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MORDIALLOC FREEWAY PROJECT

Independent Reviewer and Environmental Auditor

Quarterly Construction Audit

Report 3, September 2020

PROJECT
Mordialloc Freeway Project

Quarterly Construction Audit, September 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 third audit and inspection carried out on the 29th and 30th September 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, asphalting, installation of culverts, installation of services and utilities and early 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 29th and 30th September 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:

- Soil Management Sub-plan (CL1, CL2, CL6)
- Landfill Gas Environmental Management Plan (EMP) (CL4)

The audit also includes an assessment of how the requirements of the above plans have been incorporated into the site specific Environmental Control Plans (ECPs).

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

Soil Management Sub-plan:

To date, the project has encountered:

- Potential Acid Sulphate Soil (PASS) in the Waterways area;
- Asbestos containing material (ACM) pre-construction on the northern section of the site;
- Asbestos containing cladding around the oil pipeline north of Lower Dandenong Road (abated – picked, cleaned soil reused on-site);
- Stockpiles of asbestos, building rubble and other waste illegally dumped along the construction corridor prior to construction commencing;
- Contaminated material (hydrocarbon and heavy metal) from the former landfill located on the northern section of the site; and
- Contaminated soil following oil and fuel spills and leaks.

The PASS has been treated and reused on site. Any excess will be disposed of at an EPA licensed waste disposal facility.

ACM was found when MCDDJV took possession of the site. Detailed investigations were undertaken to assess the nature and extent of contamination. The majority of contamination was found to be in the northern half of the project and generally comprised small non-friable ACM fragments in soil, in piles of compost or areas where construction and demolition has been illegally dumped over the years. Where the project activities intersected with potential contamination or there was a significant risk to human health or the environment, this soil was abated (manual removal of ACM by picking or screening) in accordance with WorkSafe requirements using specialist contractors and qualified occupational hygienists. Where it was not cost effective or appropriate to abate and reuse material on-site it was transported and disposed of in accordance with WorkSafe and EPA requirements to a licensed landfill facility. Once abated and tested, clearance certificates were issued by an independent occupational hygienist and this clean material was stockpiled for reuse.

The project traverses over a major high pressure oil pipeline in several places. This pipeline is wrapped in protective enamel bitumen coating to prevent corrosion and contains a small amount of ACM. The project includes the removal and replacement of this protective coating using specialist contractors, working under asbestos conditions and procedures. Once removed, the old coating was disposed of to an EPA licensed waste disposal facility.

Minor spills have occurred since the project commenced due to broken hydraulic hoses on plant and equipment, along with several trucks that punctured their fuel tanks while traversing the site. In all cases, the contaminated soil was excavated and disposed of at an EPA licensed waste disposal facility.

In conclusion, the vast majority of the soil contamination MCDDJV are managing was due to contamination present on the site before construction began. The actions taken by the project are consistent with the requirements of the Soil Management Sub-Plan and MCDDJV's legal responsibilities. Once the project is completed, the potential public exposure to contamination on the site will be far lower than what existed before the project commenced.

Landfill Gas EMP

Gas vents are being installed, which safely vent gas generated by the old landfill located immediately south of the Dingley Bypass. The vents are monitored weekly. Monitoring results have been provided to EPA on a fortnightly basis. No issues have been identified. Surface methane monitoring has also been carried out for health and safety reasons and to assess public risk.

The monitoring found that methane concentrations within the landfill monitoring bores are high, however, the very low production of landfill gas, the presence of the gas vents and the age of the landfill, results in a very low risk to the surrounding community. The installation of vents by MCDDJV as part of the construction program has further reduced the risk of methane moving through the soil and migrating off-site. Surface monitoring has found the health and safety risk is extremely low and no methane was detected by the personal exposure devices worn by personnel working on the site. A low-level methane detector also found the surface methane concentration was less than 4% of the EPA's action trigger level, which is a very low value.

Complaints Management:

A complaints management process is in place which has proactively engaged the community. The process receives, records and responds to complaints concerning construction activities. The process is sound and the responses to complaints appear appropriate.

Incidents and Non-conformances:

MCDDJV recorded 1 incident since the previous audit. This involved a hydraulic oil spill from a failed hydraulic hose. The spill was relatively small and the contaminated soil collected and then disposed of as contaminated waste by an EPA licensed disposal contractor. However, it appears the incident had not been reported to MRPV as required under contract requirements and a Non Conformance was therefore raised.

There were no recorded non-conformances since the previous audit.

MCDDJV has encouraged all employees and contractors to report actual and potential hazards along with reporting workplace observations, which are either positive or negative in nature. Since the last audit, there have been 79 Observation Reports logged for investigation or management's attention. 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 dust directional gauges indicate the dust coming from the site at some locations is slightly higher than dust levels from other directions. However, the dust deposition levels have all been below the $4g/m^2$/month limit.

The results from the real time dust monitors are all below the 10 micron 24 hour average legislative health limit (monthly maximum values of 11.1 to 44 $\mu g/m^3$ measured cf. the limit of 50 $\mu g/m^3$) and the 2.5 micron 24 hour average legislative health limit (monthly maximum values of 7.7 to 23.8 $\mu g/m^3$ measured cf. the limit of 25 $\mu g/m^3$). The monitoring also confirmed the measured dust levels were below the 10 micron 1 hour average target (monthly maximum values of 21.5 to 87.8 $\mu g/m^3$ measured cf. the target of 120 $\mu g/m^3$).

In summary, dust monitoring has found the levels of off-site dust are below the target limits and in most cases below the limits by a significant margin.

Water:

Based on a review of the monitoring data, it appears there may be some impact on the Centre Dandenong Drain due to site run-off, however, this run-off is only resulting in low turbidity levels. This area was the subject of the site inspection and additional sediment control recommendations are included in the site inspection section of this report.

The informal agreement between MCDJV and MRPV to use a 10% variance between upstream and downstream monitoring results as the water quality acceptance criteria needs to be formalised.

The downstream increase in pH levels in the Dingley and Woodlands drains is unexplained. In some instances, it may have been due to run-off, but there have been several instances when the rainfall indicated that run-off was unlikely. These occurrences should be investigated to confirm if they are or are not due to site activities.

There were some instances where the downstream turbidity increased, however, the likelihood of run-off from the site was small due to low, or no rainfall. As the turbidity levels being measured are all very low, it could be due to the poor sampling technique stirring up sediment during sampling. If high readings are noted (sediment or pH), a second sample should be immediately taken slightly upstream of the first sample location.

It also appears that site personnel have been focussing on the turbidity of water (which is the primary concern) and have missed occurrences of high pH levels. Monitoring personnel should have this issue highlighted to them.

Unfortunately, it is difficult to identify potential causes of high readings after the event. Therefore, confirmed high readings should be immediately investigated by the monitoring personnel to try and identify the source of the high readings.

An issue was also identified with the Rain Intensity Chart in Appendix E3 of the contract specification. The chart has inconsistent labelling that should be clarified.

Noise Monitoring:

The majority of the day time noise results (both continuous and spot monitoring) were below, at or slightly above the new daytime noise trigger level, or similar to the background levels in the area. There were two short spikes spike that exceeded the 75 dB(A) annoyance limit and one spot reading was also slightly exceeded the annoyance limit. Interestingly, the 75dB(A) annoyance target has also been exceeded by broad spikes on Saturdays and Sundays when no construction works were occurring Even though exceedances of the 75 dB(A) target should be avoided if possible, short term spikes should be less of an issue than continuous high-level noise during day time periods.

The evening trigger levels were exceeded approximately 50% of the time, even though no construction works were occurring. The night time trigger levels were exceeded over 90% of the time, even though night works only occurred 1 night out of the 7 being reviewed. The noise level during night works was similar or less than the background noise levels during the other 6 night time periods.

The new daytime noise trigger levels are far better at reflecting the existing background noise levels and provide a good indication of the construction impacts. However, the evening and night levels are consistently being exceeded when no construction noise is occurring. At some locations, the background level with no construction occurring is at times 20dB(A) higher than the night time trigger level, which is a significant amount. Therefore, the evening and night time trigger levels are of no use what-so-ever in assessing or controlling construction noise during evening and night time periods.

Continuous noise monitoring 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.*"

Vibration Monitoring:

Vibration monitoring in Area 2 (southern section of the site) did not identify an exceedance of target vibration levels. However, vibration monitoring in Area 1 identified a number of vibration readings that appear to have exceeded the human comfort target for residential day time periods (0.56mm/s). No readings exceeded the residential structural damage target of 5mm/s. Again of note is the fact that the high vibration levels were not identified as potential issues.

Several issues were identified with the vibration monitoring, as detailed below:

- It is often not possible to place the vibration monitoring probe next to the closest house due to access to private property. MCDDJV however has not determined the expected vibration at the actual house. MCDDJV should adopt a method to determine the vibration at the actual residence when access to the property is not readily available.
- The Area 2 vibration monitoring occurred very near to the works and a significant distance from the closest residence. The auditor utilised a published method to determine the vibration at the residence, however, the greater the distance between the residence and the monitoring location, the less accurate the method is likely to be in estimating the vibration at the house. Therefore, monitoring should occur as close as possible to the closest house to the works.
- The distances between the works, the monitoring location and the closest house were not accurately recorded at the time of monitoring. This required the distances to be estimated after monitoring occurred. All data fields in the monitoring records should be accurately recorded at the time of monitoring.
- A close review of individual vibration results taken on the same day showed very large variations for the same works (by factors of 100 to 1000 between the lowest and highest readings). It appears that personnel walking near the vibration probe are influencing some results and likely disturbed the probe or probe cable (brushed against it or hit it).

Recommendations have been included to address the above issues. However, all vibration measurements were below levels that would results in any structural damage to properties, though several daytime readings may have exceeded the human comfort level.

Site Inspection Findings

The site inspection identified several issues that are summarised below:

- Chemicals and fluids were stored on bare soil at 2 locations;
- A spill kit was being used as a rubbish bin in one site compound location;
- The rumble grid used to shake soil and mud loose from heavy vehicles exiting one of the site compounds was almost full of mud and required cleaning;
- Materials were stored around the spill kit and waste bins at one contractor's storage area, preventing easy access to these items; and
- Two locations south of Centre Dandenong Road used to treat stormwater runoff before it exits the construction site need to be upgraded to prevent sediment run-off.

1 INTRODUCTION

1.1 Purpose of this Report

Independently assess compliance with Project requirements and approvals.

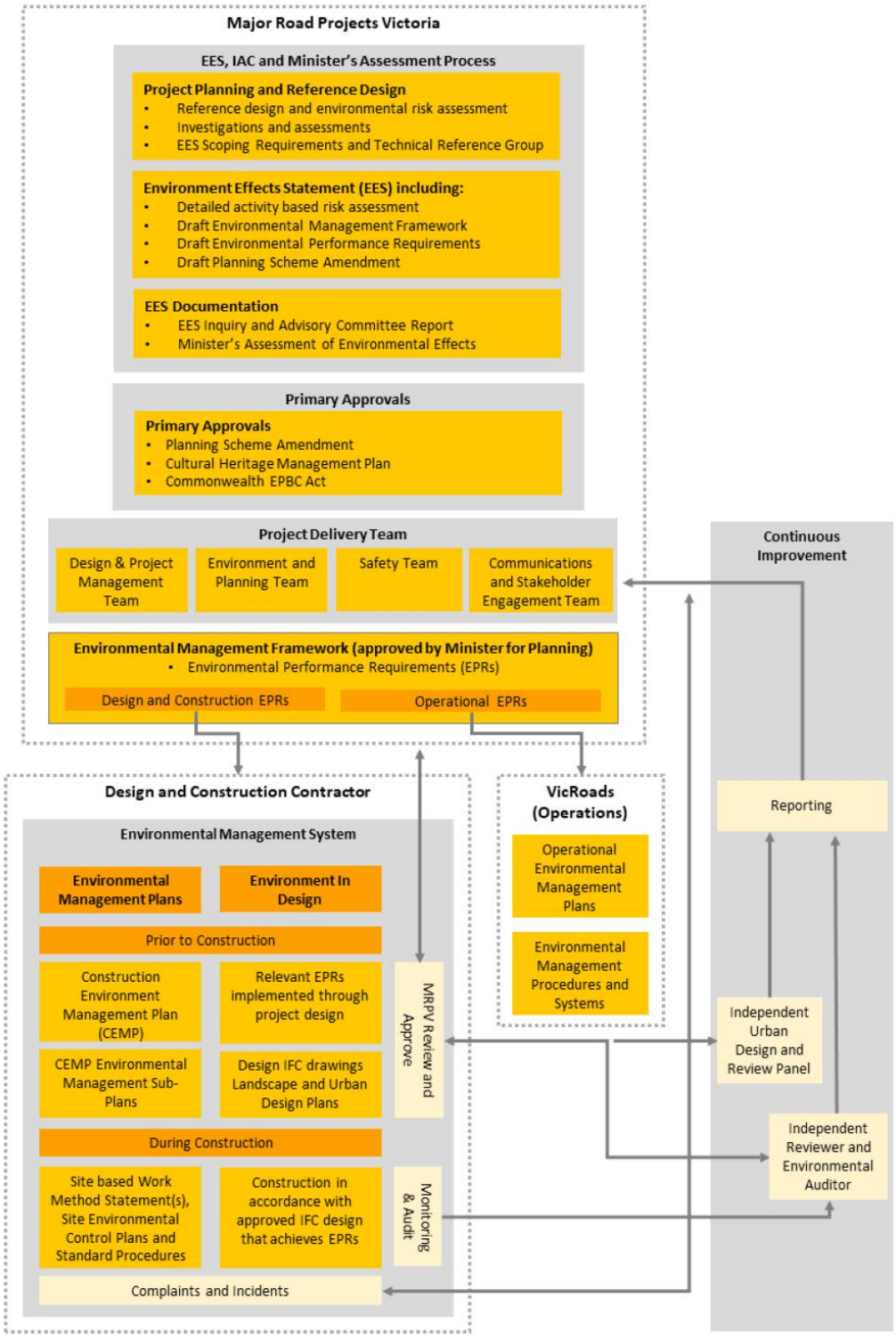
1.2 Project Background

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

Act	Requirements	Responsibility	Implementation
Water Act 1989	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 *Water Act*.
Wildlife Act 1975	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 final ERP 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 Projects (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 MITA and the Minister and is the third 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 IREA Environment Auditor, 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)
- 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 Agenda[1] 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
- 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.
- 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.	All dust monitoring data for the previous month should be downloaded from the real time analysers at the beginning of each month.	This is now occurring and the data was available for review.	Y
2.	Air-Met Scientific should be required to identify and rectify the cause of the data loss in the Area 1 real time dust monitor. The monthly data should be reviewed for on-going occurrences of data loss. If this issue continues for longer than 1 month, then Air-Met Scientific should be asked to provide a temporary unit and power supply until the existing unit can be repaired.	Air-met confirmed that technicians attended site the week commencing 10/08/2020. Subsequently, short periods of data loss still occurred. Air-met re-investigated in August. Both units revisited and serviced in mid September 2020 and no data loss has occurred since.	Y
3.	MCDDJV should review the water monitoring locations to ensure the monitoring is providing results that can be used to assess the project impacts. Each downstream monitoring location should have a corresponding upstream monitoring location.	All monitoring locations were reviewed, updated and a new map of locations produced. The Water Management EMP has been updated to include the new locations.	Y

