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Minutes of the Mount Thorley Warkworth
Community Consultative Committee Meeting Q1 2022
Date: Wednesday 23 February 2022
Location: Teleconference
Time: 2pm – 4pm

Attendees	**Role**
Colin Gellatly (CG - Chair)	Independent Chairperson MTW CCC
Gary Mulhearn (GM)	MTW Environment & Community Manager
Olivia Lane (OL)	MTW Environment & Community Advisor
Ian Hedley (IH)	Community Representative
Barb Brown (BB)	Community Representative
Denis Maizey (DM)	Community Representative
Cr. Hollee Jenkins (HJ)	Singleton Council
Dr. Neville Hodkinson (NH)	Stakeholder Rep - Singleton Shire Healthy Environment Group

1. WELCOME

- CG opened the meeting and welcomed CCC members.
- CG advised Adrian Gallagher has resigned from CCC, awaiting response from alternate member on an invitation to join CCC as full member.
- DB update on site COVID protocols and looking forward to meeting in person hopefully next meeting.

2. APOLOGIES

- CG advised alternate member had been contacted regarding meeting attendance for Q1 2022 and invitation to join CCC as full member, no response received.
- GM advised that Stewart Mitchell (SM) was an apology as well as David Bennett (MTW General Manager) was a late apology.
- Antoinette Silk (AS) advised she may be late to meeting or an apology. AS did not attend meeting.

3. DECLARATION OF PECUNIARY INTEREST / CONFLICT OF INTEREST

- **Standing Declarations:** Col advised that he is engaged by MTW to provide the services of Independent Chairperson.

4. BUSINESS ARISING

Action Items arising from the 24 November 2021 Meeting

*Refer to **attached** CCC presentation for previous actions, and relevant response / update made by MTW. Other notes of relevance discussed during the meeting in relation to Business Arising are below.*

Business Arising Action 1: *MTW to catch up with Neville regarding his heritage items outside of what is required in the MTW HHMP (Action 2 from 25 August 2021 meeting carried forward)*

- GM advised that he had discussed with NH about various heritage items within the vicinity of MTW. Furthermore, GM advised of the commitments set out in the heritage management plans and particularly the funds and how they are applicable to various projects. NH made mention of the Cockfighter Valley precinct area, in and around the mines and the approach of how heritage management plans were formulated in 2016.

Business Arising Action 2: *MTW to consult with neighbouring mines on elevated dust level in Warkworth village depositional dust gauge.*

- GM advised that elevated results had been received at this gauge since July 2021. This result was referred to an air quality consultant for further analyses. Findings suggested that in this particular instance there were other depositional material present that were not representative of deposited dust (contaminated). However subsequent to that in the subsequent four months the result has stayed high at the monitor location and MTW has continued to investigate.
- GM advised that as per recommendations from the initial investigation, a secondary depositional dust gauge (DDG) has been installed nearby to the original, in an attempt to identify if there are any localized affects that may be impacting the gauge and its results. GM advised on the original gauges location and vicinity to the Golden Highway, noting that the secondary gauge had now been installed post the arrangement of a land access agreement with a neighbouring operation and that the results of the secondary gauge would also be monitored moving forward.
- GM advised that he had reached out to neighbouring mining operations to the north and north-west of MTW regarding whether they had noticed elevated dust levels in the Warkworth Village, with one operation advising that they did have one 24 hour elevated PM10 reading in that area, however not depositional dust.
- GM advised that the Total Suspended Particulates (TSP) dust monitor annual results for 2021, had also been provided to the Air Quality consultant for further review and investigation.
- CG advised that a fair discussion has occurred at the Hunter Valley Operation (HVO) community consultative committee meeting regarding the same item, in the previous week. GM advised that it is the same gauge used by both HVO and MTW.
- GM advised that MTW had investigated whether there were any privately owned residences in Warkworth village, findings suggested that there was no longer, however that the land was mine-owned and leased to tenants who had been advised of the elevated PM10 dust levels that occurred in late 2021 by the relevant neighbouring operation. GM advised that as the consent refers to monitoring at the nearest privately-owned residence that MTW would likely go through a process of amendment to the monitoring location in due course via the Department of Planning, and Environment (DPE), given the change in property ownership overtime at Warkworth Village.
- GM advised that findings of investigations would be reported to CCC in due course.
- DM relayed a query from a community member in relation to why the July 2021 gauge result was excluded from the annual average calculations after the independent investigation by the air quality consultant, and yet the trend still maintained a high level. GM advised there was evidence of more sand and other fragments of that nature in the July result, which is quite unusual in relation to particle size. This was why this result was excluded however GM advised this was not the same for the results from August to November in 2021.

- NH expressed concerns on behalf of the community in relation to the elevated DDG levels at Warkworth Village since July 2021. NH expanded his concerns to the historic progression of how dust particulate matter is measured and assessed in relation to mining operations and their relevant approvals. NH provided a brief history of how these monitoring instruments developed. NH expressed his concern for personnel in such residences within the vicinity of the Warkworth gauge, advising widely on PM10 and PM2.5 figures for the Hunter Valley.
- NH expressed his concerns regarding various government regulatory departments and these approach to Air Quality in the Hunter Valley region. NH suggested drafting a letter that
- GM advised that there are provisions in the consent for dust level requirements at mine-owned land and nature of how those properties should be managed in varying circumstances, regarding property mitigation for air quality and noise impacts. GM made reference to the 'Mine Impacts and Me' document provided by the OEH in relation to health impacts from air quality. GM advised that depositional dust is more of an amenity issue whereby the amount of dust present / visible on a surface and that this is not a health related monitoring item.
- NH advised that the elevated level at the gauge may be due to meteorological influences in light of the three mining operations that surround the gauge location. NH advised that he believed it needed to be investigated further.

Business Arising Action 3: *IH to provide letter asking for government support to improve mobile coverage to CCC.*

- IH noted his comments in previous meeting were to suggest that persons concerned with Telstra regarding poor mobile reception should send letters of support to lobby the government or local members for parliament for funding to improve reception.
- HJ noted she can take this matter to Council.

Business Arising Action 4: *MTW to follow up on Wallaby Scrub Road intersection referral to local traffic committee, Singleton Council.*

- HJ noted that there is a Local Traffic Committee meeting in March. HJ has requested referral of this intersection with the Local Traffic Committee.

Business Arising Action 5: *MTW to provide details on Historic Heritage Conservation Fund -status of use of funds and process for applications.*

- Completed. Refer presentation.

Business Arising Action 6: *MTW to investigate option of leasing land to RMS to relocate any future bridge maintenance construction compounds.*

- Completed. This may be possible. Contact has been made with Transport for NSW to discuss. Refer presentation.
- IH advised that the timing for the works for TfNSW may be extended significantly, due to flooding/wet weather. IH advised that the long period the compound has been / will be there affects implementation of some projects from the MTW VPA funding, and also the current location can cause delays with traffic/cranes crossing the bridge for works.
- NH asked about information on the available funds and reporting of progress with the different funds including the MTW VPA funds.

- GM advised that Council has come to present to the CCC on the progress with the VPA funds, and there is some good progress happening with implementing projects.

Action 1: MTW CCC Meeting to include opportunity for VPA public information to be shared

5. CORRESPONDENCE

- 21/12/21 – CCC Q4 2021 Meeting Minutes Draft
- 14/01/22 – CCC Q4 2021 Meeting Minutes Endorsed by Chair
- 21/01/22 – Agenda and Meeting invitation – 23February 2022.
- 11/02/22 – Business Papers and reminder for RSVPs for meeting.
- 22/02/22 – Business Papers Q1 2022 – Amendment (including updated Oct/Nov 20221 MEMR)

6. CONFIRMATION OF THE PREVIOUS MEETING'S MINUTES

Confirmed at today's meeting by CG.

7. PROPONENT REPORTS AND OVERVIEW OF ACTIVITIES

MTW Operations

Refer to presentation

- GM advised that MTW currently operating one dragline in WML North Pit and one in WML West Pit, draglines will be operating intermittently as work become available. No coal activities occurring in MTO. Licensed discharge point in MTO being utilised during November 2021 to January 2022. 1.1GL of water has been discharged from site via a tributary that leads to Loders Creek, during this discharge period.

North Out Of Pit Dam (NOOP)

Refer to presentation

- GM discussed the NOOP dam, pre-construction commenced in late 2021 with main excavation having commenced in mid February 2022, with the preparation for drill and blast activities to commence in early April 2022. GM advised that this construction would result in occasional road closures along the Golden Highway and adjacent roads within the vicinity of the construction area.

Exploration

Refer to presentation

- 2022 Exploration program to commence mid March to late April 2022.

Monitoring

Refer to presentation for data – YTD 2021

- OL presented equipment downtime / Community Response Officer (CRO) noise assessments and operational changes for nights above noise limits.
- DM enquired whether a breakdown by location of the CRO noise assessments could be presented at the next meeting. GM advised that there are different criteria which would prompt the CRO's to attend different locations including noise alerts from stationary monitoring in the field and complaints. GM informed that handheld monitoring would soon be increased due to the recent installation of a new real-time noise monitor at this location.

Rehabilitation / Disturbance 2021

Refer to presentation

- GM advised that the disturbance target for 2022 includes disturbance associated with the NOOP Dam construction in previously rehabilitated areas on Tailings Dam 1 dump area.

Vertebrate Pest Management 2021

Refer to presentation

- BB queried where there had been any pig sightings. GM advised that he would have to follow up with land management personnel. IH advised that he had been very successful with eradication of pigs on his property.

Weed Management 2021

Refer to presentation

- BB queried whether the aerial seeding that community personnel were notified about in December 2021 had commenced. GM confirmed that it did occur in December 2021 and that the seeding targeted the end of dumps that are not proceeding for some time, to reduce dust from high exposed areas.

Action 2: MTW share information in relation to the aerial seeding that occurred in late 2021.

Northern and Southern Biodiversity Area (BA) Planting Program 2021

Refer to presentation

Historic & Cultural Heritage Management

Refer to presentation

- GM advised that progress should occur in 2022 on these Heritage matters with new contractors being onboarded to assist with works.
- GM advised that the Wollombi Brook Aboriginal Cultural Heritage Conservation Area (WBACHCA) Plan of Management had been updated and sent to the Registered Aboriginal Parties and Heritage NSW – nil comment received. An implementation group meeting for 2022 was yet to be scheduled (previously COVID affected).
- GM advised that Wambo Coal has existing approved entitlement for underground mining over existing Wambo Mining Leases. A separate conservation agreement, which conserves against open cut mining will be put in place over Wambo Mining Leases.
- GM advised final conservation agreements for WBACHCA and Loders Creek CHCA executed by directors for MTW were submitted to Heritage NSW Heritage NSW for execution by the Minister on 22 Feb 2022.

Business Papers

Business papers were provided to CCC members prior to the meeting, including a summary of; Complaints, Incidents, Environmental Monitoring, Rehabilitation, Website Uploads and Community Investment Update. MTW Monthly Environmental Monitoring Report (MEMR) for September, October and November 2021were provided. December MEMR to be provided at a later date.

Management Plans / Reporting

- Purchase of Crown Road D601471 Lot C, part of the former Wallaby Scrub Road, was finalised 11/01/2022. Warkworth Mining Ltd now owns this parcel of land adjacent to current WML mining activities, after several years of sale processes.
- Exploration Licence 7712 was renewed by Department of Regional NSW -Division of Mining, Exploration and Geoscience on 12/01/2022. EL7712 underlies MTO mining tenements. EL 7712 will now expire on 23 February 2026.
- On 21/01/2022 DPIE approved updated Noise Management Plan, most recently submitted on 17 December 2021.Environmental management plans and reports can be accessed and downloaded from the MTW website.

8. OTHER AGENDA ITEMS

Nil.

9. GENERAL BUSINESS

General Business MTW – Lemington Underground Water Storage & WML Workshop Modification

Refer to presentation

- GM provided CCC with an update on the Lemington Underground Water Storage & WML Workshop Modification Update. Modification applications lodged, the application and accompanying documents were on exhibition from 5-18 October 2021. MTW provided DPIE with a response to submissions 20/12/21 which should be available on the Department of Planning, and Environment's website.
- Further response to a request for information provided to DPIE on 14/2/22.

General Business MTW - Community Support Program (CSP)

Refer to presentation

- The Community Support Program has continued. The 2022 round of applications were advertised in September-October 2021 and closed 5 November 2021. There were 15 new applications received. 12 community projects or events are being supported in 2022 from the CSP application process, or sponsorships which were delayed in 2021 due to COVID.

General Business - CCC Members

- DM asked about exploration west of MTW leases, and noted the open cut mining exempted area from Bulga Village. DM noted he recalls previous drilling investigations, including gas, west of MTW and asked if GM has knowledge of this. GM advised he is not aware of those aspects, but is aware of the exploration within the MTW tenements that underly our existing mining tenements, particularly for the underground feasibility
- DM asked about sound attenuation of MTW fleet, and whether there is periodic testing of the fleet. GM advised that MTW's process is to test mobile fleet every year to test 1/3 of mobile fleet and this is described in the Noise Management Plan. GM also noted that all new plant is attenuated and tested as part of commissioning.

- DM discussed vegetation / screening along Putty Road. DM noted that MTW had previously provided photos of vegetation screening. Has had enquiry from personnel travelling can see a lot of the coal mine. Considers that the visual impact of travelling through the area is high. DM notes that Putty Road should be screened as part of the consent. Particularly bad around the underpass. DM noted that a query regarding haul trucks parking near Putty Road had been previously responded to.
- IH enquiry from another resident regarding the size of the spoil piles. IH will provide details from the enquirer.
- IH communications from various committees (VPA, CCC) is important. IH will arrange a community meeting in the Bulga Community Hall. Date to be confirmed, and IH will communicate when that has been determined.
- IH noted a thank you to MTW for the VPA funds that are going into the Bulga Community Hall – Hall, storeroom, improvements to the water supply which will improve the venue considerably.
- CG noted the issue with the site visual impacts, is there anything the company is looking at in that regard. GM noted there is limited scope in some areas in regards to dumps and where roads are in relation to mining dump heights. MTW has installed additional visual screening in areas where mine is progressing west until vegetation is established. Looking to fill in South Pit in the future which will improve visual aspects in the future as this gets filled. HJ noted there could be opportunity for an area to be beautified to create a viewpoint for interested personnel to look into the mine.
- BB noted that there are active personnel in the community from the Wine & Tourism sector which oppose mining landuse. BB considers that it is important that all are aware, and there is opportunity for harmony as the other landuses will be present far longer than mining.
- HJ provided an update on Supreme Court in relation to Australian Electoral Commission which are looking to declare the recent local government elections void. HJ will keep CCC posted in that space.

10.NEXT MEETING

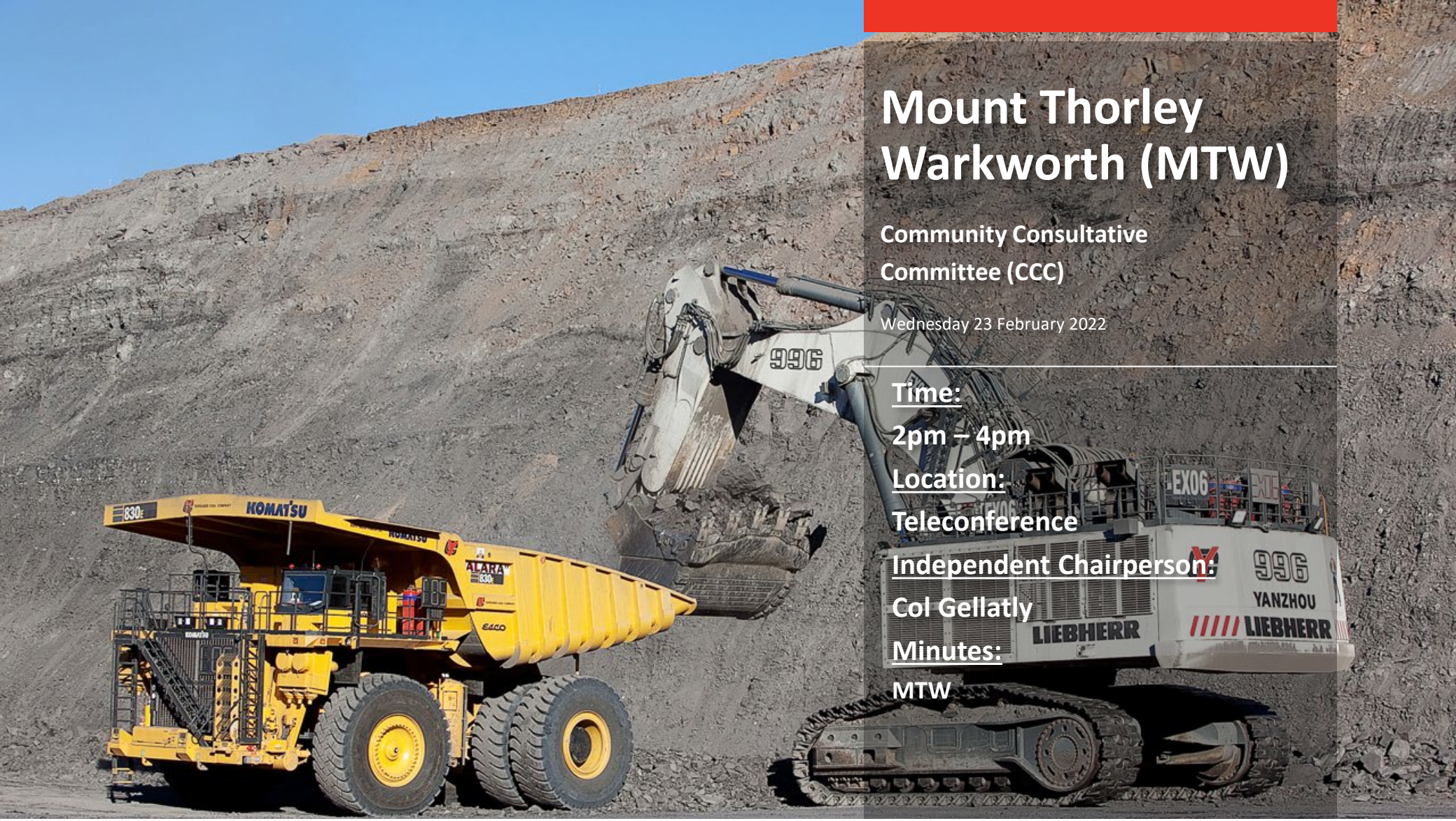
Next CCC Meeting: 26 February 2022, 2pm

MEETING CLOSED 4:00pm.

SUMMARY OF ACTIONS

Action 1: MTW CCC Meeting to include opportunity for VPA public information to be shared

Action 2: MTW share information in relation to the aerial seeding that occurred in late 2021.



Mount Thorley Warkworth (MTW)

Community Consultative Committee (CCC)

Wednesday 23 February 2022

Time:
2pm – 4pm

Location:
Teleconference

Independent Chairperson:
Col Gellatly

Minutes:
MTW

Reaching new horizons together

YANCOAL
兖煤澳大利亚有限公司

Agenda

1. Welcome (CoI)
2. Apologies (CoI)
3. Declaration of pecuniary interests / conflicts of interest (CoI)
4. Business Arising (CoI)
5. Correspondence (CoI)
6. Confirmation of the previous meeting's minutes (CoI)
7. Proponent reports and overview of activities
   - Progress of the project, environmental monitoring and performance, community complaints
8. Other agenda items
9. General business
10. Next meeting

1. Welcome

Warkworth Mining Limited
EMERGENCY EVACUATION PROCEDURES

ACTION TO BE TAKEN ON DISCOVERING A FIRE OR OTHER EMERGENCY

1. ALERT PERSONS NEARBY OF THE SITUATION.
2. EXTINGUISH THE FIRE IF ABLE TO DO SO WITH SAFETY
3. IF NOT ABLE TO PERFORM 2) NOTIFY RECEPTION OF THE EMERGENCY
3. FOLLOW THE EVACUATION PROCEDURES.

ACTION TO BE TAKEN TO EVACUATE THE BUILDING.

1. FOLLOW INSTRUCTIONS OF THE WARDENS.
2. CLOSE YOUR OFFICE DOOR AND TAKE THIS SIGN WITH YOU.
3. WALK TO THE NEAREST EXIT – DO NOT RUN.
4. PROCEED TO THE EMERGENCY MUSTER POINT ABOVE THE FIRE DAM.
4. DO NOT RETURN TO WORK AREA FOR ANY REASON.

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Apologies

Apologies – Stewart Mitchell

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3. Declaration of pecuniary interests / conflicts of interest

All members must declare interests.

These declarations should include any pecuniary or other interest (including any payment, gift or benefit) intended or likely to influence - or that could be reasonably perceived by an impartial observer as intended or likely to influence - the member to:

- act in a particular way (including making a particular decision)
- fail to act in a particular circumstance
- otherwise deviate from the proper exercise of their duty as a member.

Examples of pecuniary or other interests include holding shares in an entity carrying out the project, holding a private contract with the proponent, holding voluntary acquisition or mitigation rights under the proponent's consent, or receiving sitting fees or payments of personal expenses from the proponent; and if the member represents a stakeholder group, if the stakeholder group has received funding or a grant from the proponent.

Source: *Community consultative committees Guidelines (State Significant Projects), January 2019.*

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4. Business Arising

Action No.	Action	Response/ Update
1	MTW to catch up with Neville regarding his heritage items outside of what is required in the MTW HHMP	Completed.
2	MTW to consult with neighbouring mines on elevated dust level in Warkworth village depositional dust gauge	MTW consulted with neighbouring operations 8/2/22 to enquire regarding elevated dust readings in Warkworth Village. Neighbouring operation advised PM10 elevated TEOM results occurred during October 2021 and a notification letter was provided to residents within the area. MTW has installed an additional depositional dust monitor in the vicinity of Warkworth, to further investigate if the current location is being impacted by near the road and other localised sources. Monitoring of the new monitor will progress this investigation.
3	IH to provide letter asking for government support to improve mobile coverage to CCC.	GM contacted IH to request / discuss this letter on 8/2/22. This action was misinterpreted.

4. Business Arising

Action No.	Action	Response/ Update
4	MTW to follow up on Wallaby Scrub Road intersection referral to local traffic committee, Singleton Council.	GM discussed with HJ on 8/2/22, who has requested for referral for this intersection to the local traffic committee. Progressing with Singleton Council.
5	MTW to provide details on Historic Heritage Conservation Fund - status of use of funds and process for applications.	MTW has made all payments $500,000 required by the Warkworth consent. In conversation with Council, nil additional projects funded in 2021. More works on promotion of the fund is desired by both SSC and MTW. For HHCF, the CHAG was consulted with on the establishment of the fund, as required by the consent, but it is SSC, based on the recommendations on applications by the Singleton Heritage Advisory Council (SHAC), which determine which applications are successful. The CHAG does not have a role in assessing applications, but may be consulted on the applications. The outcomes of the applications should be communicated to the CHAG by MTW, and the identification of potential applications are welcome from the CHAG.
6	MTW to investigate option of leasing land to RMS to relocate any future bridge maintenance construction compounds.	MTW has investigated. Leasing land to Transport for NSW (TfNSW formerly RMS) is possible, subject to suitable land being agreed to with TfNSW, a suitable access arrangement being completed with TfNSW, with due consideration to any existing licensee. Contact has been made with TfNSW in February 2022 to progress discussions.

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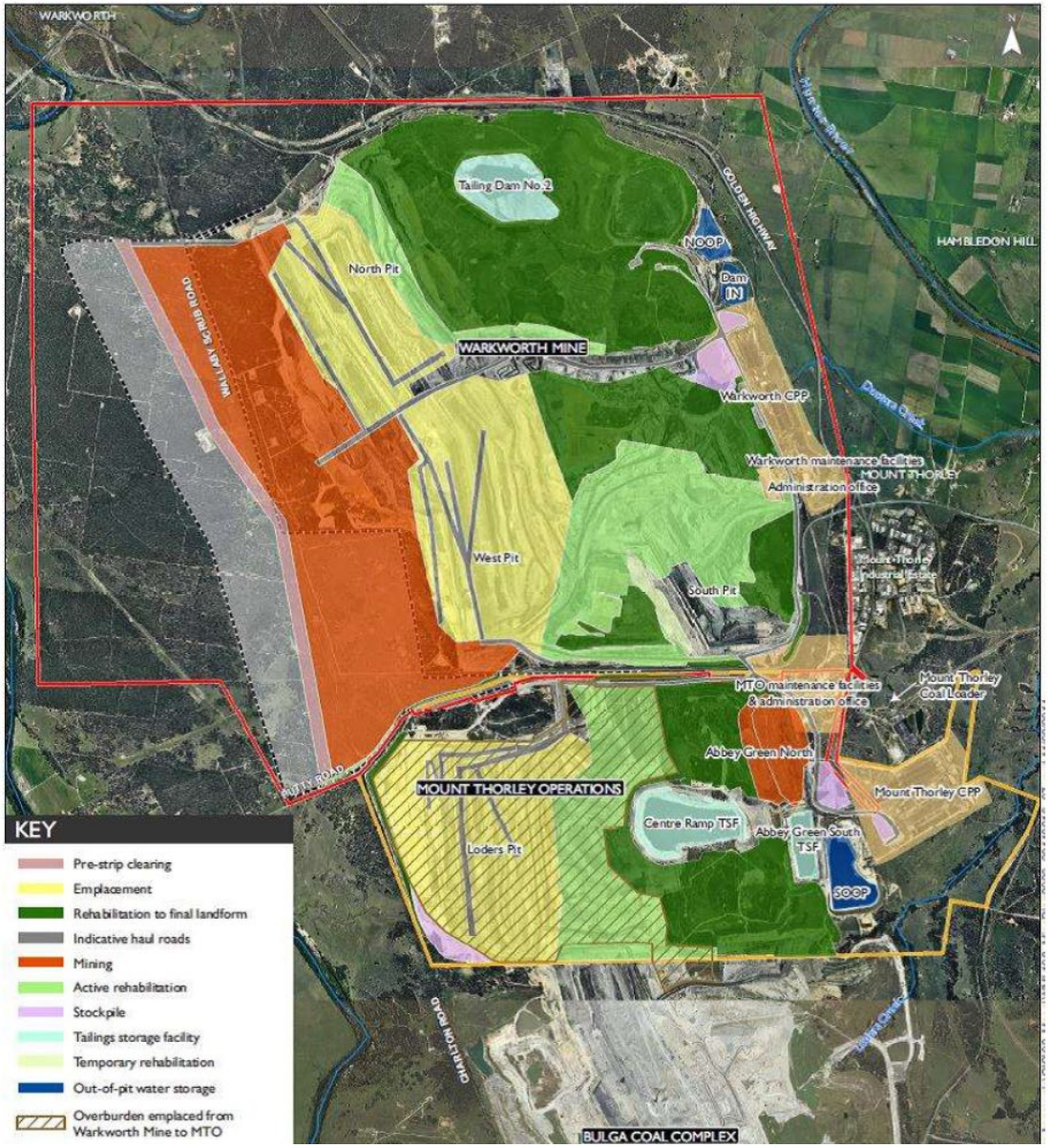
MTW Operations

- MTO: Coal production has ceased at MTO as previously communicated. Load and haul waste will continue to be dumped in the pit from the WML.
- WML: DL103 has been working in the lower passes of North Pit while DL 101 is working in the lower passes of West Pit respectively
- WML: Normal load and haul operations have continued
- Coal processing and train loading normal operations.
- MTO: Licenced Hunter River Salinity Trading Scheme (HRSTS) discharge operations occurred in Nov-Dec 2021, and Jan 2022 with over **1.1 GL water discharged** from the Dam 9S MTO licenced discharge point.

MTW Operations – NOOP Dam

NOOP is an approved dam in Warkworth Continuation Project development consent SSD-6464 and will provide improved water security / balance position at MTW.

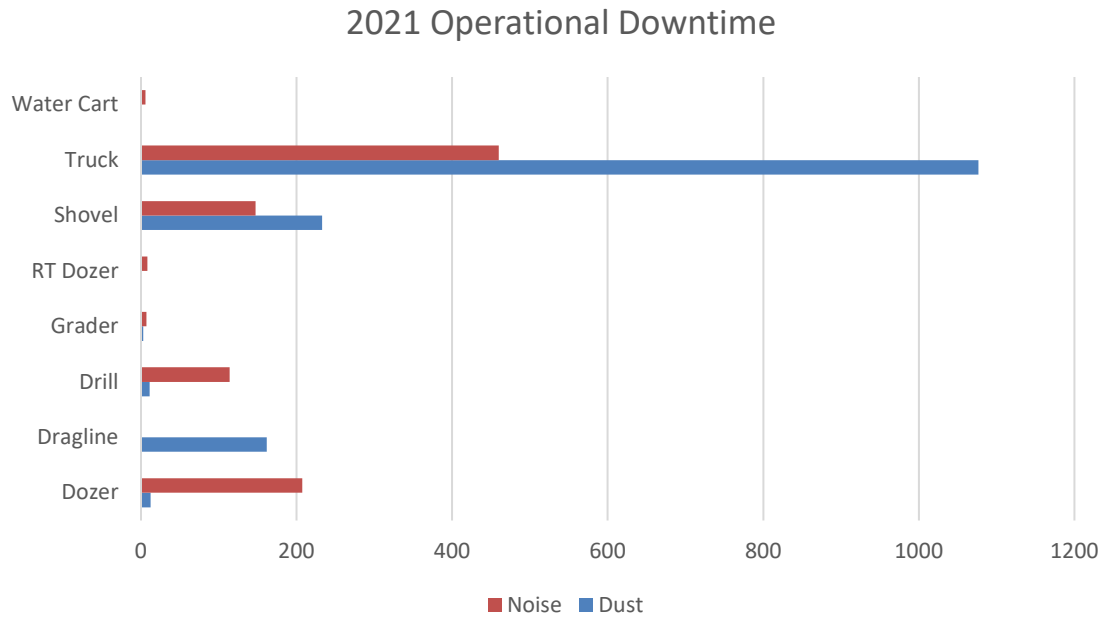
- North Out of Pit (NOOP) Dam pre-construction commenced late 2021 with stripping and top soil removal and preparatory civil works now complete.
- Main excavation by EX312 commenced mid February 2022.
- Blasting activities expected to commence in early April 2022.



Exploration

- All exploration sites for 2022 are on Yancoal owned land, and mining and exploration tenements.
- The 2022 program is expected to commence March – April 2022

MTW Operations

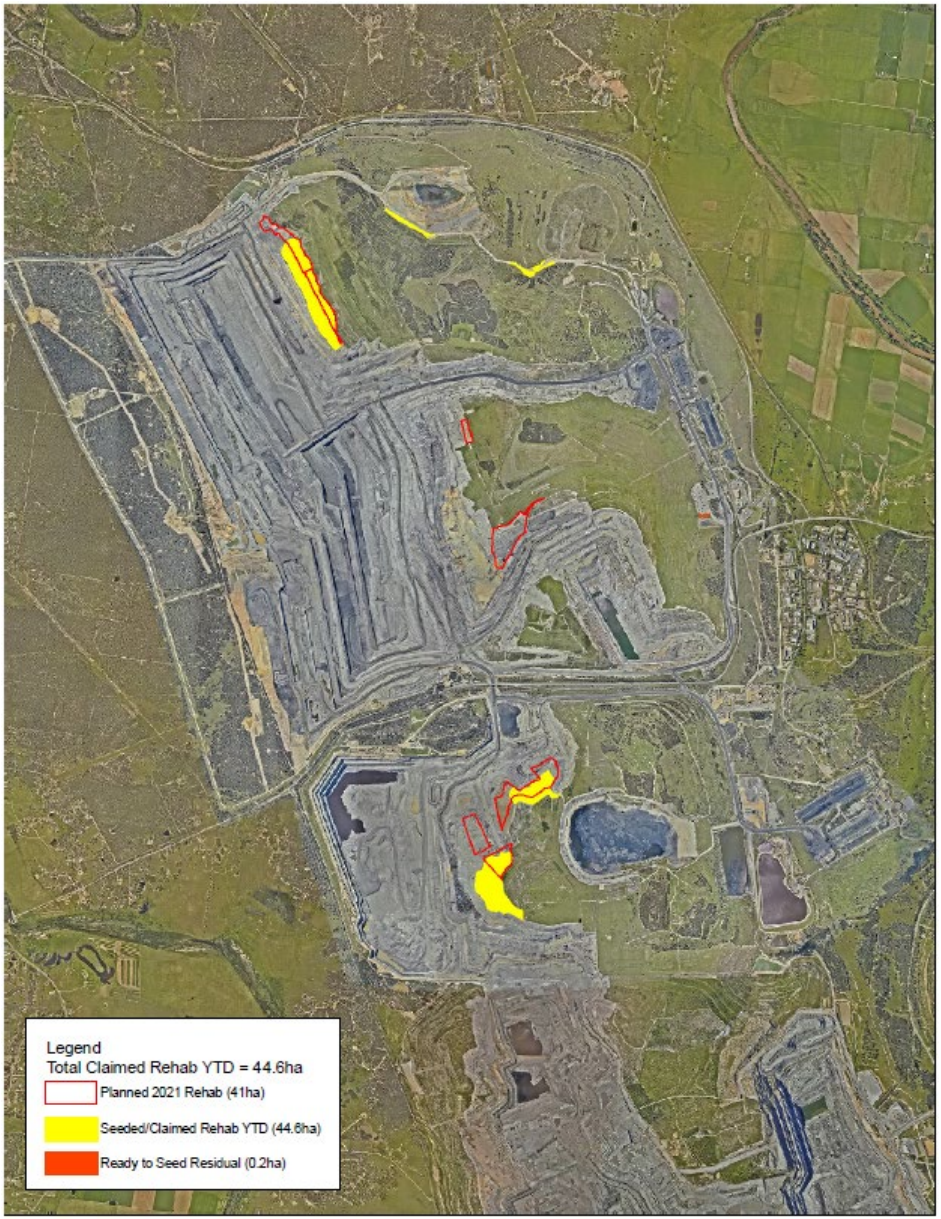


MTW Noise Monitoring YTD			
	# CRO Assessments	# Individual assessment above trigger	# Nights above trigger
2022	526	1	1
2021	7043	106	46
2020	7510	72	42
2019	8023	93	45

MTW Operations – Rehabilitation/ Disturbance 2021

Rehabilitation reforecast for 2021 - 41Ha seeded (shown in red).

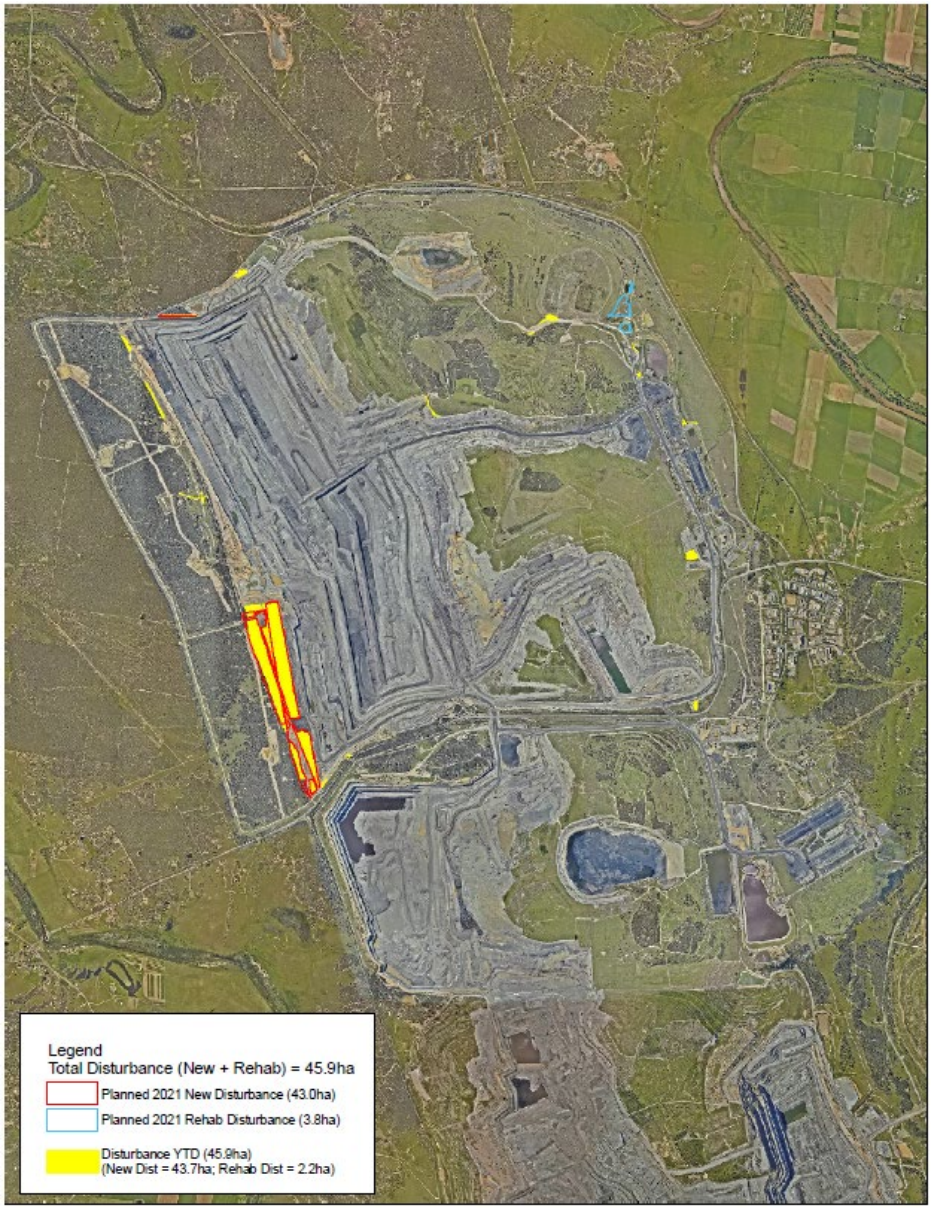
- Progress to end of December 2021:
  - Seeded = 44.6ha



MTW Operations – Rehabilitation/ Disturbance 2021

Disturbance forecast for 2021 – 46.8Ha (New Disturbance and Rehab Disturbance shown in red and blue polygons respectively).

- Progress to end of December 2021:
  - Disturbed = 45.9ha



MTW Operations – Rehabilitation/ Disturbance 2022

Disturbance target for 2022 – 80.5Ha (Includes 38ha of rehab disturbance associated with NOOP construction and Tailings Dam 1 dump area)
Rehabilitation target for 2022 – 35ha

Warkworth North Pit North

MTW Vertebrate Pest Management

Q4 2021

1080 ground baiting programs targeting wild dogs and foxes were undertaken at MTW and all Biodiversity Areas.

The following programs will be scheduled in 2022:

- Thermal ground shoot at the Putty and Condon View BAs: February
- Aerial shoot (NPWS) at the Goulburn River and Seven Oaks BAs: February and March
- Feral pig thermal ground shooting program at the Goulburn River Biodiversity Area: March
- 1080 ground baiting programmes targeting wild dogs and foxes at MTW and all Biodiversity Areas in Autumn and Spring
- Professional Wild Dog Controller Program
- Noisy Miner program at the Goulburn River and Bowditch BAs: August
- Thermal ground shoot at Bowditch BA: August
- Feral pig 1080 baiting program at the Goulburn River BA: October
- Kangaroo management at MTW
- Additional programs as required

The 2022 vertebrate pest programs will be coordinated with LLS and other large landholders in the area so programs are able to be undertaken at the same time across the broader Hunter Valley area.

MTW Weed Management

Weeds targeted in MTW operational areas in 2021 included:

- Galenia *(Galenia pubescens)*
- Blue heliotrope *(Heliotropium amplexicaule)*
- Narrow leaf cotton bush (Gomphocarpus fruticosus)
- Lantana *(Lantana Camara)*
- Mother of millions *(Bryophyllum delagoense)*
- Opuntia (Pear) species (Tiger, Prickly and Creeping Pear)
- Saligna *(Acacia saligna)*
- St Johns Wort *(Hypericum perforatum)*
- Rhodes Grass *(Chloris gayana)*
- African Lovegrass *(Eragrostis curvula)*
- *African Olive (Olea europaea ssp. Cuspidata)*
- *African Boxthorn (Lycium ferocissimum)*
- *Panic Veldt Grass (Ehrharta gayana kunth)*

Weeds targeted in 2022 will focus on the priority weed areas identified in the MTW Annual Weed Survey and 2022 pre strip areas.

Cut and paint of Acacia Saligna in the rehab

Backpack spraying targeting Galenia

MTW BA Weed Management

Weeds targeted in the Southern and Northern Biodiversity Area YTD included:

- African Love Grass *(Eragrostis curvula)*
- Prickly Pear *(Opuntia stricta)*
- African Boxthorn *(Lycium ferocissimum)*
- Blue Heliotrope *(Heliotropium amplexicaule)*
- Telegraph Weed *(Heterotheca grandiflora)*
- Mother of Millions *(Bryophyllum delagonese)*
- Coolatai Grass *(Cynodon dactylon)*
- *Patterson's Curse (Echium plantagineum)*
- Whisky grass *(Andropogon virginicus)*
- Farmers Friends *(Bidens ssp)*
- Fleabane *(Conyza sp.)*
- Stinking roger *(Tagetes minuta)*
- Galenia *(Galenia pubescens)*
- Lantana *(Lantana camara)*
- Various grasses *(Grass spp)*
- *Green Cestrum (Cestrum parqui)*
- St Johns Wort *(Hypericum perforatum)*

Fleabane in planting strips at NBA

Control of Telegraph weed in SBA1 planting area

MTW Northern BA Planting Program

2021 Warkworth Sands Woodland (WSW) planting progress:

- 2021 planting strips were sprayed out ahead of the sand getting spread.
- The additional 3,632m^3 was spread into strips and seeded with a native grass mix in April.
- Approximately 1500 WSW plants were installed in a selection of translocated topsoil plots in NBA1 with fertiliser/water crystal plant starter and biodegradable cardboard guards.

2022 program:

- Planting of remaining 2021 WSW topsoil plots and additional infill areas is scheduled for Feb/Mar 2022.
- Slashing of the 2022 planting area.
- Weed control of planting areas.
- Transportation and spreading of WSW sand from ahead of mining at MTW.
- Seeding of sand strips with native grass mix.
- Propagation of WSW plants.
- Planting of approximately 10,000 WSW plants.

2021 planting strips

2022 planting area

WSW plants

MTW Southern BA Planting Program

2021 Central Hunter Grey Box – Ironbark Woodland and River Oak Forest progress:

- Weed control of planting areas.
- Infill planting has been completed in SBA3, SBA4 and SBA5 areas with approximately 4000 River Oak Forest and 9,000 Central Hunter Grey Box – Ironbark Woodland plants.
- Drone footage below was captured in October.

2022 program:

- Weed control of planting areas.
- 11ha Warkworth Sands Woodland to be planted into SBA1.
- Infill of Central Hunter Grey Box – Ironbark Woodland and River Oak Forest into SBA3, SBA4 and SBA5.

2021 infill planting

2022 WSW planting area SBA1

2022 infill planting area SBA5

MTW Goulburn River BA Planting Program

2021 Yellow Box - Grey Box Red Gum Woodland and River Oak Forest progress:

- Slashing and weed control of planting areas undertaken.
- 2021 infill planting completed with approximately 7,000 River Oak Forest and 5,000 Yellow Box - Grey Box Red Gum Woodland plants.
- High rainfall and river flows impacted the accessibility to some infill planting areas.

2022 program:

- Slashing and weed control of planting areas.
- Infill planting completed with approximately 5,000 River Oak Forest and 5,000 Yellow Box - Grey Box Red Gum Woodland plants.

2021 infill planting

Slashing around planting areas

Goulburn River creating access issues

MTW Historic Heritage Management - Actions

Historic Heritage Items	Status
Coordinate lawn maintenance across HH sites	**Ongoing** **PO raised and now scheduling work** Contractor engaged to undertake ongoing quarterly maintenance.
RAAF Mess Hall track maintenance and repairs	**In Progress** Ground Disturbance Permit approved, awaiting contractor .
Arrange for asbestos to be removed from Red Brick House and RAAF Mess Hall area.	**Quotes Received** Works to be completed in 2022.
Obtain quotes for tree removal at Springwood and RAAF	**Quotes Received** Works to be completed in 2022.
Obtain quotes for Red Brick – door and window plywood replacement and minor roof repairs.	**Quote Received** **PO raised** Works to be completed in 2022.
Obtain quotes for Red Brick – minor brickwork repairs.	**Quote Received** **PO raised** Works to be completed in 2022.
Historic Heritage Management Plan update	Existing HHMP distributed to CHAG members 23/11/21, along with intent to update in Q1 2022.
Historic Heritage Annual Inspection	**Completed 18/11/21**

MTW Cultural Heritage Management - Actions

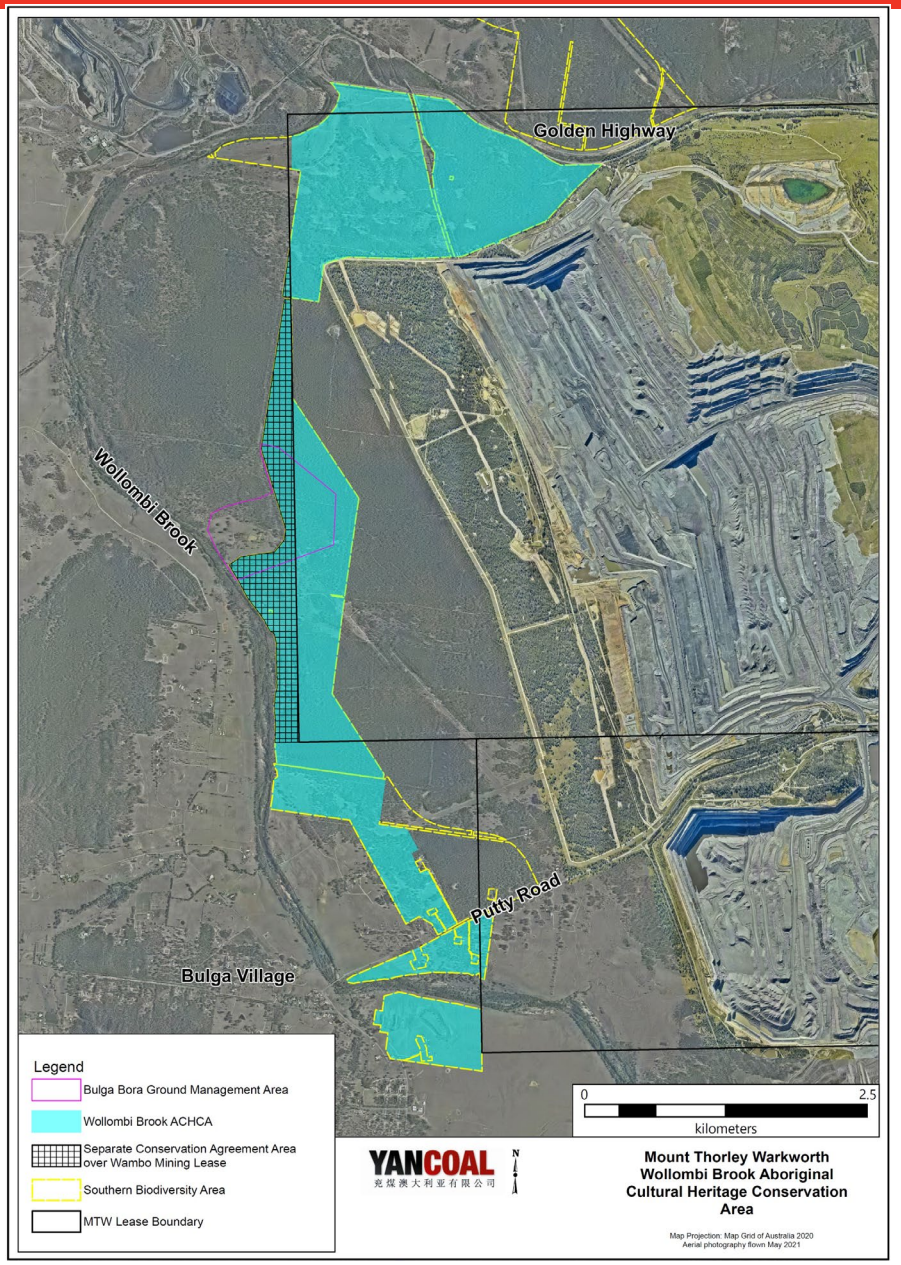
Cultural Heritage Items	Status
Coordinate meeting of CHWG for 2022.	Meeting yet to be scheduled – COVID affected
Coordinate meeting of Wollombi Brook Aboriginal Cultural Heritage Conservation Area Plan of Management Implementation Group (WBACHCA PMIG) for 2022.	Meeting yet to be scheduled – COVID affected **Updated Plan of Management for Wollombi Brook Aboriginal Cultural Heritage Conservation Area sent to RAPs/CHWG and Heritage NSW for their review - December 2021. Outlines approach to 2 x Conservation Agreements in WBACHCA. Nil comment received on updated Plan of Management.**
Obtain quotes for assistance with scar tree re-location in 2022.	**Quote Received** **Terms of reference being drafted** **New archaeologist being engaged** Consultation with CHWG required prior to progressing works
Replace signage	**Ongoing-**Commenced in Q4 2020.
Action recommendations following AHMP Annual Compliance Report, including re-barricading sites and erecting new signage	**Quote Received** Commenced in Q3 2021.
Cultural Heritage Annual Inspections	**Completed 2/11/21.**

Example of barricading and signage being replaced

New signs format

MTW Cultural Heritage Management - Actions

Cultural Heritage Items	Status
WBACHCA and Loder Creek (LCACHCA) conservation agreement progression	Wambo has existing entitlement to Underground Mining which predates the 2015 development consent. Consultation with DPIE on this issue, and DPIE endorse MTW's approach of 2 x CA's proposed for WBACHCA: – 1 x over non Wambo mining lease area which conserves against all mining, and - 1 x over Wambo mining lease area which conserves against open cut mining. An updated Plan of Management for WBACHCA which includes the above approach was circulated to CHWG/RAPS and Heritage NSW in December 2021 – nil comment received. Updated draft Conservation Agreements provided to Heritage NSW in December 2021 with the above agreement approach to CS's for the WBACHCA. Final CA's for WBACHCA and LCACHCA, executed by MTW directors were submitted to Heritage NSW for execution by the Minister on 22 Feb 2022.



MTW Operations - Business Papers

- Business papers provided to CCC prior to meeting
- Includes summary of:
  - Complaints, Incidents, Environmental Monitoring, Rehabilitation, Website Uploads, Community Investment Update

- Appendix A, B, C - MEMR for September, October and November 2021
- Appendix D – December 2021 MEMR to be provided at a later date.

Management Plans / Reporting

- Purchase of Crown Road D601471 Lot C, part of the former Wallaby Scrub Road, was finalised 11/01/2022. Warkworth Mining Ltd now owns this parcel of land adjacent to current WML mining activities, after several years of sale processes.

- Exploration Licence 7712 was renewed by Department of Regional NSW - Division of Mining, Exploration and Geoscience on 12/01/2022. EL7712 underlies MTO mining tenements. EL 7712 will now expire on 23 February 2026.

- On 21/01/2022 DPIE approved updated Noise Management Plan, most recently submitted on 17 December 2021. Environmental management plans and reports can be accessed and downloaded from the MTW website.

