appendix A.

2.3 Audit Scope

The areas covered by this audit were the EMPs and EPRs listed in section 2.1 above, the site ECPs and the physical operations occurring on the Project site.

The scope of this audit and subsequent audits is not to audit all EPRs and matters, every audit. Rather, each quarterly audit will take a risk-based approach and focus on the relevant construction activities, the risks, plans and controls. The scope will take into account any complaints and feedback from local stakeholders, community and regulatory agencies. Over the duration of construction, the intention is to ensure all aspects of the project are audited at least once. A full EPR auditing scope and schedule is included as Appendix B.

2.4 Classification of Audit Findings

Audit findings are classified according to the following definitions which have been utilised on previous high-profile Victorian infrastructure projects.

Non-conformance (NC)

An instance, event or occurrence that has not-fulfilled a requirement that has been specified in the Strategy, CEMP, ECPs, EPRs, legislation, or approval conditions.

(Note 1: A non-conformance may be an individual non-conformance or a number of minor but related audit findings, which when considered in total are judged to constitute a non-conformance.)

Area for Improvement (AI)

A deficiency in the implementation of the Strategy, CEMP, ECPs, or associated documentation judged to be a risk to the environment, or to environmental management, without constituting an overall failure in the area concerned.

Observation (O)

An audit finding which may relate to an incidental or isolated system discrepancy, which does not compromise the effectiveness of environmental management, or constitute an actual or potential environmental risk.

IREA does not require Observations to be formally closed out after they have been issued and therefore will not report these in subsequent audit reports. It is the responsibility of MCDDJV to consider these findings.

Priority of Recommendations

The severity and risk posed by findings may vary. In order to assist MCDDJV and the reader, each recommendation related to a finding that may require actions to be taken has been allocated a priority level A or B, with A being the most serious. The following definitions have been applied to these priority levels.

A - High risk of system failure, legal non-compliance, an EPR requirement or high environmental risk. **Must be corrected as a matter of priority.**

B - A requirement specified in an internal Plan or procedure, is affecting system efficiency, may result in system failure, or is a moderate environmental risk. **Must be corrected.**

3 Previous Audit Recommendations

Previous Finding Status:

"Y" - Completed

"P" - Partially completed

"O" - Open, not actioned

"On-going" - Actions that have commenced, but will need to continue for some period

"NA" - No longer applicable

Recom. No.	Recommendation	Findings	Status
1.	The real time monitoring data should be reviewed weekly. If data gaps occur again, the equipment supplier should be requested to investigate and identify the reason for the missing data and rectify the issue.	Data is reviewed weekly and discussed at quarterly HSEQ forum. One unit was repaired on the Area 1 unit due to a batch of faulty pumps. The weekly reviews pick up if the units are working.	Y
2.	MCDDJV personnel carrying out water monitoring should ensure all comment fields are completed with the necessary information, such as whether the water course is flowing and whether there has been recent rain events.	Paper field sheets are no longer used. Water monitoring results are transferred directly from the water meter memory into the Excel monitoring register. The register includes comments regarding no flow.	Y
3.	If an exceedance is noted during monitoring (turbidity or pH), personnel carrying out the monitoring should immediately take a second sample 1-2 metres upstream of the first, taking care not to disturb sediment on the bottom of the water course. If the issue is confirmed by the second sample, attempts should be made to identify any reason for the issue. This should include walking the perimeter upstream to	Action accepted and will be used if an exceedance occurs. Implementation of this process will be assessed during future audits.	Y

Recom. No.	Recommendation	Findings	Status
	identify any discharges from the site that could be causing the issue, any relevant observations and may also include spot readings further upstream to help target the potential problem area. Findings should be included in the monitoring spreadsheet. Confirmed unacceptable discharges from the site should also be entered into the site incident system.		
4.	Water monitoring personnel should be instructed in the new re-sampling and investigation process, the need to complete all comments on the water sampling records and the need to review both pH and turbidity for compliance with the 10% increase trigger. The water monitoring sheets should be amended to include a summary of the instructions.	New requirement has been discussed with sampling personnel. Paper monitoring sheets are no longer used. The data is recorded in the water monitoring meter memory and then transcribed directly into the water monitoring register. The water monitoring register (an Excel spreadsheet) will automatically highlight any exceedance of the 10% trigger.	Y
5.	The pH in the Dingley and Woodlands drain should be measured at several locations upstream of the downstream measurement point in an attempt to identify the cause for the elevated pH readings. This should occur after several days of dry weather to ensure there is no run-off from the work site. Measurements of pH should also be taken first thing in the morning and then in the early afternoon to determine if there is a noticeable change in pH due to natural causes.	A high pH has not occurred since the last audit. The requirement has been included as a standard procedure in the Water Monitoring and Management Plan and will therefore be implemented if a high pH were to occur..	Y
6.	MCDDJV should use the minutes scale on the Rain Intensity Chart provided in Appendix E3 of the project contract instead of relying on the dotted hour lines which have been drawn onto the chart.	The project is now aware of this labelling error.	Y

Recom. No.	Recommendation	Findings	Status
7.	MCDDJV should inform MRPV of the erroneous 24 hour and 48 hour lines on the Rain Intensity Chart provided in Appendix E3 of the project contract and request the error be rectified.	This information has been passed onto MRPV and it has been confirmed that this is the case.	Y
8.	MCDDJV should formally request that the water quality acceptance criteria between upstream and downstream water quality readings be agreed to.	A request has been made to MRPV and formally agreed to.	Y
9.	The lack of investigations when turbidity and pH exceedances were recorded should be recorded as a non-conformance in CMO.	The issue was entered as an incident into CMO.	Y
10.	Noise and vibration data collected in the field should be reviewed as it is collected to identify any compliance issues. If issues are found in the data, attempts should be made to identify the potential source of the noise or vibration. The results of any investigation carried out during spot noise readings should be noted in the field records.	A 3 monthly HSEQ forum is held with supervisors, engineers, safety and quality personnel where issues (past and future) are presented and discussed. The monitoring issue was presented at this forum as the personnel present may carry out the monitoring. The monitoring requirement will also be provided during any future training of new monitoring personnel. However, the Construction Noise and Vibration Management Plan should also be amended to reflect this new practice.	P
11.	All the information in the noise and vibration field record sheets should be fully completed at the time spot noise measurements are taken.	The field sheets reviewed were suitably completed.	Y
12.	Vibration monitoring should occur as close as possible to the closest residence to the works.	Raised at HSEQ forum and discussed with engineers – refer to recommendation 10 findings above.	Y

Recom. No.	Recommendation	Findings	Status
13.	Noise and vibration monitoring field sheets should be amended to include the above three requirements and these changes brought to the attention of all personnel that may be carrying out noise and vibration monitoring.	The site only uses a noise field sheet. The vibration data is transferred directly from the vibration monitoring unit to the monitoring register. The noise field sheets include a note to monitor as close as possible to the sensitive receptor. It also includes a field requiring personnel to record the dominant noise source. The field sheets reviewed were suitably completed.	Y
14.	A method to determine the vibration levels at the residence should be implemented and used when it is not possible to place the vibration monitor immediately next to the house.	The vibration standard is met in most cases at the measurement point. In instances the standard was exceeded, the sensitive receptor was a significant distance away and would have been met. The method to determine the vibration level at the sensitive receiver is still to be received from the JV's acoustic consultants.	P
15.	Vibration monitoring personnel should be alerted to the possibility that walking near to the vibration probe can influence the readings. The monitoring personnel should be instructed to install the vibration probe and then walk at least 4-5 metres from the probe during monitoring. Other personnel should be prevented from approaching the probe.	Raised at HSEQ forum – refer to recommendation 10 findings above. The individuals that carry out the vibration monitoring were also instructed in how to carry out the vibration monitoring.	Y
16.	Any noise data that exceeded the 75dB(A) annoyance target or any of the vibration targets should be identified and recorded on the data management system CMO. Each instance should be reviewed to determine if the exceedance was caused by construction activities or some external source and if any practical measures can be applied to reduce the	The issues can be entered as a hazard in CMO and investigated. If it is a legitimate issue, then it will be raised to an incident.	Y

Recom. No.	Recommendation	Findings	Status
	frequency of such occurrences.		
17.	MCDDJV should hold discussions with its acoustic consultant with the aim of developing evening and night time noise trigger levels that provide an indication of the impact due to the construction noise and when additional controls may be required. The approach taken for the new daytime noise trigger levels could be used.	Discussions have been held and a new draft of the amended noise plan has been submitted by the noise consultant with more realistic trigger levels.	Y
18.	A non-conformance should be generated within CMO due to the incident on the 17/7/2020 which was not reported to MRPV.	The non-conformance was entered into Team Binder.	Y
19.	Toolbox sessions should highlight the need store fluids in suitable containers and not on the ground. In particular, this should be brought to the attention of contractors with on-site compounds and area supervisors. The toolbox session should again remind employees and contractors that the spill kits are not rubbish bins, and they will need to dig through the rubbish if they ever need to use the spill kits.	Issue of storage and spills was raised at the HSEQ forum. Safety personnel will also be focussing on material storage.	Y
20.	MCDDJV should investigate the availability of breakable nylon ties to secure the spill kit lids.	Breakable ties have been used along with ropes.	Y
21.	The rumble grid inspection and cleaning frequency should be reviewed to ensure it is frequent enough and that they are actually occurring as planned.	Rumble grids have been cleaned and are assessed during the weekly inspection.	Y

