## CABRAMATTA LOOP PROJECT

## AUSTRALIAN RAIL TRACK CORPORATION

# CONSTRUCTION MONITORING REPORT

## November 2021 to April 2022

## Contents

# 1. Introduction

Australian Rail Track Corporation (ARTC) is constructing a passing loop for up to 1,300m length trains on the Southern Sydney Freight Line (SSFL), which will allow freight trains travelling in opposite directions to pass and provide additional rail freight capacity along the SSFL. The project is referred to as the Cabramatta Loop Project. The project has been assessed under Division 5.2 (State significant infrastructure) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The project is State Significant Infrastructure (SSI #9186) and was declared Critical State Significant Infrastructure (CSSI) on 15 May 2020. The Minister for Planning and Public Spaces granted approval of the CSSI on 28 July 2020.

ARTC has contracted Fulton Hogan to construct the Cabramatta Loop Project. The construction works commenced in November 2021 and are being performed under the provisions of the Ministers Conditions of Approval and Environment Protection Licence 3142. In accordance with Condition of Approval C13, the following report details all required monitoring to be undertaken during the reporting period.

> C13 The results of the **Construction Monitoring Programs** must be made publicly available in the form of a **Construction Monitoring Report** at the frequency identified in the relevant **Construction Monitoring Program**.
>
> Note: *Where a relevant CEMP Sub-Plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP Sub-Plan.*

# 2. Site Activities and Rainfall

During November construction activities focussed on site compound establishment, road repairs to Station Street as well as initial works associated with clearing and car park construction in Railway Parade. Sediment controls were implemented in the field as required in accordance with the Soil and Water Management Plan.

The project area received regular rainfall consistent with the Sydney basin. The closest Bureau of Meteorology (BoM) weather station at Bankstown Airport is approximately 4.5km south-east of the site and recorded 15 days of rainfall with a cumulative total of 151.2mm of rainfall for the month, which was about double the historic mean of 76.3mm and median of 68mm. Environmental controls appeared effective with no construction related impacts to water quality observed or detected in samples. It is noted that both upstream and downstream pH values were lower than baseline data and the NSW Water Quality Objective criteria for lowland rivers.
During December and January, minimal ground disturbance occurred with construction activities focused on pre and post Christmas shutdown activities including works within the Jacquie Osmond Reserve compound to implement actions assisting the management of surface water and sediment control in preparation for a potential continuation of the La Nina weather patterns; establishing environmental controls in advance of and during vegetation clearing works and temporary diversion of the shared user path adjacent Cabramatta Creek. Other activities in December and January included civil works for Railway Parade car parking; geotechnical and services investigations; rail signalling works inside the rail corridor.

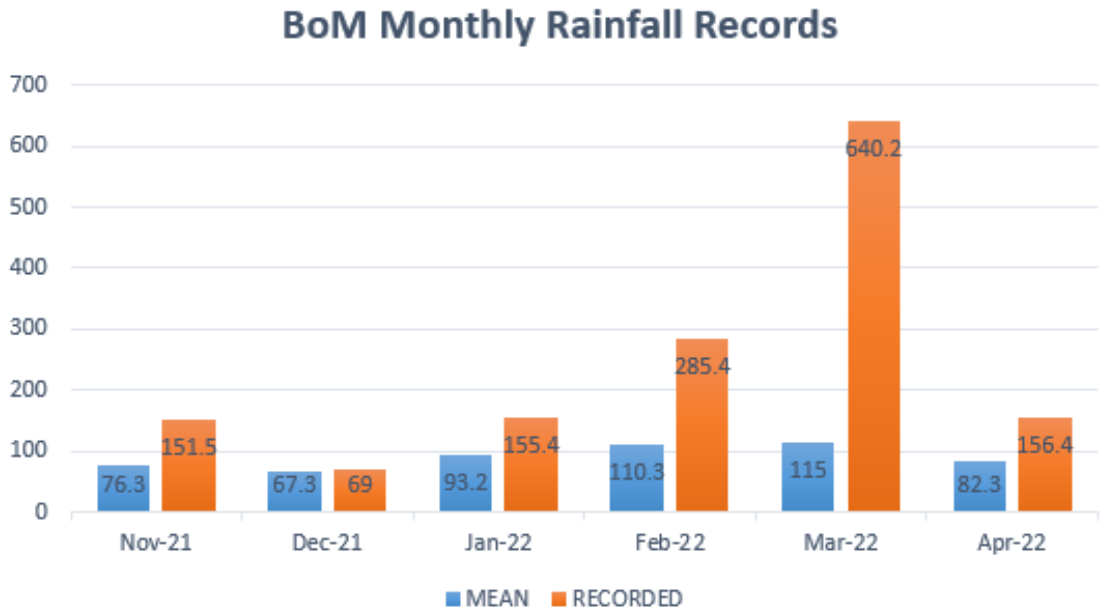
In December 2021, the BoM recorded 69mm of rainfall, which is typical given the median is 57mm the mean is 67mm. The site was prepared for a period of dormancy during the Christmas shutdown from 22 December 2021 to 12 January 2022. The BoM recorded above average rainfall for January 2022 with over 155mm received compared to the statistical median of 74.6mm and mean of 93.2mm.

No project related water quality impacts were observed or detected in samples during both sampling events with pH very consistent between the months and a slight rise in turbidity up and downstream in January that was associated with storms during the middle of the month.

Consistent rainfall significantly impacted productivity across the project in February with 285mm recorded by Bureau of Meteorology. The February mean is 110mm and the median is 80mm. Construction activities were hampered, but focussed on enabling works associated with stormwater construction and diversion of the shared user path adjacent to Cabramatta Creek and installation of environmental controls. However, work was generally unable to progress due to saturated ground conditions due to constant rainfall associated with La Nina, resulting in only ten days during the month where no rainfall was recorded. Despite this, water quality remained consistent with the previous month and was dominated by upstream influences due to high flows. No construction impacts were observed or detected during sampling.

Between the 22nd of February to 9 March, Sydney experienced 16 consecutive days of moderate to heavy rain where the BoM recorded more than 684mm at Bankstown Airport. The resulting cumulative runoff within the Cabramatta Creek catchment and wider Georges River catchment overwhelmed the site with flooding and aflux impacts form the Georges River. This rainfall continued to impact productivity across the project during March, with only seven working days where no rainfall was recorded (including Saturdays) by the BoM. Over 602mm was recorded in the month and this was significantly more than the March mean of 115mm and median of 81mm. As an indication of just how wet the year had been, the annual mean rainfall of 868mm can be compared to 1,043mm which is the total recorded for 2022 as at 29 March. When creek flows provided enough confidence it was safe to conduct sampling, slightly elevated data was recorded as to be expected with upstream water quality influencing the downstream results and no project related impact noted due to the scale of external water quality influences.

The unrelenting La Nina rainfall patterns persisted with broad impacts across the Sydney basin during April with all precipitation contributing to already supersaturated ground conditions. There were 10 working days where no rainfall was recorded and six days with less than 2mm received at the nearest BoM weather station (including Saturdays). Over 156mm was recorded in the month, which was almost twice the April mean of 82mm and nearly three times the median of 54mm. However, upstream and downstream water quality parameters remained consistent indicating no project related impacts.




Above: Rainfall data from the nearest Bureau of Meteorology station at Bankstown Airport vs statistical mean records

Cabramatta Creek looking upstream during a brief period of dry weather, February 2022

Cabramatta Creek looking upstream during wet weather typical of La Nina, March 2022

Cabramatta Creek culvert crossing looking from upstream after flooding rain event, March 2022

Cabramatta Creek looking downstream during wet weather, March 2022

Indicative Cabramatta Creek level evident on temporary project fencing North of the culvert crossing March 2022

## 3. Cabramatta Creek Water Quality Monitoring

The purpose of water quality monitoring during the construction phase is to determine impacts resulting from construction of the project only (i.e. road/ rail construction) and not other unrelated sources, such as agricultural operations, sewage overflows, or runoff of nutrient rich fertilisers from nearby landscaped parks/ recreational areas such as playing fields or golf courses.
Sampling parameters have been assessed for consistency with the following NSW Water Quality Objective Criteria:

**Turbidity** - Lowland Rivers: 6-50 NTU
**pH** - Lowland Rivers: 6.5 – 8.5
**Oil and Grease**: No visual evidence

The GHD study titled Australian Rail Track Corporation – Cabramatta Loop Water Quality Monitoring Report (September 2020), provides the following insights to the two In situ tested physico-chemical indicators and significance :
**Turbidity**: "*High turbidity is typical of disturbed catchments and during high flow events. Not toxic, but can affect ecosystems and biota*"…."*Turbidity, directly measured in situ by the water quality probe, provides readings which express how light is scattered by suspended particulate material in the water. These results, given in Nephelometric Turbidity Units (NTU), generally provide a good correlation with the concentration of particles in the water that affect water clarity and phytoplankton productivity. Although high turbidity is often a sign of poor water quality and land management, crystal clear water does not always guarantee healthy water. Extremely clear water can signify very acidic conditions, or high levels of salinity. The ANZECC (2000) Freshwater Guidelines give a trigger value of 6-50 NTU for turbidity in lowland rivers".*

**pH***: "Extremes of pH can be directly toxic to biota, and can modify the effect of other stressors (eg release metals)*"…. *"Most of the adverse effects of pH in water are associated with low pH values (acidic), effectively when pH of less than 6.5 is recorded. ANZECC (2000) states that almost all water quality guidelines around the world recommend that pH should be maintained in the range 6.5 to 9.0 to protect freshwater aquatic organisms. The ANZECC (2000) Guidelines for pH are 6.5 - 8.0 for freshwater lakes and reservoirs, and 6.5 – 8.5 for NSW lowland rivers."*

During the reporting period, surface water quality in Cabramatta Creek has been monitored immediately upstream and downstream of the bridge works at Cabramatta Creek so that any impacts directly related to construction activities can be identified and addressed.

The two construction water quality monitoring locations are indicated below as SW1 (Upstream) and SW2 (Downstream). The sampling sites were moved from those recommended by GHD in advance of construction occurring based on the following assessments:

**SW1 (Upstream)** was identified as the safest access immediately west of the existing rail bridge over Cabramatta Creek. This is downstream of GHD's recommended location and picks up additional major urban inflows from a box culvert draining from the west adjacent Cabramatta Sports Grounds containing runoff from parts of Sussex Street (west), Jasmine Crescent and Begonia Avenue and two pipe culverts draining to a headwall just west of the rail bridge crossing, draining parts of Sussex Street (west), Church Street and Railway Parade. Without relocating this upstream monitoring location, any pollutants associated with urban runoff may have been thought attributable to the construction phase of the project.

