



Annual Audit Compliance Report Form

Environmental Protection Act 1986, Part V

Once completed, please submit this form either via email to info-der@dwer.wa.gov.au, or to the below postal address:

Department of Water and Environmental Regulation
Locked Bag 33 Cloisters Square
PERTH WA 6850

Section A – Licence Details

Licence number:	L9009	Licence file number:	L9009/2016/1
Licence holder:	Northern Minerals Limited		
Trading as:	Northern Minerals Limited		
ACN:	119 966 353		
Registered address:	Level 1, 675 Murray Street, WEST PERTH WA 6005		
Reporting period:	01 / 01 / 2020 to 31 / 12 / 2020		

Section B – Statement of Compliance with Licence Conditions

Did you comply with all of your licence conditions during the reporting period?
(please tick the appropriate box)

Yes – please complete:

- section C;
- section D if required; and
- sign the declaration in Section F.

No – please complete:

- section C;
- section D if required;
- section E; and
- sign the declaration at Section F.

Section C – Statement of Actual Production

Provide the actual production quantity for this reporting period. Supporting documentation is to be attached.

Prescribed Premises Category	Actual Production Quantity
5 – Processing or beneficiation of metallic or non-metallic ore; Assessed production capacity 131,490 tonnes per Annual Period.	7,023 tonnes processed
89 – Putrescible landfill site; Assessed production capacity 499 tonnes per Annual Period.	450.02 m ³ of (uncompacted) waste disposed to landfill. Assuming volume reduced by 1/3 following compaction, it's estimated that 202.5 (compacted) tonnes were disposed to landfill ¹ .

¹ 2020 NPI report assumed 0.45 tonnes per uncompacted cubic metre of waste disposed to landfill. This allows for compaction of loose dumped waste by 1/3.

Section D – Statement of Actual Part 2 Waste Discharge Quantity

Provide the actual Part 2 waste discharge quantity for this reporting period. Supporting documentation is to be attached.

Prescribed Premises Category	Actual Part 2 Waste Discharge Quantity			
	Mth-YY	Raffinate (m ³)	Combined Tailings Solids (tonnes)	Combined Tailings (m ³)
Tailings Storage Facility (TSF) Combined Tails Solids (tonnes); Combined Tails Slurry (m3) (estimated discharge m3) and Evaporation Pond Raffinate (discharge m3)	Jan-20	0	3,168	13,448
	Feb-20	0	17	17
	Mar-20	0	0	0
	Apr-20	75	0	0
	May-20	151	0	0
	Jun-20	51	0	0
	Jul-20	9	0	0
	Aug-20	0	739.4	5,199
	Sep-20	0	1,025.6	3,029
	Oct-20	0	1,580	5,660
	Nov-20	0	297	5,110
	Dec-20	0	196	7,200
	TOTAL	286	7,023	39,663

Section E – Details of Non-Compliance with Licence Condition

Please use a separate page for each condition with which the licence holder was non-compliant at a time during the reporting period.

Condition no:	1.3.3	Date(s) of non-compliance:	2020
Details of non-compliance: <i>Condition 1.3.3: The Licensee shall ensure that cover is applied and maintained on landfilled wastes in accordance with Table 1.3.2 and that sufficient stockpiles of cover are maintained on site at all times.</i> <i>Table 1.3.2: Putrescible Waste to be covered by 300mm of inert waste Type 1 or soil on a minimum fortnightly basis.</i> Putrescible waste was not covered at the required minimum fortnightly frequency during 2020.			
What was the actual (or suspected) environmental impact of the non-compliance? NOTE – please attach maps or diagrams to provide insight into the precise location of where the non-compliance took place.			
Regular covering of landfill waste helps to reduce windblown rubbish and local fauna access to food waste. Given the relatively small size of the facility and that dingoes are no longer able to access the facility, environmental impacts from uncovered waste are minor, however there is room for improvement in managing the landfill. It's noted that management of windblown rubbish has significantly improved following the exclusion of dingoes from the facility. Although dingoes are no longer tearing bags open, disposing of the majority of waste in bulka bags does not 100% prevent food waste and potentially windblown rubbish (e.g. light plastic) being exposed. On occasion, bags			

