

MILLENNIUM MINE

**Amendments to EA conditions for groundwater
and air quality requirements**

Supporting documentation to the Environmental Authority

EPML00819213 amendment application

For

MetRes Pty Ltd

Document Status Sheet

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Table of Contents

1 Introduction	4
1.1 Proponent.....	4
1.2 Purpose of this report.....	4
1.3 Report finding.....	6
1.4 Air quality requirements	6
1.5 Groundwater requirements	6
2. EA amendment application.....	8
Surface Water	9
Groundwater	9
Land.....	9
Other.....	9
2.1 Application form.....	11
3 Proposed Amendment Description	1
4 Environmental Values and Impact Assessment.....	9
4.1 Land and Land use environmental values and impact assessment	9
4.2 Surface Water assessment.....	9
4.3 Groundwater Environmental values and impact assessment.....	10
4.4 Air and Acoustics Environmental values and impact assessment	10
4.5 Waste	11
4.6 Biodiversity Assessment.....	11
4.7 Wetlands	12
4.8 Great Barrier Reef Catchment Waters	12
5. Management and Mitigation Practices	12
6. Rehabilitation.....	12
7. EA amendment assessment level decision.....	12
8. Conclusion	15
References	16

1 Introduction

Millennium Coal Mine is within the Bowen Basin, Queensland and is located approximately 20 kilometres (km) south-east of the township of Moranbah, and 174 km east of Mackay. It is within the Isaac Regional Council Local Government Area (LGA) in Queensland (22° 00' 56.68" S, 148° 15' 09.28" E). The Site terrain is flat to slightly undulating.

The Mine consists of two mining areas with six operating mining leases (ML) and one mining lease application under consideration: the Mavis Downs area (ML 70457, ML 70483, ML 70485, and ML 700079 (application under consideration); and the Millennium area (ML 70313, ML 70401, ML 70344), together form a single operational project, the Millennium Mine. Millennium Mine operates under Environmental Authority (EA) EPML00819213.

Currently the primary activities undertaken on site include:

- Underground mining.
- Coal haulage;
- Exploration;
- Tailings and rejects disposal;
- Water management.

1.1 Proponent

This EA amendment application is being submitted by MetRes Pty Ltd as the main proponent who operates the Millennium Coal Mine to streamline compliance requirements for groundwater and air quality.

1.2 Purpose of this report

This report will be submitted with the Application Form *Application to amend an environmental authority* (ESR/2015/1773 version 21.02) online with the request to amend EA EPML00819213.

The purpose of this EA amendment application is to address minor administrative changes and to implement a number of minor changes relating to dust and groundwater values to make site compliance requirements more relevant (refer to **Table 1**).

Specialist consultants SLR Consulting and Katestone were engaged for this work to support the recommended EA changes as listed in this application.

Table 1: proposed EA amendment summary.

	EA Reference	Proposed change	Where addressed in supporting documentation
Schedule B: Air Quality	Condition B1	Proposed Administrative change only. Inclusion of relevant Australian Std.	Refer to Katestone report. Proposed wording recommended in Appendix 1 (Attachment A page 2, with justification provided in Attachment B).
	Condition B2	Proposed Administrative change only. Inclusion of relevant Australian Std.	Refer to Katestone report Proposed wording recommended in Appendix 1 (Attachment A page 4, with justification provided in Attachment B).
	EA Table B1	Proposed Administrative change only. Update of co-ordinates and wording.	Refer to Katestone report Proposed wording recommended in Appendix 1 (Attachment A page 5-6). Updated Table B1 provided on page 10.
Schedule D: Groundwater	EA Table D1	Administrative change only. Correction of bore location coordinate.	Refer to SLR Consulting report. Appendices 2 and 3.
	Condition D4.0	Minor amendment. Recommendation to compliance approach.	Refer to SLR Consulting report. Appendix 2
	EA Table D2	Minor amendment. Recommendation to change trigger limit for EC to a site specific value as suggested and agreed by the Department.	Refer to SLR Consulting report. Appendix 2.
	EA Table D3	Administrative change only. Update of correct referencing.	Refer to SLR Consulting report. Appendices 2 and 3.

The information presented in this report provides further clarity on the magnitude of proposed changes, their justification and (refer **Table 4 Section 3**), their potential environmental harm (if any) (**Section 4**).

1.3 Report finding

In this amendment, groundwater assessment has been conducted by SLR Consulting Ltd and the report has justified the reasons behind the change that is being requested. From the report no additional environmental impact is anticipated if this change request is granted. Similar assessment has also been conducted by Katestone Environmental for air quality monitoring requirements. Katestone has recommended changes in the air quality monitoring requirements that will improve and optimise the air quality monitoring and compliance requirements. None of the recommendations is expected to bring any additional environmental impacts if the changes are accepted by the Department.

1.4 Air quality requirements

Millennium Mine have five (5) dust deposition gauges and are also required to do PM10 monitoring normally but also monitor PM2.5 and TSP on request by the Department in our selected sensitive locations. Previously Millennium Mine have relied on PM10 data monitored by Isaac Plains Mine. This was because Isaac Plains had PM10 and PM2.5 monitoring equipment located in the same area required by Millennium to also monitor. Therefore, Millennium made use of the data sharing agreement with Isaac Plains and used their PM10 monitoring data.