**SW2 (Downstream)** was identified as the safest access immediately east of the existing shared user culvert crossing over Cabramatta Creek. The site nominated by GHD as Downstream (Broomfield Street cycleway) did not adequately capture potential runoff that could drain into Cabramatta Creek

from the piling and crane pads associated with construction of the Cabramatta Creek rail bridge or the potential runoff from the laydown area adjoining Jacqui Osmond Reserve. The new downstream location takes advantage of a previously cleared section of embankment associated with a pumping station to provide safe access to the waterway where potential hazards such as steep embankment, rock and woody debris trips and snakes can be easily identified without impacts to riparian flora.

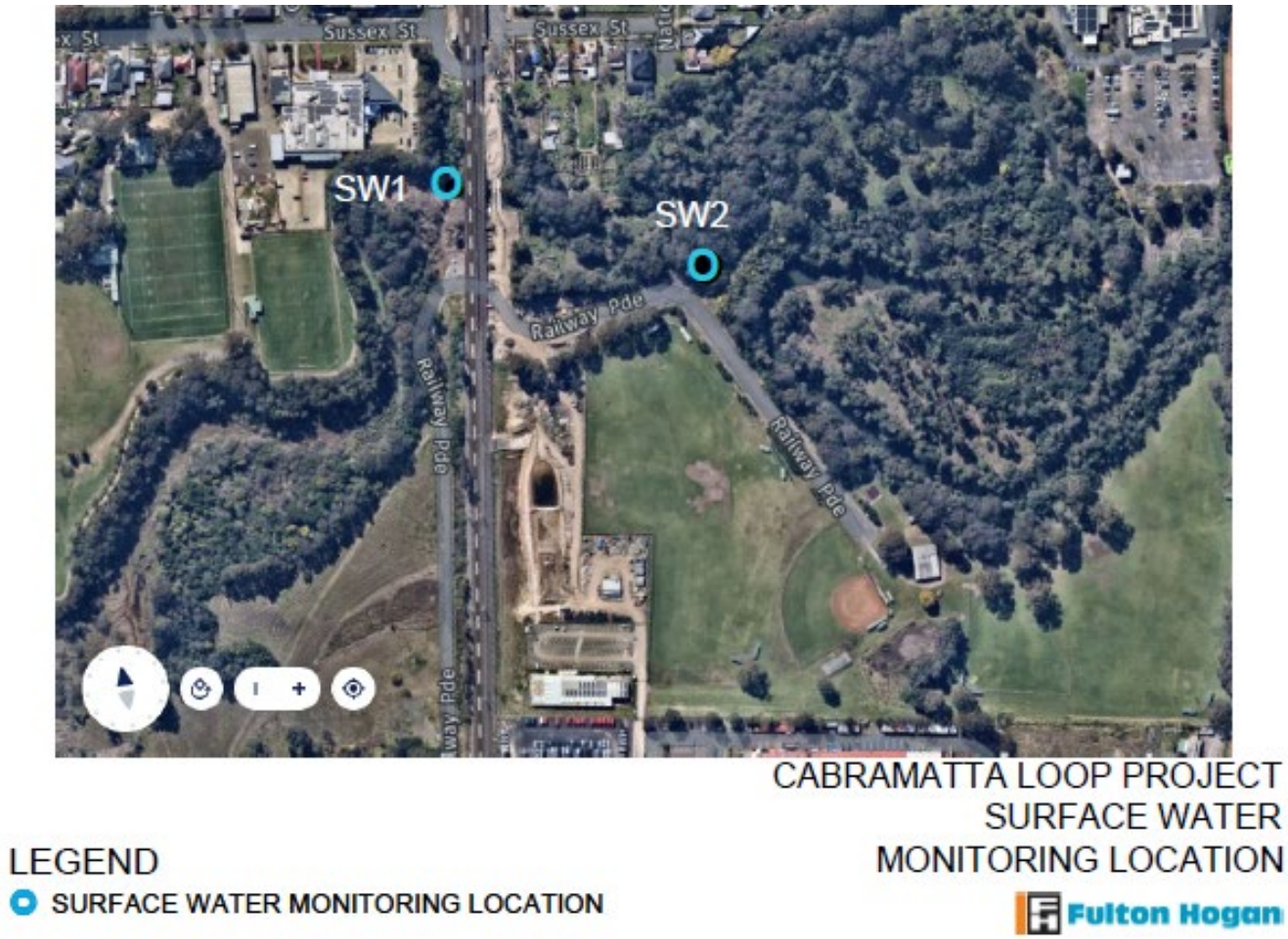



Figure 1 – Indicative water quality monitoring locations

Above:
Upstream Surface Water Sampling Point SW1
Latitude: -33.90260 º
Longitude: 150.93804
November 2021º

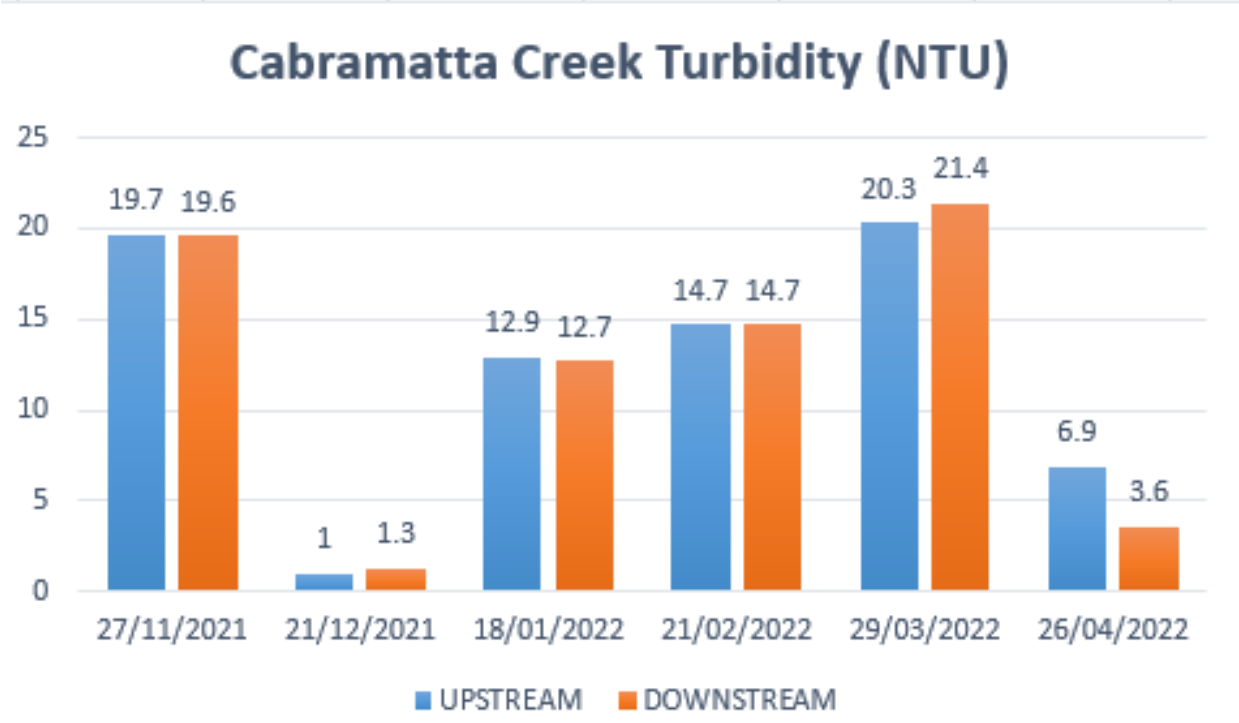
Above:
Downstream Surface Water Sampling Point SW2
Latitude: -33.90403 º
Longitude: 150.93851 º
November 2021º

Monitoring sites were sampled opportunistically on a monthly basis. At each site, grab samples were collected for field analysis. In addition, relevant site descriptions and notes were taken for each site and visual observations made. Visual observations included: Visual oil and grease; Stream flows; Water clarity; Water colour, odour and any other notable observations. Photos of each water quality sample site were taken to record the visual appearance of the site at the time of sampling. Where appropriate, photos of stream banks were taken providing a digital record of bank stability, geomorphology and riparian vegetation condition.

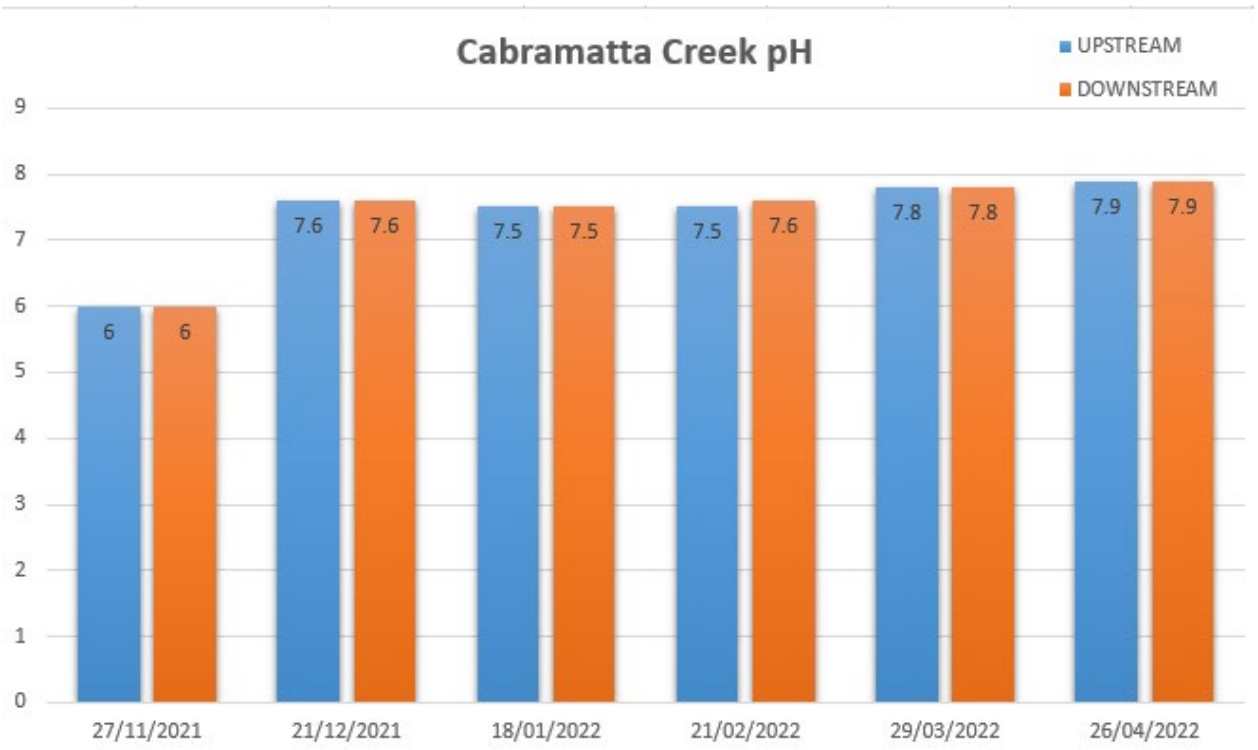
Water quality sampling was performed in accordance with Australian Standard A*S/NZS 5667-1998 "Water Quality – Sampling"* and "*Approved methods for the sampling and analysis of water pollutants in NSW"* (EPA, 2022) only when safe for personnel to get close enough to the live waterway. Therefore the data is not reflective of peak worst case water quality conditions, but is representative of general flow parameters at the time of sampling. This data is provided in Table 1 and monthly trends may be interpreted in the following graphs.

