Jacobs

Memorandum

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Subject	**SPR38 and SPR1302 Trigger Notification Report**	**Project Name**	Springvale Groundwater Monitoring
Attention	Natalie Gardiner	**Project No.**	IA132000
From	Quan Bui		
Date	25 November 2020		
Copies to			

1. Introduction

This memorandum (memo) has been prepared by Jacobs to notify Centennial Coal Springvale of a significant water level change. Vibrating Wire Piezometer (VWP) sites at SPR38 and SPR1302 have recorded significant depressurisation responses. It is noted that there are no triggers associated with VWPs in the Swamp Monitoring Program (SMP) and Water Management Plan (WMP) for LW424-427.

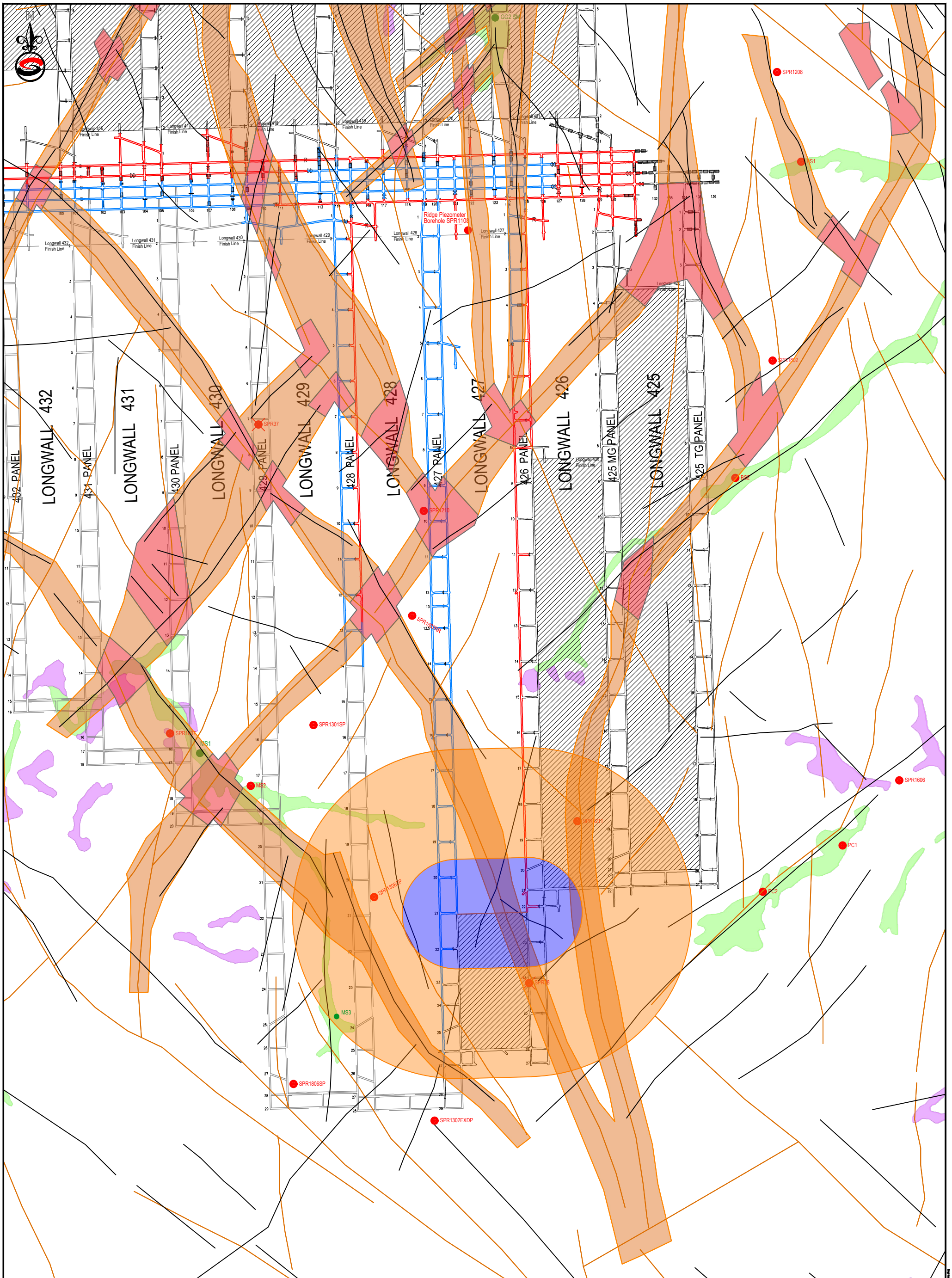
Based on VWP data at SPR38, the upper aquifers above the Mount York Claystone at this location were observed to depressurise in late October 2020. The response was recorded to propagate from the lower sensors one week prior. SPR38 was less than 200m from the longwall face when the response was recorded. SPR38 had previously shown a response in April 2019 when roads and headings were developed directly underneath the site.