Recom. No.	Recommendation	Findings	Status
22.	The pallet and other material stacked against the spill kit and waste bins at the contractor's storage area south of the Waterways piling area should be removed.	Material has been moved and there is free access to the spill kit and bins.	Y
23.	The two run-off treatment areas south of Centre Dandenong Road should be upgraded, in order to ensure water discharged from the construction site meets the water quality objectives specified in the contract specification.	The northern discharge point closest to Centre Dandenong Rd has been redesigned with a series of rock dams, core logs and silt fences. A substantial soil bund has been placed across the entrance to the southern location to prevent any water entering this area. A small amount of water flows through the new drain pipes under the roadway from a geofabric lined sump on the eastern side of the roadway (refer to site inspection section for photographs). MCDDJV representatives have stated there was no measurable impact after the recent 62mm of rainfall over 24 hours.	Y

Summary:

Completed = 21 out of 23 (91.3 %)

Partially Completed = 2 out of 23 (8.7 %)

Open = 0 out of 23 (0 %)

On-going actions = 0 out of 23 (0 %)

No longer applicable = 0 out of 23 (0 %)

Opportunity for Improvement

The Construction Noise and Vibration Management Plan should reflect new monitoring practices.

Recommendation:

- 1. The Construction Noise and Vibration Management Plan should be amended to ensure noise and vibration data collected manually in the field is reviewed as it is collected to identify any compliance issues. If issues are found in the data, the Plan should require monitoring personnel to identify the potential source of the noise or vibration if possible. The Plan should also require the results of any investigations carried out during manual noise monitoring be noted in the field records.**

4 Review of Monitoring Data

4.1 Dust Monitoring

MCDDJV operates 2 portable light scattering air quality monitors that measures PM10 and PM2.5 and a weather station on a continuous basis. One unit is located at 8 Bradley Close, adjacent the MCDDJV Governor Road compound. A second unit is located at the Din San Nursery at 418 Old Dandenong Road (refer to plans in Appendix C).

PM10 are dust particles which are less than 10 microns (millionths of a meter) in diameter and PM2.5 are particles less than 2.5 microns in diameter. In comparison, human hair can be from 17 to 181 microns with an average of approximately 75 microns. Particles greater than PM10 are mostly filtered out in the nose and throat. PM10 can enter the upper respiratory tract and lungs. PM2.5 particles are small enough to pass deep into the lungs and into the bloodstream. Note that PM10 particles include the PM2.5 fraction.

National levels to protect the community's health are in place for PM10 ($50 \mu\text{g}/\text{m}^3$ averaged over 24 hours) and for PM2.5 ($25 \mu\text{g}/\text{m}^3$ averaged over 24 hours). These levels have been adopted into law in Victoria in the State Environment Protection Policy (Ambient Air Quality) and are enforced by the Environment Protection Authority of Victoria (EPA).

The State Environment Protection Policy (Air Quality Management) defined a 24 hour PM10 intervention level of $60 \mu\text{g}/\text{m}^3$. The intervention levels are used to assess air quality monitoring data to determine whether the beneficial uses set out in the Policy are being protected. The project contract specification and the MCDDJV Air Quality EMP have adopted this intervention level as the maximum PM10 concentration that must not be exceeded.

There are no regulatory PM10 1 hour averages, however, the contract specification requires a 1 hour PM10 trigger level of $120 \mu\text{g}/\text{m}^3$. An exceedance of the trigger level results in an SMS being sent to members of the MCDDJV environmental team for investigation and action.

MCDDJV also operates a dust depositions gauge and directional dust gauge at 4 locations. The dust deposit gauges measure dust deposited over a period of time and provide reports as grams of dust per m^2 per month. The directional gauges face north, south, east and west and indicate the amount of dust that came from each direction. In this way, the amount of dust coming from the direction of the project can be compared to the amount of dust coming from other locations. One of the four dust deposition and directional gauges is located in a local residential area, well away from the project, to provide background dust levels. The locations of the dust deposition and direction gauges are shown in Appendix C.

The Project contract sets maximum dust deposition limits of “... $4 \text{ g}/\text{m}^2/\text{month}$ or $2 \text{ g}/\text{m}^2/\text{month}$ above the background measurement, whichever is the lesser.”

A review was carried out of the dust monitoring data collected to date. The following summarises the monitoring results.

Real time dust monitors

24 Hour Average Monitoring Results

Month	Area	Particle Size	Maximum	Average
September	1	PM2.5	7.0	2.9
		PM10	23.3	9.1
	2 ^a	PM2.5	9.2	2.7
		PM10	32.2	8.6
October	1 ^b	PM2.5	10.6	2.9
		PM10	17.4	8
	2	PM2.5	12.0	3.7
		PM10	28.5	10.6
November	1 ^c	PM2.5	4.5	8.0
		PM10	32.4	17.3
	2	PM2.5	7.7	3.6
		PM10	26.3	12.0

a – Filter replaced – lost 2 days data.

b – Lost 9 days data due to pump failure.

c – lost 18 days of data due to pump replacement.

This compares to the 24 hour average project limits of:

– PM2.5: 25µg/m³

– PM10: 60µg/m³

1 Hour Average Monitoring Results

Month	Area	Particle Size	Maximum	Average
September	1	PM2.5	20.7	2.9
		PM10	44.8	9.1
	2 ^a	PM2.5	12.5	3.5
		PM10	43.0	11.1
October	1 ^b	PM2.5	20.6	2.9
		PM10	39.2	7.9
	2	PM2.5	12.1	3.7
		PM10	28.5	10.6
November	1 ^c	PM2.5	7.7	3.6
		PM10	26.3	12.0
	2	PM2.5	12.6	3.7
		PM10	51.5	12.1

a – Filter replaced and intermittent fault – lost 8.5 days data.

b – Lost 9 days data due to pump failure.

c – lost 18 days of data due to pump replacement.

This compares to the 1 hour average project target of:

– PM10: 120µg/m³

Due to failure of the sampling pump and delays in servicing due to the equipment supplier's Covid 19 policy on carrying out on-site works, the Area 1 monitor lost a total of 27 days of data (9 days at the end of October and 18 days at the start of November). A filter was replaced in the Area 2 monitor, which also developed an intermittent fault that took time to correct due to the supplier's Covid 19 policy. This resulted in 8.5 days of data being lost in September. However, at all times, at least 1 real-time dust monitor was in operation.

The supplier informed MCDDJV that they had identified an issue with the sampling pumps. The batch of spare pumps provided by the overseas supplier were faulty, which appears to be the reason for the regular pump failures. Having identified the likely cause of the pump failures and relaxation of the equipment supplier's Covid 19 restrictions, MCDDJV expects a greater level of reliability from the monitors and less down time. This will be reviewed at the next audit.

Dust Deposit Gauges

September	–	Gauge 3 measured a dust deposition rate of 5.3 g/m ² /month, above the 4 g/m ³ /month limit. The report notes “Extensive earthworks around gauge”.
October	–	The three monthly reports did not exceed the dust criteria.
November	–	The three monthly reports did not exceed the dust criteria.

Directional Dust Gauges

September	–	The directional gauges at location 3 and 4 (Parks Victoria office and Waterway) found the highest dust readings were from the direction of the construction site (i.e. 2 out of 3 directional dust gauges). Location 3 found 78% of the dust was from the site.
October	–	The monthly deposition results for the three monitoring locations were all less than the limits. The directional gauges at all locations found the highest dust readings were <u>not</u> from the direction of the site.
November	–	The monthly deposition results for the three monitoring locations were all less than the limits. The dust direction gauge at monitoring location 3 (behind the Parks Victoria office) found the highest dust readings were from the direction of the site (40% of dust).

Discussion and Conclusions

Based on the monitoring data, the following conclusions can be arrived at:

- The PM10 and PM2.5 data was well below the national health levels at all times during the period under review. The maximum levels were approximately half the health limit, therefore, the risk to human health is very low.
- The off-site dust deposition levels are below the target levels in 2 out of the 3 locations.

- The direction dust gauge at location 3 (behind the Parks Victoria Office) confirms the majority of the dust was from the construction site.
- To the east of dust monitoring location 3 is extensive parkland and to the west is an industrial area. The two land use types are the least sensitive to high dust levels, however, the measured dust still represents an unacceptable level of off-site dust.
- The dust level coming from the project area is above background at times near to residents, therefore dust deposition levels in the residential area may occasionally be higher than normal.

Of note is the fact that the dust deposition exceedance at monitoring location 3 was not reported as a Hazard Observation and investigated.

