Yancoal
Mount Thorley Warkworth Operations
Community Consultative Committee Meeting
Monday 14 May 2018

Attendance

Chairperson	
Colin Gellatly	Independent Chair MTW CCC
Company Representatives	
David Bennett	Acting General Manager
Gary Mulhearn	Manager Environment & Community
Travis Bates	Specialist Community Relations
Community Representatives	
Graeme O'Brien	Community Representative
Stewart Mitchell	Community Representative
Christina Metlikovec	Community Representative
Adrian Gallagher	Community Representative
Observers / Presenters	
Hayley Frazer	Environmental Advisor / CCC Secretary
Bill Baxter	Observer / Technical Expert
Apologies	
Ian Hedley	Community Representative
Minutes	Sarah Purser

1. **Welcome;** Col greeted the CCC and welcomed David Bennett; Acting General Manger standing in for Jason McCallum and Gary Mulhearn; the new Environment & Community Manager at MTW, replacing Andrew Speechly who is now engaged full time at HVO.

   Acknowledgement of Country:
   We acknowledge the traditional owners, the Wonnarua people, of the land where we meet today and pay respect to Elders, past, present and future.

2. **Apologies;** Advised and recorded. Col advised that he would get in touch with Singleton Council's General Manager regarding Hollee's ability to attend the CCC Meetings and that currently there is no alternate in place for Council.

3. **Declaration of Pecuniary Interests / Conflict of Interest; Ongoing;** Col advised that both he and Sarah are engaged by Yancoal to provide the services of Independent Chairperson and meeting note taker. Stewart advised he is part of an organisation that has applied for a funding arrangement through the Company's Historical Heritage Management Fund.

4. **Out of Session Correspondence:-**

✓ 2017 Disturbance Query at Thorley and Dust Downtime correction - email 27 February 2018
✓ Previous Meeting Minutes - email 10 April 2018
✓ Agenda & Business Papers - 26 April, 2018

5. **Confirmation of the previous Meeting's Minutes;**
   Col confirmed that the Minutes for the Meeting 19 February 2018 had been circulated and following the comments period close had been endorsed by Chair. Col asked for the Minutes to be confirmed, no comments were put forward and the Minutes were taken as accepted.

6. Matters arising from the previous Meeting (Actions)

✓ ***Yancoal to look into replacing the Australian Flag at the Cockfighter Tavern to improve visual amenity;*** Hayley confirmed that a new flag had been ordered and will be put up.

✓ ***Hayley to clarify the day in which the blasting SMS insinuated the road was going to be closed for three hours;*** Hayley had not been able to find the exact day in question but acknowledged this did occur, Yancoal are looking to re-word text messages to indicate an "update", to avoid recipients interpreting them as the road being closed for hours at a time. Christina noted a lot of the messages are flowing on i.e. there may be one indicating 10.00 to 11.30, then another 11.30 to 12.30 and that they come through as a new text with different times. Christina asked if the new text cancels out the previous one and Hayley confirmed yes, the new text supersedes the previous one.

An example was provided on a Friday where the blast notification text had advised 12.30 - 1.30, people had postponed travel to 2.00, only to find the road was shut. Hayley confirmed there had been extreme conditions on that day. Stewart asked if the blast had gone ahead or if it had been cancelled as he had been stopped at the road closure just before 1.30, then let through at 1.40, he didn't hear a blast so he felt the road must have been immediately closed just after he travelled through. Stewart asked if that had been to clear traffic and Hayley responded the blast did go at 1.49 p.m. and yes, there are a few things around traffic queuing as MTW do not want to hold up travellers, therefore if it is safe to do so, they will let them through. Stewart provided another example of receiving a message at 11.56 regarding a re-scheduled blast to 12.00 - 1.00, he felt that if a traveller was already on the road they would have been bound to be caught up on that one.

Hayley advised that she had followed up with Drill & Blast and acknowledged there has been some teething issues that Yancoal are working to correct, she thanked Christina and Stewart for their feedback.

There was discussion over the functionality of the blast SMS system regarding advertisement of road closure times. It was agreed by all members that there was still some work to be done and MTW were committed to make this process more reliable. It is understood that advertised blast times are relied upon by the community, and MTW committed to ensuring road closures and advertised times are being monitored and improved where necessary.

Christina felt that there had been a commitment made for no blasting later than 3.00 p.m., however these were still occurring. Christina explained to David that the CCC had made this request to avoid children on buses being held up by road closures on their travel home from school.

Graeme felt the ongoing issue with blasting is that people make their travel plans based on their scheduled times. In addition, that there still remains issues with text notifications, as in some parts of the district there is no mobile service so he felt the system was not necessarily the best way to provide blast scheduling details. Christina advised mobile reception is poor at her residence but would still rather get the notifications than not. Graeme was unsure how the company could improve the blast window predictions as it is his understanding that the Bureau of Meteorology is only good 60 to 70% of time.

Col acknowledged the system needs to be constantly monitored as it rolls out and Hayley confirmed that MTW will keep the Blast Notification System on the Agenda to update the CCC on its progress and any improvements made, it was agreed that would also be good for the company as well.

ACTION 1 : Hayley to investigate re-wording text in the Blast Notification SMS System to indicate "updated" time frames to road closures and the possibility for MTW to differentiate between WML and MTO Blasts.

✓ ***MTW to advise Stewart of current overburden height to the east of West Pit;*** at this Meeting.

- ✓ ***Hayley to provide January disturbance maps to Ian. Followed up;*** email to all from Hayley 27 February 2018.

- ✓ ***Andrew to provide Ian with a contact at the RMS to address further speed zone enforcements at Putty Road. Complete;*** Andrew followed up via email 19 February 2018.

- ✓ ***Hayley to investigate the use of the access lane behind Hedweld Group of Companies by Yancoal employees. Complete;*** Hayley followed up with email to Ian 10 April 2018.

- ✓ ***MTW representative to attend a Safety Committee Meeting for Ian and provide detail on how the company manages Occupational Health & Safety with people that potentially work around dust.*** Hayley had made contact with Ian to organise a visit from the MTW Site Hygienist to present on exposure management and monitoring, MTW had also committed to attending the next Safety Meeting scheduled for June.

  Andrew to follow up with Ian on properties owned by Yancoal where there had been issues around dogs barking and roaming. Complete; Feedback provided to Real Estate agent (Bailey) that manages the tenancies for Yancoal in March 2018.

  Graeme advised that livestock owners were very concerned about roaming dogs, especially around young calves, he was not sure what Yancoal's Real Estate Agent was doing in respect of tenants having un-restrained dogs. Christina added that a Lease Agreement is a legal contract, usually for 12 months, and tenants can't be asked to leave if their dogs are barking or playing up. Christina felt this problem would only be known after the tenant had moved in and was under contract.

  Adrian felt this was not an issue for the Mine but rather a tenant problem and it was agreed that tenants should take responsibility for their dogs and an alternative avenue for resolution may be to contact Council. Graeme advised that he does not allow animals in rental properties and as the property owner you can set that criteria with the leasing Agent.

  David felt that people living in rural areas would tend to want to have dogs and Graeme noted the issue is more around concern that the dogs are causing a disturbance. Stewart advised he is not so much impacted by dogs roaming, though he noted a lot of them are not locked up or put in yards, his annoyance is around dogs barking and triggering each other off and that is a nuisance. Stewart explained the problem is in the Village, so it is not like comparing a situation where there are large rural properties with 100 acre paddocks.

  Stewart advised the problem had arisen since properties were rented and there seemed to be generally a lot more dogs, cars and motor bikes. Stewart felt six cars parked up in one house was rather suspect, as he would have expected for one family to reside there. The company felt that was not so unusual these days. Adrian advised that there also was concern in the community about items being removed from properties in Bulga.

  Col acknowledged that the rental properties are managed by Yancoal's Real Estate Agent and given the flow on effect of dogs, he asked the company to take into consideration, for the community, that when setting the lease terms for rental properties with the Agent that there be a condition about dogs.

  December 2018 CCC; Andrew to keep the CCC posted as to when the Lease for the Cockfighter Tavern may be ready to go out for Public Tender and anticipated re-opening date for the Pub when known to Yancoal.

- ✓ ***Ongoing***; Update to be provided at each Meeting.

Adrian believed the indicative lease value being spoken about for the Tavern was $1,500.00 per week and $150K for the business, he was concerned that it would not be able to turn over enough business to meet that expectation. Adrian had received anecdotal feedback regarding four people having had inspections, then not hearing anything more until the next word was that someone is moving in.

Adrian felt it might be wise for MTW to check in with the Agent, as some stories are making it look a bit pre-arranged and the process needs to be transparent. The general understanding from MTW site personnel is that the Lease is going through a Tender / Expression of Interest (EOI) process. Adrian felt that people would turn away at that price and when Yancoal say it's out there and that they would like to see it open, he felt they needed to give it a chance.

Christina was concerned also that none of the Tavern's details are on the Manenti Quinlan website and her email asking for detail on the property had been ignored, which she thought was very odd. Christina believed it should still be advertised, as a number of their properties are EOI and that the website had indicated that Quinlan was a specialist in Hotels, Pubs and Restaurants. Col felt there was an issue with the Agent not responding to Christina's request for information and asked for follow up by MTW.

Stewart advised that he is being asked by community about what is happening with the Tavern almost on a daily basis, such as when will it open etc. Stewart had queried this at the previous CCC and felt he didn't seem to be getting anywhere. Stewart was concerned that the new Management didn't know what was going on with the Tavern and he had hoped Management in this operation would know what is happening and convey that to community.

Stewart explained the Tavern is the heart of the community, for the public to get together and have a good time, and that is a way to keep the community together even though it has been badly disbursed of late. Stewart asked that it be recorded that the community are concerned about delays taking place in re-opening the Tavern.

Col asked what the time line was in the Tender process and Travis explained that the Cockfighter Tavern is managed by Yancoal's Land and Tenement Team and that he would seek an update from them as they do not report to site. Graeme felt that if the Land and Tenements Team are doing business just down the road from MTW, but don't report back to this site, then reporting linkages do not appear to be how they should be. Graeme felt that MTW being a neighbour should be part of the deal.

ACTION 2 : Col asked that MTW seek detail on the Property and Expression of Interest / Tender Process for the Cockfighter Tavern from the listing Agent; Manenti Quinlan and provide this to members post Meeting.

May 2017 CCC; MTW to keep the CCC up to date in matters pertaining to C&A's application to Singleton Council to close Wallaby Scrub Road, either at a meeting, or out of session should there be any update outside of two weeks prior to the next CCC Meeting.

✓ Gary to provide at today's Meeting.

7. Company Update - David Bennett (Acting General Manager)

THIRD CROSSING

- The Third Crossing (across Putty Road) has been completed and officially opened Friday 11 May 2018.
- Speed limit has been put back to 100 klm/hr after the RMS closed it out after their inspection.

- MTW are hauling waste material from the southern end of Warkworth pit to the Mount Thorley dump. David added that further to Stewart's query on rehab disturbance on Mount Thorley; that is the first place MTW are going in to build the landform back up.

- Trucks will be coming across under the Third Crossing adjacent to the mini strip.

- MTW will be building a series of roads up into the dumps between now and the end of 2018.

- It is anticipated that MTW will haul up to 20 million BCM's per year under that tunnel.

- There is potential to use the crossing for haulage of coal as well.

- MTW continue to mine coal from Loders Pit, they have met the Pit limit so are now mining to depth. At this time, any remnant coal will run over to the Mount Thorley Coal Handling and supplement coal from the Warkworth lease.

- David felt that less coal movement would be seen travelling over the existing bridge, rather that it would go via the new Third Crossing. The Bridge will still be used for trucks to the workshop and smaller earthmoving equipment and typically the main material will be moved along the third Putty Road crossing.

  Stewart asked how much mining life was left in Mount Thorley ? David responded there are two Draglines in Warkworth, the one in Mount Thorley will be used in 2019 for additional coal extraction around the end walls, then coal will be mined in small blocks to the end of 2019/2020. By mid 2020 David felt that mining activity in terms of extracting e.g. blasting will cease and from that point there would be a steady decline in the amount of coal that the company moves. In November 2017 the 4100 shovel was moved out of Mount Thorley and is now in Warkworth. David explained there is a lot less activity in Mount Thorley; one Dragline, one Excavator, a small number of Trucks and Dozers and a bit of drill and blasting, this will reduce to virtually nothing around this time in two years.

  MTW will continue to haul across via the crossing to fill out the final landform and there is a tailings storage facility to be completed at the northern end. The southern end of the Pit will be built back to final landform per the MOP.

  Stewart asked if the tailings dam would be below ground level ? David responded yes, and explained that in the 2014 Environmental Assessment the company had wanted to put the tailings dam in the southern end but that was not approved below ground level so the location was moved to the northern end due to the flood contour plain off Wollombi Brook.

  Adrian asked as the Warkworth Mine progresses to the West and when Mount Thorley is closed, what will MTW do with the northern washery ? David responded that the company will continue to use both wash plants. Adrian queried Warkworth's storage capacity to wash coal and also noted that mining is then getting further away. David advised that the company was looking at a few options, albeit if there is a business case one option may be to put conveyors in as typically coal haulage is not a high cost when compared to overburden. Adrian felt that this would potentially add to truck and coal movement and David agreed that as operations move away there will be greater distances to wash plants and the company will look to see if they can use conveyors rather than trucks, he advised they are not in a position to switch one washery off.

8. Operational Update

Draglines; MTW reported on two Draglines operating in Warkworth, one was walked onto a shutdown pad on the weekend of 12/13 May for 2 1/2 months, therefore only one Dragline will be operating in Warkworth for the next 70 days.

Haul Trucks; MTW have parked up 8 haul trucks this year, budgeted number was 80, so running 72.

Excavators; Shut down 1 out of fleet of 5, only running 4.

David explained that whilst MTW are taking some equipment out of production, they expect to do the same job and hit all targets with a bit less equipment.

Production; Slightly behind on waste and slightly ahead on coal production, MTW are on track to meet their budget for waste and coal movement requirements.

SAFETY SNAPSHOT

Members were provided with figures on Total Recordable Injury Frequency Rate (TRIFR) and Lost Time Injury Frequency Rate (LTIFR) for January 2017 to April 2018, David confirmed that April had been a good month with no lost time injuries. David advised of a program in place since April that is around behavioural type injuries and that there had been a focus on that. From a Safety point of view David felt there will always be work to be done and the company will never be at the point of feeling comfortable that they are doing all they can. Yancoal's main focus is to ensure all workers get home safe at the end of shift and David advised Yancoal will continue that drive, because they care about their people.

OPERATONAL DOWNTIME YTD

MTW Noise Monitoring YTD

	# CRO Assessments	# Individual Assessment above trigger	# Nights above trigger
2018 YTD	2121	33	8
2017	5990	18	10
2016	4851	84	34

It was noted that downtime was predominantly a result of dust and downtime relating to noise had reduced due to; equipment relocation i.e. going lower, 100% fleet attenuation and the parking up of approximately 10% of fleet.

REHABILITATION

Rehabilitation target for 2018 = 100 ha seeded

Works completed so far in 2018:

- ✓ 53.1 ha bulk shaped
- ✓ 15.4 ha topsoiled
- ✓ 20.5 ha composted
- ✓ 9.3 ha seeded

Key works for Quarter 2 2018 (April-June):

- ❖ Seeding works on Visual Bund (WML West Pit South)
- ❖ Seeding at North Pit Geofluv

Stewart asked if land is rehabbed and then re-disturbed e.g. at Mount Thorley, does that get re-calculated and taken back off the cumulative rehabbed figures and also go in as a new disturbance area ? Bill responded that any new disturbance or new rehabilitation disturbance is tracked and yes, if reported previously it comes back off the rehabilitation figures.

Stewart asked if MTW were going to open up the bund wall levy on Charlton Road, where the natural water course had been blocked off ? Stewart felt there was a serious problem with the wetland in Newport due to it no longer receiving any water runoff and thought it would be good if there was a larger catchment area supplying that swamp as it is a natural wetland.

Stewart was concerned about the 200 to 300 year old Red Gums all dying around that area. Stewart felt this was due to a large portion of the (now mined) catchment area no longer going under Charlton Road, and as that had previously supplemented the water level there was now a serious water problem. Stewart explained that Newport Swamp was a water fowl breeding area and there is a severe deficit of wetlands in this area, he was not sure what could be done by the company, as if it is some time before MTW restore part of that original run off, he felt by then it would be too late for the swamp.

Bill explained that the GeoFluv referenced to is a design style that utilises a more natural looking landform. Part of the design process is that drainage is the first step, and drainage is built into it rather than constant grades then a drop structure, making it a better landform. Stewart asked if the MTO final landform will drain back to the south-west and Bill confirmed that is correct, once the water quality is good enough there will be the ability to let it go across the road towards Salt Water Creek.

VERTEBRATE PEST MANAGEMENT

MTW provided a summary of vertebrate pest management for 2018. Bill explained the number of baits laid just gives it coverage for the area, MTW have data on how many are taken up for each station and there are also hot spots. Bill felt it would be difficult to get a total wild dog population but MTW have cameras in use and use on-track as a guide as well i.e. picking up dog prints.

Graeme felt total numbers would give him a better sense of how effective pest management is and provide that to the company as well, i.e. yes MTW are on top of this or more baiting needs to be done. Bill added that it had been interesting to see the number of takes going up and down over time.

GRINDING GROOVES RELOCATION

The need for removal of grinding grooves site had been known for almost a decade, so the program had long been socialised with the Registered Aboriginal Parties (RAPs).

- The methodology for removal was developed with the RAPs & technical consultants over the course of many meetings & several site visits.
- All possible geotechnical investigation & testing was completed (with RAP participation) to give all parties comfort that the best methodology would be employed
- However, the potential for damage to the grooves & slabs during the removal process was also reiterated at each discussion with the RAPs
- The removal methodology was endorsed by the RAPs & included in the MTW Part 3a/SSD Aboriginal Heritage Management Plan, which was subsequently approved by OEH & DP&E.
- The removal proceeded as per this endorsed methodology, with no protest from the Aboriginal community
- The removal was completed very successfully

COMMUNITY RELATIONS UPDATE

Near Neighbour Amenity Resource

In 2018 MTW have offered installation of under sink filters for residential properties surrounding their operation

- 32 properties have had filter systems installed

Community Investment

MTW site donations program is now accepting applications from local community groups within the Singleton LGA. Please contact Travis Bates for an application form. Programs supported in April include:

- Wildlife Aid
- Greta-Branxton Junior Rugby League
- Singleton Golf Club Lady's Annual Open Day
- Wanaruah Local Aboriginal Land Council –NAIDOC Week Awards
- Singleton Theatrical Society production of 'Mary Poppins'
- Rotary Club of Singleton on Hunter Inc –Singleton Art Prize

Travis advised that from a meeting regarding Site Donations it had been agreed for Yancoal to roll out a different funding approach, with a broader more all-encompassing Community Program and a corporate type strategy that will also allow for bigger partnerships.

9. Community Feedback

Graeme O'Brien

Graeme queried the time it would take for the RFS to use the Emergency Services trail within the mining lease once Wallaby Scrub Road is closed, as the main priority in fire suppression is speed and access of equipment. Stewart believed the proposed fire trail was 2.5 kilometres longer than Wallaby Scrub Road and felt it would be far better having a gate off Putty Road (at the southern end of the operations) for emergency vehicles to go straight in. Hayley advised she could follow up if there were longer term plans for future access roads.

Graeme felt it did not make sense for the Rural Fire Service to endorse that sort of structure for fire vehicle access, he confirmed that consultation did take place but he was not sure at what level or if any figures on travel times were done. MTW confirmed that they understood the approved path had also taken into account their own Environmental Assessment process along with comments from the RMS.

Stewart asked if the fire trail was located inside the mine site area and Hayley confirmed that it is inside MTW's property. Stewart asked why the area had been cleared to such a wide extent as it looked like there had been 80 to 100 metre strips cleared there in three locations and asked if that was something to do with the power lines.

MTW responded the clearing and excavating had been undertaken in preparation for the construction of the following infrastructure; Water Management, Road including the Fire Trail and Power. MTW confirmed that there is mulch in place as a stabilising agent and the road surface will be gravel.

Stewart raised concerns over timeliness of both alternatives; being able to travel north either via the Emergency Services Road in place of Wallaby Scrub Road or the alternate Golden Highway route.

Graeme asked if there were appropriately trained personnel on site to assist the RFS, he understood the mine has gear to spray water. Hayley confirmed the company has a fully trained Emergency Response Team; ESO's, on site. Graeme was concerned should a fire truck arrive to attend to a fire on site that they may not be given access straight away. David responded that if emergency services turned up at the front gate the company would have someone there to meet that vehicle, if access was required via the rural fire service track then emergency services should have access to that straight away.

Stewart noted that the company had mentioned an update on Wallaby Scrub Road, it was agreed by members to run through that presentation here, rather than as scheduled for General Business.

Company Update : Wallaby Scrub Road; Presented by Gary Mulhearn

Members were handed "Stakeholder Update - Wallaby Scrub Road - Please refer to extracts below

CLOSURE OF WALLABY SCRUB ROAD; Reference Stakeholder Update 14 May 2018

"On 28 August 2017, Singleton Council resolved that an application be made by Council in its capacity as the roads authority, to close 5.99km of Wallaby Scrub Road from the intersection of Putty Road.

Council submitted its application to the NSW Department of Primary Industries - Lands on 18 December 2017, with a determination for approval to be made by the Minister for Lands and Forestry.

The Department will traditionally undertake a review of the report and documentation within 60 days of receipt of the application from Council, and a determination for the closure of the road is expected soon.

During the same meeting, Singleton Council also resolved, subject to the Minister's approval, to sell the land title of the close road. Mount Thorley Warkworth continues to work with Council towards finalising the sales process."

CURRENT WORKS NEAR WALLABY SCRUB ROAD; Reference Stakeholder Update 14 May 2018

"In preparation for the continued operation of Mount Thorley Warkworth, the following work is currently being undertaken west of Wallaby Scrub Road:

- *We have begun clearing land for the construction of essential infrastructure to support continued operations;*
- *Commenced installing new fencing around the future operating boundaries to ensure a safe, secure mine site;*
- *Started construction of an access road to enable access for emergency services; and*
- *Commenced the installation of power poles, in preparation for the require diversion of existing power lines. These lines provide power to the mine site.*

Mount Thorley Warkworth also expects to begin construction of three dams west of Wallaby Scrub Road in August 2018, to support proposed future mining areas."

COMMUNITY INFORMATION LINE; Reference Stakeholder Update 14 May 2018

"If you require further information regarding current or proposed works related to Wallaby Scrub Road or the Mount Thorley Warkworth complex, please contact our ***Community Information Line on 1800 656 892****"*

Stewart Mitchell

Stewart felt that according to the approval documents it had looked like when MTW are at the end of mine, the final void would sit right on top of where Wallaby Scrub Road is. MTW responded that at the end of mine life, the bottom of the void will be west of Wallaby Scrub Road i.e. mining will continue through Wallaby Scrub Road out to the consent limit and then will batter down when that limit is reached.

Stewart queried the dumping on the overburden heap at West Pit, the one that is 180RL and queried why MTW could not back fill that void now. MTW responded there will be an area left at the top that will bench down and be quite steep in terms of a void, then there will be the final waste dump dozed down to a level. The reason MTW are dumping is that they are building to a landform they have committed to and operationally, in terms of dump space, MTW need to keep the mine advancing, thus the reason for dumping to those heights.

Stewart clarified his query on dump height was in relation to where MTW were currently dumping in the northern section, that appeared to be really high, and it was confirmed that the height for that section at North Pit was at 190 RL and height at South Pit was 180 RL. Stewart was concerned that 190 RL is about 25 metres higher than the existing highest grounds topography and the final landform will be much higher than originally proposed.

Stewart queried how much is still a void in North Pit and MTW advised that it is still open and that void will continue down dip to the west. Stewart asked if the company will fill behind it and MTW confirmed that there would be capping of a tailings dam and the rehabilitation; GeoFluv landforms will continue to move along with operations to the west and the void will move down dip.

Stewart asked where MTW will get the fill to put in that void, he was concerned all overburden was being dumped into Loders Pit at Mount Thorley. The company explained that at the end of mine life there will be a mining void, in terms of filling that in, there is money allocated in the company's closure budget and there will be sequencing work on how that will be tactically dumped back in as operations get closer to the end of mine life.

Graeme asked if there will be enough funding and MTW confirmed that the budget is recalculated every year based on cost estimates, size of void etc. Graeme had heard the final void would take 1,000 years to fill with water and its top level would be below the aquifers in the Wollombi Brook and Hunter River, MTW advised they could only talk to working towards the final void and the dump strategy to get there.

MTW advised that not all overburden, but rather a proportion of it, will get transferred across to Mount Thorley over the next 21 years and for now MTW need to dump where they need to keep operating i.e. the reason MTW are dumping high at the moment is due to needing dump space. Stewart felt it would have been easier to backfill rather than to excavate, especially with gravity pushing it in and MTW felt a proportion of that may need to be re-handled. The company advised they have to meet the commitment of the final consent in relation to both the excavation and dump side.

Stewart understood that properties in the Acquisition Zone, that had been acquired by Yancoal, would need to be vacated at some stage due to the reason for their acquisition being that they would become unliveable. Stewart understood that there are a number of properties rented now, so that the company was getting a return, which he felt was alright at the present time as the full effects of mining had not occurred, however he felt once mining had gone through Saddleback Ridge and Wallaby Scrub Road and the impacts kick in, then those houses would be cleared out. Stewart believed that this was a condition of consent and E.I.S. that they were for acquisition, removal and destruction, he was interested to know when they would be vacated as that would result in that number of households being removed from Bulga in the long term.

MTW advised that properties may be up for acquisition upon request, despite that they can be purchased and re-leased out. The normal case in affectation is to give the landowner the opportunity to raise a hand and elect to be purchased, it does not necessarily mean on all occasions that the house is not liveable, on many occasions it can be leased out particularly if the potential impact is around noise.

Stewart raised concerns about the future population of Bulga long-term should properties be left vacant. Graeme was also concerned that the village would become deserted due to the encroachment of mining, making reference to Warkworth Village. Graeme was also concerned about the closure of Wallaby Scrub Road as that is part of the Old Great North Road.

ACTION 3: MTW to review their Consent in relation to Property Acquisition conditions to seek detail around Stewart's interpretation that he felt this had specified that Yancoal owned properties were to be eventually vacated, removed and/or destructed

Stewart confirmed that he had felt that there was to be a report issued to the Department of Planning on the trials conducted by the New England University and the success of the regeneration trial they carried out in relation to the Warkworth Sands Woodlands WSW.

Hayley confirmed that the previous Development Consent had said the company needed to do research into the best practice to establish WSW and Bill advised this research was based on improving knowledge around the WSW community particularly in relation to species and soil profiles.

Bill explained the work conducted by UNE was around looking at the soil seed bank which was rated from good quality, medium quality and degraded, to ascertain if it would be valuable as a resource from a re-vegetation point of view. In addition to identifying species in the seed bank that would be useful in the poorer WSW areas, planting trials were conducted. The work MTW are conducting now is taking good quality top soil to areas and planting out with good results being seen where they have utilised top soils.

Stewart asked if sand was being moved from the mine site to Archerfield and Bill responded that they are moving WSW top soil. Stewart felt the approval was based on Archerfield standing on its own with regeneration vegetation out of WSW not needing to be supplemented. Bill explained that this top soil was getting cleared in the mine site. Although MTW did not need to strip areas at WSW to get that for Archerfield and the survival rate for tube stock on non topsoiled areas was around 60 to 65%, there was still some advantage using the topsoil where around 80% survival counts were recorded.

Stewart felt that was not the original intention as an offset and that had been assuming vegetation could be rejuvenated on that land, he felt this indicated that supplementing was required to get a successful hold at Archerfield. Bill advised the value of utilising the topsoil at Archerfield is that it has a bulk sand and clay profile, in addition there is a seed source and organic material, mulching vegetation on the way through prior to stripping the top soil resulted in a lot of microbial activity as well, so there were a lot of good factors volunteering out of this top soil.

MTW confirmed that the intent of the research was to guide the company on the most effective methods to regenerate WSW. Hayley confirmed that detail around that study can be found in Volume 2 of the company's 2014 EIS - Warkworth Sands Restoration Manual - Appendices A to M.

Stewart felt that the Department of Planning had been concerned if that would be successful or otherwise and asked if the Department furnished a report that it had satisfied their requirements. Hayely advised Development consent DA-300-9-2002-i (superseded by SSD-6464) required a detailed research program for the Warkworth Sands Woodland (WSW) Community (Schedule 4 Cond.3). The approved Biodiversity Management Plans under SSD-6464 now guide the re-establishment of WSW. Therefore, the company had met requirements by providing the information that is in that EIS, subsequently approved by the Department of Planning and new Management Plan under the development consent.

Stewart understood there had been a Bond or Guarantee and asked had that been sorted ? Bill confirmed a bond had been submitted by Yancoal per their consent and that is held by the Division of Resources and Geoscience. The intent of the bond is if the company are not able to demonstrate that they are successfully doing re-vegetation there, the Government has access to those funds to take over that.

Bill advised that there continues to be a re-vegetation program underway with activities including planting, maintenance, weed control and monitoring to demonstrate the company is being successful. That will then be submitted to Government to show that MTW are heading in right direction and if they do not think the company are doing enough or not successful, they have the Bond they can fall back on.

Christina Metlikovec

Christina advised that a number of local Bulga residents have expressed an interest to be on the CCC and asked if people from other areas would be eligible to become members. Col confirmed that members are to be local or within the affected LGA area and that Singleton would be representative of this. It was felt there was a reasonable representation from Bulga, however it was put to members if they felt more community members were required and Stewart added that he understood there could be up to seven community reps. It was noted that the CCC Guidelines state the point of community members is to bring other residents issues into the CCC and to take information back out.

DUST UPDATE 5-8 MAY 2018; requested by Ian

Hayley advised there had been a fair bit of downtime reported for this period. Monitoring results were provided that showed MTW in compliance with management conditions. Hayley advised that both she and Community Response Officers respond to any dust alarms and that when Hayley was out in the mine site at the time the pictures were taken it was quite foggy. Hayley confirmed that MTW had responded to any alarms and visually inspected the perimeter as required. Hayley explained that she had wanted to advise what actions had been undertaken on that Monday morning and confirm that MTW had been in compliance with operational criteria, however she was mindful that this was in response to a direct enquiry from Ian so she would like him to have the opportunity to discuss this and respond.

ACTION 4: Col asked Hayley and Gary to take the feedback and data presented in their Dust Update 5-8 May 2018 to Ian out of session.

10. General Business & Future Dates

EXPLORATION LICENSE APPLICATION; presented by Gary

Yancoal have submitted an Exploration License Application (ELA) within their existing operations to investigate whether deeper seams are prospective. A plan of the ELA area was presented to CCC members. The ELA will be advertised in the Singleton Argus and The Land newspapers

Adrian queried if that may lead to any potential underground mining and the company responded that they will have to check the resource to see if it is minable, conduct more studies around the exploration licence area, and that a lot of desk top work was being done. Gary explained these works were within the current mining lease but just deeper.

11. Next Meeting : Monday 13 August 2018 : 2.00 p.m. / Future Meeting; 12 November 2018

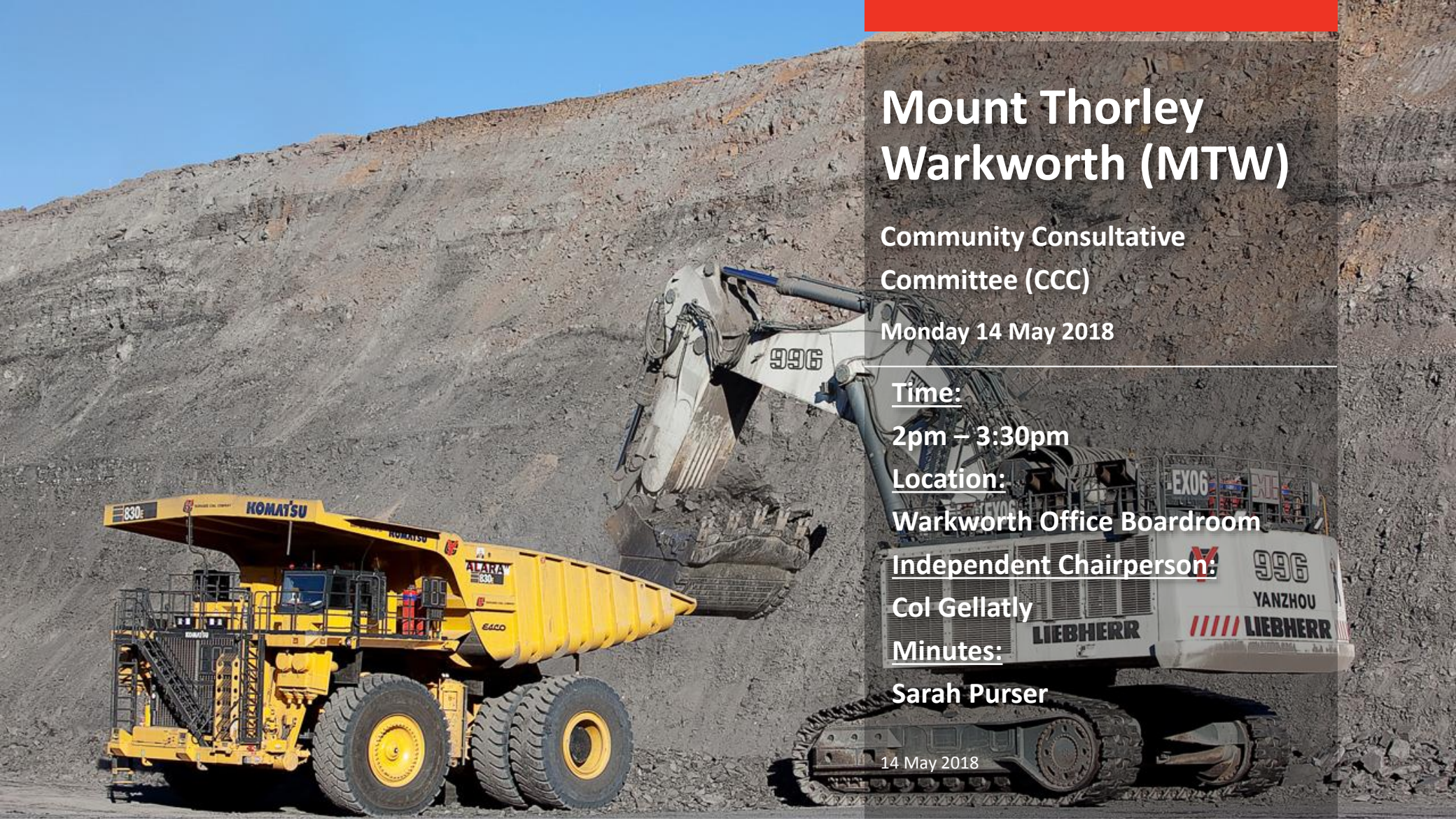
ACTIONS ARISING FROM THIS MEETING

Action	Page	Description
1	2	**Hayley to investigate re-wording text in the Blast Notification SMS System to indicate "updated" time frames to road closures and the possibility for MTW to differentiate between WML and MTO Blasts.**
2	4	**Col asked that MTW seek detail on the Property and Expression of Interest / Tender Process for the Cockfighter Tavern from the listing Agent; Manenti Quinlan and provide this to members post Meeting.**
3	10	**MTW to review their Consent in relation to Property Acquisition conditions to seek detail around Stewart's interpretation that he felt this had specified that Yancoal owned properties were to be eventually vacated, removed and/or destructed**
4	10	**Col asked Hayley and Gary to take the feedback and data presented in their Dust Update 5-8 May 2018 to Ian out of session.**

ONGOING ACTIONS

May 2017 CCC; MTW to keep the CCC up to date in matters pertaining to C&A's application to Singleton Council to close Wallaby Scrub Road, either at a meeting, or out of session should there be any update outside of two weeks prior to the next CCC Meeting.

December 2018 CCC; MTW to keep the CCC posted as to when the Lease for the Cockfighter Tavern may be ready to go out for Public Tender and anticipated re-opening date for the Pub when known to Yancoal.
Ongoing; Update to be provided at each Meeting.



Mount Thorley Warkworth (MTW)

Community Consultative Committee (CCC)

Monday 14 May 2018

Time:
2pm – 3:30pm

Location:
Warkworth Office Boardroom

Independent Chairperson:
Col Gellatly

Minutes:
Sarah Purser

14 May 2018

Reaching new horizons together

YANCOAL
兖煤澳大利亚有限公司

Acknowledgement of Country

We acknowledge the traditional owners, the Wonnarua people, of the land where we meet today and pay respect to Elders, past, present and future.

Agenda

1. Welcome (CoI)
   - Welcome New E&C manager Gary Mulhearn
2. Apologies (CoI)
3. Declaration of pecuniary interests / conflicts of interest (CoI)
4. Correspondence (CoI)
5. Confirmation of the previous meeting's minutes (CoI)
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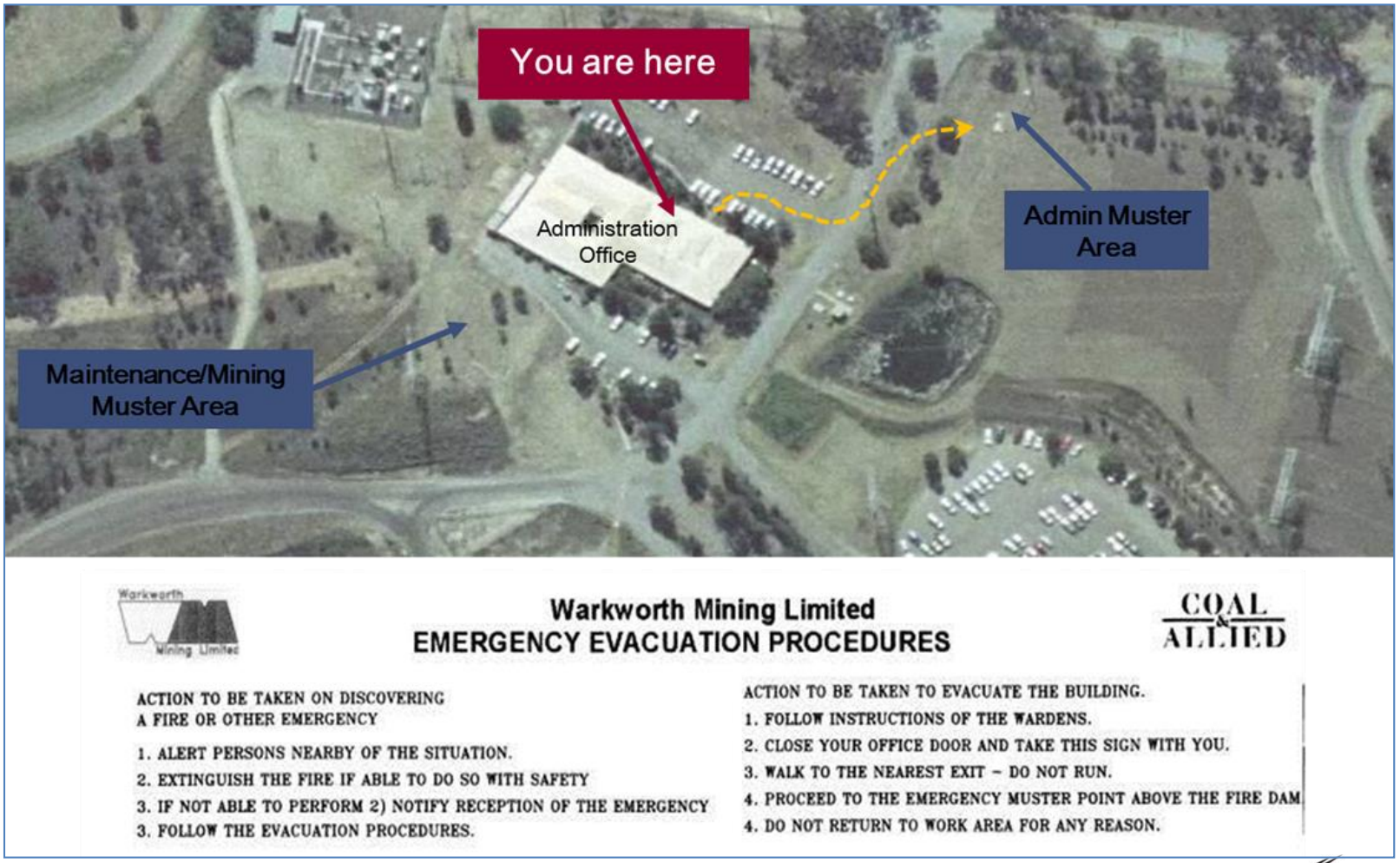
1. Welcome



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2. Apologies

- Ian Hedley

- Andrew Hodge – Observer
- Bill Baxter – Observer/Technical Expert

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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; and/or
- 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), November 2016.*

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4. Correspondence

- 2017 Disturbance Query and Dust Downtime (email 27/02/2018)
- Previous Minutes (email 10/04/2018)
- Agenda & Business Papers (26/04/2018)

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5. Confirmation of the Minutes

- Chairperson to confirm previous meeting's minutes

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6. Matters arising from previous meetings

Action No.	Actions
1	Yancoal to look into replacing Australian Flag at the Cockfighter Tavern to improve visual amenity. [HF to organise – Update: new flag has been ordered]
2	Clarify the day in which MTW Blast notification system insinuated 3 hour road closure. [HF - MTW to investigate re-wording text in the SMS system to indicate “Updated” time frames to road closures].
3	Investigate possibility of re-wording blast SMS notification system to differentiate between WML and MTO blasts. [HF – to complete by next meeting]
6	Advise Stewart of current overburden height to the east of West Pit. [HF- This meeting]

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6. Matters arising from previous meetings

Items Addressed Post Meeting (Actioned Post Meeting)	
4	Provide January disturbance maps to Ian. [**Followed up:** Email from Hayley on 27/02/2018]
5	Provide Ian contact at RMS to address further speed zone enforcements at Putty Road. [**Complete:** AS followed up with an email on 19/02/2018]
7	Investigate the use of access lane behind Hedweld Group of Companies by Yancoal employees. [**Complete:** HF followed up with email to Ian 10/04/2018]
8	MTW representative to attend a Safety Committee Meeting for Ian and provide detail on how the company manages Occupational Health & Safety with people that potentially work around dust. [**HF:** Contacted Ian to organise visit from MTW site Hygienist to present on exposure management and monitoring.]
9	Andrew to follow up with Ian on properties owned by Yancoal where there had been issues around dogs barking and roaming [**Complete**: Feedback provided to Real Estate agent that manages the tenancies for Yancoal March 2018]

6. Matters arising from previous meetings

	Actions – Ongoing
Action 17 (May 2017 CCC)	MTW to keep the CCC up to date in matters pertaining to C&A's application to Singleton Council to close Wallaby Scrub Road, either at a meeting, or out of session should there be any update outside of two weeks prior to the next CCC Meeting. [**Ongoing:** No further update available since previous CCC meeting]

YANCOAL 兖煤澳大利亚有限公司

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6. Company Update

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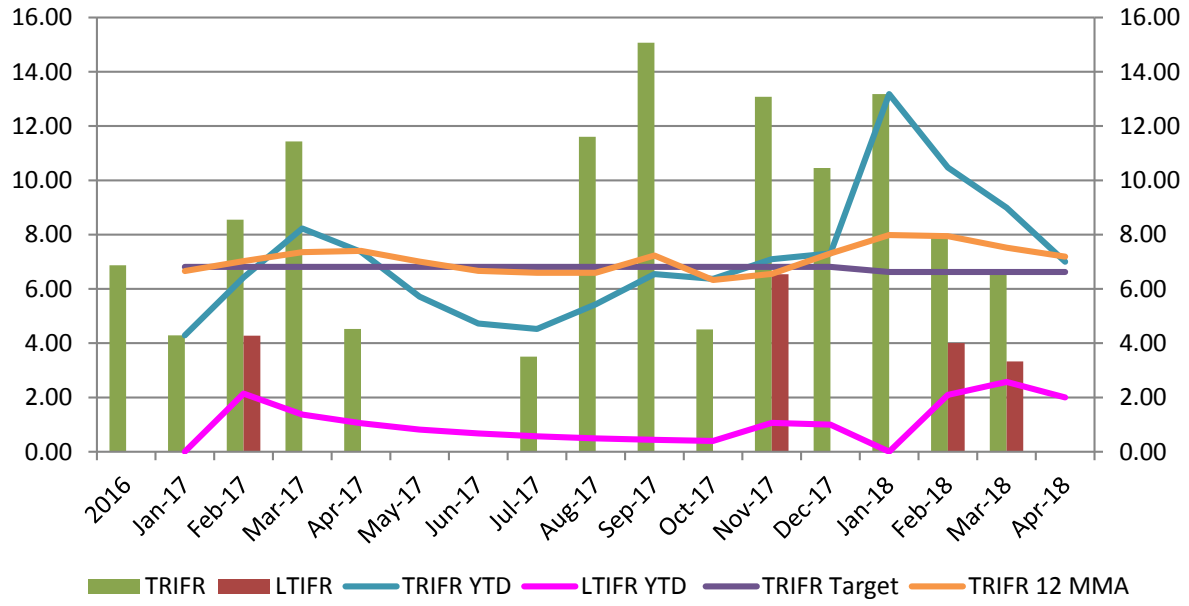
Safety Snapshot

- April TRIFR below MTW TRIFR Target (0.00 v 6.62)
- April injuries 0
- YTD TRIFR above MTW TRIFR Target (7.00 v 6.62)
- There has been 2 x LTI, 3 x RWI and 2 x MTI in 2018



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6. Company Update

- Third crossing has been completed!

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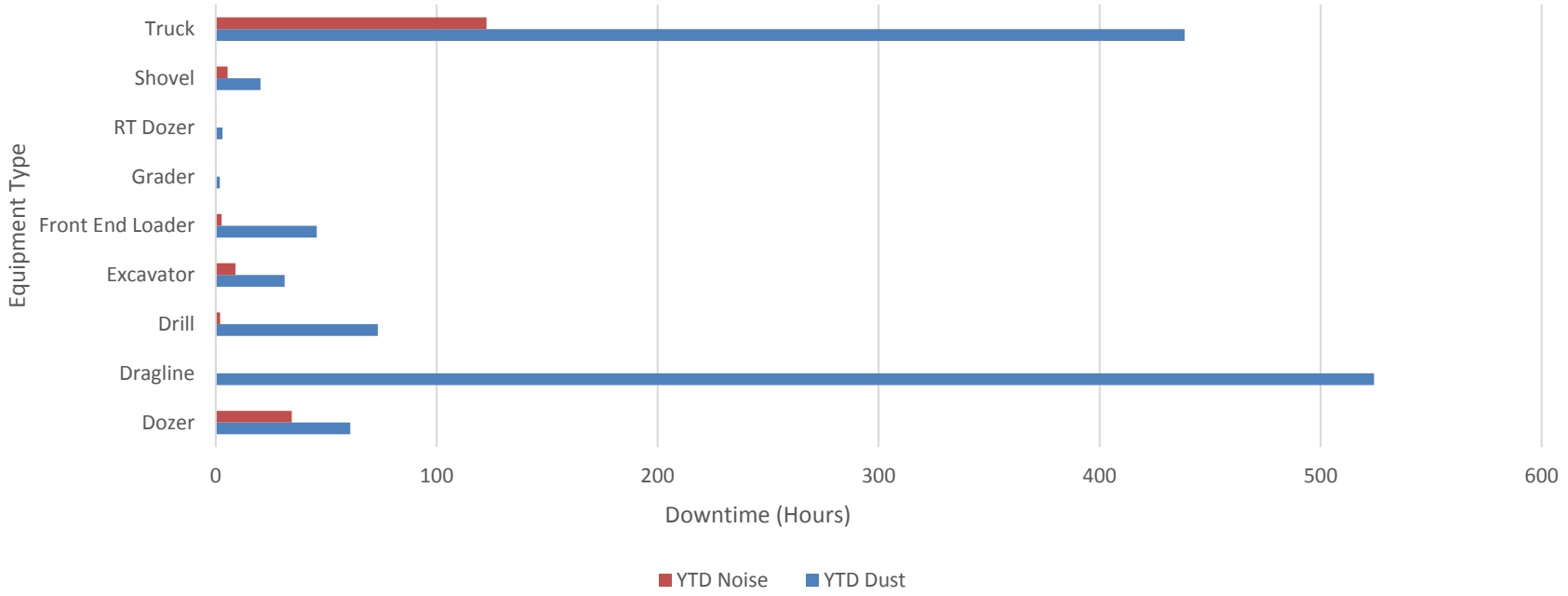
Operational Downtime YTD



MTW Noise Monitoring YTD			
	# CRO Assessments	# Individual assessment above trigger	# Nights above trigger
2018 **YTD**	2121	13	8
2017	5990	18	10
2016	4851	84	34

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MTW Rehabilitation

Rehabilitation target for 2018 = 100 ha seeded (outlined in red)

Works completed so far in 2018:

- 53.1 ha bulk shaped
- 15.4 ha topsoiled
- 20.5 ha composted
- 9.3 ha seeded

Key works for Quarter 2 2018 (April-June):

Seeing works on Visual Bund (WML West Pit South)

Seeding at North Pit GeoFluv

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Vertebrate Pest Management

Summary of Vertebrate Pest Management 2018:

2018 YTD	1080 Baiting			Trapping	Shooting		
	Total Lethal Baits Laid	Takes by Wild Dog	Takes by Fox	Wild Dog	Feral Pig	Hares	Fox
MTW	**120**	**60**	**4**	**1**	**8**	**8**	**-**
MTW BA	**120**	**78**	**3**	**-**	**4**	**6**	**3**

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Grinding Grooves Relocation

- The need for removal of grinding grooves site had been known for almost a decade, so the program had long been socialised with the Registered Aboriginal Parties (RAPs).
- The methodology for removal was developed with the RAPs & technical consultants over the course of many meetings & several site visits.
- All possible geotechnical investigation & testing was completed (with RAP participation) to give all parties comfort that the best methodology would be employed
- However, the potential for damage to the grooves & slabs during the removal process was also reiterated at each discussion with the RAPs
- The removal methodology was endorsed by the RAPs & included in the MTW Part 3a/SSD Aboriginal Heritage Management Plan, which was subsequently approved by OEH & DP&E.
- The removal proceeded as per this endorsed methodology, with no protest from the Aboriginal community
- The removal was completed very successfully

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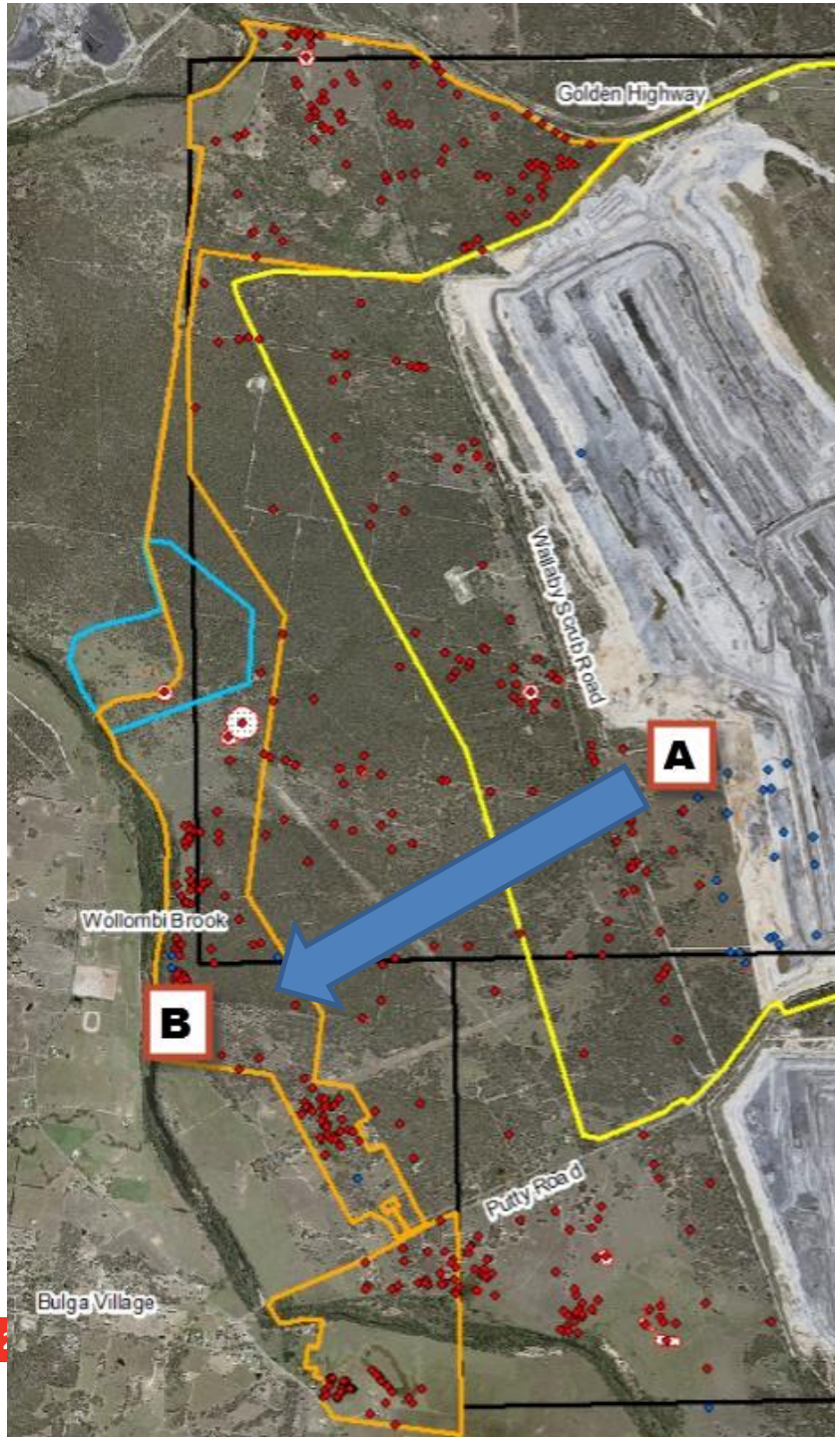
Hydraulic splitters

1.8m dia. rock saw

Excavated site ready for lifting



PROPOSED FINAL LOCATION FOR SITE M GRINDING GROOVES

Community Relations update

Near Neighbour Amenity Resource

In 2018 MTW have offered installation of under sink filters for residential properties surrounding our operation

- 32 properties have had filter systems installed

Community Investment

MTW site donations program is now accepting applications from local community groups within the Singleton LGA. Please contact Travis Bates for an application form. Programs supported in April include:

- Wildlife Aid
- Greta-Branxton Junior Rugby League
- Singleton Golf Club Lady's Annual Open Day
- Wanaruah Local Aboriginal Land Council – NAIDOC Week Awards
- Singleton Theatrical Society production of 'Mary Poppins'
- Rotary Club of Singleton on Hunter Inc – Singleton Art Prize

TB

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9.0 Feedback From Community Reps

Any other feedback via Community reps?

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10.0 General Business & Future Dates

- Cockfighter Tavern update: Broker has been engaged to find suitable tenant. No further update.
- Wallaby Scrub Road Update today

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MTW Offset Management

- Stuart requested information on UNE report for Warkworth Sands Reestablishment.
- Development consent DA-300-9-2002-i (superceded by SSD-6464) required a detailed research program for the Warkworth Sands Woodland (WSW) Community (Schedule 4 Cond.3)
- **Research – Warkworth Sands Woodland**

  3. Prior to clearing any Warkworth Sands Woodland on the site, the Applicant shall conduct research, or support research, to:
     (a) Improve existing knowledge on the Warkworth Sands Woodland Community;
     (b) Identify the extent of Warkworth Sands Woodland Community in the NDAs, HMAs, and on-site;
     (c) Identify areas within the NDAs, HMAs, and either on or off-site where the Warkworth Sands Community could be re-vegetated; and
     to the satisfaction of the Director-General.

     Based on this research, and in consultation with the Hunter Coalfield Flora and Fauna Advisory Committee, the Applicant shall determine the best practice for re-establishing the Warkworth Sands Woodland Community to the satisfaction of the Director-General.

- The research informed the WSW restoration manual which supported the 2014 EIS
- Approval granted for SSD-6464 in 2016 including Schedule 3 conditions 36 and 37 outlining the remediation plan for WSW
- The approved Biodiversity Management Plans under SSD-6464 now guide the re-establishment of WSW.