On Thursday 25th August, 2022 DESI assessment unit visited Millennium site for inspection and in the discussion, DESI required us to have our own PM10 monitoring equipment and identify new suitable sensitive locations for installation of these equipment so Millennium Mine can do its own investigations with its own monitoring data if there are any complaints from dust emissions. Millennium Mine have had several correspondences with DESI on this and a final agreement have been reached for two dust monitoring locations and a monitoring methodology for PM10.

This EA amendment on dust requirements is therefore to formally add the two monitoring locations and the monitoring technology to the EA for PM10. An administrative amendment concerning the correction for the GPS coordinates for the existing 5 dust deposition gauges will also be made. Detail amendment request is presented in section 3, Table 4 and Air Quality requirement technical memo in **Appendix 1**.

1.5 Groundwater requirements

Following the previous EA amendment on suitable groundwater network and site-specific trigger limits to satisfy the EA conditions with details in Appendix 4, new findings have been discovered based on groundwater quality results assessment which need some administrative corrections and additions to the groundwater requirements in the EA. Changes required relate to aquifer name for a number of bores referenced, GPS location coordinates of the bores, correction of reference values for water levels and screen levels.

Also, currently Millennium's EA groundwater contaminant trigger levels have three different approaches:

- a) Three (3) consecutive occasions for values derived from site specific data;*
- b) Any single occasion for values derived from ANZG (2018) or other guideline values.*
- c) Two (2) consecutive occasions for values derived from Fitzroy Water Plan WQO values.*

These requirements will have the potential of creating compliance notifications and investigations based on a false-positive (exceedance where there is none) which could be related to incorrect sampling technique, a laboratory error, or a genuine outlier in water quality.

Details have been presented in the groundwater new technical memo in **Appendix 2**.

Allowance for subsequent monitoring rounds will give confirmation and can then show if any reading indeed constitutes an exceedance. More detailed explanation is included in **Appendices 2 and 3** in the SLR Consulting Groundwater study reports attached.

In order to satisfy this monitoring compliance reporting, this EA amendment application will request for a change in condition for compliance contaminant trigger level exceedance to be for three consecutive exceedances for all the three compliance and monitoring approaches.

A request has also been made for monitoring bore MB10B electrical conductivity (EC) trigger limit to be changed from 10,265 $\mu\text{S}/\text{cm}$ to 11,200 $\mu\text{S}/\text{cm}$, as proposed by the Department and agreed to it by Millennium to conform to site specific conditions and also to be closely aligned with the Fitzroy regional WQO zone 34 deep guideline (DEHP, 2011). Detailed explanation has been included in **Appendix 2** in the groundwater technical study memo attached.

Also, all site specific EC trigger limits were derived based on field EC and not laboratory EC. Therefore, in this amendment application administrative correction request has been made in EA Table D2.

2. EA amendment application

The *Environmental Protection Act 1994* (EP Act) states the requirements for an environmental authority amendment application. The requirements have been addressed in this report as outlined (**Table 2**).

Table 2: Relevant Sections of Legislative Requirements and Response.

EP Act Section	Requirements for amendment application	Response
226 (1)(a)	An amendment application must be made to the administering authority	The EA amendment application will be made to DESI, as the administering authority.
226 (1)(b)	Application made in the approved form	The amendment application will be made using Form ESR/2015/1733 v21.02 - Application to amend an environmental authority.
226 (1)(c)	Be accompanied by the fee prescribed by regulation	The prescribed fee will accompany the amendment application.
226 (1)(d)	Describe the proposed amendment	As outlined in Section 3 Table 5 and justification to meet criteria for minor amendment in Table 11.
226 (1)(e)	Describe the land that will be affected by the proposed amendment	As outlined in Section 4.3
226 (1)(f)	Include any other document relating to the application prescribed by regulation.	As outlined in Specialist reports presented in Appendices 1, 2, 3 and 4.
226A (1)	If the amendment application is for the amendment of an environmental authority, the application must also -	
226A (1)(a)	Describe any development permits in effect under the Planning Act for carrying out the relevant activity for the authority	Development permit under planning act 2016 are not required for the activities subject of this application.
226A (1)(b)	state whether each relevant activity will, if the amendment is made, comply with the eligibility criteria for the activity	Not applicable as the relevant environmental authority was approved under a site-specific application as the activities do not comply with the eligibility criteria for mining lease activities
226A (1)(c)	if the application states that each relevant activity will, if the amendment is made, comply with the eligibility criteria for the activity—include a declaration that the statement is correct	Not applied as stated above.
226A (1)(d)	state whether the application seeks to change a condition identified in the authority as a standard condition	Not applicable as the relevant environmental authority was approved under a site-specific application and therefore all conditions are site specific and not standard.
226A (1)(e)	if the application relates to a new relevant resource tenure for the authority that is an exploration permit or GHG permit—state whether the applicant seeks an amended environmental authority that is subject to the standard conditions for the relevant activity	The application does not relate to a new relevant resource tenure.