Agenda

1. Welcome (CoI)
2. Apologies (CoI)
3. Declaration of pecuniary interests / conflicts of interest (CoI)
4. Business Arising (CoI)
5. Correspondence (CoI)
6. Confirmation of the previous meeting's minutes (CoI)
7. Proponent reports and overview of activities
   - Progress of the project, environmental monitoring and performance, community complaints
8. Other agenda items
9. General business
10. Next meeting

Agenda

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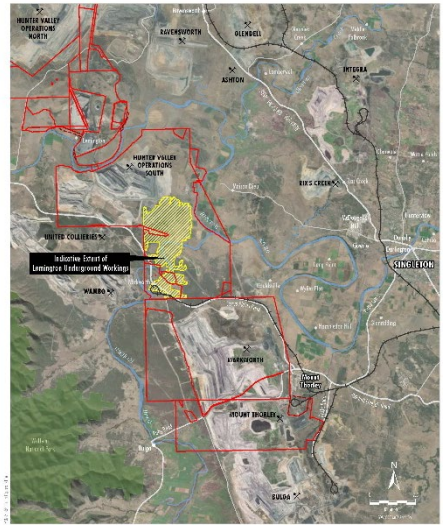
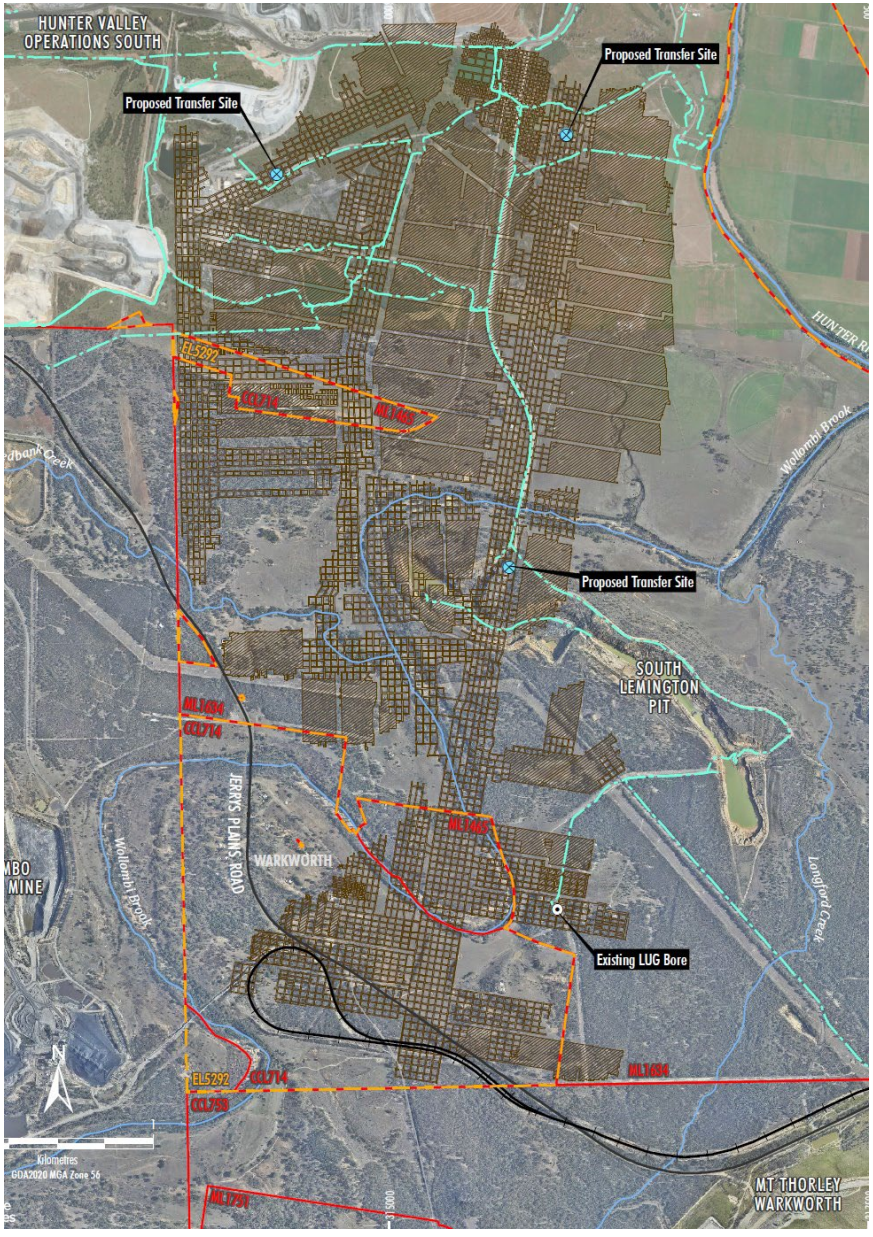
9. General business
10. Next meeting

Proposed Modification - Lemington Underground Water Storage & WML Workshop Modification Update

Proposed Modification – Water Management

- Use of the former Lemington Underground Mine void as a shared temporary water storage for both MTW and HVO
- Construction of three new bore sites and duplication of the existing LUG bore
- Use of these four bore sites to transfer water from HVO and MTW into the former underground mine void and/or extract water from the void and transfer back to HVO and MTW
- Development of supporting infrastructure (e.g. pipelines and powerlines)
- Duplicate bores and infrastructure may be constructed at each location

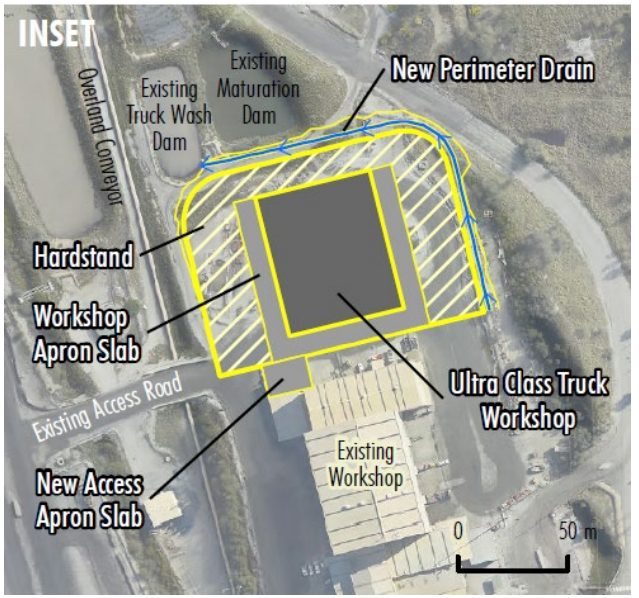




Proposed Modification - Lemington Underground Water Storage & WML Workshop Modification Update

Proposed Modification - Workshop

- In addition to the water storage modification, the Warkworth Consent would also be modified to enable an extension to the existing workshop to service and house Ultra Class Trucks
- Located within approved/historical disturbance areas



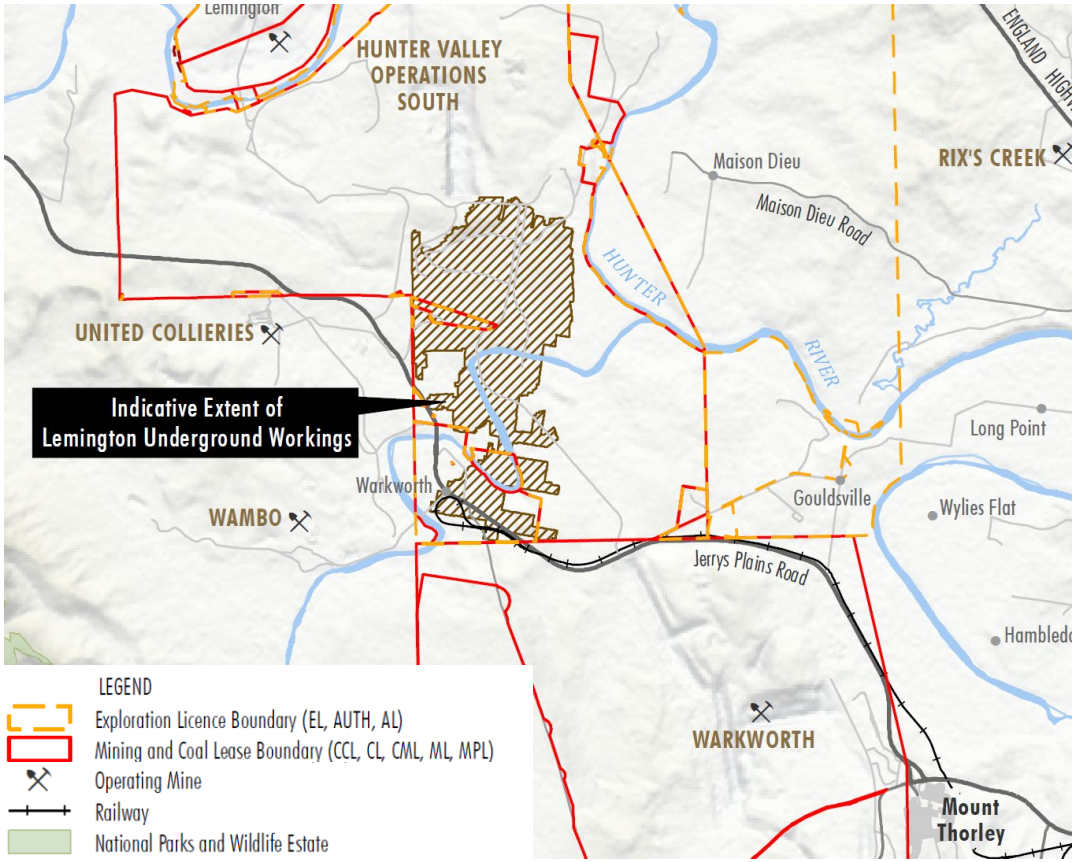
Proposed Modification - Lemington Underground Water Storage & WML Workshop Modification Update

Benefits of the Modification

- Increase total water storage capacity
- Reduce the risk of active pits being required to temporarily store excess mine water, interrupting mining operations
- Reduce reliance on water extraction from the Hunter River
- Avoid evaporative losses, increasing long-term water availability

Modification Status

- Modification applications lodged:
  - The application and accompanying documents were on exhibition from 5-18 October 2021. (The Modification Reports are available for viewing through the NSW Department of Planning, Industry and Environment's website)
  - MTW provided DPIE with a response to submissions 20/12/21 which should be available on the Department of Planning, Industry and Environment's website.
  - Further response to a request for information provided to DPIE on 14/2/22.



Community update

Community Support Program

The Community Support Program has continued. The 2022 round of applications were advertised in September-October 2021 and closed 5 November 2021. There were 15 applications received. The following organisations are being supported in 2022 through the CSP:

- University of Newcastle – Upper Hunter Science and Engineering Challenge
- Life Education NSW - Covid Recovery – Health & Wellbeing program for children in the Singleton LGA.
- Samaritans Foundation – Diocese of Newcastle - Christmas lunch in Singleton 2022.
- Singleton Business Chamber - 2022 Singleton Business Excellence Awards
- Singleton Council - 2022 Singleton Business Excellence Awards
- Singleton Council - Christmas on John Street 2022
- Singleton Golf Club Lady Members – Christmas on John Street 2022
- Singleton Fire Brigade Social Club – Singleton Lolly Run 2022
- Singleton Rugby Club Ltd - First Aid Kit Equipment Upgrade
- Northern Agriculture Association Inc (NAA) – Singleton Show & Camp Draft 2022
- Singleton Theatrical Society - 2022 Musical – Mamma Mia

Westpac Rescue Helicopter Service – Hunter Valley Mining Charity Rugby League Day 2021
(Applicant from 2021 CSP, event postponed to September 2022 due to COVID.)

General Business

General Business – other?

Agenda

1. Welcome (CoI)
2. Apologies (CoI)
3. Declaration of pecuniary interests / conflicts of interest (CoI)
4. Business Arising (CoI)
5. Correspondence (CoI)
6. Confirmation of the previous meeting's minutes (CoI)
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8. Other agenda items
9. General business
10. Next meeting

Future Dates

Next Meeting Date

Date: 25 May 2022

Time: 2:00PM - 4:00PM

Location: Boardroom, North Warkworth Building or via Teleconference

Mount Thorley Warkworth Community Consultative Committee (CCC)

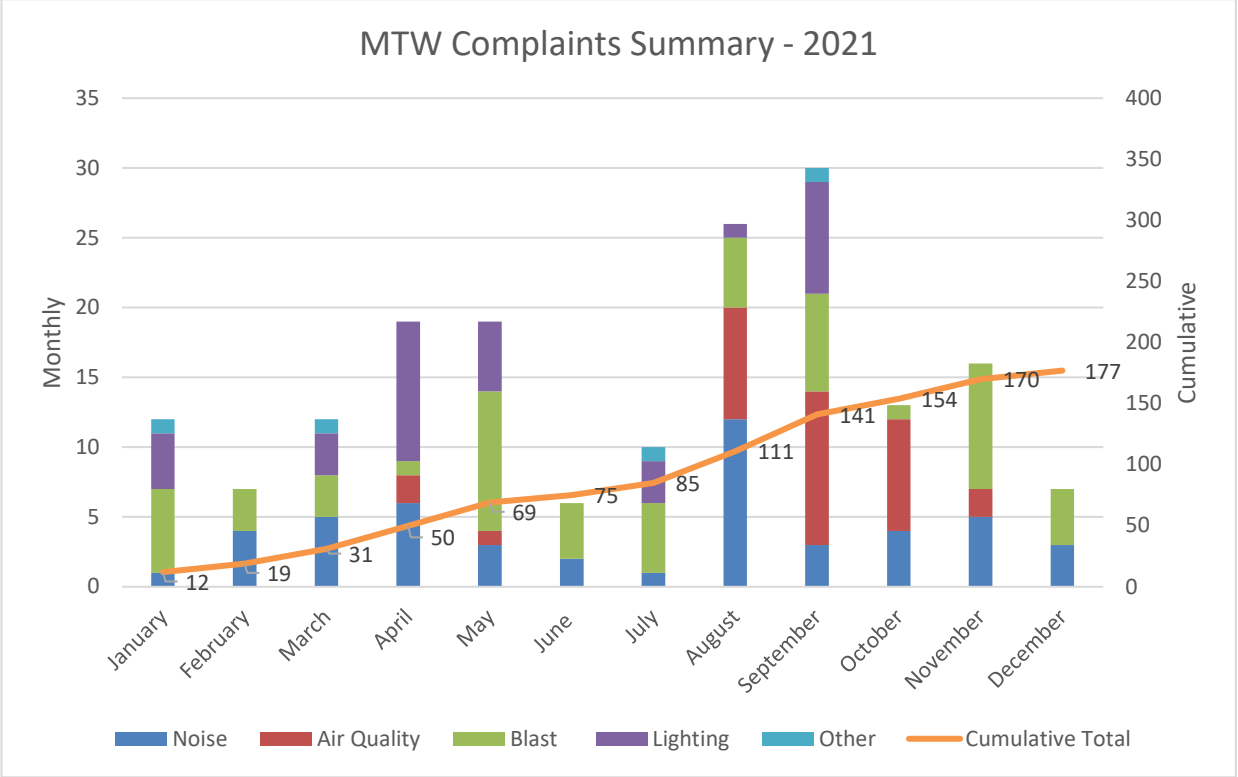
BUSINESS PAPERS February 2022

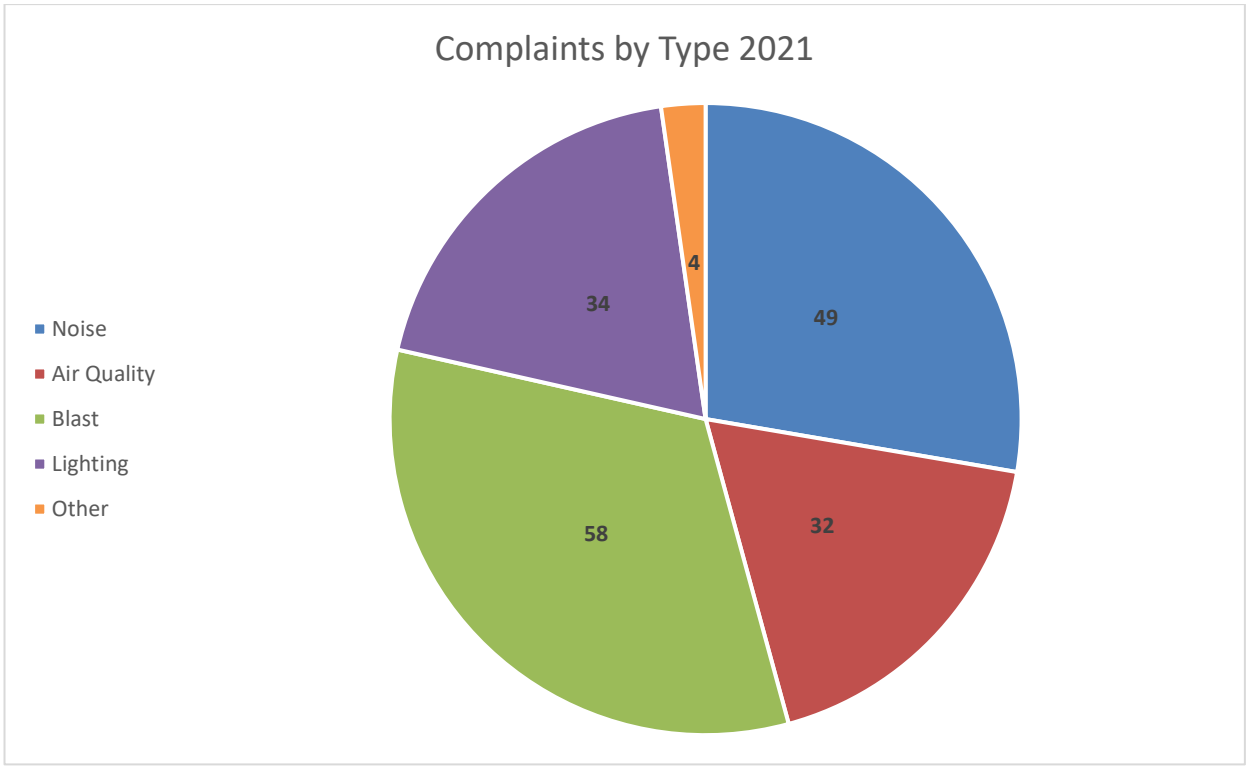
Contents page

Appendices

1 COMPLAINTS

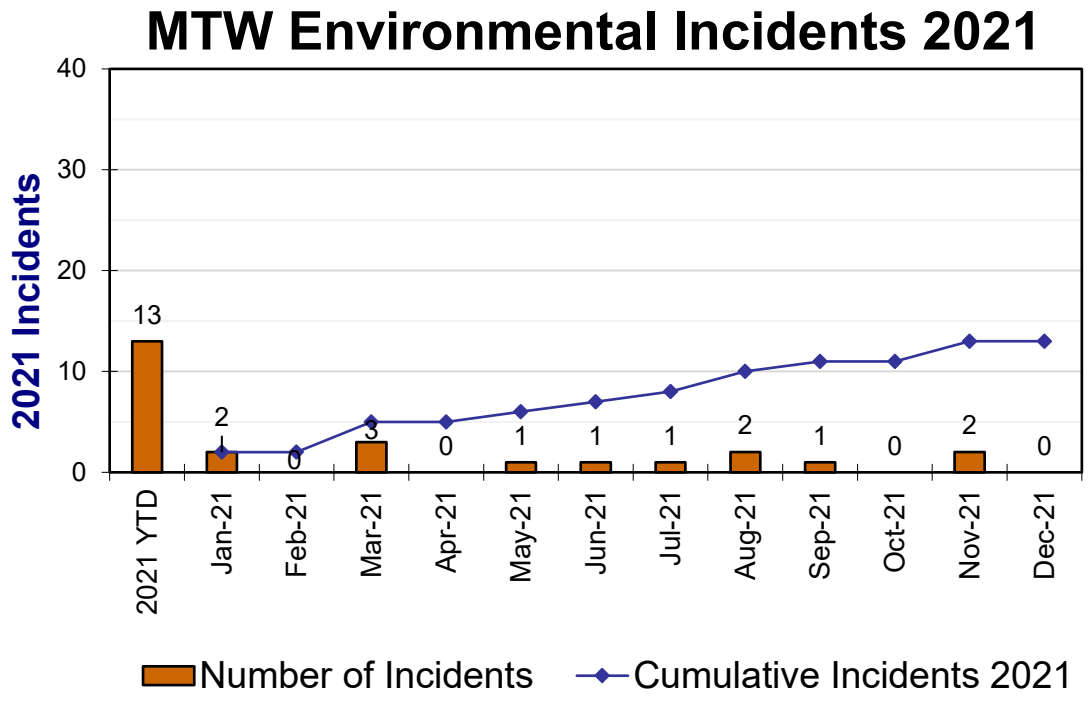
Complaints overview for period – 1 October 2021 to 31 December 2021





2 INCIDENTS

Environmental incidents overview for period – 1 July 2021 to 31 December 2021



Incident Summary for the period 1 July 2021 to 31 December 2021

Date	Details	Key Actions	Aspect
12/11/21	Overtopping of WML boundary sediment dams (53N, 54N) occurred 12/11/21 due to a significant rainfall event.	The Pollution Incident Response Management Plan (PIRMP) was activated as a result of the incident. Dams were actively dewatered during and after the rainfall event. Incident reports were submitted to the EPA, DPIE, and Resources Regulator 18/11/21.	Water Discharge
26/11/21	Overtopping of WML boundary dam 53N occurred 26/11/21 – 27/11/21 due to a significant rainfall event.	The Pollution Incident Response Management Plan (PIRMP) was activated as a result of the incident. Dams were actively dewatered during and after the rainfall event. Incident reports were submitted to the EPA, DPIE, and Resources Regulator 3/12/21.	Water Discharge

3 ENVIRONMENTAL MONITORING

Monthly summaries of environmental monitoring for the period 1 September 2021 to 31 December 2021

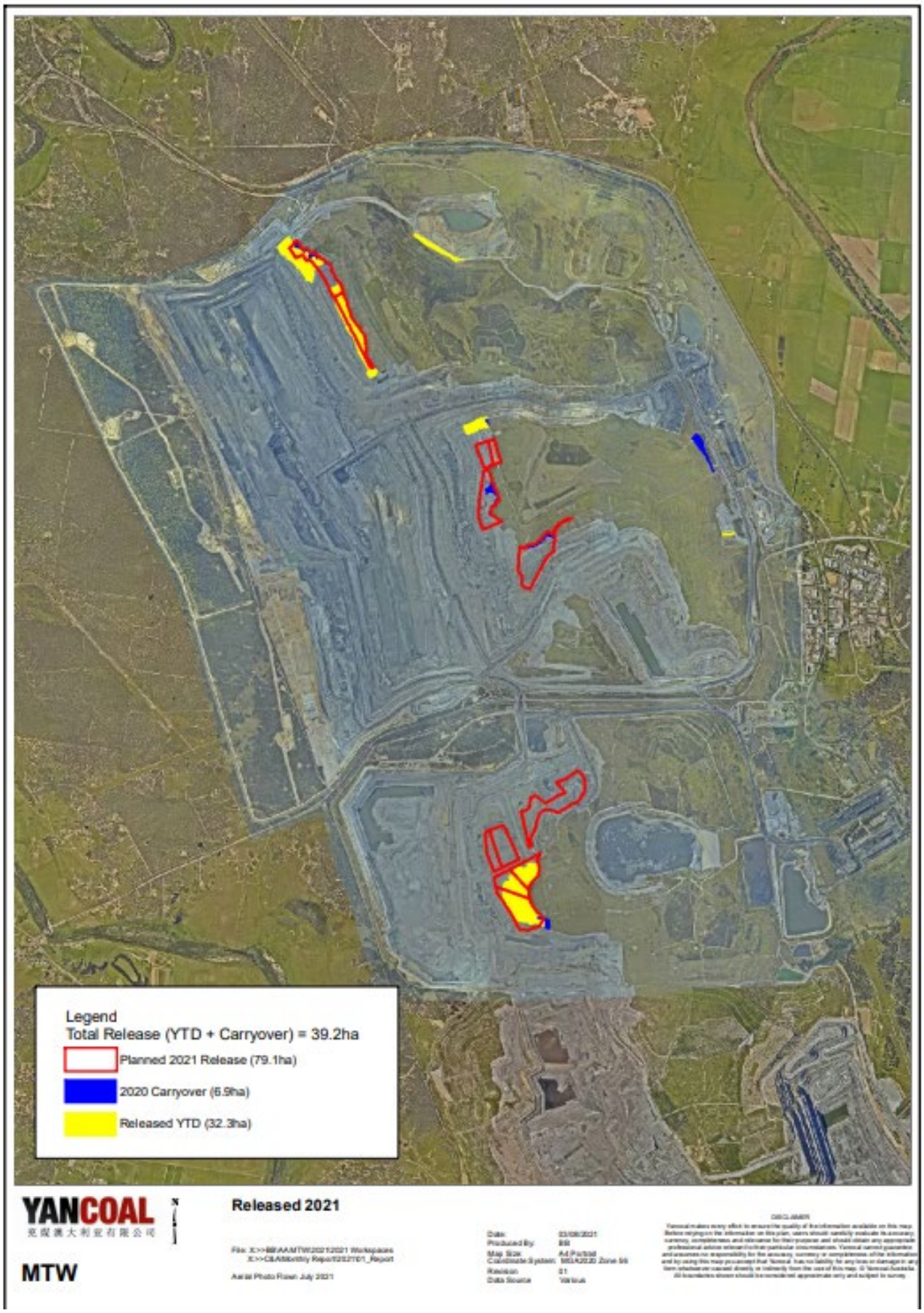
- **September 2021** - Attached as **Appendix A** (included as not provided subsequent to November 2021 CCC Meeting)
- **October 2021** - Attached as **Appendix B**
- **November 2021** - Attached as **Appendix C**
- **December 2021** – **Appendix D** (to be provided at a later date)

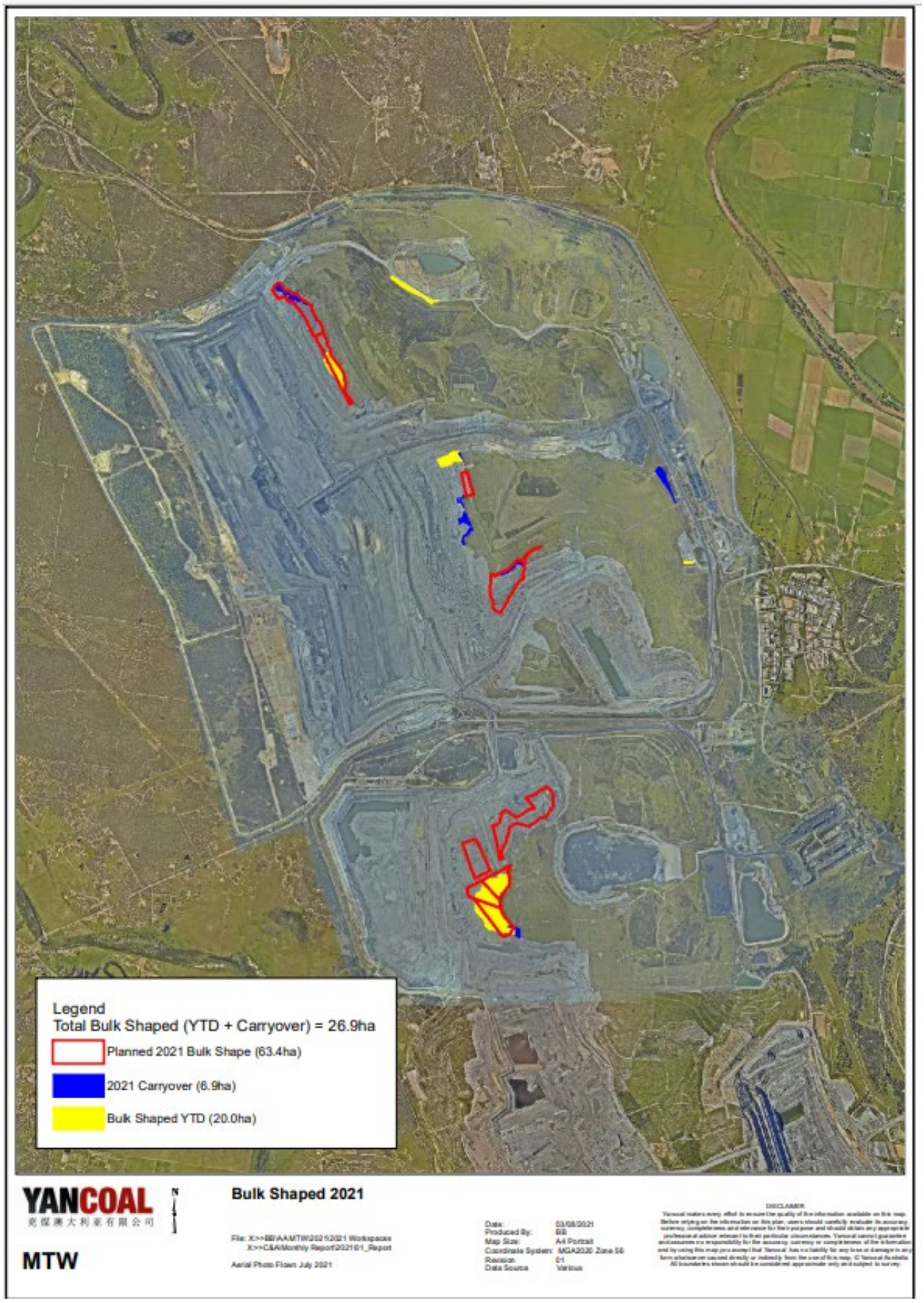
4 REHABILITATION PLAN

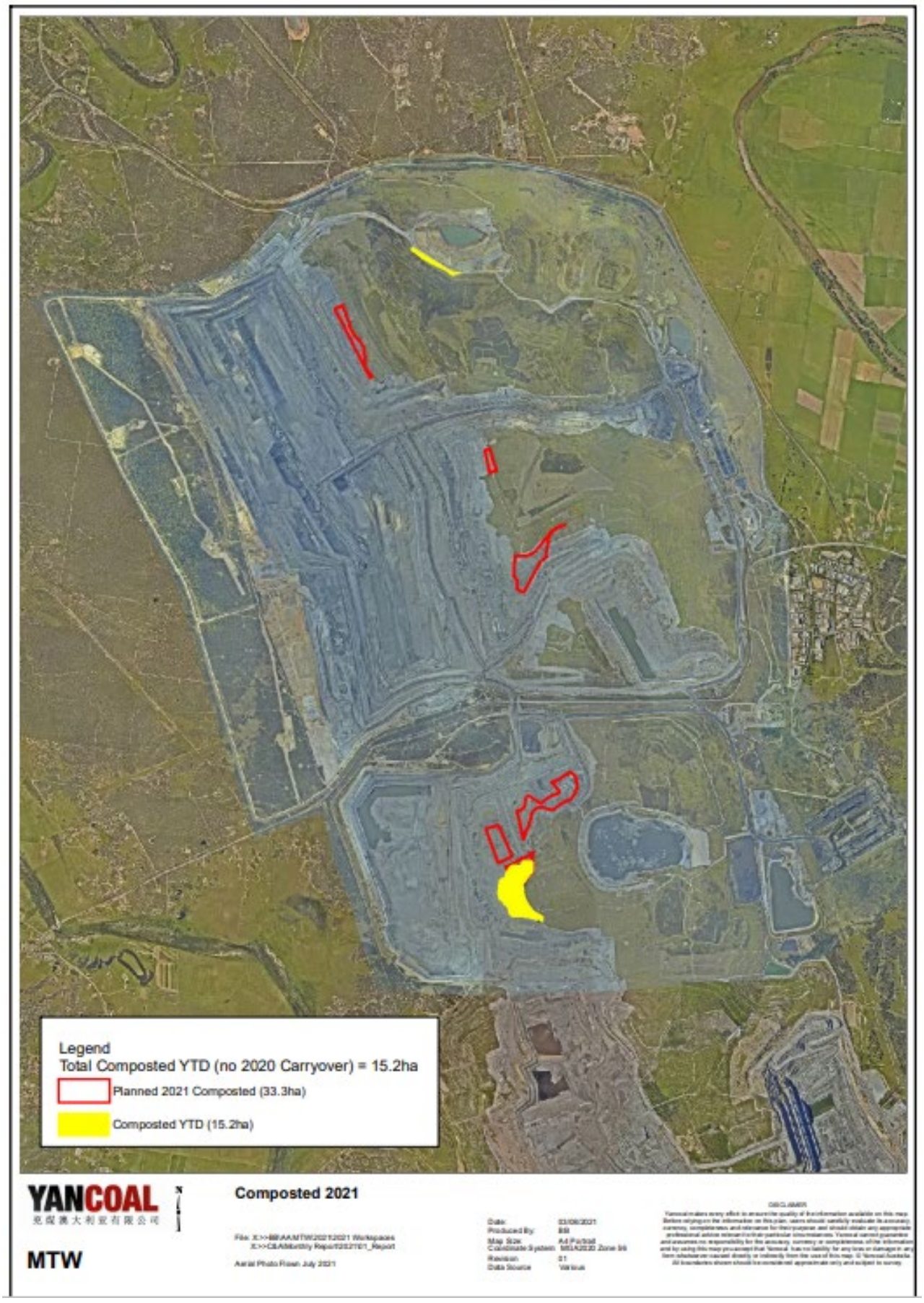
The rehabilitation planned for 2021 was 41ha, consisting of 35ha Mining Operations Plan (MOP) rehabilitation target for 2021 and the 6ha shortfall from the 2020 rehabilitation target. The planned total disturbance was 46.8ha, which included 3.8ha of rehabilitation disturbance to construct the North Out of Pit Dam.

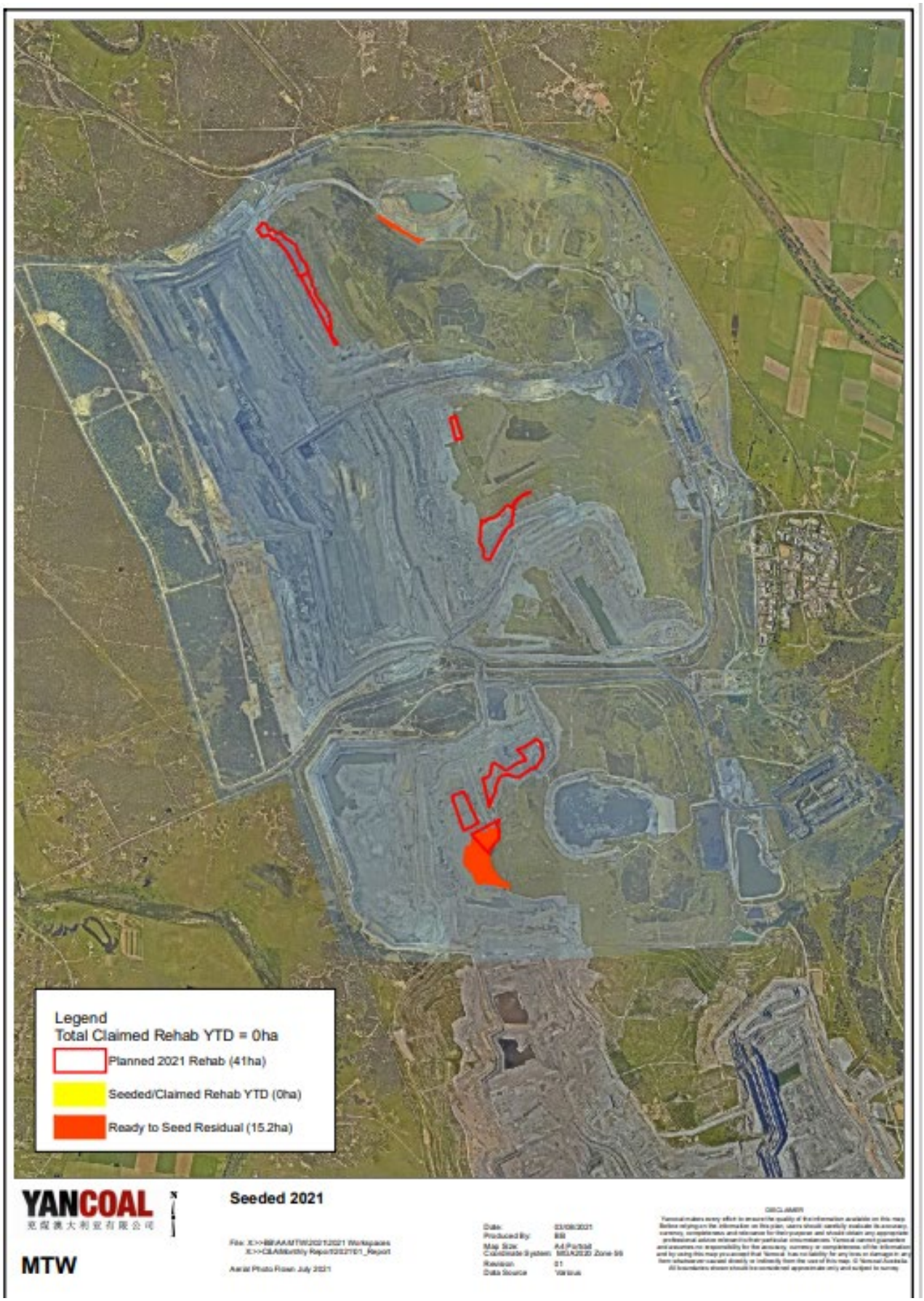
The rehabilitation and disturbance progress for 2021 are presented in the maps below. The rehabilitation target was exceeded in 2021 with a total of 44.6 ha of rehabilitation being completed.

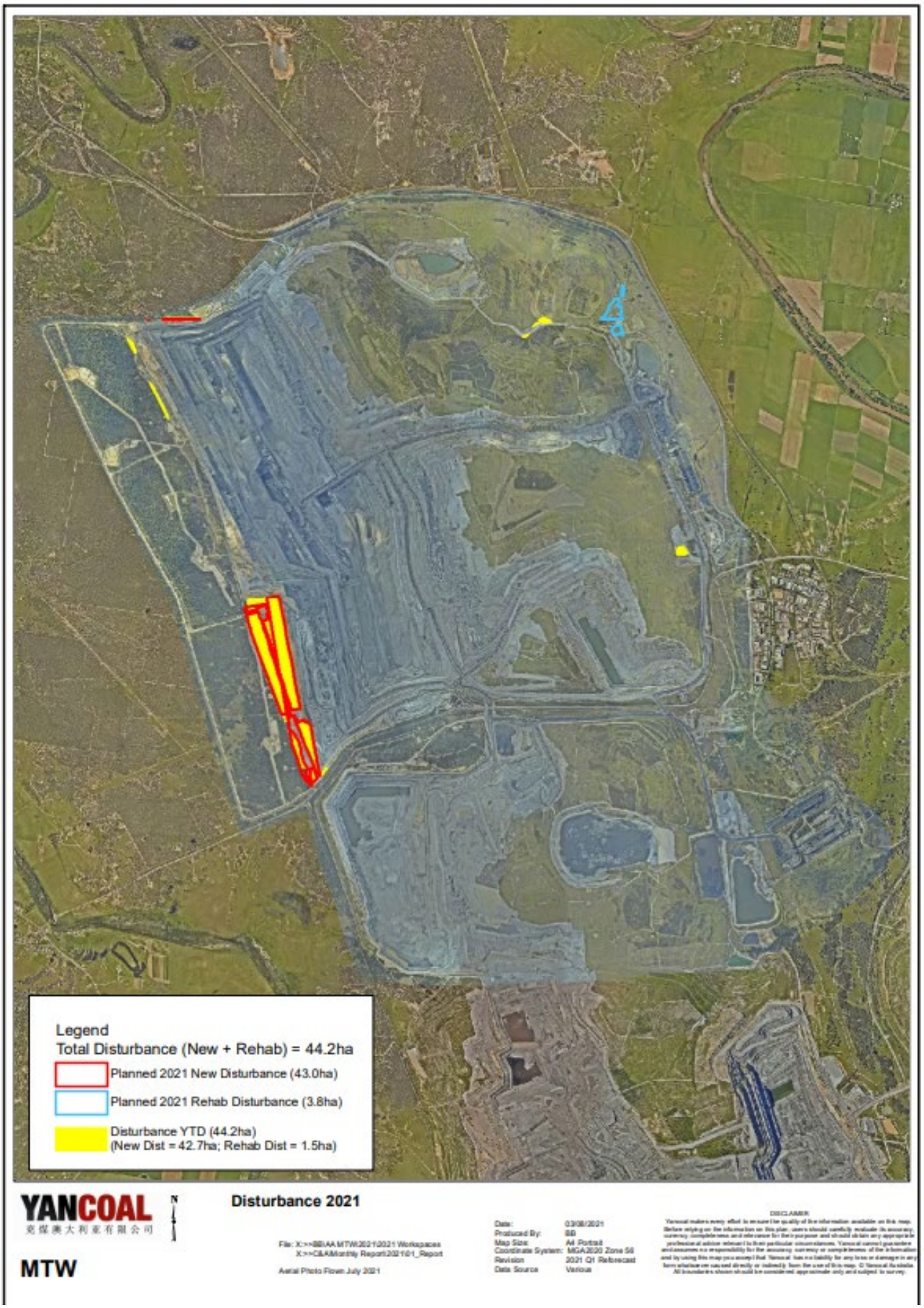
Disturbance completed to the end of December totalled 45.9 ha which was slightly below the target amount.


Legend
Total Release (YTD + Carryover) = 39.2ha
Planned 2021 Release (79.1ha)
2020 Carryover (6.9ha)
Released YTD (32.3ha)
YANCOAL
兖煤澳大利亚有限公司
MTW
Released 2021
Aerial Photo Flown July 2021


Legend
Total Bulk Shaped (YTD + Carryover) = 26.9ha
Planned 2021 Bulk Shape (63.4ha)
2021 Carryover (6.9ha)
Bulk Shaped YTD (20.0ha)
YANCOAL
MTW
Bulk Shaped 2021
Aerial Photo Flown July 2021
Date: 03/08/2021
Produced By: BB
Map Size: A4 Portrait
Coordinate System: MGA2020 Zone 56
Revision: 01
Data Source: Various


Legend
Total Composted YTD (no 2020 Carryover) = 15.2ha
Planned 2021 Composted (33.3ha)
Composted YTD (15.2ha)
YANCOAL
MTW
Composted 2021


Legend
Total Claimed Rehab YTD = 0ha
Planned 2021 Rehab (41ha)
Seeded/Claimed Rehab YTD (0ha)
Ready to Seed Residual (15.2ha)
YANCOAL
MTW
Seeded 2021


Legend
Total Disturbance (New + Rehab) = 44.2ha
Planned 2021 New Disturbance (43.0ha)
Planned 2021 Rehab Disturbance (3.8ha)
Disturbance YTD (44.2ha)
(New Dist = 42.7ha; Rehab Dist = 1.5ha)
YANCOAL
兖煤澳大利亚有限公司
MTW
N
Disturbance 2021
Date: 03/08/2021
Produced By: BB
Map Size: A4 Portrait
Coordinate System: MGA2020 Zone 56
Revision 2021 Q1 Rebrecast
Data Source Various
Aerial Photo Flown July 2021
DISCLAIMER

5 WEBSITE UPLOADS

The table below is a list of all new documents uploaded to the MTW's website from 11 November 2021 to 11 February 2022. Please refer to MTW's new website under "Environment" or MTW INSITE website under "Document Library":

https://www.mtwcoal.com.au/page/environment/

https://insite.yancoal.com.au/document-library

Document Title	Upload
Mount Thorley Warkworth Environmental Monitoring Report June 2021	12-Nov -21
Mount Thorley Warkworth Environmental Monitoring Report July 2021	12-Nov -21
Mount Thorley Warkworth Environmental Monitoring Report August 2021	12-Nov -21
Mount Thorley Warkworth Environment Protection Licence 1376 1976 Monitoring Data October 2021	24-Nov -21
Mount Thorley Warkworth Environment Protection Licence 1376 1976 Monitoring Data November 2021	22-Nov -21
MTW Community Consultative Committee – November 2021 – Minutes, Presentation and Business Papers	15-Jan-22
MTW Mining Operation Plan – Amendment C Extension	21-Jan-22
Mount Thorley Warkworth Environment Protection Licence 1376 1976 Monitoring Data December 2021	24-Jan-22
MTW Noise Management Plan	1-Feb-22
Exploration Licence 7712	2-Feb-22
MTW Water Management Plan v5.1	3-Feb-22
Mount Thorley Warkworth Environmental Monitoring Report September 2021	10-Feb-22
Mount Thorley Warkworth Environmental Monitoring Report October 2021	10-Feb-22
Mount Thorley Warkworth Environmental Monitoring Report November 2021	11-Feb-22
Mount Thorley Warkworth Environment Protection Licence 1376 1976 Monitoring Data November 2021 V1	21-Feb-22
Mount Thorley Warkworth Environmental Monitoring Report October 2021 V1	22-Feb-22
Mount Thorley Warkworth Environmental Monitoring Report November 2021 V1	22-Feb-22

6 YANCOAL COMMUNITY SUPPORT PROGRAM

The CSP invests in community groups working in the areas of health, social and community, environment, education and training. Some MTW Community Support Program (CSP) events being supported in 2020 postponed their timing into 2021 due to COVID-19. The following organizations are those which postponed their timing into 2021 due to COVID-19:

- Westpac Rescue Helicopter Service – Hunter Valley Mining Charity Rugby League Competition 2020 (COVID-19 – Support held for event in March 2021 – but cancelled due to inclement weather).
- Newcastle & Hunter Combined Schools ANZAC Service – 2020 Singleton ANZAC Service (COVID-19 – April 2021)
- Singleton Business Chamber – 2020 Hunter Coal Festival (COVID19 – Support held for event – planned for October 2022)
- Rotary Club of Singleton on Hunter – 2020 Singleton Art Prize (COVID19 – July 2021)
- Singleton Theatrical Society – 2020 Annual Musical (COVID19 – June 2021)
- University of Newcastle – Upper Hunter Science and Engineering Challenge (COVID19 – June 2021)

The 2021 round of applications were advertised in September-October 2020 and closed 6 November 2020. There were 14 applications received. In addition to multi-year partnerships from 2020, the following 7 organizations were supported in 2021 through the CSP:

- Branxton Tennis Club – Tennis court resurfacing and new nets
- PCYC Singleton – Electronic scoreboard
- Singleton Council – Christmas on John Street 2021
- Singleton Fire Brigade Social Club – Santa's lolly run
- Singleton Neighbourhood Centre – Garden Project
- St Catherine's Catholic College – Bush tucker garden
- Westpac Rescue Helicopter Service – Hunter Valley Mining Charity Rugby League Day 2021 (COVID – postponed to September 2022.

The 2022 round of applications were advertised in September-October 2021 and closed 5 November 2021. There were 15 applications received. The following organisations are being supported in 2022 through the CSP.

- University of Newcastle – Upper Hunter Science and Engineering Challenge
- Life Education NSW - Covid Recovery – Health & Wellbeing program for children in the Singleton LGA.
- Samaritans Foundation – Diocese of Newcastle - Christmas lunch in Singleton 2022.
- Singleton Business Chamber - 2022 Singleton Business Excellence Awards
- Singleton Council - 2022 Singleton Business Excellence Awards
- Singleton Council - Christmas on John Street 2022
- Singleton Golf Club Lady Members – Christmas on John Street 2022
- Singleton Fire Brigade Social Club – Singleton Lolly Run 2022
- Singleton Rugby Club Ltd - First Aid Kit Equipment Upgrade
- Northern Agriculture Association Inc (NAA) – Singleton Show & Camp Draft 2022
- Singleton Theatrical Society - 2022 Musical – Mamma Mia

For information please visit our website at https://insite.yancoal.com.au/community or email mtw.csp@yancoal.com.au

Appendix A: September 2021 Monthly Environmental Monitoring Report

Monthly Environmental Monitoring Report

Yancoal Mt Thorley Warkworth

September 2021

CONTENTS

Figures

Tables

Revision History

Version No.	Person Responsible	Document Status	Date
1.0	**Environment and Community Advisor**	**Final**	**09/02/2022**

1.0 INTRODUCTION

This report has been compiled to provide a monthly summary of environmental monitoring results for Mount Thorley Warkworth (MTW). This report includes all monitoring data collected for the period 1 September to 30 September 2021.

2.0 AIR QUALITY

2.1 Meteorological Monitoring

Meteorological data is collected at MTW's 'Charlton Ridge' meteorological station (refer to **Figure 3:** Air Quality Monitoring Locations).

2.1.1 Rainfall

Rainfall for the period is summarised in **Table 1**, the year-to-date trend and historical trend are shown in **Figure 1**.

Table 1: Monthly Rainfall MTW

2021	Monthly Rainfall (mm)	Cumulative Rainfall (mm)
September	20.6	599

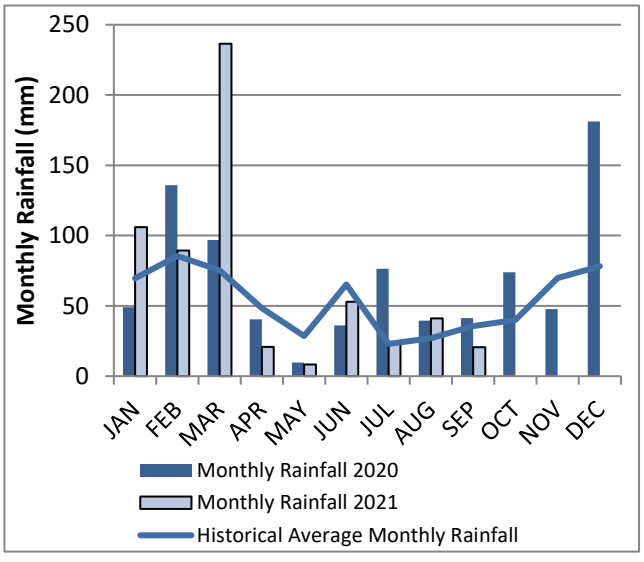


Figure 1: Rainfall Trends YTD

Note: The historical average monthly rainfall is calculated from 2007 to 2021 monthly totals

2.1.2 Wind Speed and Direction

Winds from the north west were dominant throughout the reporting period as shown in **Figure 2**..

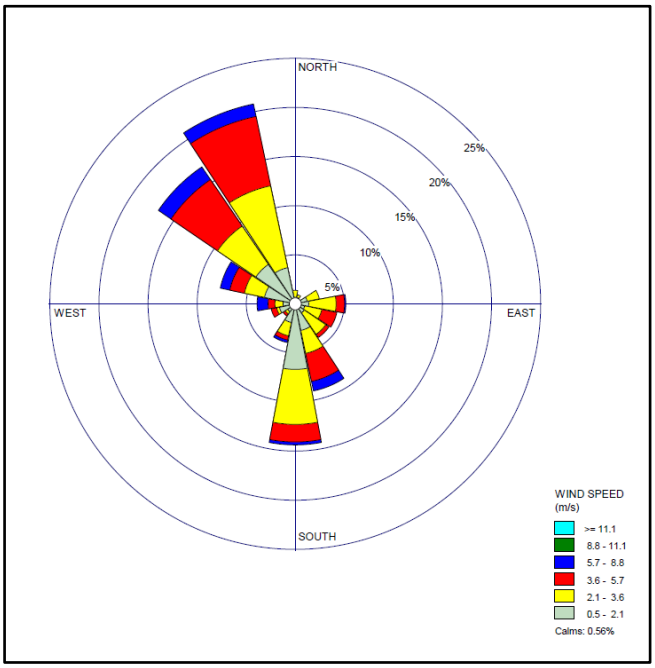


Figure 2: Charlton Ridge Wind Rose – September 2021

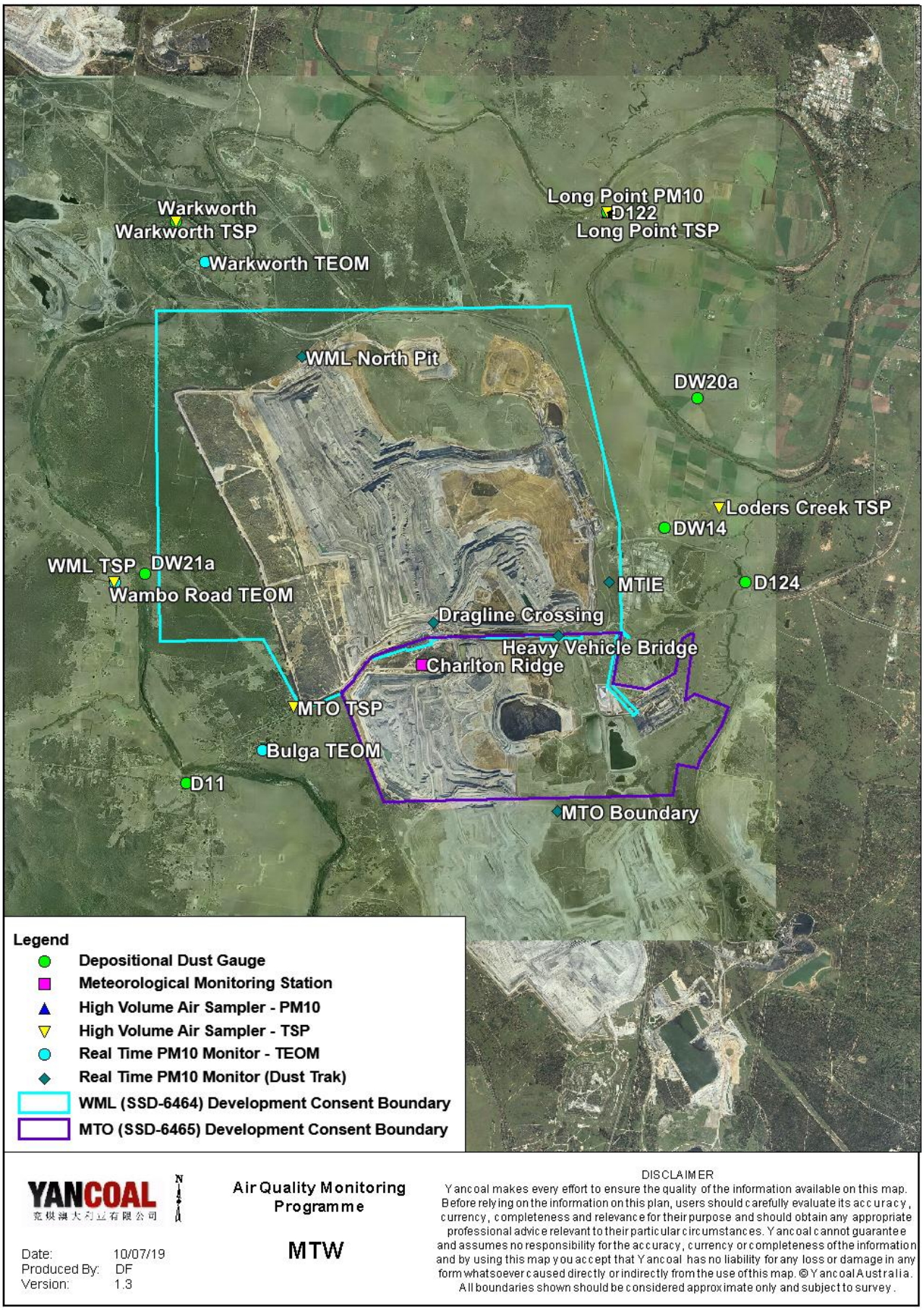


Figure 3: Air Quality Monitoring Locations

2.2 Depositional Dust

To monitor regional air quality, MTW operates and maintains a network of seven depositional dust gauges, situated on private and mine owned land surrounding MTW.

Figure 4 displays insoluble solids results from depositional dust gauges during the reporting period compared against the year-to-date average and the annual impact assessment criteria.

During the reporting period the Warkworth monitor recorded a monthly result above the long-term impact assessment criteria of 4.0 g/m2 per month. There is no evidence to suggest that the Warkworth result is contaminated. An external investigation of an elevated result at this monitor was undertaken for a July 2021 reading, which indicated the July result was anomalous and was then excluded from annual average calculation. Since that time, the August to September results have been elevated compared to other depositional dust results. MTW is progressing further investigation of the potential influence of localised sources to determine possible reasons for the result, as recommended by a specialist Air Quality specialist consultant. Presently, the result is included in the annual average calculation.

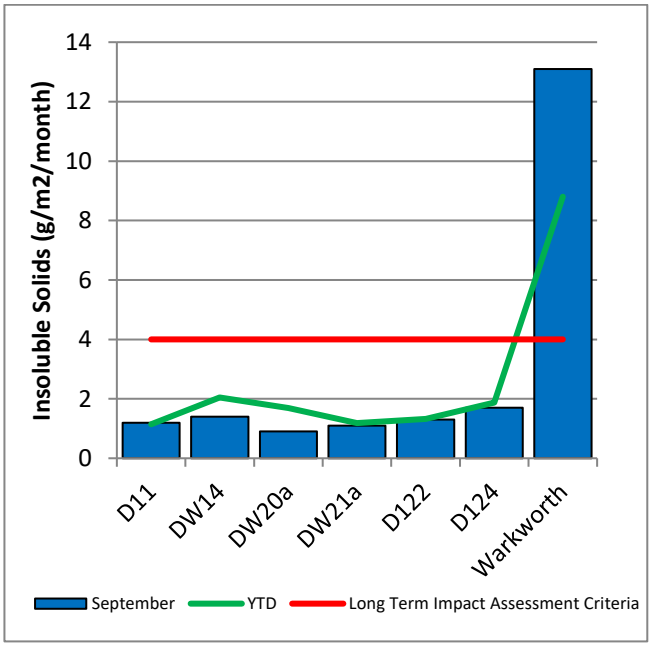


Figure 4: Depositional Dust – September 2021

2.3 Suspended Particulates

Suspended particulates are measured by a network of High Volume Air Samplers (HVAS) measuring Total Suspended Particulates (TSP) and Particulate Matter <10µm (PM_{10}). The location of these monitors can be found in **Figure 3**. Each HVAS was run for 24 hours on a six-day cycle in accordance with EPA requirements.

2.3.1 HVAS PM_{10} Results

Figure 5 shows the individual PM_{10} results at the monitoring station against the short-term impact assessment criteria of 50µg/m³.

On 12 September 2021 the Long Point HVAS PM10 unit recorded a result of 57 µg/m³, which is greater than the short term (24hr) PM10 impact assessment criteria.

Investigation determined that the wind direction was generally not from MTW's angle of influence and that the likely MTW contribution to the results is less than 75%. Accordingly, no further action is required (as per approved Air Quality Monitoring Programme).

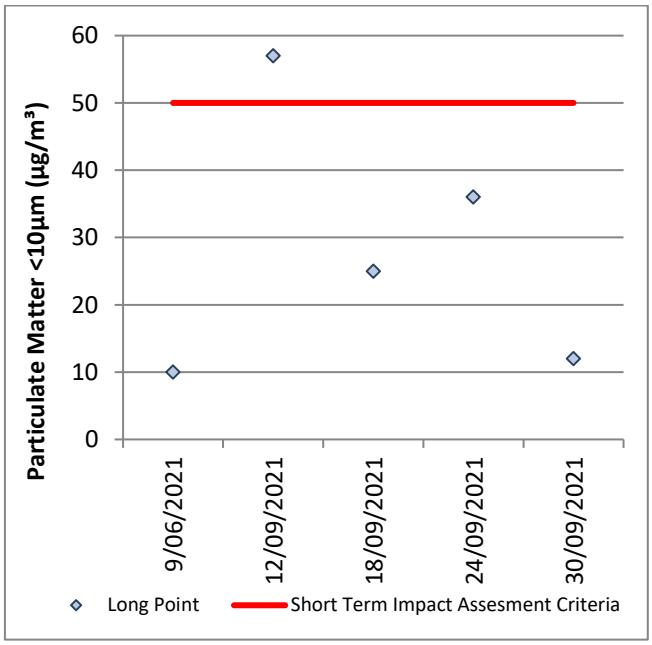


Figure 5: Individual PM_{10} Results – September 2021

Figure 6 shows the annual average PM_{10} results against the long-term impact assessment criteria.

An annual assessment of MTW's compliance with the Long-Term Impact Assessment Criteria will be provided in the 2021 Annual Review Report.

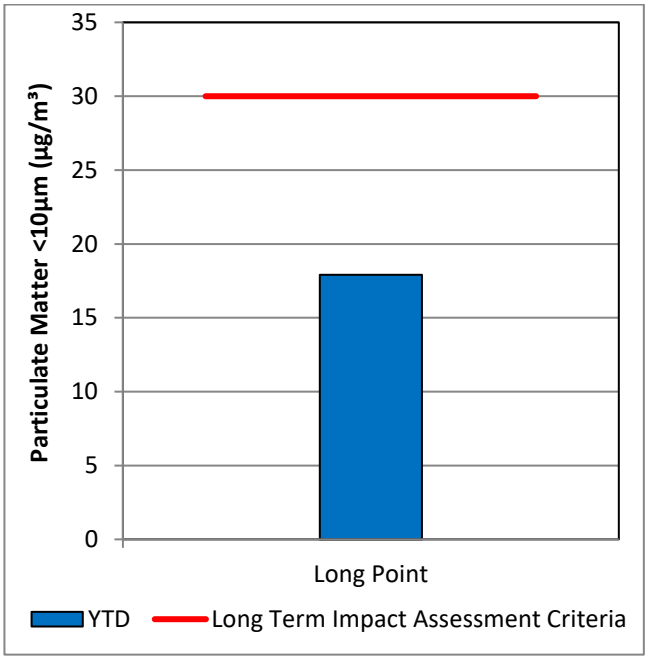


Figure 6: Annual Average PM_{10} – September 2021

2.3.2 TSP Results

Figure 7 shows the annual average TSP results compared against the long-term impact assessment criteria of 90µg/m³.