The inspection carried out as part of this audit identified extensive paving of road surfaces, grassing of embankments along with application of mulch and application of jute matting and grassing to swales (refer to site inspection findings in Section 8 of this report). This work was well advanced in the northern section of the site. The central and southern portions of the construction site still have some earthworks to complete before the surfaces can be paved or stabilised, however, this earthworks should be completed or nearly completed by the end of January 2021. The paving and stabilisation of exposed soil areas will effectively eliminate off-site dust impacts once completed.

In the interim, efforts to reduce dust by use of water carts should continue and should focus on those areas where earthworks are still occurring.

Opportunity for Improvement

Minimise off-site dust from those areas where earthworks still need to be completed.

Non-Conformance

Hazard Observations should be raised for exceedance of monitoring targets and limits.

Recommendation:

2. The use of water carts should focus on those remaining areas on the project site where earthworks are still to be completed.
3. A Hazard Observation should be raised for the September dust deposition reading recorded at deposition gauge monitoring location 3, behind the Parks Victoria office, which exceeded the contract dust deposition limit. A non-conformance should also be raised, as the high dust deposition reading was not identified and recorded as a Hazard Observation after the results were obtained in October.

4.2 Water Monitoring

The MCDDJV Water Management and Monitoring Plan sets a number of water quality parameters for any water discharged from the site, as shown below:

- Turbidity of less than 30 NTU/FNU
(Nephelometric Turbidity Units)/(Formazin Nephelometric Unit);
- pH 6.5-8.3;
- Salinity and suspended solids equivalent to background concentrations; and
- No visible floating oil, grease, scum or litter, colours or odours.

The contract also requires the downstream water quality for these parameters to not deteriorate by more than twice the level of uncertainty in the measurement parameters when compared to upstream measurements. It has been formally agreed to between MCDDJV and MRPV that this variation is no more than 10%.

A review was carried out of the monitoring data, which identified a number of issues with the monitoring, as detailed below.

1. The project contract specification includes a Rainfall Intensity Chart in appendix E3 that specifies under what rainfall intensity conditions monitoring should occur. Some of the higher rainfall events can be summarised below.

Period over which rain has occurred (hours)	Rainfall Over the Period (mm)
24	17
12	15
6	13
2	8
1	6

Therefore, if there is more than 17mm of rain in 24 hours, then water monitoring should occur. Similarly, if there is more than 15 mm of rain in 12 hours or 13mm of rain in 6 hours, then monitoring is required. The purpose of the intensity chart is to identify high intensity rainfall events that may potentially cause stormwater to run off the site.

Looking back at 24 hour rainfall data from Moorabbin Airport, which borders the site, the rain events for each month were:

24 th October	42.8mm
23 rd November	63.2mm
8 th December	8.6 mm

The data available on the Bureau of Metrology website does not show if the rainfall occurred over a short period or whether it was spread over the full 24 hours. However, even assuming it was spread over 24 hours, monitoring should have occurred on the 26th October (24th and 25th October were a weekend period) and 23rd or 24th November (depending on time of day when rain occurred), as they exceeded the 17mm trigger for 24 hours.

A review of the monitoring data found:

- No discharge monitoring occurred on the 26th October;
- Discharge monitoring did occur on the 23rd November and it was noted that sampling occurred after a rain event

Monitoring Results

Area 1

There were 2 occasions since the previous audit when the measured downstream turbidity and/or pH levels in Area 1 (northern area) were above the upstream turbidity and/or pH levels by more than 10%, as shown below (red text were elevated readings):

Area 1 Water Monitoring Exceedances of 10% Variation

Date	Location	Upstream Turbidity (FNU) and/or pH	Downstream Turbidity (FNU) and/or pH	Comments
2/10/2020	Dingley Drain	10.5 FNU	36.5 FNU	No Flow
23/10/2020	Centre Dandenong Drain	18 FNU	23.1 FNU	Slow flow

Area 2

There was 1 occasion since the previous audit when the measured downstream pH levels in Area 2 (the Waterways area) was above the upstream pH levels by more than 10%, as shown below (red text were elevated readings):

Area 2 Water Monitoring Exceedances of 10% Variation

Date	Monitoring Locations	pH	Comments
19/11/2020	1. DS Bowen Parkway	8.19	Slow Flow
	2. US Bowen Parkway	7.25	Slow Flow
	3. US Island Point	7.45	Slow Flow
	4. US Mitta Avenue	7.42	Slow Flow
	6. US Mordialloc Creek	7.59	Slow Flow

* - Location 1 is the downstream location and the remaining 4 locations are upstream locations that flow to location 1

Discussion and Conclusions

Monitoring did not occur after the Saturday rain event on the 24th October 2020. It is likely an oversight that occurred following a weekend. However, rain records should be reviewed if there has been weekend rainfall. NOTE: The contract requires sampling to occur “*within 12 hours of a rain event, outside working hours*”. This is suitable for rain events that occur Sunday to Thursday night, however, it does not recognise the fact that normally, there are no staff on-site during weekend periods.

A review of the monitoring data found the majority of measurements complied with the contract requirements. However, there were several instances where the monitoring appeared to indicate a non-complying event.

Area 1

2/10/2020 (Dingley Drain)

There had been 5.6mm of rainfall the previous day. Even though there was no observable flow at the time of sampling, some sediment run-off and impact may have occurred.

23/10/2020 (Centre Dandenong Road)

There was no rainfall on the sampling day, no rainfall for the previous 3 days and only 0.4 mm for the 2 days prior to this. Therefore, it is very unlikely there would have been any run-off from the construction site. The difference between the upstream and downstream turbidity levels (18 FNU compared to 23.1 FNU) is very small and both readings are low. Given the lack of run-off, the difference is likely due to the condition of the sampling locations (level of vegetation) and any sediment or exposed soil in the drain between the sampling points.

Area 2

19/11/2020 (Bowens Parkway – Waterways)

There was no rainfall on the sampling day, no rainfall for the previous 3 days and only 0.4 mm for the 3 days prior to this. The area has been carrying out concreting works, which has the potential to raise the pH of surrounding waterways, however, it is unclear how any concrete or concrete contaminated waste would have escaped the works area given the lack of any run-off for 6 days prior to sampling. It can only be concluded that it is unlikely the pH variation was due to the site works.

NOTE: The three exceedances of the 10% trigger limit listed above were not recorded or investigated.

Conclusions

The site personnel need to review rainfall data if rain has occurred on weekends to ensure monitoring occurs after rainfall events that exceed the trigger values in the contract.

Based on the review of the monitoring data, it appears there may have been some low level impact on the Dingley Drain due to site run-off. Two additional high downstream readings were noted, but these do not appear to have been due to site activities.

However, the three exceedances of the 10% trigger limit were not identified or investigated. Currently, the data is “eye-balled” to assess compliance. This can be difficult, especially with the Area 2 data, where the upstream level is an average of 4 sample locations. To assist in the identification of potential issues, macros could be added to the water monitoring spreadsheet that automatically identifies any issues.

Opportunity for Improvement

A process to identify the need for water monitoring after the weekend period could be improved. Improvements in identifying potential water monitoring issues should also be implemented.

Recommendations:

- 4. Rainfall data should be reviewed immediately following any weekend where rain has occurred. If the rainfall event/s exceeded the trigger values in the Appendix E3 of the project contract, then water samples should be collected as soon as possible from all water sampling locations.**
- 5. Macros should be added to the water monitoring spreadsheet to automatically identify any potential exceedances of the water quality criteria.**

Non-Conformance

Water monitoring should occur after a rainfall event that exceeds the contract trigger limits. Monitoring data should be reviewed in a timely manner and potential issues identified and investigated.

- 6. The failure to carry out water monitoring after the rainfall event on the 24th October 2020 should be recorded as a non-conformance in the MCDDJV non-conformance system.**
- 7. The lack of investigations when turbidity and pH exceedances were identified should be recorded as a non-conformance in the MCDDJV non-conformance system.**

4.3 Noise and Vibration Monitoring

4.3.1 Noise Targets

Noise targets have been set for residential and non-residential locations as shown in the following table. Neither the Victorian EPA Noise Control Guidelines nor the VicRoads Guidelines specify a noise target for works during Normal Working Hours. Therefore,

construction noise targets for non-residential uses have been adopted based on the NSW EPA Interim Control Noise Guidelines (ICNG), consistent with the approach applied on recent major Victorian infrastructure projects such as the Metro Tunnel Project and West Gate Tunnel Project.

There are targets for day, evening, night and weekend periods. The targets are also based on the background noise levels. The areas bordering the project boundaries have therefore been broken up into 8 “Noise Control Areas” (NCA). Each NCA has noise targets based on the background levels.

Day / Evening / Night / Weekend Periods

Period	Time
Day	7 am – 7 pm Monday to Friday 7 am – 3.30 pm Saturdays (other than periods noted below)
Evening and Weekends	7 pm – 10 pm Monday to Friday 3.30 pm – 10 pm Saturdays Without prior approval, no works shall be carried out on any Sunday, public holiday, between Good Friday and Easter Monday inclusive or during the Christmas to New Year period.
Night	10 pm – 7 am any day

Following the installation of 7 continuous noise loggers across the project site, it was found that the noise limits specified in the EES (and previously applied to the project) were lower than the background noise levels without any construction activities occurring. That is, the actual background noise levels without any construction activities were already exceeding the target levels set in the EES.