**Table 1. Water quality monitoring results – November 2021 – April 2022**

| Date | Location | Co-ordinates | pH | NTU (Field) | Oil & Grease |
|---|---|---|---|---|---|
| 27/11/2021 | Cabramatta Creek Upstream | -33.90260º 150.93804º | 6 | 19.7 | Not visible |
| 27/11/2021 | Cabramatta Creek Downstream | -33.90403º 150.93851º | 6 | 19.6 | Not visible |
| 21/12/2021 | Cabramatta Creek Upstream | -33.90260º 150.93804º | 7.6 | 1.0 | Not visible |
| 21/12/2021 | Cabramatta Creek Downstream | -33.90403º 150.93851º | 7.6 | 1.3 | Not visible |
| 18/01/2022 | Cabramatta Creek Upstream | -33.90260º 150.93804º | 7.5 | 12.9 | Not visible |
| 18/01/2022 | Cabramatta Creek Downstream | -33.90403º 150.93851º | 7.5 | 12.7 | Not visible |
| 21/02/2022 | Cabramatta Creek Upstream | -33.90260º 150.93804º | 7.5 | 14.7 | Not visible |
| 21/02/2022 | Cabramatta Creek Downstream | -33.90403º 150.93851º | 7.6 | 14.7 | Not visible |
| 29/03/2022 | Cabramatta Creek Upstream | -33.90260º 150.93804º | 7.8 | 20.3 | Not visible |
| 29/03/2022 | Cabramatta Creek Downstream | -33.90403º 150.93851º | 7.8 | 21.4 | Not visible |
| 26/04/2022 | Cabramatta Creek Upstream | -33.90260º 150.93804º | 7.9 | 6.9 | Not visible |
| 26/04/2022 | Cabramatta Creek Downstream | -33.90403º 150.93851º | 7.9 | 3.6 | Not visible |




Above: Turbidity data from Table 1 graphed demonstrating monthly trends




Above: pH data from Table 1 graphed demonstrating monthly trends

Prior to construction GHD was engaged by ARTC to prepare the baseline water quality monitoring program for the project titled '*Australian Rail Track Corporation Cabramatta Loop: Water Quality Monitoring Report*' dated September 2020. This baseline monitoring of surface water quality commenced in May 2019 at various sites upstream and downstream from the project and monitored baseline conditions for twelve months between May 209 and April 2020.
Any further direct comparison of the construction phase water quality to baseline parameters beyond the discussion below is difficult due to seasonal disparities and in particular the prominence of the La Nina effect experienced during 2021 and 2022. The GHD report stating "*Whilst the overall amount of rainfall was similar to the long term average, the distribution of rainfall was different. Rainfall was extremely light throughout most of the reporting period, with the exception of two wet weather events in September 2019 and February 2020. Eight of the twelve months in the period were drier than the corresponding long-term median. Most of the rainfall recorded fell during the February 2020 event; 328 millimetres fell between 7 and 10 February, and 160 millimetres was recorded on 10 February alone. As described, one wet weather sampling event was performed in February 2020. Additional wet weather sampling would have been preferable to better establish wet weather water quality conditions, however such sampling is of course weather-dependent, and was not able to be performed in the monitoring timeframe.*"

During the period November 2021 – April 2022 the following observations have been made:

- No oil or grease was observed as visible during any sampling event.
- The turbidity recorded at both the upstream and downstream sites was below the 50 NTU NSW Water Quality Objective Criteria. In December and April, turbidity was recorded below the lower guideline of 6 NTU. Extremely clear water can signify very acidic conditions or high levels of salinity however these results are consistent with baseline monitoring data where GHD previously reported "*A number of samples at all sites were below the lower guideline, this was attributed to the salinity*

*of the sites as recorded in the EC present. Whilst these samples are regarded as outside the guideline range, the low turbidity can be expected due to natural processes present at the sites*." In relation to levels ranging from 6.9 to 21.4 NTU, these values are consistent with baseline maximums where GHD has commented "*these results are as expected in wet weather flows through areas where urbanisation through the catchment has occurred, as it has in much of the Cabramatta Creek catchment."*

- pH was almost always within the ANZECC guideline range, with one sampling event during November outside of the range indicating a mildly lower pH up and down stream at pH of 6. Whilst this is lower than the minimum value of 6.9 previously recorded by GHD, it is reflective of minimums indicated in other data reported in the *2016-2017 River Health Report Card for the Georges River* (Georges River Combined Councils Committee (GRCCC), 2018) where minimums of 5.98 and 6.07 were recorded in the upper and lower Cabramatta Creek catchments respectively. This longer term dataset is comprised of samples taken between 1 November 2009 and 31 March 2020, indicating the likelihood that such levels may be periodic and natural.
- Based on the available data and field observations, the construction phase environmental controls and management measures implemented during the six month period have been effective in meeting the project's water quality objectives and minimising impacts to the Cabramatta Creek and Georges River ecosystems.

## 4. Noise Monitoring Results

Chapter 9 of the EIS assessed the potential extent and magnitude of noise impacts generated from construction of the project. This included a detailed assessment documented in EIS Volume 2 – Technical Report 2 – Cabramatta Loop Project: Noise and Vibration Impact Assessment (GHD, August 2019). As a result of this study, the area of potential noise sensitive receivers has been divided into four noise catchment areas (NCAs). These NCAs are based on ambient noise characteristics with respect to major roads and rail corridors in the project area as described and represented in Figure 2 below:

- NCA 1: The area to the North of Jacquie Osmond Reserve and west of the rail corridor. The area comprises of commercial and residential land uses. Rail noise, road traffic noise from Railway Parade and noise from commercial premises along Railway Parade dominate the noise environment in NCA01.
- NCA 2: The area to the North of Jacqui Osmond Reserve and east of the rail corridor. The area comprises of residential land uses. Road traffic noise from Broomfield Street and local roads in the area dominate the noise environment with Hume Highway operations contributing to background noise levels. An existing noise wall along Broomfield Street attenuates rail noise.
- NCA 3: The area to the South of Jacqui Osmond Reserve and West of the rail corridor. The area comprises of primarily residential land uses. Rail noise and traffic along the Hume Highway and local roads dominate the noise environment in NCA03.
- NCA 4: The area to the South of Jacqui Osmond Reserve and East of the rail corridor. The area comprises of primarily industrial and commercial land uses. Rail noise and industrial activities dominate the noise environment in NCA04.

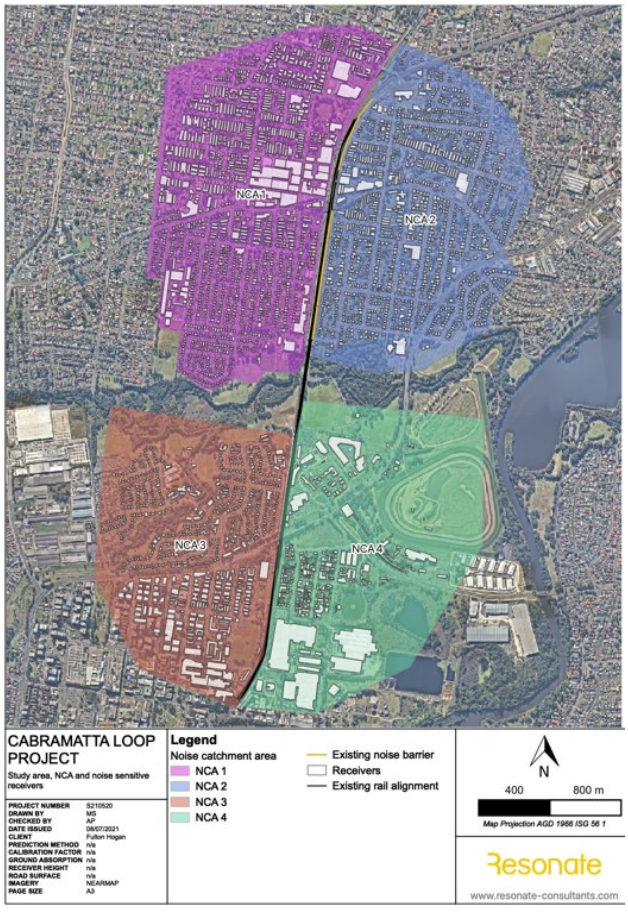



Figure 2: Noise Catchment Areas

The nominated monthly attended noise monitoring locations are shown in Figure 3 and listed below:

- Location 1: 225 Railway Parade, Cabramatta
- Location 2: 150 Broomfield Street, Cabramatta
- Location 3: Corner of Station Street and Lawrence Hargrave Road
- Location 4: In railway corridor north of Warwick Farm Station

The monitoring locations were selected to cover each NCA and proximity to key construction zones and most potentially affected sensitive receivers.


Figure 3 – Indicative noise monitoring locations

A summary of the baseline noise monitoring including a description of the ambient noise environment at each location is provided in the table below.

