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CONCRUSH INCREASE TO CAPACITY PROJECT TERALBA, NSW

Response to Submissions

FINAL

May 2019

CONCRUSH INCREASE TO CAPACITY PROJECT TERALBA, NSW

Response to Submissions

FINAL

Prepared by
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on behalf of
Concrush

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1.0 Introduction

1.1 Background

Concrush Pty Ltd (Concrush) was established in 2002 after recognising the need for a construction and demolition recycling facility in the Lake Macquarie region. The existing Concrush facility provides cost effective options for recycling of concrete, asphalt, bricks, pavers, roof tiles, wall and floor tiles, rock, sand, plasterboard and green waste for domestic households and commercial industry. These materials are then recycled into specification and non-specification quality products such as roadbase, drainage aggregates, pipe bedding and haunch, packing fines, decorative aggregates and mulches. These products are used within the civil and construction industries or for commercial, domestic and household applications.

Following strong demand for their recycling service and the increased focus on maximising recycling of construction materials by the community and State and local government, Concrush is seeking development consent to increase the processing and storage capacity of the existing facility located on part of Lot 2 DP 220347 at 21 Racecourse Road, Teralba, New South Wales (NSW) (refer to **Figure 1.1**). The 'Concrush increase to capacity project' (the Project) will involve alterations and additions to the existing facility in order to provide greater on-site storage capacity and to facilitate the increased level of throughput.

Concrush currently recycles approximately 108,000 tonnes (t) of waste material per annum (pa) and is seeking approval for a staged increase in capacity to up to 250,000 t of waste material recycled per annum. It is anticipated that the volume of materials recycled, and products sold will gradually increase over a period of time up to the maximum production level of 250,000 tonnes per annum (tpa). The waste material recycled would consist predominately of construction and demolition waste with green waste storage to be maintained below 200 t and the processing rate to be no greater than 5,000 tpa.

The Project will be constructed in two stages to allow for the proposed project elements to come online as required in line with increasing production. Concrush will require an on-site waste storage capacity of up to 150,000 t of waste at any point in time. The two Project stages and associated approximate production levels are as follows:

- Stage 1 – upon receipt of all approvals required for the Project.
- Stage 2 – at approximately 200,000 tpa up to 250,000 tpa.

The Environmental Impact Statement (EIS) for the Project was placed on public exhibition from 16 November 2018 to 14 December 2018. As part of the public exhibition process a total of 30 submissions were received in relation to the Project, including 13 government agency submissions and 17 community submissions.

This Response to Submissions (RTS) has been prepared by Umwelt Pty Limited (Umwelt) on behalf of Concrush to address the key issues raised in the submissions.

1.2 Report Structure

This report provides:

- A brief overview of the Project to provide context for the RTS (**Section 1.0**)
- A summary of the actions taken since the exhibition of the EIS for the Project (**Section 2.0**)
- A summary of changes made to the Project (**Section 3.0**)
- A detailed response to the issues raised in the government and community submissions (**Section 4.0**)
- References (**Section 5.0**).

Image Source: Nearmap (May 2017)

0 0.25 0.5 1.0km
1:25 000

Legend

Project Site

FIGURE 1.1

Locality Plan

2.0 Actions Taken Since Project Exhibition

This section provides an overview of the actions taken during the preparation of the RTS document including additional consultation undertaken and additional environmental assessment.

2.1 Consultation

Since the completion of the exhibition period Concrush has undertaken further consultation with Lake Macquarie City Council (LMCC), the NSW Environment Protection Authority (EPA), the office of environment and heritage (OEH), the NSW Department of Planning and Environment (DPE) and residents located on Racecourse Road, Teralba. An outline of the consultation undertaken with the agencies and community members is provided in **Sections 2.1.1** to **2.1.4**.

2.1.1 LMCC

A meeting was held with LMCC on 15 February 2019 to discuss the issues identified in LMCC's submission and the proposed response to each of the issues raised. These responses are provided in **Section 4.0** of this report. LMCC stated that while it is not the consent authority it had provided the comments to identify the issues that LMCC would raise if they were the consent authority. LMCC acknowledged that as the Project is State Significant Development (SSD) the provisions of LMCC's Development Control Plan are not directly applicable to the Project.

2.1.2 EPA

A meeting was held with the EPA on 5 March 2019 to discuss the issues raised in EPA's submission in relation to noise, air quality, water and contamination. Prior to the meeting Concrush provided to the EPA some additional information prepared by RCA Australia (RCA), the contamination consultant for the Project, in response to the EPA's submission in relation to contamination. The additional information (refer to **Appendix A**) was used to facilitate the discussion regarding the potential for specific contaminants to be present within the Project site and the suitability of the Project site for the intended industrial use.

During the meeting further information and clarification of the assessment process and/or specific issues was provided to the EPA in relation to the submissions on noise, air quality, water and contamination. At the conclusion of the meeting the EPA advised that it would provide further correspondence to DPE to clarify the issues to be addressed in its submission. This correspondence was provided on 12 March 2019 (refer to **Appendix B**).

2.1.3 DPE

A teleconference was held with DPE on 22 February 2019 to discuss DPE's submission on the Project and the progress of the RTS report. On 8 March 2019 DPE undertook a site visit to the Concrush facility followed by a meeting. The site visit enabled DPE staff to observe the facility during typical operations and to gain some familiarity with the existing Concrush site and the proposed area of expansion. The meeting following the site visit involved discussion of the outcomes of the EPA meeting as well as discussion of the issues identified in the DPE submission.

2.1.4 OEH

A meeting was held with the OEH on 1 March 2019 to discuss the OEH's submission regarding the level of Aboriginal cultural heritage assessment undertaken for the Project. Following the meeting OEH requested further information on the Aboriginal cultural heritage assessment process including:

- A description of the development including all ground disturbing works
- The assessment of the Aboriginal cultural heritage values of the site
- Details of the consultation undertaken with the Aboriginal community to date
- Reasoning for the level of assessment undertaken
- Any recommended further Aboriginal cultural heritage assessment.

This additional information was provided to OEH on 3 April 2019 and is presented in **Appendix C**. Following review of this information OEH provided a letter dated 2 May 2019 identifying that the Concrush Resource Recovery Facility Expansion (SSD 8753) project is granted an exemption from preparing an Aboriginal cultural heritage assessment report and no further assessment of Aboriginal cultural heritage is required (refer **Appendix C**).

2.1.5 Local Community

Engagement with key stakeholders has been an integral component of the Project and has been used to inform the environmental impact assessment process. A further round of consultation with the two nearest residents on Racecourse Road was undertaken during February and March 2019 to outline the changes in relation to the Project's operating hours (refer to **Section 3.1**).

The engagement approach built on existing relationships formed during the EIS phase and utilised the existing communication channels of email and phone. **Table 2.1** provides a summary of the consultation and stakeholder response. In summary:

- Successful contact was made with both residents.
- Neither resident made comments during the exhibition period.
- Both residents were called and offered a meeting to discuss the proposed changes relating to working hours and noise. Both residents chose to discuss over the phone. A follow-up email confirming the discussion points and contact details was sent following the discussions.
- Both residents were comfortable with the proposed changes in relation to the operating hours for the Project.
- Both residents reiterated their previous comments given as part of the EIS process indicating that the noise associated with the project was not a high concern for them individually.

Table 2.1 Stakeholder consultation details

Stakeholder	Date	Tool	Response
Resident 1	15 February 2019	Phone Call	No answer
	15 February 2019	Email	Email sent outlining changes to night time activities and contact details. Resident 1 responded advising that she could not take the call and would call back the following Monday.

Stakeholder	Date	Tool	Response
	22 February 2019	Phone and email	Email and follow up phone call. No response.
	19 March 2019	Phone Call	Successful contact. Resident 1 expressed no issues and/or concerns with the activities and was comfortable with the information provided.
Resident 2	15 February 2019	Phone Call	Resident 2 indicated that noise associated with the Project was not a concern and had follow up questions in relation to road maintenance and the potential for the Project to impact on flooding. The Project team agreed to follow up with some additional information via email.
	22 February 2019	Email	Email sent by Project team to confirm phone call on 15 February and to provide additional information around flooding and road maintenance.

2.2 Additional Environmental Assessment

2.2.1 Contamination

As identified in **Section 2.1.2**, additional information was prepared to inform a meeting with the EPA in relation to contaminated land and the suitability of the Project site for the intended industrial use. The information (refer to **Appendix A**) included the following:

- Clarification of the area covered by the 1998 Environmentally Hazardous Chemical Notice that applies to part of Lot 2 DP 220347
- Review of the sampling regime undertaken as part of the study, the contaminants of concern, results relevant to criteria, potential exposure pathways and proposed mitigation strategy
- Discussion on potential for per and polyfluoroalkyl (PFAS) substances to be present at the Project site
- The need for a Section A Site Audit Statement prepared by an EPA accredited contaminated site auditor.

The EPA's revised submission in relation to contamination is addressed in **Section 4.5** of this report.

2.2.2 Noise

The following additional noise assessment tasks were undertaken:

- Noise modelling of the operational activity of 'loading and dispatch of trucks' during the evening time period incorporating neutral meteorological conditions
- Investigation of additional reasonable and feasible mitigation options in relation to daytime operations.

The additional noise assessment is discussed in **Section 4.1** and provided as **Appendix D**.

2.2.3 Air Quality

The following additional air quality assessment tasks were undertaken:

- Odour modelling to include the leachate dam as an odour source
- Provision of tabulated air quality results for the nearest receivers to the north of the Project site.

The additional air quality assessment is discussed in **Section 4.2** and provided as **Appendix E**.

2.2.4 Soil and Water Management

The following additional monitoring, modelling and assessment has been undertaken as part of the RTS:

- An expanded water quality monitoring program was established to monitor a range of additional water quality parameters in both the Project site and receiving waters and inform ongoing surface water quality monitoring requirements.
- A detailed daily time step water balance model (the Model) was prepared using GoldSim modelling software to better predict the likely volume and frequency of discharges from sediment basins. The Model also provides more detailed results regarding captured stormwater reuse volumes from the three proposed Project catchments (Northern Catchment, Southern Catchment and Green Waste Catchment) and, in conjunction with the results of the water quality monitoring results, allows for a more accurate estimation of discharge water quality.
- The proposed sediment basins, Sediment Dam 1 (SD1) and Sediment Dam 2 (SD2), have been resized as Type D sediment basins in accordance with Landcom's *Managing Urban Stormwater Volume 1* (2004) and *Volume 2E Mines and Quarries* (DECC, 2008). The settling zone capacities of SD1 and SD2 have been increased to capture site runoff from a 5 day 85th percentile rainfall (38.9 mm) event with a two-day dewatering period and a sediment zone sized to 50% of the settling zone volume.

The additional soil and water management assessment is presented in **Section 4.3**.

2.2.5 Traffic

A review of the *Guide to Road Design Part 4: Intersections and Crossings - General* (Ausroads 2017) was undertaken by Better Safety Futures (formerly Better Transport Futures), the traffic consultant for the Project, in relation to the LMCC submission identifying the potential need for turning lanes on Racecourse Road at the Project site entrance. A summary of this review is presented in **Section 4.4** of this report with the full response presented in **Appendix F**.

3.0 Project Changes

Since the public exhibition of the EIS and in response to submissions received Concrush have reviewed the proposed Project and operations. As part of this revision Concrush is proposing changes to the Project that was presented in the EIS. The proposed Project changes are described in **Sections 3.1** to **3.3**. The key Project components as described in the EIS are presented in **Table 3.1**.

Table 3.1 Proposed Project Components

Component	Description
Hardstand areas	Hardstands will be constructed in material processing areas and stockpile areas (will require some site levelling). Hardstands will consist of 200 mm thick recycled roadbase). Internal access roads will have a two-coat seal.
Material Processing Areas	Processing areas for the crushers and screens.
Waste and Product Stockpile Areas	Waste and product stockpiles will be established with a stockpile height of up to 10 m. It is anticipated that up to 150,000 tonnes of material will be stored onsite.
Upgrade of existing facilities	The existing weighbridge and office will be upgraded, and the existing lunch room and maintenance shed will be relocated to facilitate the new site layout.
Waste Tracking System	The existing Wasteman software will be used to track the details of all inbound and outbound loads
Production Compound	The relocated lunch room, toilet and maintenance shed will be grouped together to form a compound for production staff.
Retail Area	This area will be restricted to light vehicles and small trucks and will include an area for tipping and an area containing concrete bays of products for sale.
Storage Bays	Concrete storage bays will be constructed using 1 m^3 concrete blocks.
Concrete Walls	A 2 m high concrete wall will be constructed close to the southern Project site boundary using 1 m^3 concrete blocks. The wall will prevent stockpiled material encroaching on swale drains and moving offsite. Concrete walls may also be used to delineate other areas of the site.
Green Waste Pasteurisation	An aeration system using four electronically driven and computer-controlled fans to push air through movable perforated pipes underneath the pasteurisation piles will be implemented in the green waste area. This system allows more control of oxygen levels in the pasteurisation process compared to the tradition turnover process.
Wheel Wash	A vehicle wheel wash bay will be constructed immediately after the exit weighbridge to reduce tracking of material onto public roads.
Concrete Washout Bay	A wet concrete washout bay will be constructed consisting of a bunded, impermeable area with an isolated catchment. Wet concrete and agitator washout will be captured in the concrete washout bay.
Water Management System	The existing Water Management System (WMS) will be upgraded involving resizing of existing sediment basins, new sediment basins, swale drains and a leachate dam and artificial wetland to treat nutrient runoff. Water tanks and associated poly pipe and pumps will be installed to allow collection and re-use of stormwater for dust suppression.
Trommel Screening Machine	Addition of a Trommel screening machine for sorting of green waste.
Primary Jaw Crusher	The primary jaw crusher will be replaced on a like for like basis at some point in time as part of future operations.

Component	Description
Perimeter Landscaping - Mounds, Fencing and Lighting	Landscape mounds will be established on the perimeter to limit visibility. 1.8 m high security fencing and security lighting are also to be installed.
Utilities	The existing Ausgrid connection is via a power pole in the north east corner of the site. The power supply will be extended to the south west corner of the site via an underground connection.
Pug mill	A pug mill may be installed in the future to allow fast mixing of materials to produce products such as road base.
Ballast wash facility	A processing area may be dedicated to a ballast wash facility to allow for processing of rail ballast.

3.1 Hours of Operation

The general Project operating hours will remain as 7.00 am to 5.00 pm Monday to Friday and 7.00 am to 4.00 pm Saturdays, closed Sunday. Evening works during the period 6.00 pm to 10.00 pm are proposed on an as needs basis such as servicing road or construction projects that are scheduled to be undertaken during the night to minimise disruptions to the community.

Concrush was originally seeking approval for the loading and dispatch of trucks during the night time period of 10.00 pm to 7.00 am. The EIS identified that the proposed night time operations of loading and dispatch of trucks had a predicted 8 dBA exceedance of the relevant night time criteria for Noise Catchment Area (NCA) 1 (refer to **Figure 3.1**) to the north of the Concrush site. Concrush has revised the Project operating hours such that there will be no night time operations during the period of 10.00 pm to 7.00 am. Even with the proposed night operations, neither of the two residents located in NCA 1 raised noise as an issue of concern during consultation undertaken during the EIS and RTS phases of the Project. The revised Project operating hours remove the potential for this exceedance to occur.

The EIS identified that the operating activities undertaken during the evening period would be restricted to 'screening and stockpiling' of material only. This requires a reduced number of plant and machinery to be operating compared to full production activities during the day time period. The evening time operations of 'screening and stockpiling' comply with the relevant noise criteria at all NCAs. Concrush is now proposing to undertake the activity of 'loading and dispatch of trucks' during the evening period. Noise modelling undertaken as part of this RTS predicts compliance with the evening time criteria at all NCAs for the activity of 'loading and dispatch of trucks'. It should be noted that only one activity, either 'screening and stockpiling' or 'loading and dispatch of trucks' would be undertaken at any one time during the evening period to ensure compliance with the evening time noise criteria.

Image Source: Nearmap (Jun 2018)
Data Source: RCA Acoustics (2018)

0 100 250 500m
1:10 000

Legend

Project Site

Noise Catchment Area

FIGURE 3.1

Noise Catchment Areas

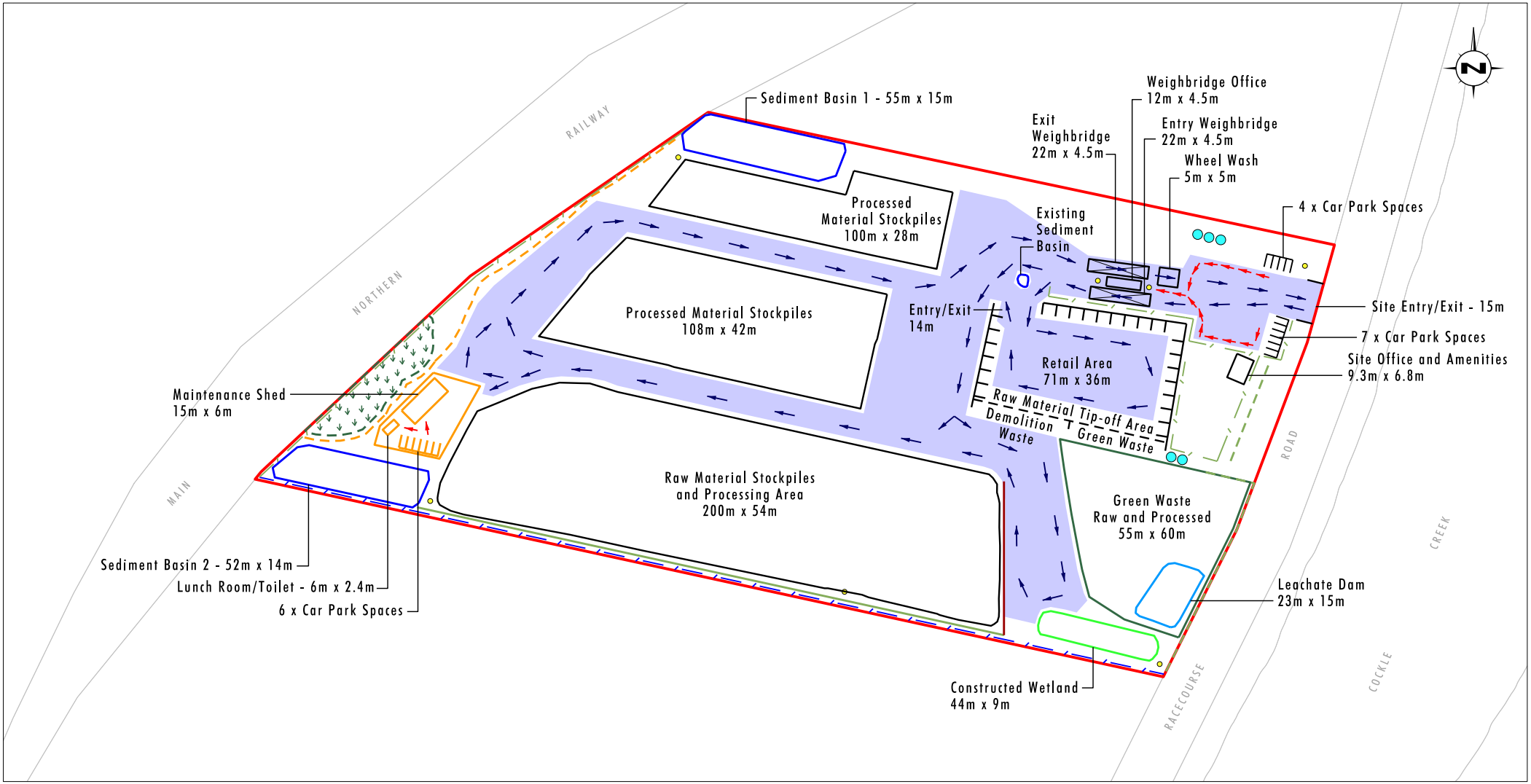
3.2 Water Management System

The WMS has been revised to allow for increased on-site water detention through increased size of the two sediment dams. Sediment Basin 1 will be approximately 55 metres (m) by 15 m compared to the original 30 m by 4 m. Sediment Basin 2 will be approximately 52 m by 14 m compared to the original 16 m by 6.6 m.

3.3 Site Layout

The changes to the WMS identified in **Section 3.2** have necessitated some alterations to the Project site layout. The increase in size of Sediment Basin 1 (refer to **Figures 3.2** and **3.3**) has resulted in minor changes to the shape of the two 'Processed Material Stockpiles' in Stages 1 and 2 of the Project.

To accommodate the increase in size of Sediment Basin 2 (refer to **Figures 3.2** and **3.3**) the production compound (consisting of the maintenance shed, lunch room/toilet and car parking area) has been relocated approximately 20 m to the north. The western end of the 'Raw Materials Stockpile and Processing Area' has been altered very slightly to accommodate the relocated production compound.



Data Source: Concrush (2018)

0 25 50 100m
1:2 000

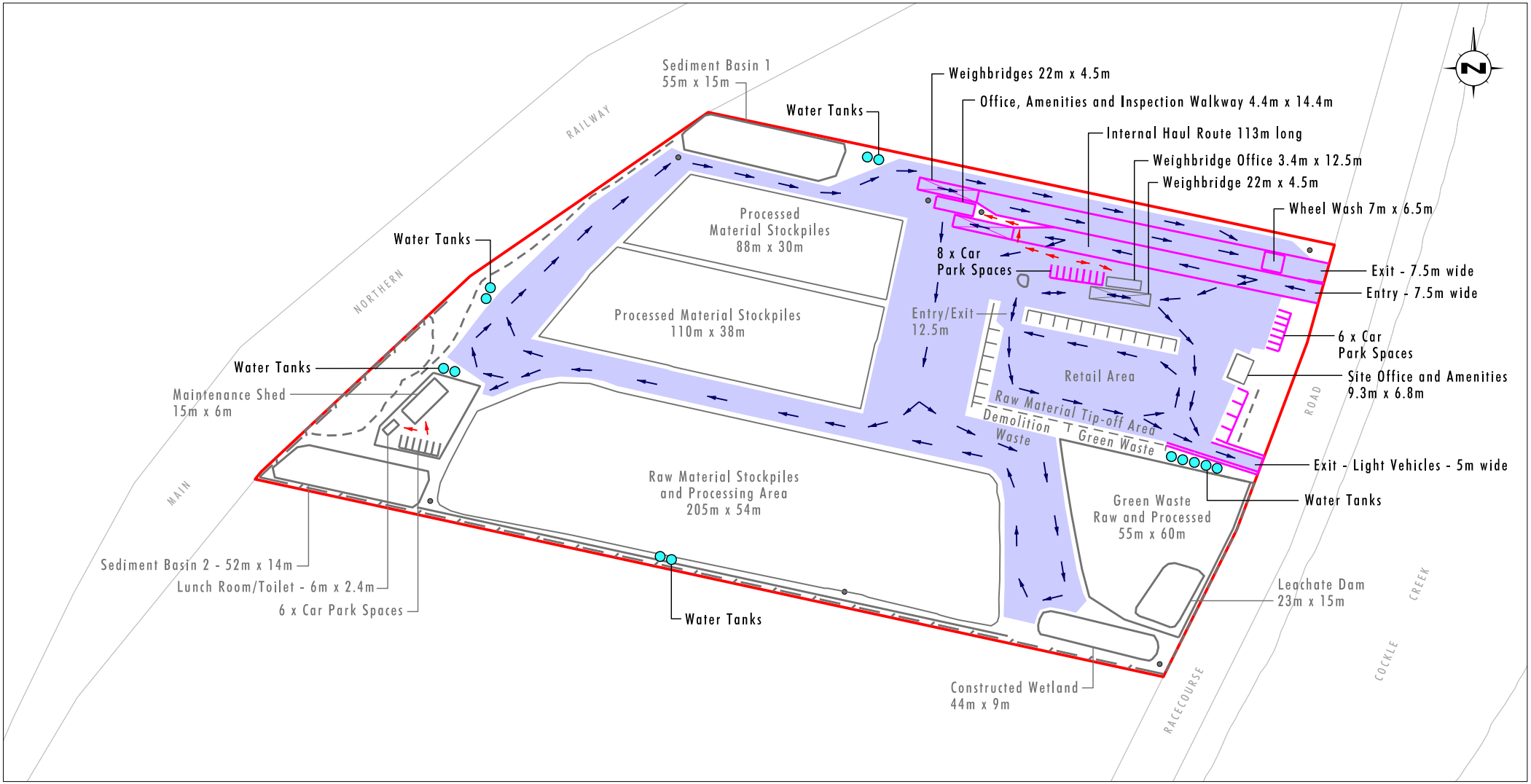
Legend

- Project Site
- Production Compound
- Processing and Stockpile Areas
- Sediment Basin
- Green Waste Area
- Existing Wetland Area with Buffer
- Landscaped Earth Bund (1 in 100 Year Flood Mitigation)
- Existing Earth Bund
- Existing 2m High Fence
- Proposed 2m High Fence
- Proposed 3m High Concrete Block Wall
- Proposed 3.5m High Concrete Block Wall
- Existing Water Tanks
- Proposed Security Lighting
- Pedestrian Movement
- General Vehicle Movement
- Internal Roads/Hardstand Area

FIGURE 3.2

Stage 1 - Conceptual Layout
Up to 200 000 Tonnes per Annum

File Name (A4): R07/3972_087.dgn
20190410 16.47



Data Source: Concrush (2018)

0 25 50 100m
1:2 000

Legend

- Project Site
- Stage 2
- Water Tanks
- Security Lighting
- Pedestrian Movement
- General Vehicle Movement
- Internal Roads/Hardstand Area

FIGURE 3.3

Stage 2 Conceptual Layout
Up to 250 000 Tonnes per Annum

4.0 Response to Submissions Received

The following section provides a response to the issues raised in submissions on the Project. The key themes raised in the submissions are summarised in **bold** text with the response below in normal text.

4.1 Noise

4.1.1 Agency Submissions

4.1.1.1 DPE

The Noise Impact Assessment (NIA) concludes that with all mitigation measures in place, there would be noise criteria exceedances of up to 8 dB at the nearest sensitive receiver. Submissions from Council and EPA also raise noise impact concerns.

The predicted noise level of up to 8 dBA above the relevant criteria was for night time operation at the nearest receivers in NCA 1 (refer to **Figure 3.1**). As identified in **Section 3.1**, operations during the night time period of 10.00 pm to 7.00 am are no longer proposed as part of the Project.

Submissions from LMCC and the EPA in relation to noise are addressed in **Sections 4.1.1.2** and **4.1.1.3** respectively.

The NIA states that not all plant would be operational at the same time thereby minimising impacts however, evidence has not been provided to demonstrate that this is a realistic and/or viable operational scenario. This evidence should be provided.

Table 6.8 of the EIS and Table 6.1 of the NIA present the operational scenarios modelled as part of the noise assessment. These operational scenarios were developed by Concrush, RCA and Umwelt to reflect realistic operational scenarios in relation to the activities undertaken during Concrush operations and with consideration of the potential number of plant and vehicles involved in each scenario. As identified in the NIA, not all plant and vehicles would be operational at the same time for the scenarios presented in the EIS and NIA. For example, Scenario 1 'Full Production and Sales' assumes there are four trucks and four cars entering/exiting or being loaded at the facility, that the water cart is operating, that the ballast wash is operating, that the pug mill is operating, that there is a grinder being used in the maintenance shed and that plant or machinery is being washed down using the presser washer. This is in addition to all crushers, screens, excavators and front end loaders operating at the same time. It is reasonable to assume that this may occur as part of 'Full Production and Sales' some of the time, however, it is entirely realistic that several items of plant identified above, such as ballast wash, pug mill or grinder, would not be operating at all times during 'Full Production and Sales'. Similarly, during less busy times there will not always be four trucks and four cars within the site unloading or being loaded. As such, the scenarios presented in the EIS and NIA are considered realistic and viable and represent a worst case scenario for assessment purposes. Therefore the statement that not necessarily all plant would be operational at the same time is considered reasonable and representative of realistic situations that will occur at the Project site.

The evening work scenario assessed in the EIS was for the activity of screening and stockpiling and included the use of a front end loader and a screening machine including vacuum pumps. In this scenario it is most likely that both items of machinery would be active the majority of the time that this activity was taking place. This RTS report has assessed the activity of loading and dispatch of trucks during the evening time. This activity included two trucks entering the site or being loaded and the operation of one front end loader. Both of these scenarios are realistic but would not be undertaken at the same time.

The Department also requires further consideration of noise mitigation measures to minimise amenity impacts to nearby sensitive receivers, including evidence of consultation with the sensitive receivers identified to be affected by predicted noise level exceedances.

The investigation of additional feasible and reasonable mitigation measures to reduce residual noise impacts during the daytime period is presented in **Section 4.1.1.2**.

As identified in **Section 2.1.4**, consultation with the two nearest residences to the north of the Project site has been undertaken to advise them of the change to the Project in relation to no night time operations. Both residents advised that noise during Concrush operations was not a primary concern for them.

Any changes to road noise impacts as a result of the revised traffic/transport arrangements are required to be addressed in a revised NIA.

No changes are proposed to traffic/transport arrangements for the Project and as such the traffic noise impact assessment will not require an update and the impact assessment remains appropriate.

4.1.1.2 EPA

Recommendations

Construction hours should be limited to the recommended standard hours in Table 1 of the Interim Construction Noise Guideline; that is 7.00 am to 6.00 pm (Monday to Friday), 8.00 am to 1.00 pm (Saturday) and no work on Sundays or Public Holidays.

As per Section 7.1.1 of the EIS, Concrush have committed to operating in accordance with standard construction hours identified in Table 1 of the Interim Construction Noise Guideline. Other construction noise mitigation measures such as turning off machinery not in use and ensuring plant and vehicles are regularly maintained will also be implemented during the construction phase.

All feasible and reasonable mitigation measures should be applied to manage construction noise impacts, including those specified in Appendix H, Section 8 of the EIS.

The noise modelling undertaken for the construction phase of the Project for the EIS identified compliance with the construction noise criteria for all NCAs. Concrush commits to implementing the construction noise mitigation measures identified in Section 7.1.1 and Appendix H of the EIS.

The operational noise exceedance of 4dB in the daytime period is a moderate impact. It is recommended that the proponent investigates additional feasible and reasonable mitigation measures to reduce residual noise impacts in the daytime period and include these into a revised EIS and Appendix H.

At the meeting on 5 March 2019 (refer **Section 2.1.2**), the EPA confirmed that the noise exceedance of 4 dBA in the daytime period is classified as a 'marginal' rather than 'moderate' exceedance in accordance with the *Noise Policy for Industry* (NPI) (EPA 2017) as it is less than 5 dBA above the daytime criteria and does not exceed the recommended amenity noise level.

The daytime noise exceedance of 4 dBA is predicted for the scenario of 'Full production and sales', representing the worst case scenario of all potential plant and equipment operating at the same time, for NCA 1 which incorporates two residential dwellings. The only other daytime noise exceedance for the 'Full production and sales' scenario is for NCA 2 which has a predicted exceedance of 1 dBA which is classified as 'negligible' under the NPI.

The investigation of additional feasible and reasonable mitigation measures to reduce residual noise impacts during the daytime period is presented below.

Modelling conducted for the original noise report indicated daytime exceedances for Scenario 1 'Full Production and Sales' at NCA1. As part of the response to submissions process, two additional operational noise models, Option A and Option B, were constructed in order to investigate further reasonable and feasible mitigation options with the aim of achieving compliance with the relevant criteria.

Both models were developed from the model of full operation used for Scenario 1, with all sources having the same sound power and same location. Additional mitigation measures were applied, as described below.

Mitigation measures in the original Scenario 1 'Full Production & Sales':

- 3.5 m bund or stockpile along eastern edge of the processing/raw material area.
- 3 m wall along southern edge of the processing/raw material area.

Additional mitigation measures for Option A:

- Barrier to 6.5 m high along part of northern boundary. The length of this barrier is flexible but it must block line of sight from NCA1 to regions of the processing and raw materials area where crushers and screens will operate.
- All processing plant, including screens, crushers, impactor, and ballast wash, should be limited to the section of processing/raw material area the above barrier shields. Crushers and screens should be placed in the western half of the processing/raw materials area to create additional distance to receivers to the east (NCA 2).

Additional mitigation measures for Option B (not incorporating Option A mitigation measures):

- One of the front-end loaders is removed and replaced with 2 x 60 t excavators
- Maintain at least 3.5 m of continuous bund/stockpile material in the larger southern processed material stockpiles (immediately north of the processing/raw material area)
- The remaining front-end loader should operate only in the area where the above bund breaks line of sight to NCA1.
- 4.5 m barrier north of processing area.

Modelling indicates that both Option A and Option B would comply with the criteria at all receivers. This compliance is by a small margin (<1 dB).

Consultation with Concrush has indicated that neither Option A nor Option B is reasonable. The reasons for this are:

- Constructing large walls or barriers to provide shielding for NCA 1 is not reasonable when considering the following:
  - There are only two residents in this NCA.
  - Both residents have been consulted and have indicated that they do not consider noise from Concrush to be an issue.
  - The predicted noise exceedance without additional mitigation measures is 'marginal' in accordance with the NPfI.
  - The location of the wall or barrier would require substantial alterations to the existing site drainage and water management systems and result in less workable space within the site.
  - Potential visual impacts of a 6.5 m high wall/barrier immediately on the site boundary.

- Replacement of machinery or restricting the area in which machinery can work is not reasonable as the existing and proposed machinery has been selected as it is the most practical and efficient way to undertake the activities required. Substituting machinery would mean a less efficient process resulting in increased time and costs for Concrush. Concrush operations require flexibility to respond to market demand for products and the type of waste being received. Placing restrictions on which parts of the Project site that machinery can operate in reduces the ability to configure the site to best respond to market demands and would result in a less efficient site layout likely requiring increased machinery movements within the restricted area.

- Maintaining a permanent bund or stockpile to act as a noise barrier in a stockpile area is not reasonable due to turnover of material and the restrictions this would place on machinery that are active at the stockpile.

- Erecting a barrier north of the processing area is not feasible as it would significantly impact the vehicle and plant movements within a large proportion of the Project site.

Based on the above considerations and noting that extensive additional mitigation was required to reduce the noise impacts by a small margin, it is considered that compliance with the noise goals is not reasonable. As outlined previously noise impacts during normal operation are negligible at all receivers except NCA 1 at which they are considered marginal, and residents in NCA 1 have been consulted and do not consider noise generated at the Concrush site to be an issue and agree with the proposed noise management measures as described in the EIS.

Operational noise predictions assume that construction noise barriers and bunds will be in place. It is recommended that the installation of construction noise barriers is required before operations commence.

Concrush commits to installing noise barriers identified in the EIS and prior to commencing operation of the Project. These noise barriers are:

- A 3 m high concrete block wall along the southern boundary of the 'Raw Material Stockpiles and Processing Area'

- A 3.5 m high bund along the eastern side of the 'Raw Material Stockpiles and Processing Area' (refer to **Figure 3.2**).

The EIS identified that the 3.5 m bund on the eastern side of the 'Raw Material Stockpiles and Processing Area' could be formed from stockpiled material. However, as requested by DPE at the meeting on 8 March 2019 (refer to **Section 2.1.3**) Concrush commits to constructing the barrier from concrete blocks.

Operational noise predictions assume that a limited number of plant will be used simultaneously and that restrictions in the use of plant will be applied during the evening and night. It is recommended that the proponent revise the EIS and Appendix H to include confirmation as to whether these limitations are viable and if not provide updated operational noise predictions to reflect the likely operational scenarios.

Table 6.8 of the EIS and Table 6.1 of the NIA present the operational scenarios modelled as part of the noise assessment. These operational scenarios were developed by Concrush, RCA and Umwelt to reflect realistic operational scenarios in relation to the activities undertaken by Concrush. Consideration was given to the number of plant and vehicles involved in each scenario. The operational noise model predictions assume that all of the plant and vehicles identified for each scenario are operating simultaneously. As identified in **Section 4.1.1.1** this is a worst case scenario for daytime operations as in reality not all of this plant will be operating all of the time and the number of vehicles present within the site may be less than those assumed in the model. These worst case scenarios result in predicted negligible and marginal impacts.

Restrictions on the use of plant will be applied for the revised operations during the evening time. One or the other of the activities of 'screening and stockpiling of material' or 'loading and dispatch of trucks' would be undertaken but not both at the same time and managed to meet compliance.

During the evening time only plant for the scenarios 'screening and stockpiling of material' or 'loading and dispatch of trucks' will be utilised. The restriction on which plant are to be in operation during the evening time are realistic and viable.

Night time work is no longer proposed as part of the Project.

The proponent has not provided graphical day to page data on monitored noise levels, therefore the EPA cannot confirm rating background noise levels and the design criteria for the proposal. It is recommended that the proponent revise the EIS and Appendix H to include this data.

Graphical day to a page noise monitoring data is provided in **Appendix D** of this report.

4.1.1.3 LMCC

Residents and 13 Racecourse Road will be impacted during daytime and night time hours, including the sleep disturbance criteria. A re-evaluation of the potential loss of amenity to the affected residential premises is recommended, and a standalone noise management document is suggested for the proposed operational phase which forms part of the daily operation of the facility.

As identified in **Section 3.1** in response to government agency submissions, operations during the night time period of 10.00 pm to 7.00 am are no longer proposed as part of the Project. This Project change removes the greatest potential for loss of amenity for the two residential premises in NCA 1 which includes 13 Racecourse Road. Consultation was undertaken with the two residences during the EIS preparation and again during the RTS process (refer **Section 2.1.4**) to describe the noise assessment results and the change to the Project operating hours in removing night time operations. Neither residence identified noise as a concern during this consultation and neither residence made a submission on the EIS during the exhibition period.

The daytime exceedance at NCA 1 is classified as 'marginal' under the NPI. Consideration of additional reasonable and feasible mitigation measures for daytime hours was undertaken and is presented in **Section 4.1.1.2**.

Concrush has an existing Noise Management Plan (NMP). Should the Project be approved the NMP would be updated to include the mitigation measures proposed within Section 7.1.1 of the EIS.

4.1.1.4 NSW Health – Hunter New England Local Health District

Environmental noise can have negative impacts on human health and well-being and can trigger ongoing community complaints about annoyance, sleep disturbance and stress. We recommend that all mitigation measures be considered to ensure potential noise impacts are reduced.

The EIS identified that the proposed night time operations of loading and dispatch of trucks had a predicted 8 dBA exceedance of the relevant night time criteria for NCA 1 to the north of the Concrush site. Concrush has revised the Project operating hours such that there will be no night time operations during the period of 10.00 pm to 7.00 am. The general Project operating hours will remain as 7.00 am to 5.00 pm Monday to Friday and 7.00 am to 4.00 pm Saturdays, closed Sunday. Limited evening works during the period from 6.00 pm to 10.00 pm are proposed only on an as needs basis.

Reasonable and feasible mitigation measures were considered during preparation of the EIS and have been incorporated into the Project to minimise noise impacts. As part of the RTS process further consideration was given to options to reduce noise impacts – refer to **Section 4.1.1.2**.

4.1.2 Community Submissions

One submission from a community member from Speers Point identified concern over an increase in road traffic and road traffic noise.

The road traffic noise assessment in the EIS was undertaken in accordance with the *Road Noise Policy* (RNP) (DECC 2011). Table 6.11 of the EIS identifies that the total traffic noise level along the heavy vehicle route through the suburb of Teralba would be below the relevant RNP criteria of 60 dBA for day time and 55 dBA for night time when the Project is operating at full capacity.

There are no changes proposed to the traffic routes identified in the EIS and hence no change to the predicted compliance with road traffic noise.

4.2 Air Quality

4.2.1 Agency Submissions

4.2.1.1 DPE

The submitted Air Quality Impact Assessment (AQIA) demonstrates compliance with all EPA air quality impact criteria subject to all mitigation measures being implemented. As it stands, the facility would be required to stop operation in the instance even one mitigation measure was to fail.

A revised AQIA is required to be submitted which also provides the results of a worst-case scenario assessment. The Revised AQIA is to demonstrate impacts in scenarios where only some mitigation measures are in place and a worst-case where no mitigation measures are in place. The revised AQIA is also required to address all concerns raised in submissions.

The initial key considerations in preparing the AQIA were the identification of dust sources and the available control measures for these sources. The dust sources and dust generating activities were first identified and ranked according to their relative contributions to determine where elimination or control measures could provide the most benefit. Prior to consideration of control measures the key dust sources, in order of their relative contribution, were identified as follows:

- Wheel generated dust on access roads
- Wind generated dust from stockpiles
- Crushing and screening units (including the activity of loading using a front end loader)
- Wind generated dust from open areas
- Green waste shredding.

The largest potential contribution to dust generation was from vehicle movements on the internal access roads. The access roads were considered in their existing condition which is unsealed. To reduce potential dust generation from this source, Concrush have committed that all internal haul roads would be sealed and also managed via water carts, thus reducing the potential for wheel generated dust. Other controls identified that Concrush commit to for the Project included:

- Automated water sprays on stockpiles
- Atomising water sprays on crushing and screening units
- Continued use of water cart
- Installation of a wheel wash.

The modelling undertaken by RCA for the EIS was in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (Approved Methods) (EPA 2016) using the Ausplume dispersion model and incorporating conservative dust generation rates for the dust sources in accordance with the emissions factors from *NPI Emission Estimation Technique Manual for Mining and Processing of Non-Metallic Minerals (1999)*. The model was run simulating the Project site at full operations with modelled meteorological data for the Project site generated by applying the TAPM model incorporating data for: wind speed, wind direction, ambient temperature, atmospheric stability class and mixing height. This is considered to be a realistic worst case scenario. Due to proximity and the prevailing meteorological conditions the receivers to the east of the Project site are considered potentially the most affected receivers. The modelling results show that compliance is achieved at the most affected receivers for all dust components of PM_{10}, $PM_{2.5}$, total suspended particulates (TSP) and deposited dust for 24 hour and annual averaging periods as applicable. For TSP and depositional dust the model results are well below the relevant air quality criteria. For PM_{10} and $PM_{2.5}$ the model results are generally well below the relevant criteria with the exception of $PM_{2.5}$ annual average that has a criteria of 8.0 and background level of 7.3. Even considering the high background level for $PM_{2.5}$ the Project contribution does not cause exceedance of the criteria.

In the event that an engineered dust control measure was to fail, Concrush is committed to stopping operation of the relevant machine or to cease specific dust generating activities within the potentially affected part of the site. For example if the atomising water sprays on a crushing or screening machine are not operating correctly then Concrush would not use this plant until it had been repaired and was fully functional. If an automated sprinkler on a stockpile was not operating then any work at this stockpile would cease and a manually operated sprinkler or hosing down of the stockpile would be undertaken before any work could commence again at this location. Any fault in the automated sprinkler system would be fixed as a matter of priority.

In addition to not undertaking dust generating activities within an area of the site if there is a dust control measure failure, there is an existing control measure for the Concrush site that stipulates no dust generating activities will occur under the following conditions:

- An average wind speed greater than 36km/h is recorded continuously over a 15 minute period from a north or north westerly direction; or
- Dust suppression measures appear visually ineffective.

The Approved Methods requires the identification of mitigation measures and as such it is considered appropriate that they be included in the modelling of impacts for the Project. Sealing of the internal access roads is a mitigation measure that once implemented cannot fail. Modelling a scenario that involves having no mitigation measures in place is not considered representative of the site or a realistic scenario.

The concerns raised in other submissions are addressed in **Sections 4.2.1.2** to **4.2.1.4**.

Provide a more detailed justification for the development and why the proposed facility has not been enclosed. The Department notes that the EPA's submission recommends the AQIA be revised to address the proposed development against best practice (i.e enclosing the facility) and this should also be addressed in the justification for the proposal.

As outlined previously, the AQIA addressed a realistic worst case scenario for the operation of the Project in accordance with the EPA's Approved Methods and identified compliance for all dust and odour components without the need for enclosure of the facility. As the Project site would be 4.8 hectares (ha) in area with stockpiles up to 10 m in height, it is not economically viable for Concrush to construct a shed to enclose the facility. The screens and crushing plant are required to be mobile and are not the highest dust contributor within the site and as such it is not considered feasible or practical to enclose these items of plant.

The EPA's recommendation that the AQIA be revised to address the proposed development against best practice (i.e enclosing the facility) is addressed in **Section 4.2.1.3**.

Section 3.2 of the EIS provides a justification for the Project with Section 8.3 describing the Project benefits. These sections outline the contribution that the Project will make towards government strategy and resource recovery goals and are summarised below.

Project Justification and Benefits

The NSW government and specifically the EPA currently operate a 5 yearly Waste Avoidance Resource Recovery Strategy (WARR). The WARR outlines future directions and supports investment in infrastructure, encourages innovation and improvements in recycling behaviour (EPA 2017). Two key elements of the WARR that the Project will contribute to are:

- increasing construction and demolition waste recycling to 80%
- increasing waste diverted from landfill to 75%.

Increasing the throughput capacity of the Concrush facility will allow for increased recycling of construction and demolition waste. This will, in turn, result in less waste potentially going to local landfills such as Awaba and Summerhill and will assist in achieving the NSW government goals stated above.

The Newcastle and Lake Macquarie regions are currently experiencing a development and infrastructure boom with substantial construction, and associated demolition works being undertaken. There is therefore a market and community need for construction and demolition waste recycling facilities such as Concrush. Currently Concrush is occasionally required to turn away construction contractors looking to recycle their waste due to the existing site constraints such as available space and the stockpile limit of 40,000 t.

There has been a strong ongoing demand for Concrush's products. With population growth in the region this demand will continue and likely increase. The Project will allow Concrush to continue to service this demand. As the Project would increase the amount of recycled product available, this also has the potential to reduce the volume of virgin material required to be quarried to meet the increasing market demand for resources.

The key benefits associated with the Project are summarised below:

- Increased capacity for recycling of construction and demolition waste
- Opportunity for less waste going to local landfills such as Awaba and Summerhill
- Servicing the ongoing demand for Concrush's products
- Continued and increased employment of local people at the site
- Appropriate use of an existing brownfield site negating the need for impact to a greenfield site
- Accessible option for the general public to recycle building waste
- Can be undertaken in an environmentally acceptable manner.

4.2.1.2 LMCC

The air quality impact assessment report states that dust and odour impacts at the nearest sensitive receptors are predicted to comply with the relevant impact assessment criteria. It is suggested that the existing Air Quality Management Plan be updated to include the management and mitigation measures in Table 15 of the report.

As identified in Section 6.3.5 of the EIS the existing Air Quality Management Plan will be updated to include the management and mitigation measures detailed in the EIS and AQIA report.

4.2.1.3 EPA

The EIS uses meteorological data collected from Nobbys Beach in 2015, which lead to the exclusion of certain sensitive receivers to the north, west and south of the premises. As this meteorological data is not representative of the premises, it is recommended the proponent include all sensitive receivers in dust and odour modelling in a revised EIS and Appendix I.

The Nobby's Signal Station has a long data record (that the other meteorological stations closer to the Project site do not have) and its data was used to analyse the long term trends in the region but was not used in the modelling. Section 6.4 of the AQIA report states "Data from other weather stations (Nobbys, Cooranbong, Wallsend OEH) was not assimilated in the TAPM simulation for Teralba…". The AQIA report details within Appendix B (meteorological file details from Todoroski Air Sciences) the site specific TAPM data for Teralba that was used in the air dispersion modelling. The Nobbys Signal Station data was not used in the meteorological or air dispersion modelling for the EIS, nor did it affect the most impacted receptors, for which specific tabulated results are presented in Section 6.3.4 of the EIS.

In regard to the sensitive receivers, all receivers were included in the dust and odour modelling as shown in the dispersion modelling contour figures presented in Appendix E of the AQIA report. Specific tabulated results for the receivers considered the most affected due to the meteorological conditions were presented in Section 6.3.4 of EIS and Section 12.2 of the AQIA. For completeness, tabulated results for the most affected receivers and the two closest receivers to the north of the Project site are presented in **Table 4.1** with the receiver locations (identified as 'G' and 'H') shown on **Figure 4.1**.

Table 4.1 Air quality results for closest receivers north of the Project site

Receiver Location	Background	Maximum Predicted Increment - *project specific contribution*	Total	Impact Assessment Criteria
PM_{10} 24 hour averaging period (µg/m^3)				
A	27.3	8.6	35.9	50.0
B	17.2	11.5	28.7	50.0
C	18.1	7.8	25.9	50.0
D	15.0	19.0	34.0	50.0
E	19.4	21.2	41.6	50.0
F	17.3	17.6	34.9	50.0
G	19.4	9.5	28.9	50.0
H	24.2	11.5	35.7	50.0
PM_{10} Annual averaging period (µg/m^3)				
A	17.0	0.2	17.2	25.0
B	17.0	0.2	17.2	25.0
C	17.0	0.2	17.2	25.0
D	17.0	0.5	17.5	25.0
E	17.0	0.7	17.7	25.0
F	17.0	0.7	17.7	25.0
G	17.0	0.2	17.2	25.0
H	17.0	0.2	17.2	25.0
$PM_{2.5}$ 24 hour averaging period (µg/m^3)				
A	3.8	2.4	6.2	25.0
B	5.9	3.3	9.2	25.0

Receiver Location	Background	Maximum Predicted Increment - *project specific contribution*	Total	Impact Assessment Criteria
C	16.2	2.2	18.4	25.0
D	5.9	5.4	11.3	25.0
E	17.2	6.1	23.3	25.0
F	4	5.1	9.1	25.0
G	17.2	2.7	19.9	25.0
H	17.2	2.4	19.6	25.0
$PM_{2.5}$ Annual averaging period (µg/m^3)				
A	7.30	0.06	7.36	8.00
B	7.30	0.06	7.36	8.00
C	7.30	0.05	7.35	8.00
D	7.30	0.15	7.45	8.00
E	7.30	0.20	7.50	8.00
F	7.30	0.17	7.47	8.00
G	7.30	0.04	7.34	8.00
H	7.30	0.05	7.35	8.00
Total Suspended Particulates (TSP) Annual averaging period (µg/m^3)				
A	34.0	0.7	34.7	90
B	34.0	0.8	34.8	90
C	34.0	0.6	34.6	90
D	34.0	1.8	35.8	90
E	34.0	2.4	36.4	90
F	34.0	2.0	36.0	90
G	34.0	0.4	34.4	90
H	34.0	0.6	34.6	90
Depositional dust Annual averaging period (g/m^2/month)				
A	-	0.1	-	Maximum increase above background: 2.0
B	-	0.1	-	Maximum increase above background: 2.0
C	-	0.2	-	Maximum increase above background: 2.0
D	-	0.5	-	Maximum increase above background: 2.0
E	-	0.7	-	Maximum increase above background: 2.0
F	-	0.6	-	Maximum increase above background: 2.0
G	-	0.1	-	Maximum increase above background: 2.0
H	-	0.1	-	Maximum increase above background: 2.0

It is recommended the proponent revise the EIS and Appendix I to benchmark the proposal against best practice process design and emission control; i.e. assess other options for reducing air emissions such as enclosing operations or other engineered dust suppression controls.

As stated in **Section 4.2.1.1** of this report the AQIA modelling was undertaken in accordance with the EPA's Approved Methods, incorporated conservative dust generation rates, applied engineering dust suppression controls, was run simulating the Project site at full operational capacity and showed compliance at the most affected receivers for odour and all dust components. The option of constructing a shed to enclose the 4.8 ha site is not economically viable or practical for Concrush and given there is compliance at all sensitive receivers, it is considered that enclosing the facility is not economically feasible or reasonable. As such, further air quality modelling to assess options that are not viable for the Project and are not required to achieve compliance is not considered warranted.

Concrush has an existing Air Quality Management Plan that is implemented on site and will be updated to include the management and mitigation measures detailed in the AQIA.

It is recommended that the proponent revise the EIS and Appendix I to include the leachate catchment as an odour source, assessing its emissions, impacts and mitigation measures as appropriate.

Additional odour modelling and assessment was undertaken by RCA to include the leachate catchment as an odour source. For the purposes of the assessment the leachate catchment is considered to be the leachate dam which is approximately 23 m by 15 m and was conservatively assumed to be at full capacity 100% of the time, which represents a worst case scenario. The main potential for odour impacts as a result of the Project is the presence of green waste stockpiles. For pasteurization activities, turning of the stockpile was assumed to occur on a cycle of four times every year (ie once every 3 months) with three turning activities within those times, i.e. 12 turning events every year. **Appendix E** provides full details on the emissions rates, assessment methodology and modelling assumptions.

Table 4.2 presents the odour level concentration at the nearest receivers for the maximum Project production rate of 250,000 tpa including all sources. The receiver locations are shown in **Figure 4.1**.

Table 4.2 Ground level odour concentrations in Odour Units (OU)

Receiver location	99th percentile Peak to Mean Ground level odour concentration - *project specific worst case prediction* (OU)	Impact assessment criterion [1](OU)
A	**0.8**	2.0
B	**0.8**	2.0
C	**0.7**	2.0
D	**1.8**	2.0
E	**1.9**	2.0
F	**1.8**	2.0
G	**0.5**	2.0
H	**0.7**	2.0

Note [1] Criteria applies at the nearest sensitive receptors, and is based on population of the community (more than 2,000 people in Teralba Area).

Compliance with the impact assessment criterion is achieved for all receivers. The odour mitigation measures identified in Section 6.3.5 of the EIS will be implemented for the Project.

Dust and odour impacts are predicted to comply with EPA criteria only when mitigation measures are implemented. It is recommended that the active implementation of an AQMP be included as a condition of approval.

As identified in Section 6.3.5 of the EIS the existing Air Quality Management Plan will be updated to include the management and mitigation measures detailed in the AQIA.

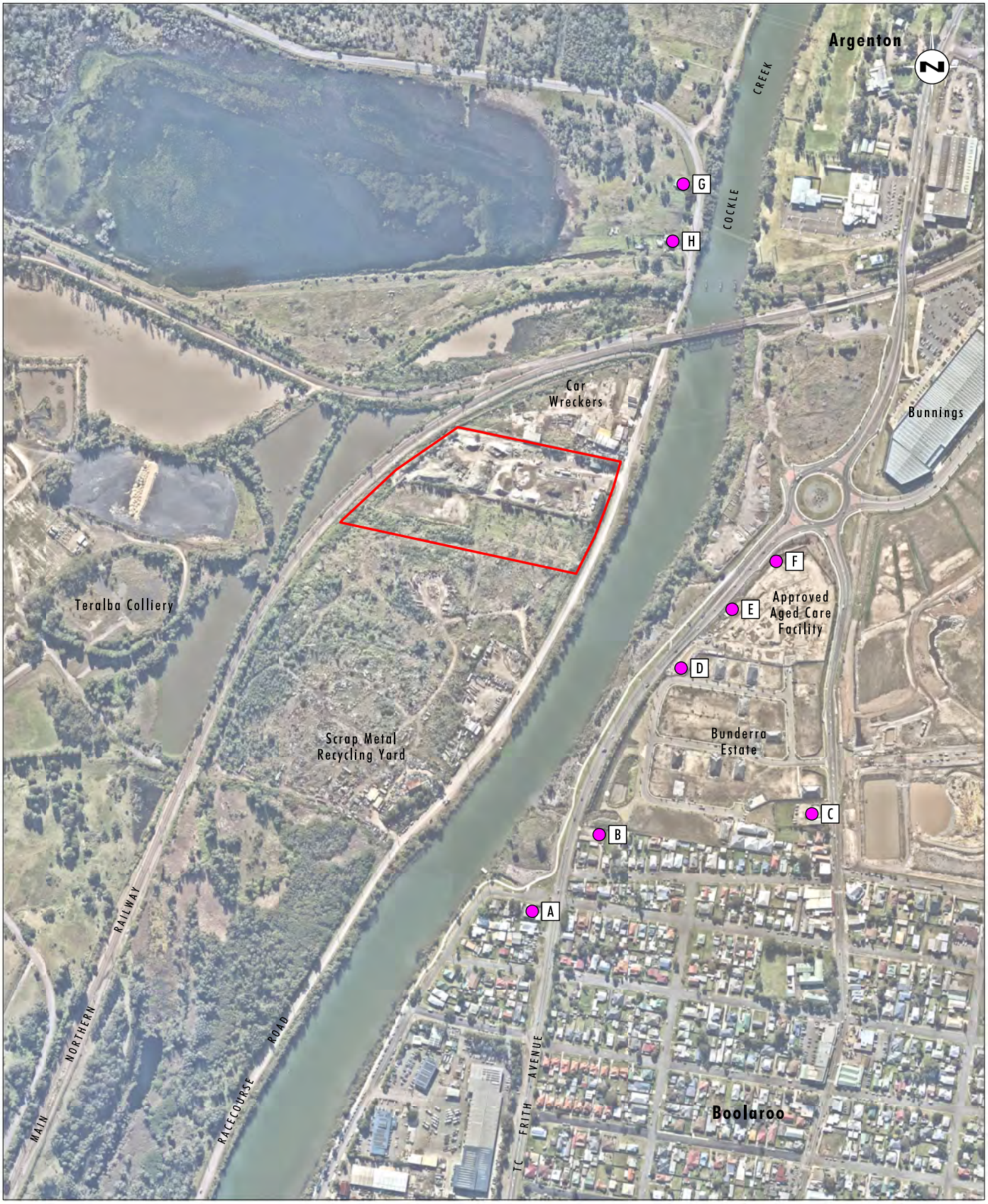


Image Source: Nearmap (Jun 2018)
Data Source: RCA Acoustics (2018)

0 100 200 400m
1:7500

Legend

- Project Site
- Approximate Location of Receivers

FIGURE 4.1

Sensitive Receiver Locations for Air Quality Assessment

4.2.1.4 NSW Health – Hunter New England Local Health District

While the EIS focuses on assessment criteria for air quality, and there are no modelled PM10 or PM2.5 exceedances, we note that there is no evidence of a threshold below which exposure to particulate matter (PM) is not associated with health effects. Therefore, all reasonable and feasible measures should be taken to minimise human exposure to PM.

Concrush has incorporated into the Project engineering and management controls to minimise dust generation during operation of the facility. Concrush is also committed to ensuring a safe working environment for its employees. While it is not possible to eliminate dust generation during operation of the facility, Concrush has considered and adopted air quality measures to minimise and control dust generation during operation of the Project as detailed in Section 6.3.5 of the EIS.

4.2.2 Community Submissions

Twelve form letter submissions were received from a group of residents at Speers Point identifying the following air quality issues:

Residents object to the proposed expansion due to dust related issues. Our residence is part of the over 55's complex and the lack of air quality greatly impacts on our living conditions, health and for those with respiratory disorders. The residents noted that there are often large uncovered stockpiles on site. The respondents were concerned if the development is approved the control of dust during high winds would be controlled by a combination of sprinklers and water carts, but who would be policing this.