MCDDJV, with MRPV approval, required the acoustic consultants Resonate to review the existing EES limits along with the actual noise data. It was found the background levels in the EES had been determined using LA₉₀ noise level, that is, the noise level exceeded 90% of the time. This method excludes the highest 10% of the noise levels. In comparison, the measurements carried out during construction are the 15 minute L_{eq}, that is, the average noise level over 15 minutes based on all noise with no exclusions. For areas impacted on by highly trafficked roads (i.e. within earshot of a major road), the frequent or constant traffic noise becomes the background. Therefore, when 10% of the loudest background noise is excluded, it results in a value far lower than what is measured by the L_{eq}, which averages all the noise.

Resonate used the actual background data measured as the L_{eq} when no construction activities were occurring to arrive at new target levels using the methods described in the notes under the table below. However, the change from an LA₉₀ to L_{eq} derived background level was only applied to the daytime targets. The weekend and night target levels were not altered. Therefore, as demonstrated further on in this section, the night time and weekend noise levels, without any construction activities occurring, are still well over the target level for these periods.

Construction noise targets for residential land uses

Noise Control Area (NCA) ¹	Construction noise target, dB(A) $L_{eq,15min}$			
	Normal Working Hours		Weekend / Evening Working Hours ⁴	Night Hours ⁵
	Noise Trigger ²	Highly Noise Affected ³		
NCA1	63	75	52	36
NCA2	63	75	55	36
NCA3	62	75	46	33
NCA4	63	75	48	39
NCA5	62	75	50	36
NCA6	62	75	48	36
NCA7	68	75	59	40
NCA8	68	75	59	40

1 - NCA locations are shown in Appendix E.

2 - The Normal Working Hours noise trigger has been set at 10 dB(A) above the ambient L_{eq} based on consultation with MRPV. The noise trigger describes the noise level at which the consideration of additional noise management measures should be considered.

3 - The Normal Working Hours noise target has been set at 75 dB(A). This is the level that should be complied with, where possible. If predicted or measured to be exceeded then further noise management measures should be implemented.

4 - The Weekend/Evening target has been set at Background + 10 dB(A) in accordance with Victorian EPA Noise Control Guidelines requirements for projects lasting less than 18 months. This target represents the level with which works should comply with during the Weekend / Evening period unless they are Unavoidable works.

5 - The Night target has been set at the RBL level, consistent with VicRoads Guidelines requirements. This target represents the level with which works should comply with during the Night period unless they are Unavoidable works.

Construction noise targets for non-residential land uses

Type of sensitive use	Construction noise target, dB(A) $L_{eq,15min}$
Classrooms at schools and other educational institutions (e.g. Chelsea Heights Primary School)	Internal: 45 External: 65
Hospital wards and operating theatres	Internal: 45 External: 65
Places of worship (e.g. Christ Church Dingley)	Internal: 45 External: 65
Active recreation areas (e.g. Chadwick Reserve)	External: 65
Passive recreation areas (e.g. wetlands and Braeside Park through NCA4)	External: 60

Community buildings	Dependent on usage. If required, refer to AS/NZS 2017:2016 <i>Acoustics – Recommended design sound levels and reverberation times for building interiors</i> for internal target.
Commercial buildings	External: 70
Industrial buildings	External: 75

4.3.2 Construction Noise Monitoring

Continuous Noise Monitoring

The acoustic consultants Resonate managed the seven continuous monitors located along the project site.

In summary, the report demonstrates:

- The majority of the daytime noise levels were below the trigger levels with only short term periods exceeding this level. There was several exceedance of the 75dB(A) target level due to short term spikes, however, a review of the data by the independent acoustic consultants Resonate found *“At no time during the monitoring was an exceedance of the 75 dB(A) Noise Target Level observed that was deemed attributable to construction works. Three 15-minute periods exceeded 75 dB(A) but were considered to be extraneous events close to the microphone rather than a result of construction works.”*
- No works occurred during the evening periods during the week, or during the Saturday or Sunday. However, there were a number of exceedances of the trigger limit due to background noise sources (primarily traffic). As the evening trigger level is also applied to Saturday afternoons, the largest exceedances occurred during this Saturday afternoon period (up to 27dB(A) above the trigger limit). The evening levels are also used during Sundays. The Sunday background noise was lower than other days of the week and was at or slightly above the trigger limit. However, there were a number of large noise spikes, which may have been due to activities such as lawn mowing close to the noise monitoring locations.
- The majority of the night time background levels (i.e. without any construction occurring), were at or significantly above the trigger level. The background level on a number of nights required construction noise controls to be applied, even when no works were occurring, particularly the Friday night, Saturday morning period.

Spot Noise Readings

Noise monitoring has also occurred during day, evening and night periods in a number of areas. The results are summarised below. The green, yellow and red shading represents day, evening and night periods respectively.

Noise Area NAC5 (residential)

Date	Activity	Audible Noise from MCDDJV Activities	LA(eq) 15min*
10/10/2020	Excavation works	Passing traffic and radio chatter	72.03
11/10/2020	Lane closure	Passing traffic	64.45

* - Values in red text were above the 15 min L_{eq} triggers shown in the following table

Period	Trigger dB(A) L_{eq} 15 min
Day	62
Evening/Weekend	50
Night	36

Noise Area NAC3 (residential)

Date	Activity	Audible Noise from MCDDJV Activities	LA(eq) 15min*
02/10/2020	General works, road upgrades, moving dirt, rolling pad	Padfoot, roller, bobcat	60.4
02/10/2020	General works, road upgrades, moving dirt, rolling pad	Padfoot, roller, bobcat	80.3
07/10/2020	General works, road upgrades, moving dirt, rolling pad	Padfoot, planes, roller	71.1
07/10/2020	General works, road upgrades, moving dirt, rolling pad	Padfoot, planes, roller	69.9
12/10/2020	General works, road upgrades, moving dirt, rolling pad	Padfoot, roller, bobcat	55.4
12/10/2020	General works, road upgrades, moving dirt, rolling pad	Padfoot, roller, bobcat	56.8

* - Values in red text were above the 15 min L_{eq} trigger shown in the following table

Period	Trigger dB(A) L_{eq} 15 min
Day	62
Evening/Weekend	46
Night	33

4.3.3 Vibration Targets

The project contract defines the maximum vibration allowed, based on the type of building or structure. The maximum vibration criteria are shown in the following table.

Vibration criteria for assessing potential for damage to buildings

Type of Structure	Peak Vibration Velocity at foundation (mm/s)
Reinforced or framed structures. Industrial and heavy commercial buildings	20
Unreinforced or light framed structure. Residential or light commercial type buildings	5
Structures that because of their sensitivity to vibration do not correspond to those listed above and are of great intrinsic value (e.g. heritage listed buildings)	3

The MCDDJV Noise and Vibration Management Plan also set a number of vibration targets based on the potential to cause annoyance to neighbours.

Vibration criteria for assessing potential annoyance to occupants

Location	Peak Vibration Velocity at foundation (mm/s)
Residential (Night – 10pm to 6 am)	0.4
Residential (Day – 6 am to 10 pm)	0.56
Commercial office (Day – 6 am to 10 pm)	1.1
Workshop (Day – 6 am to 10 pm)	2.2

4.3.4 Vibration Monitoring

Vibration monitoring has occurred at a number of locations on and around the project site, as summarised below.

Summary of Vibration Monitoring

Date	Monitoring Location	Activity	Measured Vibration (mm/s)	Estimated Vibration at Receptor ^a (mm/s)
Area 2				
25/11/2020 to 26/11/2020 (daytime)	Location: Bowen Parkway 21 measurements Human Comfort residential daytime target = 0.56 mm/s	Piling	Max 2.72 Min 0.11 Aver 0.89	Max 0.22 Min 0.01 Aver 0.07 0% > target

a- Estimated Vibration is adapted from the method described in U.S. Federal Transit Administration's Noise and Vibration Manual.

$$V_{\text{estimated}} = V_{\text{measured}} \times (\text{Measurement Distance/Receptor Distance})^{1.5}$$

4.3.5 Discussions and Conclusions

Noise Monitoring:

Half the day time noise levels were above the trigger level, with one measurement above the 75dB(A) annoyance level. However, the measurements were taken on-site due to access restriction on private property and will likely be an overestimation of the noise at the residential receiver. As was the case for the vibration measurements, the noise register should estimate the noise at the receptor in order to carry out a more accurate assessment of compliance. Irrespective of the likely overestimation, the exceedance of the 75dB(A) annoyance level should have been raised as an incident so it could be investigated further, that is, was the 75dB(A) likely to be exceeded at the residence and were there any other controls or work practices that could have been employed to reduce the noise level.

The two night levels were above the existing noise target, but were below the annoyance level. The night time readings also suffer from the site access limitations described above. It is noted that, the majority of the noise was due to the passing traffic and not construction noise. The evening and night values are also being reviewed, as discussed in Section 5.1 below, to take into account the actual noise levels being measured.