Recom. No.	Recommendation	Findings	Status
4.	Access to water monitoring location 6US should be provided to the project environmental personnel as soon as possible and the monitoring in this location reinstated.	Gate installed, access is available and sampling at location 6US has recommenced.	Y
5.	Water monitoring records should log results using the same location names as those shown on the water monitoring location map. If the monitoring location needs to be moved due to a one-off event, or additional monitoring occur for some reason, then this should be clearly noted on the monitoring record spreadsheet.	A review of the water monitoring data found the location names on the water monitoring map were being used, so there is no ambiguity as to where the samples were taken.	Y
6.	Water monitoring results should be reviewed immediately after monitoring. Any elevated turbidity results should require an inspection of the site boundary potentially contributing to the elevated turbidity. Any obvious run-off locations, or locations where uncontained soil or fill material could be entering the drain, should be identified and rectified. Each event should also be logged as a non-conformance and the proposed actions tracked to completion.	MCDDJV advised this practice has been adopted. The results are also provided to MRPV for review.	Y
7.	High noise activities such as piling should only occur during the permitted construction day time period wherever possible.	MCDDJV advised this practice has been adopted and Saturday works are being avoided wherever possible e.g. no works occurred on the 15/08/2020 and 22/08/2020.	Y
8.	The noise monitoring data should be reviewed as soon as it is available. As a minimum, those noise measurements that exceeded the "Highly Noise	MCDDJV advised this practice has been adopted. There is a new process based on 7 continuous monitors operated by the acoustic consulting firm Resonate, who	Y

Recom. No.	Recommendation	Findings	Status
	Affected" target of 75 dB(A) Leq 15min should be investigated to determine why they occurred and if the noise levels could be reduced, or activities changed to the less sensitive day time period.	provide reports that highlight issues. Night works may also require handheld monitoring based on location and works. Issue are reportedly investigated.	
9.	All noise measurements should be taken at the closest residence to the work activities. If one of the background noise monitoring locations (L1, L2, etc.) shown on the noise area map in Appendix E is close to the works, then the noise measurements should be taken at these locations to provide a direct comparison to the background levels measure pre-construction. A procedure should be developed detailing how to choose the noise monitoring location. The procedure should also include calibration requirements and the meter settings discussed in recommendation 5 of the March 2020 audit report. Personnel carrying out the noise monitoring should be instructed in the implementation of the procedure.	The existing Noise Monitoring Event Field Report form was amended to include all the recommendation items, rather than creating a new procedure. This is acceptable and ensures the requirements are highlighted to the monitoring personnel each time monitoring occurs. The Form already includes calibration requirements. MCDDJV advised that all relevant personnel were informed of amendments to form.	**Y**
10.	Personnel taking noise measurements should note down if any of the reversing beepers are not an approved low noise squawker type. They should also note any significant impact type noise (bangs, crashes, etc.) that could be an annoyance to neighbouring residents. If they do occur, these should be investigated to determine the reason for their occurrence and if they can be prevented.	An audit was undertaken of site plant and vehicles. MCDDJV advised the majority have low noise squawker type reversing alarms. All on-site plant has reversing squakers, but some delivery vehicles are still fitted with beepers. There is a limit to what can be implemented for transitory delivery vehicles. There is ongoing monitoring of delivery trucks (irregular attendance on site) All relevant personnel informed, and issues identified by	**Y**

Recom. No.	Recommendation	Findings	Status
		monitoring are investigated.	
11.	All available noise background data should be used to produce contour maps of noise levels along the alignment. The day and evening background levels can then be adjusted by adding 10 dB(A). A number of background levels were measured on private properties very close the residences. It may not be practical for MCDDJV personnel to access these properties and the closest measurement will be the resident's boundary. The adjustment to the background level in order to produce the target noise level should include an additional allowance if there is any difference in measurement locations i.e. background measured on-site near house cf. measuring off-site at the resident's boundary. A second set of contour maps should then be produced showing the noise target contours along the alignment for day, evening and night periods. The contours should then be used going forward to determine the target noise levels and the project site plans and procedures amended accordingly.	Noise measurements taken during the project have found that the measured noise levels were above the target values at a number of locations, even when no constructional activity was impacting on the measurement locations. MCDDJV and MRPV have agreed that there needed to be additional background levels taken to either confirm or amend the original target values. There are 7 continuous noise monitors which are operated by the Acoustic Consultant Resonate. Resonate issued a report on the 28/9/2020 detailing revised targets.	**Y**
12.	Vibration monitoring should be carried out in a closest residential area to the east of the Waterways piling operations, while piling is actually occurring.	Additional vibration monitors have been purchased and the Structures Team has been provided with its own vibration monitor. A vibration monitoring team has been designated and trained. As is the case in Area 1, vibration monitoring will be undertaken during all driven piling activities. Refer to section 4.3.3 for review of vibration monitoring data.	**Y**

Recom. No.	Recommendation	Findings	Status
13.	MCDDJV should investigate if the quality system could be used to record audit findings and track proposed corrective actions until they are implemented.	In discussions, MCDDJV advised that the data management system CMO will be used to record and track non-conformances and corrective actions.	Y
14.	MCDDJV and MRPV should formalise a process whereby issues identified by both parties can be reviewed and those requiring actioning entered into the incident/non-conformance records held by both organisations. Evidence should be provided by MCDDJV as issues are actioned, allowing the issues to be closed out in both organisations' records.	The issues listed in CMO are provided to MRPV. The two organisations then agree which issues are incidents and which are NCRs and the two organisation have aligned their issues.	Y
15.	MCDDJV and MRPV should consider formally broadening IREA's audit scope to include the systems and processes used to record, action and track incidents, non-conformances and audit findings. This could include how issues are communicated between the two organisations and formally recorded in both organisation's systems.	MCDDJV and MRPV have agreed that the auditor should carry out short reviews and inspections between the major quarterly audits. The suitability of the system can form part of the review topics. The between audits have unfortunately been impacted on by Covid19 restrictions, which have restricted site personnel to essential construction personnel only, but should be viable going forward.	Y
16.	Contractors working on the project should be reminded that flammable goods should be stored in an appropriate and labelled flammable goods container or cabinet along with a dry powder type fire extinguisher. Contractor's storage areas should be inspected to ensure materials are appropriately stored.	MCDDJV advised the issue was discussed at pre-start and toolbox sessions. Presentation and attendance records for a meeting. Contractors' storage areas were inspected by the MCDDJV Safety and Environment team members.	Y
17.	The updated stormwater monitoring plan should include locations in Old Dandenong drain upstream	New upstream and downstream water monitoring locations have been identified, mapped and are being	Y

Recom. No.	Recommendation	Findings	Status
	and downstream of the construction area south of Centre Dandenong Road. The turbidity results following heavy rain events should be used to determine the need for additional sediment fencing along the western boundary of the project in this area.	used to monitor water quality (viewed map). The locations appear appropriate and should allow any impact due to run-off from the construction site to be identified. Elevated downstream turbidity results are reportedly used to identify any problems/maintenance/non-project related issues.	
18.	The shallow on-site drain leading to Old Dandenong drain south of Centre Dandenong Road should be inspected during and after rain events to ensure it has sufficient capacity contain stormwater on the site. If it becomes evident that it may overflow during heavy rain events, then the bund blocking the exit to the drain should be raised to increase it's holding capacity, or other suitable measures implemented to prevent an uncontrolled overflow.	The on-site drain is inspected daily by Zone 2 Supervisor, twice weekly by environmental team and during rain events. The exit to the drain is bunded by a sediment fence and also has coir logs across the drain to reduce the sediment load. A submergible pump is also installed at the exit of the drain, which is turned on when water collects in the drain. MCDDJV advised no uncontrolled overflows have occurred. An inspection after recent rain found the water was visually low in turbidity. However, the site inspection carried out during the audit identified a pipe that directs the water collected in the on-site drain directly to the off-site stormwater drain. (refer to findings and recommendations in the site inspection section of this report – Section 8).	**Y**

Summary:

Completed = 18 out of 18 (100%)
Partially Completed = 0 out of 18 (0%)
Open = 0 out of 18 (0%)
On-going actions = 0 out of 18 (0%)
No longer applicable = 0 out of 18 (0%)

4 Review of Monitoring Data

4.1 Dust Monitoring

MCDDJV operate 2 continuous dust monitors and weather stations that measure PM10 and PM2.5 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 $\mu g/m^3$ averaged over 24 hours) and for PM2.5 (25$\mu g/m^3$ 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 $\mu g/m^3$. 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 formal 1 hour averages, however, the contract specification requires a 1 hour PM10 trigger level of 120 $\mu g/m^3$. 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 g/m^2/month or 2 g/m^2/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
June	1	PM2.5	11.4	5.4
		PM10	19.5	12.2
	2	PM2.5	9.1	3.5
		PM10	11.1	4.7
July	1	PM2.5	23.8	4.9
		PM10	44	9.6
	2	PM2.5	9.5	2.2
		PM10	11.9	2.9
August	1	PM2.5	7.7	2.6
		PM10	27.4	7.5
	2	PM2.5	Fault	Fault
		PM10	Fault	Fault

This compares to the 24 hour average project limits of:
– PM2.5: 25µg/m^3
– PM10: 60µg/m^3

1 Hour Average Monitoring Results

Month	Area	Particle Size	Maximum	Average
June	1	PM2.5	43.3	5.6
		PM10	87.8	12.2
	2	PM2.5	17.8	3.6
		PM10	22.5	4.9
July	1	PM2.5	35.2	4.5
		PM10	69.9	9.1
	2	PM2.5	9.1	1.2
		PM10	21.5	2.9
August	1	PM2.5	14.2	2.8
		PM10	33.2	8.2
	2	PM2.5	Fault	Fault
		PM10	Fault	Fault

This compares to the 1 hour average project target of:
– PM10: 120µg/m^3

NOTE: Due to monitor faults (pumps and power supply), approximately a third of the data was missing in June and July. Approximately 10% of August data was missing after servicing. The dust monitor in Area 2 data was faulty due to pump failure and relocation of the unit. The pumps were replaced on the 7th September 2020 and MCDDJV reports that no data has been lost since this upgrade. This reliability of the monitoring units will be reviewed again at the next audit.

Dust Deposit Gauges

June	– The three monthly reports did not exceed the dust criteria.
July	– The three monthly reports did not exceed the dust criteria.
August	– The three monthly reports did not exceed the dust criteria.

Directional Dust Gauges

June	– The monthly deposition results were all less than the limits. The directional gauges at location 4 at the south end of the site found the highest dust readings were from the direction of the site (i.e. 1 out of 3 directional dust gauges).
July	– The monthly deposition results were all less than the limits. The directional gauge at location 3 and 4 showed the highest dust readings were from the direction of the site.
August	– The monthly deposition results were all less than the limits. Again, locations 3 and 4 found the highest dust readings were from the direction of the site.

Discussion and Conclusions

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

- The PM10 and PM2.5 data is well below the national health levels for the majority of 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.
- The dust level coming from the project area is above background at times, therefore dust deposition levels in the residential area may occasionally be higher than normal.

Even though the current monitoring confirms that dust levels are below the target limits, there are short term events when the dust levels are higher than normal. Therefore, current efforts to reduce dust should continue. This is particularly important as the drier summer period approaches.

It was also noted that there were significant gaps in the data, particularly in July and the failure of the unit in Area 2. MCDDJV is still in technical compliance with the contract, as only 1 real-time monitor is required. However, as there are two monitors available, all efforts should be made to keep both units operating. It appears the most recent maintenance by the equipment supplier in early September may have rectified the issue that has led to data gaps. This will be reviewed at the next audit.

Opportunity for Improvement

In order to minimise data loss from the real time monitors, the data should be reviewed regularly to identify continuing gaps in the data.

Recommendation:

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.**

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 to not deteriorate by more than twice the level of uncertainty in the measurement parameters when compared to upstream measurements. It has been agreed to between MCDDJV and MRPV that this variation is no more than 10%. However, it was identified during the audit that the 10% variance has not been formally applied for by MCCDJV and that MRPV has not formally accepted this 10% variance. The fact that water quality acceptance criteria have not been formally agreed to a year after the project commenced is of concern.