The AQIA was undertaken in accordance with the Approved Methods and identifies compliance with the air quality criteria for the closest receivers for all relevant dust components. The closest sensitive receivers are located between 200 m and 500 m from the closest point of the Project site and includes receivers located to the south of the Project site. The over 55's complex is located approximately one kilometre from the closest point of the Project site in a southerly direction. The AQIA results identify that receivers located closer to the Project site in the same direction as the over 55's complex have compliance with all relevant dust and odour criteria.

The air quality guidelines adopted in NSW are those recommended by the EPA and specified in the Approved Methods. These criteria were set to be consistent with the National Environment Protection Measure for Ambient Air Quality (Ambient Air NEPM) (NEPC 1998). The Ambient Air NEPM stated that its desired environmental outcome was 'ambient air quality that allows for the adequate protection of human health and well-being'.

The activity of recycling construction and demolition waste at the Concrush site necessitates stockpiling of raw and processed materials. As machinery is required to access, process, transfer and load material from these stockpiles it is not practical that they be covered.

As identified earlier in this report, the Project incorporates a range of dust control mitigation measures including the requirement to stop dust generating activities when an average wind speed greater than 36km/h is recorded continuously over a 15 minute period from a north or north westerly direction or if other dust suppression measures appear visually ineffective.

The EPA is the responsible agency for monitoring compliance of industrial facilities such as Concrush. Concrush is required to report monthly on the volumes of incoming/outgoing and stored waste as well as reporting annually on it's environmental performance as part of the obligations under Environment Protection Licence 13351. If the Project is approved, Concrush will be required to undertake independent environmental audits to demonstrate compliance with its environmental obligations.

My wife and I are presently residents in the Bundera estate and we are of the opinion that we are experiencing dust from the present level of operations at the Concrush site. We did however purchase the land and built our house in Guest street being aware of the Concrush operation and the possibility of some dust being experienced with the wind from the direction of the Recycling Crushing and Screening operation. We, therefore, are not opposed to the present level of operations at the site. We do however most definitely oppose the expansion of the operation to the proposed level of production and storage at the site as this will result in the approximate tripling of the dust generation at the site. I am confident in stating my concerns in this regard as I am currently employed by a company which supplies Crushing and Screening equipment in the Mining and Construction industry and I have extensive experience with this type of operation.

The AQIA modelling was undertaken in accordance with the EPA's Approved Methods, incorporated conservative dust generation rates, applied engineering dust suppression controls and was modelled simulating the Project site at full operational capacity and showed compliance at the most affected receivers for all dust components. The existing Air Quality Management Plan will be updated to include the management and mitigation measures detailed in Section 6.3.5 of the EIS.

I'm writing regarding the Current Development Application proposed by Concrush Pty Ltd on Racecourse Road for expansion of their current operations and my objection of the development. The Concrush site is within a 500 metres of my home of 45 years and the proposed expansion would reduce this distant significantly to about 300 metres. My issue is with this development is the airborne dust that it creates and the prevailing winds that currently deposit dust over the properties in Boolaroo that blankets on everything and into everything because it so fine and I liken it to talcum powder, you clean it off and it back within a few days and this is happening now and has been happening for years, as you can see from the attached photos. Concrush has failed to keep the dust on their site. I have witnessed the clouds of dust blowing around on their site from the local Bunnings carpark which overlooks the Concrush present and future sites. My health isn't good I suffer from Chronic Obstructive Pulmonary Disease and have kidney problems that the dust will have a detrimental effect on my health if this expansion is to go ahead. I've also attached a statement from my doctor. If this development is to proceed then there should be strict conditions on their licence to how much dust they can produce and let out into the surrounding area preferably none. Why can't we learn from the sulphide (Pasminco) debacle that even today has left long term pollution legacy on the area.

The AQIA modelling undertaken for the Project predicts compliance with the relevant air quality criteria for the nearest sensitive receivers located approximately 200 m from the closest point of the Project site. If the Project is approved Concrush would implement the range of air quality mitigation measures identified in Section 6.3.5 of the EIS including updating the existing Air Quality Management Plan.

4.3 Soil and Water Management

4.3.1 Agency Submissions

4.3.1.1 DPE

The EPA's submission states that additional information is required to enable a proper assessment under section 45 of the POEO Act 1997. As such, the Department requires further consideration of water impacts in accordance with the EPA's requirements, including an assessment of the proposed impacts taking into account enclosing the facility.

The EPA's submission in relation to soil and water management is addressed in **Sections 4.3.1.3.**

4.3.1.2 LMCC

The soils on the site are classified as containing Type F/D sediments (fine clays/dispersible clays), and during the clearing and earthworks, these soils will be exposed. In accordance with the NSW Blue Book the sediment basin type should match the sediment type exposed during that phase, and it is suggested that the relevant plans be amended to reflect this.

The proposed sediment basins, Sediment Dam 1 (SD1) and Sediment Dam 2 (SD2), have been resized as Type D sediment basins in accordance with Landcom's *Managing Urban Stormwater Volume 1* (2004) and *Volume 2E Mines and Quarries* (DECC, 2008). The settling zone capacities of SD1 and SD2 have been increased to capture site runoff from a 5 day 85th percentile rainfall (38.9 mm) event with a two-day dewatering period and a sediment zone sized to 50% of the settling zone volume. The conceptual sediment basin sizing details are presented in **Table 4.3**.

Table 4.3 Conceptual Sediment Dam Sizing Details

Sediment Basin	Catchment (ha)	Design Rainfall Depth (mm)	Settling Zone Volume (ML)	Sediment Zone Volume (ML)	Total Volume (ML)
SD1	2.4	38.9	0.60	0.30	0.90
SD2	2.3	38.9	0.57	0.29	0.86

4.3.1.3 EPA

The EIS does not provide the information required to consider the matters set out under Section 45 of the POEO Act 1997. In particular the EIS does not adequately:

- **characterises discharge quality**
- **assess the potential impact of proposed discharges**
- **consider practical measures to minimise water pollution and mitigate potential impacts.**

The EIS does not provide adequate details of the water balance modelling, including model assumptions (e.g runoff coefficients) and results (e.g runoff/leachate volumes from the northern, southern and green waste catchments; discharge frequency and volume for each discharge point).

Adjustments to the proposed monitoring program are required to include monitoring of discharges, the immediate receiving waterway and volumes of leachate transfers and overflows. The water quality monitoring analytical suit should include all pollutants potentially present at non-trivial levels, informed by a full discharge characterisation.

Section 45 of the *Protection of Environment Operations Act 1997* (POEO Act) sets out matters that the EPA must consider when making licensing decisions, including:

- **the pollution caused or likely to be caused by the carrying out of the activity or work concerned and the likely impact of that pollution on the environment;**
- **the practical measures that could be taken to prevent, control, abate or mitigate that pollution, and to protect the environment from harm as a result of that pollution;**
- **in relation to an activity or work that causes, is likely to cause or has caused water pollution:**
  - **the environmental values of water affected by the activity or work;**
  - **the practical measures that could be taken to restore or maintain those environmental values.**

The EIS does not provide the information required to consider these matters.

The following sections (**Discharges**, **Mitigation Measures**, **Water Balance** and **Monitoring**) provide a detailed response to the specific issues raised by the EPA and recommendations made by the EPA with respect to discharges, mitigation measures, water balance and monitoring. The following additional monitoring, modelling and assessment has been undertaken to address the issues raised by the EPA:

- An expanded water quality monitoring program was instigated to assess the presence of a range of additional water quality parameters in both the Project site and receiving waters to further inform ongoing surface water quality monitoring requirements.
- A detailed daily time step water balance model (the Model) was prepared using GoldSim modelling software to better predict the likely volume and frequency of discharges from sediment basins. The Model also provides more detailed results regarding captured stormwater reuse volumes from the three proposed Project catchments (Northern Catchment, Southern Catchment and Green Waste Catchment) and, in conjunction with the water quality monitoring results, allows for a more detailed estimation of discharge water quality.
- The proposed sediment basins, Sediment Dam 1 (SD1) and Sediment Dam 2 (SD2), have been resized as Type D sediment basins in accordance with Landcom's *Managing Urban Stormwater Volume 1* (2004) and *Volume 2E Mines and Quarries* (DECC, 2008). The settling zone capacities of SD1 and SD2 have been increased to capture site runoff from a 5 day 85th percentile rainfall (38.9 mm) event with a two-day dewatering period and a sediment zone sized to 50% of the settling zone volume.

Discharges

It is understood there would be two discharge points from the premises, one for each of the two proposed sediment retention basins. Figure 3.2 of the Soil and Water Impact Assessment appears to identify the location of the proposed discharge point from 'Sediment Dam 2' and the EIS states that discharges will flow to the drainage depression which flows 1 .5 kilometres to Cockle Creek. Details of the location of the proposed discharge point from 'Sediment Basin 1' and the flow path from the discharge points to Cockle Creek are required to understand any potential risks to waters.

The water balance results indicate that on average ~15 ML of treated wastewater (combined runoff and leachate) would be discharged per year under the proposal (note that it is assumed that the values listed in Tables 4.1, 4.2 and 4.3 of Appendix K of the EIS are annual volumes). However, the EIS does not adequately characterise the quality of the proposed discharges or assess the potential impact of discharges on the environmental values of the drainage depression and Cockle Creek with reference to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality guideline values.

It should be noted that the POEO Act defines waters as, "...the whole or any part of:

a) any river, stream, lake, lagoon, swamp, wetlands, unconfined surface water, natural or artificial watercourse, dam or tidal waters (including the sea); or

b) any water stored in artificial works, any water in water mains, water pipes or water channels, or any underground or artesian water."

The drainage depression (into which discharges would flow) is therefore the immediate receiving waterway and it is important that the potential impact of discharges on the environmental values of this waterway are assessed. The EIS suggests that discharges would be further treated in the drainage depression after discharging from the premises and before entering Cockle Creek. It is not appropriate to consider potential further treatment that may occur outside the premises, where the operator may not have control over treatment effectiveness and in a waterway that may be impacted by the discharges.

The EIS provides a limited characterisation of discharge quality, estimating the discharge pH range, maximum total suspended solids concentration and average total nitrogen and total phosphorus concentrations. However, runoff from waste storage and processing areas and treated leachate could potentially contain a range of other pollutants, including dissolved pollutants, at non-trivial levels.

For example, crushed concrete can potentially leach a range of contaminants including bicarbonate, sulfate/sulphide, salts, heavy metals, polycyclic aromatic hydrocarbons, chemicals in admixtures (e.g. surfactants, methylphenols, nitrates, cyanide) and supplementary cementitious materials (e.g. industrial by-products).

It is noted that the limited characterisation provided suggests discharges from the two proposed discharge points would be of a similar quality. However, Figure 3.2 and Figure 3.3 of the Soil and Water Impact Assessment indicate excess treated green waste leachate would flow to Sediment Dam 2 only. Presumably there would also be other differences between the potential sources of pollutants that would be located within the two sediment retention basin catchments. Therefore, the quality of the discharges from the two sediment retention basins is likely to differ.

To understand the potential pollution that could be caused by the proposal, a characterisation is required of the quality of discharges (from each of the discharge points) in terms of the concentrations of all pollutants potentially present at non-trivial levels. The suite of pollutants to be included in the characterisation would need to be determined with reference to a risk assessment of the types of materials that would be stored and processed within the source catchment. Potential contaminants of concern may include but not be limited to the following:

- **nutrients, ammonia as a toxicant, biochemical oxygen demand and pesticides/herbicides from green waste;**
- **hydrocarbons, polycyclic aromatic hydrocarbons (PAHs) and metals from asphalt waste;**
- **metals and other toxicants from metal wastes;**
- **contaminants associated with wet concrete batching plant stirrer waste (e.g. cement, chemical admixtures, fuels and lubricants)**

It is recommended that the proponent:

- **provides maps of the proposal identifying key features that could affect water quality, including:**
  - **stockpiles and processing areas and identifying the types of materials in each area;**
  - **bunds;**
  - **water storages, treatment measures and conveyances;**
  - **all proposed discharge points;**
  - **the flow path/s from the discharge points to Cockle Creek;**
- **characterises the quality of discharges from each proposed discharge point in terms of the typical and maximum expected concentrations and loads of all pollutants potentially present at levels that pose a risk of non-trivial harm to human health or the environment;**
- **assesses the potential impact of proposed discharges with reference to the environmental values of the drainage depression and Cockle Creek and the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality guideline values for slightly to moderately disturbed ecosystems;**

- **demonstrates that the proposed discharges would not contain pollutants at levels that are acutely toxic or could result in bioaccumulation.**

If dilution in the environment is considered, then appropriate modelling of mixing process should be used to assess whether guideline values are achieved at the edge of a near field mixing zone.

As mentioned above, Concrush has commenced an expanded site and receiving water quality monitoring program to further characterise the Project site water quality and develop a more detailed understanding of water quality in the immediate receiving water environment, i.e. the Drainage Depression at the western boundary of the Project site. **Figure 4.2** presents the flow path between the proposed SD1 and SD2 discharge points and Cockle Creek. While it was previously thought that the Drainage Depression conveyed stormwater runoff discharging from the existing Concrush site in a southerly direction to Cockle Creek, a more detailed digital terrain map (DTM) prepared using LiDAR data shows that stormwater runoff in this section of the Drainage Depression flows to the north. As such, any discharges to the Drainage Depression from the proposed SD1 will flow to the north. The Drainage Depression discharges into Cockle Creek approximately 250 m to the north east of the existing Concrush site. However, the DTM also shows that stormwater runoff from the Project expansion site is conveyed in a southerly direction toward Cockle Creek. As such, any discharges to the Drainage Depression from the proposed SD2 will flow to the south. The southerly drainage path has areas of dense vegetation which interfere with LiDAR and result in estimated surface levels that have a greater degree of uncertainty. As such, the southerly drainage path presented in **Figure 4.2** should be considered as indicative only.

Figures 4.3 and **4.4** show the water quality monitoring locations as well as the key features of the Project site requested by the EPA:

- stockpiles and processing areas, identifying the types of materials in each area;
- bunds;
- water storages, treatment measures and conveyances; and
- all proposed discharge points (from SD1 and SD2).

There is one additional receiving water monitoring location (RW1 within the Drainage Depression south of the existing Concrush site) which has been incorporated into the expanded water quality monitoring program. RW1 can be considered as being upstream of the existing Concrush site and provides an indication of the background water quality within the Drainage Depression without the influence of stormwater runoff from Concrush. While it is still planned to include a receiving water monitoring location to the north of the existing Concrush site, the Drainage Depression is within the rail corridor and access will need to be arranged to allow water samples to be collected.

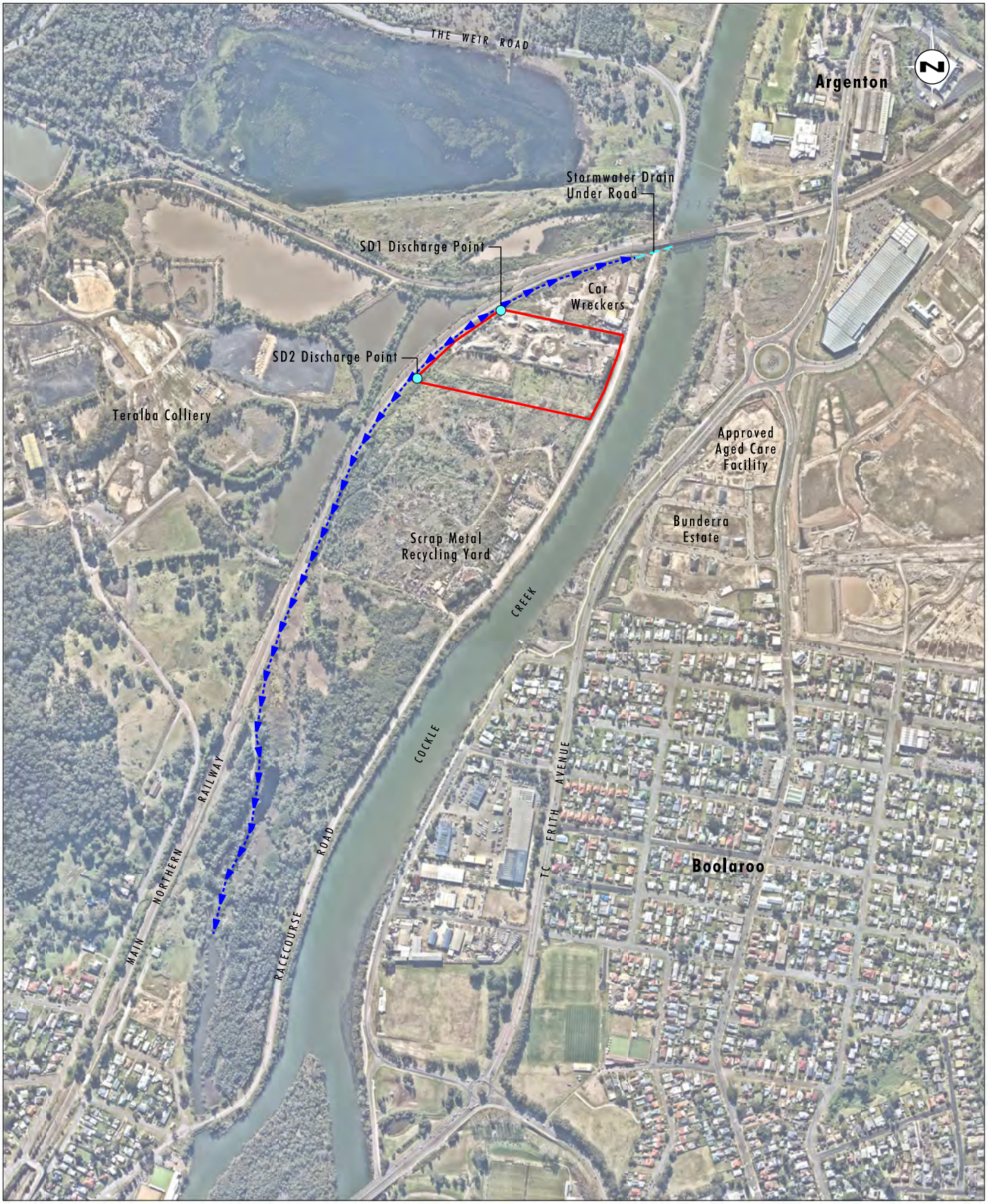


Image Source: Nearmap (Jun 2018)
Data Source: RCA Acoustics (2018)

0 100 250 500m
1:10 000

Legend

- Project Site
- Drainage Depression
- Stormwater Drain Under Road
- Proposed Discharge Points (sediment dam spillways)

FIGURE 4.2

Local Off-site Drainage

Image Source: Nearmap (May 2017)
Data Source: Concrush (2018)

0 25 50 100m
1:2 000

Legend

- Project Site
- Proposed Extension Area
- Existing Wetland Area with Buffer
- Water Quality Monitoring Location

FIGURE 4.3

Water Quality Monitoring Locations

File Name (A4): R07/3972_085.dgn
20190410 16.40

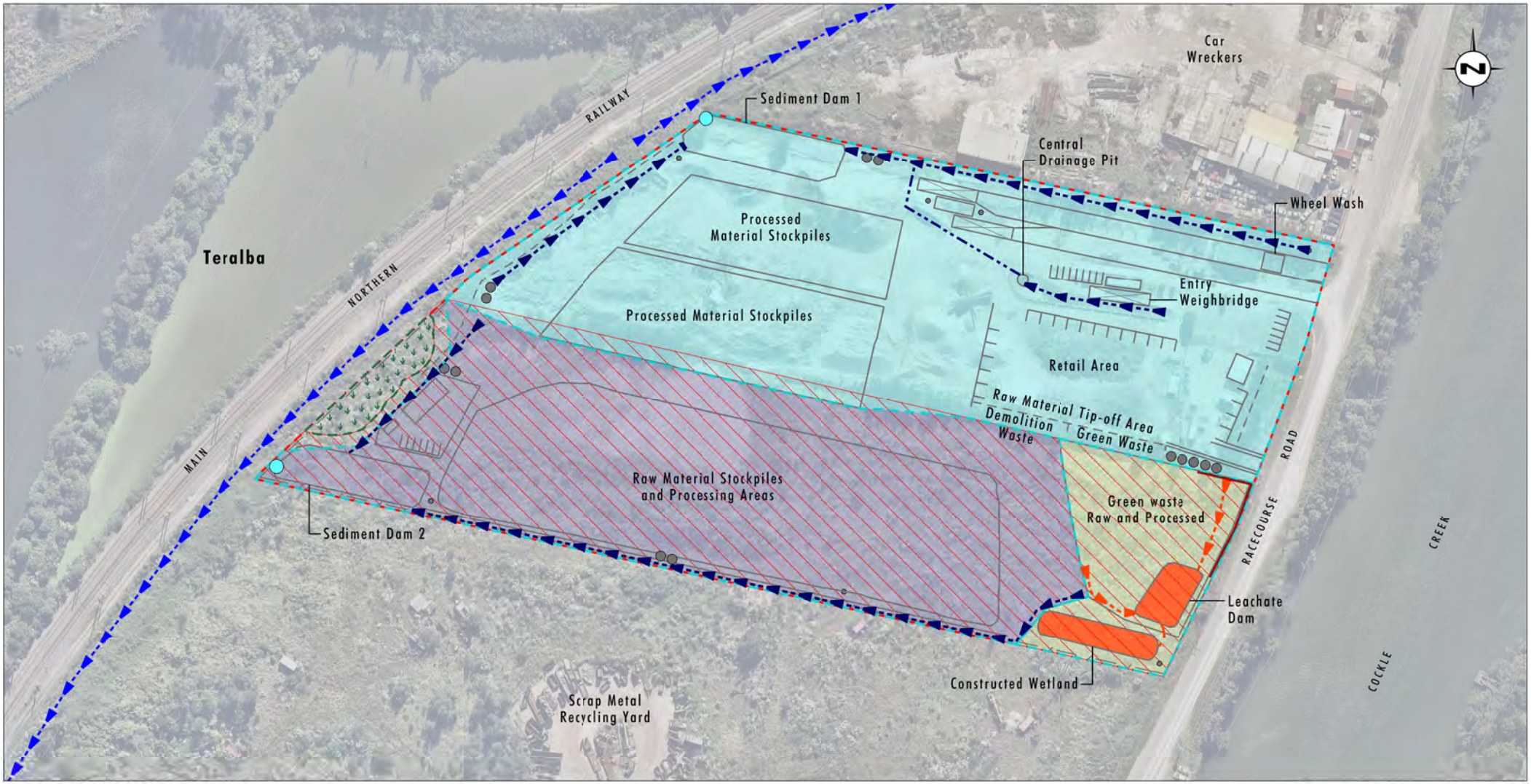


Image Source: Nearmap (May 2017)
Data Source: Concrush (2018)

0 25 50 100m
1:2 000

Legend

- Project Site
- Proposed Extension Area
- Existing Wetland Area with Buffer
- Northern Catchment Boundary
- Southern Catchment Boundary
- Green Waste
- Sediment Dam
- Drain Pipe
- Surface Drain
- Leachate Dam
- Leachate Pipe
- Leachate Drain
- Drainage Depression
- Proposed Discharge Points (sediment dam spillways)
- Flood Barrier

FIGURE 4.4

Conceptual Stage 2
Water Management Plan

File Name (A4): R07/3972_086.dgn
20190410 16:37

Table 4.4 presents the expanded list of water quality parameters for which the Project site and receiving water sources have been tested and the applicable trigger value reference document.

Table 4.4 Water Quality Parameters

Parameter	Trigger Value Reference
General Parameters	
pH	NSW Water Quality Objectives (WQOs) for the Lake Macquarie and Tuggerah Lakes catchment/ Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000)[1]
Electrical Conductivity (EC)	
Total Suspended Solids (TSS)	Typical NSW EPA Environmental Protection Licence (EPL) limit for TSS
Total Recoverable Hydrocarbons (TRH)	Typical NSW EPA Environmental Protection Licence (EPL) limit for oil and grease
Biochemical Oxygen Demand (BOD)	Typical NSW EPA Environmental Protection Licence (EPL) limits for BOD
Sulphate (turbidimetric)	NSW WQOs for the Lake Macquarie and Tuggerah Lakes catchment/ANZECC 2000[1]
Total Alkalinity	-
Nutrients	
Ammonia (as Nitrogen (N))[2]	NSW WQOs for the Lake Macquarie and Tuggerah Lakes catchment[1]
Nitrite (as N)	-
Nitrate (as N)[2]	NSW WQOs for the Lake Macquarie and Tuggerah Lakes catchment[1]
NOx (as N)	
Total Nitrogen (TN)	
Total Phosphate (TP)[3]	
Toxicants	
Dissolved Metals and Metalloids[4]	NSW WQOs for the Lake Macquarie and Tuggerah Lakes catchment[1]
Polycyclic Aromatic Hydrocarbons (PAH)[4]	
Phenols[4]	
Organochlorine Pesticides[4]	
Organophosphorus Pesticides[4]	
Carbamate Pesticides[4]	
Cyanide	
Glyphosate	

Notes

[1] While ANZECC 2000 has been largely superseded by the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018), the NSW WQOs still refer to ANZECC 2000 and revised trigger values for aquatic ecosystem physical and chemical stressors and recreational water use are yet to be included in ANZG 2018.

[2] Ammonia and Nitrate are also considered toxicants at higher concentrations.

[3] Analysis for Total Phosphate was undertaken inadvertently by the laboratory rather than Total Phosphorus (TP) as requested. However, historical TP results are available.

[4] Refer to **Appendix G** for the full list of individual analytes.

To date, two rounds (on 16 March and 1 April 2019) of the expanded water monitoring have been undertaken as there was no water to sample in the ephemeral Drainage Depression due to the dry conditions in the early part of 2019. No water sample could be collected from RW1 during the second round of the expanded water quality monitoring program as the monitoring location was dry. Following is a summary of the results from the two rounds of the expanded water quality monitoring program:

- Water samples were collected following rainfall events of approximately 34.5 mm on 16 March 2019 and 48.0 mm on 1 April 2019. Rainfall depths were sourced from the Weather Underground website (https://www.wunderground.com/dashboard/pws/ISPEERSP2/graph/2019-03-14/2019-03-14/daily) as Bureau of Meterology (BoM) data from the three nearest stations (station 061393 Edgeworth Wastewater Treatment Plant (WWTP), station 061133 Bolton Point and station 061322 Toronto WWTP) was not available on the BoM website as of 8 April 2019.
- PAH concentrations at all monitoring locations were below the laboratory limit of detection (LOD)
- Phenol concentrations at all monitoring locations were below the laboratory LOD
- Pesticide concentrations (organochlorine, organophosphorus, carbamates) at all monitoring locations were below the LOD
- Cyanide concentrations at all monitoring locations were below the LOD
- TRH concentrations at all receiving water monitoring locations and Site 1 were below the LOD. TRH concentrations recorded at Site 2 (Central Drainage Pit) and Site 3 (north west extent of the vegetated swale draining stormwater off the existing Concrush site) were less than 0.6 mg/L for the first round of the expanded water quality monitoring program. All TRH results were below the LOD for the second round of the expanded water quality monitoring program.
- Glyphosate concentrations at all receiving water monitoring locations and Site 3 were below the LOD. All glyphosate concentrations were below NSW WQO/ANZECC 2000 default trigger values for 99% species protection in freshwater systems. Glyphosate concentrations were below the LOD for all results in the second round of monitoring.
- Sulphate concentrations were found at detectable concentrations in both site and receiving waters with the highest concentrations (up to 720 mg/L) in Cockle Creek Upstream and Downstream which were above the NSW WQO/ANZECC 2000 default trigger value for recreational water use of 400 mg/L. The concentrations of sulphate at Site 1, Site 2, Site 3 and RW1 were all below the NSW WQO/ANZECC 2000 default trigger value for recreational water use.
- TSS results were elevated (> 50 mg/L) for all monitoring locations for the first round of the expanded water quality monitoring program. TSS concentrations at Site 2, Site 3, Cockle Creek Upstream and Cockle Creek Downstream were all below 50 mg/L for the second round of monitoring.
- The BOD of the receiving waters was below the LOD while the BOD at Site 2 and Site 3 was 9.7 mg/L for the first round of the expanded water quality monitoring program. All BOD results were below the LOD for the second round of water quality monitoring program.
- Nutrient concentrations were found to be elevated in both site and receiving waters.
- A number of metals and metalloids were found at detectable dissolved concentrations in both site and receiving waters.

Table 4.5 presents the Project site water quality results for the expanded water quality monitoring program. **Table 4.6** presents the receiving water quality results for the expanded water quality monitoring program. Note that only the water quality results of significance are presented in **Table 4.5** and **Table 4.6**. Further discussion of the expanded water quality monitoring results is provided following the assessment of water quality results presented in **Table 4.7.**

Table 4.5 Project Site Water Quality Results

Parameter	LOD	Units	Trigger Value/Range	Site 1		Site 2		Site 3	
				16/3/19	1/4/19	16/3/19	1/4/19	16/3/19	1/4/19
pH	0.1	-	6.5 – 8.5[1]	7.6	8.5	8.2	11	7.8	8.2
EC	1	µS/cm	125 – 2,200[1]	380	570	1,100	2600	1,400	850
TSS	1	mg/L	50[2]	120	120	320	41	110	5.8
TRH	0.1	mg/L	10[2]	0.1	<0.1	0.51	<0.1	<0.1	<0.1
BOD	5	mg/L	20[2]	<5	<5	9.7	<5	9.7	<5
Sulphate	5	mg/L	400[3]	35	86	97	140	210	90
Total Alkalinity	20	mg/L	-[4]	94	110	230	210	280	200
Ammonia (as N)	0.01	mg/L	0.90[5] (0.02[6])	0.11	<0.01	0.56	0.70	0.83	0.11
Nitrite (as N)	0.02	mg/L	-[4]	0.4	0.13	6.2	9.3	1.4	1.8
Nitrate (as N)	0.02	mg/L	0.7[5]	2.6	0.27	4.2	65	16	2.0
NOx (as N)	0.05	mg/L	0.04[6]	3	0.4	10	74	18	3.8
Total Nitrogen (TN)	0.2	mg/L	0.5[1]	4.3	2.5	13	80	20	4.9
Total Phosphate (TP)[7]	0.01	mg/L	-[4]	0.23	0.09	0.62	0.07	0.39	0.09
Glyphosate	0.01	mg/L	0.37[8]	0.10	<0.01	0.02	<0.01	<0.01	<0.01
Aluminium[9]	0.05	mg/L	0.055[10]	<0.05	0.07	0.06	1.60	<0.05	<0.05
Arsenic[9]	0.001	mg/L	0.024[10]	0.003	0.002	0.009	0.020	0.001	0.007
Boron[9]	0.05	mg/L	0.37[10]	0.06	0.09	0.09	0.08	0.05	0.12
Cadmium[9]	0.0002	mg/L	0.0002[10]	<0.0002	<0.0002	<0.0002	<0.0008	<0.0002	<0.0002
Chromium III[9]	0.005[11]/ 0.001[12]	mg/L	-[4]	<0.005	<0.001	<0.005	0.035	<0.005	<0.001
Chromium VI[9]	0.005[11]/ 0.0005[12]	mg/L	0.001[10]	<0.005	0.0057	0.039	0.032	0.053	0.0087

Parameter	LOD	Units	Trigger Value/Range	Site 1		Site 2		Site 3	
				16/3/19	1/4/19	16/3/19	1/4/19	16/3/19	1/4/19
Cobalt[9]	0.001	mg/L	-[4]	<0.001	0.015	0.004	0.014	0.002	0.001
Copper[9]	0.001	mg/L	0.0014[10]	0.018	0.005	0.037	0.076	0.027	0.007
Iron II[9,13]		mg/L	-[4]	-	<0.05	-	<0.05	-	<0.05
Lead[9]	0.001	mg/L	0.0034[10]	<0.001	<0.001	0.002	<0.001	<0.001	<0.001
Manganese[9]	0.005	mg/L	1.9[10]	<0.005	<0.005	0.01	0.028	0.11	0.04
Mercury	0.0001	mg/L	0.0006[10]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel[9]	0.001	mg/L	0.011[10]	0.002	<0.001	0.007	0.025	0.003	0.002
Selenium[9]	0.001	mg/L	0.011[10]	<0.001	<0.001	0.002	0.006	0.004	0.002
Zinc[9]	0.005	mg/L	0.008[10]	0.021	<0.005	0.018	<0.005	0.012	0.010

Notes:

1. NSW WQO selected from ANZECC 2000 default trigger value for physical and chemical stressors in south-east Australia for slight to moderately disturbed aquatic ecosystems
2. Trigger value based on concentration limits found in typical NSW Environment Protection Licences
3. ANZECC 2000 default trigger value for recreational water use
4. No NSW WQO or ANZECC 2000 default trigger value available
5. ANZECC 2000 default trigger value for non-metallic inorganic toxicants in freshwater systems for 95% species protection
6. ANZECC 2000 default trigger value for physical and chemical stressors in south-east Australia for slight to moderately disturbed aquatic ecosystems
7. Analysis for Total Phosphate was undertaken inadvertently by the laboratory rather than Total Phosphorus (TP) as requested. However, historical TP results are available.
8. ANZECC 2000 default trigger value for miscellaneous herbicide toxicants in freshwater systems for 99% species protection
9. Results are for dissolved concentrations
10. ANZECC 2000 default trigger value for metal and metalloid toxicants in freshwater systems for 95% species protection
11. Limit of Detection applied for analysis of the first round of the expanded water quality monitoring program
12. Limit of Detection applied for analysis of the second round of the expanded water quality monitoring program
13. Iron Fe II only tested for in the second round of the expanded water quality monitoring program

Table 4.6 Receiving Water Quality Results

Parameter	LOD	Units	Trigger Value/Range	Drainage Depression RW1		Cockle Creek Upstream		Cockle Creek Downstream	
				16/3/19	1/4/19	16/3/19	1/4/19	16/3/19	1/4/19
pH	0.1	-	6.5 – 8.5[1]	6.9	-	7.1	7.5	6.9	7.5
EC	1	µS/cm	125 – 2,200[1]	420	-	16,000	12,000	16,000	13,000
TSS	1	mg/L	50[2]	64	-	240	18	190	32
TRH	0.1	mg/L	10[2]	<0.1	-	<0.1	<0.1	<0.1	<0.1
BOD	5	mg/L	20[2]	<5	-	<5	<5	<5	<5
Sulphate	5	mg/L	400[3]	98	-	720	520	720	570
Total Alkalinity	20	mg/L	-[4]	37	-	40	48	40	50
Ammonia (as N)	0.01	mg/L	0.90[5] (0.02[6])	0.50	-	0.16	0.05	0.18	0.06
Nitrite (as N)	0.02	mg/L	-[4]	0.15	-	<0.02	<0.02	<0.02	<0.02
Nitrate (as N)	0.02	mg/L	0.7[5]	9.4	-	0.56	0.25	0.56	0.49
NOx (as N)	0.05	mg/L	0.04[6]	9.6	-	0.57	0.26	0.58	0.51
Total Nitrogen (TN)	0.2	mg/L	0.5[1]	13.8	-	0.9	0.7	1.4	1.1
Total Phosphate (TP)[7]	0.01	mg/L	-[4]	0.38	-	0.15	0.05	0.15	0.05
Glyphosate	0.01	mg/L	0.37[8]	<0.01	-	<0.01	0.05	<0.01	<0.01
Aluminium[9]	0.05	mg/L	0.055[10]	<0.05	-	<0.05	<0.05	<0.05	<0.05
Arsenic[9]	0.001	mg/L	0.024[10]	0.003	-	0.003	0.002	0.003	0.003
Boron[9]	0.05	mg/L	0.37[10]	0.13	-	1.30	1.00	1.30	1.10
Cadmium[9]	0.0002	mg/L	0.0002[10]	0.0003	-	<0.0002	<0.0002	<0.0002	<0.0002
Chromium III[9]	0.005[11]/ 0.001[12]	mg/L	-[4]	<0.005	-	<0.005	<0.001	<0.005	<0.001
Chromium VI[9]	0.005[11]/ 0.0005[12]	mg/L	0.001[10]	<0.005	-	<0.005	0.0006	<0.005	<0.0005

Parameter	LOD	Units	Trigger Value/Range	Drainage Depression RW1		Cockle Creek Upstream		Cockle Creek Downstream	
				16/3/19	1/4/19	16/3/19	1/4/19	16/3/19	1/4/19
Cobalt[9]	0.001	mg/L	-[4]	<0.001	-	<0.001	<0.001	<0.001	<0.001
Copper[9]	0.001	mg/L	0.0014[10]	0.025	-	0.002	<0.001	0.003	0.001
Iron II[9,13]		mg/L	-[4]		-				0.14
Lead[9]	0.001	mg/L	0.0034[10]	0.001	-	<0.001	<0.001	<0.001	0.001
Manganese[9]	0.005	mg/L	1.900[10]	0.019	-	0.040	0.046	0.039	0.05
Mercury	0.0001	mg/L	0.0006[10]	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001
Nickel[9]	0.001	mg/L	0.011[10]	0.004	-	<0.001	0.001	<0.001	0.001
Selenium[9]	0.001	mg/L	0.011[10]	<0.001	-	<0.001	<0.001	<0.001	<0.001
Zinc[9]	0.005	mg/L	0.008[10]	0.200	-	0.024	0.028	0.024	0.037

Notes:

1. NSW WQO selected from ANZECC 2000 default trigger value for physical and chemical stressors in south-east Australia for slight to moderately disturbed aquatic ecosystems
2. Trigger value based on concentration limits found in typical NSW Environment Protection Licences
3. ANZECC 2000 default trigger value for recreational water use
4. No NSW WQO or ANZECC 2000 default trigger value available
5. ANZECC 2000 default trigger value for non-metallic inorganic toxicants in freshwater systems for 95% species protection
6. ANZECC 2000 default trigger value for physical and chemical stressors in south-east Australia for slight to moderately disturbed aquatic ecosystems
7. Analysis for Total Phosphate was undertaken inadvertently by the laboratory rather than Total Phosphorus (TP) as requested. However, historical TP results are available.
8. ANZECC 2000 default trigger value for miscellaneous herbicide toxicants in freshwater systems for 99% species protection
9. Results are for dissolved concentrations
10. ANZECC 2000 default trigger value for metal and metalloid toxicants in freshwater systems for 95% species protection
11. Limit of Detection applied for analysis of the first round of the expanded water quality monitoring program
12. Limit of Detection applied for analysis of the second round of the expanded water quality monitoring program
13. Iron Fe II only tested for in the second round of the expanded water quality monitoring program

Table 4.7 Water Quality Results - Assessment

Water Quality Observations	Comments and Potential Impacts on Water Quality Associated with Project
Elevated TSS concentrations for all results	• Elevated TSS concentrations are to be expected after a significant rainfall event, particularly from disturbed catchments as a consequence of higher runoff rates entraining a greater amount of solids. • The increased design capacity of the proposed SD1 and SD2 will contain site runoff for rainfall events up to the 5 day 85th percentile event (38.9 mm). There would have been no discharge from SD1 or SD2 for the rainfall event prior to the first round of water quality monitoring on 16 March 2019. It should be noted that a future rainfall event of the same depth as the rainfall event prior to the first round of expanded water quality monitoring on 16 March 2019 (34.5 mm) would not result in a discharge from the proposed SD1 or SD2. That is, stormwater with TSS concentrations similar to those recorded at Site 3 on 16 March 2019 would be contained on site for rainfall events less than the 5 day 85th percentile event (38.9 mm). • The increased retention capacity of the proposed SD1 and SD2 and the capacity of the Leachate Dam will reduce the sediment loads discharging from site during rainfall events where the proposed sediments basins spill. Predicted off-site discharge volumes and frequencies are provided in the Water Balance section of this report.
Detectable TRH concentrations in site waters	• The TRH concentrations in site water were below typical EPL discharge criteria for oil and grease. • The increased retention capacity of the proposed SD1 and SD2 and the capacity of the Leachate Dam will reduce the loads of TRH discharging from site during rainfall events where the proposed SD1 and SD2 spill.
Elevated BOD concentrations in site waters	• The BOD in site water was below typical EPL discharge criteria for BOD in the first round of the expanded water quality monitoring program and below the LOD in the second round. • The source of BOD in site waters is runoff from the green waste storage and handling area. The proposed Leachate Dam will be designed and installed to capture runoff from the Green Waste catchment for rainfall events up to the 1 in 10 year 24 hour duration average recurrence interval (ARI). Further, leachate collected from the Green Waste catchment will be treated in the proposed Constructed Wetland. Constructed wetlands have been demonstrated to remove BOD (including ammonia) from wastewaters (Huddleston et al., 2000). • The increased retention capacity of the proposed SD2 and the capacity of the Leachate Dam will reduce the loads of BOD discharging from site during rainfall events where the proposed SD2 spills. Predicted off-site discharge volumes and frequencies are provided in the Water Balance section of this report.
Elevated nutrient concentrations in site and receiving waters	• All site and receiving water quality results demonstrate nutrient (NOx, TN and ammonia) concentrations above the aquatic ecosystem ANZECC 2000 default trigger values for physical and chemical stressors. • All site waters and RW1 demonstrated Nitrate concentrations above the ANZECC 2000 95% species protection non-metallic inorganic toxicant default trigger value for freshwater systems. • The RW1 results indicate that the immediate receiving water environment upstream of the existing Concrush site contains elevated nutrient concentrations. • Nutrient concentrations in the stormwater samples collected at Site 1 and Site 3 were typically lower for the second round of the expanded water quality monitoring program compared to the first round. This is likely to be a result of dilution associated with the higher rainfall depth preceding sampling.

Water Quality Observations	Comments and Potential Impacts on Water Quality Associated with Project
	• The primary source of nutrients in site stormwater is runoff from the green waste storage and handling area. The proposed Leachate Dam will be designed and installed to capture runoff from the Green Waste catchment for rainfall events up to the 1 in 10 year, 24 hour duration ARI in accordance with the *Environmental Guidelines, Composting and Related Organics Processing Facilities* (NSW Department of Environment and Conservation (DEC), 2004). Further, leachate collected from the Green Waste catchment will be treated in the proposed Constructed Wetland which is expected to remove up to 75% of TN and 50% of TP. Treated water from the Constructed Wetland will be reused in the Green Waste catchment as a priority and elsewhere on site for dust suppression activities when not all of the treated leachate can be reused for green waste processing. • The increased retention capacity of the proposed SD1 and SD2 and the capacity of the Leachate Dam will reduce the loads of nutrients discharging from site during rainfall events where the proposed SD1 and SD2 spill. Predicted off-site discharge volumes and frequencies are provided in the Water Balance section of this report.
Elevated Aluminium concentration in site water	• The Aluminium concentrations in the water sample collected at Site 2 for both rounds of the expanded water quality monitoring program were above the ANZECC 2000 95% species protection default trigger value. The Aluminium concentration in the Site 1 water sample collected at for the second round of the expanded water quality monitoring program was approximately 27% greater than the 95% species protection ANZECC 2000 default trigger value. • However, Aluminium was below the LOD in the Site 3 water samples for both rounds of the expanded water quality monitoring program.
Elevated Chromium VI in site water	• The Chromium VI concentrations in the Site 2 and Site 3 water samples collected on 16 March 2019 were above 80% species protection ANZECC 2000 default trigger value for freshwater systems. It should be noted that a future rainfall event of the same depth as the rainfall event prior to the first round of expanded water quality monitoring on 16 March 2019 (34.5 mm) would not result in a discharge from the proposed SD1 or SD2. That is, stormwater with Chromium VI concentrations similar to those recorded at Site 3 on 16 March 2019 would be contained on site for rainfall events less than the 5 day 85th percentile event (38.9 mm). • The Chromium VI concentrations in the Site1, Site 2 and Site 3 water samples for the second round of the expanded water quality monitoring program collected on 1 April 2019 were above 95% species protection ANZECC 2000 default trigger value. The Chromium VI concentration at Site 1 was just above the LOD and the Chromium VI concentration at Site 3 was approximately 84% lower than the first round result. The lower second round Chromium VI concentration for Site 3 is likely to be a result of dilution associated with the higher rainfall depth preceding sampling. • Chromium VI was detected at the Cockle Creek Upstream monitoring location for the second round of the expanded water quality monitoring program at a concentration just above the LOD but below the 95% species protection ANZECC 2000 default trigger value. • The source of Chromium VI in stormwater runoff from the Concrush site is associated with the storage and processing of waste concrete. • The increased retention capacity of the proposed SD1 and SD2 will reduce the loads of Chromium VI discharging from site during rainfall events where the proposed SD1 and SD2 spill. Predicted off-site stormwater discharge volumes and frequencies are provided in the Water Balance section of this report.

Water Quality Observations	Comments and Potential Impacts on Water Quality Associated with Project
Elevated Copper in site and receiving waters	• Copper concentrations in all site and receiving waters were above the ANZECC 2000 95% species protection metals and metalloids default trigger value for freshwater systems. Copper concentrations in the Site 2, Site 3 and RW1 water samples were above the ANZECC 2000 80% species protection metals and metalloids default trigger value for freshwater systems. • The source of Copper in stormwater runoff from the Concrush site is associated with the storage and processing of waste concrete. • The elevated Copper concentration (as well as detectable concentrations of Arsenic, Boron, Cadmium, Lead, Nickel and Zinc) in the RW1 water sample indicates a substantial level of existing disturbance in the Drainage Depression. • The increased retention capacity of the proposed SD1 and SD2 will reduce the loads of Copper discharging from site during rainfall events where the proposed SD1 and SD2 spill. Predicted off-site stormwater discharge volumes and frequencies are provided in the Water Balance section of this report.
Elevated Zinc in site and receiving waters	• Zinc concentrations in all site and receiving waters were above the ANZECC 2000 95% species protection metals and metalloids default trigger value for freshwater systems. • Zinc concentrations in the RW1 water samples were above the ANZECC 2000 80% species protection metals and metalloids default trigger value for freshwater systems. • The source of Copper in stormwater runoff from the Concrush site is associated with the storage and processing of waste concrete. • The elevated Zinc concentration (as well as detectable concentrations of Arsenic, Boron, Cadmium, Copper, Lead and Nickel) in the RW1 and Cockle Creek water samples indicates a substantial level of existing disturbance in the Drainage Depression and Cockle Creek. • The increased retention capacity of the proposed SD1 and SD2 will reduce the loads of Zinc discharging from site during rainfall events where the proposed SD1 and SD2 spill. Predicted off-site discharge volumes and frequencies are provided in the Water Balance section of this report.

Stormwater discharges from the existing Concrush site contain a number of pollutants (including TSS, nutrients and dissolved metals) at elevated concentrations. Some of the pollutants in stormwater leaving the site were detected at concentrations above the 95% species protection toxic levels (Nitrate, Chromium VI, Copper, Zinc), however, the proposed controls (Leachate Dam, Constructed Wetland, SD1 and SD2) to be implemented as part of the Project will reduce the concentrations and loads discharged off-site. Further, the background concentrations of nutrients and metals (Nitrate, Arsenic, Boron, Cadmium, Copper, Lead, Nickel and Zinc) indicate a significant high level of disturbance in the Drainage Depression upstream of the Concrush site (i.e. at RW1).

The concentration of Aluminium measured at Site 1 (0.07 mg/L) during the first round of the expanded water quality monitoring program was below the acute toxicity levels in technical brief sourced from the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG) (Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia, 2018). The acute Aluminium toxicity for fish in freshwater at a pH greater than 6.5 has been measured at 600 mg/L (ANZG, 2018). The acute toxicity values for amphibians, crustaceans and algae in freshwater at a pH greater than 6.5 has been measured at 0.86 mg/L, 2.3 mg/L and 0.46 mg/L respectively.

The concentrations of Chromium VI measured at Site 3 and Copper measured at Site 1 and Site 3 during the first round of the expanded water quality monitoring program were above acute toxicity levels provided in technical briefs sourced from the (ANZG, 2018). Acute Chromium VI toxicity for freshwater fish has been measured at 0.220 mg/L, which is above the recorded site water Chromium VI concentrations, and 0.023 mg/L for other freshwater species (ANZG, 2018). Acute Copper toxicity for freshwater species has been measured at 0.017 mg/L by the USEPA, however, a study of Australian species indicates an acute toxicity concentration of greater than 0.040 mg/L (ANZG, 2018) which is above all recorded site water Copper concentrations. However, the concentrations of Chromium VI and Copper measured at Site 1 and Site 3 during the second round of the expanded water quality monitoring program, which was undertaken after a more significant rainfall event, were below acute toxicity levels.

Nitrate and Zinc concentrations recorded at Site 1, Site 2 and Site 3 are at levels not considered to be acutely toxic to freshwater species (ANZG, 2018).

Using the results of the expanded water quality monitoring program to supplement historical water quality monitoring results for nutrients and a detailed water balance model, the concentrations of nutrients in off-site discharges from SD2 were predicted. SD1 discharges are expected to contain relatively low levels of nutrients when compared to SD2, however, there is presently no basis to allow predictions to be made of the likely nutrient concentrations in SD1 discharges other than that they are expected to be significantly lower than SD2 during discharges from SD2 that include leachate spilled from the Leachate Dam. The SD2 discharge water quality predictions were estimated for spill events where the Model (refer to Water Balance section) predicted a spill from the Leachate Dam to SD2 and SD2 spilling off site based on the following:

- Average site water quality nutrient concentrations spilling from the Site 3 water quality monitoring point. Maximum measured concentrations were not used as the capacity of the Leachate Dam will ensure significant dilution of leachate prior to spilling. The leachate nutrient concentrations modelled were:
    - Ammonia – 0.28 mg/L
    - Nitrate – 8.34 mg/L
    - NOx – 9.37 mg/L
    - TN – 11.03 mg/L
    - TP – 0.24 mg/L
- The volume of leachate spilled is diluted with the volume of runoff from the Southern Catchment and the SD2 settling zone capacity (0.57 ML)
- The Total Phosphate results from the expanded water quality monitoring program were treated as Total Phosphorus (TP) and included with historical TP results for the purpose of this assessment.

Only six discharge events where leachate has spilled to SD2 during an SD2 discharge were predicted for the modelled 28 year rainfall data set. The estimated nutrient concentrations for those events are presented in **Table 4.8**.

The results presented in **Table 4.8** show that:

- Discharges that potentially include a portion of untreated leachate are only expected to occur infrequently and when there has been substantial rainfall leading up to the discharge event.
- Four of the six predicted discharges have concentrations of Nitrate that are above the ANZECC 2000 95% species protection non-metallic inorganic toxicant default trigger value for freshwater systems. However, the Nitrate concentrations are predicted to be at least 14 times lower than those measured in the Drainage Depression upstream of Concrush (RW1).

- Four of the six predicted discharges have concentrations of TN that are above the ANZECC 2000 trigger value. However, the TN concentrations are predicted to be up to approximately 12 times lower than those measured in the Drainage Depression up[stream of Concrush (RW1).

- Three of the six predicted discharges have concentrations of NOx that are above the ANZECC 2000 trigger value. However, the NOx concentrations are predicted to be up to approximately 15 times lower than those measured in the Drainage Depression up[stream of Concrush (RW1).

- TP concentrations in discharges are all predicted to be below the ANZECC 2000 trigger value.

Further, the above is considered a conservative estimate of discharge nutrient concentrations as the average leachate nutrient concentrations are based on historical water quality monitoring results with some high nutrient concentrations in water sampled following low rainfall.

Based on the water quality monitoring results the pH, EC, BOD concentration, TRH concentration, Sulphate concentrations and Glyphosate concentrations of discharges from the proposed SD1 and SD2 are predicted to be within the trigger values presented in **Table 4.5**. During high or prolonged rainfall events that result in discharges from SD1 and SD2, the TSS concentrations may exceed 50 mg/L.

The water quality results indicate the potential for discharges with some dissolved metal and metalloid concentrations in excess of the trigger values presented in **Table 4.5**. However, there is limited data available to determine whether the high concentrations are likely to persist through a rainfall event or represent a first flush of concentrated runoff. Therefore predictions of likely SD1 and SD2 discharge concentrations for metals and metalloids have not been made. Concrush will continue to monitor for the metals and metalloids recorded above the LOD listed in **Table 4.5** and **Table 4.5** at Site 2, Site 3 and RW1. Concrush will also coordinate access to the rail corridor to select a suitable downstream monitoring location in the Drainage Depression to the north of the existing Concrush site.

Sediment basins designed for an 85th percentile rainfall event are expected to spill up to six times per year (DECCW, 2008). Water balance predictions (refer to Water Balance section) indicate that SD1 and SD2 will typically spill less than six times per year and SD1 may spill approximately seven times per year in a high rainfall year while SD2 will spill approximately 3 times per year in a high rainfall year. Should the Project be approved, it is expected that the discharges from SD1 and SD2 will have substantially lower concentrations of dissolved metals and metalloids than those measured at Site 3 in the first two rounds of the expanded water quality monitoring program. Concrush will monitor receiving water and discharge metal and metalloid concentrations from SD1 and SD2. Should metal and metalloid concentrations in discharges be demonstrated to be having a detrimental impact on the Drainage Depression, Concrush will investigate and implement additional mitigation measures as required in consultation with the EPA.

Table 4.8 Predicted SD2 Discharge Concentrations

Rainfall Event Date	Rainfall Preceding Discharge (mm)	Ammonia (mg/L)		Nitrate (mg/L)		NOx (mg/L)		TN (mg/L		TP (mg/L)	
		Discharge Estimate	Trigger Value	Discharge Estimate	Trigger Value	Discharge Estimate	Trigger Value	Discharge Estimate	Trigger Value	Discharge Estimate	Trigger Value
4/02/1990	439.5	0.0224	0.9[1]	0.669	0.7[1]	0.751	0.04[2]	0.88	0.5[2]	0.0192	0.05[2]
4/08/1990	192.0	0.0025		0.073		0.082		0.10		0.0021	
8/02/2002	219.0	0.0001		0.003		0.004		0.00		0.0001	
17/06/2011	193.2	0.0003		0.010		0.011		0.01		0.0003	
23/04/2015	352.0	0.0202		0.602		0.676		0.80		0.0173	
8/01/2016	311.0	0.0166		0.493		0.554		0.65		0.0142	

Notes:

1. ANZECC 2000 default trigger value for non-metallic inorganic toxicants in freshwater systems for 95% species protection
2. ANZECC 2000 default trigger value for physical and chemical stressors in south-east Australia for slight to moderately disturbed aquatic ecosystems

Mitigation Measures

The EIS does not adequately consider practical measures that could be taken to minimise pollution and mitigate potential impacts.

Sediment retention basins

The EIS proposes to treat wastewater using type C sediment retention basins. Sediment retention basins are designed to treat stormwater containing clean sediment only and type C sediment retention basins are specifically designed to treat stormwater that contains only coarse sediment that settles readily. Additional or alternative measures may be needed to treat runoff containing fine sediment, other pollutants and particularly dissolved pollutants (e.g. source controls; increased detention capacity; coagulation/flocculation; filtration; bio retention measures).

Green waste leachate treatment

The EIS indicates that stormwater from the existing facility has elevated nutrient concentrations and attributes this to leachate inflows to the stormwater system. There is likely to be substantial uncertainty in the treatment efficiency of the leachate wetland and there is potential for treated leachate to contain elevated concentrations of nutrients, biochemical oxygen demand and potentially toxicants (e.g. pesticides). Therefore, the treated leachate could pose risks to water if it is reused outside the green waste area or transferred to the stormwater system for discharge.

Roofing over high risk activities and materials

Although, the EIS states that mulch storage bays would be roofed, roofing and leachate containment are not considered for other activities or materials. Locating high risk activities (e.g. receivals and sorting) and materials (e.g. metals) undercover and containing the associated leachate would reduce the amount of pollutants requiring treatment. Runoff from roofs is likely to be of a higher quality than runoff from other areas of the premises. Collected runoff could be collected and reused on-site, with excess potentially discharged directly with minimal treatment, reducing the volume of wastewater requiring further treatment.

It is recommended that the proponent considers additional or alternative treatment measures to minimise pollution and mitigate potential water quality impacts. These could include:

- **source controls (e.g. roofing over high risk activities and materials);**
- **increased detention capacity;**
- **coagulation/flocculation;**
- **filtration;**
- **bio retention measures;**
- **options to manage green waste leachate separately from the stormwater system (e.g. increasing the capacity of the leachate dam and storing and processing green waste undercover).**

As part of the RTS process Concrush has undertaken further consideration of applicable soil and water mitigation measures. The mitigation measures proposed by Concrush for the Project are:

- Sediment basins (SD1 and SD2) for the Northern and Southern catchments to be designed and constructed in accordance with the Blue Book as Type D sediment basins to capture the runoff from a 5 day 85th percentile rainfall event. SD1 and SD2 will have a sediment zone with a capacity equal to 50% of the settling zone volume and be operated with a two day dewatering period.

- A Leachate Dam designed and constructed to capture Green Waste catchment runoff from a 1 in 10 year, 24 hour duration storm event. The design storm event is in accordance with the minimum requirements of the *Environmental Guidelines, Composting and Related Organics Processing* Facilities (NSW Department of Environment and Conservation, 2004). Given Concrush only process green waste organics (no-putrescibles and/or animal based organics) the green waste processing is considered to be relatively low risk. Therefore the sizing based on the 1 in 10 year 24 hour duration storm event is considered appropriate.

- A constructed wetland to treat Green Waste catchment leachate captured in the Leachate Dam. The Constructed Wetland is a form of bio retention for stormwater and is considered to have a moderate-high effectiveness for removal of nutrients in the *Stormwater Treatment Device Guidelines* (LMCC, 2003) and is expected to remove up to 75% of TN and 50% of TP.

- Treated leachate and runoff captured in SD1 and SD2 will be used on site for operational demands (dust suppression and production). Treated water will be reused in the Green Waste catchment as a priority and elsewhere on site for dust suppression activities when not all of the treated leachate can be reused for green waste processing.

- The concrete agitator washout handling bay will be roofed and graded to prevent run-on from other site areas. This area has the highest potential for high pH and high fine sediment concentrations in runoff. Any water generated within the concrete agitator washout bay (e.g. excess water from dust suppression and seepage from material) will be captured and reused in the production of road base product.

- The drains directing runoff from the Northern and Southern catchments will be grassed and are considered to have a low-moderate effectives for the removal of heavy metals and fine sediments in the *Stormwater Treatment Device Guidelines* (LMCC, 2003).

Filtration and coagulation/flocculation are not considered to be required with the above proposed measures in place. With all other proposed mitigation measures in place, roofing over all or part of the Green Waste catchment was considered to be impractical from an operational perspective given the relatively small scale of the operation. The potential for mobile plant collisions with roof structures was assessed as high and the cost to construct an oversized roof structure to reduce the risk of collisions was considered uneconomical.

Water Balance

The EIS does not provide adequate details of the water balance modelling. In particular, the EIS does not specify the runoff coefficient adopted for each area of the site and the results do not differentiate on-site water sources (e.g. runoff from the northern, southern and green waste catchments). It is therefore unclear what volume or proportion of the leachate would be reused within the leachate barrier system versus transferred to the stormwater system for reuse or discharge. The EIS also does not estimate the expected volume and frequency of discharges from each of the two proposed discharge points.