Vibration Monitoring:

Vibration monitoring in Area 2 (southern section of the site) did not identify any exceedance of target vibration levels for human comfort (no vibration monitoring was required in Area 1).

Opportunities for Improvement

The noise levels at the closest residential premises should be determined when access to private property is not practicable.

Recommendations:

- 8. The distance from the noise source to the noise measurement location, along with the distance from the noise source to the closest residence, should be recorded when noise measurements are taken. The noises register, should then calculate the noise at the closest residence using the formula:**

$$N_{\text{estimated}} = N_{\text{measured}} + 20 \times \log (\text{Distance}_{\text{measurement point}} / \text{Distance}_{\text{residence}})$$

- 9. The Construction Noise and Vibration Management Plan should be amended to include requirements to calculate noise and vibration levels at the receptor when it is not possible to take measurements at the receptor. The Plan should also describe the method of calculating the noise and vibration level at the receptor.**

Non-conformance

Noise levels that exceed the annoyance level should be reported as a Hazard Observation, investigated and any improvement actions identified then implemented.

10. A non-conformance should be raised as the exceedance of the 75dB(A) noise level during the day period on the 2/10/2020 was not recorded as a Hazard Observation. Any future exceedance of the annoyance level should be investigated to ascertain the actual impact at the sensitive receiver and to ascertain if additional noise controls could be applied.

4.4 Soil and Groundwater Monitoring

MCDDJV is required to monitor the depth to the underlying aquifer in a number of the site groundwater monitoring bores. This monitoring has been occurring as required. Additionally, samples of groundwater were collected on the 15/6/2020, as required by a previous audit recommendation, and sent for analysis. The analysis results found the water to be saline. This water can be used as a dust suppressant on the project site if groundwater were to be encountered (has not occurred to date), but should not be discharged off-site.

No additional soil contamination issues were encountered since the pervious audit.

Opportunity for Improvement

NIL

5 Environmental Plans

5.1 Construction Noise and Vibration Management Plan (CNVMP)

MCDDJV has implemented the requirements of the CNVMP. Monitoring has occurred when out of hours work is required along with the necessary out of hours work request forms.

The CNVMP was under review at the time of the audit. A draft had been issued by the Acoustic Consultants, Resonate, for review. The main changes in the plan that will impact on the site operations were the new trigger levels. As detailed in the September Audit Report, the day time trigger levels had been amended by taking into account the actual background noise levels measured as an L_{eq} . The same changes are also proposed for the evening and night time periods where works are unavoidable. In these instances, the noise triggers are the background $L_{eq(15min)}$ plus 10dB(A). For works which are not unavoidable, the previous targets based on the EPA noise control guidelines still apply. The 75dB(A) annoyance level is also retained.

The proposed amendments are far more realistic. The targets take into account the actual background levels and should no longer be exceeded when construction is not occurring. This provides meaningful trigger levels that can be used to assess the noise impact during construction.

As stated in the noise monitoring section 4.3.5 above and Recommendation 7, the CNVMP should be amended to include requirements and methods to calculate both the noise and vibration levels at the receptor in cases where it is not possible to take measurements at the receptor.

Opportunity for Improvement

NIL

6 Complaints Management

Complaints can be generated by members of the public, motorists, community groups, regulators and businesses. They can be received via emails, phone calls, SMS, walk-ins, or letters. These can be made directly to MCDDJV or to a contact centre that collates enquires and complaints for all MRPV projects and passes them on to the relevant project for a response. These can be passed to either MRPV or MCDDJV depending on the nature of the enquiry.

The Project's Community Engagement personnel produce weekly complaint summaries which include descriptions of the issues raised by each individual lodging the complaint and the actions taken by MCDDJV in response to the complaint. The weekly reports are provided to MRPV.

Community Engagement personnel have adopted a proactive approach when liaising with the local community. Members of the community who have expressed concern over various aspects of the project have been regularly contacted by the project's Community Engagement personnel to discuss any recent issues and to provide information on upcoming activities. This is commendable and complements the project's complaint management process.

Following is a summary of the raw events data. The summary has focussed on the environmental issues relevant to the scope of this audit, namely:

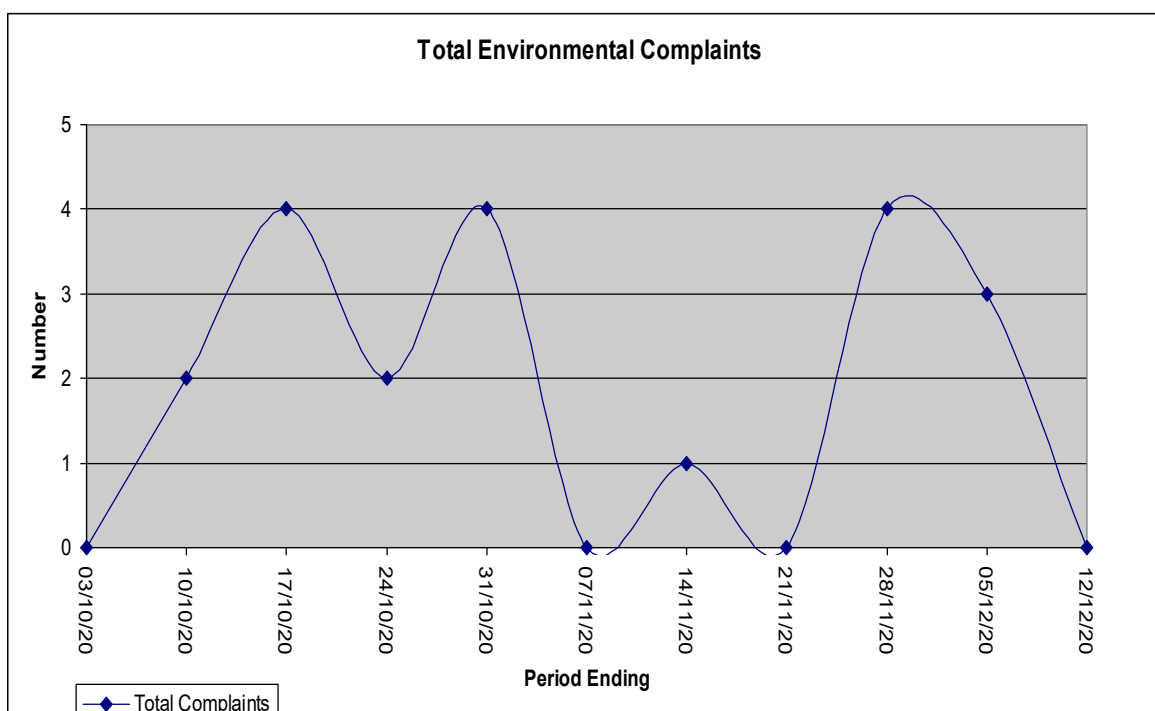
- Dust/Air
- Noise
- Vibration
- Water
- Fauna/Flora
- Night Works Light Pollution