EP Act Section	Requirements for amendment application	Response
	or authority, to the extent it relates to the permit	
226A (1)(f)(i)	a description of the environmental values likely to be affected by the proposed amendment	Summarised in Section 4.
226A (1)(f)(ii)	details of emissions or releases likely to be generated by the proposed amendment	<p>Surface Water</p> <p>The proposed amendment request for air quality and groundwater will not cause additional environmental harm or contamination to surface and receiving waters. Also, no additional emissions are anticipated as a result of this amendment.</p> <p>Groundwater</p> <p>This amendment as described in section 3 will not have any additional releases or emissions to groundwater. Rather minor corrections to the groundwater conditions are being sought.</p> <p>Land</p> <p>This amendment as described in section 3 will not have any additional releases or emissions to land. Also, structure of the land and aesthetics will not be affected through any release. There will be no vegetation clearing associated with this amendment.</p> <p>Other</p> <p>Noise and air emissions will be similar to the currently approved impacts.</p>
226A (1)(f)(iii)	a description of the risk and likely magnitude of impacts on the environmental values	There will be no risk or impact to environmental values.
226A (1)(f)(iv)	details of the management practices proposed to be implemented to prevent or minimise adverse impacts	Existing management plans will be used as there will not be any additional environmental impacts from this amendment. Details in section 5.
226A (1)(f)(v)	if a PRCP schedule does not apply for each relevant activity—details of how the land the subject of the application will be rehabilitated after each relevant activity ends	All amendments seeking change (as listed in section 3, do not involve any clearing of vegetation or excavation of land. Therefore, no land will be affected as a result of this EA amendment. Details in section 6.
226A (1)(g)	include a description of the proposed measures for minimising and managing waste generated by amendments to the relevant activity	Details in section 4.5.
226A (1)(h)	include details of any site management plan or environmental protection order that relates to the land the subject of the application	Existing management plans will remain the same.

This application does not relate to a PRCP Schedule, Coal Seam Gas activity or Underground Water Rights. Therefore, section 226B, 227 and 227AA of the EP Act do not apply to this application.

Other relevant and associated legislations have also been considered and addressed in **Table 3**.

Table 3: Other relevant associated legislations considered.

Legislation	Administering authority	Relevance to this EA amendment
COMMONWEALTH		
Environmental Protection and Biodiversity Protection Act 1999	Department of Climate Change, Energy, the Environment and Water	Not applicable to this EA amendment. No impact to MNES arise from this EA amendment request.
National Greenhouse and Energy Report Act 2007	The Clean Energy Regulator	Not applicable to this EA amendment. Annual reporting will continue in line with current operation.
Native Title Act 1994	Department of Resources (DoR)	Not Applicable.
STATE OF QUEENSLAND		
Environmental Protection Act 1994	Department of Environment, Science, and Innovation (DESI)	This amendment request has addressed all relevant requirements of the EP act 1994.
Mineral Resources Act 1999	Department of Resources	Not applicable.
Mineral and Energy Resources (Financial Provisioning) Act 2018	Queensland Treasury	Not applicable to this EA amendment. This amendment will not require a new ERC.
Aboriginal Cultural Heritage Act 2003 (Qld)	Department of Aboriginal and Torres Strait Islander Partnerships	Not applicable to this EA amendment. The Project will continue to operate under the approved CHMP, and any consultation requirements of that CHMP will be complied with.
Biosecurity Act 2014	Department of Agriculture and Fisheries	Not applicable to this EA amendment.
Coal Mining Safety and Health Act 1999	Resources Safety & Health Queensland (RSHQ),	Not applicable to this EA amendment.
Nature Conservation Act 1992	DESI	Not applicable to this EA amendment. This amendment application does not involve clearing of vegetation.
Planning Act 2016	Queensland Treasury	Not applicable to this EA amendment.
Queensland Heritage Act 1992	DESI	Not applicable to this EA amendment. This amendment does not involve any site disturbance.
Regional Planning Interests Act 2014	Queensland Treasury	Not applicable to this EA amendment.
Stock Route Management Act 2002	Department of Resources and Isaac Regional Council	Not applicable to this EA amendment.
Strong and Sustainable Resource Communities Act 2017	Coordinator- General and Anti- Discrimination Commission Queensland	Not applicable to this EA amendment.
Transport Infrastructure Act 1994	Department of Transport and Main Roads (DTMR)	Not applicable to this EA amendment.
Transport Operations	DTMR	Not applicable to this EA amendment.

Legislation	Administering authority	Relevance to this EA amendment
(Road Use Management) Act 1995		
Vegetation Management Act 1999	Department of Resources	Not applicable to this EA amendment. This amendment request does not involve clearing of vegetation.
Waste Reduction and Recycling Act 2011	DES	Not applicable to this EA amendment. No change to authorised transport operation is proposed for this amendment request and therefore not considered further.
Water Act 2000	Department of Regional Development, Manufacturing and Water	Management of impacts on underground water caused by the exercise of underground water rights by resource tenure holders. This legislation does not apply to this amendment application.

2.1 Application form

This amendment has been submitted with the Application Form *Application to amend an environmental authority* (ESR/2015/1773 version 21.02) online with all responses checked. Other responses to relevant sections of the form can be found in this document (**Table 4**).

Table 4: Application Form Requirements and Response.

Form Section	Response
Section 9 – Amend activities	See Table 5
Section 10 – Amend Locations	See Table 5
Section 11 – Single integrated operation confirmation	N/A
Section 12 – Seek to vary conditions	See Table 5
Section 13 Describe the proposed amendment	See section 3 and Table 5.
Section 14 Describe the land that will be affected by the proposed amendment.	See section 4.3
Section 15 Compliance with any eligibility criteria	N/A
Section 16 Environmental Offsets	N/A
Section 17 – Regional interest areas	N/A
Section 18 – Matters of national environmental significance	N/A

3 Proposed Amendment Description.

Where relevant to the action seeking change, this supporting documentation have been developed in consideration of the requirements listed under the following DESI's Guidelines and all relevant guidelines to this application have been fully addressed.