It is recommended that the proponent provides:

- **details of the water balance assumptions including the runoff coefficient adopted for each area of the site;**

- **detailed water balance results:**
    - **differentiating on-site water sources (e.g. runoff from the northern, southern and green waste catchments);**
    - **estimating typical and wet-year annual discharge volume and frequency for each proposed discharge point.**

If it is proposed that a proportion of green waste leachate would be transferred to the stormwater system, then the proponent should specify the average annual volume and proportions of leachate would be reused within the leachate barrier system and transferred to the stormwater system.

A detailed daily time step water balance model (the Model) has been developed in GoldSim modelling software. The Model has been developed to provide predictions of:

- The Project gross water balance (excludes potable water imports and sediment basin discharges);
- The frequency and volume of discharges from SD1 and SD2;
- Treated leachate reuse volumes;
- Captured stormwater runoff reuse volumes;
- Potable water import volumes; and
- Operational water demands.

The Model basis and assumptions are as follows:

- Daily rainfall data (for the period 1990 to 2017) input to the Model was sourced from the BoM Edgeworth WWTP station (station 061393) which is located approximately 1.5 km to the north of the Project.
- Evaporation data input to the Model was based on average monthly evaporation for the BoM Williamtown RAAF station (station 061078).
- An evaporation pan factor of 0.8 was used for evaporative loss calculations from water surfaces.
- Runoff volumes are estimated using an Australian Water Balance Model (AWBM) runoff model for hardstand catchments and stockpiles.
- A stockpile and exposed area dust suppression demand of 5 mm/day (including rainfall).
- A roadway dust suppression demand of 10 mm/day (including rainfall).
- All water applied as dust suppression is lost from the water management system (WMS).
- A Project stormwater tank capacity of 310 kL (existing of 110 kL plus 200 kL) additional storage.
- Water transfers to the stormwater tanks are prioritised as below. The water transfer priority outlined below was applied to minimise the likelihood of excess leachate spilling from the Leachate Dam to SD2 and also to minimise the likelihood of off-site SD2 discharges containing untreated leachate.
    - Treated leachate is transferred first;
    - Captured runoff in SD2 is transferred second; and
    - Captured runoff in SD1 is transferred third.

Table 4.9 presents the 10th percentile, 50th percentile and 90th percentile Project gross water balance results (excludes potable water imports and sediment basin discharges).

Table 4.9 Project Gross Water Balance Results

Statistic	Result (ML/year)
10th Percentile	-68.7
50th Percentile	-59.7
90th Percentile	-41.6

The results show that the Project has a water deficit that requires the import of water to meet operational demands even in high rainfall years. **Table 4.10** presents the net water balance results for the modelled rainfall year closest to gross water balance 50th percentile prediction.

Table 4.10 Detailed Net Water Balance results - Median Year

Parameter	Result (ML/year)
Inflows	
Rainfall Inflows	22.3
Potable Import	63.3
Total Inflows	**85.6**
Outflows	
Evaporation	1.0
Hardstand Dust Suppression	15.5
Stockpile Dust Suppression	65.6
SD1 Discharge	2.5
SD2 Discharge	1.0
Total Outflows	**85.6**
Change in Storage	0.0
Water Balance	**0.0**

Table 4.11 presents the predicted volumes of captured runoff from the Northern and Southern catchments and treated leachate from the Green Waste catchment reused on site. **Table 4.12** presents the predicted volumes of potable water imported to ensure operational water demands are met.

Table 4.11 Captured Runoff Reuse (ML/year)

Statistic	SD1	SD2	Treated Leachate
10th Percentile	6.1	6.6	0.8
50th Percentile	8.4	9.6	1.2
90th Percentile	12.6	15.7	2.2

Table 4.12 Potable Water Import

Statistic	Import Volume (ML/year)
10th Percentile	49.7
50th Percentile	63.8
90th Percentile	70.5

The reuse and import results presented in **Table 4.11** and **Table 4.12** demonstrate that Concrush is dependent on the Hunter Water Corporation potable water supply to meet operational demands. A total reuse volume of 18.4 ML was predicted for the Median year water balance (refer to **Table 4.10**) which represents approximately 83% of WMS runoff.

Table 4.13 and **Table 4.14** present the predicted volumes and frequencies respectively of discharges from SD1 and SD2 and spills from the Leachate Dam to SD2.

Table 4.13 Discharges and Internal Spill Volumes (ML/year)

Statistic	SD1	SD2	Leachate Dam (internal spill to SD2)
10th Percentile	0.91	0.03	0.00
50th Percentile	2.41	0.92	0.00
90th Percentile	7.21	3.35	0.03

Table 4.14 Discharge and Internal Spill Frequencies (events/year)

Statistic	SD1	SD2	Leachate Dam (internal spill to SD2)
10th Percentile	2.0	0.7	0.0
50th Percentile	4.0	2.0	0.0
90th Percentile	7.3	4.3	1.0

The results presented in **Table 4.13** and **Table 4.14** show that the potential annual volumes of internal spills from the Leachate Dam to SD2 are low and only occur during high rainfall years. Only six SD2 discharge events were predicted that included a portion of water spilled from the Leachate Dam for the 28 years of modelled rainfall.

Higher volumes and more frequent discharges have been predicted from SD1 than SD2. This is a direct result of the modelled operational strategy (i.e. the preferential reuse of treated leachate from the Constructed Wetland and SD2) which was designed to minimise the risk of discharges containing a portion of untreated leachate. Ongoing water quality monitoring (refer to Monitoring section), including the monitoring of metal and metalloids, will further inform the WMS operating strategy. Further, water quantity monitoring (refer to Monitoring section) to be undertaken as part of the Project will allow the AWBM to be better calibrated to confirm that predictions of rainfall runoff response are representative of the Project catchment.

Monitoring

The EIS proposes monthly surface water quality monitoring. Monitoring sites are proposed for the constructed wetland, sediment basins and upstream/downstream on Cockle Creek. Discharge monitoring is also required to ensure it is of appropriate quality. It is not necessary to monitor water quality in Cockle Creek as this is unlikely to detect changes that could be attributed to the discharges (given the distance from the discharge point to Cockle Creek and the range of other potential pollution sources in the catchment). Monitoring of water quality in the drainage depression, immediately upstream and downstream of the discharge points, would be more sensitive to potential water quality changes related to discharges.

The proposed monitoring parameters are TSS, EC, pH, total nitrogen, total phosphorus, oxides of nitrogen and ammonia. The monitoring parameters should be reviewed subject to a full characterisation of the discharges as recommended above (see Discharge section).

The EIS proposes monthly monitoring of volumes of potable water imported via water cart and water storage inventories. Monitoring of volumes of leachate transfers and overflows and discharges from the premises is also required to inform management.

The EIS states the following:

"Baseline surface water quality monitoring will initially be undertaken on a monthly basis for a period of 24 months to establish site specific trigger values in accordance with ANZECC water quality guidelines. The site specific triggers will allow Concrush to identify any trends or step changes in Cockle Creek water quality and assess whether Project operations could have impacted the water quality result."

It is unclear whether the monitoring sites would be appropriate for deriving site-specific guideline values. It appears that the facility would discharge to disturbed waterways. The Australian and New Zealand Guidelines for Fresh and Marine Water Quality state that highly disturbed ecosystems should not be regarded as 'pollution havens' and in most cases ecological values can be maintained by applying the default guideline values for slightly disturbed systems. The concepts of adaptive management and continual improvement should always be promoted to maximise future options for a waterway. In this context, guideline values for slightly to moderately disturbed ecosystems are appropriate to support the goal of improvement, rather than maintenance, of the disturbed condition.

The Guidelines recommend deriving site-specific guideline values for physical and chemical stressors based on reference site data. The Guidelines define reference condition as "an environmental quality or condition that is defined from as many similar systems as possible and used as a benchmark for determining the environmental quality or condition to be achieved and/or maintained in a particular system of equivalent type."

Given that the goal should be to improve ecosystem condition, it is important that any site-specific guideline values should be derived based on reference sites that are representative of slightly to moderately disturbed ecosystem condition.

As discussed, monitoring in Cockle Creek unlikely to be sensitive to changes to water quality associated with discharges from the proposed development. Water quality monitoring of discharges and ambient waters in the drainage depression immediately upstream and downstream of the proposed discharge points, before and after the development, would be appropriate to detect potential water quality impacts.

It is recommended that the ongoing monitoring program includes monitoring of:

- **discharge quality and volume at each proposed discharge point;**
- **water quality in the drainage depression immediately upstream and downstream of the discharge points (sampling should occur during discharges);**
- **volumes of green waste leachate transfers and overflows to the stormwater system.**

The proponent should provide a map of the proposed monitoring sites.

The water quality monitoring analytical suite should be reviewed subject to the discharge characterisations.

These requirements could potentially be reviewed subject to additional mitigation measures and initial monitoring results.

If site-specific guideline values are proposed for detecting impacts, then these should be derived consistent with Australian and New Zealand Guidelines for Fresh and Marine Water Quality, including being based on reference sites that are representative of slightly to moderately disturbed ecosystem condition.

The proposed surface water monitoring program has been updated and will include:

- additional water quality parameters;
- revised receiving water monitoring locations; and
- water quantity monitoring.

Water Quality

Table 4.15 outlines the proposed site surface water quality monitoring program for the Project.

Table 4.15 Site Surface Water Quality Monitoring

Water Source	Frequency	Parameters
Constructed Wetland	Monthly	pH, EC, TSS, TRH,, TN, TP, Nitrate, NOx, Ammonia
SD1	Monthly and during discharge	pH, EC, TSS, TRH,, TN, TP, Nitrate, NOx, Ammonia **Dissolved Metals and Metalloids** Aluminium, Arsenic, Boron, Cadmium, Chromium III, Chromium VI. Cobalt, Copper, Lead. Nickel, Selenium, Zinc
SD2	Monthly and during discharge	
SD1 Spillway	Monthly during discharge	
SD2 Spillway	Monthly during discharge	

Table 4.16 Receiving Surface Water Quality Monitoring

Water Source	Frequency	Parameters
SW1 (Drainage Depression Downstream of SD1 spillway)	Monthly	pH, EC, TSS, TRH,, TN, TP, Nitrate, NOx, Ammonia **Dissolved Metals and Metalloids** Aluminium, Arsenic, Boron, Cadmium, Chromium III, Chromium VI. Cobalt, Copper, Lead. Nickel, Selenium, Zinc
SW2 (Drainage Depression Downstream of SD2 spillway)	Monthly	

The siting of the proposed receiving water quality monitoring locations (Surface Water 1 (SW1) and Surface Water (SW2)) has yet to be determined. Concrush will need to arrange access to the rail corridor for a site inspection to determine safely accessible locations for ongoing monitoring. The locations of SW1 and SW2 will be determined prior to commencing Project construction.

Given the Drainage Depression drains from a high point at the western end of the Project site to both the north and south there will be no practical location to monitor upstream Drainage Depression water quality. While RW1 is upstream of the proposed SD2 discharge point, it is likely to be influenced by ponding of discharges from SD2 due to the relatively flat terrain. Presently, RW1 (refer to Discharges section and **Figure 4.3**) represents an upstream Drainage Depression monitoring location. Concrush will continue to monitor water quality at RW1 prior to construction of the Project to develop further understanding of the existing water quality in the Drainage Depression. While the available data set of RW1 water quality is unlikely to satisfy the ANZECC 2000 guidelines with respect to development of site specific trigger values (i.e. 24 months of contiguous monitoring results), the available data will be used to define trigger values to alert Concrush to any deviations in downstream water quality that could potentially be associated with the Concrush operation. Trigger Action Response Plans (TARPs) will be developed to provide Concrush personnel with the practical steps required to investigate and respond to an exceedance of a trigger value. The TARPs will be included in an updated version of the Concrush Site Water Management Plan along with the requirements of the proposed surface water monitoring program.

Water Quantity

Table 4.17 presents the proposed surface water quantity monitoring for the Project.

Table 4.17 Receiving Surface Water Quantity Monitoring

Parameter	Frequency	Methodology
SD1 volume	Following rainfall events	Manual read of staff gauge and dam level - storage relationship
SD2 volume	Following rainfall events	
Leachate Dam volume	Following rainfall events	
Treated leachate reuse volume	Monthly	Manual read flow meter; or Pump run time and rated pump flow
SD1 Discharge	Monthly during discharge	Calculation based on: • spillway design; • manual read of staff gauge during discharge to determine flow height over spillway; and • duration of discharge.
SD2 Discharge		
Leachate Dam Spills to SD2		

4.3.1.4 OEH

Emergency flood risk for floods up to the probable maximum flood. The Winding Creek and Lower Cockle Creek Flood Study by WMA Water (2013) indicates that the site is a low flood island and becomes isolated in relatively minor flood events (20% ARI) as Racecourse Road becomes a high hazard floodway.

In extreme flood events the site becomes submerged with no escape route. Flood risk will increase if the proponent intends to have more people, and property, on the site. The proponent must satisfy themselves that they can manage any increases in emergency flood risk.

Recommendation

OEH recommends that the proponent review its emergency management procedures to ensure that any increased flood risk can be appropriately managed.

Concrush have an existing Pollution Incident Response Management Plan (PIRMP) which includes relevant procedures for emergency management including floods. If the Project is approved the PIRMP will be reviewed and updated as required.

4.4 Traffic Assessment and Road Design

4.4.1 Agency Submissions

4.4.1.1 LMCC

It is noted that traffic coming to and leaving the site from the north via The Weir Road has height constraints due to the nearby rail bridge. In addition, it is likely Council will place a 5 tonne load limit on The Weir Road in the near future, and this should be reflected in the traffic assessment.

Section 6.4.2 of the EIS notes the restriction on vehicle movements to and from the north of the Project site from the 4.2 m low clearance rail bridge over the Weir Road. The Traffic Impact Assessment (TIA) assumed a conservative approach that all traffic to and from the Project site would utilise the southern route through Teralba. At the time of preparing the EIS there was no weight restriction on the Weir Road and as such this was not identified in the EIS. As the TIA already assumes all traffic accesses the Project site from the south there is no requirement to revise the TIA.

The only possible route for transporting material to and from the site by heavy vehicle is south via Teralba along Racecourse Road, York Street and Toronto Road. It is essential that the development is conditioned to only use this route.

At the time of preparing this RTS report the only restriction on the local road network in the vicinity of the Project site is the 4.2 metre low clearance rail bridge on Racecourse Road to the north of the Project site. If at some time in the future LMCC places a weight restriction on the Weir Road then road users would be obliged to comply with this restriction. It is outside of the control of Concrush to be able to enforce that potential customers, particularly one off or infrequent customers, obey the local road rules. As such, a potential condition that cannot be controlled or enforced by Concrush is considered unreasonable as it would potentially place Concrush in a position of non-compliance with its project approval.

Left and right turning lanes off Racecourse Road are recommended due to the number of heavy vehicle movements and evidence of existing road deterioration caused by current operations.

Better Transport Futures (now Better Safety Futures) prepared the TIA for the EIS. Better Safety Futures have undertaken a review of the need for turning lanes on Racecourse Road as a result of the Project. This review is presented in **Appendix F** with a summary provided below.

A review of the warrants from the *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings* (Austroads 2017) for turn treatments on major roads at unsignalised intersections confirms that with the proposed Project traffic volumes at the site access intersection the appropriate standard of auxiliary lane treatment is 'Basic'. It is important to note that the warrants are for 'intersections' on 'major' roads and the Project involves a site access and Racecourse Road which is a 'collector' road. As such, the recommended 'Basic' auxiliary lane treatment is considered more than adequate to accommodate the Project traffic volumes.

The southern access route of Racecourse Road/York Street will be the principal route to/from the Project site from the main road network. For these reasons the TIA recommended and Concrush has committed to a rural 'Basic' Left (BAL) treatment to accommodate the entry traffic movements from the south, which will include most heavy vehicles as the route to the north via Weir Road is constrained by a 4.2 m low clearance bridge under the Main Northern Railway. The rural basic left turn treatment is shown below in **Figure 4.5**.

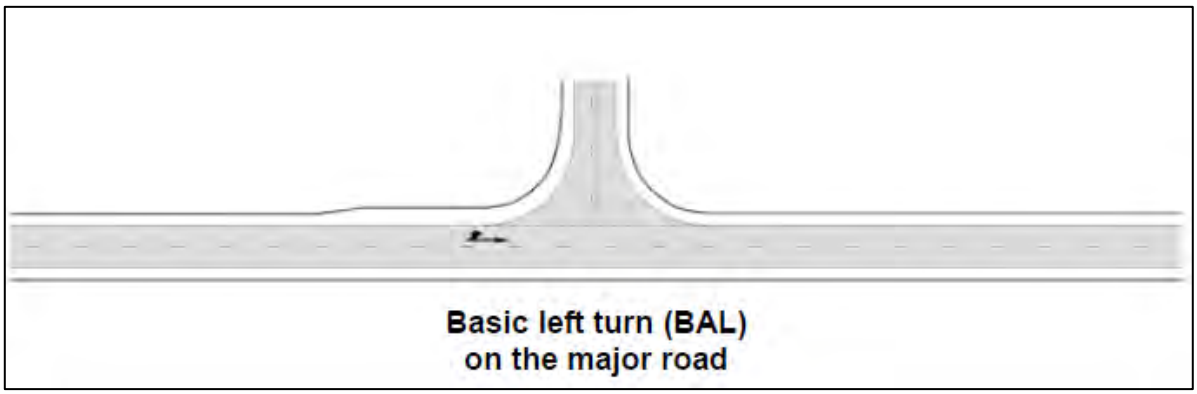


Figure 4.5 Rural basic left turn (BAL) treatment from Ausroads 2017

In the event of several vehicles arriving at the Project site at the same time, the Stage 1 site layout (refer **Figure 3.2**) allows for vehicles to enter the site and pull over and wait, if required, before proceeding to the weighbridge. There is adequate space for several truck and dogs to be at or waiting to enter the weighbridge without queuing outside the site on the public road system. At Stage 2 the site layout (refer **Figure 3.3**) has the weighbridges located approximately 50 m further west within the Project site which allows adequate space for several large vehicles to queue along the access driveway within the site, if required, before proceeding onto the weighbridge.

A permanent drainage structure such as concrete v-drain with drainage pits and associated piping should be constructed for the full frontage of the facility, with the driveway complying with Council standard EGSD 202-2 and constructed in concrete. It is suggested that the proposal be revised to include details for the intersection to be able to properly ascertain the extent of pavement and drainage upgrading required. Council would welcome the opportunity to review and intersection design.

The driveway or site access point will be a rural BAL treatment as identified above in accordance with the specifications provided in Ausroads 2017.

The existing surface water drainage along the existing Concrush site frontage to Racecourse Road consists of vegetated swale drains with no kerb and guttering. There is currently no formalised drainage along Racecourse Road to the north and south of the Project site. As such, there would be no existing infrastructure for concrete v-drains and drainage pits to connect into. It is not proposed as part of the Project to construct concrete v-drains and drainage pits and pipes along the Concrush frontage to Racecourse Road. The Project site drainage has been considered as part of the WMS described in **Section 4.3** of this report.

4.4.1.2 DPE

Reconsideration of the site entry is required to be submitted, including addressing Council's submission which recommends the installation of left and right turning lanes. The Department agrees with this recommendation and requests that this be addressed in the RTS.

As described in **Section 4.4.1.1** of this report, the site entry will be designed in accordance with the rural BAL treatment specifications described in *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings* (Ausroads 2017).

4.4.1.3 RMS

Roads and Maritime have no comments in response to the Notification of Exhibition.

Noted.

4.4.2 Community Submissions

Four submissions raised the following issues regarding traffic.

I have concerns with regard to the increase in traffic and types in the vicinity for access to this location. All minor and major roads will be impacted on due to traffic number increase and size of vehicles .The Speers Point roundabout at Five Islands Bridge is already inadequate with traffic volumes and the roundabout near Cockle Creek railway station will have increased use with the continuation of Muninbung road extension to Cardiff in the future as well as increase due to current residential expansion . The Weir Road access will be adversely impacted upon with increase in use. The access roads pass through residential and school zone areas. Will the truck usage be compliant with current load limits in the travel access areas?

I would object to the application, as there would be a significant increase in heavy vehicle traffic along Wakefield Rd. The traffic report in Appendix J is unclear as to whether trucks carrying raw materials would use the northern route comprising of Racecourse Road, The Weir Road, Northville Road and then Wakefield Road, as on page 6 it states smaller vehicles may access the site via this route, but then on page 15 the traffic report states that Wakefield Road is a two lane two way rural standard road that is capable of accommodating heavy vehicles, should the Weir Road route be utilised. Whilst this is considered unlikely, it is available as an alternate route to the M1 Pacific Motorway via the Palmers Road interchange to the south." This alternative route has not been assessed.

The traffic report does not detail how the heavy vehicles will move from Five Islands Road to the M1 Palmers Road interchange. There appear to be two main routes, the first through Toronto and along Awaba Rd, the second is along Miller Rd which connects back to Wakefield Rd. Both of these routes have not been considered in the assessment.

If these alternative routes along Wakefield Rd are utilised there would be significant increase in traffic along a road that is already busy with trucks, from the Metromix Quarry. As a daily commuter along Wakefield Rd there are no overtaking lanes along this 10km stretch of road to the Rhondda Road intersection, which means I can be caught behind a truck some days for 10+ minutes. However if these trucks take the alternate Wakefield Rd route there will be a significant increase in traffic, 1 additional truck every 5 minutes, this would result in multiple cars being struck behind these slow trucks.

I have seen very reckless behaviour where trucks have caused many near misses along this road, and if these trucks are using this alternate route the danger will only increase. I would recommend installing an overtaking lane along Wakefield Rd to mitigate these dangers. Please clarify if these heavy vehicles will use Wakefield Rd to access the M1 Palmers Road interchange and if so, please assess the impacts of the vehicles."

The TIA for the Project was undertaken in accordance with the *Guide to Traffic Generating Developments* (Version 2.2, RTA October 2002). The primary access for heavy vehicles carrying raw materials to the Project site and product from the Project site was identified as via Racecourse Road, then proceeding to the main road network at Five Islands Road/Toronto Road via York Street and Toronto Road North (refer **Figure 4.6**). Smaller vehicles may access the site via a northern route comprising Racecourse Road, The Weir Road, Northville Drive and then Wakefield Road to the west which leads to a connection with the M1 Motorway (refer **Figure 4.6**). Heavy vehicle movements north of the Project site entrance are restricted by the low clearance bridge (4.2 m) under the Main Northern Railway.

In accordance with the *Guide to Traffic Generating Developments* the TIA has assessed the impacts to key adjacent roads and intersections. An assessment of the total route a vehicle may take to/from the site is not required and is not possible as all vehicle origins and destinations cannot be known. The roads leading from the Project site are identified as Collector Roads in LMCC's road hierarchy. The TIA assessed the potential impacts on these roads until connection with the main road network. The roads used to access the main road network were identified as:

- For Five Islands Road
    - Racecourse Road
    - York Street
    - Toronto Road
- For M1 Motorway and Newcastle Link Road
    - Racecourse Road
    - The Weir Road
    - Wakefield Road.

Based on traffic count data the TIA included analysis of the current capacity of the local road network for the routes identified above and shown in **Figure 4.6**. The forecast traffic volumes for the Project at maximum production capacity were then added to each of these road segments to determine the potential impacts of the Project on the local road network. The results of this analysis identified that the Level of Service (a measure of the traffic flow conditions) remains high and generally in the Austroads B/C range for mid-block performance along the approach and departure routes.

The TIA concluded that taking into account the traffic generated by the Project, the local road network would continue to operate well within their technical and functional lane capacity levels as described by Austroads and NSW RMS guidelines. Similarly, the TIA identified there would be little change to intersection performance.

All roads will have an increase in deterioration and therefore require increased maintenance. Who will fund this on a regular basis.

LMCC is responsible for maintenance of the roads in the vicinity of the Project site. As identified in **Section 4.15.1** of this report, if the Project is approved Concrush is required to pay LMCC a road haulage levy to contribute to the maintenance of the local roads in the vicinity of the Project in accordance with the Local Infrastructure Contributions provisions within the *Environmental Planning and Assessment Act 1979* and the *Lake Macquarie City Council Development Contributions Plan 2016 - Toronto Contributions Catchment*. LMCC determines the road haulage levy based on calculations involving the number of vehicle movements to/from the Project site and the length of Council maintained road the vehicles typically travel before joining the main road network. The road haulage levy consists of an annual payment made for the life of the Project.

My sister in-law was in a car crash a few days ago with another vehicle on this road which is already dangerous. More traffic without road upgrades would be irresponsible.

Teralba requires significant road upgrades before this should be considered. Billy's Lookout is already one traffic disaster too many. To exacerbate the problem at the other end would be highly irresponsible. Racecourse Road is already an accident waiting to happen.

The TIA included an assessment of the capacity of the existing road network, including Racecourse Road, to accommodate the potential increase in traffic as a result of the Project. The TIA concluded that with the additional traffic generated by the Project the local road network, including Racecourse Road, would still be well within the technical and functional lane capacity levels as described by Austroads and NSW RMS guidelines.

Image Source: Nearmap (May 2017)
Data Source: LPI (2017)

0 0.5 1.0 1.5km
1:30 000

Legend

- Project Site
- Key Northern Transport Route
- Key Southern Transport Route

FIGURE 4.6

Transport Route for Vehicle Access

4.5 Contamination

4.5.1 Agency Submissions

4.5.1.1 EPA

The EPA initially provided a submission in a letter dated 5 February 2019. Following a meeting on 5 March 2019 (refer **Section 2.1.2**) to discuss the issues raised in its submission the EPA issued a revised letter dated 12 March 2019. The response to the revised letter of 12 March 2019 is provided below.

A Data Gap Investigation (DGI) as per the EPA's letter dated 5 February 2019 is still recommended as a requirement of consent. The EPA considers that on-site monitoring of only two wells is insufficient and that further investigation and reporting is required to establish groundwater contamination and hydrogeology before operations commence as per the proposed development.

The requirements for a DGI were discussed at a meeting between representatives of EPA, Concrush, Umwelt and RCA on 5 March 2019. At this meeting it was agreed that a third groundwater well would be established at the Concrush site and that this could occur post approval during the construction phase of the Project as part of works for the Remedial Action Plan (RAP). Sampling and reporting from the third groundwater well would be undertaken during the construction phase and compared with the results from the groundwater testing already undertaken during preparation of the EIS from the two existing groundwater wells within the Project site. A summary report outlining the findings from sampling of the third groundwater well would be provided to the EPA prior to commencement of operations.

The proponent provided the EPA with information which suggest that the premises subject to the SSD would be of low risk of polyfluoroalkyl substance (PFAS) contamination. As a result, the original requirement to assess PFAS contamination is no longer recommended for consent.

Noted. The additional information provided to the EPA is presented as part of **Appendix A**.

The recommended requirement to prepare an Environment Management Plan (EMP) and a Remedial Action Plan (RAP) to manage any residual contamination throughout the construction of the proposed development may be included in the development's Construction Environmental Management Plan (CEMP).

If the Project is approved Concrush will prepare a RAP, CEMP and Operational Environmental Management Plan (OEMP) to be submitted to DPE for approval.

The EPA revises its initial requirement for the proponent to engage a NSW EPA accredited Contaminated Land Site Auditor to prepare a Section A Site Audit Statement to confirm suitability of the land for its proposed use. By considering the additional information provided by the proponent, the EPA agrees for the proponent to use "certified consultants". Note that the EPA requires all reports submitted to the EPA to comply with the requirements of the Contaminated Land Management Act 1997 (CLM Act) to be prepared, or reviewed and approved, by a certified consultant (see the EPA's Contaminated Land Consultant Certification Policy (http://www.epa.nsw.gov.au/media/epa/corporatesite/resources/-clm/18520-contaminated-land-consultant-certification-policy.pdf?la=en).

All contaminated land management reporting for the Project will be undertaken by a certified consultant in accordance with the EPA's policy.

4.5.1.2 DPE

Lot 2 DP 220347 is listed on the EPA's Contaminated Land register as having a current section 35 notice under the *Environmentally Hazardous Chemicals Act 1985*. The Department notes that the EPA's submission did not address land contamination however Council's submission requests the preparation of a Remedial Action Plan. As such, the Department has sought comment from the EPA's Contaminated Lands team regarding this matter and will advise the Applicant when a formal response has been received.

The EPA's submission is addressed in **Section 4.5.1.1**.

The LMCC's submission is addressed in **Section 4.5.1.3**.

4.5.1.3 LMCC

It is requested that a Construction Site Remedial Action Plan be provided and approved prior to the issue of any Construction Certificate.

Concrush will prepare a RAP as part of the CEMP and submit this to DPE for approval. Once approved the RAP and CEMP will be submitted to LMCC for issue of a construction certificate.

4.6 Waste

4.6.1 Agency Submissions

4.6.1.1 EPA

It is recommended the proponent revise the EIS to detail the expected quantity of each waste type proposed to be accepted at the premises when Stage 2 of the proposal is in operation.

The quantity of waste that would be accepted at the premises when Stage 2 of the Project commences cannot be accurately be predicted as it will be subject to market demand and is also likely to vary to some extent over the life of the Project. During Stage 2 of the Project there may be times when a particular waste type is being produced in a high volume in the local area and being sent to Concrush for recycling and as such this type of waste is highly represented across the range of waste types accepted at Concrush. No more than 150,000 tonnes of waste would be present on-site at any one time.

Concrush currently reports to the EPA monthly on the type of waste incoming, outgoing and stored on the existing site. The monthly reporting for the site will continue for the Project with the total volume of waste likely to increase over time, subject to market demand, with the relative proportions of each waste type expected to be similar to what is currently reported each month. The latest monthly reporting data is included at **Appendix H**.

4.6.1.2 LMCC

There is no sewer connection point or nearby sewer infrastructure to service the site. An application under the provisions of Section 68 of the *Local Government Act 1993* for the installation of a system of sewerage management will be required. In this regard, a pump-out system will be required due to the limited area available after development of the site.

The Project does not involve connection to LMCC sewer infrastructure therefore a Section 68 application under the *Local Government Act 1993* is not required. The existing chemical toilet facilities will be relocated along with the lunch room and maintenance shed to the south western portion of the Project site to form a production compound. The new toilet facilities associated with the new weighbridge office will also be a chemical treatment facility with pump out as required to a licensed waste disposal contractor.

4.7 Visual Impacts

4.7.1 Agency Submissions

4.7.1.1 LMCC

Given the visual sensitivity of the site's location and proposed works the preparation of a VIA is suggested. The VIA should include consideration of a significant landscape buffer within the site around the east, west, and southern boundaries that reflects the sensitivity of the site adjoining Cockle Creek and the landscape character of Lake Macquarie. Council would welcome the opportunity to review any VIA.

Section 6.11 of the EIS provides a visual impact assessment of the Project. This includes:

- A description of the existing visual environment
- Identification of public and private viewpoints to the Project site
- Discussion of the potential change to the visual environment
- Radial analysis using lidar data to assess visibility of the site from the surrounding landscape (assuming a worst case scenario of all stockpile areas at 10 metres high)
- A description of mitigation measures.

It is therefore considered that the requirement for a visual impact assessment has been met.

As described in Section 6.11.1 of the EIS the Project site and immediately surrounding areas are distinctly industrial in character strongly reflecting the zoning and land use of the area. Views to the Project site are briefly available from the rail corridor for passengers on trains travelling north or south as well as from vehicles on Racecourse Road. Some intermittent glimpses of the Project site are also available for vehicles travelling on TC Frith Avenue to the east of the site.

An existing earth bund (refer **Figure 3.2**) with varying heights of vegetation up to approximately 4 m high, is located along the majority of the existing and proposed western boundary of the Project site. This vegetated bund provides some landscape buffer for potential views from the rail corridor, however, as the stockpiles on site could be up to 10 m in height the vegetated bund would not fully screen potential views from passenger trains.

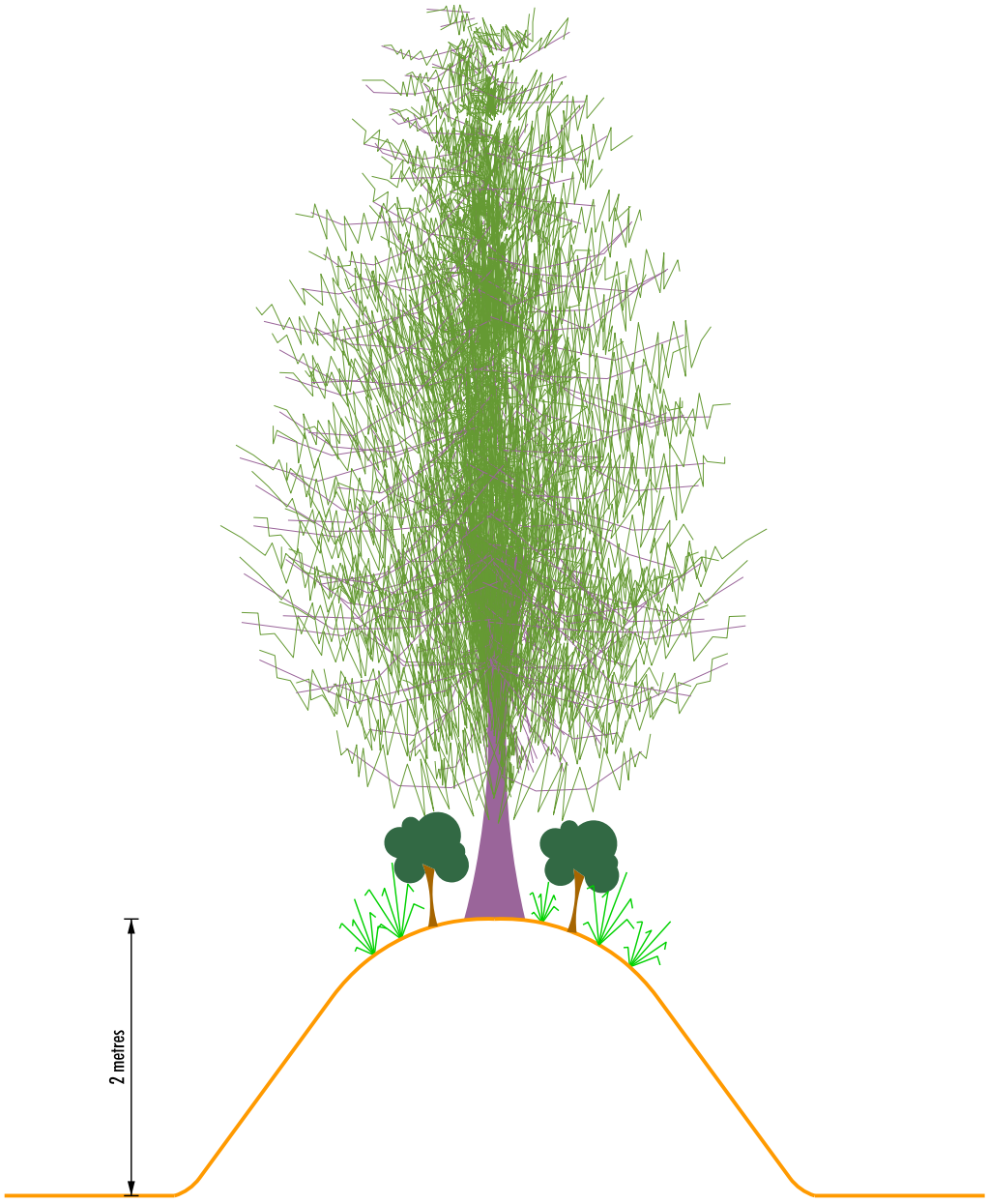
Similarly, there is an existing and a proposed landscaped earth bund (two metres high) along the majority of the eastern boundary of the Project site (refer **Figure 3.2**). The existing bund is, and the proposed bund will be, vegetated with local native species including Casuarina trees which provide a visual screen/landscape buffer from potential views from the east of the site on either Racecourse Road or TC Frith Avenue. As such, there is some visual screening/landscape buffer between the Project site and the potential view points towards the site. To the north and south of the Project site is existing industrial land with no potential viewers towards the Project site with the exception of workers at these sites. It is not considered necessary to provide a visual screen/landscape buffer between immediately adjacent industrial sites.

To the east of the Project is Cockle Creek which has vegetation on both the western and eastern banks in the vicinity of the Project site which provides a visual screen for potential views from local roads and residential areas to the east of the Project site. The Bunderra Estate includes landscape plantings on the western boundary of the estate adjacent to TC Frith Avenue. These landscape plantings provide a vegetated screen for potential views from the estate towards the Project site and will become an even more effective screen as these plants grow and reach maturity.

A landscape plan does not appear to accompany the EIS and should be prepared by a qualified landscape architect. Council would welcome the opportunity to review any revised landscape plan.

The existing earth bund close to the western boundary of the site is already vegetated. The existing constructed landscaped bund along the eastern boundary of the current Project site consists of planted native species including Casuarina trees and was constructed and planted by Concrush. It is proposed that the additional length of landscaped bund along the eastern boundary of the site would be constructed and planted by Concrush using a similar mix of species to those already present along the existing landscape bund. In this case it is not considered necessary that the plan showing the landscaped bund be prepared by a qualified landscape architect. A cross section representation of the proposed landscape bund is presented in **Figure 4.7**.

Furthermore, as discussed above, there are limited views available from the surrounding areas towards the Project site and therefore the need for a specifically designed landscape bund is not considered necessary.



Legend

- Proposed Bund Surface
- Proposed Shrubs/Plants
- Proposed Tree

FIGURE 4.7

Landscaped Bund Cross Section

4.7.2 Community Submissions

Many homes in Boolaroo look upon this site on the hill and to make it even larger would again only give Boolaroo another eyesore to look at.

A visual impact assessment was undertaken for the Project and is presented in Section 6.11 of the EIS. As identified in this assessment the Project site and immediately surrounding areas are distinctly industrial in character strongly reflecting the zoning and land use of the area. A car wreckers yard is located immediately to the north of the Project site with vacant industrial land immediately to the south of the existing site with a scrap metal yard further to the south. To the west of the Project site is the Teralba Colliery and Macquarie Coal Preparation Plant.

A visual assessment including three dimensional terrain modelling was undertaken for the Project. The purpose of the assessment was to determine the locations surrounding the Project site from which the Project elements would be visible. A 4 by 4 km digital terrain model of the area surrounding the Project site was examined to determine potential viewing locations at which to run a detailed radial analysis. Two publicly accessible locations on TC Frith Avenue and two potential dwelling locations from Bunderra Estate and the proposed aged care facility were selected based on their potential to have views towards the Project site.

The radial analysis identified that there would be some fleeting glimpses of the Project site available to motorists, cyclists and pedestrians travelling on TC Frith Avenue, however, due to the vegetation on both the eastern and western banks of Cockle Creek the Project site is predominately screened from passing motorists.

The view point selected within the Bunderra Estate at Boolaroo represented the highest point within the estate and therefore the potential dwelling location most likely to have views towards the Project site. Views from this location are generally restricted to the north west, which is towards the Project site, however views are partially restricted by vegetation along Cockle Creek. As such, there would only be some views, potentially between trees, where stockpiles on the Project site may be seen. It should be noted that the radial analyses from this location did not take into account other houses on the Bunderra Estate that would likely be built between this view point and the Project site which could likely further restrict potential views from this location. There are also landscape plantings on the western boundary of Bunderra Estate, including Casuarina trees, which as they grow will provide further screening of potential views towards the Project site.

The radial analysis from the view point within the site of the approved age care facility identified there are no views to the west of this location into the Project site because of the screening vegetation along the eastern side of Cockle Creek.

4.8 Bushfire

4.8.1 Agency Submissions

4.8.1.1 NSW Rural Fire Service

The Rural Fire Service raises no objections to the proposal subject to a requirement that the future development complies with the bush fire threat assessment and recommendations outlined in *Concrush Increase to Capacity Project, Teralba Environmental Impact Statement* prepared by Umwelt (Australia) Pty Ltd, dated November 2018.

Concrush will implement the bushfire management recommendations identified in Section 6.7.2 of the EIS.

4.8.1.2 NSW Fire and Rescue

It is understood that the main works to be completed are an increasing of processing and storage capacities, upgrading of facilities, establishment of a retail arm, and an increase in site area. It is understood that stockpiled material on site will be either combustible green waste or non-combustible construction waste.

The Report (EIS) makes reference to agreed minutes from a meeting held on 13 June 2018 at FRNSW's offices attended by representatives from Concrush, Umwelt and FRNSW. These minutes could not be found in Appendix G Risk Assessment and as such FRNSW cannot verify that recommendations made therein have been considered and incorporated into the expansion. It is recommended that Concrush confirm their commitment to adopting recommendations outlined with the agreed minutes from a meeting held on 13 June 2018 at FRNSW's offices attended by Concrush, Umwelt and FRNSW.

The agreed minutes from the meeting held on 13 June 2018 at FRNSW's office are attached to this RTS report as **Appendix I**. Concrush confirms its commitment to the recommendations within the agreed minutes.

It is recommended that a comprehensive Emergency Management Plan (EMP) be developed for the site.

Concrush have an existing Pollution Incident Response Management Plan (PIRMP) which includes relevant procedures for fires and bushfires. If the Project is approved the PIRMP will be reviewed and updated as required.

It is recommended that consideration be given to FRNSW's Fire safety guideline - Fire safety in waste facilities.

Concrush has reviewed the FRNSW's *Fire safety in waste facilities* guideline and considers that the meeting held with FRNSW and reflected in the agreed minutes covers the site specific requirements for the Project. As identified above, Concrush have an existing PIRMP which includes relevant procedures for fires and bushfires which will be updated as required.

4.9 Aboriginal Heritage

4.9.1 Agency Submissions

4.9.1.1 OEH

The OEH initially provided a submission in a letter dated 10 January 2019. Following a meeting on 1 March 2019 (refer **Section 2.1.4**) to discuss the issues raised in relation to Aboriginal heritage, additional information was provided to OEH (refer **Appendix C**). Following review and consideration of the additional information provided, OEH responded via letter dated 2 May 2019 (refer **Appendix C**) that the Concrush Resource Recovery Facility Expansion (SSD 8753) project is granted an exemption from preparing an Aboriginal cultural heritage assessment report and no further assessment of Aboriginal cultural heritage is required.

4.10 Historic Heritage

4.10.1 Agency Submissions

4.10.1.1 OEH – Heritage Division

There are no issues relating to State heritage that require a response from the Heritage Division.

Noted.

4.10.1.2 LMCC

The heritage recommendations contained within the EIS are concurred with and should be applied as conditions of consent.

The heritage recommendations from Section 6.9.3.3 of the EIS will be implemented for the Project.

4.11 Ecology

4.11.1 Agency Submissions

4.11.1.1 OEH

OEH is satisfied with the biodiversity assessment provided and no further assessment is required.

Noted.

4.12 Community Consultation

4.12.1 Agency Submissions

4.12.1.1 NSW Health – Hunter and New England Local Health District

NSW Health recommend that the proponent ensure meaningful ongoing community engagement and consultation.

As part of the RTS process Concrush has undertaken further targeted consultation with the community as described in **Section 2.1.4** of this report. If the Project is approved, Concrush will continue to keep the local community informed of any key activities planned for the development of the site.

4.13 Site Plans

4.13.1 Agency Submissions

4.13.1.1 DPE

Detailed site plans are required to be submitted which clearly and adequately depict individual stockpile size(s) and location(s), including dimensions. The site plans are also required to accurately depict setback measurements.

As discussed with DPE on 8 March 2019 following the DPE site visit to the Concrush facility, the provision of detailed site plans depicting stockpile sizes and locations is problematic as the required site configuration changes in response to the type of material being received and the demand for certain products at any one point in time. Any site plans prepared at the time of this RTS and referenced in the consent conditions could potentially restrict Concrush's future operations and impact the need for flexibility in the site configuration.

Figures 3.2 and **3.3** clearly identify the delineated areas of the Project site including the green waste and construction waste sections of the site and the retail area for the general public which is separated from other sections of the site at Stage 2 of the Project. **Figures 3.2** and **3.3** identify the general areas where raw material will be stockpiled and processed and where the processed material or products will be stockpiled. The internal haulage routes with direction of travel are also shown along with pedestrian movements.

4.14 Building Details

4.14.1 Agency Submissions

4.14.1.1 LMCC

No details have been provided for the proposed maintenance shed and stage 2 weighbridge office/amenities. Appendix D Building plans do not correlate to any of the identified structures in either stage 1 or 2 with a footprint measurement of 4.4m x 14m. It is suggested that the details of all proposed buildings be provided, and clearly identify their proposed locations. The size of the buildings is particularly relevant to Section 7.11 contributions.

Building locations and dimensions were provided in Figures 3.1 and 3.2 of the EIS. The Stage 2 weighbridge office dimensions were shown incorrectly on Figure 3.2 of the EIS but have been updated on **Figure 3.3** of this RTS report. The Stage 2 weighbridge office is the only new building proposed on site with detailed plans provided in Appendix D of the EIS. The Stage 2 weighbridge office will be 4.4 m wide by 14 m long with a 1 m wide covered walkway along one side to allow inspection of incoming loads.

The maintenance shed and lunch room/toilet shown on **Figure 3.2** are the existing maintenance shed and lunchroom/toilet which will be relocated from the eastern section of the existing site to the south western section of the expanded Project site.

4.15 Section 7.11 Contributions - Local Infrastructure and Haulage

4.15.1 Agency Submissions

4.15.1.1 LMCC

Developer contributions will be applicable however it is unclear what additional Gross Leasable Floor Area will be included as part of the application. It is requested that Council is able to review the building details as requested above. A Road haulage levy is also applicable to the subject development and has been based on the following:

- **As previously stated, the only possible route for transporting material to and from the site by heavy vehicle is south via Teralba along racecourse Road, York Street and Toronto Road. It is essential that the development is conditioned to only use this route.**
- **Should the development seek to use and alternate route the haulage contribution amount will need to be reconsidered.**
- **Annual payment of $6,054.90 (subject to indexation).**

The additional Gross Leasable Floor Area will be the proposed Stage 2 weighbridge office at 4.4 by 14.4 m.

The transport routes to the site are discussed in **Section 4.4.1.1**. Concrush agrees to the annual road haulage levy payment amount of $6,054.90.

The following condition is recommended to be included should consent be issued.

a) **This condition is in accordance with the Local Infrastructure Contributions provisions within the *Environmental Planning and Assessment Act* 1979 and the Lake Macquarie City Council Development Contributions Plan 2016 - Toronto Contributions Catchment. During the life of this development the person(s) entitles to the benefit of the consent shall pay Council an annual Haulage Contribution of $6,054.90.**

The Council shall apply the Haulage Contribution towards the repair, maintenance and upgrade of the Haulage Route. Haulage Route means South via Teralba for a distance of 2.885 kilometres, which consists of Racecourse Road, York Street and Toronto Road Teralba.

b) From the date this Notice of Determination is made until payment, the haulage Contribution will be indexed and adjusted at the close of business on the 14 May and 14 November in each year in accordance with indexation provisions within the Contributions plan. The first date for indexation will occur on the first aforementioned date after the Notice of Determination becomes effective.

c) The contributions payable will be the amounts last indexed and adjusted in accordance with Clause (b) above. However, if no amount has been indexed and adjusted because the first date for indexation and adjustment has not arrived, the contributions payable shall be those in clause (a) above.

d) The contributions shall be paid to Council 12 months from the Determination Date, and annually on the Determination Date thereafter.

It is the responsibility of the person having the benefit of this development consent to ensure that the Road Haulage monetary contributions have been paid to Council in accordance with the above provisions.

Concrush agrees to the above provisions in relation to the annual road haulage levy.

4.16 Environment Protection Licence

4.16.1 EPA

The existing EPL 13351 will need to be varied to include the increased capacity if the proposal is approved.

Noted. If the Project is approved Concrush will apply to vary EPL 13351.

4.17 Hunter Water

The existing development has a water supply via an existing 20 mm water service connecting to an existing 150 mm CICL water main in Racecourse Road. Should the existing water service size be insufficient to service the proposed development, a technical assessment application will be required to determine the appropriate service size. All works, applications and fees associated with upsizing the water service will be the responsibility of the property owner/developer.

The developer may be required to submit an application for a hydraulic design assessment of internal water and sewerage services for the development, including rainwater tanks and any alternative water supply systems. Please contact Hunter Water's Technical Services Team to confirm the specific requirements.

Concrush is not seeking an upgrade or new connection to the Hunter Water supply system as part of the Project as the existing arrangement is considered suitable.

The site is bounded to the west by the Great Northern Railway and to the east by Cockle Creek and is considered remote from the Hunter Water sewer system. Therefore, a conventional gravity/pump station system is therefore not considered viable for this site. Should a connection to sewer be required, the developer should liaise with Hunter Water to discuss viable servicing options.

Concrush is not seeking a connection to the Hunter Water sewer system as part of the Project. The new toilet facilities associated with the new weighbridge office will be a chemical treatment facility with pump out as required to a licensed waste disposal contractor.

Hunter Water's requirements for the provision of water and sewerage facilities to the water main extension at Lot 2 DP 220347, 21 Racecourse Road, Teralba are as follows:

- **Design and construct Major Works on behalf of Hunter Water to connect to the existing water system(s) of Hunter Water. Construct a suitable water main extension from the 150mm CICL water main in Racecourse Road. A major works assessment/administration fee of $2,233 should be paid when design are submitted**

- **Prior to providing final approval of designs, Hunter Water may require a Review of Environmental Factors (REF) to be submitted (refer Section 1 of Hunter Water's Water and Sewer design Manual). A REF considers the likely impacts a development may have on the environment. At all times, methods for preventing or reducing adverse environmental impacts should be considered and where appropriate incorporated into the project design. Hunter Water, where appropriate may make a determination in accordance with the EP&A Act 1979.**

- **The extension of water main under a works contract may require entry to an adjoining party property. It is the responsibility of the developer to arrange entry with the affected landowner and have evidence of consent by way of a signed Entry permit. The permit is to be submitted prior to release of the signed contract.**

- **You may be required to submit an application for a hydraulic design assessment of internal water and sewerage services for this development, including rainwater tanks and any greywater systems.**

Concrush is not seeking connection to the Hunter Water supply system or sewer system as part of the Project.

4.18 Sydney Trains

If required by Sydney trains, prior to the commencement of works, prior to the issue of the Occupation Certificate, or at any time during the excavation and construction period deemed necessary by Sydney Trains, a joint inspection of the rail infrastructure and property in the vicinity of the project is to be carried out by representatives from Sydney Trains and the Applicant. These dilapidation surveys will establish the extent of any existing damage and enable any deterioration during construction to be observed. The submission of a detailed dilapidation report will be required unless otherwise notified by Sydney Trains.

Noted.

The following items are to be submitted to Sydney Trains for review and endorsement prior to the operation of the site:

- **Machinery to be used during excavation/construction**

Section 3.1.7 of the EIS identified the plant and equipment to be used during the construction phase of the Project as follows:

- Traxcavator
- Grader
- Front end loader

- Excavator
- Rollers (smooth drum and sheep foot)
- Water cart
- Hand tools.

Prior to the undertaking of works a Risk Assessment/Management Plan and a detailed Safe Works Method Statements (SWMS) for the proposed works are to be submitted to Sydney Trains for review and comment on the impacts on the rail corridor.

Concrush will prepare a Risk Assessment/Management Plan and SWMS for construction activities that will occur within proximity of the rail corridor. It should be noted that there is an existing earth bund present within the western portion of the Project site that forms a natural barrier between the rail corridor and the working portion of the Project site. There will be no direct impacts in the rail corridor.

Sydney Trains of TfNSW and persons authorised by those entities for the purpose of this condition, are entitled to inspect the site of the development and all structures to enable it to consider whether those structures have been or are being constructed and maintained in accordance with the approved plans and these conditions of consent, on giving reasonable notice to the principal contractor for the development or the owner or occupier of the part of the site to which access is sought.

Noted.

Prior to the commence of works the Applicant is to submit to Sydney Trains a plan showing all craneage and other aerial operations for the development and must comply with all Sydney Trains requirements. If required by Sydney Trains, the Applicant must amend the plan showing all craneage and other aerial operations to comply with all Sydney Trains requirements. Safe approach distances will need to be maintained at all times.

Construction of the Project will not involve any craneage.

Prior to the commencement of works appropriate fencing is to be in place along the rail corridor to prevent unauthorised access to the rail corridor during construction. Details of the type of fencing and method of erection are to be to the satisfaction of Sydney Trains prior to the fencing work being undertaken.

The development shall have appropriate fencing fit for future usage of the development site to prevent unauthorised access to the rail corridor by future occupants of the development. Details of the type of new fencing to be installed and the method of erection are to be to the satisfaction of Sydney Trains prior to the new fencing work being undertaken.

There is an existing chain link fence approximately 2 m high along the length of the rail corridor boundary with the Project site.

Given the development site's location next to the rail corridor, drainage from the development must be adequately disposed of/managed and not allowed to be discharged into the corridor unless prior approval has been obtained from Sydney Trains. Prior to the commencement of works the Applicant shall provide a final drainage design confirming that there is no drainage into the rail corridor.

The Concrush operations require an import of water. As such, the WMS aims to capture as much water as possible for reuse on site. The purpose of the sediment dams shown in **Figure 3.2** and **3.3** is to retain water to allow pumping to water storage tanks. Rainfall events of a certain magnitude will occasionally result in the sediment basins overtopping with discharge off site. The WMS for the Project will allow an increase in the amount of water captured within the Project site compared to the existing situation. A detailed water balance undertaken for the Project identifies that there is potential for up to seven rainfall events in a year to result in water being discharged from the Project site. The low point that forms the drainage depression in the vicinity of the Concrush/Sydney Trains boundary appears to be located at least partially within the Sydney Trains rail corridor.

The drainage design for the Project is presented in **Figure 4.4** and described in **Section 4.3**.

Prior to the commencement of works the Applicant shall confirm the final dam depths and if greater than 2m in depth, shall provide engineering documentation to Sydney Trains for review and endorsement.

The sediment dam depths will be 2 - 2.5 m depending on final design. Prior to the commencement of construction works Concrush will confirm the final sediment dam depths and if greater than 2 m will provide engineering documentation to Sydney Trains.

The Applicant shall provide Sydney Trains with cross section drawings identifying the Sydney Trains power poles and earth bund in proximity of the Concrush/Sydney Train site boundary.

A cross section showing the location of the Sydney Trains power poles and the earth bund in the vicinity of the Concrush/Sydney Trains site boundary is presented in **Figure 4.8**.

4.19 Transport for NSW

The exhibited documents have been reviewed and no further comment is provided.

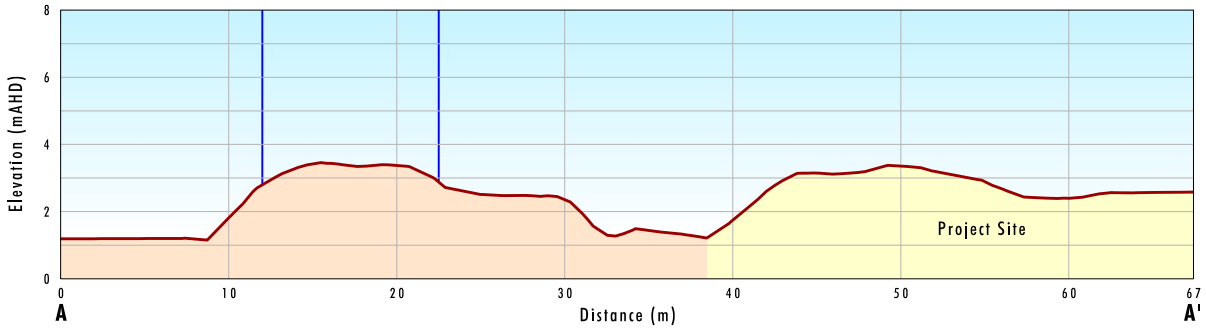
Noted.

4.20 Ausgrid

Ausgrid do not have any objection to the proposed development.

Noted.

Plan View



Section View

Legend

- Project Site
- Cross Section A-A'
- Existing Surface
- Sydney Trains Overhead Power Poles

0 5 10 20m
Plan Scale

Image Source: Nearmap (May 2017)
Data Source: Lidar Survey (Sept. 2014)
Note: Contour Interval 0.5m, Vertical Exaggeration 1:2

FIGURE 4.8

Cross Section of
Rail Corridor and Project Site

File Name (A4): R07/3972_081.dgn
20190410 16.39

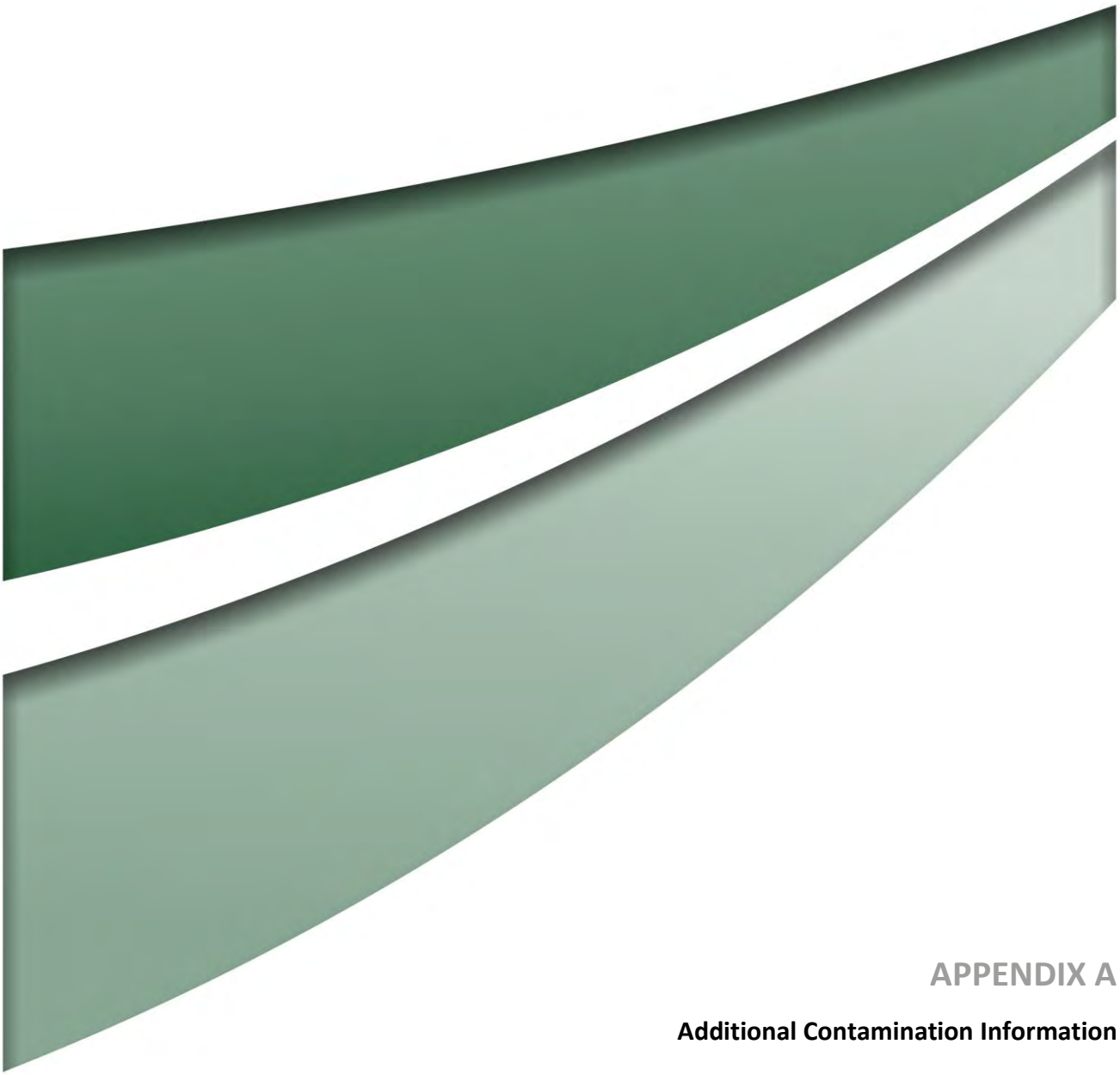
5.0 References

EPA (2016) Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Approved Methods)

EPA (2017) Noise Policy for Industry (NPI)

Huddleston GM1, Gillespie WB, Rodgers JH Using constructed wetlands to treat biochemical oxygen demand and ammonia associated with a refinery effluent.