Section E – Details of Non-Compliance with Licence Condition	
<p>are not tied up properly before disposal and come open, spilling contents. Crows and the occasional raptor are then able to spread rubbish.</p>	
<p>Refer to Figure 1: Browns Range Landfill Facility, in Attachment 1 for location of the non-compliance.</p>	
Cause (or suspected cause) of non-compliance:	
<p>While the site was in Care and Maintenance (late March to mid July 2020) there was minimal waste being disposed of and minimal site personnel available to manage the landfill. However due to the minor volume of waste being disposed, impacts during this period would also have been minimal.</p> <p>There is no routine maintenance program for the landfill, therefore waste is covered on an ad hoc basis when there are resources available.</p>	
Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:	
<p>A recurring fortnightly action has been placed into STEMS to prompt the operations team to cover landfill waste.</p>	
Was this non-compliance previously reported to DWER? No.	
<input checked="" type="checkbox"/> Yes, and	
<input type="checkbox"/> Reported to DWER verbally	Date: / /
<input checked="" type="checkbox"/> Reported to DWER in writing	Date: 08 / 04 / 2020

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Please use a separate page for each condition with which the licence holder was non-compliant at a time during the reporting period.			
Condition no:	1.3.4	Date(s) of non-compliance:	2019/2020 & 2020/2021 wet season
Details of non-compliance:			
<p><i>Condition 1.3.4: The Licensee shall ensure that waste material is only stored and/or treated within vessels or compounds provided within the infrastructure detailed in Table 1.3.3.</i></p> <p><i>Table 1.3.3: Beneficiation Plant & Hydrometallurgical Event Ponds / Material: Potentially contaminated stormwater and spillage from the beneficiation and hydrometallurgical processing facilities: 1.1m freeboard maintained to contain a 1 in 20-year return period, 24-hour rainfall event.</i></p> <p>Northern Minerals notified DWER via an incident notification form (N1 Form) submitted 3rd March 2020 and 8th December 2020 that the freeboard requirements in both Event Ponds had been exceeded.</p> <ul style="list-style-type: none"> • During the 2019/2020 wet season, water levels were managed to maintain the 1.1m freeboard by pumping excess water to the TSF, until early March. Event Pond water was pumped to the tails hopper to assist pumping of tailings. Historically, pumping of tailings has been problematic given the intermittent nature of the tailings flow from the Pilot Plant process units. On 2nd March an estimated 1 in 30 year Average Recurrence Interval (ARI), 24 hour storm event caused both Event Ponds to discharge from their respective spillways. At this point, all transfers of water ceased and the ponds were allowed to discharge naturally by gravity flow. This was the only stormwater discharge event during the 2019/2020 wet season. • Early in the 2020/2021 wet season on 7th December 2020, an estimated 1 in 30 year ARI, 24 hour rainfall event occurred, filling the Ponds above the freeboard limit specified in Condition 1.3.4. DWER were notified of the non-compliance on 8th December 2020. 			
What was the actual (or suspected) environmental impact of the non-compliance?			
<p>NOTE – please attach maps or diagrams to provide insight into the precise location of where the non-compliance took place.</p>			
<p>Specific details regarding the quality of water discharged from the Event Ponds and an assessment of environmental impact was provided in the N1 incident notification. The relatively good quality of the stormwater released was such that there was no actual (or suspected) environmental impact as a result of this discharge.</p> <p>Refer to Figure 2: Browns Range Pilot Plant Project Overview, in Attachment 1 for location of the non-compliance.</p>			
Cause (or suspected cause) of non-compliance:			
<p>As per ongoing consultation with DWER (commencing March 2020) an investigation has found that the 1.1m freeboard specified for the Event Ponds is only sufficient to contain a 1 in 5-year, 24-hour rainfall event and not a 1 in 20-year event as stated in Table 1.3.3 of the licence. The ponds have rather been designed with a total capacity sufficient to contain a 1 in 20 year ARI, 24 hour rainfall event. Irrespective of the freeboard volume provided, or it's correctness, it is not possible for the operation to comply with the 1.1m freeboard at all times of the year.</p>			