The upper sensor at SPR1302 located just below the Mount York Claystone recorded a depressurisation in late October 2020. This occurred as the longwall was moving away from SPR1302, approximately one month after it was closest to the mining face. SPR1302 had previously shown depressurisation responses in the lower aquifers during mining of LW425 and LW426, when mining was well over 600m away.

Note that analysis and interpretation of the trigger values, and the reasons for any trigger exceedances, are not discussed in this document. Any required investigation procedures and analysis should be implemented in accordance with Section 10 of the SMP LW424-427 (Centennial 2018).

If the trigger levels in Section 7 of the SMP LW424-427 (Centennial 2018) are exceeded, a series of checks will be made to discern non-mining-related impacts from mining related impacts. Once this process is followed then management measures and/or corrective actions can be implemented, if required.

Figure 1 shows the locations of groundwater impact sites against the progression of LW427 in late October 2020 around when the impacts were recorded.



LEGEND:

- 600m Faceline Buffer Monitoring Trigger Zone
- 200m Faceline Buffer Monitoring Trigger Zone

NOTES:

SRK 2017 Model Used.

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DATE	20-11-2020
DRAWN	Madison Haddon
REFERENCE	N:\Z_Plans
SEAM	LITHGOW
INFORMATION SUPPLIED FROM	Peter Corbett, Survey Department
SCALE	NOT TO SCALE

SPRINGVALE COLLIERY

LW426 Extraction Plan Groundwater & Soil Moisture Monitoring- Weekly Trigger Plan

Charted To: 19-11-2020

CENTENNIAL SPRINGVALE

Plan No. SVY06758.1 A3V

2. Background

Groundwater level triggers have been developed to determine whether anomalous results have been measured at groundwater monitoring sites. The methodology of developing the triggers is based on statistical analysis and the development of percentile based triggers. Section 8 of the SMP LW424-427 (Centennial 2018) presents the design of the monitoring program in the context of how trigger values can be applied across the mining area. Per the SMP, monitoring locations have been designated as impact sites and reference sites.

Impact sites are those locations which have the potential to be impacted by longwall mining due to their close proximity (within 600m) of a planned underlying longwall.

Reference sites are those locations at which mining induced impacts are considered highly unlikely due to their significant distance away from planned active mining areas. Both site types are monitored at the same frequency. Notably, an impact site as classified in the SMP, may be used as a reference site. This may occur in the instance that an impact site is a sufficient distance away from the active mining area, has itself not been undermined previously, whilst being close enough to the relevant impact site to have similar climatic, geological, hydrogeological and vegetative conditions.

Reference sites are used as a comparative reference when determining whether any changes at impact sites are the result of natural (e.g. climatic or bush fire related) factors or whether the changes are the result of mining activities.

Reference and impact sites have been defined for the two upper aquifer systems underlying the Springvale mining area including:

- The perched swamp aquifer system; and
- The regional aquifer system.

3. Summary

The hydrographs of SPR38 and SPR1302 are presented in the section below. The historical longwalls are highlighted and the vertical dotted lines represent the reporting period from 1 October to 30 October when the depressurisation was observed.

SPR38 is located directly above the headings of LW427. SPR38 first recorded a depressurisation in the lower aquifer around the Lithgow seam in April 2019 when the headings for LW427 was being developed. No significant changes in the other aquifers were recorded during this period. In October 2020 when the extraction of LW427 came within 200m of SPR38, a depressurisation of all sensors was observed. Sensors #1 and #2 in the Banks wall sandstone recorded a decline of approximately 12m and 13m respectively. Sensors #3, #4, and #5 below the Mount York Claystone recorded a decline of approximately 20m, 27m and 5m respectively. Communication was lost to the lowest three sensors. At this point in time, the response is likely correlated to the mining activities.