- Application requirements for activities with impacts to air (ESR/2015/1840, version 5.01) (DESI, 2024);
- Application requirements for activities with impacts to land (ESR/2015/1839, version 4.04) (DESI, 2024);
- Application requirements for activities with impacts to water (ESR/2015/1837, version 4.05) (DESI, 2024);
- Application requirements for activities with noise impacts (ESR/2015/1838, version 3.07) (DESI, 2021);
- Application requirements for activities with waste impacts (ESR/2015/1836, version 5.04) (DESI, 2024); and
- Requirements for site-specific and amendment applications – underground water rights (ESR/2016/3275, version 1.04) (DESI, 2024).

Please note that although our supporting document has been prepared based on previous versions of the guidelines mentioned above. After reviewing the latest 2024 versions, we can confirm that the content of our supporting documentation remains unchanged by the more recent guidelines. The proposed amendments seeking a change to EPML00819213, as part of this application, are summarised in **Table 5 through to Table 9**.

Technical reports to support the information presented in Section 3 Table 5 through to Table 9 is provided in Appendices 1 to 4.

All the necessary and detailed EA changes being requested in this application have been summarised in **Table 5**.

Table 5: Summary table of proposed EA amendments.

EA Reference	Technical area	Proposed change	Level of Environmental Harm assessed	Where addressed in supporting documentation
CONDITION CHANGES PROPOSED				
Schedule B: Air Quality				
Condition B1	Air quality	(b) (iii) Add Australian Standard AS3580.9.11 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter PM10 Environmental Beta Attenuation Monitor (E-BAM).	There will be no environmental harm if this methodology is added to the dust monitoring methodology.	Appendix 1 document.
		(c) Add Australian Standard AS3580.9.11 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter PM2.5 Environmental Beta Attenuation Monitor (E-BAM).	There will be no environmental harm if this methodology is added to the dust monitoring methodology.	Appendix 1 document.
Condition B2	Air Quality	Add Australian Standard AS3580.9.11 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter Environmental Beta Attenuation Monitor.	There will be no environmental harm if this methodology is added to the dust monitoring methodology	Appendix 1 document
EA Table B1	Air Quality	Replace EA Table B1 with Table 6 below;	There will be no environmental harm if EA Table B1 is optimised with Table 6.	Appendix 1
Schedule D: Groundwater				
EA Table D1	Groundwater	Replace EA Table D1 with table 7 below with corrected bore locations coordinates, corrected aquifer names and corrected screens depth.	This is a minor administrative change and will not have any additional environmental impacts.	Appendix 2 and 3.
Condition D4.0	Groundwater	Change the groundwater contaminant trigger levels compliance approach to 3 consecutive exceedances for all 3 compliance approaches.	This change will avoid compliance notifications and investigations for any false-	Appendix 2

EA Reference	Technical area	Proposed change	Level of Environmental Harm assessed	Where addressed in supporting documentation
			positive and it will be in line with the WQO guidelines. More details attached in appendix 2. Therefore, this change will not add any additional environmental impacts to existing operations.	
EA Table D2	Groundwater	Replace EA Table D2 with Table 8 below with a changed ec trigger limit for MB10B from 10,265 $\mu\text{S}/\text{cm}$ to 16,000 $\mu\text{S}/\text{cm}$ to conform to the Regional Fitzroy WQO, Zone 34 deep, replaced laboratory ec to field ec as all field ec was used to model for the site-specific trigger levels, corrected aquifer names, removed asterisk from "dissolved".	No additional environmental impacts are anticipated from these changes.	Appendix 2.
EA Table D3	Groundwater	Replace EA Table D3 with Table 9 below with corrected aquifer names, added new level trigger threshold and corrected reference water level.	No additional environmental impacts are anticipated from these changes.	Appendices 2 and 3.

Table 6 constitutes the new EA Table B1 proposed in this amendment with corrected location coordinates and inclusion of other relevant Australian Standards.

Table 6: Proposed new EA Table B1 for Air Quality Monitoring Details.

Air Quality determination	Monitoring Standard	Monitoring Point Description	Approximate Monitoring Point Location (GDA94)	
			Latitude	Longitude
PM10	AS/NZS 3580.9.6:2003 or AS 3580.9.8:2008 or AS3580.9.11:2022	PM10 Station 1 Upwind	22° 01'25"S	148°19'35"E
PM10	AS/NZS 3580.9.6:2003 or AS 3580.9.8:2008 or AS3580.9.11:2022	PM10 Station 2 Downwind	22° 00'7"S	148°12'40"E
Site Description	AS/NZS 3580.10.1:2003	DG1	22° 00'01"S	148°12'40"E
		DG2	21° 59'53"S	148°15'23"E
		DG3	22° 01'52"S	148°16'59"E
		DG4	22° 02'21"S	148°13'40"E
		DG5	22° 02'11"S	148°12'39"E
		MS1	22° 00'33"S	148°14'43"E

Note: Wind speed and direction, humidity, temperature, and precipitation.

Table 7 is the new proposed EA Table D1 with corrected bore location coordinates and aquifer names.

Table 7: New proposed EA table D1.