RTA (2002) Guide to Traffic Generating Developments (Version 2.2)



APPENDIX A

Additional Contamination Information

RCA ref 13589-402/1

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

Geotechnical Engineering
Engineering Geology
Environmental Engineering
Hydrogeology
Construction Materials Testing
Environmental Monitoring
Sound & Vibration
Occupational Hygiene

1 March 2018

Concrush Pty Ltd
C/-Umwelt (Australia) Pty Ltd
75 York Street
Teralba NSW 2284

Attention: Tim Browne
CC: Mr Lachlan Sweeney

RESPONSE TO THE NSW EPA FOLLOWING COMMENTS RE PROPOSED CONCRUSH EXPANSION RACECOURSE ROAD, TERALBA

1 INTRODUCTION

RCA recently completed a contamination assessment (Ref [1]) of an area of land proposed to be used for the Concrush Increase to Capacity Project (the Project) which built upon an initial investigation undertaken by Coffey Environments (Ref [2]). The Project site is situated on part Lot 2 DP220347, Racecourse Road, Teralba adjacent the current Concrush Operations and was historically used in association with a scrap metal business. Environmental Impact Statement (EIS) for the project was recently put on public exhibition, which included the contamination assessment prepared by RCA (Ref [1]).

RCA's assessment concluded that the Project site was suitable for the proposed expansion provided:

- Stockpiles of fill, concrete and metal were characterised for onsite reuse or classified for offsite waste removal (or otherwise) prior to the proposed expansion.
- A construction management plan was developed to address asbestos contamination on site including the placement of a maker layer placed across the entire site in line with a previous management plan (Ref [3]).

RCA further noted (Ref [1]) that if the development required excavation works into natural soils to depths near the groundwater table an acid sulfate soil management plan would be required.

Following the public exhibition period the NSW EPA provided comment on a number of issues including uncertainty regarding the extent of the Project site in relation to adjoining land within the same land title (Lot 2, DP220347) that was declared as contaminated in 1998 under Notice #483 of the Environmentally Hazardous Chemicals Act 1985 (ECH Act). Under the Notice remediation of the declared land was required, however the NSW EPA stated in their comments that they were unable to confirm if the remedial actions had been undertaken.

The NSW EPA recommended the following be undertaken:

- Data gap investigation to delineate residual contamination on site including, but not limited to asbestos.
- Groundwater assessment including consideration of contamination and hydrogeology.
- PFAS assessment because the site is historically linked to waste management.
- Remedial Action Plan (RAP) and Environmental Management Plan (EMP).
    - RCA notes that that there was an environmental site management plan (Ref [3]) prepared for a portion of the proposed expansion site which included the remedial requirements based on the presence of asbestos contamination. The EMP requested by the NSW EPA is assumed to be related to the long term management of the proposed expansion site following the completion of the remediation.
- Engagement of a NSW EPA accredited Contaminated Land Site Auditor to prepare a Section A Site Audit Statement (SAS) to confirm the land is suitable subsequent to remediation and management under an EMP.

The purpose of this letter is to present the proposed responses to the NSW EPA recommendations in an attempt to justify reasoning that sufficient investigation work has been conducted, appropriate management plans will be prepared for the development, and questions the need for any further assessment work or a site suitability statement issued by a NSW EPA accredited site auditor. The letter is also being provided ahead of a scheduled meeting between the NSW EPA, Concrush and its representative on the 5th March 2019 in order to guide the discussion during the meeting.

2 SITE IDENTIFICATION AND DESCRIPTION

The expansion site is identified as part Lot 2 DP 220347 at Racecourse Road, Teralba as shown on **Drawing 1**, **Appendix A**. Additional site details are shown in **Table 1**.

Table 1 *Expansion Site Details*

Current zoning (Ref [4])	IN1 – General Industrial
Current and proposed use	Current: Vacant/unused land Proposed: Expansion of existing Concrush facility.
Size of expansion site	Approximately 2.4ha
Surrounding land use to the: North	Industrial – current Concrush facility.
South	Industrial
East	Racecourse Road and then Cockle Creek
West	Main Northern Rail line and wetlands
Nearest sensitive receptor (human health)	A residential housing zone is located approximately 360m south east across Cockle Creek. There are rural residential house to the north of the site from approximately 330m away.
Nearest sensitive receptor (environmental)	Cockle Creek located approximately 35m east and a waterbody approximately 30m west

3 SPECIFIC ISSUES

3.1 ENVIRONMENTALLY HAZARDOUS CHEMICAL NOTICE

The Notice was generated in 1998 and a map of the area subject to the Notice was included with the Notice and can be reviewed on the NSW EPA website. It is noted that the Notice refers to green and red ink however the accessible copy of the map is in black and white. As such RCA has referred to other aspects of the Notice and map, as well as a historical aerial photograph close to the time of the Notice to identify the area of land subject to the Notice.

The map attached to the Notice defined two (2) areas:

- The “Premises”.
- The “South West Portion”.

The Notice refers to the Premises as being the area for which remedial works are required. As such it is considered that only the area identified as the Premises would be subject to the conditions of the Notice.

A historical aerial image from 1993 has been reproduced from a photocopy held by RCA below. RCA have then interpreted the extent of the current Concrush facility and Project site, based on location of the railway and pond infrastructure to the west. The area of expansion has then been interpreted based on the mapping in RCA's previous report (Ref [1]).

Figure 1 *1993 Aerial Photograph with approximate extent of current Concrush operations (based on features considered consistent between 1993 and 2019) and proposed expansion portion outlined.*

RCA has used the EHC Notice map and scaled it onto the 1993 aerial photograph, based on the assumption that the general outline is as per the Lot boundary, and reproduced in **Figure 2** below. This indicates that the 'Premises' and 'South West Portion' which are referred to in the EHC Notice are to the approximately 143-206m to the south of the Project site.

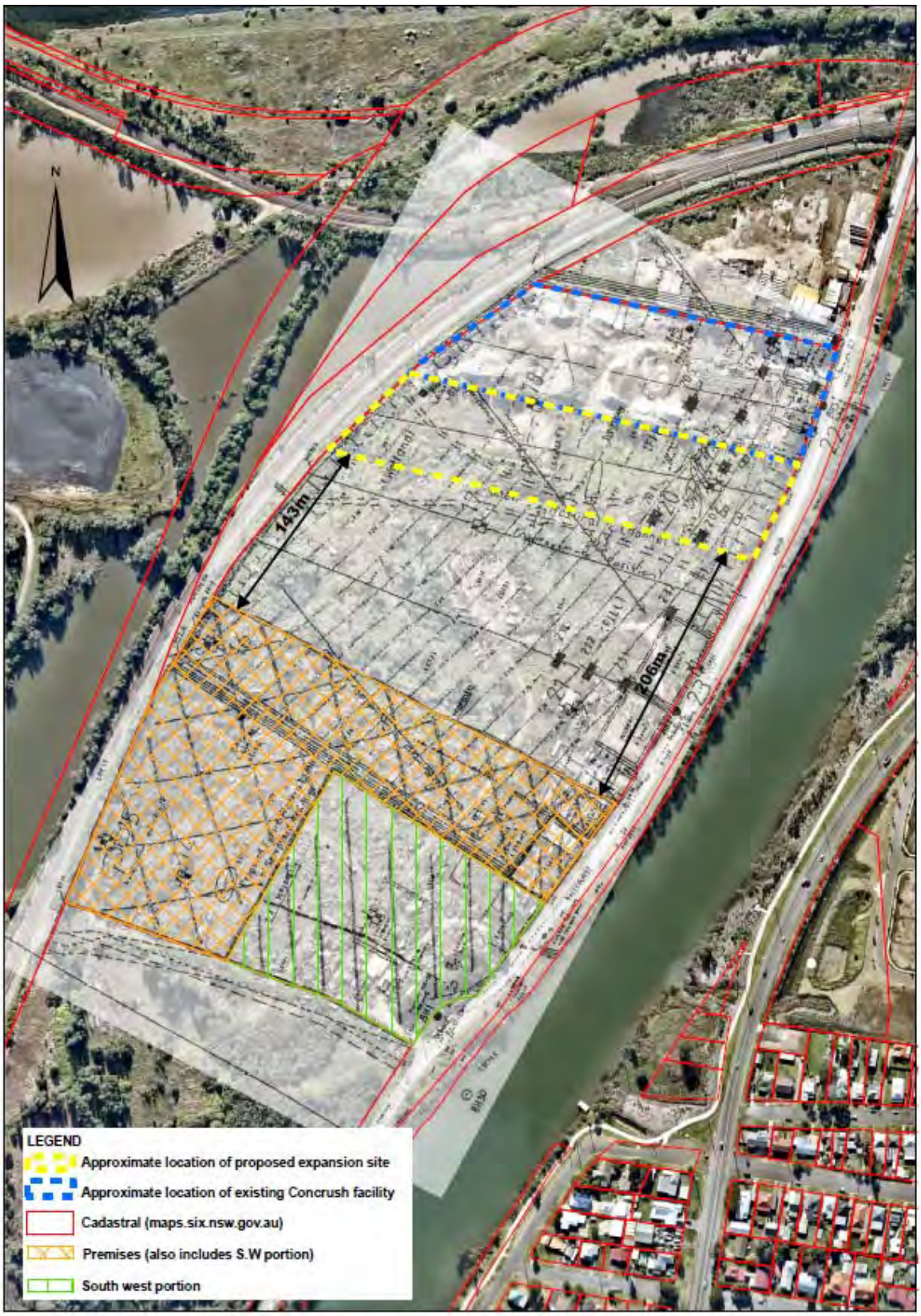


Figure 2 *1993 Aerial Photograph with EHC Notice map overlain including interpreted extent of existing Concrush site and proposed expansion portion outlined.*

As such it is considered that the Concrush and Project site are to the north of the area subject to the Notice.

3.2 DELINEATION OF CONTAMINATION

The NSW EPA has requested an assessment of any residual contamination including, but not limited to asbestos. The assessment requested by NSW EPA is also to include an assessment groundwater contamination and hydrogeology.

Figure 3 shows the extent of assessment which has been undertaken at the Project site.

Figure 3 *Extent of Soil and Groundwater Sampling at Project Site*

RCA are of the view that further delineation of soil and groundwater contamination is not required for the proposed development based on the following points:

1. The extent of assessment undertaken at the Project site.
    - There has been a total of thirty (30) soil sampling locations undertaken by RCA Australia (Ref [1]) and Coffey (Ref [2]). This is considered to be in compliance with the NSW EPA guidelines (Ref [5]) which recommend thirty (30) to thirty five (35) sampling locations for a site of 2.0ha to 2.5ha in size.
2. The absence of contamination in soils.
    - All (19) of RCA's collected soil samples were analysed for a broad suite of contaminants including those listed on the declaration Notice as hydrocarbons (TRH, BTEX, PAH), metals, phenol, cyanide and asbestos. All of Coffey's (Ref [2]) seventeen (17) collected soil samples were similarly analysed for the primary contaminants of concern including metals, PAH and asbestos with a selection of samples additionally analysed for TRH & BTEX, pesticides, phenolics and PCB.
    - None of the thirty six (36) primary soil samples analysed exhibited any contaminants in excess of human health protection criteria under the industrial land use setting.
    - Asbestos was detected in fragments of bonded fibro sheets on the Project site. No asbestos fibres were identified in the soil, including in samples within the immediate vicinity of fragments collected by RCA (TP7, TP8, TP9). This is considered to indicate asbestos fibres remain in a bonded matrix, and that the potential for the site's soil to be contaminated with asbestos fibres is low. As such, fragments of bonded asbestos are the only aspect of the site that require remediation / management
    - Some concentrations of PAH and metals were in excess of generic ecological criteria, however, given the industrial nature of existing and expansion operations as well as the proposed hard stand surfacing, these concentrations were not considered detrimental to terrestrial ecological receptors.
3. The absence of contamination in groundwater.
    - The groundwater analytical results (Ref [1]) represent the immediately underlying watertable on the southern (downgradient) site boundary at a shallow depth of approximately 2.0m-3.0m. Results indicate an absence of detectable concentrations of any primary contaminants such as hydrocarbons (TRH, BTEX, PAH), phenols and the majority of metals. Only zinc and arsenic marginally exceeded the ecological criterion for receiving waters.
    - In combination with the positioning of soil sample locations (refer **Figure 3**) and depths, the confirmed absence of soil or groundwater contamination and the location of the groundwater wells on the southern (downgradient flux) boundary being representative of groundwater migrating offsite; the expansion site has been sufficiently investigated such that a conclusion on site suitability could be made.
4. The absence of potential exposure pathways following the completion of the expansion development.

- The Project comprises an industrial facility which is not proposed to be enclosed. As such there will be limited opportunity for the indoor accumulation of volatile compounds from soil or groundwater (noting that none were detected).
- It is proposed to cap the Project site with a 0.5m thick layer of suitable soil material which will prevent potential exposure routes from:
  - Inhalation of dust and potential asbestos fibres (noting that only identified in bonded fragments to date).
  - Ingestion of soil / dust.
  - Dermal contact with soil.
- Groundwater will not be extracted for use and as such there will be no potential ingestion or dermal contact.

5. The management of potential exposure of construction workers to soil and groundwater contamination during the construction phase of the expansion development by strict accordance with detailed management procedures to be documented in a construction management plan.
6. The management of potential exposure of site/maintenance workers to soil and groundwater contamination below the capping layer after completion of the construction of the development by preparing and implementing a long-term management plan which will be notified on land title (i.e. Section 10.7 Certificate).

The cap and contain strategy is considered to address any uncertainties with the distribution of contamination at the Project site. The construction management plan will include a contingency plan for unexpected finds such as malodourous soils and shallow groundwater.

Groundwater has been assumed by the EHC Notice map and by Coffey (Ref [2]) to flow towards the southeast toward Cockle Creek. RCA considers that this is likely as Cockle Creek leads into Lake Macquarie which would be considered the dominant hydrogeological feature in the area. In the absence of any potential use of groundwater and due to the low concentrations of contaminants observed in the collected samples, RCA is of the view that it is not necessary to confirm the expected groundwater flow direction.

3.3 PFAS

The NSW EPA has requested an assessment of potential per and polyfluoroalkyl substances (PFAS) based on the previous use of the site as part of a waste management facility.

RCA acknowledges that no consideration of PFAS has been undertaken as part of the previous assessment however submits that no assessment is necessary based on the following points:

1. The former use of the site.
    - While the broader definition of the site was 'waste management facility' the previous business was titled 'Scrap Metals' and 'Metals Salvage'. These activities are not specifically identified as a credible source of PFAS (Ref [6]).
    - The Notice identifies contamination in the form of localised hydrocarbons, foundry sand (contaminated with metals, PAH, phenols and cyanide), fill contaminated with metals and a number of drums with chemicals. The drums are considered to be the only potential source of PFAS as their contents are unknown and it is noted that these were identified at the 'Premises' as defined by the Notice and as such are unlikely to be relevant to the proposed Project site. Neither RCA (Ref [1]) nor Coffey (Ref [2]) identified the presence of chemical drums during investigations, although concrete, metal objects and bricks were identified.
2. PFAS are non-volatile and as such would not present an inhalation risk from either soil or groundwater concentrations should these be present.
3. The proposed Project will include a capping layer which will remove exposure routes (inhalation of dust, ingestion, dermal contact) after the completion of the construction phase as discussed in the above section.
4. Groundwater will not be extracted for use as such there will be no potential ingestion or dermal contact.
5. The management plans during construction and operation will manage potential exposure during any actions below the capping layer.

3.4 REMEDIAL ACTION PLAN

The NSW EPA has requested a RAP be prepared for the Project site as well as a long term EMP.

A previous Environmental Site Management Plan (ESMP, Ref [3]) has been prepared for a portion of the site and in general addresses the requirements of a RAP. As such, in combination with RCA's report (Ref [1]), RCA is of the view that there is sufficient information to outline the broad remedial strategy for the purpose of determining that the site can be made suitable for the proposed site use.

RCA have recommended a construction management plan which will provide details of the remedial strategy such as:

1. Induction of all personnel to advise of potential hazards and the management measures that are required to control risk.
2. Occupational hygiene requirements such as personal protective equipment (PPE).

3. Dust minimisation measures to be implemented.
4. Surface water management measures to be implemented.
5. Programming of order of works (vegetation stripping, placement of marker layer, filling).
6. Classification and handling requirements for stockpiles.
7. Verification measures for placement of the marker layer, type of material used as a marker layer, quality of imported fill, excavations below the marker layer (such as for service installation).
8. Contingency plans for unexpected finds and in the event that excavation into potential acid sulfate soils was required.

RCA are of the view that this document will supplement the detail provided in the previous ESMP (Ref [3]) and be a more appropriate document for the implementation of the remedial strategy.

RCA further submit that this document can form part of the Construction Certificate requirements for the proposed development in that it will have to be prepared and presented to the regulatory authority prior to the commencement of any development. This timing will allow the involvement of the earthworks contractor to ensure that the management plan is correct in logistical methodology as well as the technical aspects of the remediation.

RCA agree that a long-term EMP is required and this will be presented with a report validating the completion of the remediation as part of the Occupational Certificate requirements.

3.5 AUDITOR

The NSW EPA has recommended that a NSW EPA accredited Contaminated Site Auditor be appointed prepare a Section A Site Audit Statement (SAS) to confirm the land is suitable subsequent to remediation and management under an EMP.

RCA believe that an auditor is not required for this project based on the following points:

1. The absence of contamination identified at the site.
    - With the exception of bonded asbestos fragments, no contamination has been identified in either soil or groundwater which would pose a risk to human health. The majority of contaminants are below the detection limit, implying that there is a low risk of unidentified contamination and/or contamination hotspots.
2. The continued commercial / industrial nature of the Project site limits human receptors to industrial workers and infrequent maintenance workers.
3. The technical simplicity of the cap and contain remedial strategy.
    - While logistically there may be some intricacies to work through and managed via construction plans, the remedial strategy is a non-technical, tried and tested approach, that has been implemented on numerous properties with similar characteristics to cap bonded asbestos contamination. The remedial strategy is therefore relatively simple and does not need technical contractors or consulting specialists, as such a statement of land suitability by an accredited auditor would not be necessary under these circumstances.

4. The inclusion of a certified practitioner up to this point (including the scoping of the extent of the RCA assessment (Ref [1]), development of conceptual site model, preparation of assessment report) and proposed for the remainder of the works.

    - Current NSW EPA policy is for certified practitioners specialising in land contamination to prepare or approve reports being issued to the NSW EPA when dealing in matters under the CLM Act and more broadly. The certified practitioner scheme was developed to support the site auditor scheme, particularly on contaminated land issues of less technical nature and lower public health sensitivities. The Project does not involve either of these issues. As such, the involvement of the certified practitioner on the expansion project provides sufficient expertise that should be to the satisfaction of the NSW EPA under these circumstances.

Yours faithfully

RCA AUSTRALIA **Sullivan-ES**

Fiona Brooker
Associate Environmental Engineer

Adam Sullivan
Principal Scientist (CEnvP-SC #40944)

REFERENCES

[1] RCA Australia, *Baseline Contamination Assessment, Proposed Concrush Facility Expansion, Racecourse Road, Teralba*, RCA ref:13589-401/3, November 2018.

[2] Coffey Environments Australia Pty Ltd, *Soil Contamination Assessment – Proposed Industrial Subdivision, Racecourse Road, Teralba NSW*, 1 May 2013

[3] Coffey Environments Australia Pty Ltd, *Environmental Site Management Plan, Proposed Industrial Subdivision, Racecourse Road, Teralba NSW*, 9 July 2014.

[4] Lake Macquarie City Council Local Environmental Plan 2014, under the Environmental Planning and Assessment Act 1979, published 2014

[5] NSW EPA, *Sampling Design Guidelines*, September 1995.

[6] HEPA, *PFAS National Environmental Management Plan*, January 2018.

GLOSSARY

EMP	Environmental management plan.
LEP	Local environment plan. A planning tool for the Local Government.

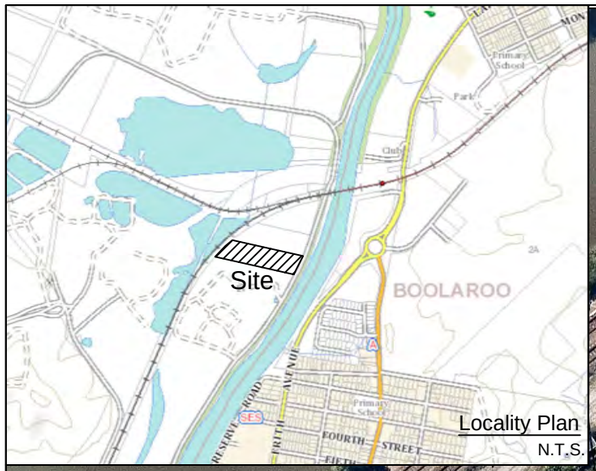
NSW EPA	NSW Environment Protection Authority – formerly a component of DECC, DECCW, OEH but made a separate entity in 2011 to regulates the contaminated land industry.

Chemical Compounds

BTEX	Benzene, toluene, ethylbenzene, xylene.
PAH	Polycyclic aromatic hydrocarbons. Multi-ring compounds found in fuels, oils and creosote. These are also common combustion products.
PCB	Poly chlorinated biphenyls.
Phenol	Carbolic acid (C_6H_5OH). Phenols and substituted phenols are used as anti-microbial agents in high concentrations.
TRH	Total recoverable hydrocarbons

Appendix A

Drawing



Existing Concrush Facility

Racecourse Road

LEGEND

Approximate site boundary location

Aerial image taken from Nearmap,
June 15 2018
(used in accordance with commercial licence)

0 10 20 30 40 50
metres

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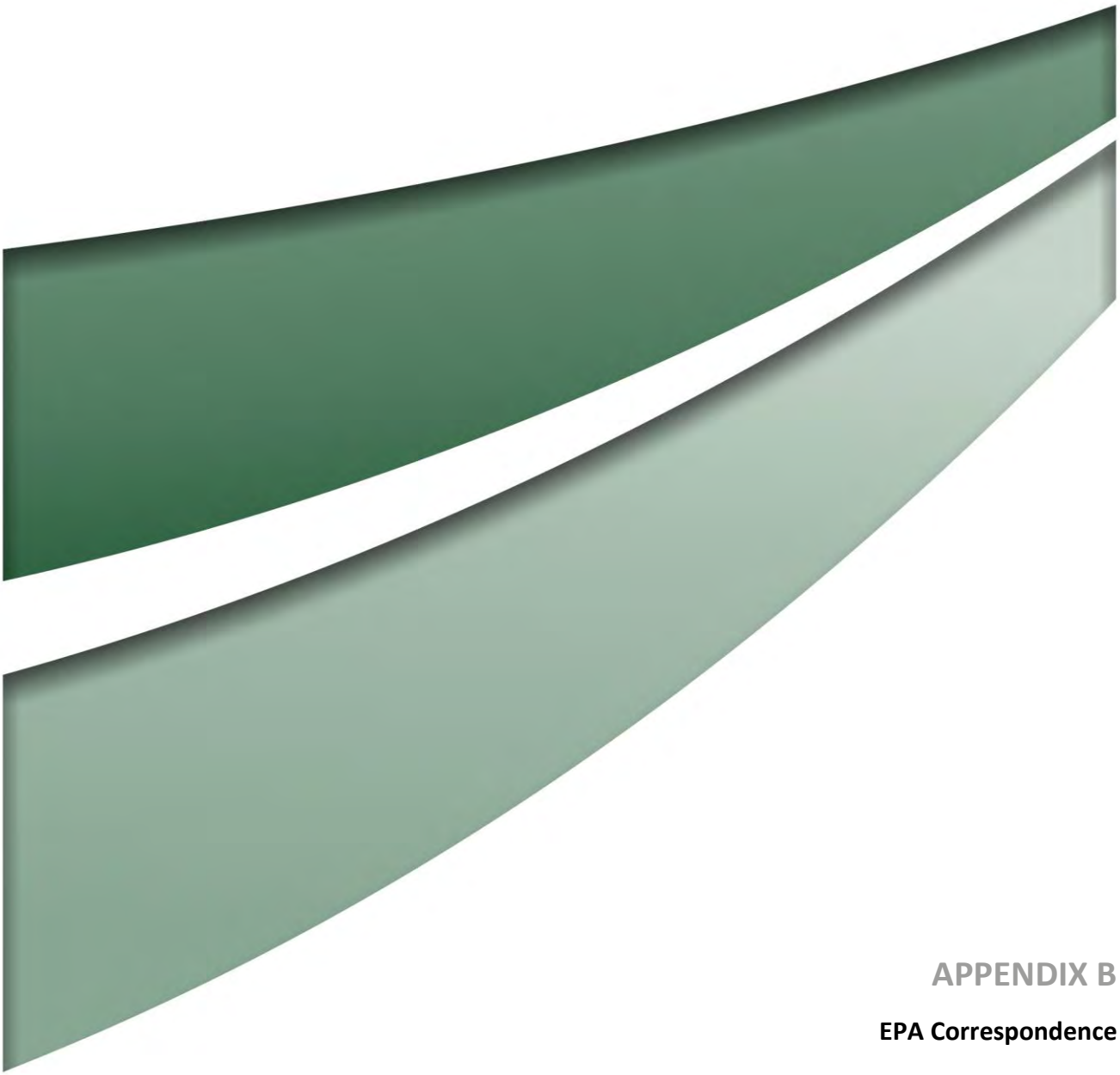
SITE LAYOUT AND LOCALITY PLAN
RACECOURSE ROAD
TERALBA

CLIENT	Concrush Pty Ltd			RCA Ref	13589-402/1
DRAWN BY	FB	SCALE	1 : 1000 (A3)	DRAWING No 1	REV 0
APPROVED BY	FB	DATE	01/03/2019	OFFICE	NEWCASTLE

CDT-DWG-A3H-001/1



APPENDIX B

EPA Correspondence

DOC19/208032

Planning Services Industry Assessments
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2000

Att: Nikki Matthews
nikki.matthews@planning.nsw.gov.au

12 March 2019

Dear Miss Matthews

Revised EPA Recommendations for State Significant Development 8753 – Concrush Expansion Project – Teralba, NSW

The Environment Protection Authority (**EPA**) wishes to advise the NSW Department of Planning and Environment (**DPE**) of a meeting held with the proponent for State Significant Development 8753 (**SSD**). The meeting was requested by the proponent and was held in the Newcastle office of the EPA on 5 March 2019.

The EPA provided recommendations to DPE regarding the SSD application on 13 December 2018 and 5 February 2019. Copies of the recommendations are attached for reference. During the meeting on 5 March 2019, the EPA and the proponent discussed all of the EPA's recommendations and agreed to vary some of them. The EPA wishes to confirm with the DPE the following variations to its recommendations for this SSD application.

EPA Contamination and Remediation Recommendations

The EPA provided DPE with four (4) recommended requirements for consent of the SSD regarding contamination and remediation on 5 February 2019. Prior to the meeting on 5 March 2019, the proponent provided correspondence from RCA Australia, dated 1 March 2019, responding to the EPA's recommended requirements. The RCA letter is attached for reference.

As a result of the meeting on 5 March 2019, the EPA provides variations to its original recommendations as follows:

1. A Data Gap Investigation (**DGI**) as per the EPA's letter dated 5 February 2019 is still recommended as a requirement of consent. The EPA considers that on-site monitoring of only two wells is insufficient and that further investigation and reporting is required to establish groundwater contamination and hydrogeology before operations commence as per the proposed development.

2. The proponent provided the EPA with information which suggest that the premises subject to the SSD would be of low risk of polyfluoroalkyl substance (**PFAS**) contamination. As a result, the original requirement to assess PFAS contamination is no longer recommended for consent.

Phone 131 555 **Fax** 02 4908 6810 Po Box 488G 117 Bull St **info@epa.nsw.gov.au**
Phone 02 4908 6845 **TTY** 133 677 Newcastle Newcastle West **www.epa.nsw.gov.au**
ABN 43 692 285 758 NSW 2300 Australia NSW 2302 Australia

3. The recommended requirement to prepare an Environment Management Plan (**EMP**) and a Remedial Action Plan (**RAP**) to manage any residual contamination throughout the construction of the proposed development may be included in the development's Construction Environmental Management Plan (**CEMP**).

4. The EPA revises its initial requirement for the proponent to engage a NSW EPA accredited Contaminated Land Site Auditor to prepare a Section A Site Audit Statement to confirm suitability of the land for its proposed use. By considering the additional information provided by the proponent, the EPA agrees for the proponent to use *"certified consultants"*. Note that the EPA requires all reports submitted to the EPA to comply with the requirements of the *Contaminated Land Management Act 1997* (CLM Act) to be prepared, or reviewed and approved, by a certified consultant (see the EPA's Contaminated Land Consultant Certification Policy (http://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/clm/18520-contaminated-land-consultant-certification-policy.pdf?la=en).

EPA Water Recommendations

Attachment A of the EPA's letter on 13 December 2018 set out four (4) topics of recommended requirements of consent. Following the meeting, the EPA has not varied any of these recommendations.

EPA Noise Recommendations

The EPA's letter on 13 December 2018 set out seven (7) recommended requirements of consent. Following the meeting, the EPA provides the following variation to its original recommended requirements as follows:

3. The EPA has reviewed this recommendation and confirms that the 4dB operational noise exceedance in the day time period is a marginal impact. The recommendation to investigate reasonable and feasible mitigation measures to reduce residual noise impacts in the day time period and include these into a revised EIS and Appendix H remains.

4. The proponent has informed the EPA that night-time work is being removed from the SSD application. If this is confirmed by DPE, then noise requirement 4 from the EPA can be voided. If night work remains in the SSD application, then the original recommended requirement for this item remains.

No other recommended requirement for noise has been varied.

EPA Air Recommendations

The EPA's letter on 13 December 2018 set out four (4) recommended requirements of consent. Following the meeting, the EPA has not varied any of these recommendations.

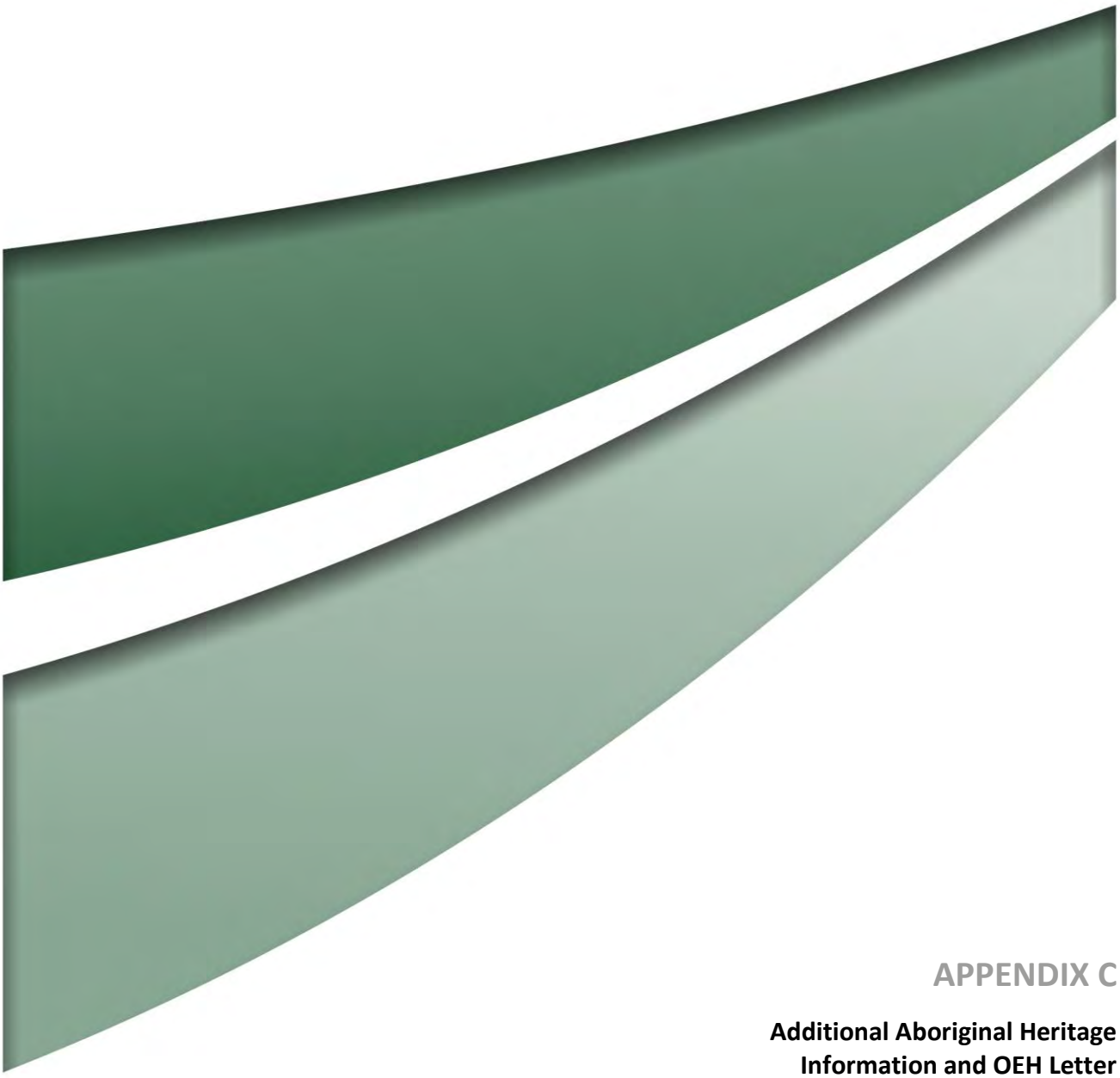
If you have any queries relating to this matter, please contact Grace Bell on (02) 4908 6845.

Yours faithfully

12/3/2019

STEVEN JAMES
Unit Head – Waste Compliance
Environment Protection Authority

Attached:
1. EPA Letter – 13 December 2018
2. EPA Letter – 5 February 2019
3. RCA Letter – 1 March 2019



APPENDIX C

Additional Aboriginal Heritage Information and OEH Letter

umwelt
Environmental & Social Consultants

Our Ref: 3972B_OEH_Molloy_ltr_20190403

3 April 2019

Sharon Molloy
Director
Hunter Central Coast Branch
Office of Environment & Heritage
Level 4/26 Honeysuckle Drive
Newcastle NSW 2300

Dear Sharon

Re: Concrush Project – Aboriginal Cultural Heritage Assessment

This letter provides an overview of the Concrush Increase to Capacity Project (the Project) and the Aboriginal Archaeological Due Diligence Assessment undertaken as part of the Environmental Impact Assessment (EIS) for the Project. This letter follows a request for information in an email from OEH dated 1 March 2019. The figures attached and referred to in this letter were produced as part of the EIS for the Project.

1.0 Description of the Project

Concrush Pty Ltd (Concrush) is seeking development consent to increase the processing and storage capacity of the existing resource recovery facility located on part of Lot 2 DP 220347 at 21 Racecourse Road, Teralba, New South Wales (NSW) (refer **Figure 1.1** of the EIS). The existing Concrush facility recycles concrete, asphalt, bricks, pavers, roof tiles, wall and floor tiles, rock, sand, plasterboard and green waste from domestic households and commercial industry. These materials are then recycled into specification and non-specification quality products such as roadbase, drainage aggregates, pipe bedding and haunch, packing fines, decorative aggregates and mulches. These products are used within the civil and construction industries or for commercial, domestic and household applications.

Concrush currently processes approximately 108,000 tonnes (t) of construction and demolition and green waste material per annum (pa) and stores up to a maximum of 40,000 t of waste material on site at any one time. Concrush proposes to increase the production capacity to up to 250,000 tpa of waste and allow for an increased storage capacity, up to 150,000 t of waste material to accommodate the proposed levels of production. It is anticipated that the volume of materials recycled and products sold will increase over a period of time up to the maximum production level of 250,000 tpa. The Project would require a capital investment value of approximately $1.1M excluding mobile equipment over approximately 5 years and would increase the amount of building and construction waste able to be recycled in the Lake Macquarie Region. This would reduce the volume of this type of waste potentially being sent to local landfills including Awaba and Summerhill. The Project will also contribute towards achieving the objectives of the NSW Government's Waste Avoidance and Resource Recovery Strategy 2014-21.

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Umwelt (Australia) Pty Limited
ABN: 18 059 519 041

The Project site would increase in area by 2.4 ha to a total site area of 4.8 ha. The Project site is within land that has been previously filled and extensively disturbed. The Project would require the removal of some planted landscape trees as well as grass and weeds species to accommodate the additional stockpiling/processing areas.

A description of the individual elements of the proposed Project including additional plant and equipment are summarised in **Table 1.1** and shown on **Figures 3.1** and **3.2**.

Table 1.1 Proposed Project Components

Component	Description
Hardstand areas	Hardstands will be constructed in material processing areas and stockpile areas (will require some site levelling). Hardstands will consist of 200 mm thick recycled roadbase). Internal access roads will have a two coat seal.
Material Processing Areas	Processing areas for the crushers and screens.
Waste and Product Stockpile Areas	Waste and product stockpiles will be established with a stockpile height of up to 10 m. It is anticipated that up to 150,000 t of material will be stored onsite.
Upgrade of existing facilities	The existing weighbridge and office will be upgraded, and the existing lunch room and maintenance shed will be relocated to facilitate the new site layout.
Waste Tracking System	The existing Wasteman software will be used to track the details of all inbound and outbound loads
Production Compound	The relocated lunch room, toilet and maintenance shed will be grouped together to form a compound for production staff.
Retail Area	This area will be restricted to light vehicles and small trucks and will include an area for tipping and an area containing concrete bays of products for sale.
Storage Bays	Concrete storage bays will be constructed using 1 m^3 concrete blocks.
Concrete Walls	A two metre high concrete wall will be constructed close to the southern Project site boundary using 1 m^3 concrete blocks. The wall will prevent stockpiled material encroaching on swale drains and moving offsite. Concrete walls may also be used to delineate other areas of the site.
Green Waste Pasteurisation	An aeration system using four electronically driven and computer controlled fans to push air through movable perforated pipes underneath the pasteurisation piles will be implemented in the green waste area. This system allows more control of oxygen levels in the pasteurisation process compared to the tradition turnover process.
Wheel Wash	A vehicle wheel wash bay will be constructed immediately after the exit weighbridge to reduce tracking of material onto public roads.
Concrete Washout Bay	A wet concrete washout bay will be constructed consisting of a bunded, impermeable area with an isolated catchment. Wet concrete and agitator washout will be captured in the concrete washout bay.
Water Management System	The existing Water Management System (WMS) will be upgraded involving resizing of existing sediment basins, new sediment basins, swale drains and a leachate dam and artificial wetland to treat nutrient runoff. Water tanks and associated poly pipe and pumps will be installed to allow collection and re-use of stormwater for dust suppression.
Trommel Screening Machine	Addition of a Trommel screening machine for sorting of green waste.
Primary Jaw Crusher	The primary jaw crusher will be replaced on a like for like basis at some point in time as part of future operations.
Perimeter Landscaping - Mounds, Fencing and Lighting	Landscape mounds will be established on the perimeter to limit visibility. 1.8 m high security fencing and security lighting are also to be installed.

Component	Description
Utilities	The existing Ausgrid connection is via a power pole in the north east corner of the site. The power supply will be extended to the south west corner of the site via an underground connection.
Pug mill	A pug mill may be installed in the future to allow fast mixing of materials to produce products such as road base.
Ballast wash facility	A processing area may be dedicated to a ballast wash facility to allow for processing of rail ballast.

To most efficiently meet the increase in demand for recycling of materials and products, it is proposed to stage the Project. The two Project stages and the associated approximate production levels are as follows:

- Stage 1 – upon receipt of all approvals required for the Project (refer **Figure 3.1**)
- Stage 2 – at approximately 200,000 up to 250,000 tpa (refer **Figure 3.2**).

1.1 Ground Disturbance Works

The contamination assessment undertaken for the Project involved 28 test pit sites across the proposed additional Project site area. The depth of fill material identified within the test pit areas ranged from a minimum of 0.5 metres to up to 4 metres below ground level.

Within the additional 2.4 hectare area that forms part of the Project site, the construction activities that involve ground disturbance are: levelling of the existing fill piles to form a level surface, excavation for the leachate pond, constructed wetland and sediment basin, formation of a drainage swale and levelling and minor excavation for footings for relocated lunch room and maintenance shed. With the exception of the excavation for the leachate pond, constructed wetland and sediment basin, impacts from the proposed activities will not exceed 0.5 metres in depth. Impacts for the leachate pond, constructed wetland and sediment basin in the proposed extension area may extend to depths of 2-2.5m depending on final design. The results of contamination testing in the vicinity of these activities were reviewed and the soil profile is described in **Table 1.2** below.

Table 1.2 Description of soil profile in areas of deeper impact

Activity	Nearest contamination test location	Soil profile to depth of impacts
Leachate dam	TP13	Fill to 1.5m Sandy clay (wet) to 3m
Constructed wetland	TP12 and TP13	TP 13 – as above TP 12 – fill to 2.7m
Sediment dam 2	BH1	Fill to 1.5m Saturated grey sandy clay to 4.5m

Based on the information presented above, impacts associated with the Project will almost entirely be confined to areas of existing fill deposit. Where impacts may extend below the depth of fill; namely the leachate dam and sediment dam, soils are wet to saturated and indicative of landforms within a low-lying, readily inundated context.

2.0 Aboriginal Archaeology

2.1 Environmental Context

The Project site is located on the western bank of Cockle Creek between Racecourse Road and the Great Northern Railway at Teralba. The Project site falls within the Cockle Creek Soil Landscape where the topography consists of narrow alluvial flats up to 500 m wide to wider drainage plains up to 1 km wide with some relict terrace and levee deposits in proximity to lower Cockle Creek. The geology consists of Quaternary alluvial sediment derived from sandstone, siltstone, conglomerate, shale and tuff from the upper catchment. Slopes are generally 0 to 2%. The lower Cockle Creek area consists of predominantly cleared woodland of *Angophora costata* (smooth-barked apple), *Angophora floribunda* (rough-barked apple) and *Corymbia gummifera* (red bloodwood). *Casuarina glauca* (swamp-oak) commonly occurs along drainage channels.

The Project site forms part of a low lying swampy landscape located between two primary transportation routes. The Project site is within a locality that has predominantly been used for industrial rather than residential purposes (**Plate 1** and **2**. Due to its location adjacent to Cockle Creek the site would historically have been subject to flooding and have high water tables with periodic waterlogging. Based on the current appearance of the site and the results of contamination testing, it has been filled to make it suitable for industrial use.

Plate 1 1897 Teralba Parish map (red outline is approximate location of study area)

Plate 2 1903 Teralba Parish map (red outline is approximate location of study area)

The Project site is located on land that, in its original context, would not have been suitable for occupation by Aboriginal people. As a swampy area bordering an estuarine watercourse, it is likely that it would have provided resources used by Aboriginal people but is not differentiated in any way from other adjoining areas that would have had the same resources values. The area has been substantially disturbed by past approved land use developments and the Project does not involve any ground disturbance within areas not subject to previous disturbance and/or that would have been suitable for occupation by Aboriginal people.

2.2 Archaeological context

An extensive search of the OEH Aboriginal Heritage Information Management System (AHIMS) was undertaken on the 18 July 2018. The results of this search indicate that there are 95 recorded Aboriginal sites or places recorded within a 4 km radius of the Project site. A basic search of the AHIMS register was undertaken for the Project site on 18 July 2018 confirming that no known items or places of Aboriginal heritage significance are located in or within 200 metres of Lot 2 DP 220347.

The closest known Aboriginal sites to the Project site are shown on **Figure 6.12** of the original EIS. These are AHIMS#38-4-0080 (Teralba 4) approximately 520 m to the west which is a valid grinding groove site, AHIMS#38-4-0116 (Site 2) approximately 940 m to the north-east which is an artefact

scatter listed as destroyed and AHIMS# 38-4-1382 (Five Islands Midden) approximately 850 m to the south on an island in Cockle Creek which is a valid midden site with potential archaeological deposit.

2.3 Discussion of Archaeological Value of the Project Site

Based on the information presented above, the Project site does not contain any recorded archaeological sites. The area is within 200 metres of a watercourse (being Cockle Creek) and therefore requires consideration as to whether it meets the definition of a sensitive landscape. As discussed above, prior to landscape modification, the project site would have comprised low-lying landforms bordering an estuarine watercourse. While the area would have supplied resources used by Aboriginal people, in its original context it would not have been suitable for occupation by Aboriginal people and there is unlikely to contain detectible quantities of Aboriginal objects.

In addition, the Project site has been subject to high levels of disturbances related to historical and modern land use including:

- Vegetation clearance
- Earthworks and filling
- Vehicular tracks and movement
- Erosion

As such, the Project site is assessed as having low archaeological potential. When considered with reference to the nature of the proposed impacts (predominantly being works within existing fill deposits), there is very low likelihood that the proposed works will result in harm to Aboriginal objects.

2.4 Discussion of Aboriginal Cultural Values of the Project Site

The Lake Macquarie Aboriginal Heritage Strategy (Umwelt 2011) includes mapping of sensitive cultural landscapes. This mapping was developed 'on the basis of Aboriginal archaeological evidence, landscape features that have been described in historic records of traditional Aboriginal cultural and other Aboriginal community cultural values. The Sensitive Aboriginal Cultural Landscapes mapped in these figures recognise traditionally important places and places of importance to the contemporary Aboriginal community regardless of the condition of those landscapes.' It is also noted that this mapping was developed in consultation with the Aboriginal parties involved in the preparation of the LMCC AHMS, including the relevant Local Aboriginal Land Councils, the Awabakal Descendants Traditional Aboriginal Owners Corporation and the Awabakal Traditional Owners Aboriginal Corporation.

Plate 3 shows the areas mapped as Sensitive Aboriginal Cultural Landscapes in the LMCC AHMS, as extracted from (Umwelt 2011). The sensitive landscapes in the LMCC AHMS do not extent over the project site but do include other sections of the local area, including Munibung Hill and the upper reaches of Cockle Creek.

Plate 3 Sensitive Aboriginal Cultural Landscapes (shown as red hatching) in the vicinity of the project site (red outline is project site)

The mapping of Sensitive Aboriginal Cultural Landscapes was subsequently reviewed by LMCC as part of the 2014 LEP revisions. Based on these revisions, the sensitivity boundary was extended to include any landforms within 100 metres of a watercourse, regardless of the previous assessment of sensitivity described above. Based on this updated mapping, the arbitrary sensitivity boundary along Cockle Creek includes a very thin sliver of land (approximately 20 metres in width) on the eastern margin of the project site.

Informal discussions were had with representatives of Awabakal Descendants Traditional Aboriginal Owners Corporation and the Awabakal Traditional Owners Aboriginal Corporation who indicated that they were not aware of any particular sensitivities associated with the Project site, noting that all land is important in accordance with Aboriginal cultural values.

3.0 Reasoning for a Reduced Level of Assessment

The Secretary's Environmental Assessment Requirements (SEARs, as issued 25 October 2017 and amended 15 December 2017) specified that the assessment of heritage should include 'a detailed assessment of Aboriginal cultural heritage.' for the Project. The specific supporting correspondence provided by OEH noted that any Aboriginal cultural heritage assessment undertaken prior to 2010 may not meet current requirements and specified that the OEH *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011) should be referenced.

The OEH *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011) identifies that the NPW Act requires proponents to exercise 'due diligence' to determine if a proposed activity/development could harm Aboriginal objects or declared Aboriginal places. This assessment has followed the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (OEH 2010) (due diligence code). The *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* specifies the requirements for a detailed investigation if the due diligence code identifies that this is required.

In accordance with the requirements specified above, Umwelt completed a comprehensive due diligence assessment of the Project site and identified that there was low likelihood that the Project would result in harm to Aboriginal objects based on the nature of the former and current landforms within the Project site. In addition, consideration was given to the outcomes of the LMCC AHMS, which was completed in 2011 (Umwelt 2011).

Based on the outcomes of other assessments undertaken in the Newcastle area, we believe that this approach is consistent with the above requirements and is justified based on the potential for harm from the proposed works.

4.0 Recommended Additional Assessment Activities

It is our understanding based on recent discussions, that OEH's primary concern relates to potential impacts on intangible heritage, that is, potential impacts to Aboriginal cultural values not directly associated with archaeology. With reference to these concerns, we note the following:

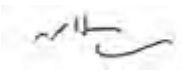
- Impacts associated with the Project comprise impacts within an already modified landscape. When considering impacts to potential viewlines etc, it is noted that there are very few permanent structures or new modifications to the landscape that will not be reversible at the conclusion of the Project.

- The original mapping of Aboriginal heritage sensitivity undertaken with Aboriginal parties did not identify any specific values associated with the Project site and actually specifically excluded it. The subsequent change in mapping includes a very small portion of the Project site, presumably due to the association with Cockle Creek. Based on the description of the Project impacts, the impacts to natural landscapes within the Project site are extremely limited and will occur in soil profiles consistent with swamp/readily inundated landforms within which Aboriginal objects are unlikely to be present .

On this basis, it is recommended that no further assessment is required.

Please do not hesitate to contact the undersigned on 02 4950 5322 should you require clarification or further information.

Yours sincerely



Nicola Roche
Manager, Cultural Heritage

DOC19/306327-2
3972B

Ms Nicola Roche
Manager, Cultural Heritage
Umwelt (Australia) Pty Limited
75 York Street
Teralba NSW 2284
nroche@umwelt.com.au

Dear Nicola

Concrush Resource Recovery Facility Expansion (SSD 8753) request for an exemption from the preparation of an Aboriginal Cultural Heritage Assessment Report.

I refer to your letter dated 3 April 2019 seeking an exemption from the preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the Concrush Resource Recovery Facility Expansion (SSD 8753) located at 21 Racecourse Road, Teralba, within the Lake Macquarie Local Government Area. The proposal involves increasing the capacity of the site to receive, process and store up to 250,000 tonnes per annum of construction and demolition waste and green waste.

OEH has reviewed the *Concrush Project - Aboriginal Cultural Heritage Assessment*, a letter provided by Umwelt (Australia) Pty Limited, on behalf of Concrush Pty Ltd, following a request for information from OEH (1 March 2019). OEH concurs with the assessment that the likelihood of harming Aboriginal objects is considered low.

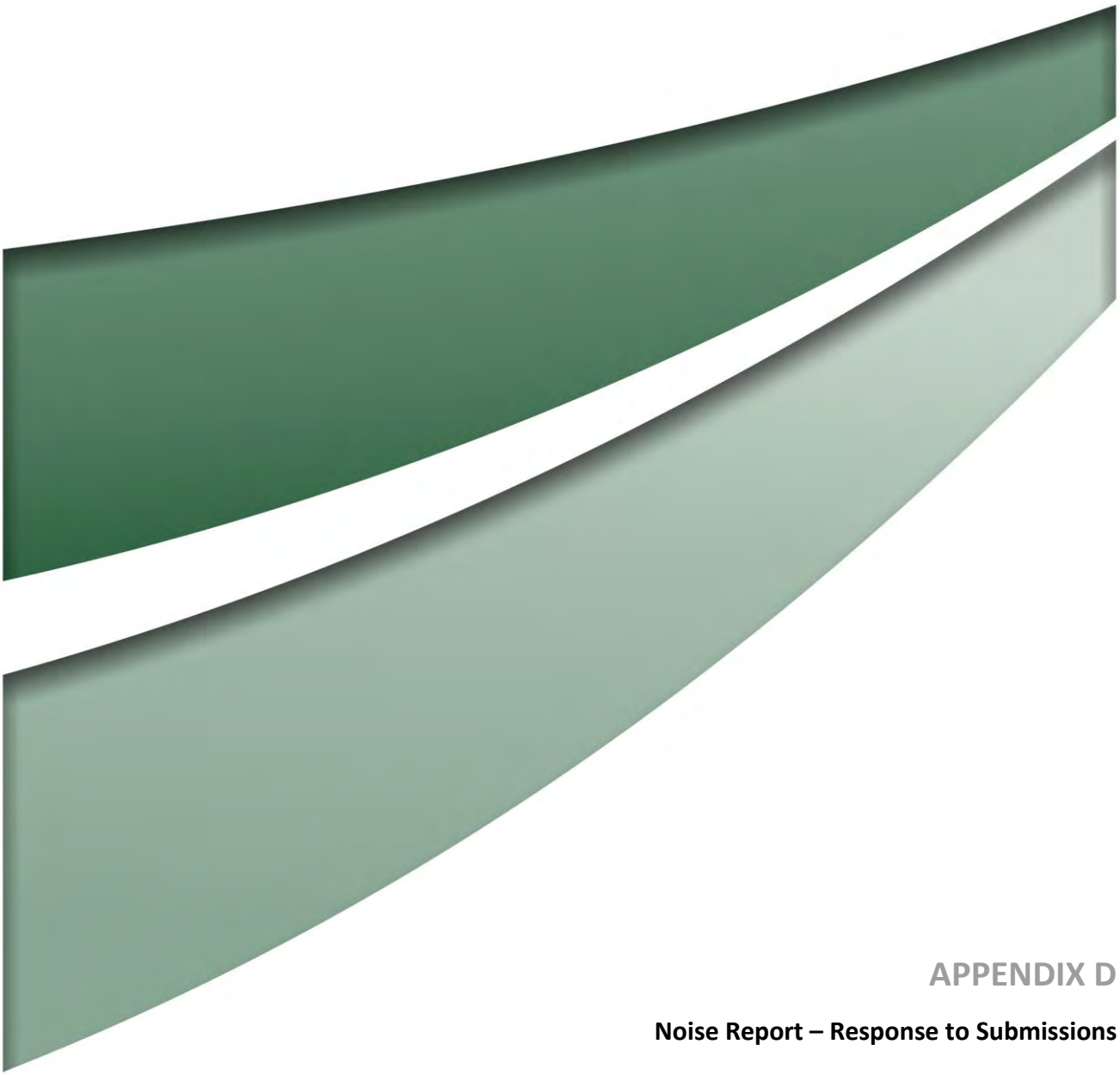
OEH issued Secretary Environmental Assessment Requirements (SEAR's) on 20 October 2017 (DOC17/492823-1), which required that an ACHAR be prepared for the project. In this instance, the Concrush Resource Recovery Facility Expansion (SSD 8753) project is granted an exemption from preparing an ACHAR and no further assessment of Aboriginal cultural heritage is required.

If you require any further information regarding this matter, please contact Nicole Davis, Archaeologist, on 8448 0412 or via email at rog.hcc@environment.nsw.gov.au.

Yours sincerely

2 May 2019

STEVEN COX
Senior Team Leader Planning
Hunter Central Coast Branch
Conservation and Regional Delivery Division



APPENDIX D

Noise Report – Response to Submissions

NOISE IMPACT ASSESSMENT - RESPONSE TO SUBMISSIONS

Concrush Pty Ltd

21 Racecourse Rd, Teralba

Prepared for Umwelt Australia

Prepared by RCA Australia

RCA ref 13155-602/1

April 2019

RCA AUSTRALIA

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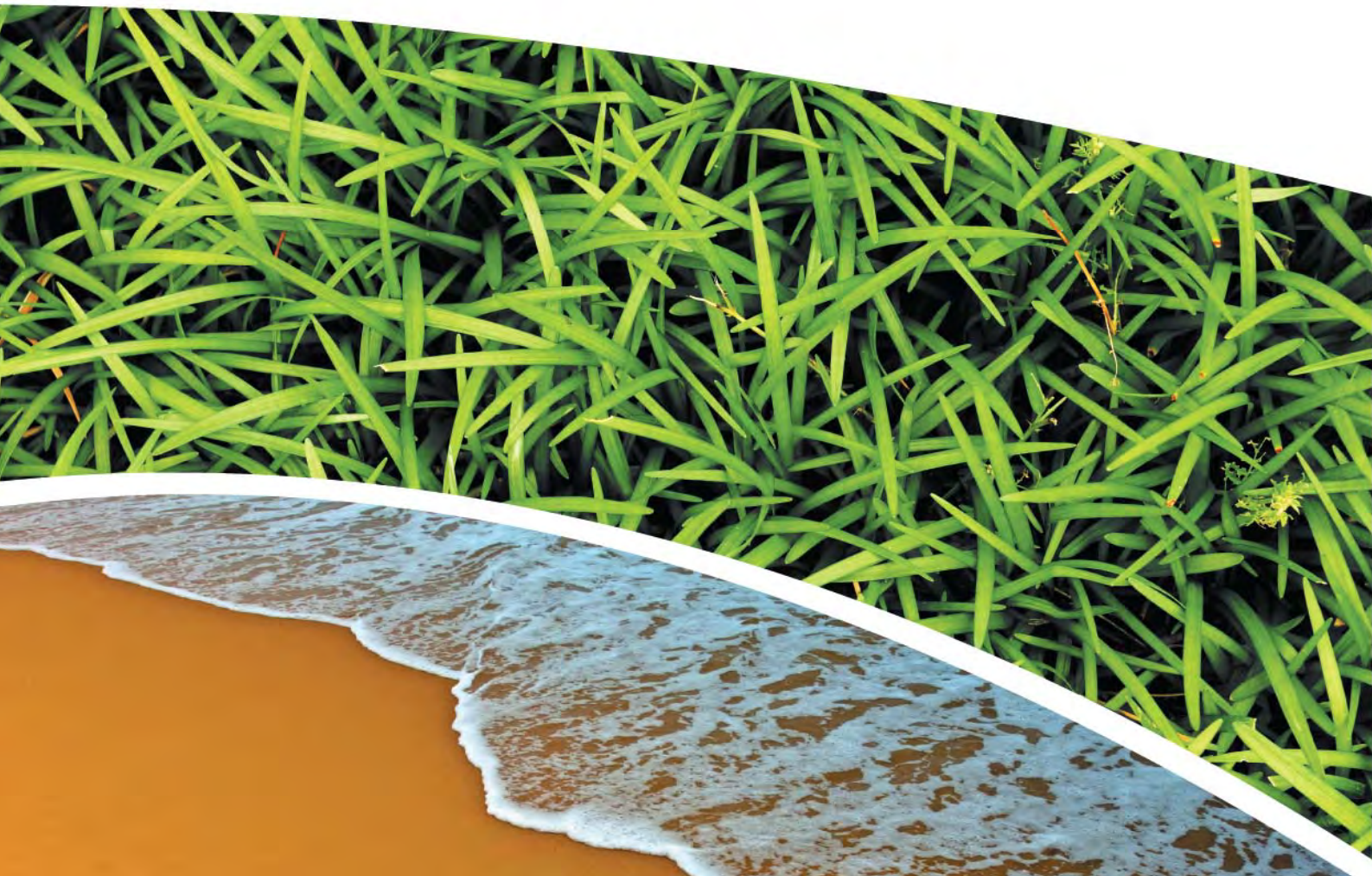

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DOCUMENT STATUS						
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				Name	**Signature**	**Date**
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12 April 2019

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NOISE IMPACT ASSESSMENT – RESPONSE TO SUBMISSIONS FOR CONCRUSH SITE, 21 RACECOURSE RD TERALBA

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1 INTRODUCTION

Concrush Pty Ltd (Concrush) is seeking development consent to increase the processing and storage capacity of the existing resource recovery facility located on part of Lot 2 DP 220347 at 21 Racecourse Road, Teralba, NSW. The Environmental Impact Statement (EIS) for the Project was placed on public exhibition from 16 November 2018 to 14 December 2018. This report was developed in response to stakeholder submissions regarding noise impacts.