**Table 2. Summary of Baseline Noise Monitoring**

| NCA | Address | Free-field or façade | Rating background level (RBL) | | | Ambient noise levels, $L_{Aeq(period)}$ | | | | | Ambient noise observations |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Day | Evening | Night | Day | Evening | Night | Day (15 hour) | Night (9 hour) | |
| - | In rail corridor (North of Warwick Farm Station) | Free field | - | - | - | 65 | 64 | 63 | 65 | 63 | Rail noise dominant |
| - | In rail corridor (South of Cabramatta Station) | Free field | 43 | 41 | 33 | 68 | 68 | 66 | 68 | 66 | Rail noise dominant |
| 01 | 225 Railway Parade, Cabramatta | Free field | 45 | 44 | 33 | 61 | 61 | 59 | 61 | 59 | Rail noise dominant, road traffic noise along Railway Parade |
| 02 | 150 Broomfield Street, Cabramatta | Façade | 39 | 38 | 31 | 56 | 56 | 52 | 56 | 52 | Rail noise dominant, road traffic noise along Broomfield Street, construction works at residence along Broomfield Street |
| 02 | 46a National Street, Cabramatta | Free field | 38 | 37 | 31 | 53 | 48 | 46 | 51 | 46 | Rail noise faintly audible, road traffic noise along National Street |
| 01 | 41 Church Street, Cabramatta | Free field | 38 | 39 | 30 | 55 | 53 | 50 | 54 | 50 | Road traffic noise along Church Street, rail passbys in background |
| 03 | 25 Lawrence Hargrave Road, Warwick Farm | Free field | 37 | 38 | 32 | 52 | 50 | 47 | 50 | 47 | Rail noise dominant, car passbys and bird noise |

As a result of this baseline monitoring, the below noise management levels were determined and are used to ensure that impacts to noise and vibration are minimised and within the scope permitted by the project approval through the employment of reasonable and feasible attenuation and management measures:

**Table 3. Summary of residential noise management levels**

| NCA | Standard hours, $L_{Aeq,15min}$ | OOHW Period 1, $L_{Aeq,15min}$ | | OOHW Period 2, $L_{Aeq,15min}$ | Sleep disturbance, $L_{AFmax}$ |
|---|---|---|---|---|---|
| | | Day | Evening | Night | Night |
| NCA01 | 48 | 43 | 42 | 36 | 52 |
| NCA02 | 48 | 43 | 43 | 35 | 52 |
| NCA03 | 47 | 42 | 42 | 37 | 52 |
| NCA04 | 47 | 42 | 42 | 37 | 52 |

The following noise monitoring has been performed:

- Monthly noise monitoring at sensitive receiver locations identified as Noise Monitoring Locations 1 to 4 from November 2021 to April 2022;
- Where Out of Hours Works have been performed, monitoring has also been undertaken at the closest receivers and at random locations for the purpose of conducting spot checks within the catchment. This has occurred during weekend track closures known as “possessions”. Such activities are permitted by ARTC’s Environmental Protection Licence to provide a safe working

environment and the works are assessed in accordance with the OOHW Protocol approved by the Department of Planning and Environment.

- During this reporting period the following possessions have taken place:
  WE22 – November 2021 and WE31 – January 2022.

No complaints were received in relation to acoustic impacts within these four noise catchments during the reporting period.

Attended measurements were conducted using the following instrumentation:

- Sound Level Meter - Rion NA-28 sound level meter serial number: 01270688
- Sound Calibrator – Pulsar Model 106 serial number 83428

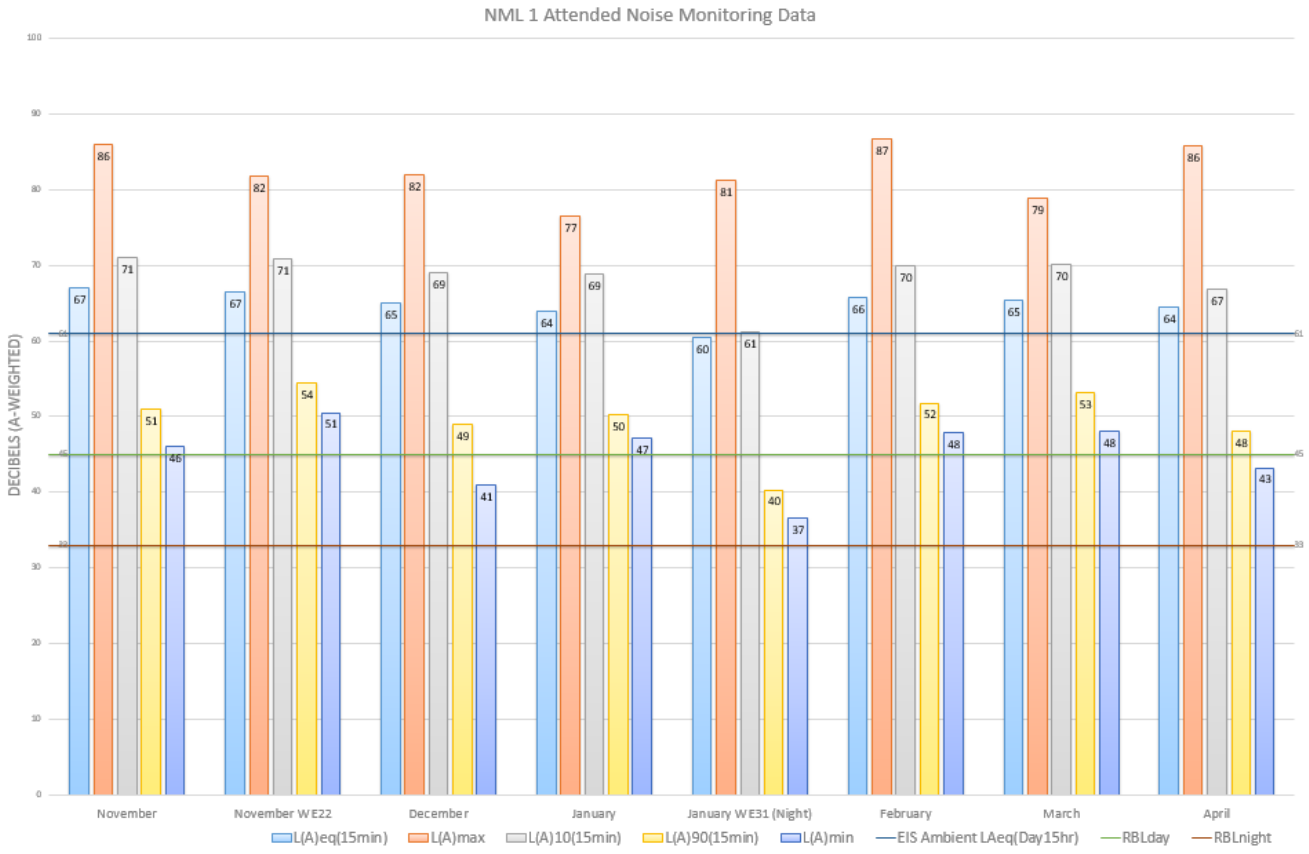
The sound level meter holds a current calibration certification. The Rion NA-28 was manufactured before 2019 and complies with Australian Standard IEC 61672.1:2013. The Pulsar 106 complies with the requirements set out in IEC 60942:2017 Electroacoustics: sound calibrators. The attended measurement events were guided by the methods described in Australian Standard 1055:2018 Acoustics: description and measurement of environmental noise and Approved methods for the measurement and analysis of environmental noise in NSW (EPA, 2022).

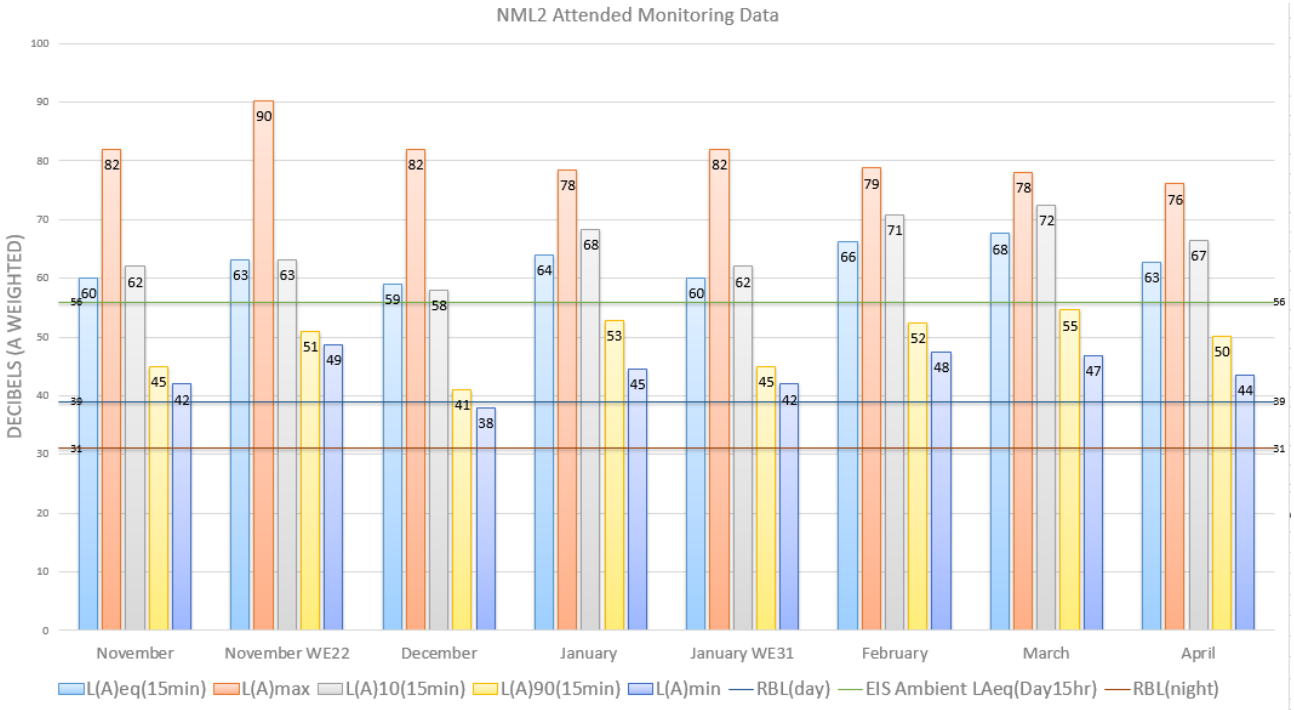
Field calibration of the sound level meter was checked both prior and post measurement and no noise level drift was observed. All monitoring locations have been established to ensure outdoor free-field noise level measurements where the influence of reflecting structures (other than the ground) is minimised ie: measurements have been undertaken at least 3.5m from any reflecting structure and at a height of 1.2m above ground level mounted on a tripod. There were no instances where the nearest residence was more than 30m away from the monitoring location.

Although the project formally entered “construction commencement” 30 days after approval of the Construction Environmental Management Plan, minimal enabling work activities beyond compound establishment in Jacqui Osmond Reserve occurred in November 2021, hence the attended monitoring data for November is very useful for comparison against the baseline established in 2018/19 during the EIS planning phase. No construction impacts were audible at any of the noise monitoring locations and on each occasion, the recorded minimums were above the rated background levels for each catchment. This has been a trend throughout the monitoring period, indicating some change in ambient acoustics has likely occurred during the past few years. Frequent monitoring in noise catchments 3 and 4 also provide insights to current ambient conditions with no project work occurring.