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Dust update 5-8 May 2018

- Response to Ian Hedley Dust enquiry

Date	North Warkworth	Bulga Boundary	Conveyor/ MTIE	Dagline Loop	Heavy Bridge	Warkworth	Bulga	Wallaby Scrub Road
5/05/2018 0:00	4	4	8	20	8	22.6	9.8	26.2
6/05/2018 0:00	4	4	8	20	8	31.9	8.6	24.1
7/05/2018 0:00	1.4	1.4	2.9	7.2	2.9	17.7	8.6	34.8
8/05/2018 0:00	5.9	3.7	6.4	5.2	17.7	-	11.6	-

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MTW Exploration License Application

- Yancoal have submitted an Exploration License Application (ELA) within our existing operations to investigate whether deeper seams are prospective.
- The ELA will be advertised in the Singleton Argus, and The Land newspapers (likely in late May 2018).

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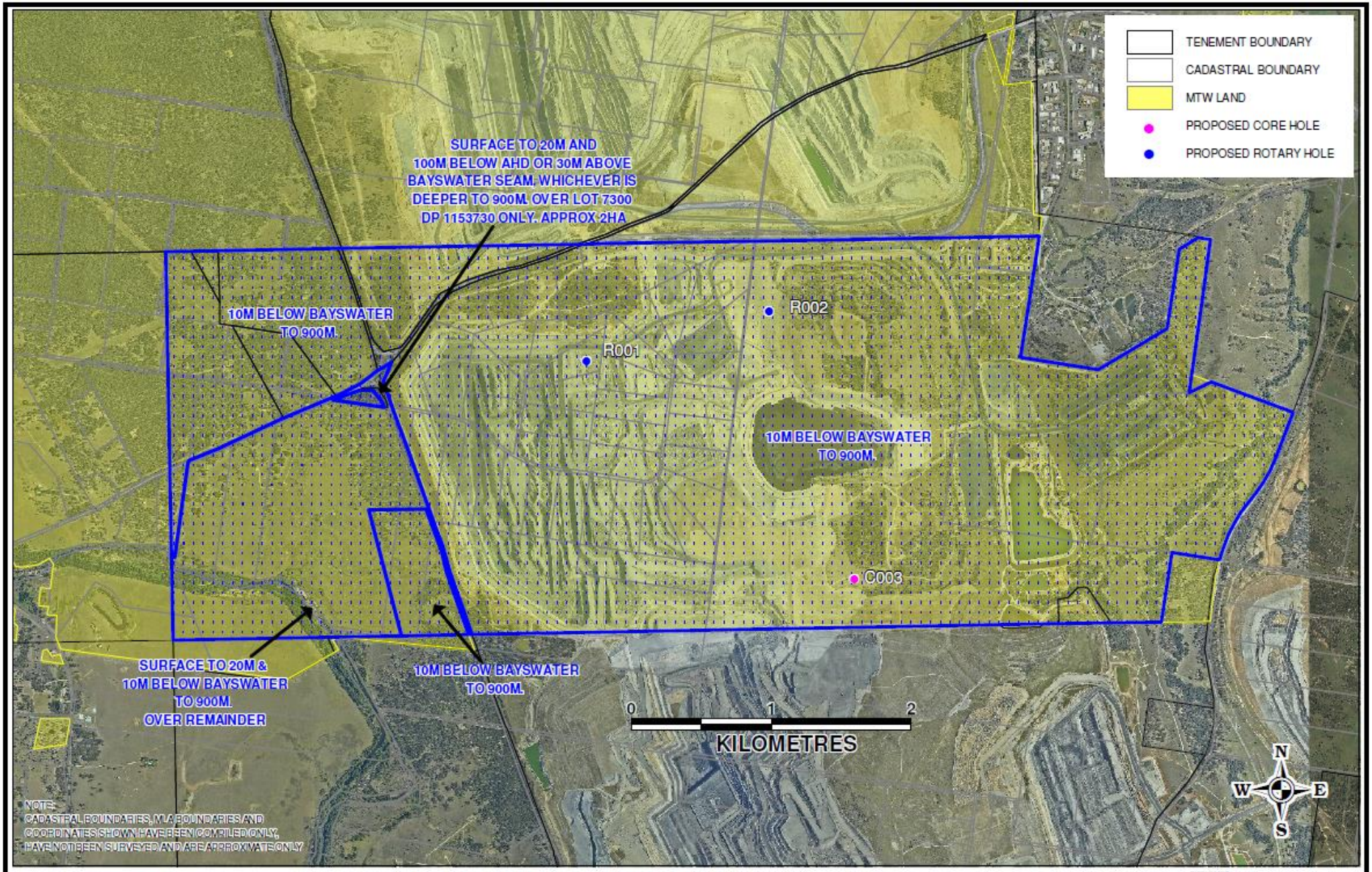

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MTW

ELA 20X Proposed Drilling

File: P_MTW_MTO_ELA 20X Exploration Studios 180409.wor
P_MTW_MTO_ELA 20X Proposed Drilling 180409.PDF

Date:	09/04/18
Produced By:	SC
Map Size:	A4 Landscape
Coordinate System:	MGA94 Zone 56
Revision	01
Data Source	Various

Other General Business & Future Dates

Other General Business?

Next Meeting Date

13 August 2018 – MTW Board Room

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11.0 Meeting Close

Thank you. Please travel safely.

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Mount Thorley Warkworth Community Consultative Committee (CCC)

BUSINESS PAPERS – May 2018

Contents page

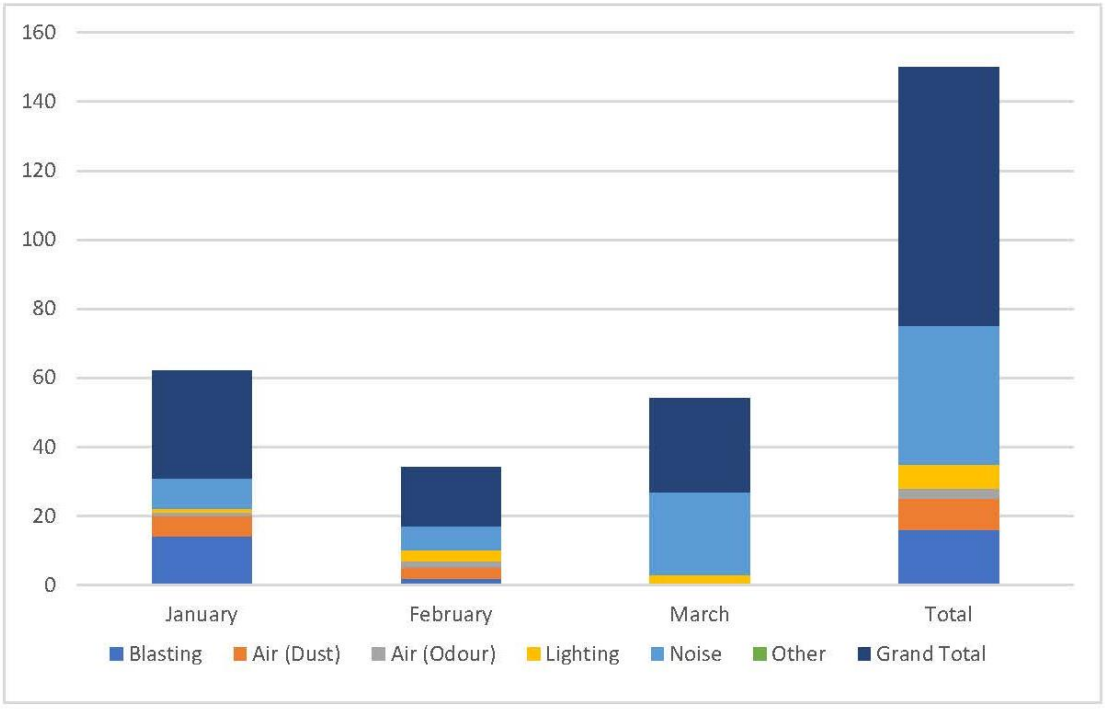
Appendices

1 COMPLAINTS

Complaints overview for Quarter 1 and YTD 2018 (01.01.2018 - 30.03.2018)

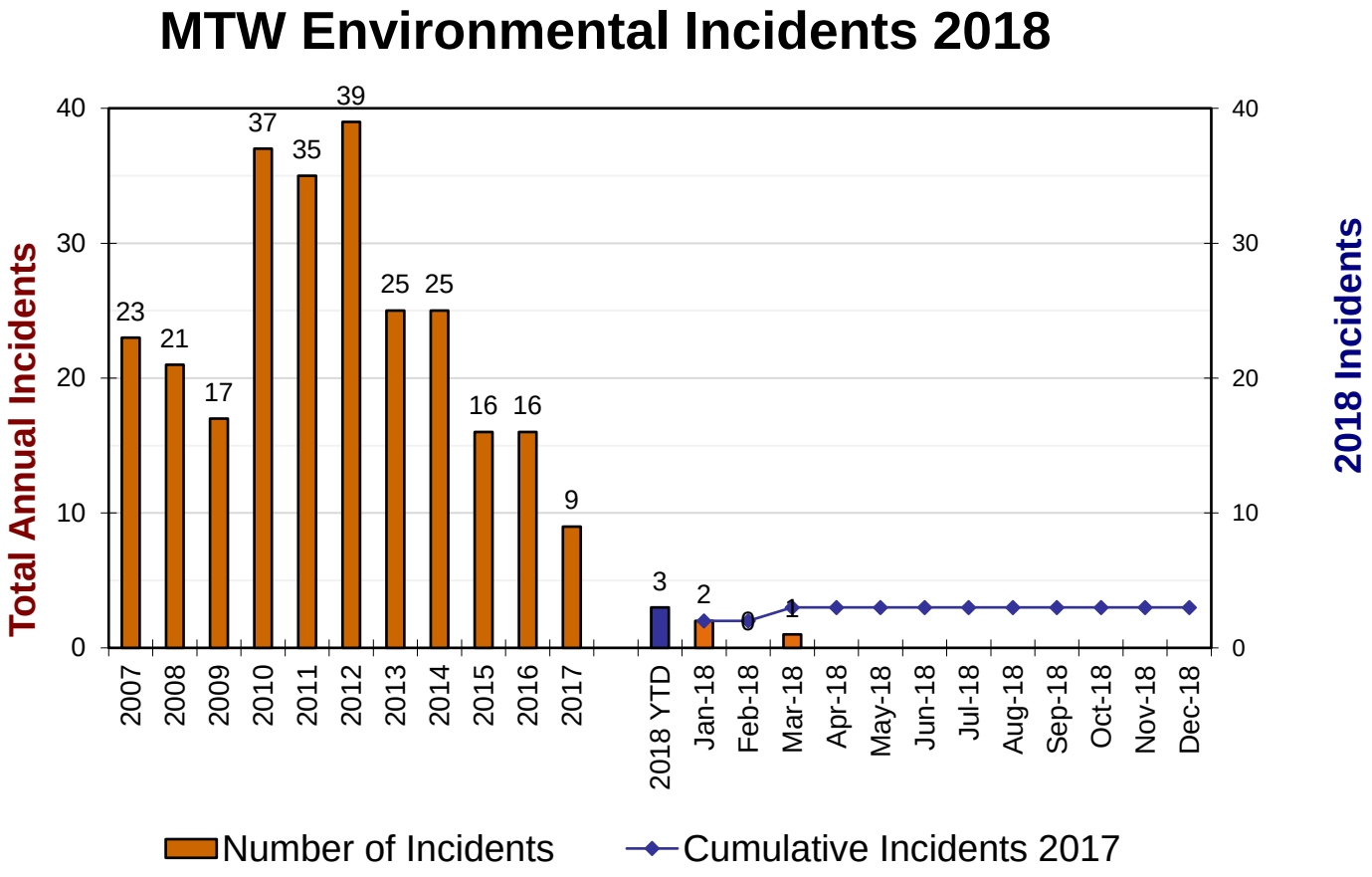
Mount Thorley Warkworth Monthly Complaints Summary

	January	February	March	Total
Blasting	14	2	0	**16**
Air (Dust)	6	3	0	**9**
Air (Odour)	1	2	0	**3**
Lighting	1	3	3	**7**
Noise	9	7	24	**40**
Other	0	0	0	**0**
Grand Total	**31**	**17**	**27**	**75**



2 INCIDENTS

Overview of environmental incidents for period first quarter 2018 – 01 January 2018 to 30 March 2018.



Incident Summary for the period of 1 February 2018 to 30 March 2018.

Date	Details	Key Actions	Aspect
20-March-2018	Whilst being loaded, a rock has fallen from the side of the tray landing on the ground directly next to the fuel tank of a haul truck and bounced into the side of the fuel tank creating a hole in the tank where approximately 500-1000L of Diesel was spilt.	Spill was contained. Incident investigated.	Hydrocarbon

3 ENVIRONMENTAL MONITORING

Monthly summaries of environmental monitoring for the period 1 January 2018 to 30 March 2018.

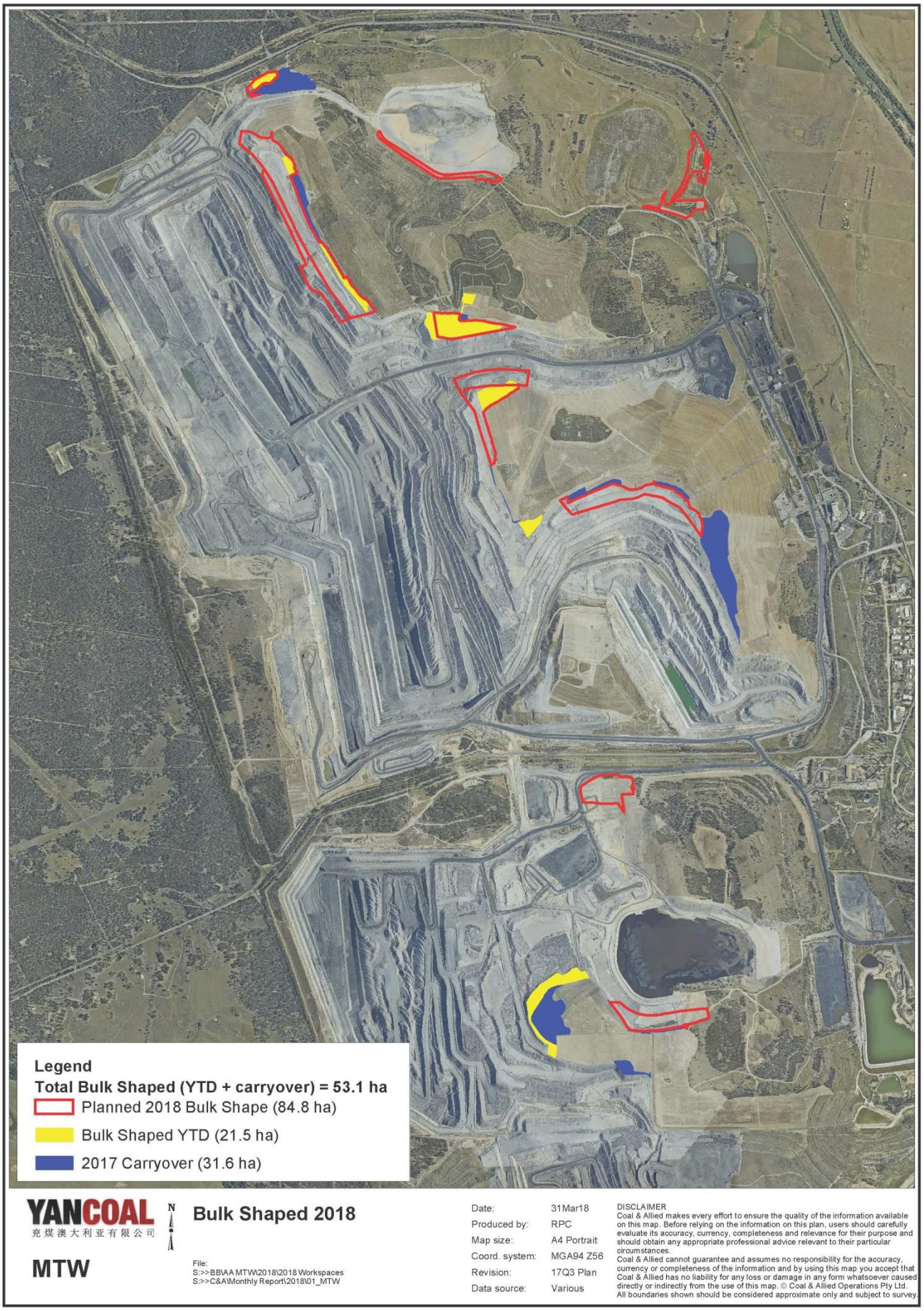
January 2018
Attached as **Appendix A**
February 2018
Attached as **Appendix B**
March 2018
Attached as **Appendix C**

4 REHABILITATION PLAN

Good progress has been made to date against the 2018 MTW rehab target of 100ha, with bulk shaping completed on 53.1ha. Rehabilitation activities have progressed further on many of these areas such that 11.2ha are ready for seeding and 9.3ha have been seeded.

The year to date disturbance is 31.6ha. The disturbance during this period was evenly distributed between WML and MTO leases as a result of Pit advancement in West Pit, infrastructure (including implementation of water management) and stripping of rehab areas at Mt Thorley in preparation for dumping progression.

Planned disturbance to the far west of the operations is for construction of the emergency access track/fire trail (schedule 3, cond.50, SSD-6464).


Legend
Total Bulk Shaped (YTD + carryover) = 53.1 ha
Planned 2018 Bulk Shape (84.8 ha)
Bulk Shaped YTD (21.5 ha)
2017 Carryover (31.6 ha)
YANCOAL
兖煤澳大利亚有限公司
MTW
N
Bulk Shaped 2018
File:
S:>>BB\AA MTW\2018\2018 Workspaces
S:>>C&A\Monthly Report\2018\01_MTW
Date: 31Mar18
Produced by: RPC
Map size: A4 Portrait
Coord. system: MGA94 Z56
Revision: 17Q3 Plan
Data source: Various
DISCLAIMER
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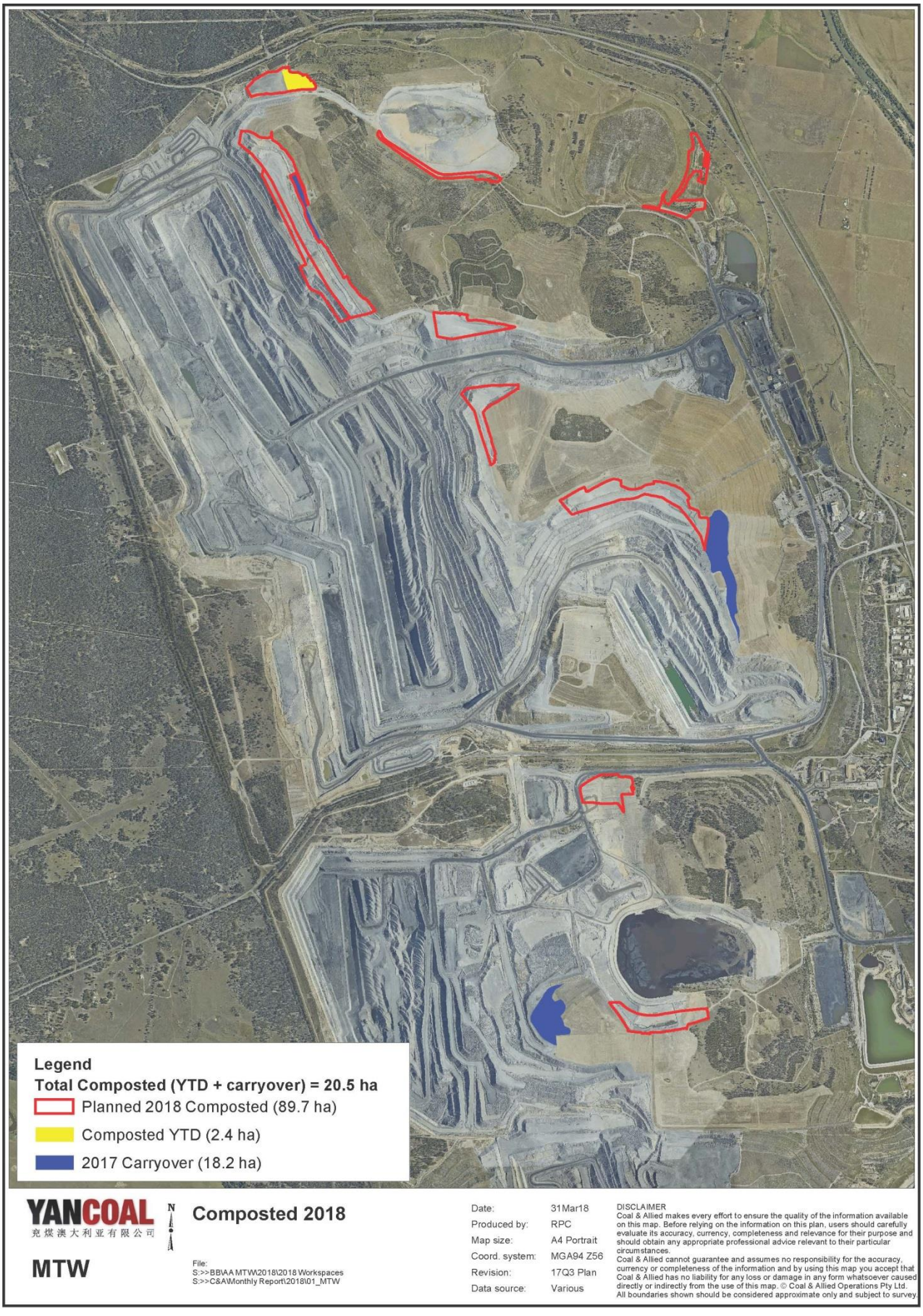
Legend
Total Composted (YTD + carryover) = 20.5 ha
Planned 2018 Composted (89.7 ha)
Composted YTD (2.4 ha)
2017 Carryover (18.2 ha)
YANCOAL
兖煤澳大利亚有限公司
N
Composted 2018
MTW
File:
S:>>BB\AA MTW\2018\2018 Workspaces
S:>>C&A\Monthly Report\2018\01_MTW
Date: 31Mar18
Produced by: RPC
Map size: A4 Portrait
Coord. system: MGA94 Z56
Revision: 17Q3 Plan
Data source: Various
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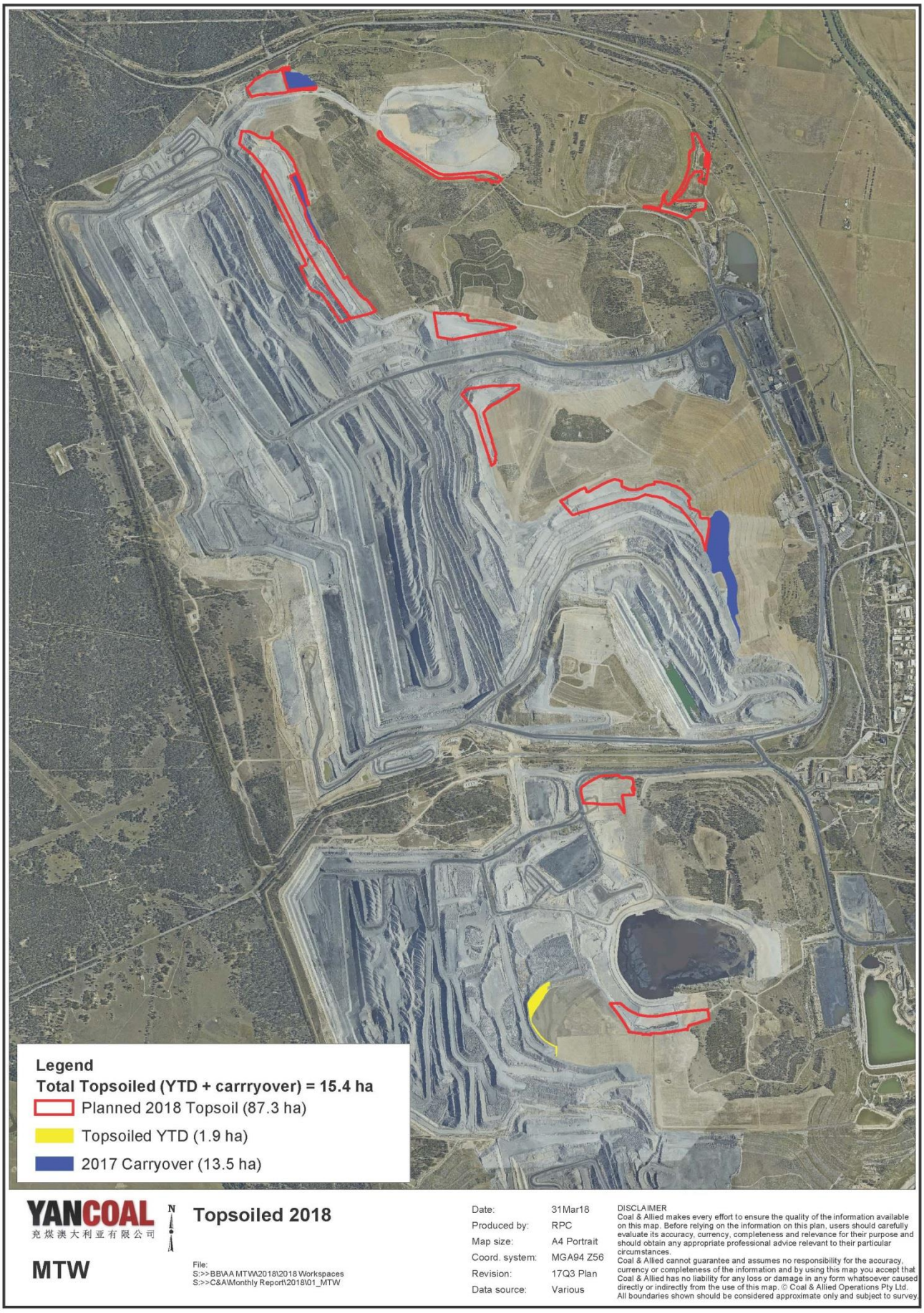
Legend
Total Topsoiled (YTD + carrryover) = 15.4 ha
Planned 2018 Topsoil (87.3 ha)
Topsoiled YTD (1.9 ha)
2017 Carryover (13.5 ha)
YANCOAL
兖煤澳大利亚有限公司
MTW
N
Topsoiled 2018
File:
S:>>BB\AA MTW\2018\2018 Workspaces
S:>>C&A\Monthly Report\2018\01_MTW
Date: 31Mar18
Produced by: RPC
Map size: A4 Portrait
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Revision: 17Q3 Plan
Data source: Various
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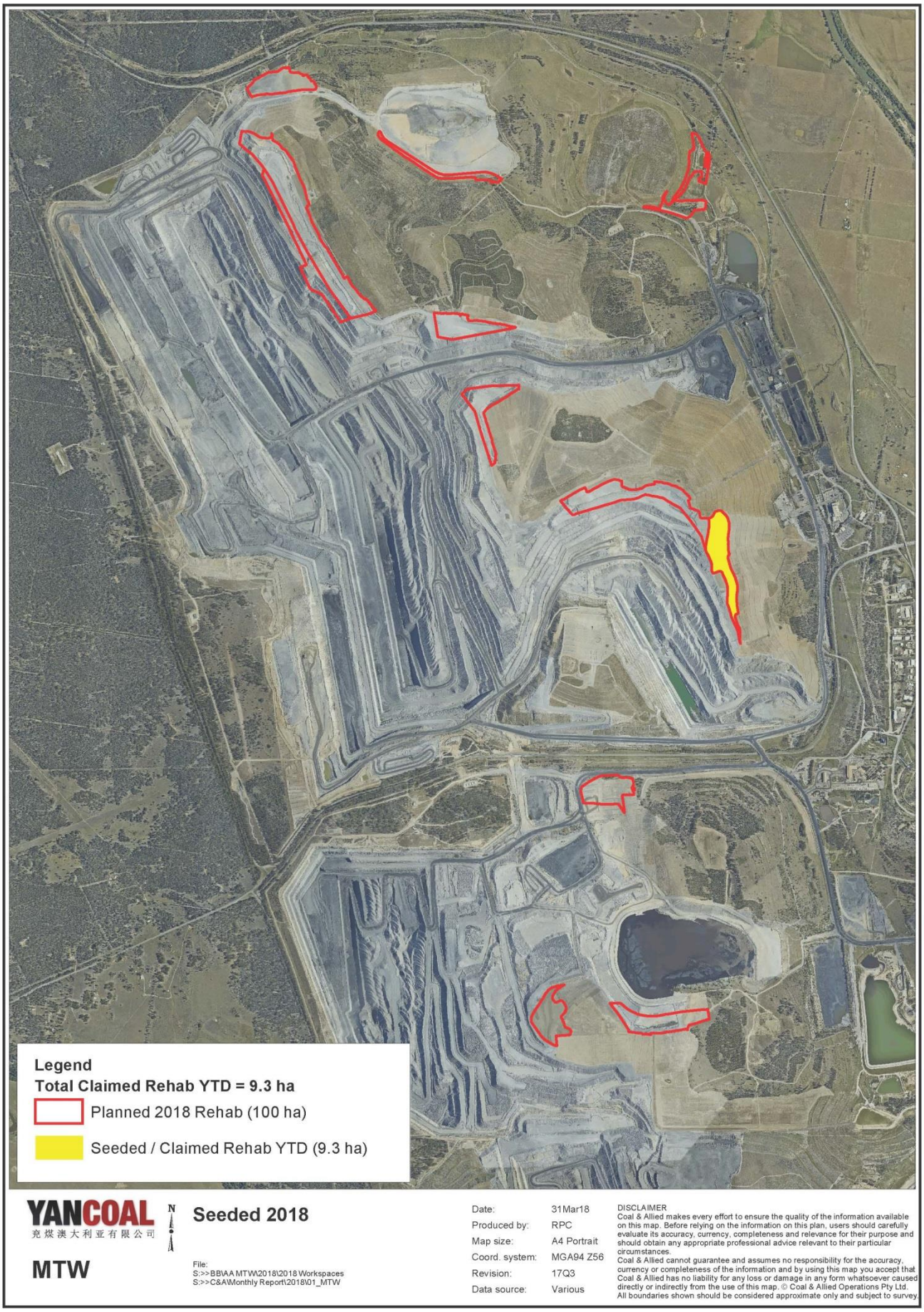
Legend
Total Claimed Rehab YTD = 9.3 ha
Planned 2018 Rehab (100 ha)
Seeded / Claimed Rehab YTD (9.3 ha)
YANCOAL
兖煤澳大利亚有限公司
N
Seeded 2018
MTW
File:
S:>>BB\AA MTW\2018\2018 Workspaces
S:>>C&A\Monthly Report\2018\01_MTW
Date: 31Mar18
Produced by: RPC
Map size: A4 Portrait
Coord. system: MGA94 Z56
Revision: 17Q3
Data source: Various
DISCLAIMER
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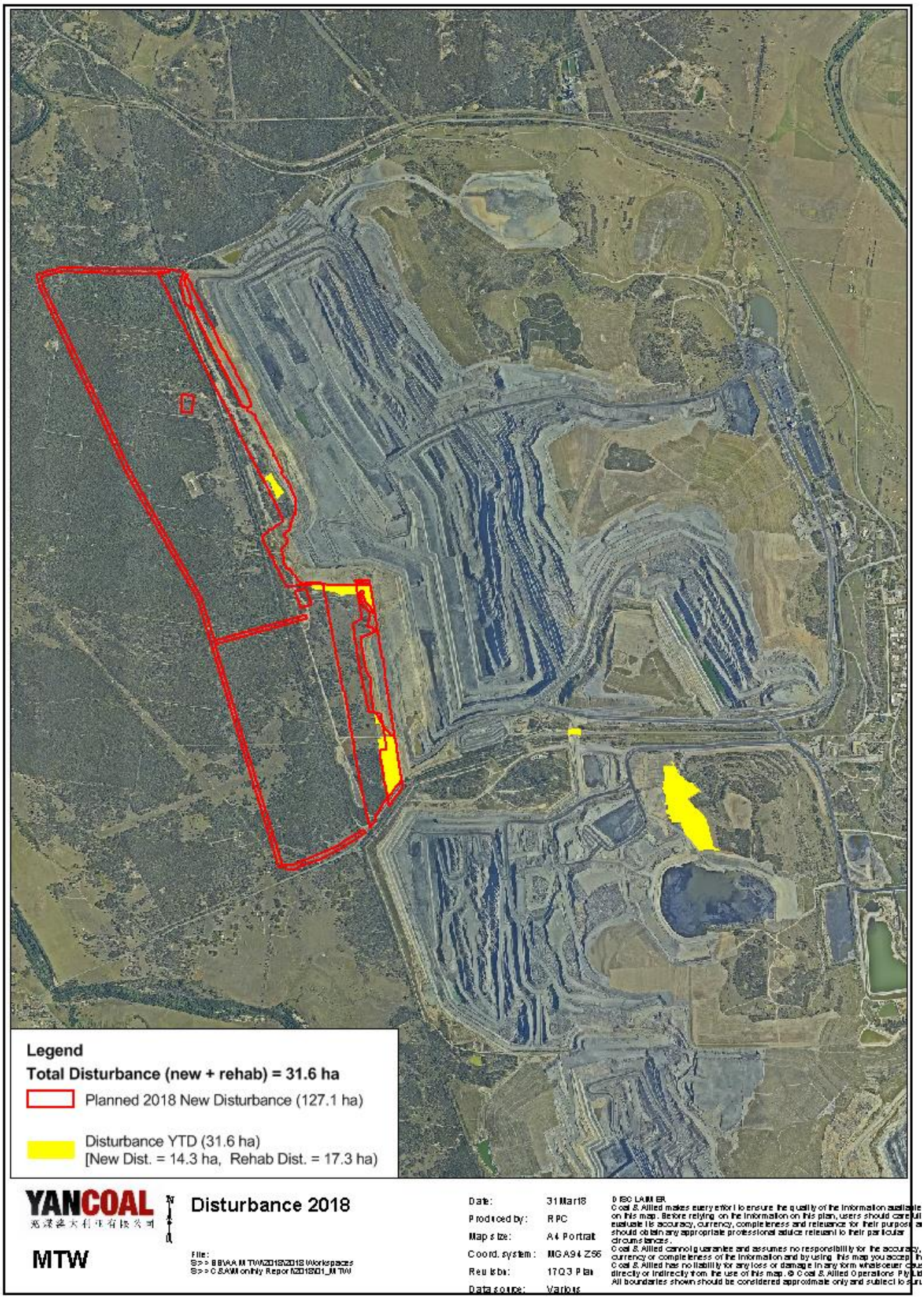

Legend
Total Disturbance (new + rehab) = 31.6 ha
Planned 2018 New Disturbance (127.1 ha)
Disturbance YTD (31.6 ha)
[New Dist. = 14.3 ha, Rehab Dist. = 17.3 ha)
YANCOAL
MTW
Disturbance 2018
Date: 31 Mar 18
Produced by: RPC
Map size: A4 Portrait
Coord. system: MGA94 Z56
Results: 17Q3 Plan
Data source: Various

5 ACQUISITION UPDATE

There have been no new land acquisitions by Yancoal. Full summary included in Appendix D.

6 WEBSITE UPLOADS

Table 1 below is a list of all documents uploaded to the MTW library of the Yancoal Australia InSite website since 19 February 2018. Uploads have been characterised as Additions, being a new document, or a Change, meaning a new version of an existing document. Please refer to the library page of the website for document contents:

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

Document Title	Upload
Mount Thorley Warkworth Environmental Monitoring Report - December 2017	Addition
Mount Thorley Warkworth Water Management Plan	Change
Mount Thorley Warkworth Environment Protection Licence 1376 1976 Monitoring Data January 2018	Addition
Mount Thorley Warkworth - Historic Heritage Management Plan	Addition
Wollombi Brook Aboriginal Cultural Heritage Conservation Area - Plan of Management	Addition
Mount Thorley Warkworth Air Quality Management Plan	Change
Mount Thorley Warkworth Blast Management Plan	Change
Mount Thorley Warkworth Noise Management Plan	Change
Mount Thorley Warkworth Environment Protection Licence 1376 1976 Monitoring Data February 2018	Addition
Mount Thorley Warkworth Environmental Monitoring Report January 2018	Addition
Mount Thorley Warkworth Environmental Monitoring Report February 2018	Addition
Mount Thorley Warkworth Environment Protection Licence 1376 1976 Monitoring Data March 2018	Addition
MTW Community Consultative Committee Meeting Minutes - February 2018	Addition
MTW Community Consultative Committee Meeting Presentation - February 2018	Addition
MTW Community Consultative Committee Business Papers - February 2018	Addition

7 YANCOAL CORPORATE INVESTMENT

The MTW site donations program is now active. For information please contact Travis Bates.

Travis Bated
Yancoal Community Relations Specialist
+61 2 6575 5911
Travis.bates@yancoal.com.au

Appendix A: January Monthly Environmental Monitoring Report

Monthly Environmental Monitoring Report

Yancoal Mt Thorley Warkworth

January 2018

CONTENTS

Figures

Tables

Revision History

Version No.	Person Responsible	Document Status	Date
1.0	**Environmental Advisor**	**Draft**	**02/03/2018**
1.1	**Environmental Specialist**	**Final**	**15/03/2018**

1.0 INTRODUCTION

This report has been compiled to provide a monthly summary of environmental monitoring results for Mt Thorley Warkworth (MTW). This report includes all monitoring data collected for the period 1st January to 31st January 2018.

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

2018	Monthly Rainfall (mm)	Cumulative Rainfall (mm)
January	10.8	10.8

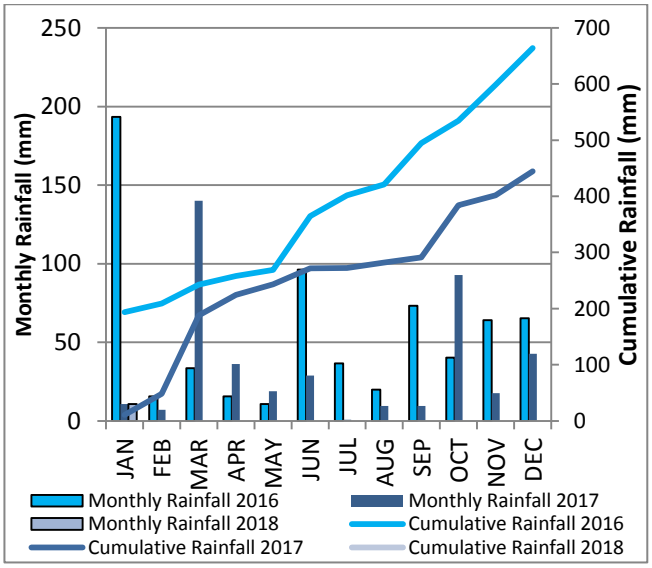


Figure 1: Rainfall Trend YTD

2.1.2 Wind Speed and Direction

Winds from the South – West were dominant throughout the reporting period as shown in Figure 2.

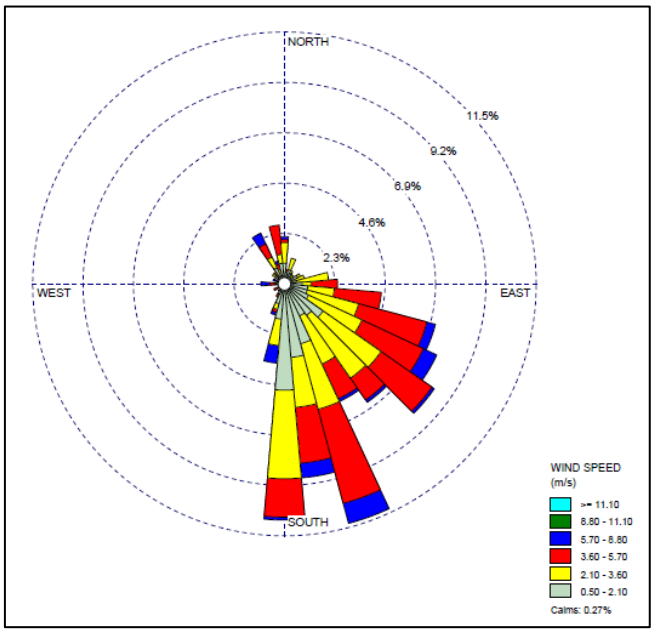


Figure 2: Charlton Ridge Wind Rose – January 2018

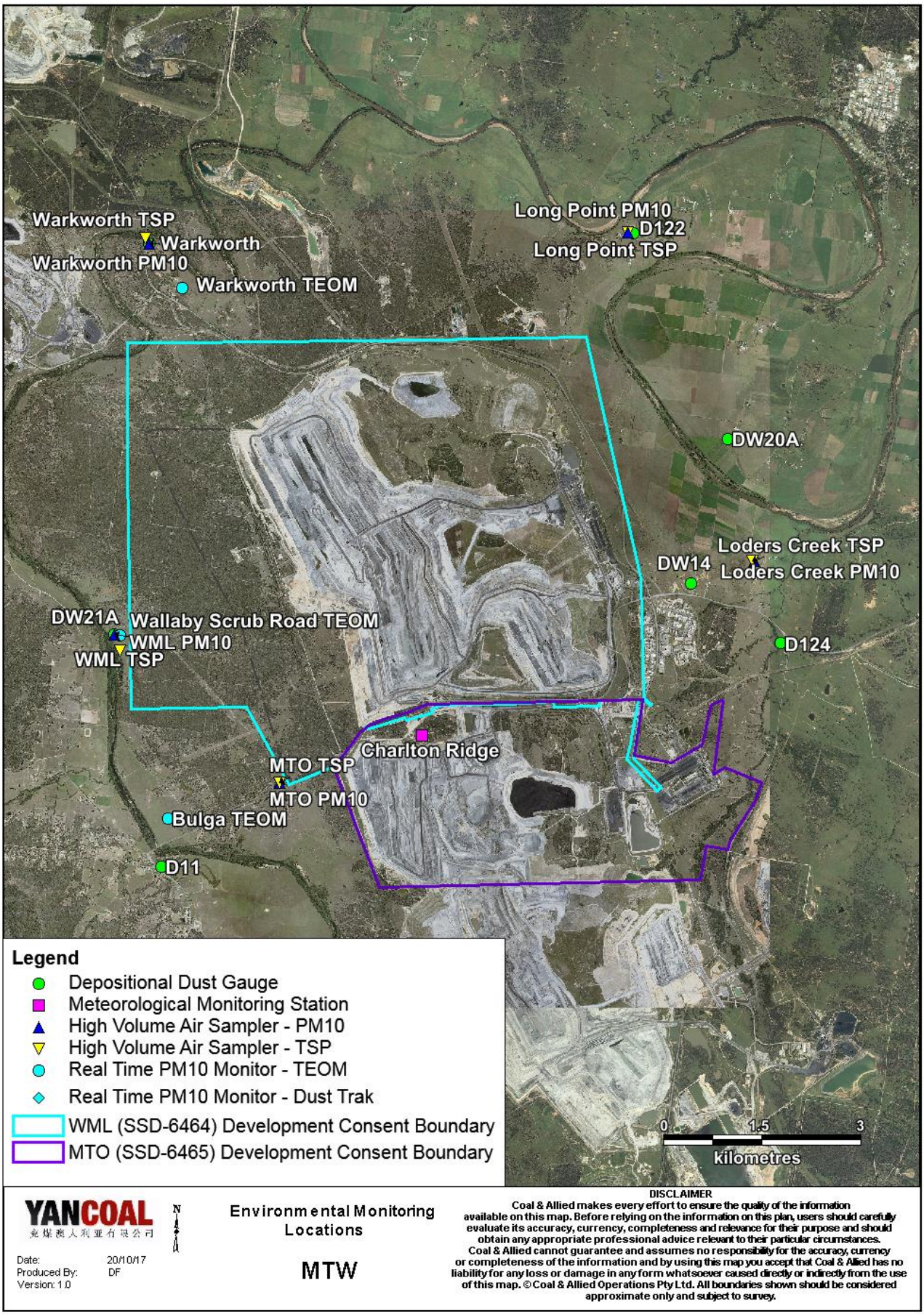


Figure 3: Air Quality Monitoring Locations

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 DW21A and Warkworth monitors recorded a monthly result above the long term impact assessment criteria of 4.0 g/m^2 per month. Field notes associated with DW21A confirm the presence of insects and bird droppings. As such the result is considered contaminated and will be excluded from calculation of the annual average. There is no evidence to suggest that the Warkworth result is contaminated. Accordingly, the result will be included in the annual average calculation.

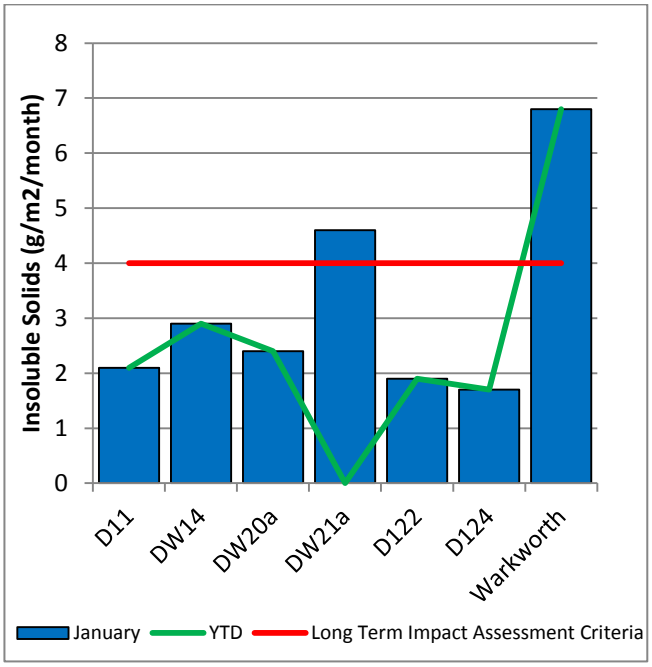


Figure 4: Depositional Dust – January 2018

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

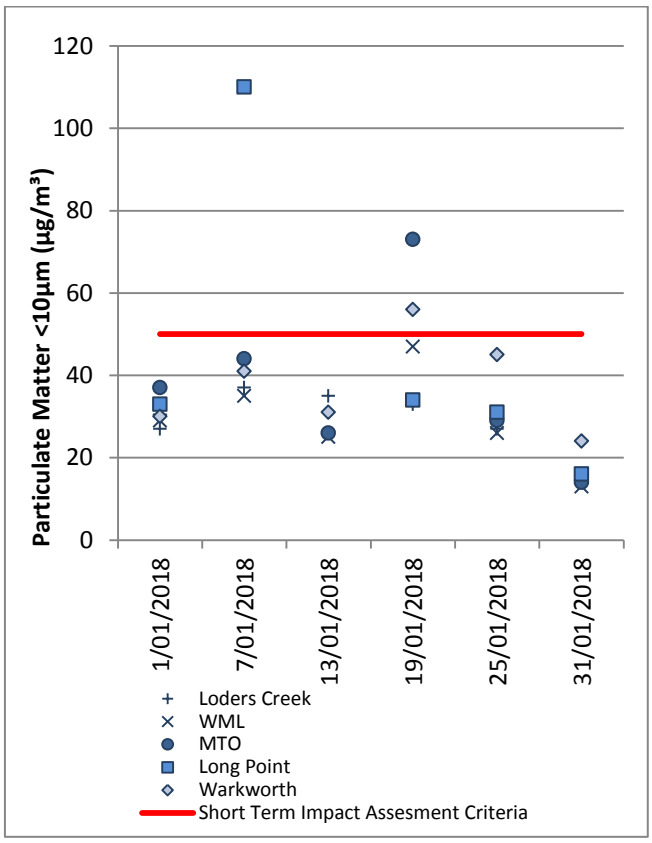


Figure 5 shows the individual PM_{10} results at each monitoring station against the short term impact assessment criteria of 50µg/m³.

Data was not available on 13/01/2018 at the Long Point HVAS due to HVAS motor fault.

On 7/01/2018 the Long Point HVAS PM_{10} unit recorded results which were greater than the short term (24hr) PM_{10} impact assessment criteria of 50µg/m^3. Investigation determined that MTW's maximum contribution at the Long Point monitor was <19.5 µg/m^3.

Accordingly, no further action is required (as per approved Air Quality Monitoring Programme).

On 19/01/2018, two HVAS PM_{10} units recorded results which were greater than the short term (24hr) PM_{10} impact assessment criteria; MTO (73 µg/m^3) and Warkworth (56µg/m^3).

Investigation determined that HVO's maximum contribution at each monitor is as follows:

- MTO – 42.7 µg/m^3; or 58% of the measured result.
- Warkworth – 23ug/m3 or 41% of the measured result.

Accordingly, no further action is required (as per approved Air Quality Monitoring Programme).

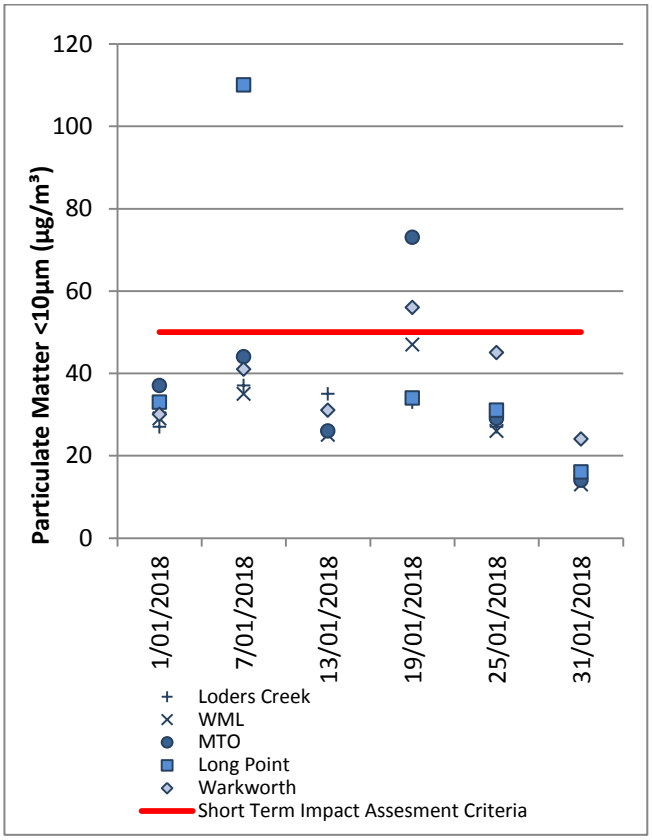


Figure 5: Individual PM_{10} Results – January 2018

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

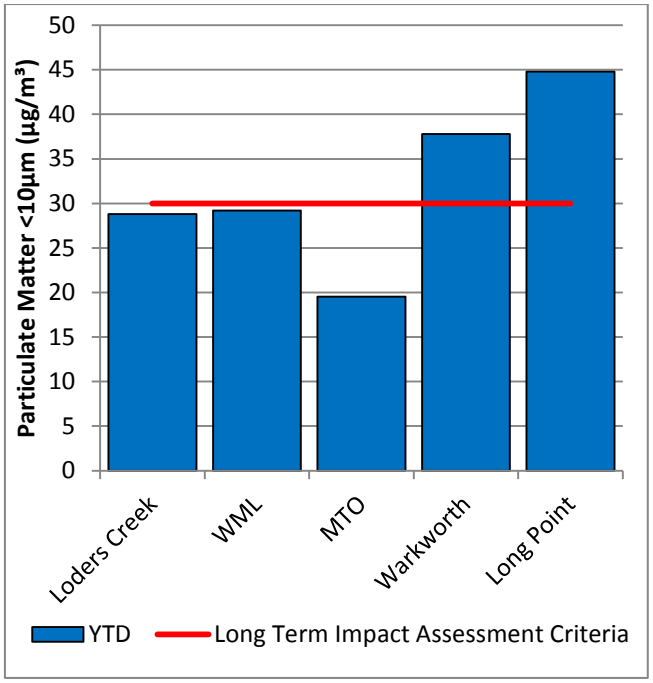


Figure 6: Annual Average PM_{10} – January 2018

2.3.2 TSP Results

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

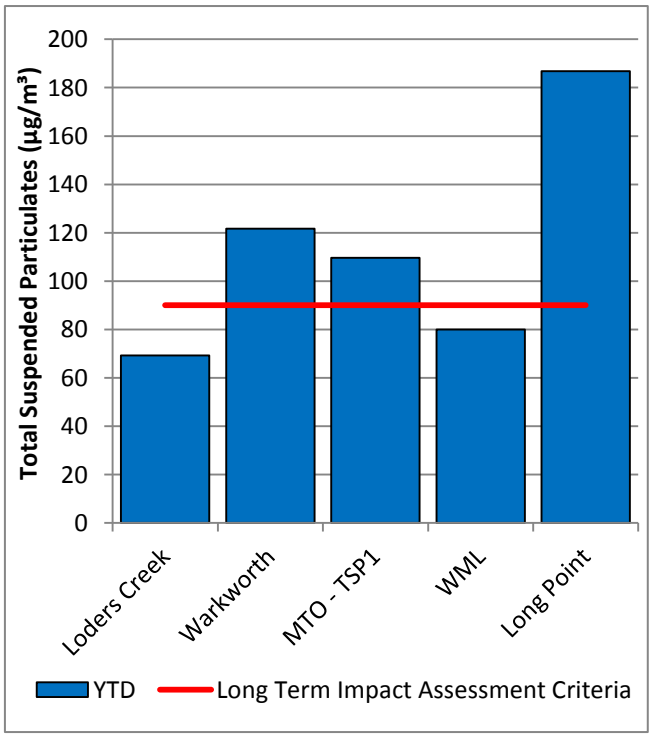


Figure 7: Annual Average Total Suspended Particulates – January 2018

2.3.3 Real Time PM_{10} Results

Mt 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.

One result recorded elevated levels at the Bulga TEOM (62.4 µg/m³) which exceeded the short term (24hr) criteria on 9th January 2018. This measurement was assessed for MTW's maximum potential contribution based on mining activities and meteorological conditions on this day resulting in a maximum estimated contribution of <8 µg/m³ from the direction of MTW.

Two results recorded elevated levels at the Warkworth TEOM which exceeded the short term (24hr) criteria. These measurements were assessed for MTW's maximum potential contribution based on mining activities and meteorological conditions on these days.

Resulting in the following maximum estimated contributions from the direction of MTW:

- 19 January 2018 – 27.6 µg/m³; and
- 24 January 2018 – 28.4 µg/m³.

2.3.4 Real Time Alarms for Air Quality

During January, the real time monitoring system generated 188 automated air quality related alerts, including 48 alert for adverse meteorological conditions and 140 alerts for elevated PM_{10} levels.