An annual assessment of MTW's compliance with the Long-Term Impact Assessment Criteria will be provided in the 2021 **Annual Review Report.**

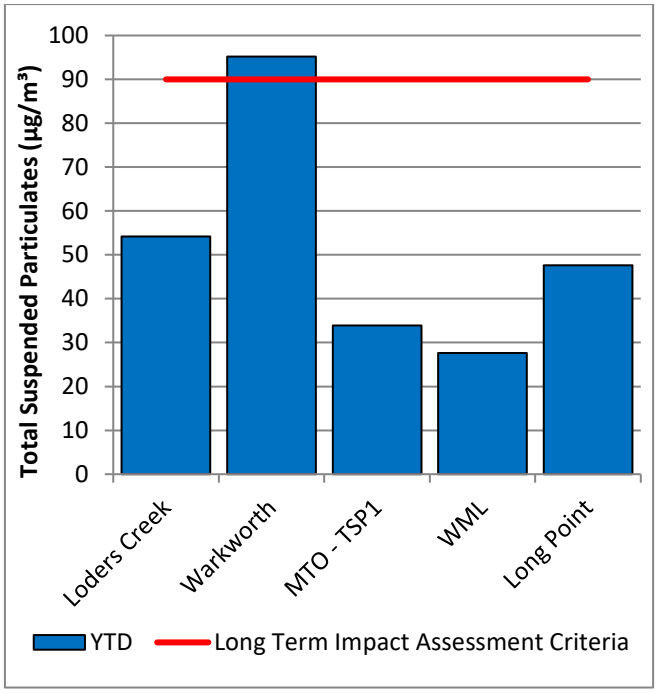


Figure 7: Annual Average Total Suspended Particulates – September 2021

2.3.3 Real Time PM_{10} Results

Mount Thorley Warkworth maintains a network of real time PM_{10} monitors. The real-time air quality monitoring stations continuously log information and transmit data to a central database, generating alarms when particulate matter levels exceed internal trigger limits.

Results for real time dust sampling are shown in **Figure 8**, including the daily 24-hour average PM_{10} result and the annual PM_{10} average.

During September one exceedance was recorded at Warkworth on 12 September from the Warkworth monitor. Investigation determined that the wind direction was generally not from MTW's angle of influence and that the likely MTW contribution to the results is less than 75%.

2.3.4 Real Time Alarms for Air Quality

During September, the real-time monitoring system generated 115 automated air quality related alerts, including 16 alerts for adverse meteorological conditions and 99 alerts for elevated PM_{10} levels.

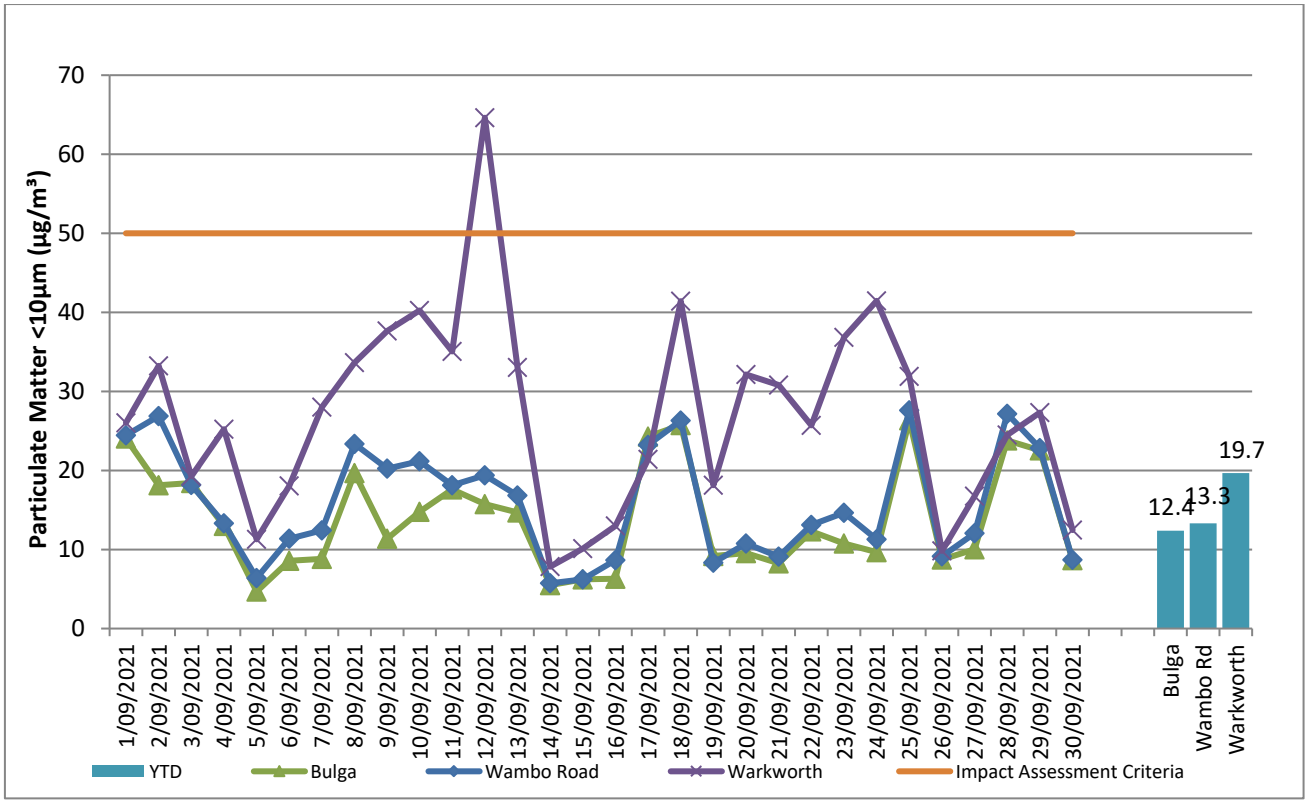


Figure 8: Real Time PM_{10} 24hr average and Year-to-date average – September 2021

3.0 WATER QUALITY

MTW maintains a network of surface water and groundwater monitoring sites.

3.1 Surface Water

Monitoring is conducted at mine site dams and surrounding natural watercourses. The surface water monitoring locations are outlined in **Figure 15**.

Surface water courses are sampled on a monthly or quarterly sampling regime. Water quality is evaluated through the parameters of pH, Electrical Conductivity (EC) and Total Suspended Solids (TSS). The Hunter River and the Wollombi Brook are sampled both upstream and downstream of mining operations, to monitor the potential impact of mining. Other Hunter River tributaries are also monitored.

3.1.1 Surface Water Monitoring Results

Figure 9 to **Figure 11** show the long-term surface water trend (2018 – current) within MTW mine dams. **Figure 12** to **Figure 14** show the long-term surface water trend (2018 - current) in surrounding watercourses.

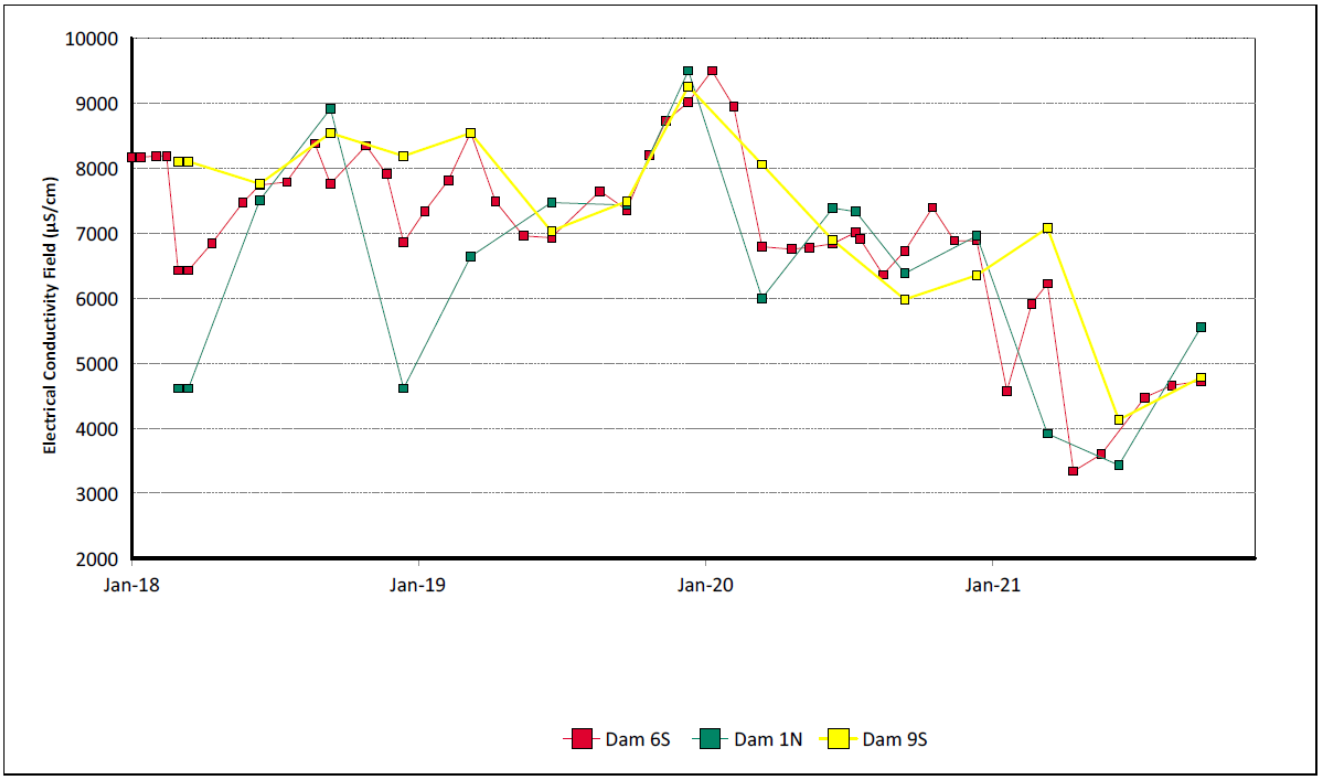


Figure 9: Site Dams Electrical Conductivity Trend – September 2021

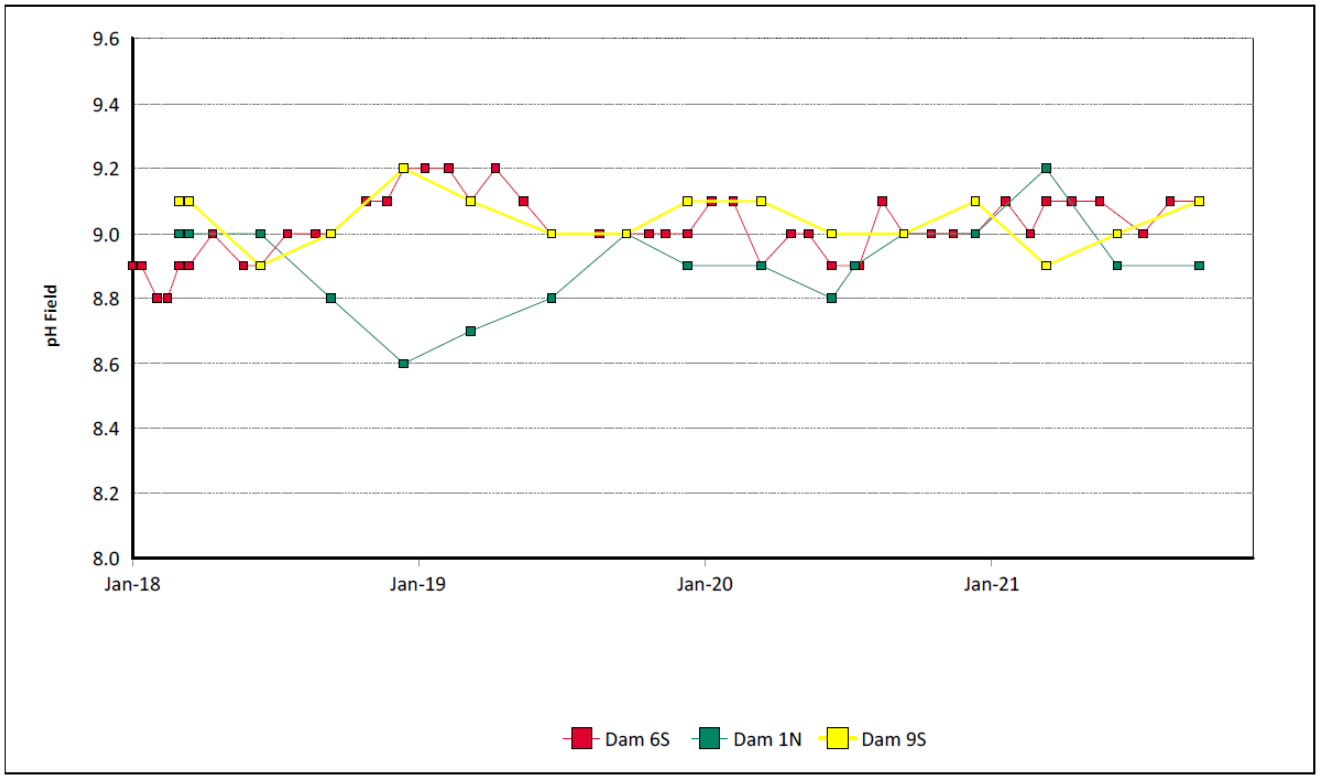


Figure 10: Site Dams pH Trend – September 2021

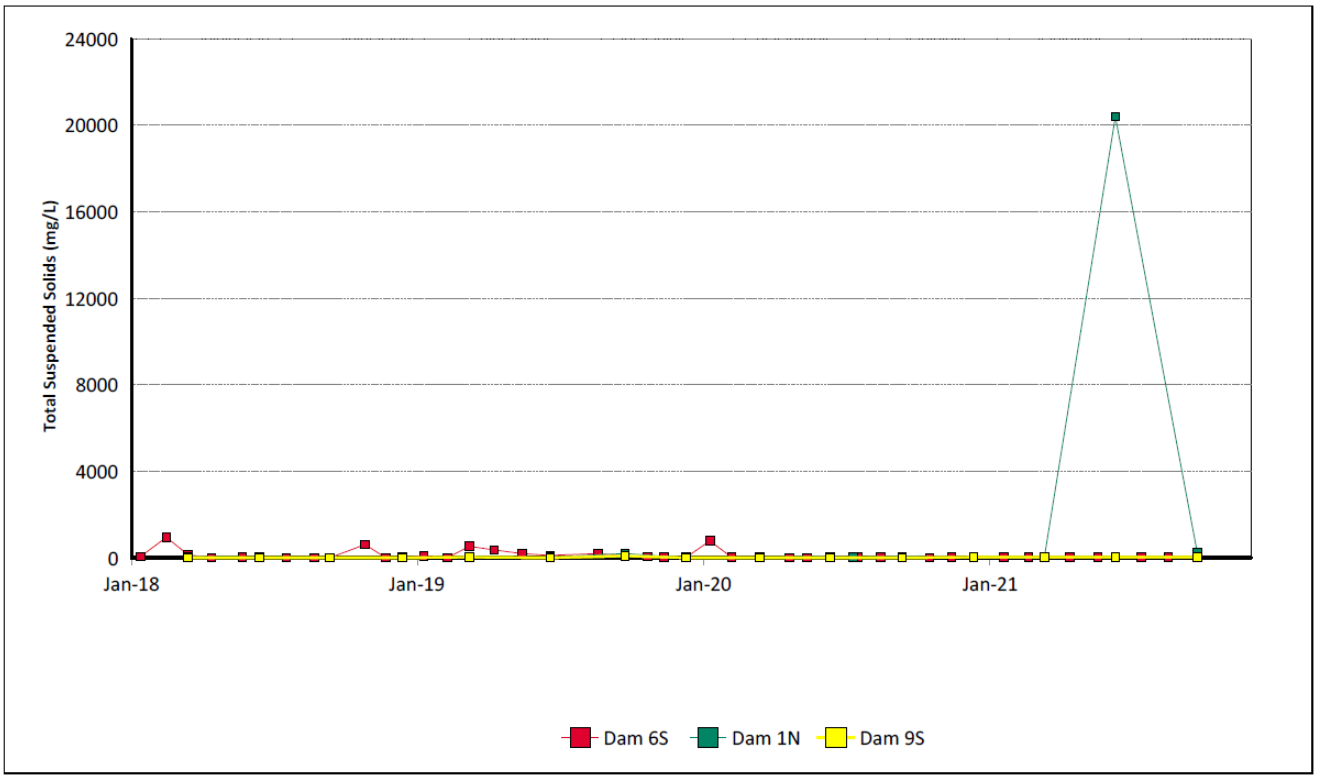
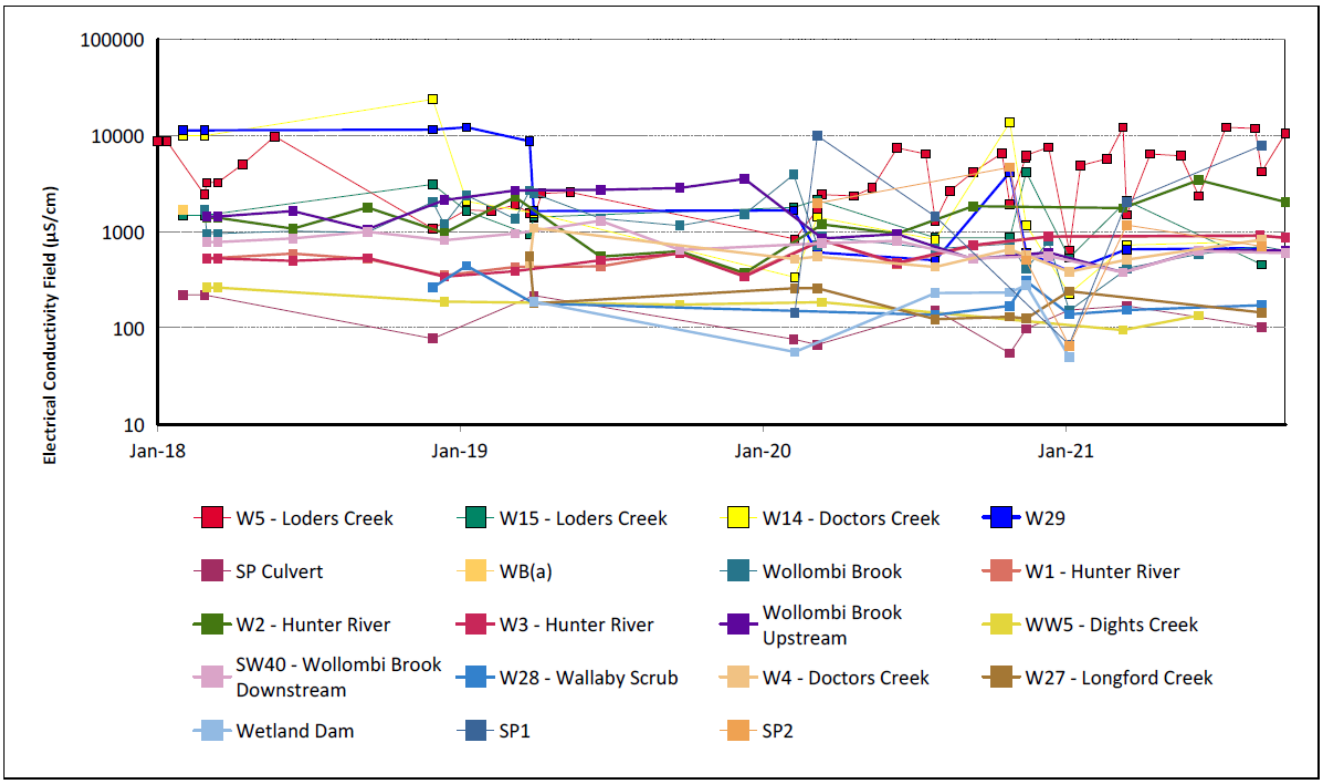
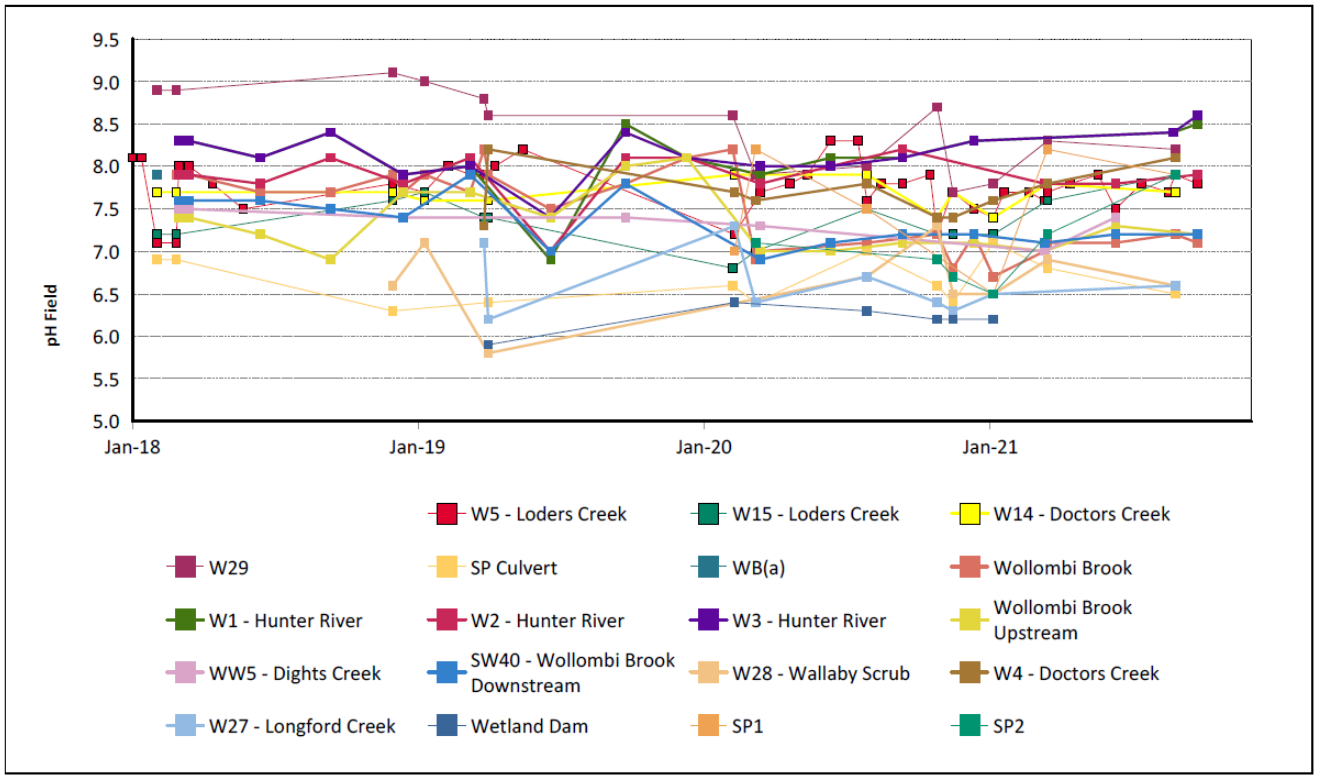


Figure 11: Site Dams Total Suspended Solids Trend – September 2021



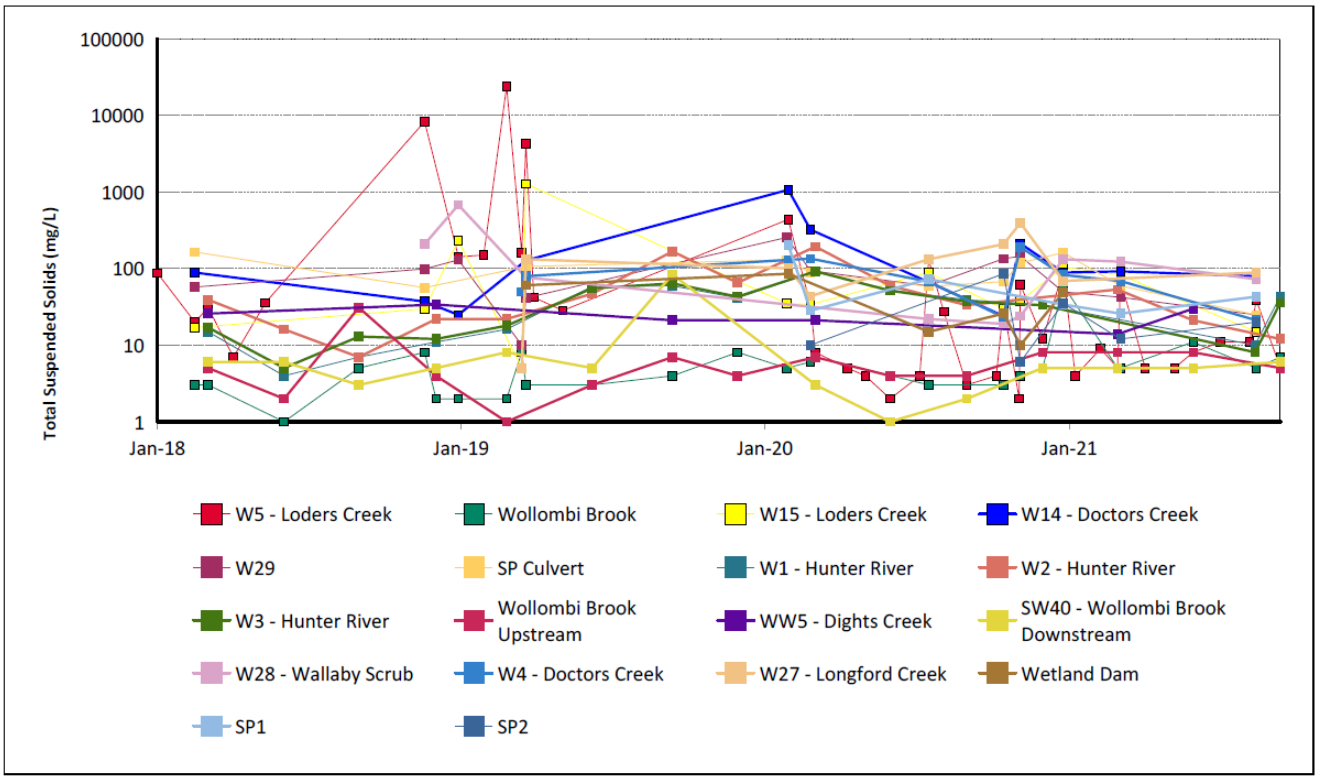
Note: Missing data indicates that there was insufficient water to take a sample, or that there was no safe access.

Figure 12: Watercourse Electrical Conductivity Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample, or that there was no safe access.

Figure 13: Watercourse pH Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample, or that there was no safe access.

Figure 14: Watercourse Total Suspended Solids Trend – September 2021

3.1.2 Surface Water Trigger Tracking

Internal trigger limits have been developed to assess monitoring data on an on-going basis, and to highlight potentially adverse surface water impacts. The process for evaluating monitoring results against the internal triggers and subsequent responses are outlined in the MTW Water Management Plan.

Current internal surface water trigger limit breaches are summarised in **Table 2**.

Table 2: Surface Water Trigger Tracking – September YTD 2021

Site	Date	Trigger Limit Breached	Action Taken in Response
SP1	05/01/2021	pH –5th Percentile	Monitoring results back within trigger limits for March and August 2021 sample rounds. No follow up required.
W5	05/01/2021	pH –5th Percentile	Monitoring results back within trigger limits for February 2021 and all subsequent sample rounds. No follow up required.
W15	05/01/2021	pH –5th Percentile	Cyclical lower-pH measurements are consistently seen in the historical trend for this Loders Creek monitoring location. Monitoring results back within trigger limits for March 2021 sample round. No follow up required.
W29	05/01/2021	pH –5th Percentile	Monitoring results back within trigger limits for March and August 2021 sample rounds. No follow up required.
W3	23/09/2021	pH –5th Percentile	Watching Brief*
W2	11/03/2021	TSS – 50mg/L (ANZECC criteria)	Unlikely to be associated with MTW mining related impacts. Elevated TSS results most likely attributable to sampling from water with no flow. Note: Result is not considered to be a valid representation given that there was no flow at the time of sampling. Monitoring results back within trigger limits for June and September 2021 sample rounds. No follow up required.
W4	05/01/2021	TSS – 50mg/L (ANZECC criteria)	Watching Brief*. Elevated TSS associated with high runoff due to rainfall event (79.4mm on 4 January). Consistent with and higher than upstream sample W29 (which is closer to MTW); no mine site sources of sediment identified (no dam overtopping and/or site discharges recorded during the event).

Site	Date	Trigger Limit Breached	Action Taken in Response
W4	15/03/2021	TSS – 50mg/L (ANZECC criteria)	Watching Brief*. Elevated TSS associated with rainfall event (36.2mm on 14 March) and is considered related to sampling from slow flowing water. Consistent with and higher than upstream sample W29 (which is closer to MTW); no mine site sources of sediment identified. Monitoring results back within trigger limits for August 2021 sample round. No follow up required.
W5	05/01/2021	TSS – 50mg/L (ANZECC criteria)	Elevated TSS associated with high runoff due to rainfall event (79.4mm on 4 January), resulting in mobilisation of sediment in Loders Creek. No MTW site sources of sediment identified. No follow up required.
W5	15/03/2021	TSS – 50mg/L (ANZECC criteria)	Elevated TSS associated with rainfall event (36.2mm on 14 March), resulting in mobilisation of sediment in Loders Creek. No MTW site sources of sediment identified. Monitoring results back within trigger limits for August 2021 sample round. No follow up required.
W14	05/01/2021	TSS – 50mg/L (ANZECC criteria)	Elevated TSS associated with high runoff due to rainfall event (79.4mm on 4 January). No mine site sources of sediment identified. Upstream sample W29 (which is closer to MTW) indicates source of sediment may be partially attributable to runoff from downstream farming properties. No follow up required.
W14	15/03/2021	TSS – 50mg/L (ANZECC criteria)	Elevated TSS associated with rainfall event (36.2mm on 14 March), resulting in mobilisation of sediment in Doctors Creek. No mine site sources of sediment identified. Upstream sample W29 (which is closer to MTW) indicates source of sediment may be partially attributable to runoff from downstream farming properties. No follow up required.
W14	25/08/2021	TSS – 50mg/L (ANZECC criteria)	Elevated TSS associated with rainfall event (31.4mm on 24 August), resulting in mobilisation of sediment in Doctors Creek. No mine site sources of sediment identified. Upstream sample W29 (which is closer to MTW) indicates source of sediment may be partially attributable to runoff

Site	Date	Trigger Limit Breached	Action Taken in Response
			from downstream farming properties. No follow up required.
W15	05/01/2021	TSS – 50mg/L (ANZECC criteria)	Investigation undertaken. Note: Elevated TSS results most likely attributable to high runoff due to rainfall event (79.4mm on 4 January), resulting in mobilisation of sediment in Loders Creek. In addition, TSS results were potentially affected by turbid water associated with the overtopping of one mine water dam at MTO and several MTCL dams/catchment basins which were reported to EPA and DPIE.
W15	15/03/2021	TSS – 50mg/L (ANZECC criteria)	Elevated TSS associated with rainfall event (36.2mm on 14 March), resulting in mobilisation of sediment in Loders Creek. No mine site sources of sediment identified. Monitoring results back within trigger limits for August 2021 sample round. No follow up required.
W27	05/01/2021	TSS – 50mg/L (ANZECC criteria)	Investigation undertaken. Note: Elevated TSS results most likely attributable to high runoff due to rainfall event (79.4mm on 4 January). In addition, TSS results were potentially affected by turbid water associated with the overtopping of an MTW mine water dam as a result of the rainfall event which was reported to EPA and DPIE.
W27	25/08/2021	TSS – 50mg/L (ANZECC criteria)	Watching Brief* Elevated TSS results most likely attributable to high runoff due to rainfall event (31.4mm on 24 August). Note: location was too shallow to sample in March 2021 sample round.
W28	05/01/2021	TSS – 50mg/L (ANZECC criteria)	Investigation undertaken. Note: Elevated TSS results most likely attributable to high runoff due to rainfall event (79.4mm on 4 January). In addition, TSS results were potentially affected by turbid water associated with the overtopping of MTW sediment dams as a result of greater than design rainfall, which were reported to EPA and DPIE.
W28	15/03/2021	TSS – 50mg/L (ANZECC criteria)	Elevated TSS associated with rainfall event (36.2mm on 14 March). No mine site sources of sediment identified. No follow up required.

Site	Date	Trigger Limit Breached	Action Taken in Response
W28	25/08/2021	TSS – 50mg/L (ANZECC criteria)	Elevated TSS associated with rainfall event (31.4mm on 24 August). No mine site sources of sediment identified.

* = Watching brief established pending outcomes of subsequent monitoring events.

3.2 HRSTS Discharge

MTW participates in the Hunter River Salinity Trading Scheme (HRSTS), allowing discharge from licensed discharge points located at Dam 1N and Dam 9S. Discharges can only take place subject to HRSTS regulations.

MTW did not undertake any HRSTS discharges in the reporting period.

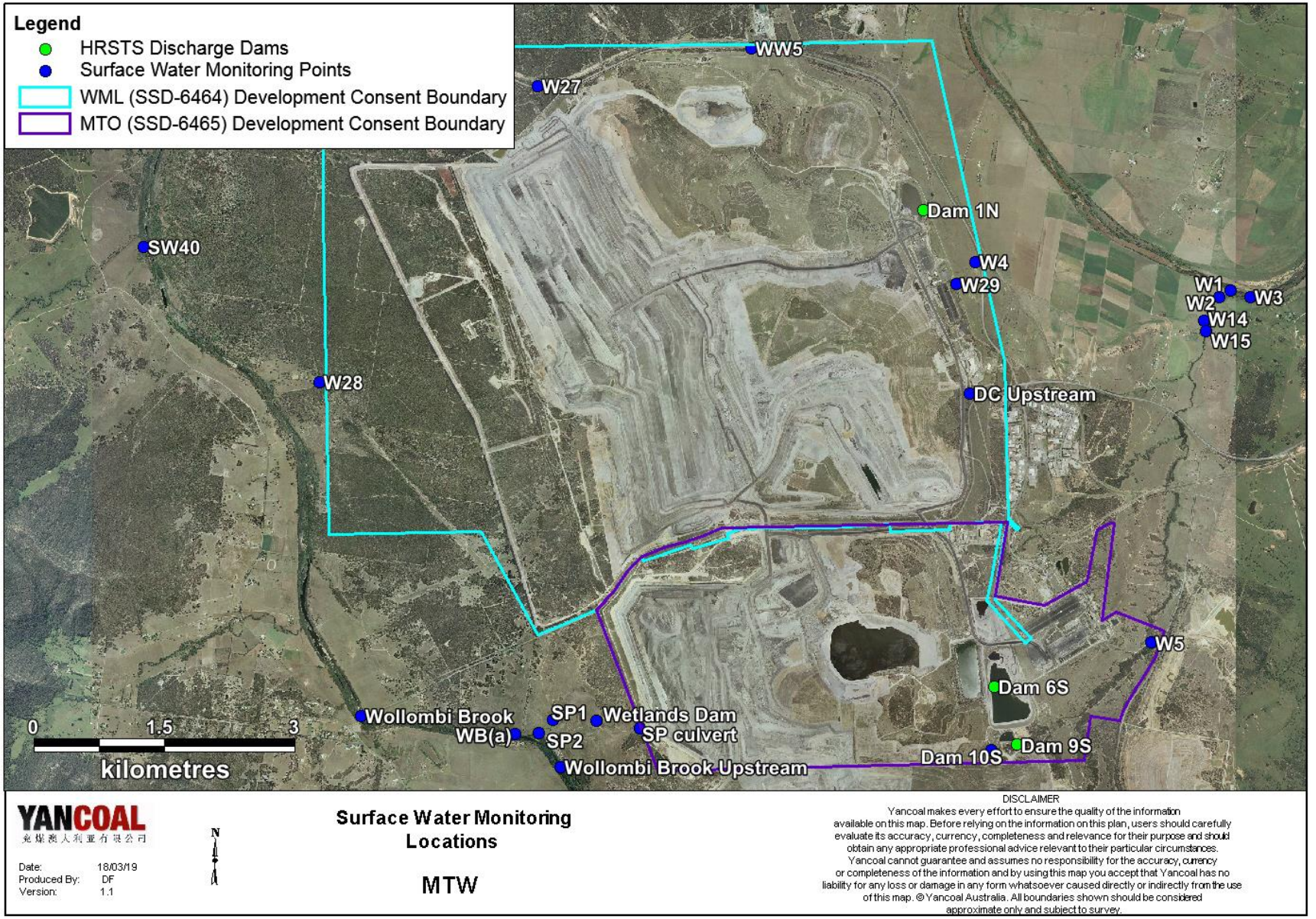
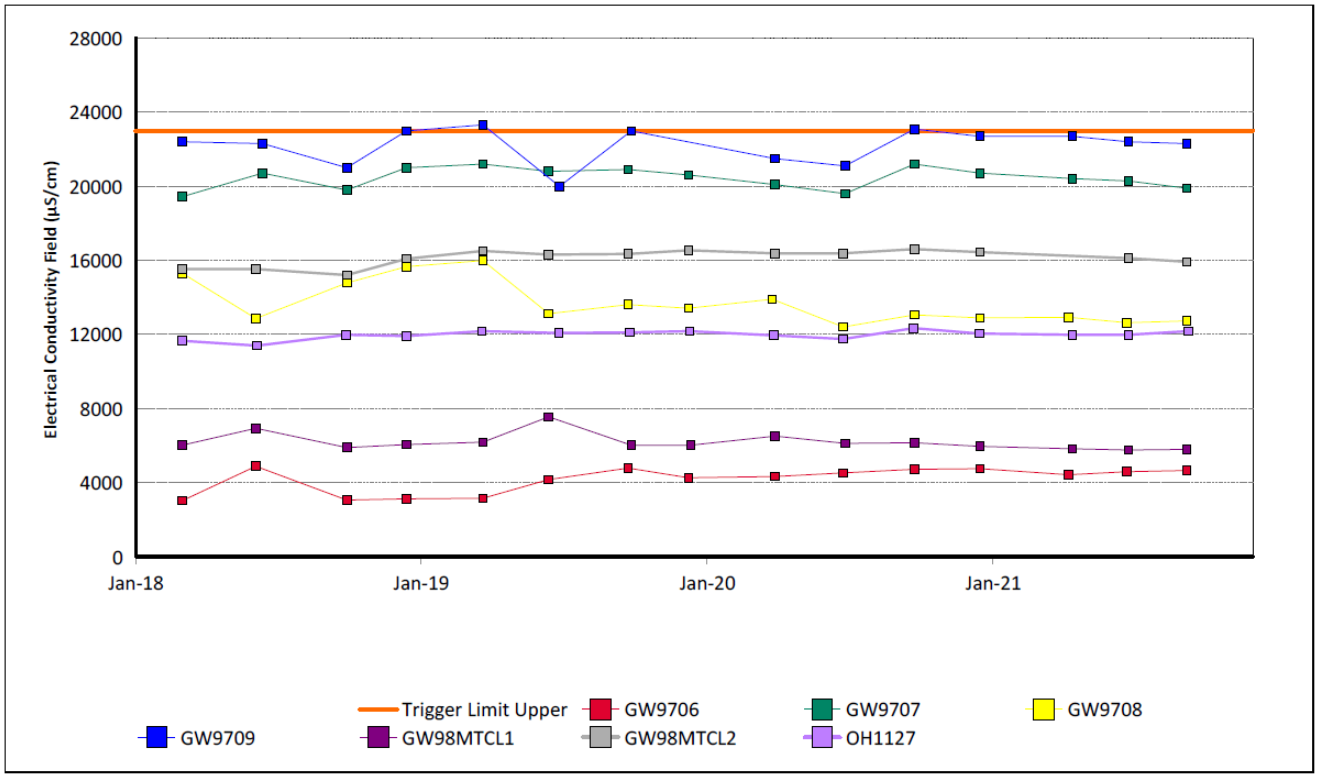


Figure 15: Surface Water Monitoring Location Plan

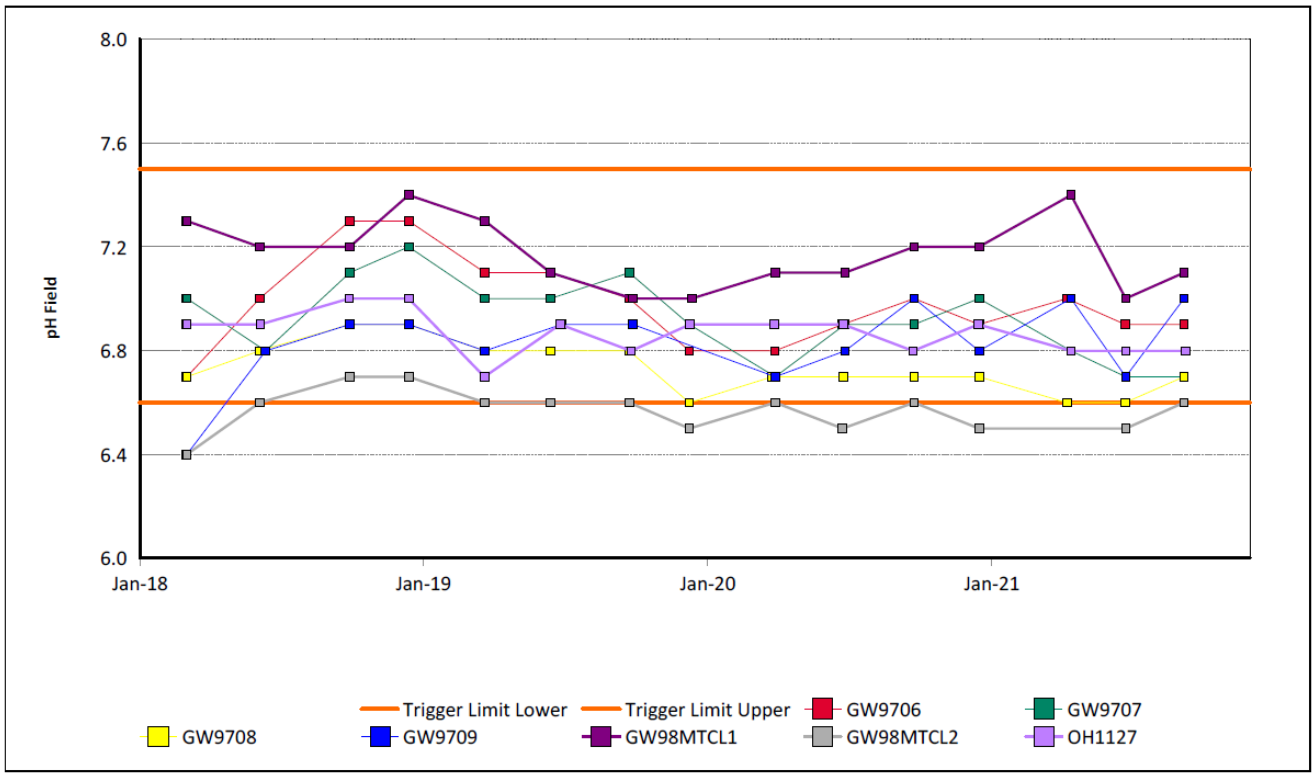
3.3 Groundwater Monitoring

Groundwater monitoring is undertaken on a quarterly basis in accordance with the MTW Groundwater Monitoring Programme.

Figure 16 to **Figure 61** show the long-term water quality trends (2018 – current) for groundwater bores monitored at MTW.



Note: Missing data indicates that there was insufficient water to take a sample.
Figure 16: Bayswater Seam Electrical Conductivity Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample.

Figure 17: Bayswater Seam pH Trend – September 2021

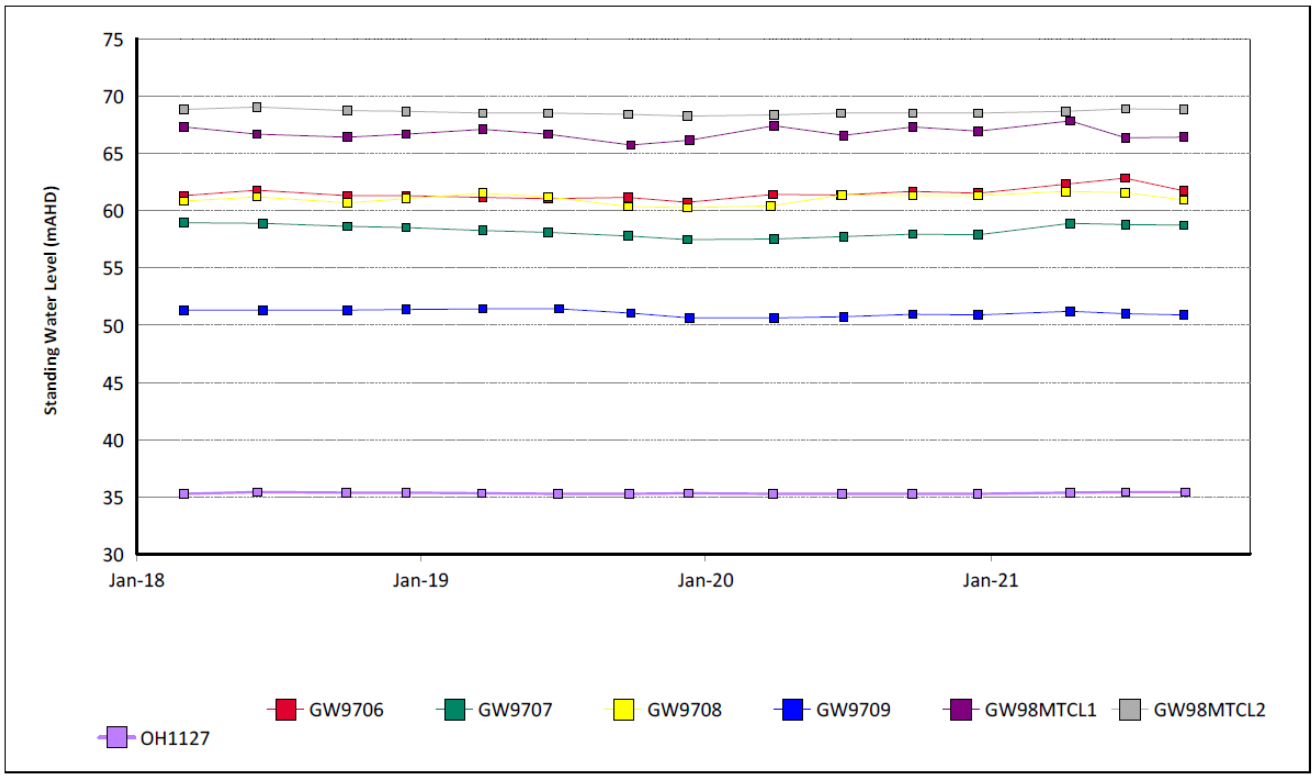
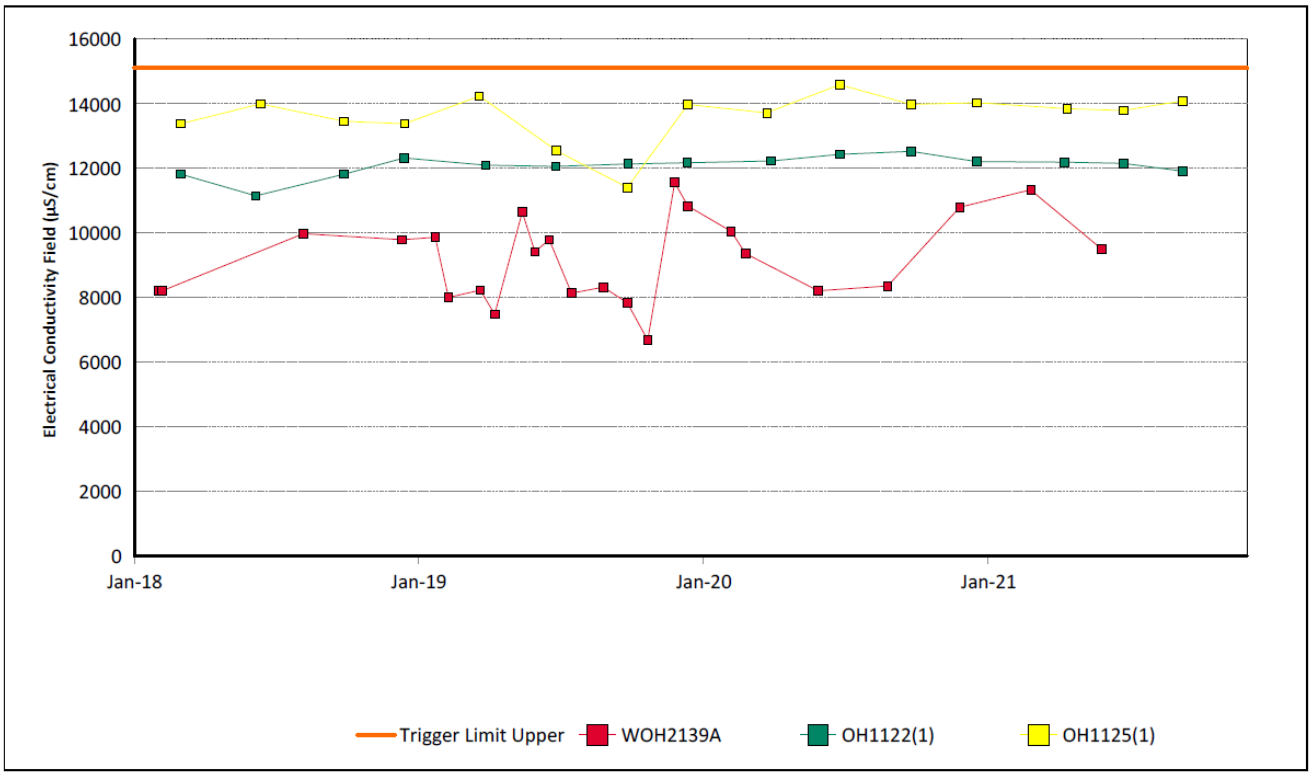
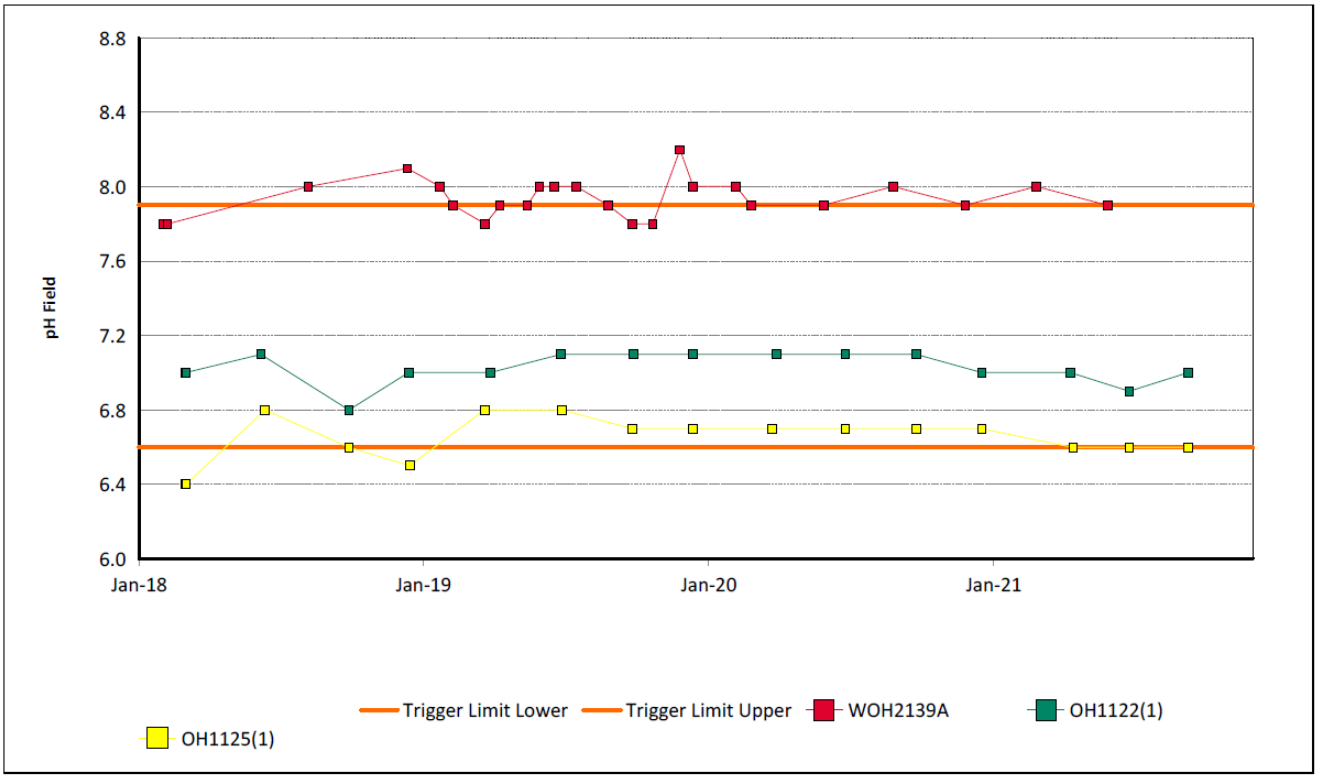


Figure 18: Bayswater Seam Standing Water Level Trend – September 2021



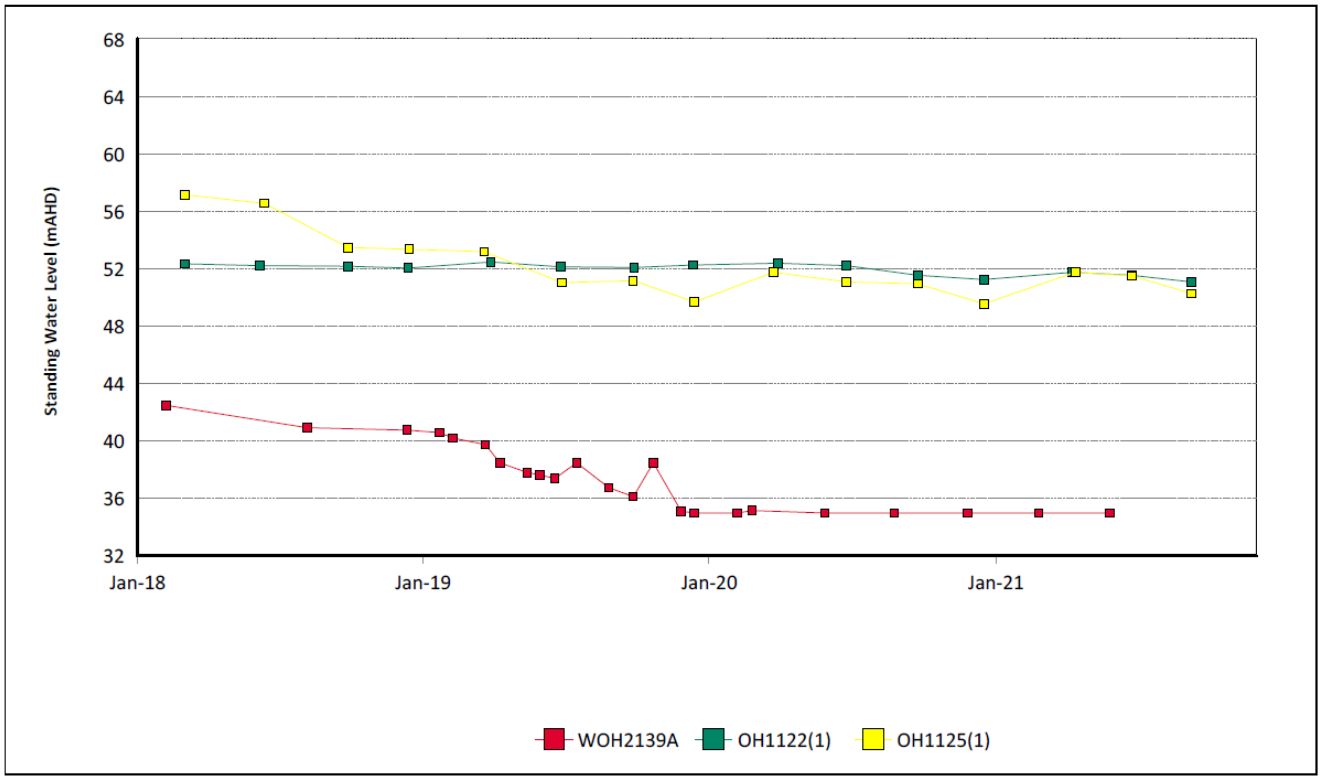
Note: Missing data indicates that there was insufficient water to take a sample, or that there was no safe access.