During the monitoring period, with the exception of possession weekends, almost always ambient acoustics are dominated by background noise in all catchments except for NCA 2 where Broomfield Street enabling work such as utility diversions and street realignment civil works are the primary noise source. Significant contributions to background levels are attributed to common noise sources including passenger and freight trains within the rail corridor, light and heavy vehicles on local roads and the Hume Highway bridge over the rail corridor at Warwick Farm (o the Sooth for NCAs 3 and 4) and Cabramatta Road bridge over the rail at Cabramatta (to the North for NCA’s 1 and 2), overhead aircraft including jet and propeller thrusted aircraft as well as helicopters departing and approaching Bankstown Airport.

Each month of attended monitoring is represented in Tables 4 to 9 with graphical representations below.



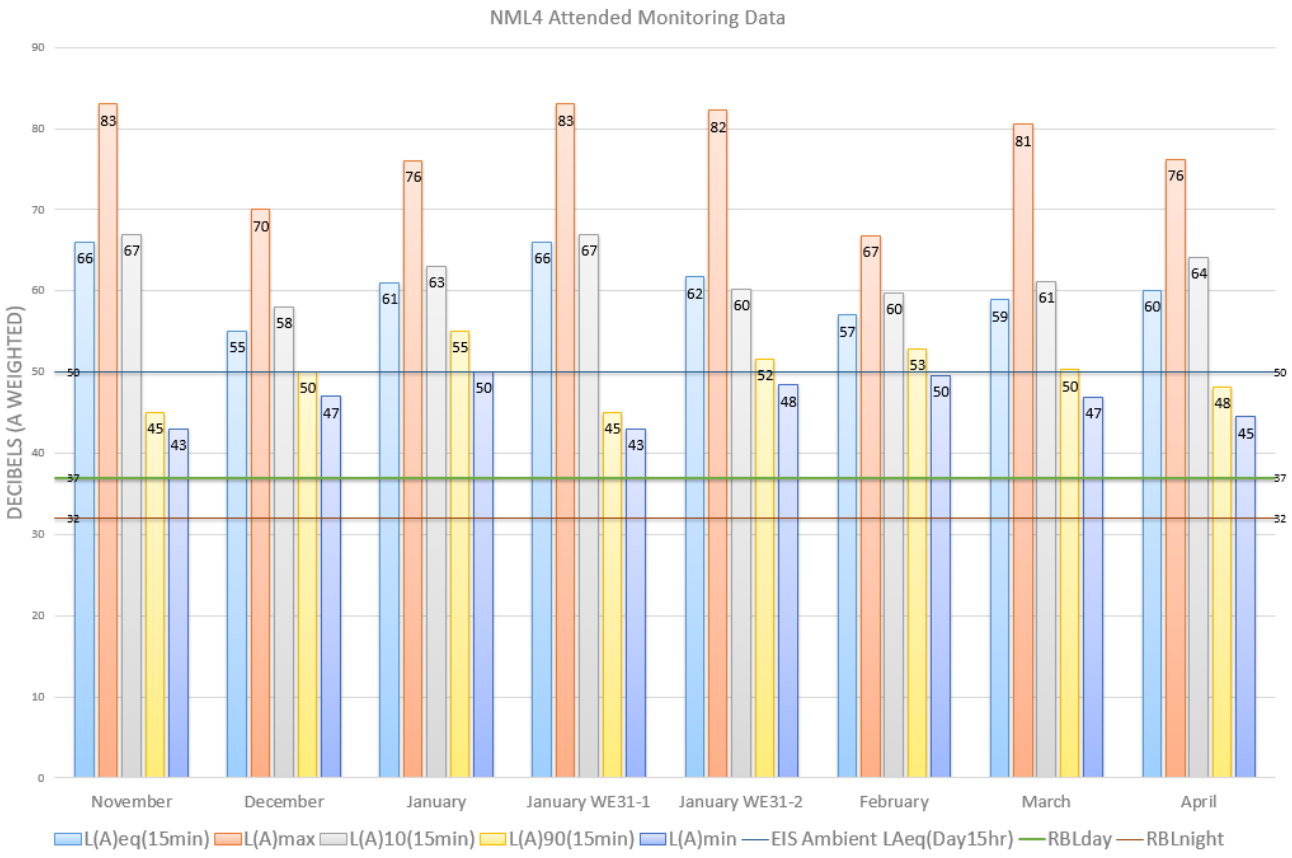



**Table 4. Attended noise monitoring results – November 2021**

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML1 NCA1 | Location 1 – 225 Railway Parade, Cabramatta | Monthly Monitoring - check of background noise levels | 5/11/2021 13:42 | 45 | 67 | Lmax – 86 dB<br>Lmin – 46 dB<br>L10 – 71 dB<br>L90 – 51 dB<br>Passing Heavy vehicles audible from 68-85 including Sydney buses 60 – 81 dB, typical: 68-76 dB.<br>Passing Light vehicles audible from 68-78, typical: 65-73 dB<br>B/G estimate – 47 dB<br>Mynah birds 49-53 dB<br><br>No construction occurring at time of monitoring in the vicinity. No construction noise was audible at the time of monitoring.<br><br>All noise is attributable to background noise sources |
| NML2 NCA2 | Location 2 – 150 Broomfield Street, Cabramatta | Monthly Monitoring - check of background noise levels | 5/11/2021 13:15 | 39 | 60 | Lmax – 82 dB<br>Lmin – 42 dB<br>L10 – 62 dB<br>L90 – 45 dB<br>Passing Heavy vehicles –N/A.<br>Passing Light vehicles audible from 66-75 dB, typical: 68-72 dB<br>Passing Freight train on SSFL: 65-76 dB tailing off over 30secs<br>Passing Sydney Trains audible between 55-63 dB<br>B/G estimate – 42-44 dB<br>Birds audible between 46-60 dB<br><br>No construction occurring at time of monitoring in the vicinity. No construction noise was audible at the time of monitoring.<br><br>All noise is attributable to background noise sources |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML3 NCA3 | Location 3 - Corner of Station Street and Lawrence Hargrave Road, Warwick Farm | Monthly Monitoring - check of background noise levels | 5/11/2021 14:58 | 37 | 59 | Lmax – 79 dB<br>Lmin – 46 dB<br>L10 – 60 dB<br>L90 – 49 dB<br>Passing Light vehicles audible from 66-75 dB, typical: 68-72dB<br>Public traffic on Hume Hwy dominates the background acoustic environment between 47-63dB, typical 55-60dB<br>Passing Sydney Trains audible between 60-79 dB (x3)<br>B/G estimate – 47-50 dB<br>Birds audible between 48-50 dB<br><br>No construction occurring at time of monitoring in the vicinity. No construction noise was audible at the time of monitoring.<br><br>All noise is attributable to background noise sources |
| NML4 NCA4 | Location 4 - Warwick Farm Station Car Park | Monthly Monitoring - check of background noise levels | 9/11/2021 10:59 | 37 | 66 | Lmax – 83 dB<br>Lmin – 43 dB<br>L10 – 67 dB<br>L90 – 45 dB<br><br>No project related construction occurring at time of monitoring in the vicinity.<br><br>The acoustic environment is dominated by the rail corridor and train movements along with construction noise associated with construction of multi-story car park at Warwick Farm Station.<br><br>All noise is attributable to background noise sources |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML1 NCA1 | Location 1 – 225 Railway Parade, Cabramatta | Possession WE22 OOHW Monitoring | 27/11/21 14:38 | 45 | 67 | Lmax – 82dB<br>Lmin – 51dB<br>L10 – 71dB<br>L90 – 54dB<br><br>Monitoring for assessment of acoustics relating to hand installation of Vortok safety fencing incl delivery by hiab (<10km/hr).<br><br>The acoustic environment is dominated by light vehicle and bus movements along Railway Pde with noise associated with buses replacing trains at Cabramatta Station.<br><br>No project construction noise is audible. All noise is attributable to other noise sources. |
| NML2 NCA2 | Location 2 – 150 Broomfield Street, Cabramatta | Possession WE22 OOHW Monitoring | 27/11/21 13:45 | 39 | 63 | Lmax – 90dB<br>Lmin – 49dB<br>L10 – 63dB<br>L90 – 51dB<br><br>Birds audible between 53-59dB<br><br>Monitoring for assessment of acoustics relating to hand installation of Vortok safety fencing incl delivery by hiab (<10km/hr).<br><br>The acoustic environment is dominated by the light vehicle movements 63-73 (incl max 89 @ passing WRX) along Broomfield St and construction noise associated with an excavator on private property works (51-57) and intermittent breaker noise from rail maintenance activities not project related (50-60)<br><br>All noise is attributable to non-project related noise sources |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML3 NCA3 | Location 3 - Corner of Station Street and Lawrence Hargrave Road, Warwick Farm | Possession WE22 OOHW Monitoring | 27/11/21 15:15 | 37 | 61 | Lmax – 80dB<br>Lmin – 52dB<br>L10 – 60dB<br>L90 – 55dB<br><br>No project work in this vicinity. The acoustic environment is dominated by the traffic on the Hume Hwy and machinery noises from rail maintenance activities not project related, however seems they are on a break for 14mins of the 15min sample.<br><br>All noise is attributable to non-project related noise sources |
| Spot Check NCA2 | 33 National Street, Cabramatta | Possession WE22 OOHW Monitoring | 27/11/21 14:02 | 38 | 55 | Lmax – 74dB<br>Lmin – 45dB<br>L10 – 57dB<br>L90 – 49dB<br>Mynah birds / Koel @ 53-59dB<br>Rooster - 47-51 dB (very frequent@10sec intervals)<br>Passing cars- 55-58, 59- 63, 64-68dB<br>Aircraft: 50dB<br>JH hammer/breaker (opp LHargrave school)- 50-51, 52, 53-55 (count 8, approx4-6 secs)<br>Wind picking up - banging metal in residential building site at 30 National St<br>Cannot hear the hiab or vortok fence installation at all. All noise is non project related. |

Below: Vortok safety barrier hand installation during Possession WE22

Below: Monitoring at Broomfield Street and Railway Parade Cabramatta during possession WE31