Monitoring site ID	Latitude (GDA94)	Longitude (GDA94)	Ground Elevation (mAHD)	Depth (mbgl)	Screens (mbgl)	Aquifer	Monitoring Frequency	Monitoring Parameters
MB2 (Bore dry)	22°1'50" S	148°14'18" E	262.4	90	72-90	Rangal Coal Measures (Coal)	Quarterly	SWL
MB8A	22°0'28" S	148°14'3" E	259.1	30	22-28	Rewan Group	Quarterly	SWL and Quality
MB8B (Monitoring, not compliance)	22°0'28" S	148°14'3" E	259.1	80	62-74	Rangal Coal Measures (Sandstone)	Quarterly	SWL and Quality
MB9A	22°0'34" S	148°14'43" E	251.8	30	22-30	Fort Cooper Coal Measures (Coal)	Quarterly	SWL and Quality
MB9B	22°0'34" S	148°14'43" E	251.8	80	60-74	Fort Cooper Coal Measures (Sandstone)	Quarterly	SWL and Quality
MB10A	22°1'33" S	148°16'0" E	233.9	35	27-35	Fort Cooper Coal Measures (Sandstone)	Quarterly	SWL and Quality
MB10B	22°1'33" S	148°16'0" E	233.9	80	64-76	Fort Cooper Coal Measures (Sandstone)	Quarterly	SWL and Quality
CS_MB2	22°1'10" S	148°17'16" E	236.4	170	161-164	Rangal Coal Measures (Coal)	Quarterly	SWL

Table 8 is the new proposed EA Table D2 with corrected aquifer names, proposed new EC contaminant trigger limit for bore MB10B from 10,265 $\mu\text{S}/\text{cm}$ to 11,200 $\mu\text{S}/\text{cm}$ and a change from Laboratory EC to field EC.

Table 8: New proposed EA Table D2.

Aquifer	Monitoring point	Field pH	Lab Ec (us/cm)	Al (mg/l) Dissolved	As (mg/l) Dissolved	Cu (mg/l) Dissolved	Hg (mg/l) Dissolved	Mo (mg/l) Dissolved	Sb (mg/l) Dissolved	Se (mg/l) Dissolved	Zn (mg/l) Dissolved	C6-C10 Fraction (ug/l)	C10-C40 Fraction (ug/l)	Major ions (Ca, Na, Mg, K, HCO ₃ , CO ₃ , SO ₄) (mg/l)	Cl (mg/l)	Fe (mg/l)
Rewan Group	MB8A	6.0-7.5	8910	0.055	0.013	0.0014	0.0006	0.034	0.009	0.011	0.008	20	100	INTERPRETATION ONLY	3185	NO INCREASING TREND
Rangal Coal Measures (Sandstone)	MB8B		24240	0.055							0.317	20			8520	
Fort Cooper Coal Measures (Coal)	MB9A		20329	0.055							0.06	20			6785	
Fort Cooper Coal Measures (Sandstone)	MB9B		16000	0.055							0.008	20			5905	

Aquifer	Monitoring point	Field pH	Lab Ec (us/cm)	Al (mg/l) Dissolved	As (mg/l) Dissolved	Cu (mg/l) Dissolved	Hg (mg/l) Dissolved	Mo (mg/l) Dissolved	Sb (mg/l) Dissolved	Se (mg/l) Dissolved	Zn (mg/l) Dissolved	C6-C10 Fraction (ug/l)	C10-C40 Fraction (ug/l)	Major ions (Ca, Na, Mg, K, HCO ₃ , CO ₃ , SO ₄) (mg/l)	Cl (mg/l)	Fe (mg/l)
Fort Cooper Coal Measures (Sandstone)	MB10A		3998	0.055				0.034			0.06				789	
Fort Cooper Coal Measures (Sandstone)	MB10B		11,200	0.055				0.034			0.008				5905	

Notes

No note- values are derived from the 95th Percentile of site specific data.

A ANZECC 2000 Guidelines – Freshwater upland river Table 3.3.4

B ANZECC Aquatic Ecosystem (95%) Protection Guideline (ANZG 2018)

C Fitzroy Water Plan WQ1310, Zone 34 Shallow 80th Percentile

D Fitzroy Water Plan WQ1310, Zone 34 Deep 80th Percentile

Table 9 below is the new proposed EA Table D3 with corrected aquifer names for the bores, new included values for level trigger threshold in accordance with EA condition D 6.0, and corrected groundwater reference level for CS_MB2 from 236.63 mAHD to 151.8 mAHD.

Table 9: New Proposed EA Table D3 (based on appendices 2 and 3).

Monitoring Bore	Aquifer	Level Trigger Threshold (m) drawdown from reference water level	Reference water Level (mbgl)	Reference Water Level (mAHD)
MB2	Rangal Coal Measures (Coal)	4.3	86.6	175.7
MB8A	Rewan Group	Dry	Dry	Dry
MB8B	Rangal Coal Measures (Sandstone)	2.0	64.4	194.7
MB9A	Fort Cooper Coal Measures (Coal)	2.0	25.1	226.7
MB9B	Fort Cooper Coal Measures (Sandstone)	2.0	30.9	221.0
MB10A	Fort Cooper Coal Measures (Sandstone)	2.0	19.7	214.3
MB10B	Fort Cooper Coal Measures (Sandstone)	2.0	19.9	214.0
CS_MB2	Rangal Coal Measures (Coal)	51.3	84.6	151.8

4 Environmental Values and Impact Assessment

4.1 Land and Land use environmental values and impact assessment

All amendments seeking change (as listed in **Section 3, Table 5**) do not involve any clearing of vegetation or excavation of land. Therefore, no land will be affected as a result of this EA amendment.