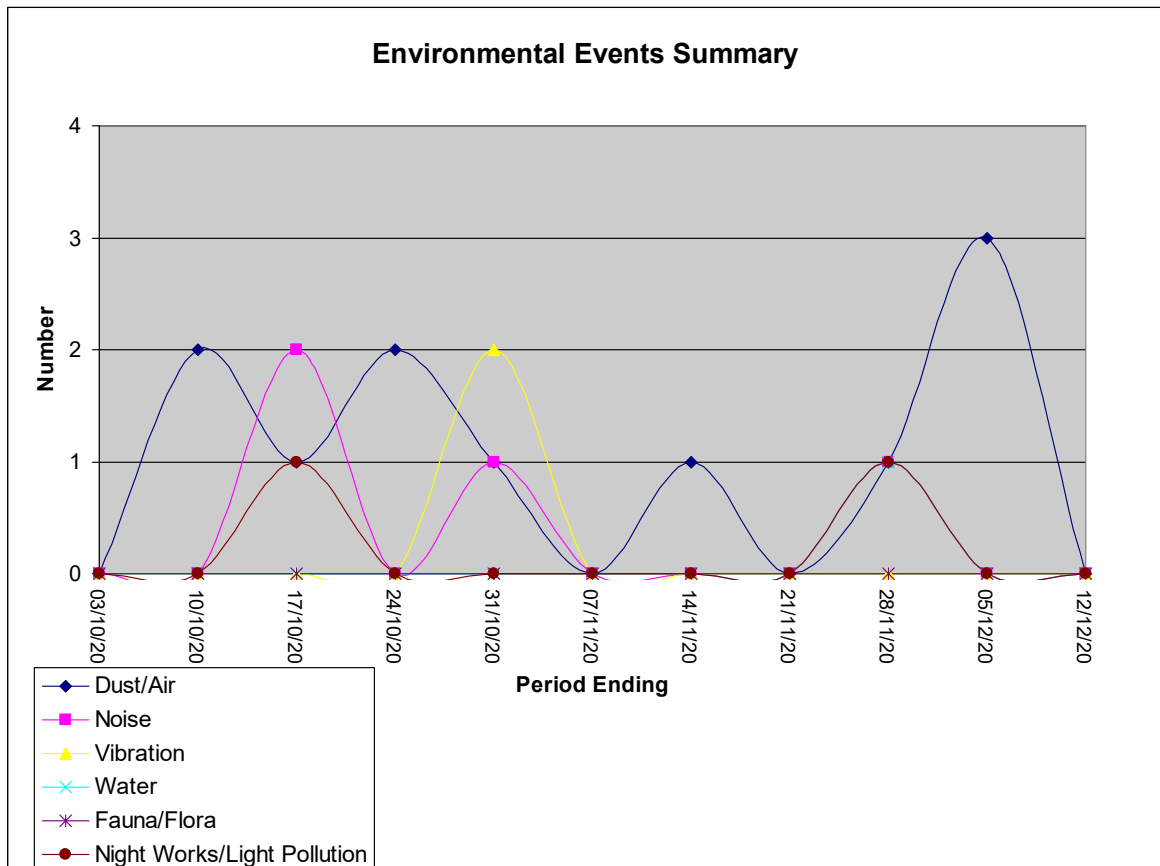
Summary of Raw Events

Period Ending	Total Events ¹	Dust/ Air	Noise	Vibration	Water	Fauna/ Flora	Night Works Light Pollution
03/10/20	0	0	0	0	0	0	0
10/10/20	2	2	0	0	0	0	0
17/10/20	4	1	2	0	0	0	1
24/10/20	2	2	0	0	0	0	0
31/10/20	4	1	1	2	0	0	0
07/11/20	0	0	0	0	0	0	0
14/11/20	1	1	0	0	0	0	0
21/11/20	0	0	0	0	0	0	0
28/11/20	4	1	1	0	1	0	1
05/12/20	3	3	0	0	0	0	0
12/12/20	0	0	0	0	0	0	0
TOTALS	20	11	4	2	1	0	2

- 1 – Total events include environmental issues only (i.e. dust, noise, vibration, water, fauna/flora and night works/light pollution). Note: A single complaint may have referred to a number of issues. In these cases, each issue raised has been recorded as a separate event in the above table e.g. if a resident referred to both dust and noise issues, then each issue was recorded separately. If the complaint was found to be due to other local companies or activities, it has not been recorded in the above table.

The data in the above table is presented graphically below.





As can be seen in the above table, dust complaints are the most frequent events (11 complaints) with noise a distant second (4 complaints). Three dust complaints were lodged on Saturday 5/12/2020. This was a particularly windy day with wind gusts up to 72km/h and followed a period of warm dry weather.

The Project's responses have been documented in the weekly complaint spreadsheet. All persons making a complaint were contacted and the responses appear appropriate given the complaint type and MCDDJV's ability to take action.

Complaint levels are a good indication of how well controls to protect the community are working. The numbers of complaints have been steadily decreasing since the project commenced, as shown below:

- March Audit - 121 complaints
- June Audit - 53 complaints
- September Audit - 36 complaints
- December Audit - 20 complaints

Opportunity for Improvement

NIL

7 Incidents and Non-Conformances

7.1 Reported Incidents

There were no reported incident since the previous audit.

7.2 Reported Non-conformances

There was one non-conformance raised on the 8/10/2020. The non-conformance was raised due to not reporting an incident to MRPV in correct timeframe and was an outcome of the previous audit.

7.3 Observation Reports

MCDDJV has encouraged all employees and it's contractors to report actual and potential hazards so they can be investigated, along with reporting workplace observations. The observations can be either positive or negative in nature.

7.4 Discussion and Conclusions

Based on the above information, there were no significant incidents or issues of note. The Observation Reports are a useful and proactive tool to help avoid issues. It also provides employees with a method of communicating workplace issues of concern, or to highlight action which they believe have been beneficial to the project, to employees, the community or the environment.

Opportunity for Improvement

NIL

8 Site Inspection

Examples of positive progress in the works are shown in the following two photographs.



Left: Northern section of project. Majority of roadway is sealed and landscaping mainly completed with topsoil and jute matting applied to swales. Perimeter area has been topsoiled and grassed.



Left: One of the large, permanent stormwater retention basins. Topsoil and jute matting was being applied to the base.

The following two photographs are areas south of Lower Dandenong Road. The sediment control devices were found inadequate at the previous audit, but have been upgraded.



Above: The area immediately south of Lower Dandenong Road. Sediment fences and coir logs have been installed to slow down runoff water. Ballast filled trenches have also been installed to further slow down the runoff and collect sediment.



Above: The drainage area further south of Lower Dandenong Road has been bunded, preventing any runoff entering the area directly.



Above: The one issue of concern was the unlabelled IBC used by a sub-contractor that was found in Zone 1. Enquiries during the audit identified the material as a concrete curing compound that is sprayed onto the concrete.

Opportunity for Improvement

Proper storage and labelling of fluids used on site.

Recommendations:

- 11. MCDDJV should require their contractors to label all containers containing fluid with their contents. Containers used in the field should also be placed on spill trays.**

9 Summary of Recommendations

Recommendation Types:

Non-conformance (NC)

An instance, event or occurrence that has not-fulfilled a requirement that has been specified in the Strategy, CEMP, ECPs, EPRs, legislation, or approval conditions.

(Note 1: A non-conformance may be an individual non-conformance or a number of minor but related audit findings, which when considered in total are judged to constitute a non-conformance.)

Opportunity for Improvement (OI)

A deficiency in the implementation of the Strategy, CEMP, ECPs, or associated documentation judged to be a risk to the environment, or to environmental management, without constituting an overall failure in the area concerned.

Observation (O)

An audit finding which may relate to an incidental or isolated system discrepancy, which does not compromise the effectiveness of environmental management, or constitute an actual or potential environmental risk.

IREA does not require Observations to be formally closed out after they have been issued and therefore will not report these in subsequent audit reports. It is the responsibility of the MCDDJV to consider these findings.

Recommendation Priorities:

- A** - High risk of system failure, legal non-compliance, an EPR requirement or high environmental risk. **Must be corrected as a matter of priority.**
- B** - A requirement specified in an internal Plan or procedure, is affecting system efficiency, may result in system failure, or is a moderate environmental risk. **Must be corrected.**

Recomm. No.	Type	Recommendation	Priority
1.	OI	The Construction Noise and Vibration Management Plan should be amended to ensure noise and vibration data collected manually in the field is reviewed as it is collected to identify any compliance issues. If issues are found in the data, the Plan should require monitoring personnel to identify the potential source of the noise or vibration if possible. The Plan should also require the results of any investigations carried out during manual noise monitoring be noted in the field records.	B
2.	OI	The use of water carts should focus on those remaining areas on the project site where earthworks are still to be completed.	B
3.	NC	A Hazard Observation should be raised for the September dust deposition reading recorded at deposition gauge monitoring location 3, behind the Parks Victoria office, which exceeded the contract dust deposition limit. A non-conformance should also be raised, as the high dust deposition reading was not	B

Recomm. No.	Type	Recommendation	Priority
		identified and recorded as a Hazard Observation after the results were obtained in October.	
4.	OI	Rainfall data should be reviewed immediately following any weekend where rain has occurred. If the rainfall event/s exceeded the trigger values in the Appendix E3 of the project contract, then water samples should be collected as soon as possible from all water sampling locations.	A
5.	OI	Macros should be added to the water monitoring spreadsheet to automatically identify any potential exceedances of the water quality criteria.	B
6.	NC	The failure to carry out water monitoring after the rainfall event on the 24 th October 2020 should be recorded as a non-conformance in the MCDDJV non-conformance system.	B
7.	NC	The lack of investigations when turbidity and pH exceedances were identified should be recorded as a non-conformance in the MCDDJV non-conformance system.	B
8.	OI	The distance from the noise source to the noise measurement location, along with the distance from the noise source to the closest residence, should be recorded when noise measurements are taken. The noises register, should then calculate the noise at the closest residence using the formula: $N_{\text{estimated}} = N_{\text{measured}} + 20 \times \log (\text{Distance}_{\text{measurement point}} / \text{Distance}_{\text{residence}})$	B
9.	OI	The Construction Noise and Vibration Management Plan should be amended to include requirements to calculate noise and vibration levels at the receptor when it is not possible to take measurements at the receptor. The Plan should also describe the method of calculating the noise and vibration level at the receptor.	B
10.	NC	A non-conformance should be raised as the exceedance of the 75dB(A) noise level during the day period on the 2/10/2020 was not recorded as a Hazard Observation. Any future exceedance of the annoyance level should be investigated to ascertain the actual	B

Recomm. No.	Type	Recommendation	Priority
		impact at the sensitive receiver and to ascertain if additional noise controls could be applied.	
11.	OI	MCDDJV should require their contractors to label all containers containing fluid with their contents. Containers used in the field should also be placed on spill trays.	A (legal requirement)

10 Audit Conclusions

10.1 Environment Management Plans

The audit reviewed the Construction Noise and Vibration Management Plan. No substantive issues were identified and the requirements set out in the plans are being implemented. The evening and night time noise trigger levels were being reviewed at the time of the audit in order to accurately reflect the existing background levels. The revised plan should provide more effective trigger levels.