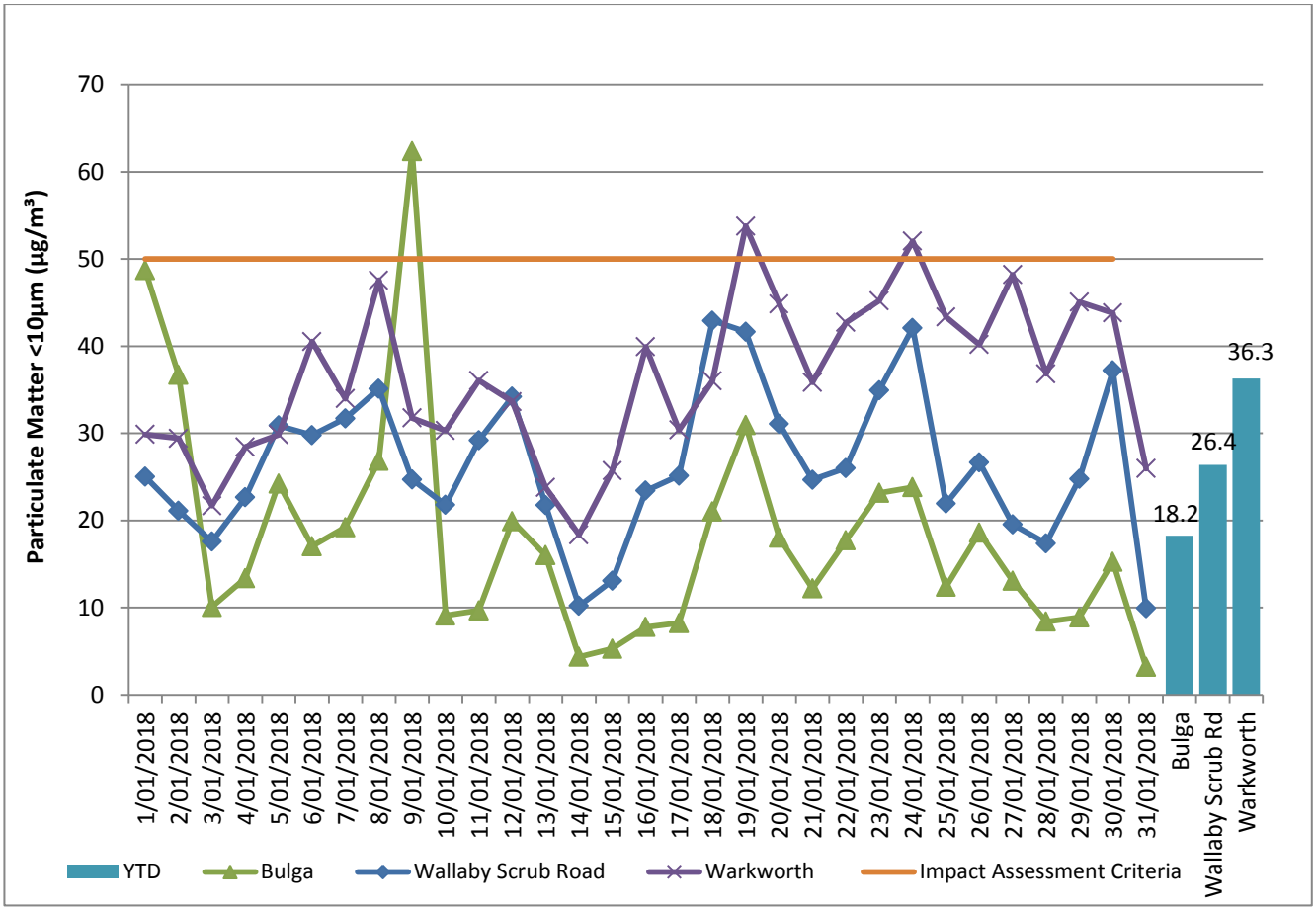


Figure 8: Real Time PM_{10} daily 24hr average and annual average – January 2018

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 monitor the potential impact of mining on the river. Other Hunter River tributaries are also monitored.

Results of monitoring are reported quarterly, next available in the March 2018 report.

3.2 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 March 2018 report.

3.3 HRSTS Discharge

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

During the reporting period no water was discharged under the HRSTS.

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 **Error! eference source not found.**.

4.1 Blast Monitoring Results

During January 2018, 24 blasts were initiated at MTW. Figure 9 to Figure 12 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
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.

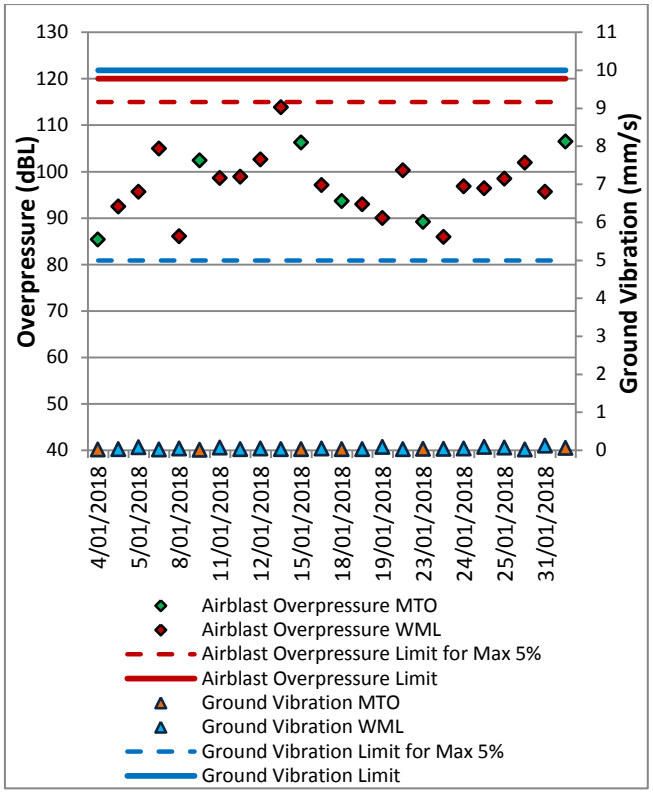


Figure 9: Abbey Green Blast Monitoring Results – January 2018

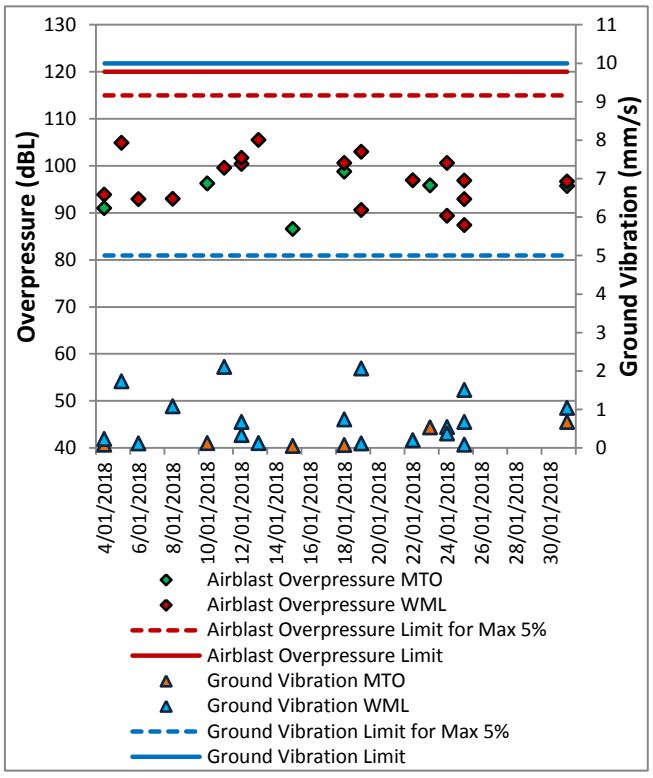


Figure 10: Bulga Village Blast Monitoring Results – January 2018

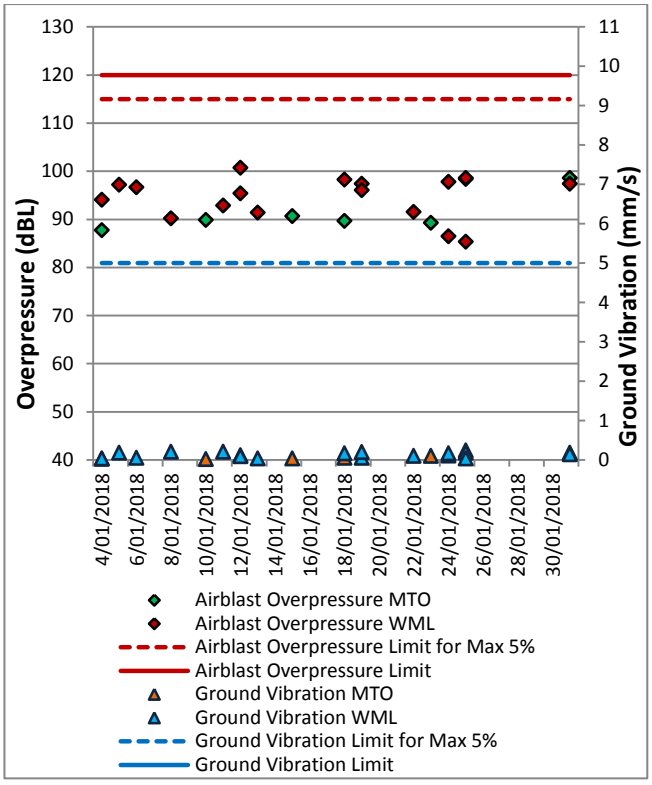


Figure 11: MTIE Blast Monitoring Results – January 2018

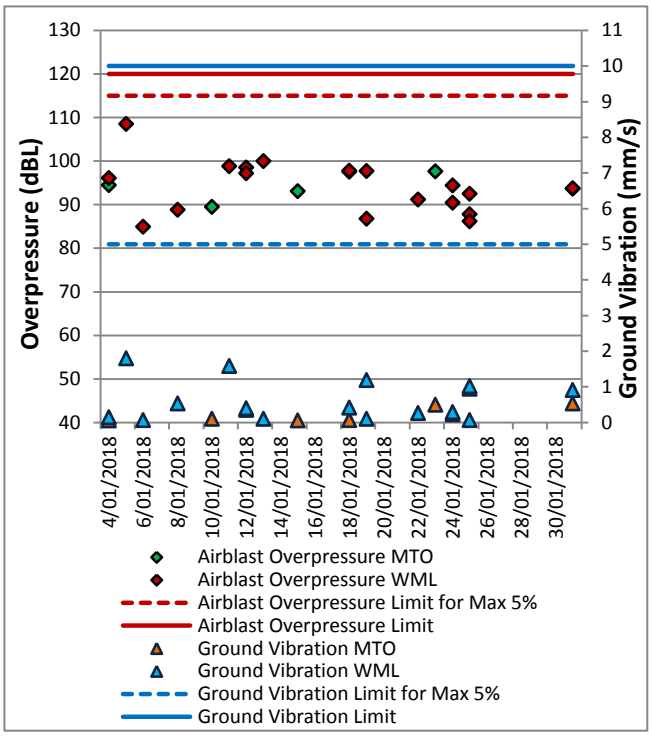


Figure 12: Wollemi Peak Road Blast Monitoring Results – January 2018

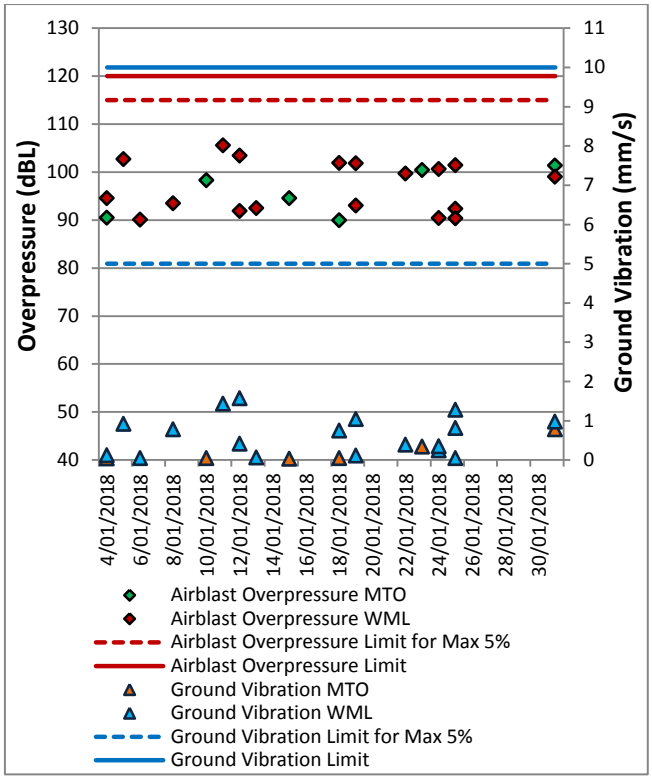


Figure 13: Wambo Road Blast Monitoring Results – January 2018

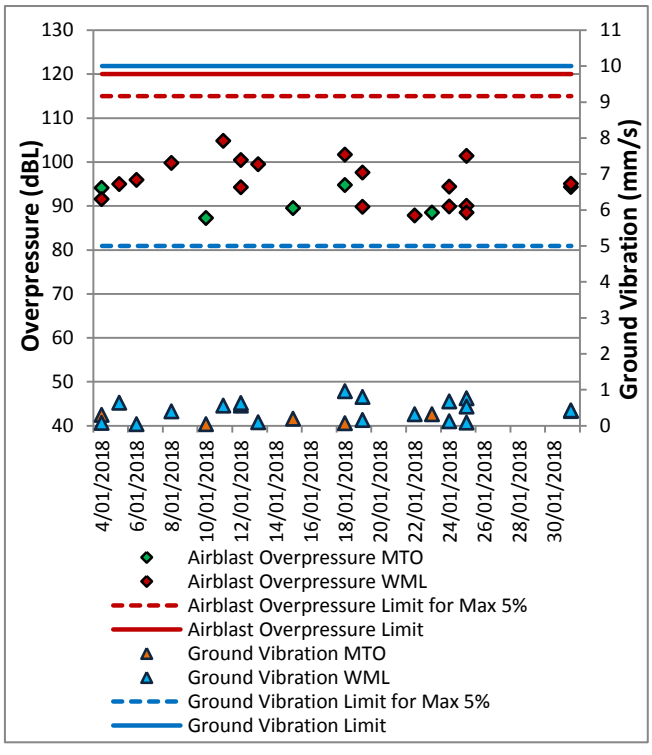


Figure 14: Warkworth Blast Monitoring Results – January 2018

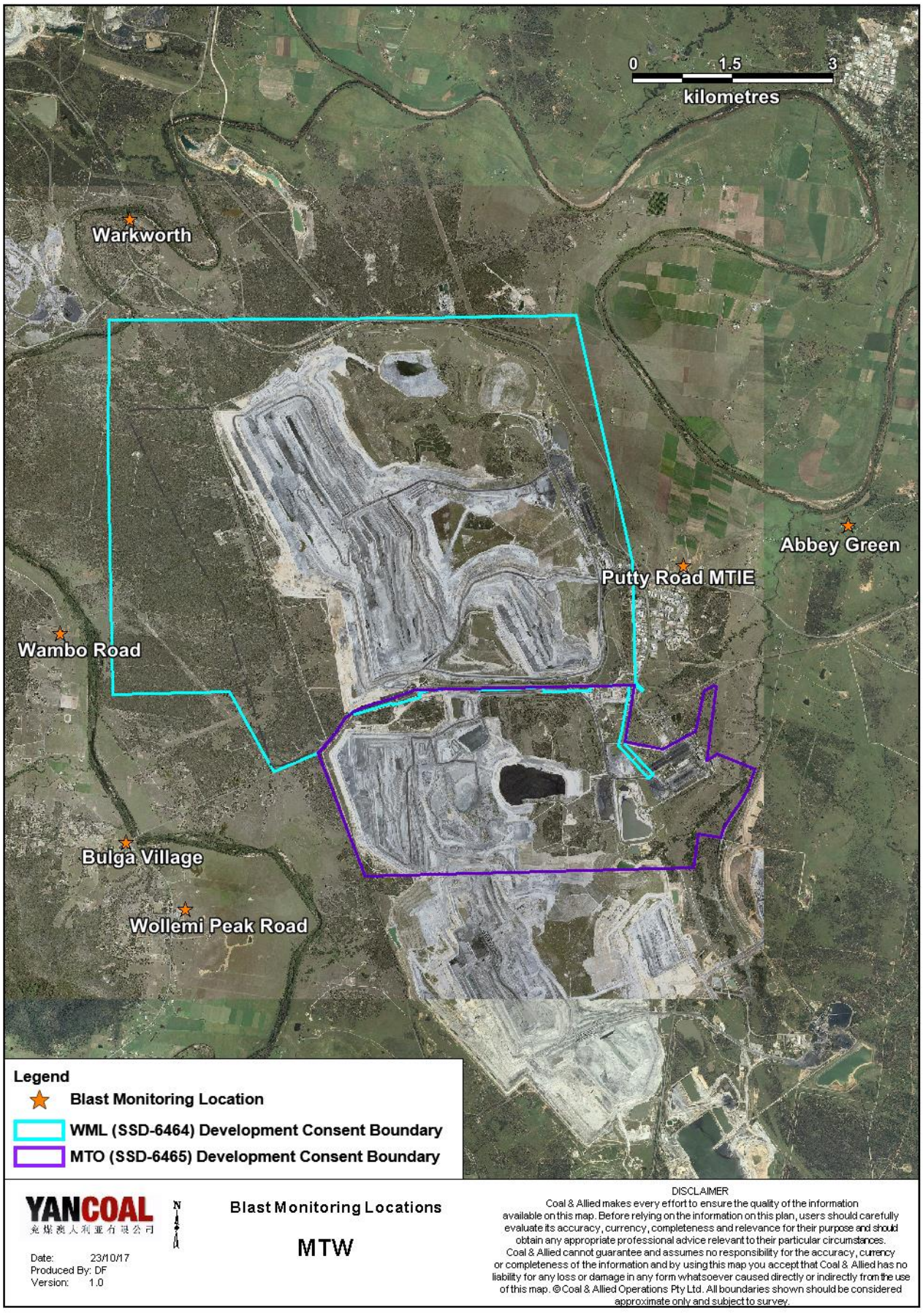


Figure 15: MTW Blast Monitoring Location Plan

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 16 January 2018. 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 – January 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion dB(A)	Criterion Applies?[1,5]	WML L_{Aeq} dB[2,4]	Exceedance[3]
Bulga RFS	16/01/2018 23:12	4.1	D	37	No	IA	NA
Bulga Village	16/01/2018 23:12	4.2	D	38	No	IA	NA
Gouldsville	16/01/2018 23:12	3.9	D	38	No	IA	NA
Inlet Rd	16/01/2018 23:12	3.9	D	37	No	<25	NA
Inlet Rd West	16/01/2018 23:12	4.4	D	35	No	IA	NA
Long Point	16/01/2018 23:12	4.4	D	35	No	IA	NA
South Bulga	16/01/2018 23:12	2.8	D	35	Yes	IA	Nil
Wambo Road	16/01/2018 23:12	4.0	D	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;
2. Estimated or measured LAeq,15minute attributed to WML;
3. NA means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable;
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.
6. Revised LAeq, 15minute level following application of low frequency noise penalty as per the INP where applicable.

Table 4: $L_{A1,\ 1\ minute}$ Warkworth - Impact Assessment Criteria – January 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion dB(A)	Criterion Applies?[1,5]	WML $L_{A1,\ 1min}$ dB[2,4]	Exceedance[3]
Bulga RFS	16/01/2018 23:12	4.1	D	47	No	IA	NA
Bulga Village	16/01/2018 23:12	4.2	D	48	No	IA	NA
Gouldsville	16/01/2018 23:12	3.9	D	48	No	IA	NA
Inlet Rd	16/01/2018 23:12	3.9	D	47	No	<30	NA
Inlet Rd West	16/01/2018 23:12	4.4	D	45	No	IA	NA
Long Point	16/01/2018 23:12	4.4	D	45	No	IA	NA
South Bulga	16/01/2018 23:12	2.8	D	45	Yes	IA	Nil
Wambo Road	16/01/2018 23:12	4.0	D	48	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;
2. Estimated or measured LA1,1minute attributed to Warkworth mine (WML);
3. NA in exceedance column means atmospheric conditions outside conditions specified in project approval and so criterion is not applicable. NA (not applicable) in criterion column means criterion not specified for this location;
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.

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 – January 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion dB	Criterion Applies?[1,5]	MTO L_{Aeq} dB[2,4]	Exceedance[3]
Bulga RFS	16/01/2018 23:12	4.1	D	37	No	IA	NA
Bulga Village	16/01/2018 23:12	4.2	D	38	No	IA	NA
Gouldsville	16/01/2018 23:12	3.9	D	35	No	<30	NA
Inlet Rd	16/01/2018 23:12	3.9	D	37	No	IA	NA
Inlet Rd West	16/01/2018 23:12	4.4	D	35	No	IA	NA
Long Point	16/01/2018 23:12	4.4	D	35	No	IA	NA
South Bulga	16/01/2018 23:12	2.8	D	36	Yes	IA	Nil
Wambo Road	16/01/2018 23:12	4.0	D	38	No	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;
2. Estimated or measured LAeq,15minute attributed to WML;
3. NA means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable;
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.
6. Revised LAeq, 15minute level following application of low frequency noise penalty as per the INP where applicable.

Table 6: $L_{A1,\ 1Minute}$ Mount Thorley - Impact Assessment Criteria – January 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion dB	Criterion Applies?[1,5]	MTO $L_{A1,\ 1min}$ dB[2,4]	Exceedance[3]
Bulga RFS	16/01/2018 23:12	4.1	D	47	No	IA	NA
Bulga Village	16/01/2018 23:12	4.2	D	48	No	IA	NA
Gouldsville	16/01/2018 23:12	3.9	D	45	No	<30	NA
Inlet Rd	16/01/2018 23:12	3.9	D	47	No	IA	NA
Inlet Rd West	16/01/2018 23:12	4.4	D	45	No	IA	NA
Long Point	16/01/2018 23:12	4.4	D	45	No	IA	NA
South Bulga	16/01/2018 23:12	2.8	D	46	Yes	IA	Nil
Wambo Road	16/01/2018 23:12	4.0	D	48	No	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;
2. Estimated or measured LA1,1minute attributed to Mt Thorley Operations (MTO);
3. NA in exceedance column means atmospheric conditions outside conditions specified in project approval and so criterion is not applicable. NA (not applicable) in criterion column means criterion not specified for this location;
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.

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 penalty has been assessed. During January 2018 no measurements required the penalty to be applied. The assessment for low frequency noise is shown in Table 7.

Table 7: Low Frequency Noise Modifying Factor Assessment – January 2018

Location	Date and Time	Measured Site Only LA_{eq} dB (WML/MTO)	Site Only L_{Ceq} dB[4] (WML/MTO)	Site Only LCeq – LAeq dB[1,4] (WML/MTO)	Result Max exceedance of ref spectrum dB (WML/MTO) [2,3,4]	Penalty dB(A)	Exceedance
Bulga RFS	16/01/2018 23:12	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Bulga Village	16/01/2018 23:12	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Gouldsville	16/01/2018 23:12	IA/<30	NA/NA	NA/NA	NA/NA	NA/NA	NA
Inlet Rd	16/01/2018 23:12	<25/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Inlet Rd West	16/01/2018 23:12	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Long Point	16/01/2018 23:12	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
South Bulga	16/01/2018 23:12	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Wambo Road	16/01/2018 23:12	<25/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA

Notes:
1. As per NPfI, if LCeq – LAeq >= 15 dB further assessment of low frequency noise required.
2. As per NPfI, compare measured spectrum against reference spectrum to determine if the low frequency modifying factor is triggered and application of penalty is required;
3. Bold results and penalties in red are where the relevant modifying factor trigger was exceeded; and
4. Where it is not possible to determine the site only result due to the presence of other low frequency noise sources occurring during the measurement, or where criteria were not applicable due to meteorological conditions, this is noted as NA (not available) and no further assessment has been undertaken.

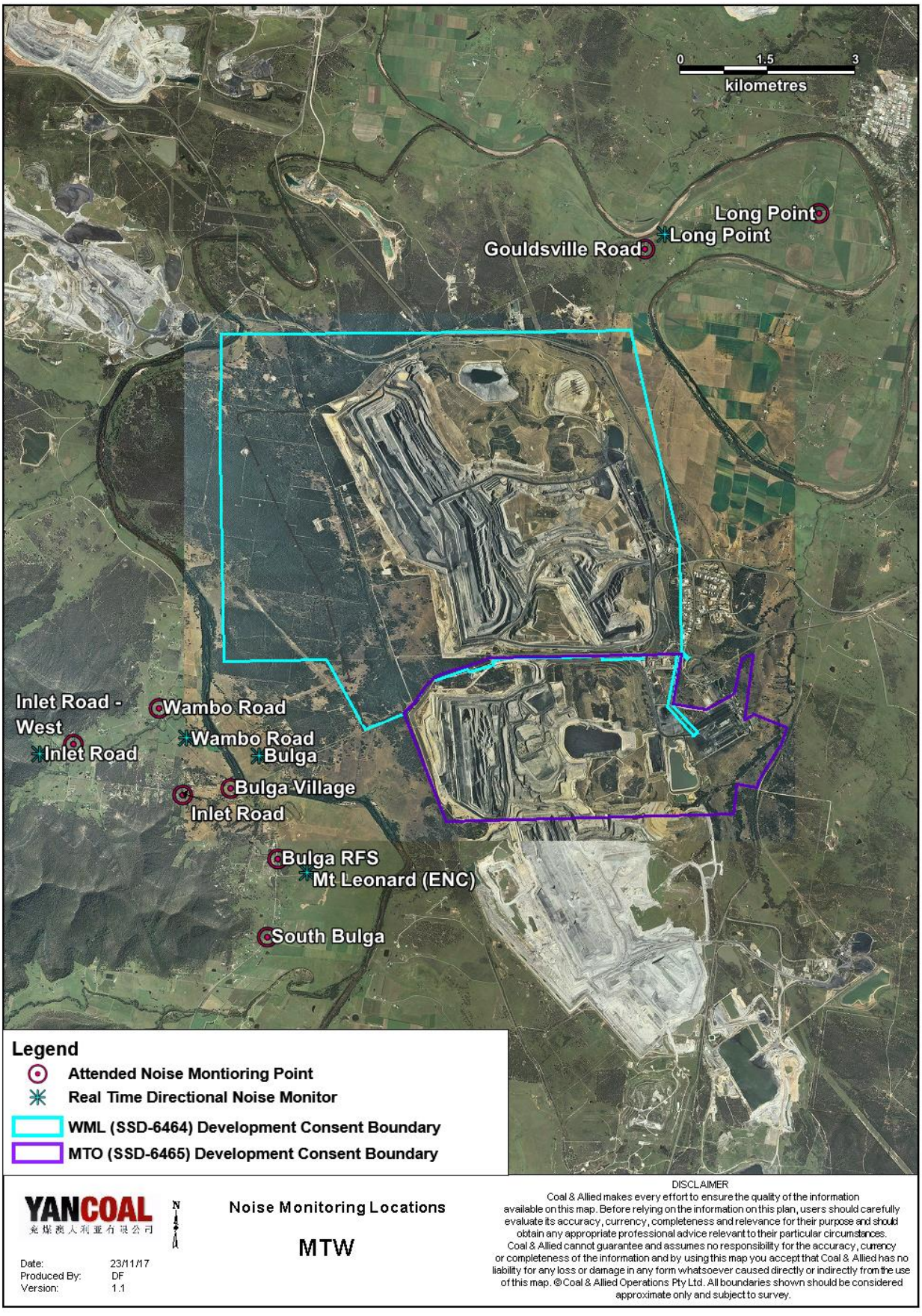


Figure 16: Noise Monitoring Location Plan

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 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 January are provided in Table 8.

Table 8: Supplementary Attended Noise Monitoring Data – January 2018

No. of assessments	No. of assessments > trigger	No. of nights where assessments > trigger	% greater than trigger
539	3	3	0.6

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

6.0 OPERATIONAL DOWNTIME

During January, a total of 2531 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.

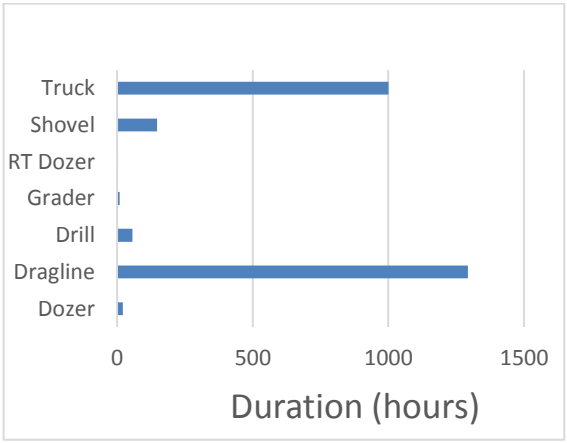


Figure 17: Operational Downtime by Equipment Type – January 2018

7.0 REHABILITATION

During January, 1.3 Ha of land was released, 1.8 Ha of land was bulk shaped and 9.3 Ha of land was rehabilitated.

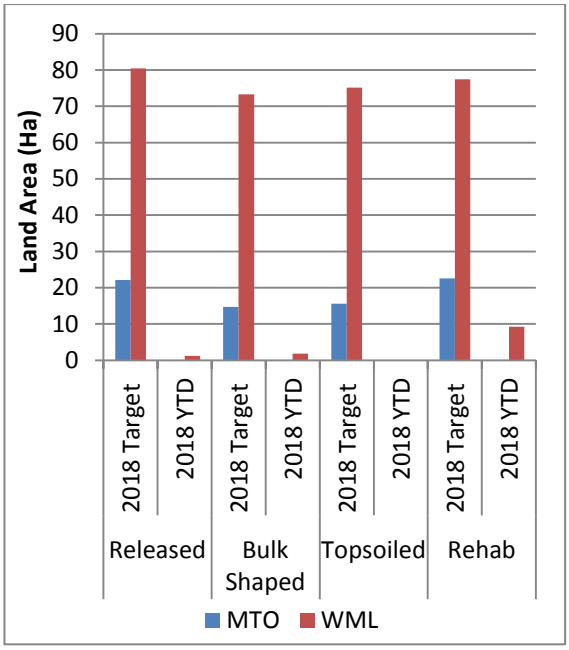


Figure 18: Rehabilitation YTD – January 2018

8.0 ENVIRONMENTAL INCIDENTS

During the reporting period there were no reportable environmental incidents.

9.0 COMPLAINTS

During the reporting period 30 complaints were received. Details of these complaints are shown in Table 9 below.

Table 9: Complaints Summary YTD

	Noise	Dust	Blast	Lighting	Other	Total
January	9	6	14	1	1	31
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	-	-	-	-	-	-
May	-	-	-	-	-	-
June	-	-	-	-	-	-
July	-	-	-	-	-	-
August	-	-	-	-	-	-
September	-	-	-	-	-	-
October	-	-	-	-	-	-
November	-	-	-	-	-	-
December	-	-	-	-	-	-
Total	9	6	14	1	1	31

Appendix A: Meteorological Data

Table 10: Meteorological Data – Charlton Ridge Meteorological Station – January 2018

Date	Air Temperature Maximum (°C)	Air Temperature Minimum (°C)	Relative Humidity Maximum (%)	Relative Humidity Minimum (%)	Solar Radiation Maximum (W/Sq. M)	Wind Direction Average (°)	Wind Speed Average (m/sec)	Rainfall(mm)
1/01/2018	35	19	84	21	1278	152	2.9	0.0
2/01/2018	32	19	84	35	1301	137	3.0	0.0
3/01/2018	28	18	88	41	1435	145	3.8	0.0
4/01/2018	29	17	75	33	1602	136	2.5	0.0
5/01/2018	35	14	84	16	1214	147	2.3	0.0
6/01/2018	41	18	74	10	1105	177	2.7	0.0
7/01/2018	44	22	58	9	1103	235	3.7	0.0
8/01/2018	42	21	83	13	1126	161	2.5	10.2
9/01/2018	34	21	82	33	1356	159	3.2	0.2
10/01/2018	24	18	87	61	924	132	3.0	0.2
11/01/2018	28	18	80	48	1556	135	2.2	0.0
12/01/2018	38	19	87	24	1258	137	1.8	0.0
13/01/2018	37	20	80	24	1455	253	4.5	0.0
14/01/2018	26	16	85	20	1535	177	5.1	0.0
15/01/2018	28	13	64	19	1454	166	3.9	0.0
16/01/2018	27	16	60	25	1492	153	4.6	0.0
17/01/2018	30	13	72	16	1146	169	2.4	0.0
18/01/2018	35	11	78	5	1139	154	2.1	0.0
19/01/2018	39	13	68	7	1115	156	2.5	0.0
20/01/2018	39	13	76	1	1143	148	2.9	0.0
21/01/2018	38	16	81	14	1187	144	2.6	0.0
22/01/2018	41	27	29	7	777	123	3.5	0.0
23/01/2018	39	20	69	9	1285	151	2.2	0.0
24/01/2018	39	23	66	11	1287	129	2.8	0.0
25/01/2018	36	20	82	25	1431	158	2.5	0.0
26/01/2018	36	21	84	29	1344	157	2.4	0.2
27/01/2018	37	21	87	22	1187	154	2.7	0.0
28/01/2018	35	21	80	29	1403	130	3.8	0.0
29/01/2018	34	19	88	30	1323	124	3.5	0.0
30/01/2018	36	17	85	14	1084	148	2.4	0.0
31/01/2018	26	17	81	57	253	162	4.5	0.0

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

Appendix B: February Monthly Environmental Monitoring Report

Monthly Environmental Monitoring Report

Yancoal Mt Thorley Warkworth

February 2018

CONTENTS

Figures

Tables

Revision History

Version No.	Person Responsible	Document Status	Date
1.0	**Environmental Advisor**	**Draft**	**27/03/2018**
1.1	**Environmental Specialist**	**Final**	**05/04/2018**

1.0 INTRODUCTION

This report has been compiled to provide a monthly summary of environmental monitoring results for Mt Thorley Warkworth (MTW). This report includes all monitoring data collected for the period 1st February to 28th February 2018.

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 **Error! Reference source not found.**.

Table 1: Monthly Rainfall MTW

2018	Monthly Rainfall (mm)	Cumulative YTD Rainfall (mm)
February	68.6	79.4

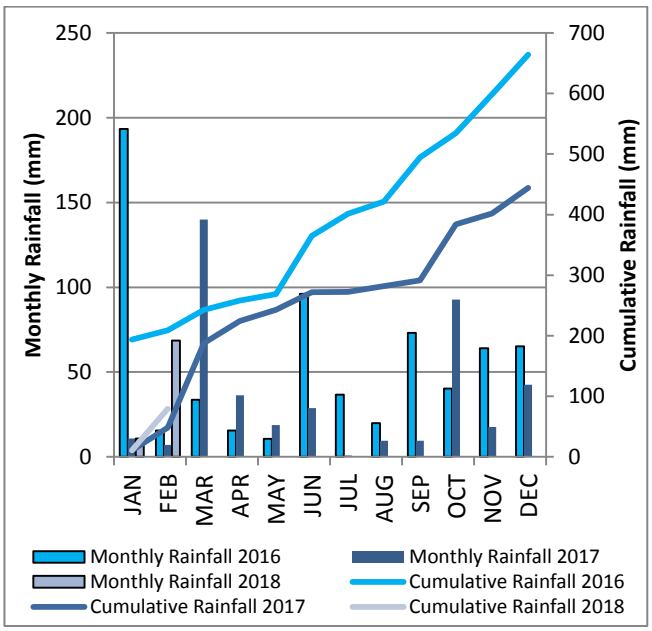


Figure 1: Rainfall Trend YTD

2.1.2 Wind Speed and Direction

Winds from the South – East were dominant throughout the reporting period as shown in **Error! Reference source not found.**.

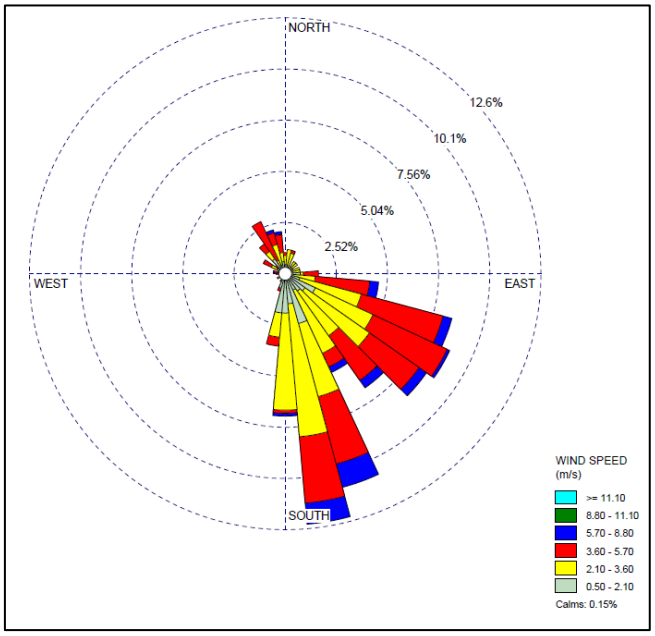


Figure 2: Charlton Ridge Wind Rose – February 2018

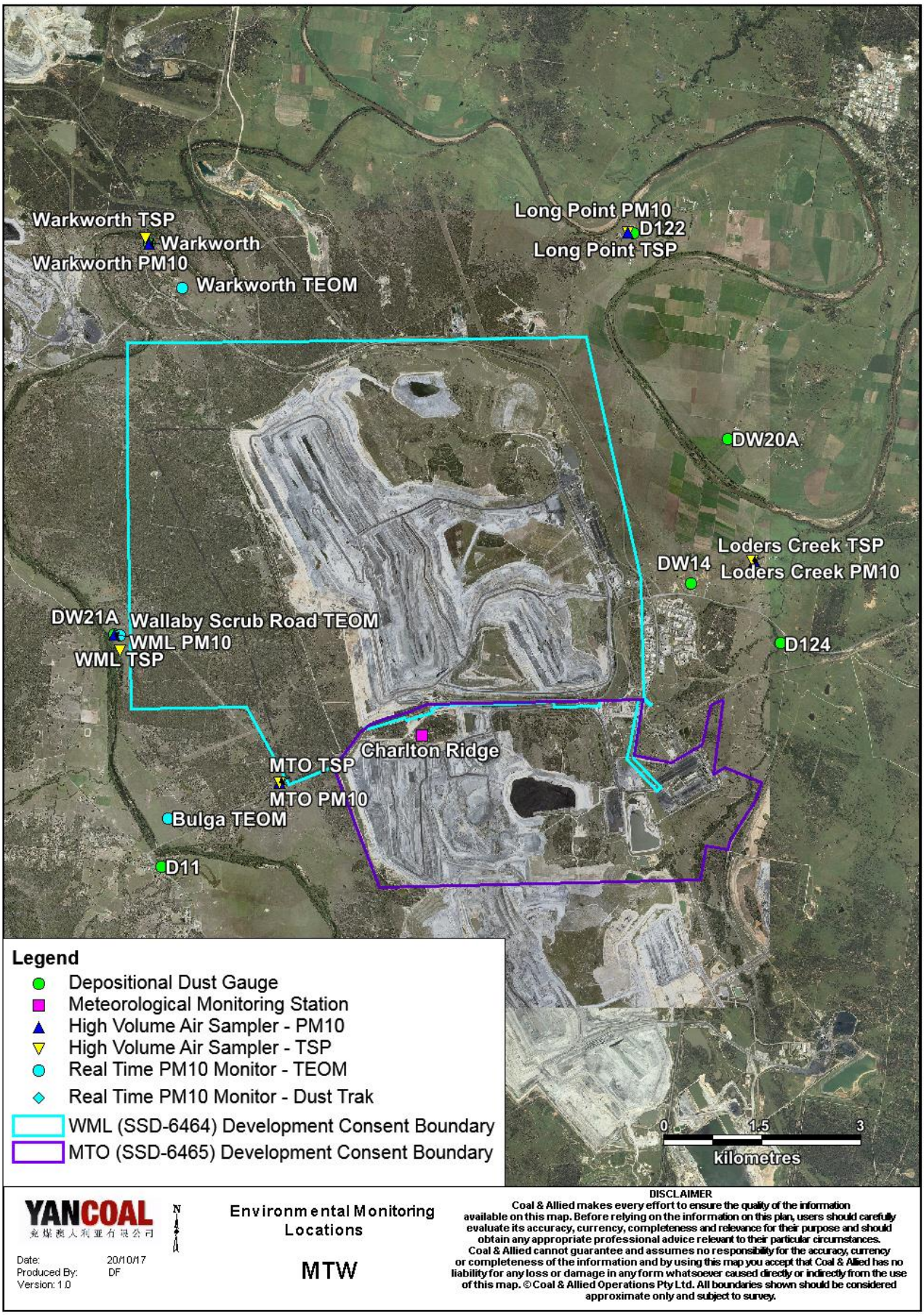


Figure 3: Air Quality Monitoring Locations

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.

Error! Reference source not found. 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 D122, D124 and Warkworth monitors recorded monthly results above the long term impact assessment criteria of 4.0 g/m^2 per month. Field notes associated with D122, D124 and Warkworth confirm the presence of bird droppings and/or vegetation and/or insects. As such the results are considered contaminated and will be excluded from calculation of the annual average.

An assessment of MTW's contribution to the long term assessment criteria will be reported in the 2018 Annual Return.

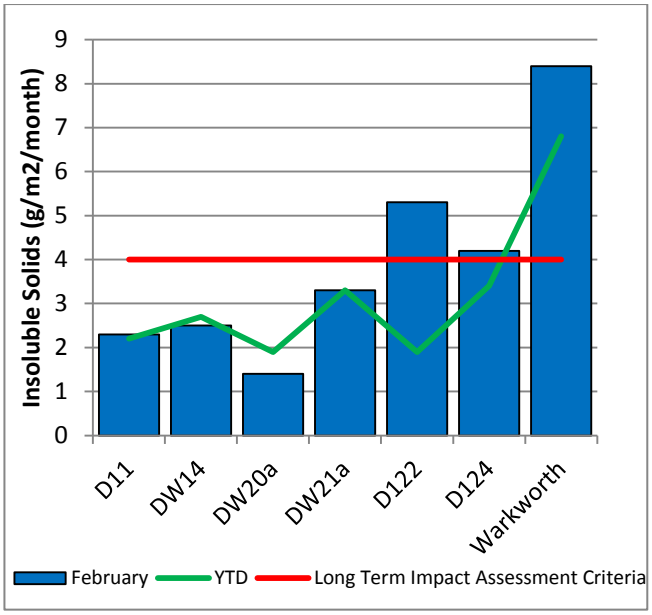


Figure 4: Depositional Dust – February 2018

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

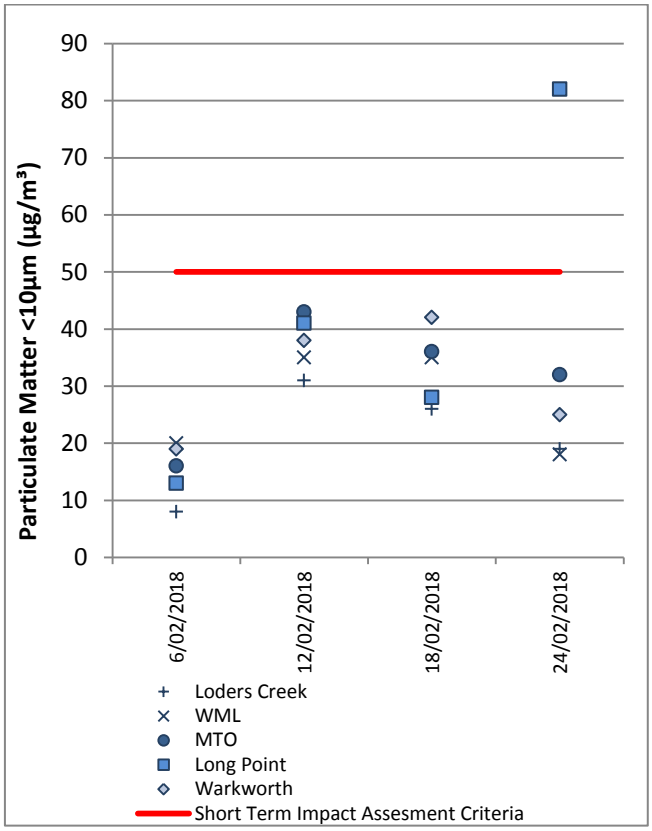


Figure 5 shows the individual PM_{10} results at each monitoring station against the short term impact assessment criteria of 50µg/m³.

On 24/02/2018 the Long Point HVAS PM_{10} unit recorded a result of 82µg/m^3, which is greater than the short term (24hr) PM_{10} impact assessment criteria.

An Investigation determined that the wind direction was generally not from MTW's angle of influence at Long Point on the 24th February. Accordingly, no further action is required.

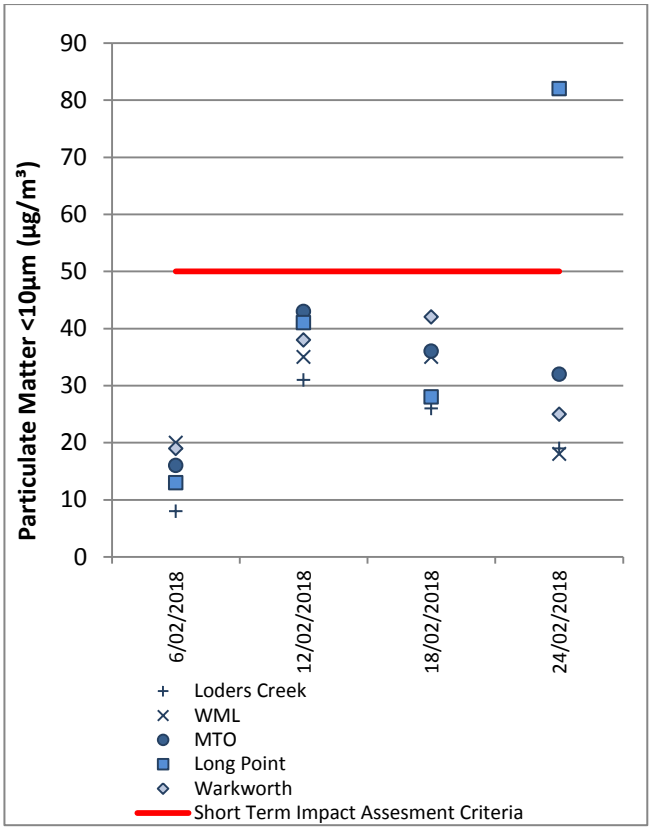


Figure 5: Individual PM_{10} Results – February 2018

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

An assessment of MTW's contribution to the long term assessment criteria will be reported in the 2018 Annual Return.

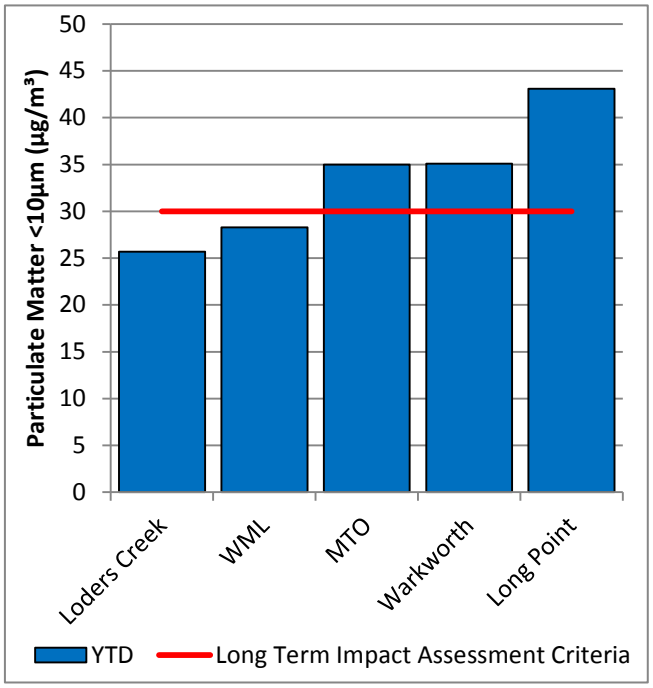


Figure 6: Annual Average PM_{10} – February 2018

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 contribution to the long term assessment criteria will be reported in the 2018 Annual Return.

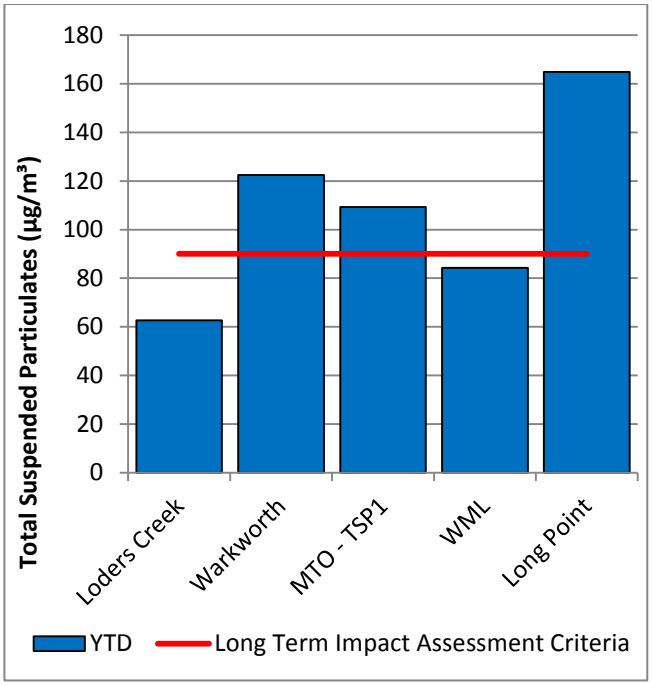


Figure 7: Annual Average Total Suspended Particulates – February 2018

Mt 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.

Seven TEOM PM_{10} measurements exceeded the 24 hour short term impact assessment criteria during the reporting period. Each was investigated to determine the level of contribution from MTW activities in accordance with the compliance protocol outlined in the MTW Air Quality Management Plan. All recorded exceedances were determined to be compliant with the relevant criterion.

A summary of the investigations undertaken for each short term PM_{10} exceedance are provided in Table 2.

2.3.3 Real Time PM_{10} Results

Table 2: 24hr PM_{10} Investigations

Date	Site	24hr PM_{10} result ($\mu g/m^3$)	Estimated contribution from MTW ($\mu g/m^3$)	Discussion
15/02/2018	Bulga TEOM	66.7	3.9	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 3.9µg/m3 or ~5.8% of the measured result. As the calculated contribution was less than 75% of the measured result MTW operations are not considered to be a significant contributor to the result as described in the MTW Air Quality Management Plan.
16/02/2018	Bulga TEOM	57.9	1.6	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 1.6µg/m3 or ~2.8% of the measured result. As the calculated contribution was less than 75% of the measured result MTW operations are not considered to be a significant contributor to the result as described in the MTW Air Quality Management Plan.

15/02/2018	Wallaby Scrub Road TEOM	62.3	40.8	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 40.8µg/m3 or ~65.5% of the measured result. As the calculated contribution was less than 75% of the measured result MTW operations are not considered to be a significant contributor to the result as described in the MTW Air Quality Management Plan.
09/02/2018	Warkworth OEH TEOM	52.5	16.7	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 16.7µg/m3 or ~31.8% of the measured result. As the calculated contribution was less than 75% of the measured result MTW operations are not considered to be a significant contributor to the result as described in the MTW Air Quality Management Plan.
15/02/2018	Warkworth OEH TEOM	92.6	29.8	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 29.8µg/m3 or ~32.2% of the measured result. As the calculated contribution was less than 75% of the measured result MTW operations are not considered to be a significant contributor to the result as described in the MTW Air Quality Management Plan.
16/02/2018	Warkworth OEH TEOM	52.4	23.3	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 23.3µg/m3 or ~44.6% of the measured result. As the calculated contribution was less than 75% of the measured result MTW operations are not considered to be a significant contributor to the result as described in the MTW Air Quality Management Plan.
19/02/2018	Warkworth OEH TEOM	58.1	34.8	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 34.8µg/m3 or ~ 59.9% of the measured result. As the calculated contribution was less than 75% of the measured result MTW operations are not considered to be a significant contributor to the result as described in the MTW Air Quality Management Plan.

2.3.4 Real Time Alarms for Air Quality

During February, the real time monitoring system generated 196 automated air quality related alerts, including 6 alerts for adverse meteorological conditions and 190 alerts for elevated PM_{10} levels.

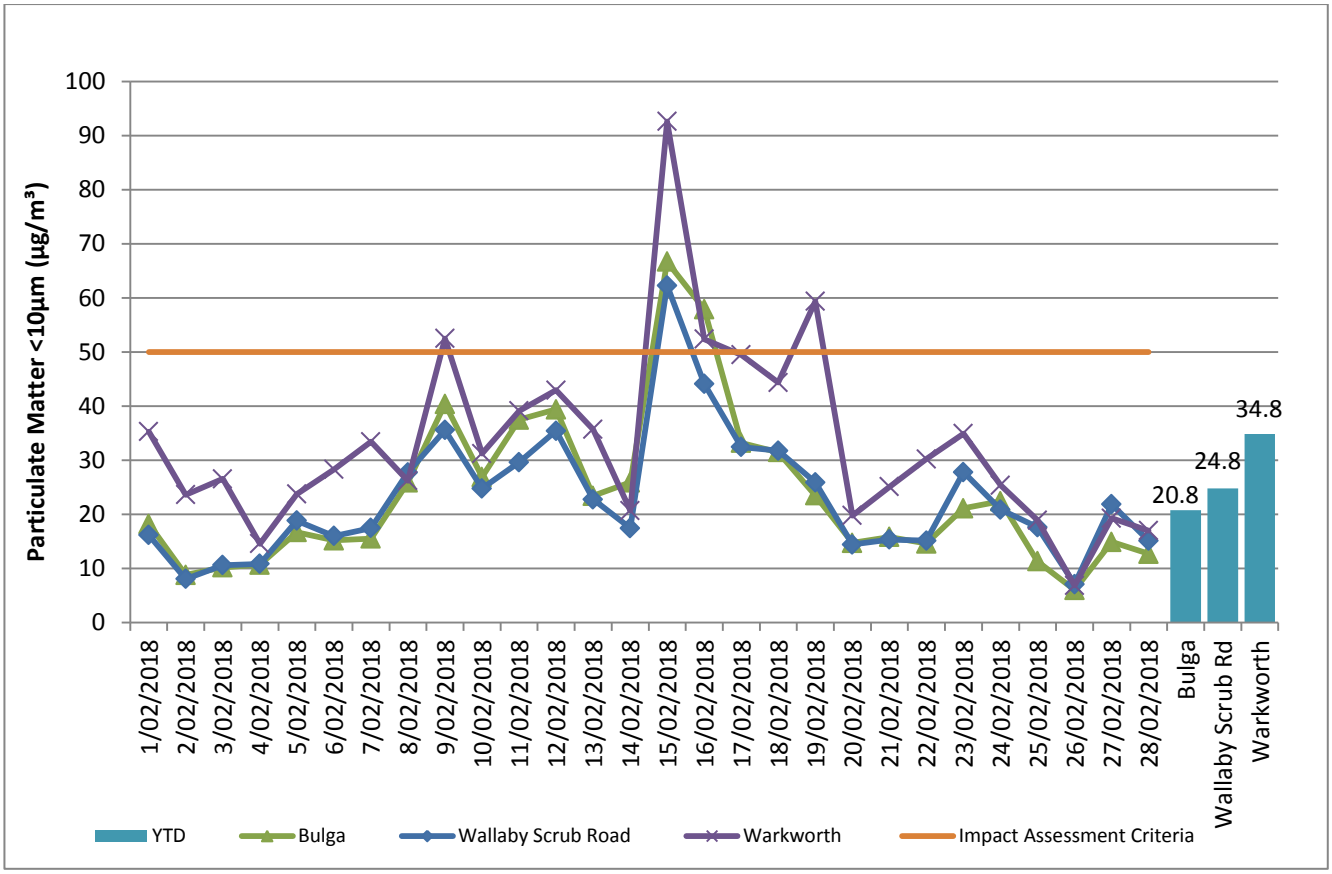


Figure 8: Real Time PM_{10} daily 24hr average and annual average – February 2018

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 monitor the potential impact of mining on the river. Other Hunter River tributaries are also monitored.

Results of monitoring are reported quarterly, next available in the March 2018 report.

3.2 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 March 2018 report.

3.3 HRSTS Discharge

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

During the reporting period no water was discharged under the HRSTS.

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 **Error! Reference source not found.**.

4.1 Blast Monitoring Results

During February 2018, 26 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 are summarised in Table 3.

Table 3: 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.