4.2 Surface Water assessment

Millennium Mine is located in the Isaac River drainage basin sub-area of the wider Fitzroy Drainage Basin. The Isaac River, to the south-west of Millennium, is the major drainage feature of the region and flows in a southeasterly direction. New Chum Creek runs parallel to Millennium Mine, between the existing Millennium and Mavis open cut pits, and is a tributary of the Isaac River. New Chum Creek and Isaac River are classified as third order and sixth order streams respectively, and both are ephemeral, experiencing short periods of flow following high rainfall events over the summer months.

The catchment area of New Chum Creek is approximately 51 km², with Millennium Mine, as well as Poitrel and Daunia Mines, located within the catchment. The main channel of New Chum Creek typically has a base width approximately 3 m and a depth of up to 2 m. Although minor waterholes can persist in the channel for several weeks following high rainfall events, there is little to no aquatic vegetation due to the stream being ephemeral, with streamflow expected to occur less than 30% of the time (Peabody, 2020).

The south-western part of Millennium Mine drains south to West Creek, another tributary of Isaac River. The West Creek confluence with the Isaac River is approximately 9 km upstream of that of New Chum Creek. West Creek has a catchment area of approximately 22 km². West Creek acts as an ephemeral minor watercourse.

Surface water in the area is ephemeral and does not have a groundwater baseflow component (SLR, 2021).

The receiving environment of Millennium Mine includes the New Chum Creek, West Creek and North Creek and connected waterways 10 km downstream of release points which will include the Isaac River. The New Chum Creek is the closest area where water flows during heavy rainfall. The New Chum Creek begins east of the Peak Downs Highway and continues through to the site, bisecting the space between the Millennium and Mavis areas of the site. Flows are generally in the south-east direction through the mine site. The West and North Creeks are tributaries that connect the main New Chum Creek that feed into the Isaac River. There are no Wetlands located within 10 km radius of the Millennium Mine operations.

As actions relating to this EA amendment is for minor condition change to air quality and groundwater, no additional environmental impacts are anticipated for surface water from this amendment.

4.3 Groundwater Environmental values and impact assessment

Millennium is located within the Isaac Connors Groundwater Management Area (GMA) (Zone 34) of the Fitzroy Basin under the Water Plan (Fitzroy Basin) 2011 (DES, 2011). The management objective of the Water Plan (Fitzroy Basin) 2011 is to maintain the 20th, 50th and 80th percentiles water quality results in order to preserve or enhance groundwater quality for its recognised uses. These percentiles are available for ‘shallow’ bores (less than 30m deep) and ‘deep’ bores (more than 30m deep).

In the case of Isaac groundwaters, these values include aquatic ecosystems, irrigation, farm supply/ use, stock watering, primary recreation, drinking water as well as being of cultural and spiritual value. The identified Environmental Values (EVs) of groundwater most applicable to Millennium are listed in Table 10 below.

Table 10: Identified Environmental values for groundwater and applicable water quality guidelines.

Identified Environmental Value	Applicable Guideline	Water Quality Objective
Use of groundwater for domestic and agricultural purposes by landholders within the area.	ANZECC Guideline (Stock watering) ANZECC Guideline (Irrigation).	Fitzroy water plan, WQ1310, zone 34.
Use of groundwater by GDE and potentially (although considered unlikely) groundwater contribution to palustrine wetlands.	Default Toxicant Guideline (ANZG, 2018).	Fitzroy Water plan, WQ1310, zone 34.

The Millennium Expansion Project Environment Management Plan (MatrixPlus, 2010) found that groundwater is largely associated with the coal seam aquifers and is neutral to alkaline (pH 7.2 to 8.2) and slightly to highly saline (electrical conductivity (EC) 840 to 25,500 µS/cm). There is no realistic re-use value for this groundwater, either for agricultural, domestic, or industrial purposes. SLR Consulting Australia Pty Ltd (SLR) has undertaken a technical review of the proposed EA amendment changes relating to groundwater. Results and the request details are presented in Appendices 2 and 3.

The current groundwater quality and existing groundwater values will not be impacted, and no monitoring plan or program will be compromised but will be further improved from this amendment explained in Table 5 above.

4.4 Air and Acoustics Environmental values and impact assessment

Sensitive receptors in the vicinity of Millennium Mine include individual residences or homesteads as well as the Towns of Moranbah and Coppabella. This is shown in **Table 11** below.

Table 11: Nearest sensitive receptors to the Millennium Mine.

Sensitive Receptor	Description	Distance and direction from Millennium Mine
Most affected receptors in Millennium's Project EIS		
Annandale	Homestead	6.8 km north-northeast
Moorvale	Homestead	6.3 km north-northeast
Winchester Downs	Homestead	9 km south-southwest
Watonga	Homestead	4.8 km West
Broadlea	Homestead	7.7 km northwest
Other Receptors		
Moranbah	Town	13.8 km west
Coppabella	Town	13.8 km northeast
Wanella	Homestead	15.3 km northeast
Mavis Downs	Homestead	5.7 km east
Daunia	Homestead	8.0 km southeast
Olive Downs	Homestead	9.1 km south-southeast
Coolibah	Homestead	12.0 km southwest
Kurrali Park	Homestead	14.8 km west-southwest
Grosvenor Downs	Homestead	12.8 km west
Moranbah	Homestead	11.1 km west

There are eight main sensitive receptors within 10 km of Millennium Mine. The closest is the Wotonga Homestead which is 4.8 km West of the Mine.

This amendment is requesting to optimise the air quality monitoring by inclusion of two new PM10 monitoring stations with associated Australian Standards in appropriate sensitive locations that will give real time air quality results for prompt decision making. Therefore, no additional potential environmental harm to air and noise environmental values will be affected as a result of this change request.

