

GLENCORE

Plan for

# SURFACE WATER AND GROUNDWATER RESPONSE

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#### **Document Review History**

Version	Date Reviewed	Review Team (consultation)	Nature of the Amendment
1	February 2013	DP&I	Document developed in accordance with Schedule 3, Condition 36 and approved by DP&I.
2	July 2014	Mangoola Coal/DP&E	Revised to reflect Modification 6, name changes to company and general review. Approved 22 <sup>nd</sup> December 2014.
3	January 2017	Mangoola Coal NSW EPA Crown Lands and Water Division Steve Downes (suitably qualified expert endorsed by the Secretary)	<ul> <li>Revised to:</li> <li>Better define response processes using flow diagrams</li> <li>Align with details studies based around definition of the alluvium and colluvium related to Big Flat Creek</li> <li>Align with trigger processes revised for the Ground Water Monitoring Program</li> <li>Define process of compensation for potentially affected landholders as per DP&amp;E Dam Audit 2016</li> <li>Remove Appendix 1 Quick reference guide.</li> </ul>
4	November 2017	Mangoola Coal	Updated in consultation with Crown Lands and Water Division further comment.
5	May 2018	Mangoola Coal	Updated in line with amendments to Groundwater Monitoring Plan (GWMP).
6	May 2018	Mangoola Coal	Approved by DPE
7	January 2020	Mangoola Coal	Update Figure 2.7 to include assessment of potential inflows from Big Flat Creek.
8	April 2020	Mangoola Coal	Included figure 2.9 to outline response to discharge of water from the Sandy Creek Farm Dams and / or Raw Water Dam Seepage Collection Sump (SCS) in accordance with the Engeny Saline Seepage Discharge Investigation Cover Letter 2020

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## **1** Introduction

### **1.1 Definitions**

The terminology utilised within this SWGWRP is defined in Table 1.7 of the WMP.

## 2 Management Response Protocols

Mangoola Coal has developed protocols that outline the responses required in the event that operations result in potential adverse impacts to the surrounding surface water and/or groundwater environment. Events included in this TARP include those which are unforeseen (not anticipated or predicted) based on previous environmental assessment and mining operations.

## 2.2 Surface Water Response Plans

Surface Water Management and Monitoring at Mangoola is outlined within the WMP and SWMP.

The TARP's outlined in **Figures 1-5** are implemented as per the predefined triggers listed in the **SWMP**.

#### Surface Water Quality Impact Assessment Criteria Exceedance



Continue Monitoring and Reporting as per the requirements of the **SWMP**. Revise impact assessment criteria if necessary

Conduct an investigation into the incident

Assess risk of environmental harm, take all

preventative measures to prevent or minimise

environmental harm and enact PIRMP if required

Notify as per Schedule 5, Condition 4 of PA 06\_0014 and EPL 12894 Condition R2

Submit a detailed report to the EPA, DP&E and Crown Lands and Water Division (within seven days) regarding the incident as per Schedule 5, Condition 4 of PA 06\_0014 and EPL 12894

Prioritise actions based on the risk to the environment and likelihood of a repeat incident

Monitor the completion of actions to ensure they have been effective

Review and if necessary revise **SWMP** and **SWGWRP** as per Schedule 5, Condition 9 of PA 06\_0014

#### Figure 2.1

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### Stream Health Criteria Exceedance and/or Deterioration of Stream

	GDE Health
Trig	ger
Exceedance of stream health criteria, significant deterioration in stream stability or GDE health identified during monitoring as per <b>SWMP or GWMP</b>	
Act	ion
Notify the Mangoola Coal ECM Review monitoring results against historical mo Review recent monitoring results for adjacent m Review operations and determine if the impact Determine if an incident has occurred as define	nonitoring sites is a result of mining
Resp	onse
An incident has not occurred and trigger is not a result of mining	An incident is deemed to have occurred
Continue Monitoring and Reporting as per the requirements of the <b>SWMP</b> . Revise impact assessment criteria if necessary	Assess risk of environmental harm, take all preventative measures to prevent or minimise environmental harm and enact PIRMP if required Conduct an investigation into the incident Notify as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Condition R2 Submit a detailed report to the EPA, DP&E and Crown Lands and Water Division (within seven days) regarding the incident as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894