SPR1302 is located approximately 100m directly south of LW428. The lower aquifers around the Lithgow seam at SPR1302 previously showed a depressurisation response during the extraction of LW425 between April to September 2019 and during LW426 in April 2020. Both these longwalls are over 600m away from the SPR1302 when these observations were made.
The depressurisation of the sensor at the Mount York Claystone was only observed recently in October 2020 during the extraction of LW427. The upper sensor #5 recorded a decline of 10m over the

reporting period. This depressurisation occurred after the longwall face was at its closest point to SPR1302.

Further investigative actions are not be required to comply with the SMP and WMP for LW424-427. There are no performance indicators in the SMP and WMP for LW424-427 associated with VWPs. This memo is just a notification of significant changes that were observed in the monitoring network.

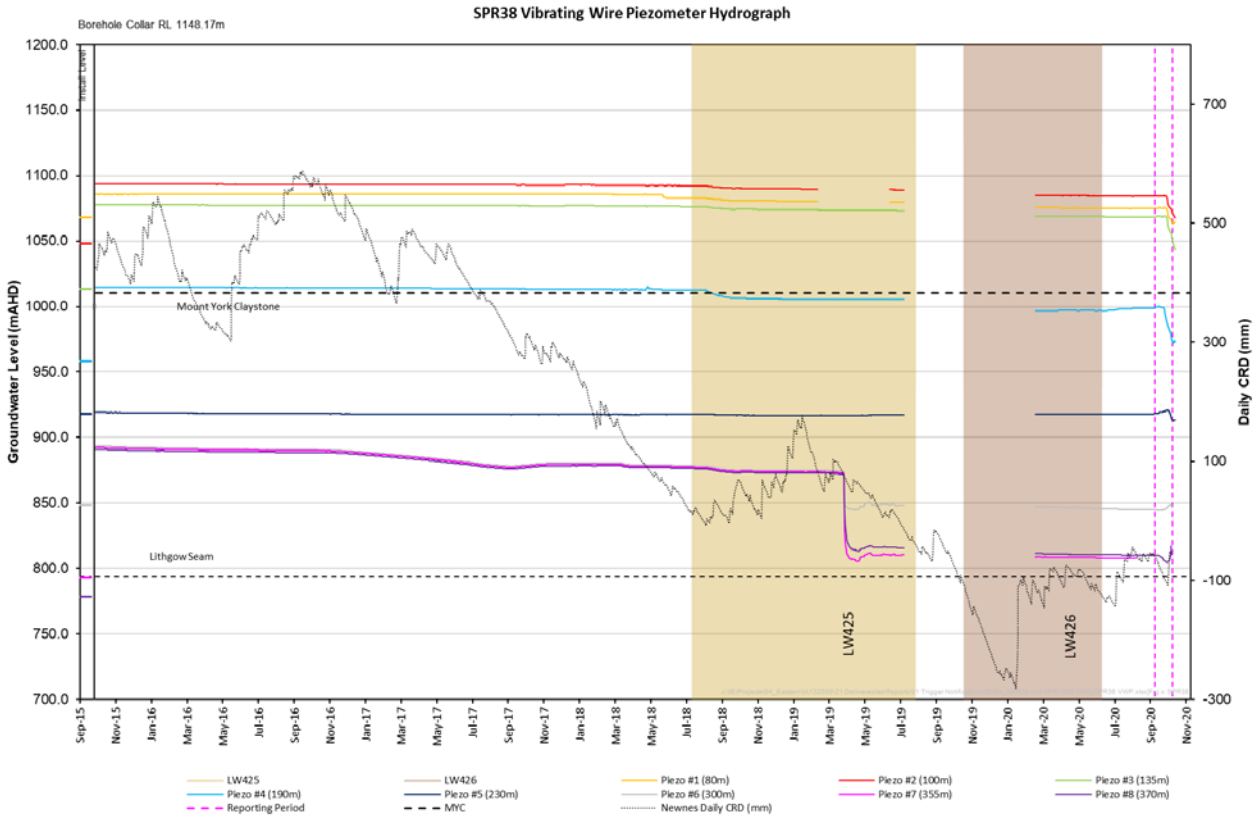

Figure 2: SPR38 Hydrograph

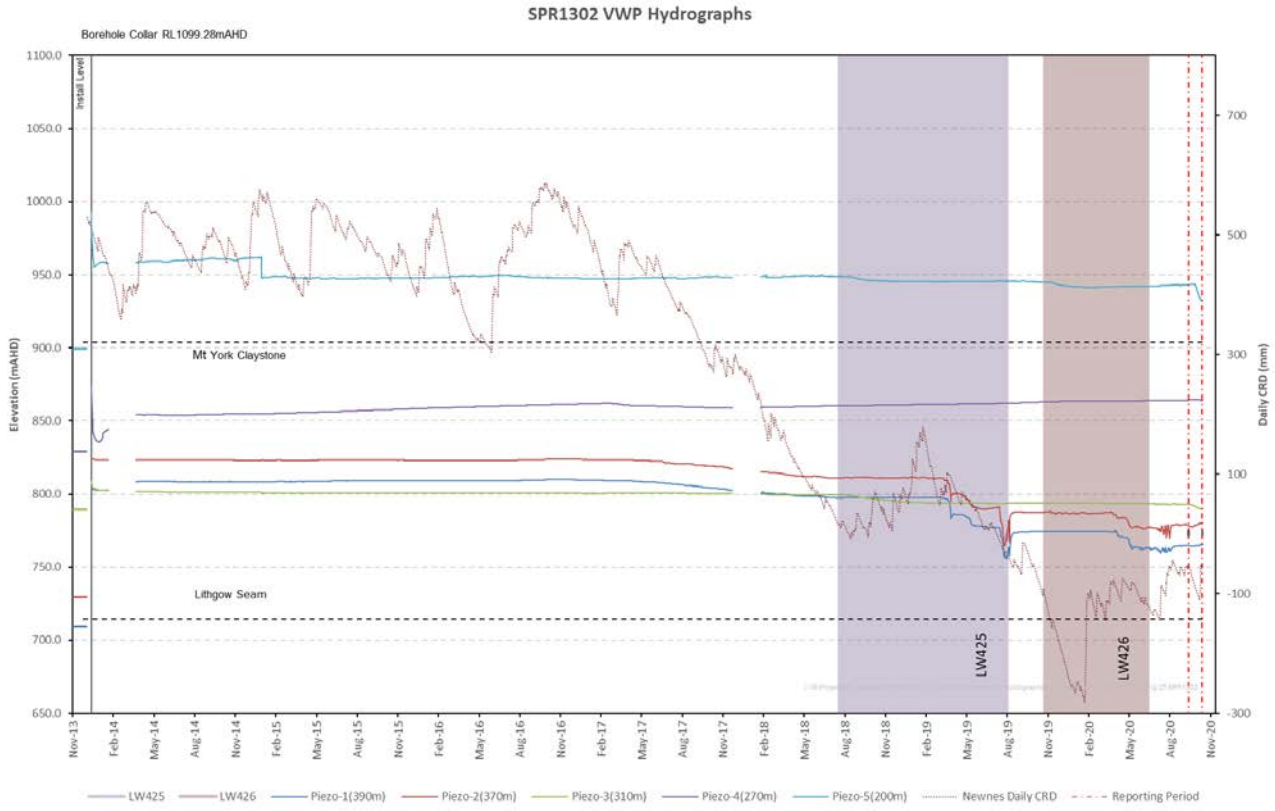

Figure 3: SPR1302 hydrograph

We trust this information is sufficient for your purposes, however should you require any further information or clarification please do not hesitate to contact our office.

Yours sincerely

Quan Bui

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References

Centennial 2018, Swamp Monitoring Program for LW424 to LW427, Centennial Coal May 2018

Centennial 2018a, Water Management Plan of Extraction Plan for LW424 to LW427, Centennial Coal May 2018

Table 14 - Impact Assessment Criteria and Trigger Action Response Plan

Key Element	Trigger Response	Condition Green	Condition Amber	Condition Red
Environment / Public Safety				
Piezometric Head Change (Water Resources – no greater subsidence impacts or environmental consequences than predicted in the EIS)	Trigger	Specified in the Swamp Monitoring Program	Specified in the Swamp Monitoring Program	Specified in the Swamp Monitoring Program