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Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:	
<p>There were no adverse environmental effects of the non-compliance with the Event Pond freeboard requirement and release of stormwater.</p> <p>A licence amendment application was submitted in 2020 which seeks to remove the freeboard requirement. The application is in the final stages of assessment at the time of writing.</p>	
Was this non-compliance previously reported to DWER?	
<input checked="" type="checkbox"/> Yes, and	
<input type="checkbox"/> Reported to DWER verbally	Date: / /
<input checked="" type="checkbox"/> Reported to DWER in writing	Date: 03 / 03 / 2020 and 08 / 12 / 2020

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Please use a separate page for each condition with which the licence holder was non-compliant at a time during the reporting period.			
Condition no:	1.3.5	Date(s) of non-compliance:	November 2019
Details of non-compliance:			
<p><i>Condition 1.3.5: The Licensee shall ensure that the beneficiation plant and hydrometallurgical event ponds are emptied (maximum of 0.5 m water allowed in each pond) at the commencement of the wet season.</i></p> <p><i>'Wet season' means the months of December in each year and January, February and March in the following year.</i></p> <p>The Event Ponds were not emptied as per condition 1.3.5 prior to the commencement of either the 2019/2020 or 2020/2021 wet seasons, i.e. the wet season technically commences 1st December for the purpose of the licence. The Hydrometallurgical Event Pond was emptied to within 0.5m of the bottom by 7th December 2020 prior to the approx. 1 in 30 year ARI storm, and therefore in this instance it is believed the intent of this condition has been complied with for this facility. However approx. 1—1.5 m of solids remained in the Beneficiation Event Pond awaiting dredging when the pond refilled with stormwater on 7th December 2020. Further emptying and dredging of the Beneficiation Event Pond was not possible after the wet season commenced.</p>			
What was the actual (or suspected) environmental impact of the non-compliance?			
<p>NOTE – please attach maps or diagrams to provide insight into the precise location of where the non-compliance took place.</p>			
<p>There was no actual (or suspected) environmental impact as a result of this non-compliance. Neither pond has discharged thus far during the 2020/2021 wet season.</p> <p>Refer to Figure 2: Browns Range Pilot Plant Project Overview, in Attachment 1 for the location.</p>			

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Cause (or suspected cause) of non-compliance:	
<p>There are numerous contributing factors to this scenario:</p> <ol style="list-style-type: none"> 1. Non-routine and interrupted operation of the Pilot Plant in line with the R & D nature of the Plant has resulted in numerous upsets and overflows to the Event Ponds during the first approx. 18 months of operation. 2. Operation of the Waste Water Treatment Plant has proved problematic and as a result it has generally not been in operation since the Project commenced, with consequences for aspects of the site water balance (notably the TSF water balance) and additional inputs of solid & liquid waste to the Event Ponds. 3. The COVID-19 pandemic caused significant disruptions to the Project during 2020 with the site entering a C & M phase from early March to mid-July 2020 as a result. Limited resources were and challenging logistical factors delayed on site remedial action during this period. 4. Dredging of the Event Ponds commenced several months prior to the wet season, however as dredging method chosen was slow and labor intensive, only the Hydrometallurgical Event Pond was emptied prior to the first storm of the wet season. The solids were mobilised by water hose into a dilute liquid slurry which was then transferred to the tailings hopper and the TSF. Although this method was guaranteed to protect the integrity of the HDPE-liner, it was slow and could not be completed in the required timeframe. This situation has provided learnings for future wet season preparedness planning. 	
Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:	
<p>There were no adverse effects of the non-compliance.</p> <p>A formal wet season preparedness program has been developed and will be implemented each dry season to prepare the site for the upcoming wet season.</p>	
Was this non-compliance previously reported to DWER?	
<input checked="" type="checkbox"/> Yes, and	
<input type="checkbox"/> Reported to DWER verbally	Date: / /
<input checked="" type="checkbox"/> Reported to DWER in writing	Date: 02 / 12 / 2020