Below: Typical traffic on Railway Parade Cabramatta during possession WE31


**Table 5. Attended noise monitoring results – December 2021**

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML1 NCA1 | Location 1 – 225 Railway Parade, Cabramatta | Monthly Monitoring - Potential construction impacts vs ambient noise levels | 21/12/2021 09:22 | 45 | 65 | Lmax – 82 dB (bus)<br>Lmin – 41 dB<br>L10 – 69 dB<br>L90 – 49 dB<br>Ambient noise is dominated by the intersection of Boundary Lane and Railway Parade as well as passing traffic and train movements including:<br>Buses 69 – 82 dB<br>Heavy vehicles audible from 67-81 dB<br>Passing cars audible from 65-82 dB.<br>4xSydney Trains from 67-77 dB (15-20s each)<br>Construction activities opposite includes 2 labourers cleaning up car park site- manual labour with some scraping of shovels & erecting fencing. Crew truck quacker audible between 58-63 dB x 4 between 10-20secs.<br>No other construction noise was audible at the time of monitoring. |
| NML2 NCA2 | Location 2 – 150 Broomfield Street, Cabramatta | Monthly Monitoring - Potential construction impacts vs ambient noise levels | 21/12/2021 08:56 | 39 | 59 | Lmax – 82 dB<br>Lmin – 38 dB<br>L10 – 58 dB<br>L90 – 41 dB<br>Ambient noise is dominated by passing vehicles on Broomfield Street, Sydney Trains, overhead aircraft movements and avifauna, including:<br>Passing Heavy vehicle 54-78 dB.<br>Passing Light vehicles audible from 54-74 dB (Count 18) typical: 68-73 dB<br>Passing Sydney Trains x 3, 52-60 dB<br>Aircraft x3 from 51-55 dB for 60sec each<br>Birds audible between 42-58 dB constant (crows, mynah birds, lorikeets).<br><br>No construction occurring at time of monitoring in the vicinity. All noise is attributable to background noise sources |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML3 NCA3 | Location 3 - Corner of Station Street and Lawrence Hargrave Road, Warwick Farm | Monthly Monitoring - check of background noise levels | 21/12/2021 07:59 | 37 | 59 | Lmax – 77 dB<br>Lmin – 41 dB<br>L10 – 59 dB<br>L90 – 44 dB<br><br>No construction occurring. Ambient conditions dominated by passing cars, the Hume Highway overbridge and traffic, passing trains, avifauna and industrial noises from the opposite car yard, including:<br>Passing Sydney Trains audible between 62-76 dB (x5)<br>Passing light vehicles audible from 58-65 dB.<br>Passing garbage truck – 50-74 dB.<br>Aircraft x4 from 55-58 dB<br>Public traffic on Hume Hwy dominates the background acoustic environment between 44-53 dB, typical 48-50 dB<br>B/G estimate – 42 dB<br>Birds (mynahs, lorikeet flock in tree at school) very impulsive between 45 up to 65 dB.<br>Cars regularly tooting horn at Peter Warren going up round ramp 4@10sec intervals 47-52 dB<br>Garbage truck on Station St - 50-74 dB.<br><br>No construction occurring at time of monitoring in the vicinity. All noise is attributable to background noise sources |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML4 NCA4 | Location 4 - Warwick Farm Station Car Park | Monthly Monitoring - check of background noise levels | 21/12/2021 08:28 | 37 | 55 | Lmax – 70 dB<br>Lmin – 47 dB<br>L10 – 58 dB<br>L90 – 50 dB<br><br>No project related construction occurring at time of monitoring in the vicinity. The acoustic environment is dominated by the rail corridor train movements and functioning railway station along with building noise associated with construction of multi-story car park opposite Warwick Farm Station.<br>Sydney trains northbound- arriving at station 54-64 dB<br>Departing station: 53-59 dB<br>Syd Trains southbound arrival 52-54 dB<br>Departing south 52-61 dB, doors closing alarm - 58 dB. Train station announcements 52--61 “doors closing, pls stand clear” count 4<br>Multi-storey car park construction site-48-64 dB constant the whole period incl hammering metal scaffold and power tools<br>Hume Hwy audible 44-52 dB with truck compression braking @ 53-56 dB. Light vehicles on Hwy with loud exhausts 57-63 dB.<br>Dog barking 60-69 dB x 3 occasions<br>Birds (Magpies – 58,Mynah birds 55-58 dB fairly constant)<br>Leaf blower in horse stables - 50-54 dB (frequent)<br>Commuter parking LVs - 54- 64dB count 4<br>All noise is attributable to background noise sources. |

Below: Monitoring at Station Street and Warwick Street, Warwick Farm during December 2021

Below: Monitoring at Broomfield Street looking north and South during December 2021