Prioritise actions based on the risk to the environment and likelihood of a repeat incident including appropriate mitigation and control measures

Monitor the completion of actions to ensure they have been effective

Review and if necessary revise SWMP and SWGWRP as per Schedule 5, Condition 9 of PA 06\_0014

#### Figure 2.2

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#### Discharge of Water from Dirty Water Management System

Trig	ger	
Discharge of sediment laden water from the dirty water management system		
Act	ion	
Action Notify the Mangoola Coal ECM Review operational pumping in place to limit volume of discharge Collect samples upstream, downstream and at the discharge source (5 days following cessation of discharge) Review monitoring results against historical monitoring data Review recent monitoring results for adjacent monitoring sites Review operations and determine if the impact is a result of mining Determine if an incident has occurred as defined under EPL 12894 and / or PA 06_0014		
Resp	onse	

An incident has not occurred and trigger is not a result of mining	An incident is deemed to have occurred
Continue Monitoring and Reporting as per the requirements of the <b>SWMP</b> . Revise impact assessment criteria if necessary	Assess risk of environmental harm, take all preventative measures to prevent or minimise environmental harm and enact PIRMP if required Conduct surface water quality monitoring as per <b>Section 3.7.1</b> of <b>SWMP</b> Conduct an investigation into the incident Notify as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Condition R2 Submit a detailed report to the EPA, DP&E and Crown Lands and Water Division if required (within seven days) regarding the incident as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Prioritise actions based on the risk to the environment and likelihood of a repeat incident Monitor the completion of actions to ensure they have been effective Review and if necessary revise <b>ESCP</b> , <b>SWMP</b> and <b>SWGWRP</b> as per Schedule 5, Condition 9 of PA 06_0014

#### Figure 2.3

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#### Discharge of Water from Saline Water Management System

Tri	gger
Unlicensed/uncontrolled discharge of saline water i.e. other than that allowed under HRSTS	
Ac	tion
Notify the Mangoola Coal ECM Review operational pumping in place to limit ve Collect samples upstream, downstream and at discharge) Review monitoring results against historical mo Review recent monitoring results for adjacent r Review operations and determine if the impact Determine if an incident has occurred as define	the discharge source (5 days following cessation of ponitoring data monitoring sites t is a result of mining

Resp	onse
An incident has not occurred and trigger is not a result of mining	An incident is deemed to have occurred
Continue Monitoring and Reporting as per the requirements of the SWMP. Revise impact assessment criteria if necessary	Assess risk of environmental harm, take all preventative measures to prevent or minimise environmental harm and enact PIRMP if required Conduct surface water quality monitoring as per Section 3.7.1 of SWMP Notify impacted users and replace water supply with suitable water from the mine water management system until water quality is no longer affected by discharge Conduct an investigation into the incident Notify as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Condition R2 Submit a detailed report to the EPA, DP&E and Crown Lands and Water Division (within seven days) regarding the incident as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Prioritise actions based on the risk to the environment and likelihood of a repeat incident Monitor the completion of actions to ensure they have been effective Review and if necessary revise WMP, ESCP and SWGWRP as per Schedule 5, Condition 9 of PA 06_0014

#### Figure 2.4

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#### Surface Water Complaint

Trigger	
Complaint received from landholder alleging unauthorised discharge from the mines dirty or saling water management systems	
Action	
Notify the Mangoola Coal ECM Review current onsite dam levels and visit possible area where water could discharge from site. Collect samples of the water leaving the location if applivable Review monitoring results against historical monitoring data Review recent monitoring results for adjacent monitoring sites Review operations and determine if the impact is a result of mining Determine if an incident has occurred as defined under EPL 12894 and / or PA 06_0014	