	Response	Specified in the Swamp Monitoring Program	Specified in the Swamp Monitoring Program	Specified in the Swamp Monitoring Program
Groundwater Quality Change (Water Resources – no greater subsidence impacts or environmental consequences than predicted in the EIS)	Trigger	Specified in the Swamp Monitoring Program	Specified in the Swamp Monitoring Program	Specified in the Swamp Monitoring Program
	Response	Specified in the Swamp Monitoring Program	Specified in the Swamp Monitoring Program	Specified in the Swamp Monitoring Program
Change in Surface Water Quality (Water Resources – reduction in water quality) (Water Resources - increase in erosion)	Trigger Note 1. Turbidity may be substituted for TSS, for field-instrument only measurement rounds, once an acceptable calibration between TSS and Turbidity (as NTU) is obtained.	TSS[1], pH and EC at downstream monitoring location is less than 80th percentile at reference site (greatest of all reference sites) for three consecutive monitoring events. 80th percentile (and 20th with respect to pH) at a reference site shall be calculated based on the previous 24 data points. Where Non-Detect, a value of the detection limit shall be	TSS[1], pH and EC at downstream monitoring location is greater than 80th percentile at reference site (greatest of all reference sites) for three consecutive monitoring events. 80th percentile (and 20th with respect to pH) at a reference site shall be calculated based on the previous 24 data points. Where Non-Detect, a value of the detection limit shall be	TSS[1] at downstream monitoring location exceeds 95th percentile at reference site (greatest of all reference sites) for three consecutive monitoring events. 80th percentile (and 20th with respect to pH) at a reference site shall be calculated based on the previous 24 data points. Where Non-Detect, a value of the detection limit shall be