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

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 maximum rain events for each month were:

4th July	14.8mm
23rd August	21.4mm
13th September	18mm

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 24th August and 14th September, as the previous day's rainfall exceeded the 17mm trigger for 24 hours. Unfortunately this monitoring did not occur.

The above issue may be due to an error in the Rain Intensity Chart which forms part of the contract. The scale on the chart is in minutes. To assist users of the chart, lines have been drawn on the chart at the 0.5 hour, 1 hour, 2 hour, 3 hour, 6 hour, 12 hour, 24 hour and 48 hour points. Unfortunately, the 24 and 48 hour lines are in the wrong locations. Twenty-four hours is 1,440 minutes. The line on the chart has been placed at 2,440 minutes. Similarly, 48 hours is 2,880 minutes, while the line has been placed at 3,880 minutes. MCDDJV should ignore the 24 and 48 hour lines and use the minutes scale instead.

2. The Area 1 monitoring result includes a comments section along with two final columns noting whether there was flow or no flow and whether the monitoring was compliant or not. However, from the 11th August onwards, the comments and final two columns have not been completed. This makes it difficult to assess the reason for any exceedances.

Monitoring Results

Area 1

There were 14 occasions over the approximate 3 month period commencing in late June when the measured downstream turbidity and/or pH levels in Area 1 (northern area) were above the upstream turbidity and/or pH levels, 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
3/7/2020	Woodlands Drain	8.73 pH	11.73 pH	No Flow US Slow Flow DS
3/7/2020	Centre Dandenong Drain	15 FNU	21.2FNU	Post High Rainfall Event

9/7/2020	Dingley Drain	8.13 pH / 25.3 FNU	9.2 pH / 34.1 FNU	NIL Comments
17/7/2020	Centre Dandenong Drain	21.2 FNU	96 FNU	NIL Comments
29/7/2020	Dingley Drain	6.2 pH	8.1 pH	NIL Comments
4/8/2020	Dingley Drain	8.19 pH	9.39 pH	NIL Comments
4/8/2020	Woodlands Drain	7.72 pH	10.03 pH	NIL Comments
11/08/2020	Centre Dandenong Drain	18 FNU	34.1 FNU	NIL Comments
20/8/2020	Dingley Drain	8.03 pH	8.98 pH	NIL Comments
27/8/2020	Woodlands Drain	6.7 pH	8.74 pH	Post Major Rainfall Event

Area 2

There was 1 occasion over the approximate 3 month period commencing in late June where the measured downstream turbidity levels in Area 2 (the Waterways area) was above the upstream turbidity levels, as shown below (red text were elevated readings):

Area 2 Water Monitoring Exceedances of 10% Variation

Date	Monitoring Locations*	Turbidity (FNU)	Comments
18/8/2020	1. DS Bowen Parkway	52.1	Slow
	2. US Bowen Parkway	17	No flow
	3. US Island Point	43.7	No flow
	4. US Mitta Avenue	34.7	No flow
	6. US Mordialloc Creek	35.1	No flow

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

Discussion and Conclusions

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, although a review of rainfall before these events casts doubt on whether the unacceptable downstream readings were due to run-off from the work site, as discussed below:

Area 1

3/7/2020 – Woodlands drain, elevated downstream pH: There was 3.4 mm of rain over the previous 2 days and no rain for 4 days previous to this. It is possible, but unlikely that this would have resulted in run-off from the work site. The drain is also on the opposite side of the Woodlands Drive and only 200m of the site borders Woodlands Drive, decreasing the chance of any run-off. After this

there is an industrial area between the construction site and the drain. It is more likely the run-off was from the industrial area roadways.
(Runoff Unlikely)

3/7/2020 – Centre Dandenong Drain, elevated turbidity: As above with respect to rainfall. It is possible this level of rainfall may have resulted in run-off from the work site. This area was inspected during the current audit and additional recommendations have been made concerning sediment control.
(Runoff Possible)

9/7/2020 – Dingley Drain, elevated pH and turbidity. There was rain every day for the previous 7 days (total of over 25mm). The drain runs through the site, therefore, likely it was due to site runoff.
(Runoff Likely)

17/7/20 – Centre Dandenong Drain, elevated turbidity. No rain on the day of sampling and less than 1 mm of rain spread over the previous 4 days. The very low rainfall makes run-off unlikely.
(Runoff Unlikely)

29/7/2020 – Dingley Drain, elevated pH. There was no rain on the day of sampling, 0.2mm the day before and no rain for the 4 days before this. Therefore, the increase in pH is unlikely due to run-off from the work area. An alternate source for the increase in pH should be investigated.
(Runoff Very Unlikely)

4/8/2020 – Dingley Drain, elevated pH. There was 2.4mm of rain on the day of sampling. However, the rain appeared to have occurred in the afternoon, while the sampling was carried out at approximately mid-day. There had been no rain for the previous 6 days. Therefore, there is little likelihood of run-off from the work area.
(Runoff Very Unlikely)

4/8/2020 – Woodlands Drain, elevated pH. Same lack of rainfall as described above and same site layout as previously described.
(Runoff Very Unlikely)

11/8/2020 – Centre Dandenong Drain, elevated turbidity. No rain on the day of sampling, 1.2mm over the previous 2 days and 9.8mm the day before that. Therefore, it is possible that runoff from the site increased the turbidity.
(Runoff Possible)

20/8/2020 – Dingley Drain, elevated pH. There was 3.6mm of rain on the day of sampling and an additional 2.8mm of rain the 2 days prior to sampling. Therefore, it is possible there was run-off from the work site based on the rainfall. However, the turbidity levels decreased from 102 FNU upstream to 28.4 FNU downstream. If there had been run-off form the worksite, the turbidity would have been expected to increase.
(Runoff Possible based on rainfall, but unlikely based in turbidity)

27/8/2020 – Woodlands Drain, elevated pH. No rainfall on the day of sampling or the day before. 0.2mm three days prior to sampling and 21.4mm the day before this. Run-off from the site is possible due to the high rainfall 4 days earlier, however, the turbidity decreased from 82.5 FNU upstream to 32.3 FNU downstream.

(Runoff Possible based on rainfall, but unlikely based in turbidity)

Area 2

18/8/2020 – Elevated downstream turbidity: There was no rainfall in the previous 2 days and only 4mm of rain spread over the 3 days before this. Again, it is unlikely that there would have been any run-off from the worksite given the lack of rain for the 2 days before the measurements were taken the small amount of daily rainfall prior to this.
(Runoff unlikely)

Conclusions

Based on the above review, it appears there may be some impact on the Centre Dandenong Drain due to site run-off, however, this run-off is only resulting in low turbidity levels. This area was the subject of the site inspection and additional sediment control recommendations are included in the site inspection section of this report.

The informal agreement between MCDJV and MRPV to use a 10% variance between upstream and downstream monitoring results as the water quality acceptance criteria needs to be formalised.

The downstream increase in pH levels in the Dingley and Woodlands drains is unexplained at this stage. In some instances, it may have been due to run-off from the construction site, but there have been several instances when the rainfall indicated that run-off was unlikely. The pH change could be due to another source of contaminated water, or it may be a natural phenomena. Both downstream sample locations contain heavy vegetation. During day time periods, aquatic plants photosynthesise and draw dissolved carbon dioxide from the water, increasing the pH. At night, photosynthesis stops and dissolved carbon dioxide levels naturally increase, resulting in a decrease of the pH.

There were some instances where the downstream turbidity increased, however, the likelihood of run-off was small. The turbidity levels being measured are all very low. Therefore, a small amount of sediment stirred up from the bottom of the water course during sampling can significantly affect the results. Given the low rainfall or lack of rainfall before these episodes, it is more likely that the elevated downstream turbidity levels were due to sediment picked up during the measuring process. If high readings are noted (sediment or pH), a second sample should be immediately taken. The second sample should be taken slightly upstream of the first to ensure any stirred up sediment from the first sample location does not affect the second sample as well.

It also appears that site personnel have been focussing on the turbidity of water (which is the primary concern) and have missed occurrences of high pH levels. Monitoring personnel should have this issue highlighted to them.

Unfortunately, it is difficult to identify potential causes of high readings after the event. Therefore, confirmed high readings should be immediately investigated by the monitoring personnel to try and identify the source of the high readings.

Opportunity for Improvement

The water monitoring records could include additional comments on the circumstances present the time of monitoring. Any issue should also be investigated by the individual carrying out the monitoring as part of the monitoring process. The error in the Rain Intensity Chart labelling should also be taken into account when using the chart and carrying out water monitoring.

Recommendations:

2. **MCDDJV personnel carrying out water monitoring should ensure all comment fields are completed with the necessary information, such as whether the water course if flowing and whether there has been recent rain events.**

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 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.**

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.**

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.**

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.**

Non-Conformance

Formal water quality acceptance criteria should be agreed to between MRPV and MCDDJV.
Monitoring data should be reviewed in a timely manner and potential issues identified and investigated.

8. **MCDDJV should formally request that the water quality acceptance criteria between upstream and downstream water quality readings be agreed to.**

9. **The lack of investigations when turbidity and pH exceedances were recorded should be recorded as a non-conformance in CMO.**

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 different targets for day, evening, night and weekend periods. The targets are also based on the preconstruction 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 that 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 Leq, 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 Leq, which averages all the noise. This results in the nonsensical situation, where additional noise controls need to be applied to construction activities that are not occurring.

Resonate used the actual background data measured as the Leq 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 Leq 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

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 Areas are shown in Appendix E.

2 - The Normal Working Hours noise trigger has been set at 10 dB(A) above the ambient Leq 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) Leq,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 *Acoustics – Recommended design sound levels and reverberation times for building interiors* 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. One of the weekly reports produced by Resonate is attached in Appendix F.

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 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 was significantly above the trigger levels on the Friday night, Saturday morning period. Night works only occurred during the Thursday night, Friday 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 NAC3 (residential)

Date	Activity	Audible Noise from MCDDJV Activities	LA(eq) 15min*
07/07/2020	Fill import, excavation	Excavator, padfoot, roller	67.2
07/07/2020	Fill import, excavation	Excavator, padfoot, roller	64.3
19/08/2020	NIL. No Works. (rain)	NIL. No Works. (rain)	68.1
19/08/2020	NIL. No Works. (rain)	NIL. No Works. (rain)	72.3
19/08/2020	NIL. No Works. (rain)	NIL. No Works. (rain)	65.3
19/08/2020	NIL. No Works. (rain)	NIL. No Works. (rain)	70.2
19/08/2020	NIL. No Works. (rain)	NIL. No Works. (rain)	66.2
19/08/2020	NIL. No Works. (rain)	NIL. No Works. (rain)	62.3
19/08/2020	NIL. No Works. (rain)	NIL. No Works. (rain)	68.5
26/08/2020	General Works, utilities installation	Excavator, padfoot, roller	60.7
26/08/2020	General Works, utilities installation	Excavator, padfoot, roller	54
02/09/2020	Piling, General works	Pile, excavator, padfoot, roller	65.3
02/09/2020	Piling, General works	Pile, excavator, padfoot, roller	61.7
07/09/2020	Moving dirt, general works, road upgrade, fill tipoff	Excavator, padfoot, roller	64

07/09/2020	General works, road upgrades, moving dirt, rolling pad	Padfoot, roller, bobcat,	71.3

*- Values in red text were above the 15 min Leq Target Level ion the following table

Period	Target dB(A) Leq 15 min
Day	62
Evening/Weekend	46
Night	33

Noise Area NAC3 (residential)

Date	Activity	Audible Noise from MCDDJV Activities	LA(eq) 15min*
28/06/2020	United Energy utility relocation	Cable winch	54.6
28/06/2020	United Energy utility relocation	Excavator	52.1
28/06/2020	United Energy utility relocation	excavator bucket scrapping on bitumen	49.6
30/06/2020	Earthmoving, truck movement, LV movement	Dozers, trucks movement	51.2
30/06/2020	Earthmoving, truck movement, LV movement	Reverse beacon, dozer tracks and boring bucket shaking twice for less than 30 seconds	51.7
05/07/2020	Utility relocation. Rolling works	NIL	63.1
05/07/2020	Utility relocation. Rolling works	NIL	67.6
05/07/2020	Utility relocation. Rolling works	NIL	45.7
07/07/2020	Utility relocation	NIL	39.13
25/07/2020	Utility relocation	Saw cutting, excavator reverse beacon	56.2
26/07/2020	Utility relocation	Excavator reversing	67.7
26/07/2020	Utility relocation	NIL	57.6
11/08/2020	Waterways: bored piling & concrete pour, Waterways track capping, Pipeline: excavator tracking, Z5 North Civil works	Reverse beacon from trucks in zone 5 North civil works, tracks on excavator	54.59
11/08/2020	Waterways: bored piling & concrete pour, Waterways track capping, Pipeline:	Reverse beacon, tracks on excavator	58.05

	excavator tracking, Z5 North Civil works	& dozer, Bored piling bucket shaken	
11/08/2020	Waterways: bored piling & concrete pour, Waterways track capping, Pipeline: excavator tracking, Z5 North Civil works	Reverse beacon from trucks in zone 5 North civil works, tracks on excavator waterways & dozer, Bored piling bucket shaken	52.14
11/08/2020	Waterways: bored piling & concrete pour, Waterways track capping, Pipeline: excavator tracking, Z5 North Civil works	Reverse beacon from trucks in zone 5 North civil works, tracks on zone 5 north dozer, Bored piling bucket shaken	52.23
11/08/2020	Waterways: bored piling & concrete pour, Waterways track capping,Pipeline: excavator tracking, Z5 North Civil works	Reverse beacon from trucks in zone 5 North civil works, tracks on zone 5 north dozer, Bored piling bucket shaken	54.09
12/08/2020	Shifting traffic barriers	Franna passing	65.8
12/08/2020	Street sweeper	Street sweeper	62
13/08/2020	Shifting traffic barriers	Franna passing	66.8
13/08/2020	Asphalting	Asphalting	66.2
13/08/2020	Asphalting, truck running 10m away	NIL	66.4
25/08/2020	Governor Rd: FCA piling , Waterways: bored piling & concrete pour, Waterways track capping,Z5 North Civil works	Moxy, Reverse beacon, excavator loading truck, rollers	58.7
02/09/2020	Waterways Break back & pour, Z5N Civilworks	Reverse beeper & tail gates closing on trucks	56.4
02/09/2020	Gov Rd local Rd's Z5N Civilworks,	Reverse beeper & tail gates closing on trucks	75.3
07/09/2020	Waterways Break back & pour, Z5N Civilworks, Gov Rd Driven piling	Metal tracks, Reverse beeper & tail gates closing on trucks	52.6
07/09/2020	Gov Rd Driven piling, Gov Rd local Rd's Z5N Civilworks,	Metal tracks, Reverse beeper & tail gates closing on trucks	66.6