Figure 19: Blakefield Seam Electrical Conductivity Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample, or that there was no safe access.

Figure 20: Blakefield Seam pH Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample, or that there was no safe access.

Figure 21: Blakefield Seam Standing Water Level Trend – September 2021

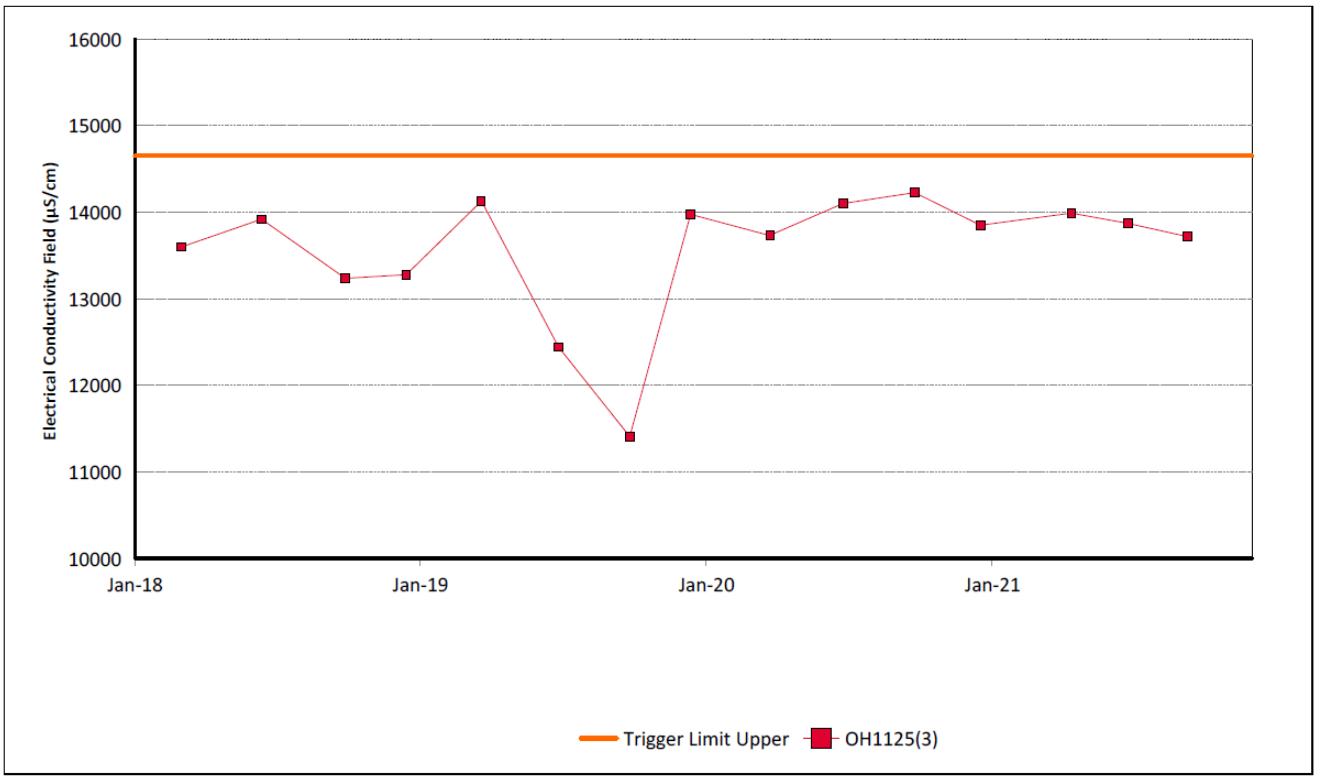


Figure 22: Bowfield Seam Electrical Conductivity Trend – September 2021

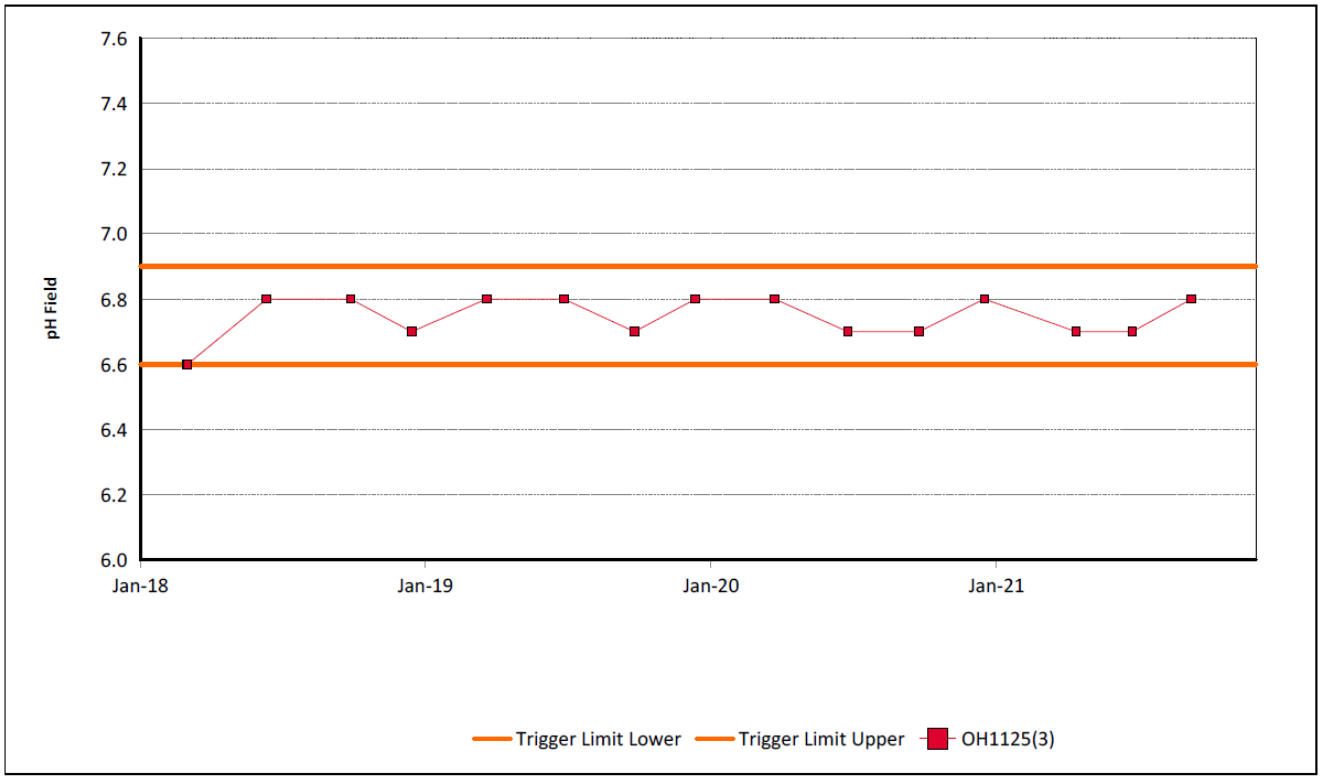


Figure 23: Bowfield Seam pH Trend – September 2021

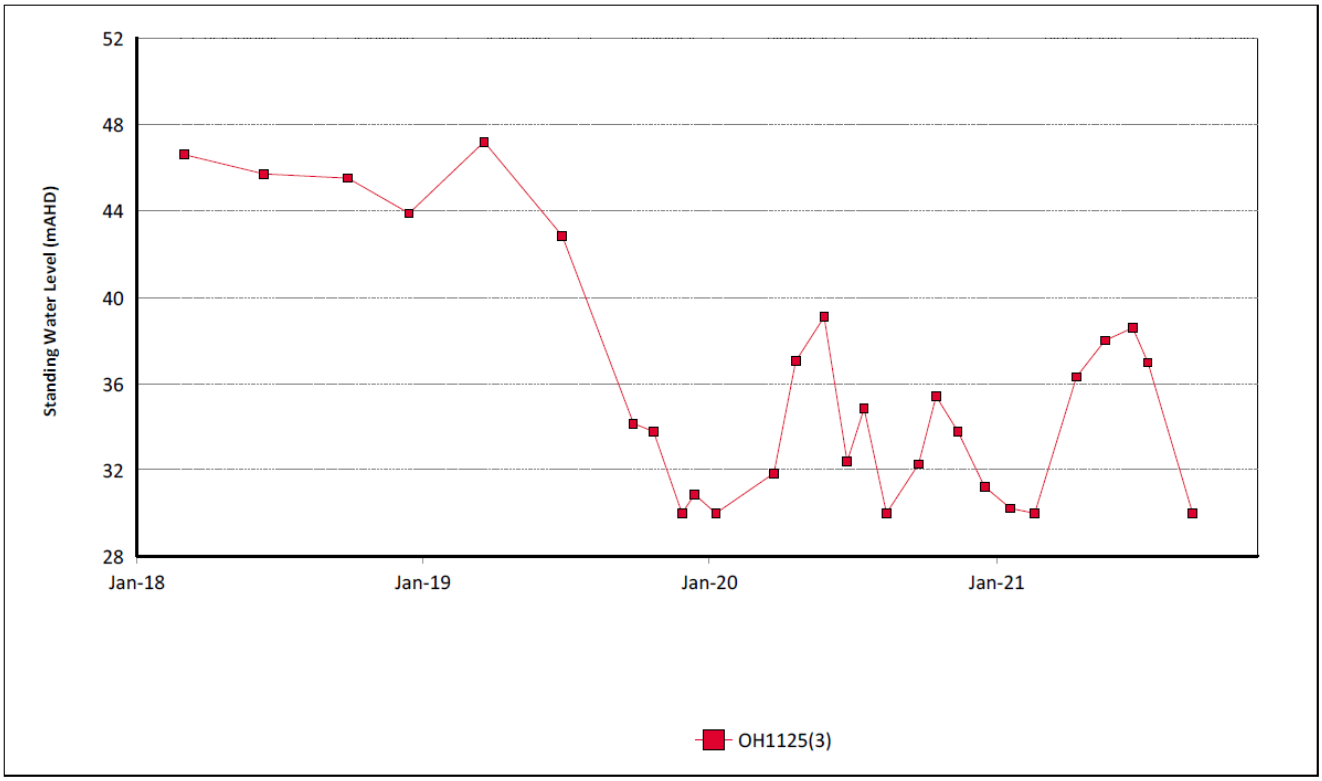


Figure 24: Bowfield Seam Standing Water Level Trend – September 2021

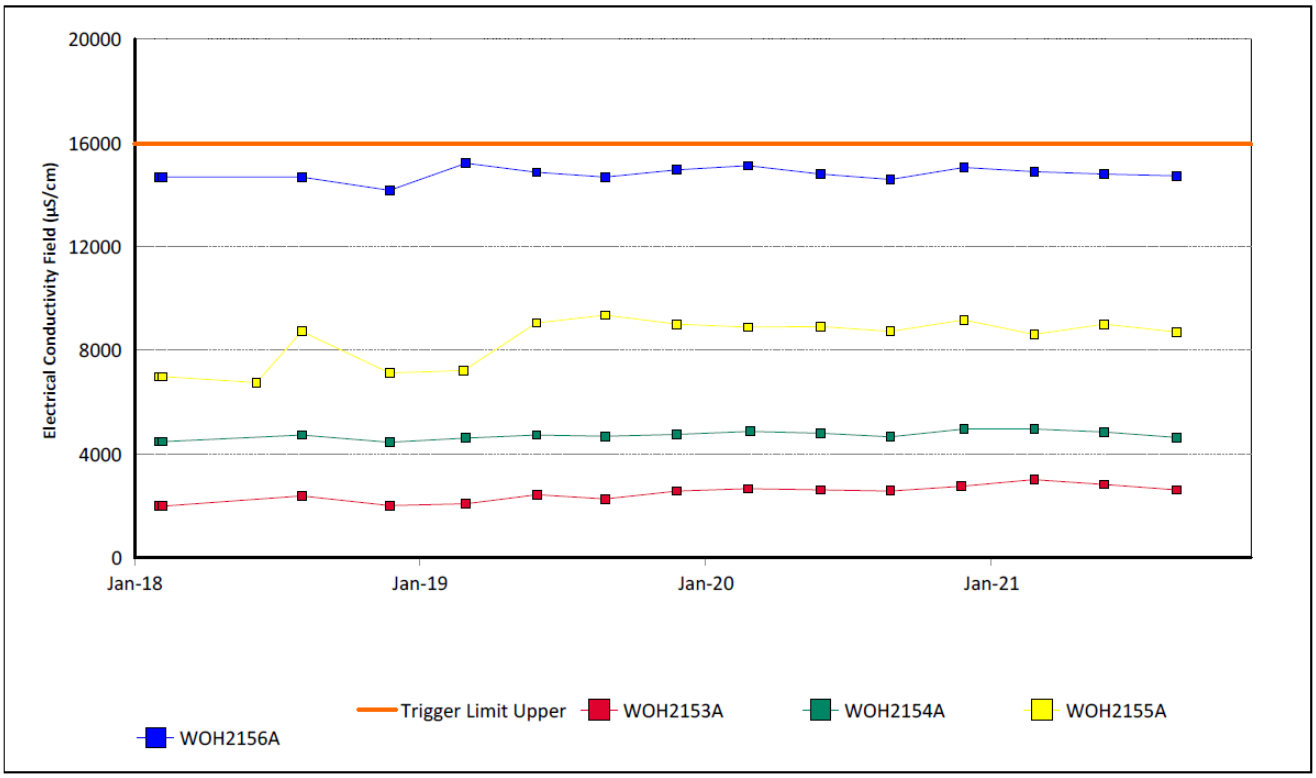


Figure 25: Redbank Seam Electrical Conductivity Trend – September 2021

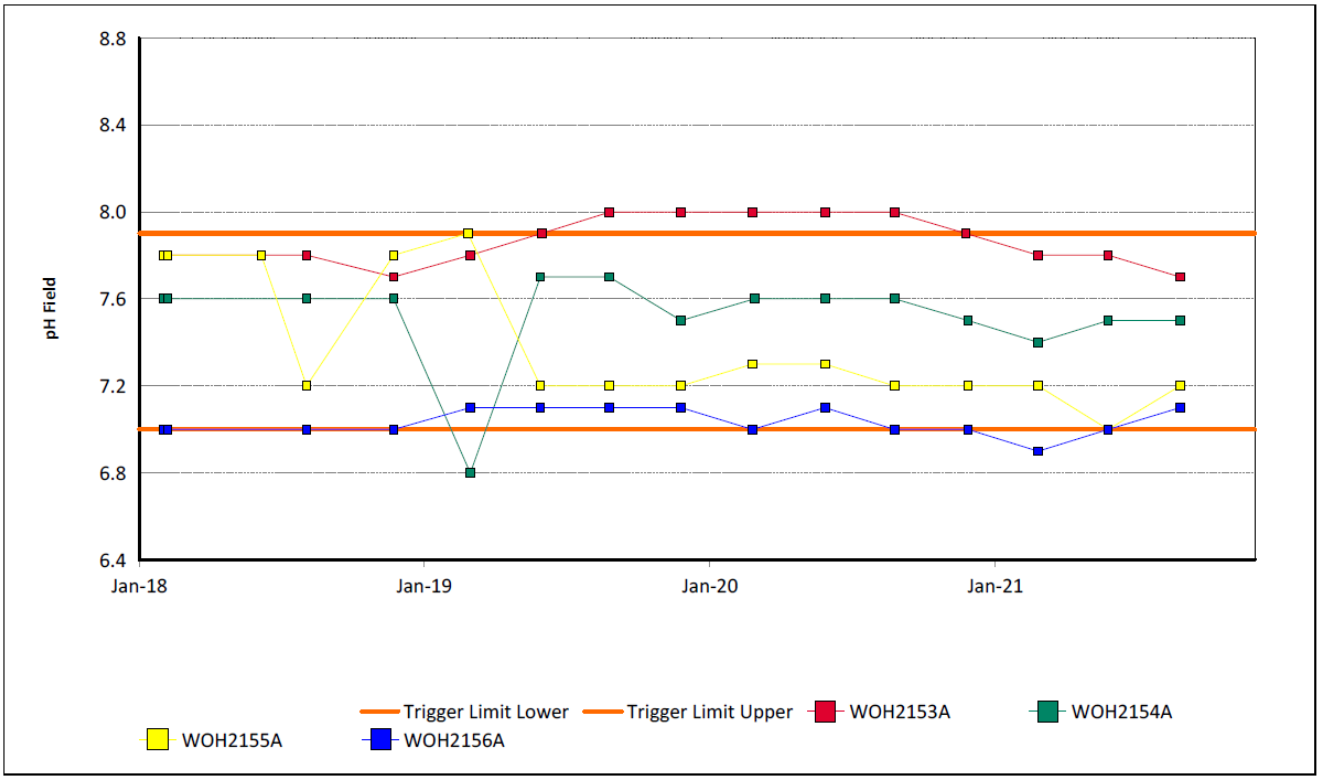


Figure 26: Redbank Seam pH Trend – September 2021

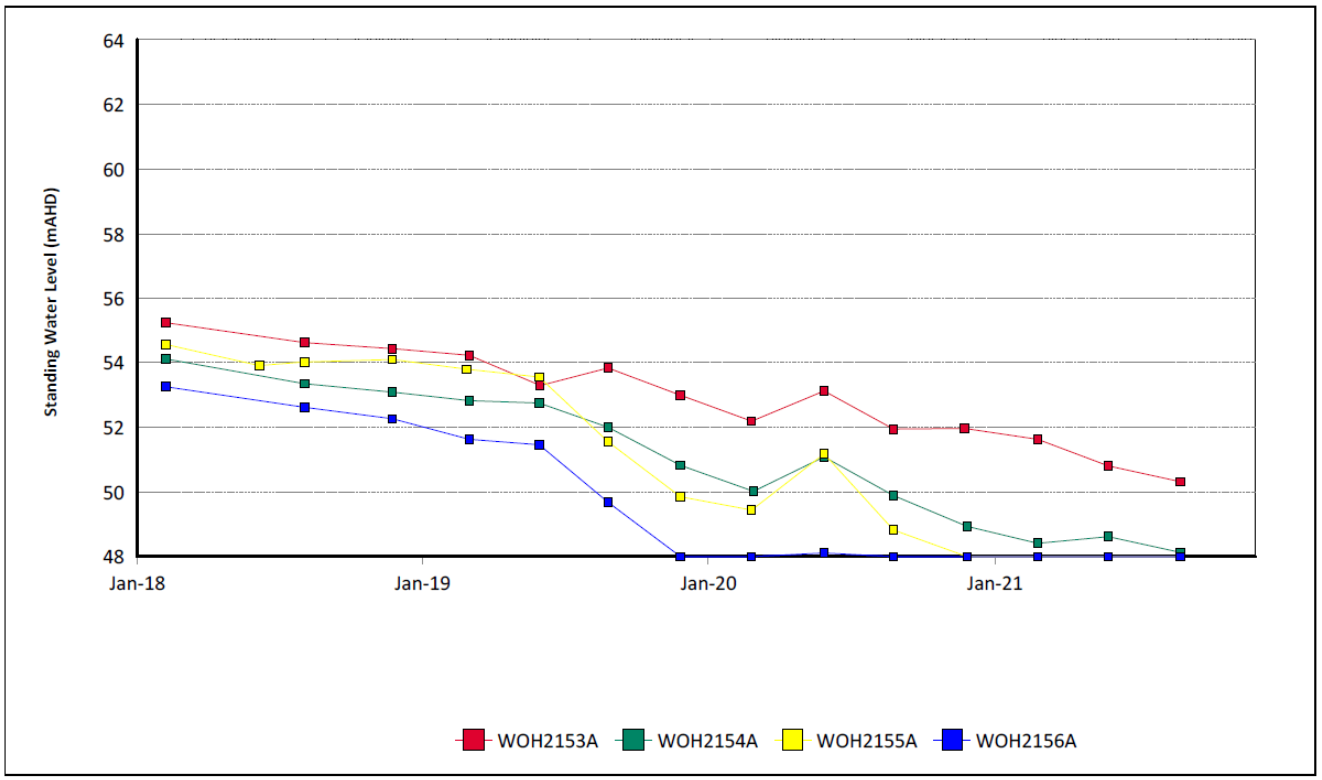


Figure 27: Redbank Seam Standing Water Level Trend – September 2021

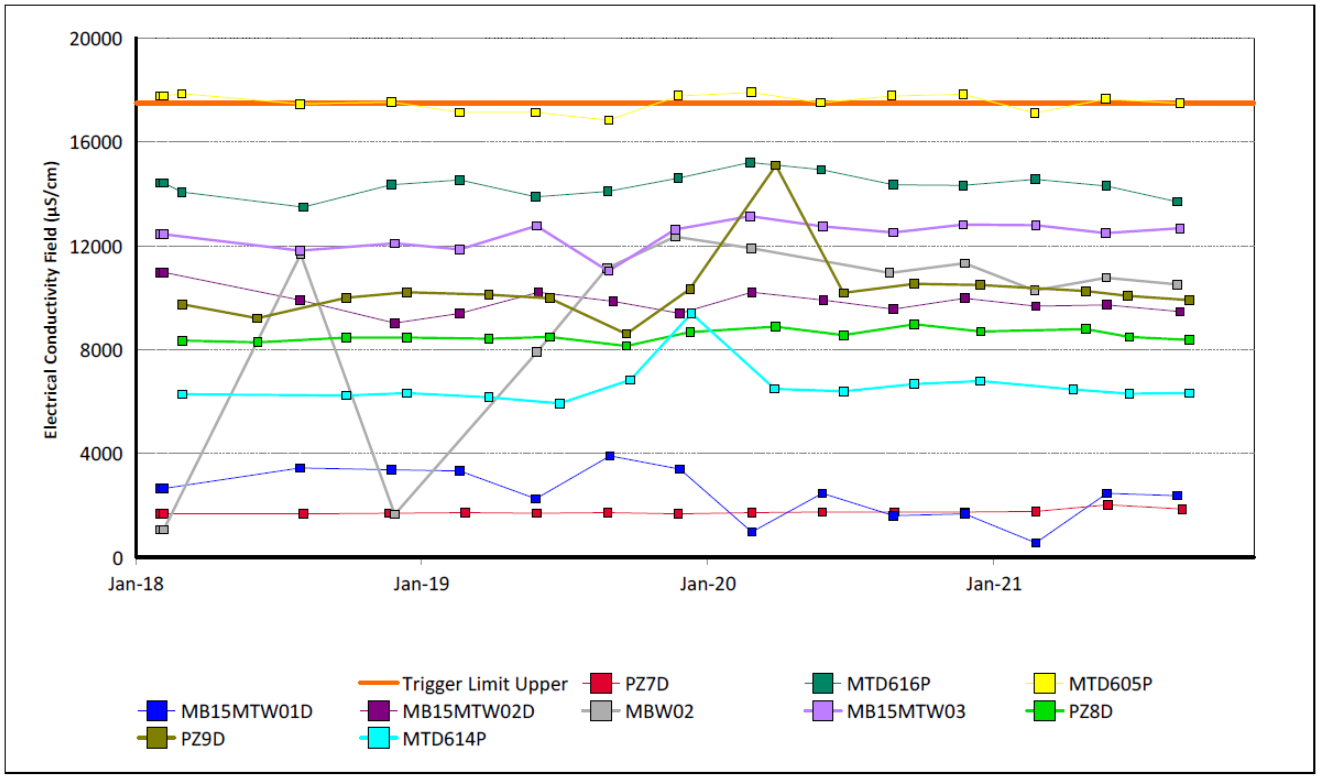


Figure 28: Shallow Overburden Electrical Conductivity Trend – September 2021

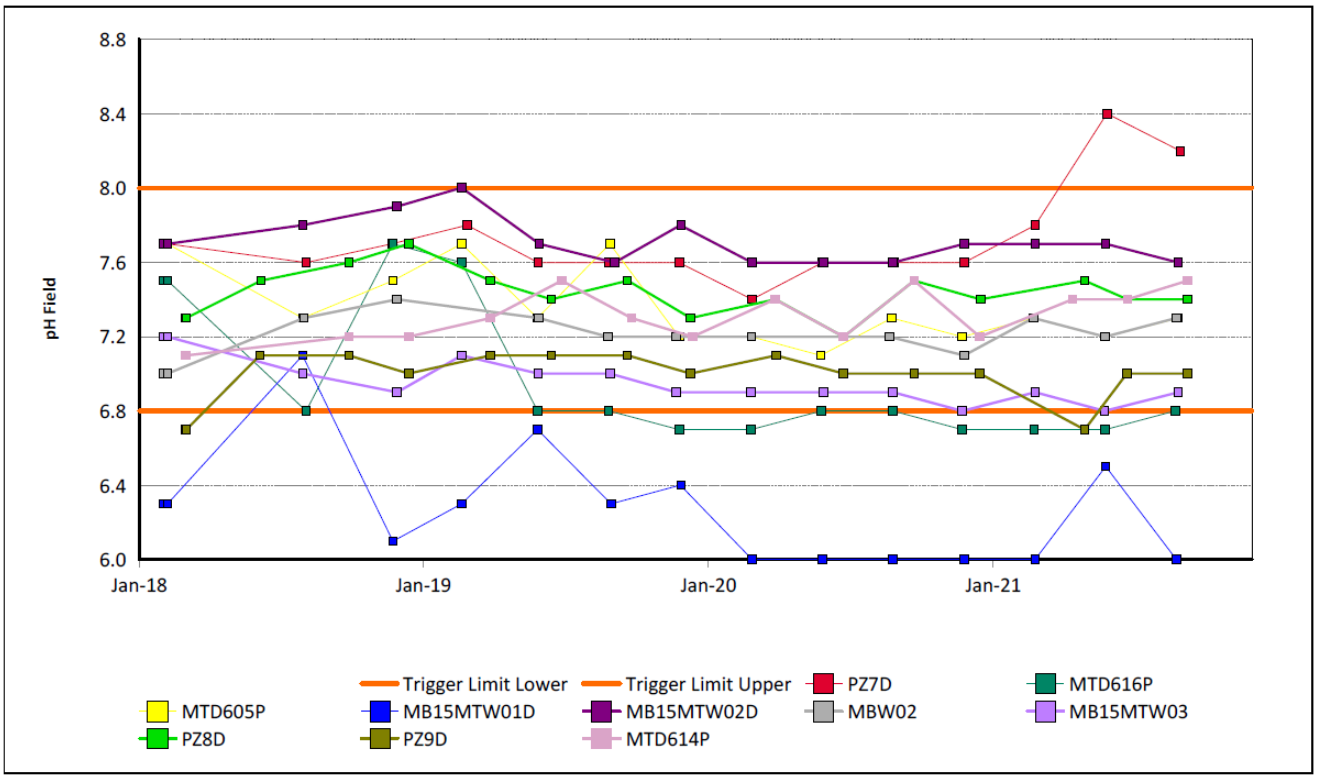


Figure 29: Shallow Overburden pH Trend – September 2021

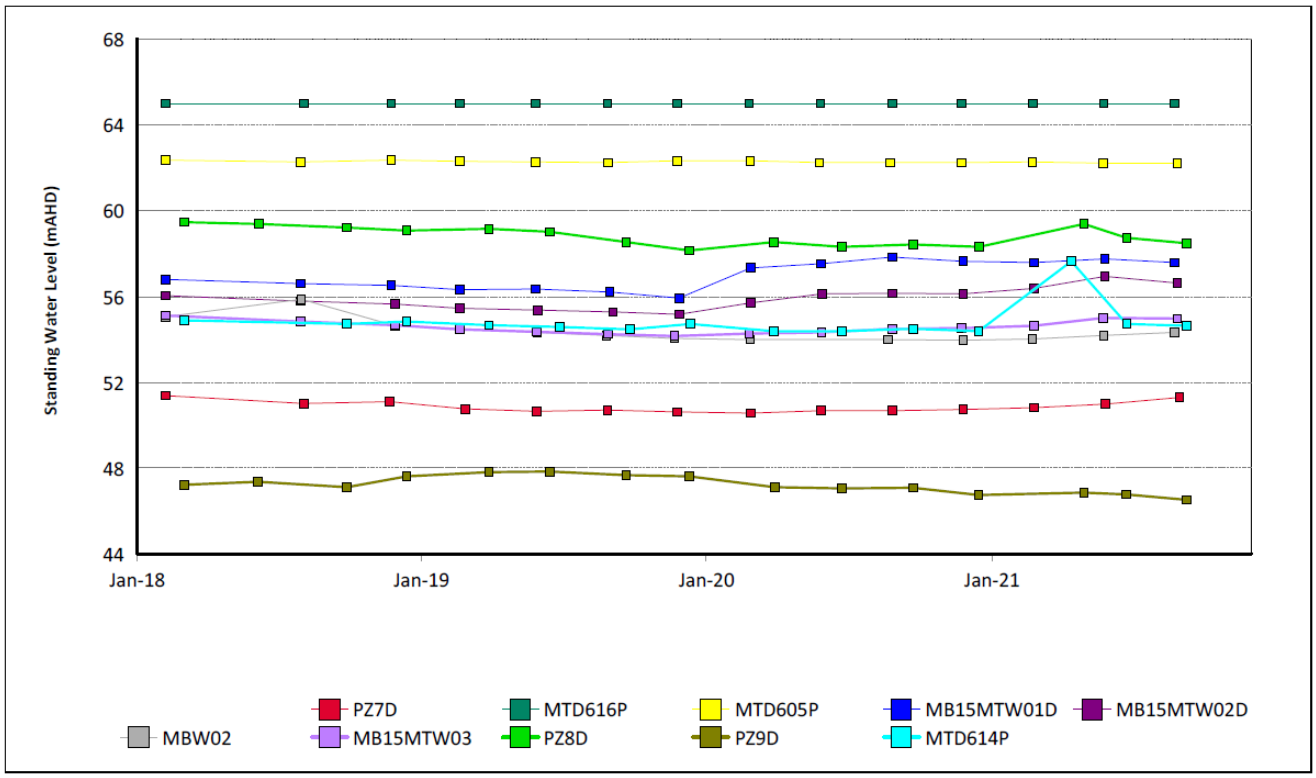
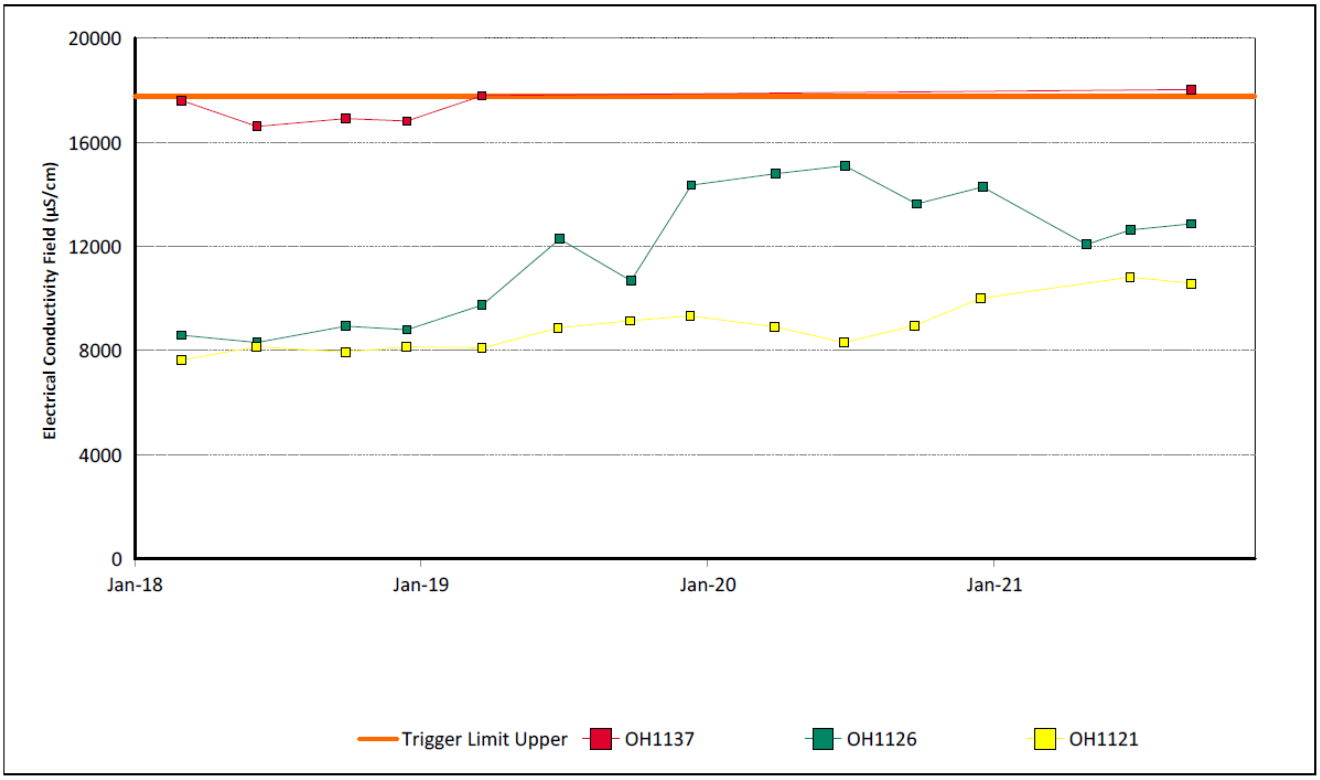
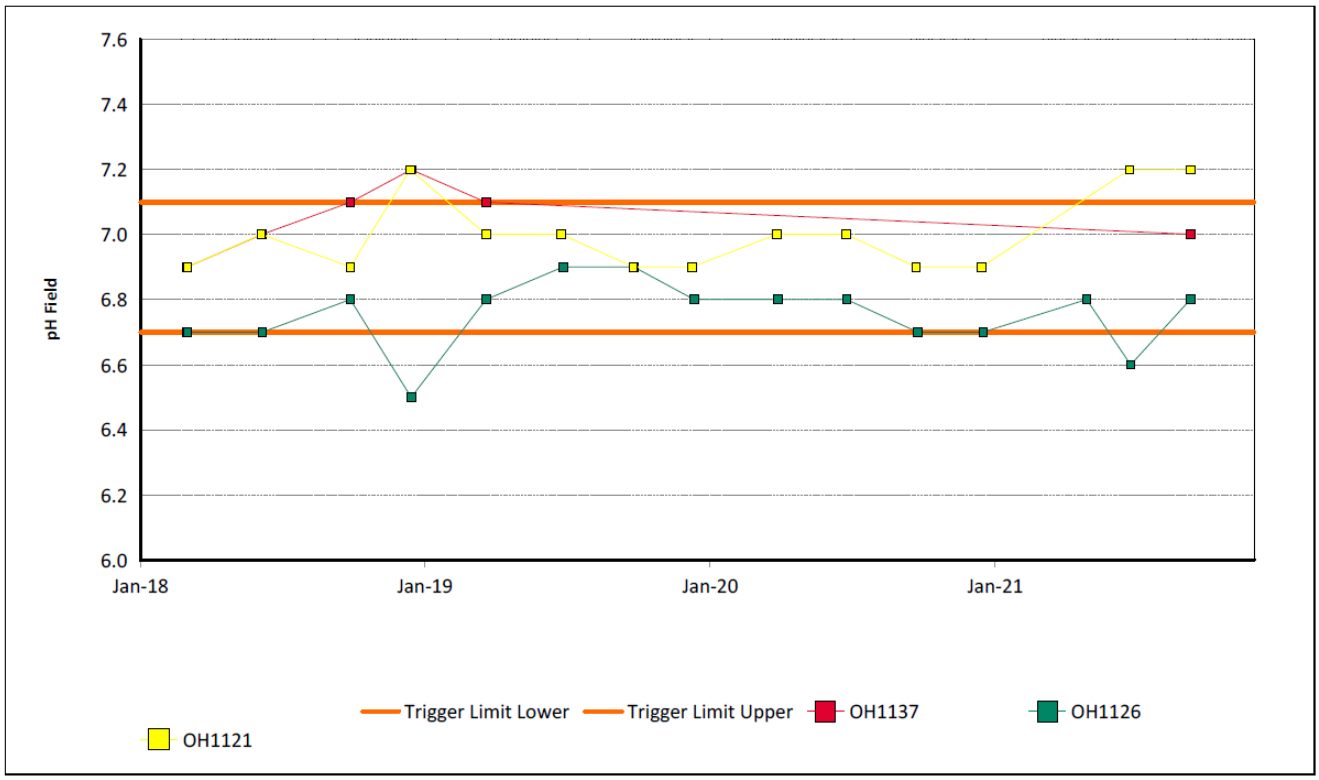


Figure 30: Shallow Overburden Standing Water Level Trend – September 2021



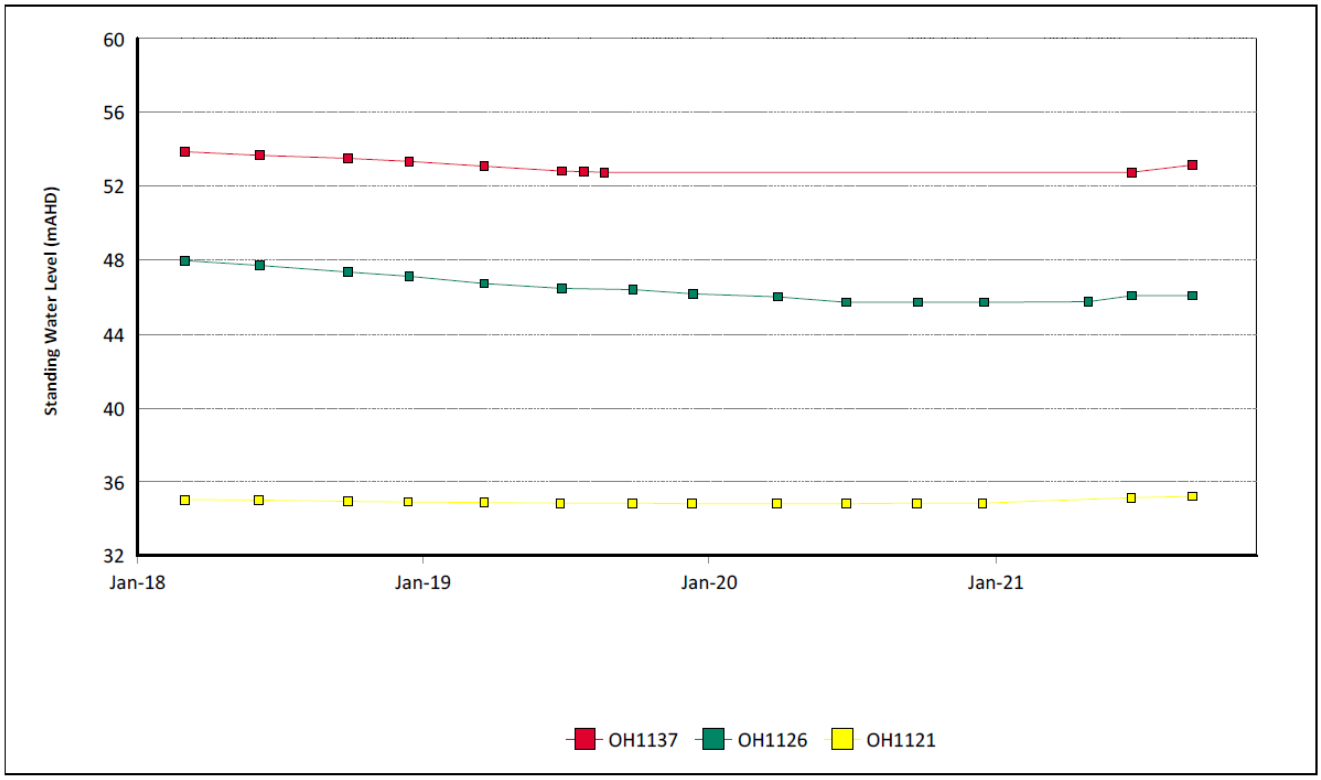
Note: Missing data indicates that there was insufficient water to take a sample.

Figure 31: Vaux Seam Electrical Conductivity Trend – September 2021

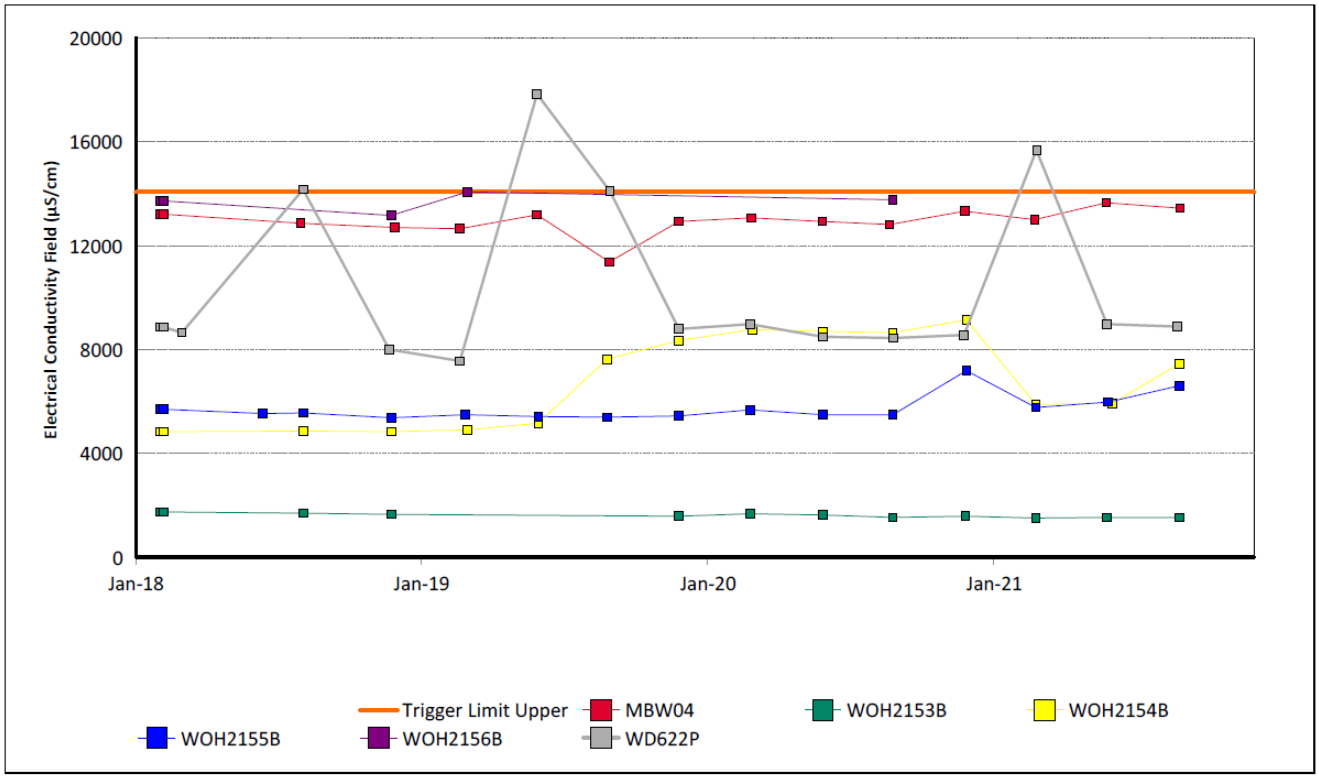


Note: Missing data indicates that there was insufficient water to take a sample.

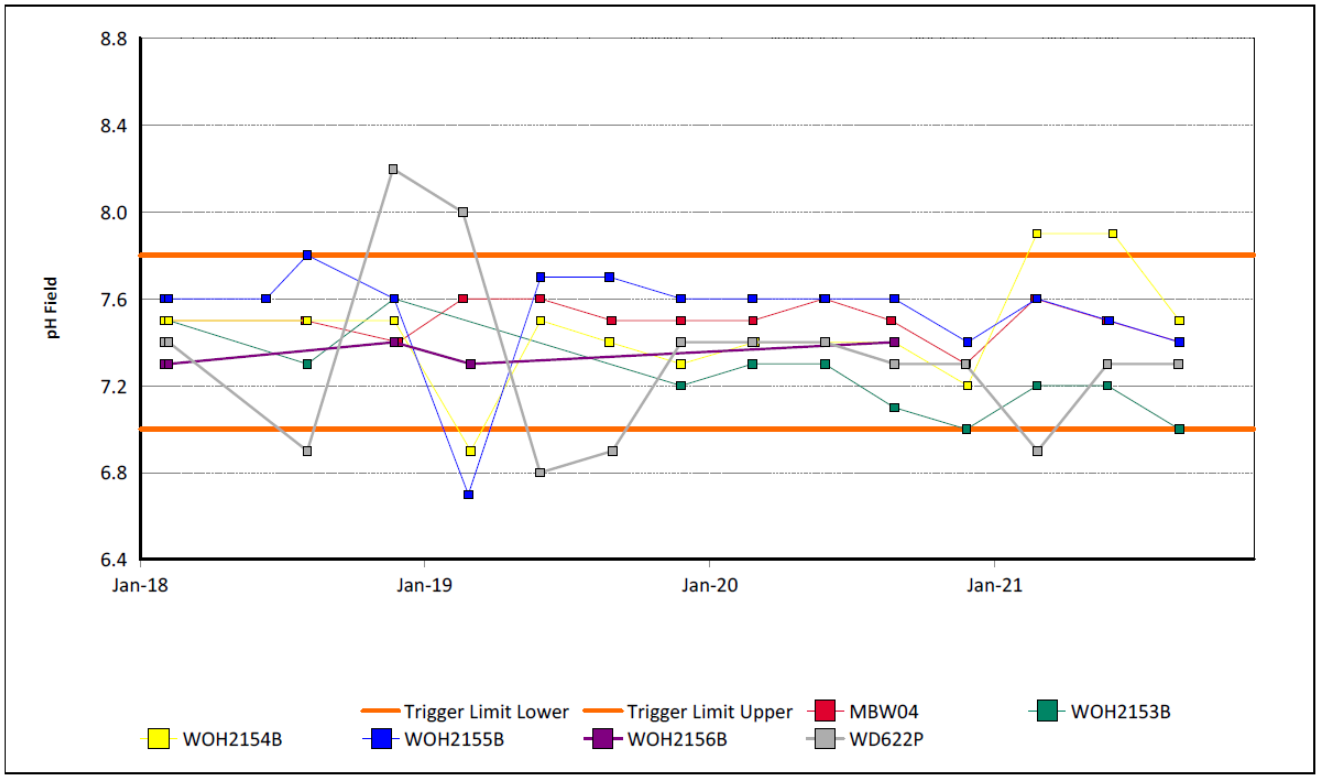
Figure 32: Vaux Seam pH Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample.
Figure 33: Vaux Seam Standing Water Level Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample.
Figure 34: Wambo Seam Electrical Conductivity Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample.