2 SUMMARY OF PREVIOUS ASSESSMENT

2.1 SURROUNDING AREA AND CRITERIA

The Concrush site is located on the western bank of Cockle Creek, and southeast of the Central Coast/Newcastle train line. The nearest residential areas are:

- Boolaroo - located approximately 330 m to the south-east of the Project area
- Argenton - located approximately 1.1 km to the north-east of the Project area, and
- Teralba – located approximately 1.3 km to the south-west of the Project area.

In addition, there is a large portion of land to the east of the Project area which has been remediated following the closure of the former Pasminco lead smelter. This land consists of the approved Bunderra residential estate and associated seniors housing development. Once Bunderra residential estate and the seniors housing are fully developed, the nearest residential dwellings will be approximately 200 m from the Project area.

There are two residents located over 300 metres to the north of the Project area.

Receivers have been grouped into five noise catchment areas (NCAs) as indicated in **Figure 2-1**.

Figure 2-1 *Project area ( ) and noise catchment areas ( )*

Criteria for each NCA were determined in accordance with the *Noise Policy for Industry* (NPfI) (NSW EPA, 2017), and are presented in **Table 2-1**. Refer to EIS Appendix H for further details about the derivation of these criteria.

Table 2-1 *Project specific operational noise criteria*

Receiver	Operational noise criteria, $L_{Aeq,\ 15\ min}$ dB		
	Day	Evening	Night
NCA 1	47	43	36
NCA 2	54	47	37
NCA 3	53	53	53
NCA 4	54	48	42
NCA 5	68	68	68

Note: The NPfI determines the 'day' to be between 7 am and 6 pm, the 'evening' to be between 6 pm and 10 pm' and the 'night' to be between 10 pm and 7 am.

Criteria were also determined for the construction work involved in the Project, in accordance with the *Interim Construction Noise Guide* (ICNG) (Department of Environment & Climate Change, 2009), laid out in **Table 2-2**.

Table 2-2 *Construction noise criteria*

	Standard Hours, $L_{Aeq,15min}$ dB		Out of Hours, $L_{Aeq,15min}$ dB		
	Noise Affected	**Highly Noise Affected**	**Noise Affected Day**	**Noise Affected Evening**	**Noise Affected Night**
NCA 1	52	75	47	46	36
NCA 2	59	75	54	47	37
NCA 3	65	-	65	65	65
NCA 4	59	75	54	50	42
NCA 5	75	-	75	75	75

Note: The ICNG defines "Standard Hours" to be between 7am-6pm on weekdays and 7am-1pm on Saturday. All other times are out of hours. Day, evening and night periods are defined as per the NPfI.

2.2 OPERATIONAL NOISE MODELLING

To determine noise impacts at identified receivers, a noise model was constructed in modelling software CadnaA. Several scenarios were modelled, representing different modes of operation, using noise sources either taken from RCA's database or measured on the existing Concrush site. Refer to EIS Appendix H for further details about the noise model.

The modelled noise sources and the scenario groupings are identified in **Table 2-3**. The results of the modelling are reproduced in **Table 2-4**.

Table 2-3 *Operational noise scenarios*

Plant modelled	Adopted sound power data, dBA	No. of plant included in each scenario						
		Scenario 1 – Full production and sales	Scenario 2 – Green waste shredding	Scenario 3 – Weekend activities	Scenario 4 – Evening Work	Scenario 5 – Night Work	Scenario 6 – Night Maximum Levels	Scenario 7 - Fans
Trucks entering/exiting or receiving product	98	4	4	4	-	2	2-	-
Cars entering/exiting or receiving product	87	4	4	4	-	-	-	-
Grinder in maintenance shed	109	1	1	1	-	-	-	-
Pressure washer in plant storage area	99	1	1	1	-	-	-	-
Wheeled loaders working at stockpiles	111	2	2	1	1	1	1	-
Small loader loading cars	102	1	1	1	-	-	-	-
Excavators working at stockpiles	105	3	3	3	-	-	-	-
Concrete pulveriser heads on excavators	80	2	2	2	-	-	-	-
Jaw crusher crushing concrete	108	1	1	1	-	-	-	--
Impact crusher crushing concrete	107	1	1	1	-	-	-	-
Cone crusher crushing concrete	116	1		1	-	-	-	-
Screens sorting crushed concrete	110	2	2	2	1	-	-	-
Vacuum pumps serving the cone crusher and one screen	92	2	2	2	1	-	-	-
Pugmill operating	106	1	1	1	-	-	-	-
Water cart running a circuit around stockpiles	98 (line source – spread over circuit)	1	1	1	-	-	-	-
Trommel Screen screening	102	-	1	-	-	-	-	-

green waste								
Ballast wash operating	110	1	1	1	-	-	-	-
Shredder processing green waste (assumed 50% active time)	Processing – 111 idle - 97	-	1	-	-	-	-	-
Tipping Truck	118	-	-	-	-	-	1	-
Fans in green waste area	82	4	4	4	4	4	4	4

Table 2-4 *Operational noise modelling - results*

NCA	Project specific criteria, dB(A)			Sleep Disturbance screening criteria, dB(A)		Predicted noise level, dB(A)						
	Day $L_{Aeq,15min}$	**Evening** $L_{Aeq,15min}$	**Night** $L_{Aeq,15min}$	**Night** $L_{Aeq,15min}$	**Night Max** L_{AMax}	**Scenario 1 – Full production and sales (day)**	**Scenario 2 – Green waste shredding (day)**	**Scenario 3 – Weekend activities (day)**	**Scenario 4 – Evening Work (evening)**	**Scenario 5 – Night Work (night)**	**Scenario 6 – Night L_{Amax} Levels (night)**	**Scenario 7 – Fans (night)**
NCA 1	47	43	36	40	52	***51 (4 dB)***	***50 (3 dB)***	***50 (3 dB)***	43	***44 (8 dB)***	49	18
NCA 2	54	47	37	40	52	***55 (1 dB)***	***56 (2 dB)***	***55 (1 dB)***	47	***42 (5 dB)***	51	30
NCA 3	53	53	53	-	-	53	53	52	41	40	50	24
NCA 4	54	48	42	42	52	51	51	50	42	38	46	24
NCA 5	68	68	68	-	-	46	45	46	39	32	44	12

Note: Entries in ***bold*** exceed the relevant criteria by the margin in brackets.

2.3 CONSTRUCTION NOISE MODELLING

Noise impacts during construction were determined using the CadnaA noise model. Noise sources were chosen and positioned according to planned stages of construction, and noise levels were predicted at all receivers.

Predicted noise levels are reproduced in **Table 2-5**.

Table 2-5 *Construction noise modelling - results*

	Standard Hours Criteria $L_{Aeq,15min}$, dB		**Predicted Noise Level** $L_{Aeq,15min}$, dB			
	Noise Affected	Highly Noise Affected	Site Clearing	Road & Hardstand	Pipes & Poles	Fencing construction
NCA 1	52	75	43	47	41	34
NCA 2	59	75	51	56	47	43
NCA 3	65	-	50	54	48	41
NCA 4	59	75	49	51	45	39
NCA 5	75	-	38	42	33	26

No receivers were found to exceed the criteria for standard hours during construction.

2.4 ROAD NOISE

The noise generated by additional traffic was considered as part of the assessment. Road noise levels were determined based on predicted vehicle numbers along with measurements of current traffic on York St. It was assumed that all traffic will travel south along Racecourse Rd and York St.

Predicted levels and criteria are laid out in **Table 2-6**.

Table 2-6 *Road noise results*

	Day ($L_{Aeq,15hr}$)	**Night ($L_{Aeq,9hr}$)**
Current traffic noise	56	49
Future traffic noise	59	55
Criteria (sub-arterial roads)	60	55

Proposed traffic numbers were found to comply with the road noise criteria.

3 NOISE RELATED SUBMISSION COMMENTS

RCA have reviewed all submissions and have identified any comments or issues related to the noise assessment. These submissions are summarised in **Table 3-1**, which also includes references to the relevant sections of this report for each submission.

Table 3-1 *Submissions regarding noise impact assessment*

Submission Author	Comment / Recommendation	Reference
NSW EPA	Construction hours should be limited to recommended standard hours from the ICNG	**Section 4.1**
	All feasible and reasonable mitigation measures should be applied to manage construction noise impacts.	**Section 4.2**
	Operational noise impacts will be moderate – additional mitigation measures should be investigated to reduce noise impacts during the day.	**Section 4.9**
	The impact of night-time work cannot be determined due to insufficient information.	**Section 4.3** **Section 5**
	Operational noise predictions assume noise barriers and bunds will be in place.	**Section 4.4**
	Operational predictions assume there will be limited amounts of plant operating simultaneously. Clarify these restrictions are viable.	**Section 4.5**
	Provide graphical noise logging data to allow confirmation of rating background noise levels.	**Appendix B**
	Confirm whether annoying noise characteristics have been considered	**Section 4.6**
Department of Planning & Environment	Operational predictions assume not all plant will operate simultaneously. Clarify these restrictions are viable.	**Section 4.5**
	Consider further noise mitigation measures to minimize noise impacts, including evidence of consultation with receivers affected by predicted exceedances	**Section 4.9**
	Assess any revisions to traffic/transport arrangements.	**Section 4.7**
Hunter New England Local Health District	All noise mitigation measures should be considered to ensure potential impacts are reduced.	**Section 4.9**
Lake Macquarie City Council	A re-evaluation of noise impacts at 13 Racecourse Rd is recommended	**Section 4.9**
	A stand-alone noise management plan should be produced for the operation of the site.	**Section 4.8**
Community	Concern over increase in road traffic noise.	**Section 4.7**

4 RESPONSE TO SUBMISSIONS

4.1 HOURS OF CONSTRUCTION

Concrush have committed to all construction work occurring during standard hours identified in the ICNG (7am-6pm weekdays, 7am-1pm Saturday, no work on Sunday/public holidays).

4.2 MITIGATION MEASURES FOR CONSTRUCTION

The original noise report (EIS Appendix H) identified noise mitigation measures for the construction phase of the Project. The predicted construction noise is below the noise affected criteria for all NCAs for all identified construction activities. As such, the construction noise mitigation measures identified in the EIS and Appendix H are considered adequate for the Project. The construction noise mitigation measures are listed in Section 6.1.1 of this report.

4.3 NIGHT OPERATIONS

Concrush was originally seeking approval for the loading and dispatch of trucks during the night time period of 10pm to 7am. Following government submissions received regarding potential night time noise impacts, Concrush is no longer seeking approval for night time operations during the period of 10pm to 7am. Concrush are seeking revised evening operations as detailed in Section 5.0. The only night time source of noise will be the fans associated with the aeration process operating in the green waste area. Noise generated by the fans alone was assessed in the previous noise report and was found to be well below the relevant night time criteria for all NCAs (see **Table 2-4**).

Scenario 5 and Scenario 6 from **Table 2-4** are removed from consideration, as these scenarios deal with loading activities at night which are no longer part of the Project.

4.4 NOISE BARRIER INSTALLATION

All predicted levels in **Table 2-4** assume that specified mitigation measures (in the form of noise barriers) are in place. Concrush commits to installing the noise barriers identified in Section 6.1.2 prior to commencing operation of the Project. The EIS and Appendix H identified that the 3.5 metre bund on the eastern side of the 'Raw Material Stockpiles and Processing Area' could be formed from stockpiled material, however, as requested by DPE at a meeting on 8 March 2019 Concrush commits to constructing the barrier from concrete blocks.

4.5 SIMULTANEOUS PLANT ACTIVITY

Some predicted levels in **Table 2-4** assume limited plant operating. These include:

- Scenario 2 (Green waste processing) – Cone crusher not operational
- Scenario 3 (Weekend) – Reduced plant numbers
- Scenario 4 (Evening) – Reduced plant numbers, no crushers operational.

These operational scenarios were developed in consultation with Concrush and represent feasible operational modes, which will be documented in the updated noise management plan referenced in **Section 4.8**.

4.6 ANNOYING NOISE CHARACTERISTICS

RCA attended the existing Concrush site to observe the current operations and to take noise measurements of the plant. These measurements were considered in light of Fact Sheet C of the NPfI in order to determine whether any plant items display annoying noise characteristics and hence required an adjustment factor to be considered in the assessment process.

No measured noise sources were considered low frequency. While the operation of some plant may be considered intermittent noise (such as the green waste shredder), these plant items will not operate during the night and so no adjustment was required.

One measured noise source exhibited tonal noise. However, consideration of the position of the source and the spectral background levels in the area showed that the source would not be tonal at receiver locations, so the tonal adjustment was not applied.

4.7 TRAFFIC NOISE

No changes are proposed to traffic/transport arrangements for the Project and as such the traffic noise impact assessment is not required to be updated and the impact assessment remains appropriate.

4.8 NOISE MANAGEMENT PLAN

Concrush has an existing Noise Management Plan (NMP). Should the Project be approved the existing NMP would be updated to include the mitigation measures proposed within Section 6.1.2 of this report.

4.9 FURTHER OPERATIONAL NOISE MITIGATION

Modelling conducted for the original noise report indicated daytime exceedances for Scenario 1 'Full Production and Sales' at NCA1. As part of the response to submissions process, two additional operational noise models, Option A and Option B, were created in order to investigate further reasonable and feasible mitigation options with the aim of achieving compliance with the relevant criteria.

Both models were developed from the model of full operation used for Scenario 1 in **Table 2-4**, with all sources having the same sound power and same location. Additional mitigation measures were applied, as described below.

Mitigation measures in the original Scenario 1 Full Production & Sales:

- 3.5m bund or stockpile along eastern edge of the processing/raw material area.
- 3m wall along southern edge of the processing/raw material area.

Additional mitigation measures for Option A:

- Barrier to 6.5 m high along part of northern boundary. The length of this barrier is flexible but it must block line of sight from NCA1 to regions of the processing and raw materials area where crushers and screens will operate.
- All processing plant, including screens, crushers, impactor, and ballast wash, should be limited to the section of processing/raw material area the above barrier shields. Crushers and screens should be placed in the western half of the processing/raw materials area to create additional distance to receivers to the east (NCA 2).

Additional mitigation measures for Option B:

- One of the front-end loaders is removed and replaced with 2 x 60t excavators
- Maintain at least 3.5 m of continuous bund/stockpile material in the larger southern processed material stockpiles (immediately north of the processing/raw material area)
- The remaining front-end loader should operate only in the area where the above bund breaks line of sight to NCA1.

- 4.5m barrier north of processing area.

Modelling indicates that both Option A and Option B would comply with the criteria at all receivers. This compliance is by a small margin (<1 dB).

Consultation with Concrush has indicated that neither Option A nor Option B is both feasible and reasonable. The reasons for this are:

- Constructing large walls or barriers to provide shielding for NCA1 is not reasonable when considering the following:
    - There are only two residents in this NCA.
    - Both residents have been consulted and have indicated that they do not consider noise from Concrush to be an issue.
    - The predicted noise exceedance is 'marginal' in accordance with the NPfI.
    - The location of the wall or barrier would require substantial alterations to the existing site drainage and water management systems and result in less workable space within the site.
    - Potential visual impacts of a 6.5 metre high wall/barrier immediately on the site boundary.
- Replacement of machinery or restricting the area in which machinery can work is not reasonable as the existing and proposed machinery has been selected as it is the most practical and efficient way to undertake the activities required. Substituting machinery would mean a less efficient process resulting in increased time and costs for Concrush. Concrush operations require flexibility to respond to market demand for products and the type of waste being received. Placing restrictions on which parts of the Project site that machinery can operate in reduces the ability to configure the site to best respond to market demands and would result in a less efficient site layout likely requiring increased machinery movements within the restricted area.
- Maintaining a permanent bund or stockpile to act as a noise barrier in a stockpile area is not reasonable due to turnover of material and the restrictions this would place on machinery that are active at the stockpile.
- Erecting a barrier north of the processing area is not feasible as it would significantly impact the vehicle and plant movements within a large proportion of the Project site.

Based on the above considerations, and noting that extensive additional mitigation was required to reduce the noise impacts by a small margin, RCA do not consider compliance with the noise goals to be within reasonable and feasible means. However, noise impacts during normal operation are negligible at all receivers except NCA1, and residents in NCA1 have been consulted and do not consider noise generated at the Concrush site to be an issue.

5 ADDITIONAL EVENING ASSESSMENT

The original noise report included an assessment of noise levels generated from screening and stockpiling of material during the evening and loading and dispatch of trucks at night. Night time activities have been removed from the Project in response to government submissions. It is now proposed during the evening period to undertake either the activity of screening and stockpiling of material or the activity of loading and dispatch of trucks, but not both at the same time.

The option of undertaking either screening and stockpiling of material or loading and dispatch of trucks is realistic as it will provide Concrush flexibility in managing product volumes and product deliveries. Concrush could during the evening period screen and stockpile product for immediate dispatch the next day in order to meet client requirements for a large volume of product delivered over a relatively short timeframe. Alternatively Concrush could stockpile product during the day and undertake loading and dispatch of trucks during the evening time to service a client requiring product outside of standard construction hours such as for road works which may be scheduled to minimise disruption to motorists.

As the original noise report did not assess the activity of loading and dispatch of trucks during the evening period, a noise model was prepared in CadnaA. This model was identical to the night loading model in the original NIA with the exception of noise-enhancing weather conditions. During the night, temperature inversions were determined to be a feature of the area and were incorporated into the assessment. Inversions are not considered during the evening and so wind was the only weather condition assessed in the model in accordance with the NPfI.

Plant items included in the model were:

- One front end loader, loading trucks from stockpiles
- Two trucks accessing the site and waiting for material loading
- Four fans operating in the green waste area.

Further details of the weather conditions assessed and the sources included in the model are available in Appendix E of the EIS.

The results of the noise modelling are presented in **Table 5-1**.

Table 5-1 *Evening truck loading activities*

Receiver	Project specific criteria, dB(A)	Predicted noise level, dB(A)
	Evening $L_{Aeq,15min}$	**Trucks loading (evening)**
NCA 1	43	43
NCA 2	47	40
NCA 3	53	39
NCA 4	48	37
NCA 5	68	30

Noise levels are found to be within the criteria at all receivers. Note that this assumes there is no other activity on site; this restriction is noted in **Section 6** below.

6 ALL NOISE MITIGATION RECOMMENDATIONS

This section includes all relevant noise mitigation measures from the previous assessment, as well as additional measures discussed in **Section 4** above.

6.1.1 CONSTRUCTION NOISE

- Undertake work during standard hours (7am-6pm weekdays, 7am-1pm Saturday).
- Turn off plant when not in use.
- Ensure plant is regularly maintained, and repair or replace plant that becomes noisy.
- Arrange work site to minimize the use of movement alarms on vehicles and plant.
- Avoid dropping materials from a height.

6.1.2 OPERATIONAL NOISE

- The existing noise management plan will be updated to include these revised mitigation measures.
- Construct a barrier to 3.5 m above finished ground level along the eastern side of the “Raw Material Stockpiles and Processing Area”. The bund is to be formed from concrete blocks. Crushers and screens (except for the trommel screen used for green waste) will not be used outside this area. The bund would meet the wall along the southern boundary described below and should block line of sight between the area and NCA2.
- Construct a wall to 3 m above finished ground level along the southern boundary of the “Raw Material Stockpiles and Processing Area”.
- Crushers will not be used after 6pm.
- The cone crusher will not be used when green waste shredding is occurring.
- In the evening period between 6pm-10pm only one activity, either truck loading and tipping or screening and stockpiling of material will occur.
- No operations should occur between 10pm-7am (weekdays) or 10pm-8am (weekends and public holidays).
- Routine quarterly noise monitoring will be conducted by an experienced noise consultant during the day time to monitor and report on operational noise. Two 15-minute measurements are conducted at the most impacted receiver in NCA 1 and a representative location within NCA 2. Noise monitoring procedures will be finalized in the noise management plan.

6.1.3 ROAD NOISE

While the objectives of the RNP are anticipated to be met, the increased traffic volumes along York Street may potentially cause annoyance among the community. Positive driver behavior will assist to mitigate against this, and is to be included as a training topic in site inductions for contractors. Driver expectations should be included in a driver Code of Conduct.

7 CONCLUSION

All submissions regarding the noise impact assessment for the proposed expansion of the Concrush site have been considered in this report. Comments and clarifications have been provided where necessary.

A further investigation into reducing noise impacts during normal operations was conducted. It was demonstrated that additional noise mitigation in order to achieve compliance with the project goals is not reasonable based on the required limitations to site machinery and restrictions on vehicle/machinery movements within the Project site. It is noted that the residents of the noise catchment area which will experience the greatest noise impacts have been consulted, and they have no concerns about the predicted noise impacts.

The proponent no longer wishes to conduct night loading works, and accordingly this item is not considered in the assessment. Loading may be conducted during the evening, and this report has assessed the potential noise impacts of this mode of operation. Evening loading was found to comply with all relevant criteria.

Yours faithfully
RCA Acoustics

Natasha Pegler
Acoustic Consultant

Appendix A

Terms and Definitions

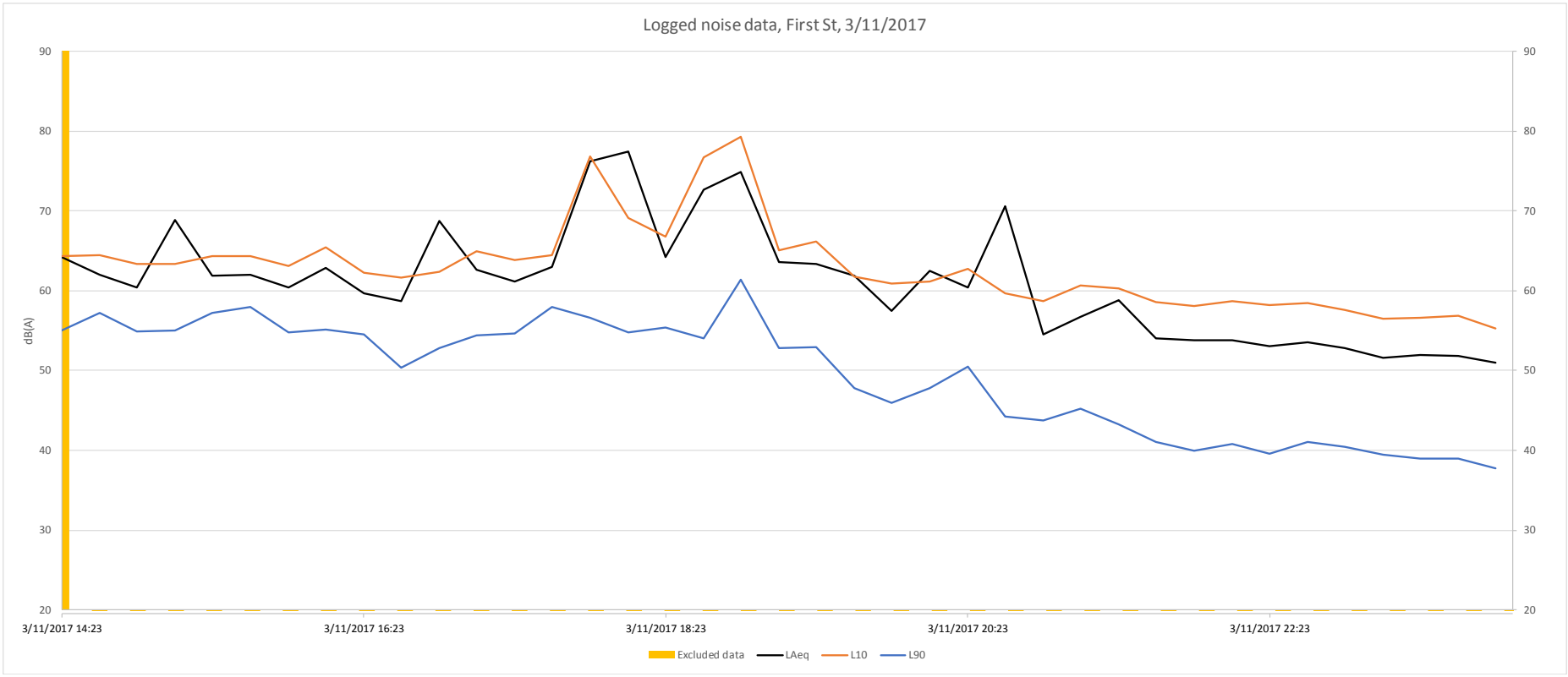
TERMS AND DEFINITIONS

dB(A)	Unit of sound pressure level, modified by the A-weighting network to represent the sensitivity of the human ear.
SPL	The incremental variation of sound pressure from the reference pressure level expressed in decibels.
SWL (L_W)	Sound Power Level of a noise sources per unit time expressed in decibels from reference level $W_{O.}$
L_X	Statistical noise descriptor. Where (x) represents the percentage of the time for which the specified noise level is exceeded.
L_{eq}	Equivalent continuous noise level averaged over time on an equivalent energy basis.
L_1	Average Peak Noise Level in a measurement period.
L_{10}	Average Maximum Noise Level in a measurement period.
L_{90}	Average Minimum Noise Level in a measurement period.
L_{max}	Maximum Noise Level in a measurement period.
Background Noise Level	Noise level determined for planning purposes as the one tenth percentile of the ambient L_{A90} noise levels.
PO	Reference Sound Pressure for the calculation of SPL in decibels.
WO	Reference Sound Power for the calculation of SWL in decibels.

Appendix B

Logged Daily Data

Logged data and exclusions are marked in the graphs below. Exclusions are typically due to periods of rain or high wind (though some instances of instrument-specific interference have also been excluded).


Logged noise data, First St, 3/11/2017
dB(A)
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80
70
60
50
40
30
20
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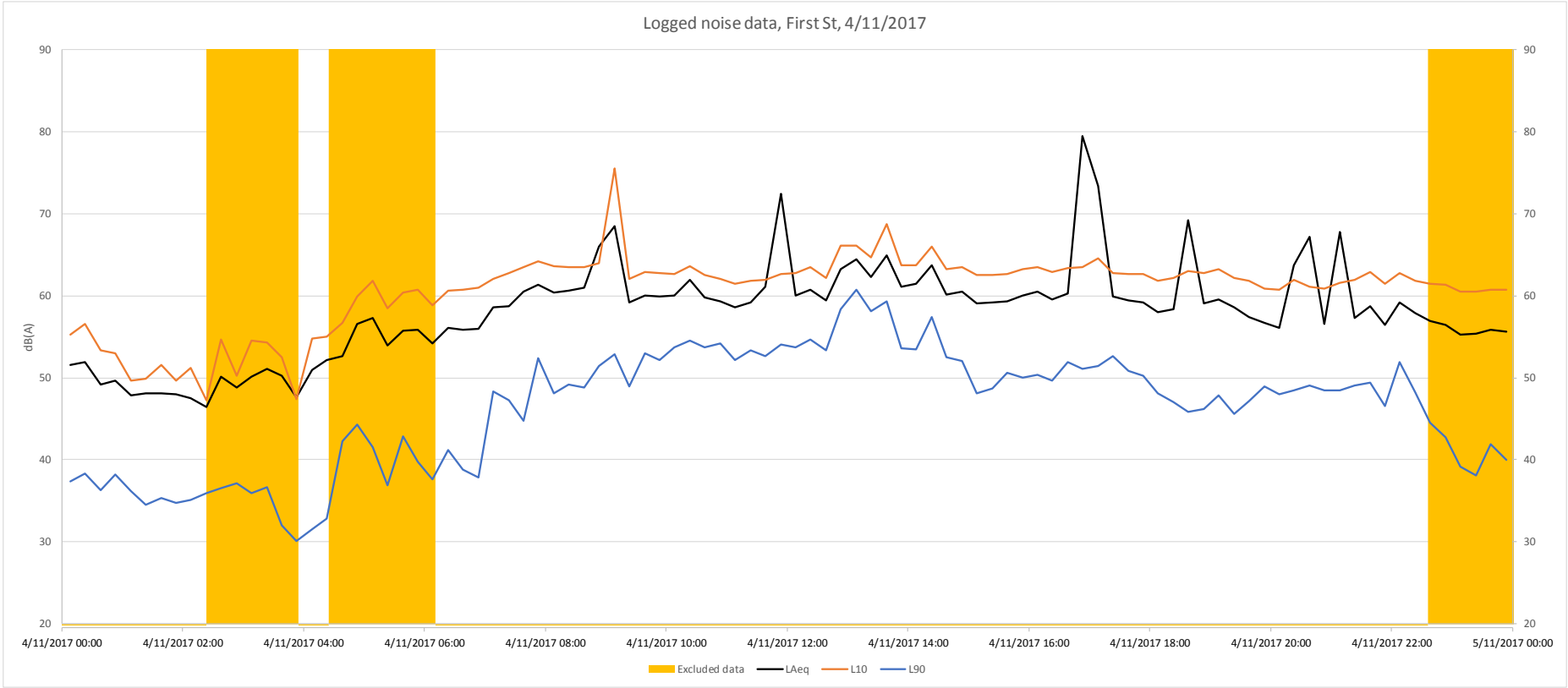
3/11/2017 18:23
3/11/2017 20:23
3/11/2017 22:23
Excluded data
LAeq
L10
L90


Logged noise data, First St, 4/11/2017
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30
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4/11/2017 08:00
4/11/2017 10:00
4/11/2017 12:00
4/11/2017 14:00
4/11/2017 16:00
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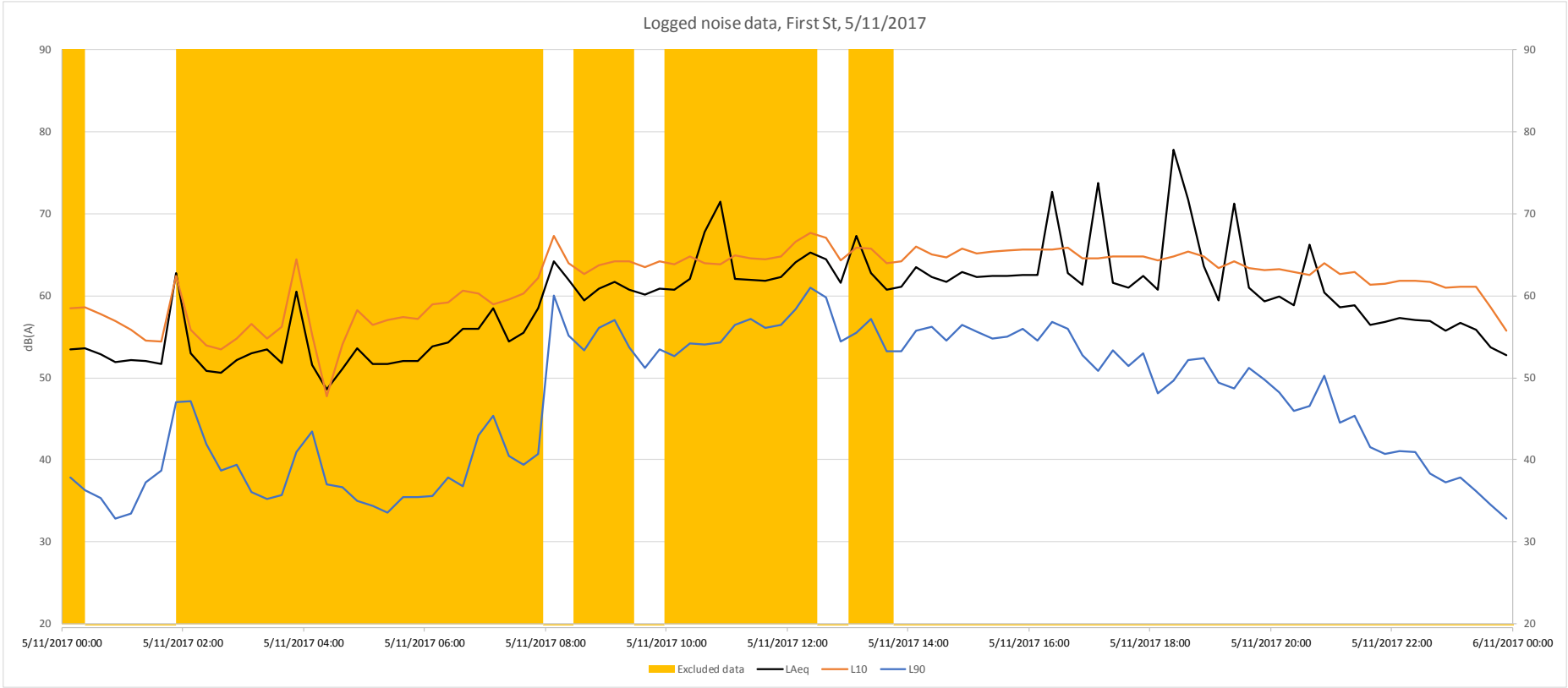
4/11/2017 20:00
4/11/2017 22:00
5/11/2017 00:00
Excluded data
LAeq
L10
L90


Logged noise data, First St, 5/11/2017
dB(A)
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5/11/2017 04:00
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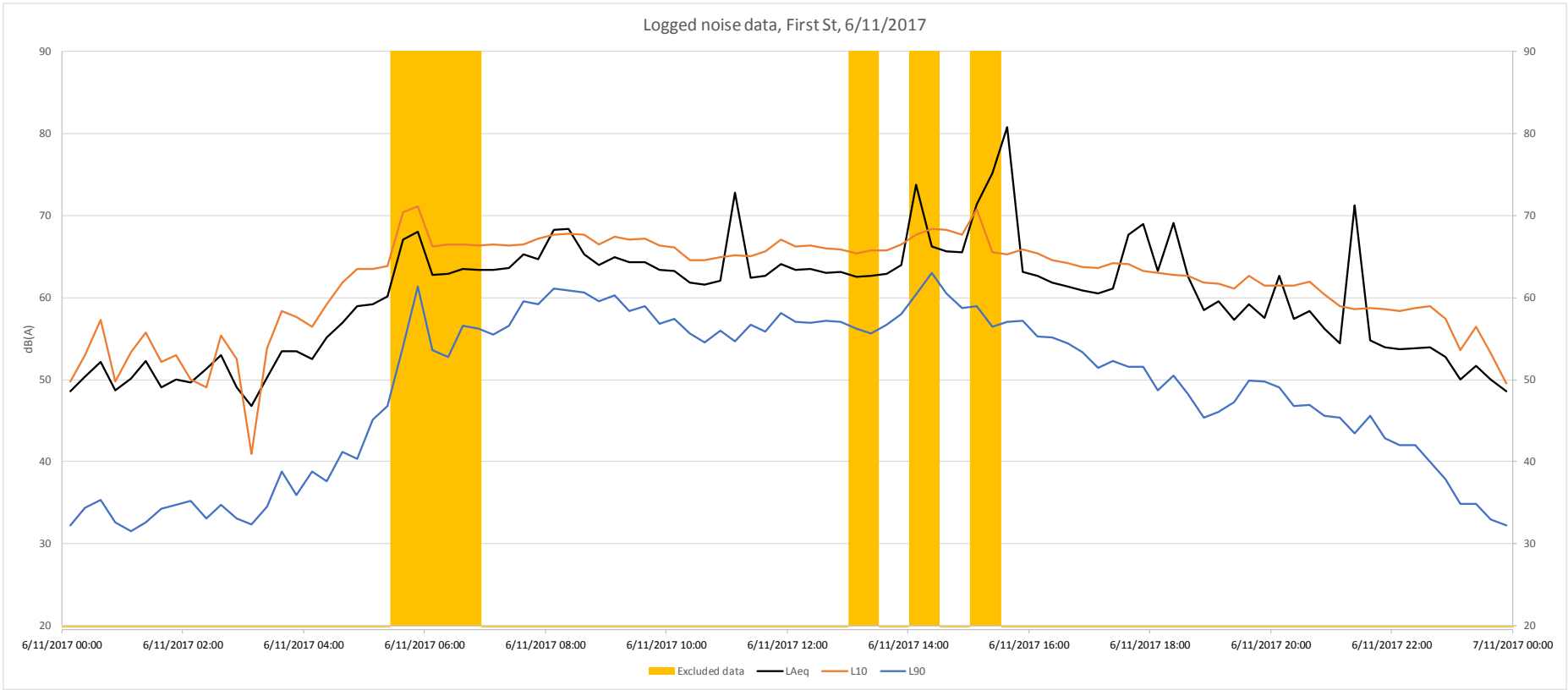
Excluded data
LAeq
L10
L90


Logged noise data, First St, 6/11/2017
dB(A)
90
80
70
60
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6/11/2017 00:00
6/11/2017 02:00
6/11/2017 04:00
6/11/2017 06:00
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6/11/2017 14:00
6/11/2017 16:00
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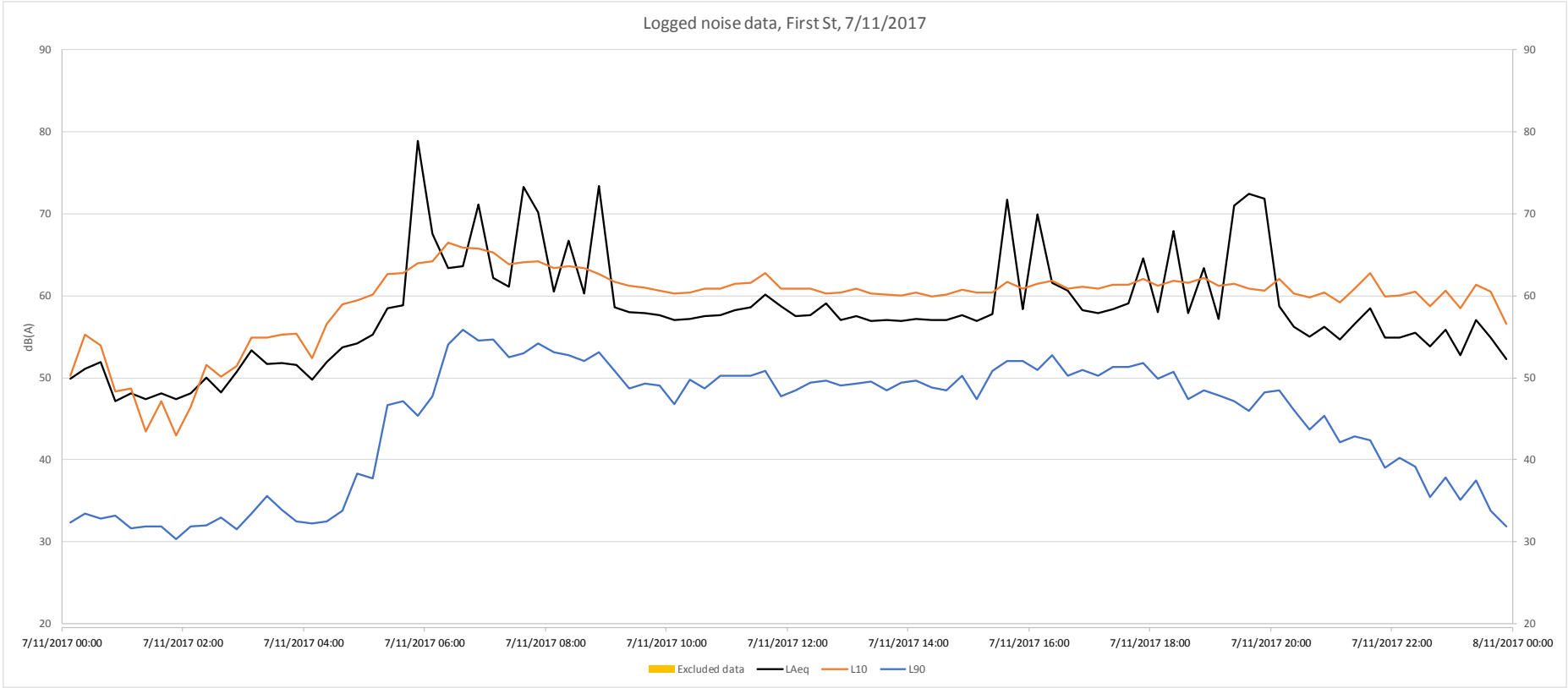
6/11/2017 20:00
6/11/2017 22:00
7/11/2017 00:00
Excluded data
LAeq
L10
L90


Logged noise data, First St, 7/11/2017
dB(A)
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80
70
60
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20
7/11/2017 00:00
7/11/2017 02:00
7/11/2017 04:00
7/11/2017 06:00
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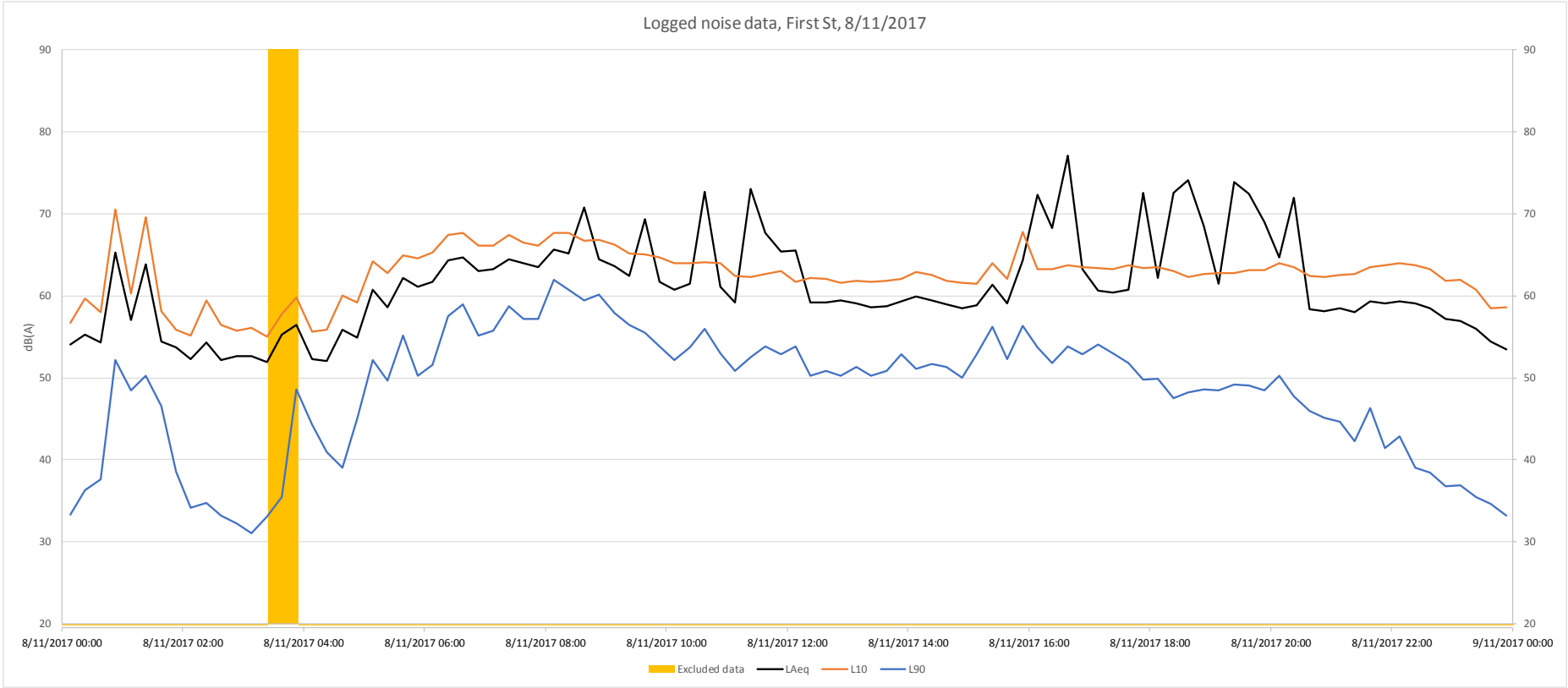
7/11/2017 14:00
7/11/2017 16:00
7/11/2017 18:00
7/11/2017 20:00
7/11/2017 22:00
8/11/2017 00:00
Excluded data
LAeq
L10
L90


Logged noise data, First St, 8/11/2017
dB(A)
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80
70
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20
8/11/2017 00:00
8/11/2017 02:00
8/11/2017 04:00
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8/11/2017 10:00
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8/11/2017 16:00
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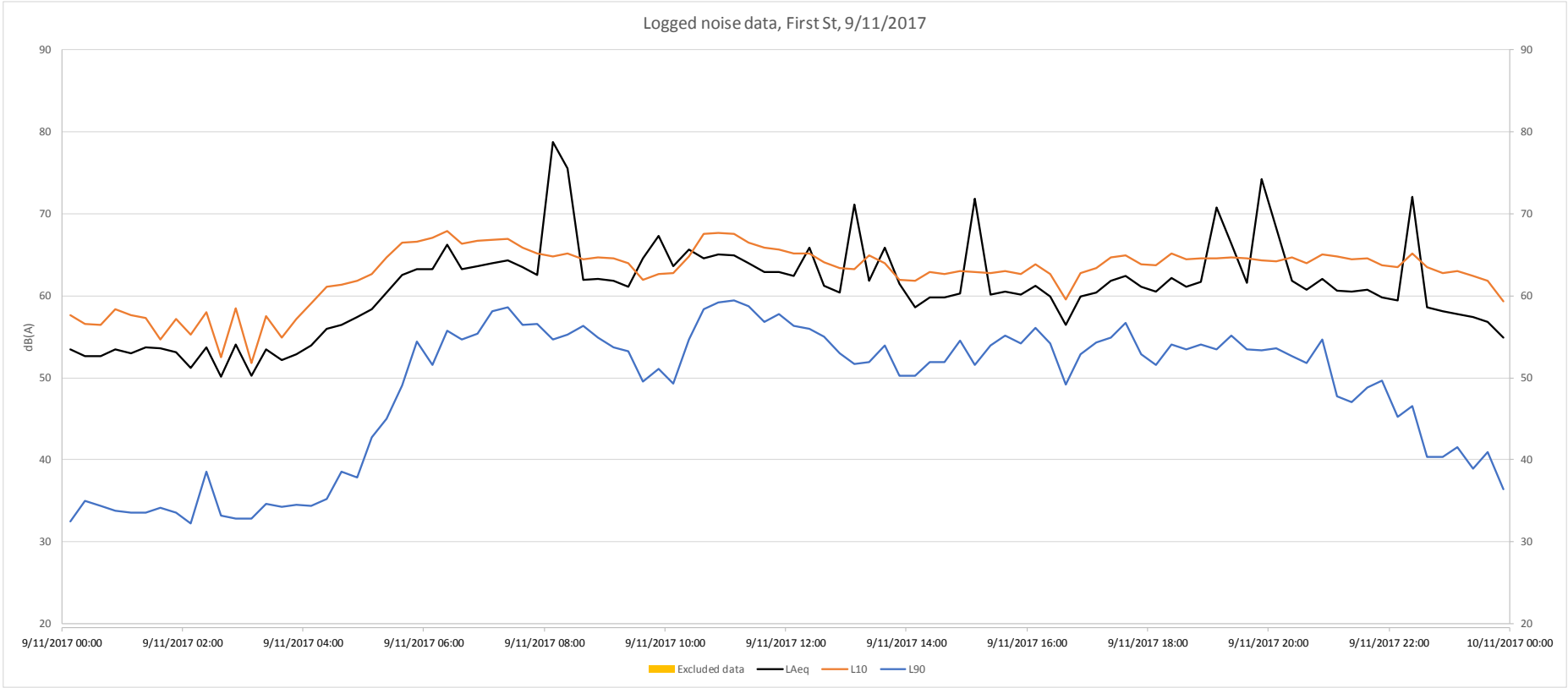
8/11/2017 20:00
8/11/2017 22:00
9/11/2017 00:00
Excluded data
LAeq
L10
L90


Logged noise data, First St, 9/11/2017
dB(A)
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80
70
60
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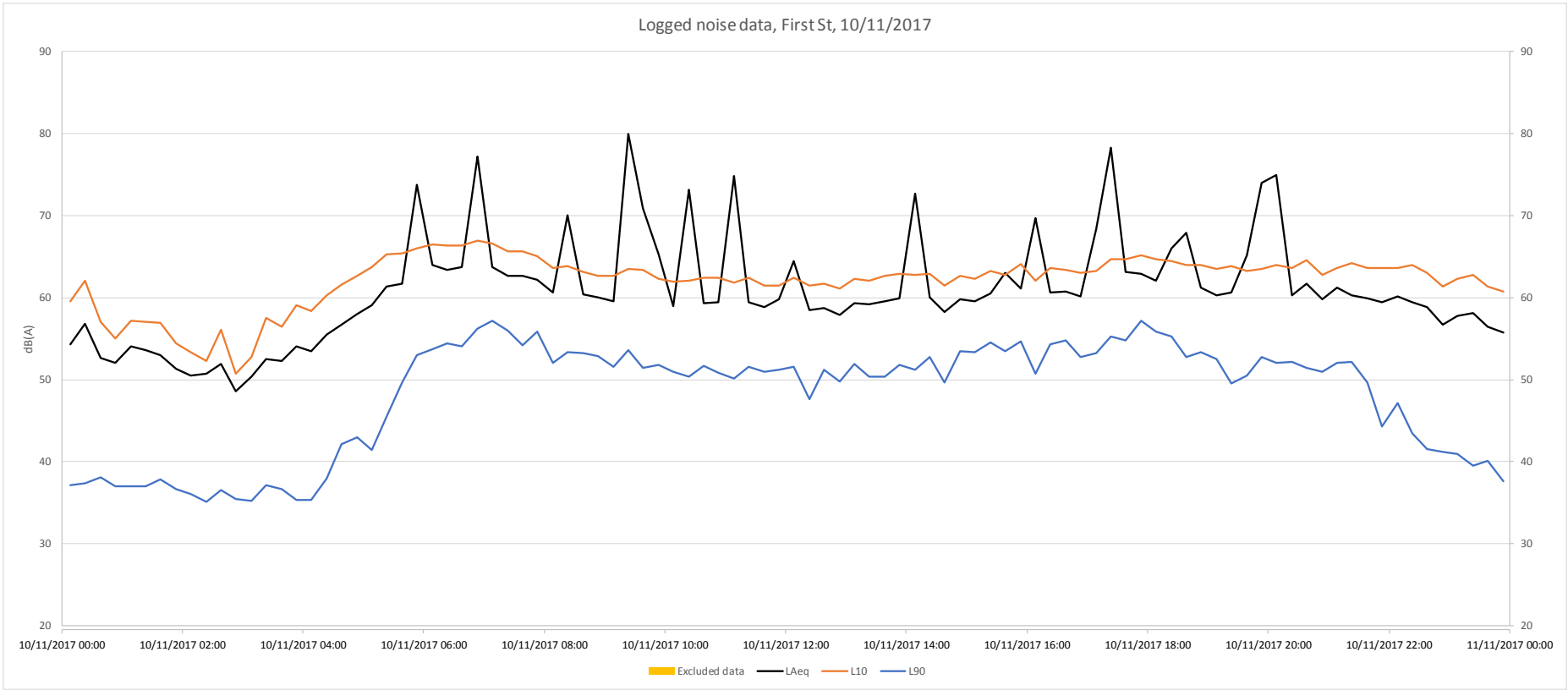
20
9/11/2017 00:00
9/11/2017 02:00
9/11/2017 04:00
9/11/2017 06:00
9/11/2017 08:00
9/11/2017 10:00
9/11/2017 12:00
9/11/2017 14:00
9/11/2017 16:00
9/11/2017 18:00
9/11/2017 20:00
9/11/2017 22:00
10/11/2017 00:00
Excluded data
LAeq
L10
L90


Logged noise data, First St, 10/11/2017
dB(A)
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80
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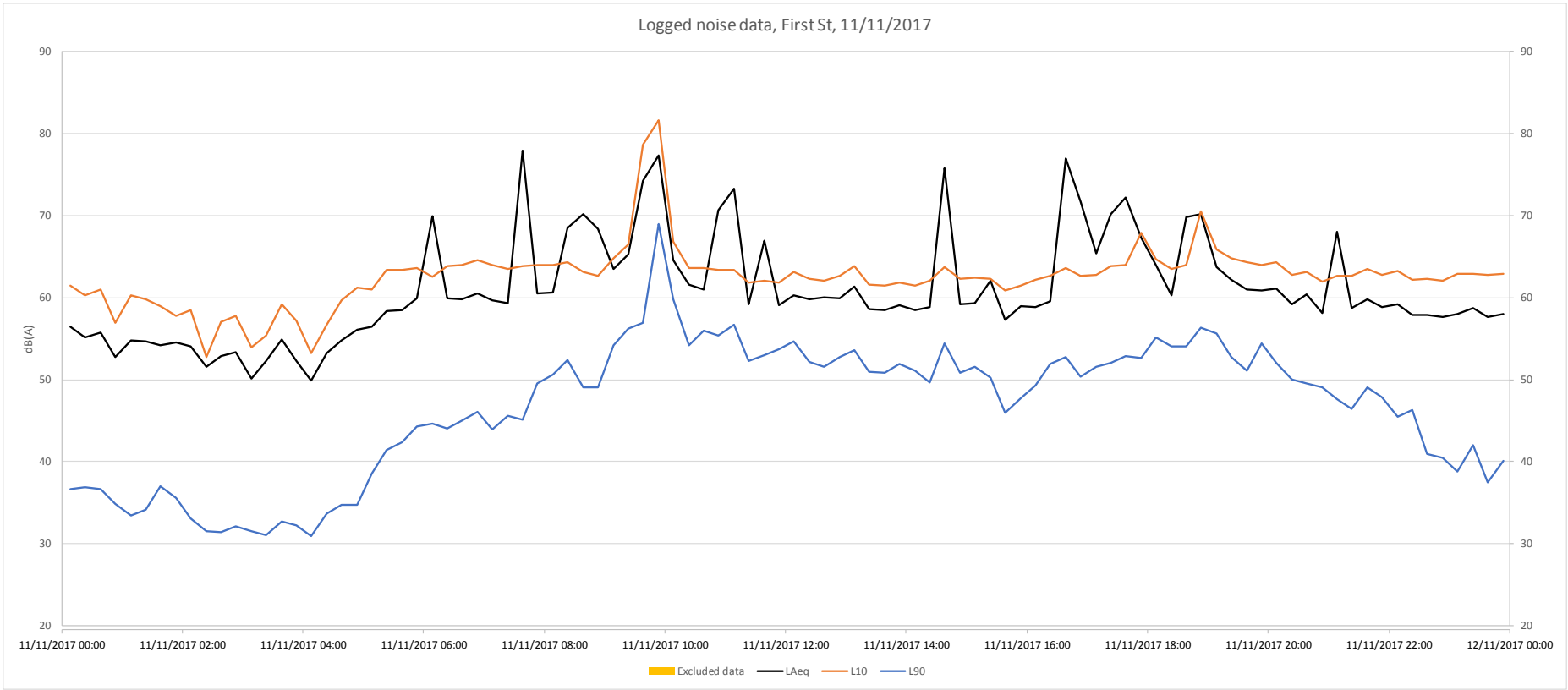
20
10/11/2017 00:00
10/11/2017 02:00
10/11/2017 04:00
10/11/2017 06:00
10/11/2017 08:00
10/11/2017 10:00
10/11/2017 12:00
10/11/2017 14:00
10/11/2017 16:00
10/11/2017 18:00
10/11/2017 20:00
10/11/2017 22:00
11/11/2017 00:00
Excluded data
LAeq
L10
L90


Logged noise data, First St, 11/11/2017
dB(A)
90
80
70
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20
11/11/2017 00:00
11/11/2017 02:00
11/11/2017 04:00
11/11/2017 06:00
11/11/2017 08:00
11/11/2017 10:00
11/11/2017 12:00
11/11/2017 14:00
11/11/2017 16:00
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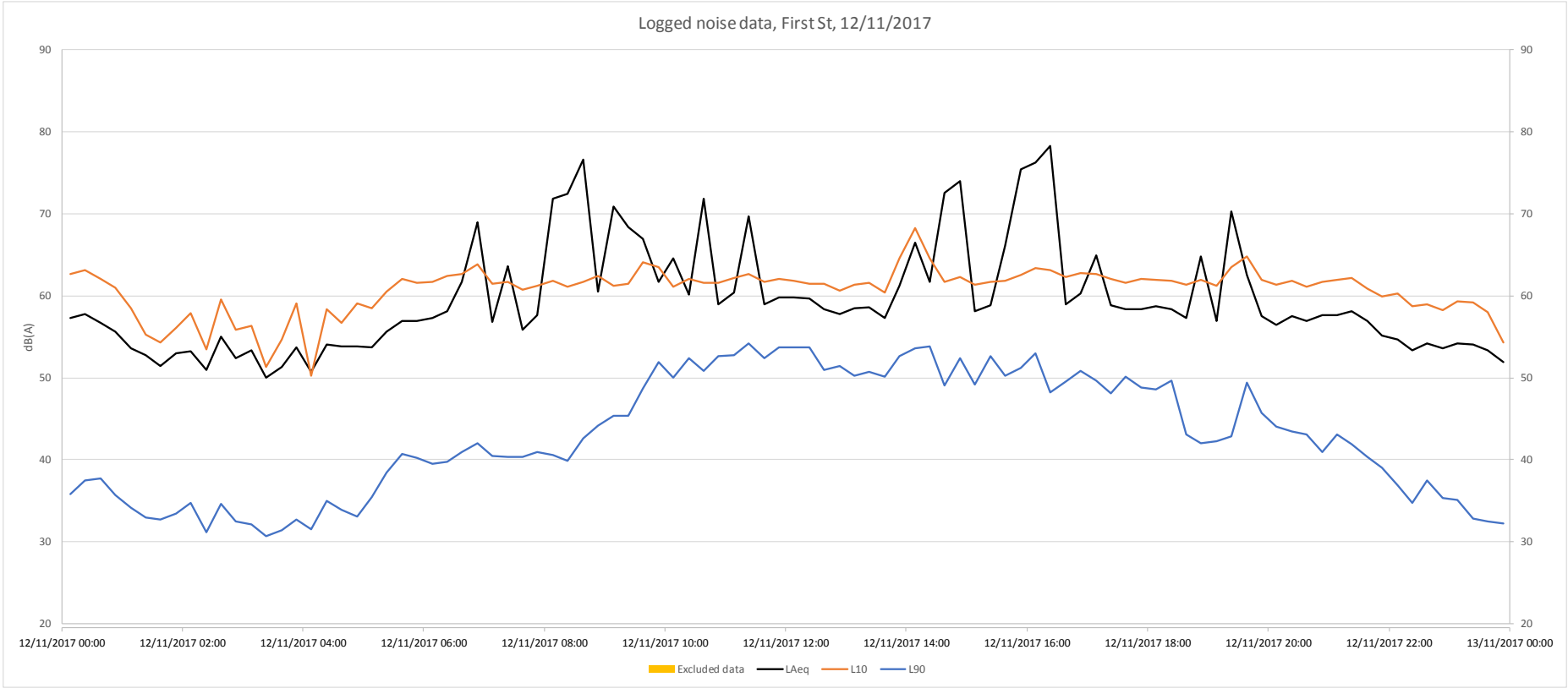
11/11/2017 20:00
11/11/2017 22:00
12/11/2017 00:00
Excluded data
LAeq
L10
L90