*- Values in red text were above the 15 min Leq Target Level ion the following table

Period	Target dB(A) Leq 15 min
Day	62
Evening/Weekend	50
Night	36

Noise Area NAC6 (residential)

Date	Activity	Audible Noise from MCDDJV Activities	LA(eq) 15min*
18/08/2020	Civil works 5 North & south & bored piling	Dozer in zone 5 north and dozer in zone 5 south	52.5
19/08/2020	No works- rained off	NIL	50.2
19/08/2020	No works- rained off	NIL	44.8
19/08/2020	No works- rained off	NIL	46.2
25/08/2020	Waterways: bored piling & concrete pour, Waterways track capping,Z5 North Civil works	Bored piling & reverse beacon	46.8

*- Values in red text were above the 15 min Leq Target Level ion the following table

Period	Target dB(A) Leq 15 min
Day	62
Evening/Weekend	48
Night	36

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[1] (mm/s)
Area 1				
8/7/2020 – 18/82020 (daytime)	Location: Centre Dandenong Rd ROW East 201 measurements Human Comfort residential daytime target = 0.56 mm/s	Piling Utilities Construction	Max 4.86 Min 0.1 Aver 0.95	Max 4.54 Min 0.1 Aver 0.89 48% >target
Area 2				
25/8/2020 to 17/9/2020 (daytime)	Location: Governor Rd 24 measurements Human Comfort residential daytime target = 0.56 mm/s	Piling	Max 23.5 Min 0.38 Aver 7.86	Max 0.26 Min 0.00 Aver 0.09 0% > target

1- Estimated Vibration is adapted from the method described in U.S. Federal Transit Administration's Noise and Vibration Manual.
$V_{estimated} = V_{measured}$ x (Measurement Distance/Receptor Distance)$^{1.5}$

4.3.5 Discussions and Conclusions

Noise Monitoring:

It should be noted that spot measurements were undertaken on the project site within proximity to noise sources. The noise trigger and annoyance limit apply at the nearest sensitive resident. On this basis spot measurements are likely to be louder than if they had been taken at the nearest sensitive resident where the noise limits apply. While this might not be ideal it is practically difficult to obtain access to residential properties on an as needs basis particular during COVID restrictions.

The majority of the day time noise results (both continuous and spot monitoring) were below, at or slightly above the new daytime noise trigger level, or similar to the background levels in the area. There was one spot reading on the 2nd September that slightly exceeded the annoyance limit, though as stated above, this was measured at the boundary of the works and not at the resident. Interestingly, the continuous noise monitoring found the 75dB(A) annoyance target was also exceeded by broad spikes on Saturdays and Sundays when no construction works were occurring, presumably due to activities such as grass mowing. Even though exceedances of the 75 dB(A) target should be avoided if possible, short term spikes during day time periods should be less of an issue than continuous high-level noise. It is also difficult at times to identify the causes of very short term events that cause spikes. Additionally, some short term noise sources, such as truck tailgates slamming shut after tipping soil, are unavoidable.

The evening trigger levels were exceeded approximately 50% of the time, even though no construction works were occurring. The night time trigger levels were exceeded over 90% of the time, even though night works only occurred 1 night out of the 7 being reviewed. A comparison was made of the noise level during night works and the background noise levels during the other 6 night time periods. It was found the noise during night time construction was similar to most other nights. However, it was similar or lower than the noise level during Friday night, when there was no construction noise. It can only be concluded that noise during night works is similar to and sometimes less than existing background noise levels.

The new daytime noise trigger levels are far better at reflecting the existing background noise levels and provide a good indication of the construction impacts. However, the evening and night levels are consistently being exceeded when no construction noise is occurring. At some locations, the background level with no construction occurring is at times 20dB(A) higher than the night time trigger level, which is a significant amount. Therefore, the evening and night time trigger levels are of no use what-so-ever in assessing or controlling construction noise during evening and night time periods.

Continuous noise monitoring 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.*"

Vibration Monitoring:

Vibration monitoring in Area 2 (southern section of the site) did not identify an exceedance of target vibration levels. However, vibration monitoring in Area 1 identified a number of

vibration readings that appear to have exceeded the human comfort target for residential day time periods (0.56mm/s). No readings exceeded the residential structural damage target of 5mm/s. Again of note is the fact that the high vibration levels were not identified as potential issues.

A number of issues were identified with the vibration monitoring, as detailed below:

- It is often not possible to place the vibration monitoring probe next to the closest house due to access to private property. In this case, the probe has been placed at the property boundary. MCDDJV however has not determined the expected vibration at the actual house. In Section 4.3.4 above, an estimate of the vibration has been made based on a U.S. methodology. MCDDJV should adopt this or a similar method to determine the vibration at the actual residence when access to the property is not readily available.
- The Area 2 vibration monitoring occurred very near to the works and a significant distance from the closest residence. Again, section 4.3.4 has used the U.S method to determine the vibration at the residence. However, the greater the distance between the residence and the monitoring location, the less accurate the method is likely to be in estimating the vibration at the house. Therefore, monitoring should occur as close as possible to the closest house to the works.
- The distances between the works, the monitoring location and the closest house were not accurately recorded at the time of monitoring. This required the distances to be estimated after monitoring occurred. All data fields in the monitoring records should be accurately recorded at the time of monitoring.
- Multiple measurements were taken on the same day during works. A close review of individual vibration results taken on the same day showed very large variations for the same works. For example, on the 14th August 2020, there were occasional readings above the 0.56mm/s target value interspersed with the majority of readings, which were 0.1-0.3mm/s. There were also two readings of 78.9mm/s and 100mm/s. The final 2 readings are not realistic given the works and the distance to the works (112m), 100 to 1000 times higher than all other readings for the day and normally are only seen during blasting in mines and quarries. These readings were not used in the audit data review, as it appears that personnel walking near the vibration probe are influencing some results and likely disturbed the probe or probe cable (brushed against it or hit it) for the two very high readings.

Opportunities for Improvement

The review of noise and vibration data needs to be improved to identify potential issues. Recording of data in the field also needs improving, along with the locations where vibration monitoring occurs.

Recommendations:

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.**

11. **All the information in the noise and vibration field record sheets should be fully completed at the time spot noise measurements are taken.**

12. **Vibration monitoring should occur as close as possible to the closest residence to the works.**

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.**

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.**

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.**

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 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.**

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, but should not be discharged off-site.

The issue of soil contamination is discussed in the following section which reviews the implementation of the Soil Management Sub-plan.

Opportunity for Improvement

NIL

5 Environmental Plans

5.1 Soil Management Sub-plan

The only soil contamination identified on the project has been:

- Potential Acid Sulphate Soil (PASS) in the Waterways area;
- Asbestos containing material (ACM) pre-construction on the northern section of the site;
- Asbestos containing cladding around the oil pipeline north of Lower Dandenong Road (abated – picked, cleaned soil reused on-site);
- Stockpiles of asbestos, building rubble and other waste illegally dumped along the construction corridor prior to construction commencing;
- Contaminated material (hydrocarbon and heavy metal) from the former landfill located on the northern section of the site; and
- Contaminated soil following oil and fuel spills and leaks.

Potential Acid Sulphate Soil

PASS was encountered in the waterways area from piling operations. After discussions with EPA, this material has been treated on-site with lime and has been stockpiled for reuse in the project. Any excess material will be disposed off-site at an EPA licensed waste facility. PASS was also suspected at Governor Road, but upon investigation this proved to not be the case. PASS is managed in accordance with the approved PASS/ASS Management Plan.

Asbestos Containing Material (ACM)

ACM was found when MCDDJV took possession of the site. Detailed investigations were undertaken to assess the nature and extent of contamination. The majority of contamination was found to be in the northern half of the project and generally comprised small non-friable ACM fragments in soil, in piles of compost or areas where construction and demolition has been illegally dumped over the years. Where the project activities intersected with potential contamination or there was a significant risk to human health or the environment, this soil was abated (manual removal of ACM by picking or screening) in accordance with WorkSafe requirements using specialist contractors and qualified occupational hygienists. Where it was not cost effective or appropriate to abate and reuse material on-site it was transported and disposed of in accordance with WorkSafe and EPA requirements to a licensed landfill facility. Once abated and tested, clearance certificates were issued by an independent occupational hygienist and this clean material was stockpiled for reuse.

The project traverses over a major high pressure oil pipeline in several places. This pipeline is wrapped in protective enamel bitumen coating to prevent corrosion and contains a small amount of ACM. The project includes the removal and replacement of this protective

coating using specialist contractors, working under asbestos conditions and procedures. Once removed, the old coating was disposed of to an EPA licensed waste disposal facility.

Oil and Fuel Spills

There have been a number of hydraulic hoses on equipment and plant which have burst over the period of construction. As detailed in previous reports, a number of truck fuel tanks were also punctured early in the life of the project, when drivers took "short-cuts" off the designated roads (this issue has been resolved). In each instance, an incident report was completed and the contaminated soil removed and disposed of by EPA licensed waste contractors. The volumes of contaminated soil have been relatively small and have had no immediate or ongoing environmental measurable consequences.

Conclusions

The vast majority of the soil contamination MCDDJV are managing was due to contamination present on the site before construction began. The actions taken by the project are consistent with the requirements of the Soil Management Sub-Plan and MCDDJV's legal responsibilities. Once the project is completed, the potential public exposure to contamination on the site will be far lower than what existed before the project commenced.

5.2 Landfill Gas EMP

Gas vents are being installed, which collect and vent gas generated by the old landfill located immediately south of the Dingley Bypass. Ten gas monitoring bores have also been installed and weekly gas monitoring is carried out on the bores. Continuous gas monitors have also been installed on one bore placed within the waste mass and two perimeter bores approximately 10m from the edge of the waste mass.

Surface methane monitoring is also carried out for health and safety reasons. Two personal monitors are worn by site personnel working in the area. The monitors measure the Lower Explosive Limit (LEL). A portable monitor that measures very low levels of methane was also used to measure methane levels in a 25m x 25m grid. Monitoring occurred during a period of falling barometric pressure, which would encourage the escape of any landfill gas.

The EPA's Landfill Best Practice Environmental Management (BPEM) guideline sets out action levels for methane and carbon dioxide measured in subsurface geology at the landfill boundary as follows:

- 1 % v/v methane above background; and
- 1.5 % v/v carbon dioxide above background.

Results that are above the Landfill BPEM are shown in red in following table, which has been extracted from the Tonkin and Taylor report, Mordialloc Bypass Project - Quarterly Monitoring Report - Landfill Gas, August 2020.

As can be seen from the table, there are a number of high methane and carbon dioxide concentrations measured in the bores. The EPA criteria are based on gas concentration measured at the landfill boundary. Therefore the results from bore GB07, which is located 20m from the waste material, will provide the best indication of conditions at the boundary.

The EPA's Landfill BEPM requirements were developed following issues with methane seeping into houses located close to landfills. In comparison, the former landfill located on the construction is producing very little landfill gas and the pressures in the monitoring bores are very low. The maximum gas pressure measured was 3.83 mbar (atmospheric pressure is typically 1013 mbar). This is to be expected, firstly due to the presence of the gas vents and bores and secondly, given the age of the landfill. Any gas produced can vent through the gas vents and bore holes, reducing the gas pressure. Additionally, landfill gas production peaks from 5 to 10 years after material is buried in a landfill and then decreases. A review of the site found the landfill operated from the early 1960s to 1968 although some landfilling or quarrying may have continued until 2005, based on a review of historical aerial photographs[1]. The very low pressure and the preference for gas to vent via the new gas vents reduces the risk of landfill gas migrating off-site through the soil. Any issues would have manifested themselves when the buried material was younger and producing more landfill gas and before the gas vents were installed.

EPA has been provided with fortnightly landfill gas monitoring reports produced by the project to date and have not expressed any have no concerns. They have further stated that MCDDJV need not submit any further monitoring reports for review. A sample of correspondences between the project environmental personnel and EPA were reviewed.