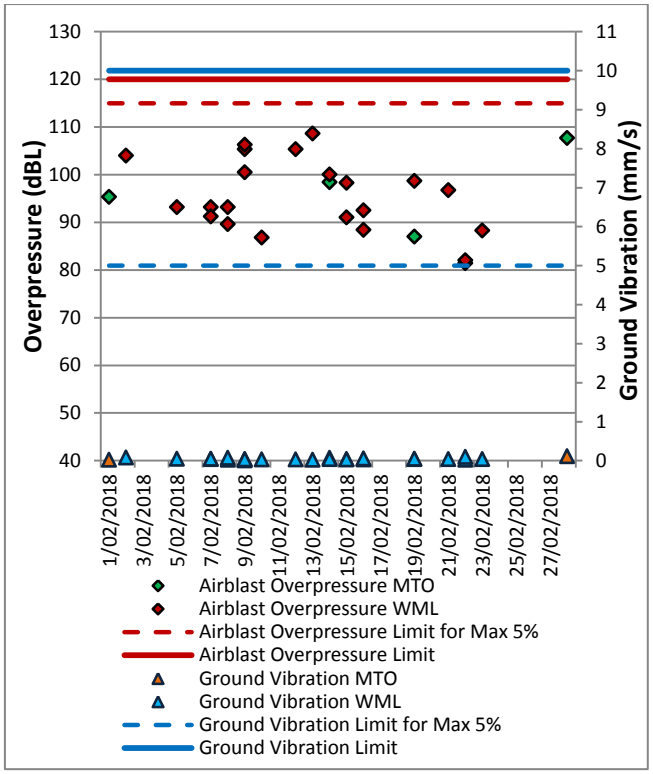


Figure 9: Abbey Green Blast Monitoring Results – February 2018

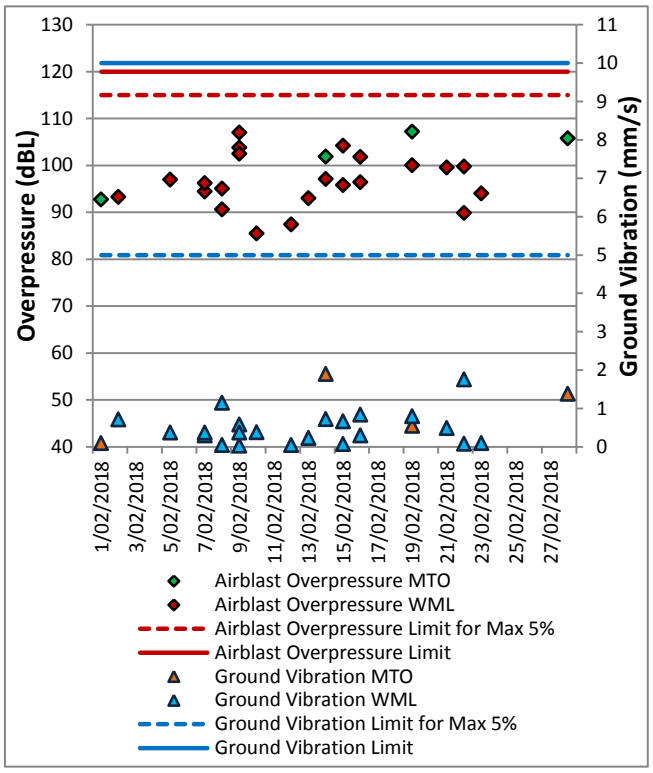


Figure 10: Bulga Village Blast Monitoring Results – February 2018

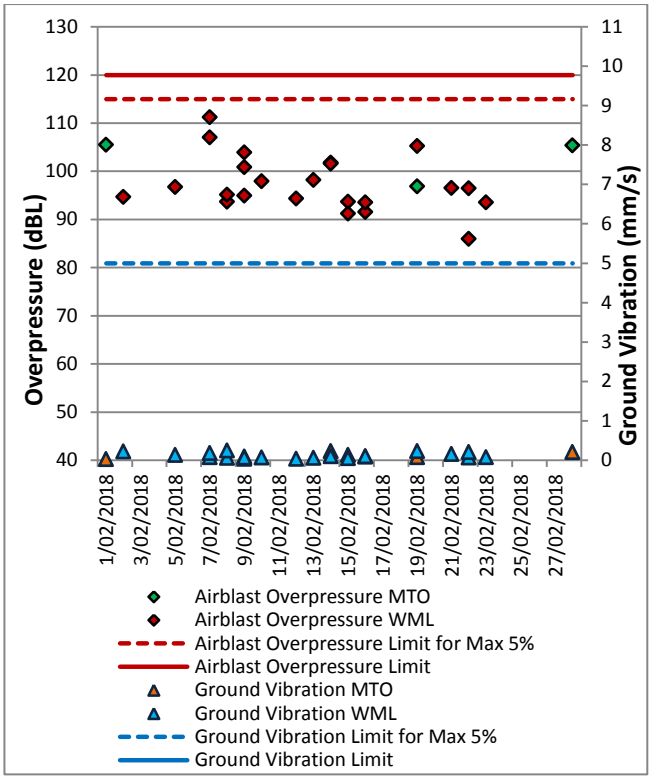


Figure 12: MTIE Blast Monitoring Results – February 2018

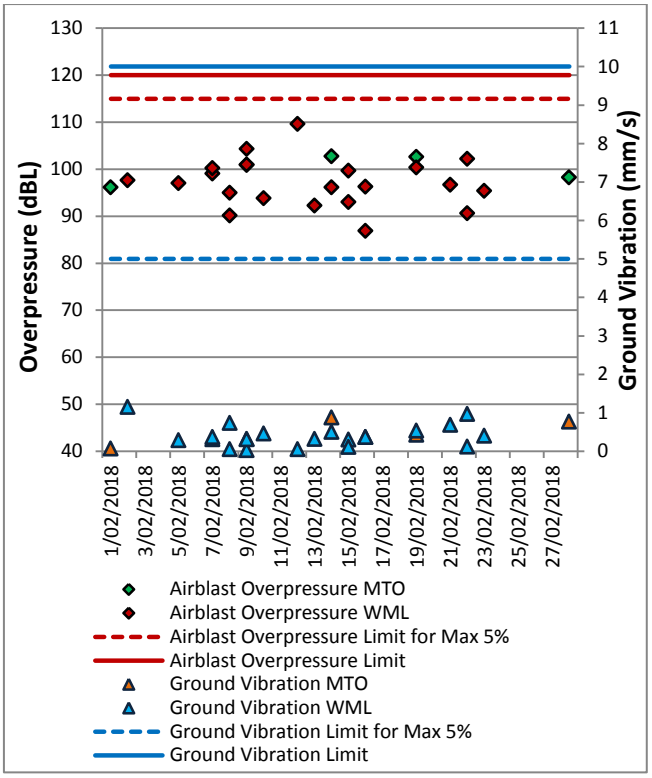


Figure 11: Wambo Road Blast Monitoring Results – February 2018

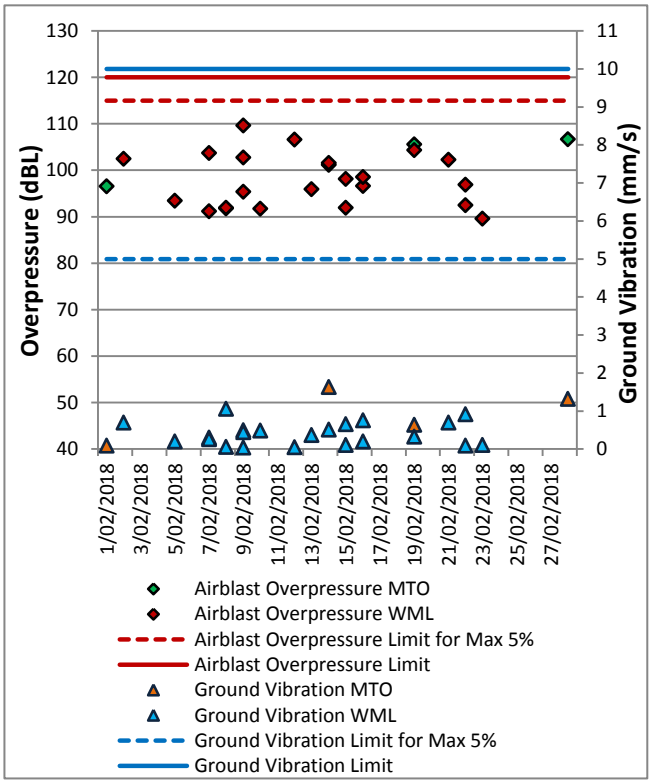


Figure 13: Wollemi Peak Road Blast Monitoring Results – February 2018

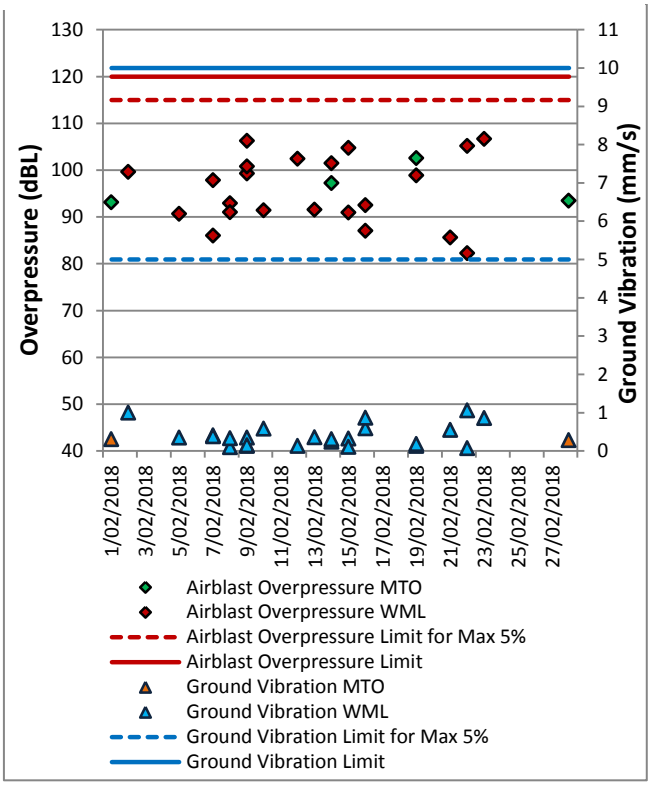


Figure 14: Warkworth Blast Monitoring Results – February 2018

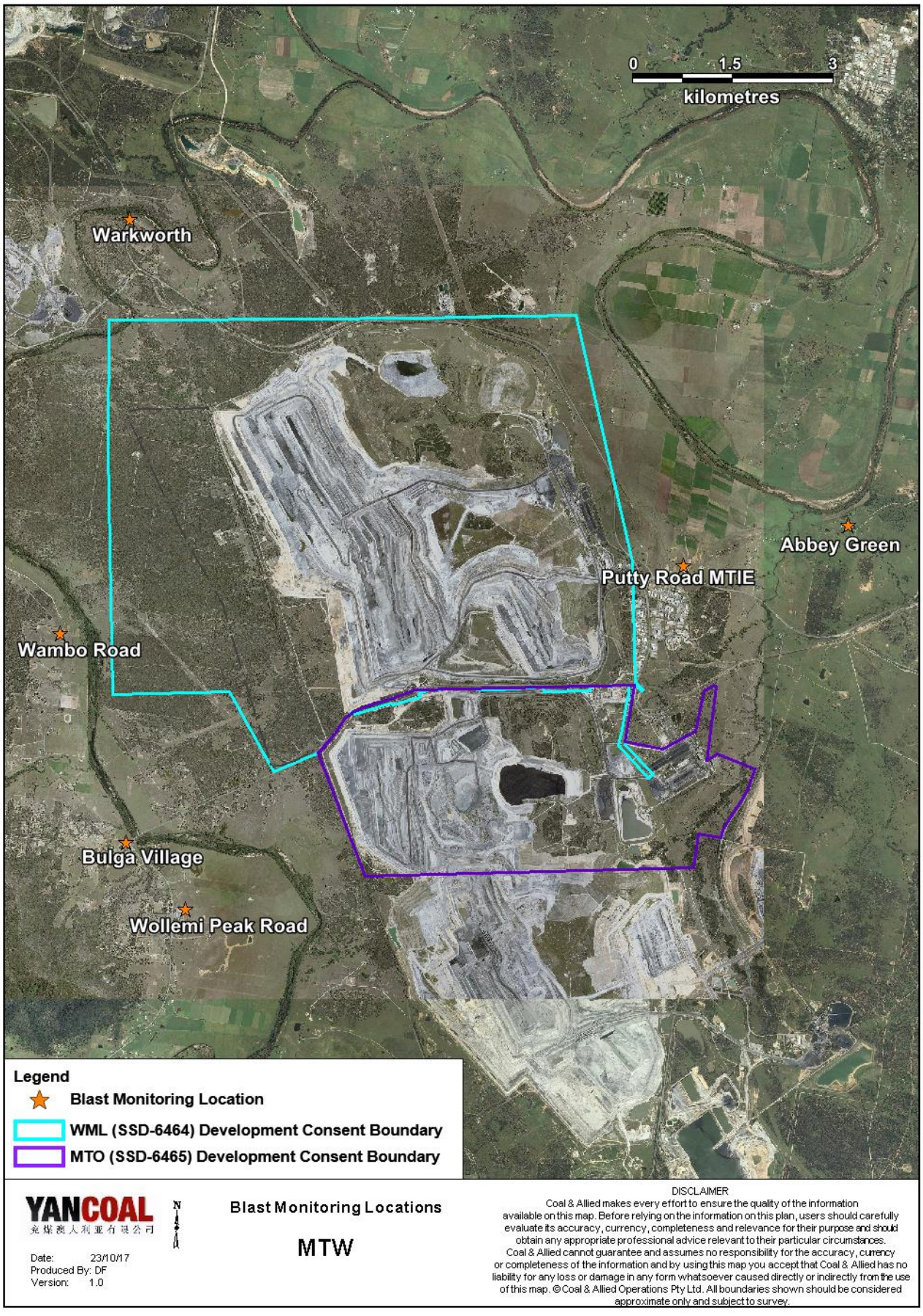


Figure 15: MTW Blast Monitoring Location Plan

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 20 February 2018. All measurements complied with the relevant criteria. Results are detailed in Table 4 to **Error! Reference source not found.**.

5.1.1 WML Noise Assessment

Compliance assessments undertaken against the WML noise criteria are presented in Tables 4 and 5.

Table 4: $L_{Aeq,\ 15\ minute}$ Warkworth Impact Assessment Criteria – February 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion dB(A)	Criterion Applies?[1,5]	WML L_{Aeq} dB[2,4]	Exceedance[3]
Bulga RFS	21/02/2018 0:04	3.0	D	37	Yes	IA	Nil
Bulga Village	20/02/2018 22:01	2.7	E	38	Yes	<20	Nil
Gouldsville	20/02/2018 22:00	2.7	E	38	Yes	30	Nil
Inlet Rd	20/02/2018 21:34	4.2	D	37	No	IA	NA
Inlet Rd West	20/02/2018 21:08	2.8	F	35	No	IA	NA
Long Point	20/02/2018 21:38	4.2	D	35	No	IA	NA
South Bulga	21/02/2018 0:47	2.9	D	35	Yes	IA	Nil
Wambo Road	20/02/2018 22:37	2.6	E	38	Yes	<25	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;
2. Estimated or measured LAeq,15minute attributed to WML;
3. NA means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable;
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.

Table 5: $L_{A1,\ 1\ minute}$ Warkworth - Impact Assessment Criteria – February 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion dB(A)	Criterion Applies?[1,5]	WML $L_{A1,\ 1min}$ dB[2,4]	Exceedance[3]
Bulga RFS	21/02/2018 0:04	3.0	D	47	Yes	IA	Nil
Bulga Village	20/02/2018 22:01	2.7	E	48	Yes	<20	Nil
Gouldsville	20/02/2018 22:00	2.7	E	48	Yes	37	Nil
Inlet Rd	20/02/2018 21:34	4.2	D	47	No	IA	NA
Inlet Rd West	20/02/2018 21:08	2.8	F	45	No	IA	NA
Long Point	20/02/2018 21:38	4.2	D	45	No	IA	NA
South Bulga	21/02/2018 0:47	2.9	D	45	Yes	IA	Nil
Wambo Road	20/02/2018 22:37	2.6	E	48	Yes	26	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;
2. Estimated or measured LA1,1minute attributed to Warkworth mine (WML);
3. NA in exceedance column means atmospheric conditions outside conditions specified in project approval and so criterion is not applicable. NA (not applicable) in criterion column means criterion not specified for this location;
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.

5.1.3 MTO Noise Assessment

Compliance assessments undertaken against the MTO noise criteria are presented in Table 6 and 7.

Table 6: $L_{Aeq,\ 15minute}$ Mount Thorley - Impact Assessment Criteria – February 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion dB	Criterion Applies?[1,5]	MTO L_{Aeq} dB[2,4]	Exceedance[3]
Bulga RFS	21/02/2018 0:04	3.0	D	37	Yes	IA	Nil
Bulga Village	20/02/2018 22:01	2.7	E	38	Yes	IA	Nil
Gouldsville	20/02/2018 22:00	2.7	E	35	Yes	IA	Nil
Inlet Rd	20/02/2018 21:34	4.2	D	37	No	<25	NA
Inlet Rd West	20/02/2018 21:08	2.8	F	35	No	<20	NA
Long Point	20/02/2018 21:38	4.2	D	35	No	26	NA
South Bulga	21/02/2018 0:47	2.9	D	36	Yes	IA	Nil
Wambo Road	20/02/2018 22:37	2.6	E	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;
2. Estimated or measured LAeq,15minute attributed to Mt Thorley Operations (MTO);
3. NA means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable;
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.

Table 7: $L_{A1,\ 1Minute}$ Mount Thorley - Impact Assessment Criteria – February 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion dB	Criterion Applies?[1,5]	MTO $L_{A1,\ 1min}$ dB[2,4]	Exceedance[3]
Bulga RFS	21/02/2018 0:04	3.0	D	47	Yes	IA	Nil
Bulga Village	20/02/2018 22:01	2.7	E	48	Yes	IA	Nil
Gouldsville	20/02/2018 22:00	2.7	E	45	Yes	IA	Nil
Inlet Rd	20/02/2018 21:34	4.2	D	47	No	<25	NA
Inlet Rd West	20/02/2018 21:08	2.8	F	45	No	<20	NA
Long Point	20/02/2018 21:38	4.2	D	45	No	30	NA
South Bulga	21/02/2018 0:47	2.9	D	46	Yes	IA	Nil
Wambo Road	20/02/2018 22:37	2.6	E	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;
2. Estimated or measured LA1,1minute attributed to Mt Thorley Operations (MTO);
3. NA in exceedance column means atmospheric conditions outside conditions specified in project approval and so criterion is not applicable. NA (not applicable) in criterion column means criterion not specified for this location;
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.

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 penalty has been assessed. During February 2018 no measurements required the penalty to be applied. The assessment for low frequency noise is shown in **Error! Reference source not found.**

Table 8: Low Frequency Noise Modifying Factor Assessment – February 2018

Location	Date and Time	Measured Site Only LA_{eq} dB (WML/MTO)	Site Only L_{Ceq} dB[4] (WML/MTO)	Site Only LCeq – LAeq dB[1,4] (WML/MTO)	Result Max exceedance of ref spectrum dB (WML/MTO)[2,3,4]	Penalty dB(A)	Exceedance
Bulga RFS	21/02/2018 0:04	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Bulga Village	20/02/2018 22:01	<20/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Gouldsville	20/02/2018 22:00	30/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Inlet Rd	20/02/2018 21:34	IA/<25	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Inlet Rd West	20/02/2018 21:08	IA/<20	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Long Point	20/02/2018 21:38	IA/26	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
South Bulga	21/02/2018 0:47	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Wambo Road	20/02/2018 22:37	<25/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA

Notes:
1. As per NPfI, if LCeq – LAeq >= 15 dB further assessment of low frequency noise required.
2. As per NPfI, compare measured spectrum against reference spectrum to determine if the low frequency modifying factor is triggered and application of penalty is required;
3. Bold results and penalties in red are where the relevant modifying factor trigger was exceeded; and
4. Where it is not possible to determine the site only result due to the presence of other low frequency noise sources occurring during the measurement, or where criteria were not applicable due to meteorological conditions, this is noted as NA (not available) and no further assessment has been undertaken.

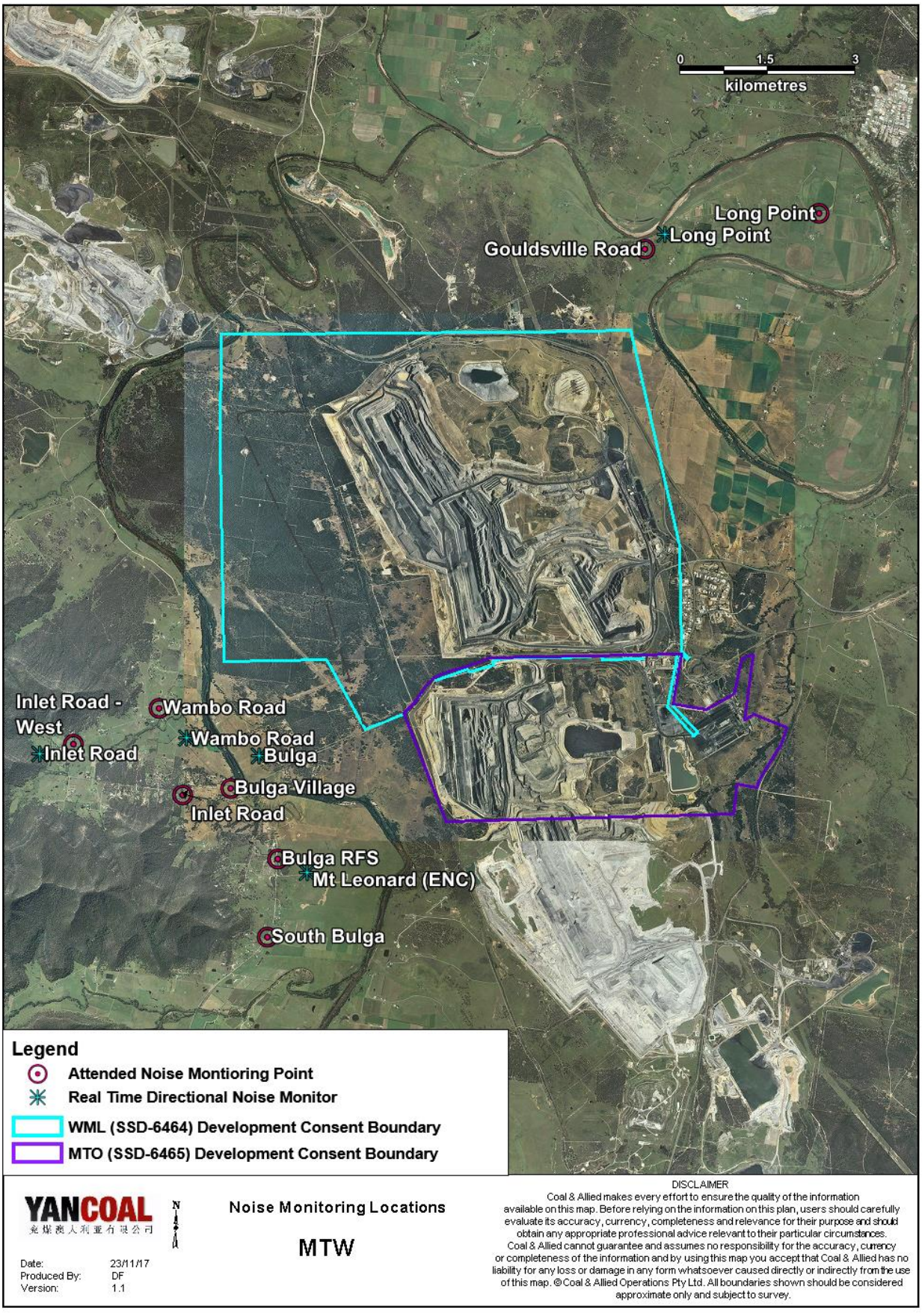


Figure 16: Noise Monitoring Location Plan

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 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 February are provided in Table 9.

Table 9: Supplementary Attended Noise Monitoring Data – February 2018

No. of assessments	No. of assessments > trigger	No. of nights where assessments > trigger	% greater than trigger
489	6	2	1.2

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

6.0 OPERATIONAL DOWNTIME

During February, a total of 346 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.

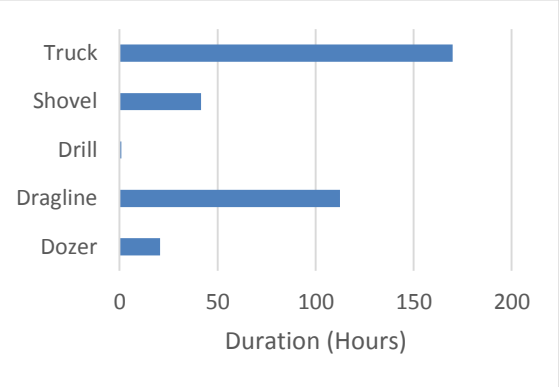


Figure 17: Operational Downtime by Equipment Type – February 2018

7.0 REHABILITATION

During February, 8.9 Ha of land was released, 9.7 Ha of land was bulk shaped and 2.4 Ha of land was composted.

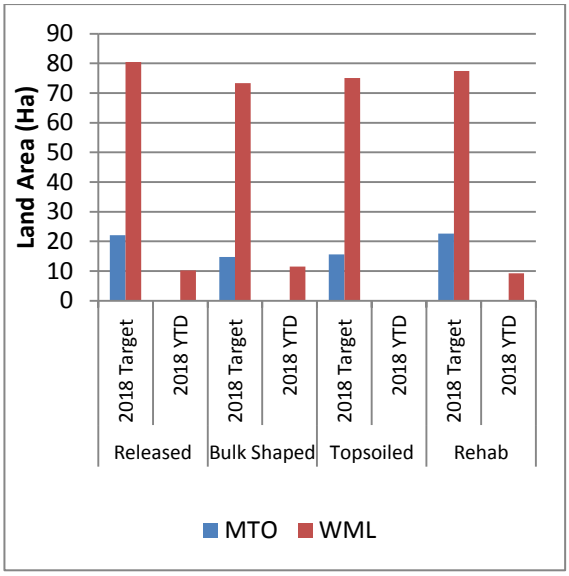


Figure 18: Rehabilitation YTD – February 2018

8.0 ENVIRONMENTAL INCIDENTS

During the reporting period there were no reportable environmental incidents.

9.0 COMPLAINTS

During the reporting period 19 complaints were received. Details of these complaints are shown in **Error! Reference source not found.** below.

	Noise	Dust	Blast	Lighting	Other	Total
January	9	6	14	0	1	30
February	8	4	2	3	2	19
March	-	-	-	-	-	-
April	-	-	-	-	-	-
May	-	-	-	-	-	-
June	-	-	-	-	-	-
July	-	-	-	-	-	-
August	-	-	-	-	-	-
September	-	-	-	-	-	-
October	-	-	-	-	-	-
November	-	-	-	-	-	-
December	-	-	-	-	-	-
Total	17	10	16	3	3	49

Figure 19: Complaints Summary – YTD February

Appendix A: Meteorological Data

Table 10: Meteorological Data – Charlton Ridge Meteorological Station – February 2018

Date	Air Temperature Maximum (°C)	Air Temperature Minimum (°C)	Relative Humidity Maximum (%)	Relative Humidity Minimum (%)	Solar Radiation Maximum (W/Sq. M)	Wind Direction Average (°)	Wind Speed Average (m/sec)	Rainfall(mm)
1/02/2018 0:00	23	16	67	39	1212	138	3.3	0.0
2/02/2018 0:00	23	14	79	40	969	153	3.4	0.0
3/02/2018 0:00	27	14	90	37	1465	155	4.1	3.4
4/02/2018 0:00	28	14	83	31	1545	142	3.8	0.0
5/02/2018 0:00	32	13	84	19	1102	153	2.4	0.0
6/02/2018 0:00	31	15	81	22	1344	135	3.1	0.0
7/02/2018 0:00	32	16	78	24	1205	130	3.1	0.0
8/02/2018 0:00	35	14	74	12	1082	145	1.9	0.0
9/02/2018 0:00	40	18	79	10	1233	159	2.9	2.2
10/02/2018	36	18	89	22	1051	156	2.4	0.0
11/02/2018	39	20	73	11	1301	186	3.4	0.0
12/02/2018	38	20	79	6	1163	153	3.0	0.0
13/02/2018	34	20	83	26	1137	134	3.2	0.0
14/02/2018	40	21	84	4	1161	205	3.1	0.0
15/02/2018	37	19	71	7	1064	157	3.2	0.0
16/02/2018	37	16	86	3	1300	184	2.9	0.0
17/02/2018	32	19	75	30	1137	131	3.3	0.0
18/02/2018	37	17	82	17	1008	144	2.7	0.0
19/02/2018	31	18	70	27	1316	141	3.4	0.0
20/02/2018	22	15	92	56	560	145	4.3	5.8
21/02/2018	28	14	88	31	1384	140	3.5	0.0
22/02/2018	30	15	78	28	1452	137	2.9	0.0
23/02/2018	33	16	81	25	1175	149	2.4	0.0
24/02/2018	35	18	84	29	1525	246	2.8	0.0
25/02/2018	35	15	95	32	1321	244	4.1	40.8
26/02/2018	19	14	98	77	1413	172	4.1	16.4
27/02/2018	27	13	85	37	1443	139	3.1	0.0
28/02/2018	34	11	92	29	1045	235	2.5	0.0

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

Appendix C: March Monthly Environmental Monitoring Report

Monthly Environmental Monitoring Report

Yancoal Mt Thorley Warkworth

March 2018

CONTENTS

Figures

Tables

Revision History

Version No.	Person Responsible	Document Status	Date
1.0	**Environmental Advisor**	**Draft**	**24/04/2018**
1.1	**Environmental Specialist**	**Final**	**26/04/2018**

1.0 INTRODUCTION

This report has been compiled to provide a monthly summary of environmental monitoring results for Mt Thorley Warkworth (MTW). This report includes all monitoring data collected for the period 1 March to 31 March 2018.

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

2018	Monthly Rainfall (mm)	Cumulative Rainfall (mm)
March	73.2	152.6

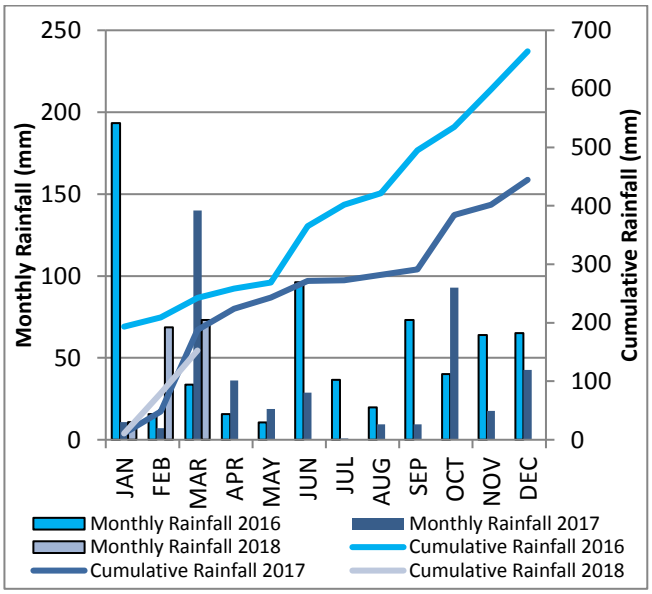


Figure 1: Rainfall Trends YTD

2.1.2 Wind Speed and Direction

Winds from the South were dominant throughout the reporting period as shown in Figure 2.

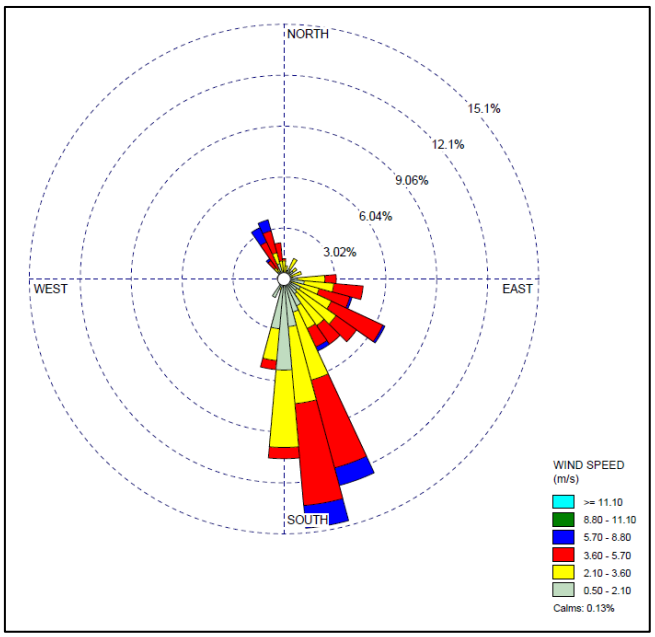


Figure 2: Charlton Ridge Wind Rose –March 2018

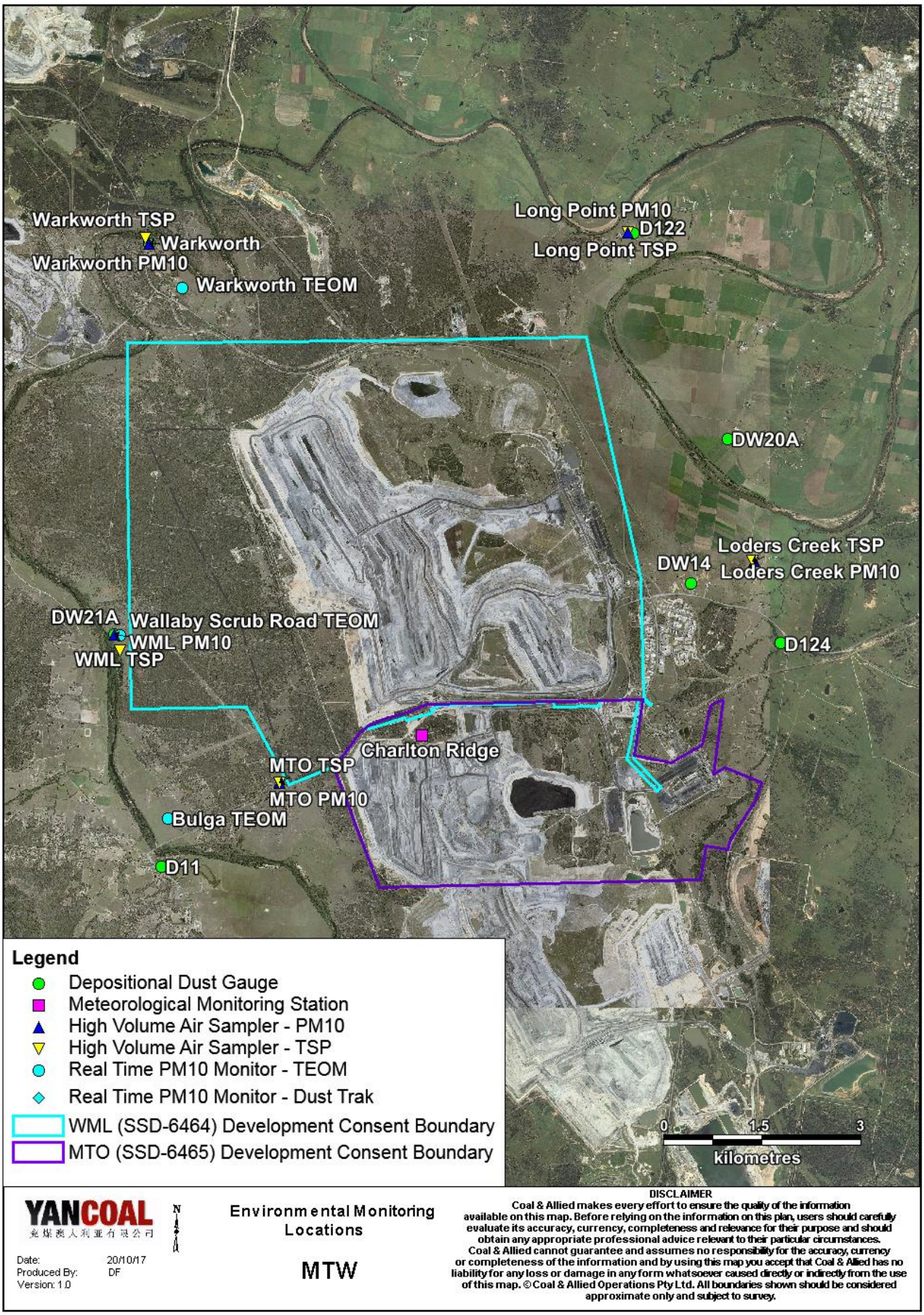


Figure 3: Air Quality Monitoring Locations

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 DW21a, D124 and Warkworth monitors recorded monthly results above the long term impact assessment criteria of 4.0 g/m^2 per month. Field notes associated with monitor DW21a results confirm the presence of insects. As such the results are considered contaminated and will be excluded from calculation of the annual average.

There is no evidence to suggest that the D124 and Warkworth results are contaminated. Accordingly, the results will be included in the annual average calculation.

An annual assessment of MTW's compliance with the Long Term Impact Assessment Criteria will be provided in the 2018 Annual Review.

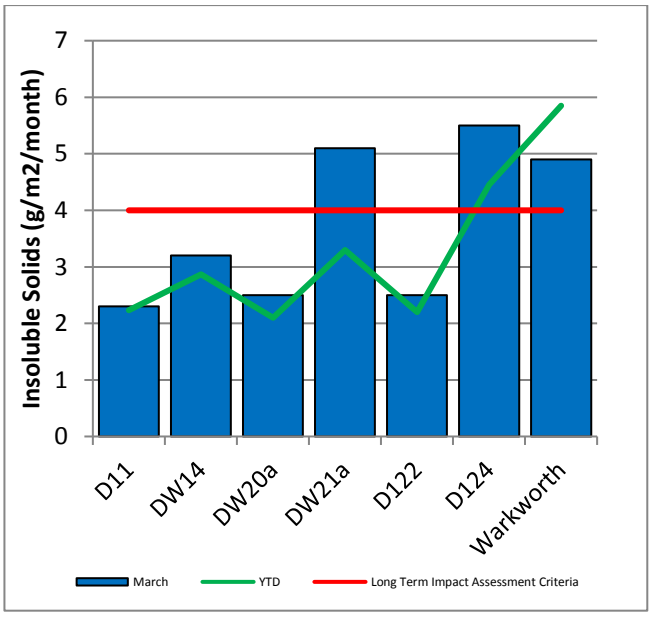


Figure 4: Depositional Dust – March 2018

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.

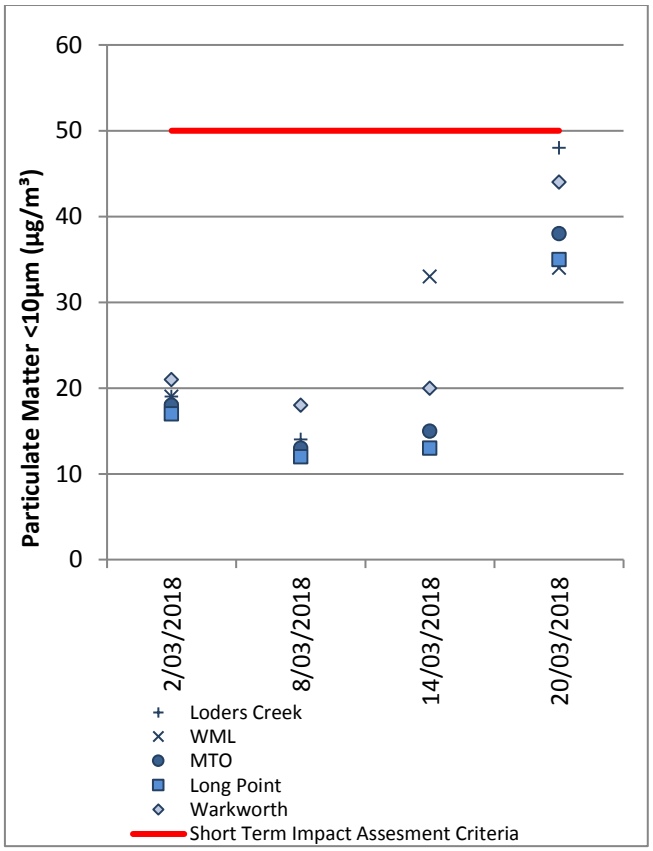


Figure 5: Individual PM_{10} Results – March 2018

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 2018 Annual Review.

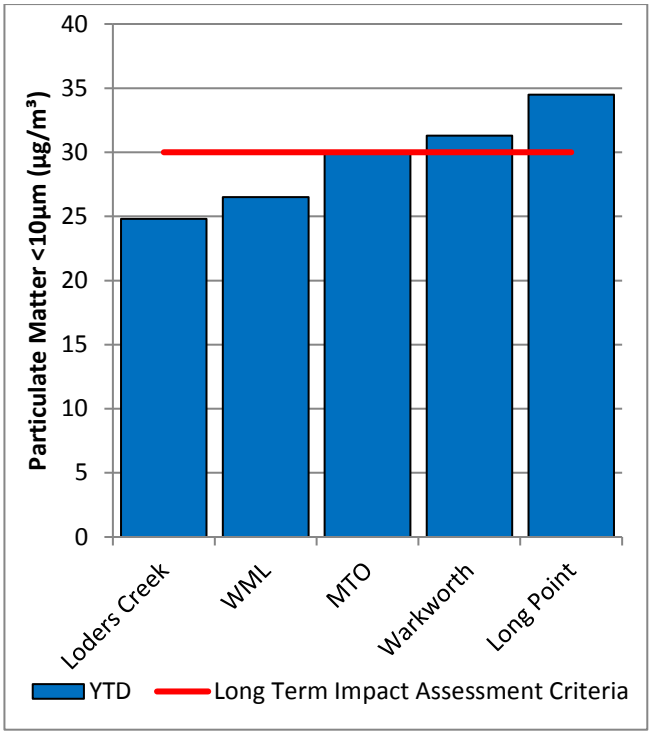


Figure 6: Annual Average PM_{10} –March 2018

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 2018 Annual Review.

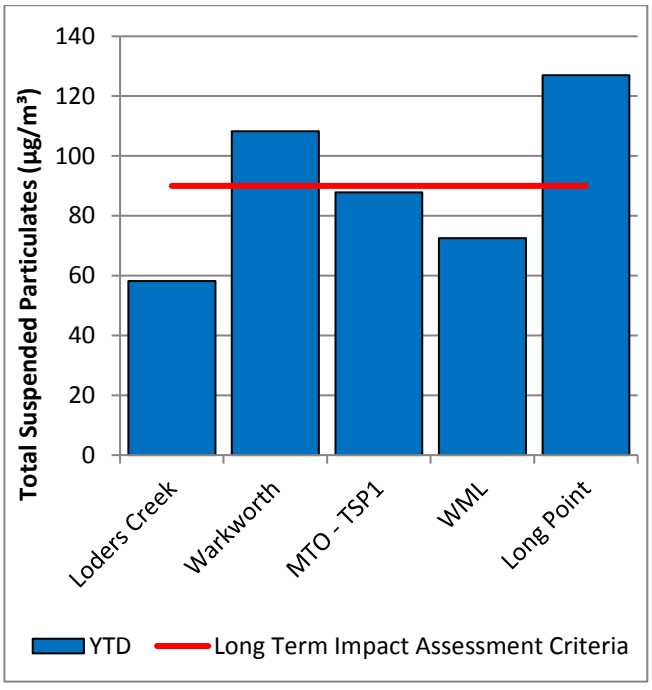


Figure 7: Annual Average Total Suspended Particulates – March 2018

2.3.3 Real Time PM_{10} Results

Mt 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

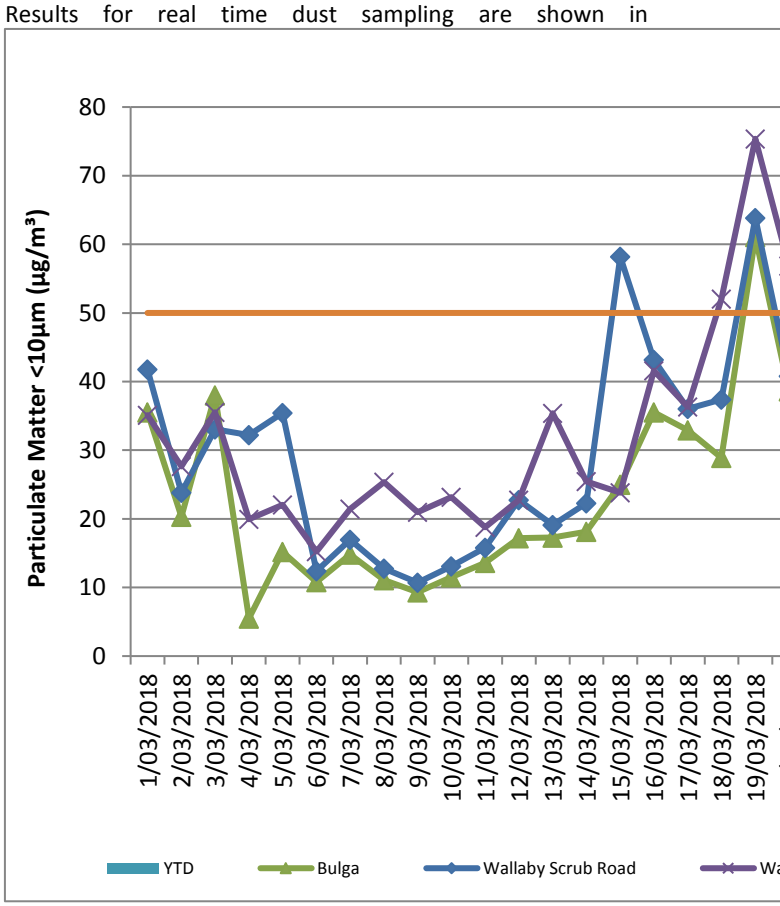


Figure 8, including the daily 24 hour average PM_{10} result and the year to date annual average PM_{10} result.

Six TEOM PM_{10} measurements exceeded the 24 hour short term impact assessment criteria during the reporting period. Each was investigated to determine the level of contribution from MTW activities in accordance with the compliance protocol outlined in the MTW Air Quality Management Plan. All recorded exceedances were determined to be compliant with the relevant criterion.

A summary of the investigations undertaken for each short term PM_{10} exceedance are provided in Table 2.

Note: Where reliable data was unable to be collected from the Bulga TEOM, data from the nearby OEH operated TEOM was sourced.

2.3.3 Real Time PM_{10} Results

Table 2: 24hr PM_{10} Investigations

Date	Site	24hr PM_{10} result ($\mu g/m^3$)	Estimated contribution from MTW ($\mu g/m^3$)	Discussion
15/03/2018	Wallaby Scrub Road TEOM	58.2	4.6	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 4.6µg/m3 or 8% of the measured result. As the calculated contribution was less than 75% of the measured result MTW is not considered to be a significant contributor to the result as described in the MTW Air Quality Management Plan.
18/03/2018	Warkworth OEH TEOM	52.1	8.8	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 8.8µg/m3 or 16.9% of the measured result. As the calculated contribution was less than 75% of the measured result MTW is not considered to be a significant contributor to the result as described in the MTW Air Quality Management Plan.
19/03/2018	Bulga OEH TEOM	61.1	N/A	An analysis of meteorological data has determined that the Bulga OEH monitoring location was predominantly upwind of MTW throughout the day. Therefore, it is unlikely that MTW was a significant contributor to the result and thus an estimation of contribution has not been calculated.
19/03/2018	Wallaby Scrub Road TEOM	63.8	23.0	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 23µg/m3 or 36.1% of the measured result. As the calculated contribution was less than 75% of the measured result MTW is not considered to be a significant contributor to

				the result as described in the MTW Air Quality Management Plan.
19/03/2018	Warkworth OEH TEOM	75.4	34.9	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 34.9µg/m3 or 46.3% of the measured result. As the calculated contribution was less than 75% of the measured result MTW is not considered to be a significant contributor to the result as described in the MTW Air Quality Management Plan.
20/03/2018	Warkworth OEH TEOM	56.8	30.6	An analysis of meteorological data has determined the maximum potential MTW contribution to the result to be in the order of 30.6µg/m3 or 53.9% of the measured result. As the calculated contribution was less than 75% of the measured result MTW is not considered to be a significant contributor to the result as described in the MTW Air Quality Management Plan.

2.3.4 Real Time Alarms for Air Quality

During March, the real time monitoring system generated 80 automated air quality related alerts, including 5 alerts for adverse meteorological conditions and 75 alerts for elevated PM_{10} levels.

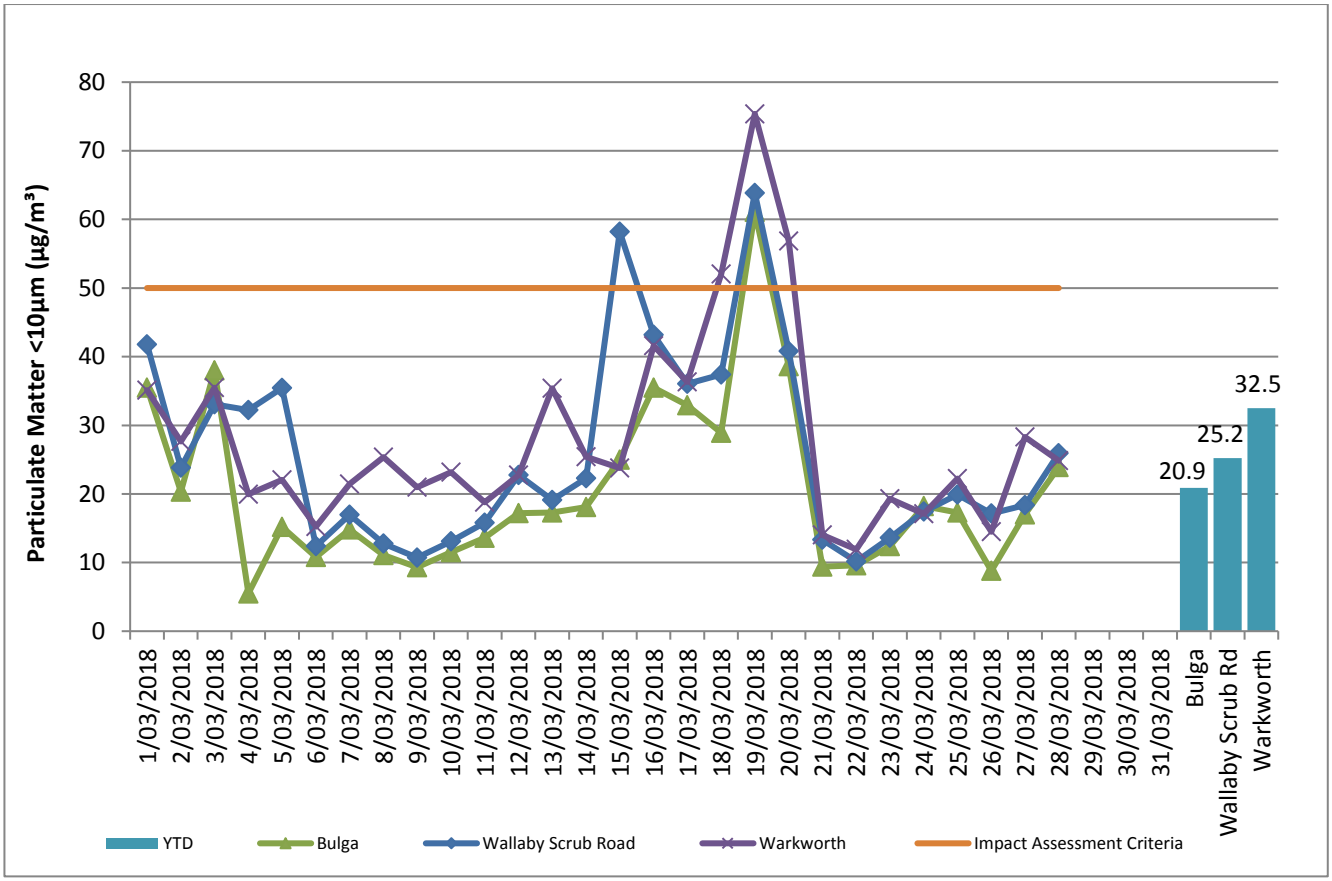


Figure 8: Real Time PM_{10} 24hr average and Year-to-date average – March 2018

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 (2015 – current) within MTW mine dams. Figure 12 to Figure 14 show the long term surface water trend (2015 - current) in surrounding watercourses.