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Resp	onse
An incident has not occurred and trigger is not a result of mining	An incident is deemed to have occurred
Continue Monitoring and Reporting as per the requirements of the <b>SWMP</b> Respond to complainant as per site Complaints Management Procedure	Assess risk of environmental harm, take all preventative measures to prevent or minimise environmental harm and enact PIRMP if required Provide landholder with suitable water supply from the mine water management system Conduct an investigation into the incident Notify as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Condition R2 Submit a detailed report to the EPA, DP&E and Crown Lands and Water Division (within seven days) regarding the incident as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Respond to complainant as per site Complaints Management Procedure. Prioritise actions based on the risk to the environment and likelihood of a repeat incident Monitor the completion of actions to ensure they have been effective Review and if necessary revise <b>SWMP, ESCP</b> and <b>SWGWRP</b> as per Schedule 5, Condition 9 of PA 06_0014

#### Figure 2.5

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## 2.3 Groundwater Response Plans

Groundwater Management and Monitoring at Mangoola is outlined with the WMP and GWMP.

The TARP's outlined in **Figures 2.6 - 2.8** are implemented as per the predefined triggers listed in the **GWMP**.

#### Impact Assessment Criteria Exceeded for Quality and Standing Water Level

Tri	gger
Three consecutive monitoring result values outside of the adopted impact assessment criteria for quality and/or standing water level presented in the <b>GWMP</b>	
Act	ion
Notify the Mangoola Coal ECM Undertake additional monitoring of the bore Review results against baseline monitoring for Compare against water quality trends and relat Review groundwater model predictions, confirm reflect what is occurring in the mine. Seek advi Review operations and investigate for links to oc Investigate any external influence which may b Determine if an incident has occurred as define	ionships with adjacent bores n model assumptions are correct/ ce from qualified hydrogeologist if required operational activities e affecting the results including climatic data

Resp	onse
An incident has not occurred and trigger is not a result of mining	An incident is deemed to have occurred
Continue Monitoring and Reporting as per the requirements of the GWMP	Assess risk of environmental harm, take all preventative measures to prevent or minimise environmental harm and enact PIRMP if required Provide affected landholders with suitable water supply from the mine water management system Conduct an investigation into the incident Notify as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Condition R2 Submit a detailed report to the EPA, DP&E and Crown Lands and Water Division (within seven days) regarding the incident as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Prioritise actions including any groundwater isolation contingency plans or modification of mining operations based on the risk to the environment and likelihood of a repeat incident Monitor the completion of actions to ensure they have been effective Review and if necessary revise <b>GWMP</b> and <b>SWGWRP</b> as per Schedule 5, Condition 9 of PA 06_0014

#### Figure 2.6

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### Groundwater extraction exceeding license limits or surface water inflows from Big

Flat Creek	
Trigger	
Annual Review Reporting of groundwater intercepted/extracted by mining exceeds approved predicted groundwater make at corresponding stage of mining as outlined in Section 2.3.3 of GWMP or advice from independent hydrologist says there is an unexplained increase in groundwater inflows during the quarterly groundwater inflow assessment.	
Action	
Notify the Mangoola Coal ECM Review groundwater model predictions, confirm model assumptions are correct and reflect what is occurring in the mine Review surface water quality to determine if water quality in pit compared with water quality in Big Flat Creek shows a surface water loss. Review operations and investigate for links to operational activities Review Groundwater monitoring network data linvestigate any external influence which may be affecting the results including climatic data Seek advice from qualified hydrogeologist if required Seek additional license allocation and make appropriate transfer in consultation with DPI Water Determine if an incident has occurred (exceedance of license allocation) as defined under EPL 12894 and / or P/ 06_0014	