10.2 Environment Performance Requirements

The EPR requirements have been incorporated into the contractor's EMPs (this was confirmed in a pre-construction audit). Therefore, compliance with the EMPs ensures compliance with the related EPRs. Hence the conclusions in section 10.1 immediately above are also applicable to the MCDDJV's compliance with the EPR requirements.

10.3 Site Works

The site works are progressing as planned. Considerable progress has been made in sealing the roadway, landscaping and grassing areas, particularly in the northern section of the site. No significant impacts on the surrounding community or the environment have been noted. All but one of the previous audit recommendations have been completed, with the one remaining issue partially fulfilled. Noise, vibration and water monitoring has improved although review of the monitoring data to identify any issues needs to be improved.

10.4 Overall Conclusion

The implementation of plans and controls appear appropriate and effective. As road sealing and landscaping continues, the impact on the surrounding environment and community will continue to decrease.

Appendix A – Audit Agenda

Audit Agenda

Site:	Mordialloc Freeway Project
For:	McConnell Dowell Decmil Joint Venture
Project Environmental Auditor:	Vic Natoli
VicRoads Auditor/Reviewer:	Ken Fraser
Company Representative:	Chris DiDomenico
Audit Date/s:	14 th – 15 th December 2020

Day 1

- 9:00 Opening meeting with company representatives to review audit process, availability of data and personnel and confirm audit agenda
- 9:30 Review actions taken to close previous audit findings.
Water monitoring results and compliance. (W3, W5)
Air Monitoring results and compliance (AQ2)
Noise monitoring results and compliance (NV2)
Soil monitoring results (where monitoring has occurred) and contaminated soil management (CL1, CL2, CL6)
Incident reporting since previous audit and response
Community complaints since previous audit and response (EM2, LV5, S1)
Noise EMP (NV2)
- 4:30 Day 1 Wrap up meeting
Any issues identified during the day will be reviewed and discussed.
- 5:00 End of Day 1

NOTE: Text in brackets refers to the relevant EPR. The various Plans have been confirmed as complying with the EPRs. Therefore, compliance with the Plans will ensure compliance with the EPR requirements.

Day 2

Site Inspection

9:00 An inspection will be carried out of the site in order to:

- Determine if the controls specified in the plans and site specific plans have been implemented, as they apply to the works to date.
- Identify any unsuitable work practices.
- Visually confirm monitoring and sampling locations.

4:30 Day 2 Wrap up meeting

Any issues identified during the day will be reviewed and discussed.

5:00 End of Day 2

NOTE: Day 2 may be extended if required in order to complete the tasks listed in the Audit Agenda.

Appendix B – Quarterly Audit Schedule

EPR	EPR Title	Quarterly Site Audit and Inspection						
Audit/Review Date		6/2020	9/2020	12/2020	3/2021	6/2021	9/2021	12/2021
EM1	Construction Environmental Management Plans	*	*	*	*	*	*	*
EM2	Environmental complaints management	*	*	*	*	*	*	*
EM3	Independent Reviewer and Environmental Auditor (IREA)							
AQ1	Air quality (operation)							
AQ2	Air quality (construction)	*	*	*	*	*	*	*
B1	Fauna habitat							
B2	Lighting design (operation)							
B3	Native vegetation and habitat	*	*	*	*	*	*	*
B4	Fauna (construction)	*	*	*	*	*	*	*
B5	Native vegetation (construction)	*	*	*	*	*	*	*
B6	Flora and Fauna Monitoring Management Plan (operation)							

CL1	Soil Management Plan	*	*	*	*	*	*	*
CL2	Acid Sulphate Soil Management Plan	*	*	*	*	*	*	*
CL3	Passive landfill gas capture and venting design							
CL4	Landfill Gas Management Plan (Construction)		*				*	
CL5	Landfill Gas Management Plan (Operation)							
CL6	PFAS Management Plan	*	*	*	*	*	*	*
CL7	Landfill material							
E1	Business Disruption Plan							
E2	Utility assets							
GG1	Greenhouse gas monitoring and reporting							
GG2	Emissions reduction							
H1	Cultural Heritage Management Plan	*	*	*	*	*	*	*
H2	Unidentified non-Aboriginal historical archaeological sites	*	*	*	*	*	*	*
H3	Non-Aboriginal heritage sites	*	*	*	*	*	*	*

LV1	Landscape and urban design							
LV2	Crime prevention through environmental design							
LV3	Reinstatement works							
LV4	Lighting (operation)							
LV5	Light spillage (construction)	*	*	*	*	*	*	*
LV6	Minimise large (amenity - non native) tree removal outside no-go zones	*	*	*	*	*	*	*
LV7	Landscape management strategy							
LV8	Independent urban design review panel							
NV1	Noise and vibration (design)							
NV2	Construction Noise and Vibration Management Plan	*	*	*	*	*	*	*
NV3	Traffic noise verification							
S1	Community and Stakeholder Engagement Plan	*	*	*	*	*	*	*
S2	Recreational facilities							
T1	Intersection and freeway design and performance							

T2	Transport Management Plan							
T3	Vehicle and pedestrian access							
T4	Traffic validation							
W1	Water body health (water quality operation)							
W2	Flood protection (operation)							
W3	Surface water management (construction)	*	*	*	*	*	*	*
W4	Flood protection (Flood Management Plan for temporary works) (construction)	*			*			
W5	Water Management and Monitoring Plan	*	*	*	*	*	*	*
W6	Surface water management (design and operation)							
W7	Water Asset Management Plan (Operation)							

NOTE:

- Greyed out cells are not applicable.
- An asterisk in the “Quarterly Site Audit and Inspection” columns does not mean every item in the referenced EPR will be reviewed. Refer to the Quarterly Site Audit and Inspection Topic Agenda below for additional details.
- Separate “Quarterly Site Audit and Inspection” and “IREA EPR Review” reports will be produced for each quarter.
- The IREA’s review of EPR NV3 (Traffic Noise Verification) will occur post construction.

Quarterly Site Audit and Inspection Topic Agenda

Audit Date	Quarterly Site Audit and Inspection Topics
June 2020	• Review actions taken to close previous audit findings. • Water monitoring results and compliance. (W3, W5) • Air Monitoring results and compliance (AQ2) • Noise monitoring results and compliance (NV2) • Soil Monitoring Results (where monitoring has occurred) (CL1, CL2, CL6) • Incident reporting and response since previous audit • Community complaints and response since previous audit (EM2, LV5, S1) • Flora Fauna EMP (B3, B4, B5) • Flood Management EMP (W4) • Site Inspection (AQ2, B3, B4, B5, H1, H2, H3, LV6, W3)
September 2020	• Review actions taken to close previous audit findings. • Water monitoring results and compliance. (W3, W5) • Air Monitoring results and compliance (AQ2) • Noise monitoring results and compliance (NV2) • Soil Monitoring Results (where monitoring has occurred) (CL1, CL2, CL6) • Incident reporting and response since previous audit • Community complaints and response since previous audit (EM2, LV5, S1) • Soil Management Sub-plan (CL1, CL2, CL6) • Landfill Gas EMP (CL4) • Site Inspection (AQ2, B3, B4, B5, H1, H2, H3, LV6, W3)
December 2020	• Review actions taken to close previous audit findings. • Water monitoring results and compliance. (W3, W5) • Air Monitoring results and compliance (AQ2) • Noise monitoring results and compliance (NV2) • Soil Monitoring Results (where monitoring has occurred) (CL1, CL2, CL6) • Incident reporting and response since previous audit