Figure 35: Wambo Seam pH Trend – September 2021

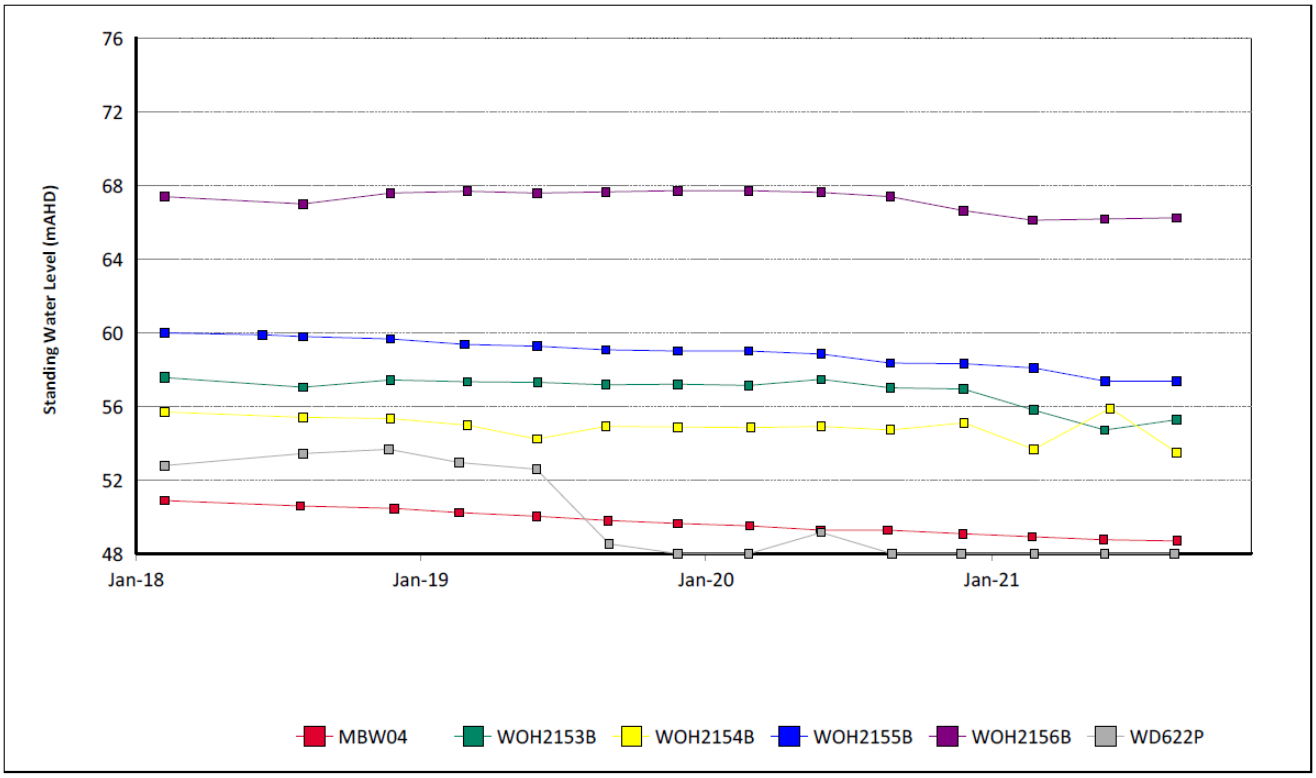


Figure 36: Wambo Seam Standing Water Level Trend – September 2021

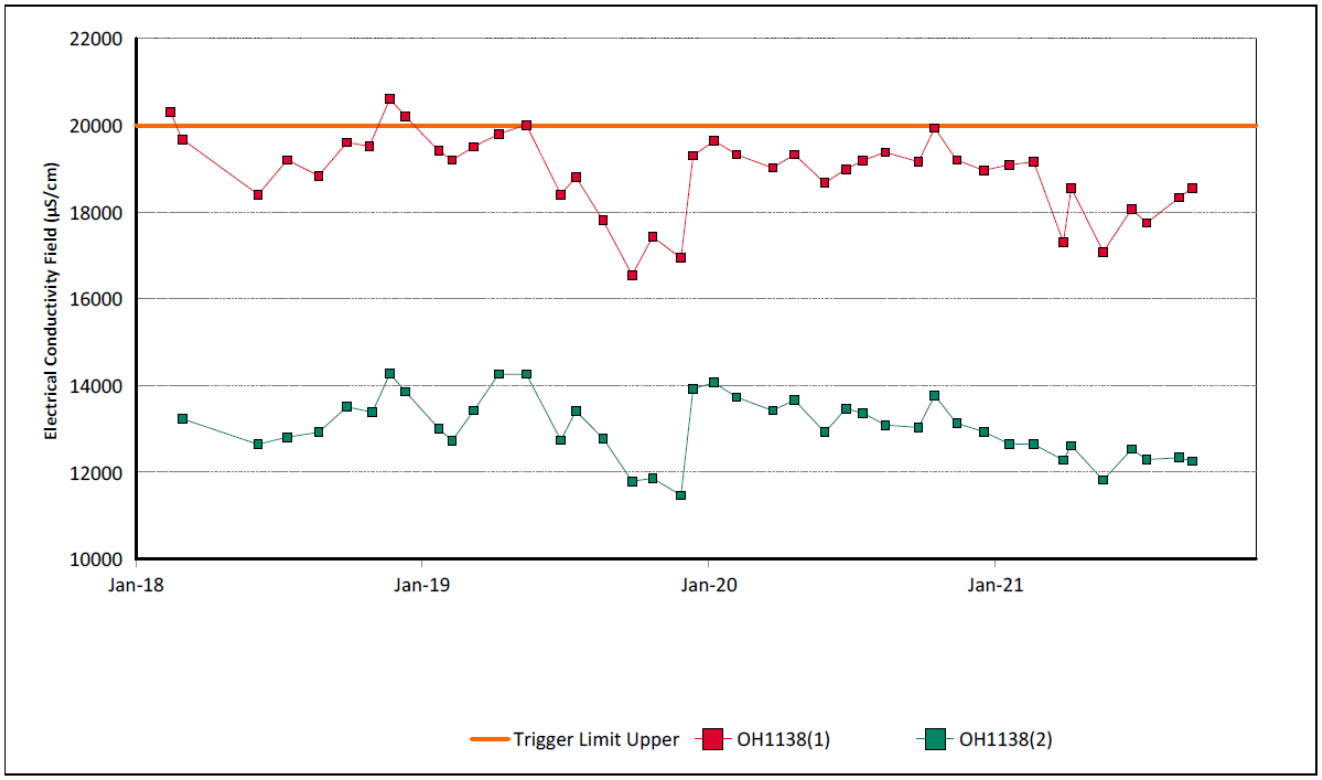


Figure 37: Warkworth Seam Electrical Conductivity Trend – September 2021

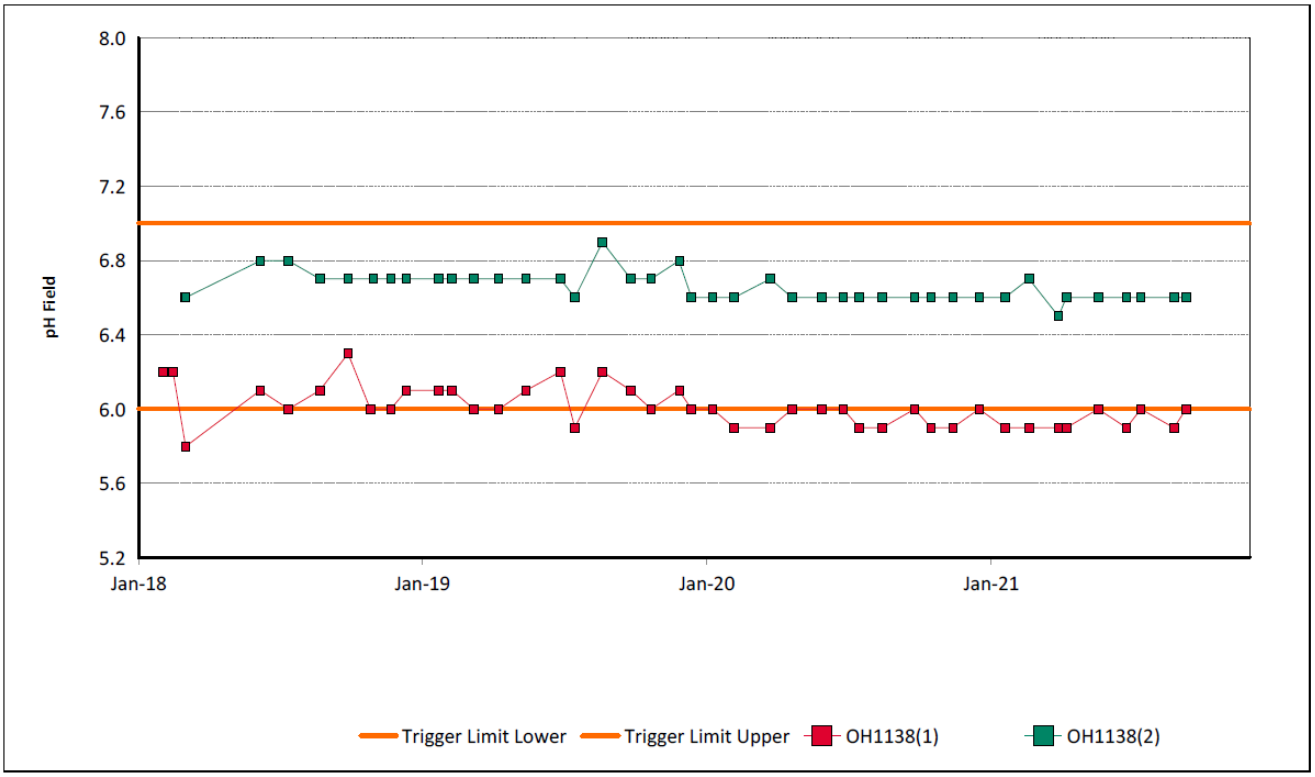


Figure 38: Warkworth Seam pH Trend – September 2021

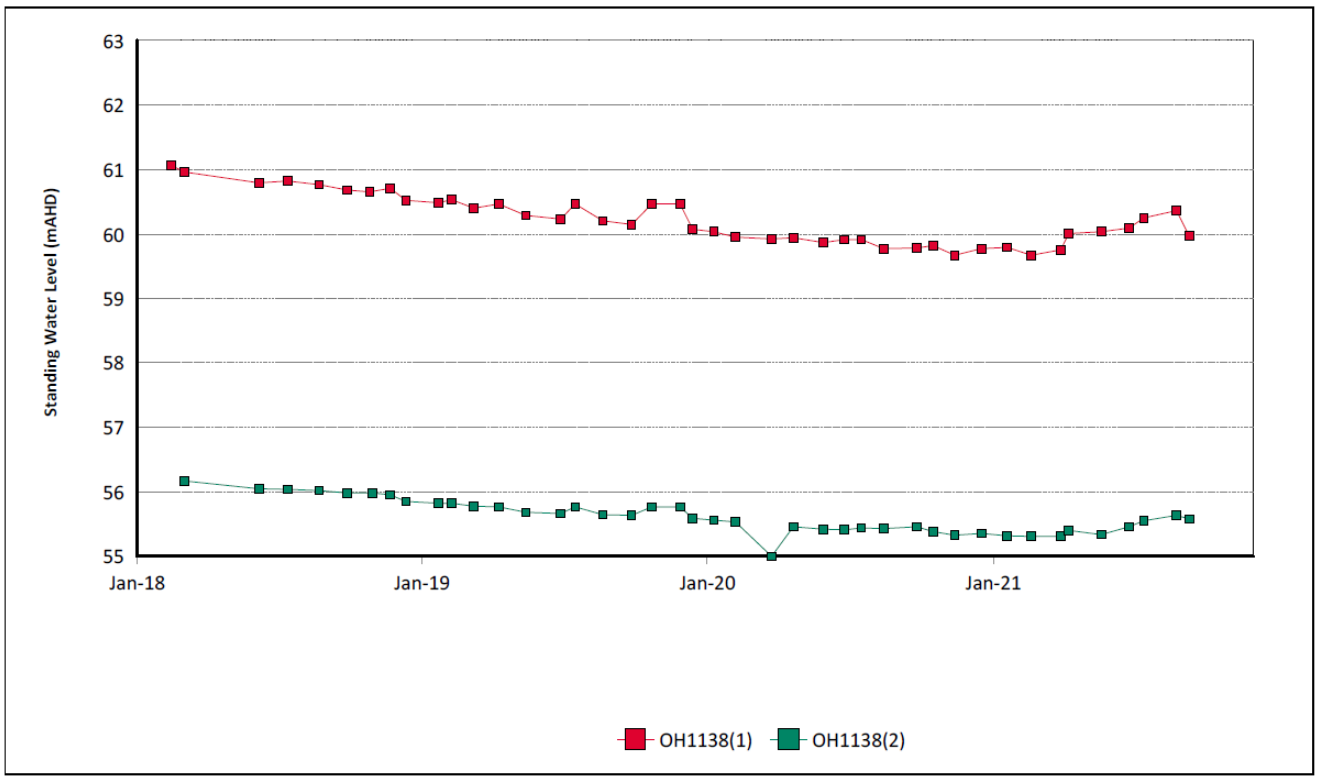


Figure 39: Warkworth Seam Standing Water Level Trend – September 2021

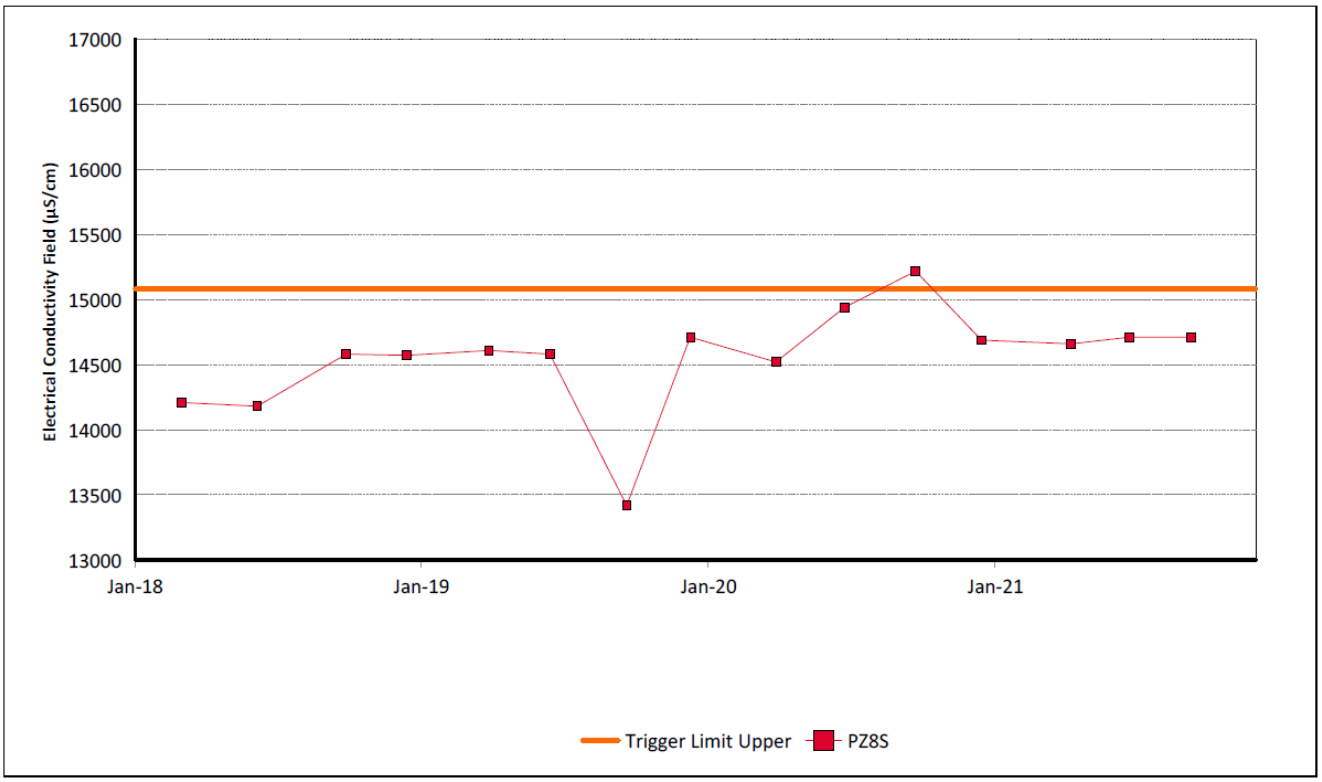


Figure 40: Wollombi Alluvium Electrical Conductivity Trend – September 2021

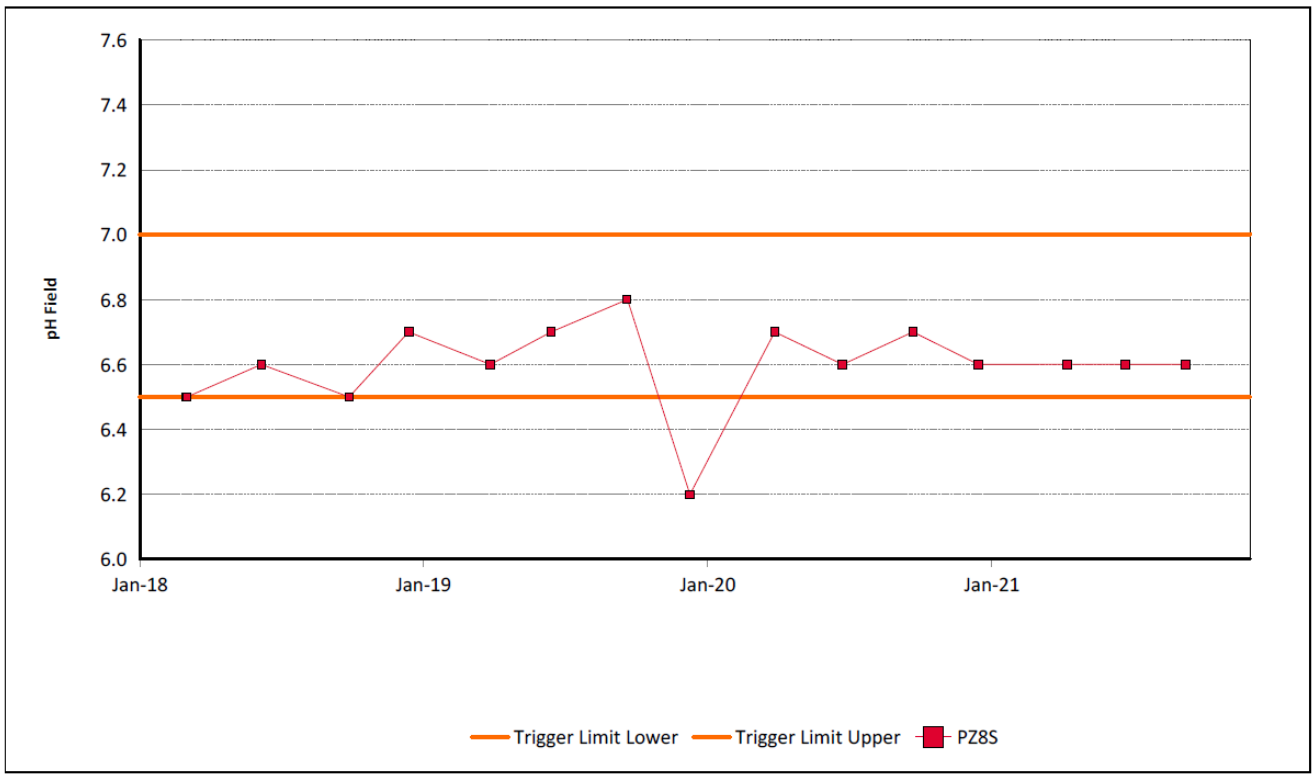
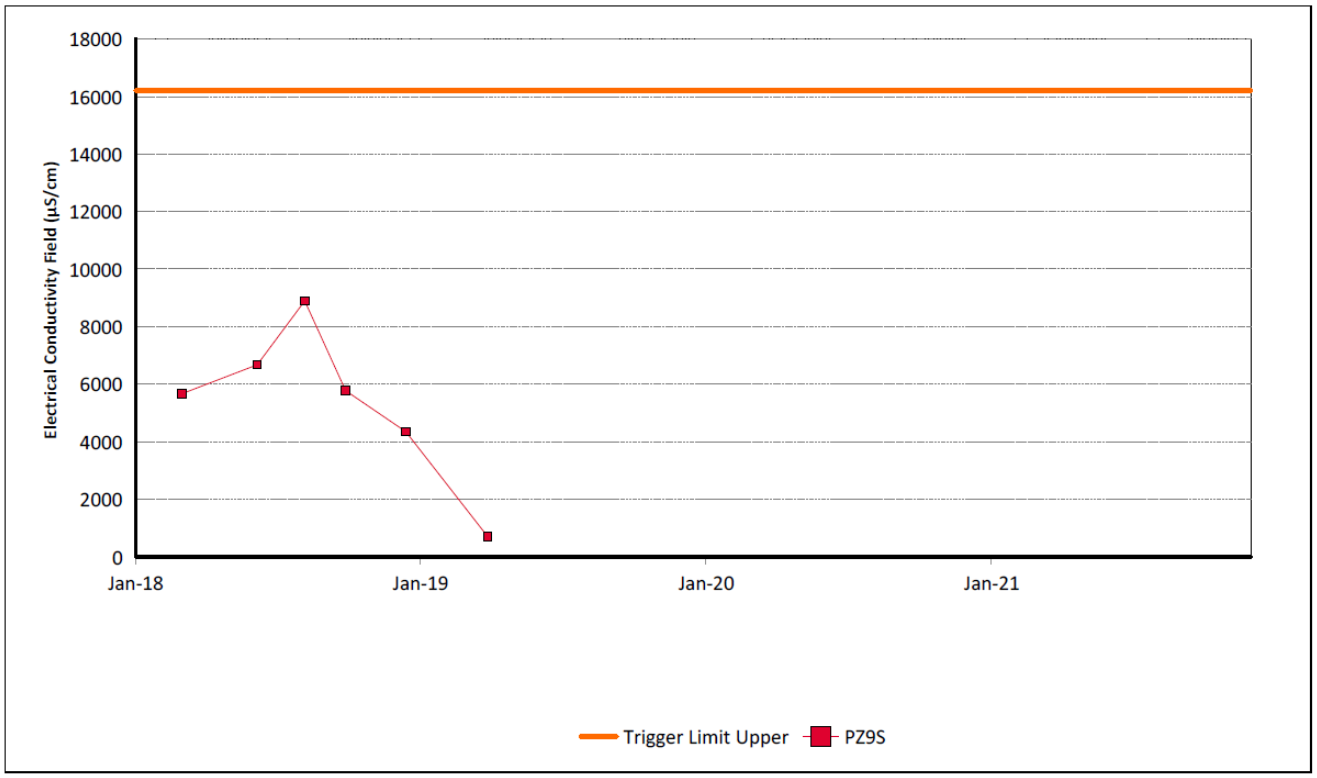
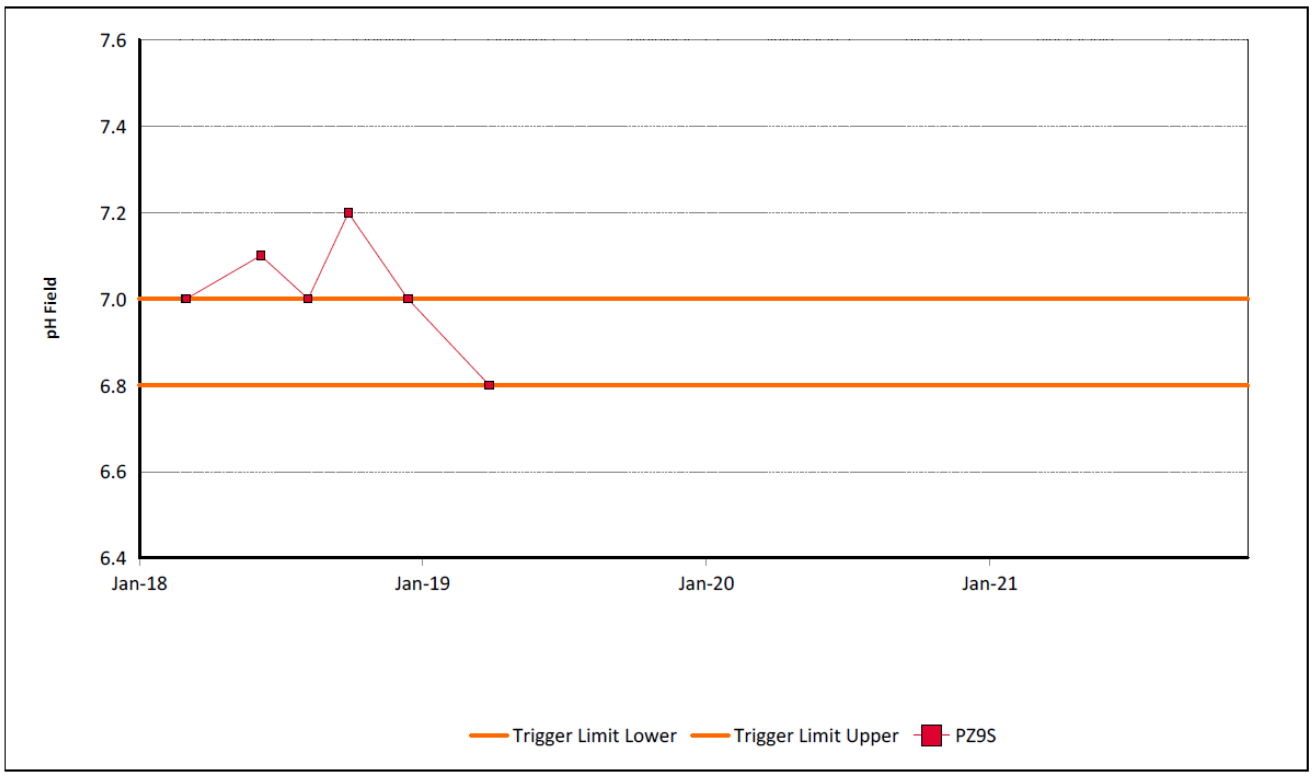


Figure 41: Wollombi Alluvium pH Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample.

Figure 42: Wollombi Alluvium 2 Electrical Conductivity Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample.

Figure 43: Wollombi Alluvium 2 pH Trend – September 2021

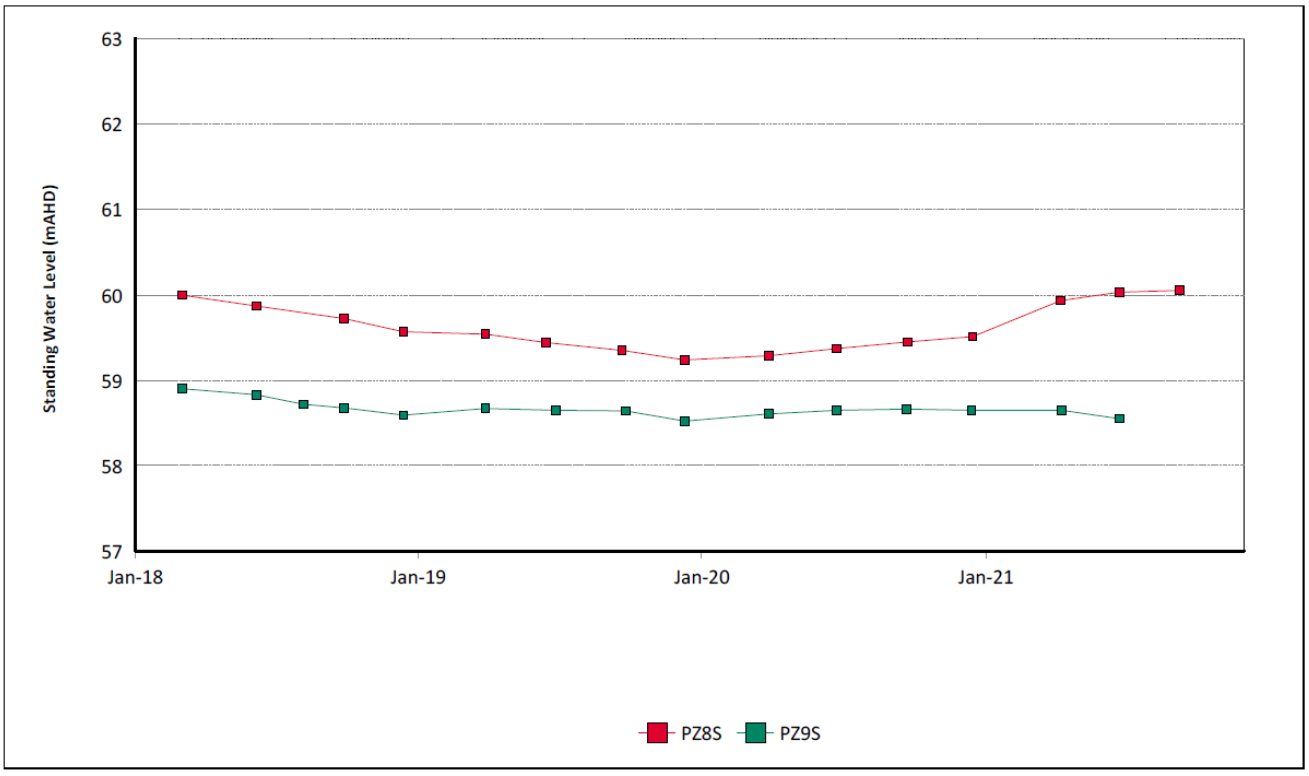


Figure 44: Wollombi Alluvium Standing Water Level Trend – September 2021

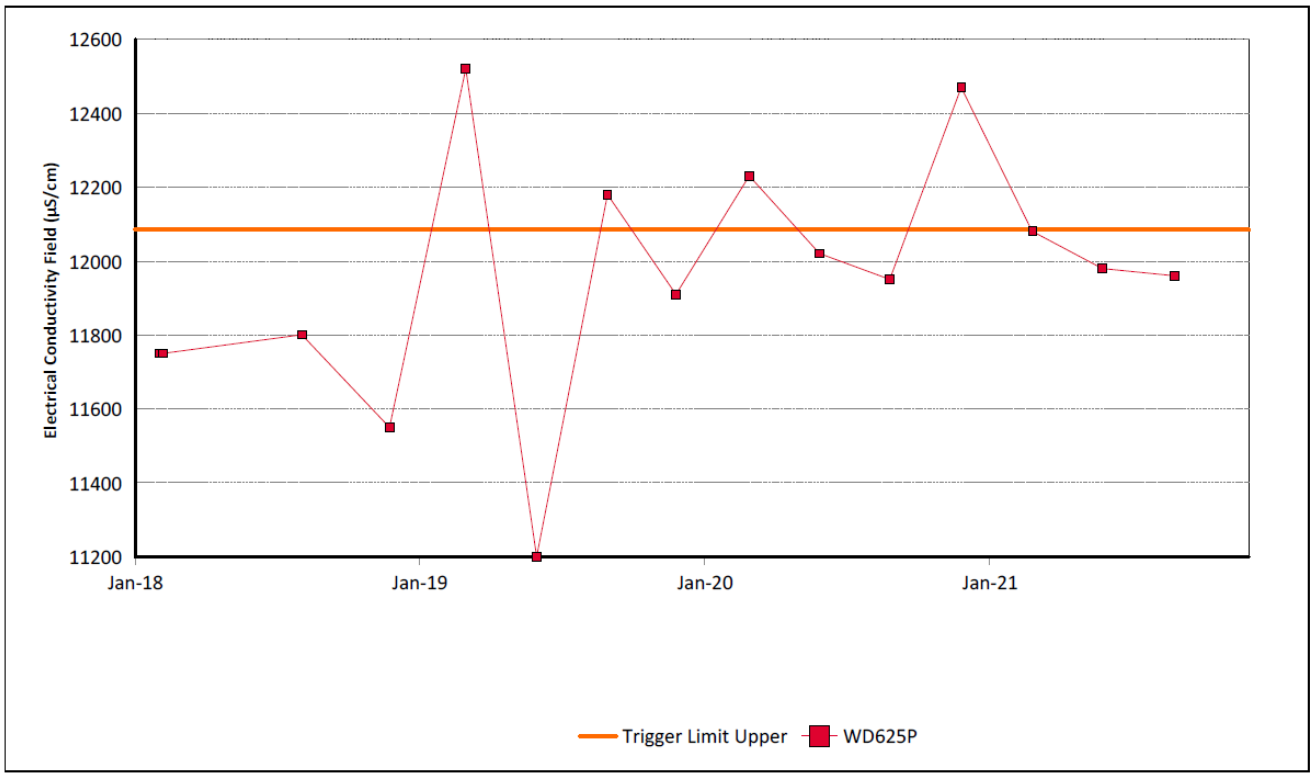


Figure 45: Woodlands Hill Seam Electrical Conductivity Trend - September 2021

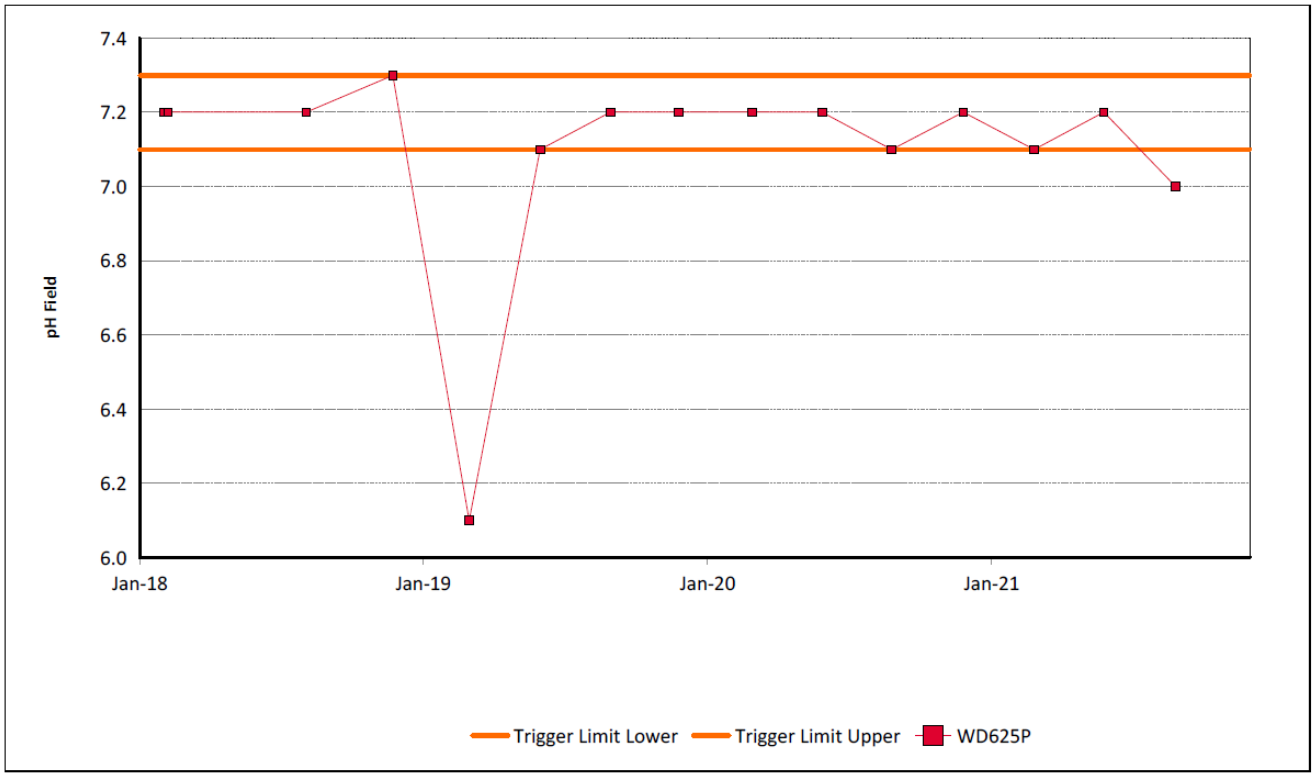


Figure 46: Woodlands Hill Seam pH Trend - September 2021

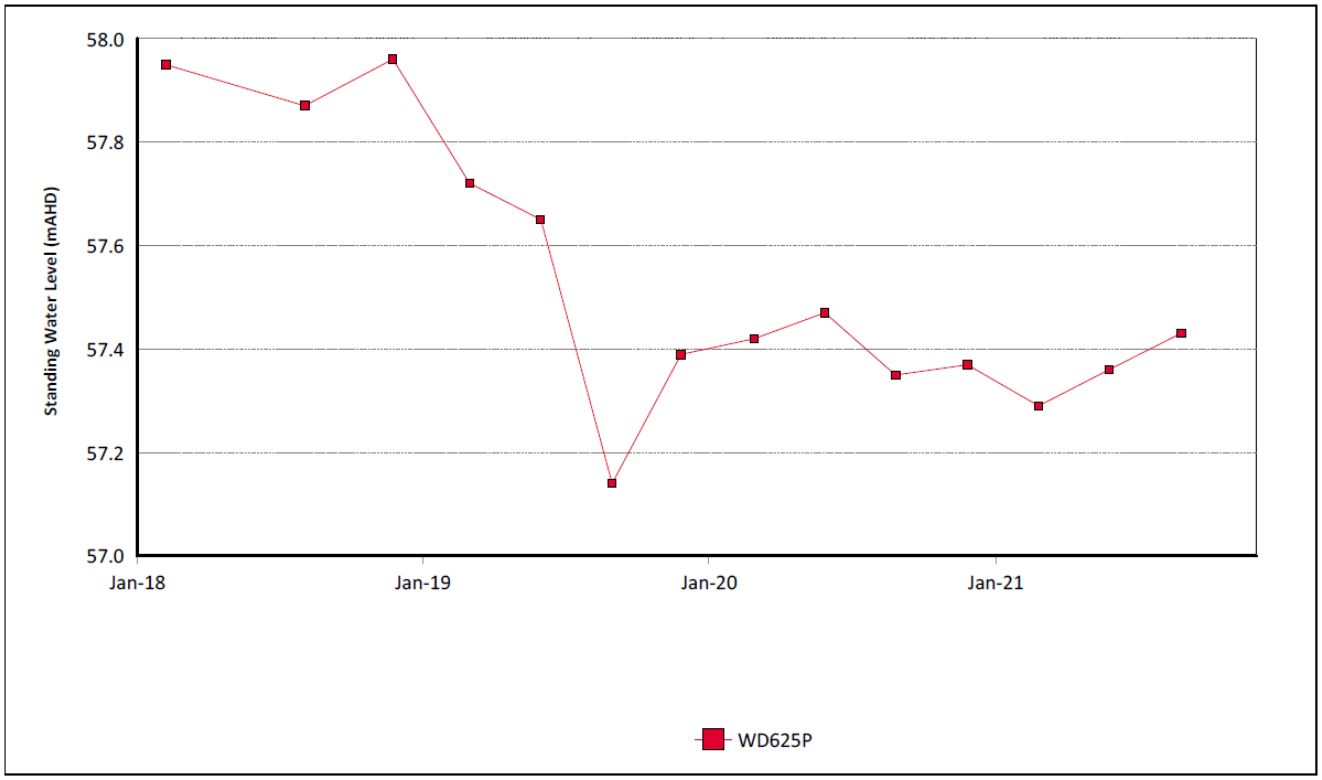


Figure 47: Woodlands Hill Seam Standing Water Level Trend - September 2021

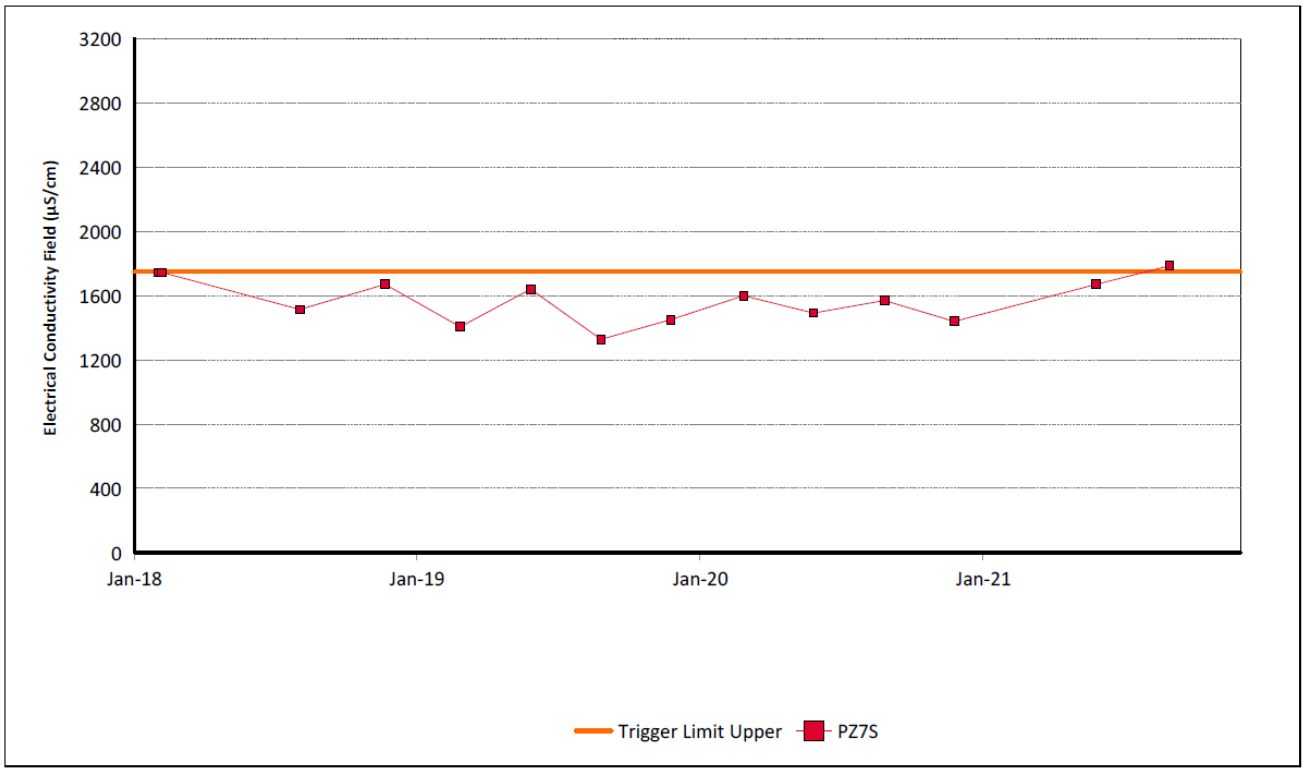


Figure 48: Aeolian Warkworth Sands Electrical Conductivity Trend – September 2021

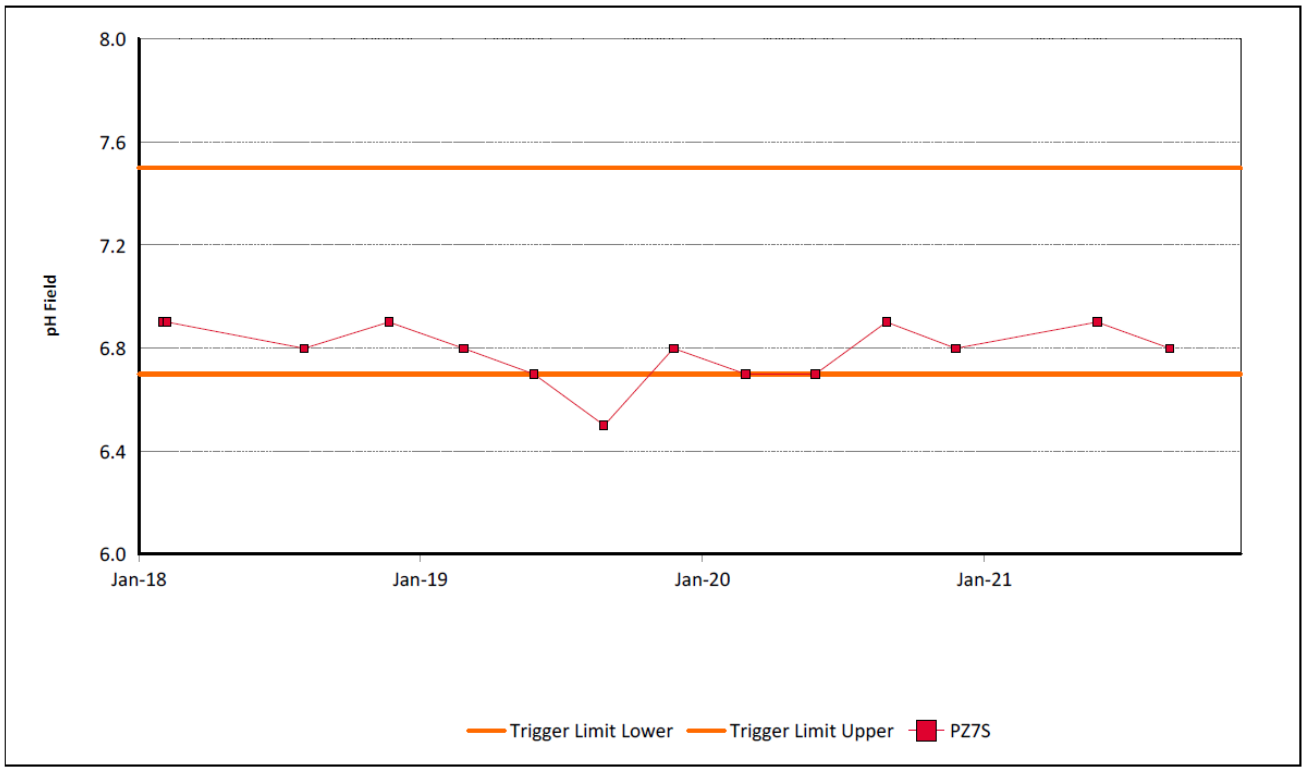


Figure 49: Aeolian Warkworth Sands pH Trend – September 2021

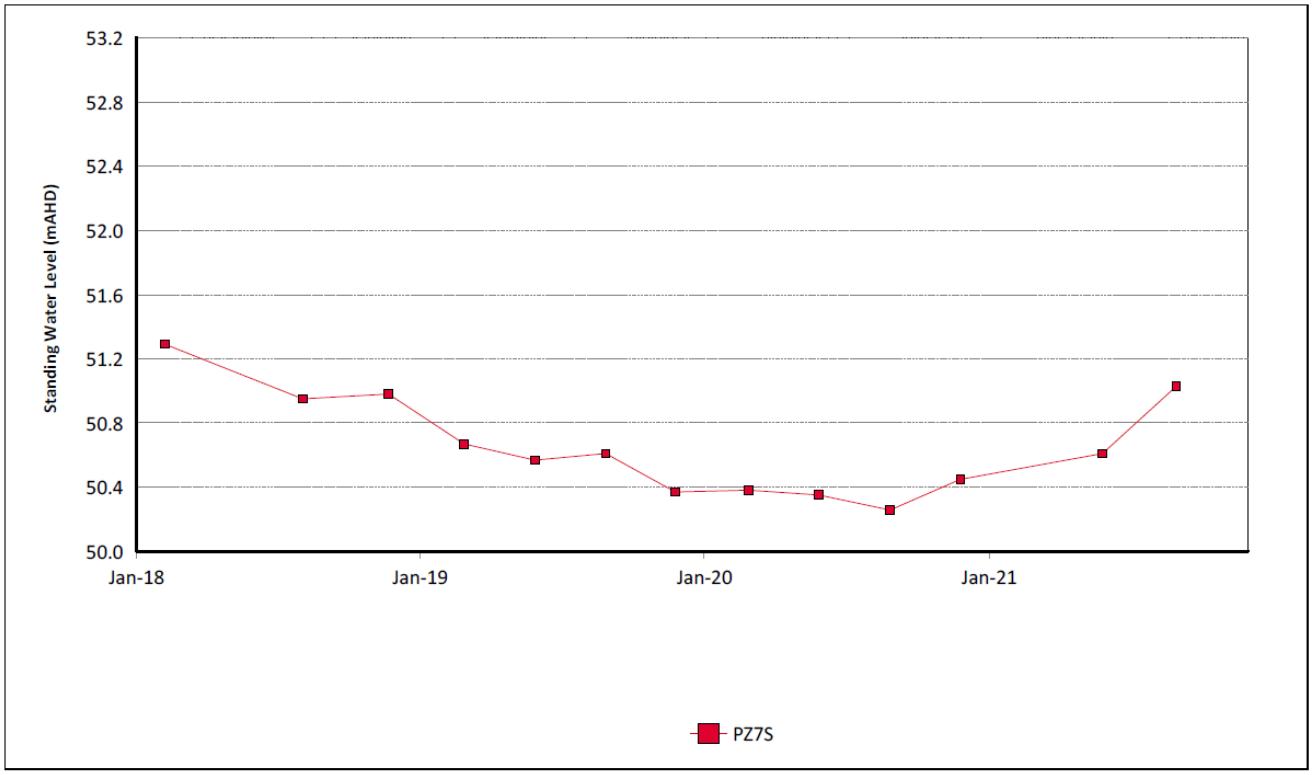


Figure 50: Aeolian Warkworth Sands Standing Water Level Trend – September 2021

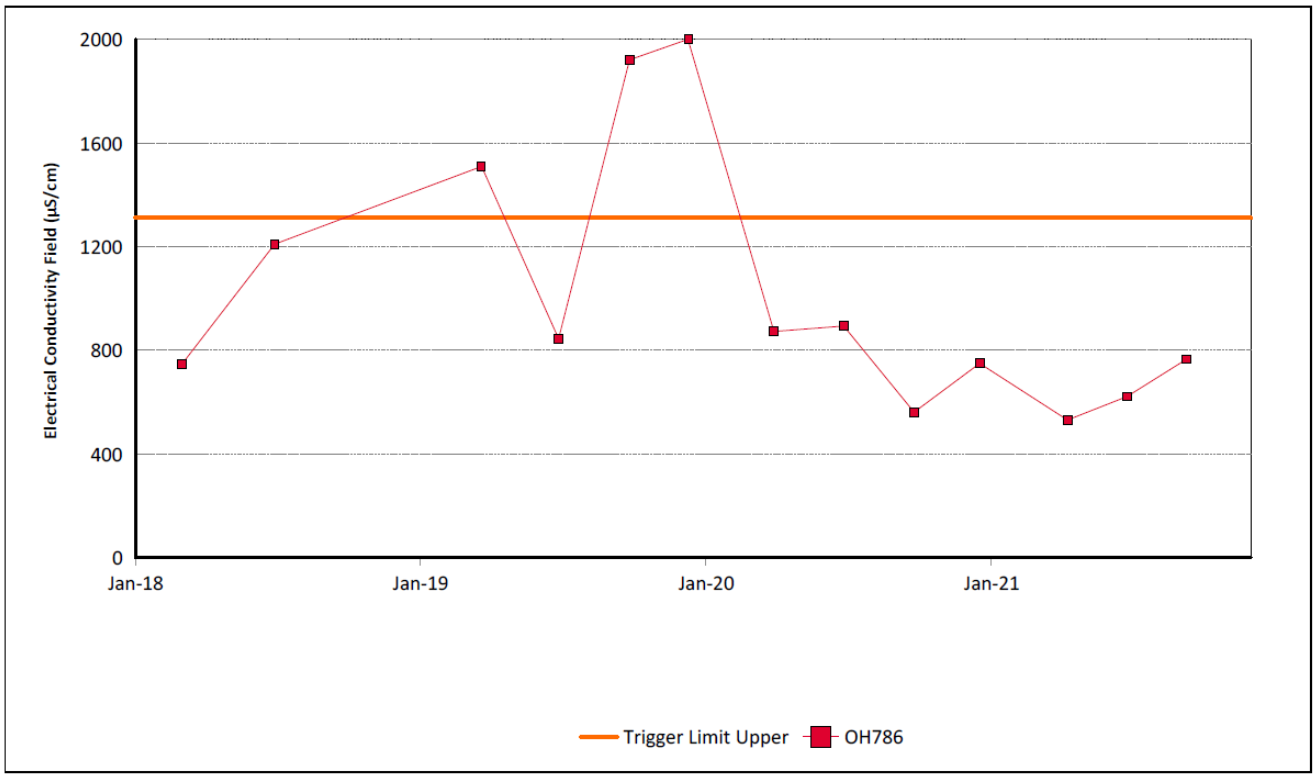


Figure 51: Hunter River Alluvium 1 Electrical Conductivity Trend – September 2021

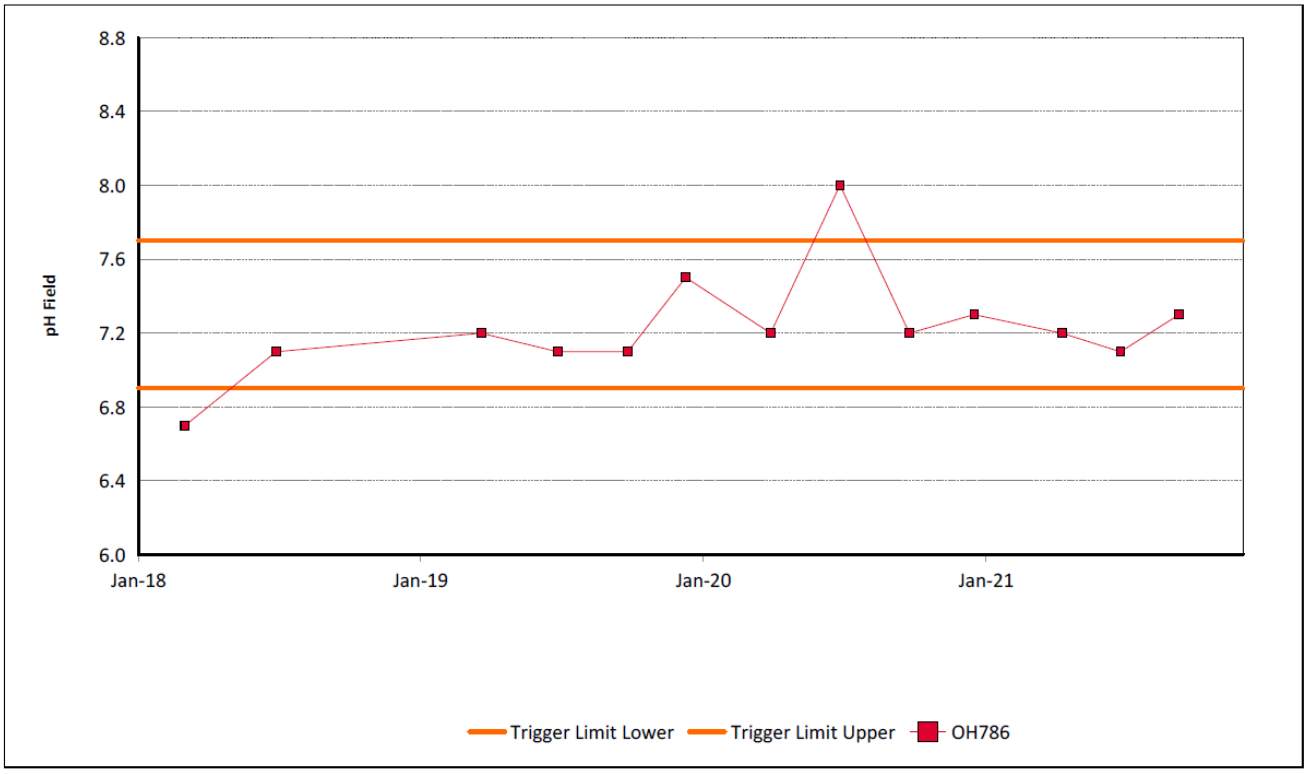


Figure 52: Hunter River Alluvium 1 pH Trend – September 2021

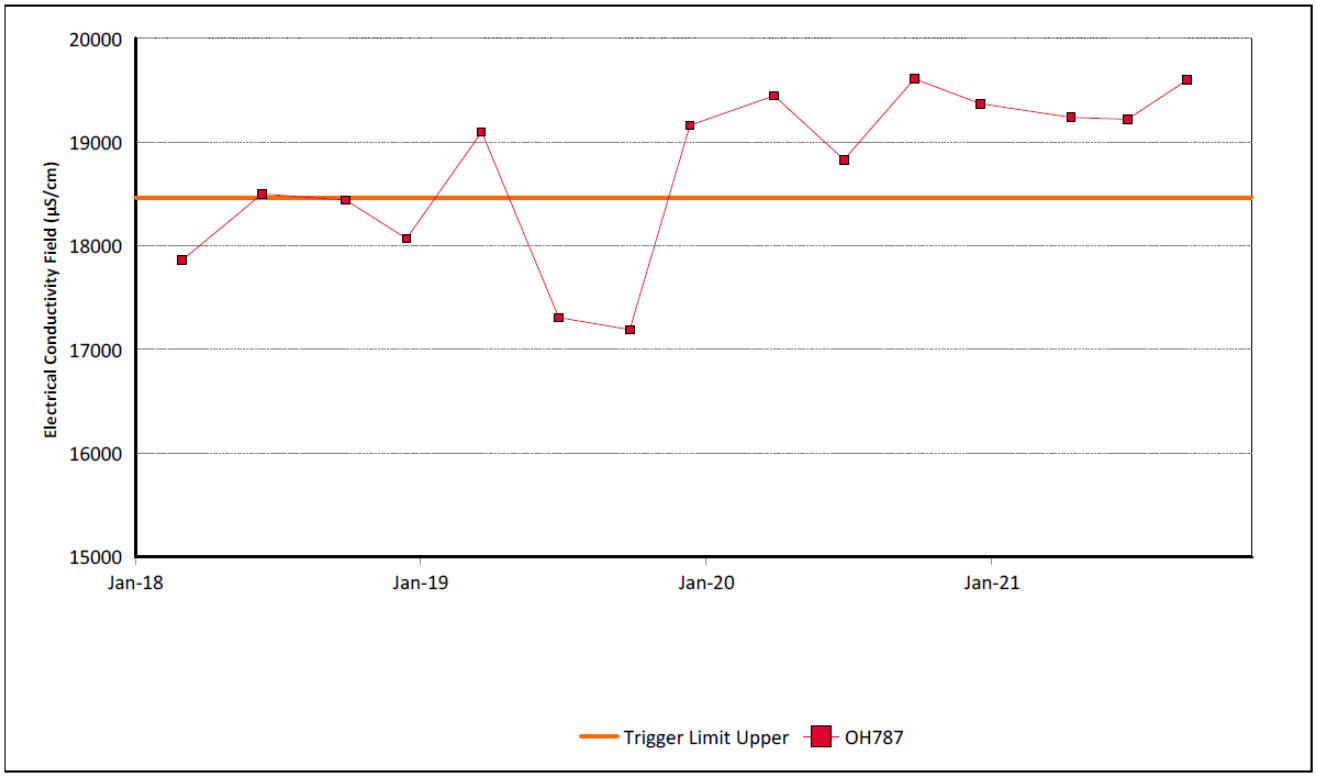


Figure 53: Hunter River Alluvium 2 Electrical Conductivity Trend – September 2021

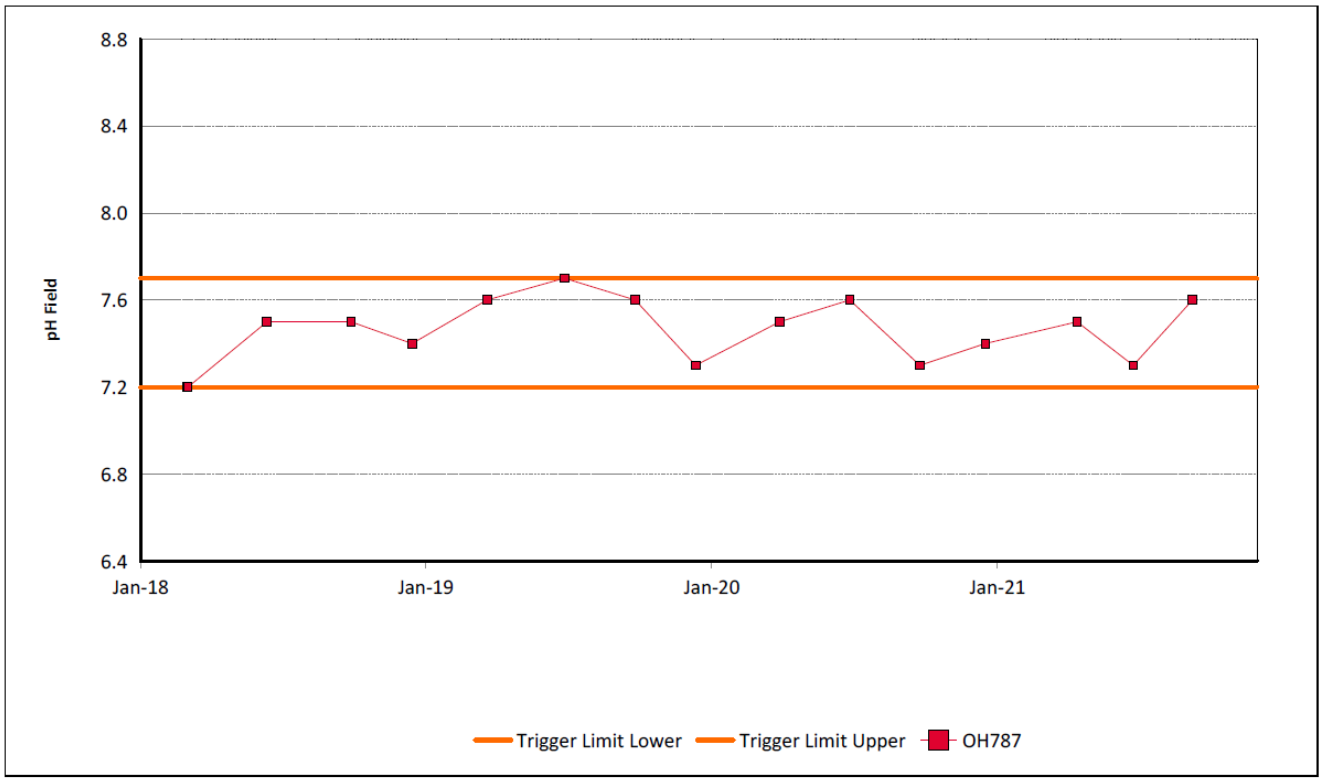


Figure 54: Hunter River Alluvium 2 pH Trend – September 2021

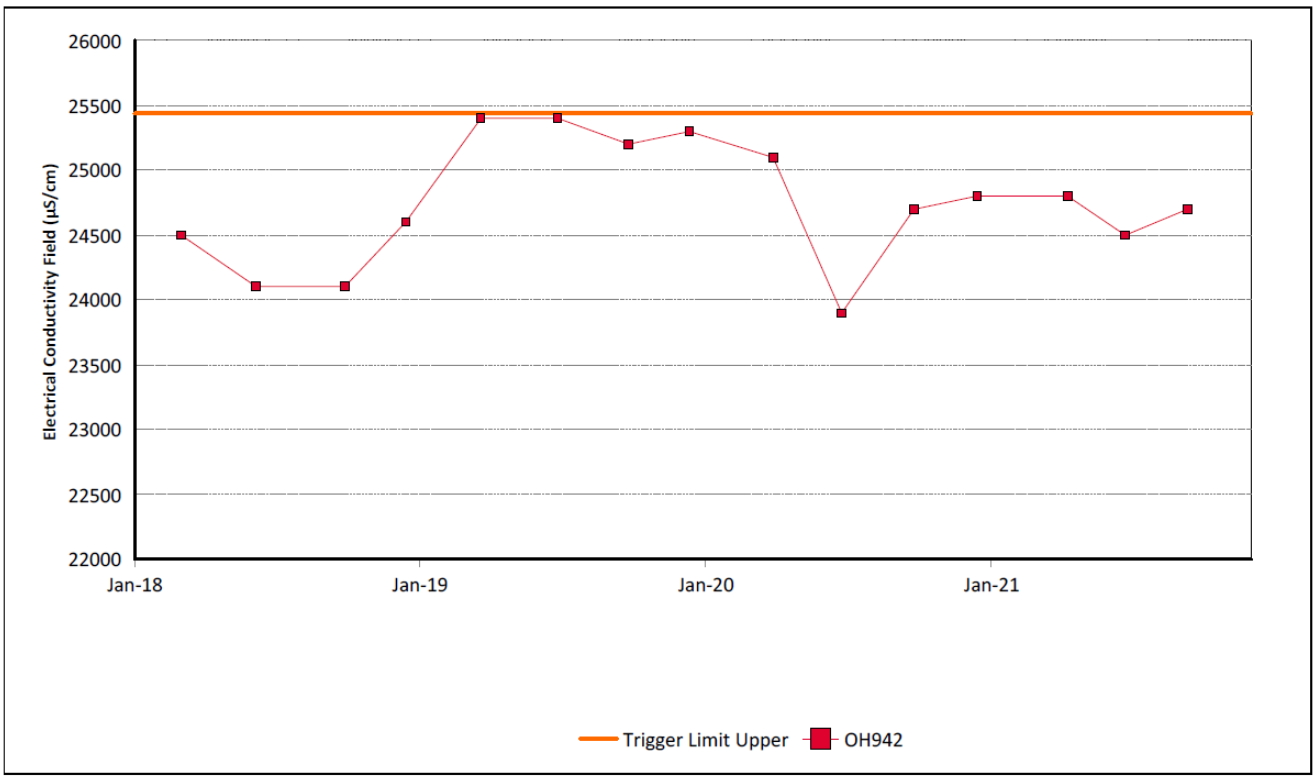


Figure 55: Hunter River Alluvium 3 Electrical Conductivity Trend – September 2021