Logged noise data, First St, 12/11/2017
dB(A)
90
80
70
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20
12/11/2017 00:00
12/11/2017 02:00
12/11/2017 04:00
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12/11/2017 08:00
12/11/2017 10:00
12/11/2017 12:00
12/11/2017 14:00
12/11/2017 16:00
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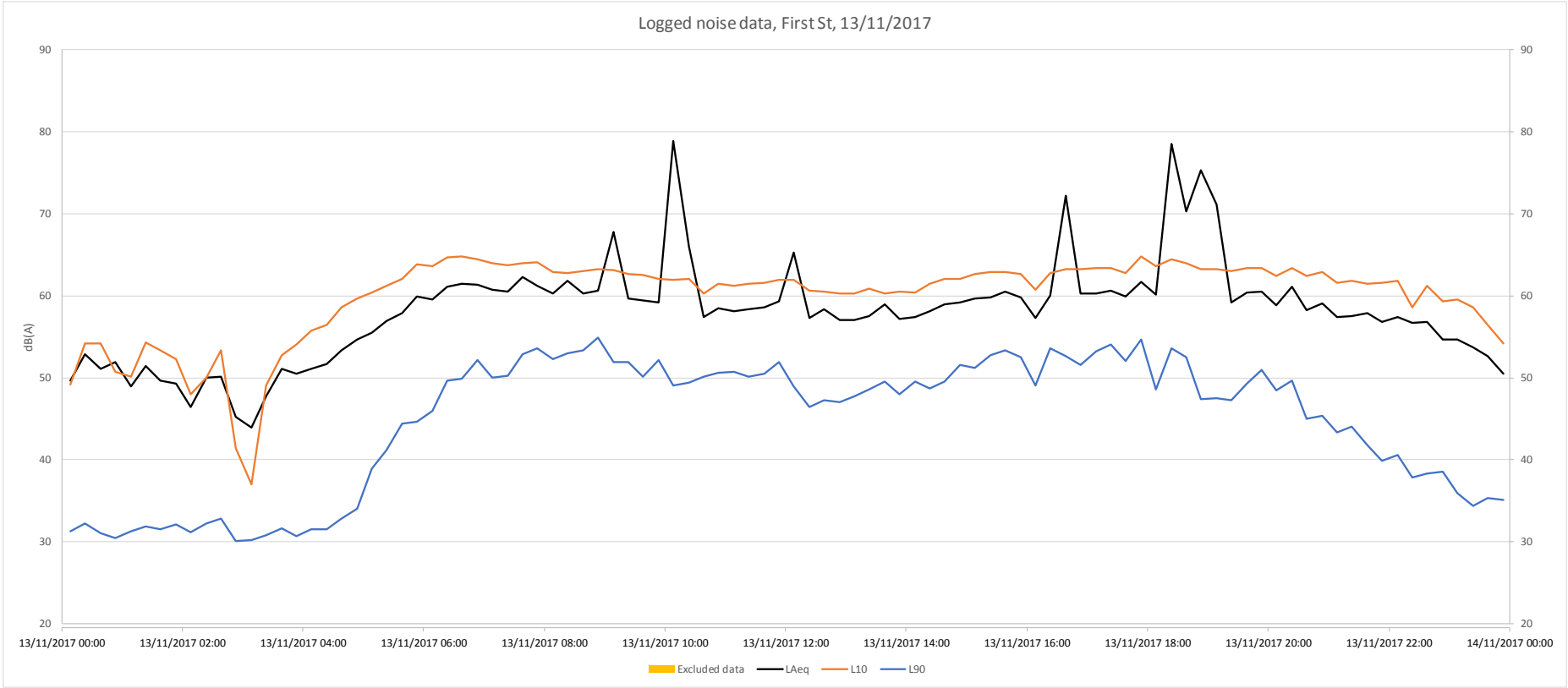
12/11/2017 20:00
12/11/2017 22:00
13/11/2017 00:00
Excluded data
LAeq
L10
L90


Logged noise data, First St, 13/11/2017
dB(A)
90
80
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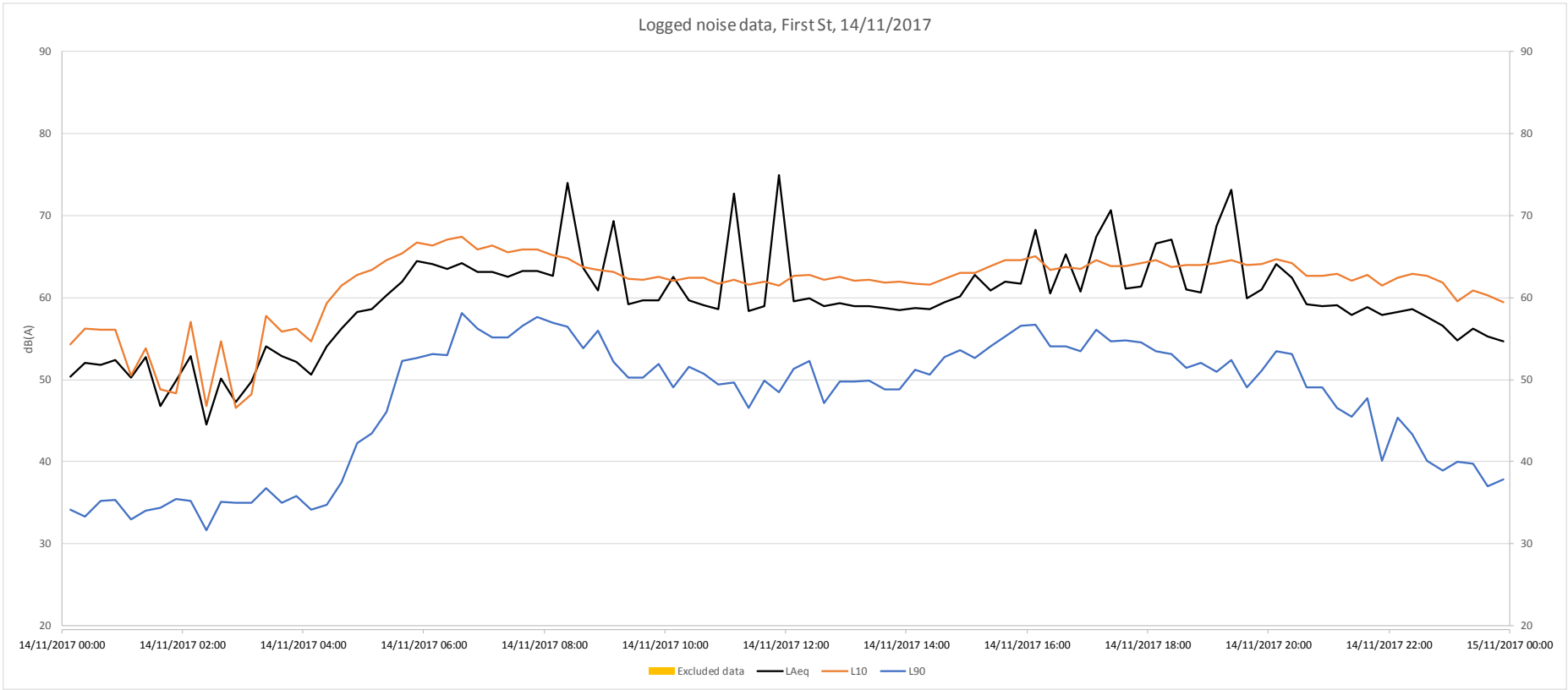
20
13/11/2017 00:00
13/11/2017 02:00
13/11/2017 04:00
13/11/2017 06:00
13/11/2017 08:00
13/11/2017 10:00
13/11/2017 12:00
13/11/2017 14:00
13/11/2017 16:00
13/11/2017 18:00
13/11/2017 20:00
13/11/2017 22:00
14/11/2017 00:00
Excluded data
LAeq
L10
L90


Logged noise data, First St, 14/11/2017
dB(A)
90
80
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20
14/11/2017 00:00
14/11/2017 02:00
14/11/2017 04:00
14/11/2017 06:00
14/11/2017 08:00
14/11/2017 10:00
14/11/2017 12:00
14/11/2017 14:00
14/11/2017 16:00
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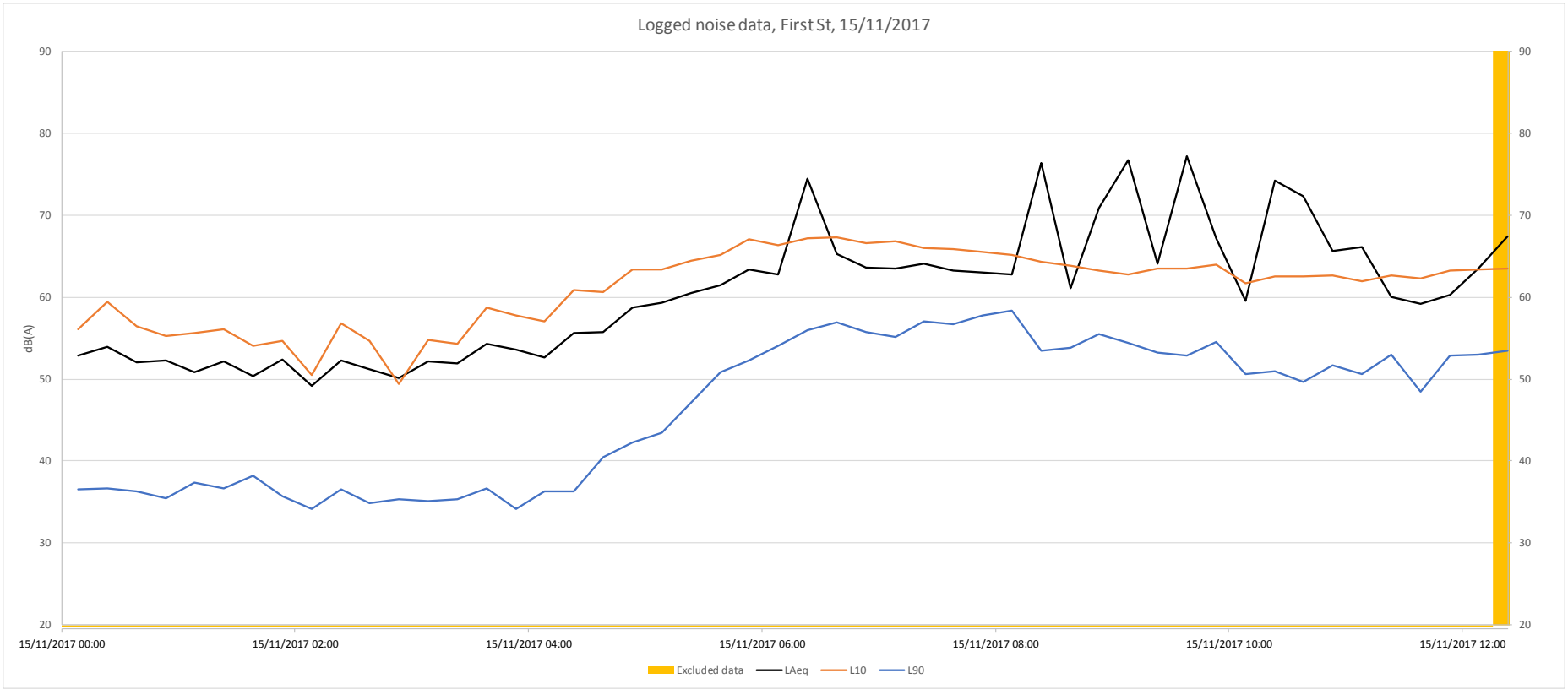
14/11/2017 20:00
14/11/2017 22:00
15/11/2017 00:00
Excluded data
LAeq
L10
L90


Logged noise data, First St, 15/11/2017
dB(A)
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80
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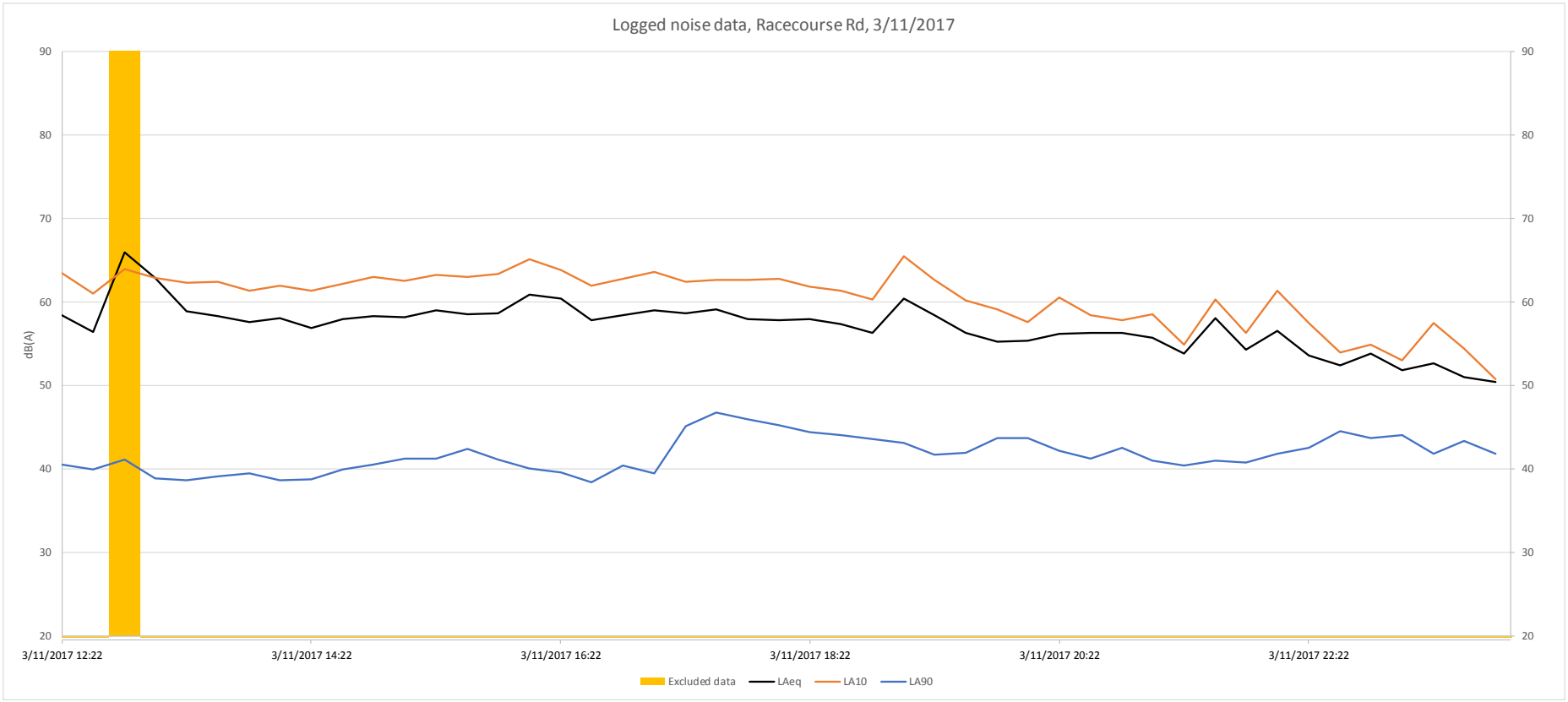
15/11/2017 00:00
15/11/2017 02:00
15/11/2017 04:00
15/11/2017 06:00
15/11/2017 08:00
15/11/2017 10:00
15/11/2017 12:00
Excluded data
LAeq
L10
L90


Logged noise data, Racecourse Rd, 3/11/2017
dB(A)
90
80
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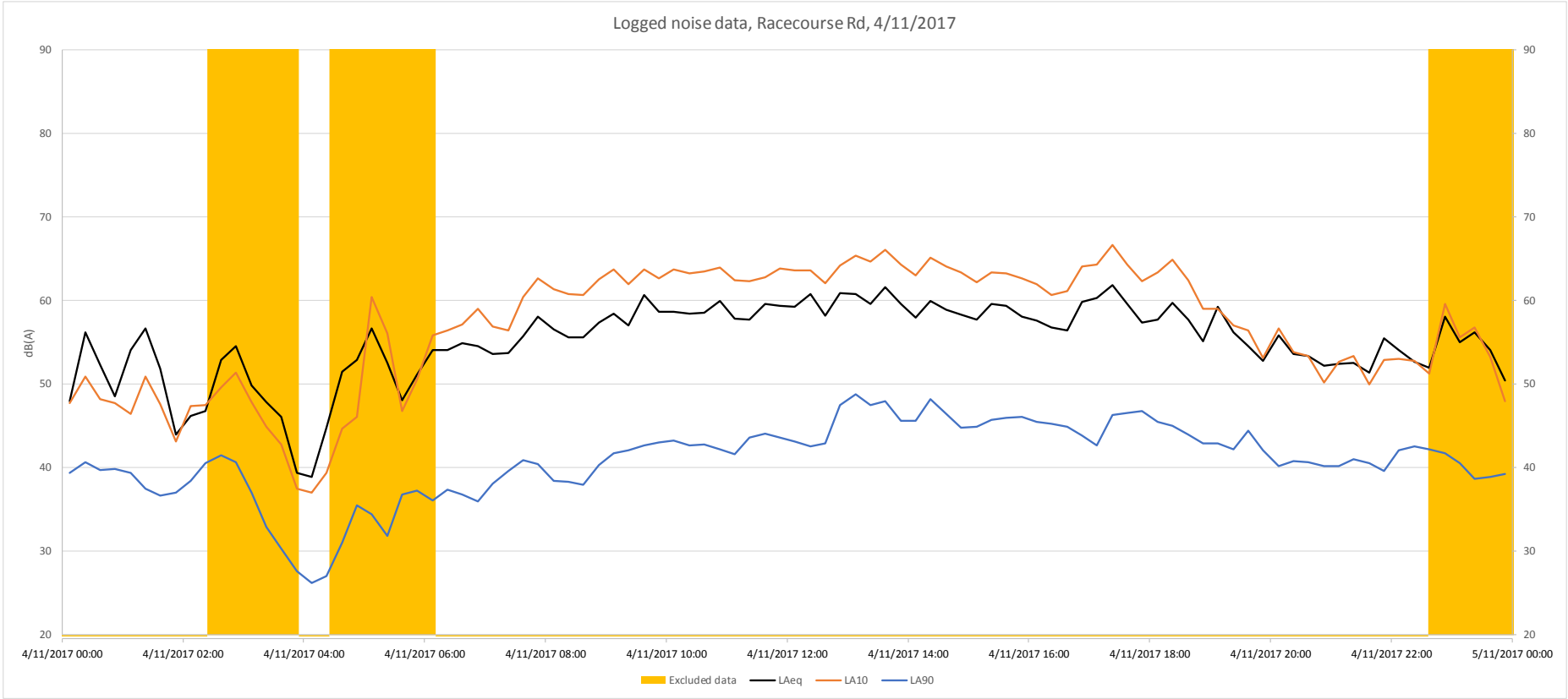
3/11/2017 12:22
3/11/2017 14:22
3/11/2017 16:22
3/11/2017 18:22
3/11/2017 20:22
3/11/2017 22:22
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 4/11/2017
dB(A)
90
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4/11/2017 00:00
4/11/2017 02:00
4/11/2017 04:00
4/11/2017 06:00
4/11/2017 08:00
4/11/2017 10:00
4/11/2017 12:00
4/11/2017 14:00
4/11/2017 16:00
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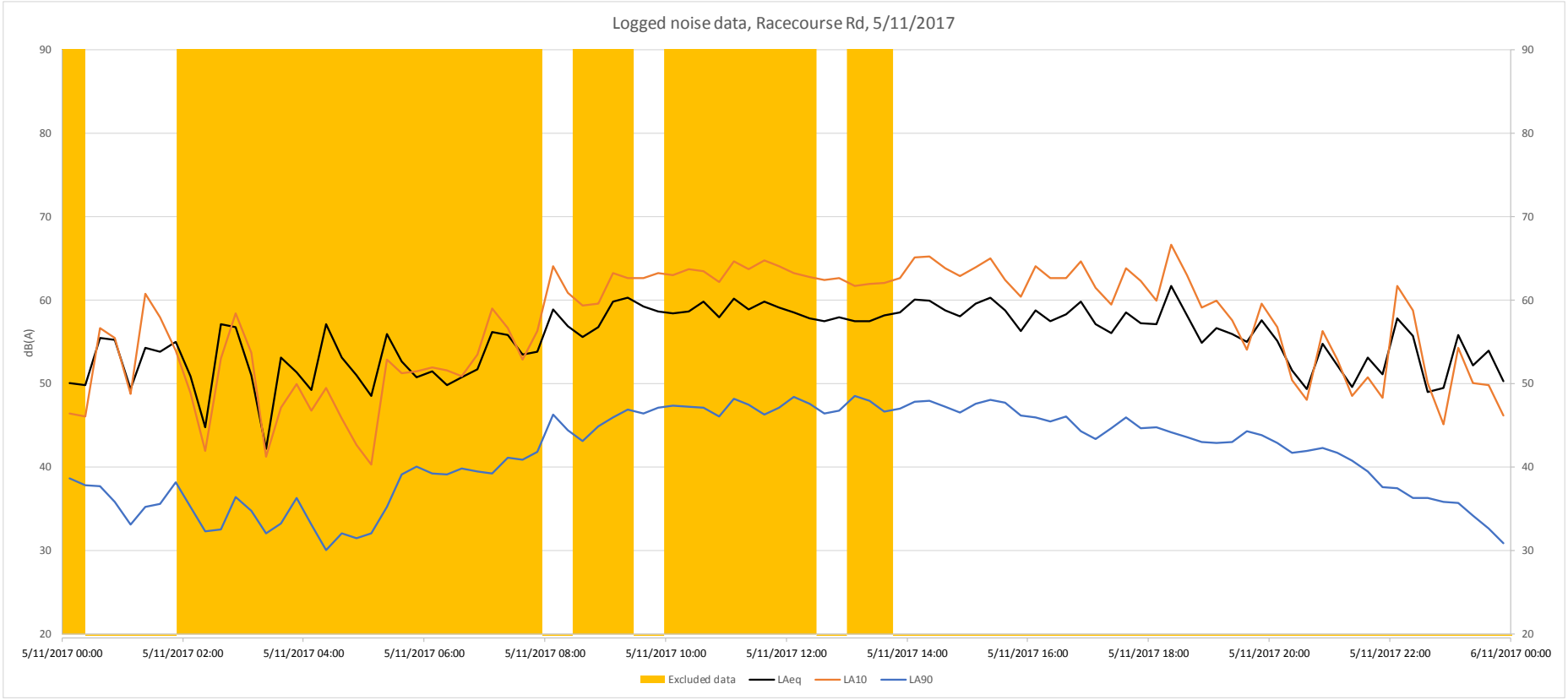
4/11/2017 20:00
4/11/2017 22:00
5/11/2017 00:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 5/11/2017
dB(A)
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5/11/2017 00:00
5/11/2017 02:00
5/11/2017 04:00
5/11/2017 06:00
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5/11/2017 14:00
5/11/2017 16:00
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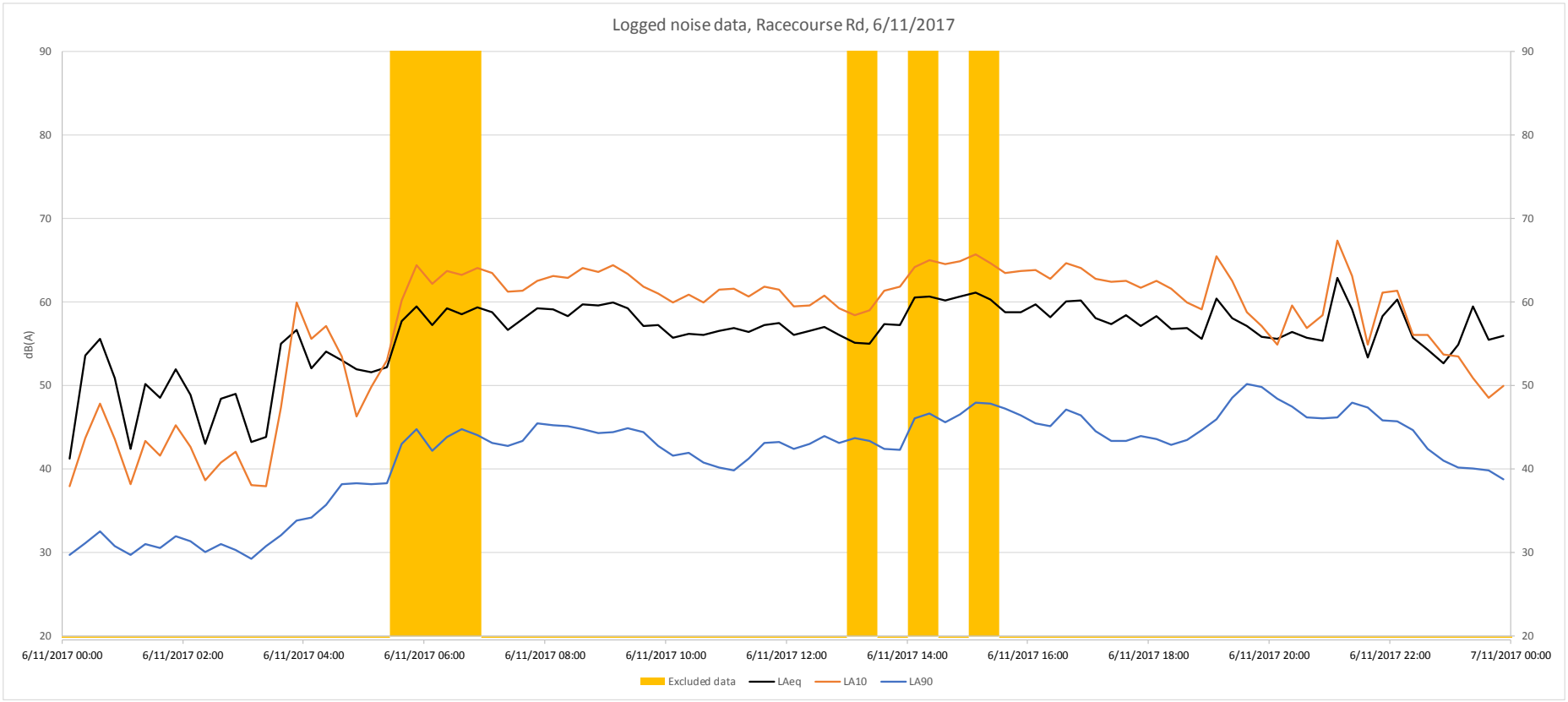
5/11/2017 22:00
6/11/2017 00:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 6/11/2017
dB(A)
90
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6/11/2017 00:00
6/11/2017 02:00
6/11/2017 04:00
6/11/2017 06:00
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6/11/2017 10:00
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6/11/2017 16:00
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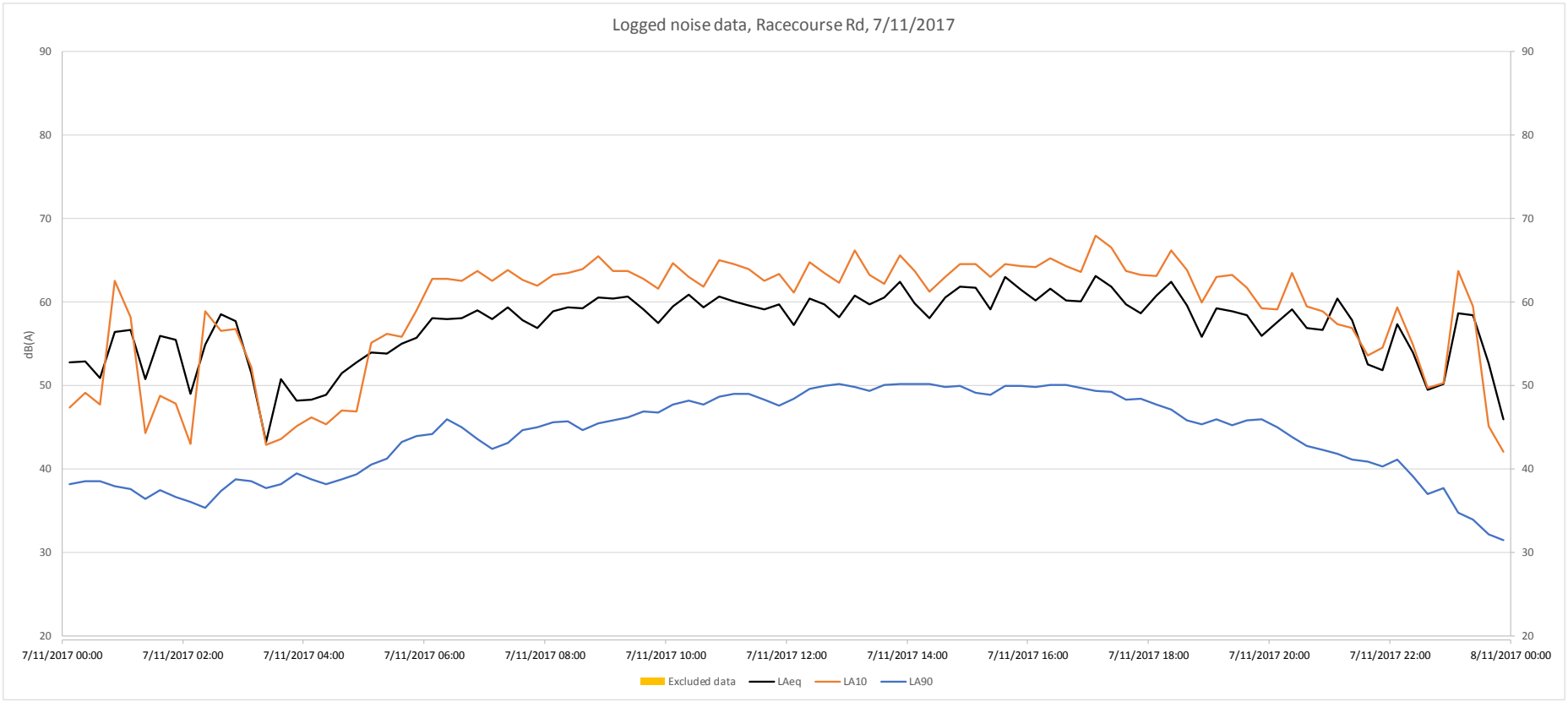
6/11/2017 20:00
6/11/2017 22:00
7/11/2017 00:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 7/11/2017
dB(A)
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7/11/2017 00:00
7/11/2017 02:00
7/11/2017 04:00
7/11/2017 06:00
7/11/2017 08:00
7/11/2017 10:00
7/11/2017 12:00
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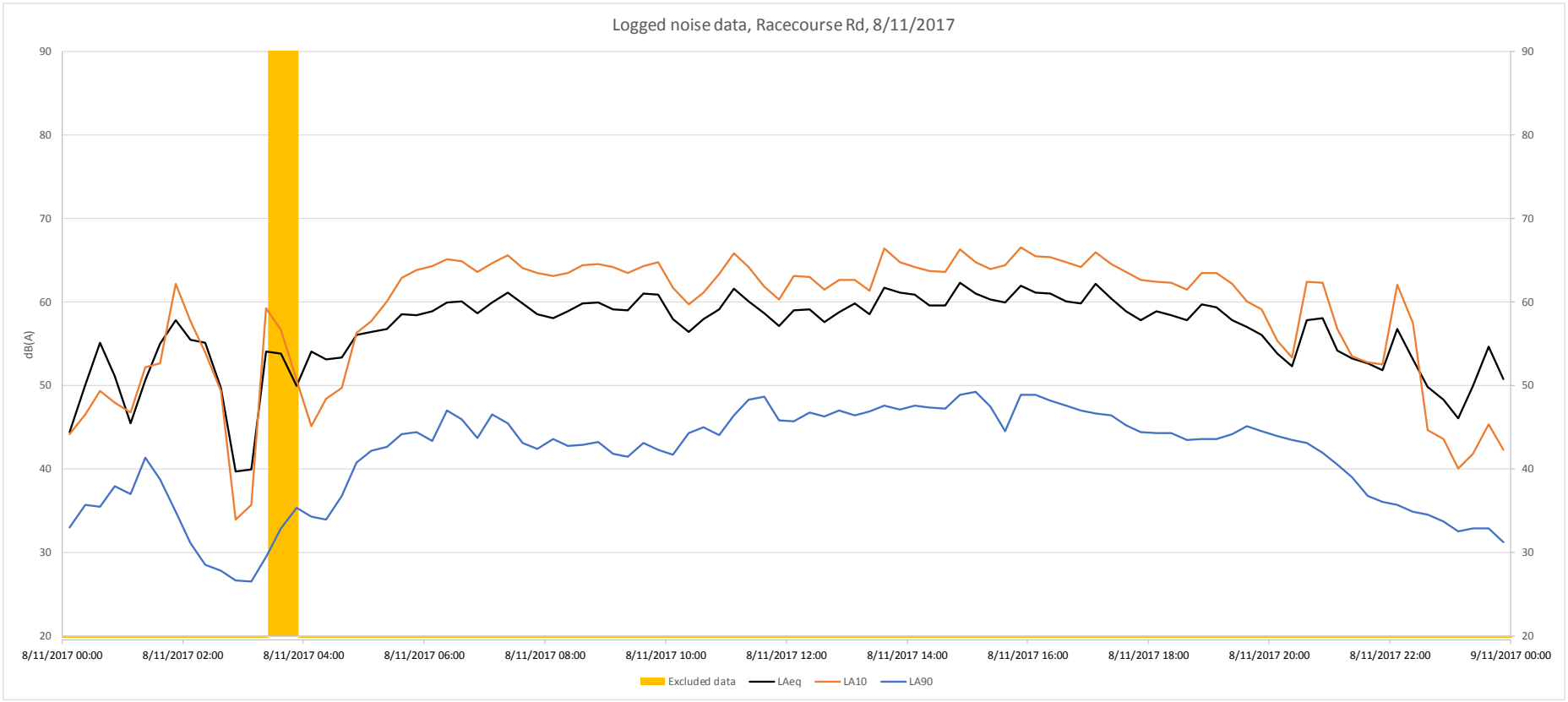
7/11/2017 16:00
7/11/2017 18:00
7/11/2017 20:00
7/11/2017 22:00
8/11/2017 00:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 8/11/2017
dB(A)
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8/11/2017 00:00
8/11/2017 02:00
8/11/2017 04:00
8/11/2017 06:00
8/11/2017 08:00
8/11/2017 10:00
8/11/2017 12:00
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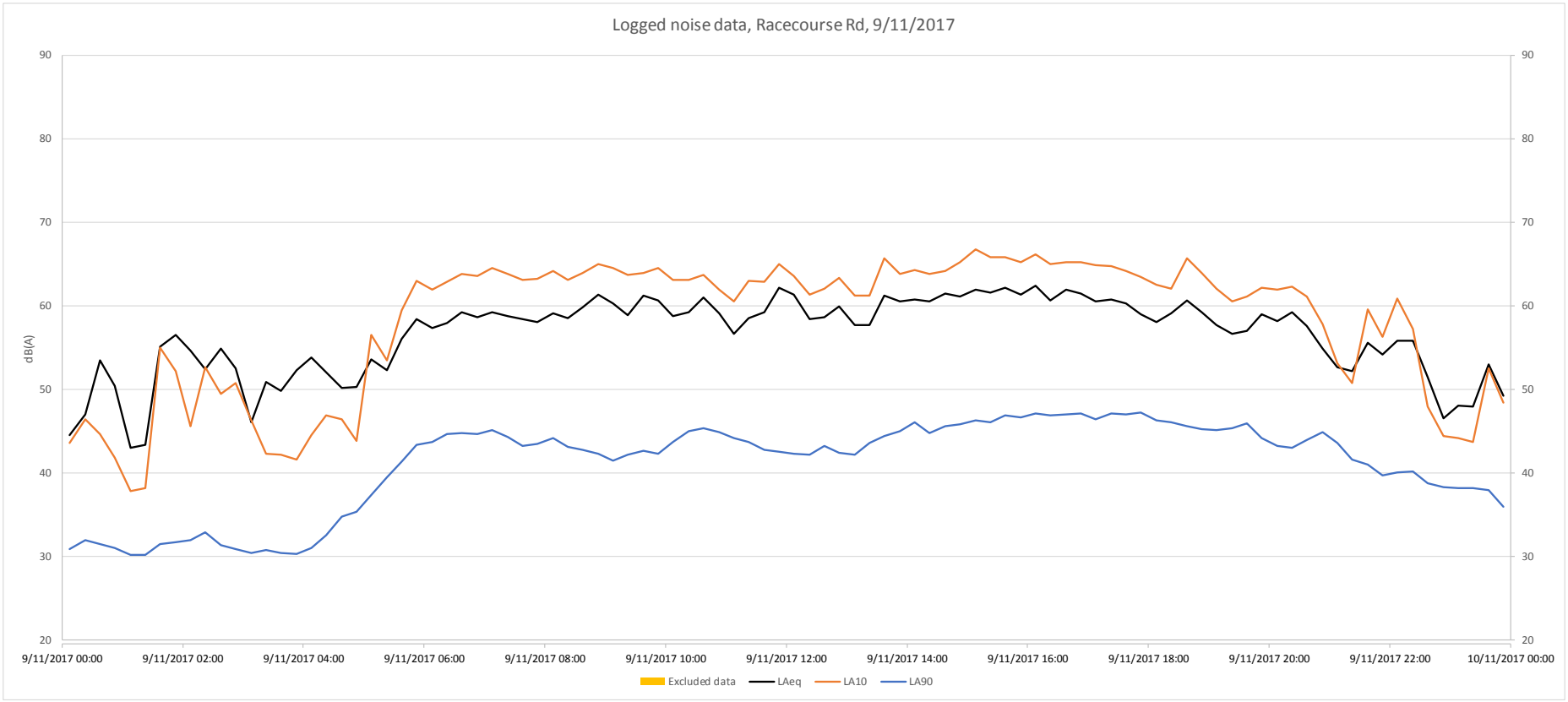
8/11/2017 16:00
8/11/2017 18:00
8/11/2017 20:00
8/11/2017 22:00
9/11/2017 00:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 9/11/2017
dB(A)
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20
9/11/2017 00:00
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9/11/2017 04:00
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9/11/2017 08:00
9/11/2017 10:00
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9/11/2017 16:00
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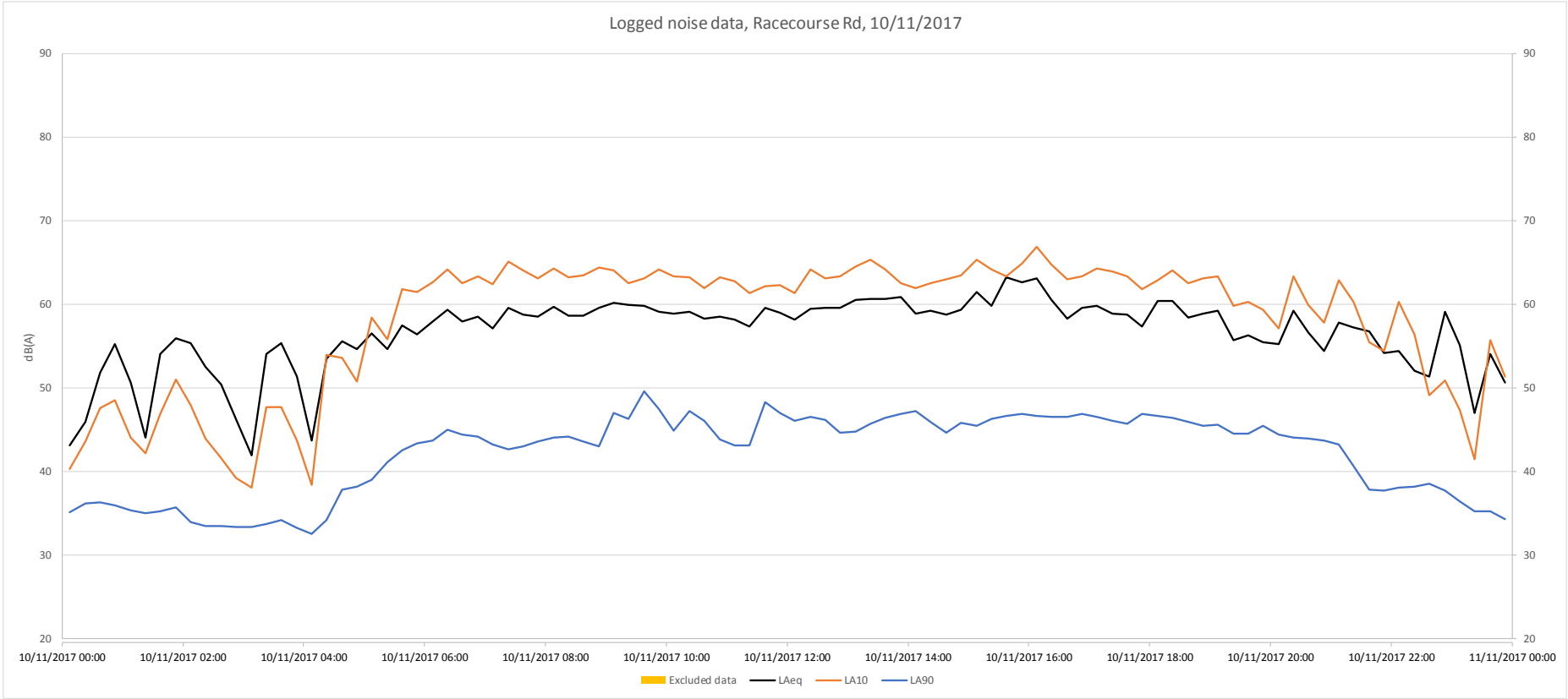
9/11/2017 20:00
9/11/2017 22:00
10/11/2017 00:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 10/11/2017
dB(A)
90
80
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20
10/11/2017 00:00
10/11/2017 02:00
10/11/2017 04:00
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10/11/2017 16:00
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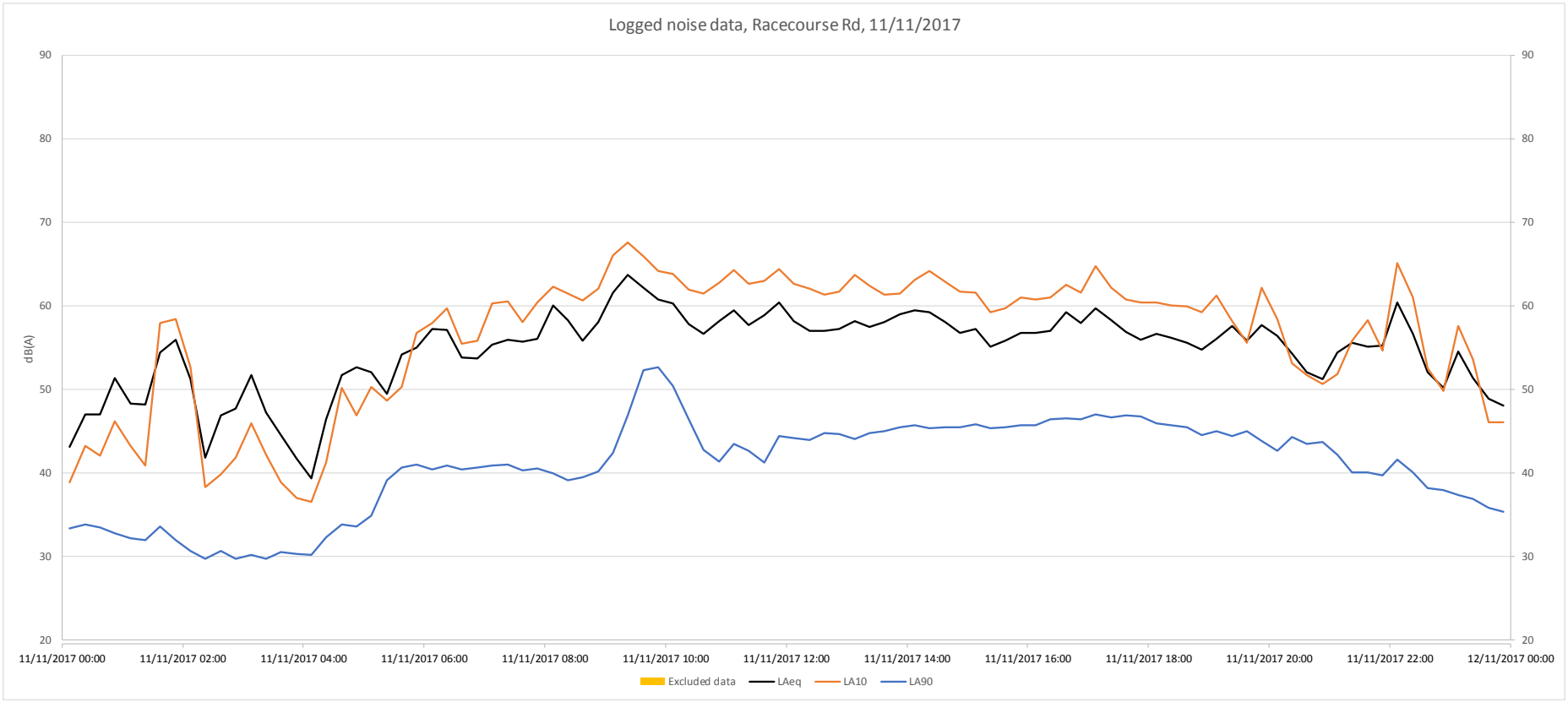
10/11/2017 20:00
10/11/2017 22:00
11/11/2017 00:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 11/11/2017
dB(A)
90
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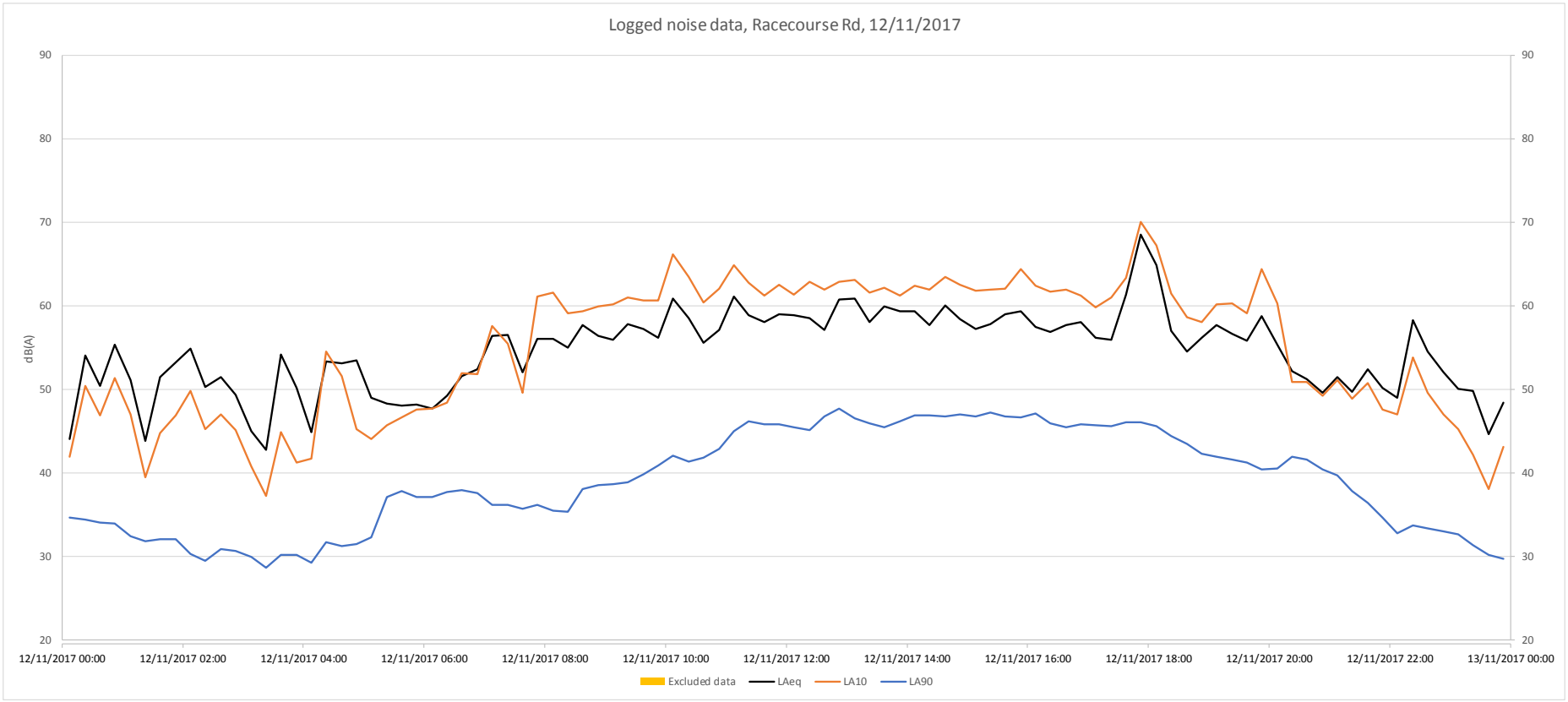
11/11/2017 00:00
11/11/2017 02:00
11/11/2017 04:00
11/11/2017 06:00
11/11/2017 08:00
11/11/2017 10:00
11/11/2017 12:00
11/11/2017 14:00
11/11/2017 16:00
11/11/2017 18:00
11/11/2017 20:00
11/11/2017 22:00
12/11/2017 00:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 12/11/2017
dB(A)
90
80
70
60
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40
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20
12/11/2017 00:00
12/11/2017 02:00
12/11/2017 04:00
12/11/2017 06:00
12/11/2017 08:00
12/11/2017 10:00
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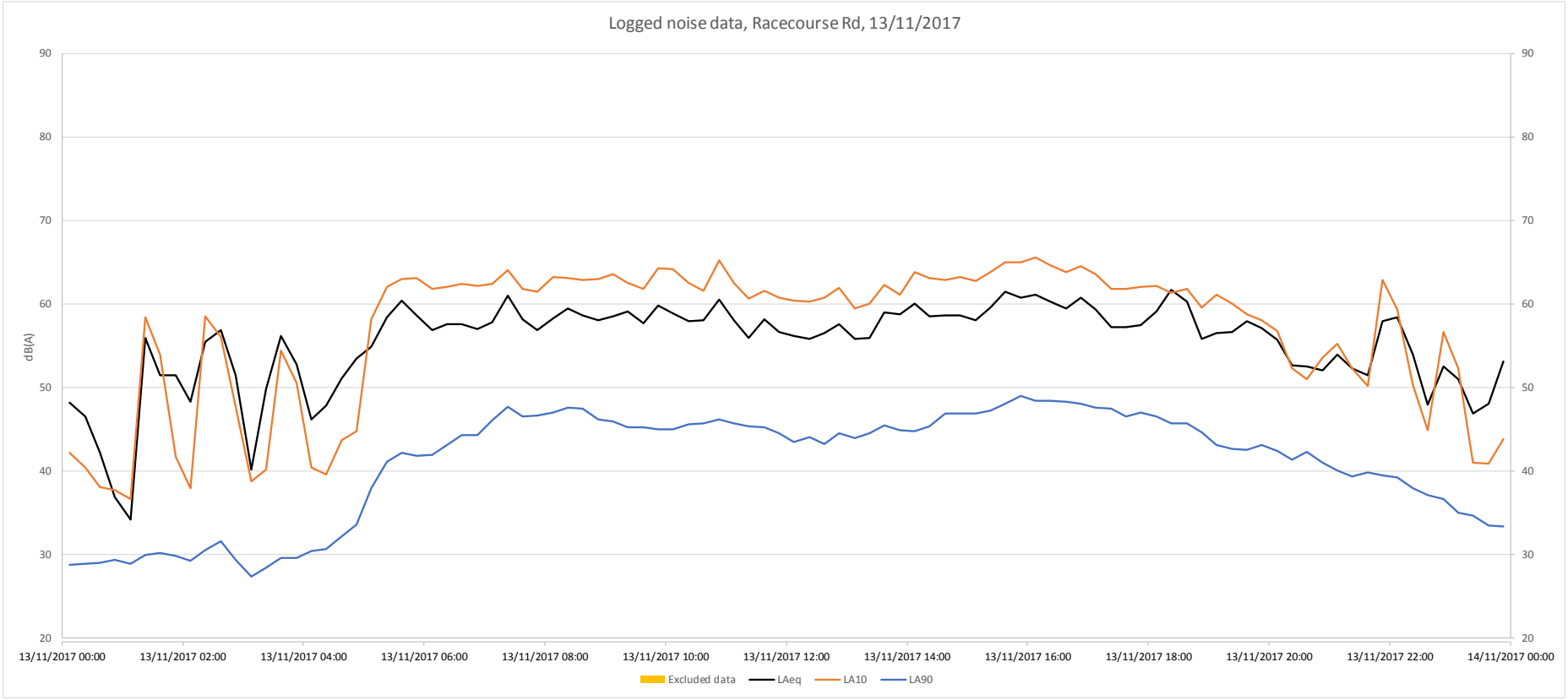
12/11/2017 14:00
12/11/2017 16:00
12/11/2017 18:00
12/11/2017 20:00
12/11/2017 22:00
13/11/2017 00:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 13/11/2017
dB(A)
90
80
70
60
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40
30
20
13/11/2017 00:00
13/11/2017 02:00
13/11/2017 04:00
13/11/2017 06:00
13/11/2017 08:00
13/11/2017 10:00
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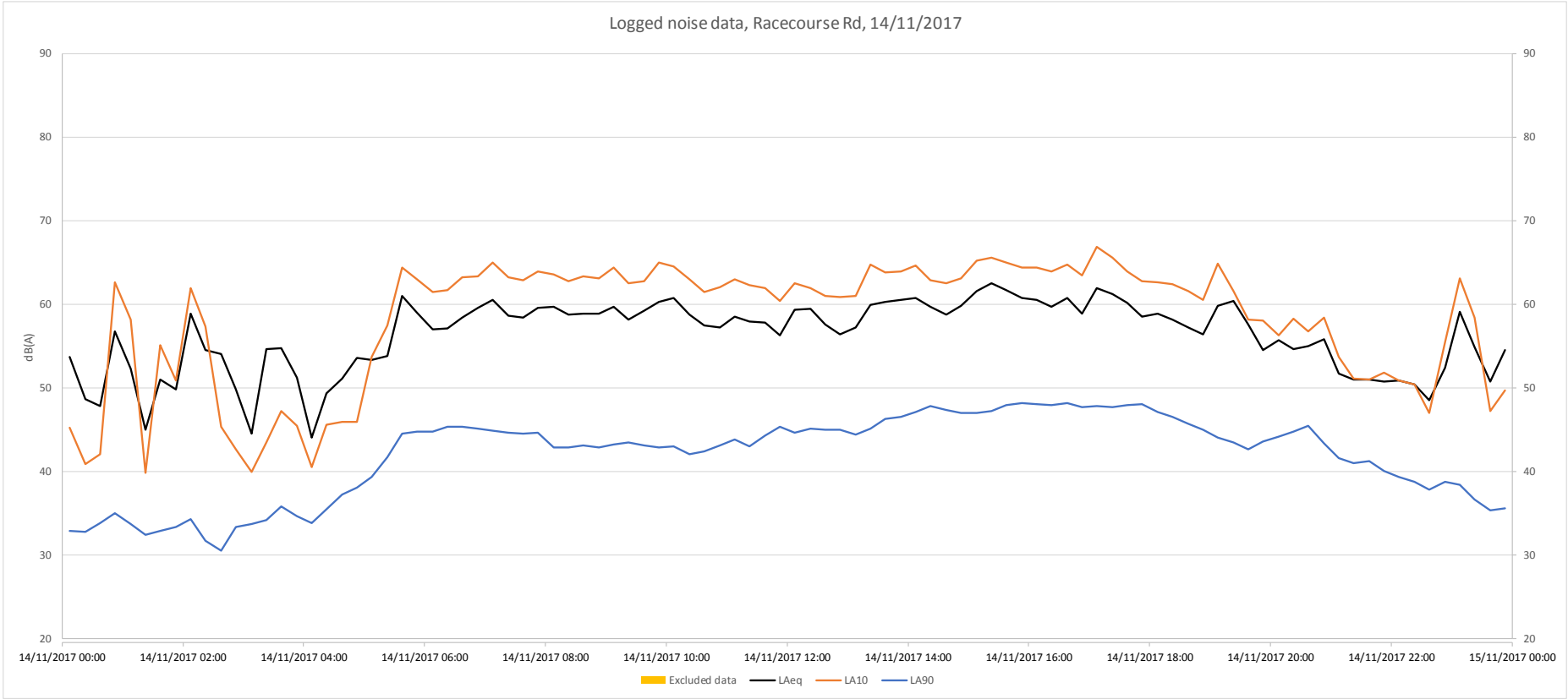
13/11/2017 16:00
13/11/2017 18:00
13/11/2017 20:00
13/11/2017 22:00
14/11/2017 00:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 14/11/2017
dB(A)
90
80
70
60
50
40
30
20
14/11/2017 00:00
14/11/2017 02:00
14/11/2017 04:00
14/11/2017 06:00
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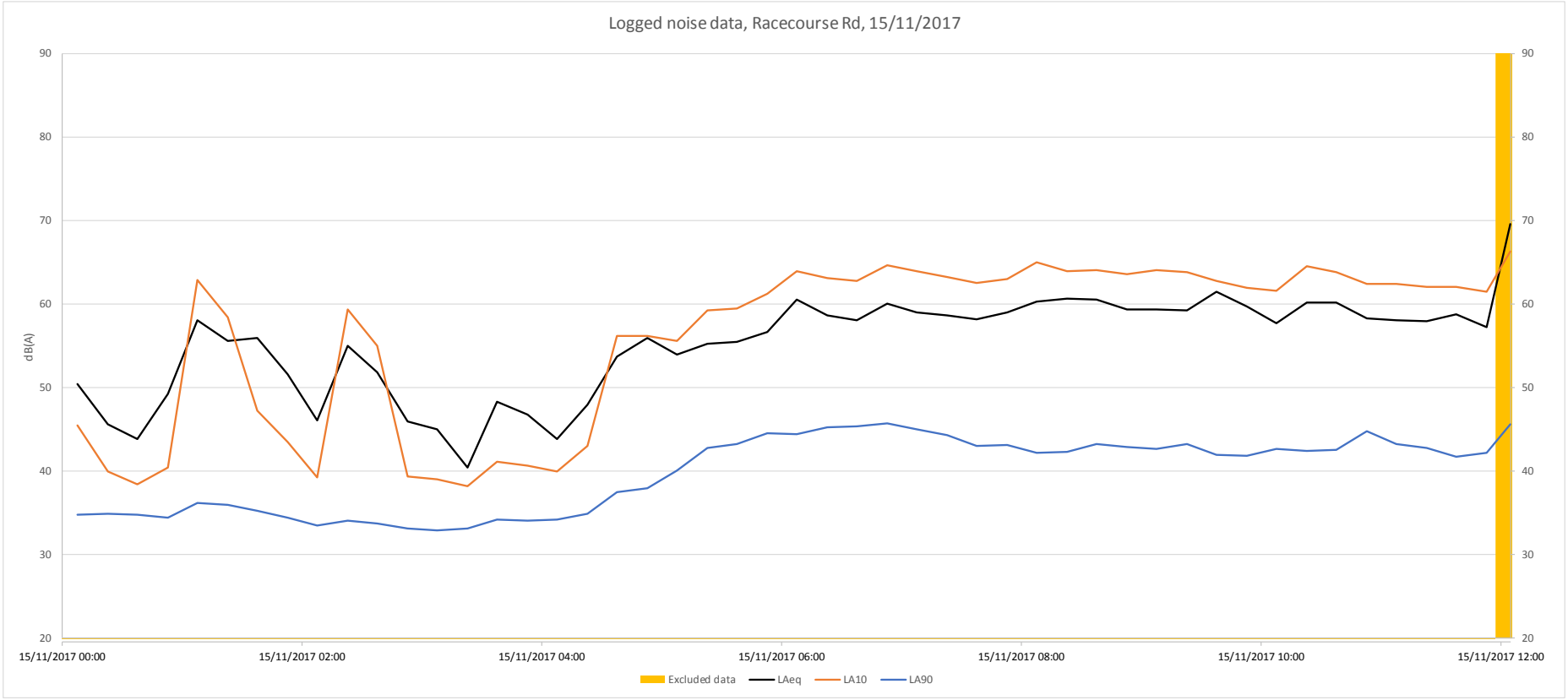
14/11/2017 14:00
14/11/2017 16:00
14/11/2017 18:00
14/11/2017 20:00
14/11/2017 22:00
15/11/2017 00:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Racecourse Rd, 15/11/2017
dB(A)
90
80
70
60
50
40
30
20
15/11/2017 00:00
15/11/2017 02:00
15/11/2017 04:00
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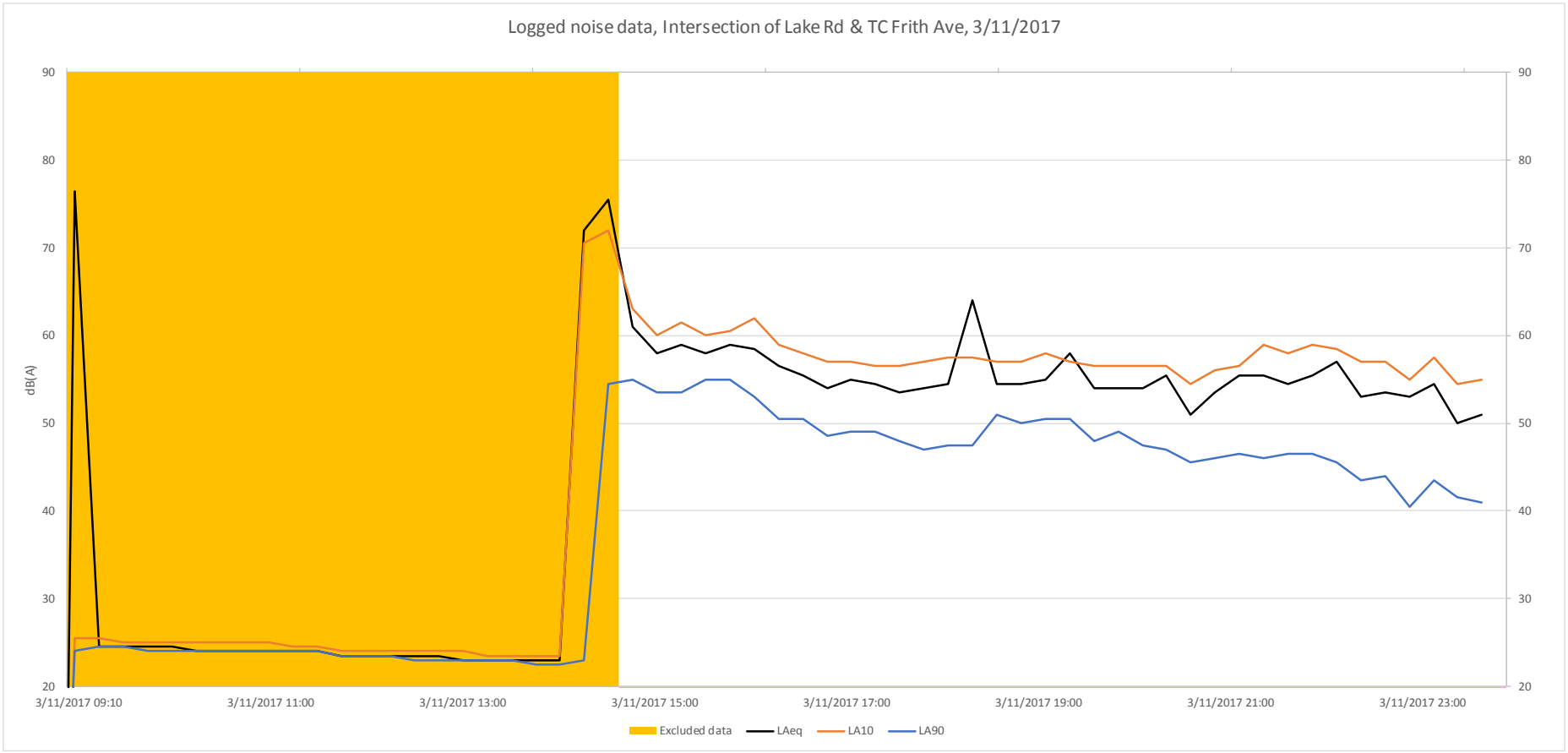
15/11/2017 08:00
15/11/2017 10:00
15/11/2017 12:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Intersection of Lake Rd & TC Frith Ave, 3/11/2017
dB(A)
90
80
70
60
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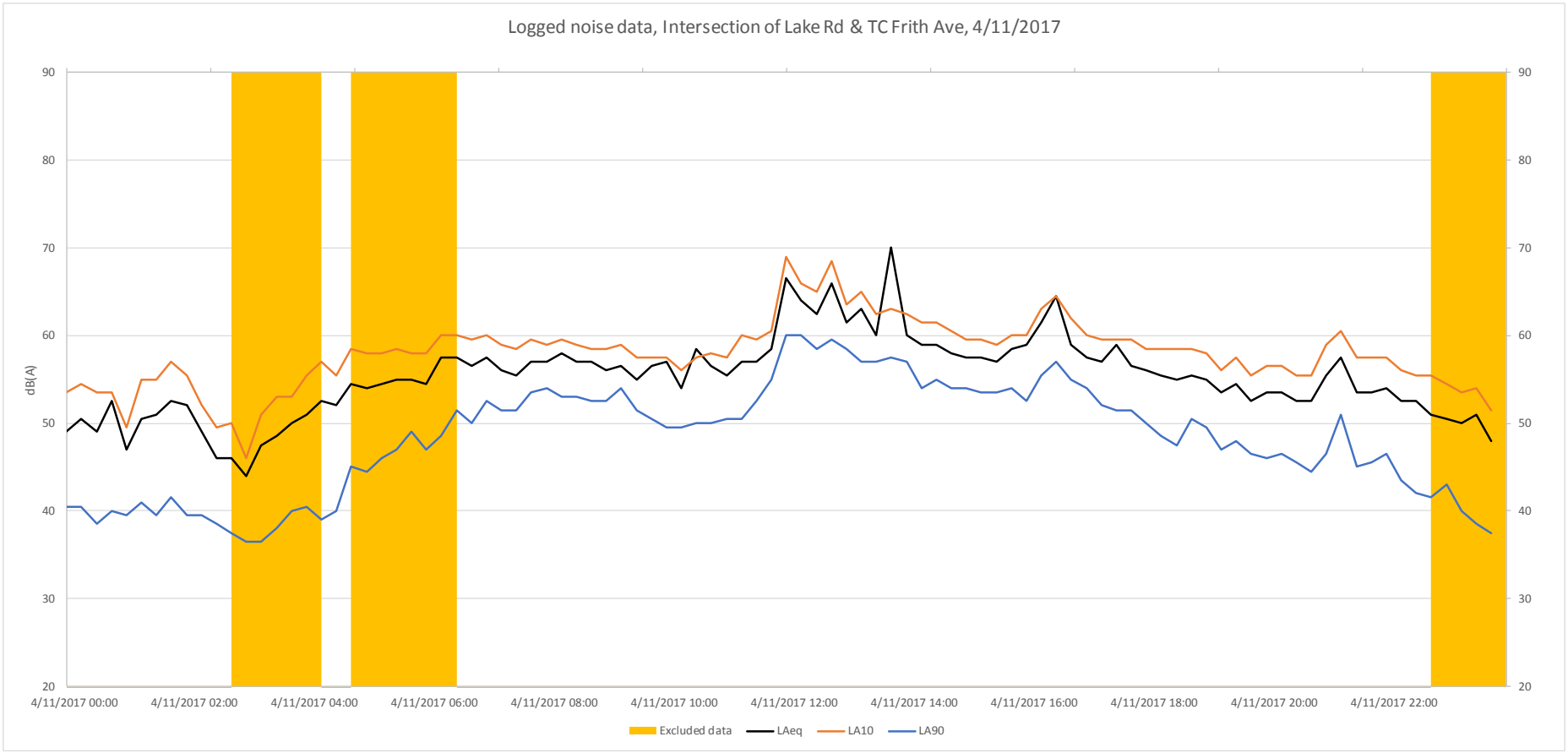
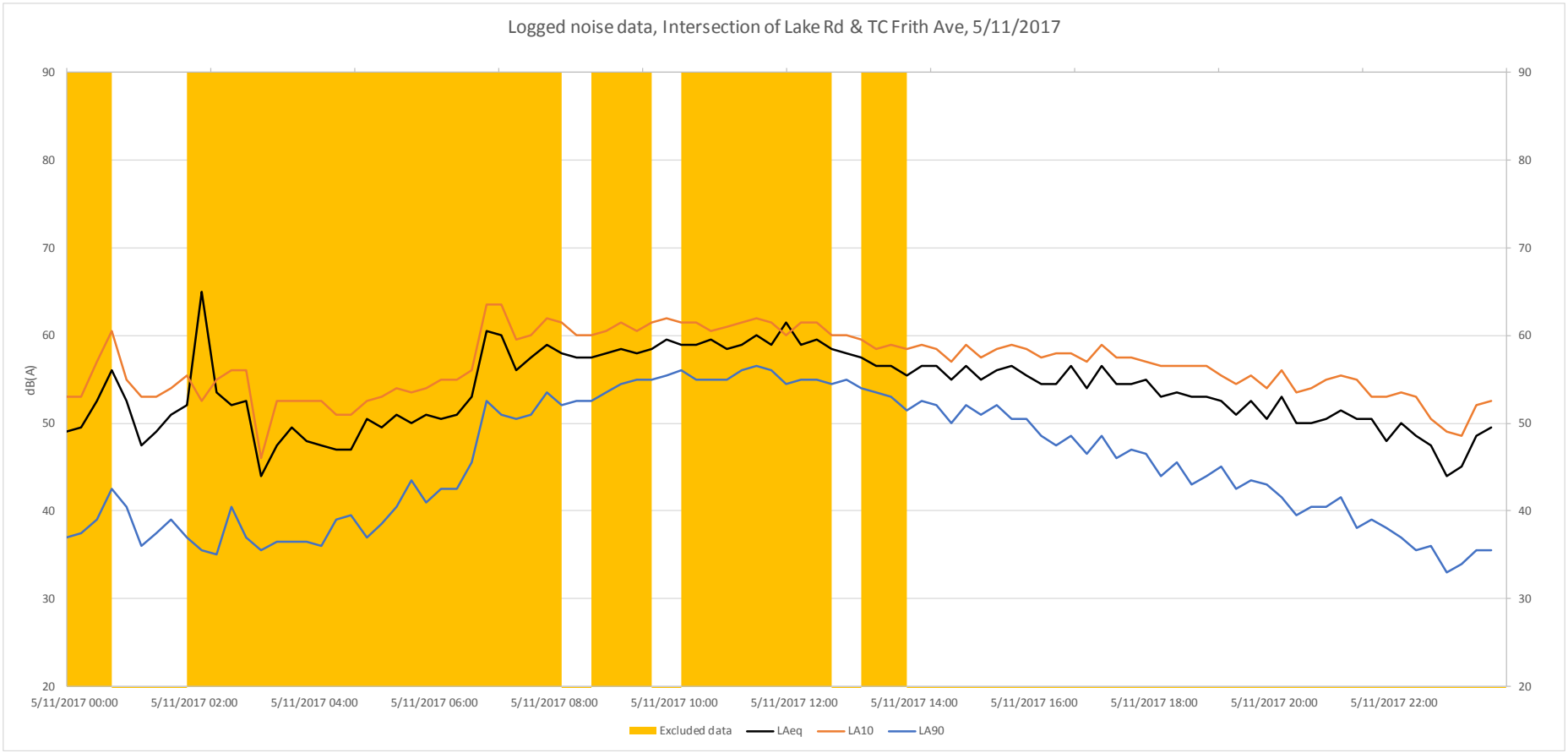
40
30
20
3/11/2017 09:10
3/11/2017 11:00
3/11/2017 13:00
3/11/2017 15:00
3/11/2017 17:00
3/11/2017 19:00
3/11/2017 21:00
3/11/2017 23:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Intersection of Lake Rd & TC Frith Ave, 4/11/2017
dB(A)
90
80
70
60
50
40
30
20
4/11/2017 00:00
4/11/2017 02:00
4/11/2017 04:00
4/11/2017 06:00
4/11/2017 08:00
4/11/2017 10:00
4/11/2017 12:00
4/11/2017 14:00
4/11/2017 16:00
4/11/2017 18:00
4/11/2017 20:00
4/11/2017 22:00
Excluded data
LAeq
LA10
LA90