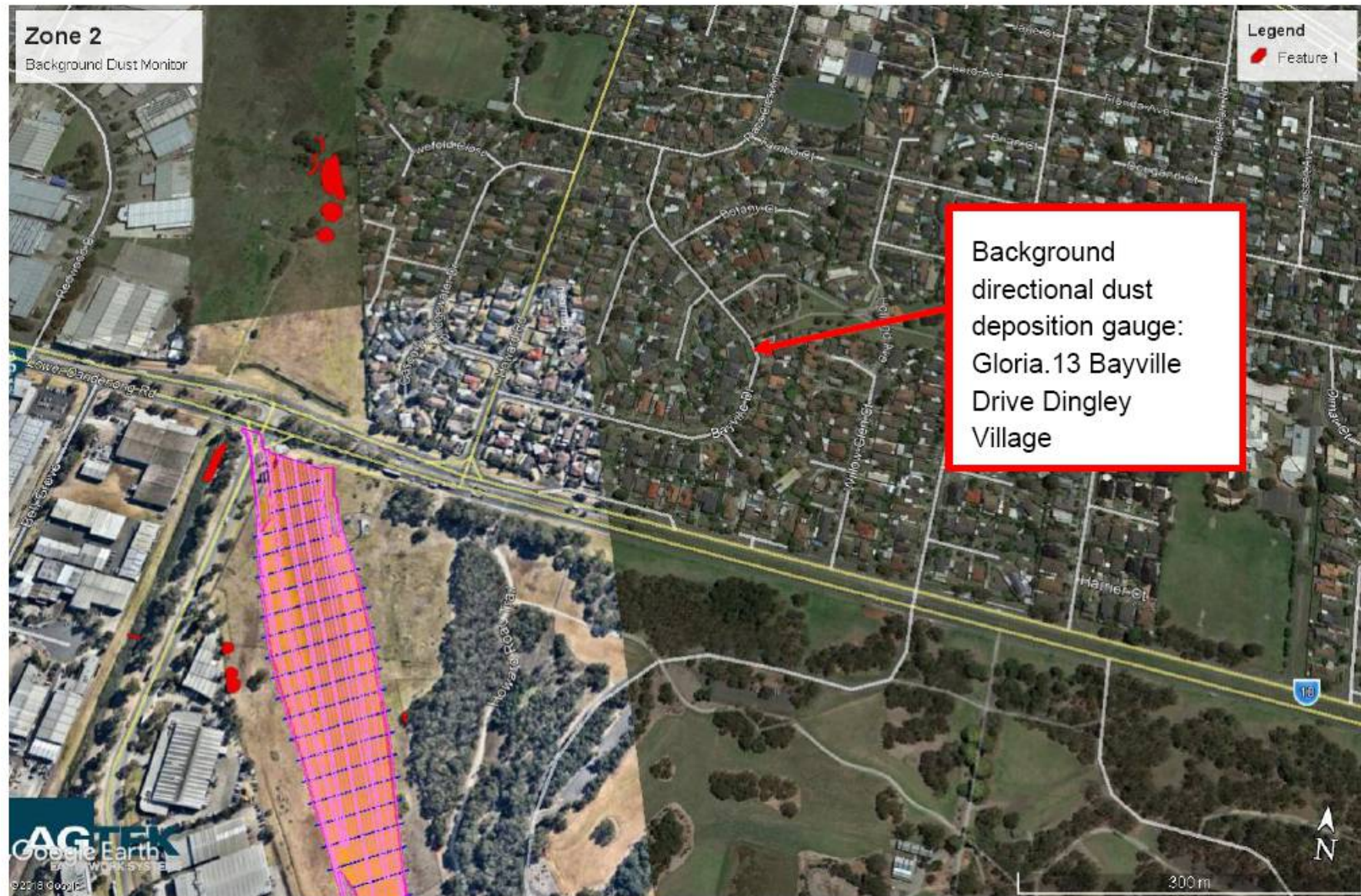
	• Community complaints and response since previous audit (EM2, LV5, S1) • Noise EMP (NV2) • Site Inspection (AQ2, B3, B4, B5, H1, H2, H3, LV6, W3)
March 2021	• Review actions taken to close previous audit findings. • Water monitoring results and compliance. (W3, W5) • Air Monitoring results and compliance (AQ2) • Noise monitoring results and compliance (NV2) • Soil Monitoring Results (where monitoring has occurred) (CL1, CL2, CL6) • Incident reporting and response since previous audit • Community complaints and response since previous audit (EM2, LV5, S1) • Water EMP (W5) • Flood Management EMP (W4) • Site Inspection (AQ2, B3, B4, B5, H1, H2, H3, LV6, W3)
June 2021	• Review actions taken to close previous audit findings. • Water monitoring results and compliance. (W3, W5) • Air Monitoring results and compliance (AQ2) • Noise monitoring results and compliance (NV2) • Soil Monitoring Results (where monitoring has occurred) (CL1, CL2, CL6) • Incident reporting and response since previous audit • Community complaints and response since previous audit (EM2, LV5, S1) • Waste Management EMP • Site Inspection (AQ2, B3, B4, B5, H1, H2, H3, LV6, W3)
September 2021	• Review actions taken to close previous audit findings. • Water monitoring results and compliance. (W3, W5) • Air Monitoring results and compliance (AQ2) • Noise monitoring results and compliance (NV2) • Soil Monitoring Results (where monitoring has occurred) (CL1, CL2, CL6) • Incident reporting and response since previous audit

	• Community complaints and response since previous audit (EM2, LV5, S1) • Landfill Gas EMP (CL4) • Site Inspection (AQ2, B3, B4, B5, H1, H2, H3, LV6, W3)
December 2021	• Review actions taken to close previous audit findings. • Water monitoring results and compliance. (W3, W5) • Air Monitoring results and compliance (AQ2) • Noise monitoring results and compliance (NV2) • Soil Monitoring Results (where monitoring has occurred) (CL1, CL2, CL6) • Incident reporting and response since previous audit • Community complaints and response since previous audit (EM2, LV5, S1) • Waste Management EMP • Site Inspection (AQ2, B3, B4, B5, H1, H2, H3, LV6, W3)

NOTE:

- References in brackets are the respective EPR numbers.

Appendix C – Dust Monitoring Locations



Zone 1

Dust Monitor locations

Legend

Feature 1

Real time Dust and
weather Monitor:
Paul Smith. Din
San Nursery 418
Old Dandenong

Zone 2

Dust Monitor locations

Legend

Feature 1

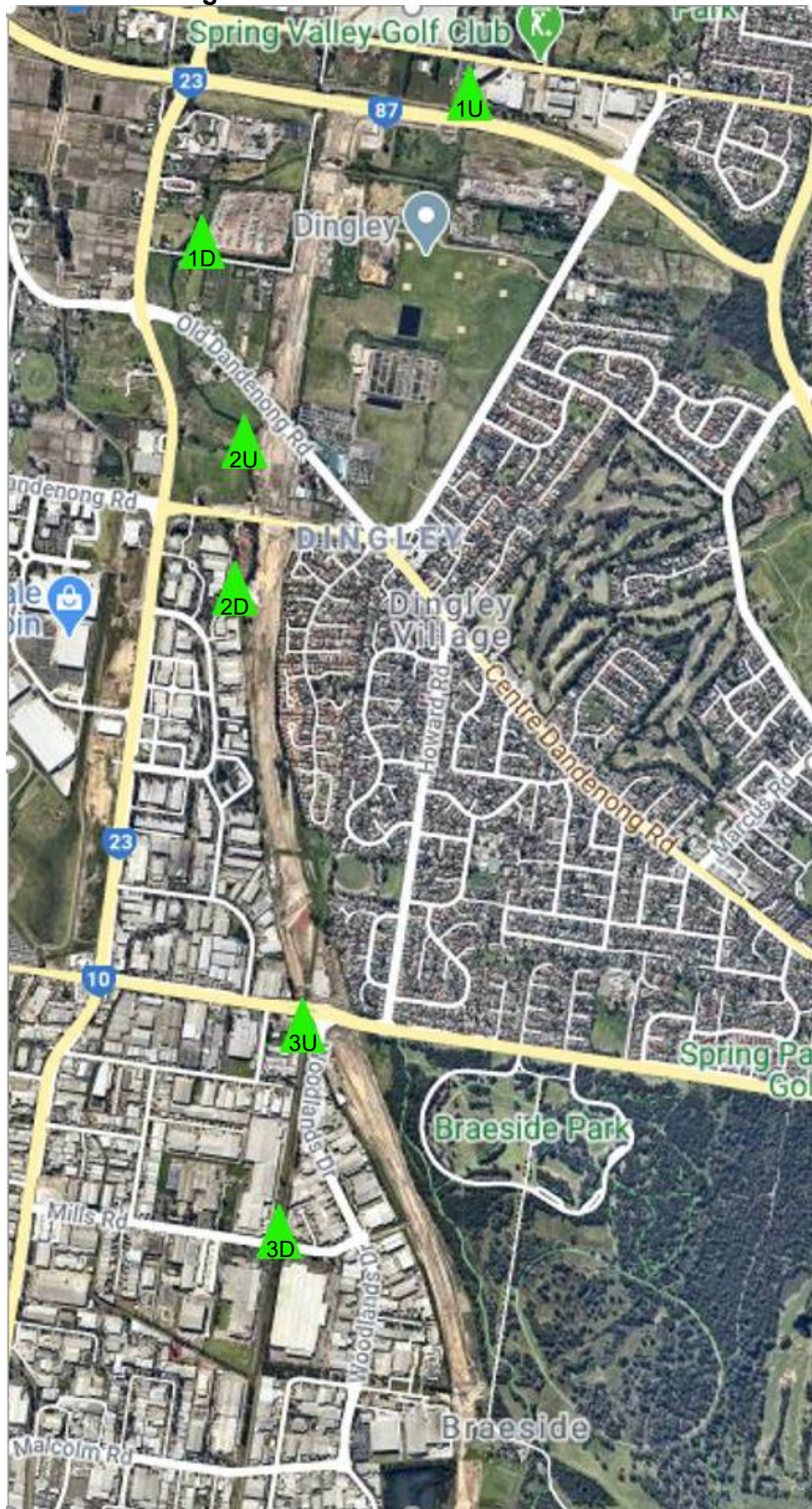
Dust Directional
Gauge: 9 Fir St
Dingley. Darren
Reeve Gas Turbine
Overhaul





Appendix D – Water Monitoring Locations

Area 1 Water monitoring locations



Area 2 Water monitoring locations



Appendix E – Noise Control Areas