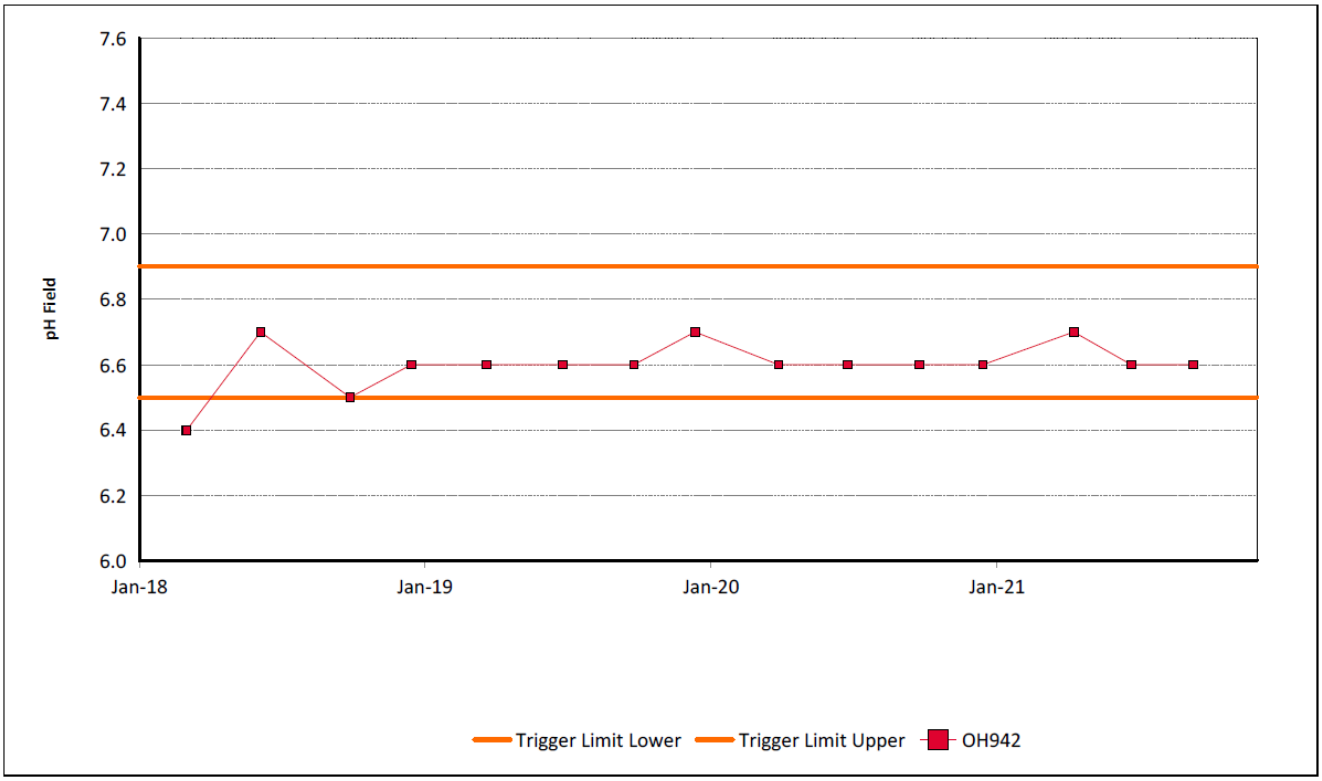
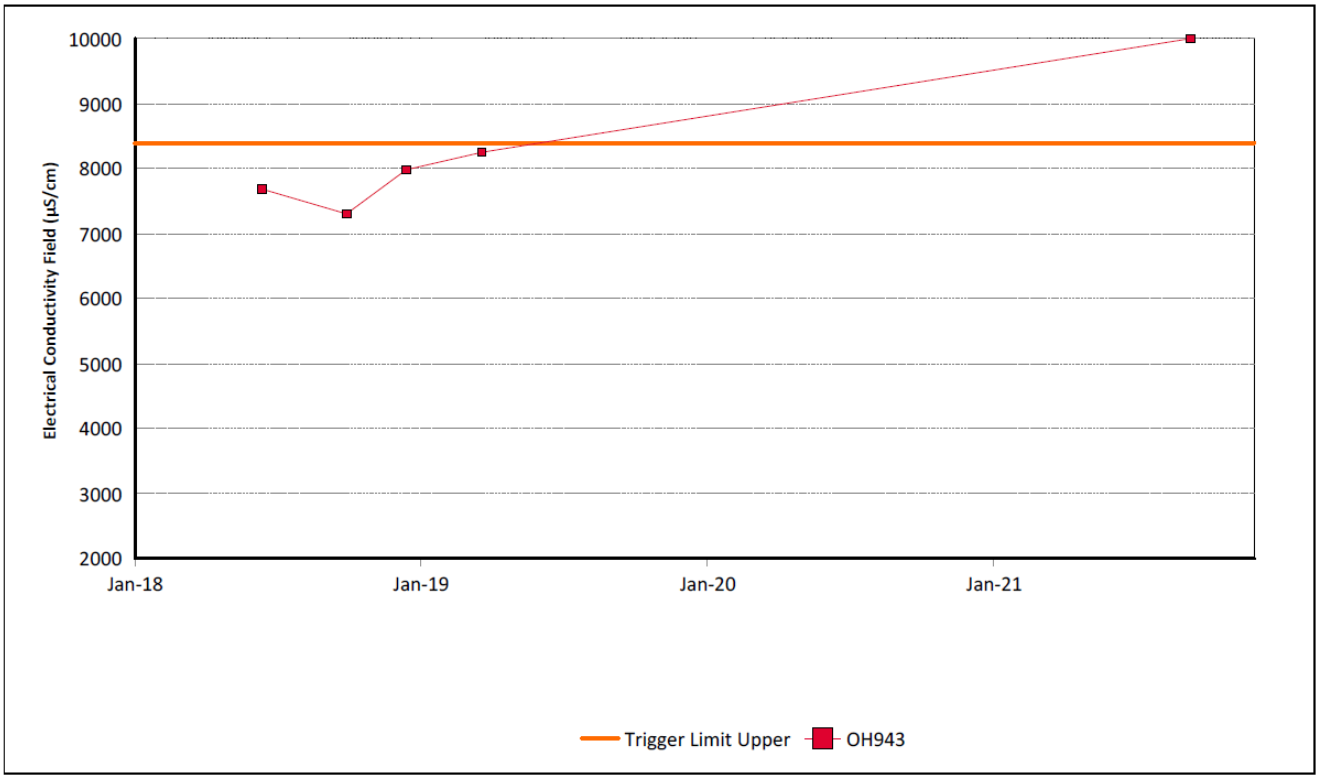
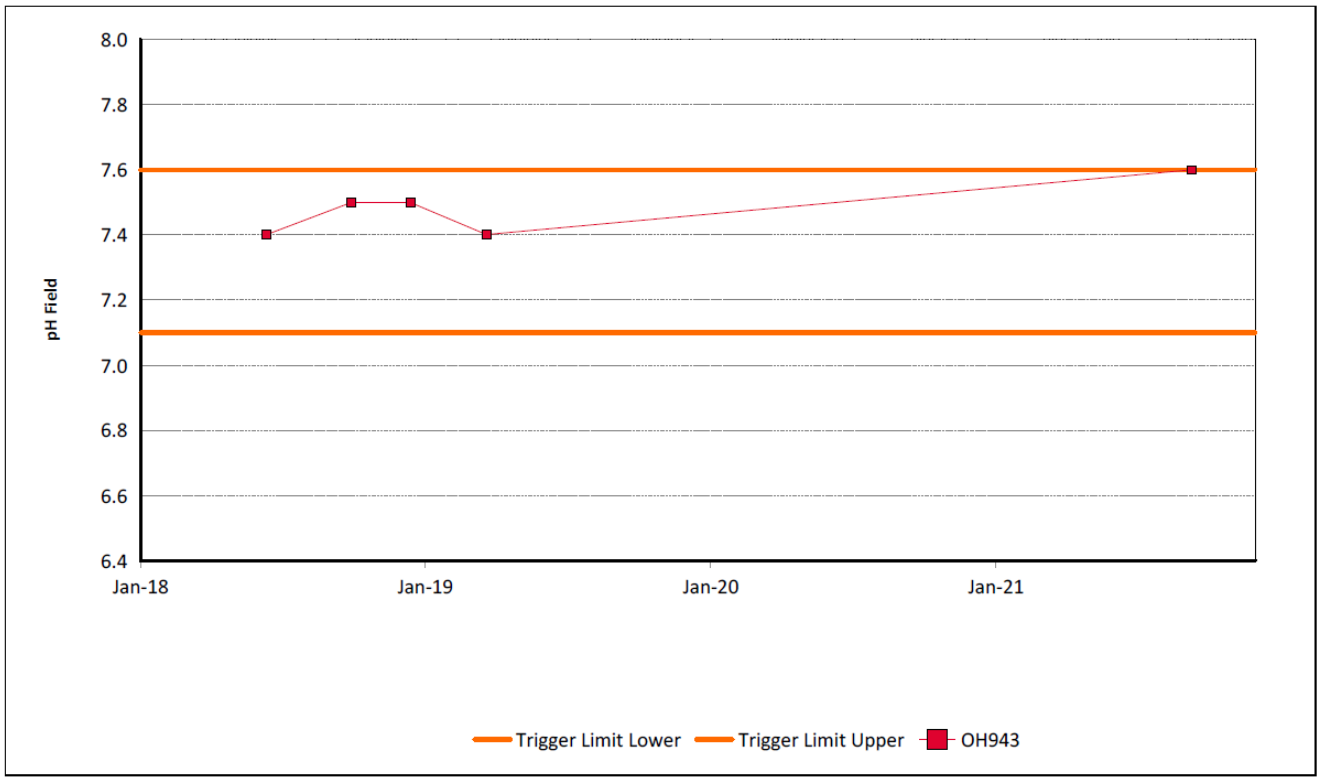


Figure 56: Hunter River Alluvium 3 pH Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample.

Figure 57: Hunter River Alluvium 4 Electrical Conductivity Trend – September 2021



Note: Missing data indicates that there was insufficient water to take a sample.

Figure 58: Hunter River Alluvium 4 pH Trend – September 2021

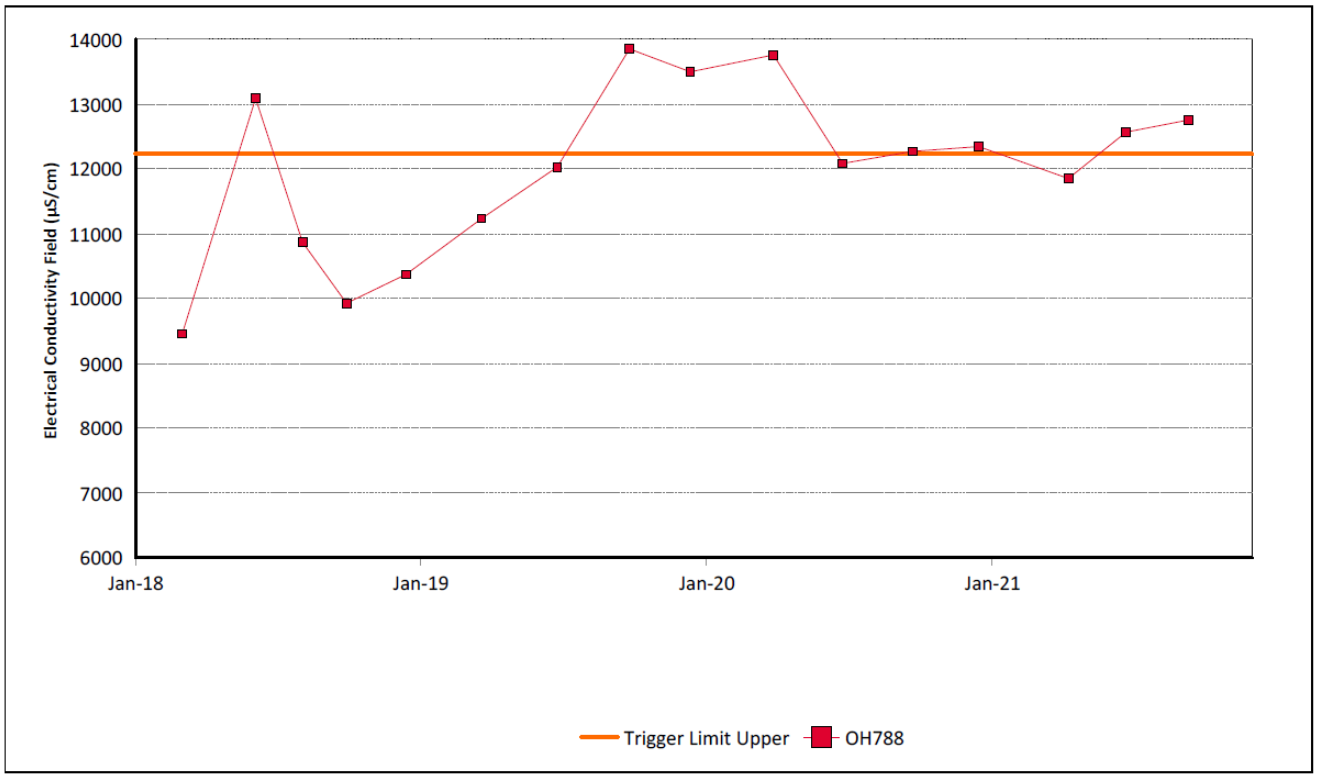


Figure 59: Hunter River Alluvium 5 Electrical Conductivity – September 2021

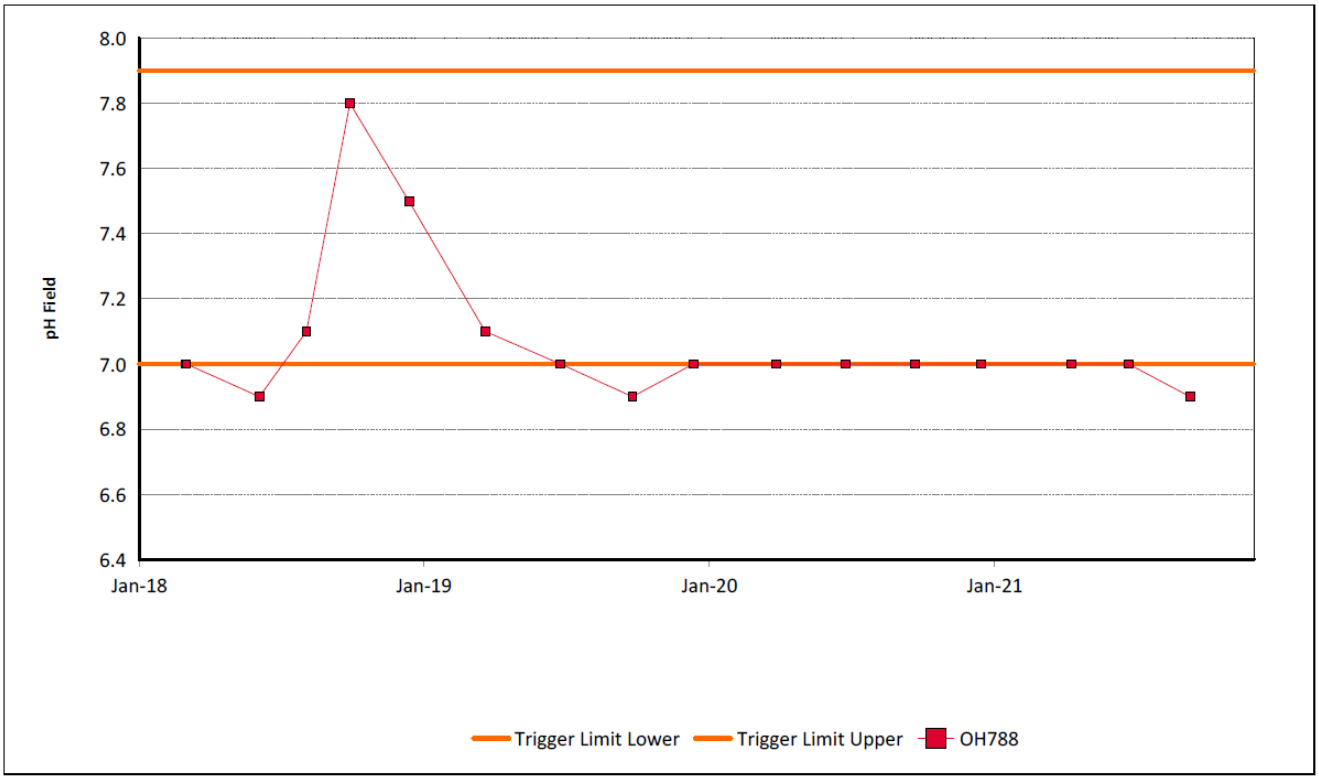


Figure 60: Hunter River Alluvium 5 pH Trend – September 2021

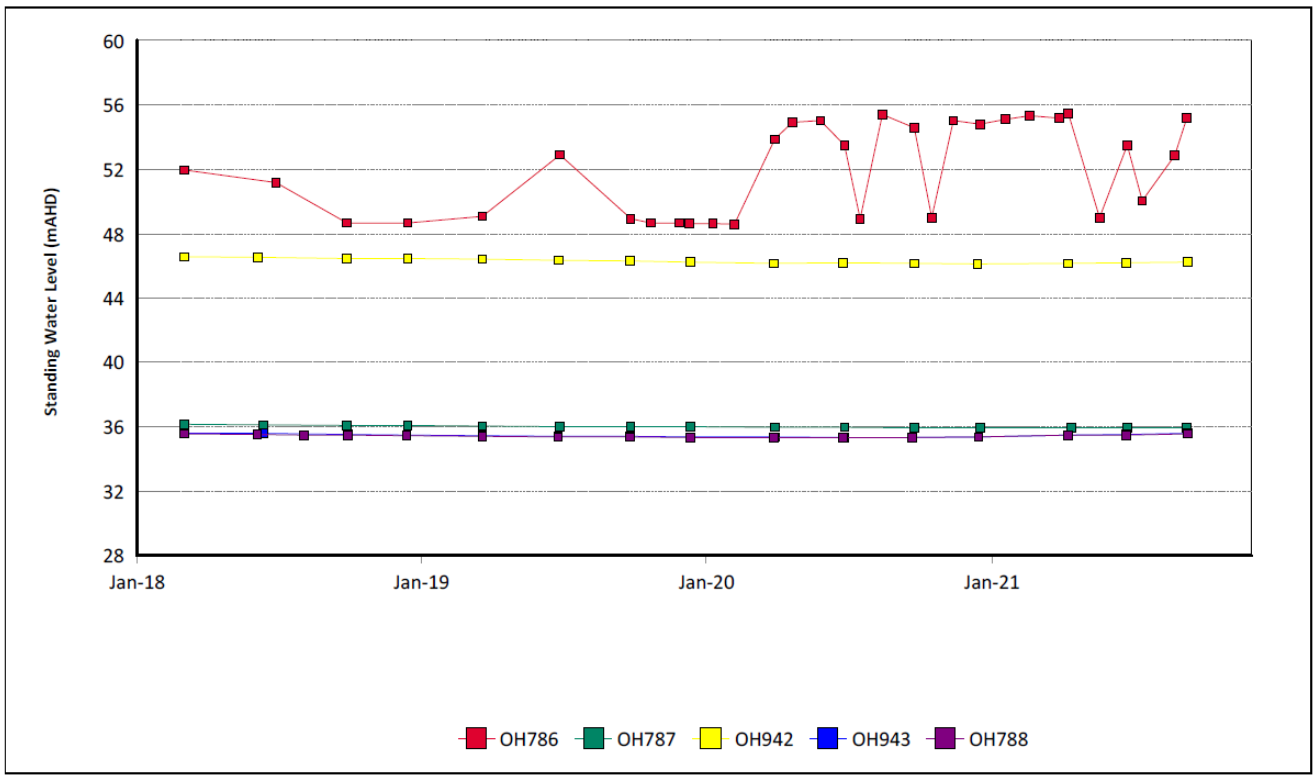


Figure 61: Hunter River Alluvium Standing Water Level Trend – September 2021

3.2.1 Groundwater Trigger Tracking

Internal trigger limits have been developed to assess monitoring data on an on-going basis, and to highlight potentially adverse groundwater impacts. The process for evaluating monitoring results against the internal triggers and subsequent responses are outlined in the MTW Water Management Plan. Locations of groundwater bores are shown in **Figure 62.**

Current internal groundwater trigger limit breaches are summarised in **Table 3**.

Table 3: Groundwater Triggers – 2021

Site	Date	Trigger Limit Breached	Action Taken in Response
OH787	13/04/2021	EC – 95th Percentile	Watching Brief* A change to the sampling methodology implemented in 2019 i.e. low flow pumping/purging prior to all sampling and analysis, is considered the cause of the measured increase in EC since then.
OH787	24/06/2021	EC – 95th Percentile	Watching Brief*
OH787	8/09/2021	EC – 95th Percentile	In field investigation completed, no water interaction with surface observed. (Note EC relatively consistent at 753-1133 uS/cm above 95th trigger limit value of 18467uS/cm). Continue Watching Brief*. Review at 2021 Annual GW Report
OH788	22/06/2021	EC – 95th Percentile	Watching Brief*
OH788	9/09/2021	EC – 95th Percentile	Watching Brief*
MTD605P	24/05/2021	EC – 95th Percentile	Watching Brief* Returned to within 95th percentile for 27/8/21 sample result
WD622P	25/02/2021	EC – 95th Percentile	Watching Brief* Returned to within 95th percentile for 26/5/21 sample result.
PZ7S	30/08/2021	EC – 95th Percentile	Watching Brief*
OH1137	9/09/2021	EC – 95th Percentile	Watching Brief*
OH943	9/09/2021	EC – 95th Percentile	September 2021 is the first time that sufficient water for sample has been present since 2019. Watching Brief*
GW98MTCL2	23/06/2021	pH – 5th Percentile	Watching Brief* Returned to above 5th percentile for 6/9/21 sample result
WOH2139A	25/02/2021	pH – 95th Percentile	Watching Brief* Returned to within 95th percentile for 27/5/21 sample result.
WOH2156A	25/02/2021	pH – 5th Percentile	Watching Brief* Returned to above 5th percentile for 26/5/21 sample result.
MB15MTW01D	25/02/2021	pH – 5th Percentile	Watching Brief* A change to the sampling methodology implemented in 2019 i.e. low flow pumping/purging prior to all sampling and analysis, is possibly considered the cause of the measured drop in pH results below 5th percentile trigger level since then.
MB15MTW01D	26/05/2021	pH – 5th Percentile	A change to the sampling methodology implemented in 2019 i.e. low flow pumping/purging prior to all sampling and analysis, is possibly considered the cause of the measured drop in pH results below 5th percentile trigger level since then.
MB15MTW01D	24/08/2021	pH – 5th Percentile	A change to the sampling methodology implemented in 2019 i.e. low flow pumping/purging prior to all sampling and analysis, is possibly considered the cause of the measured drop in pH results below 5th percentile trigger level since then. No investigation required.
MTD616P	25/02/2021	pH – 5th Percentile	Watching Brief*

Site	Date	Trigger Limit Breached	Action Taken in Response
MTD616P	25/05/2021	pH – 5th Percentile	Watching Brief* Returned to above 5th percentile for 23/8/21 sample result
WD622P	25/02/2021	pH – 5th Percentile	Watching Brief* Returned to above 5th percentile for 26/5/21 sample result.
WOH2154B	24/02/2021	pH – 95th Percentile	Watching Brief*
WOH2154B	2/06/2021	pH – 95th Percentile	Watching Brief* Returned to within 95th percentile for 26/8/21 sample result
PZ9D	29/04/2021	pH – 5th Percentile	Watching Brief* Returned to above 5th percentile for 22/6/21 sample result.
OH788	9/09/2021	pH – 95th Percentile	Watching Brief*
OH1137	9/09/2021	pH – 95th Percentile	Watching Brief*
OH1138(1)	19/01/2021	pH – 5th Percentile	Watching Brief*
OH1138(1)	19/02/2021	pH – 5th Percentile	Watching Brief*
OH1138(1)	29/03/2021	pH – 5th Percentile	Results were investigated in the MTW 2020 Annual Groundwater Review. pH results for monitoring bore OH1138 likely to be attributable to the regional drawdown associated within the active mining in North Pit and the potential influences from the abstraction of water from the Lemington underground workings. Continue Watching Brief*
OH1138(1)	8/04/2021	pH – 5th Percentile	See March comment re investigation at this location. Returned to the 5th percentile for 19/5/21 sample result. Continue Watching Brief*
OH1138(1)	24/06/2021	pH – 5th Percentile	See March comment re investigation at this location. Returned to the 5th percentile for 13/7/21 sample result. Continue Watching Brief*
OH1138(1)	24/08/2021	pH – 5th Percentile	See March comment re investigation at this location. Returned to the 5th percentile for 9/9/21 sample result. Continue Watching Brief*
PZ7D	27/05/2021	pH – 95th Percentile	Watching Brief*
PZ7D	30/08/2021	pH – 95th Percentile	Watching Brief*
OH1121	23/06/2021	pH – 95th Percentile	Watching Brief*
OH1121	9/09/2021	pH – 95th Percentile	Watching Brief*
OH1126	24/06/2021	pH – 5th Percentile	Watching Brief* Returned to above 5th percentile for 9/9/21 sample result
WD625P	26/08/2021	pH – 95th Percentile	Watching Brief*
OH788	9/09/2021	pH – 5th Percentile	Watching Brief*

* = Watching brief established pending outcomes of subsequent monitoring events. No specific actions required.

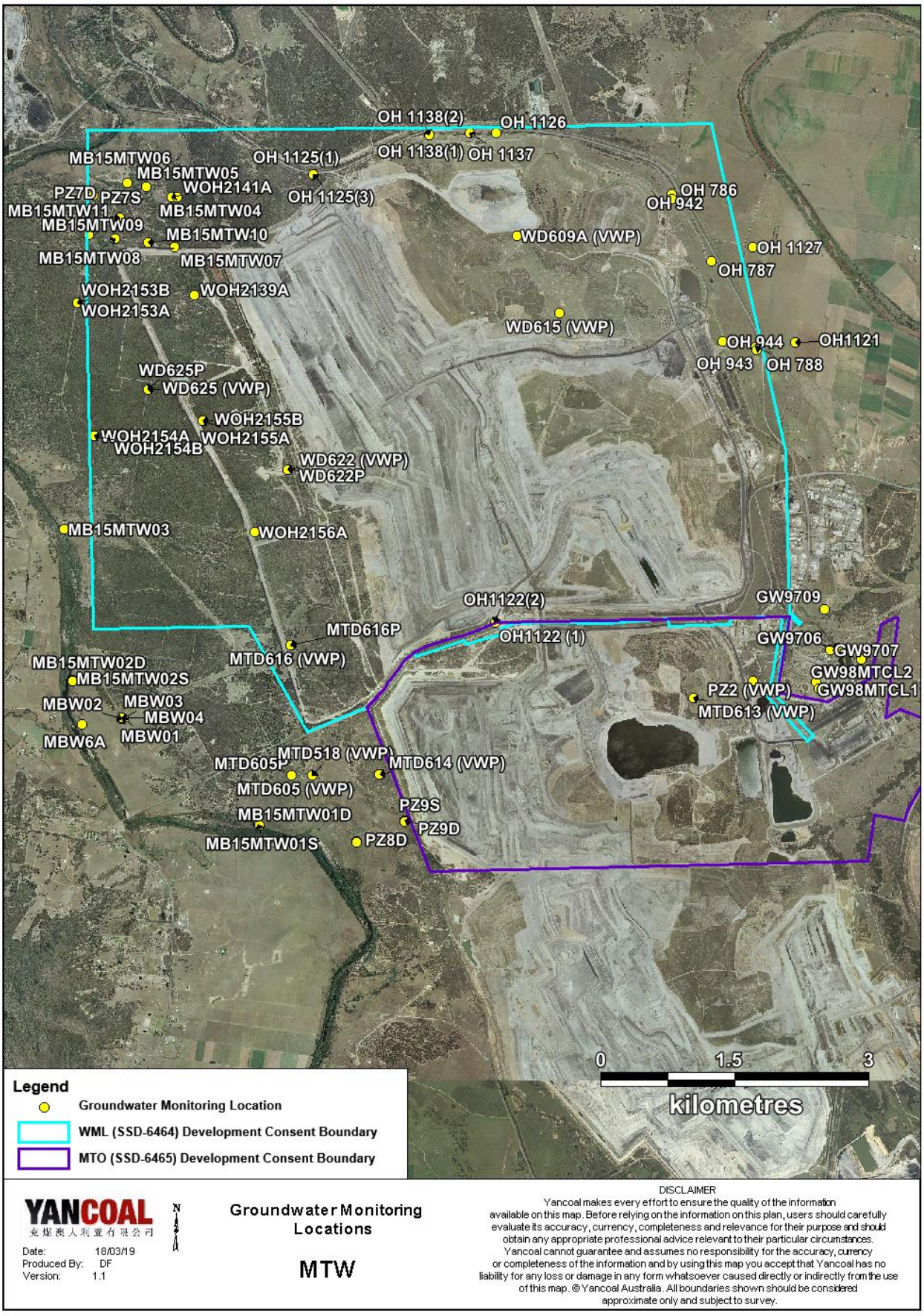


Figure 62: Groundwater Monitoring Location Plan

4.0 BLAST MONITORING

MTW have a network of six blast monitoring units. These are located at nearby privately-owned residences and function as regulatory compliance monitors.

The location of these monitors can be found in **Figure 69**.

4.1 Blast Monitoring Results

During September 2021, 22 blasts were initiated at MTW. Error! Reference source not found. to Error! Reference source not found. show the blast monitoring results for the reporting period against the impact assessment criteria. The criteria is summarised in **Table 4**.

Table 4: Blasting Limits

Airblast Overpressure (dB(L))	Comments
115	5% of the total number of blasts in a 12-month period
120	0%
Ground Vibration (mm/s)	**Comments**
5	5% of the total number of blasts in a 12-month period
10	0%

During the reporting period no blasts exceeded the 115 dB(L) 5% threshold for airblast overpressure or 5mm/s 5% threshold for ground vibration.

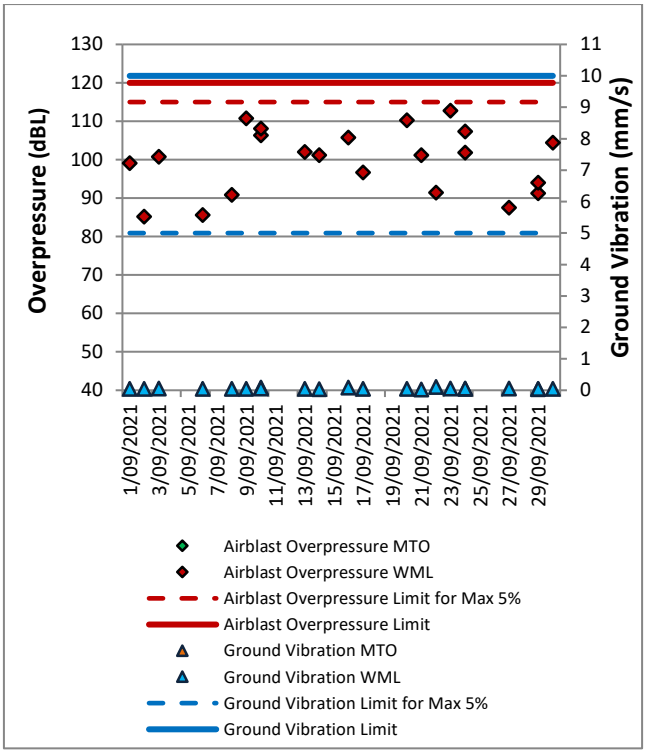


Figure 63: Abbey Green Blast Monitoring Results – September 2021

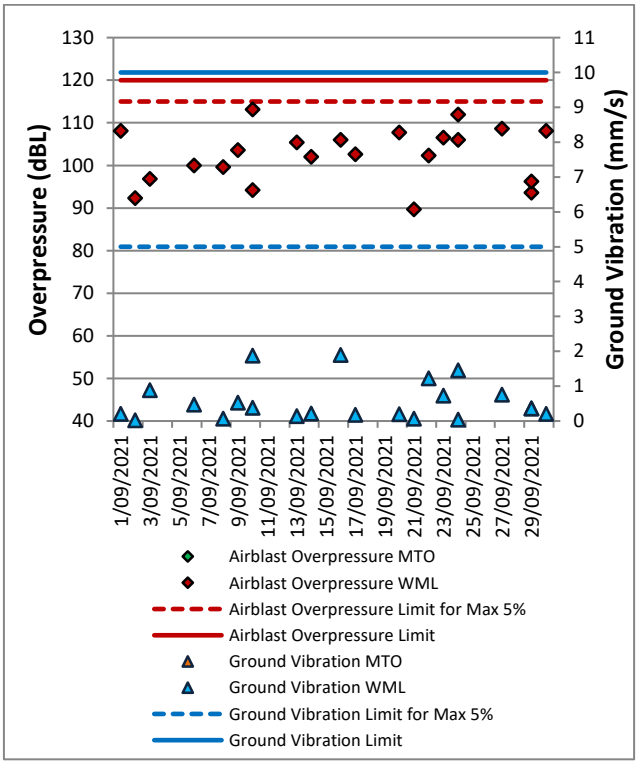


Figure 64: Bulga Village Blast Monitoring Results – September 2021

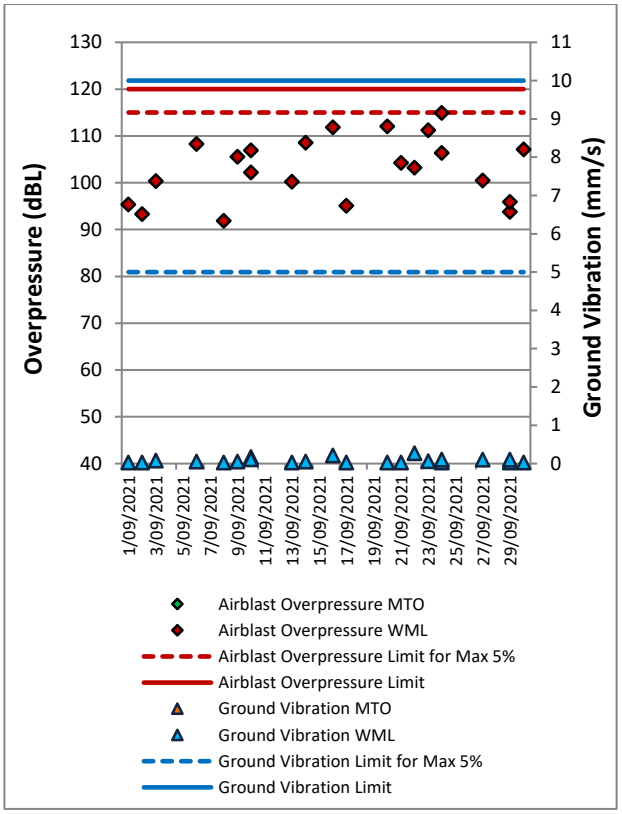


Figure 65: MTIE Blast Monitoring Results – September 2021

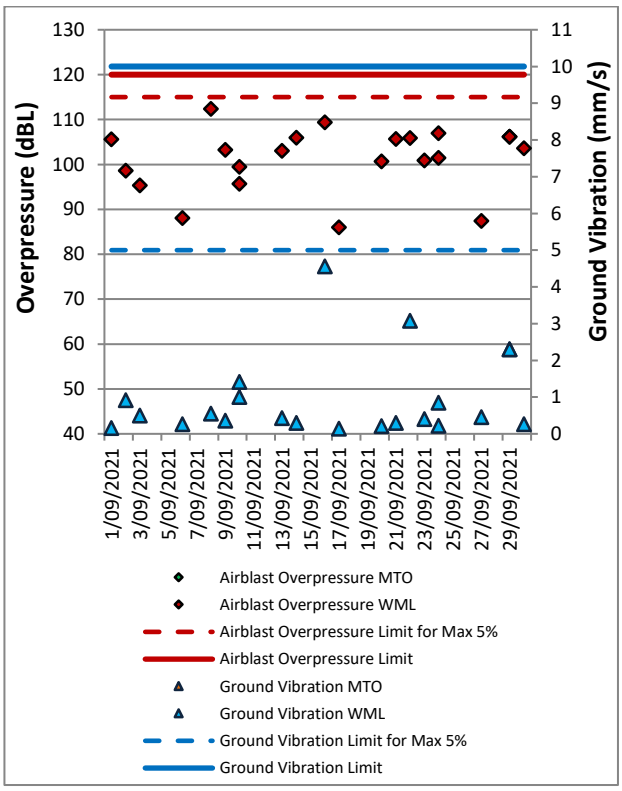


Figure 66: Warkworth Blast Monitoring Results - September 2021

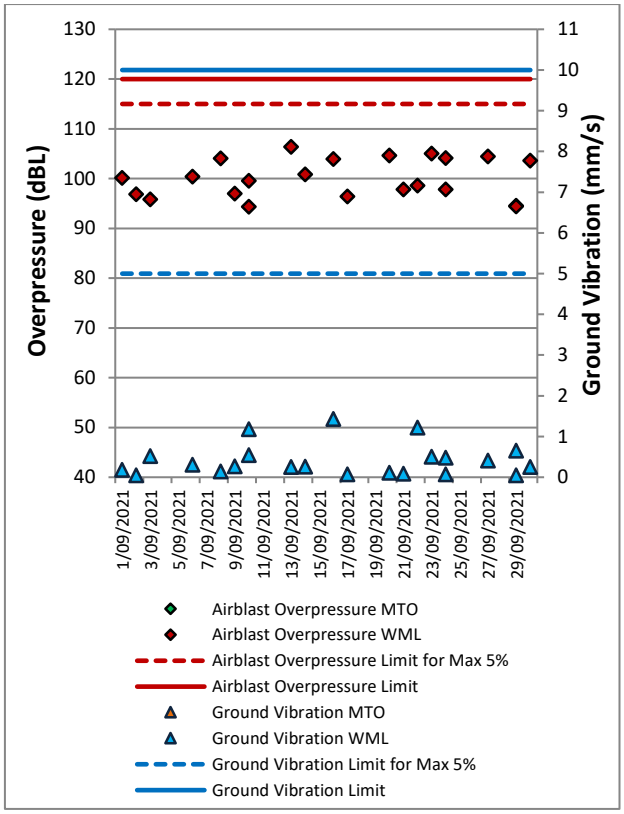


Figure 67: Wambo Road Blast Monitoring Results – September 2021

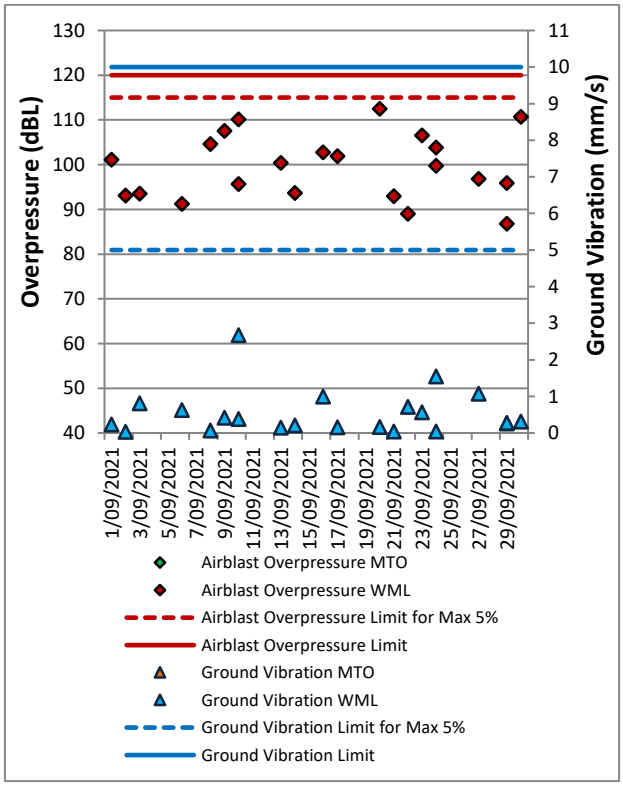


Figure 68: Wollemi Peak Road Blast Monitoring Results - September 2021

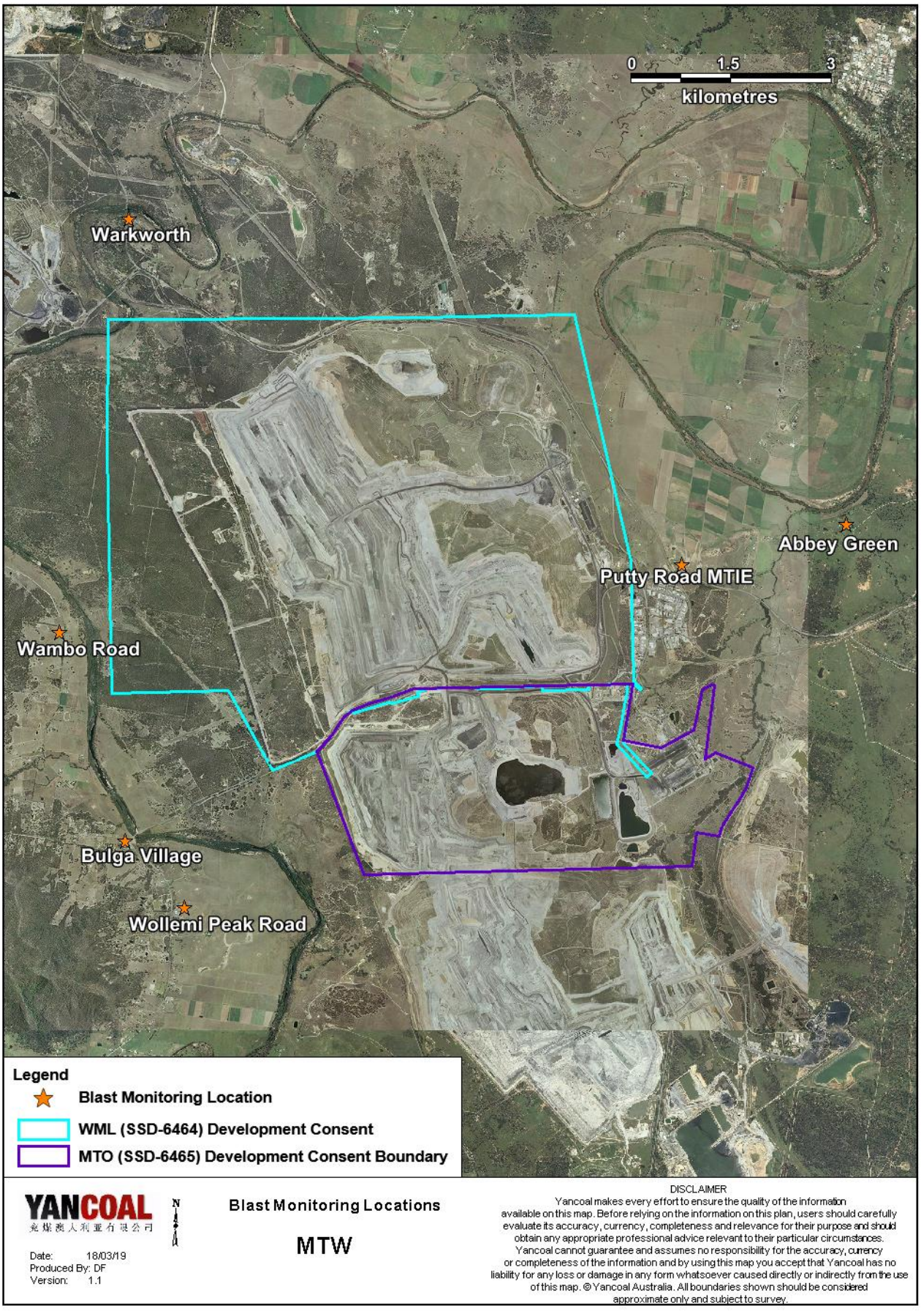


Figure 69: Blast and Vibration Monitoring Location Plan

5.0 NOISE

Routine attended noise monitoring is carried out in accordance with the MTW Noise Management Plan. A review against EIS predictions will be reported in the Annual Review Report. The purpose of the noise surveys is to quantify and describe the acoustic environment around the site and compare results with specified limits. Unattended monitoring (real time noise monitoring) also occurs at five sites surrounding MTW. The attended noise monitoring locations are displayed in **Figure 70.**

5.1 Attended Noise Monitoring Results

Attended monitoring was conducted at receiver locations surrounding MTW on the night of 7 September 2021. All measurements complied with the relevant criteria. Results are detailed in **Table 5** to **Table 8**.

5.1.1 WML Noise Assessment

Compliance assessments undertaken against the WML noise criteria are presented in **Table 5** and **Table 6**.

Table 5: $L_{Aeq,\ 15\ minute}$ Warkworth Impact Assessment Criteria – September 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion (dB(A))	Criterion Applies?[1]	WML L_{Aeq} dB[2,3,4,5]	Exceedance[3,6]
Bulga RFS	7/09/2021 22:51	1.7	F	37	Yes	IA	Nil
Bulga Village	7/09/2021 22:11	1.3	F	38	Yes	IA	Nil
Gouldsville	7/09/2021 21:27	3.0	D	38	Yes	29	Nil
Inlet Rd	7/09/2021 21:22	2.5	D	37	Yes	NM	Nil
Inlet Rd West	7/09/2021 21:00	2.9	E	35	Yes	IA	Nil
Long Point	7/09/2021 21:01	2.9	E	35	Yes	27	Nil
South Bulga	7/09/2021 23:38	1.7	E	35	Yes	IA	Nil
Wambo Road	7/09/2021 21:49	2.7	D	38	Yes	IA	Nil

Notes:

1. Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;

2. Estimated or measured LAeq,15minute attributed to WML;

3. Bold results in red are possible exceedances of relevant criteria;

4. IA denotes 'Inaudible';

5. NM denotes 'Not measurable', this means some noise was audible but could not be quantified

6. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable.

Table 6: $L_{A1,\ 1\ minute}$ Warkworth Impact Assessment Criteria – September 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion (dB(A))	Criterion Applies?[1]	WML L_{Aeq} dB[2,3,4,5]	Exceedance[3,6]
Bulga RFS	7/09/2021 22:51	1.7	F	47	Yes	IA	Nil
Bulga Village	7/09/2021 22:11	1.3	F	48	Yes	IA	Nil
Gouldsville	7/09/2021 21:27	3.0	D	48	Yes	32	Nil
Inlet Rd	7/09/2021 21:22	2.5	D	47	Yes	NM	Nil
Inlet Rd West	7/09/2021 21:00	2.9	E	45	Yes	IA	Nil
Long Point	7/09/2021 21:01	2.9	E	45	Yes	28	Nil
South Bulga	7/09/2021 23:38	1.7	E	45	Yes	IA	Nil
Wambo Road	7/09/2021 21:49	2.7	D	48	Yes	IA	Nil

Notes:
1. Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;
2. Estimated or measured LA1,1minute attributed to WML;
3. Bold results in red are possible exceedances of relevant criteria;
4. IA denotes 'Inaudible';
5. NM denotes 'Not measurable', this means some noise was audible but could not be quantified
6. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not Applicable.

5.1.2 MTO Noise Assessment

Compliance assessments undertaken against the MTO noise criteria are presented in **Table 7** and **Table 8**.

Table 7: $L_{Aeq,\ 15minute}$ Mount Thorley Operations - Impact Assessment Criteria – September 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB	Criterion Applies?[1]	MTO L_{Aeq} dB[2,3]	Exceedance[3,4]
Bulga RFS	7/09/2021 22:51	1.7	F	37	Yes	NM	Nil
Bulga Village	7/09/2021 22:11	1.3	F	38	Yes	IA	Nil
Gouldsville	7/09/2021 21:27	3.0	D	35	Yes	IA	Nil
Inlet Rd	7/09/2021 21:22	2.5	D	37	Yes	IA	Nil
Inlet Rd West	7/09/2021 21:00	2.9	E	35	Yes	IA	Nil
Long Point	7/09/2021 21:01	2.9	E	35	Yes	IA	Nil
South Bulga	7/09/2021 23:38	1.7	E	36	Yes	32	Nil
Wambo Road	7/09/2021 21:49	2.7	D	38	Yes	NM	Nil

Notes:
1. Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;
2. Estimated or measured LA1,1minute attributed to WML;
3. Bold results in red are possible exceedances of relevant criteria;
4. IA denotes 'Inaudible';
5. NM denotes 'Not measurable', this means some noise was audible but could not be quantified
6. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not Applicable.

Table 8: $L_{A1, 1Minute}$ Mount Thorley Operations - Impact Assessment Criteria – September 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB	Criterion Applies?[1]	MTO $L_{A1, 1min}$ dB[2,3]	Exceedance[3,4]
Bulga RFS	7/09/2021 22:51	1.7	F	47	Yes	NM	Nil
Bulga Village	7/09/2021 22:11	1.3	F	48	Yes	IA	Nil
Gouldsville	7/09/2021 21:27	3.0	D	45	Yes	IA	Nil
Inlet Rd	7/09/2021 21:22	2.5	D	47	Yes	IA	Nil
Inlet Rd West	7/09/2021 21:00	2.9	E	45	Yes	IA	Nil
Long Point	7/09/2021 21:01	2.9	E	45	Yes	IA	Nil
South Bulga	7/09/2021 23:38	1.7	E	46	Yes	42	Nil
Wambo Road	7/09/2021 21:49	2.7	D	48	Yes	NM	Nil

Notes:
1. Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;
2. Estimated or measured LA1,1minute attributed to WML;
3. Bold results in red are possible exceedances of relevant criteria;
4. IA denotes 'Inaudible';
5. NM denotes 'Not measurable', this means some noise was audible but could not be quantified
6. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not Applicable.

5.1.3 Low Frequency Assessment

In accordance with the requirements of the EPA's Noise Policy for Industry (NPfI), the applicability of the low frequency modification penalty has been assessed. There were no noise measurements taken during the reporting period which required the penalty to be applied. The WML assessment for low frequency noise is shown in **Table 9** and the MTO assessment for low frequency noise is shown in **Table 10.**

Table 9: Warkworth Low Frequency Noise Assessment – September 2021

Location	Date and Time	Measured WML LAeq dB[1,2]	Criterion Applies?	Intermittency Modifying Factor?	Tonality Modifying Factor?	Frequency of Tonality[3]	Low-frequency Modifying Factor?	Maximum Exceedance of Reference Spectrum [3,4]	Penalty dB[4]	Exceedance
Bulga RFS	7/09/2021 22:51	IA	Yes	No	No	NA	No	NA	Nil	NA
Bulga Village	7/09/2021 22:11	IA	Yes	No	No	NA	No	NA	Nil	NA
Gouldsville	7/09/2021 21:27	29	Yes	No	No	NA	No	NA	Nil	NA
Inlet Rd	7/09/2021 21:22	NM	Yes	No	No	NA	No	NA	Nil	NA
Inlet Rd West	7/09/2021 21:00	IA	Yes	No	No	NA	No	NA	Nil	NA
Long Point	7/09/2021 21:01	27	Yes	No	No	NA	No	NA	Nil	NA
South Bulga	7/09/2021 23:38	IA	Yes	No	No	NA	No	NA	Nil	NA
Wambo Road	7/09/2021 21:49	IA	Yes	No	No	NA	No	NA	Nil	NA

Notes:
1. IA denotes 'Inaudible';
2. NM denotes 'Not measurable', this means some noise was audible but could not be quantified
3. NA denotes 'not applicable'; and
4. Bold results indicate that application of NPfI modifying factor/s is required.

Table 10: Mount Thorley Operations Low Frequency Noise Assessment – September 2021

Location	Date and Time	Measured WML LAeq dB[1,2]	Criterion Applies?	Intermittency Modifying Factor?	Tonality Modifying Factor?	Frequency of Tonality[3]	Low-frequency Modifying Factor?	Maximum Exceedance of Reference Spectrum [3,4]	Penalty dB[4]	Exceedance
Bulga RFS	7/09/2021 22:51	NM	Yes	No	No	NA	No	NA	Nil	NA
Bulga Village	7/09/2021 22:11	IA	Yes	No	No	NA	No	NA	Nil	NA
Gouldsville	7/09/2021 21:27	IA	Yes	No	No	NA	No	NA	Nil	NA
Inlet Rd	7/09/2021 21:22	IA	Yes	No	No	NA	No	NA	Nil	NA
Inlet Rd West	7/09/2021 21:00	IA	Yes	No	No	NA	No	NA	Nil	NA
Long Point	7/09/2021 21:01	IA	Yes	No	No	NA	No	NA	Nil	NA
South Bulga	7/09/2021 23:38	32	Yes	No	No	NA	No	NA	Nil	NA
Wambo Road	7/09/2021 21:49	NM	Yes	No	No	NA	No	NA	Nil	NA

Notes:
1. IA denotes 'Inaudible';
2. NM denotes 'Not measurable', this means some noise was audible but could not be quantified
3. NA denotes 'not applicable'; and
4. Bold results indicate that application of NPfI modifying factor/s is required.

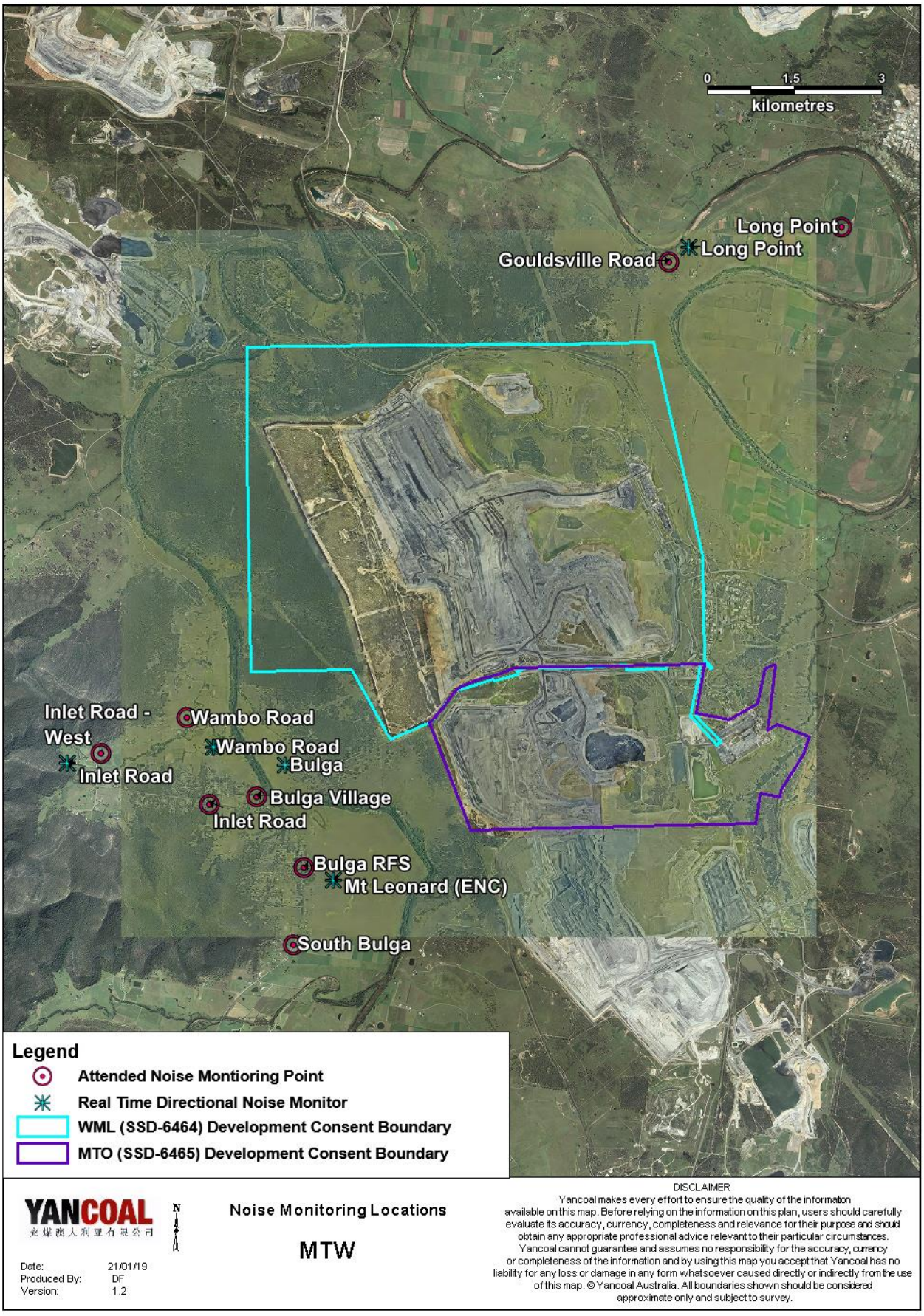


Figure 70: Noise Monitoring Location Plan

5.2 Noise Management Measures

A program of targeted supplementary attended noise monitoring is in place at MTW, supported by the real-time directional monitoring network and ensuring the highest level of noise management is maintained. The supplementary program is undertaken by MTW personnel and involves:

- Routine inspections from both inside and outside the mine boundary;
- Routine and as-required handheld noise assessments (undertaken in response to noise alarm and/or community complaint), comparing measured levels against consent noise limits; and
- Validation monitoring following operational modifications to assess the adequacy of the modifications.