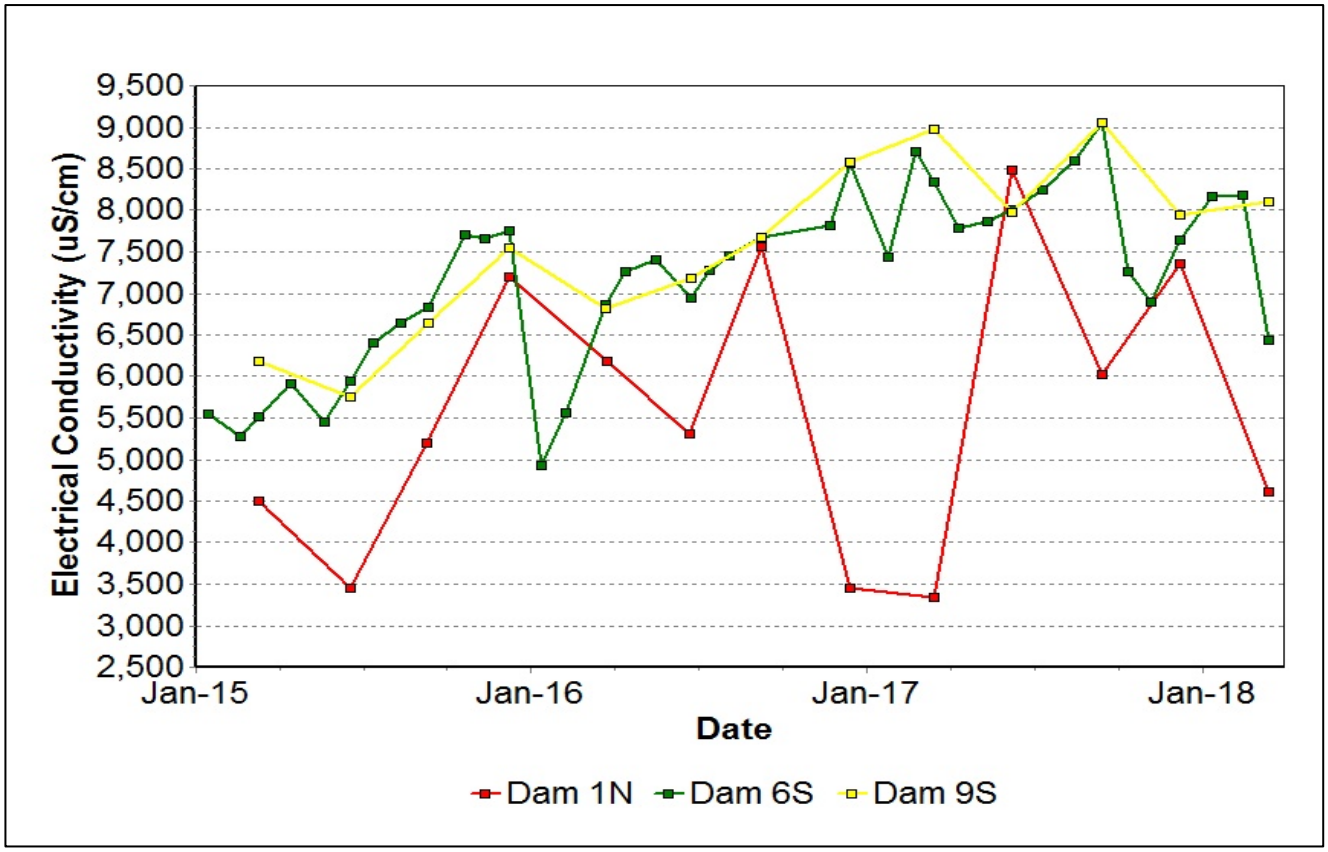


Figure 9: Site Dams Electrical Conductivity Trend – March 2018

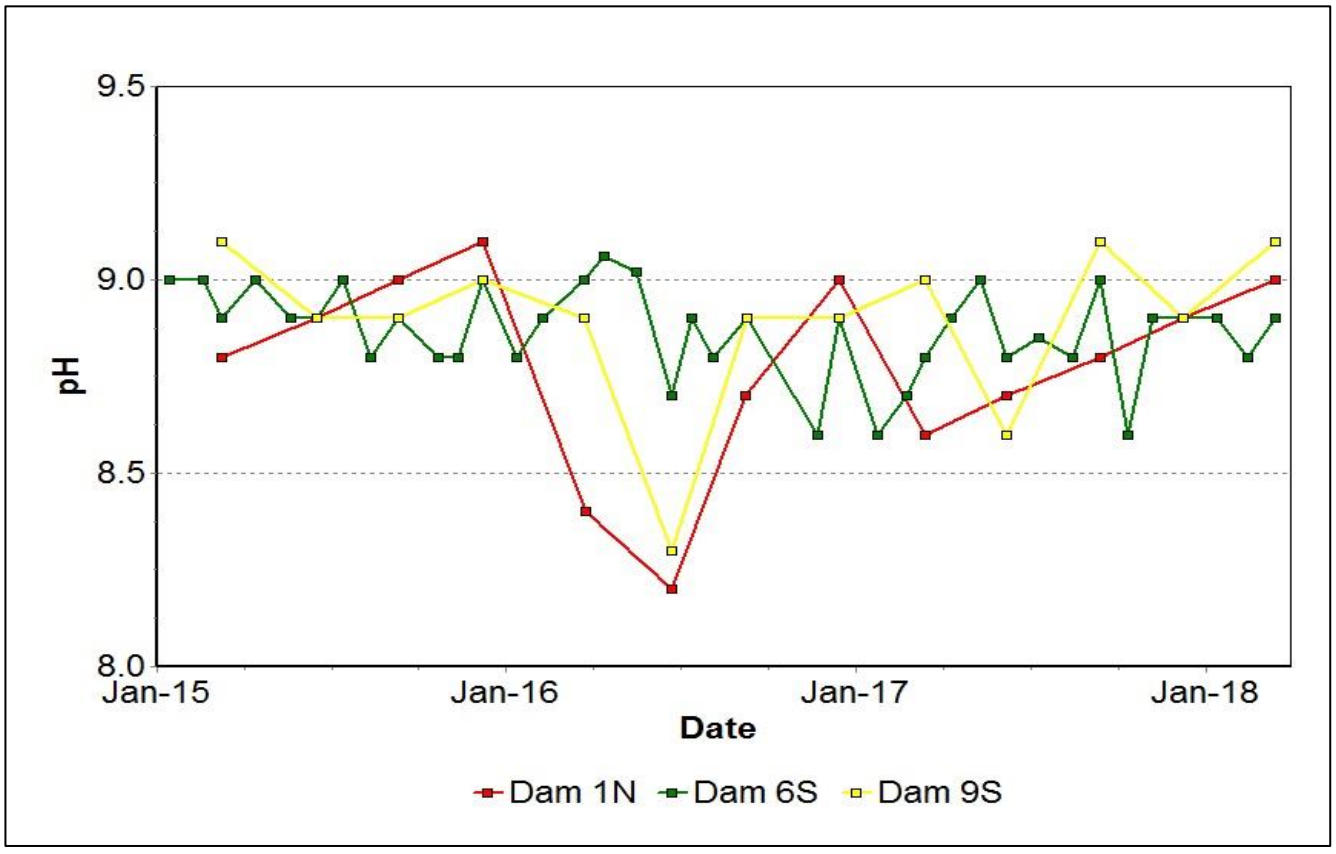


Figure 10: Site Dams pH Trend – March 2018

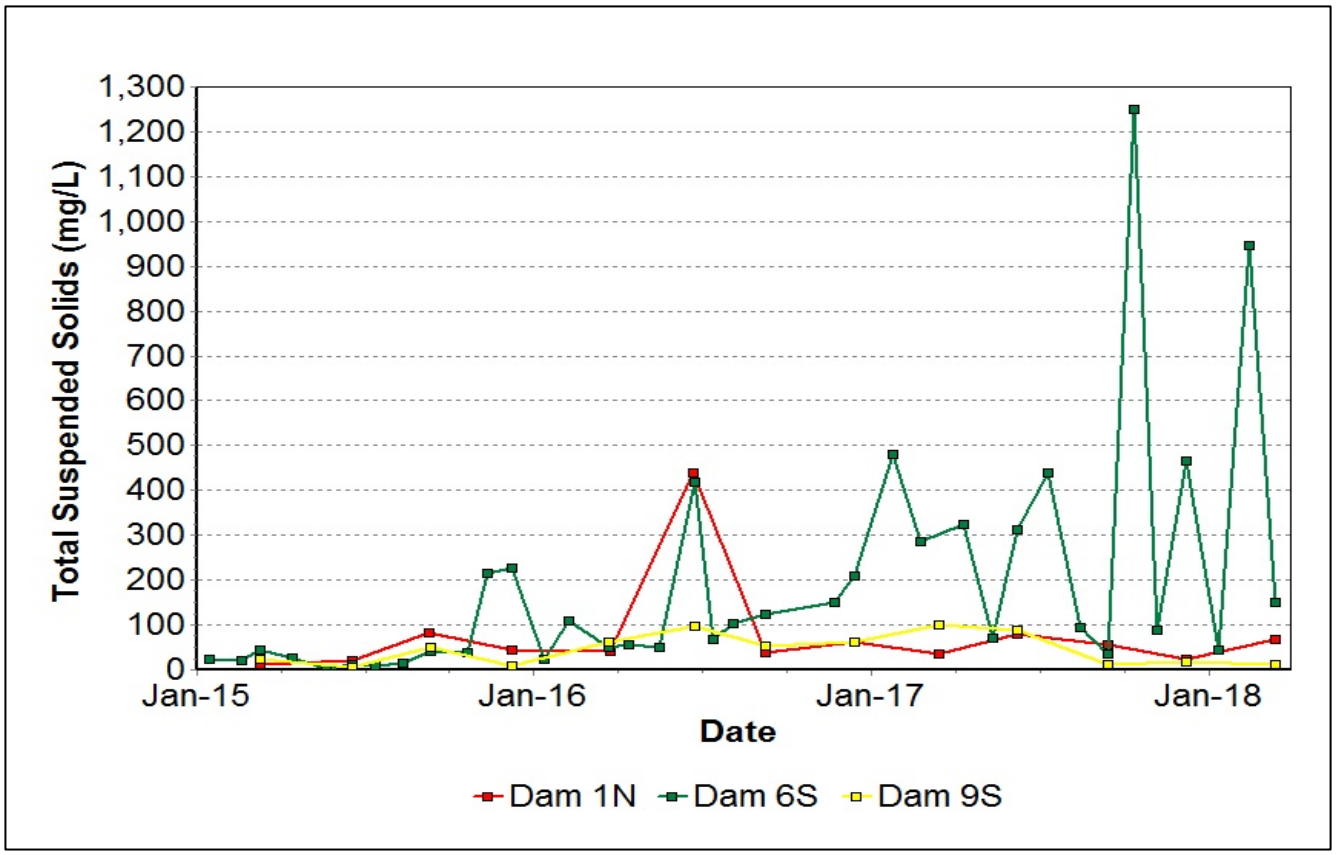


Figure 11: Site Dams Total Suspended Solids Trend – March 2018

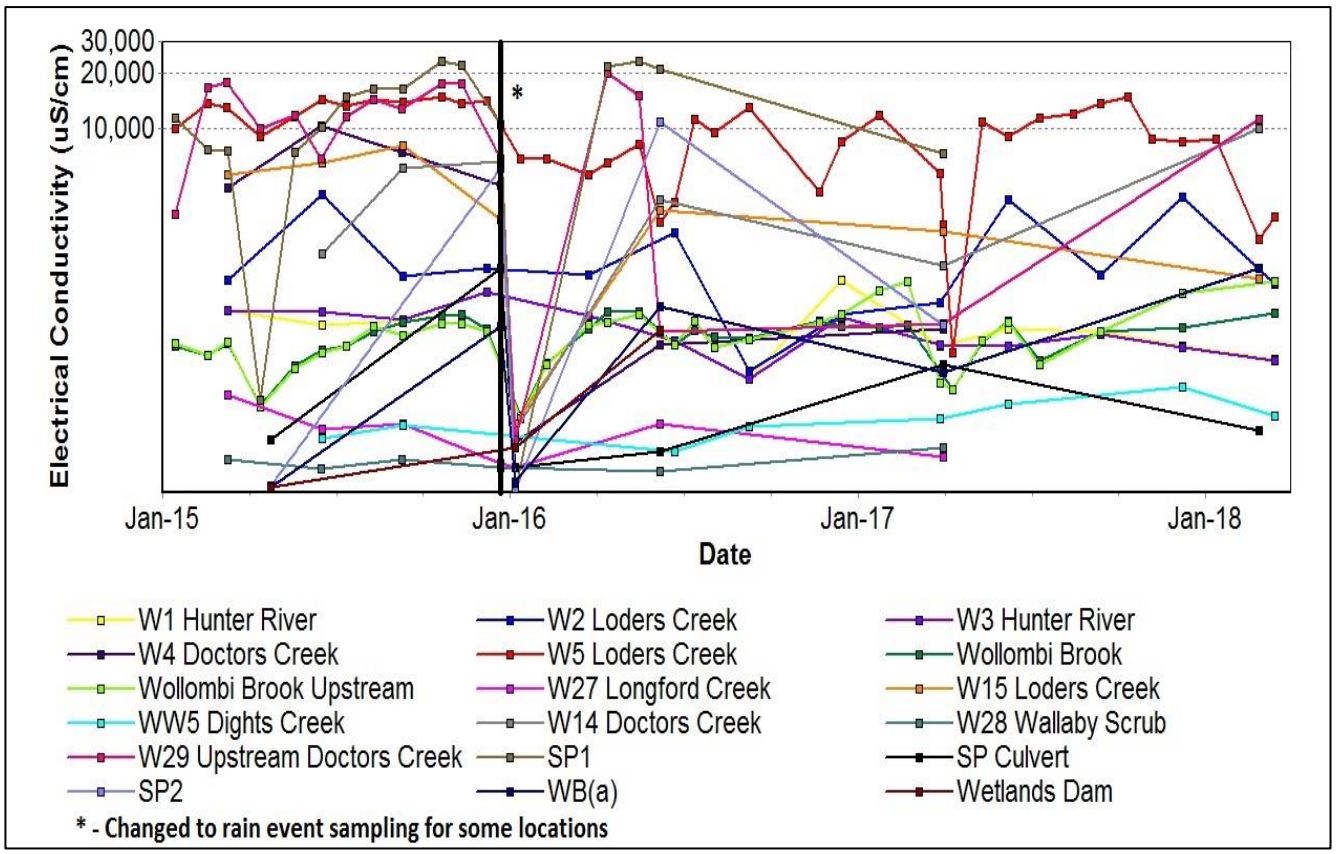


Figure 12: Watercourse Electrical Conductivity Trend – March 2018

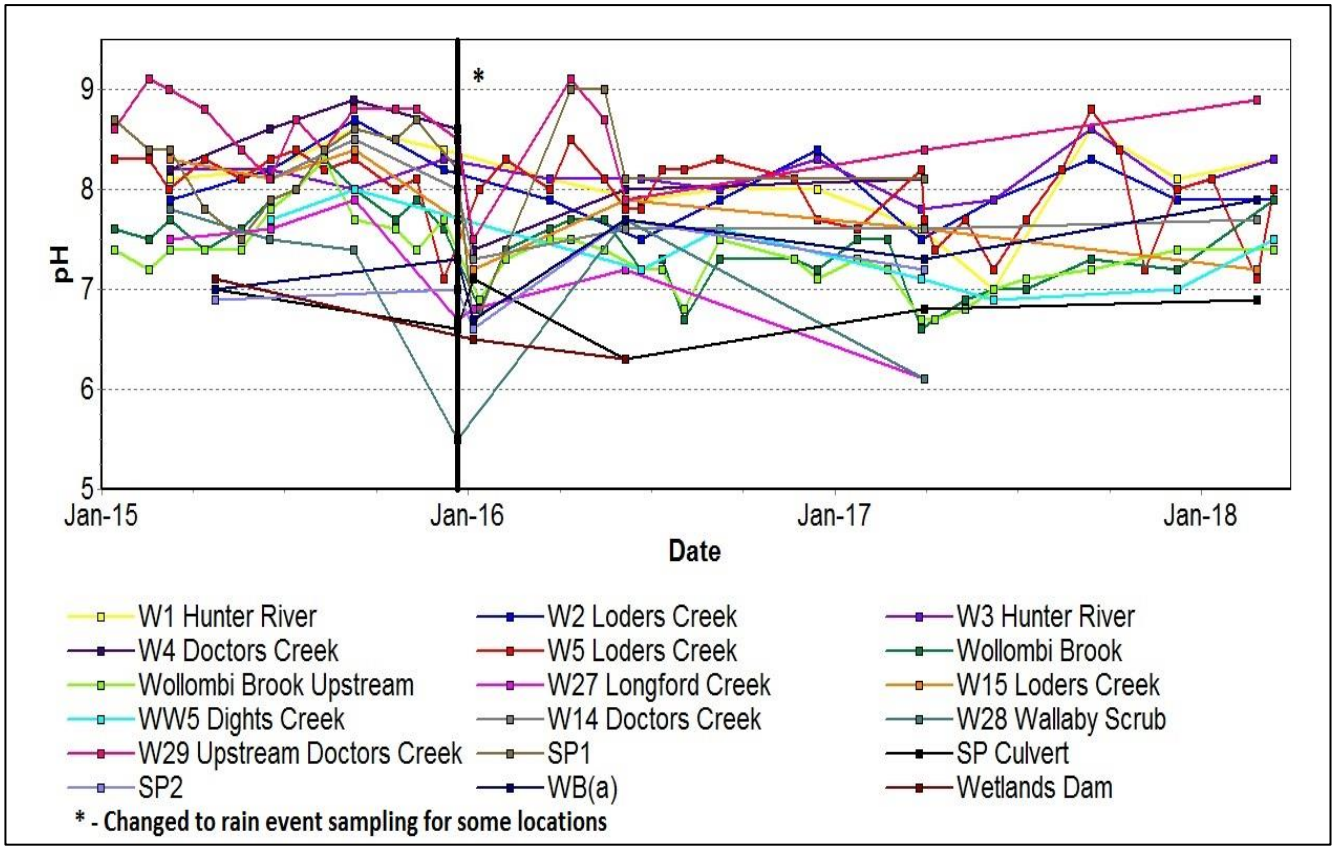


Figure 13: Watercourse pH Trend – March 2018

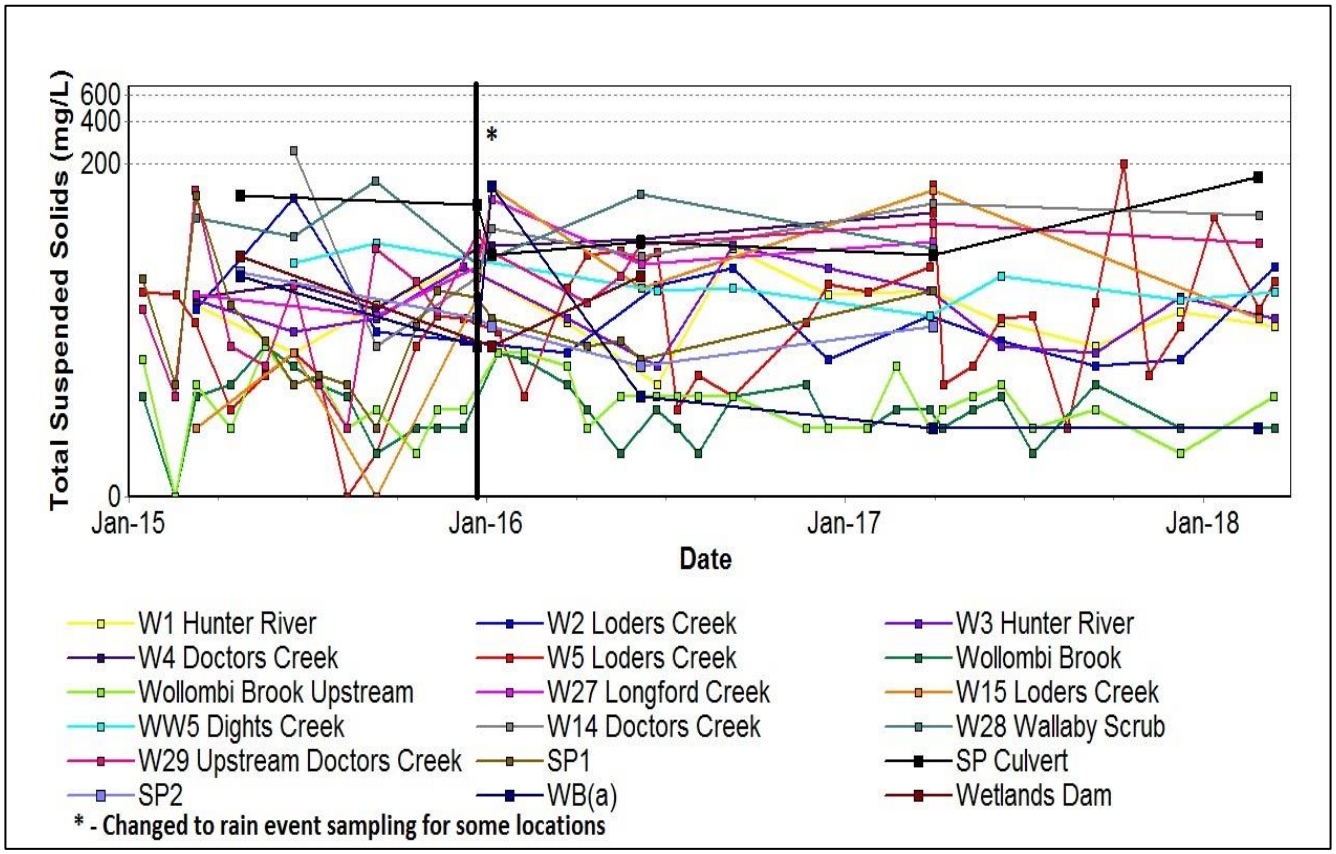


Figure 14: Watercourse Total Suspended Solids Trend – March 2018

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 3.

Table 3: Surface Water Trigger Tracking – March YTD 2018

Site	Date	Trigger Limit Breached	Action Taken in Response
W14	26/02/2018	EC –95th Percentile	Watching Brief*
W5	14/02/2018	pH –5th Percentile	Watching Brief*
W15	26/02/2018	pH –5th Percentile	Watching Brief*
W5	12/01/2018	TSS – 50mg/L (ANZECC criteria)	Field investigation did not identify any mining related sources of sediment. Elevated TSS associated with high intensity rainfall event after prolonged dry period. No further action taken
W14	26/02/2018	TSS – 50mg/L (ANZECC criteria)	Field investigation did not identify any mining related sources of sediment. Elevated TSS associated with high intensity rainfall event after prolonged dry period. No further action taken
W29	26/02/2018	TSS – 50mg/L (ANZECC criteria)	Field investigation did not identify any mining related sources of sediment. Elevated TSS associated with high intensity rainfall event after prolonged dry period. No further action taken

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

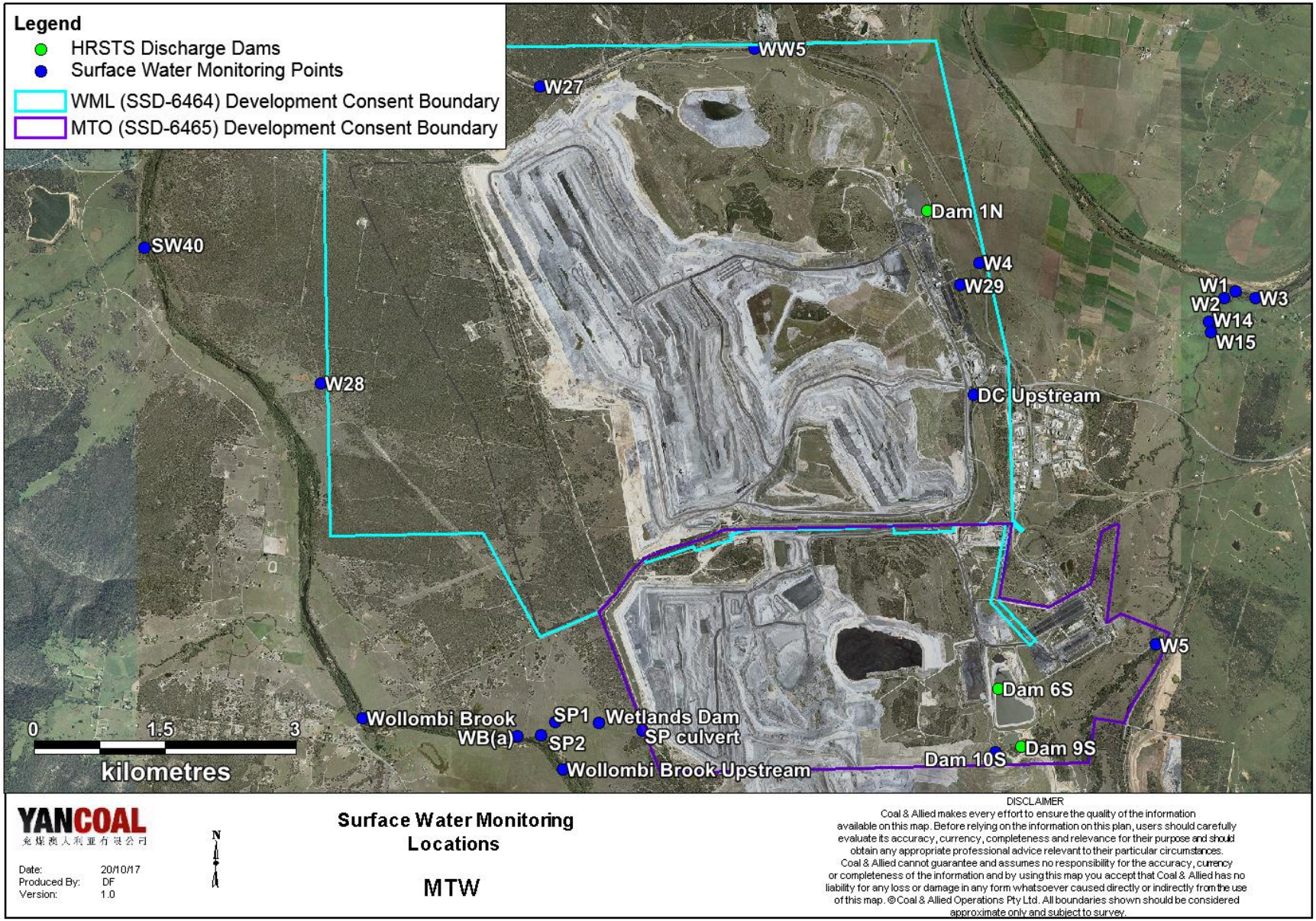


Figure 15: Surface Water Monitoring Location Plan

3.2 Groundwater Monitoring

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

Figure 16 to Figure 60 show the long term water quality trends (2015 – current) for groundwater bores monitored at MTW.