Chart 1: Trigger Action Response Plan – Overview

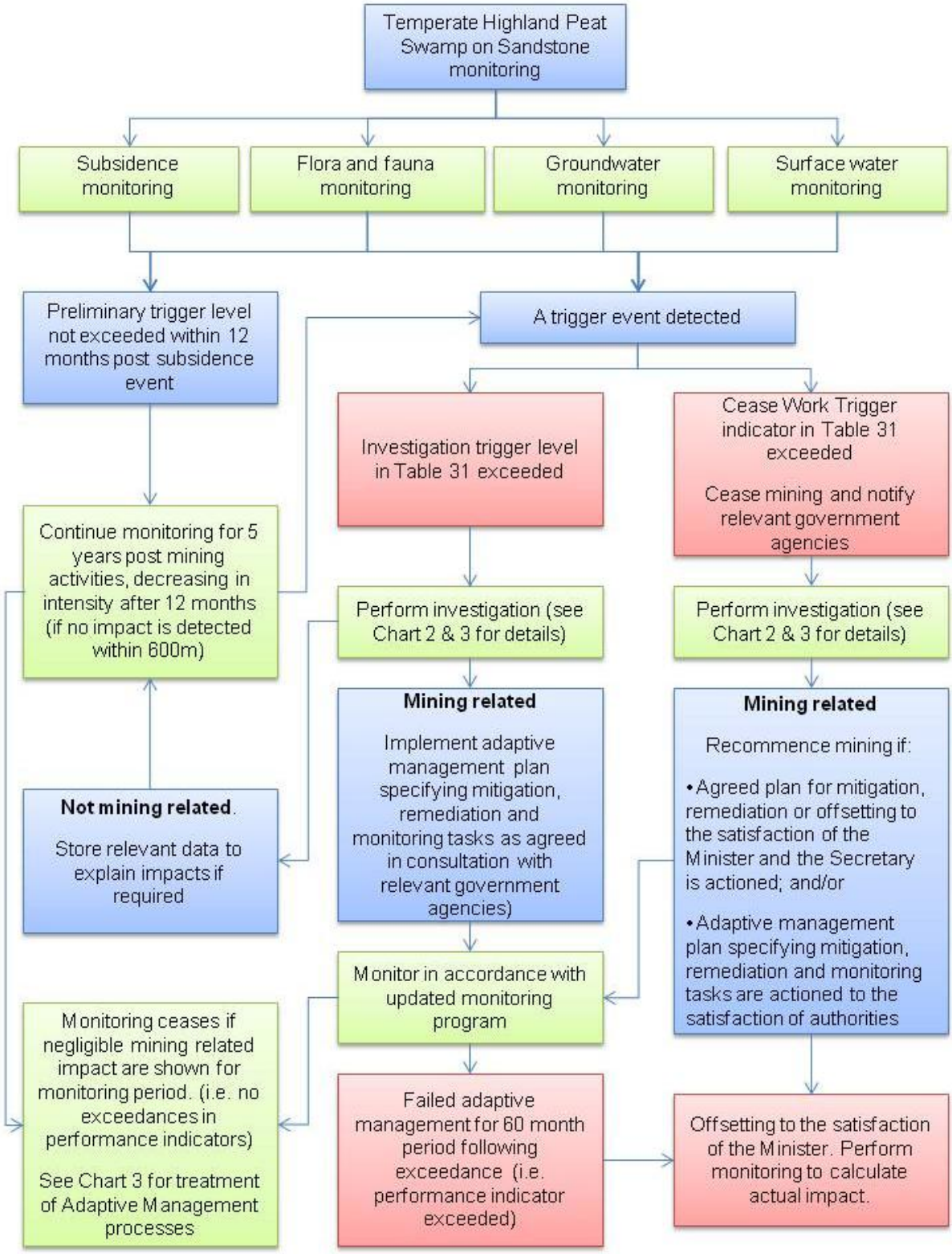

Chart 2: Trigger Action Response