Logged noise data, Intersection of Lake Rd & TC Frith Ave, 5/11/2017
dB(A)
90
80
70
60
50
40
30
20
5/11/2017 00:00
5/11/2017 02:00
5/11/2017 04:00
5/11/2017 06:00
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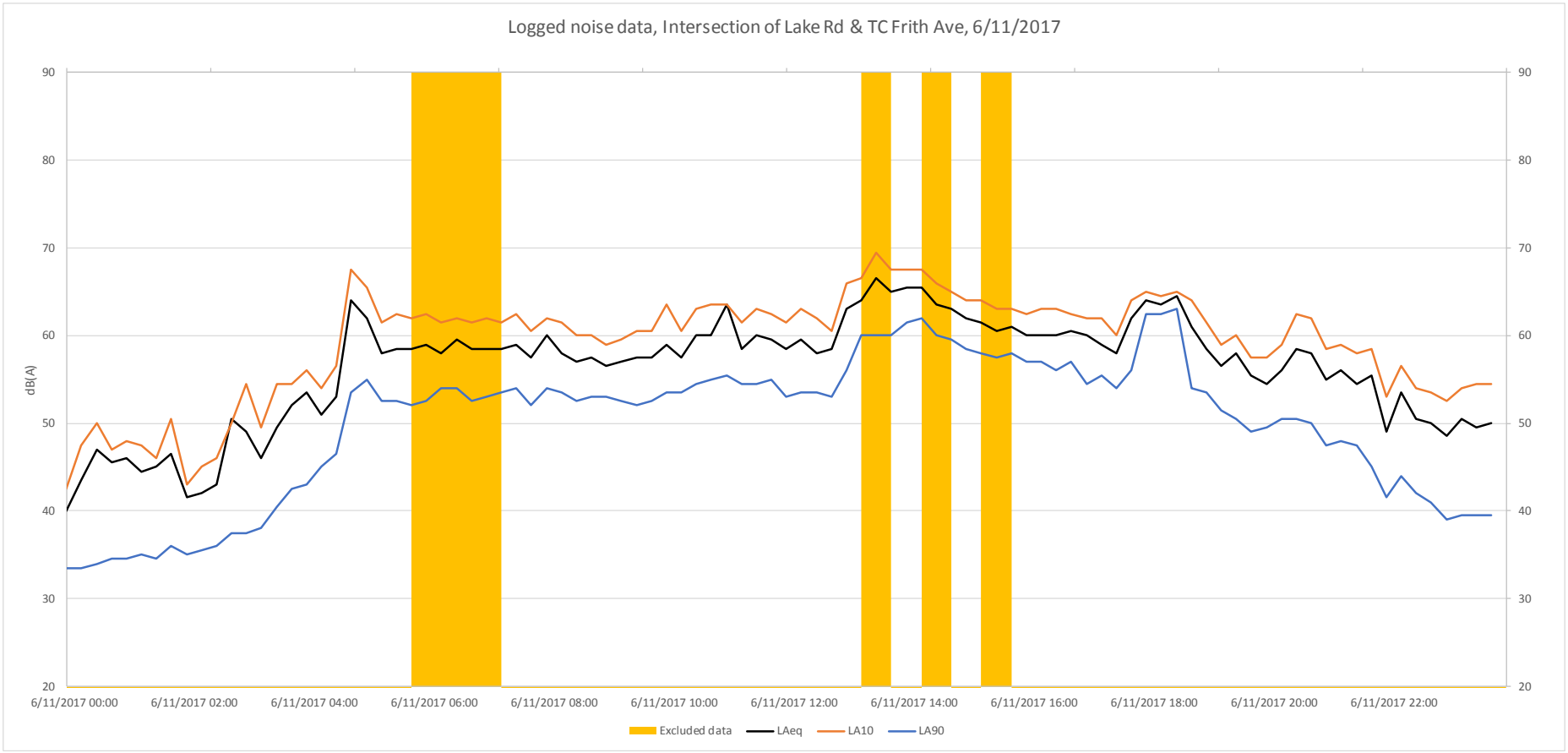
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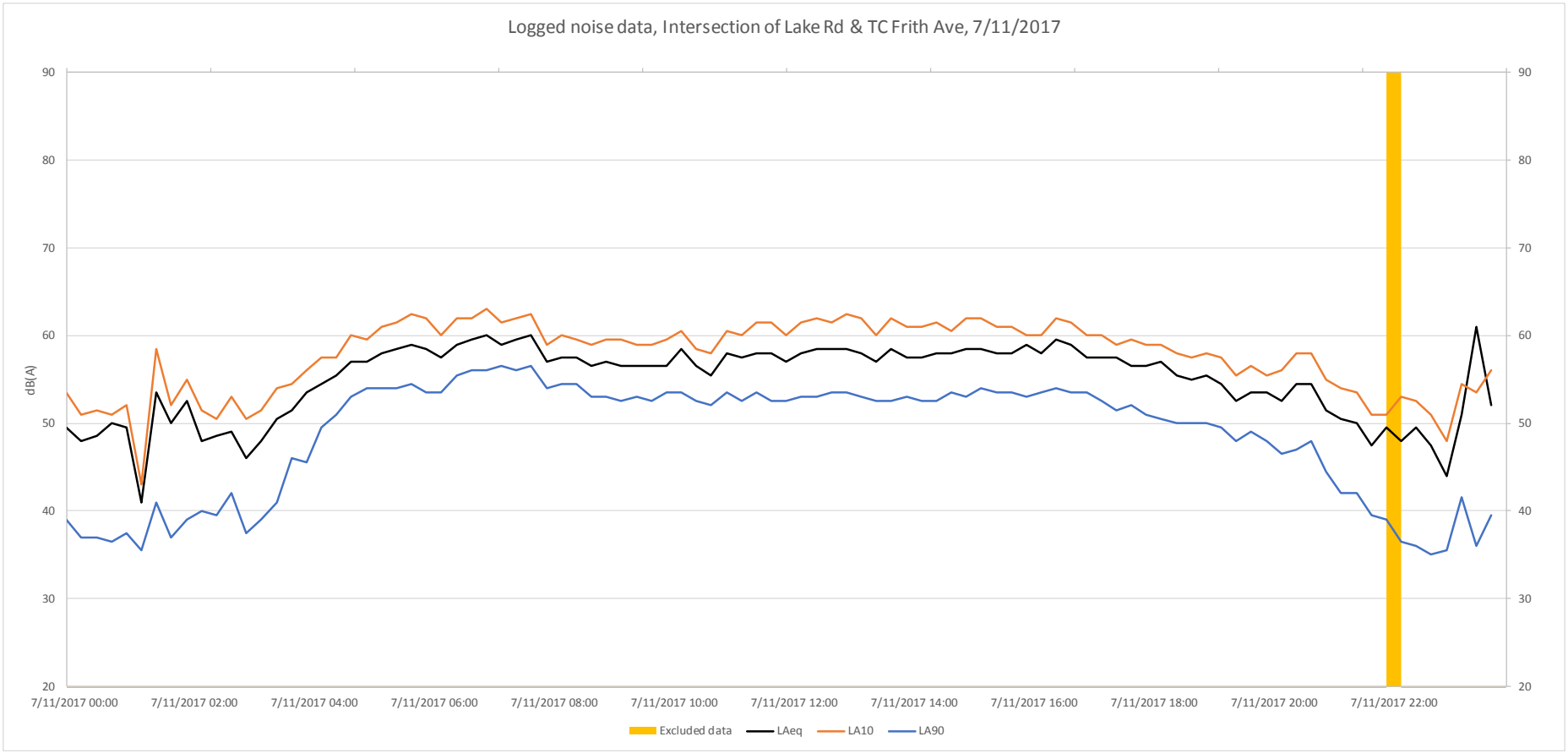
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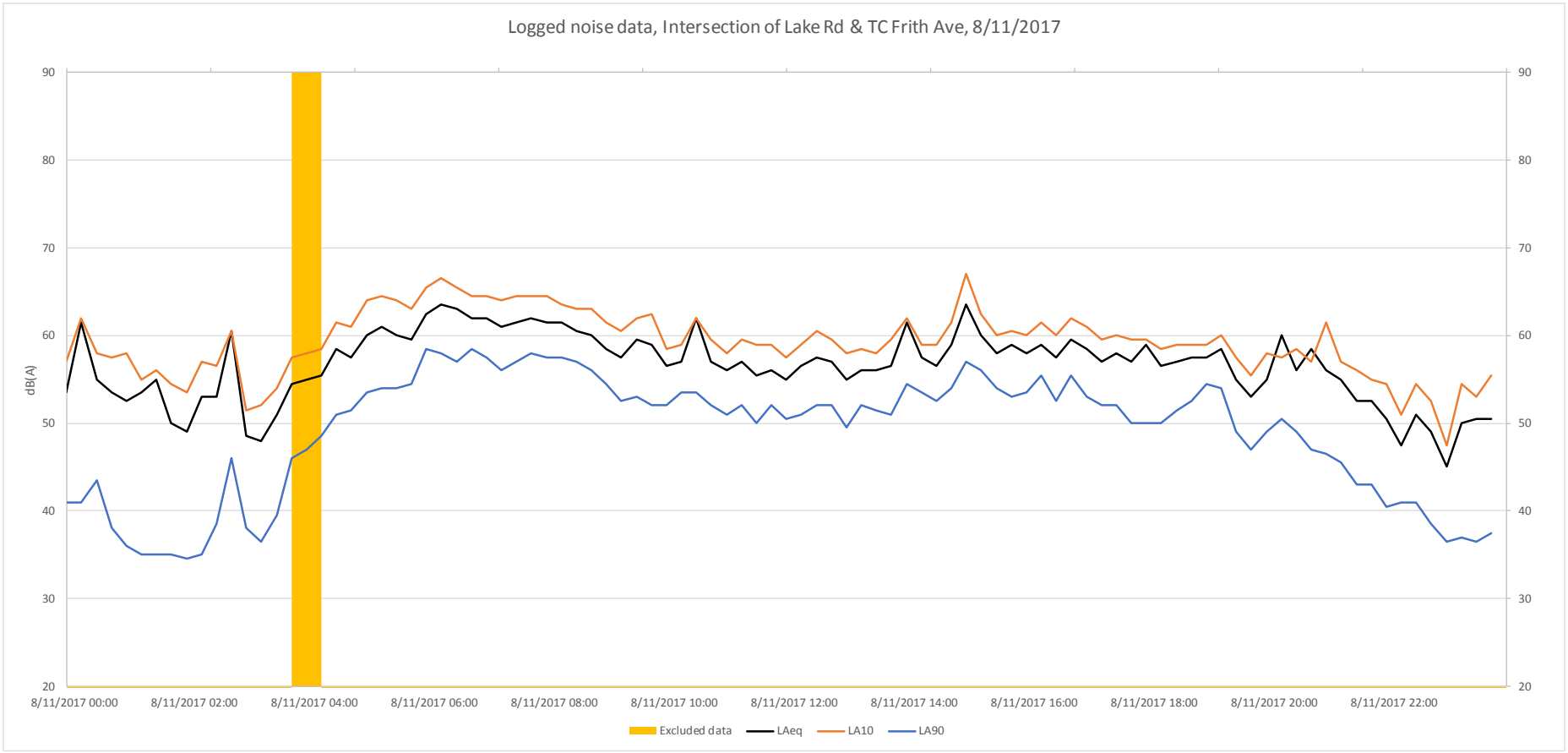
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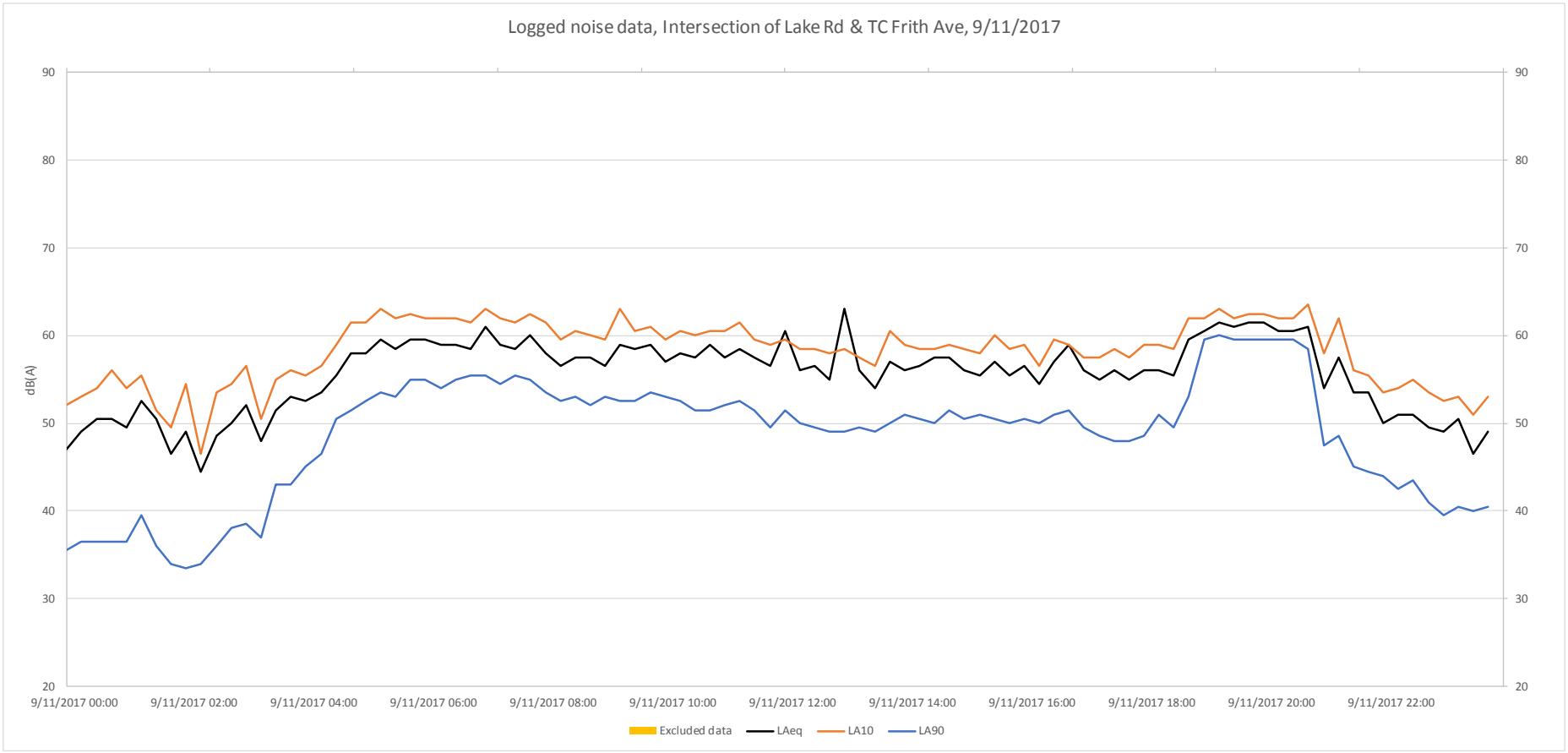
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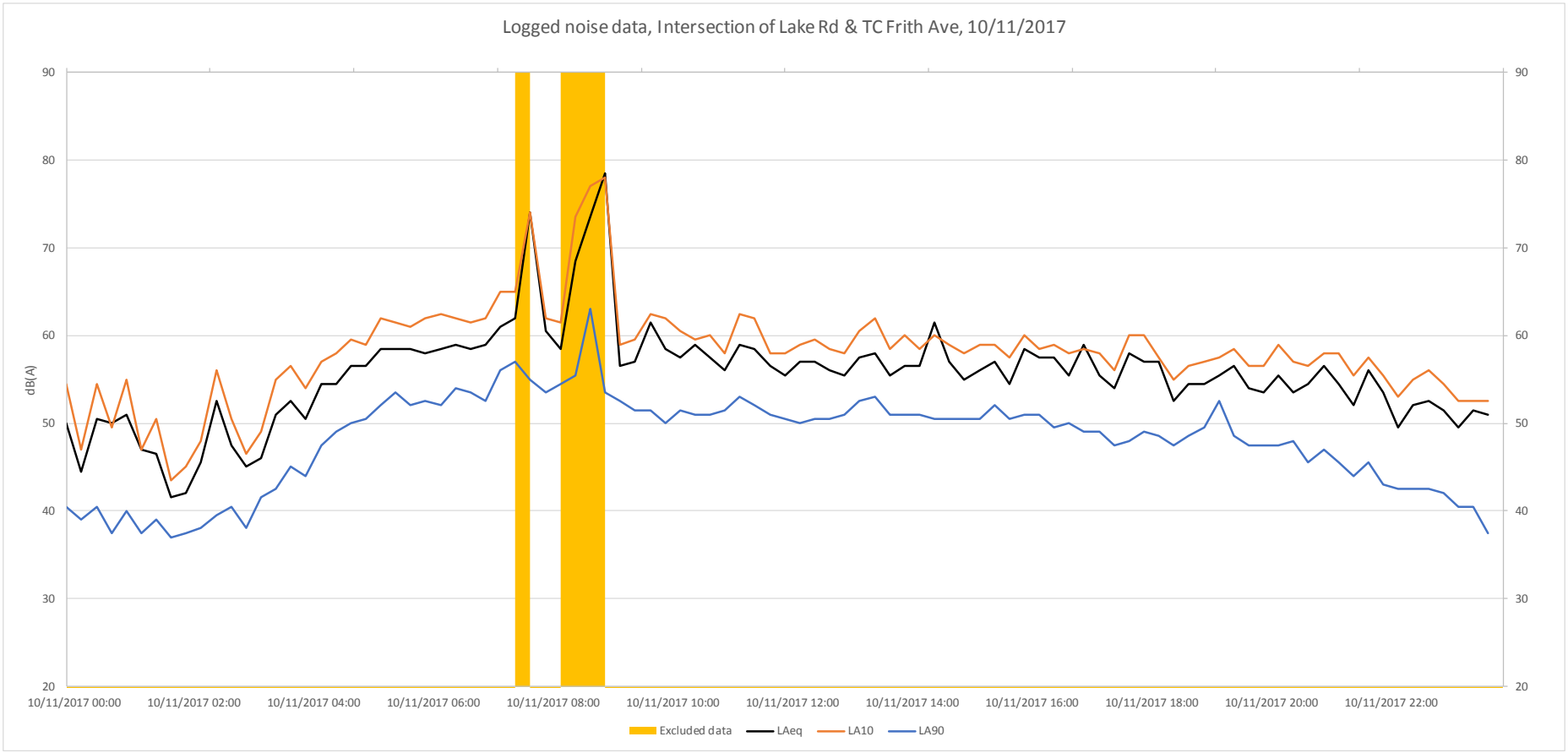
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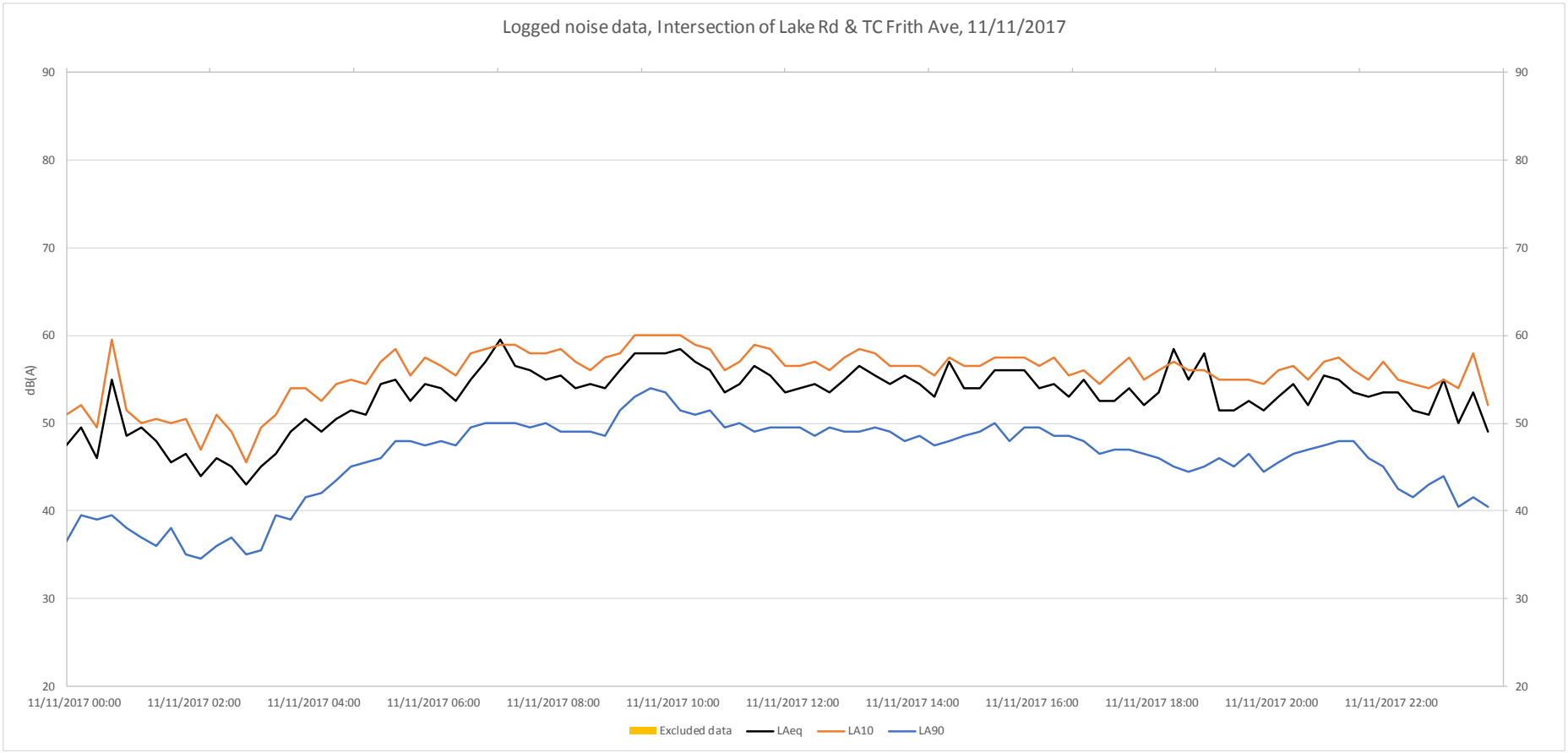
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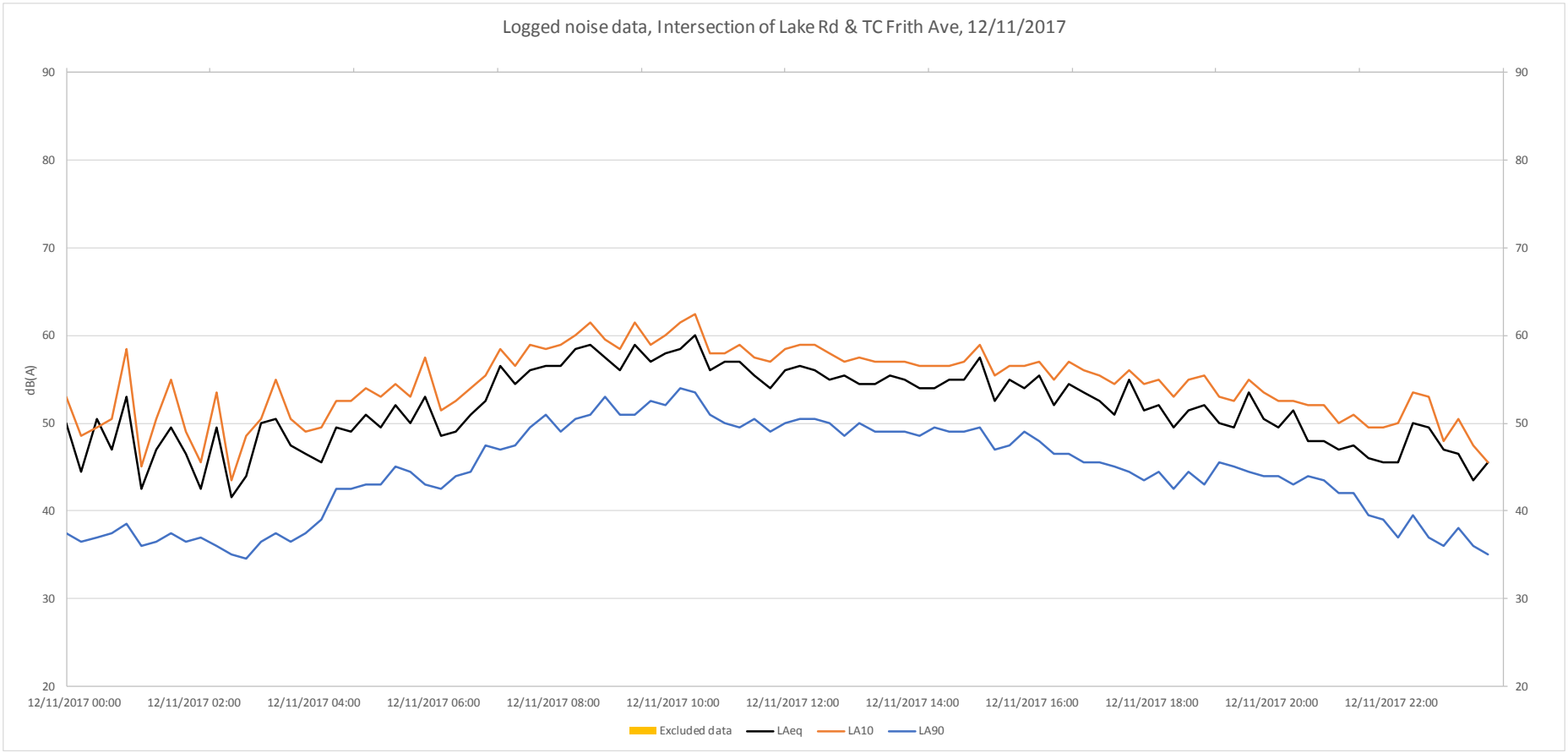
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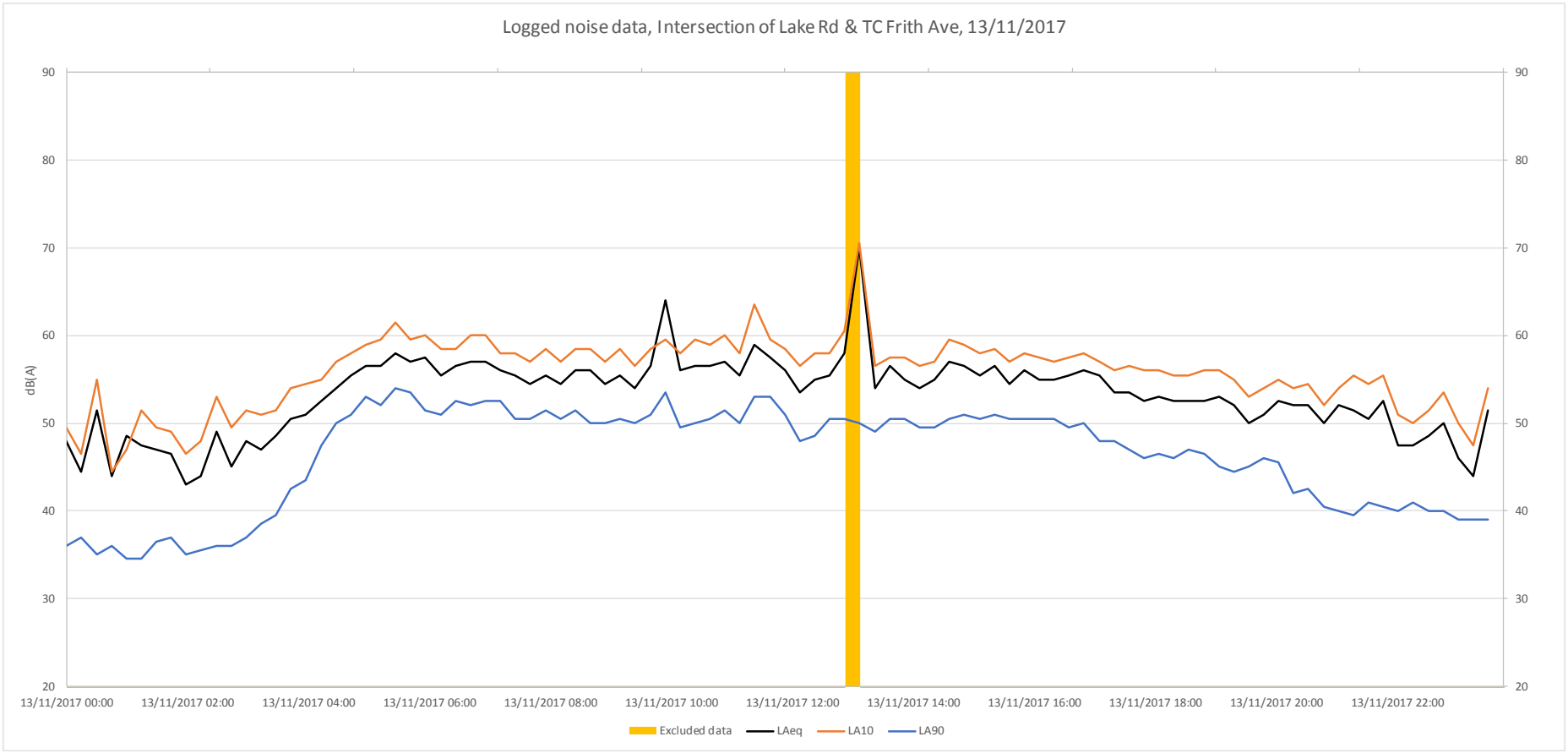
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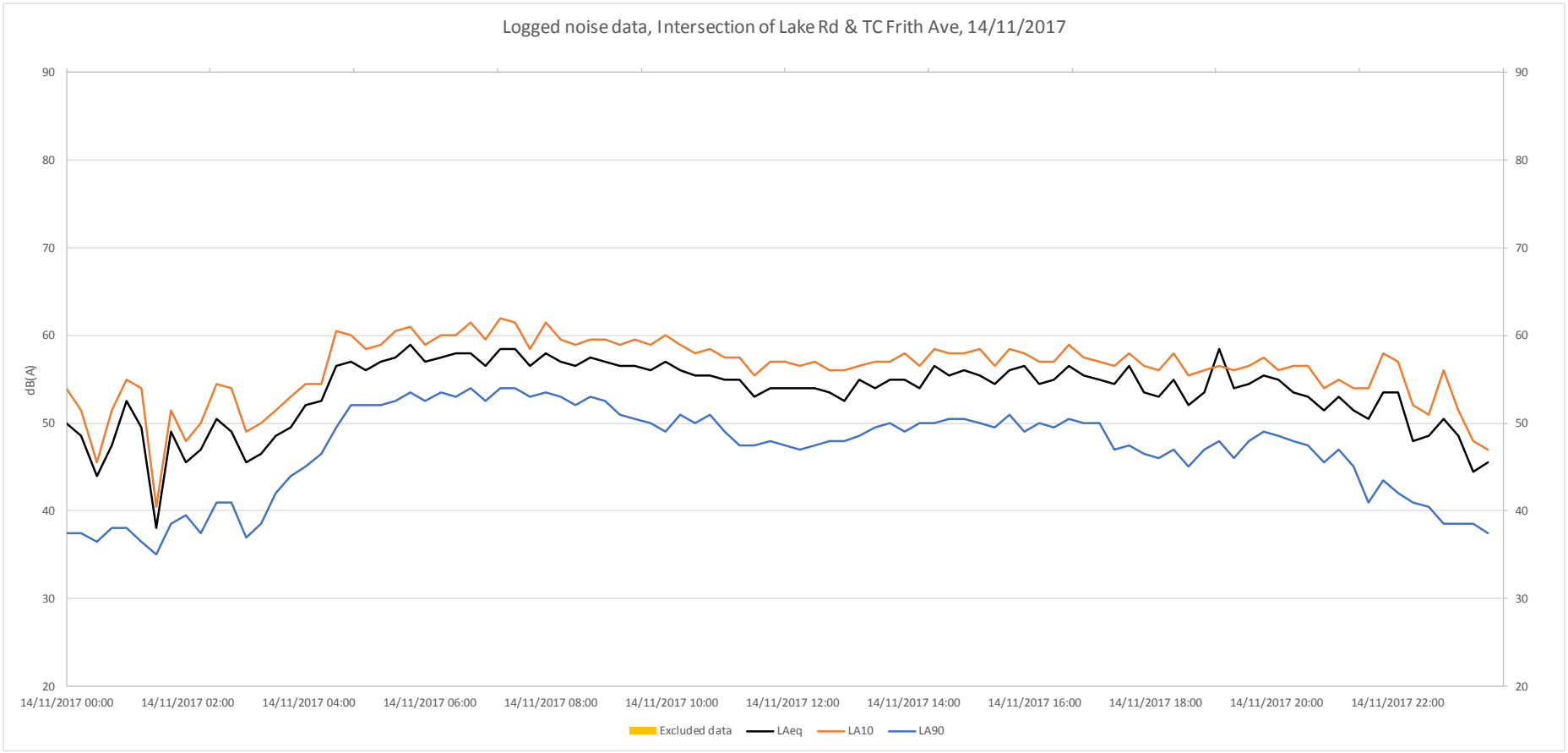
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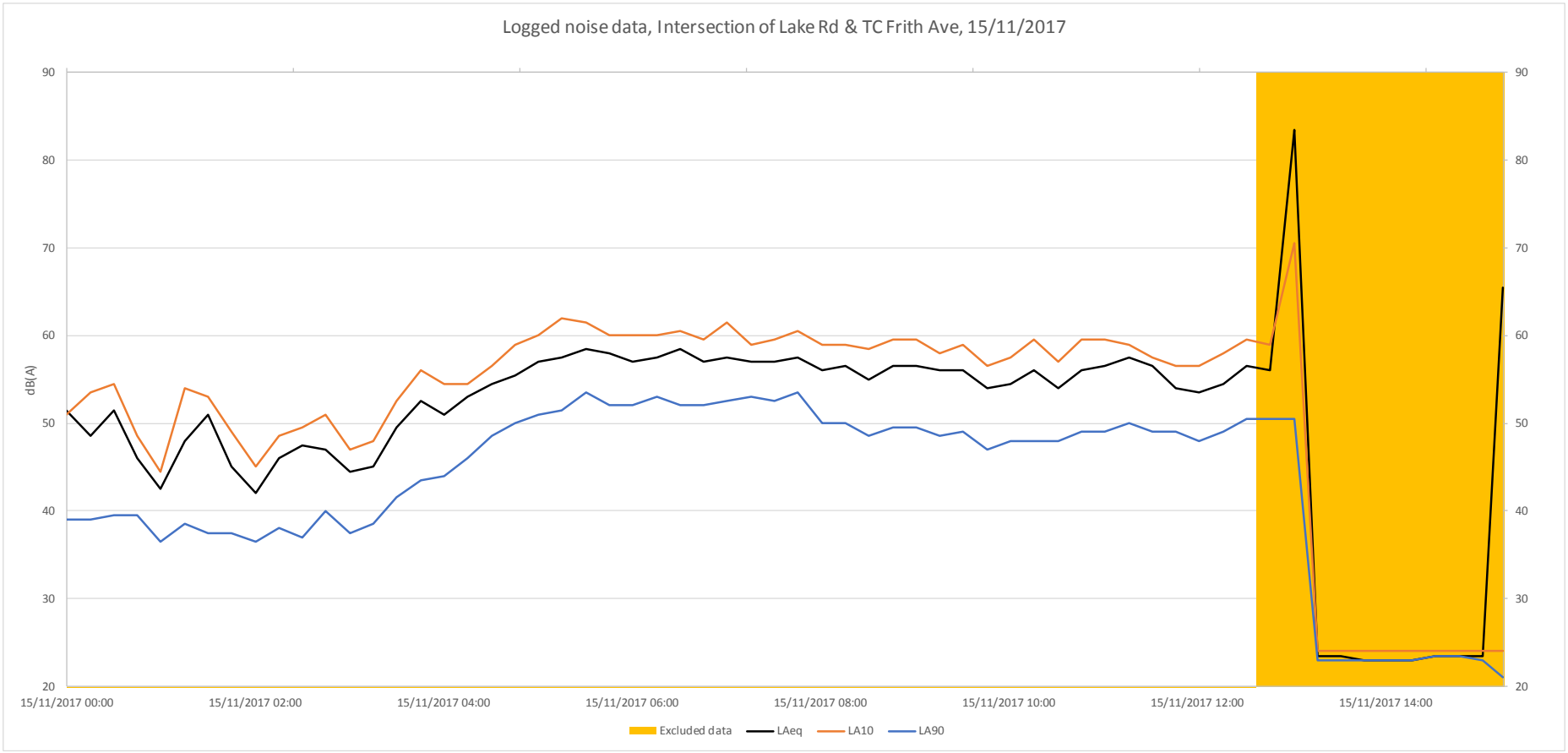
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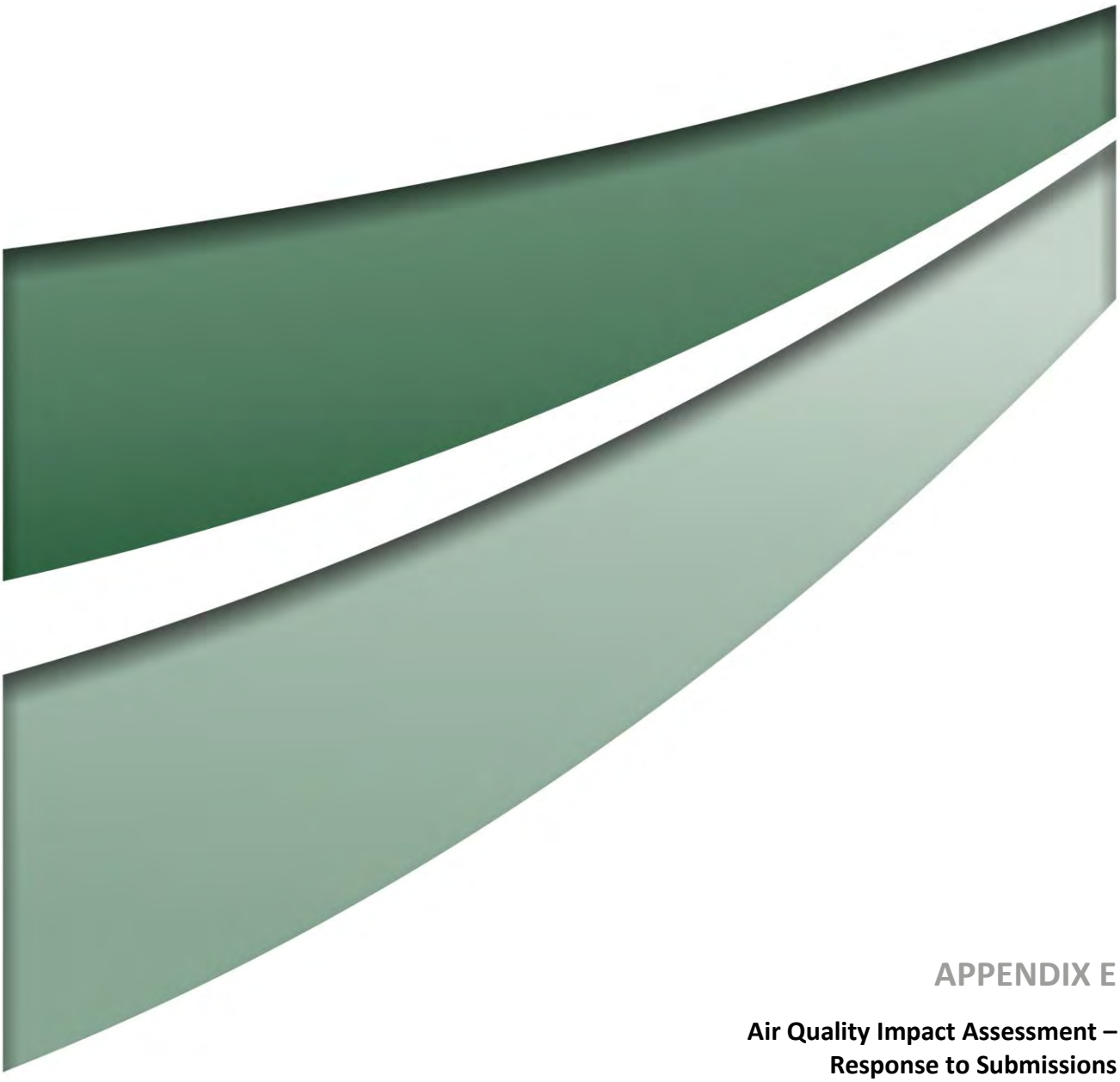

APPENDIX E

Air Quality Impact Assessment –
Response to Submissions

ADDENDUM TO AIR QUALITY IMPACT ASSESSMENT – REVISED ODOUR ASSESSMENT TO INCLUDE LEACHATE CATCHMENT

Proposed Expansion to Operations
Concrush Pty Ltd
Teralba NSW

Prepared for Umwelt

On behalf of Concrush Pty Ltd

Prepared by RCA Australia

RCA ref 14117- 401/1
March 2019

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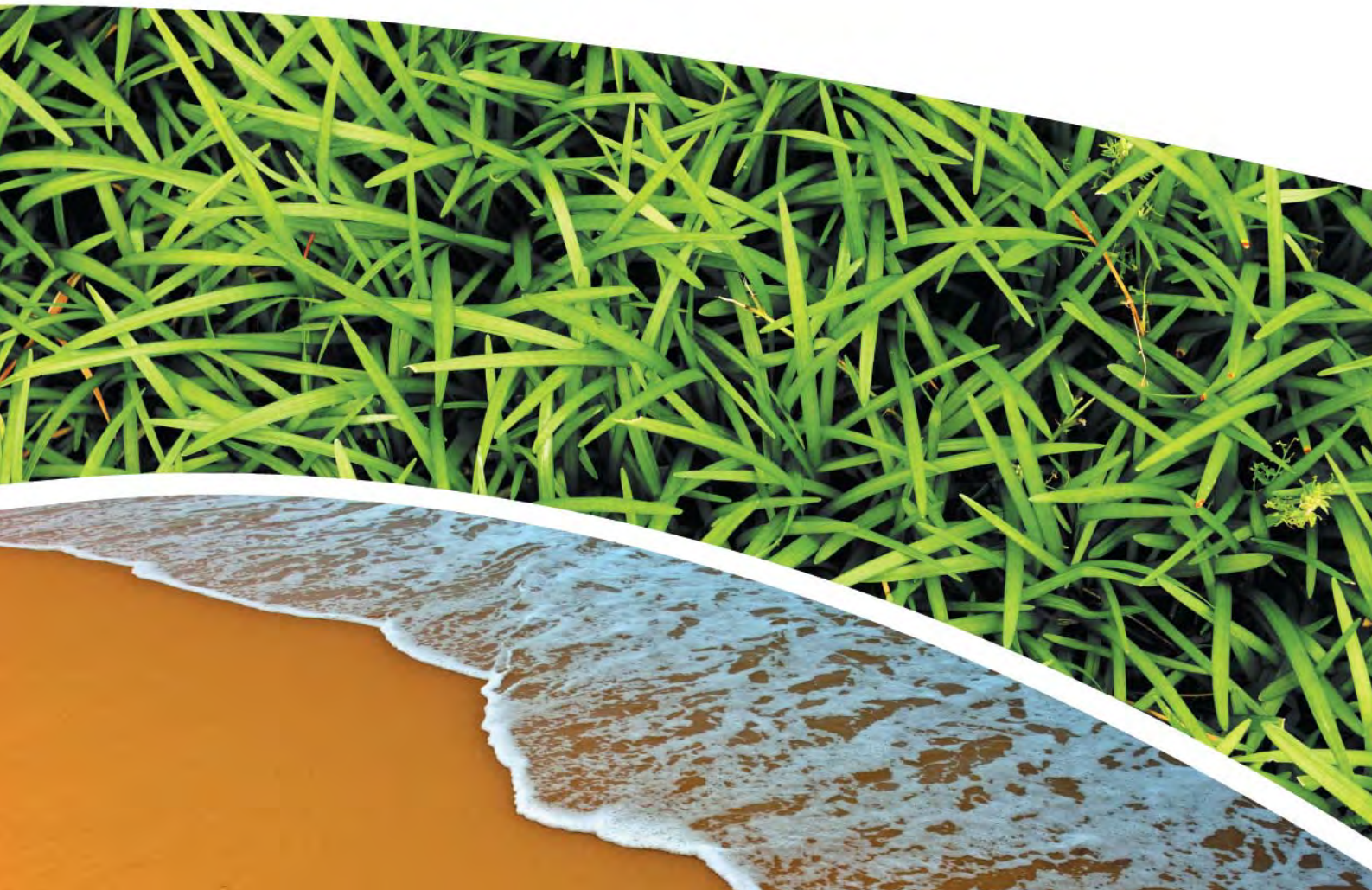

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/0	1	Electronic report	RCA – job archive	13.03.19
/1	1	Electronic (email)	Lachlan Sweeney – Umwelt. lsweeney@umwelt.com.au	28.03.19
/1	1	Electronic report	RCA – job archive	28.03.19

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APPENDIX B

DRAWING SHOWING LOCATION OF ODOUR SOURCES FOR AIR MODELLING

APPENDIX C

DRAWINGS SHOWING MODELLING CONTOURS FOR ODOUR

RCA ref 14117-401/1

28 March 2019

Concrush Pty Limited
c/- Umwelt (Australia) Pty Limited
75 York St
TERALBA NSW 2284

Attention: Lachlan Sweeney

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Geotechnical Engineering
Engineering Geology
Environmental Engineering
Hydrogeology
Construction Materials Testing
Environmental Monitoring
Sound & Vibration
Occupational Hygiene

ADDENDUM TO AIR QUALITY IMPACT ASSESSMENT – REVISED ODOUR ASSESSMENT TO INCLUDE LEACHATE CATCHMENT
EXPANSION TO OPERATIONS - CONCRUSH PTY LTD, TERALBA NSW

1 INTRODUCTION AND BACKGROUND

Concrush Pty Ltd (Concrush) is seeking development consent to increase the processing and storage capacity of the existing resource recovery facility located on part of Lot 2 DP 220347 at 21 Racecourse Road, Teralba, NSW. The Concrush increase to capacity project (the Project) will involve alterations and additions to the existing facility in order to provide greater on-site storage capacity that is sufficient for the increased level of throughput. An Environmental Impact Statement (EIS) for the project was recently put on public exhibition, which included the Air Quality Impact Assessment (AQIA, Ref [1]).