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Please use a separate page for each condition with which the licence holder was non-compliant at a time during the reporting period.			
Condition no:	1.3.6	Date(s) of non-compliance:	2019
Details of non-compliance:			
<p><i>NOTE: The below non-compliance was reported in the 2020 AACR. Due to disruptions experienced in 2020 and the Plant only operating in a limited capacity for part of the year, planned remedial action, specifically the construction of a new pipeline corridor and sumps, was rescheduled for the 2021 dry season.</i></p> <p><i>Condition 1.3.6: The Licensee shall ensure that all pipelines containing tailings, tailings return water and hydrometallurgical raffinate are either:</i></p> <p><i>(a) equipped with operating telemetry systems and pressure sensors to allow detection of leaks and failures;</i></p> <p><i>(b) equipped with flow switches in the event of a pipe failure; or</i></p> <p><i>(c) provided with secondary containment with sufficient volume to contain 12 hours of discharge.</i></p> <p>An internal review has revealed the following with respect to conveyance of tailings, return water and raffinate and associated pipeline corridors:</p> <ul style="list-style-type: none"> Flow switches were not installed on the tailings and return water pipelines as stated would be done in the <i>W6007/2016/1 Construction Compliance Report (BR5-EN-RA-100-006)</i>, submitted 11th April 2018. It's noted this report was submitted prior to the construction of the pipeline corridors. It was believed that the corridor was in compliance with (c), however a review by Knight Piésold (TSF engineers) at the request of Northern Minerals has found that the capacity provided by the bunded corridor and catch sumps, is not sufficient to contain 12 hours of discharge. Currently, therefore, the tailings/return water pipeline is not fitted with (a), (b) or (c). With regards to the raffinate pipeline corridor, the abovementioned Construction Compliance report states that the corridor would be constructed to contain 12 hours of discharge, in preference to installing flow switches. A review shows that although the total volume provided by the bunded corridor and catch sumps will approximately contain 12 hours of flow from the raffinate pipeline, it is likely the falls within the corridor, particularly in the area where the pipeline crosses under the mine access road, will not ensure secondary containment to meet condition (c) above. 			
What was the actual (or suspected) environmental impact of the non-compliance?			
<p>NOTE – please attach maps or diagrams to provide insight into the precise location of where the non-compliance took place.</p>			
<p>There was no actual (or suspected) environmental impact as a result of this non-compliance.</p> <p>Refer to Figure 2: Browns Range Pilot Plant Project Overview, in Attachment 1 for location.</p>			
Cause (or suspected cause) of non-compliance:			
<p><u>Tailings/return water pipeline corridor</u></p> <p>Subsequent to the submission of the Construction Compliance report, it was determined that a constant power source would be required at the TSF to provide power to the flow sensor at that</p>			

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point. The costs of installing power to the TSF to enable the installation of flow sensors on the outlet pipe, were found to be prohibitive and not economically feasible. A decision was therefore made to manage the risk via option (c) above, as it was believed the corridor capacity was sufficient to contain 12 hours of discharge.

Raffinate pipeline corridor

As the pipeline corridor was constructed after the submission of the Construction Compliance report, it appears that a post-construction review of the appropriateness of the design and construction compliance was overlooked. This statement also applies to the construction of the tailings/return water pipeline.

Further to the above, Northern Minerals wishes to install additional water transfer pipelines to allow movement of mine impacted water and TSF return water between water storage facilities to maximise water use and disposal efficiencies. This would require an upgrade in the current pipeline corridor capacity to ensure secondary containment of 12 hours of flow for all contaminated water. Such changes will be captured in the revised pipeline corridor design.

Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:

There were no adverse effects as a result of the non-compliance.

Revised pipeline corridor designs which comply with Condition 1.3.6 (c) – ‘provide secondary containment with sufficient volume to contain 12 hours of discharge’ have been prepared at Northern Minerals’ request by Knight Piésold. Construction of the Tailings pipeline corridor commenced in the 2020 dry season, however due to limited resources and the limited testwork program planned for the Plant during 2020, construction of the pipeline corridors was rescheduled for the 2021 dry season.