Where a noise assessment identifies noise emissions which are exceeding the relevant noise limit(s) for any particular residence, modifications will be made so as to ensure that the noise event is resolved within 75 minutes of identification. The actions taken are commensurate with the nature and severity of the noise event, but can include:

- Changing the haul route to a less noise sensitive haul;
- Changing dump locations (in-pit or less exposed dump option)
- Reducing equipment numbers;
- Shut down of task; or
- Site shut down.

A summary of these assessments undertaken during September are provided in **Table 11.**

Table 11: Supplementary Attended Noise Monitoring Data – September 2021

No. of assessments	No. of assessments > trigger	No. of nights where assessments > trigger	% greater than trigger
611	20	7	3.27

: Measurements are taken under all meteorological conditions, including conditions under which the consent noise criteria do not apply.

6.0 OPERATIONAL DOWNTIME

During September a total of 596 hours of equipment downtime was logged in response to environmental events such as dust, noise and adverse meteorological conditions. Operational downtime by equipment type is shown in **Figure 71**.

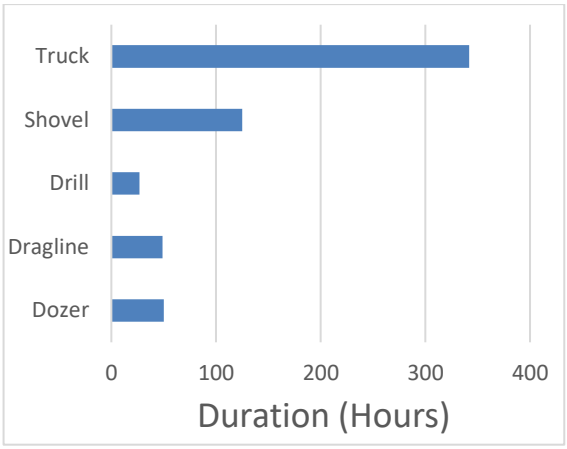


Figure 71: Operational Downtime by Equipment Type – September 2021

7.0 REHABILITATION

During September, 12.96 Ha of land was released for rehabilitation and 33.41 Ha was bulk shaped. No land was topsoiled or Rehabilitated during the reporting period. Year-to-date progress can be viewed in **Figure 72.**

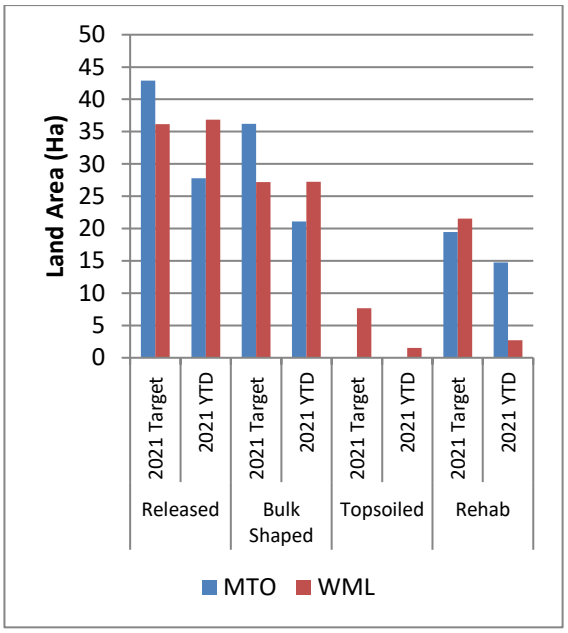


Figure 72: Rehabilitation YTD – September 2021

8.0 ENVIRONMENTAL INCIDENTS

There were no reportable environmental incidents recorded during the reporting period.

9.0 COMPLAINTS

During the reporting period 30 complaints were received, details of these complaints are displayed in **Table 12** Error! Reference source not found.below.

Table 12: Complaints Summary - YTD

	Noise	Dust	Blast	Lighting	Other	Total
January	1	0	6	4	1	12
February	4	0	3	0	0	7
March	5	0	3	3	1	12
April	6	2	1	10	0	19
May	3	1	10	5	0	19
June	2	0	4	0	0	6
July	1	0	5	3	1	10
August	12	8	5	1	0	26
September	3	11	7	8	1	30
October						
November						
December						
Total	37	22	44	34	4	141

Appendix A: Meteorological Data

Table 13: Meteorological Data – Charlton Ridge Meteorological Station – September 2021

Date	Air Temperature Maximum (°C)	Air Temperature Minimum (°C)	Relative Humidity Maximum (%)	Relative Humidity Minimum (%)	Wind Direction Average (°)	Wind Speed Average (m/sec)	Rainfall(mm)
1/09/2021	26	2	87	17	203	9	0
2/09/2021	26	6	88	44	144	9	0
3/09/2021	25	6	98	25	198	8	0
4/09/2021	24	7	97	37	285	12	1.4
5/09/2021	18	6	97	28	298	15	1.4
6/09/2021	21	3	85	20	239	10	0
7/09/2021	25	1	87	12	267	12	0
8/09/2021	22	4	79	32	243	2	0
9/09/2021	27	4	84	10	308	13	0
10/09/2021	29	10	94	14	260	12	0
11/09/2021	29	7	97	15	289	12	0
12/09/2021	30	8	68	6	288	20	0
13/09/2021	21	5	98	25	141	14	8.2
14/09/2021	16	5	95	50	169	14	1.4
15/09/2021	20	5	85	33	170	10	0
16/09/2021	20	4	92	42	148	10	0
17/09/2021	23	2	97	25	209	7	0
18/09/2021	29	9	90	27	264	18	0.6
19/09/2021	24	7	91	18	296	13	0.2
20/09/2021	27	7	67	10	290	18	0
21/09/2021	17	4	67	24	207	20	0
22/09/2021	21	2	82	28	213	7	0
23/09/2021	26	4	86	22	309	13	0
24/09/2021	27	6	82	21	295	16	0
25/09/2021	27	8	79	13	210	13	0
26/09/2021	17	7	89	49	142	11	0
27/09/2021	21	3	95	35	132	11	0.2
28/09/2021	25	11	75	32	103	8	0
29/09/2021	21	7	98	53	204	15	7.2
30/09/2021	24	6	99	49	210	13	0

Appendix B: October 2021 Monthly Environmental Monitoring Report

Monthly Environmental Monitoring Report

Yancoal Mount Thorley Warkworth

October 2021

CONTENTS

Figures

Tables

Revision History

Version No.	Version Details	Document Status	Date
1.1	**Environment and Community Advisor**	**Final**	**21/02/2022**

1.0 INTRODUCTION

This report has been compiled to provide a monthly summary of environmental monitoring results for Mount Thorley Warkworth (MTW). This report includes all monitoring data collected for the period 1 October to 31 October 2021.

2.0 AIR QUALITY

2.1 Meteorological Monitoring

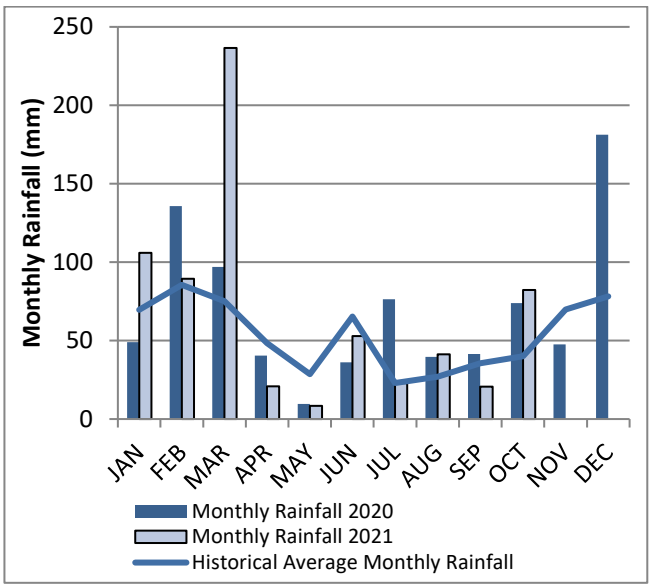
Meteorological data is collected at MTW's 'Charlton Ridge' meteorological station (refer to **Figure 3**: Air Quality Monitoring Locations).

2.1.1 Rainfall

Rainfall for the reporting period is summarised in **Table 1**. The year-to-date monthly rainfall totals, 2021 monthly rainfall totals and historical average monthly rainfall trend are shown in **Figure 1**.

Table 1: Monthly Rainfall MTW

2021	Monthly Rainfall (mm)	Cumulative Rainfall (mm)
October	82.2	681.2



Note: The historical average monthly rainfall is calculated from 2007 to 2020 monthly totals

Figure 1: Rainfall Trend YTD

2.1.2 Wind Speed and Direction

Winds from the north west were dominant during the reporting period as shown in **Figure 2.**

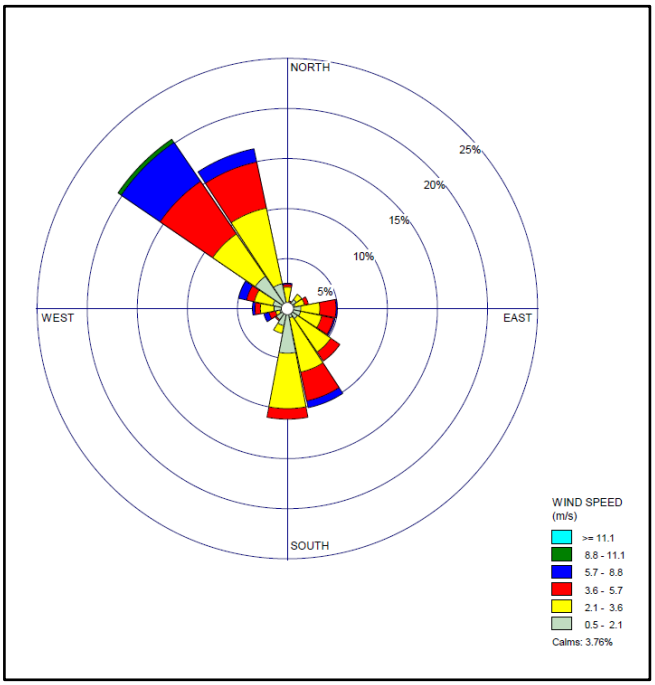


Figure 2: Charlton Ridge Wind Rose – October 2021

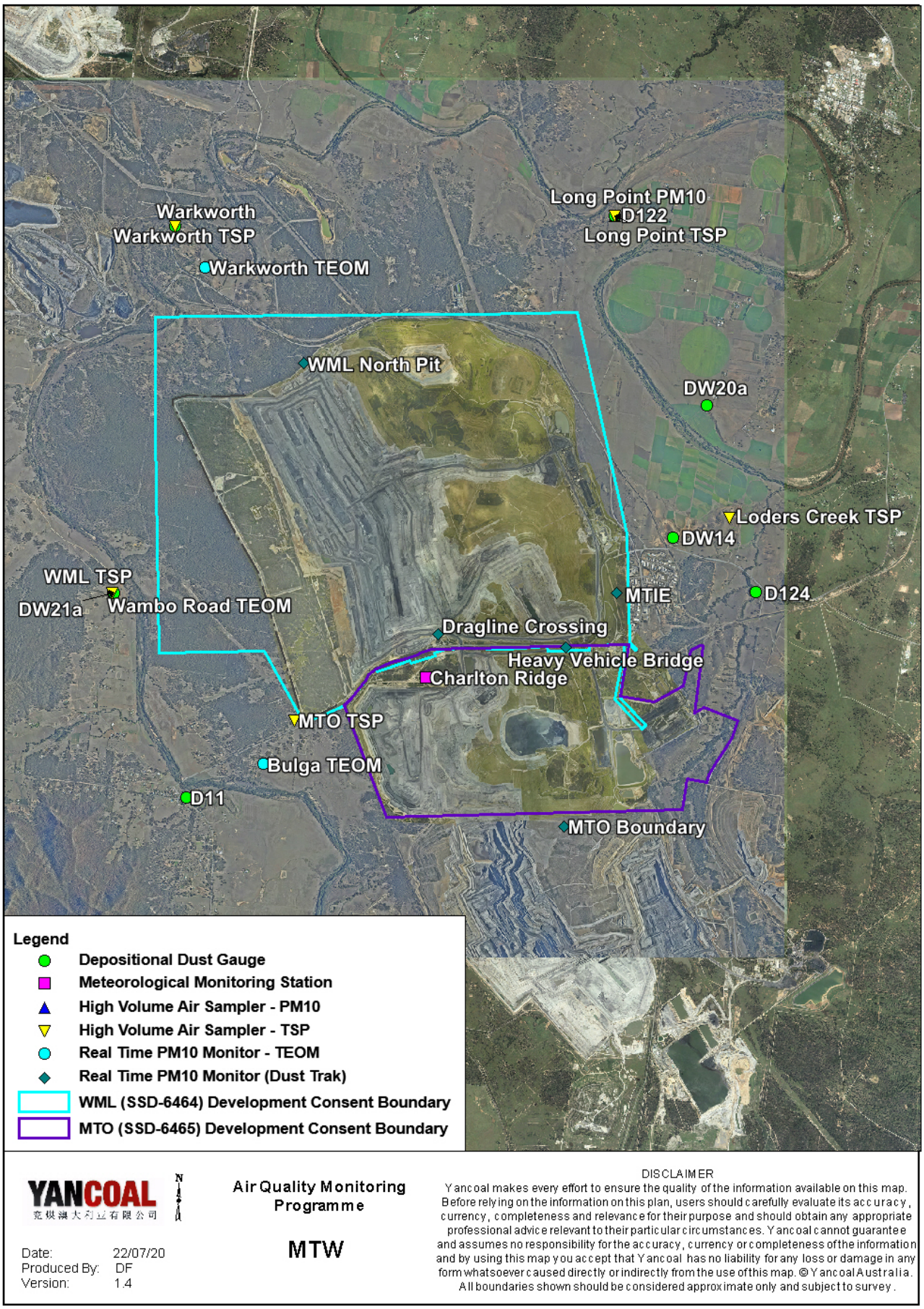


Figure 3: Air Quality Monitoring Locations

2.2 Depositional Dust

To monitor air quality, MTW operates and maintains a network of seven depositional dust gauges, situated on private and mine owned land surrounding MTW.

During the reporting period the Warkworth monitor recorded a monthly result above the long-term impact assessment criteria of 4.0 g/m^2 per month. There is no evidence to suggest that the Warkworth result is contaminated. An external investigation of an elevated result at this monitor was undertaken for a July 2021 reading, which indicated the July result was anomalous and was then excluded from annual average calculation. Since that time, the August to October results have been elevated compared to other depositional dust results. MTW is progressing further investigation of the potential influence of localised sources to determine possible reasons for the result, as recommended by a specialist Air Quality specialist consultant. Presently, the result is included in the annual average calculation.

Figure 4 displays insoluble solids results from depositional dust gauges during the reporting period compared against the year-to-date average and the annual impact assessment criteria.

An annual assessment of MTW's compliance with the Long-Term Impact Assessment Criteria will be provided in the 2021 Annual Review Report.

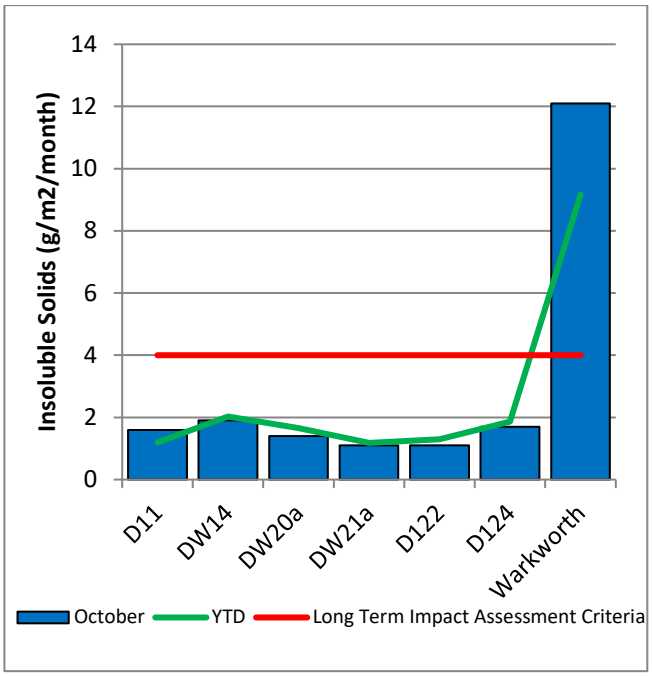


Figure 4: Depositional Dust – October 2021

2.3 Suspended Particulates

Suspended particulates are measured by a network of High Volume Air Samplers (HVAS) measuring Total Suspended Particulates (TSP) and Particulate Matter <10µm (PM_{10}). The location of these monitors can be found in **Figure 3**. Each HVAS was run for 24 hours on a six-day cycle in accordance with EPA requirements.

2.3.1 HVAS PM_{10} Results

Figure 5 shows the individual PM_{10} results at each monitoring station against the short-term impact assessment criteria of 50µg/m^3.

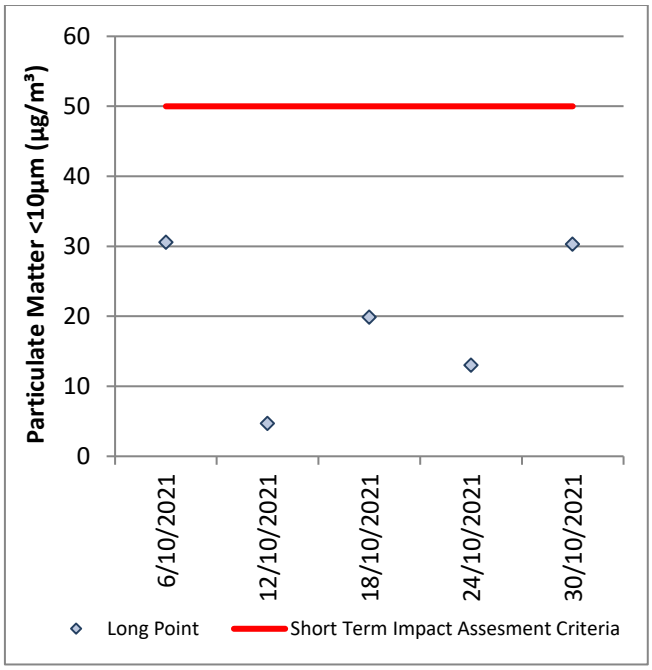


Figure 5: Individual PM10 Results – October 2021

Figure 6 shows the annual average PM10 result against the long term impact assessment criteria.

An assessment of MTW's compliance with the Long-Term Impact Assessment Criteria will be provided in the 2021 Annual Review Report.

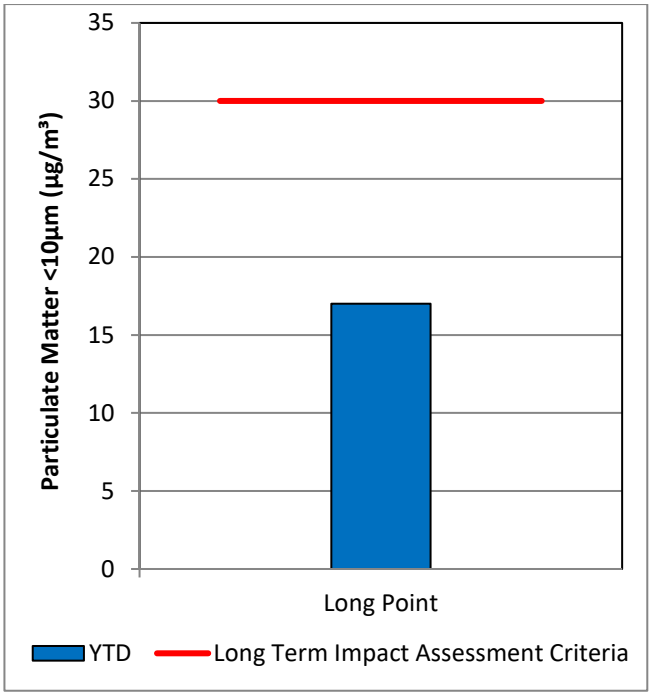


Figure 6: Annual Average PM_{10} – October 2021

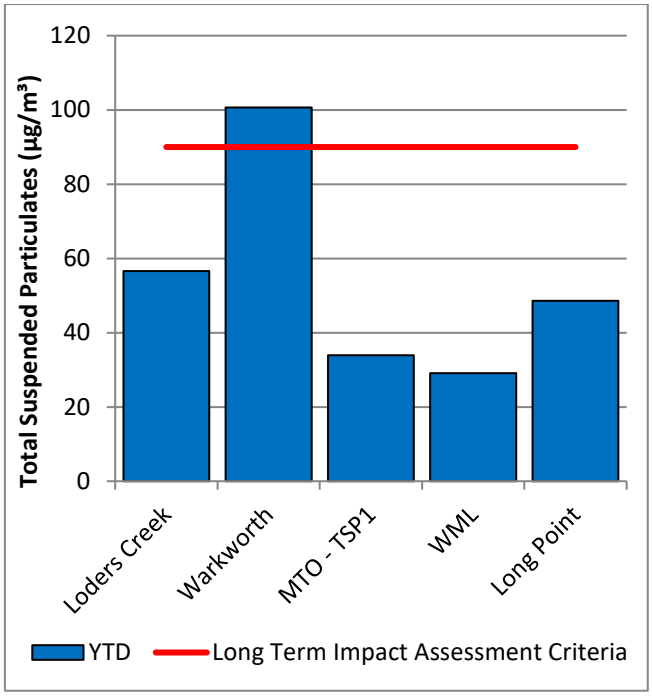


Figure 7: Annual Average Total Suspended Particulates – October 2021

2.3.2 TSP Results

Figure 7 shows the annual average TSP results compared against the long-term impact assessment criteria of 90µg/m³.

During the reporting period the MTO-TSP1 monitor experienced a power outage and data was not obtained on the 6 October 2021.

An assessment of MTW's compliance with the Long-Term Impact Assessment Criteria will be provided in the 2021 Annual Review Report.

2.3.3 Real Time PM_{10} Results

MTW maintains a network of real time PM_{10} monitors. The real time air quality monitoring stations continuously log information and transmit data to a central database, generating internal alerts when particulate matter levels exceed internal trigger limits.

Results for real time dust sampling are shown in **Figure 8**, including the daily 24-hour average PM_{10} result and the annual PM_{10} average.

On 7 October 2021, the Warkworth OEH TEOM (63.6 µg/m³) exceeded the short term (24hr) criteria. This measurement was assessed for MTW's potential contribution based on meteorological conditions on this day resulting in a maximum estimated contribution of 15.5 µg/m³, less than a 25% contribution to the result. Accordingly, no further action is required (as per approved Air Quality Monitoring Programme).

On 10 October 2021, the Warkworth OEH TEOM (56.5 µg/m³) exceeded the short term (24hr) criteria. This measurement was assessed for MTW's potential contribution based on meteorological conditions on this day resulting in a maximum estimated contribution of 7.5 µg/m³, less than a 14% contribution to the result. Accordingly, no further action is required (as per approved Air Quality Monitoring Programme).

On 29 October 2021, the Warkworth OEH TEOM (82.0 µg/m³) exceeded the short term (24hr) criteria. This measurement was assessed for MTW's potential contribution based on meteorological conditions on this day resulting in a maximum estimated contribution of 11.6 µg/m³, less than a 17% contribution to the result. Accordingly, no further action is required (as per approved Air Quality Monitoring Programme).

2.3.4 Real Time Alarms for Air Quality

During October, the real time monitoring system generated 118 automated air quality related alerts, including 13 alerts for adverse meteorological conditions and 105 alerts for elevated PM_{10} levels.

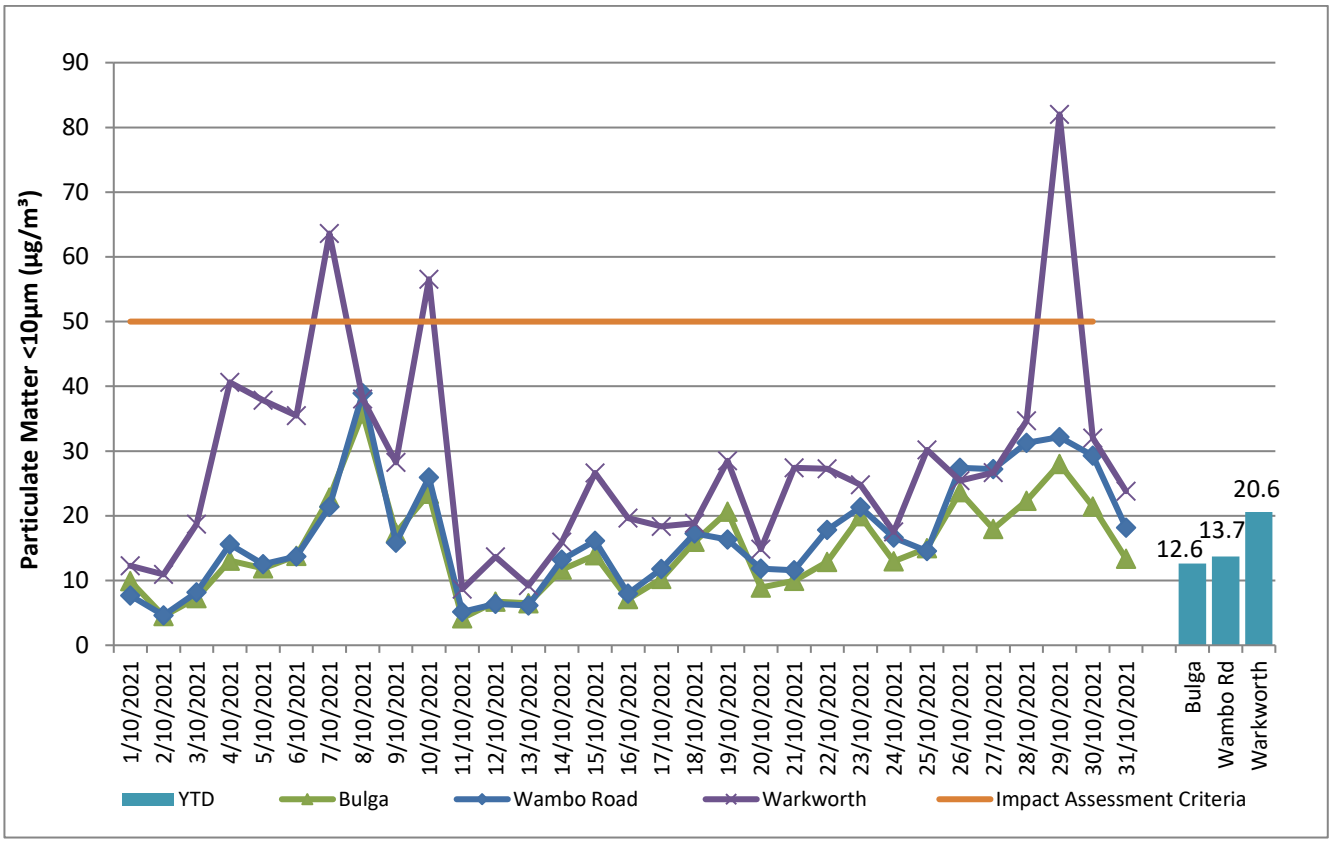


Figure 8: Real Time PM_{10} daily 24hr average (line graphs) and YTD annual average (column graphs) – October 2021

3.0 WATER QUALITY

MTW maintains a network of surface water and groundwater monitoring sites.

3.1 Surface Water

Monitoring is conducted at mine site dams and surrounding natural watercourses.

Surface water courses are sampled on a monthly or quarterly sampling regime. Water quality is evaluated through the parameters of pH, Electrical Conductivity (EC) and Total Suspended Solids (TSS). The Hunter River and the Wollombi Brook are sampled both upstream and downstream of mining operations, to record background water quality and to monitor the potential impact of mining on the river system. Other Hunter River tributaries are also monitored.

Results of monitoring are reported quarterly, next available in the December 2021 report.

3.2 HRSTS Discharge

MTW participates in the Hunter River Salinity Trading Scheme (HRSTS), allowing discharge from licensed discharge points located at Dam 1N and Dam 9S. Discharges can only take place subject to HRSTS regulations.

During the reporting month no water was discharged under the HRSTS. Discharge simulation was completed in October at the Mount Thorley Discharge Point.

3.3 Groundwater Monitoring

Groundwater monitoring is undertaken on a quarterly basis in accordance with the MTW Groundwater Monitoring Programme.

Groundwater results are reported quarterly, next available in the December 2021 report.

4.0 BLAST MONITORING

MTW have a network of six blast monitoring units. These are located at nearby privately owned residences and function as regulatory compliance monitors.

The location of these monitors can be found in **Figure 15.**

4.1 Blast Monitoring Results

During October 2021, 24 blasts were initiated at MTW. **Figure 9** to **Figure 14** show the blast monitoring results for the reporting period against the impact assessment criteria. The criteria are summarised in **Table 2**.

Table 2: Blasting Limits

Airblast Overpressure (dB(L))	Comments
115	5% of the total number of blasts in a 12 month period at WML or MTO
120	0%
Ground Vibration (mm/s)	**Comments**
5	5% of the total number of blasts in a 12 month period at WML or MTO
10	0%

During the reporting period one blast exceeded the 115 dB(L) 5% threshold for airblast overpressure at MTIE monitoring location. No blast exceeded the 5mm/s 5% criteria for ground vibration.

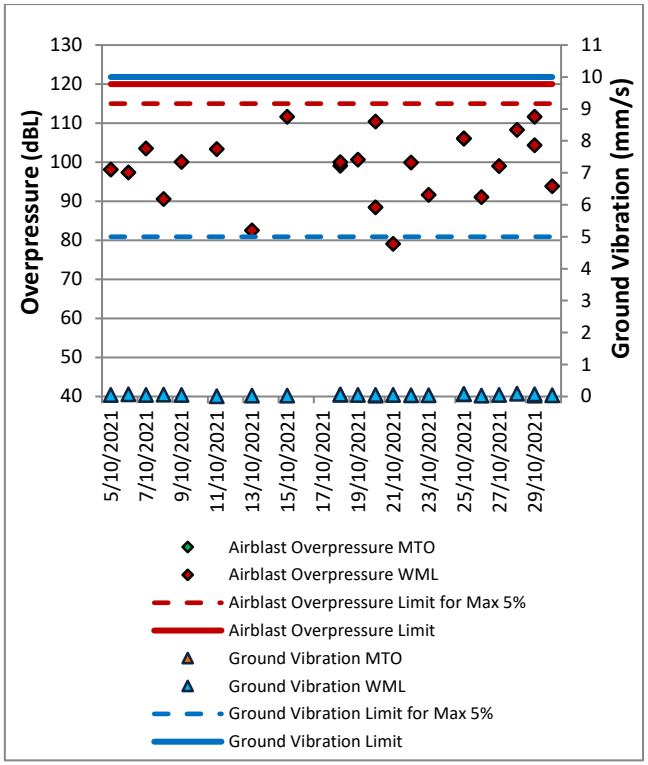


Figure 9: Abbey Green Blast Monitoring Results – October 2021

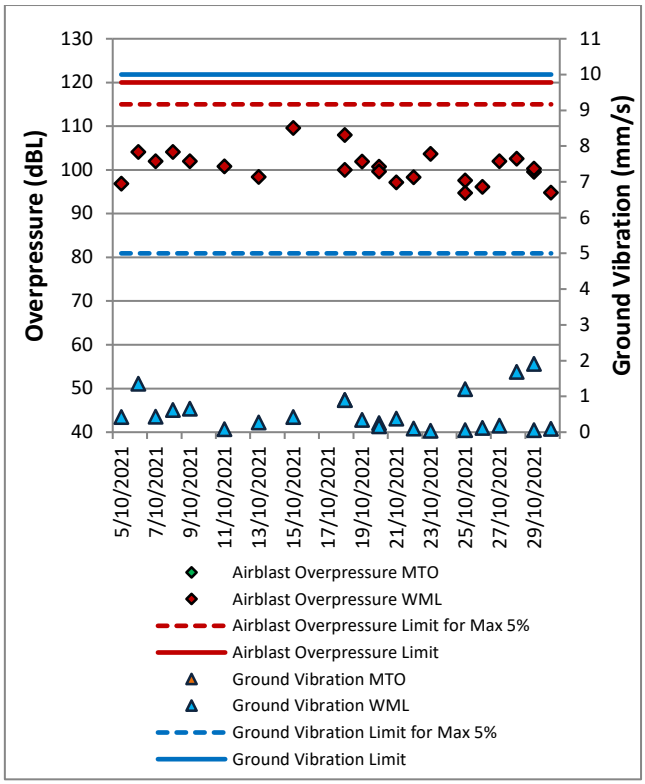


Figure 10: Bulga Village Blast Monitoring Results – October 2021

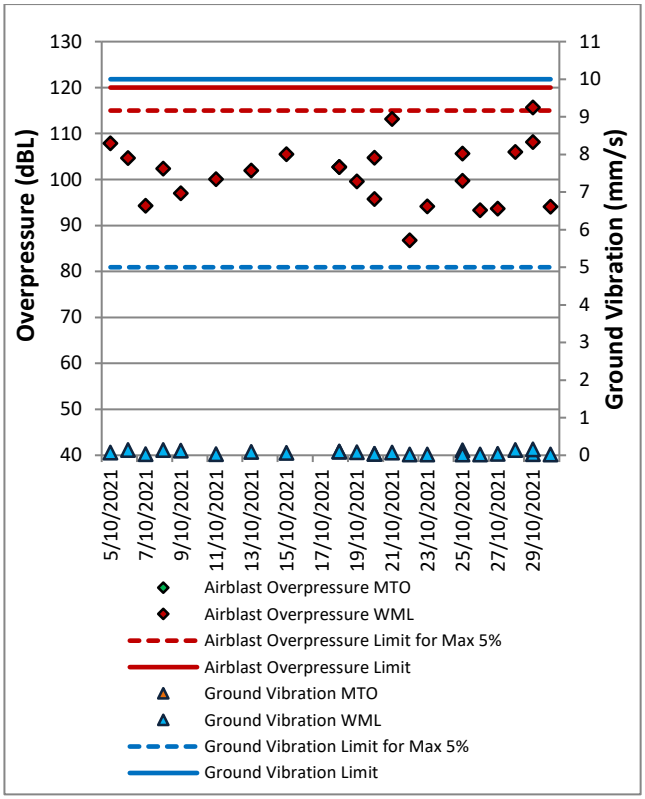


Figure 11: MTIE Blast Monitoring Results – October 2021

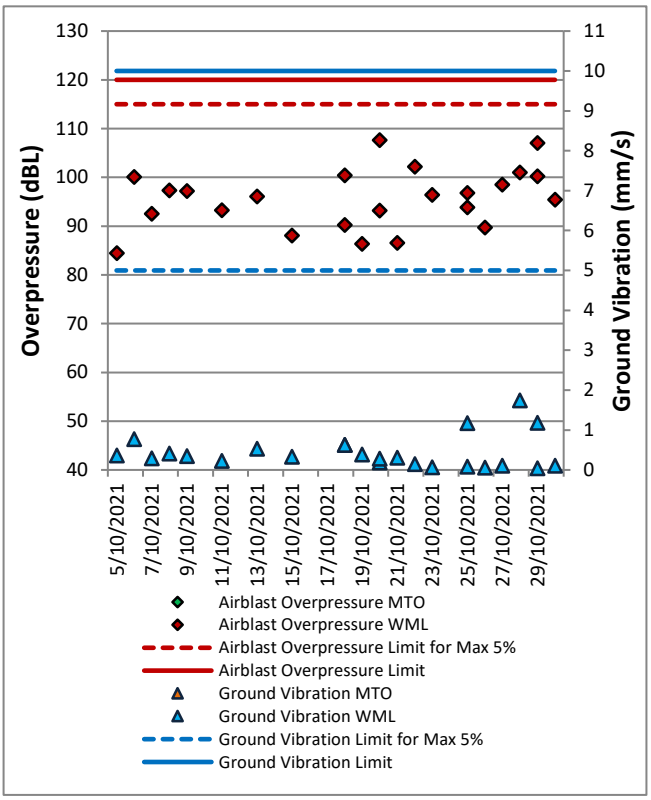


Figure 13: Wambo Road Blast Monitoring Results – October 2021

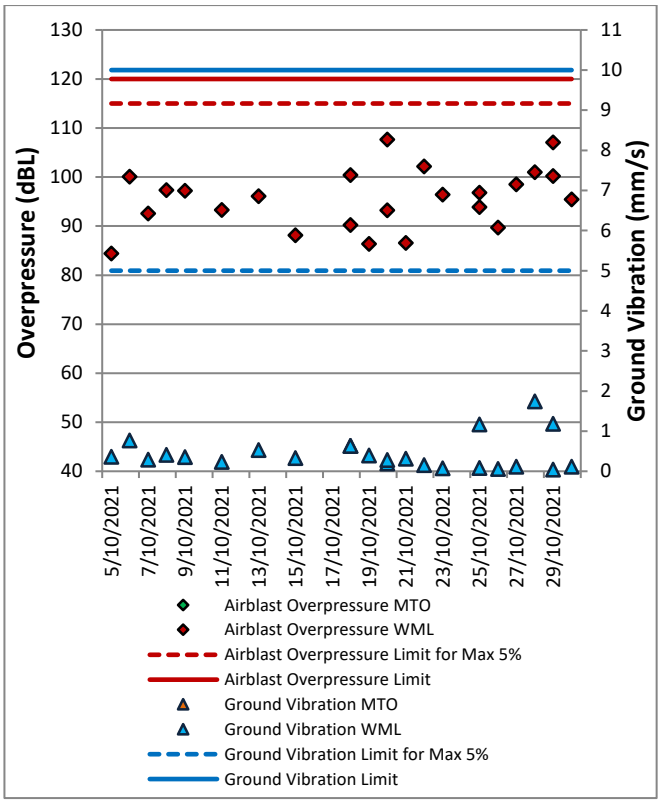


Figure 12: Wollemi Peak Road Blast Monitoring Results – October 2021

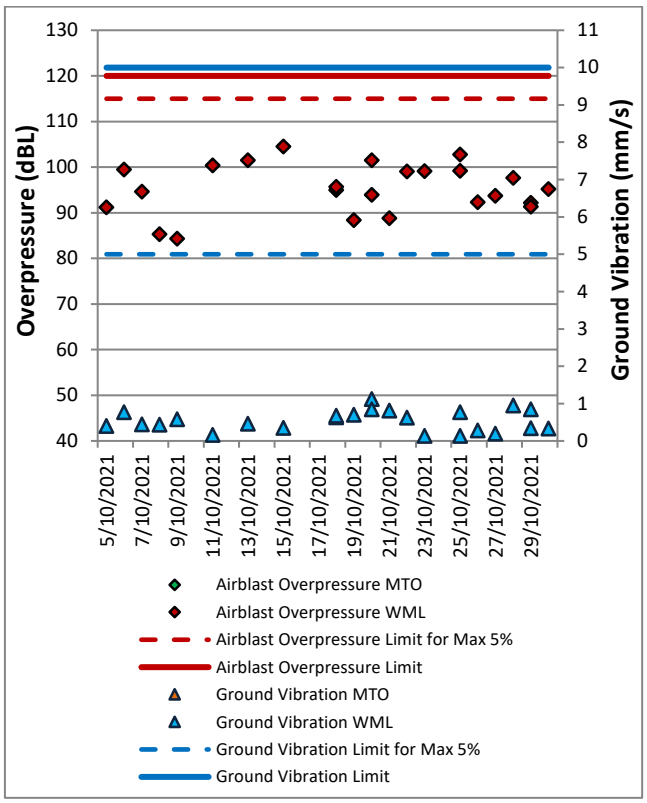


Figure 14: Warkworth Blast Monitoring Results – October 2021

Figure 15: MTW Blast Monitoring Location Plan

5.0 NOISE

Routine attended noise monitoring is carried out in accordance with the MTW Noise Management Plan. A review against EIS predictions will be reported in the Annual Review. The purpose of the noise surveys is to quantify and describe the acoustic environment around the site and compare results with specified limits. Real time noise monitoring also occurs at five sites surrounding MTW. Noise monitoring locations are displayed in **Figure 16**.

5.1 Attended Noise Monitoring Results

Attended monitoring was conducted at receiver locations surrounding MTW on the night of 21/22 October 2021. All measurements complied with the relevant criteria. Results are detailed in **Table 3** to **Table 6**.

5.1.1 WML Noise Assessment

Compliance assessments undertaken against the WML noise criteria are presented in **Tables 3** and **4**.

Table 3: $L_{Aeq,\ 15\ minute}$ Warkworth Impact Assessment Criteria – October 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB(A)	Criterion Applies?[1]	WML L_{Aeq} dB[2,3,4]	Exceedance[3,5]
Bulga RFS	21/10/2021 22:55	2.8	D	37	Yes	<25	Nil
Bulga Village	21/10/2021 21:48	2.9	D	38	Yes	29	Nil
Gouldsville	21/10/2021 21:22	3.1	D	38	Yes	<20	NA
Inlet Rd	21/10/2021 21:24	3.1	D	37	No	30	NA
Inlet Rd West	21/10/2021 21:00	3	D	35	Yes	25	Nil
Long Point	21/10/2021 21:00	3	D	35	Yes	IA	Nil
South Bulga	21/10/2021 23:18	3.2	D	35	No	IA	NA
Wambo Road	21/10/2021 22:10	3.2	D	38	No	31	NA

Notes:
1. Noise criteria apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;
2. Site-only LAeq,15minute attributed to WML, including modifying factors if applicable;
3. Bold results in red indicate exceedances of relevant criteria;
4. IA denotes 'Inaudible'; and
5. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable.

Table 4: $L_{A1,\ 1\ minute}$ Warkworth - Impact Assessment Criteria – October 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB(A)	Criterion Applies?[1]	WML $L_{A1,\ 1min}$ dB[2,3,4]	Exceedance[3,5]
Bulga RFS	21/10/2021 22:55	2.8	D	47	Yes	<30	Nil
Bulga Village	21/10/2021 21:48	2.9	D	48	Yes	35	Nil
Gouldsville	21/10/2021 21:22	3.1	D	48	No	<20	NA
Inlet Rd	21/10/2021 21:24	3.1	D	47	No	33	NA
Inlet Rd West	21/10/2021 21:00	3	D	45	Yes	28	Nil
Long Point	21/10/2021 21:00	3	D	45	Yes	IA	Nil
South Bulga	21/10/2021 23:18	3.2	D	45	No	IA	NA
Wambo Road	21/10/2021 22:10	3.1	D	48	No	34	NA

Notes:
1. Noise criteria apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;
2. Site-only LA1,1minute attributed to WML;
3. Bold results in red are possible exceedances of relevant criteria; and
4. IA denotes 'Inaudible'; and
5. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable.

5.1.3 MTO Noise Assessment

Compliance assessments undertaken against the MTO noise criteria are presented in **Table 5** and **6**.

Table 5: $L_{Aeq,\ 15minute}$ Mount Thorley - Impact Assessment Criteria – October 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB	Criterion Applies?[1]	MTO L_{Aeq} dB[2,3,4]	Exceedance[3,5]
Bulga RFS	21/10/2021 22:55	2.8	D	37	Yes	32	Nil
Bulga Village	21/10/2021 21:48	2.9	D	38	Yes	<25	Nil
Gouldsville	21/10/2021 21:22	3.1	D	35	Yes	IA	NA
Inlet Rd	21/10/2021 21:24	3.1	D	37	Yes	IA	NA
Inlet Rd West	21/10/2021 21:00	3	D	35	Yes	IA	Nil
Long Point	21/10/2021 21:00	3	D	35	Yes	IA	Nil
South Bulga	21/10/2021 23:18	3.2	D	36	Yes	31	NA
Wambo Road	21/10/2021 22:10	3.2	D	38	Yes	IA	NA

Notes:
1. Noise criteria apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;
2. Site-only LAeq,15minute attributed to MTO, including modifying factors if applicable;
3. Bold results in red indicate exceedances of relevant criteria;
4. IA denotes 'Inaudible'; and
5. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable.

Table 6: $L_{A1, 1Minute}$ Mount Thorley - Impact Assessment Criteria – October 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB	Criterion Applies?[1]	MTO $L_{A1, 1min}$ dB[2,3,4]	Exceedance[3,5]
Bulga RFS	21/10/2021 22:55	2.8	D	47	Yes	36	Nil
Bulga Village	21/10/2021 21:48	2.9	D	48	Yes	<30	Nil
Gouldsville	21/10/2021 21:22	3.1	D	45	Yes	IA	NA
Inlet Rd	21/10/2021 21:24	3.1	D	47	Yes	IA	NA
Inlet Rd West	21/10/2021 21:00	3	D	45	Yes	IA	Nil
Long Point	21/10/2021 21:00	3	D	45	Yes	IA	Nil
South Bulga	21/10/2021 23:18	3.1	D	46	Yes	36	Nil
Wambo Road	21/10/2021 22:10	3.2	D	48	Yes	IA	NA

Notes:

1. Noise criteria apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;

2. Site-only LAeq,15minute attributed to MTO, including modifying factors if applicable;

3. Bold results in red indicate exceedances of relevant criteria;

4. IA denotes 'Inaudible'; and

5. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable.

5.1.4 NPfI Low Frequency Assessment

In accordance with the requirements of the EPA's Noise Policy for Industry (NPfI), the applicability of the low frequency modification factor corrections has been assessed. There were no noise measurements taken during the reporting period which required the penalty to be applied. The WML assessment for low frequency noise is shown in **Table 7** and the MTO assessment for low frequency noise is shown in **Table 8**: Mount Thorley Operations Low Frequency Noise Assessment –

Table 7: Warkworth Low Frequency Noise Assessment – October 2021

Location	Date and Time	Measured WML LAeq dB[1]	Criterion Applies?	Intermittency Modifying Factor?	Tonality Modifying Factor?	Frequency of Tonality[1]	Low-frequency Modifying Factor?	Maximum Exceedance of Reference Spectrum [1,2]	Penalty dB[2]	Exceedance
Bulga RFS	21/10/2021 22:55	<25	Yes	No	No	NA	No	NA	Nil	NA
Bulga Village	21/10/2021 21:48	29	Yes	No	No	NA	No	NA	Nil	NA
Gouldsville	21/10/2021 21:22	<20	No	No	No	NA	No	NA	Nil	NA
Inlet Rd	21/10/2021 21:24	30	No	No	No	NA	No	NA	Nil	NA
Inlet Rd West	21/10/2021 21:00	25	Yes	No	No	NA	No	NA	Nil	NA
Long Point	21/10/2021 21:00	IA	Yes	No	No	NA	No	NA	Nil	NA
South Bulga	21/10/2021 23:18	IA	No	No	No	NA	No	NA	Nil	NA
Wambo Road	21/10/2021 22:10	31	No	No	No	NA	No	NA	Nil	NA

1. NA denotes 'not applicable'; and

2. Bold results indicate that application of NPfI modifying factor/s is required.

Table 8: Mount Thorley Operations Low Frequency Noise Assessment – October 2021

Location	Date and Time	Measured WML LAeq dB[1]	Criterion Applies?	Intermittency Modifying Factor?	Tonality Modifying Factor?	Frequency of Tonality[1]	Low-frequency Modifying Factor?	Maximum Exceedance of Reference Spectrum [1,2]	Penalty dB[2]	Exceedance
Bulga RFS	21/10/2021 22:55	32	Yes	No	No	NA	No	NA	Nil	NA
Bulga Village	21/10/2021 21:48	<25	Yes	No	No	NA	No	NA	Nil	NA
Gouldsville	21/10/2021 21:22	IA	No	No	No	NA	No	NA	Nil	NA
Inlet Rd	21/10/2021 21:24	IA	No	No	No	NA	No	NA	Nil	NA
Inlet Rd West	21/10/2021 21:00	IA	Yes	No	No	NA	No	NA	Nil	NA
Long Point	21/10/2021 21:00	IA	Yes	No	No	NA	No	NA	Nil	NA
South Bulga	21/10/2021 23:18	31	No	No	No	NA	No	NA	Nil	NA
Wambo Road	21/10/2021 22:10	IA	No	No	No	NA	No	NA	Nil	NA

1. NA denotes 'not applicable'; and
2. Bold results indicate that application of NPfI modifying factor/s is required.

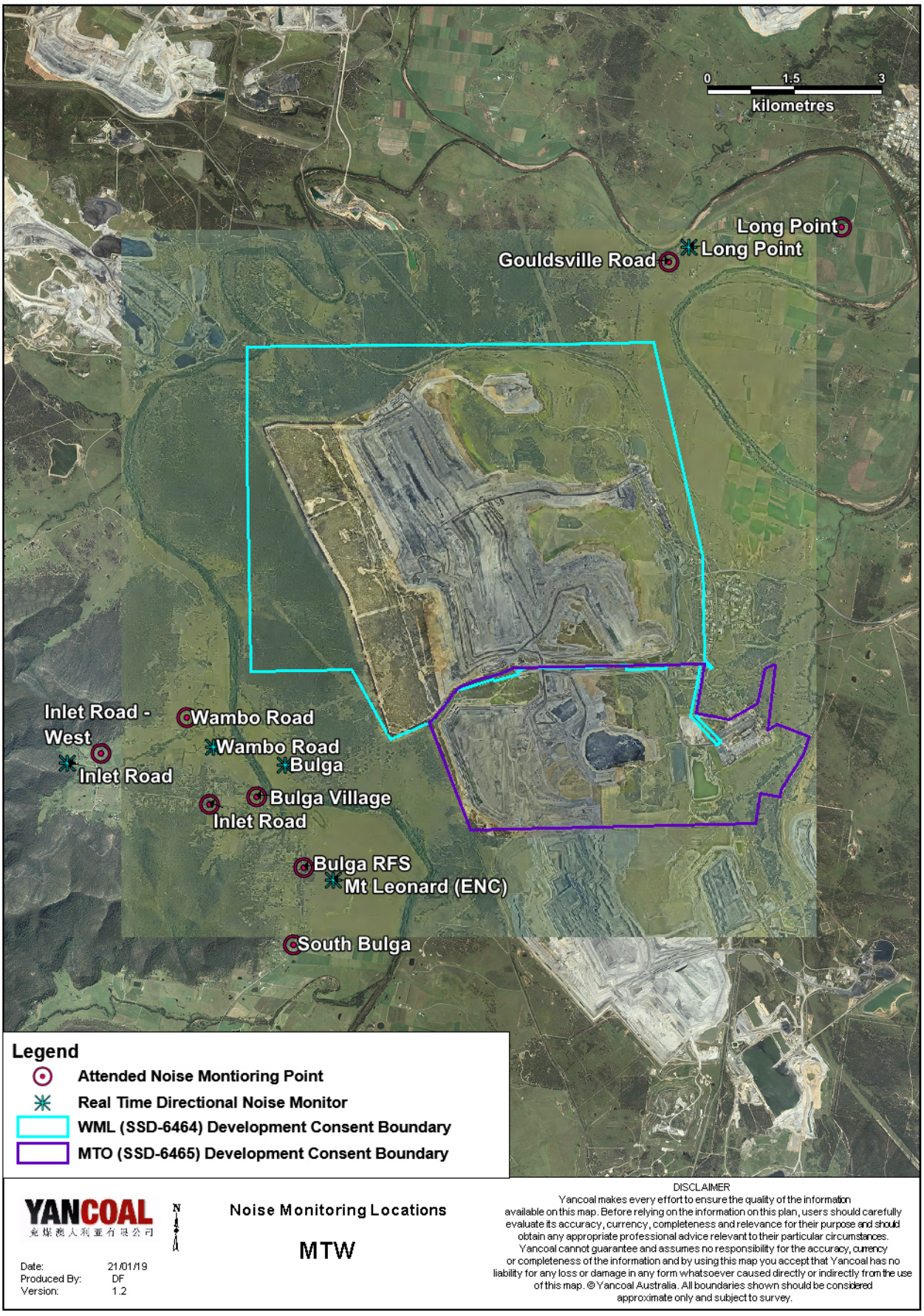


Figure 16: Noise Monitoring Location Plan

5.2 Noise Management Measures

A program of targeted supplementary attended noise monitoring is in place at MTW, supported by the real-time directional monitoring network and ensuring the highest level of noise management is maintained. The supplementary program is undertaken by MTW personnel and involves:

- Routine inspections from both inside and outside the mine boundary;
- Routine and as-required handheld noise assessments (undertaken in response to noise alarm and/or community complaint), comparing measured levels against consent noise limits; and
- Validation monitoring following operational modifications to assess the adequacy of the modifications.

Where a noise assessment identifies noise emissions which are exceeding the relevant noise limit(s) for any particular residence, modifications will be made to ensure that the noise event is resolved within 75 minutes of identification. The actions taken are commensurate with the nature and severity of the noise event, but can include:

- Changing the haul route to a less noise sensitive haul;
- Changing dump locations (in-pit or less exposed dump option);
- Reducing equipment numbers;
- Shut down of task; or
- Site shut down.

A summary of these assessments undertaken during October are provided in **Table 9**.

Table 9: Supplementary Attended Noise Monitoring Data – October 2021

No. of assessments	No. of assessments > trigger	No. of nights where assessments > trigger	% greater than trigger
625	4	2	0.64

Note: Measurements are taken under all meteorological conditions, including conditions under which the consent noise criteria do not apply.

6.0 OPERATIONAL DOWNTIME

During October, a total of 387 hours of equipment downtime was logged in response to environmental events such as dust, noise and adverse meteorological conditions. Operational downtime by equipment type is shown in **Figure 17.**

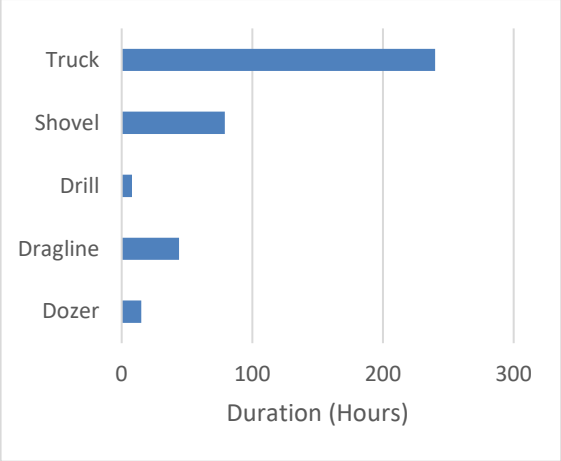


Figure 17: Operational Downtime by Equipment Type – October 2021

7.0 REHABILITATION

During October 2021, 0.39 Ha of land was released, 6.12 Ha of land was bulk shaped and 18.08 Ha of land was composted.