RCA's assessment (Ref [1]) concluded that proposal will comply with the EPA criteria for odour and dust impacts at full operational scale when mitigation measures are implemented.

Following the public exhibition period the NSW EPA provided the following comment (amongst others not relevant to this report):

"It is recommended that the proponent revise the EIS and Appendix I to include the leachate catchment as an odour source, assessing its emissions, impacts and mitigation measures as appropriate."

The NSW EPA further requested, in a meeting with Umwelt that two (2) additional residences be included in the revised odour assessment. This assessment aims to address this recommendation from the EPA.

This report should be read in conjunction with the AQIA (Ref [1]).

2 REVISED ODOUR ASSESSMENT AND MODELLING

This report aims to assess the impacts from the additional odour source (the leachate dam) by way of odour dispersion modelling as it was not included in RCA'S AQIA (Ref [1]). The methodology used in this assessment used the same components as shown in RCA's AQIA (Ref [1]) for:

- Climate.
- Meteorological data.
- Air dispersion modelling.

Various sensitive receptors were identified in the vicinity of the proposed development. The 'nearest' sensitive receptors for this assessment are:

- Existing residences located 350 m to the south east of the south eastern corner of the proposed operations (Receptors "A", "B" and "C" on **Drawing 1**, **Appendix A**).
- Future residential locations 200m to the east of the south eastern corner of the proposed operations (Receptors "D", "E" and "F" on **Drawing 1**, **Appendix A**). RCA included these in order to take into account the potential future sensitive receivers and consideration of approved and/or proposed developments in the vicinity.
- Existing residences, as requested by the NSW EPA, located 400 m to the north of the northern boundary of the proposed operations (Receptors "G", and "H" on **Drawing 1**, **Appendix A**).

Throughout this report, these locations are also referred to as the "receptors". More detail regarding these receptors is shown in **Table 1** below.

Table 1 *Sensitive Receptors in AQIA – Proposed Concrush Operations*

Receptor	Easting (MGA56 m system)	Northing (MGA56 m system)
A	370867	6353387
B	370994	6353484
C	371300	6353473
D	371072	6353675
E	371122	6353740
F	371188	6353817
G	371107	6354392
H	371091	6354305

3 SOURCE CHARACTERISATION AND EMISSIONS INVENTORY

3.1 EMISSIONS INVENTORY – ODOUR

The odour emission rate used for the modelling of the additional "area" source (leachate dam) for proposed operations and the source of information used to derive the rates are shown in **Table 2** below. This odour source is shown in **Drawing 2**, **Appendix B**. Note that for this revised odour modelling, the odour emission rates for other sources (e.g. material stockpiling) were unchanged from the previous assessment (Ref [1]) however results are reproduced below for completeness.

Table 2 *Odour Emission Rates for Proposed Concrush operations – including additional odour source for revised odour modelling*

Odour Source	Specific Odour Emission Rate (SOER) adopted for source ($OU/m^2/s$)	Adjustment in odour rate due to operations	Final Odour emission rates ($OU/m^2/s$) used in dispersion modelling (including peak to mean ratios of 2.5 & 2.3 for modelling)
Leachate dam	0.38 [1]	No adjustment – assumed to be operating 100% of time to be conservative	0.95 & 0.87
Material stockpiling – front end loader, GW piles only (4 locations)	1.00	Reduced due to number of operating hours in year; and stockpiling occurring for 50% (maximum) of operating hours available	0.43 & 0.39
Odour from GW stockpiles (3 locations)	0.23	(no adjustment)	0.58 & 0.53
Shredding of GW	5.9	Adjusted for highest proposed production rate; and shredding only occurring for 20% of operating hours available (conservative maximum)	2.95 & 2.71
Screening of GW	5.9	Adjusted for highest proposed production rate; and screening only occurring for 20% of operating hours available (conservative maximum)	2.95 & 2.71
Pasteurisation activities	5.9 & 1.0	Adjusted to reflect the months (9/12 per year) that the pasteurisation pile is *not* being turned over, refer to Ref [1]	3.00 & 2.50

1 Average of rates from Ref [2]

4 MODELLING OF ODOUR EMISSIONS

The aim of the revised odour dispersion modelling for the site is to predict odour concentrations at ground level at the sensitive receptors nominated (including maximum concentrations under worst case conditions) to compare the results to the appropriate criteria.

The following sections outline the methodologies used in this assessment.

4.1 METHODOLOGY

RCA's methodology involved:

- Research into odour emission rates for the site activities for use in the odour dispersion modelling.
- Dispersion modelling using a NSW EPA approved methodology. The same methodology for odour modelling including meteorological data was used as per RCA's AQIA (Ref [1]).

4.2 MODELLING ASSUMPTIONS AND CONSIDERATIONS

A number of assumptions and considerations were used in the air dispersion modelling for this assessment. Most of these assumptions were based on a conservative approach to represent 'worst case' outcomes and to be consistent with the aims of this assessment for odour emissions:

- Emission rates for some machinery e.g. shredding and screening of Green Waste (GW) were based on overall proposed plant operating hours, then by adjusting the hours based on the utilisation at the existing operations (Ref [1]).
- The locations of key odour and dust sources for the proposed operations are located on **Drawing 2**, **Appendix B**. In some cases the sources were placed as close to the eastern boundary as possible, to reflect 'worst case' impacts on the receptors.
- The proposed Non Green Waste (NGW) crushing and screening plants (3 in total) were modelled to operate continually in a year to model emissions that reflect a worst case outcome for dust emissions.
- The proposed pug mill was assumed to be operating in the proposed operations. This was modelled as a combined crusher and impactor unit for dust emissions for conservative purposes, i.e. this source was a single source for dust modelling. This approach was considered the most appropriate for the mechanical actions within the pug mill, and to also yield conservative emission rates from the pug mill unit.
- The proposed pasteurisation system includes features that will most likely result in odour levels that are *lower* than the current practice of "turning" the material piles. For example, the aeration system incorporating mechanical fans will distribute the odours more evenly across the material piles therefore assisting in the dispersion and dilution of odours from those piles. However, odour rates for modelling the pasteurisation activities were based on the current pasteurisation practice in order to reproduce worst case odour rates for modelling. This is also consistent with the conservative approach of this assessment. On this basis, the modelled pasteurisation turning activities were based on a cycle of 4 times every year (i.e once every 3 months), and three (3) turning activities within those times, i.e. 12 "turning" events every year (Ref [1]). The odour dispersion model was modelled accordingly.

- All stockpiles were assumed to be of 10m height.
- No additional emission factors were included for the maintenance of stockpiles by front end loaders as it is considered that the NPI factors for deriving wind erosion from stockpiles is conservative.
- The leachate "catchment" was primarily contained within the leachate dam located towards the south east of the site, refer to **Drawing 2 Appendix B**. Any other odour emissions associated with the leachate system e.g. small openings, were assumed to be insignificant compared with the dam's "open area" exposed to the air.
- The leachate dam was assumed to be 'operational' for 100% of the time for conservative purposes, i.e. leachate is always present in the dam.
- The leachate within the dam was assumed to extend to the full capacity (dimensions of the dam approximately 23m x 15m) and for 100% of the time. Given that scenario is unlikely to occur at the proposed site, the odour emissions were over-estimated and therefore for conservative purposes.

5 ODOUR MODELLING RESULTS AND DISCUSSION

Table 3 shows the odour modelling results at the ground level receptors for the proposed operations at the Concrush site.

Table 3 *99th Percentile Model Results, Ground Level Odour Concentrations*

Receptor location	**99th percentile Peak to Mean Ground level odour concentration incremental modelling for *proposed* operations - *project specific contribution and worst case prediction, for revised modelling including leachate dam as odour source***	Impact assessment criterion[1]
A	**0.8**	2.0
B	**0.8**	2.0
C	**0.7**	2.0
D	**1.8**	2.0
E	**1.9**	2.0
F	**1.8**	2.0
G	**0.5**	2.0
H	**0.7**	2.0

1 The criterion (Ref [1]) applies at the nearest sensitive receptors, and is based on the population of the community (more than 2,000 people in the Teralba Area).

The modelling results indicate that for the proposed operations and including the leachate catchment as an odour source, the ground level odour concentrations are predicted to be below the odour impact criteria of 2.0 odour units for the eight (8) receptors nominated. This includes "worst case" future operations (including the leachate dam and the green waste area) of a total maximum capacity of 250,000 tonnes per year. The results shown in **Table 3** therefore are considered to represent 'worst case' predictions for ground level odour and at all of the receptors.

Drawing 3, **Appendix C** illustrates the odour incremental modelling results as a contour plot.

The results show that the impact of the odours from the leachate catchment (the dam) do not adversely impact odour levels at the nearest receptors.

6 AIR QUALITY MANAGEMENT AND RECOMMENDATIONS

6.1 ODOUR

Concrush has an active Air Quality Management Plan (AQMP) for allocating the responsibilities and obligations of Concrush to control odour emissions, minimising the impact to the local community and environment. This plan currently includes:

- Monitor Weather Conditions – to aid in the dispersion and dilution of odour emissions away from residential areas:
    - Avoid conducting potential odour generating activities when the wind direction is blowing towards nearby residential areas (normally south westerly or westerly).
    - Avoid conducting potential odour generating activities during early morning periods under low wind speed conditions.
- Use of covers or tarps – to aid in the fugitive emission of odours during transport of potential odour generating products:
    - Cover transported loads leaving site.
- Odour monitoring.
- Odour complaint investigation.
- Investigative odour monitoring.

RCA's AQIA (Ref [1]) recommended the review and update of this plan to reflect the proposed operations.

Given the results of the revised odour modelling as presented in this report, RCA considers that there are no additional odour mitigation measures necessary to those previously identified (Ref [1]).

For future pasteurisation activities, and so that odours from this activity will be minimised, Concrush will continue to manage odour in accordance with current management practices and as shown in Concrush document: "*Pasteurised Garden Organic Materials Management Plan for Concrush Pty Ltd Teralba Facility*".

7 CONCLUSIONS

Concrush Pty Ltd (Concrush) is seeking development consent to increase the processing and storage capacity of the existing resource recovery facility located on part of Lot 2 DP 220347 at 21 Racecourse Road, Teralba, NSW. The Project will involve alterations and additions to the existing facility in order to provide greater on-site storage capacity that is sufficient for the increased level of throughput.

The odour modelling undertaken for the public exhibited air quality assessment (Ref [1]) has been repeated to include the leachate catchment as potential odour source and to assess the effects on two (2) additional receptors as requested by the NSW EPA. This revised odour impact assessment has been undertaken in accordance with the NSW EPA approved methods (Ref [1]).

The results of the revised odour modelling, and subsequent assessment indicate the proposed operations will not adversely impact odour levels at existing receptors, and possible future receptors to the east of the project area; and the compliance level of two (2) odour units will be achieved at all those locations.

8 LIMITATIONS

This report has been prepared for Umwelt and Concrush in accordance with the agreement between RCA and Concrush. The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practice.

This report has been prepared for the use of Umwelt and Concrush. The report may not contain sufficient information for purposes of other uses or for parties other than Umwelt and Concrush. This report shall only be presented in full and may not be used to support objectives other than those stated in the report without permission. The information in this report is considered accurate at the date of issue with regard to the current conditions of the site, including normal, full operating conditions at the future Teralba site.

Environmental conditions including odour air emissions and can change in a limited period of time. This should be considered if the report is used following a significant period of time after the date of issue. The air dispersion modelling was carried out in accordance with a model and methodology presented in NSW EPA guidelines (Ref [1]) using professional standards and judgement.

Yours faithfully
RCA AUSTRALIA

Martin Belk
Associate Environmental Engineer

Fiona Brooker
Environmental Services Manager

REFERENCES

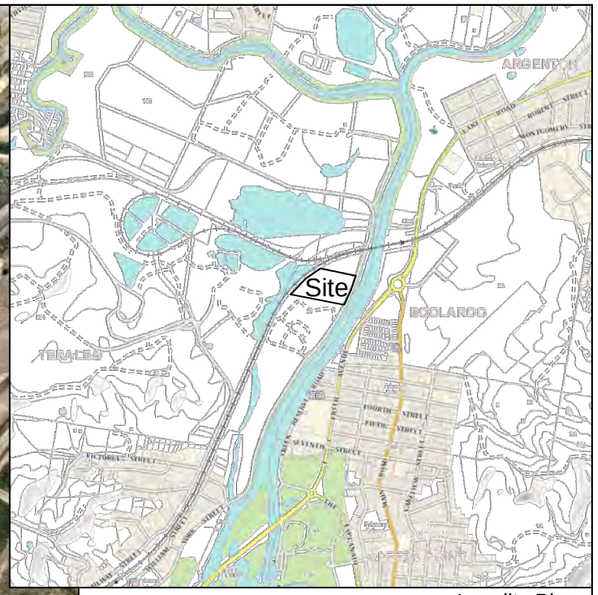
[1] RCA Australia, *Air Quality Impact Assessment, Concrush Expansion Project*, RCA 13149-701/5, November 2018.

[2] NSW EPA, *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*, January 2016.

[3] Golder Associates, *Hanson Landfill and Quarry - Risk Assessment*, October 2012

Appendix A

Drawing showing Site Location and Receptors



Locality Plan
N.T.S.

LEGEND

- Approximate location of receptors
- Approximate location of proposed expansion
- Approximate location of existing site (current 2019 operations)

Aerial image taken from Nearmap, September 26 2017
(used in accordance with commercial licence)

0 50 100 150 200 250
metres

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SITE AND RECEPTORS LOCATION PLAN
AIR QUALITY IMPACT ASSESSMENT
REVISED ODOUR MODELLING - MARCH 2019
21 RACECOURSE ROAD
TERALBA

CLIENT	Concrush Pty Ltd			RCA Ref	14117-401/1
DRAWN BY	MB	SCALE	1 : 5000 (A3)	DRAWING No 1	REV 0
APPROVED BY	FB	DATE	27/03/2019	OFFICE	NEWCASTLE

CDT-DWG-A3H-001/1

Appendix B

Drawing showing Location of Odour Sources for Air Modelling

LEGEND

- Assumed location of source for modelling and to be conservative
- Emission type (odour, dust or both)
- Approximate location of dust gauge

(1) Dust from wind erosion
(2) Odour from stockpile
(3) Odour from activities/operations
(4) Dust from unloading/loading
(5) Odour from unloading/loading
(6) Dust from unit operating
(7) Odour from unit operating
(8) Wind generated dust from open areas (other than stockpiles)

NOTE:
Aerial image taken from Nearmap, April 7 2018
(used in accordance with commercial licence)
Drawing adapted from plan supplied by
Unwelt
Stage 1 Works MGA56 Rev 1 Simple

0 10 20 30 40 50
metres

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

LOCATION OF ODOUR AND DUST SOURCES FOR MODELLING - PROJECT SPECIFIC CONTRIBUTION
AIR QUALITY IMPACT ASSESSMENT
REVISED ODOUR MODELLING - MARCH 2019
21 RACECOURSE ROAD
TERALBA

CLIENT	Concrush Pty Ltd			RCA Ref	14117-401/1
DRAWN BY	MB	SCALE	1 : 1000 (A3)	DRAWING No 2	REV 0
APPROVED BY	FB	DATE	27/03/2019	OFFICE	NEWCASTLE

CDT-DWG-A3H-001/1

Appendix C

Drawings showing Modelling Contours for Odour

LEGEND

- Approximate location of receptors
- Approximate location of proposed expansion
- Approximate location of existing site (current 2019 operations)
- Odour concentrations expressed in odour units (OU) at ground level, odour impact assessment criteria is 2.0 odour units

Aerial image taken from Nearmap, September 26 2017 (used in accordance with commercial licence)

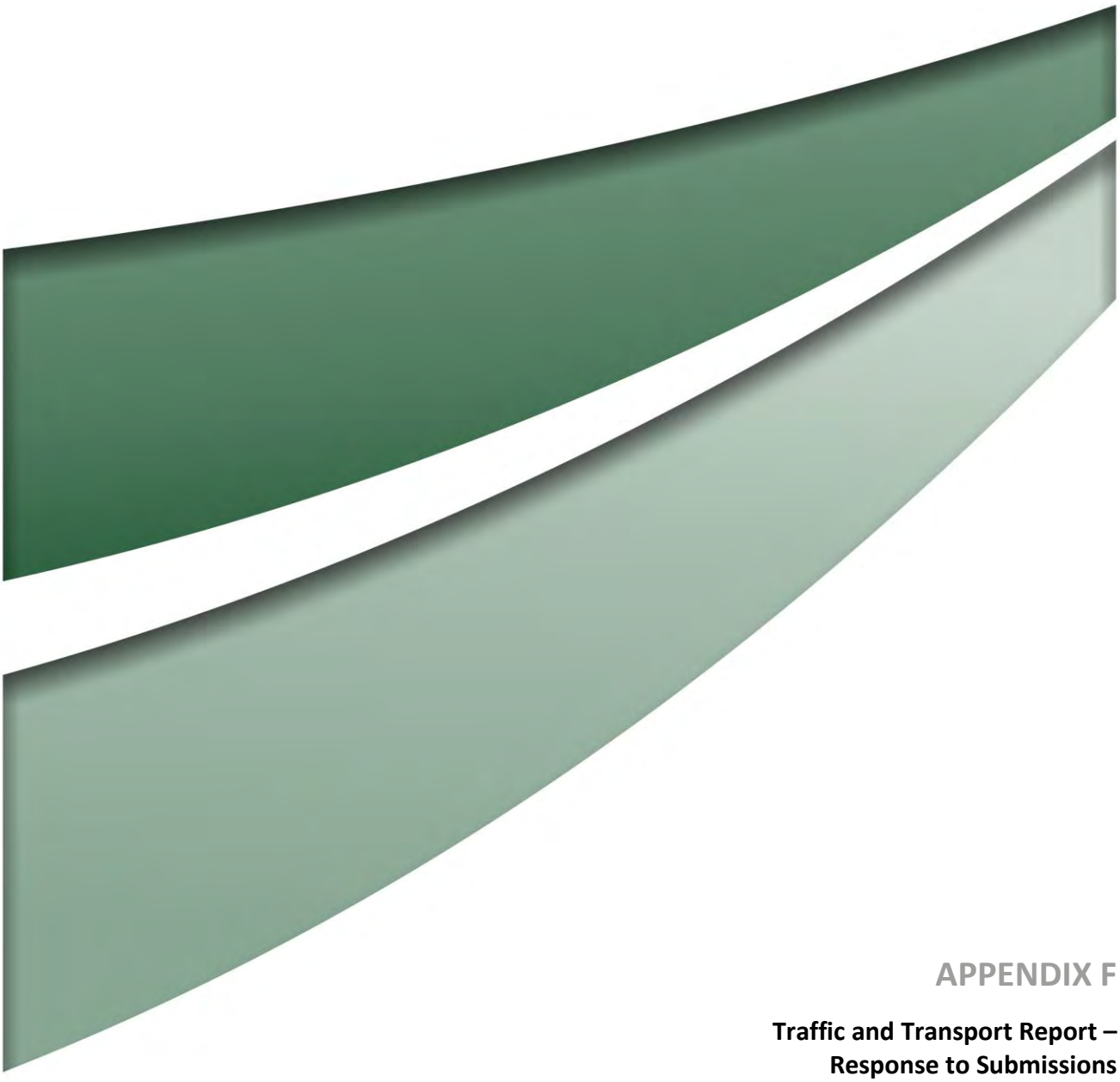
0 50 100 150 200 250
metres

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

INCREMENTAL ODOUR MODELLING RESULTS
PROJECT SPECIFIC CONTRIBUTION
AIR QUALITY IMPACT ASSESSMENT
REVISED ODOUR MODELLING - MARCH 2019
21 RACECOURSE ROAD
TERALBA

CLIENT	Concrush Pty Ltd			RCA Ref	14117-401/1
DRAWN BY	MB	SCALE	1 : 5000 (A3)	DRAWING No 3	REV 1
APPROVED BY	FB	DATE	27/03/2019	OFFICE	NEWCASTLE

CDT-DWG-A3H-001/1



APPENDIX F

Traffic and Transport Report –
Response to Submissions

BETTER SAFETY FUTURES
MARK WAUGH

P O Box 114
NEW LAMBTON
NSW 2305

#222D Concrush EIS RTS Rev01.docx
7 March 2019

Mr Lachlan Sweeney
Senior Environmental Scientist
Umwelt (Australia) Pty Limited
75 York Street
Teralba, NSW 2284

Dear Lachlan,

RE: EIS Submissions – Response to Traffic Issues Raised

I refer to your request for assistance in responding to issues raised by government agencies and the community, arising from the exhibition of the EIS documentation for the Concrush Recycling Facility. A review of the submissions received relating to traffic matters has been completed and our comments on each summarised below:

1. Provision of Auxiliary lanes (right and left) at the site access on Racecourse Road, Teralba NSW
   A review of the warrants for turn treatments on major roads at unsignalised intersections (Ref: Attachment A, Austroads 2017) confirms that with the project traffic volumes at the site access intersection the appropriate standard of auxiliary lane treatment is 'BAsic'. What is important to note here is that the warrants are for intersections on Major Roads. Racecourse Road is not a major road and the intersection is a site access only. Also of note is the TIS recommendation to use the Racecourse Road / York Street route as the principal route to the main road network.

   It was for this reason the Traffic Impact Statement recommended a rural BAsic Left (BAL) treatment to accommodate the entry traffic movements from the south, which will include all heavy vehicles. The route to the north via Weir Road is constrained by a low clearance bridge (4.2m) under the Main Northern Railway.
2. Proposed Access route for the Concrush Recycling Facility
   The Traffic Impact Assessment has considered and assumed that all heavy vehicle access to and from the subject site would be to the south via Racecourse Road and York Street to Five Islands Road (B53) which is part of the State's Main Road network. This route is already used by heavy vehicles. Travel to destinations further afield would then be achieved by using other parts of the State Main road network. For example using Awaba Road / Cessnock Road to access the M1 Palmers Road Interchange on the M1 Pacific Motorway, or travelling north via Five Islands Road to routes such as the B89, A15 etc. The Traffic Impact Statement concludes under Future Performance (Point r. *"No truck movements north along Racecourse Road have been assumed because of height and flooding restrictions on the Weir Road route."*)
3. Increase in Traffic and types of traffic (heavy vehicles)
   The current standard of the Racecourse Road / York Street route to Five Islands Road is considered appropriate and consistent with Council's standard for a local collector road of this type. Subject to Council's normal and regular maintenance routines it is more than capable of accommodating the vehicles that use the route.
4. Traffic Safety and need for road upgrades
   The current standard of approach route (Racecourse Road / York Street from Five Islands Road, and Weir Road for light vehicles only) is considered appropriate and consistent with Council's standard for local collector roads of this type. Subject to Council's normal and regular maintenance routines the routes are more than capable of accommodating the vehicles generated (existing and proposed) by the subject site. Concrush will also be subject to an annual contribution for local road maintenance as agreed with Lake Macquarie City Council.

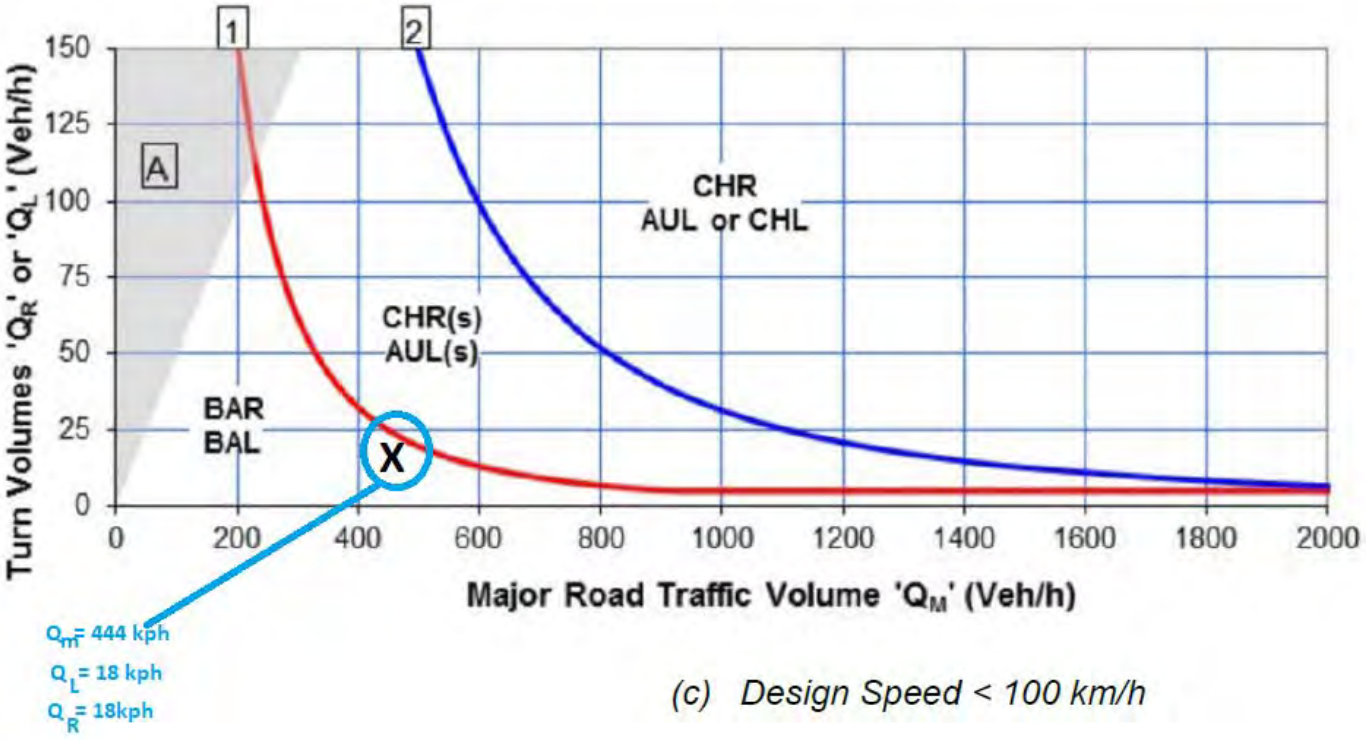
Please contact me directly on 0409 250 773 should you have any queries.

Yours faithfully

J Mark Waugh
Director
Att:

*Attachment A –*Warrants for turn treatments on major roads at unsignalised intersections

Existing Flows Racecourse Road Sth – 408 vph
Future Site Traffic Flows Q_L = 18 vph
Future Site Traffic Flows Q_R = 18 vph



Adapted from 'Figure 2.26: Warrants for turn treatments on major roads at unsignalised intersections'
Source: *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings (Austroads 2017)*

NOTES:

1. Forecast site traffic flows are 18 movements IN, 18 movements OUT. (BTF TIS 2018)
2. Racecourse Road is NOT a main road
3. Forecast flows south of Concrush site on Racecourse Road 444 vph. This includes the site turning traffic and a 3% p.a. growth factor as per RMS requirements for traffic impact assessment. 'Main Road' flow is therefore 408 vph.

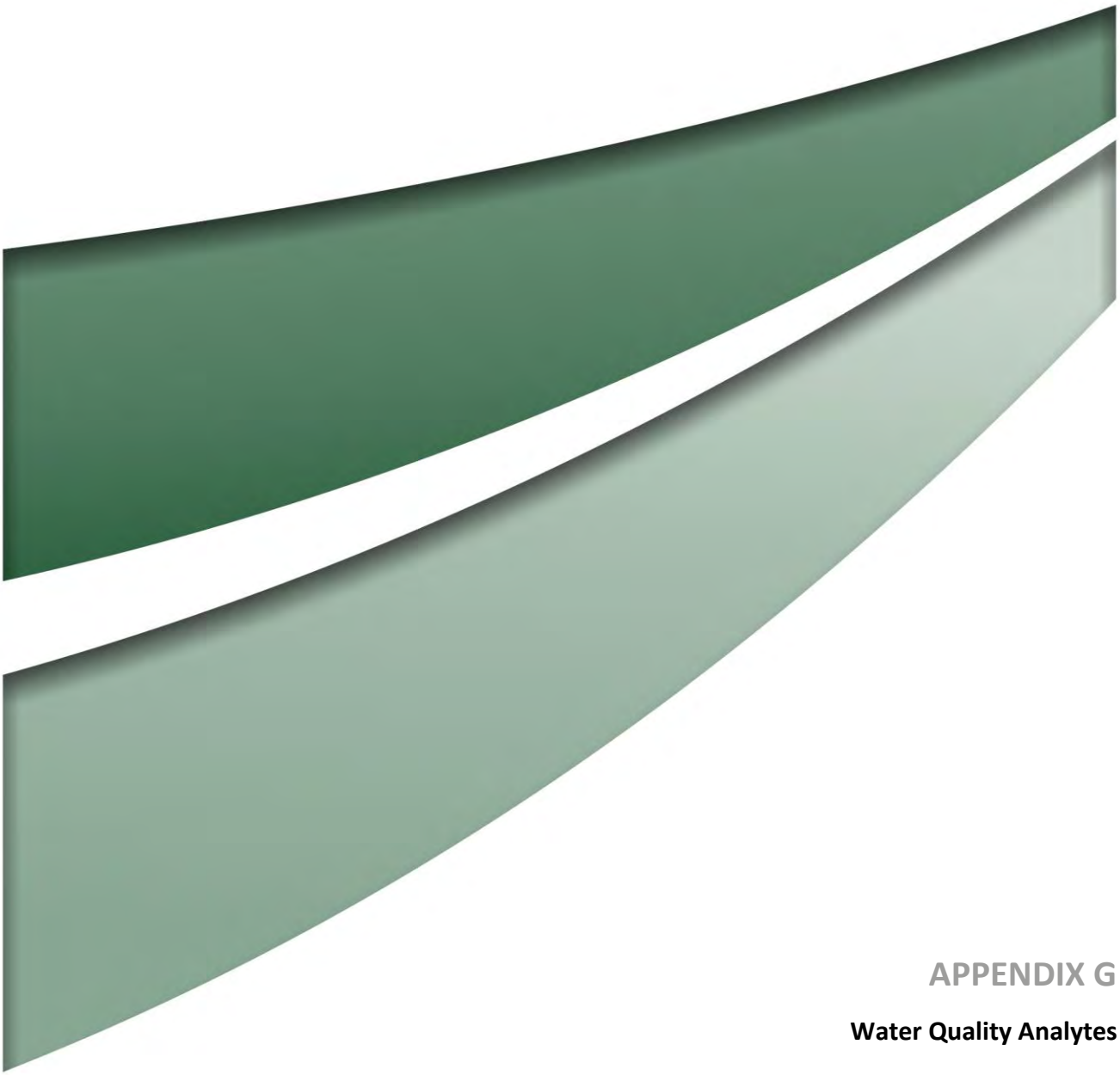
Conclusion: BAL is appropriate turning lane standard for left turn access to the subject site. Right turns out to Racecourse Road southbound queue on site.

Attachment B – Responses to Submissions Referencing Traffic as an Issue

Agency Submission Summary - TRAFFIC			
Organisation / Name	**Issue**	**Detail**	**Comment**
DPE	Traffic	Reconsideration of the site entry is required to be submitted, including addressing Council's submission which recommends the installation of left and right turning lanes. The Department agrees with this recommendation and requests that this be addressed in the RTS.	The warrant for right and left turn lanes has been reviewed. See Comment below against Lake Macquarie City Council Road design item.
TfNSW	N/A	Transport for NSW does not have any additional comments to provide on the above referenced project.	NOTED
Lake Macquarie City Council	Traffic Assessment	it is noted that traffic coming to and leaving the site from the north via The Weir Road has height constraints due to the nearby rail bridge. In addition it is likely Council will place a 5 tonne load limit on The Weir Road in the near future, and this should be reflected in the traffic assessment. The only possible route for transporting material to and from the site by heavy vehicle is south via Teralba along Racecourse Road, York Street and Toronto Road. It is essential that the development is conditioned to only use this route.	NOTED - Council's view regarding the route for transporting material to and from the site by heavy vehicle as being south via Teralba along Racecourse Road, York Street and Toronto Road is consistent with the conclusion of the Traffic Impact Statement (Point R) which states: *r. No truck movements north along Racecourse Road have been assumed because of height and flooding restrictions on the Weir Road route.*
	Road Design	Left and right turning lanes off Racecourse Road are recommended due to the number of heavy vehicle movements and evidence of existing road deterioration caused by current operations. A permanent drainage structure such as concrete v-drain with drainage pits and associated piping should be constructed for the full frontage of the facility, with the driveway complying with Council standard EGSD 202-2 and constructed in concrete. It is suggested that the proposal be revised to include details for the intersection to be able to properly ascertain the extent of pavement and drainage upgrading required. Council would welcome the opportunity to review and intersection design.	A review of the warrants for turn treatments on major roads at unsignalised intersections (Ref: Attachment A, Austroads 2017) confirms that with the project traffic volumes at the site access intersection the appropriate standard of auxiliary lane treatment is 'BAsic'. What is important to note here is that the warrants are for intersections on Major Roads. Racecourse is not a major road and the intersection is a site access only. Also of note is the TIS recommendation to use the Racecourse Road / York Street route as the principal route to the main road network. For this reason the Traffic Impact Statement recommended a BAsic Left (BAL) Auxiliary lane to accommodate theentry traffic movements from the south, which will include all heavy vehicles. The route to the north via Weir Road is not planned to be encouraged as an active access route for the site.

Community Submission Summary - TRAFFIC

Source	Issues	EIS Submission	Issues
Community Member, Spears Point	Traffic Noise Maintenance	*I have concerns with regard to the increase in traffic and types in the vicinity for access to this location. All minor and major roads will be impacted on due to traffic number increase and size of vehicles .The Speers Point roundabout at Five Islands Bridge is already inadequate with traffic volumes and the roundabout near Cockle Creek railway station will have increased use with the continuation of Munibung road extension to Cardiff in the future as well as increase due to current residential expansion .This also includes the road noise increase The Weir road access will be adversely impacted upon with increase in use. The access roads pass through residential and school zone areas. All roads will have an increase in deterioration and therefore require increased maintenance. Who will fund this on a regular basis. Will the truck usage be compliant with current load limits in the travel access areas*	The standard of approach route (Racecourse Road / York Street from Five Islands Road, and Weir Road for light vehicles only) is considered appropriate and consistent with Council's standard for local collector roads of this type. Subject to Council's normal and regular maintenance routines the routes are more than capable of accommodating the vehicles generated 9existing and proposed) by the subject site.
Community Member, Spears Point	Traffic Safety	*Teralba requires significant road upgrades before this should be considered. Billy's Lookout is already one traffic disaster too many. To exacerbate the problem at the other end would be highly irresponsible. Racecourse Road is already an accident waiting to happen.*	The standard of Racecourse Road / York Street to Five Islands Road is considered appropriate and consistent with Council's standard for a local collector road of this type. Subject to Council's normal and regular maintenance routines it is more than capable of accommodating the vehicles that use the route.
Community Member, Boolaroo	Traffic Safety Air Quality Visual Amenity	*My sister in-law was in a car crash a few days ago with another vehicle on this road which is already dangerous. More traffic without road upgrades would be irresponsible. Also many homes in Boolaroo look upon this site on the hill and to make it even larger would again only give Boolaroo another isore to look at and add more dust to the already dirty area due to this and the ex pasminco site. When is council going to start letting Boolaroo become beautiful instead of allowing continued pollution, hasn't the area suffered enough. What council also allows a Main street premise to store hundreds of tyres in the open for all to see. Fire hazard. Don't allow the enlargement of this site to proceed.*	The standard of Racecourse Road / York Street to Five Islands Road is considered appropriate and consistent with Council's standard for a local collector road of this type. Subject to Council's normal and regular maintenance routines it is more than capable of accommodating the vehicles that use the route.
Community Member, Argenton	Traffic Safety	*I would object to the application, as there would be a significant increase in heavy vehicle traffic along Wakefield Rd. The traffic report in Appendix J is unclear as to whether trucks carrying raw materials would use the northern route comprising of Racecourse Road, The Weir Road, Northville Road and then Wakefield Road, as on page 6 it states smaller vehicles may access the site via this route, but then on page 15 the traffic report states that "Wakefield Road is a two lane two way rural standard road that is capable of accommodating heavy vehicles, should the Weir Road route be utilised. Whilst this is considered unlikely, it is available as an alternate route to the M1 Pacific Motorway via the Palmers Road interchange to the south." This alternative route as not been assessed.* *The traffic report does not detail how the heavy vehicles will move from Five Islands Road to the M1 Palmers Road interchange. There appear to be two main routes, the first through Toronto and along Awaba Rd, the second is along Miller Rd which connects back to Wakefield Rd. Both of these routes have not been considered in the assessment.* *If these alternative routes along Wakefield Rd are utilised there would be significant increase in traffic along a road that is already busy with trucks, from the Metromix Quarry. As a daily commuter along Wakefield Rd there are no overtaking lanes along this 10km stretch of road to the Rhondda Rd intersection, which means I can be caught behind a truck some days for 10+ minutes. However if these trucks take the alternate Wakefield Rd route there will be a significant increase in traffic, 1 additional truck every 5 minutes, this would result in multiple cars being struck behind these slow trucks.* *I have seen very reckless behaviour where trucks have causes many near misses along this road, and if these trucks are using this alternate route the danger will only increase. I would recommend installing an overtaking lane along Wakefield Rd to mitigate these dangers.* *Please clarify if these heavy vehicles will use Wakefield Rd to access the M1 Palmers Road interchange and if so, please assess the impacts of the vehicles.*	The Traffic Impact Assessment has considered and assumed that all heavy vehicle access to and from the subject site would be to the south via Racecourse Road and York Street to Five Islands Road (B53) which is part of the State's Main Road network. This route is already used by heavy vehicles. Travel to destinations further afield would then be achieved by using other parts of the State Main road network. For example using Awaba Road / Cessnock Road to access the M1 Palmers Road Interchange on the M1 Pacific Motorway, or travelling north via Five Islands Road to routes such as the B89, A15 etc. The Traffic Impact Statement concludes under Future Performance (Point r. *r. No truck movements north along Racecourse Road have been assumed because of height and flooding restrictions on the Weir Road route.*



APPENDIX G

Water Quality Analytes

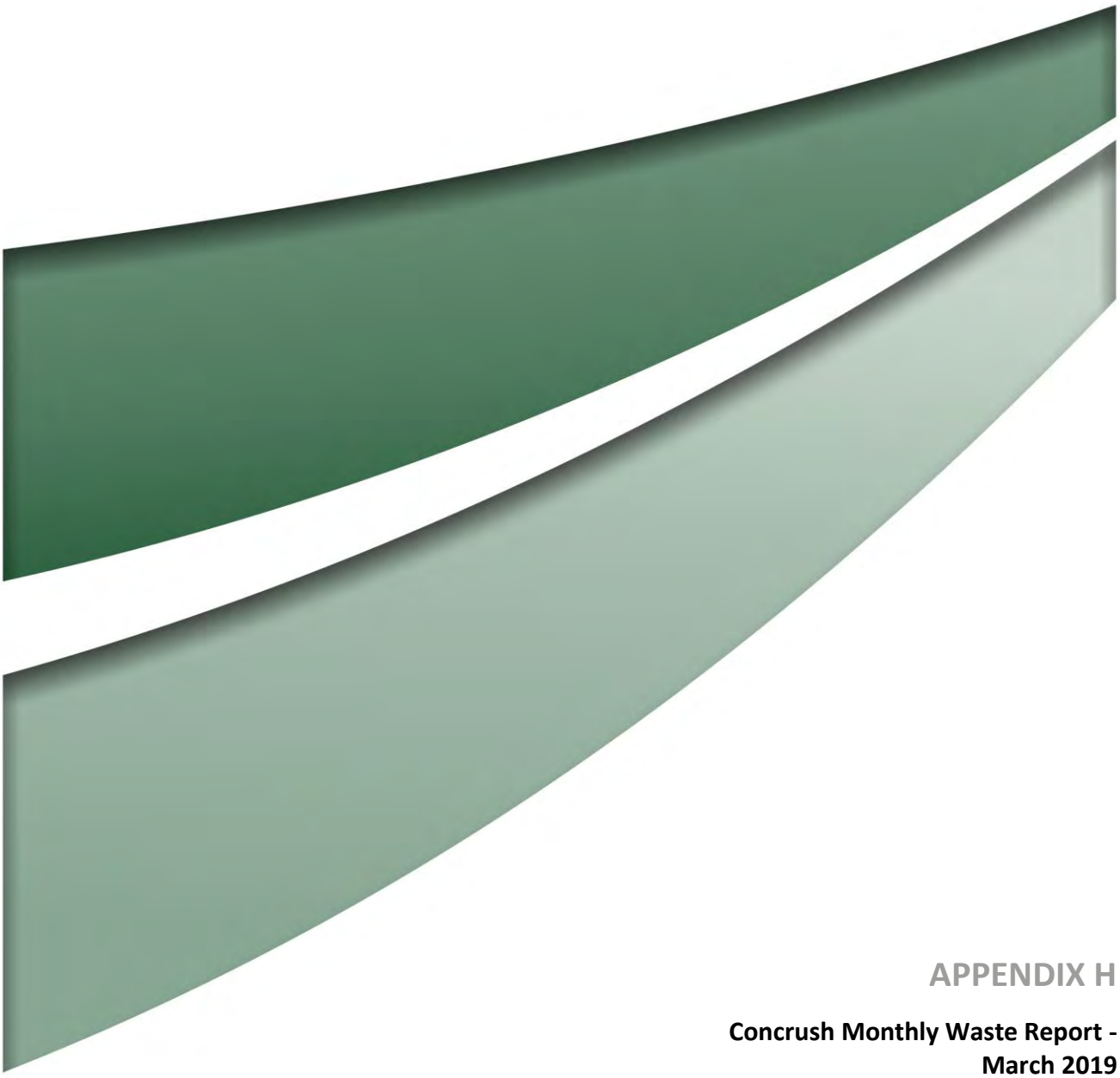
General	
	pH
	Conductivity @ 25 C
	Alkalinity (Bicarbonate as CaCO3)
	Alkalinity (Hydroxide) as CaCO3
	Alkalinity (total) as CaCO3
	Carbonate Alkalinity as CaCO3
	BOD
	Cyanide Total
	Sulphate
	Sulphide
	TSS
Nutrients	
	Ammonia as N
	Kjeldahl Nitrogen Total
	Nitrate (as N)
	Nitrite (as N)
	Nitrate + Nitrite (as N)
	Nitrogen (Total)
	Organic Nitrogen (as N)
	Phosphate total (P)
Total Recoverable Hydrocarbons	
	C10 - C16 Fraction
	C16 - C34 Fraction
	C10 - C40 Fraction (Sum)
	C34 - C40 Fraction
	C6 - C10 Fraction minus BTEX (F1)
	TPH C6 - C10 Fraction
	TRH >C10-C16 less Naphthalene (F2)
Polycyclic Aromtaic Hydrocarbons	
	Acenaphthene
	Acenaphthylene
	Anthracene
	Benz(a)anthracene
	Benzo(a) pyrene
	Benzo(b&j)fluoranthene
	Benzo(g,h,i)perylene
	Benzo(k)fluoranthene
	Chrysene
	Dibenz(a,h)anthracene
	Fluoranthene
	Fluorene

General	
	Indeno(1,2,3-c,d)pyrene
	Naphthalene
	PAHs (Sum of total)
	Phenanthrene
	Pyrene
Phenols	
	2,4,5-trichlorophenol
	2.4.6-Trichlorophenol
	2,4-dichlorophenol
	2,4-dimethylphenol
	2,4-dinitrophenol
	2,6-dichlorophenol
	2-chlorophenol
	2-methylphenol
	2-nitrophenol
	3-&4-methylphenol
	4,6-Dinitro-2-methylphenol
	4,6-Dinitro-o-cyclohexyl phenol
	4-chloro-3-methylphenol
	4-nitrophenol
	Dinoseb
	Pentachlorophenol
	Phenol
	tetrachlorophenols
	Phenols (Total Halogenated)
	Phenols (Total Non Halogenated)
Organochlorine Pesticides	
	4,4-DDE
	a-BHC
	Aldrin
	Aldrin + Dieldrin
	b-BHC
	chlordane
	d-BHC
	DDD
	DDT
	DDT+DDE+DDD
	Dieldrin
	Endosulfan I
	Endosulfan II
	Endosulfan sulphate

General	
	Endrin
	Endrin aldehyde
	Endrin ketone
	g-BHC (Lindane)
	Heptachlor
	Heptachlor epoxide
	Hexachlorobenzene
	Methoxychlor
	Toxaphene

General
Organophosphorus Pesticides
Azinophos methyl
Bolstar (Sulprofos)
Chlorfenvinphos
Chlorpyrifos
Chlorpyrifos-methyl
Coumaphos
Demeton-O
Demeton-S
Diazinon
Dichlorvos
Dimethoate
Disulfoton
EPN
Ethion
Ethoprop
Fenitrothion
Fensulfothion
Fenthion
Malathion
Merphos
Methyl parathion
Mevinphos (Phosdrin)
Monocrotophos
Naled (Dibrom)
Omethoate
Parathion
Phorate
Pirimiphos-methyl
Pyrazophos
Ronnel
Terbufos
Tetrachlorvinphos
Tokuthion
Trichloronate
Carbomate Pesticides
Aldicarb
Bendiocarb
Carbaryl
Carbofuran
Methomyl

General	
	Oxamyl
	Thiobencarb
Herbicides	
	AMPA
	Glyphosate
Metals	
	Aluminium
	Aluminium (filtered)
	Arsenic
	Arsenic (filtered)
	Boron
	Boron (filtered)
	Cadmium
	Cadmium (filtered)
	Chromium
	Chromium (filtered)
	Chromium (hexavalent)
	Chromium (hexavalent) (filtered)
	Chromium (Trivalent)
	Chromium (Trivalent) (filtered)
	Cobalt
	Cobalt (filtered)
	Copper
	Copper (filtered)
	Lead
	Lead (filtered)
	Manganese
	Manganese (filtered)
	Mercury
	Nickel
	Nickel (filtered)
	Selenium
	Selenium (filtered)
	Zinc
	Zinc (filtered)



APPENDIX H

Concrush Monthly Waste Report - March 2019

WCMR: Concrush Pty Ltd - 13351

Reporting Period: **February 2019** Due: **26 March 2019**
Status: **Certified** Report Version: **1**
Printed on: 4/3/2019, 11:44 AM Printed by: Helen Milne, Certifier

☐ No waste has been received, processed or removed from site during this period

Waste Received — Regional Levy Area

Municipal

Received/Source	Waste type	Quantity (tonnes)
	Total Municipal	**0.00**

Commercial and Industrial

Received/Source	Waste type	Quantity (tonnes)
	Total Commercial and Industrial	**0.00**

Construction and Demolition

Received/Source	Waste type	Quantity (tonnes)
Other - General Public	Aggregate, roadbase or ballast	562.02
	Bricks or concrete	8,135.80
	Ceramics, tiles, pottery	39.98
	Vegetation or garden	238.87
	Wood, trees or timber	12.74
Other - Council	Aggregate, roadbase or ballast	680.36
	Bricks or concrete	190.16
	Total Construction and Demolition	**9,859.93**

Unknown

Received/Source	Waste type	Quantity (tonnes)
	Total Unknown	**0.00**

Processed Waste

Materials Processed

Quantity of materials processed in accordance with a Resource Recovery Order during this reporting period:	10,200.00

Deduction - Waste Transported from Site

Waste transported from site for disposal at a licensed waste facility

Facility	Waste type	Quantity
	Total	**0.00**

Waste transported from site for lawful recovery at a licensed waste facility

Facility	Waste type	Quantity
OneSteel Recycling Pty Ltd - Hexham	Ferrous (iron or steel)	54.94
Estimate of waste stream at time of receipt	☑ Unknown	
	Total	**54.94**

Waste transported from site under a Resource Recovery Order

RRO	Waste type				Quantity
Recovered aggregate	Bricks or concrete				7,441.27
Estimate of waste stream at time of receipt	☐ Unknown	MUN: 0.00%	C&I: 0.00%	C&D: 100.00%	
Pasteurised garden organics	Composts or mulches				593.72
Estimate of waste stream at time of receipt	☐ Unknown	MUN: 0.00%	C&I: 0.00%	C&D: 100.00%	
			Total		**8,034.99**

Waste transported from site for lawful recovery (not a licensed waste facility)

Destination	Waste type	Quantity
	Total	**0.00**

WCMR: Concrush Pty Ltd - 13351

Reporting Period: **February 2019** Due: **26 March 2019**
Status: **Certified** Report Version: **1**
Printed on: 4/3/2019, 11:44 AM Printed by: Helen Milne, Certifier

Summary Details

Current position

	Tonnes
Waste Received - RLA	9,859.93
Deductions - Waste transported from site	8,089.93
Net position for reporting preiod	1,770.00

Authorised amount

	Tonnes
Authorised amount	40,000.00
Opening stock	25,461.60
Net change to stockpile tonnage	1,770.00
Closing stock	27,231.60 tonnes - 68.08%

Certification Statement

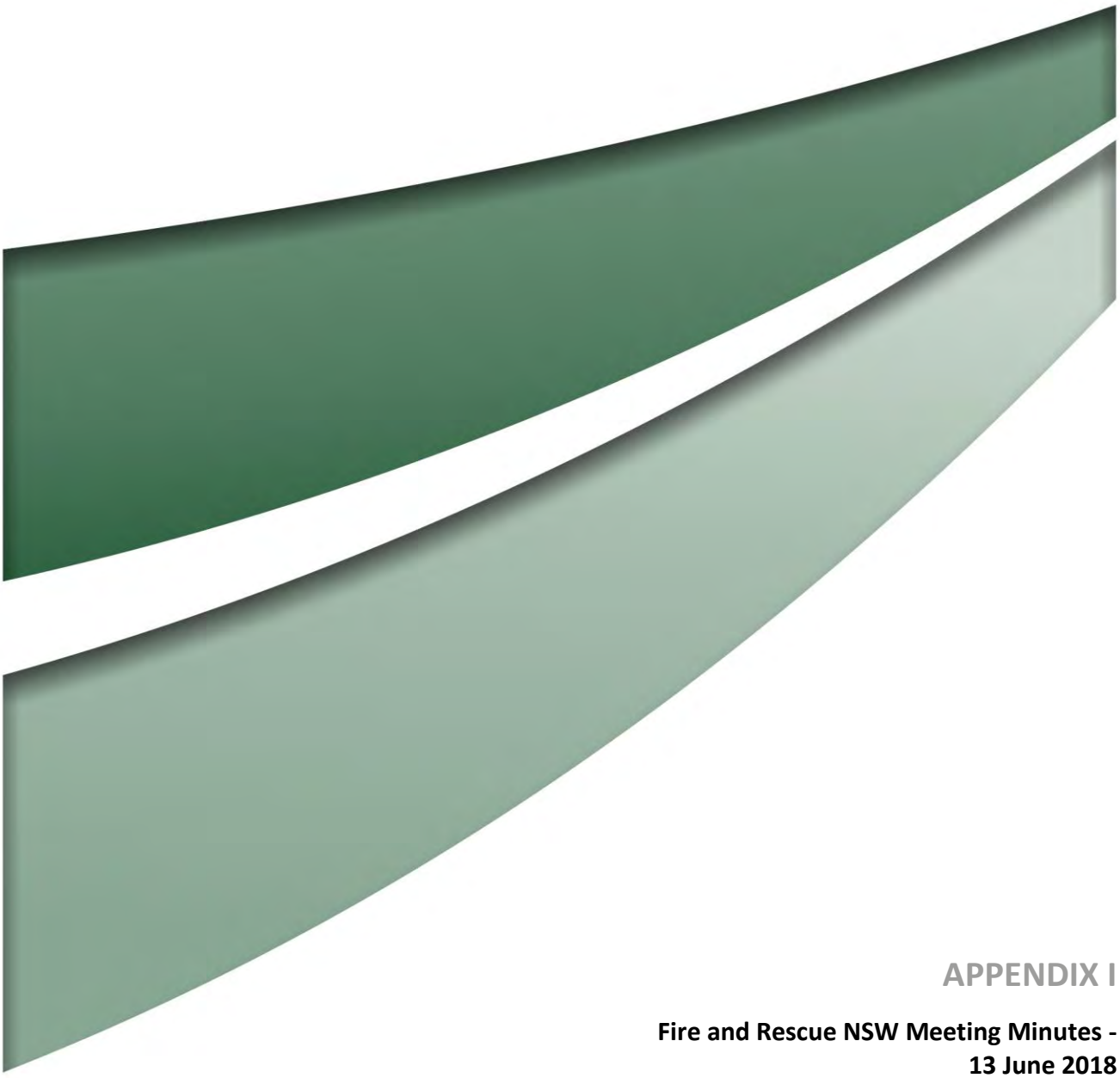
I Helen Milne certify that the information contained in the report in respect of scheduled waste facility Concrush Pty Ltd (licence number: 13351) located at 21 Racecourse Road, Teralba, 2284 for the reporting period February 2019 is true and correct.

I further certify that all deductions claimed in this report are valid and correct and that the occupier of the scheduled waste facility has kept the necessary records to substantiate these claims as required by clauses 26 to 33 of the Protection of the Environment Operations (Waste) Regulation 2014.

I understand that all information contained within this report, records maintained in support of this report, and any claims for exemptions and deductions may be subject to EPA audit inspection.

Please select the option that applies to you:

I am a person delegated to sign on the occupier's behalf and approved by the EPA in writing to sign this report



APPENDIX I

Fire and Rescue NSW Meeting Minutes - 13 June 2018

Meeting minutes

Date: 13 June 2018
Time: 12:30 PM
Location: Fire and Rescue NSW Office, Greenacre
Subject: Concrush Increase to Capacity Project
Attendees: Mark Castelli (MC) – Fire and Rescue NSW
Chris Brown (CB) – Fire and Rescue NSW
Kevin Thompson (KT) – Concrush
Lachlan Sweeney (LS) - Umwelt

Item	Action
• LS & KT provided overview of existing site and Concrush's proposed expansion	-
• MC stated main interest is the green waste not the non-combustibles • MC and CB asked questions regarding size and volume of mulch that may be present on site at any particular time • KT advised up to 400 tonnes maximum – generally in one main stockpile	-
• MC asked about type of machinery on site and whether it would be available to FRNSW if required to break up a mulch fire • KT advised that front end loaders and excavators are present on site and would definitely be available to assist FRNSW if required	-
• MC and CB asked about existing water supply and availability to use in firefighting if required • KT advised that Concrush has a water cart and truck water in from standpipe further down Racecourse Road. Concrush has several 10,000 litre tanks on site and will install more as part of the project to have an overall capacity of 110,000 litres. Water is definitely available to FRNSW	-
• MC advised that if town water connection is made in the future, a hydrant could be installed on site near the green waste area • MC advised that FRNSW require a certain connection type to be able to use water from tanks as it is not under pressure. Will send details of the connection type and relevant Australian standard	MC to send details of the required connection type

Item	Action
• KT stated Concrush could have this connection type on one of the tanks near the green waste area • CB advised that if the individual tanks were connected together in a certain way then you could potentially access the total water capacity from the one FRNSW compatible connection point	-
• CB/MC advised that the fire truck would need access to within 3.0 metres of the tank connection point to be able to access the water in an emergency. • In addition, if 65mm Storz connections were used as a draughting point (in lieu of a 150mm Storz draughting connection) then 65mm rigid draughting hose lines would need to be provided on-site by KT. The rigid hose-line connections would need to be compatible with FRNSW hose connections couplings.	-
• KT advised that Teralba Fire Brigade have previously (many years ago) practiced firefighting on the green waste stockpile • KT advise that water would be available to FRNSW if they required it for other locations in the local area	-
• LS advised that the Environmental Impact Statement would include the details discussed above in relation to having machinery and a water source available to FRNSW if required to assist in the event of a fire in the green waste / mulch stockpile	-

umwelt
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