As an interim measure, the risk associated with a spill from the tailings or raffinate pipeline corridors was managed by increasing the frequency of the pipeline corridor inspections to 6-hourly while the pipelines were in operation.

Was this non-compliance previously reported to DWER?

Yes, and

<input type="checkbox"/> Reported to DWER verbally	Date: / /
<input checked="" type="checkbox"/> Reported to DWER in writing	Date: 08 / 04 / 2020

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Please use a separate page for each condition with which the licence holder was non-compliant at a time during the reporting period.			
Condition no:	1.3.9	Date(s) of non-compliance:	September to December 2020
Details of non-compliance:			
<p><i>The licence holder shall undertake an annual water balance for the TSF. The water balance shall as a minimum consider and include the following:</i></p> <ul style="list-style-type: none"> <i>a) site rainfall;</i> <i>b) evaporation;</i> <i>c) tailings return water recovery volumes;</i> <i>d) seepage recovery volumes; and</i> <i>e) volumes of tailings deposited.</i> <p>A review of the water balance developed for the TSF and Evaporation Pond undertaken for the purpose of this audit has discovered that (d) 'seepage recovery volumes' (<i>which actually refers to recovery of water from the TSF underdrainage system before seepage outside of the facility occurs</i>), has not been included in the current water balance. The water balance currently assumes a conservative volume of water recovered from the underdrainage system per month. Volumes recovered from the underdrainage system and returned to the TSF pond, though not significant, were not accounted for, but will be added to the water balance moving forward.</p>			
What was the actual (or suspected) environmental impact of the non-compliance?			
<p>NOTE – please attach maps or diagrams to provide insight into the precise location of where the non-compliance took place.</p>			
<p>The exclusion of the seepage recovered volumes (i.e. <i>water recovered from the TSF underdrainage system prior to liquid becoming seepage</i>) will have a minor impact on the accuracy of facility water balance estimates.</p> <p>Refer to Figure 2: Browns Range Pilot Plant Project Overview, in Attachment 1 for location.</p>			
Cause (or suspected cause) of non-compliance:			
<p>Seepage recovery volumes were excluded from the water balance when it was set up by a third party TSF engineering consultant as these were deemed insignificant to the overall water balance. The discrepancy between the licence requirement and the current water balance was discovered as a part of the AACR process and represents an oversight on behalf of environment personnel.</p>			
Action taken to mitigate any adverse effects of non-compliance and prevent recurrence of the non-compliance:			
<p>The impacts on the accuracy of the TSF water balance estimates are not anticipated to be significant given the seepage recovery volumes are not significant in the context of TSF inputs and outputs. Therefore, there were no adverse effects as a result of the non-compliance.</p>			
Was this non-compliance previously reported to DWER?			
<input type="checkbox"/> Yes, and			

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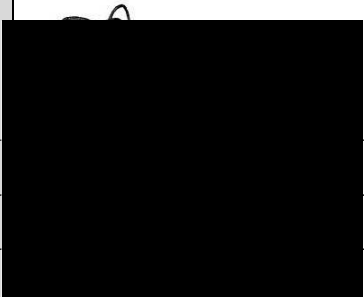
Please use a separate page for each condition with which the licence holder was non-compliant at a time during the reporting period.

<input type="checkbox"/> Reported to DWER verbally	Date: / /
<input type="checkbox"/> Reported to DWER in writing	Date: / /

Section F – Declaration

I / We declare that the information in this Annual Audit Compliance Report is true and correct and is not false or misleading in a material particular¹.

I / We consent to the Annual Audit Compliance Report being published on the Department of Water and Environmental Regulation's (DWER) website.

Signature ² :		Signature:	
Name: (printed)		Name: (printed)	
Position:		Position:	
Date:		Date:	
Seal (if signing under seal):			

¹ It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular.

² AACRs can only be signed by the licence holder or an authorised person with the legal authority to sign on behalf of the licence holder.