Door	0.050
Response	
An incident has not occurred and trigger is not a result of mining	An incident is deemed to have occurred
Continue Monitoring and Reporting as per the requirements of the <b>GWMP</b>	Assess risk of environmental harm, take all preventative measures to prevent or minimise environmental harm and enact PIRMP if required
	Conduct an investigation into the incident
	Notify as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Condition R2
	Submit a detailed report to the EPA, DP&E and Crown Lands and Water Division (within seven days) regarding the incident as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894
	Prioritise actions including any groundwater isolation contingency plans, modification of operations, temporary license transfers or purchase of more license allocation based on the risk to the environment and likelihood of a repeat incident
	Monitor the completion of actions to ensure they have been effective
	Review and if necessary revise <b>GWMP</b> and <b>SWGWRP</b> as per Schedule 5, Condition 9 of PA 06_0014



#### **Groundwater Complaint**

Trigger		
Complaint received regarding groundwater.		
Action		
Notify the Mangoola Coal ECM Undertake additional monitoring of the private bore If required Review results against baseline monitoring for the bore (if available) Compare against water quality trends and relationships with adjacent bores Review groundwater model predictions, confirm model assumptions are correct/ reflect what is occurring in the mine Review operations and investigate for links to operational activities Investigate any external influence which may be affecting the results including climatic data Consult and gain advice from qualified hydrogeologist if required Determine if an incident has occurred as defined under EPL 12894 and / or PA 06_0014		

Response	
An incident has not occurred and trigger is not a result of mining	An incident is deemed to have occurred
Continue Monitoring and Reporting as per the requirements of the <b>GWMP</b> Respond to complainant as per site Complaints Management Procedure	Assess risk of environmental harm, take all preventative measures to prevent or minimise environmental harm and enact PIRMP if required Provide landholder with suitable water supply from the mine water management system Conduct an investigation into the incident Notify as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Condition R2 Submit a detailed report to the EPA, DP&E and Crown Lands and Water Division (within seven days) regarding the incident as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Prioritise actions based on the risk to the environment and likelihood of a repeat incident Monitor the completion of actions to ensure they have been effective Review and if necessary revise <b>GWMP</b> and <b>SWGWRP</b> as per Schedule 5, Condition 9 of PA 06_0014

#### Figure 2.8

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#### Discharge of water from the Sandy Creek Farm Dams (SCFDs) and / or Raw Water Dam Seepage Collection Sump (SCS)

Water Dam Seepage Collection Sump (SCS)		
Trig	gger	
volumes are greater than 50% capacity, or	SCS, during any rainfall event, where initial storage e SCS during a rainfall event less than 50 mm in	
24 hours.	-	
Act	ion	
Notify the Mangoola Coal ECM. Review operational pumping was / is in place Conduct surface water quality monitoring as p Review Teledata to check dam levels and rai		
Response		
An incident has not occurred and trigger is not a result of mining	An incident is deemed to have occurred	
If dams were 50% or less full continue monitoring equipment and pumping infrastructure; or If there was more than 50mm of rain in the preceding 24 hours continue monitoring equipment and pumping infrastructure.	If either / both dams were greater than 50% full; or	
	There was less than 50mm of rain in the preceding 24 hours then:	
	Take all preventative measures to prevent or minimise environmental harm and enact PIRMP.	
	Conduct an investigation into the incident.	
	Notify as per Schedule 5, Condition 4 of PA 06_0014 and EPL 12894 Condition R2.	
	Submit a detailed report to the EPA and DPIE if required (within seven days) regarding the incident as per Schedule 5 Condition 4 of PA 06_0014.	

Note: Discharge TARP was developed in accordance with below studies:

Engeny Water Management 2020. Saline Seepage Interception System Discharge Investigation. Mangoola Sandy Creek Overflow Assessment, Seepage Collection Sump Overflow Assessment and Cover Letter. Reports prepared for Mangoola Coal.

#### Figure 2.9

Prioritise actions based on the risk to the environment and likelihood of a repeat incident.

Monitor the completion of actions to ensure that they are effective.

Review and if necessary revise relevant strategies, plans, programs and reports as per Schedule 5 Condition 9 of PA 06\_0014.

# **3** Reporting and Review

Reporting and review requirements are outlined in Section 9.0 of the WMP.

## 4 References

All references are included in Section 10 of the WMP.

### **Appendix A – Authority Correspondence**