Summary of landfill gas bore monitoring results from 24 April 2020 – 9 July 2020

Bore ID	Max. Flow (L/hr)	Max. Borehole Pressure (mb)	Methane (% v/v)				Carbon Dioxide (% v/v)				Other gases (ppm)	
			Peak		Stable		Peak		Stable		CO	H_2S
			Min	Max	Min	Max	Min	Max	Min	Max	Range	Range
Perimeter landfill gas monitoring bores												
GB01	0.1	0.17	0.0	2.0	0.0	2.0	14.0	22.5	13.9	22.5	1 - 1	0 - 1
GB03	0.1	0.03	0.0	0.3	0.0	0.0	9.1	11.5	9.1	11.5	0 - 1	0 - 0
GB04	15.7	3.32	0.0	0.6	0.0	0.0	12.3	20.7	11.2	19.9	0 - 1	0 - 1
GB05	0.1	0.36	0.0	0.4	0.0	0.0	5.6	9.6	5.6	9.6	0 - 1	0 - 2
GB06	23.9	3.83	0.0	15.3	0.0	7.5	8.2	13.2	1.4	9.5	0 - 1	0 - 1
GB07	7.8	0.17	0.0	17.7	0.0	14.9	2.2	13.5	1.8	13.5	0 - 2	0 - 0
GB08	18.1	3.74	0.0	0.7	0.0	0.1	1.7	4.0	1.5	3.7	1 - 7	0 - 0
Bores monitoring landfill gas within waste[2/4]												
GB02	0.4	0.96	25.3	82.1	24.4	79.5	4.4	23.4	4.4	23.4	0 - 3	0 - 2
LB01	Bore is buried, so has not been monitored											
LB02	0.1	0.09	36.9	79.5	34.8	75.3	17.7	24.0	17.7	23.9	2 - 6	0 - 2

[1] WSP (2018), Mordialloc Bypass, Environmental Site Assessment Report, report no 2135645A-SE-26-ENV-REP-0010 Rev01, dated September 2018.

The ambient methane monitoring at the surface using the personal monitors did not detect any methane present at the surface. Therefore, there are no health and safety concerns due to landfill gas. The surface monitoring using the low-level methane detector found all readings were below the 100ppm methane action level set in the EPA's Landfill BEPM guideline. A review of the raw data found that all readings were less than 4ppm.

Conclusions

The monitoring found that methane concentrations within the landfill are high, however, the very low production of landfill gas, the presence of the gas vents and the age of the landfill, results in a very low risk to the surrounding community. The installation of vents by MCDDJV as part of the construction program has further reduced the risk of methane moving through the soil and migrating off-site. Surface monitoring has found the health and safety risk is extremely low and no methane was detected by the personal exposure devices worn by personnel working on the site. The low-level methane detector also found the surface methane concentration was less than 4% of the EPA's action trigger level, which is a very low value.

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 recently 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 projects 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:

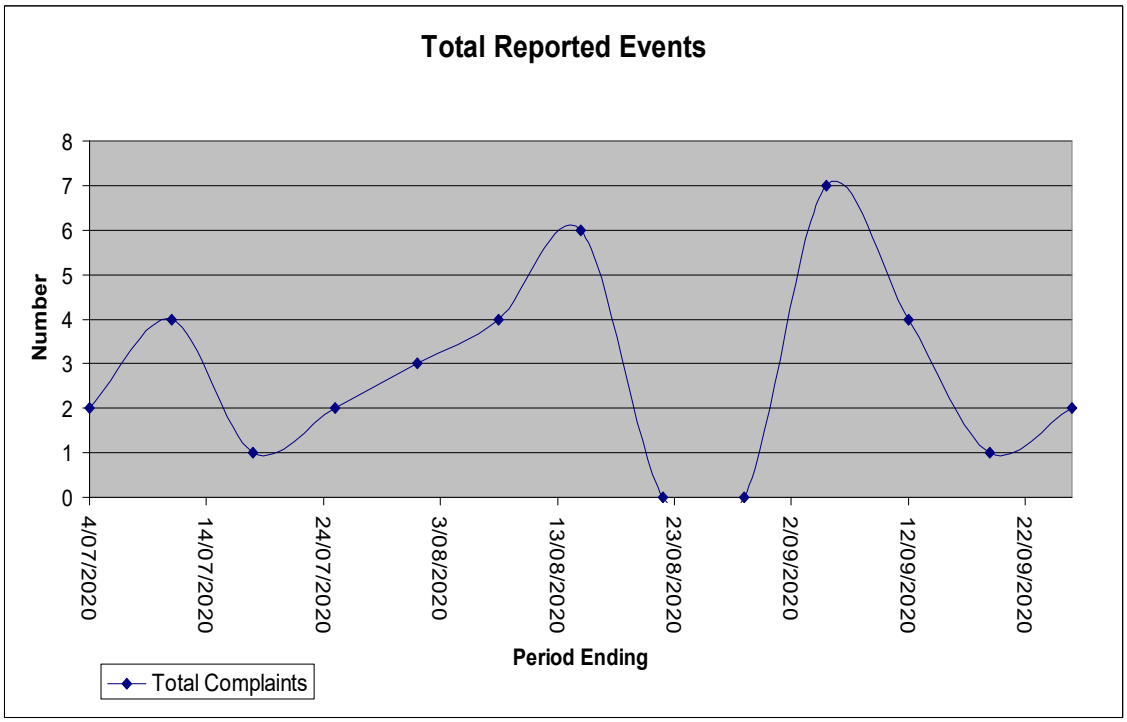
- Dust/Air
- Noise
- Vibration
- Water
- Fauna/Flora
- Night Works Light Pollution

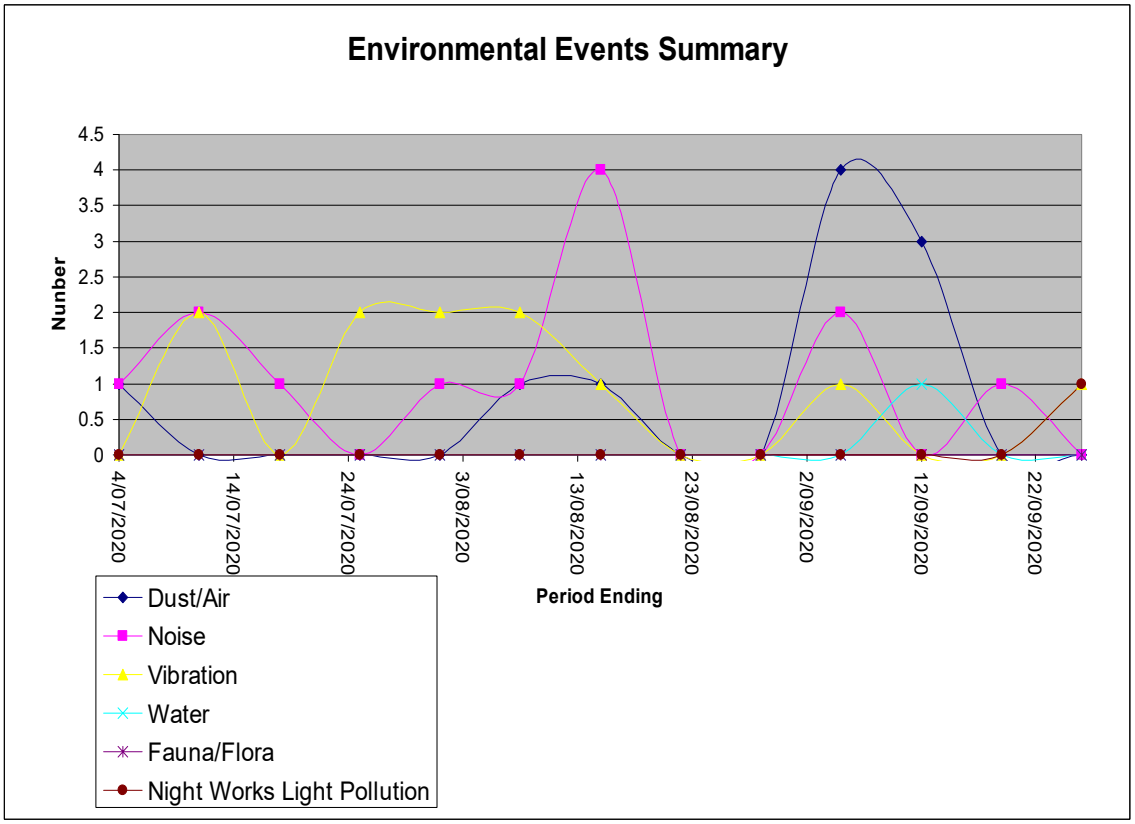
Summary of Raw Events

Period Ending	Total Events[1]	Dust/ Air	Noise	Vibration	Water	Fauna/ Flora	Night Works Light Pollution
4/07/2020	2	1	1	0	0	0	0
11/07/2020	4	0	2	2	0	0	0
18/07/2020	1	0	1	0	0	0	0
25/07/2020	2	0	0	2	0	0	0
1/08/2020	3	0	1	2	0	0	0
8/08/2020	4	1	1	2	0	0	0
15/08/2020	6	1	4	1	0	0	0
22/08/2020	0	0	0	0	0	0	0
29/08/2020	0	0	0	0	0	0	0
5/09/2020	7	4	2	1	0	0	0
12/09/2020	4	3	0	0	1	0	0
19/09/2020	1	0	1	0	0	0	0
26/09/2020	2	0	0	1	0	0	1
TOTALS	36	10	13	11	1	0	1

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.

The data in the above table is presented graphically below.





As can be seen in the above table, noise and dust complaints are the most frequent events. There was a maximum of four noise complaints over a week. However, each complaint was related to a different noise sources, specifically, noise during the Stage 4 Covid lockdown, truck reversing beepers, general noise south of the waterways bridge and night works. The four dust complaints occurred during a particularly windy period and included dust from trucks and dust from the worksite.

The Project's responses have been documented in the weekly complaint spreadsheet. 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

Opportunity for Improvement

NIL

7 Incidents and Non-Conformances

7.1 Reported Incidents

There was one reported incident on the 17/7/2020 due to a burst hydraulic hose. Approximately 20L of oil was lost onto bare soil. The soil was removed and disposed of at a licensed EPA waste disposal facility.

The incident was minor and there were no issues identified with the reporting and recording of the incident or with the incident response process. However, it appears the incident had not been reported to MRPV as required under contract requirements.

7.2 Reported Non-conformances

There were no recorded non-conformances since the previous audit.

7.3 Observation Reports

MCDDJV has encouraged all employees and contractors to report actual and potential hazards so they can be investigated, along with reporting workplace observations which are either positive or negative in nature. Since the last audit, there have been 79 Observation Reports logged for investigation or management's attention.

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.

Non-Conformance

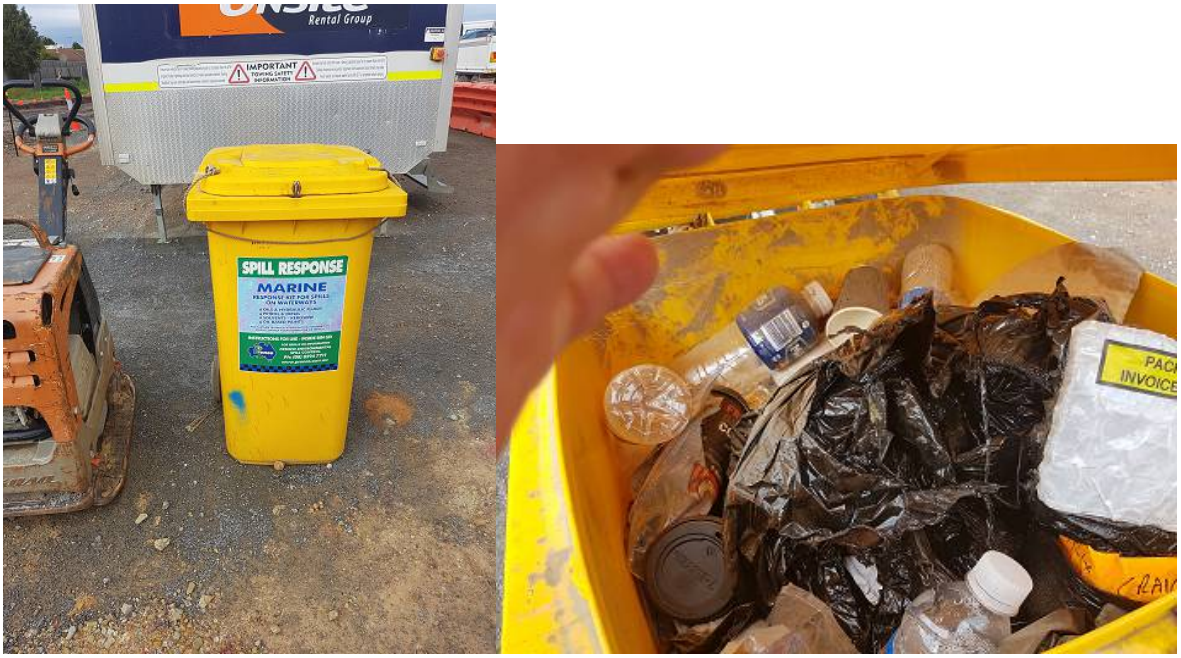
All incidents need to be reported to MRPV.

Recommendation:

18. **A non-conformance should be generated within CMO due to the incident on the 17/7/2020 which was not reported to MRPV.**

8 Site Inspection

Above: 20L containers of fluids stored on bare soil at the landfill bridging structure works area. A contractor was asked to place these materials in the storage container. This occurred before the inspection of he area was completed.



Above: The spill kit located at the Centre Dandenong Road compound was being used as a rubbish bin.

Left: The rumble grid located at the Centre Dandenong Road works exit required cleaning.

Above: The spill kit and waste bins at the contractor's storage area south of the Waterways piling area were inaccessible due to storage of material against the bins.