4.5 Waste

The proposed amendments described in section 3 Table 5 above is not associated with additional waste generation. Therefore, no change is required to the approved waste management practices for Millennium Mine. As actions relating to this EA amendment is for minor condition change to air quality and groundwater only, no additional environmental impacts are anticipated for waste management from this amendment and does not apply to DESI's guideline for Application requirements for activities with waste impacts ESR/2015/1836, version 5.04.

4.6 Biodiversity Assessment

This amendment does not involve any vegetation clearing or disturbance of ecosystem. Biodiversity situation on site will be preserved and will not have any additional environmental impact. As actions relating to this EA amendment is for minor condition change to air quality and groundwater only, no additional environmental impacts are anticipated for Biodiversity from this amendment.

4.7 Wetlands

There are no wetlands located within 10 km radius of Millennium Mine and therefore no environmental impacts to wetlands are anticipated.

4.8 Great Barrier Reef Catchment Waters

The Reef Discharge Standards are described in section 41AA of the Environmental Protection Regulation 2019 and apply to EA applications where there are proposed impacts to the Great Barrier Reef (GBR) catchment waters or other coastal waters from the release of fine sediment and dissolved inorganic nitrogen. The guideline *Reef discharge standards for industrial activities* (ESR/2021/5627 version 1.04) (the Reef Discharge Guideline) describes how the standards will be applied and assessed.

This amendment application does not involve any clearing or disturbance and there is no sediment discharge associated with this amendment. This EA amendment has no impacts to the Great Barrier Reef and therefore Reef discharge standards does not apply to this amendment and impacts assessment to the Great Barrier Reef will not be considered any further.

5. Management and Mitigation Practices

In general, this amendment is not expected to introduce any additional environmental impact to surface water, groundwater, land, or waste to be managed differently other than the current environmental management practices on site. Therefore, minor changes will be done to the existing air quality and the groundwater monitoring and management plans to accommodate these changes being requested in this amendment application. All other management plans will continue to apply for this amendment and will not be changed.

6. Rehabilitation

This amendment will not bring any changes to the rehabilitation objectives of the site. Therefore, the existing Rehabilitation Management Plan will still be relevant and remain unchanged as an outcome of the proposed amendments.

7. EA amendment assessment level decision

Under s.228 of the EP Act, the Department as the administering authority, must decide whether the proposed amendment to the EA is a minor or a major amendment.

Reference has been made to the DESI Guideline 'Major and minor amendments' (ESR/2015/1684, version 11.02) (DES, 2024). The threshold criteria for a minor EA amendment and their relevance for the proposed EA amendment are described in Table 12.

Based on this analysis, MetRes is of the view that the proposed EA amendment is a **'minor' EA amendment**.

Table 12: Minor Amendment Criteria.

Minor amendment (threshold) criteria	Proposed Amendment
Is not a change to a condition identified in the authority as a standard condition.	NO There are no standard conditions as the Millennium EA was approved under a site-specific application.
Does not significantly increase the level of environmental harm caused by the relevant activity.	NO As confirmed in Section 3 Table 5, the proposed amendments will not result in any additional contamination to receiving surface waters, will not result in any additional releases or emissions to groundwater or land, and will not result in any additional environmental harm to air and noise environmental values. This EA amendment will not increase the level of environmental harm caused by the activity. The existing disturbance will not increase by the 10% threshold. Therefore, this as a standalone amendment will be minor.
does not change any rehabilitation objectives in the EA in a way likely to result in significantly different impacts on environmental values than the impacts previously permitted under the EA.	NO This EA amendment will not change the existing rehabilitation objectives of the Millennium Mine site.
Does not significantly increase the scale or intensity of the relevant activity.	NO The proposed amendment will not introduce any additional disturbance or undermine the monitoring regime of the environmental management requirements.
Does not relate to a new relevant resource tenure for the authority that is- a) a new mining lease; b) a new petroleum lease; c) a new geothermal lease under the <i>Geothermal Energy Act 2010</i> ; or d) a new GHG injection and storage lease under the <i>Greenhouse Gas Storage Act 2009</i> .	NO This EA Amendment does not relate to a new resource tenure.
Involves an addition to the surface area for the relevant activity of no more than 10 % of the existing area.	NO The proposed amendment will not introduce any additional disturbance of the surface area.
For an environmental authority for a petroleum activity- a) involves constructing a new pipeline that does not exceed 150 km b) involves extending an existing pipeline so that the extension does not exceed 10 % of the existing length of the pipeline.	NO The EA does not relate to a petroleum activity.
If the amendment relates to a new relevant resource tenure for the authority that is an exploration permit or GHG permit – seeks, in the amendment application under section 224, an amended environmental authority that is subject to the standard conditions for the relevant activity or authority, to the extent it relates to the permit.	NO The amendment does not relate to a new resource tenure.

From this self-assessment, the activities relating to the proposed EA amendment (both the amendments to the conditions for compliance under the EA, and minor administrative amendments) as a standalone project are in accordance with a **minor amendment application**.

Additional consideration is provided below in relation to considerations for a major amendment application as set out in the Department’s Guideline ‘Major and minor amendments’ (ESR/2015/1684 Version 11.02, 12 June 2024). **Tables 12 and 13** demonstrate that the proposed EA amendment as a standalone project for the air quality and groundwater does not trigger a major amendment but will be a minor amendment.

Table 13: Major Amendment considerations (DES, 2024).