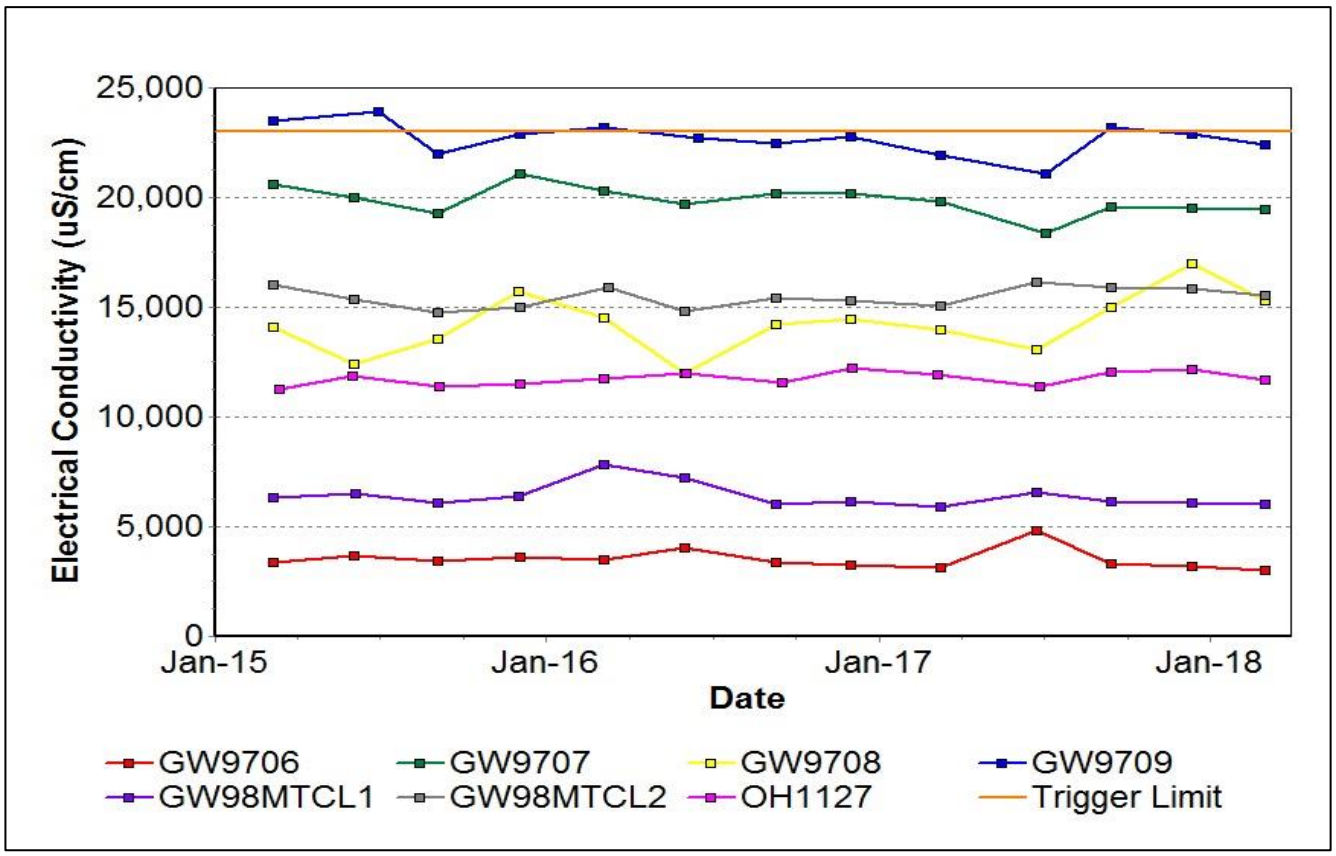


Figure 16: Bayswater Seam Electrical Conductivity Trend – March 2018

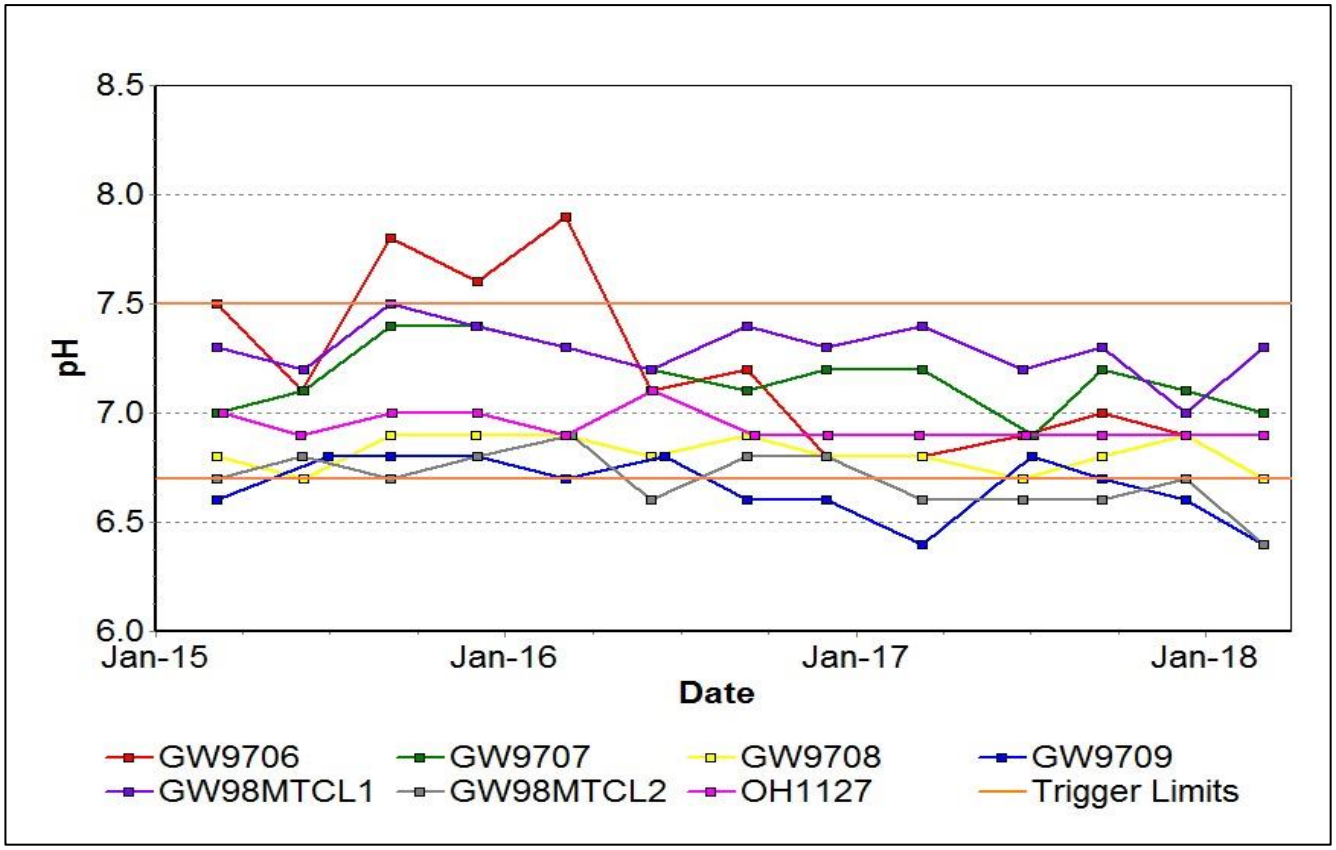


Figure 17: Bayswater Seam pH Trend – March 2018

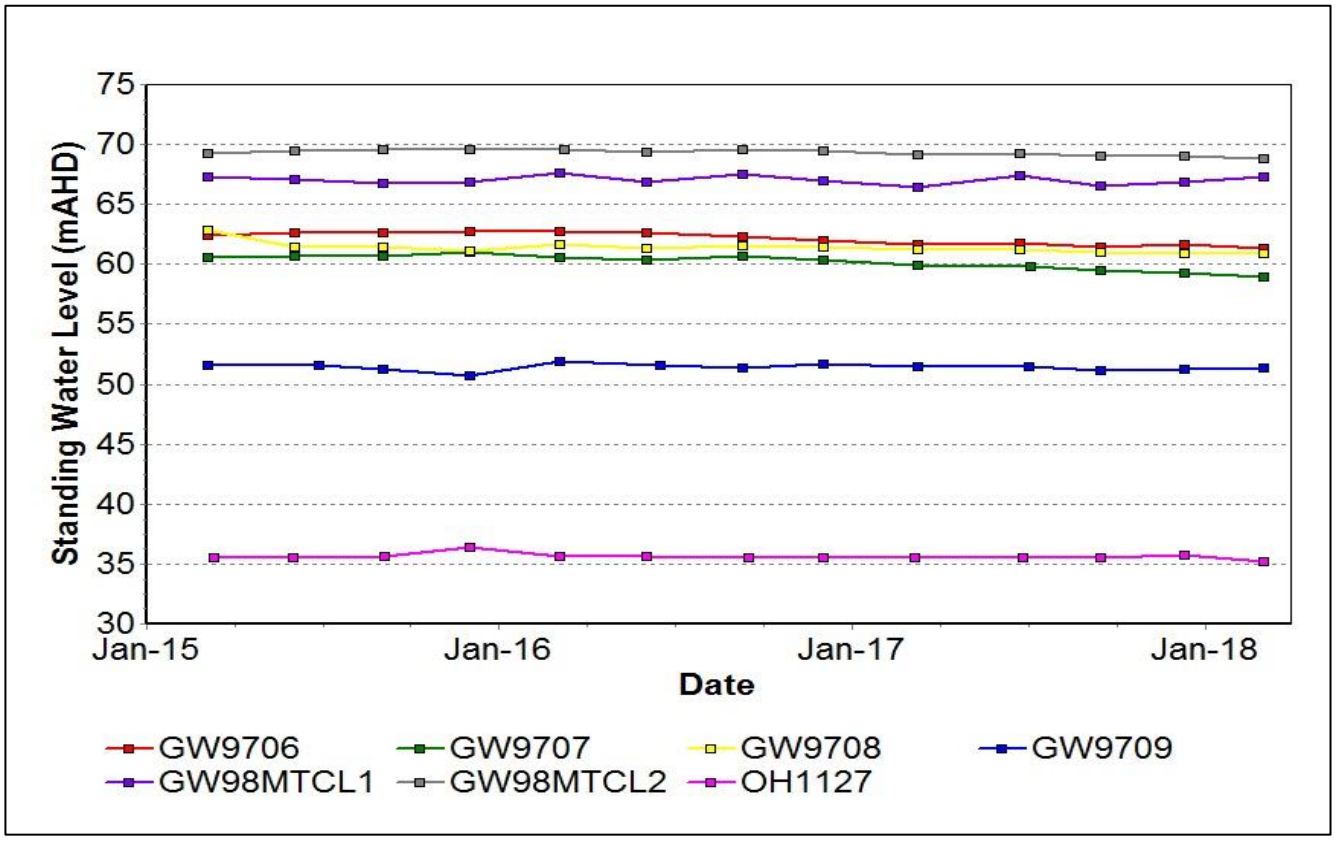


Figure 18: Bayswater Seam Standing Water Level Trend – March 2018

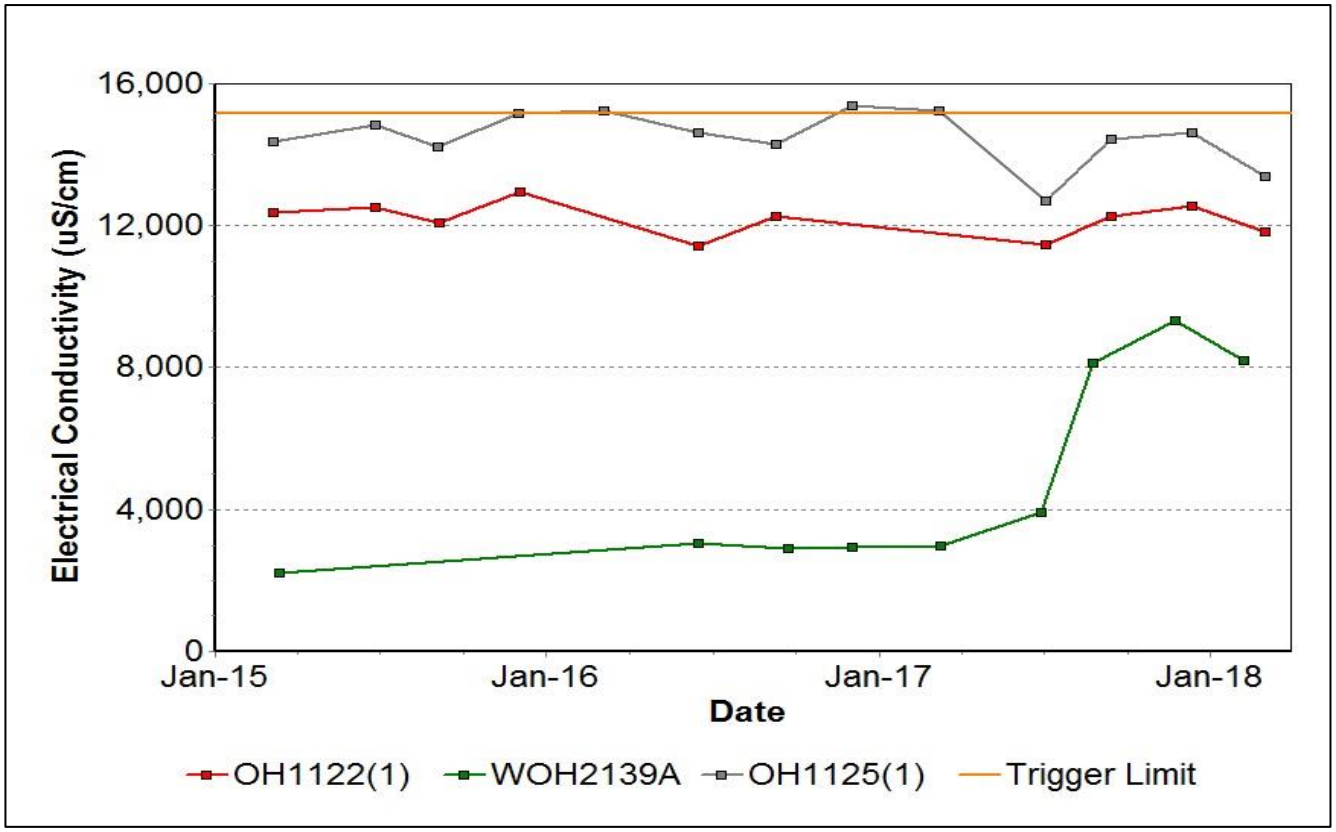


Figure 19: Blakefield Seam Electrical Conductivity Trend – March 2018

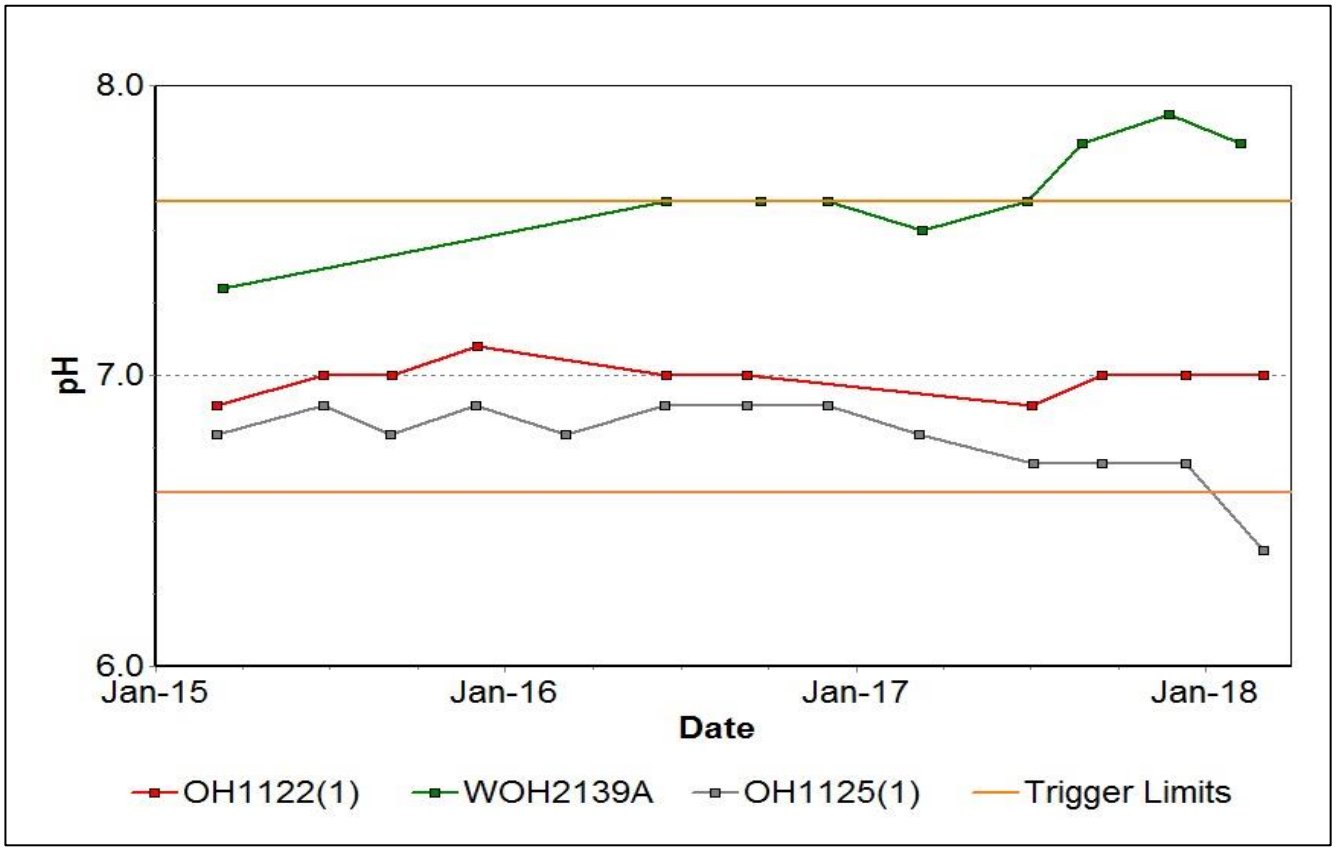


Figure 20: Blakefield Seam pH Trend – March 2018

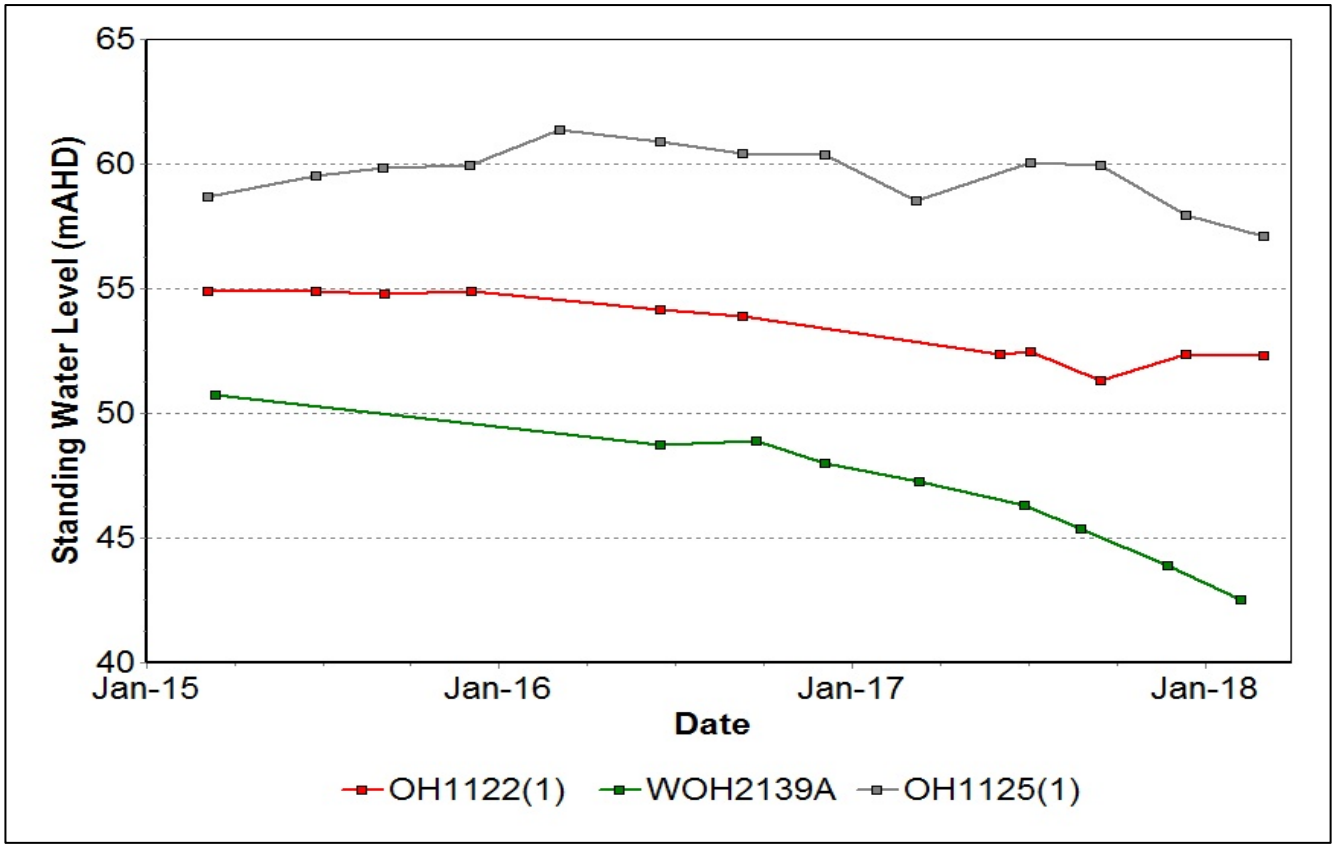


Figure 21: Blakefield Seam Standing Water Level Trend – March 2018

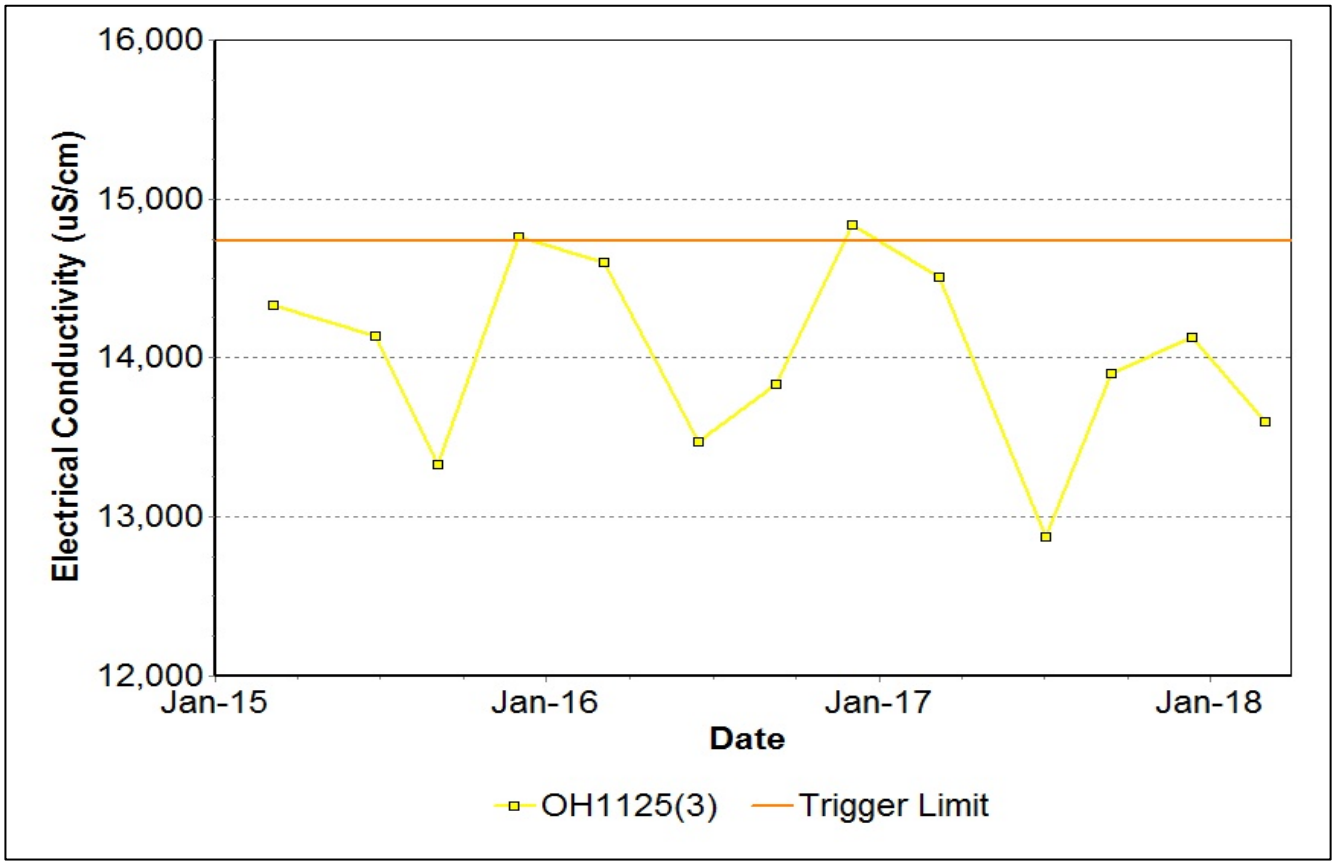


Figure 22: Bowfield Seam Electrical Conductivity Trend – March 2018

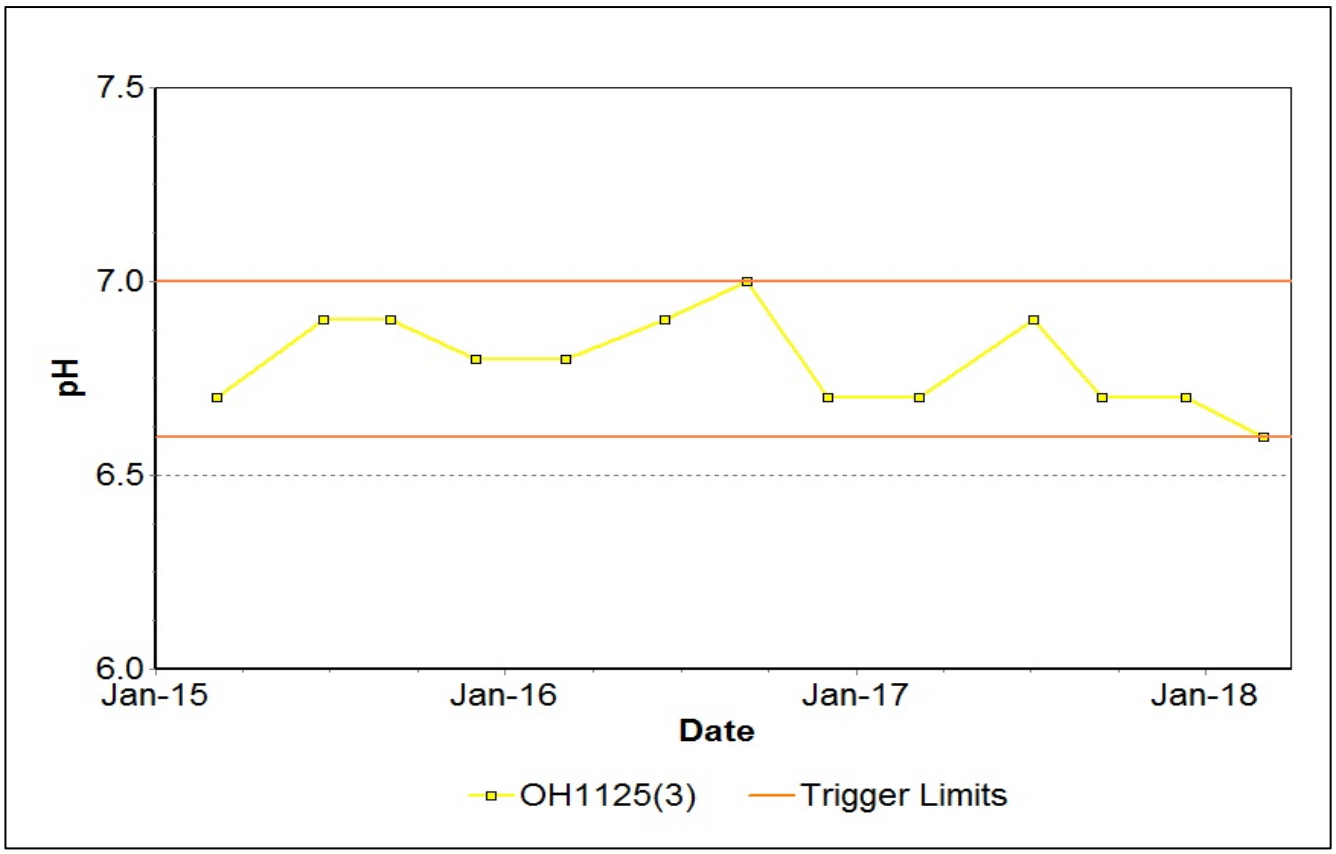


Figure 23: Bowfield Seam pH Trend – March 2018

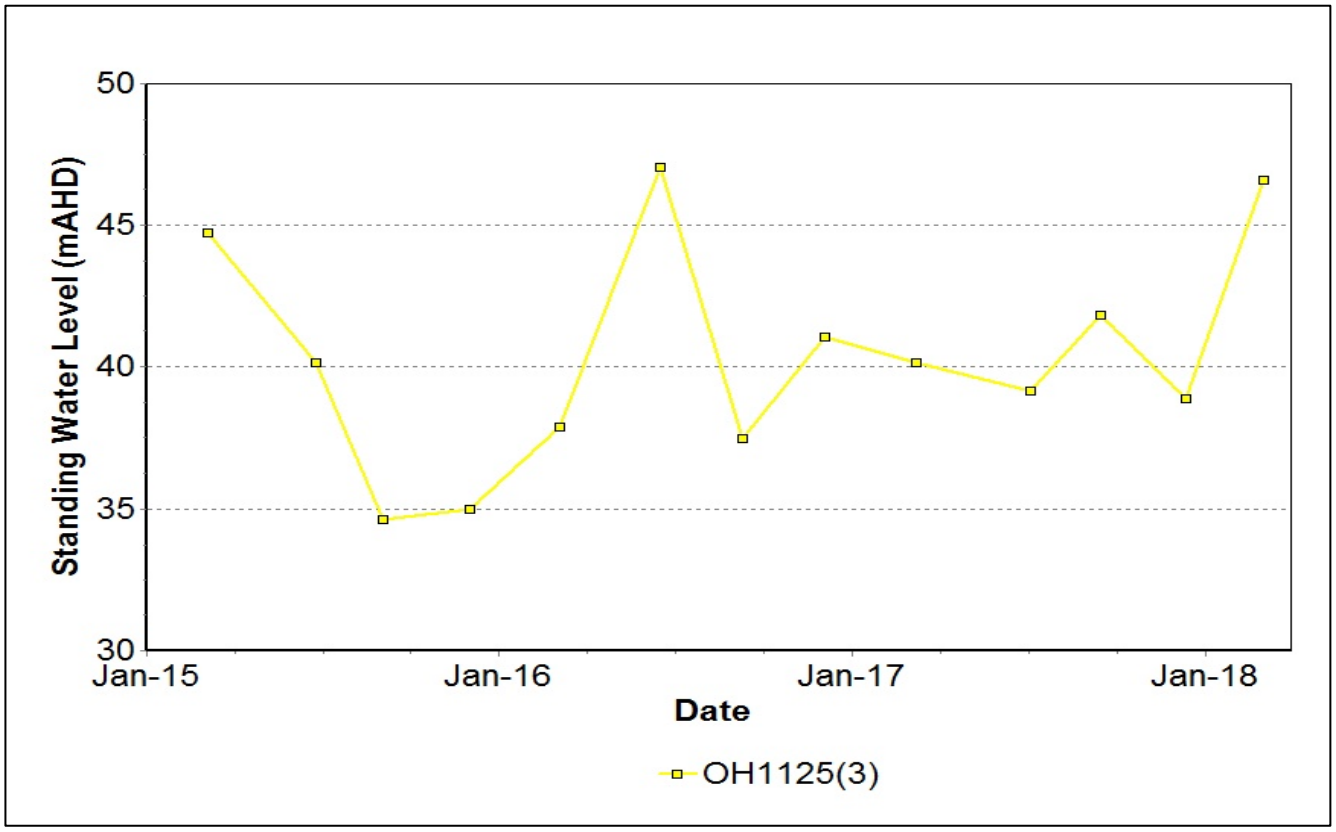


Figure 24: Bowfield Seam Standing Water Level Trend – March 2018

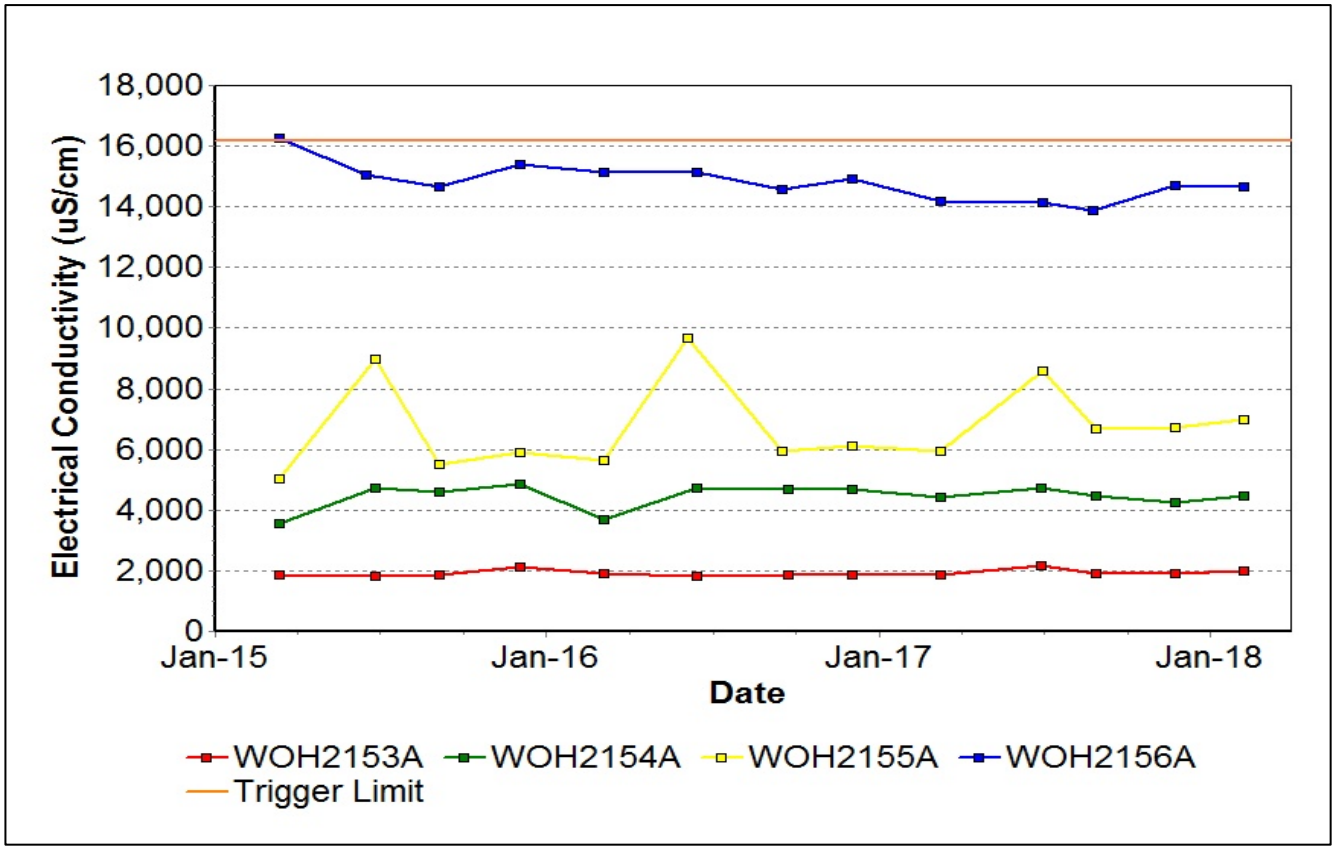


Figure 25: Redbank Seam Electrical Conductivity Trend – March 2018

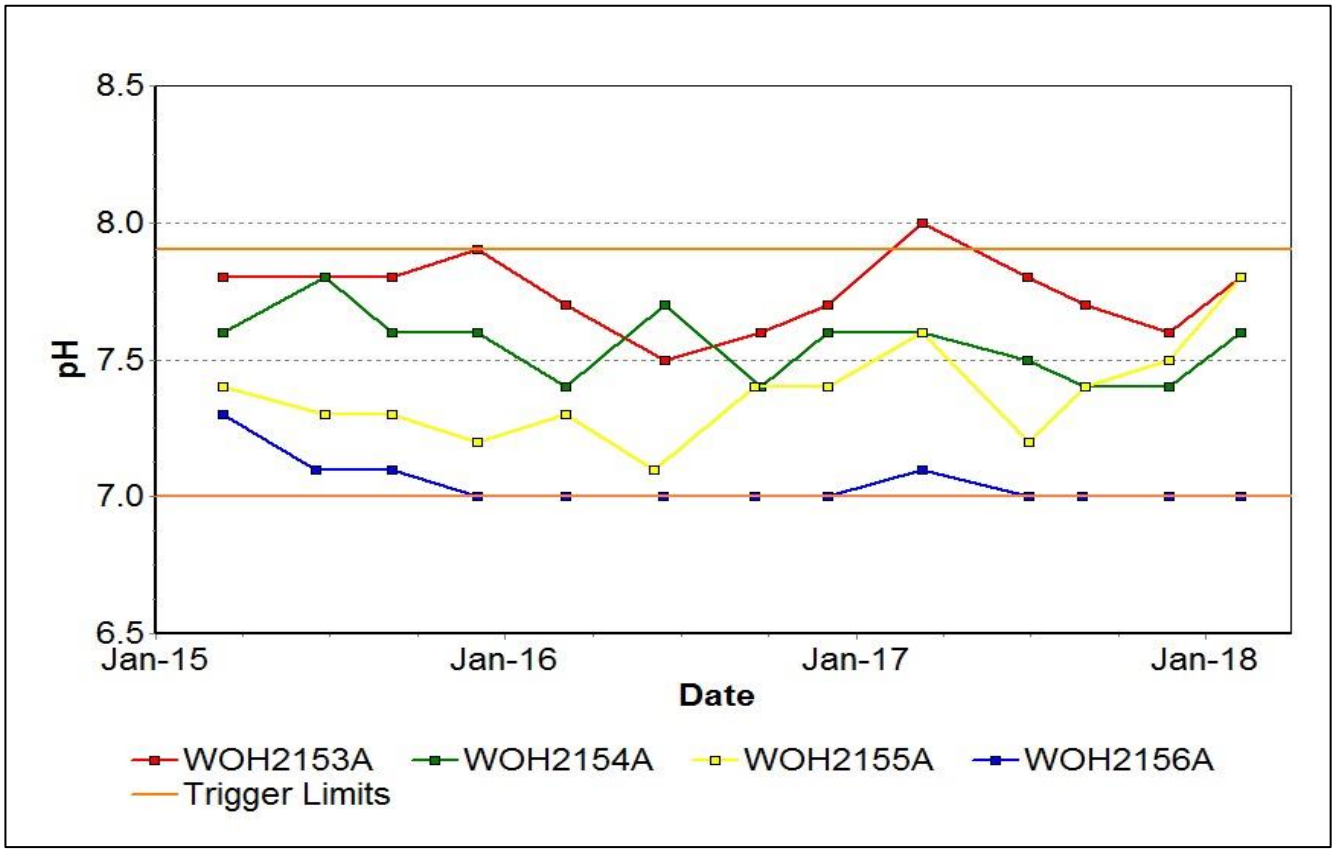


Figure 26: Redbank Seam pH Trend – March 2018

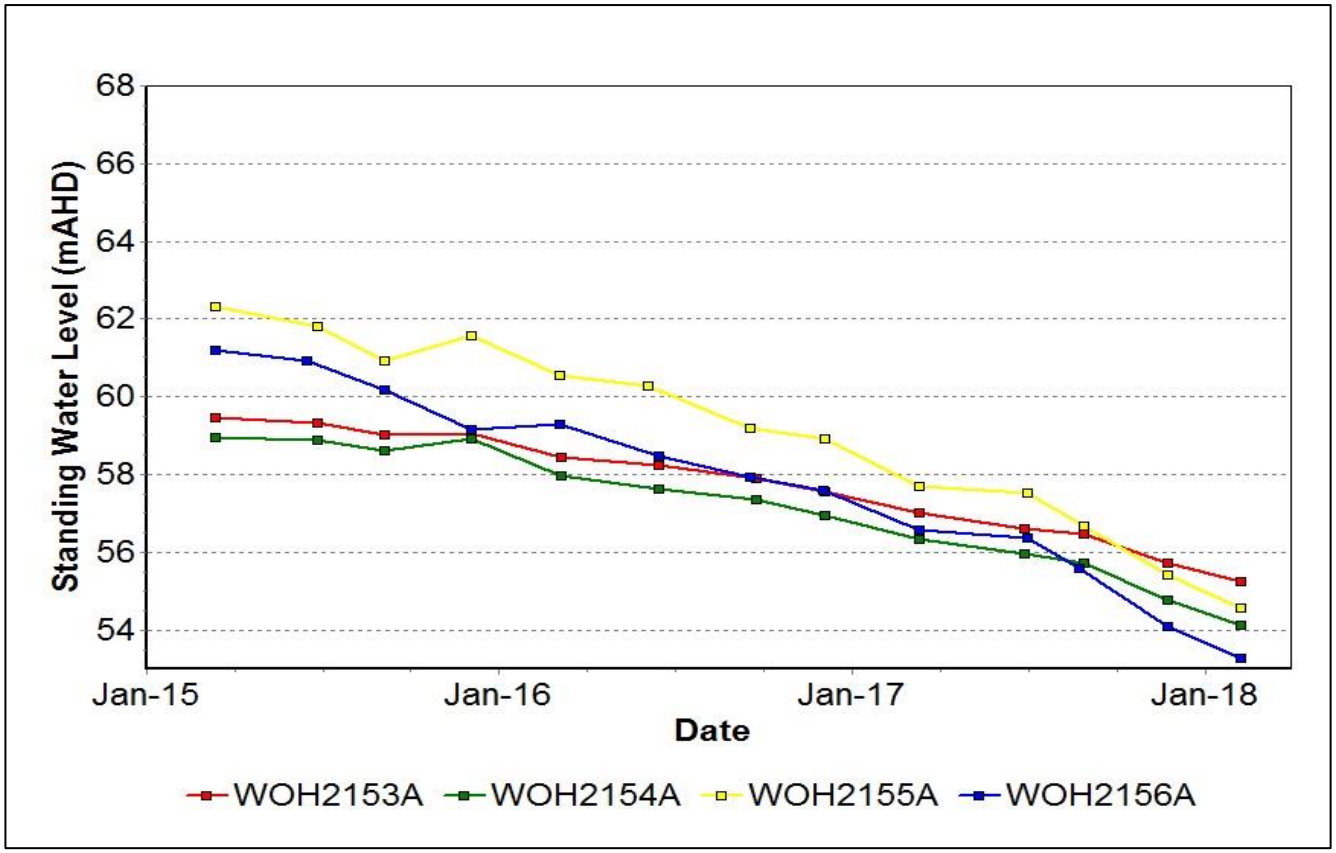


Figure 27: Redbank Seam Standing Water Level Trend – March 2018

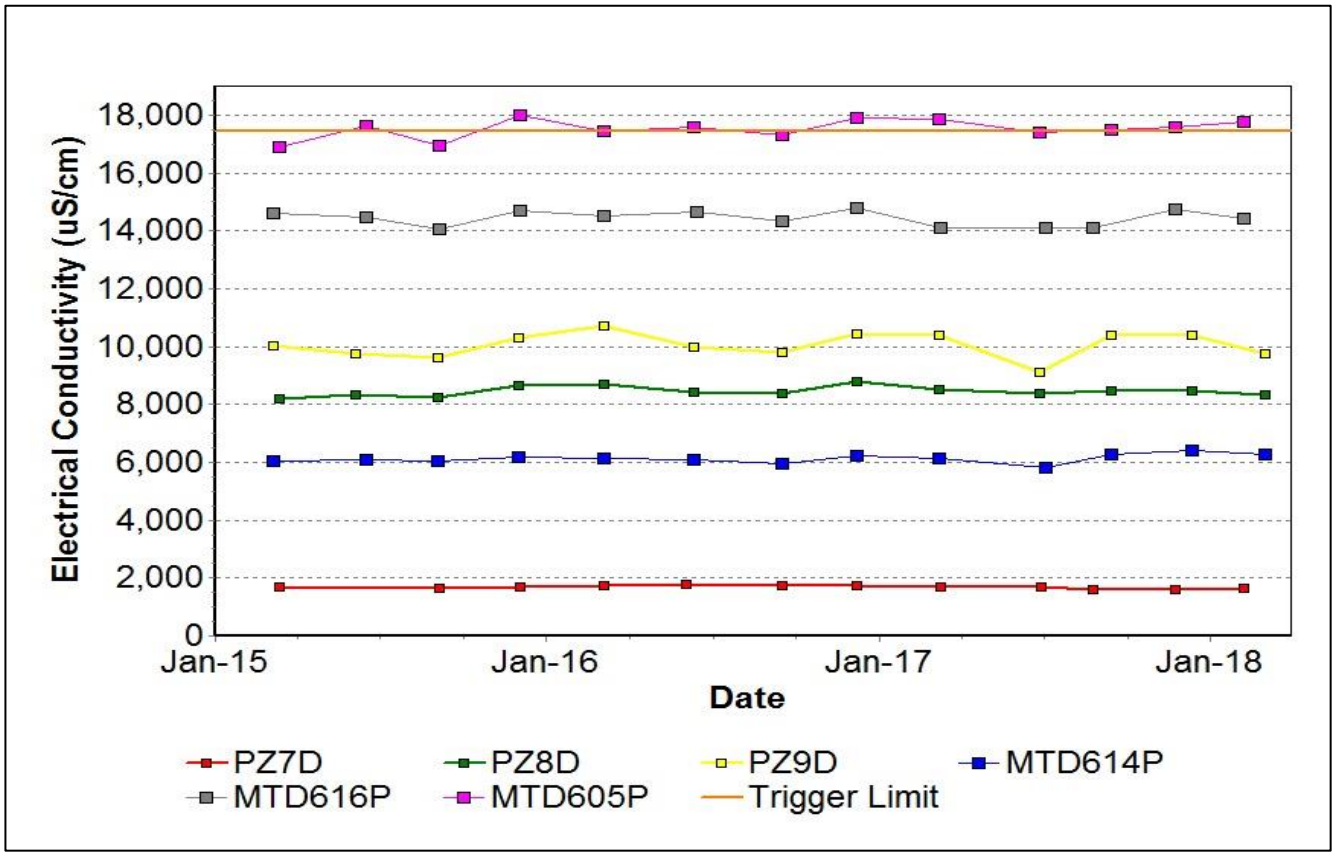


Figure 28: Shallow Overburden Seam Electrical Conductivity Trend – March 2018

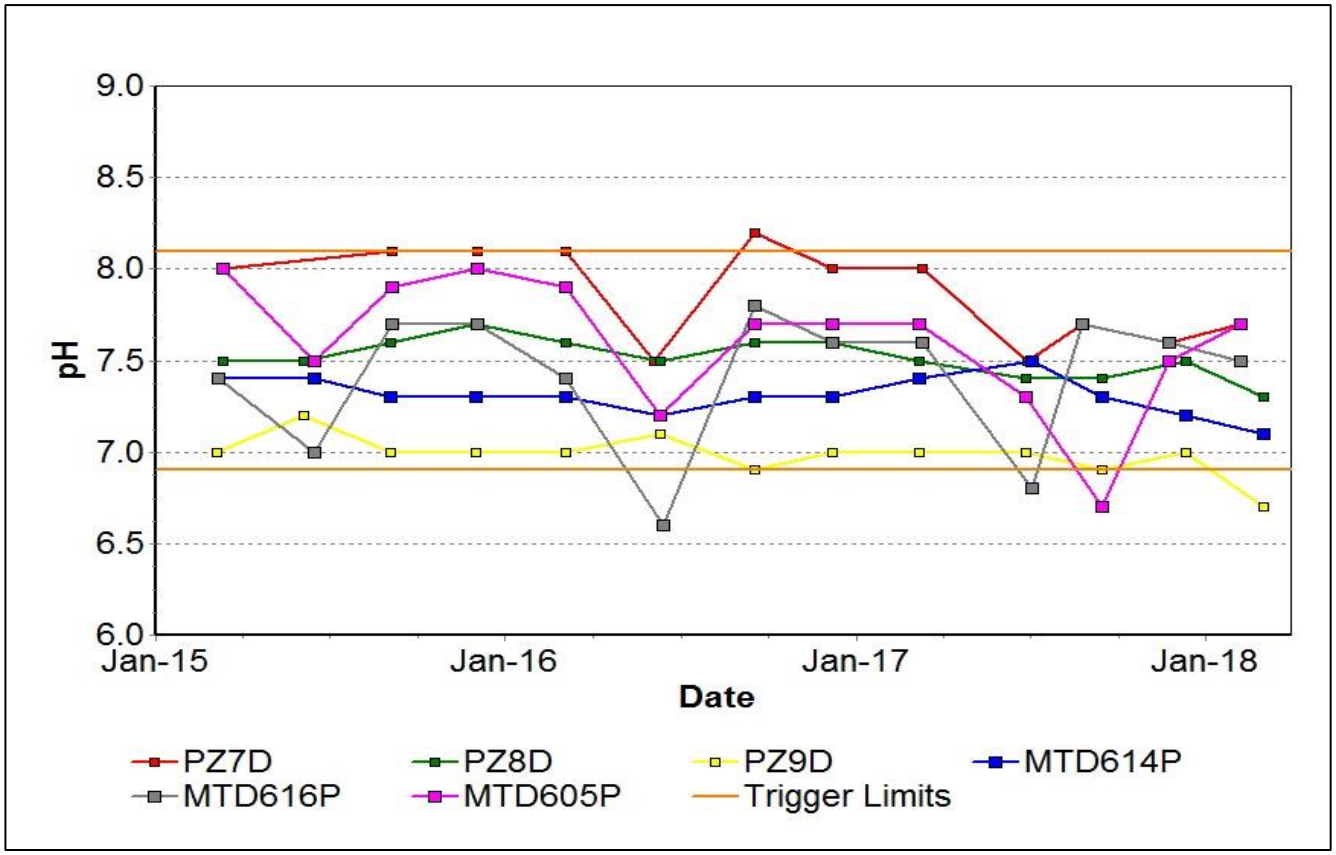


Figure 29: Shallow Overburden Seam pH Trend – March 2018

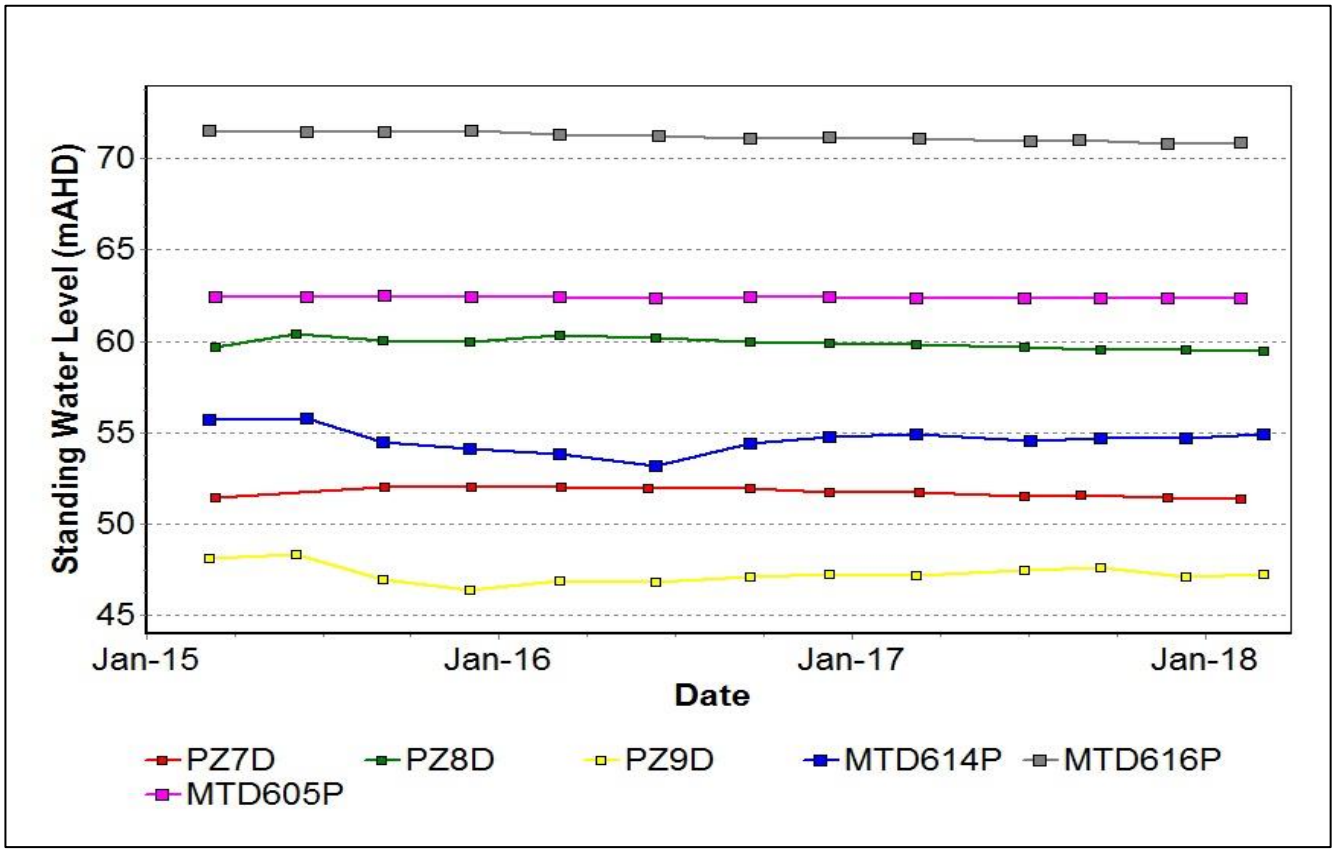


Figure 30: Shallow Overburden Seam Standing Water Level Trend – March 2018

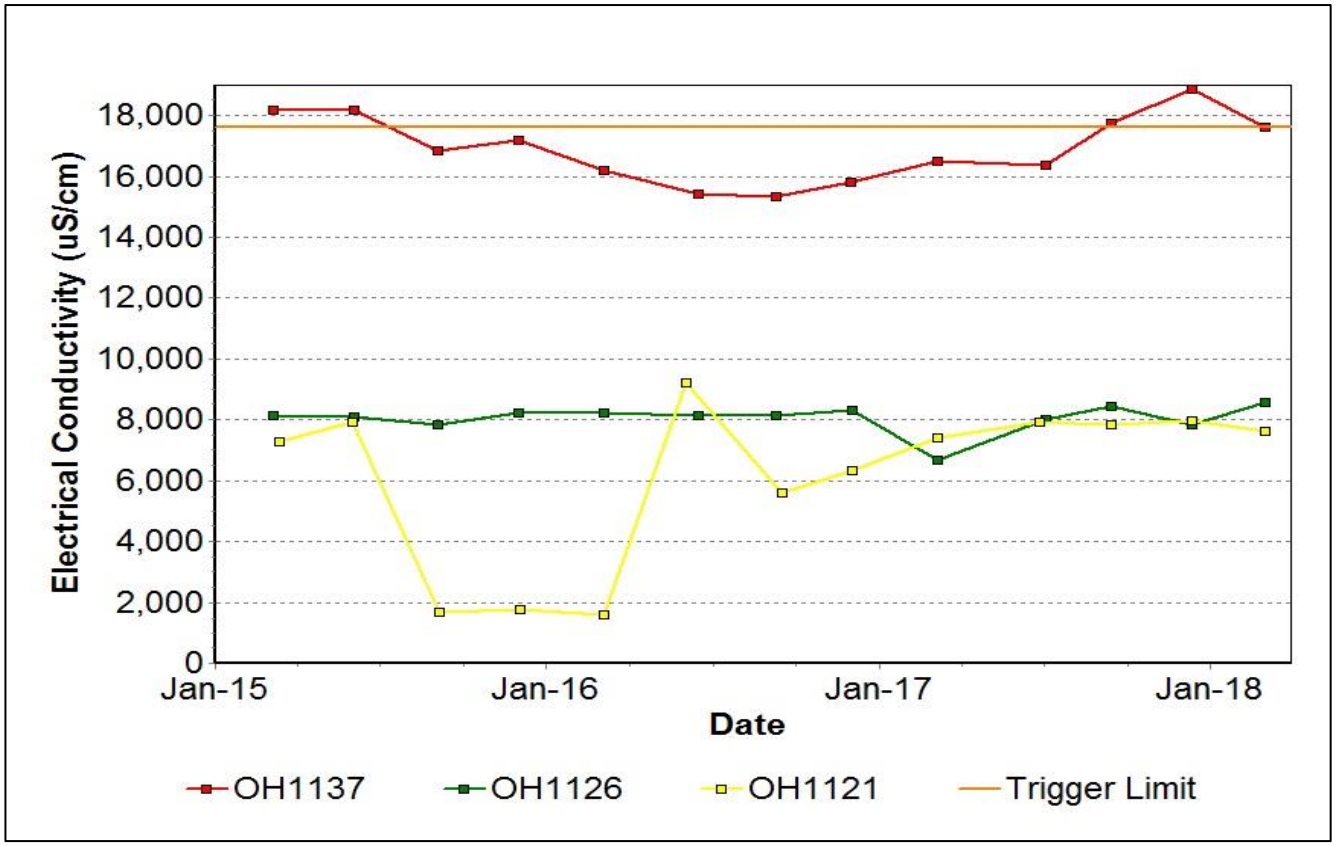


Figure 31: Vaux Seam Electrical Conductivity Trend – March 2018

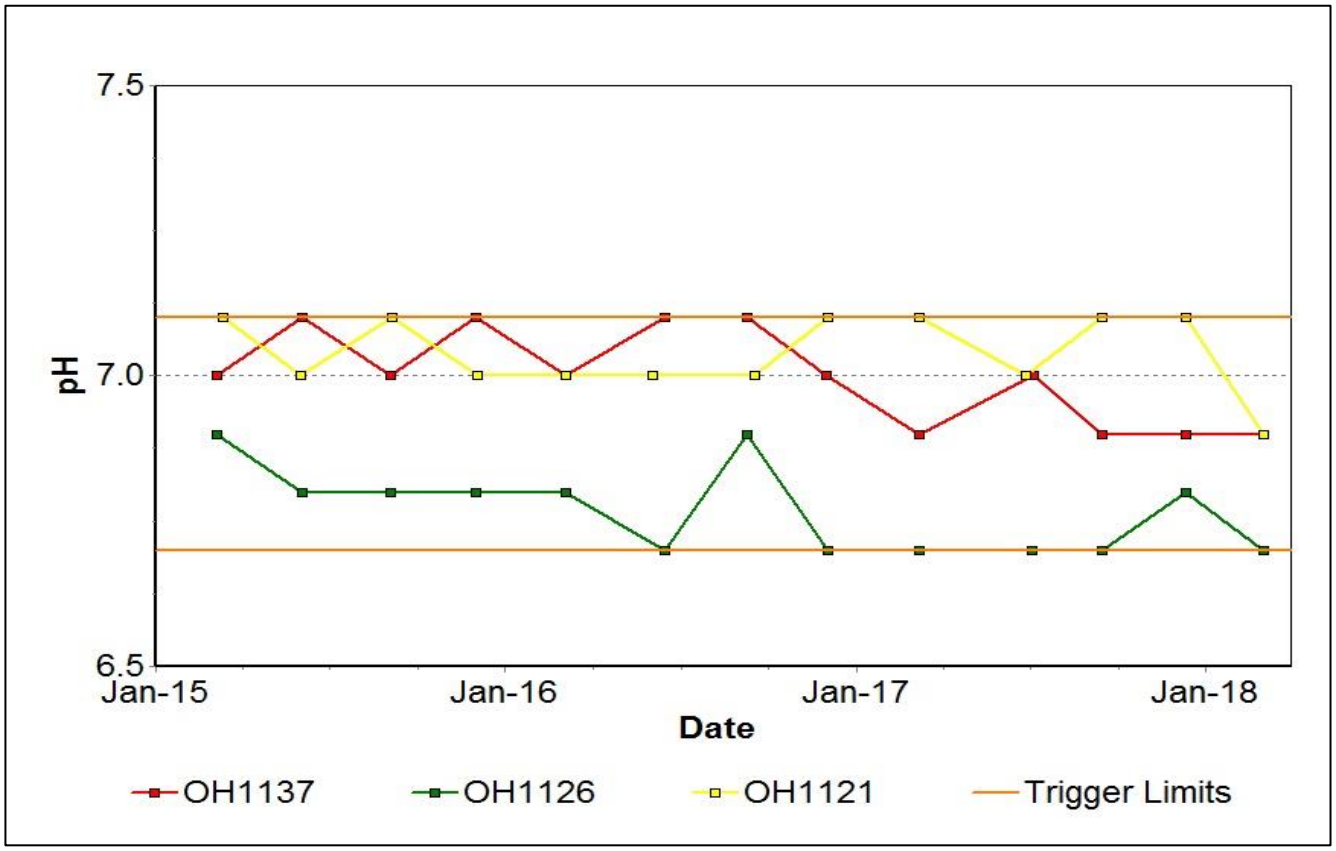


Figure 32: Vaux Seam pH Trend – March 2018

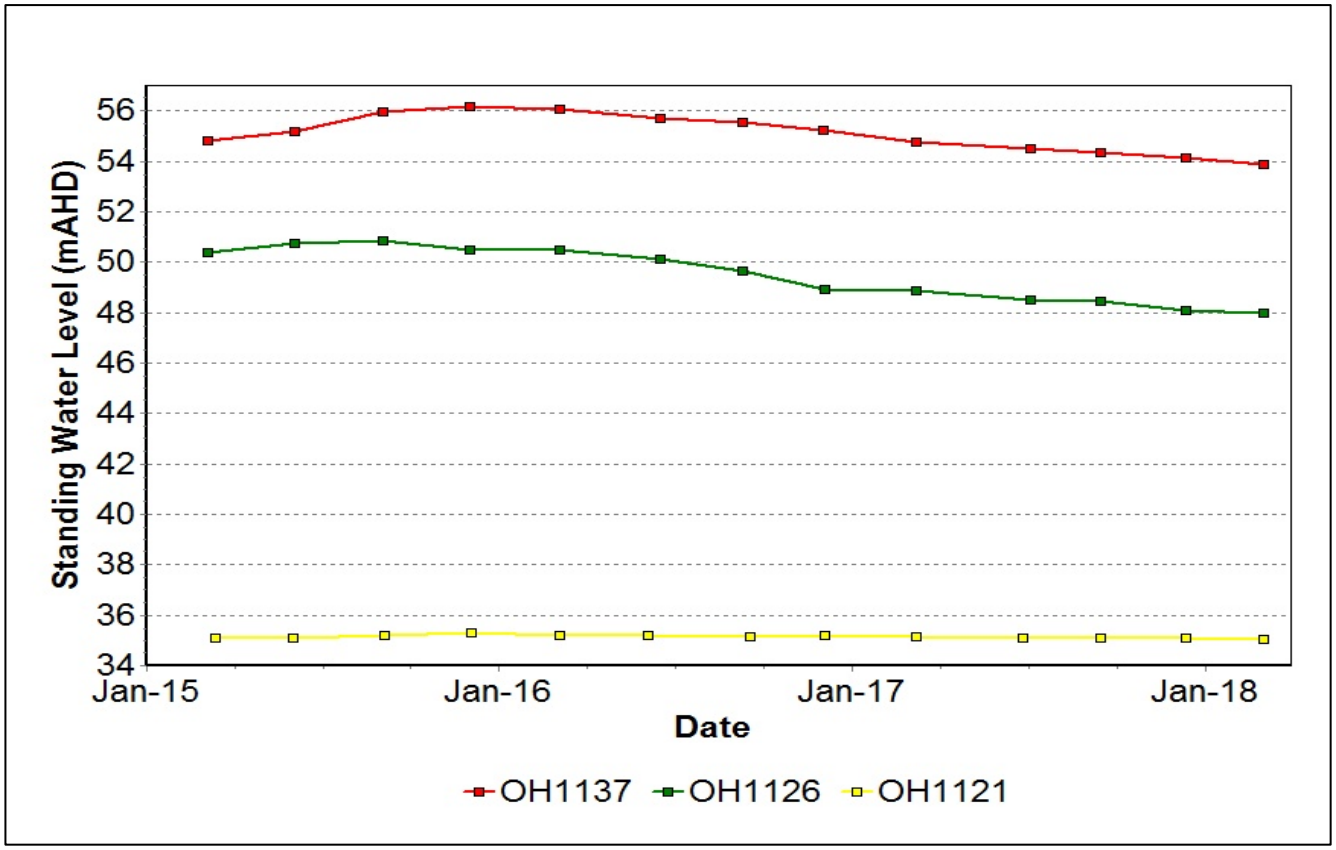


Figure 33: Vaux Seam Standing Water Level Trend – March 2018

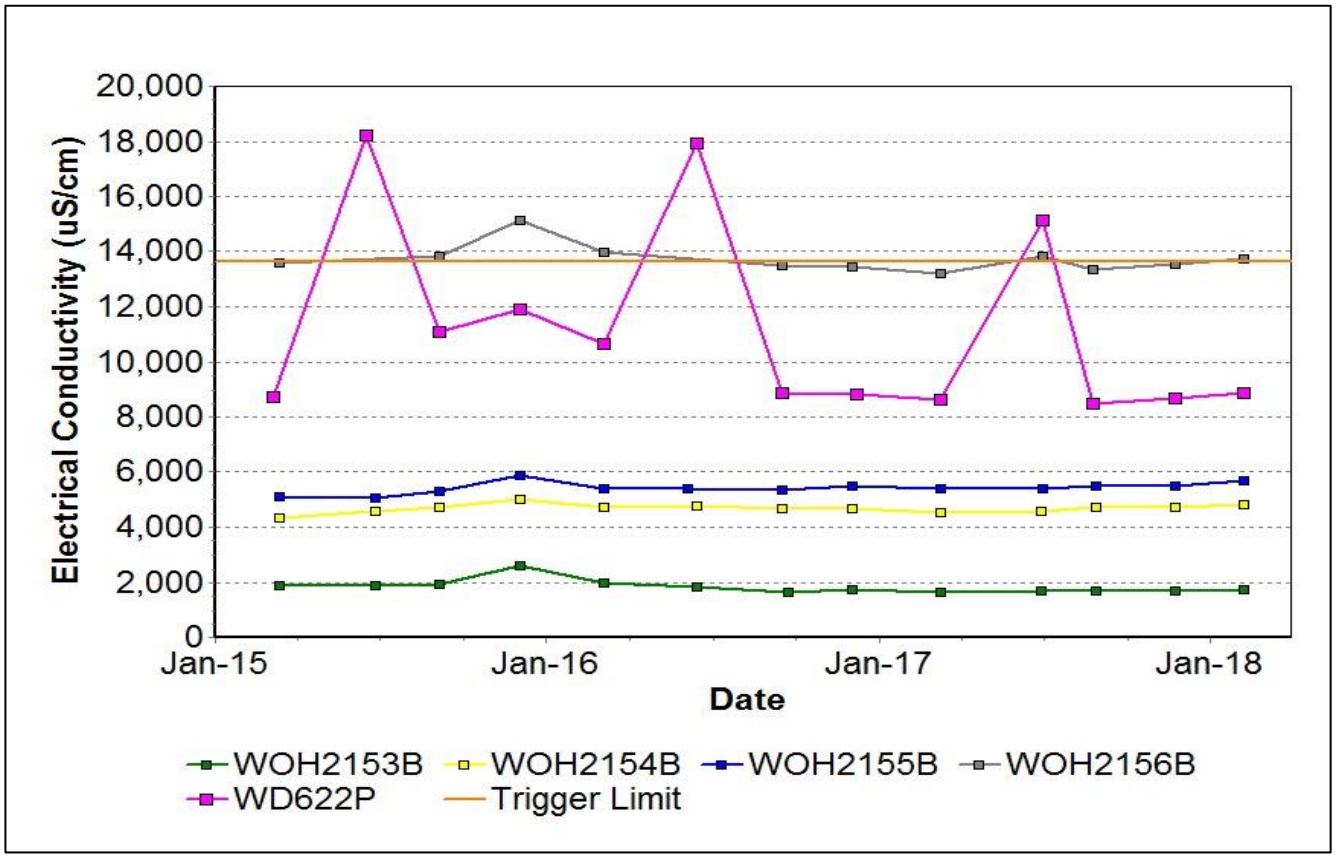


Figure 34: Wambo Seam Electrical Conductivity Trend – March 2018

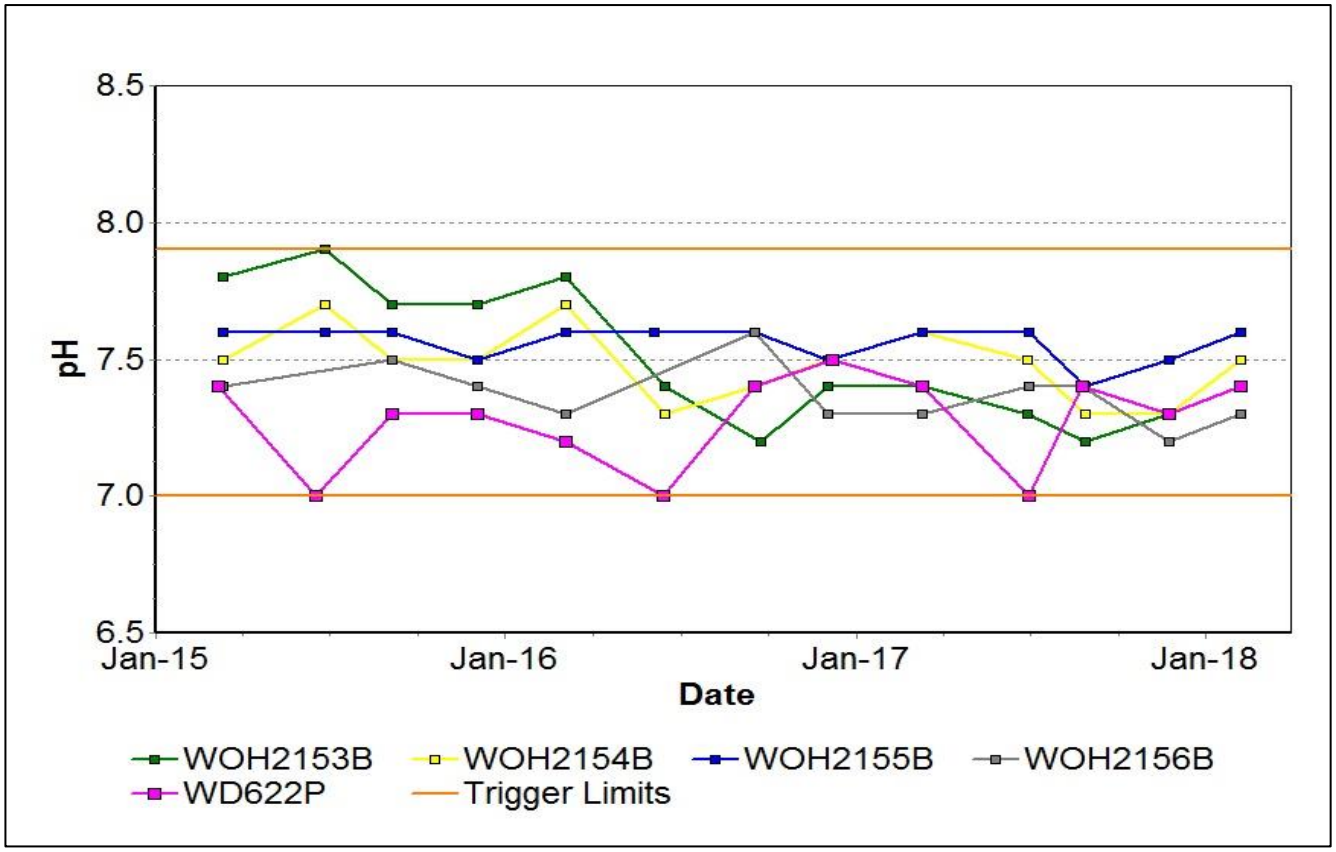


Figure 35: Wambo Seam pH Trend – March 2018

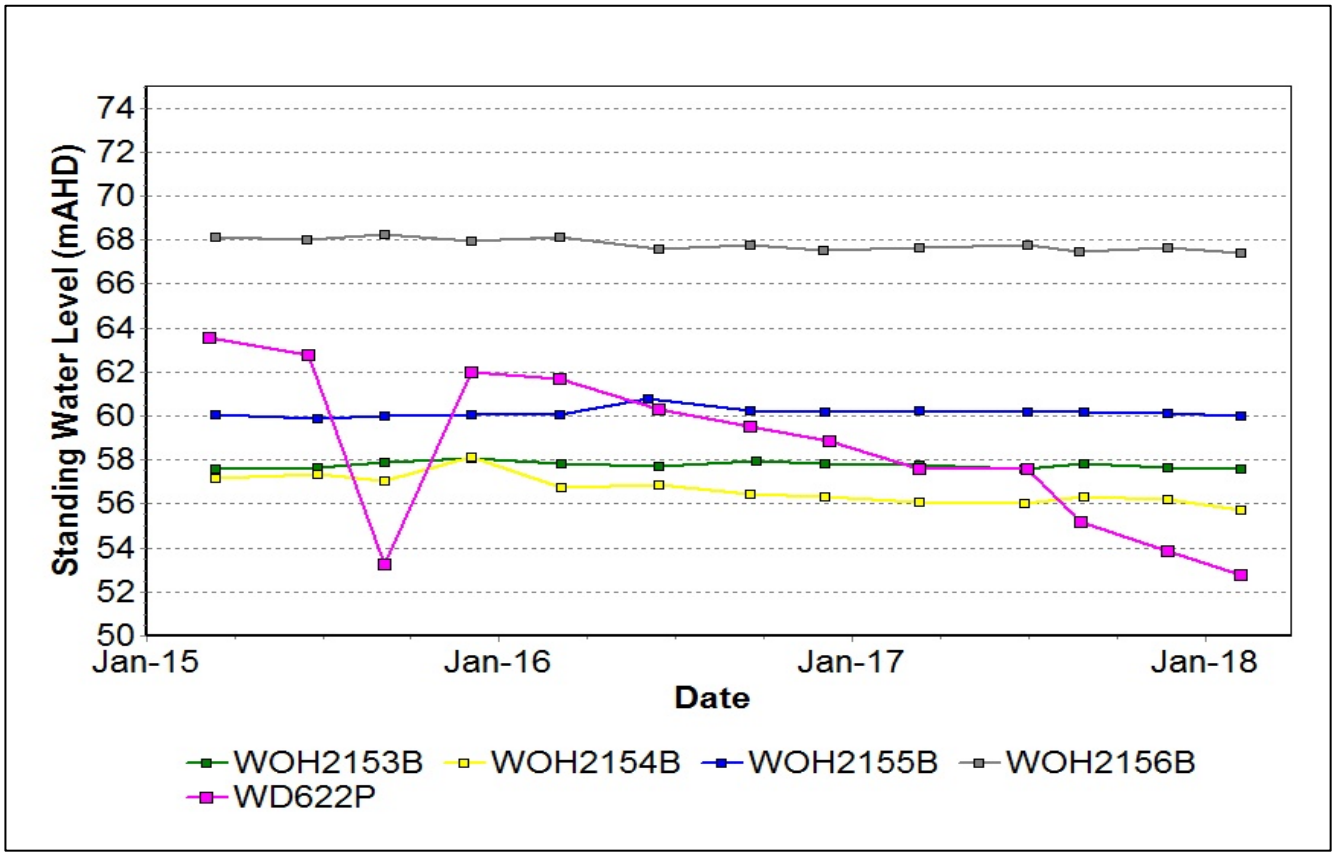


Figure 36: Wambo Seam Standing Water Level Trend – March 2018

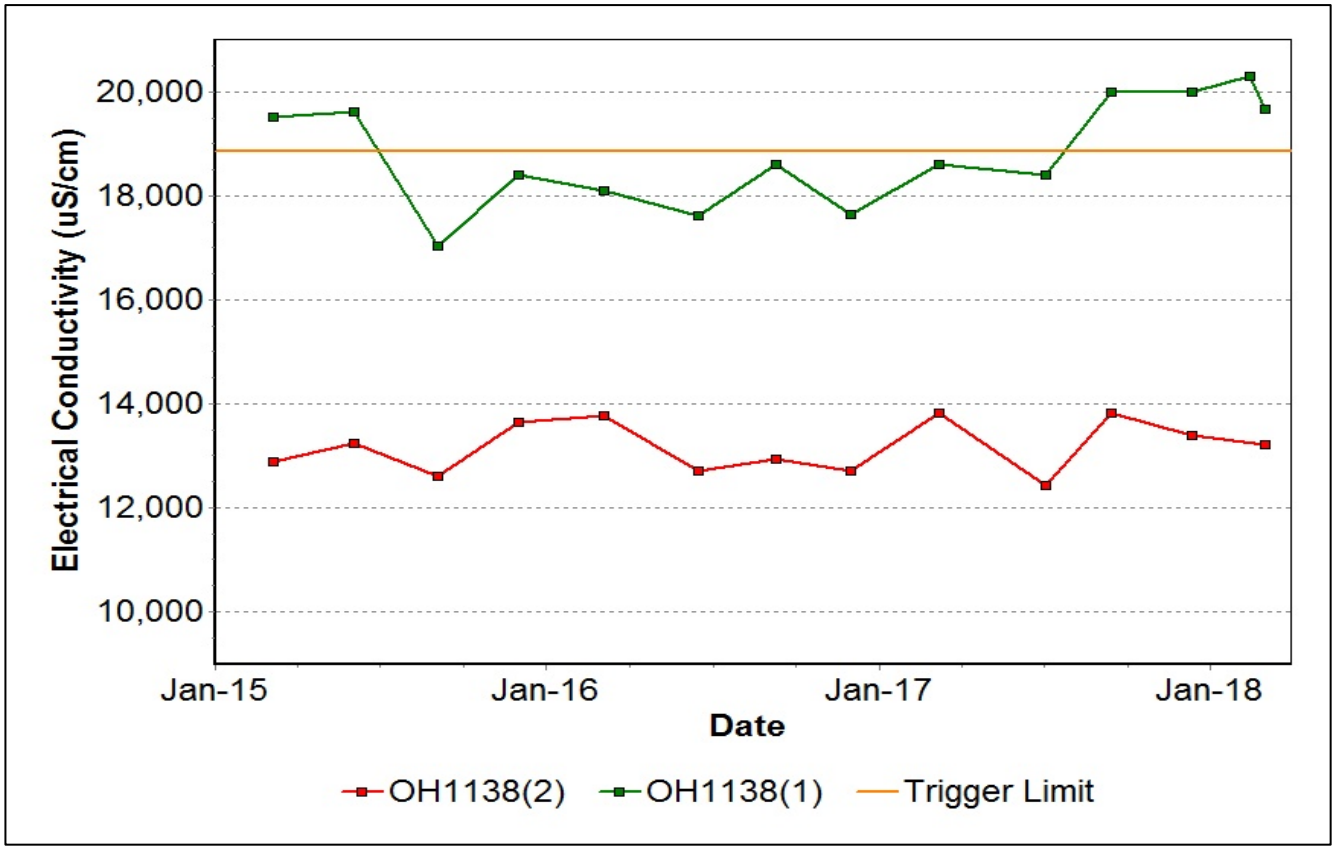