Above: Drum of bitumen solvent primer stored on bare soil at the contractor's storage area south of the Waterways piling area

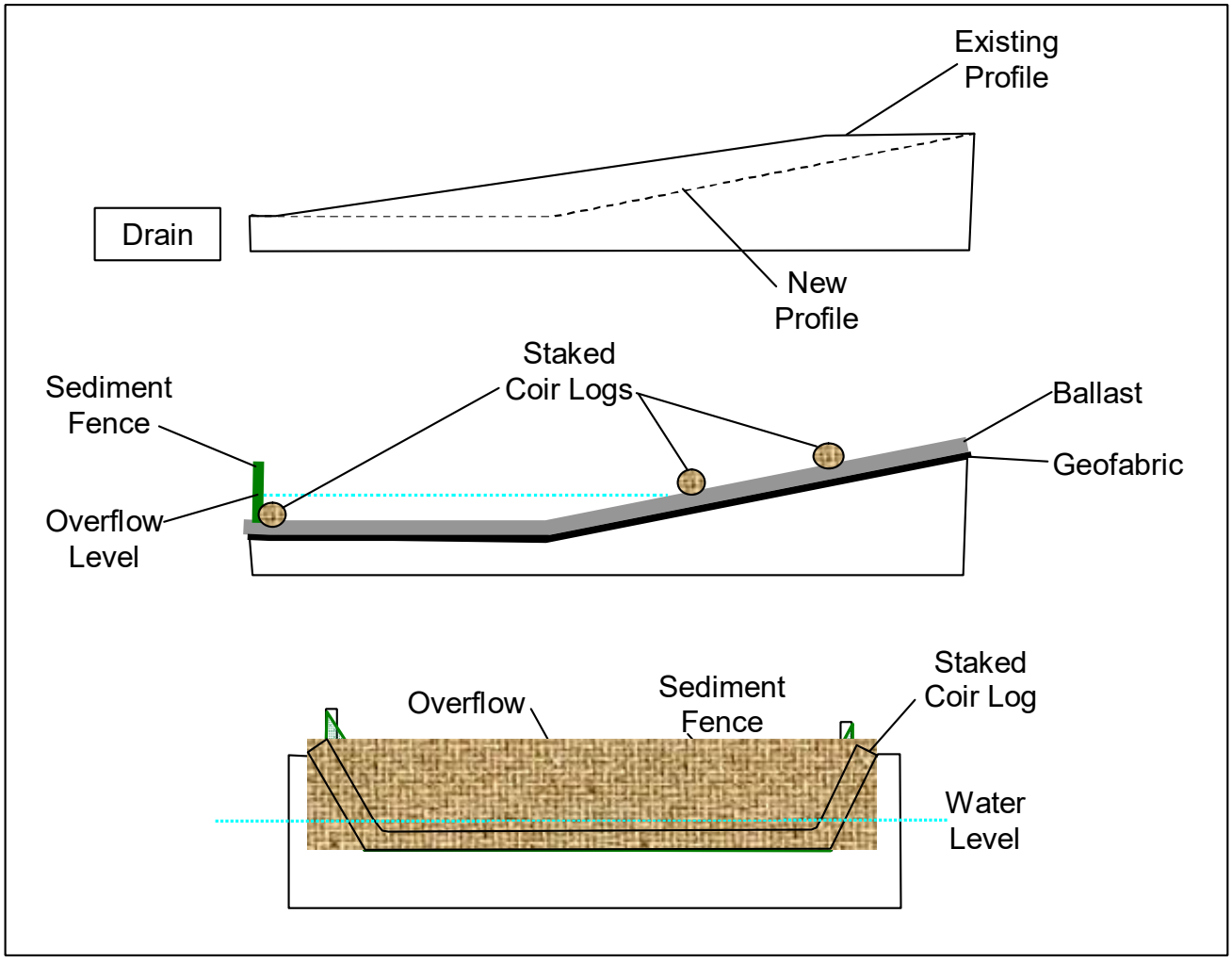

Above: Discharge point into drain approximately 20m south of Centre Dandenong Road.

The area pictured above is receiving run-off from the portion of the constructions site close to Centre Dandenong Road. The coir logs and sediment fence have retained sediment,

however, the treatment area is sloped, therefore the majority of the sediment is collecting on the left side, as evident by the left end of the coir logs being buried in sediment. Also, the sediment fence at the end of the treatment area is acting as a dam, as the sediment fences are not permeable. Water is therefore finding its way around the sides of the sediment fence. It would also be useful to increase the holding capacity of this area to improve treatment.

The contract specification requires any sedimentation ponds or basins to be designed to adequately treat the volume of water that could be collected. However, due to the lack of room, it is not possible to install a suitably large settling pond. Therefore, alternate treatment methods to remove any suspended sediment are required. The following methods should be considered.

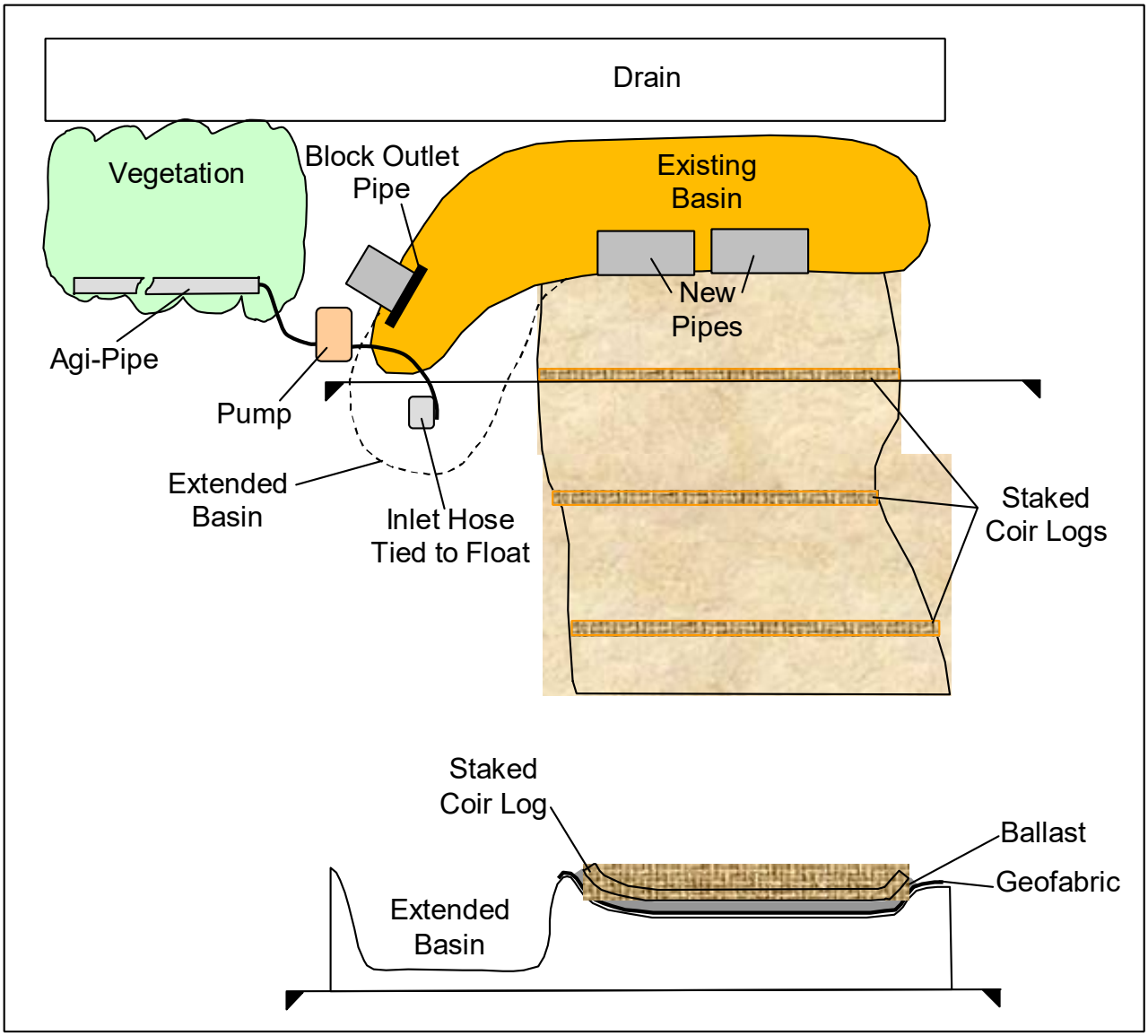
The treatment area could be scraped out to increase the depth slightly and re-establish the surface with geofabric coved with a layer of ballast. This will slow the flow of water down and prevent erosion of the surface. Two sets of coir logs should be installed across the treatment area. The sediment fence should be re-established, however, it should extend partially up the side of the bank to prevent water running around the fence. A coir log can be placed along the base of the fence to help prevent water scoring out the base of the fence. An overflow should be installed at the mid point of the sediment fence (refer to diagrams below). Alternatives that achieve the water quality objectives can also be implemented.



Above: Discharge point into drain approximately 100m south of Centre Dandenong Road.

The sediment fence at the top of the treatment area has been partially buried by soil. As stated for the previous treatment area, the sediment fence acts as a dam and water builds up and flows around the fence causing scouring of the underlying soil. Again, it is not possible to install a large settling pond and alternate treatment methods should be installed and the following should be considered.

The catchment for this area is larger than the area discussed above, therefore the holding capacity should be increased. The surface should again be stabilised with geofabric and ballast. The water currently discharges via a 500mm pipe that appears to have existed before construction commenced. The larger catchment for this location will produce a larger volume of water during rain events compared to the treatment area discussed above. Therefore, it would be preferable to treat this water further before it is discharged. The 500mm pipe inlet should therefore be blocked and a suitably sized pump installed to discharge the water through a length of slotted “agi-pipe” placed along the vegetated boundary of the site. This will allow water to trickle through the dense grass and undergrowth. The majority of the water will likely soak into the soil and the remainder will be filtered through the vegetation before it enters the drain (refer to diagrams below). Again, alternatives that achieve the water quality objectives can also be implemented.



Opportunity for Improvement

Storage of fluids and sediment controls south of Centre Dandenong Road could be improved.

Recommendations:

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.**

20. **MCDDJV should investigate the availability of breakable nylon ties to secure the spill kit lids.**

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.**

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.**

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.**

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 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.	A
2.	OI	MCDDJV personnel carrying out water monitoring should ensure all comment fields are completed with the necessary information, such as whether the water course if flowing and whether there has been recent rain events.	B
3.	OI	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 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.	A
4.	OI	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.	A
5.	OI	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.	B
6.	OI	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.	B

Recomm. No.	Type	Recommendation	Priority
7.	OI	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.	B
8.	NC	MCDDJV should formally request that the water quality acceptance criteria between upstream and downstream water quality readings be agreed to.	A
9.	NC	The lack of investigations when turbidity and pH exceedances were recorded should be recorded as a non-conformance in CMO.	B
10.	OI	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
11.	OI	All the information in the noise and vibration field record sheets should be fully completed at the time spot noise measurements are taken.	B
12.	OI	Vibration monitoring should occur as close as possible to the closest residence to the works.	A
13.	OI	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.	B
14.	OI	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.	A
15.	OI	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.	A

Recomm. No.	Type	Recommendation	Priority
16.	OI	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 frequency of such occurrences.	B
17.	OI	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.	B
18.	NC	A non-conformance should be generated within CMO due to the incident on the 17/7/2020 which was not reported to MRPV.	B
19.	OI	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.	B
20.	OI	MCDDJV should investigate the availability of breakable nylon ties to secure the spill kit lids.	B
21.	OI	The rumble grid inspection and cleaning frequency should be reviewed to ensure it is frequent enough and that they are actually occurring as planned.	A
22.	OI	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.	B
23.	OI	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.	A

10 Audit Conclusions

10.1 Environment Management Plans

The audit reviewed two plans, namely the Soil Management Sub-plan and the Landfill Gas EMP. No substantive issues were identified and the requirements set out in the plans are being implemented. The risk to the community and the environment due to contaminated soil and landfill gas will be substantially lower once construction is completed compared to the site pre-construction.

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. 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 substantially. However, several additional issues need to be addressed to ensure monitoring and trigger values provide an accurate assessment of any off-site impacts due to site activities. Two locations south of Centre Dandenong Road used to treat stormwater runoff before it exits the construction site need to be upgraded to prevent sediment run-off.

10.4 Overall Conclusion

The implementation of plans and controls appear appropriate and effective. Some issues still exist with noise, dust and water monitoring that need to be addressed to adequately assess the impact of works on neighbouring residents and the aquatic environment. However, the overall risk to the surrounding community and the environment due to issues such as soil contamination and the former landfill site will be substantially lower post-construction compared to the risk before construction commenced.

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:	29th – 30th September 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)

Soil Management Sub-plan (CL1, CL2, CL6)

Landfill Gas EMP (CL4)

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 Pans 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.