Plan – Management Measures

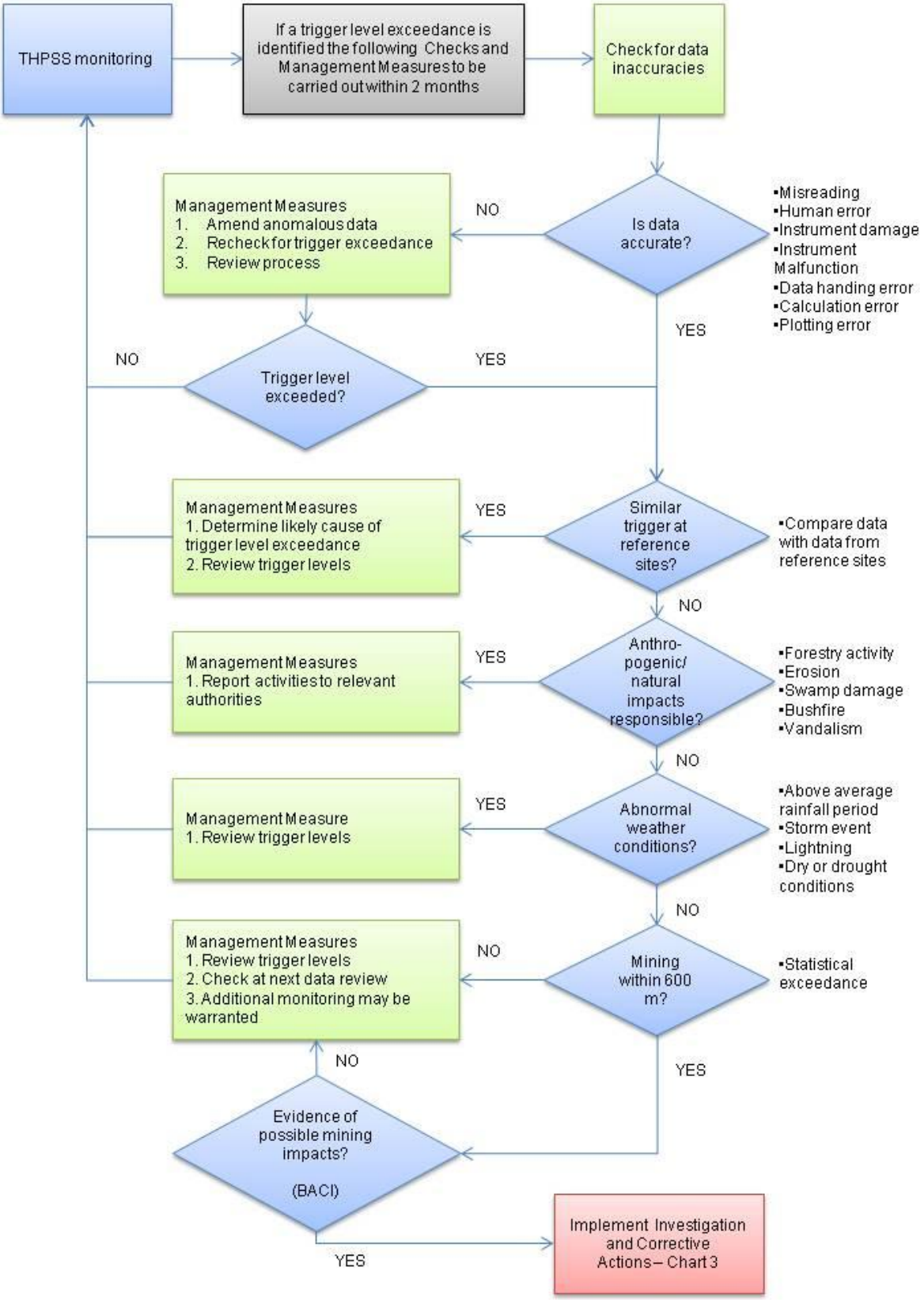

Chart 3: Trigger Action Response Plan – Corrective Actions