Figure 37: Warkworth Seam Electrical Conductivity Trend – March 2018

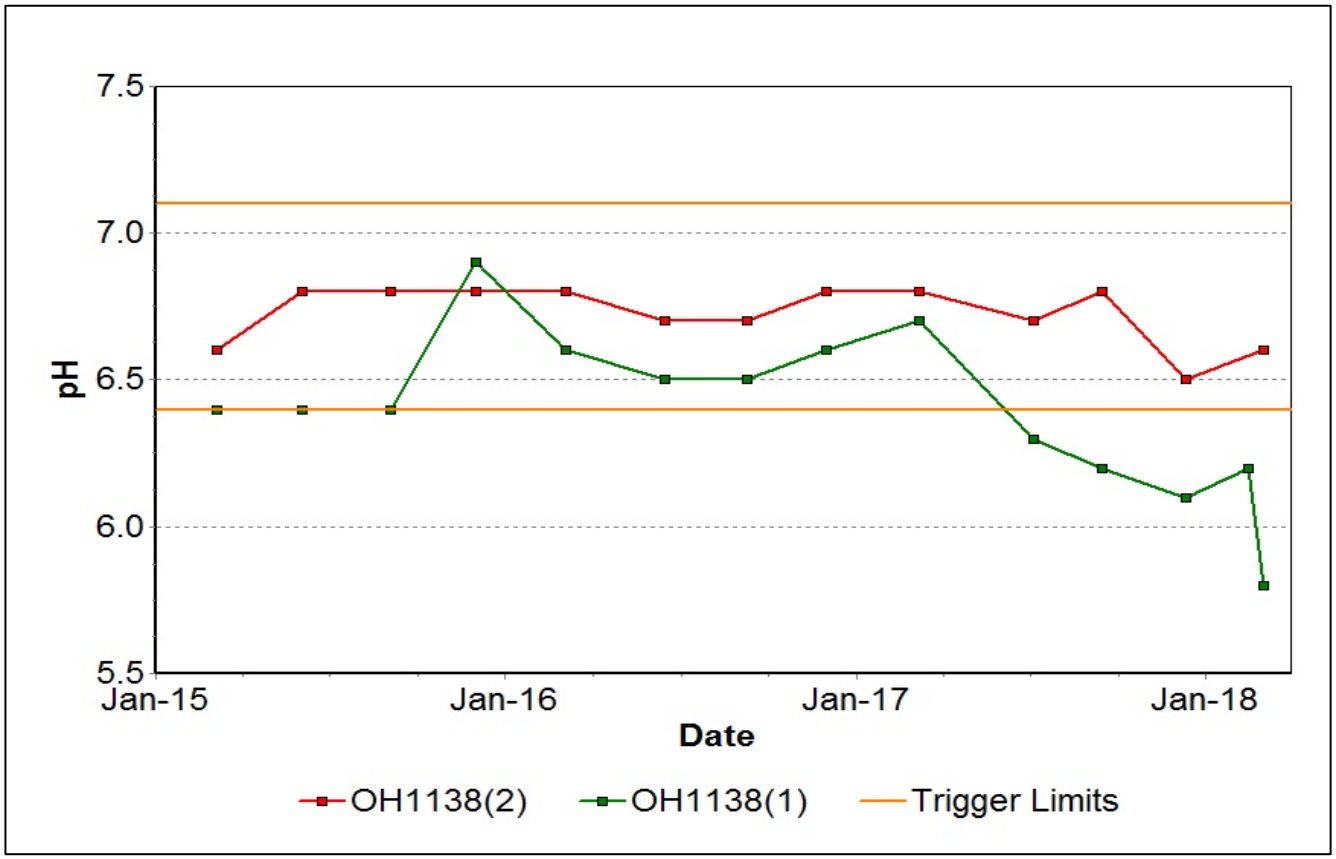


Figure 38: Warkworth Seam pH Trend –March 2018

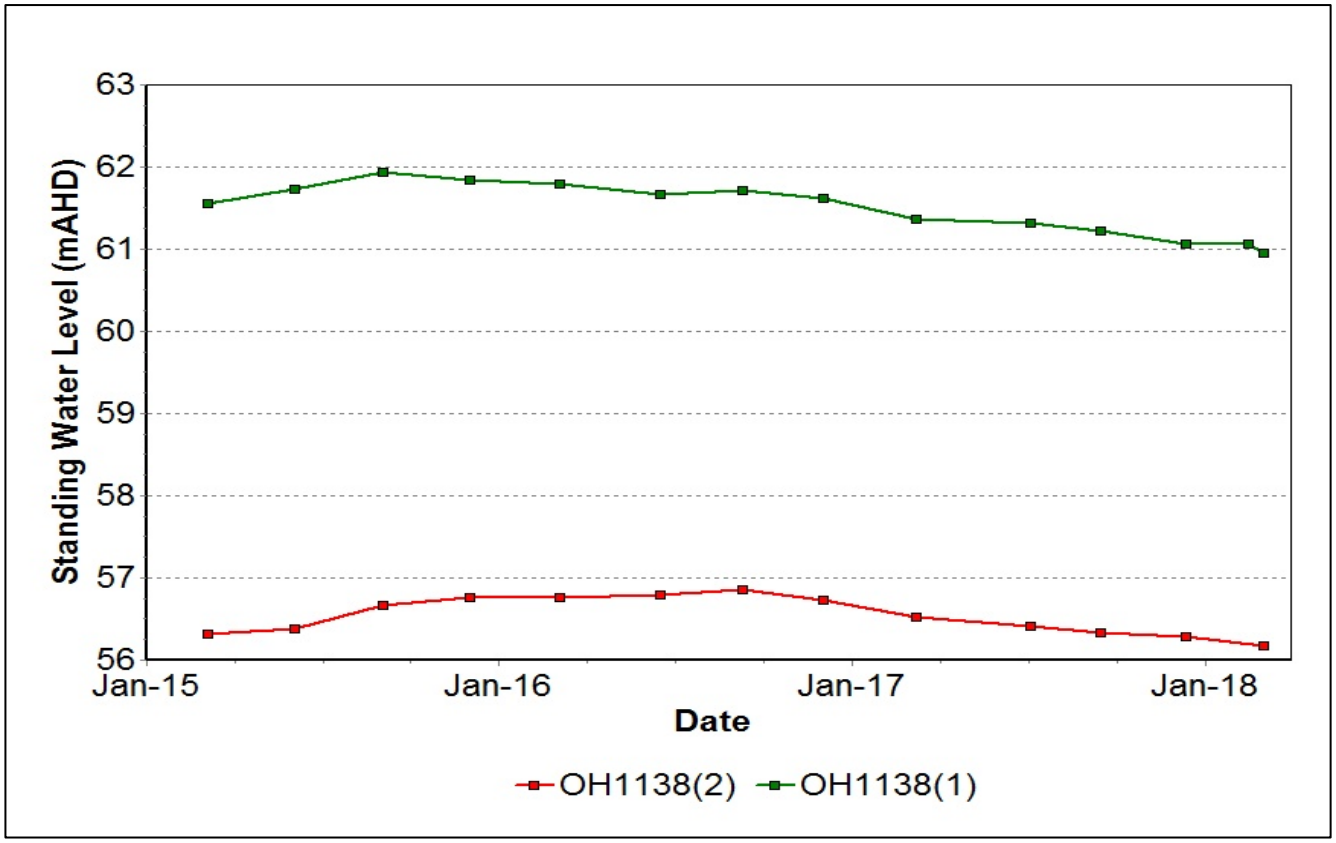


Figure 39: Warkworth Seam Standing Water Level Trend – March 2018

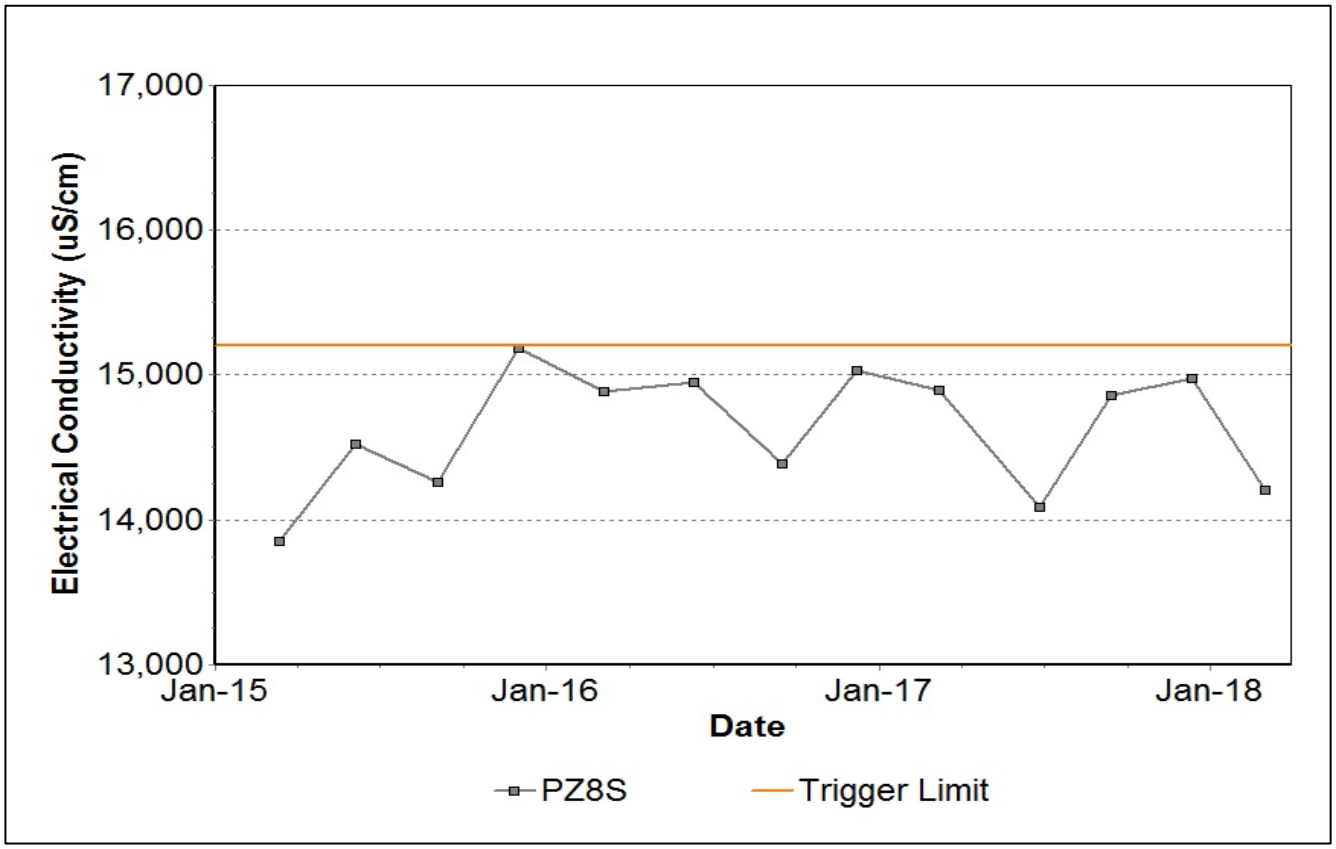


Figure 40: Wollombi Alluvium 1 Electrical Conductivity Trend – March 2018

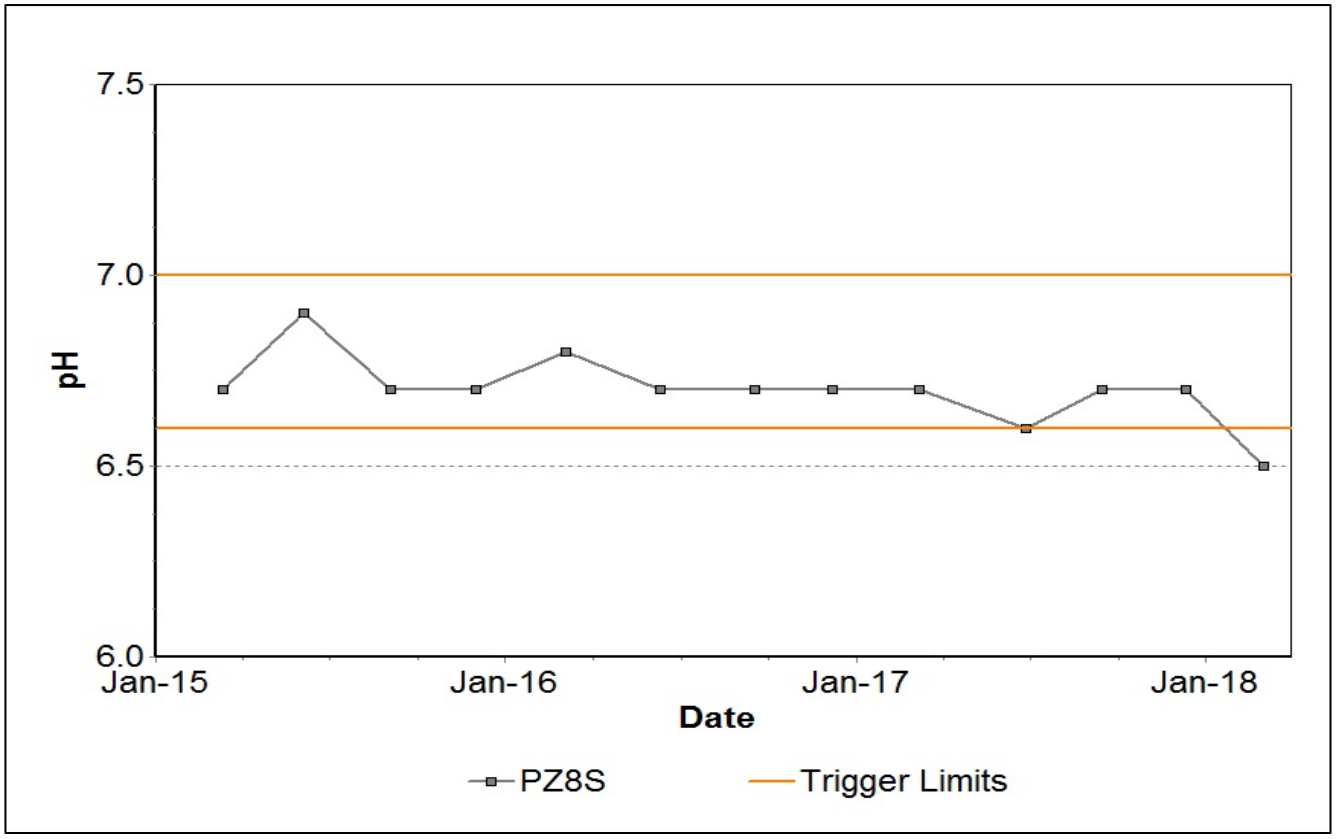


Figure 41: Wollombi Alluvium 1 pH Trend – March 2018

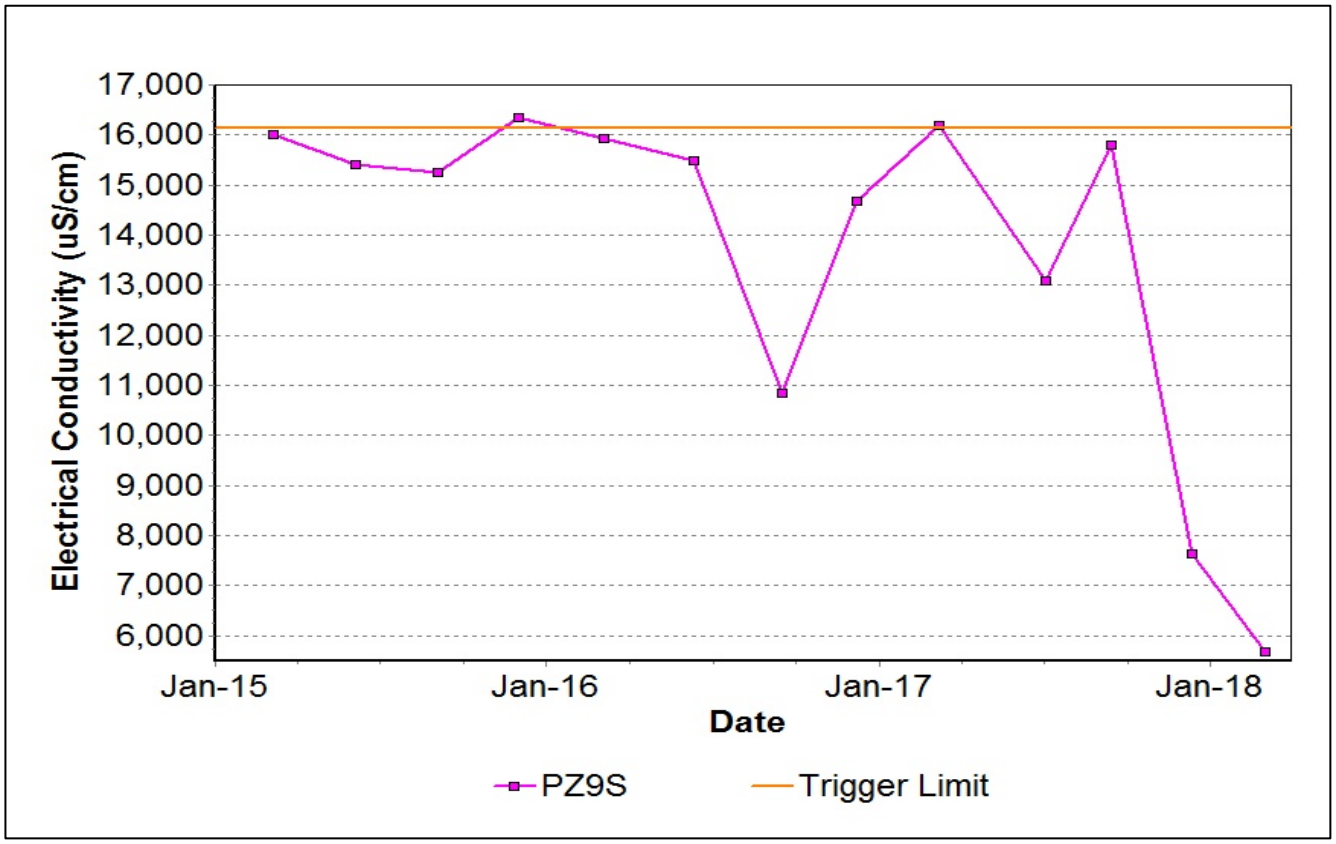


Figure 42: Wollombi Alluvium 2 Electrical Conductivity Trend – March 2018

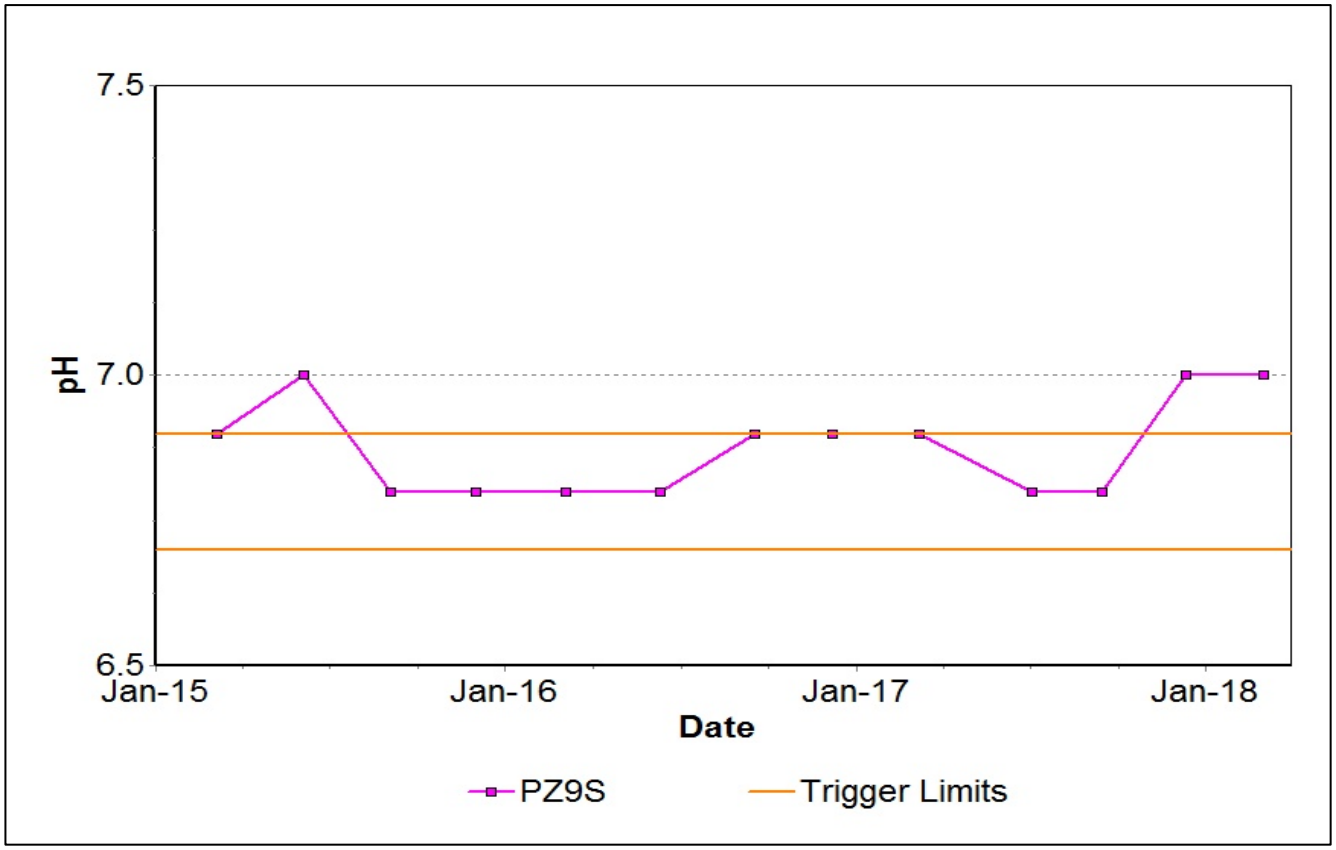


Figure 43: Wollombi Alluvium 2 pH Trend – March 2018

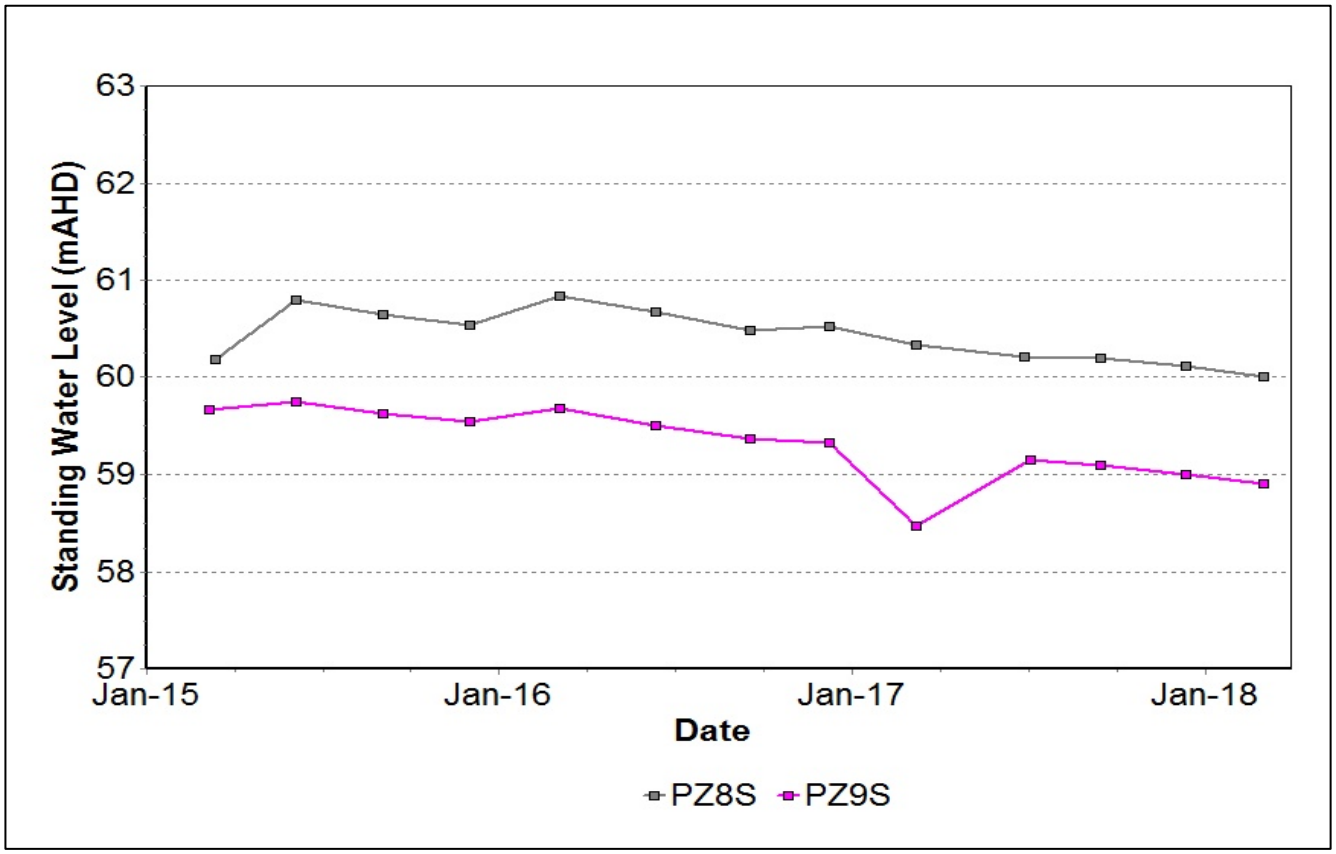


Figure 44: Wollombi Alluvium Standing Water Level Trend – March 2018

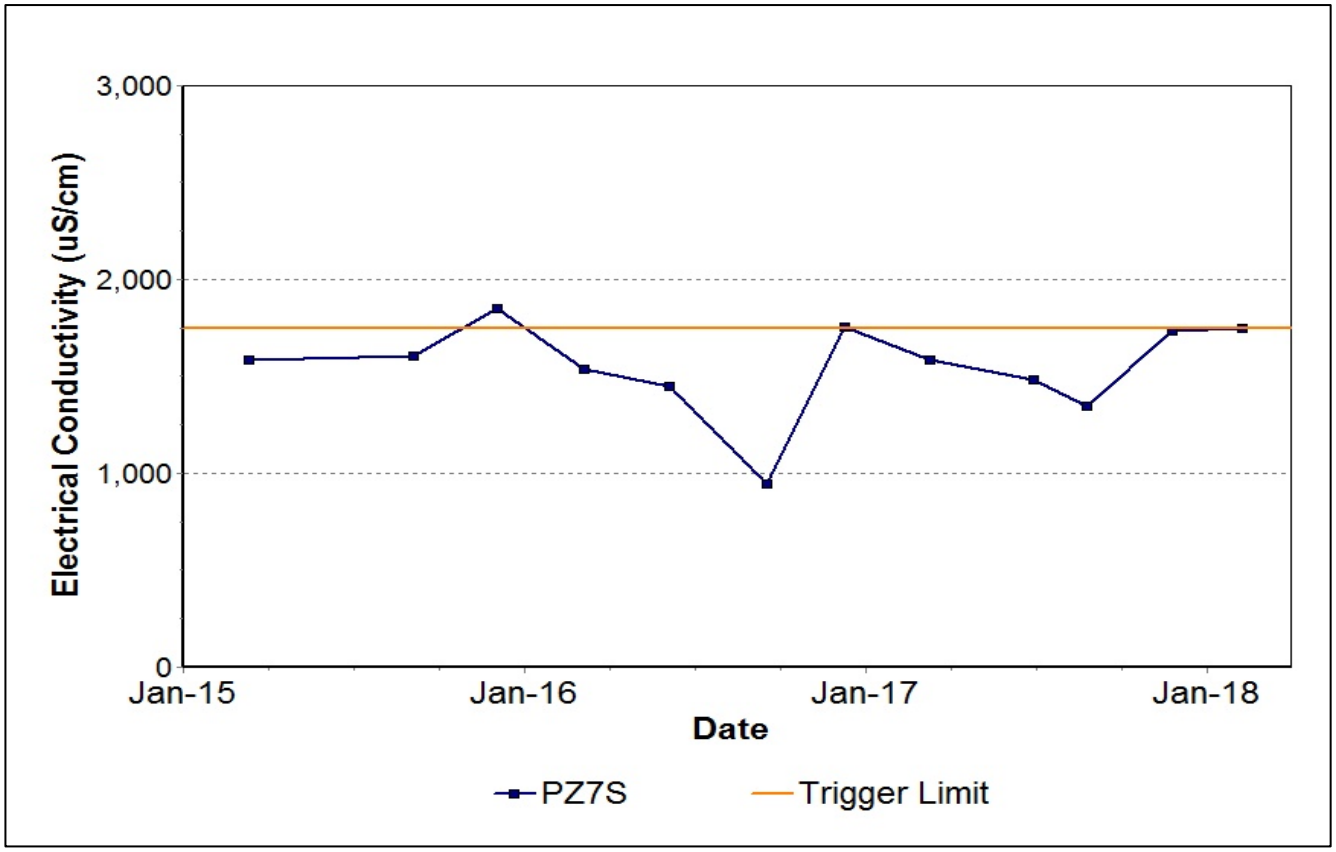


Figure 45: Aeolian Warkworth Sands Electrical Conductivity Trend – March 2018

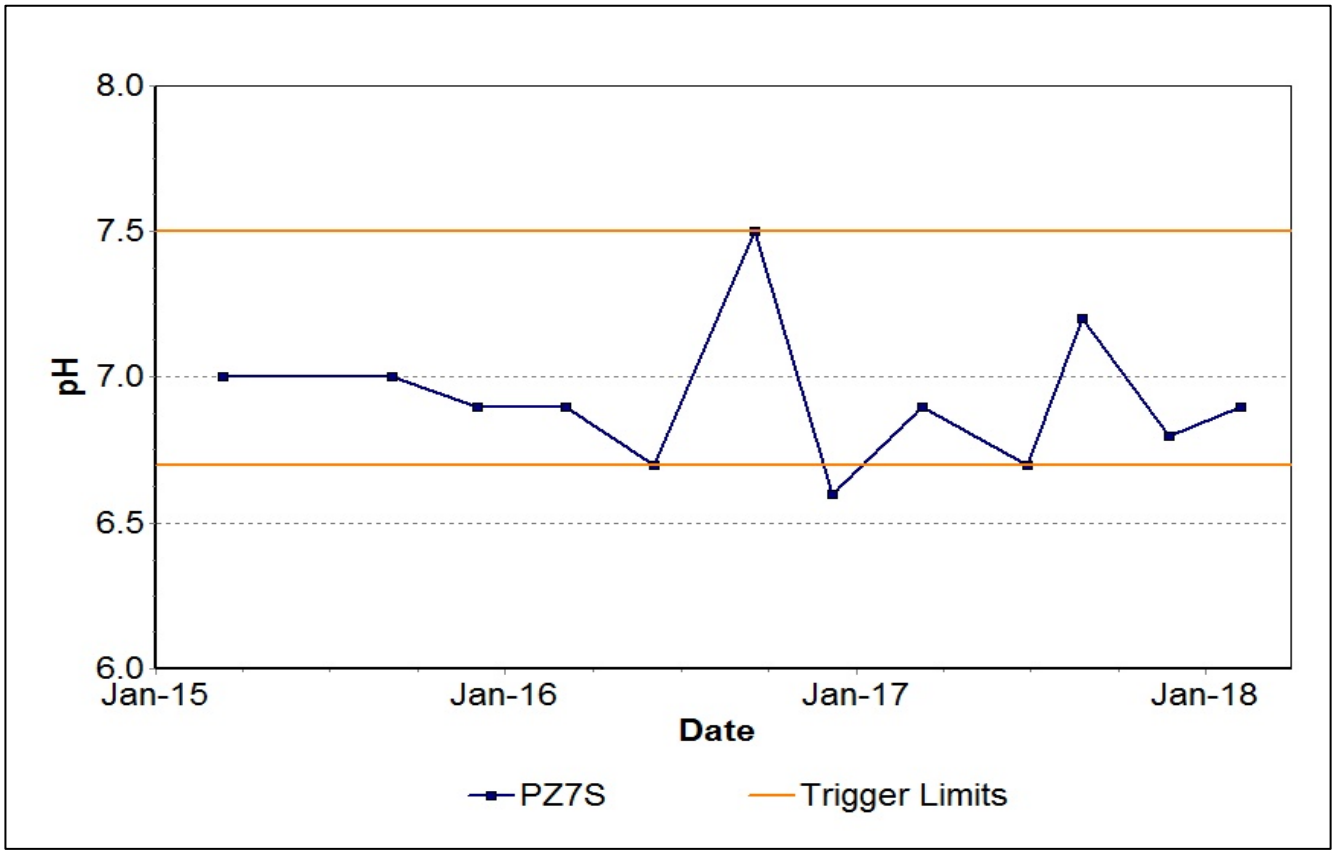


Figure 46: Aeolian Warkworth Sands pH Trend – March 2018

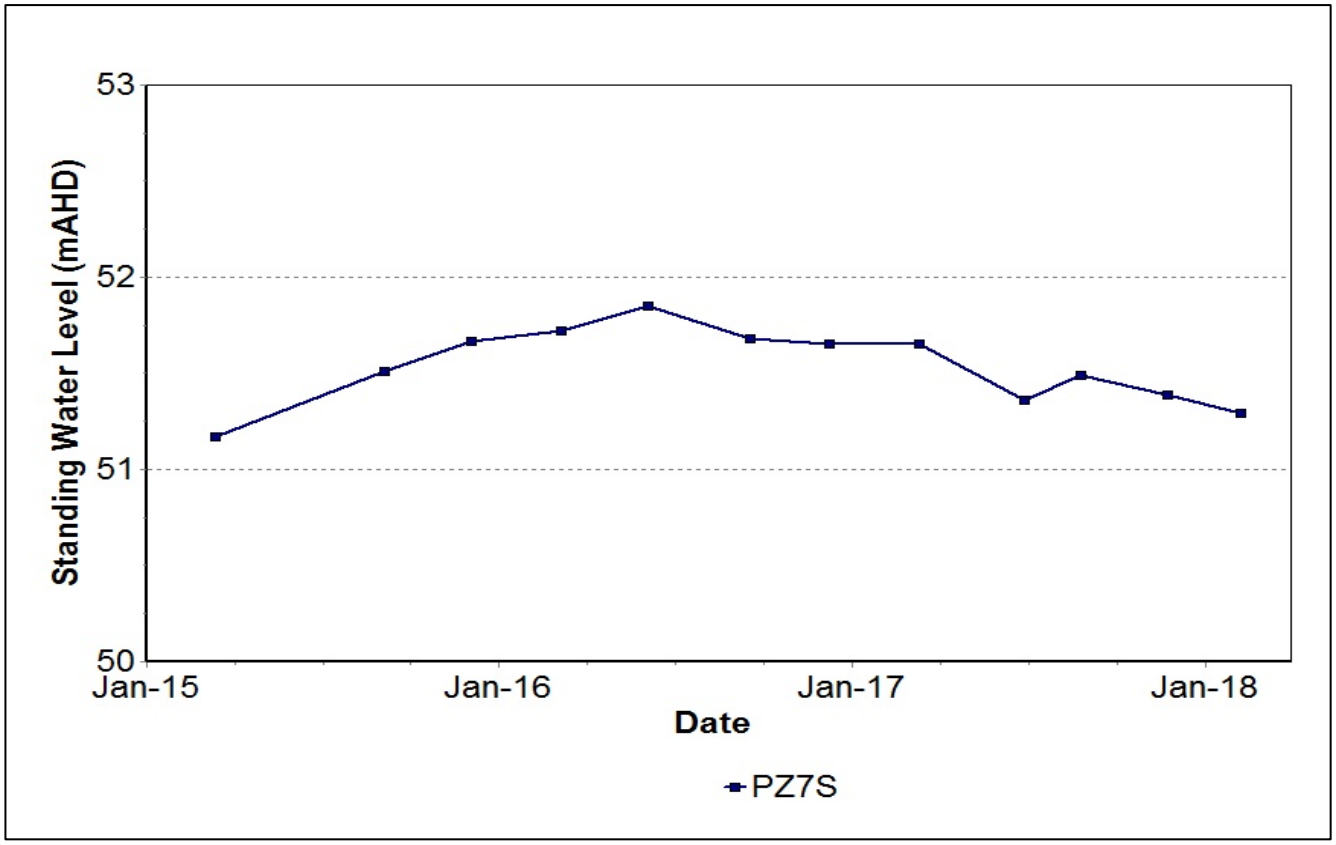


Figure 47: Aeolian Warkworth Sands Standing Water Level Trend – March 2018

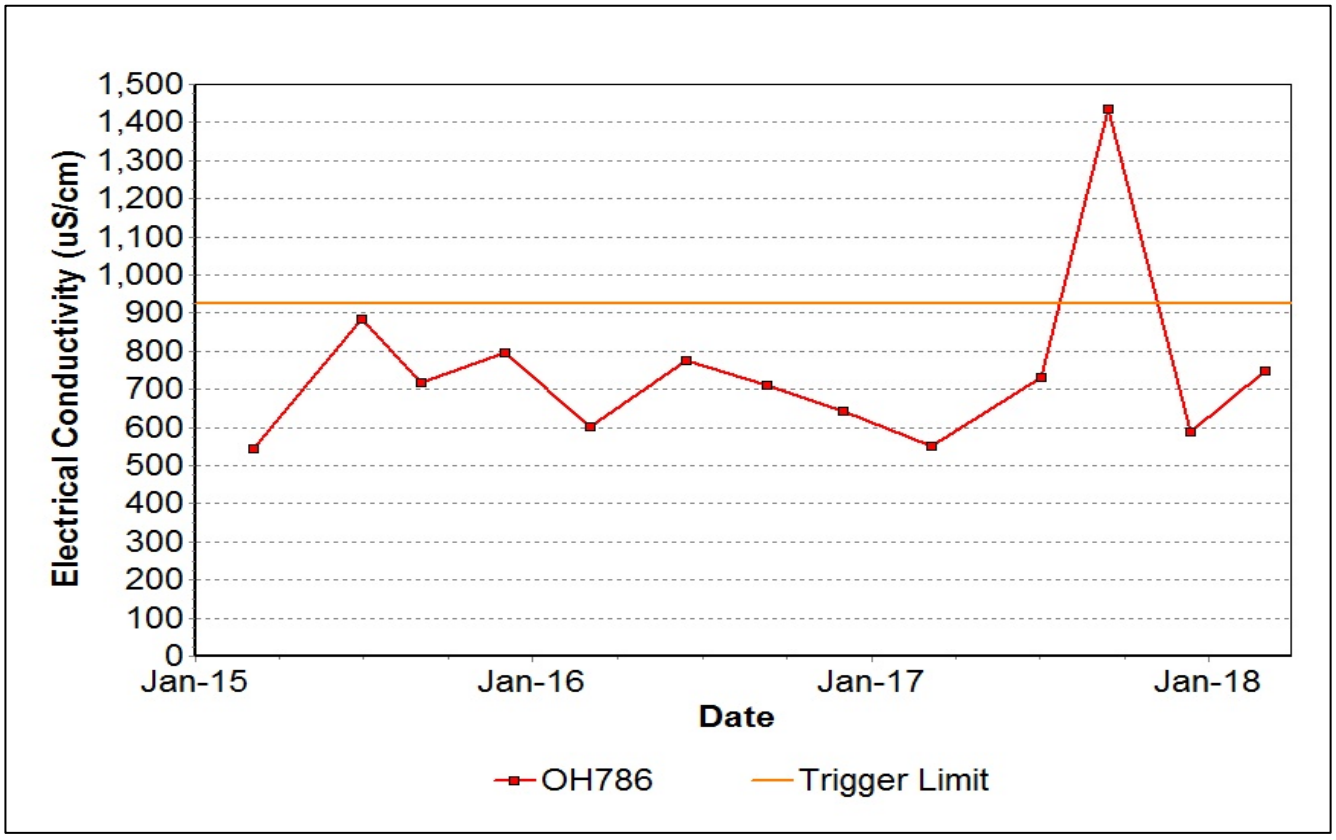


Figure 48: Hunter River Alluvium 1 Seam Electrical Conductivity Trend – March 2018

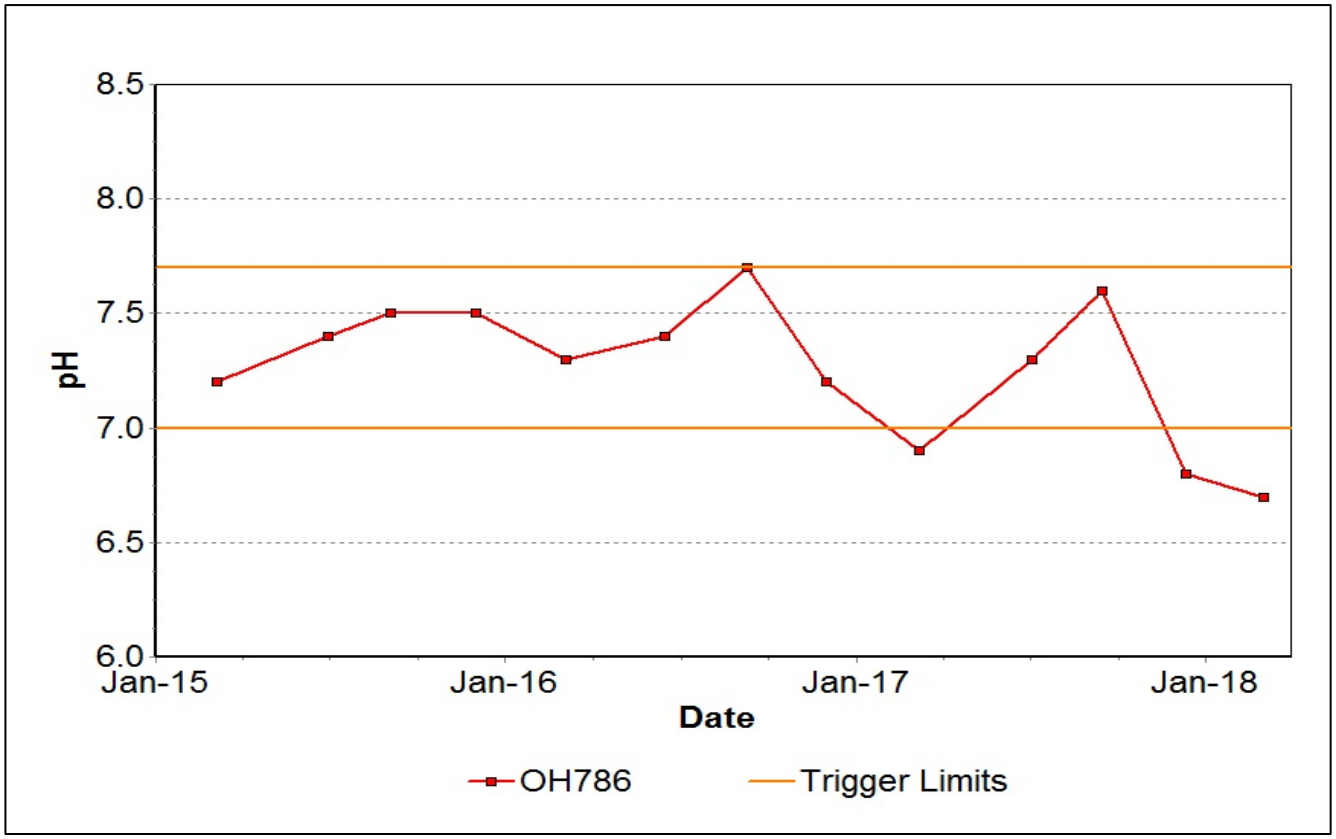


Figure 49: Hunter River Alluvium 1 Seam pH Trend – March 2018

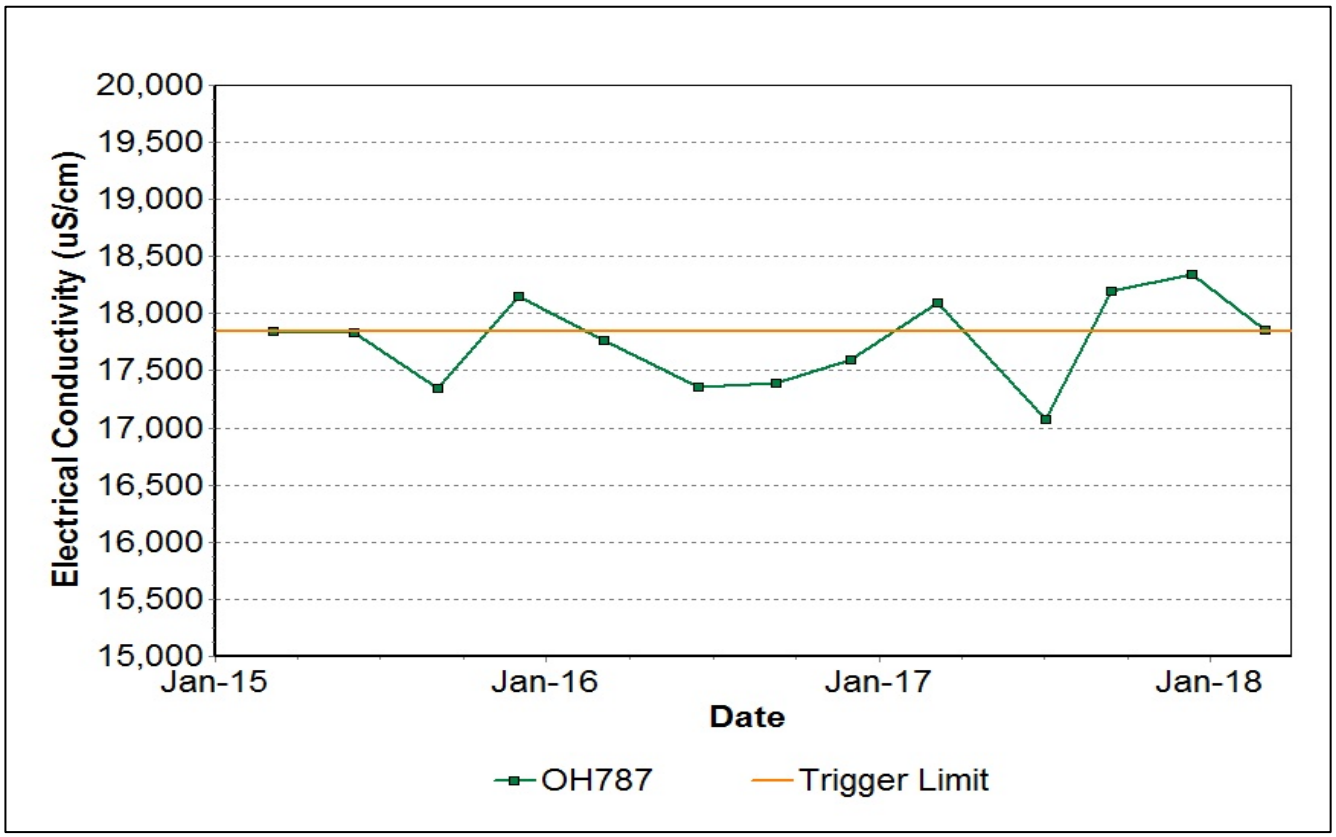


Figure 50: Hunter River Alluvium 2 Seam Electrical Conductivity Trend – March 2018

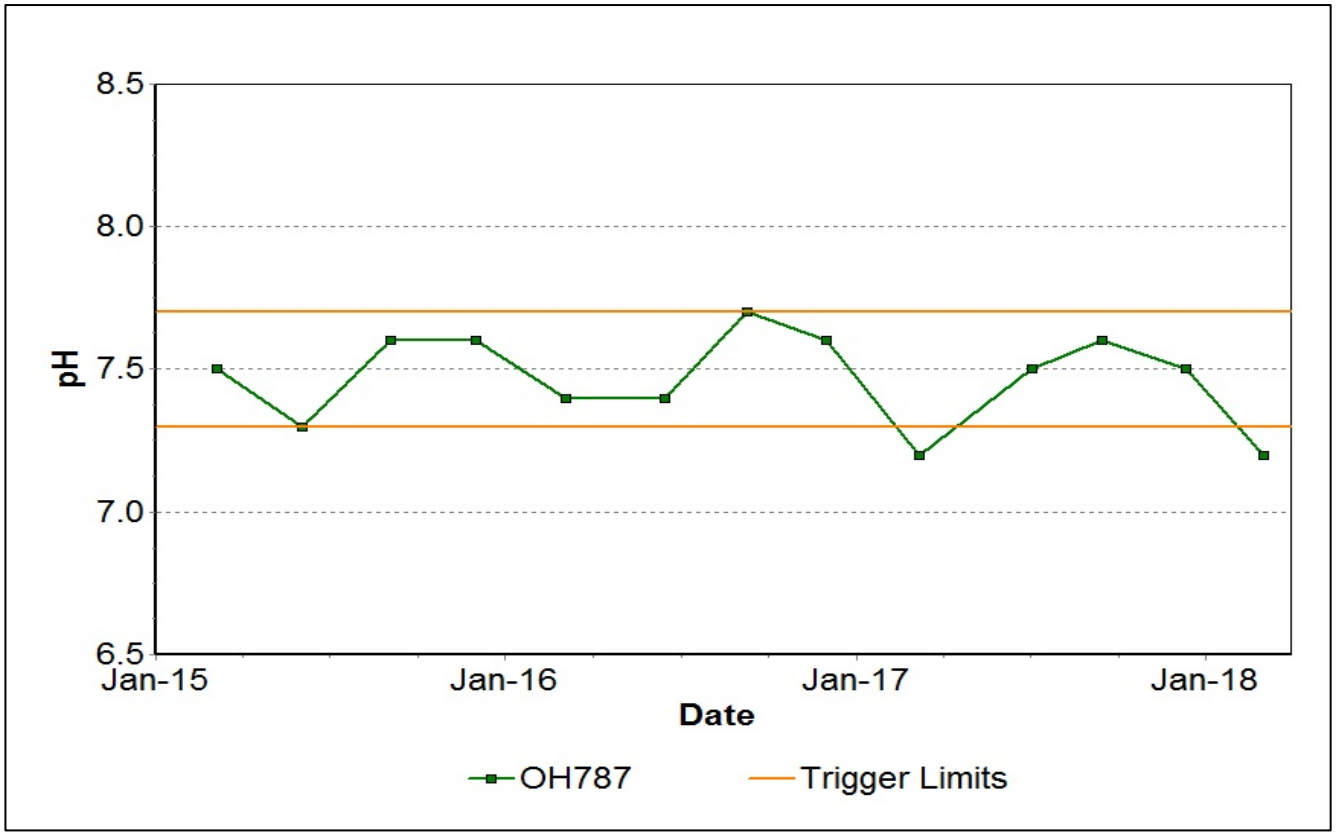


Figure 51: Hunter River Alluvium 2 Seam pH Trend – March 2018

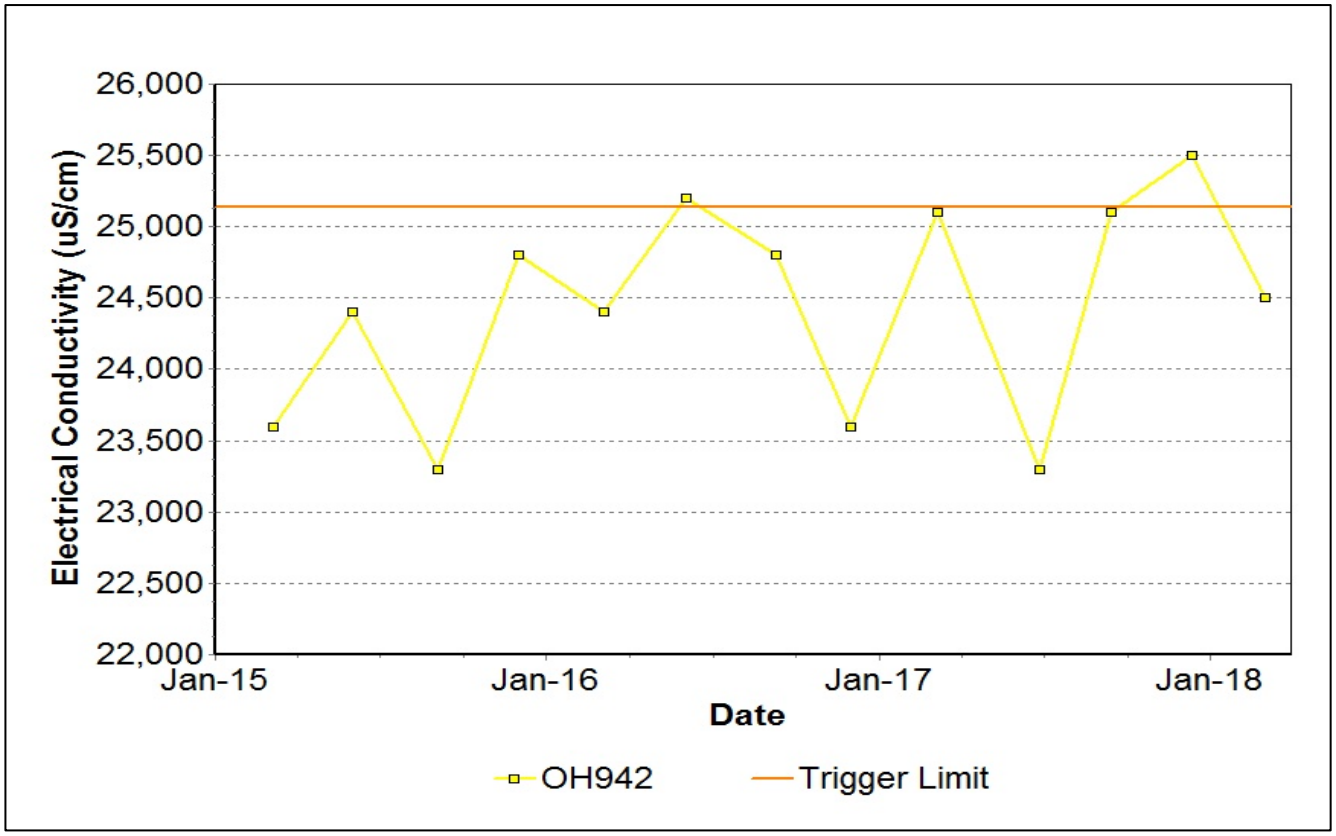


Figure 52: Hunter River Alluvium 3 Seam Electrical Conductivity Trend – March 2018

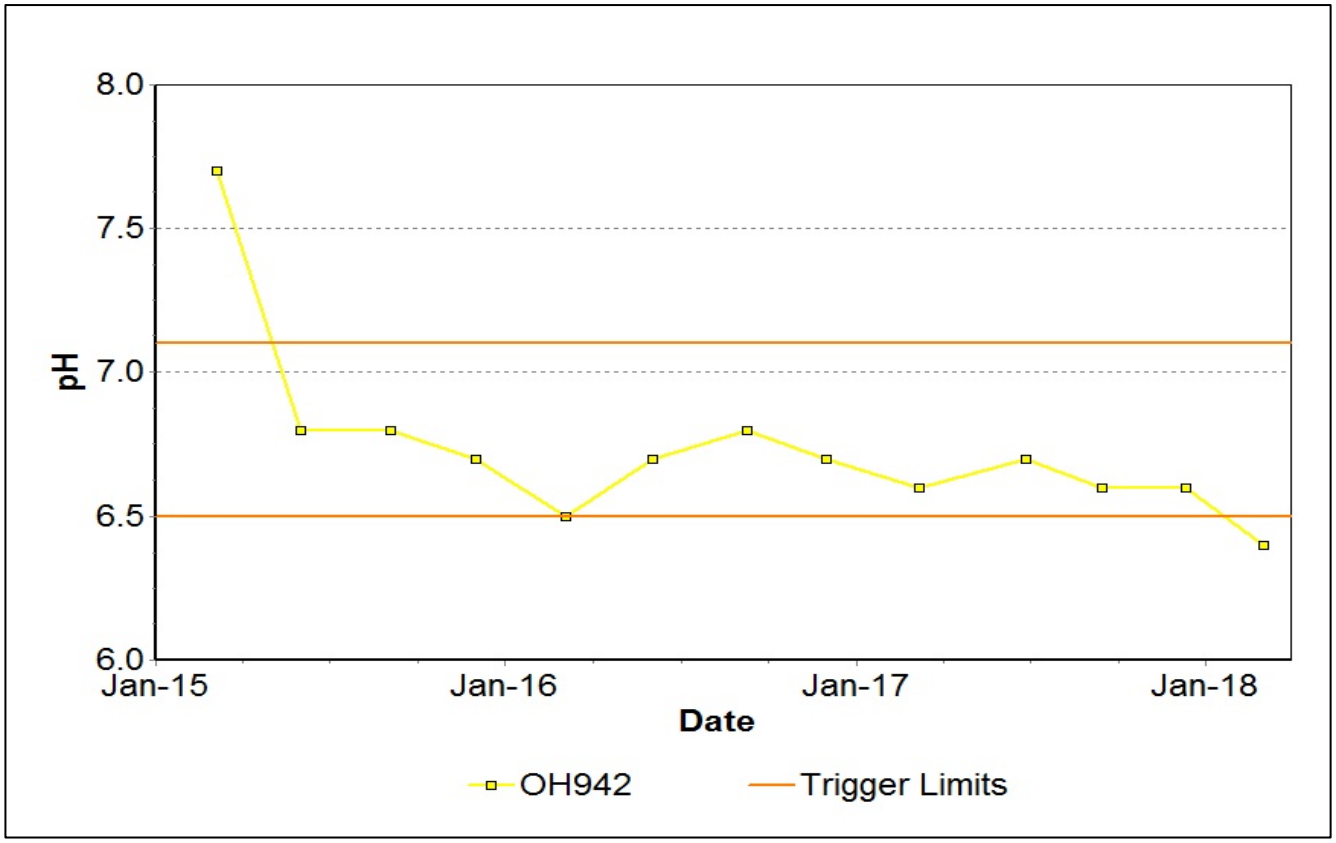


Figure 53: Hunter River Alluvium 3 Seam pH Trend – March 2018

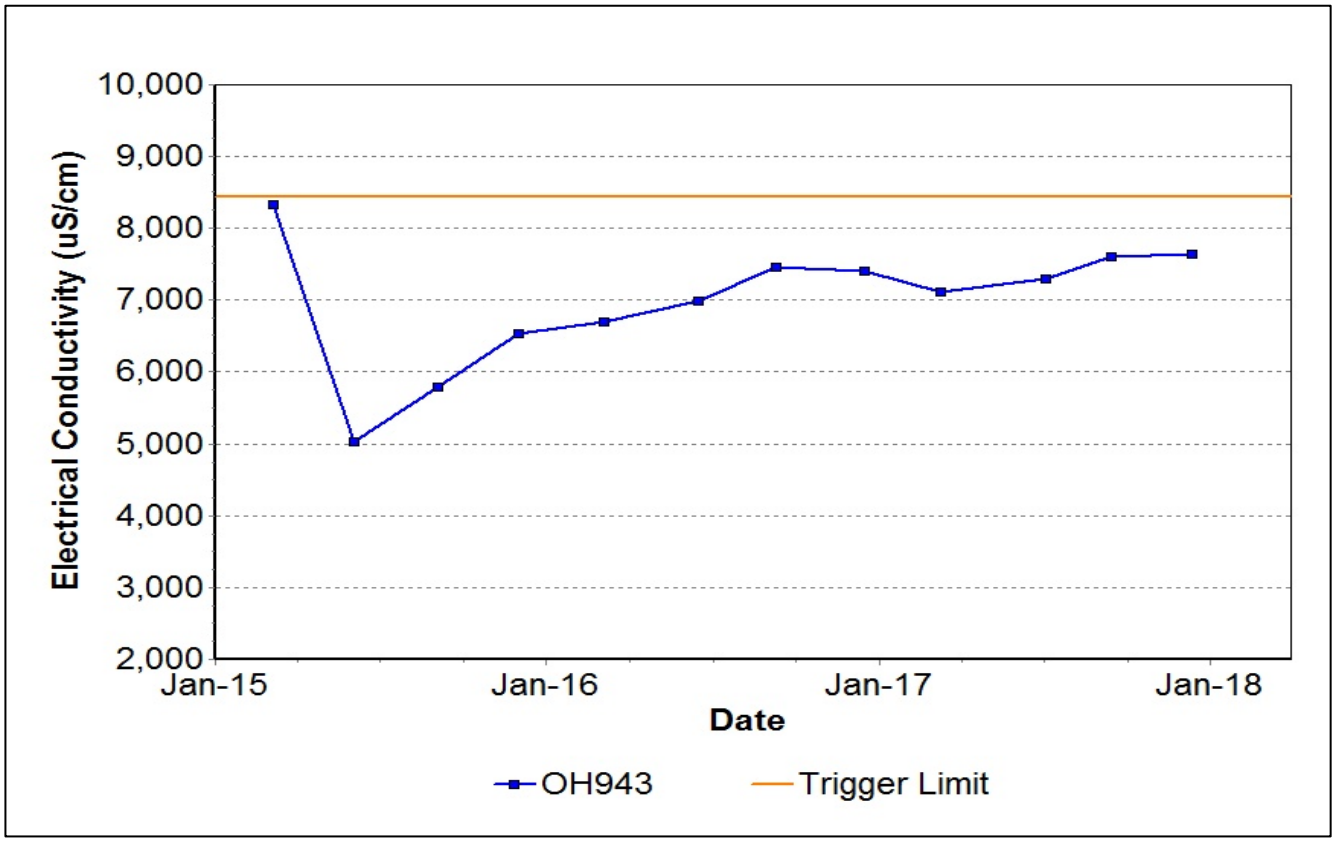


Figure 54: Hunter River Alluvium 4 Seam Electrical Conductivity Trend – March 2018

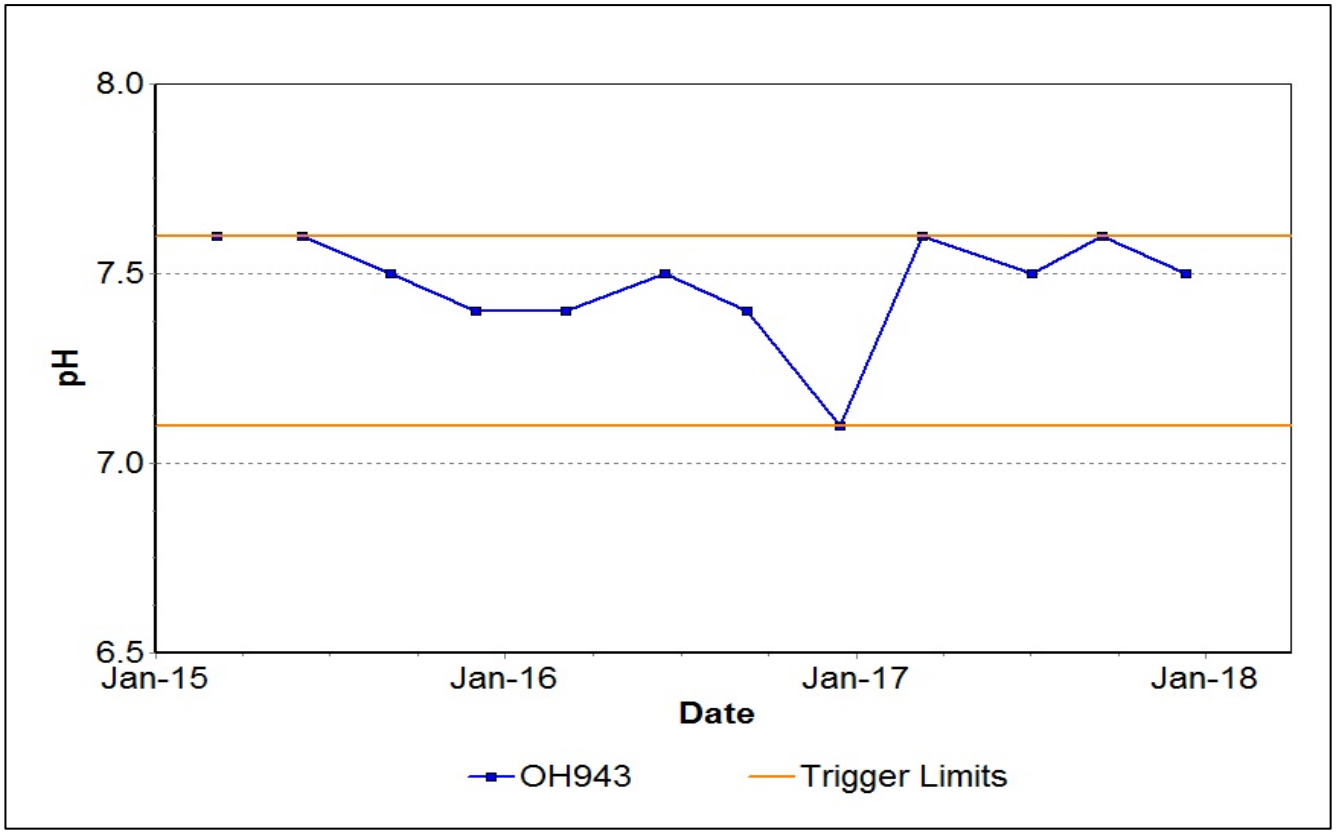
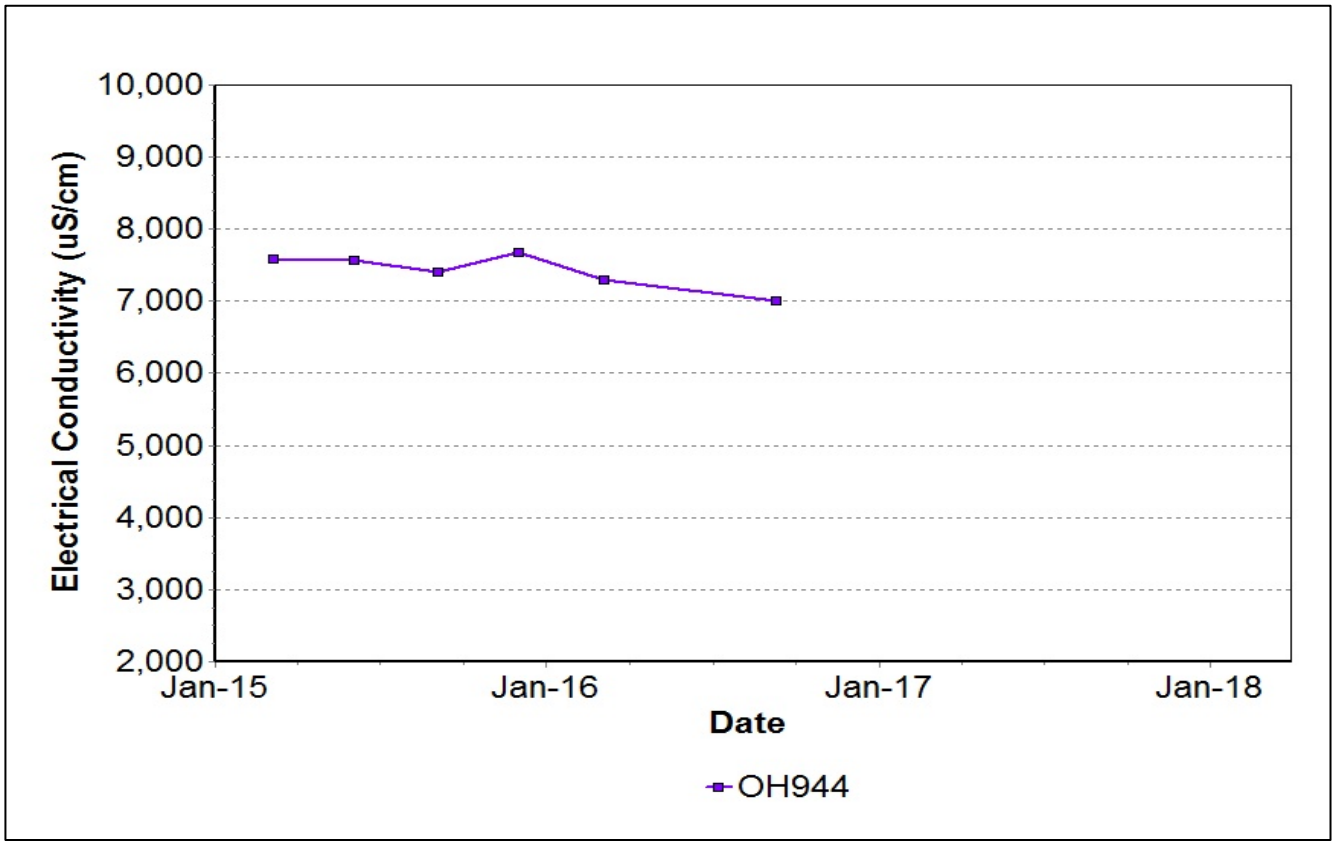
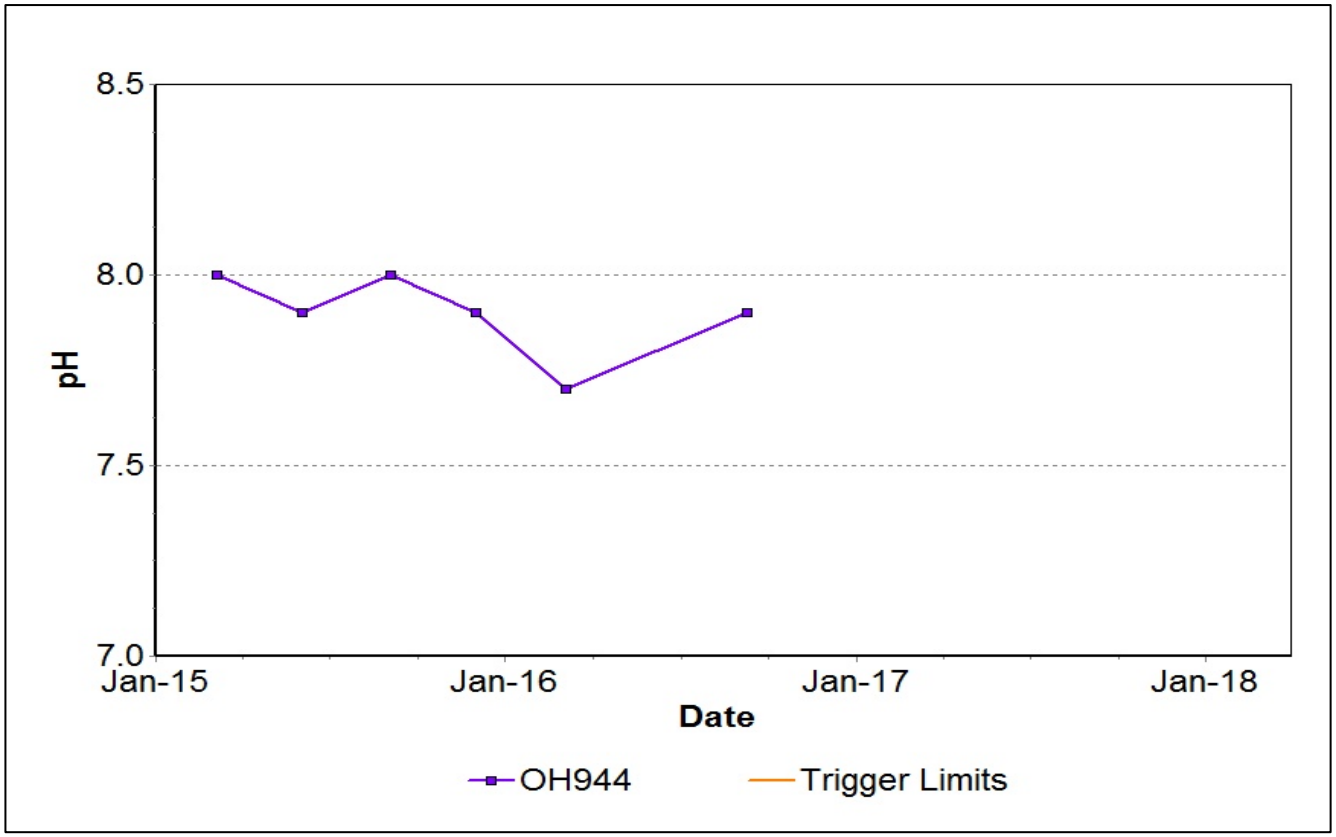


Figure 55: Hunter River Alluvium 4 Seam pH Trend – March 2018



Note: There has been insufficient water to sample since September 2016.