12:00 Day 2 Wrap up meeting

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

12:30 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

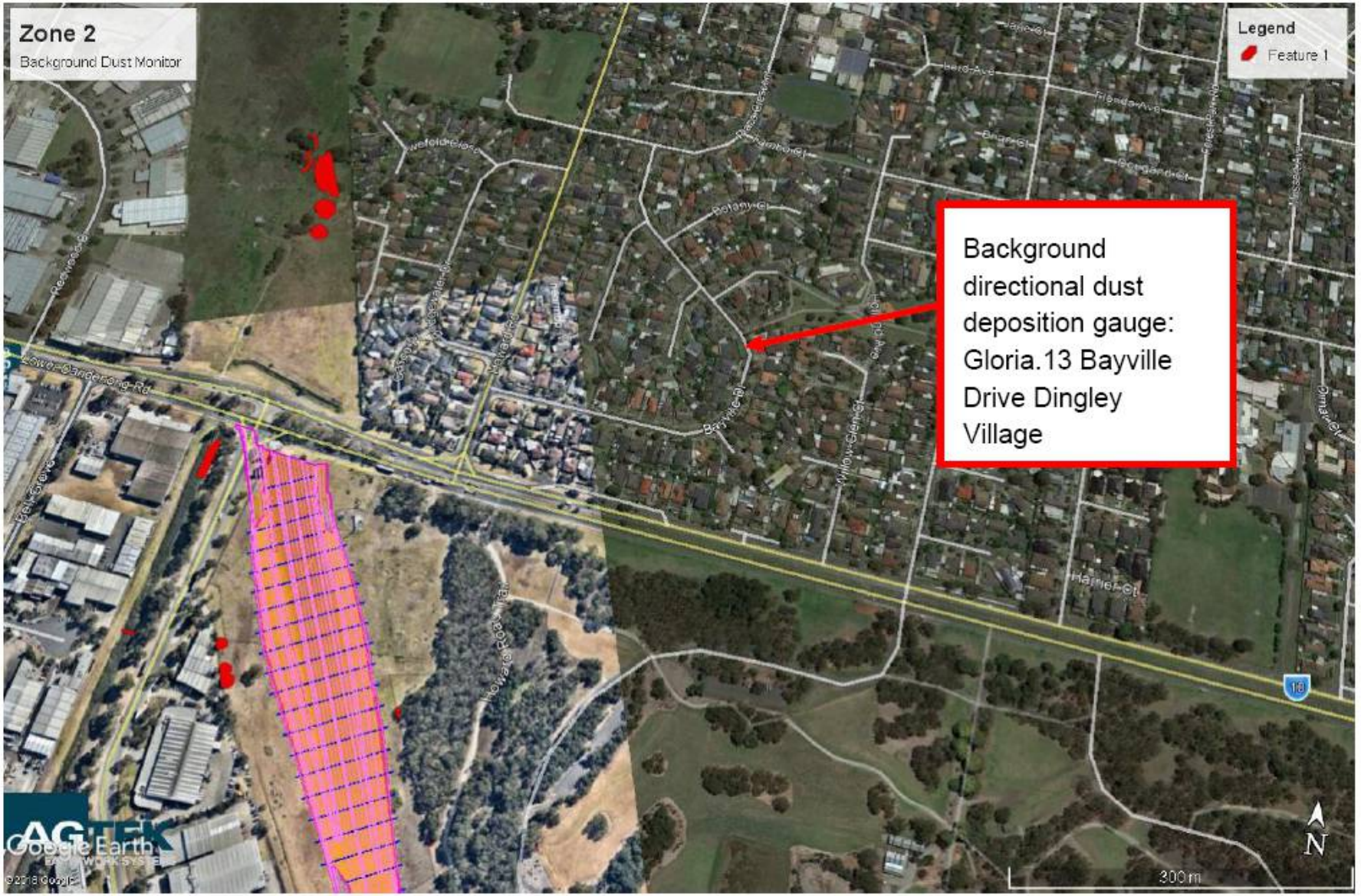
	• Community complaints and response since previous audit (EM2, LV5, S1) • Noise EMP (NV2) • Site Inspection (AQ2, B3, B4, B5, H1, H2, H3, LV6, W3)
March 2021	• Review actions taken to close previous audit findings. • Water monitoring results and compliance. (W3, W5) • Air Monitoring results and compliance (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

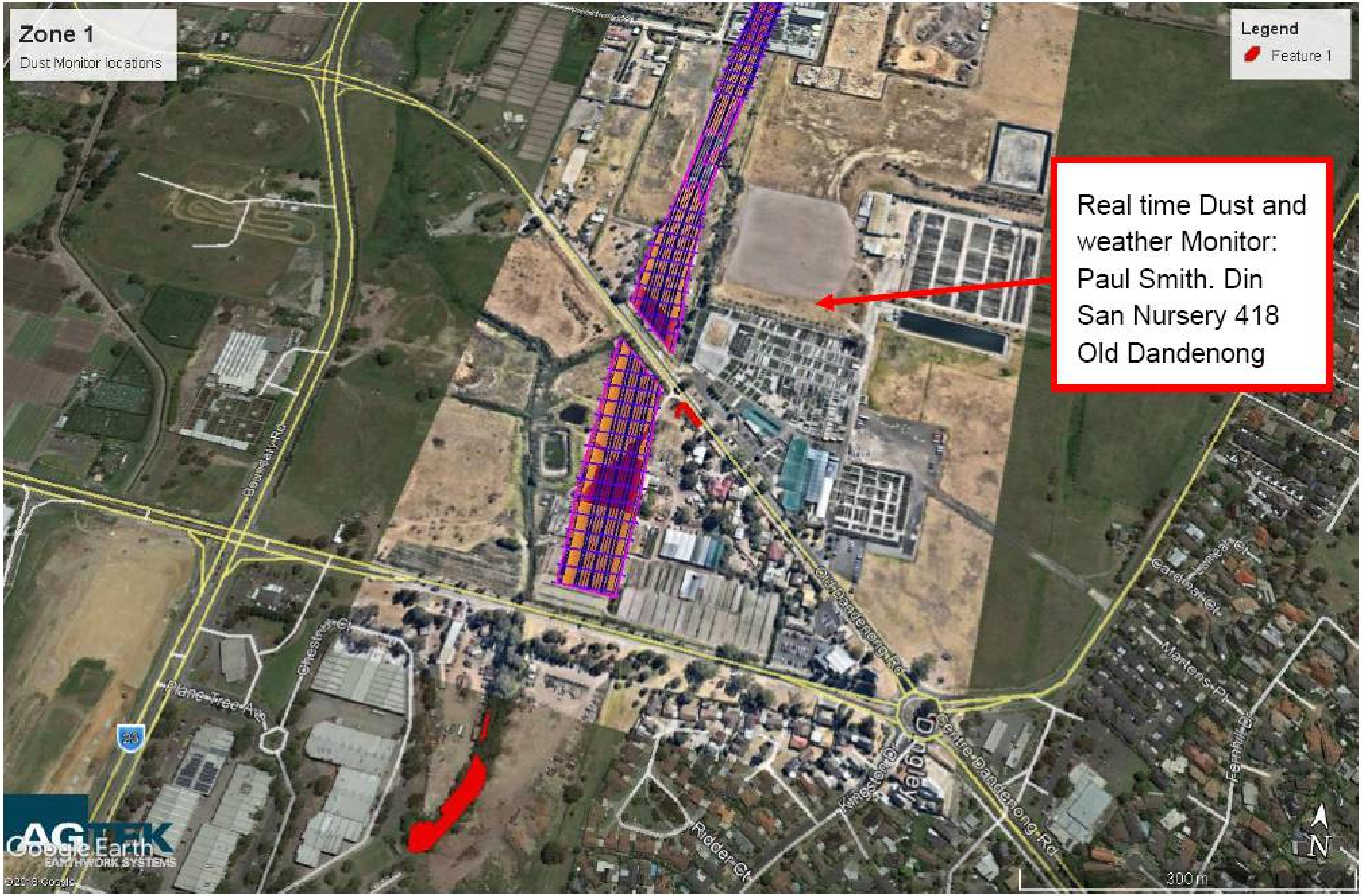
	• Community complaints and response since previous audit (EM2, LV5, S1) • Landfill Gas EMP (CL4) • Site Inspection (AQ2, B3, B4, B5, H1, H2, H3, LV6, W3)
December 2021	• Review actions taken to close previous audit findings. • Water monitoring results and compliance. (W3, W5) • Air Monitoring results 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:

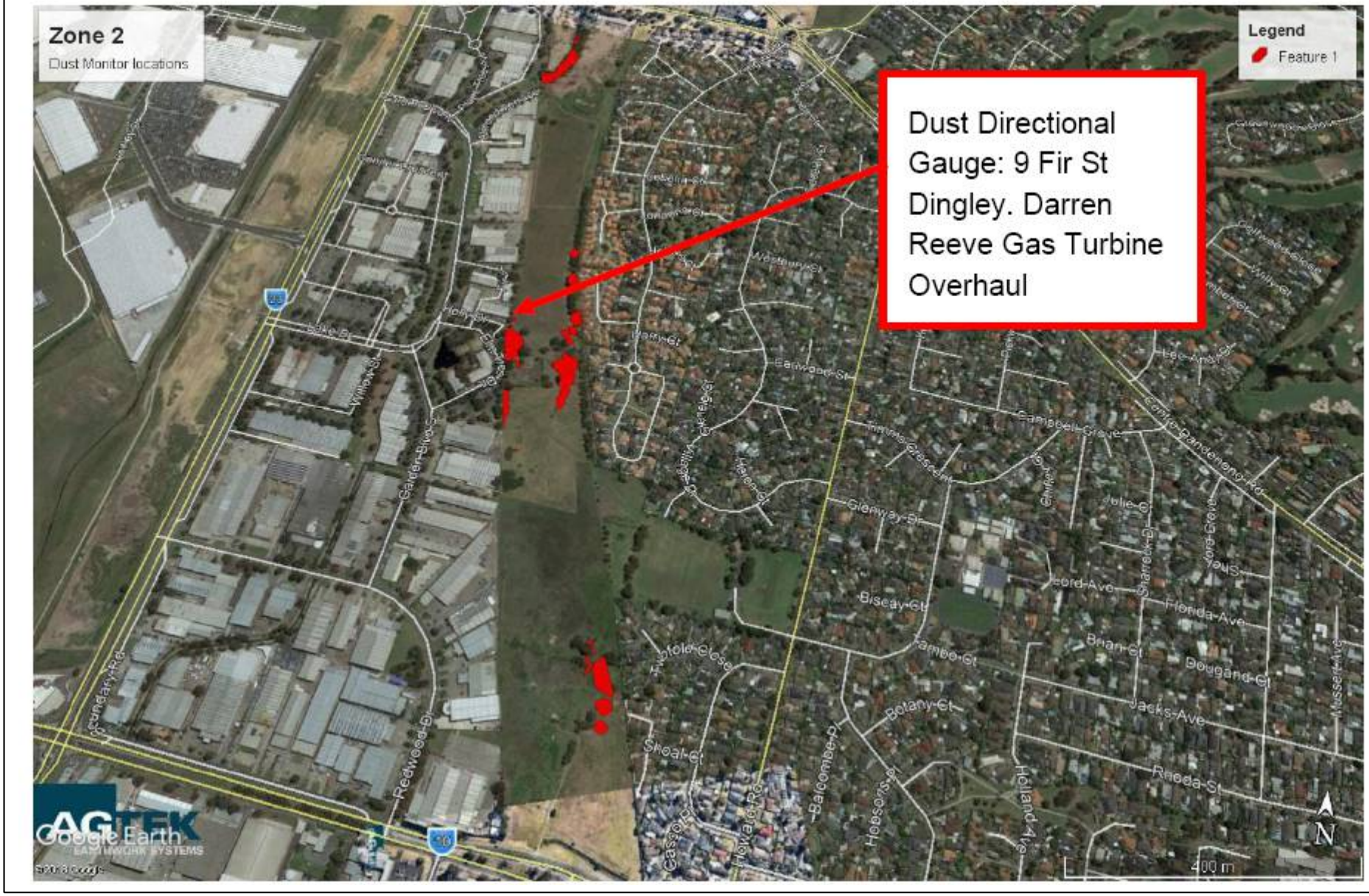
- References in brackets are the respective EPR numbers.

Appendix C – Dust Monitoring Locations

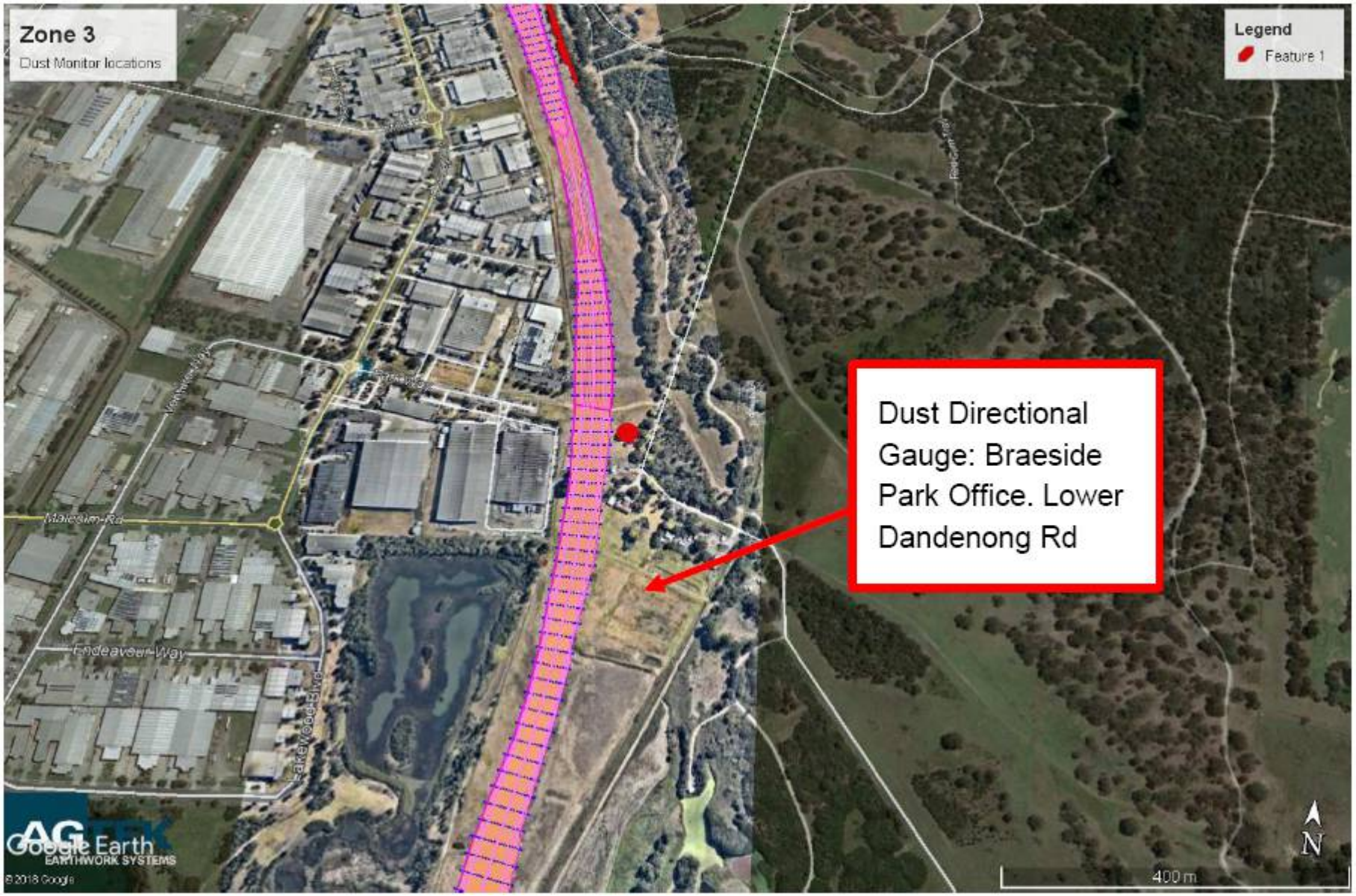




Zone 1
Dust Monitor locations
Legend
Feature 1
Real time Dust and weather Monitor: Paul Smith. Din San Nursery 418 Old Dandenong
Old Dandenong Rd
Centre Dandenong Rd
Plane Tree Ave
Boundary Rd
Kingston Dr
Ridder Ct
Martens Pl
Cardinal Ct
Fernhill Dr
23
AGTEK
EARTHWORK SYSTEMS
Google Earth
300 m
N