**Table 6. Attended noise monitoring results – January 2022**

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML1 NCA1 | Location 1 – 225 Railway Parade, Cabramatta | Monthly Monitoring | 27/01/22 16:04 | 45 | 64 | Lmax – 77 dB<br>Lmin – 47 dB<br>L10 – 69 dB<br>L90 – 50 dB<br>Car parking construction across the road is presently inactive. Formwork partially installed and earthworks done with excavator and roller parked up, no staff on site.<br>Light vehicle traffic dominates the acoustics – almost a continuous stream of LVs: 58-72dB (for 3-5 secs)<br>2 buses audible form 58-76dB turning at Boundary Lane<br>1 aircraft: 53-55secs (30 secs)<br>Sydney Trains: 55-72 dB (x2 for 10secs)<br>Cabramatta Rd bridge traffic is reasonably constant: 49-50dB<br>Birds chirping constantly (50-54dB) |
| NML2 NCA2 | Location 2 – 150 Broomfield Street, Cabramatta | Monthly Monitoring - Potential construction impacts vs ambient noise levels | 27/01/22 16:30 | 39 | 61 | Lmax – 75 dB<br>Lmin – 38 dB<br>L10 – 64 dB<br>L90 – 52 dB<br>Crew truck down at SUP diversion visible but not audible form here.<br>Ambient noise is dominated by local traffic: passing cars very frequent: 55-66 dB (2-3secs)<br>Hotted up cars with loud exhausts 60-74dB (x3)<br>Overhead aircraft: 53-58 dB (x3 for 30secs)<br>Bird calls (frequent):52-56 dB<br>All noise is attributable to background levels |
| NML3 NCA3 | Location 3 - Corner of Station Street and Lawrence Hargrave Road, Warwick Farm | Monthly Monitoring - check of background noise levels | 27/01/22 | 37 | 59 | Lmax – 74 dB<br>Lmin – 45 dB<br>L10 – 60 dB<br>L90 – 47 dB<br>Construction at main compound (JOR) is not audible<br>All noise is attributable to background levels including:<br>Hume Highway traffic over bridge 46-53 dB constantly<br>Aircraft: 51-60 dB (20-30secs x 2)<br>Sydney Trains x 3 53-73dB (15secs each)<br>Local traffic: 52-65dB for 3-5secs x 2<br>Birds in trees v frequent: 49-51dB |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML4 NCA4 | Location 4 - Warwick Farm Station Car Park | Monthly Monitoring - check of background noise levels | 27/01/22 17:20 | 37 | 61 | Lmax – 76 dB<br>Lmin – 50 dB<br>L10 – 63 dB<br>L90 – 55 dB<br>No construction is occurring at this location presently<br>All noise is attributable to background levels including:<br>Station announcements: 62-64dB x 5<br>Hume Hwy traffic is fairly constant: 56-62dB<br>typical- loud car: 72dB<br>Aircraft: 56-62dB x 2<br>Sydney Trains: 58-65 (x 2 @10 secs)<br>Cars in carpark: 58-62 x 2 – 10-12 secs<br>People talking in car park: 60-64 (approx. 50-60secs cumulative) |
| Spot Check NCA2 | 36 Broomfield Street, Cabramatta | Pre-Possession WE31 OOHW Background Monitoring | 28/01/2021 23:43 | 31 | 61 | Lmax – 77 dB<br>Lmin – 38 dB<br>L10 – 65 dB<br>L90 – 41 dB<br>No construction is occurring tonight.<br>Background noise is dominated by local traffic including buses, sports cars, sirens, heavy mufflers and motorbikes as well as aircraft from Bankstown airport.<br>B/G dominated by crickets or other insects constant @ 40-41 dB.<br>All noise is attributable to background noise sources |
| Spot Check NCA2 | 36 Broomfield Street, Cabramatta | Pre-Possession WE31 OOHW Background Monitoring | 29/01/2021 00:03 | 31 | 64 | Lmax – 72 dB<br>Lmin – 45 dB<br>L10 – 68 dB<br>L90 – 53 dB<br>No construction is occurring tonight.<br>Background noise is dominated by local traffic including buses, street sweeper, sports cars with loud mufflers and motorbikes as well as helicopters from Bankstown airport.<br>All noise is attributable to background noise sources |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| Spot Check NCA2 | 36 Broomfield Street, Cabramatta | Possession WE31 OOHW Monitoring | 29/01/2021 11:47 | 39 | 64 | Lmax – 78 dB (light vehicle)<br>Lmin – 45dB<br>L10 – 68dB<br>L90 – 53dB<br><br>The acoustic environment is dominated by light vehicles and bus movements replacing trains & aircraft audible over traffic@ 66-73dB.<br>Excavator in the rail corridor is inaudible due to Broomfield St traffic noise, when operating arm & bucket. Movement alarm is audible @ 57-61dB (15secs)<br>Birds: 51-57 dB.<br>Passing light vehicles: 58-73 dB.<br>Background estimate: 45-46 dB |
| Spot Check NCA2 | 2 Cumberland Rd Cabramatta | Possession WE31 Monitoring | 29/01/2021 12:37 | 38 | 53` | Lmax – 73 dB (aircraft)<br>Lmin – 42dB<br>L10 – 55dB<br>L90 – 44dB<br><br>The acoustic environment is dominated by light vehicles, bus movements replacing trains, aircraft and cicadas @ 55-58dB.<br>Excavator in the rail corridor is barely audible @ 44dB-46 (20 secs) x 3. Inaudible when slewing, only when movement alarm is activated.<br>Hydremas are inaudible when waiting to unload<br>Birds: 43-59, typical 47-50<br>Passing light vehicles – 62-66dB.<br>Background estimate: 42-44dB |
| NML2 NCA2 | Location 2 – 150 Broomfield Street, Cabramatta | Possession WE31 Monitoring | 29/01/2021 13:15 | 39 | 60 | Lmax – 82dB<br>Lmin – 42dB<br>L10 – 62dB<br>L90 - 45dB<br>Passing Light vehicles audible from 66-75dB, typical: 68-72dB<br>B/G estimate – 42-44dB<br>Birds audible between 46-60dB<br>No construction audible at time of monitoring in the vicinity.<br>All noise is attributable to background noise sources. |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML3 NCA3 | Location 3 - Corner of Station Street and Lawrence Hargrave Road, Warwick Farm | Possession WE29 OOHW Monitoring | 29/01/2021 15:15 | 37 | 61 | Lmax – 80dB<br>Lmin – 52dB<br>L10 – 60dB<br>L90 – 55dB<br>No project work in this vicinity. Compound activities in JOR are not audible. The acoustic environment is dominated by the traffic on the Hume Hwy and machinery noises from rail maintenance activities.<br>All noise is attributable to non-project related noise sources |
| NML4 NCA4 | Location 4 - Warwick Farm Station Car Park | Possession WE31 OOHW Monitoring | 29/01/2021 17:42 | 37 | 66 | Lmax – 83dB<br>Lmin – 43dB<br>L10 – 67dB<br>L90 – 45dB<br>Only inaudible related construction occurring at time of monitoring in the vicinity (cable puling and hand connections in pit behind noise barriers)<br>The acoustic environment is dominated by construction noise associated with construction of multi-story car park at Warwick Farm Station (mostly pavement roller and impulsive reverse beeper on bobcat responsible for higher levels of noise).<br>All noise is attributable to non-project noise sources |
| Spot Check NCA | 64 Broomfield Street, Cabramatta | Possession WE31 Monitoring | 29/01/2021 22:20 | 31 | 59 | Lmax- 79 dB (passing bus)<br>Lmin 47 dB<br>L90 - 50 dB<br>L10- 62 dB<br>Passing buses: 67 – 78 (x 4)<br>Passing LVs 57 – 66 dB, typical 60-63 when passing (2secs) v frequent (almost continuous)<br>Talking pedestrians: 55 dB (60 secs x 3)<br>Insects making up background ie: Crickets 51 dB (constant)<br>Day makers just audible @50 dB during rare breaks in traffic<br>Car starting up on Broomfield in close proximity: 58dB (15secs)<br>Party in close vicinity of units - lots of screaming and singing & music clearly audible from 50-51 dB<br>Hydrema quacker passing: 51 dB (3secs)<br>Local traffic very dominant acoustically<br>Low hum of lighting towers possibly contributing to background at 49-50dB.<br>Difficult to guess what plant activity is operating due to SSFL noise wall which appears effective in mitigating impacts, with background urban noise sources dominant. |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| Spot Check NCA | 64 Broomfield Street, Cabramatta | Possession WE31 Monitoring | 29/01/2021 22:40 | 31 | 57 | Lmax- 74 dB (passing bus)<br>Lmin 46 dB<br>L90 - 50 dB<br>L10- 61 dB<br>Some compaction audible @ 50-53, infrequently up to 58dB, (4mins cumulative)<br>Passing cars almost constant (longest period of no LVs - 43secs) - 60-66dB when passing close by<br>Bus turning into Fisher St 58-63dB count 2<br>Fireworks or gunshots?? Or backfire on hot hatch (mufflers?)- 58dB, multiple times - 3s x 3 moving down road<br>Some clanging audible on 3 occasions… Maybe ballast?<br>Local traffic very dominant acoustically<br>Low hum of lighting towers contributing to background at 49-50s |
| Spot Check NCA | 36 Broomfield Street, Cabramatta | Possession WE31 Monitoring | 29/01/2021 23:05 | 31 | 60 | Lmax – 75dB<br>Lmin – 45dB<br>L10 – 64dB<br>L90 – 48dB<br>Domestic mechanised gate opening (bell chimes?) for 10secs@ 53-56 dB<br>Very frequent passing light vehicles are dominant: 63 – 71 dB (almost continuous)<br>Excavator high rail 51 -54 passing 10secs<br>Movement alarm (Quacker): 49-52 for 3s<br>Excavator loading hydrema: 54- 57 (2min audible in between passing cars)<br>Daymakers clearly audible when no traffic @ 47-48 dB – Site action: implement some acoustic screening to mitigate this)<br>FFC streetsweeper (max) approx 74 dB |
| Spot Check NCA2 | 2 Cumberland Rd Cabramatta | Possession WE31 Monitoring | 29/01/2021 23:30 | 31 | 48 | Lmax – 63dB<br>Lmin – 40dB<br>L10 – 51dB<br>L90 – 42dB<br>Frequent light vehicles dominant: 63- 71 dB when passing (3-5secs)<br>Excavator (high rail): 51 -54 dB (passing audible for 10secs)<br>Movement alarm of hydrema: 44-46 dB (60secs)<br>2 x reversing and loading: 45dB<br>Lighting tower inaudible even with no traffic |
| Spot Check NCA1 | 141 Railway Parade, Cabramatta | Possession WE31 Monitoring | 29/01/2021 23:50 | 33 | 59 | Lmax – 76dB<br>Lmin – 40dB<br>L10 – 61dB<br>L90 – 43dB<br>Stockpile area is visible but not audible. Noise is dominated by cars and buses on Railway Parade. |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| Spot Check NCA1 | 3 Pevensey Street, Cabramatta | Possession WE31 Monitoring | 30/01/2021 00:08 | 30 | 53 | Lmax – 72dB<br>Lmin – 40dB<br>L10 – 53dB<br>L90 – 42dB<br>Noise is dominated by cars and buses on Railway Parade. No construction noise audible at this location |
| Spot Check NCA1 | 37 Park Road, Cabramatta | Possession WE31 OOHW Monitoring | 30/01/2021 00:30 | 30 | 63 | Lmax – 93 dB (passing car exhaust)<br>Lmin – 45 dB<br>L10 – 55 dB<br>L90 – 46 dB<br>Hotted up sports cars and trolley collection including metal on metal unloading (55-69) dominate the acoustics during the monitoring period.<br>No construction is occurring tonight.<br>Background noise estimate: 46dB comprise audible contributions from cooling fans from commercial buildings, loud exhausts on LVs far away, streets weeping in adjacent roads and the vision impaired signal at the pedestrian crossing/ lights.<br>Passing LVs up to 92 x 2 very loud muffler sports cars (racing)<br>Trolleys being towed and delivering to Woollies car park: 46 -69 dB quite noisey. Typical: 54-63 dB<br>FCC street sweeper @56-69 dB (40secs but contributed to background when working in adjacent streets)<br>The intersection pedestrian crossing has an audible beep every 3 secs 46-48 dB. |
| Spot Check NCA2 | 17 Hughes Street, Cabramatta | Possession WE31 OOHW Monitoring | 30/01/2021 00:49 | 30 | 61 | Lmax – 82 dB (FCC street sweeper)<br>Lmin – 42 dB<br>L10 – 61 dB<br>L90 – 44 dB<br>Pedestrian crossing audible warning constantly beeping every 3secs: 43-44dB<br>FCC street sweeper – constantly contributing to background in adjacent streets – max recorded when passing intersection: 81.6 dB<br>Aircraft: 48-56 dB (20 & 45secs)<br>Background Estimate: 43-44 dB Crickets and the sight impaired pedestrian crossing<br>Construction noise is generally inaudible with the exception of three brief events (possibly ballast on metal?) could be heard (47-52dB x 3 secs each)<br>43-48 dB (4 secs possibly ballast unloading?) |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML1 NCA1 | Location 1 – 225 Railway Parade, Cabramatta | Possession WE31 Monitoring | 30/01/2021 01:19 | 33 | 60 | Lmax: 81 dB<br>Lmin: 37 dB<br>L90: 40 dB<br>L10: 61 dB<br>Passing LVs- 59-71, 74 , 75-80 (fat muffler)<br>Aircraft - 48-50/51 (1 min)<br>Bat screech 53 in Eucalyptus in Broomfield St opposite.<br>Buses -54-72 turning at Boundary Lane (10 secs)- count: 2<br>Buses Over bridge Cabramatta Rd- approx 5s 41- 56 dB<br>FCC street sweeper @ 48 dB<br>Background crickets constant: 40dB<br>Construction of 3ULX north of Cabramatta Station is inaudible at this location at time of monitoring. |
| NML4 NCA4 | Location 4 - Warwick Farm Station Car Park | Monthly Monitoring - check of background noise levels Possession WE31 OOHW Monitoring | 30/01/2021 10:07 | 37 | 62 | Lmax: 82 dB<br>Lmin: 48 dB<br>L90: 52 dB<br>L10: 60 dB<br>Passing Aircraft -<br>Cicadas dominate background in Eucalyptus 51-61dB (typical 59+)<br>No machinery work occurring- only gst work and cable pulling about to commence. Crew waiting for track certifier prior to ramping<br>Public announcements from Station 59-60 “due to track work this weekend, buses replace trains between …”<br>Hume Hwy bridge rail provides dominant external noise source - constraint 51-53dB<br>Buses on other side of station contribute 59-61dB<br>Construction of ULX is inaudible here. Noise blanket screen work area so not visible either |

Below – Single Track underground crossing construction at Warwick Farm Station during weekend possession WE31


Below – Triple Track underground crossing construction at Cabramatta Station during weekend possession WE31