The following matters will usually be significant, and therefore be assessed as major amendments	Relevance to proposed Amendment
Increasing impacts to Category A or B environmentally sensitive areas	No
Increasing impacts to waters with limited assimilative capacity measured against environmental values and management objectives as prescribed in the Environmental Protection (Water) Policy 2019 (e.g. a discharge to a river which is already not meeting the required water quality objectives prescribed in the Environmental Protection (Water and Wetland Biodiversity) Policy 2019)	No
Increasing impacts to air quality such that the air quality objectives in the Environmental Protection (Air) Policy 2019 may not or will not be achieved.	No
Increasing noise emissions such that the acoustic quality objectives in the Environmental Protection (Noise) Policy 2019 may not, or will not be achieved	No
Increasing scale and nature of disturbances by a prescribed activity that will, or are likely to, result in a significant residual impact on a prescribed environmental matter (Note - these changes may trigger a requirement for an offset under the <i>Environmental Offsets Act 2014</i>)	No
Diverting a natural watercourse	No
Changing fuel type being used (i.e. from gas to coal or coal to waste)	No
Discharging contaminants directly to groundwater	No
Deeper extraction that intersects groundwater or where the depth of groundwater is not known	No
Increasing the height or area of a mine tailings dam by more than 10% of the existing height or area of that dam	No
Constructing and/or operating a new coal seam gas brine dam	N/A
Using emerging technologies (e.g. a new type of mining)	No
Changes to the final landform design that compromise landform stability and increase erosion potential (e.g. increasing the gradient of final slopes)	No
Changes which are part of staged development	No
A 5% volume increase of waste production with potentially acid forming or neutral mine drainage properties	No
A change in the type of minerals being mined	No
A change of a post-mining land use for an area	No

The following matters will usually be significant, and therefore be assessed as major amendments	Relevance to proposed Amendment
The addition of a mining lease to an EA, due to the increase in the risk of environmental harm	No
Discharging contaminants which differ to those authorised in the existing EA	No
Increasing emissions to the environment either by substantial volume or concentration or load	No
Changing the final rehabilitation acceptance criteria for an activity to a lower standard such that proposed rehabilitated land has a lower environmental value than that originally authorised in the existing EA	No
Moving a contaminant release location to a place with different environmental values	No
Using different industrial processes which will result in different emissions and impacts which are not authorised by the EA	No
Changing the design of an engineered capping layer to be installed over a waste rock dump	No
Increasing annual throughput for the relevant activity beyond that authorised in the existing EA	No
Increasing the quantity of chemicals, hazardous materials or wastes stored on the site beyond that authorised in the existing EA	No
Increasing operating hours into evening hours and Sundays where not previously authorised in the existing EA and the site of the activity(ies) is within close proximity to sensitive receptors.	No

8. Conclusion

This EA amendment application is being requested by MetRes Pty Ltd to streamline compliance requirements for groundwater and air quality and also to take advantage to correct minor administrative changes that is required in the EA.

Groundwater Technical Assessment report and Memorandum from SLR Consulting have been included in this amendment application as attachments 2 to 4 that have justified the need for this amendment application. The groundwater assessment reports from SLR Consulting did not identify any additional environmental impacts that would be associated with this amendment request. Similarly, a technical report from Katestone Environmental on-air quality (Attachment 1) suggests improvements and optimisation of the current air quality compliance requirements in the EA. If the change request on air quality requirements is accepted no additional environmental impacts are anticipated but will rather results in improvements as clarified by the Katestone report. Therefore, existing environmental management plans for Millennium Mine will still be useful and will apply to this amendment application for all environmental impacts mitigation except the air quality and groundwater monitoring and management plans where there shall be minor changes to accommodate these new change request.

References

- ANZG, 2018 Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines.
- DESI 2024, Application requirements for activities with impacts to air (ESR2015/1840, version 5.01).
- DESI 2024, Application requirements for activities with impacts to land (ESR/2015/1839, version 4.04).
- DESI, 2024. Requirements for site-specific and amendment applications – underground water rights (ESR/2016/3275, version 1.04).
- DESI 2024. Application requirements for activities with impacts to water (ESR2015/1837, version 4.05).
- DESI 2021. Application requirements for activities with noise impacts (ESR/2015/1838, version 3.07).
- DESI 2024, Application requirements for activities with waste impacts (ESR/2015/1836, version 5.04).
- DESI, 2013. *Guideline Resource activity – mining Model water conditions for coal mines in the Fitzroy basin*, ESR/2015/1561 version 3.0.
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- DESI, 2024. Guideline Major and Minor Amendments ESR/2015/1684 version 11.02.
- DEHP, 2011. Environmental Protection (Water) Policy 2009 Fitzroy River Sub-basin Environmental values and Water Quality Objectives Basin No. 130 (part), including all waters of the Fitzroy River Sub-basin September, 2011.
- MatrixPlus, 2010. *Groundwater Impact Assessment for Millennium Expansion Project EIS*. Report prepared for Peabody Energy Australia by MatrixPlus, October 2010.
- SLR, 2023. Groundwater Network and Trigger Review Report for Millennium Mine.

APPENDIX 1
AIR QUALITY TECHNICAL MEMO

APPENDIX 2
GROUNDWATER NEW TECHNICAL MEMO

APPENDIX 3
GROUNDWATER DRAWDOWN INFORMATION

APPENDIX 4
GROUNDWATER NETWORK REVIEW AND TRIGGER ASSESSMENT VERSION 3