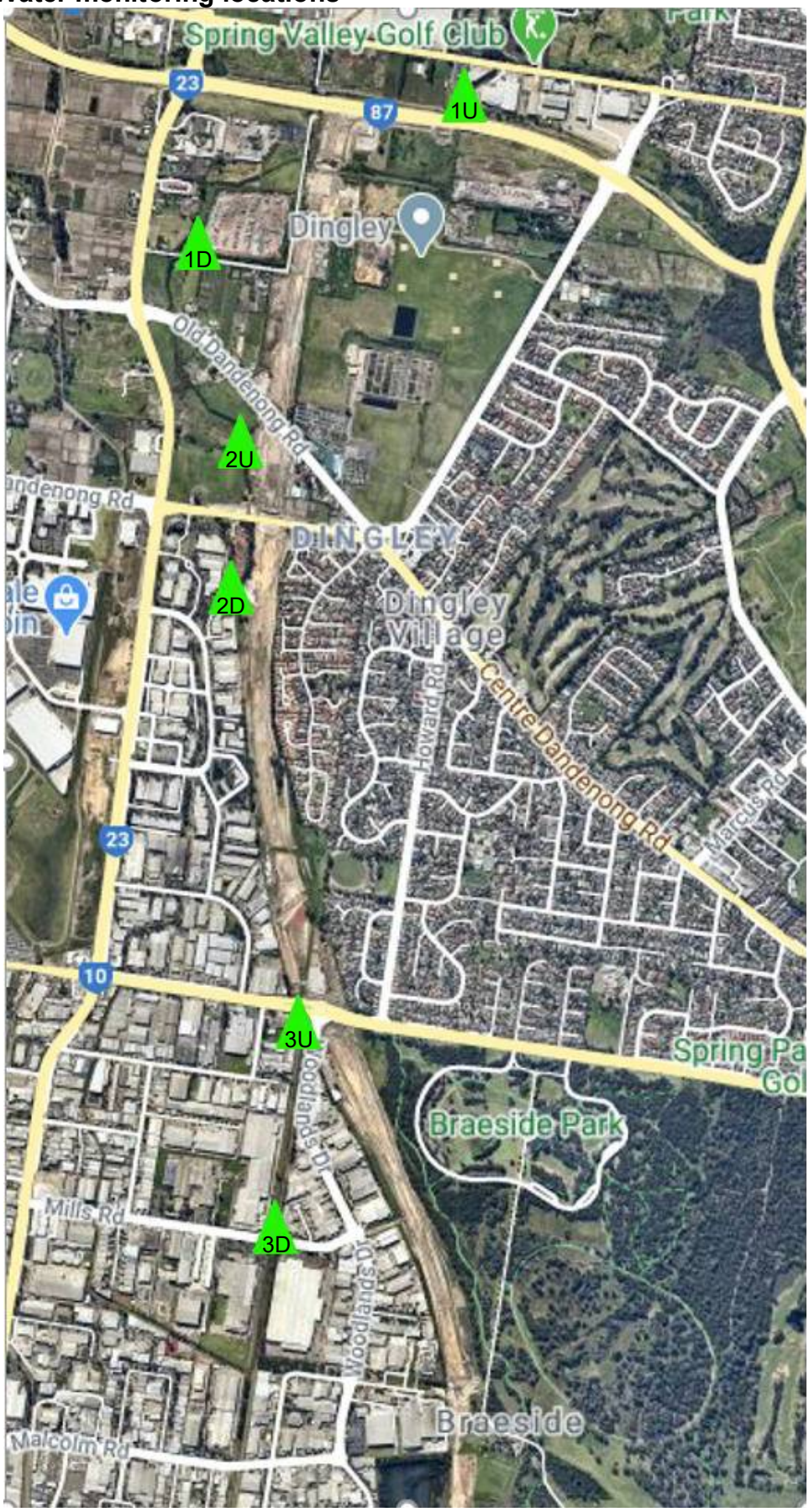

Zone 2
Dust Monitor locations
Legend
Feature 1
Dust Directional Gauge: 9 Fir St Dingley. Darren Reeve Gas Turbine Overhaul
Google Earth
400 m
N


Zone 5
Dust Monitor locations
Legend
Feature 1
Real time Dust Monitor: MCDDJV Compound
Directional Dust Deposition Gauge behind 17 Westbridge Ct
Google Earth
300 m
N

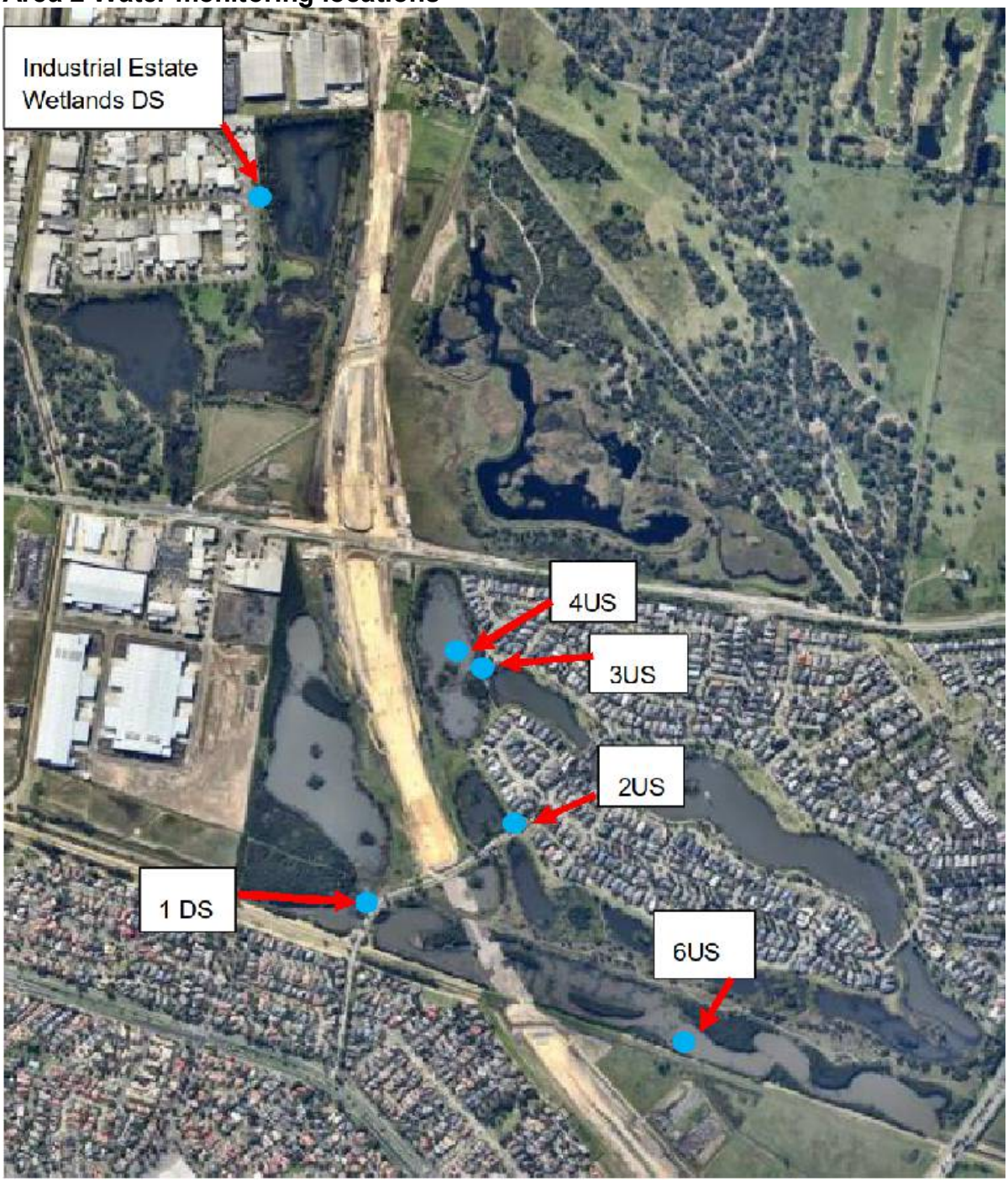

Zone 3
Dust Monitor locations
Legend
Feature 1
Dust Directional Gauge: Braeside Park Office. Lower Dandenong Rd
Malcolm Rd
Endeavour Way
Lakewood Blvd
Google Earth
© 2018 Google
400 m
N

Appendix D – Water Monitoring Locations

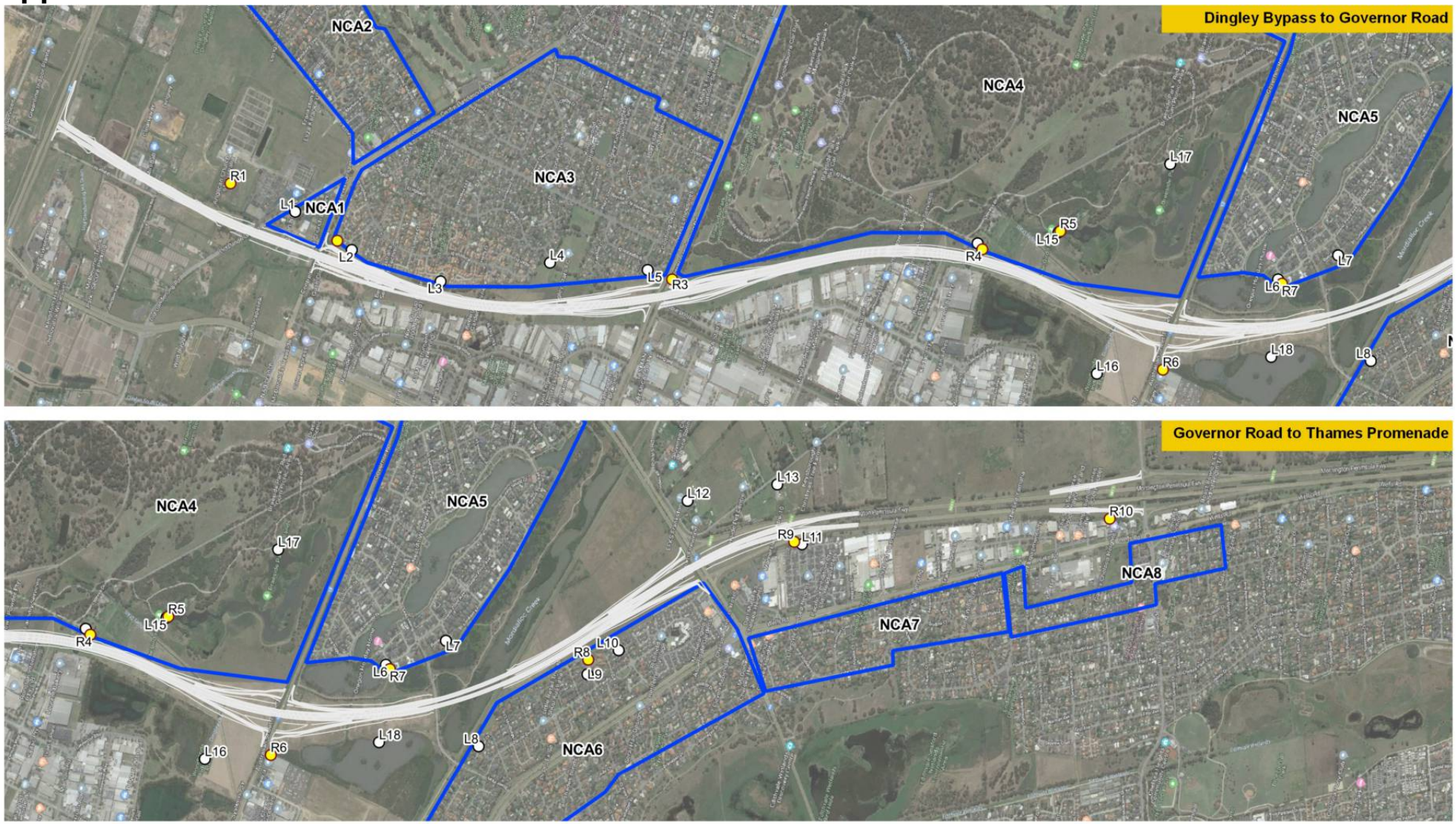
Area 1 Water monitoring locations



Area 2 Water monitoring locations



Appendix E – Noise Control Areas



Appendix F – Resonate Construction Noise Monitoring Report—Week Beginning 21 September 2020