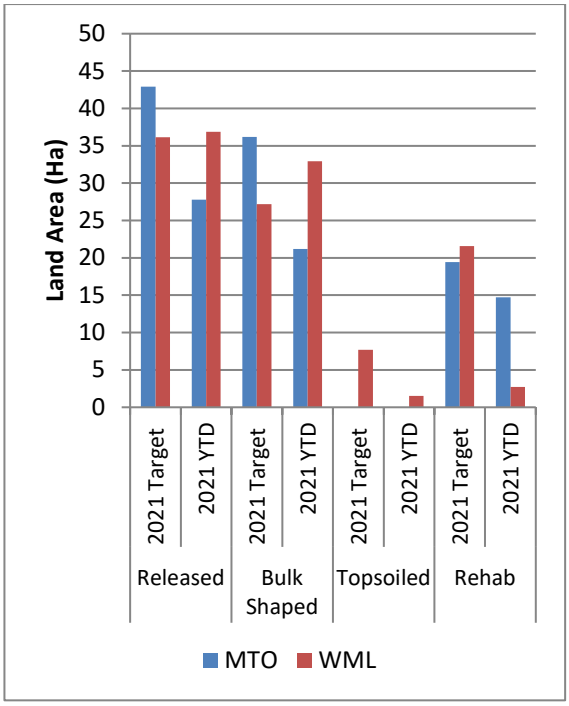


Figure 18: Rehabilitation YTD – October 2021

8.0 ENVIRONMENTAL INCIDENTS

There were no reportable environmental incidents recorded during the reporting period.

9.0 COMPLAINTS

13 complaints were received during the reporting period. Details of these complaints are shown in **Table 10** below.

Table 10: Complaints Summary YTD

	Noise	Dust	Blast	Lighting	Other	Total
January	1	0	6	4	1	12
February	4	0	3	0	0	7
March	5	0	3	3	1	12
April	6	2	1	10	0	19
May	3	1	10	5	0	19
June	2	0	4	0	0	6
July	1	0	5	3	1	10
October	12	8	5	1	0	26
September	3	11	7	8	1	30
October	4	8	1	0	0	13
November						
December						
Total	41	30	45	34	4	154

Appendix A: Meteorological Data

Table 11: Meteorological Data – Charlton Ridge Meteorological Station – October 2021

Date	Air Temperature Maximum (°C)	Air Temperature Minimum (°C)	Relative Humidity Maximum (%)	Relative Humidity Minimum (%)	Wind Direction Average (°)	Wind Speed Average (m/sec)	Rainfall(mm)
1/10/2021	26	9	97	38	231	2.5	26.6
2/10/2021	23	7	99	41	301	3.1	0.2
3/10/2021*	19.4	-	61	-	305	3.5	0
4/10/2021	26	9	84	22	284	4.6	0
5/10/2021	22	8	62	20	277	4.5	0
6/10/2021	25	5	68	14	302	3.4	0
7/10/2021	29	6	71	18	285	3.7	0
8/10/2021	24	11	77	36	109	2.3	0
9/10/2021	32	7	95	22	242	2.4	0
10/10/2021	34	12	98	28	224	3.1	7.6
11/10/2021	17	8	98	80	171	3.2	11
12/10/2021	15	6	99	75	151	3.4	21.8
13/10/2021	19	8	99	64	123	2.9	6.6
14/10/2021	28	8	98	31	212	2.6	0.2
15/10/2021	22	6	97	31	274	4.2	0.2
16/10/2021	20	6	81	37	303	6.0	0
17/10/2021	26	5	81	22	250	2.9	0
18/10/2021	27	6	85	23	230	2.2	0
19/10/2021	29	8	94	20	234	2.9	1.4
20/10/2021	22	7	91	41	131	2.6	0.4
21/10/2021	24	7	94	48	134	3.0	0
22/10/2021	27	10	92	37	142	2.6	0
23/10/2021	33	10	98	24	200	2.4	6
24/10/2021	27	11	98	28	196	1.2	0.2
25/10/2021	25	10	74	18	190	3.3	0
26/10/2021	25	9	81	27	149	2.6	0
27/10/2021	30	16	69	22	180	2.3	0
28/10/2021	31	11	75	18	231	2.1	0
29/10/2021	32	12	73	25	281	4.3	0
30/10/2021	24	8	92	28	154	3.4	0
31/10/2021	23	5	93	31	145	2.6	0

"-" Indicates that data was not available due to technical issues.

"*" Data calculated with one hour of missing data due to time change for daylight savings AEST

Appendix C: November 2021 Monthly Environmental Monitoring Report

Monthly Environmental Monitoring Report

Yancoal Mount Thorley Warkworth

November 2021

CONTENTS

Figures

Tables

Revision History

Version No.	Version Details	Document Status	Date
1.1	**Environment and Community Advisor**	**Final**	**21/02/2022**

1.0 INTRODUCTION

This report has been compiled to provide a monthly summary of environmental monitoring results for Mount Thorley Warkworth (MTW). This report includes all monitoring data collected for the period 1 November to 30 November 2021.

2.0 AIR QUALITY

2.1 Meteorological Monitoring

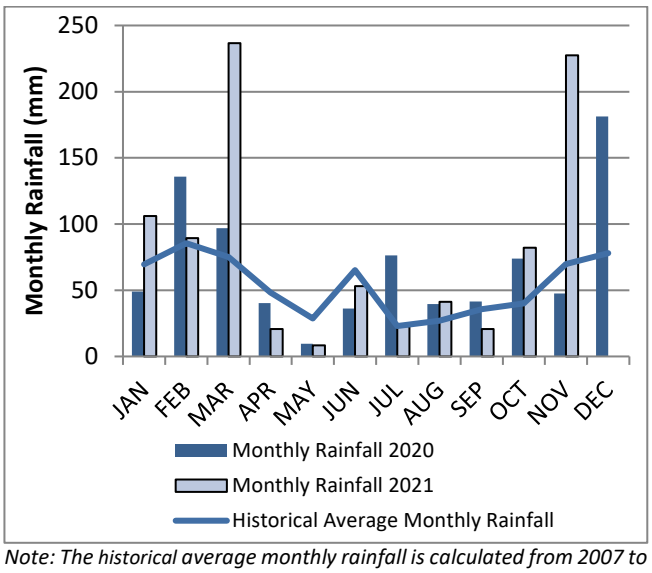
Meteorological data is collected at MTW's 'Charlton Ridge' meteorological station (refer to **Figure 3**: Air Quality Monitoring Locations).

2.1.1 Rainfall

Rainfall for the reporting period is summarised in **Table 1**. The year-to-date monthly rainfall totals, 2021 monthly rainfall totals and historical average monthly rainfall trend are shown in **Figure 1**.

Table 1: Monthly Rainfall MTW

2021	Monthly Rainfall (mm)	Cumulative Rainfall (mm)
November	227.4	908.6



Note: The historical average monthly rainfall is calculated from 2007 to 2020 monthly totals

Figure 1: Rainfall Trend YTD

2.1.2 Wind Speed and Direction

Winds from the south were dominant during the reporting period as shown in **Figure 2.**

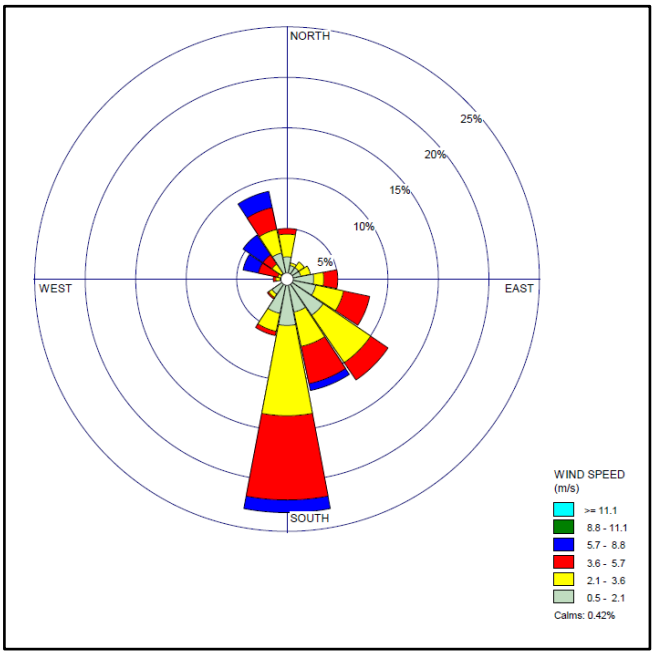


Figure 2: Charlton Ridge Wind Rose – November 2021

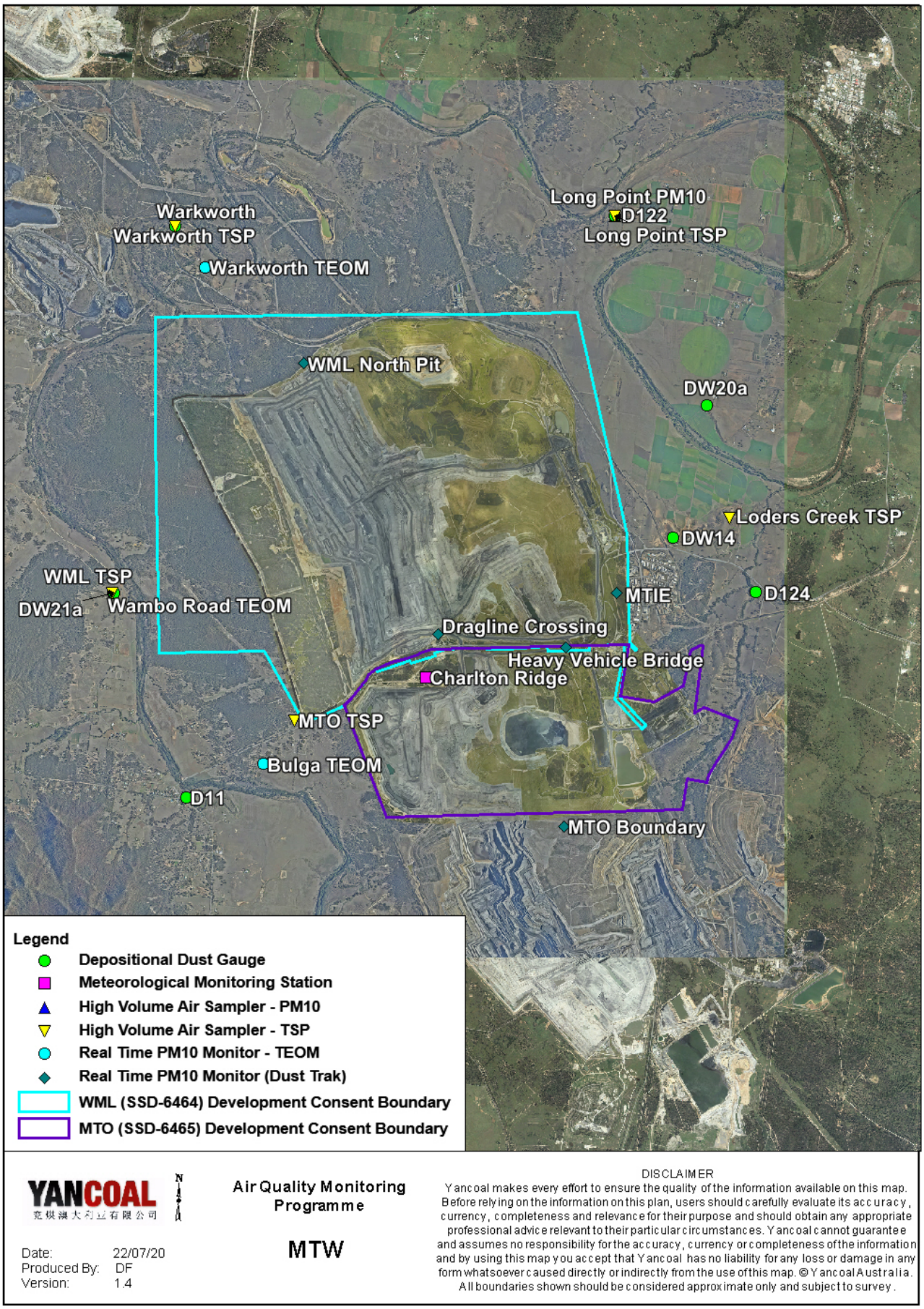


Figure 3: Air Quality Monitoring Locations

2.2 Depositional Dust

To monitor air quality, MTW operates and maintains a network of seven depositional dust gauges, situated on private and mine owned land surrounding MTW.

During the reporting period the Warkworth monitor recorded a monthly result above the long-term impact assessment criteria of 4.0 g/m^2 per month. There is no evidence to suggest that the Warkworth result is contaminated. An external investigation of an elevated result at this monitor was undertaken for a July 2021 reading, which indicated the July result was anomalous and was then excluded from annual average calculation. Since that time, the August to November results have been elevated compared to other depositional dust results. MTW is progressing further investigation of the potential influence of localised sources to determine possible reasons for the result, as recommended by a specialist Air Quality specialist consultant. Presently, the result is included in the annual average calculation.

Figure 4 displays insoluble solids results from depositional dust gauges during the reporting period compared against the year-to-date average and the annual impact assessment criteria.

An annual assessment of MTW's compliance with the Long-Term Impact Assessment Criteria will be provided in the 2021 Annual Review Report.

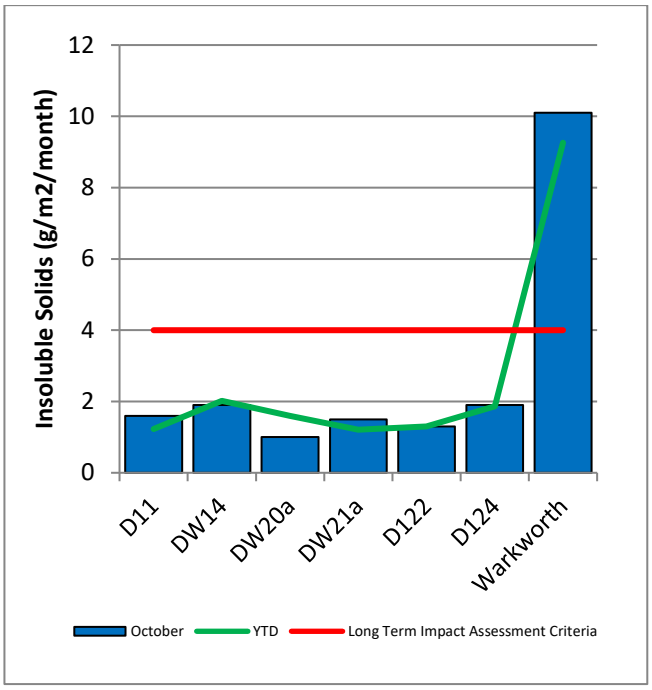


Figure 4: Depositional Dust – November 2021

2.3 Suspended Particulates

Suspended particulates are measured by a network of High Volume Air Samplers (HVAS) measuring Total Suspended Particulates (TSP) and Particulate Matter <10µm (PM_{10}). The location of these monitors can be found in **Figure 3**. Each HVAS was run for 24 hours on a six-day cycle in accordance with EPA requirements.

2.3.1 HVAS PM_{10} Results

Figure 5 shows the individual PM_{10} results at each monitoring station against the short-term impact assessment criteria of 50µg/m^3.

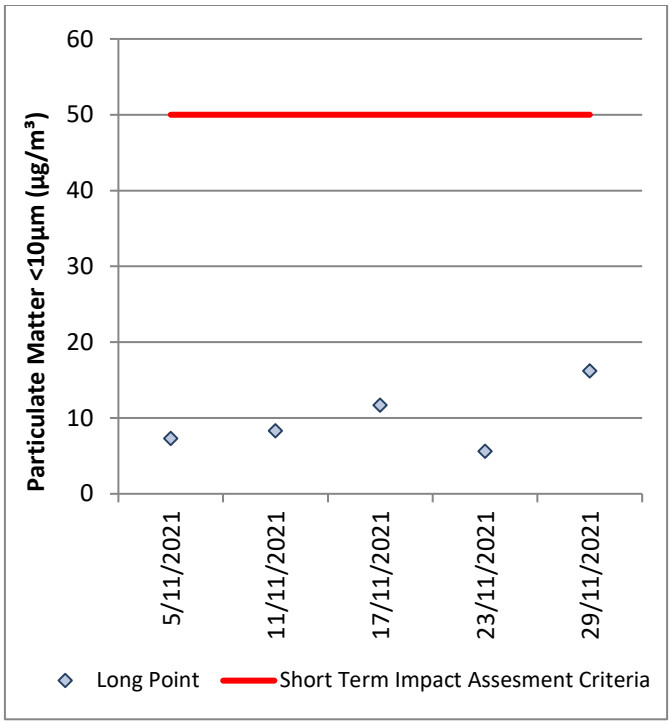


Figure 5: Individual PM10 Results – November 2021

Figure 6 shows the annual average PM10 result against the long term impact assessment criteria.

An assessment of MTW's compliance with the Long-Term Impact Assessment Criteria will be provided in the 2021 Annual Review Report.

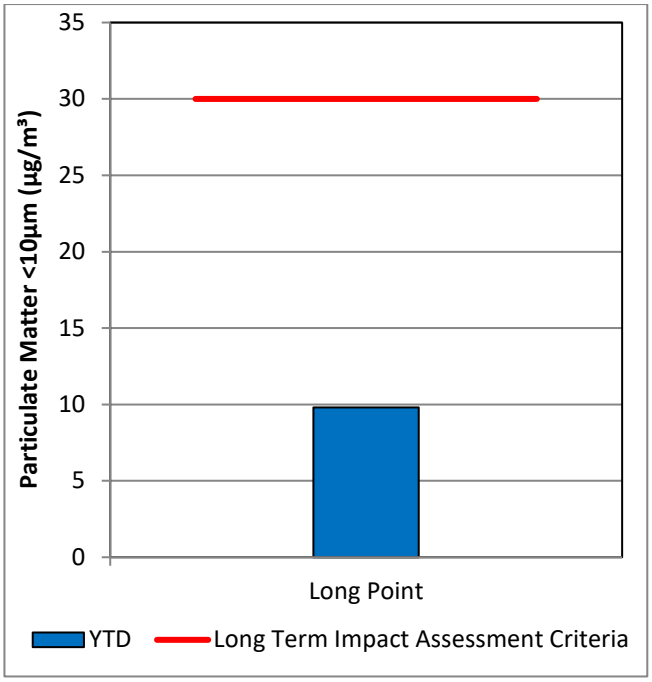


Figure 6: Annual Average PM_{10} – November 2021

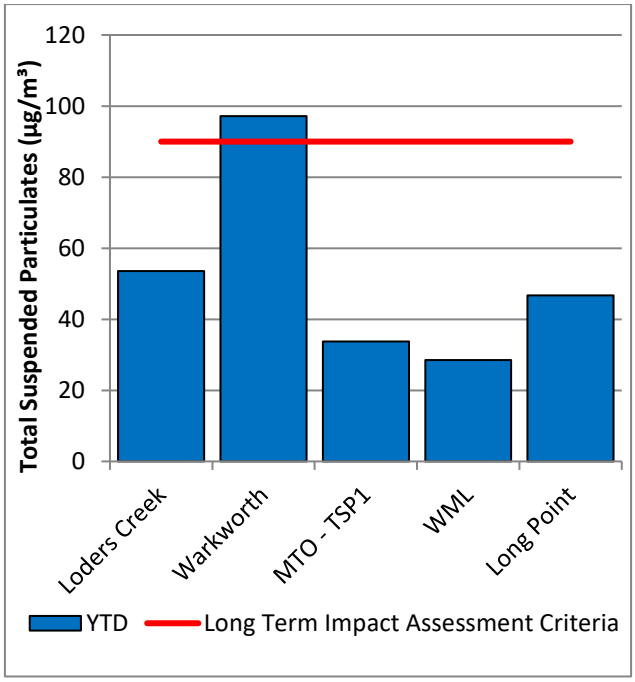


Figure 7: Annual Average Total Suspended Particulates – November 2021

2.3.2 TSP Results

Figure 7 shows the annual average TSP results compared against the long-term impact assessment criteria of 90µg/m³.

An assessment of MTW's compliance with the Long-Term Impact Assessment Criteria will be provided in the 2021 Annual Review Report.

2.3.3 Real Time PM_{10} Results

MTW maintains a network of real time PM_{10} monitors. The real time air quality monitoring stations continuously log information and transmit data to a central database, generating internal alerts when particulate matter levels exceed internal trigger limits.

Results for real time dust sampling are shown in **Figure 8**, including the daily 24-hour average PM_{10} result and the annual PM_{10} average.

Data was not available from 11 to 15 November 2021 from the Wambo Road monitor due to equipment issues.

2.3.4 Real Time Alarms for Air Quality

During November, the real time monitoring system generated 33 automated air quality related alerts, including 10 alerts for adverse meteorological conditions and 23 alerts for elevated PM_{10} levels.

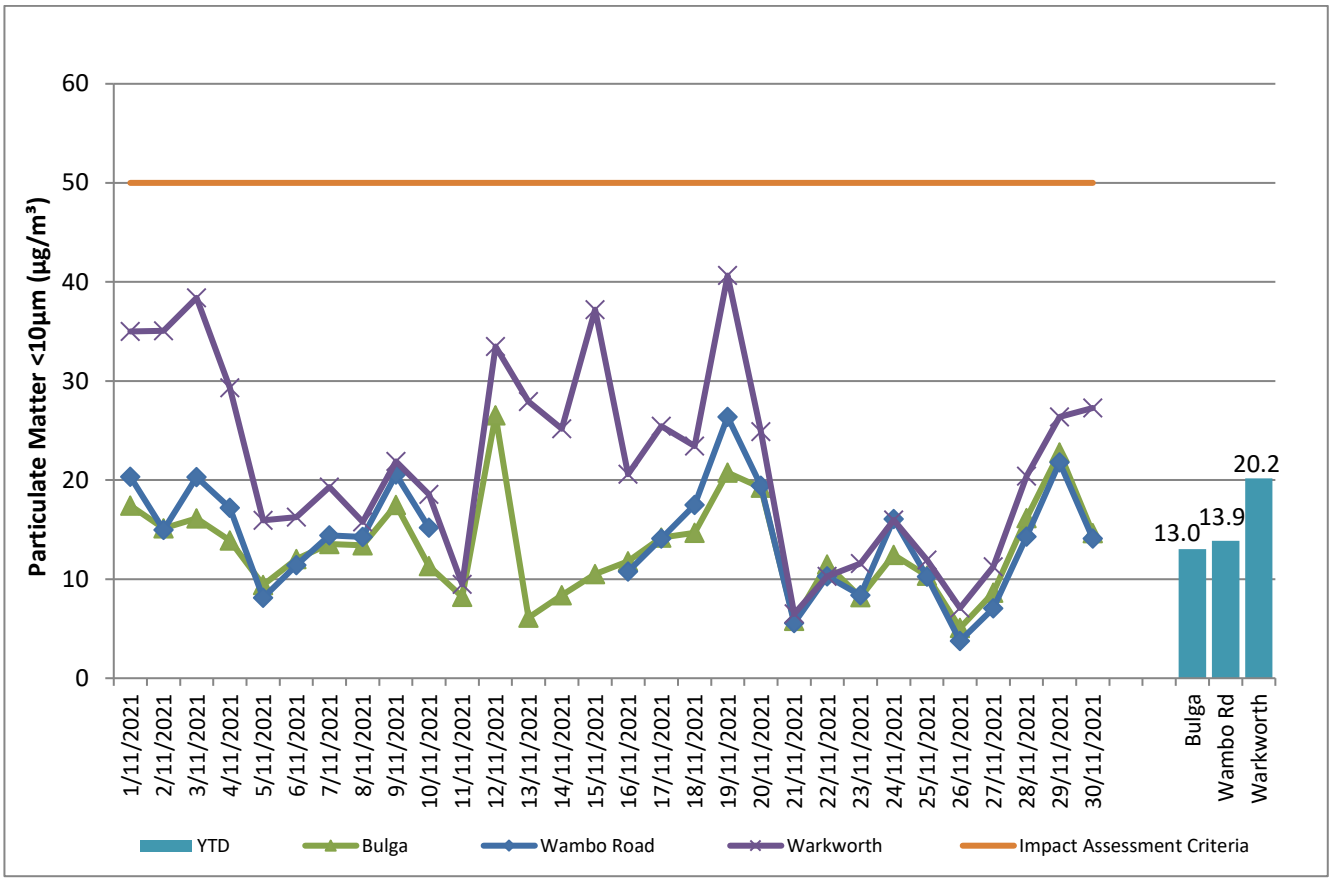


Figure 8: Real Time PM_{10} daily 24hr average (line graphs) and YTD annual average (column graphs) – November

3.0 WATER QUALITY

MTW maintains a network of surface water and groundwater monitoring sites.

3.1 Surface Water

Monitoring is conducted at mine site dams and surrounding natural watercourses.

Surface water courses are sampled on a monthly or quarterly sampling regime. Water quality is evaluated through the parameters of pH, Electrical Conductivity (EC) and Total Suspended Solids (TSS). The Hunter River and the Wollombi Brook are sampled both upstream and downstream of mining operations, to record background water quality and to monitor the potential impact of mining on the river system. Other Hunter River tributaries are also monitored.

Results of monitoring are reported quarterly, next available in the December 2021 report.

3.2 HRSTS Discharge

MTW participates in the Hunter River Salinity Trading Scheme (HRSTS), allowing discharge from licensed discharge points located at Dam 1N and Dam 9S. Discharges can only take place subject to HRSTS regulations.

During the reporting period licenced HRSTS discharge from Dam 9S (EPL 1976 Point 4) occurred from the 24 November to 30 November 2021 discharging a total of 359ML.

3.3 Groundwater Monitoring

Groundwater monitoring is undertaken on a quarterly basis in accordance with the MTW Groundwater Monitoring Programme.

Groundwater results are reported quarterly, next available in the December 2021 report.

4.0 BLAST MONITORING

MTW have a network of six blast monitoring units. These are located at nearby privately owned residences and function as regulatory compliance monitors.

The location of these monitors can be found in **Figure 15**.

4.1 Blast Monitoring Results

During November 2021, 18 blasts were initiated at MTW. **Figure 9** to **Figure 14** show the blast monitoring results for the reporting period against the impact assessment criteria. The criteria are summarised in **Table 2**.

Table 2: Blasting Limits

Airblast Overpressure (dB(L))	Comments
115	5% of the total number of blasts in a 12 month period at WML or MTO
120	0%
Ground Vibration (mm/s)	**Comments**
5	5% of the total number of blasts in a 12 month period at WML or MTO
10	0%

During the reporting period one blast exceeded the 115 dB(L) 5% threshold for airblast overpressure at Wambo Road monitoring location. No blast exceeded the 5mm/s 5% criteria for ground vibration.

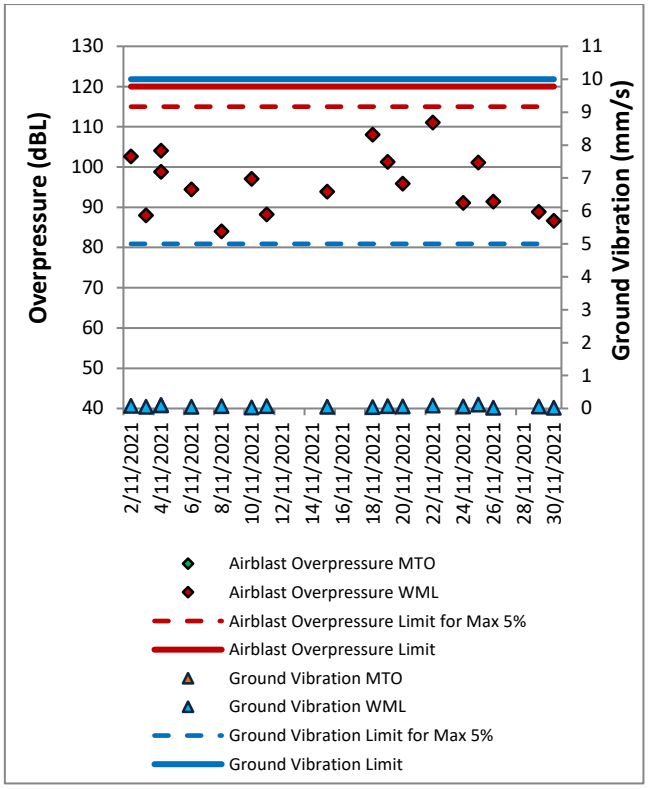


Figure 9: Abbey Green Blast Monitoring Results – November 2021

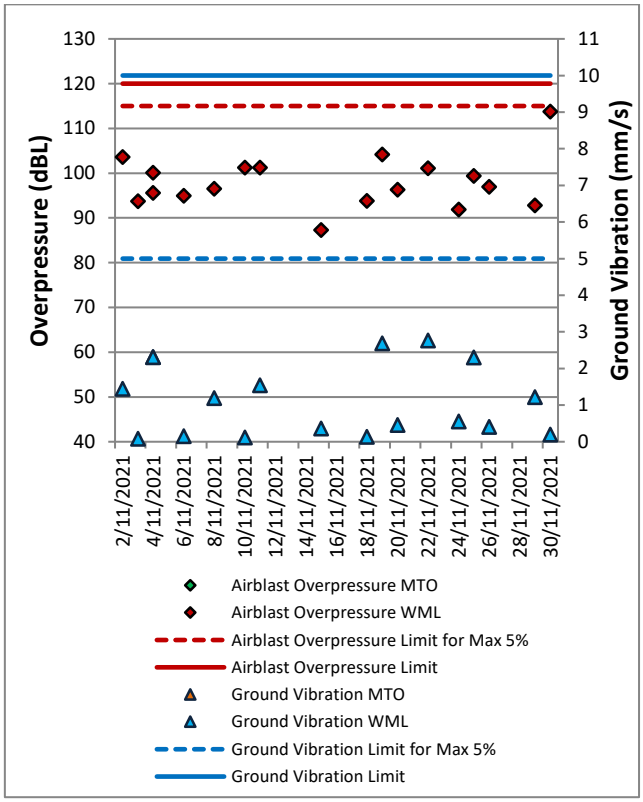


Figure 10: Bulga Village Blast Monitoring Results – November 2021

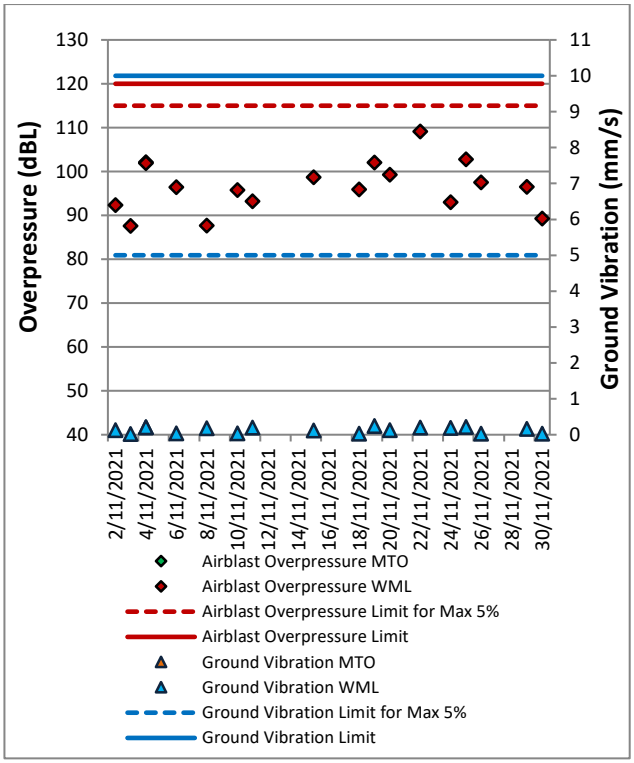


Figure 11: MTIE Blast Monitoring Results – November 2021

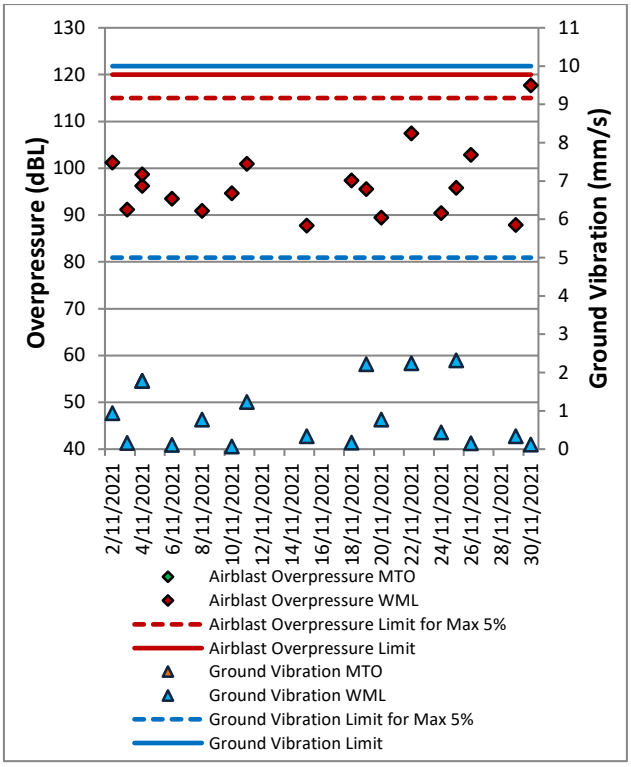


Figure 13: Wambo Road Blast Monitoring Results – November 2021

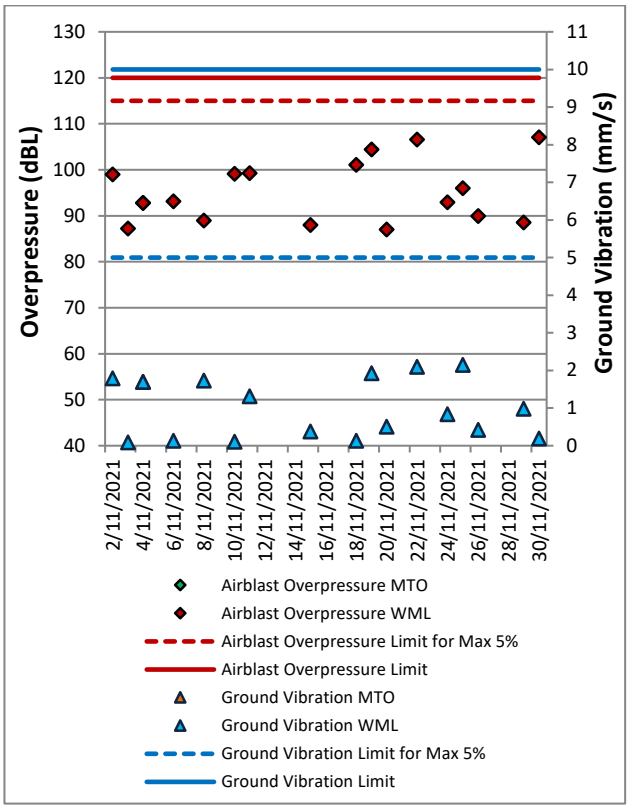


Figure 12: Wollemi Peak Road Blast Monitoring Results – November 2021

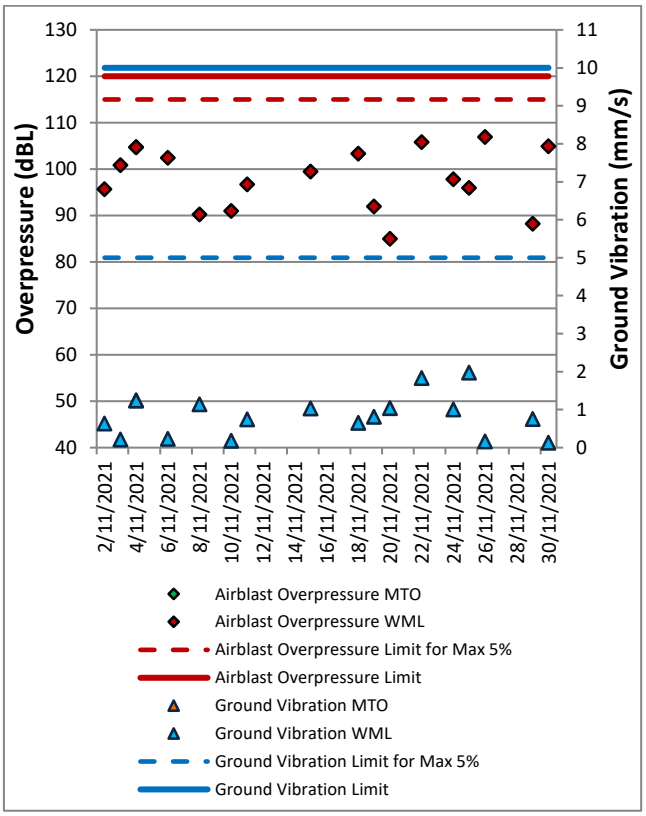


Figure 14: Warkworth Blast Monitoring Results – November 2021

Figure 15: MTW Blast Monitoring Location Plan

5.0 NOISE

Routine attended noise monitoring is carried out in accordance with the MTW Noise Management Plan. A review against EIS predictions will be reported in the Annual Review. The purpose of the noise surveys is to quantify and describe the acoustic environment around the site and compare results with specified limits. Real time noise monitoring also occurs at five sites surrounding MTW. Noise monitoring locations are displayed in **Figure 16**.

5.1 Attended Noise Monitoring Results

Attended monitoring was conducted at receiver locations surrounding MTW on the night of 23 November 2021. All measurements complied with the relevant criteria. Results are detailed in **Table 3 to Table 6.**

5.1.1 WML Noise Assessment

Compliance assessments undertaken against the WML noise criteria are presented in **Tables 3** and **4**.

Table 3: $L_{Aeq,\ 15\ minute}$ Warkworth Impact Assessment Criteria – November 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB(A)	Criterion Applies?[1]	WML L_{Aeq} dB[2,3,4]	Exceedance[3,5]
Bulga RFS	23/11/2021 23:03	2.6	F	37	No	IA	NA
Bulga Village	23/11/2021 22:06	3.2	E	38	No	<25	NA
Gouldsville	23/11/2021 21:23	3.5	E	38	No	<30	NA
Inlet Rd	23/11/2021 21:22	3.8	E	37	No	<25	NA
Inlet Rd West	23/11/2021 21:01	3.8	E	35	No	IA	NA
Long Point	23/11/2021 21:00	3.8	E	35	No	IA	NA
South Bulga	23/11/2021 23:23	2.8	F	35	No	IA	NA
Wambo Road	23/11/2021 21:44	3.3	E	38	No	<25	NA

Notes:
1. Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;
2. Estimated or measured LAeq,15minute attributed to WML;
3. Bold results in red are possible exceedances of relevant criteria;
4. IA denotes 'Inaudible';
5. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable.

Table 4: $L_{A1,\ 1\ minute}$ Warkworth - Impact Assessment Criteria – November 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB(A)	Criterion Applies?[1]	WML $L_{A1,\ 1min}$ dB[2,3,4]	Exceedance[3,5]
Bulga RFS	23/11/2021 23:03	2.6	F	47	No	IA	NA
Bulga Village	23/11/2021 22:06	3.2	E	48	No	27	NA
Gouldsville	23/11/2021 21:23	3.5	E	48	No	35	NA
Inlet Rd	23/11/2021 21:22	3.8	E	47	No	<25	NA
Inlet Rd West	23/11/2021 21:01	3.8	E	45	No	IA	NA
Long Point	23/11/2021 21:00	3.8	E	45	No	IA	NA
South Bulga	23/11/2021 23:23	2.8	F	45	No	IA	NA
Wambo Road	23/11/2021 21:44	3.3	E	48	No	29	NA

Notes:
1. Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;
2. Estimated or measured LAeq,15minute attributed to WML;
3. Bold results in red are possible exceedances of relevant criteria;
4. IA denotes 'Inaudible';

5. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable.

5.1.3 MTO Noise Assessment

Compliance assessments undertaken against the MTO noise criteria are presented in **Table 5** and **6**.

Table 5: $L_{Aeq, 15minute}$ Mount Thorley - Impact Assessment Criteria – November 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB	Criterion Applies?[1]	MTO L_{Aeq} dB[2,3,4]	Exceedance[3,5]
Bulga RFS	23/11/2021 23:03	2.6	F	37	Yes	33	NA
Bulga Village	23/11/2021 22:06	3.2	E	38	Yes	IA	NA
Gouldsville	23/11/2021 21:23	3.5	E	35	Yes	IA	NA
Inlet Rd	23/11/2021 21:22	3.8	E	37	Yes	<25	NA
Inlet Rd West	23/11/2021 21:01	3.8	E	35	Yes	<20	NA
Long Point	23/11/2021 21:00	3.8	E	35	Yes	IA	NA
South Bulga	23/11/2021 23:23	2.8	F	36	Yes	<25	NA
Wambo Road	23/11/2021 21:44	3.3	E	38	Yes	IA	NA

Notes:
1. Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;
2. Estimated or measured LAeq,15minute attributed to MTO;
3. Bold results in red are possible exceedances of relevant criteria;
4. IA denotes 'Inaudible';
5. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable.

Table 6: $L_{A1, 1Minute}$ Mount Thorley - Impact Assessment Criteria – November 2021

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB	Criterion Applies?[1]	MTO $L_{A1, 1min}$ dB[2,3,4]	Exceedance[3,5]
Bulga RFS	23/11/2021 23:03	2.6	F	47	Yes	39	NA
Bulga Village	23/11/2021 22:06	3.2	E	48	Yes	IA	NA
Gouldsville	23/11/2021 21:23	3.5	E	45	Yes	IA	NA
Inlet Rd	23/11/2021 21:22	3.8	E	47	Yes	<25	NA
Inlet Rd West	23/11/2021 21:01	3.8	E	45	Yes	<20	NA
Long Point	23/11/2021 21:00	3.8	E	45	Yes	IA	NA
South Bulga	23/11/2021 23:23	2.8	F	46	Yes	27	NA
Wambo Road	23/11/2021 21:44	3.3	E	48	Yes	IA	NA

Notes:
1. Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;
2. Estimated or measured LAeq,15minute attributed to MTO;
3. Bold results in red are possible exceedances of relevant criteria;
4. IA denotes 'Inaudible';
5. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable.

5.1.4 NPfI Low Frequency Assessment

In accordance with the requirements of the EPA's Noise Policy for Industry (NPfI), the applicability of the low frequency modification factor corrections has been assessed. There were no noise measurements taken during the reporting period which required the penalty to be applied. The WML assessment for low frequency noise is shown in **Table 7** and the MTO assessment for low frequency noise is shown in **Table 8**: Mount Thorley Operations Low Frequency Noise Assessment –

Table 7: Warkworth Low Frequency Noise Assessment – November 2021

Location	Date and Time	Measured WML LAeq dB[1]	Criterion Applies?	Intermittency Modifying Factor?	Tonality Modifying Factor?	Frequency of Tonality[2]	Low-frequency Modifying Factor?	Maximum Exceedance of Reference Spectrum [2,3]	Penalty dB[3]	Exceedance [2]
Bulga RFS	23/11/2021 23:03	IA	No	No	No	NA	No	NA	Nil	NA
Bulga Village	23/11/2021 22:06	<25	No	No	No	NA	No	NA	Nil	NA
Gouldsville	23/11/2021 21:23	<30	No	No	No	NA	No	NA	Nil	NA
Inlet Rd	23/11/2021 21:22	<25	No	No	No	NA	No	NA	Nil	NA
Inlet Rd West	23/11/2021 21:01	IA	No	No	No	NA	No	NA	Nil	NA
Long Point	23/11/2021 21:00	IA	No	No	No	NA	No	NA	Nil	NA
South Bulga	23/11/2021 23:23	IA	No	No	No	NA	No	NA	Nil	NA
Wambo Road	23/11/2021 21:44	<25	No	No	No	NA	No	NA	Nil	NA

Notes:
1. IA denotes 'Inaudible';
2. NA denotes 'not applicable'; and
3. Bold results indicate that application of NPfI modifying factor/s is required.

Table 8: Mount Thorley Operations Low Frequency Noise Assessment – November 2021

Location	Date and Time	Measured WML LAeq dB[1]	Criterion Applies?	Intermittency Modifying Factor?	Tonality Modifying Factor?	Frequency of Tonality[2]	Low-frequency Modifying Factor?	Maximum Exceedance of Reference Spectrum [2,3]	Penalty dB[3]	Exceedance [2]
Bulga RFS	23/11/2021 23:03	33	Yes	No	No	NA	No	NA	Nil	NA
Bulga Village	23/11/2021 22:06	IA	Yes	No	No	NA	No	NA	Nil	NA
Gouldsville	23/11/2021 21:23	IA	No	No	No	NA	No	NA	Nil	NA
Inlet Rd	23/11/2021 21:22	<25	No	No	No	NA	No	NA	Nil	NA
Inlet Rd West	23/11/2021 21:01	<20	Yes	No	No	NA	No	NA	Nil	NA
Long Point	23/11/2021 21:00	IA	Yes	No	No	NA	No	NA	Nil	NA
South Bulga	23/11/2021 23:23	<25	No	No	No	NA	No	NA	Nil	NA
Wambo Road	23/11/2021 21:44	IA	No	No	No	NA	No	NA	Nil	NA

Notes:
1. IA denotes 'Inaudible';
2. NA denotes 'not applicable'; and
3. Bold results indicate that application of NPfI modifying factor/s is required.

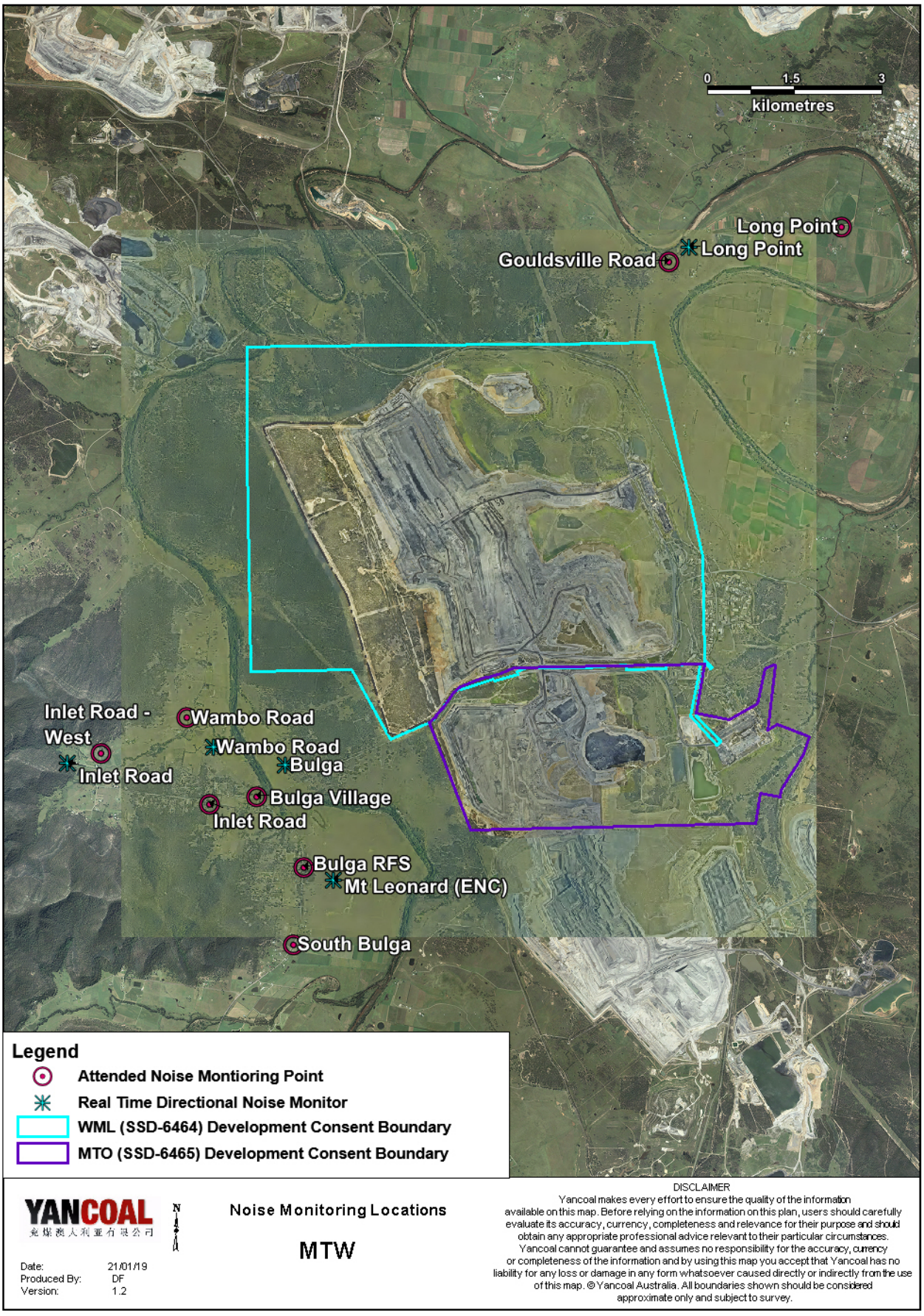


Figure 16: Noise Monitoring Location Plan

5.2 Noise Management Measures

A program of targeted supplementary attended noise monitoring is in place at MTW, supported by the real-time directional monitoring network and ensuring the highest level of noise management is maintained. The supplementary program is undertaken by MTW personnel and involves:

- Routine inspections from both inside and outside the mine boundary;
- Routine and as-required handheld noise assessments (undertaken in response to noise alarm and/or community complaint), comparing measured levels against consent noise limits; and
- Validation monitoring following operational modifications to assess the adequacy of the modifications.

Where a noise assessment identifies noise emissions which are exceeding the relevant noise limit(s) for any particular residence, modifications will be made to ensure that the noise event is resolved within 75 minutes of identification. The actions taken are commensurate with the nature and severity of the noise event, but can include:

- Changing the haul route to a less noise sensitive haul;
- Changing dump locations (in-pit or less exposed dump option);
- Reducing equipment numbers;
- Shut down of task; or
- Site shut down.

A summary of these assessments undertaken during November are provided in **Table 9**.

Table 9: Supplementary Attended Noise Monitoring Data – November 2021

No. of assessments	No. of assessments > trigger	No. of nights where assessments > trigger	% greater than trigger
497	0	0	0

Note: Measurements are taken under all meteorological conditions, including conditions under which the consent noise criteria do not apply.

6.0 OPERATIONAL DOWNTIME

During November, a total of 84 hours of equipment downtime was logged in response to environmental events such as dust, noise and adverse meteorological conditions. Operational downtime by equipment type is shown in **Figure 17**.

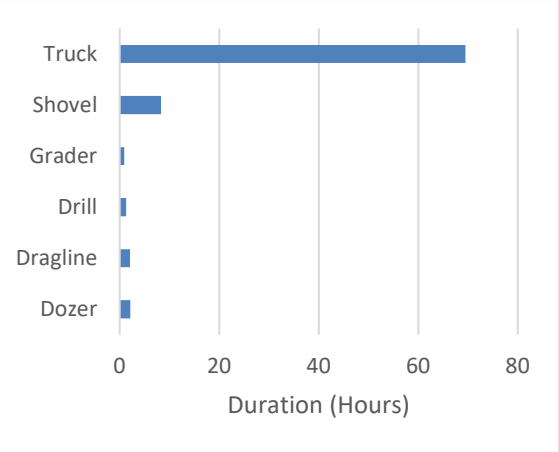


Figure 17: Operational Downtime by Equipment Type – November 2021

7.0 REHABILITATION

During November 2021 0.29 Ha of land was released, 6.12 Ha of land was bulk shaped, 1.41 Ha of land was topsoiled, 9.12 Ha of land was composted and 15.8 Ha of land was rehabilitated.

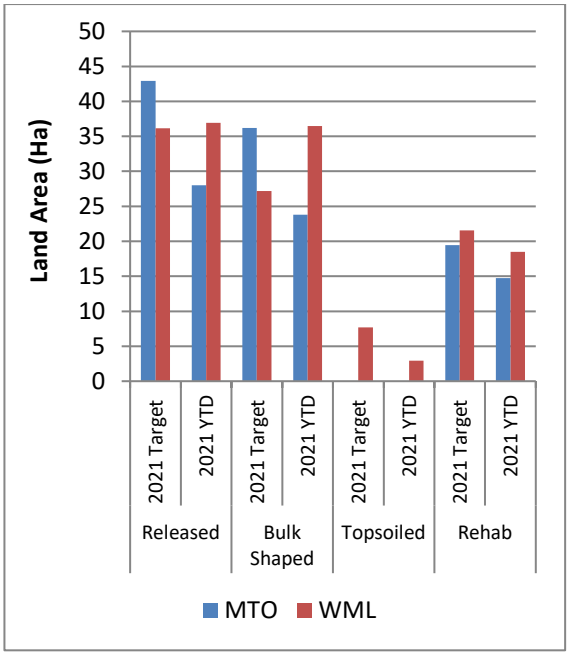


Figure 18: Rehabilitation YTD - November 2021

8.0 ENVIRONMENTAL INCIDENTS

There were two reportable environmental incidents recorded during the reporting period.

On 12 November 2021, two sediment dams overtopped their spillways due to a significant rain event. Rainfall started at approximately 6:30am on Wednesday 10 November 2021 and continued until approximately 7:00am on Friday 12 November 2021. A total of 110.6mm of rainfall was recorded during the period. Notifications to the relevant regulatory authorities was undertaken by the MTW Environment and Community Manager in accordance with the sites Pollution Incident Response Management Plan.

On 26 November 2021, a sediment dam overtopped its spillway due to a significant rain event. Rainfall started at approximately 11:34pm on Saturday 20 November 2021 and continued until approximately 5:20pm on Friday 26 November 2021. A total of 84mm of rainfall was recorded during the period. Notifications to the relevant regulatory authorities was undertaken by the MTW Environment and Community Manager in accordance with the sites Pollution Incident Response Management Plan.

9.0 COMPLAINTS

16 complaints were received during the reporting period. Details of these complaints are shown in **Table 10** below.

Table 10: Complaints Summary YTD

	Noise	Dust	Blast	Lighting	Other	Total
January	1	0	6	4	1	12
February	4	0	3	0	0	7
March	5	0	3	3	1	12
April	6	2	1	10	0	19
May	3	1	10	5	0	19
June	2	0	4	0	0	6
July	1	0	5	3	1	10
August	12	8	5	1	0	26
September	3	11	7	8	1	30
October	4	8	1	0	0	13
November	5	2	9	0	0	16
December						
Total	46	32	54	34	4	170

Appendix A: Meteorological Data

Table 11: Meteorological Data – Charlton Ridge Meteorological Station – November 2021

Date	Air Temperature Maximum (°C)	Air Temperature Minimum (°C)	Relative Humidity Maximum (%)	Relative Humidity Minimum (%)	Wind Direction Average (°)	Wind Speed Average (m/sec)	Rainfall(mm)
1/11/2021	24	7	85	30	162	1.9	0
2/11/2021	27	10	85	32	144	3.3	0
3/11/2021	28	10	86	28	135	2.7	0
4/11/2021	22	-	90	-	144	1.9	0
5/11/2021	19	11	99	76	157	2.0	16.6
6/11/2021	28	9	100	36	180	2.1	0
7/11/2021	25	12	99	60	189	1.3	6
8/11/2021	28	15	99	43	156	2.1	1.8
9/11/2021	28	14	96	36	151	1.9	0
10/11/2021	22	13	100	74	167	2.2	51.4
11/11/2021	23	11	100	72	185	2.7	25.8
12/11/2021	28	9	100	33	246	4.7	33.4
13/11/2021	18	9	74	42	301	5.7	0
14/11/2021	22	6	81	25	299	4.8	2.4
15/11/2021	23	6	75	26	295	5.5	0
16/11/2021	24	6	74	25	219	2.6	0
17/11/2021	25	8	80	35	137	3.1	0
18/11/2021	29	8	91	23	198	2.7	0
19/11/2021	27	13	92	46	237	2.5	1.4
20/11/2021	29	13	97	37	179	2.4	0.6
21/11/2021	17	10	99	88	165	3.6	26.6
22/11/2021	20	10	99	60	157	4.3	3.2
23/11/2021	25	11	99	58	152	3.3	0.8
24/11/2021	29	13	98	44	131	1.6	2
25/11/2021	27	15	99	64	134	1.2	11.6
26/11/2021	21	12	100	82	176	4.0	39.2
27/11/2021	17	10	97	74	169	5.3	2.2
28/11/2021	20	9	95	63	166	3.9	0
29/11/2021	22	10	88	61	142	2.1	0
30/11/2021	21	13	99	75	160	1.9	2.4

"-" Indicates that data was not available due to technical issues.

Appendix D: December 2021 Monthly Environmental Monitoring Report

**This Appendix will be provided at a later date.*