Figure 56: Hunter River Alluvium 5 Seam Electrical Conductivity Trend – March 2018



Note: There has been insufficient water to sample since September 2016.

Figure 57: Hunter River Alluvium 5 Seam pH Trend – March 2018

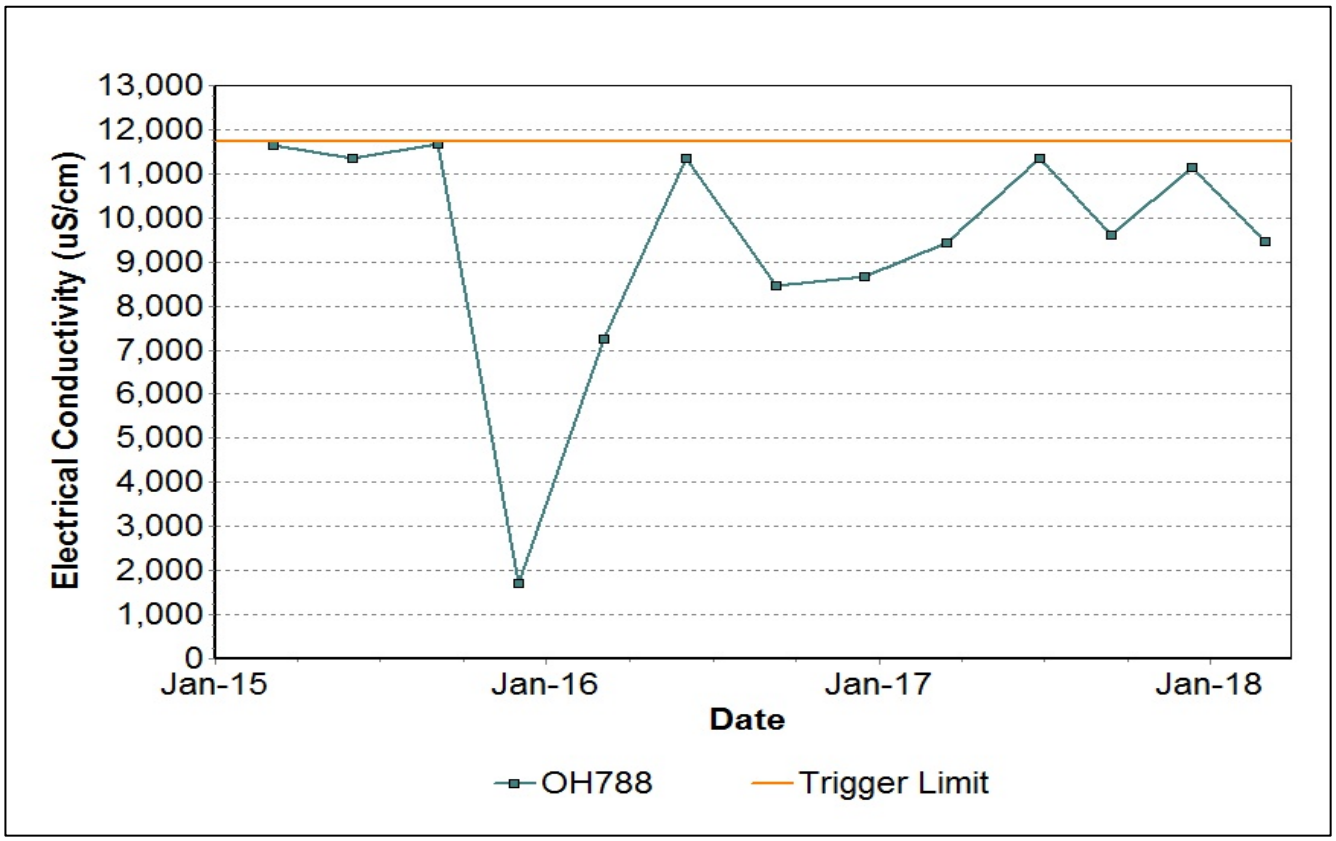


Figure 58: Hunter River Alluvium 6 Seam Electrical Conductivity – March 2018

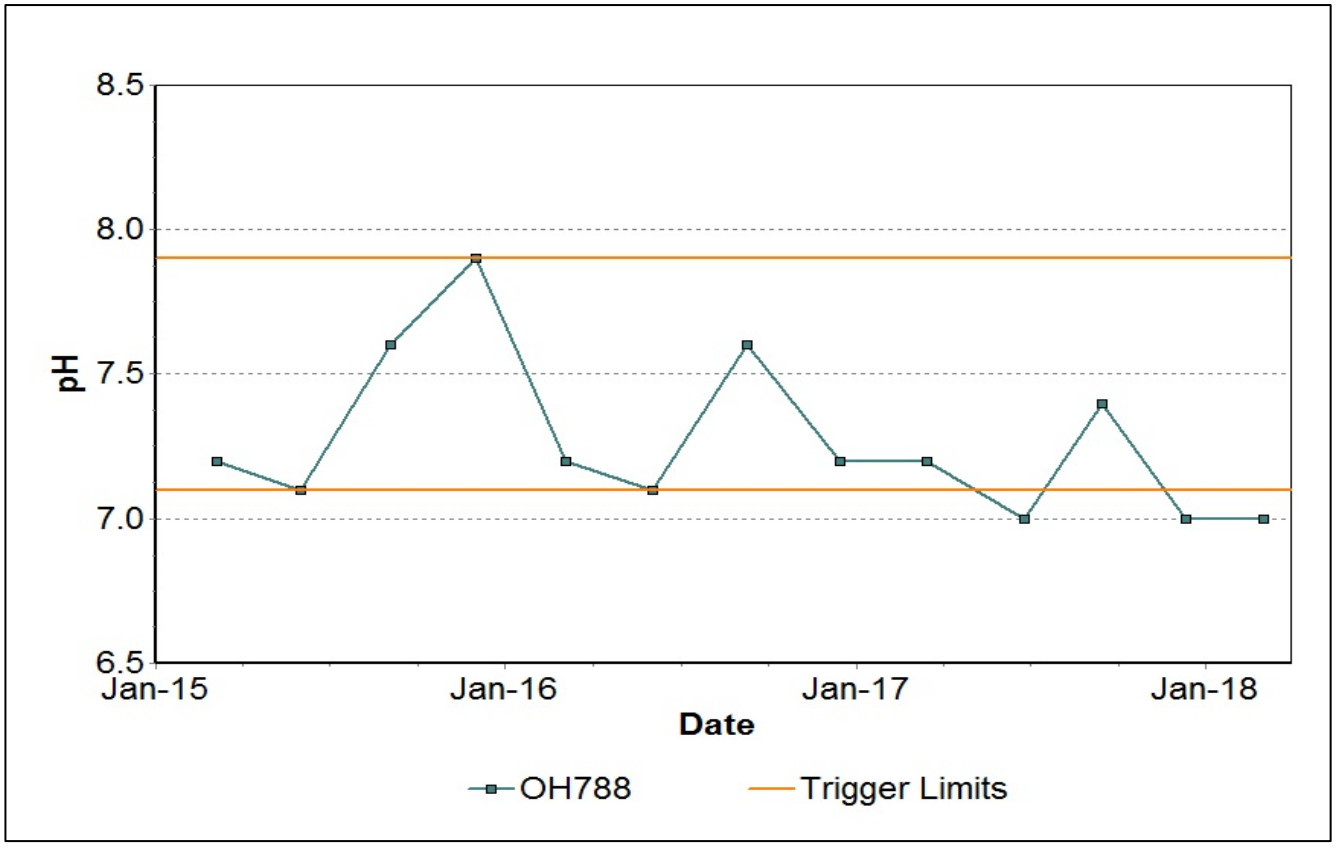


Figure 59: Hunter River Alluvium 6 Seam pH Trend – March 2018

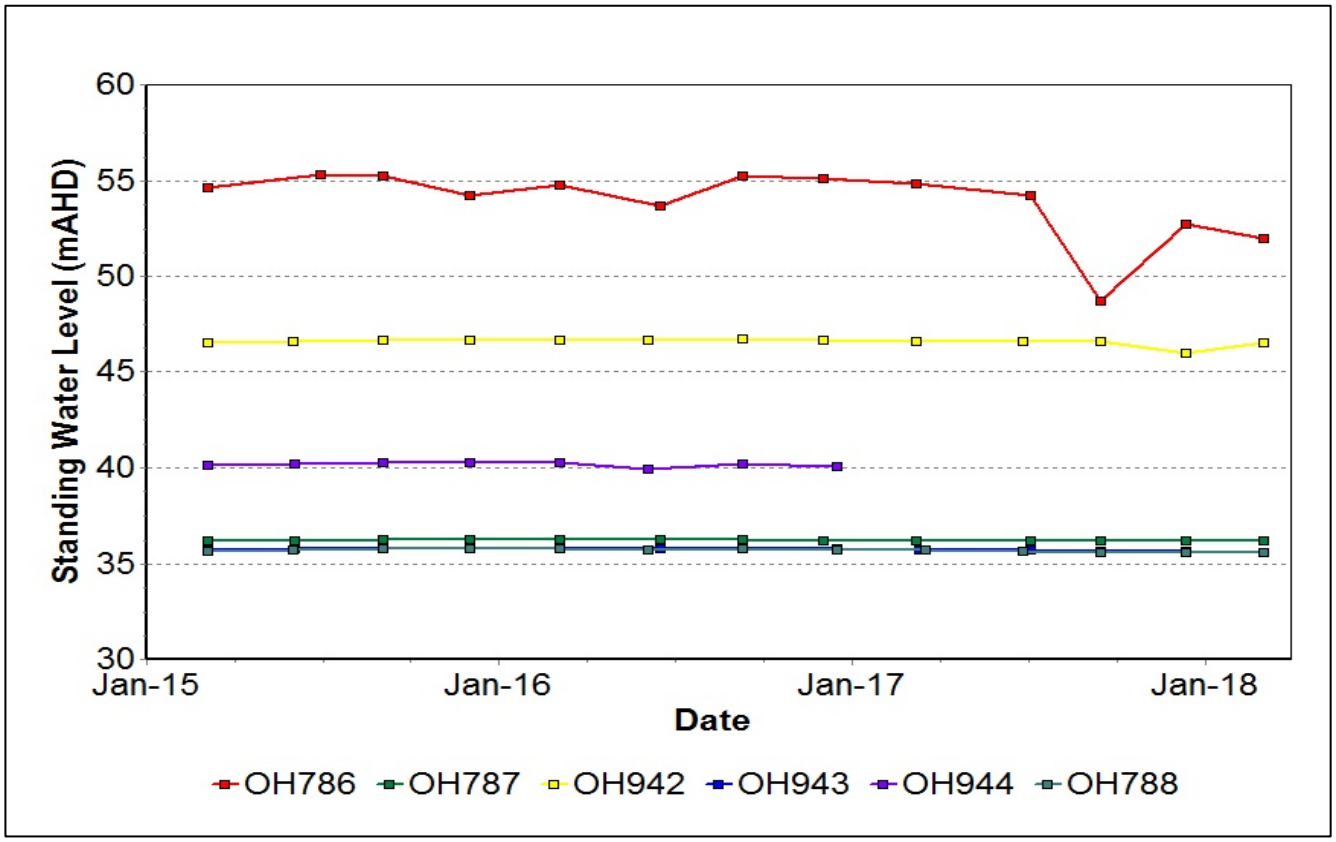


Figure 60: Hunter River Alluvium Standing Water Level Trend – March 2018

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 61.

Current internal groundwater trigger limit breaches are summarised in Table 4.

Table 4: Groundwater Triggers - 2018

Site	Date	Trigger Limit Breached	Action Taken in Response
OH 787	02/03/2018	EC – 95th Percentile	Data is stable and consistent with historical trend; no further action
MTD605P	06/02/2018	EC – 95th Percentile	Data is stable and consistent with historical trend; no further action
WOH2156B	06/02/2018	EC – 95th Percentile	Data is stable and consistent with historical trend; no further action
OH 1138(1)	02/03/2018	EC – 95th Percentile	Data is stable and consistent with historical trend; no further action
OH 786	02/03/2018	pH –5th Percentile	Watching Brief*
OH 787	02/03/2018	pH –5th Percentile	Watching Brief*
OH 942	02/03/2018	pH –5th Percentile	Watching Brief*
OH 788	02/03/2018	pH –5th Percentile	Watching Brief*
PZ8S	02/03/2018	pH –5th Percentile	Watching Brief*
PZ9S	02/03/2018	pH – 95th Percentile	Watching Brief*
GW9709	02/03/2018	pH –5th Percentile	Watching Brief*
GW98MTCL2	02/03/2018	pH –5th Percentile	Watching Brief*
WOH2139A	06/02/2018	pH – 95th Percentile	Data is stable and consistent with historical trend; no further action
OH 1125(1)	02/03/2018	pH –5th Percentile	Watching Brief*
MB15MTW01D	06/02/2018	pH –5th Percentile	Watching Brief*
PZ9D	02/03/2018	pH –5th Percentile	Watching Brief*
OH 1138(1)	06/02/2018	pH –5th Percentile	Investigation commenced.

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

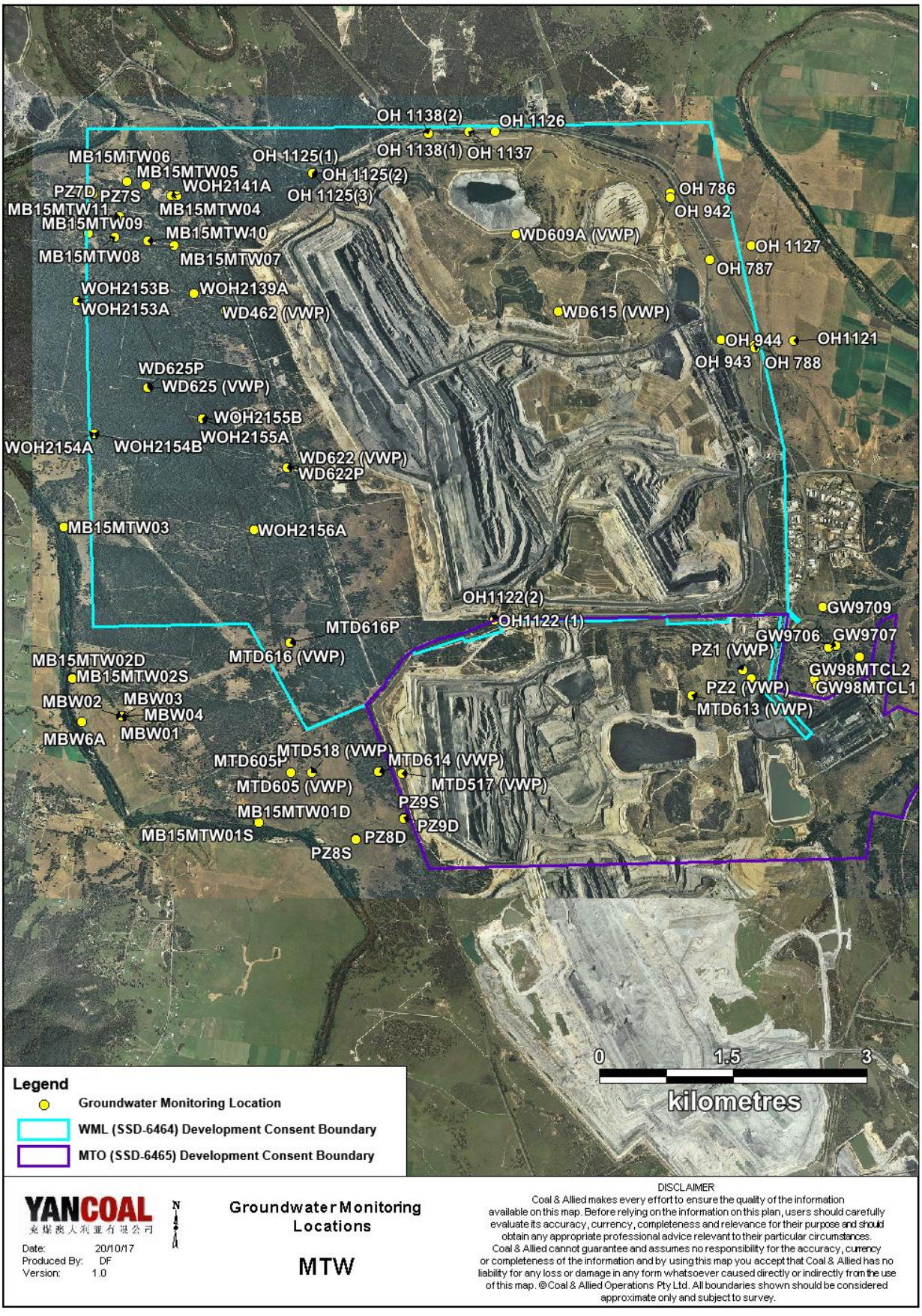


Figure 61: Groundwater Monitoring Location Plan

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 68.

4.1 Blast Monitoring Results

During March 2018, 26 blasts were initiated at MTW. Figure 62 to Figure 67 show the blast monitoring results for the reporting period against the impact assessment criteria. The criteria are summarised in Table 5.

Table 5: 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

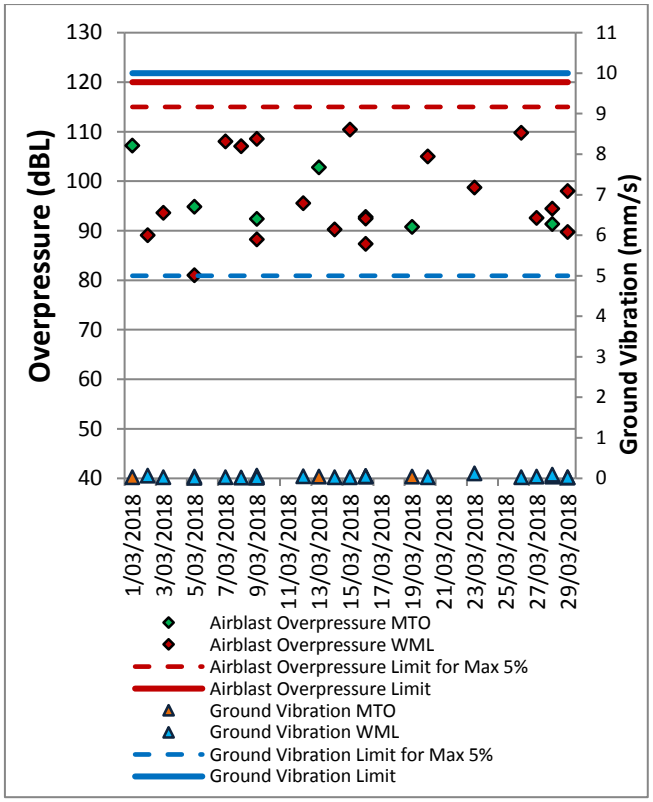


Figure 62: Abbey Green Blast Monitoring Results – March 2018

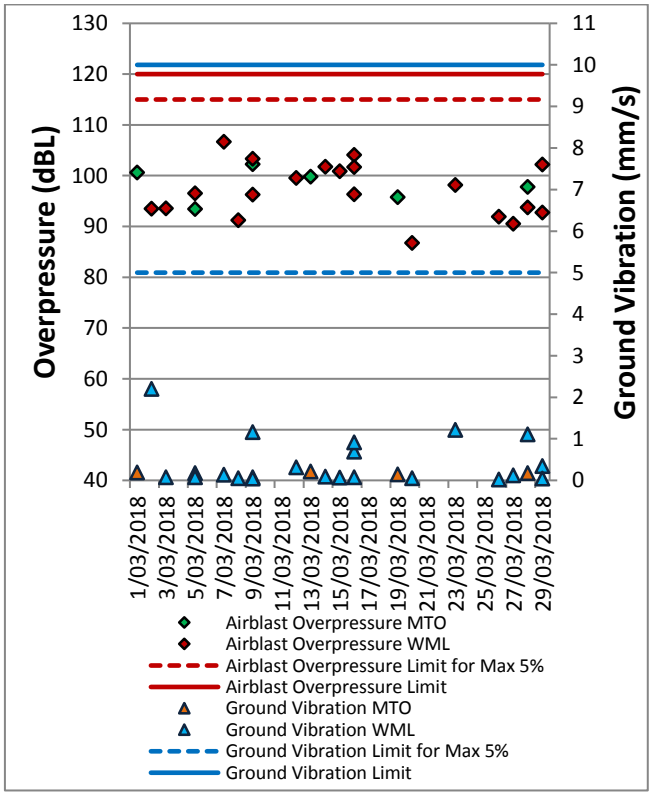


Figure 63: Bulga Village Blast Monitoring Results – March 2018

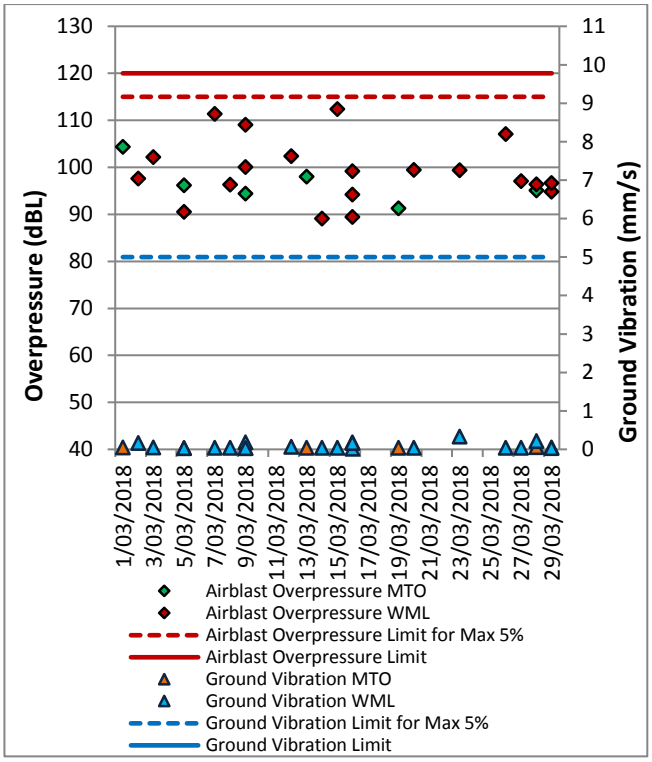


Figure 64: MTIE Blast Monitoring Results – March 2018

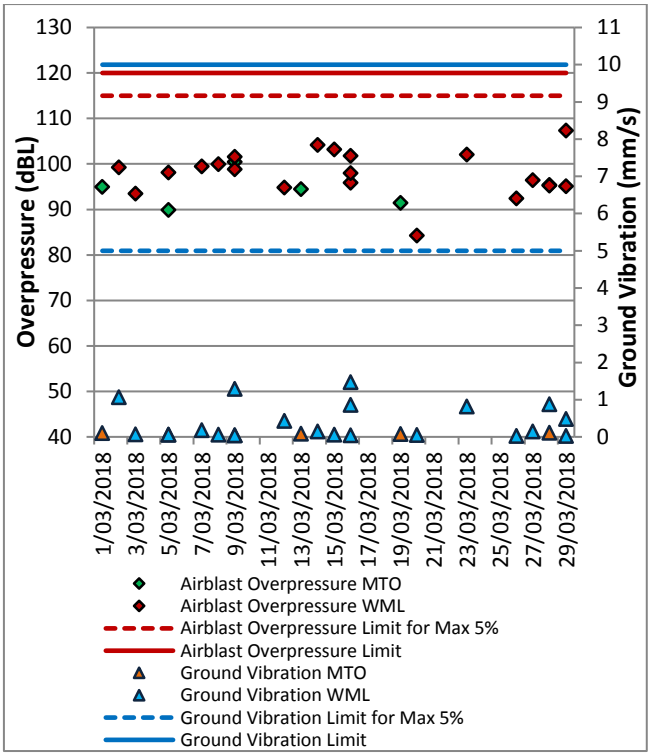


Figure 66: Wambo Road Blast Monitoring Results – March 2018

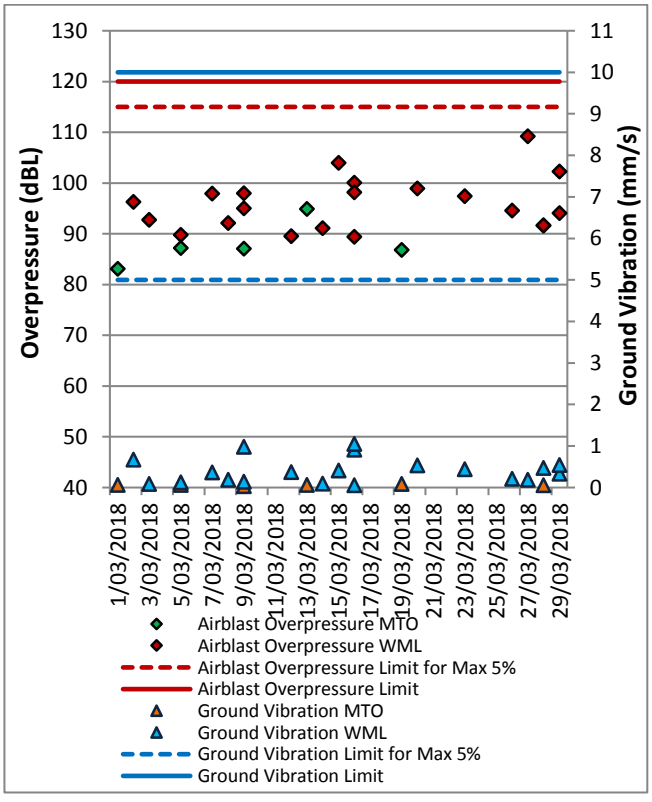


Figure 65: Warkworth Blast Monitoring Results - March 2018

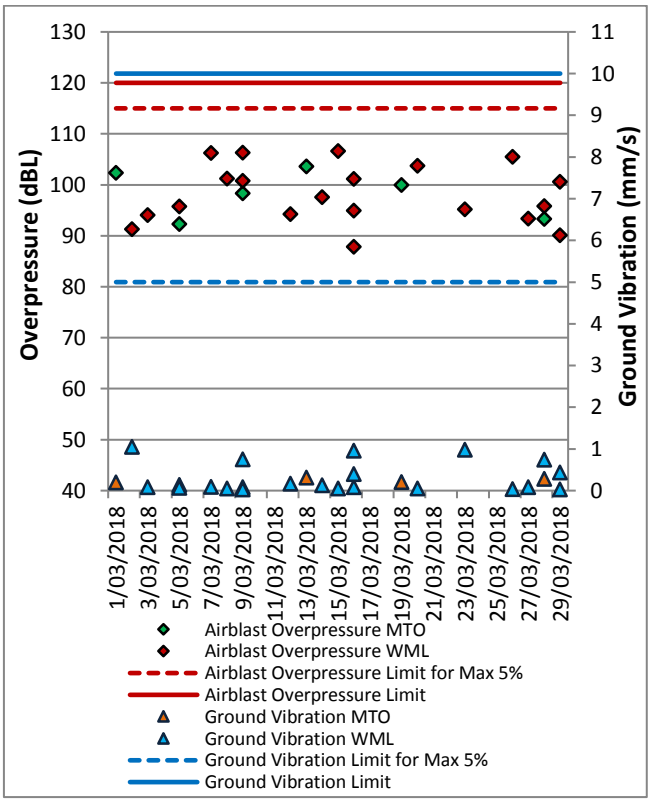


Figure 67: Wollemi Peak Road Blast Monitoring Results - March 2018

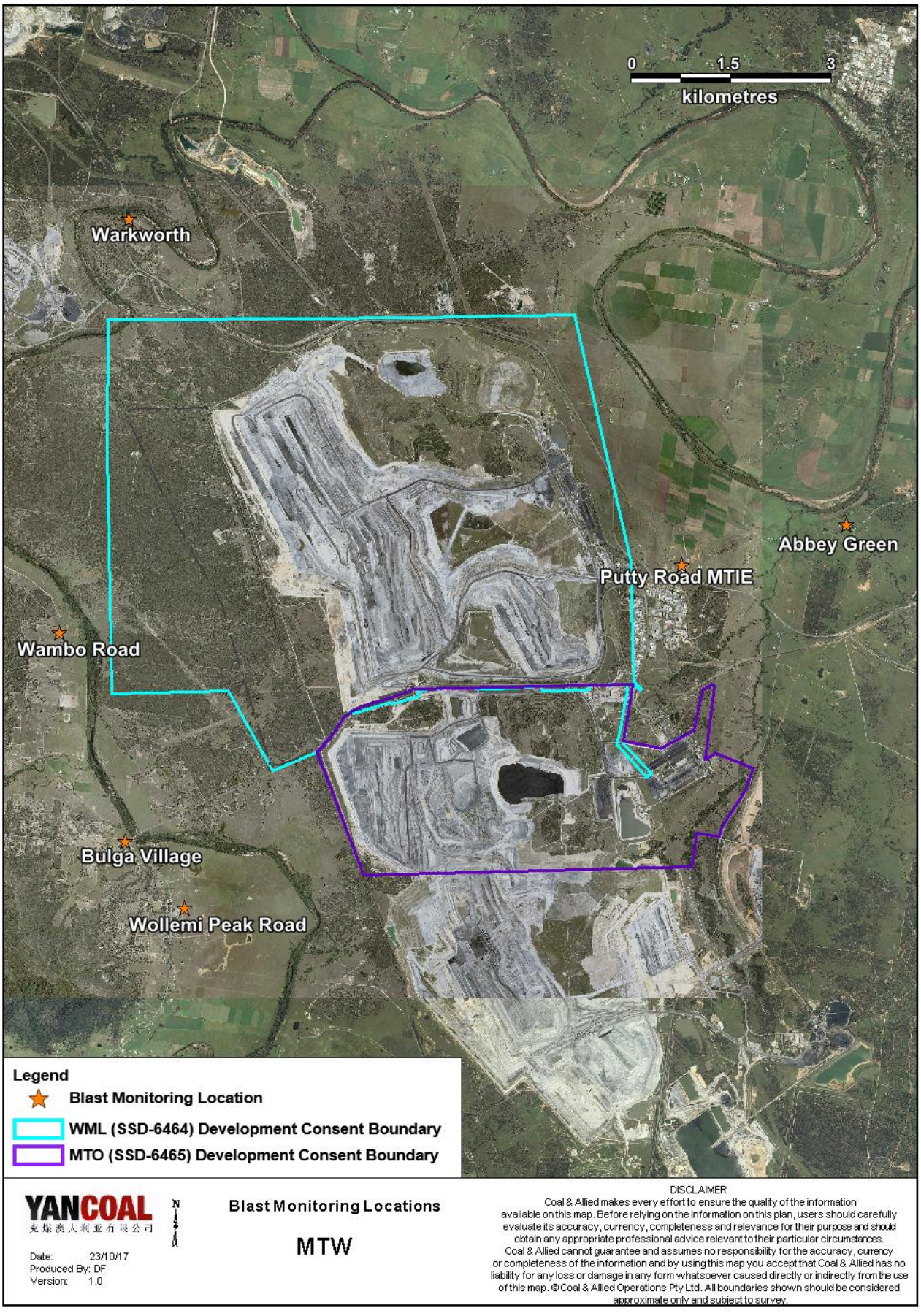


Figure 68: Blast and Vibration Monitoring Location Plan

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. 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 69.

5.1 Attended Noise Monitoring Results

Attended monitoring was conducted at receiver locations surrounding MTW on the night of 8 March 2018. All measurements complied with the relevant criteria. Results are detailed in Table 6 to Table 9.

5.1.1 WML Noise Assessment

Compliance assessments undertaken against the WML noise criteria are presented in Table 6 and Table 7.

Table 6: $L_{Aeq,\ 15\ minute}$ Warkworth Impact Assessment Criteria – March 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion (dB(A))	Criterion Applies?[1,5]	WML L_{Aeq} dB[2,4]	Exceedance[3]
Bulga RFS	8/03/2018 21:02	2.8	D	37	Yes	IA	Nil
Bulga Village	8/03/2018 23:16	3.1	D	38	No	IA	NA
Gouldsville	9/03/2018 0:56	3.1	D	38	No	30	NA
Inlet Rd	8/03/2018 21:22	2.7	D	37	Yes	<25	Nil
Inlet Rd West	8/03/2018 21:00	2.8	D	35	Yes	IA	Nil
Long Point	9/03/2018 0:30	4.1	D	35	No	<25	NA
South Bulga	8/03/2018 21:37	2.6	D	35	Yes	IA	Nil
Wambo Road	8/03/2018 22:51	3.5	D	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;
2. Estimated or measured LAeq,15minute attributed to WML;
3. NA means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable;
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.

Table 7: $L_{A1,\ 1\ minute}$ Warkworth Impact Assessment Criteria – March 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion (dB(A))	Criterion Applies?[1,5]	WML L_{Aeq} dB[2,4]	Exceedance[3]
Bulga RFS	8/03/2018 21:02	2.8	D	47	Yes	IA	Nil
Bulga Village	8/03/2018 23:16	3.1	D	48	No	IA	NA
Gouldsville	9/03/2018 0:56	3.1	D	48	No	33	NA
Inlet Rd	8/03/2018 21:22	2.7	D	47	Yes	<25	Nil
Inlet Rd West	8/03/2018 21:00	2.8	D	45	Yes	IA	Nil
Long Point	9/03/2018 0:30	4.1	D	45	No	28	NA
South Bulga	8/03/2018 21:37	2.6	D	45	Yes	IA	Nil
Wambo Road	8/03/2018 22:51	3.5	D	48	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;
2. Estimated or measured LA1,1minute attributed to Warkworth mine (WML);
3. NA in exceedance column means atmospheric conditions outside conditions specified in project approval and so criterion is not applicable.
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.

5.1.2 MTO Noise Assessment

Compliance assessments undertaken against the MTO noise criteria are presented in Table 8 and Table 9.

Table 8: $L_{Aeq,\ 15minute}$ Mount Thorley Operations - Impact Assessment Criteria – March 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion dB	Criterion Applies?[1,5]	MTO L_{Aeq} dB[2,4]	Exceedance[3]
Bulga RFS	8/03/2018 21:02	2.8	D	37	Yes	IA	Nil
Bulga Village	8/03/2018 23:16	3.1	D	38	No	NM	NA
Gouldsville	9/03/2018 0:56	3.1	D	35	No	IA	NA
Inlet Rd	8/03/2018 21:22	2.7	D	37	Yes	<25	Nil
Inlet Rd West	8/03/2018 21:00	2.8	D	35	Yes	IA	Nil
Long Point	9/03/2018 0:30	4.1	D	35	No	IA	NA
South Bulga	8/03/2018 21:37	2.6	D	36	Yes	IA	Nil
Wambo Road	8/03/2018 22:51	3.5	D	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;
2. Estimated or measured LAeq,15minute attributed to MTO;
3. NA means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable;
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.

Table 9: $L_{A1,\ 1Minute}$ Mount Thorley Operations - Impact Assessment Criteria – March 2018

Location	Date and Time	Wind Speed (m/s)[5]	Stability Class	Criterion dB	Criterion Applies?[1,5]	MTO $L_{A1,\ 1min}$ dB[2,4]	Exceedance[3]
Bulga RFS	8/03/2018 21:02	2.8	D	47	Yes	IA	Nil
Bulga Village	8/03/2018 23:16	3.1	D	48	No	NM	NA
Gouldsville	9/03/2018 0:56	3.1	D	45	No	IA	NA
Inlet Rd	8/03/2018 21:22	2.7	D	47	Yes	<25	Nil
Inlet Rd West	8/03/2018 21:00	2.8	D	45	Yes	IA	Nil
Long Point	9/03/2018 0:30	4.1	D	45	No	IA	NA
South Bulga	8/03/2018 21:37	2.6	D	46	Yes	IA	Nil
Wambo Road	8/03/2018 22:51	3.5	D	48	No	<30	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;
2. Estimated or measured LA1,1minute attributed to MTO;
3. NA in exceedance column means atmospheric conditions outside conditions specified in project approval and so criterion is not applicable.
4. Bolded results in red are possible exceedances of relevant criteria; and
5. Criterion may or may not apply due to rounding of meteorological data values.

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. During March 2018 no measurements required the penalty to be applied. The assessment for low frequency noise is shown in Table 10.

Table 10: Low Frequency Noise Assessment - March 2018

Location	Date and Time	Measured Site Only LA_{eq} dB (WML/MTO)	Site Only LC_{eq} dB[4] (WML/MTO)	Site Only LC_{eq}-LA_{eq} dB [1,4] (WML/MTO)	Result Max exceedance of ref spectrum dB[2,3,4] (WML/MTO)	Penalty dB(A) (WML/MTO)	Exceedance
Bulga RFS	8/03/2018 21:02	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Bulga Village	8/03/2018 23:16	IA/NM	NA/NA	NA/NA	NA/NA	NA/NA	NA
Gouldsville	9/03/2018 0:56	30/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Inlet Rd	8/03/2018 21:22	<25/<25	NA/NA	NA/NA	NA/NA	NA/NA	NA
Inlet Rd West	8/03/2018 21:00	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Long Point	9/03/2018 0:30	<25/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
South Bulga	8/03/2018 21:37	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Wambo Road	8/03/2018 22:51	<25/<25	NA/NA	NA/NA	NA/NA	NA/NA	NA

Notes:
1. As per NPfI, if LCeq – LAeq >= 15 dB further assessment of low frequency noise required.
2. As per NPfI, compare measured spectrum against reference spectrum to determine if the low frequency modifying factor is triggered and application of penalty is required;
3. Bold results and penalties in red are where the relevant modifying factor trigger was exceeded; and
4. Where it is not possible to determine the site only result due to the presence of other low frequency noise sources occurring during the measurement, or where criteria were not applicable due to meteorological conditions, this is noted as NA (not available) and no further assessment has been undertaken.

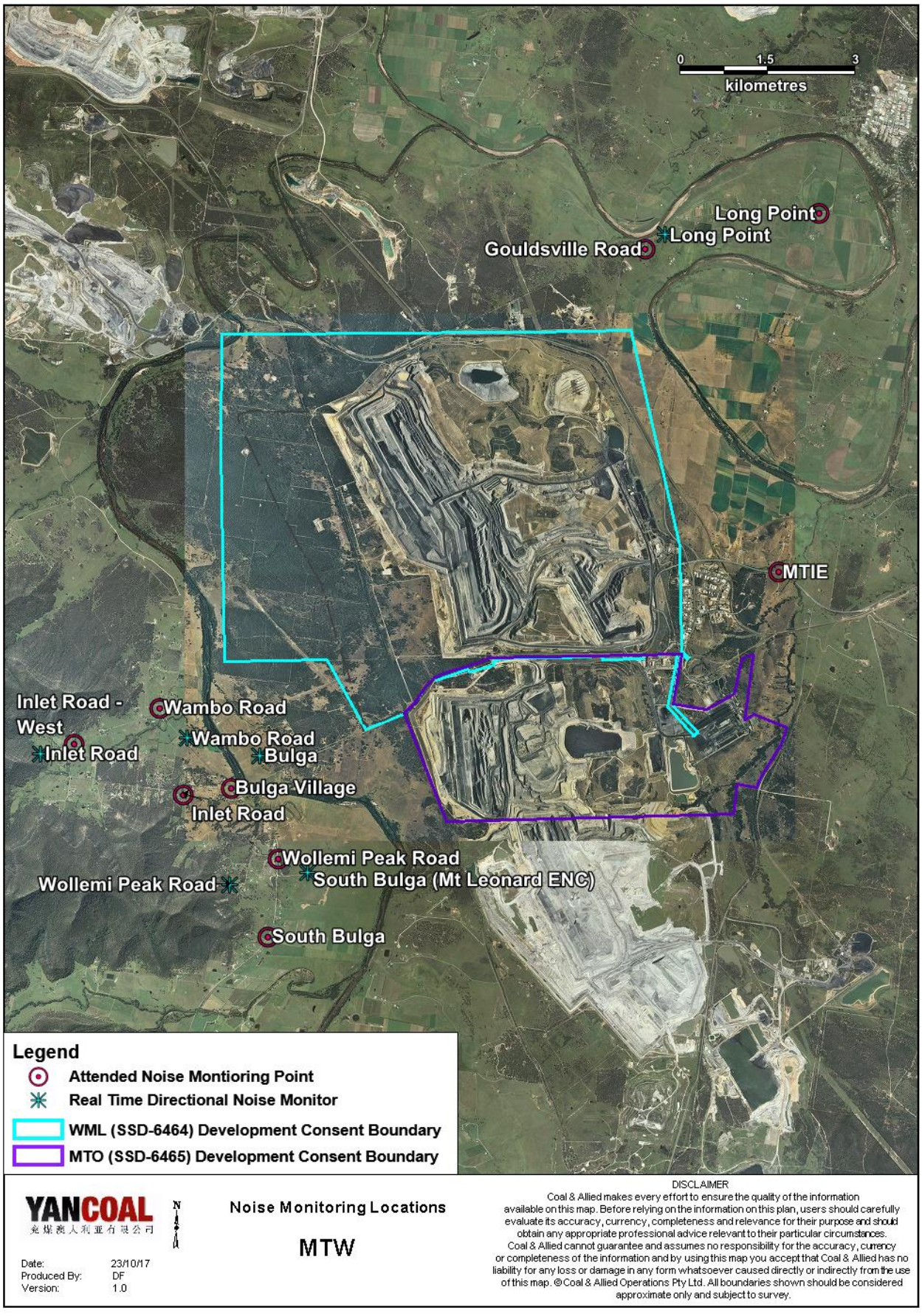


Figure 69: Noise Monitoring Location Plan

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 March are provided in

Table 11: Supplementary Attended Noise Monitoring Data – March 2018

No. of assessments	No. of assessments > trigger	No. of nights where assessments > trigger	% greater than trigger
589	8	3	1.4

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

6.0 OPERATIONAL DOWNTIME

During March a total of 213 hours of equipment downtime was logged in response to environmental events such as dust, noise and elevated wind impacts. Operational downtime by equipment type is shown in

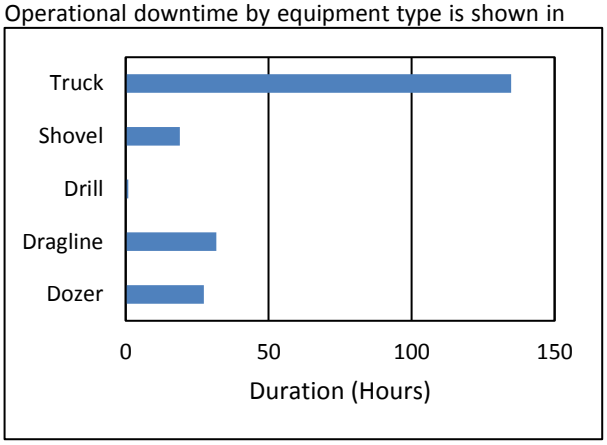


Figure 70.

Table 11.

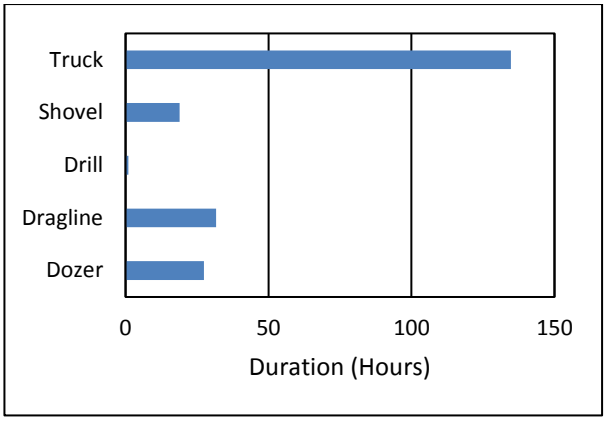


Figure 70: Operational Downtime by Equipment Type – March 2018

7.0 REHABILITATION

During March, 9.4Ha of land was released, 10.0Ha was bulk shaped and 1.9Ha was top soiled. Year-to-date progress can be viewed in Figure 71

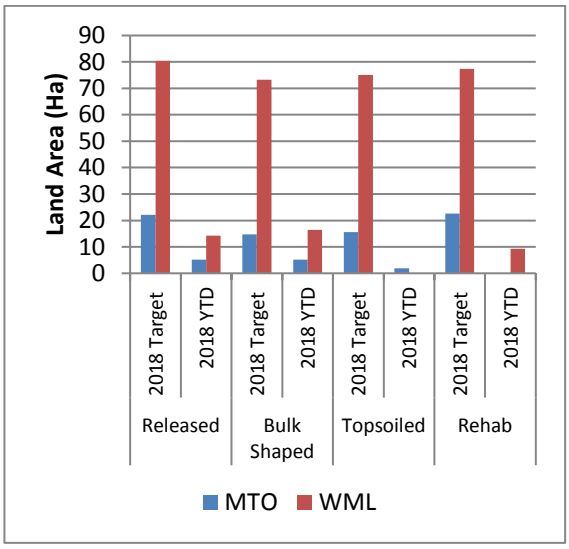


Figure 71: Rehabilitation YTD - March 2018

8.0 ENVIRONMENTAL INCIDENTS

There were no reportable environmental incidents during the reporting period.

	January	February	March	**Total**
Blasting	14	2	0	**16**
Air (Dust)	6	3	0	**9**
Air (Odour)	1	2	0	**3**

9.0 COMPLAINTS

During the reporting period 27 complaints were received, details of these complaints are displayed in Figure 72 below.

Lighting	1	3	3	**7**
Noise	9	7	24	**40**
Other	0	0	0	**0**
Grand Total	**31**	**17**	**27**	**75**

Figure 72: Complaints Summary - YTD March 2018

Appendix A: Meteorological Data

Table 12: Meteorological Data – Charlton Ridge Meteorological Station – March 2018

Date	Air Temperature Maximum (°C)	Air Temperature Minimum (°C)	Relative Humidity Maximum (%)	Relative Humidity Minimum (%)	Solar Radiation Maximum (W/Sq. M)	Wind Direction Average (°)	Wind Speed Average (m/sec)	Rainfall(mm)
1/03/2018 0:00	28	19	71	41	1132	166	3.1	0.0
2/03/2018 0:00	28	16	84	40	1286	130	2.7	0.0
3/03/2018 0:00	33	16	84	28	982	148	2.0	0.0
4/03/2018 0:00	34	15	97	34	1314	190	2.8	22.6
5/03/2018 0:00	27	18	96	58	982	151	2.1	0.2
6/03/2018 0:00	23	16	95	53	1383	160	4.2	6.8
7/03/2018 0:00	26	16	90	36	1444	145	4.3	0.6
8/03/2018 0:00	25	14	86	43	1471	148	3.9	0.0
9/03/2018 0:00	26	15	83	44	1520	148	3.9	0.0
10/03/2018	28	16	83	34	1403	141	2.9	0.0
11/03/2018	28	14	85	35	1129	149	2.0	0.0
12/03/2018	29	12	92	35	1172	143	2.2	0.0
13/03/2018	28	15	85	43	1149	149	3.2	0.0
14/03/2018	31	18	86	35	1132	126	2.5	0.0
15/03/2018	35	16	90	25	1091	210	2.7	0.0
16/03/2018	30	20	77	42	1106	137	2.9	0.0
17/03/2018	36	20	82	14	933	213	2.8	0.0
18/03/2018	38	18	73	15	924	257	3.4	0.0
19/03/2018	38	20	75	13	911	179	2.7	0.0
20/03/2018	30	18	80	34	1034	170	3.7	0.0
21/03/2018	22	15	94	70	909	166	5.8	15.4
22/03/2018	21	14	97	67	1257	160	4.4	8.4
23/03/2018	22	15	94	67	796.6	142	3.1	5.2
24/03/2018	28	16	94	50	1083	140	1.6	0.0
25/03/2018	32	16	94	31	1056	273	3.3	0.0
26/03/2018	27	16	94	30	1057	259	3.8	14.0
27/03/2018	25	9	79	28	1321	150	3.0	0.0

28/03/2018	29	14	91	45	901	148	2.0	0.0
29/03/2018	29	15	95	43	942	135	1.9	0.0
30/03/2018	32	16	95	29	862	190	2.3	0.0
31/03/2018	28	18	87	46	1067	139	2.9	0.0

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

Appendix D: Land Acquisition Update

Mount Thorley Warkworth Property Portfolio Update

As of 31st March 2018

YANCOAL
兖煤澳大利亚有限公司

Approach

Property purchases are based on the following:

- Regulatory criteria (those properties identified as being within a zone of acquisition due to predicted impacts under current operating consent. The majority of properties owned by Coal & Allied fall into this category).

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How are properties managed?

- Properties within the mining lease may or may not be tenanted depending on their distance from the operation.
- Some of the properties were purchased as part of consent conditions requiring offer of acquisition to owners. Many have been owned for some time over the 30 year life of the operation (e.g. along Putty Road).
- Properties that are tenanted are offered for lease on the open market at market rates, and are managed through local real estate agents.
- Properties must be managed in accordance with Coal & Allied standards of property and land management.

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Current property portfolio

- 1909 Putty Road, Bulga
- 1870 Putty Road, Bulga
- 1758 Putty Road, Bulga
- 1804 Putty Road, Bulga
- 1855 Putty Road, Bulga
- 1893 Putty Road, Bulga
- 1906 Putty Road, Bulga
- 1951 Putty Road, Bulga
- 2119 Putty Road, Bulga
- 2042 Putty Road, Bulga
- 1946 Putty Road, Bulga
- 1946 Putty Road, Bulga
- 608 Hambledon Hill Road, Singleton
- 271 Wallaby Scrub Road, Bulga
- 277 Wallaby Scrub Road, Bulga
- 896 Putty Road, Mt Thorley
- 288 Jerrys Plains Road, Jerrys Plains
- 11 Inlet Road , Bulga
- 36 Inlet Road, Bulga
- 1 Wambo Road, Bulga
- 89 Wambo Road , Bulga
- 910 Putty Road, Mt Thorley
- 129 Wambo Road, Bulga
- 181 Wambo Road, Bulga
- 313 Wambo Road, Bulga
- 317 Wambo Road, Bulga
- 248 Wambo Road, Bulga
- 367 Wambo Road, Bulga
- Lot 84 Jerrys Plains Road, Warkworth
- 28 Inlet Road, Bulga
- 42 Inlet Road, Bulga
- 5A Wollemi Peak Road, Bulga
- 2041 Putty Road, Bulga
- 16 Inlet Road, Bulga
- 30 Inlet Road, Bulga
- 2068 Putty Road, Bulga
- 34 Wambo Road, Bulga
- 910A Putty Road, Mt Thorley
- 218 Wambo Road, Bulga
- 100 Trefolly Road, Wylies Flat
- 2038 Putty Road, Bulga

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