**Table 7. Attended noise monitoring results – February 2022**

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML1 NCA1 | Location 1 – 225 Railway Parade, Cabramatta | Monthly Monitoring - Assessment of potential noise impacts | 17/02/2021 8:01am | 45 | 66 | Lmax – 87<br>Lmin – 48<br>L10 – 70<br>L90 - 52<br>Ambient noise is dominated by the intersection of Boundary Lane and Railway Parade as well as passing traffic and train movements including:<br>Buses: 52 – 79 (Count 9)<br>Passing cars: 52-74, typical 67-70dB (Count 80).<br>Syd Trains Northbound: 56-73 (Count 3)<br>Syd Trains Southbound: 62-69 (Count 2)<br>Freight train: 55-78 (locos), carriages: typical 67dB (80s)<br>Construction activities opposite appear complete with no work activity observed during monitoring, barriers and boundary fencing still exist.<br>No construction noise was audible at the time of monitoring. All noise is attributable to ambient conditions. |
| NML2 NCA2 | Location 2 – 150 Broomfield Street, Cabramatta | Monthly Monitoring - Assessment of potential noise impacts | 17/02/2021 8:31am | 39 | 66 | Lmax – 79dB<br>Lmin – 48dB<br>L10 – 71dB<br>L90 - 52dB<br>The acoustic environment is dominated by passing vehicles using Broomfield St along with rail activities, passing aircraft and bird activity.<br>Passing Heavy vehicles: 63-78dB (x2)<br>Light vehicles audible from 59-75dB, (Count 52)<br>Sydney Trains: 53-73dB<br>Overhead aircraft: 58 - 74dB<br>Birds (lorikeets and Mynahs) frequently audible in trees between 52-69dB<br>Traffic Management in place with a water cart filling traffic barriers: 67-73dB (180s).<br>Drainage crew present south at Sussex St performing survey set-out but not audible from this location. |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML3 NCA3 | Location 3 - Corner of Station Street and Lawrence Hargrave Road, Warwick Farm | Monthly Monitoring - Assessment of potential noise impacts | 17/02/2021 9:20am | 37 | 57 | Lmax – 74dB<br>Lmin – 45dB<br>L10 – 58dB<br>L90 – 48dB<br>No construction occurring at time of monitoring in the vicinity. The acoustic environment is dominated by Hume Highway traffic, passing aircraft, the operational rail network, school activities, birdlife and noise from the opposite motor trade dealership workshops. Ambient source emissions include:<br>Syd Trains Northbound: 61-73dB (x 2)<br>Syd Trains Southbound: 52-68dB (x 2)<br>Hume Hwy traffic: 49-53dB, passing trucks: 55-58dB<br>School PA announcement: 49-51<br>Passing Light vehicles 57-60dB<br>Overhead aircraft: 48-58 (x6)<br>Birds (lorikeets) frequently audible in school trees between 48-61dB<br>Impulsive Wheel rattle gun at Peter Warren: 51-56 (60s)<br>Domestic whipper snipper in use 2 houses south: 51-69 (180s)<br>No construction noise was audible at the time of monitoring. All noise is attributable to background noise sources. |
| NML4 NCA4 | Location 4 - Warwick Farm Station Car Park | Monthly Monitoring - Assessment of potential noise impacts | 17/02/2021 8:58am | 37 | 57 | Lmax – 67dB<br>Lmin – 50dB<br>L10 – 60dB<br>L90 – 53dB<br>No project related construction occurring in the vicinity at time of monitoring.<br>The acoustic environment is dominated by the rail corridor and train station activities, Hume Highway operations, birds and construction noise associated with construction of multi-story car park at Warwick Farm Station.<br>Ambient source emissions include:<br>Syd Trains: 54-65dB (Count 4)<br>Train door alarms: 54-59dB<br>Platform PA announcements: 53-63dB<br>Hume Hwy (constant): 53-57db<br>Aircraft passing: 54-58 (Count 4)<br>Lorikeets, Cockatoos & Mynahs: 54-60dB<br>Carpark construction 55-61dB<br>All noise is attributable to background noise sources |

Below: Additional car parking completed opposite 225 Station Street, Cabramatta in February 2022


Below: Work zone safety barriers established in Broomfield Street, Cabramatta - February 2022

**Table 8. Attended noise monitoring results – March 2022**

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML1 NCA1 | Location 1 – 225 Railway Parade, Cabramatta | Monthly Monitoring - Assessment of potential noise impacts | 23/03/2022 15:43 | 45 | 65 | Lmax – 79<br>Lmin – 48<br>L10 – 70<br>L90 – 53<br>No construction occurring on this side of the rail corridor at time of monitoring. Ambient acoustic are dominated by the operational commuter rail network, passing light vehicles and buses as well as a flock of Corellas.<br><br>Passing buses: 57-77 (Count 7)<br>Light vehicles: 71-74 dB (Count 45)<br>Sydney Trains: 61-73dB (Count 3)<br>Flock of birds (Corellas): 60-63dB (frequent)<br><br>No construction noise from Broomfield St was audible at the time of monitoring. All noise is attributable to background noise sources |
| NML2 NCA2 | Location 2 – 150 Broomfield Street, Cabramatta | Monthly Monitoring - Assessment of potential noise impacts | 23/03/2022 16:10 | 39 | 68 | Lmax – 78dB<br>Lmin – 47dB<br>L10 – 72dB<br>L90 - 55dB<br>Drainage construction dominates the acoustic environment at time of monitoring with typical ambient contributions from sources such as passing aircraft, Sydney Trains and a freight train, passing vehicles and constant bird noise. Observations include:<br>Passing Heavy vehicles – 71-76dB.<br>Light vehicles: 67-73dB, (Count 28)<br>Passing Freight train on SSFL: 57-72dB (120s)<br>Passing Sydney Trains: 56-69dB<br>Aircraft: 59-69 (Count 2)<br>Birds on and off the whole period (Cockatoos, Lorikeets, Mynahs): 56-64dB<br>One single bogie, one agi and two excavators in operation for drainage construction between 50 &100m away on & off.<br>Truck idling: 56-61dB (120s)<br>Truck spoil haul passing: 63-75dB (10s): –<br>Agi reverse quacker 61-70dB (10s)<br>Excavator idling: 49-53 (300s),<br>Excavator high revs (digging & loading – 600s): 63-67dB<br>Excavator movement alarm: 57-67dB |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML3 NCA3 | Location 3 - Corner of Station Street and Lawrence Hargrave Road, Warwick Farm | Monthly Monitoring - Assessment of potential noise impacts | 23/03/2022 17:01 | 37 | 59 | Lmax – 73dB<br>Lmin – 44dB<br>L10 – 59dB<br>L90 – 47dB<br>No construction audible at time of monitoring – Can see a single excavator working in main compound at Jacquie Osmond Reserve but can't hear it over background noise. Typical ambient contributions are generated by the operational commuter rail network and Hume Hwy forming the background noise.<br>Passing Syd Trains Northbound: 52-74dB ( x 2)<br>Syd Trains Southbound: 56-68dB ( x 1)<br>Traffic on Hume Hwy (constant): 47-54dB<br>Birds audible between 52-53dB |
| NML4 NCA4 | Location 4 - Warwick Farm Station Car Park | Monthly Monitoring - Assessment of potential noise impacts | 23/03/2022 16:34 | 37 | 59 | Lmax – 81dB<br>Lmin – 47dB<br>L10 – 61dB<br>L90 – 50dB<br>No project related construction occurring in the vicinity at time of monitoring. The acoustics are dominated by operational rail activities including train corridor movements, Warwick Farm Station operations along with aircraft noise and Hume Highway traffic impacts.<br>Hume Highway: 51-55dB (Constant)<br>Sirens going past rail overbridge: 50-53, 55-60dB.<br>Aircraft: 53-73 (x 3)<br>Sydney Trains 53-64 (x 4)<br>Platform announcements: 49-54dB<br>Freight train: 54-68. Loco & 3 x horns:78-79 (max)<br>Birds: 51-54, up to 68dB<br>All noise is attributable to background noise sources |

Below: Enabling work activities (drainage work) in Broomfield Street during March 2022

**Table 9. Attended noise monitoring results – April 2022**

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML1 NCA1 | Location 1 – 225 Railway Parade, Cabramatta | Monthly Monitoring - Assessment of potential noise impacts | 12/04/2022 09:50 | 45 | 64 | Lmax – 86<br>Lmin – 43<br>L10 – 67<br>L90 - 48<br>No construction occurring at time of monitoring. Broomfield St work stood down due to significant rainfall recently. Ambient acoustics are dominated by vehicular use of Railway Parade and the intersection of Boundary Road as well as the operational commuter rail network, passing aircraft as well as birdlife<br>Light vehicles: 58-75 dB (Count 78)<br>Passing buses: 55-78 (Count 5)<br>Sydney Trains: 59-71dB (Count 5)<br>Aircraft overhead: 51-58 (Count 3, 30s/50s)<br>Birds (Crows & lorikeets): 49-58dB<br>B/G estimate: 44-45dB<br>No construction noise from Broomfield St was audible at the time of monitoring. All noise is attributable to background noise sources |
| NML2 NCA2 | Location 2 – 150 Broomfield Street, Cabramatta | Monthly Monitoring - Assessment of potential noise impacts | 12/04/2022 10:18 | 39 | 63 | Lmax – 76dB<br>Lmin – 44dB<br>L10 – 67dB<br>L90 - 50dB<br>No construction occurring at time of monitoring. Broomfield St work stood down due to recent rainfall. Ambient acoustics are dominated by vehicular use of Broomfield St as well as the operational rail network including SSFL, passing aircraft as well as birdlife<br>Sydney Trains: 57-67dB (Count 5)<br>Freight train: 50-76dB (120s)<br>Light vehicles: 52-73 dB (Count 46)<br>Aircraft overhead: 57-67dB (Count 2, 30-40s)<br>Birds (Crows & lorikeets): 48-55dB<br><br>No construction noise audible at the time of monitoring. All noise is attributable to background noise sources |

| ID# / NCA | Location | Reason for monitoring | Date/Time | RBL dB(A) | $L(A)_{eq(15min)}$ dB(A) | Comments |
|---|---|---|---|---|---|---|
| NML3 NCA3 | Location 3 - Corner of Station Street and Lawrence Hargrave Road, Warwick Farm | Monthly Monitoring - Assessment of potential noise impacts | 12/04/2022 11:03 | 37 | 57 | Lmax – 73dB<br>Lmin – 39dB<br>L10 – 58dB<br>L90 – 43dB<br>Passing Sydney Trains: 46-72 dB (x3)<br>Overhead aircraft: 44-51dB<br>Helicopters: 47-62dB (x 2, 120s, 70s)<br>Freight train: 49-69 (120s)<br>Passing Light vehicles audible from 57-70dB, typical: 68-72dB<br>Hume Hwy traffic: 44 (cars)-55dB (trucks)<br>Birds (lorikeets & mynahs) constant on & off: 46-61dB<br>Barking dogs: 51dB<br>Peter Warren Workshop: 49-53dB (40s)<br>B/G estimate: 41-43dB<br><br>No construction noise was audible at the time of monitoring. All noise is attributable to background noise sources |
| NML4 NCA4 | Location 4 - Warwick Farm Station Car Park | Monthly Monitoring - Assessment of potential noise impacts | 12/04/2022 10:36 | 37 | 60 | Lmax – 76dB<br>Lmin – 45dB<br>L10 – 64dB<br>L90 – 48dB<br>No project related construction occurring in the vicinity at time of monitoring.<br>The acoustic environment is dominated by the rail corridor and train movements, Hume Highway traffic, truck noise associated with the freight logistics hub nearby, aircraft associated with Bankstown Airport and birdlife.<br>Passing Sydney Trains: 50-56 dB (x6)<br>Train door beepers: 57-62dB<br>Station announcements: 49-52<br>Freight train: 52-72 (80s)<br>Aircraft: 53-73 (x5, 40, 50-70s)<br>Helicopter: 51-72 (x1, 90s)<br>Passing freight truck on Manning St: 57-72dB<br>Hume Hwy traffic: 48-50dB)<br>Birds (lorikeets, cockies & mynahs) constant on & off: 50-63dB<br>B/G estimate – 44dB<br><br>All noise is attributable to background noise sources |

Below: Post flood drainage and civil work on hold in Broomfield Street during April 2022

Below: Freight train passing Warwick Farm Station on the SSFL during NCA4 monitoring April 2022

## 5. Vibration Monitoring Results

Vibration monitoring during the period was not required as no vibration intensive activities were performed near any sensitive receivers.