Site UCFL2 Site 1 (Removed from 2021 monitoring by UCMPL)

Site Attributes	
Date Sampled	02 December 2020
Approximate Easting	756688
Approximate Northing	6431941
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW1) at Ulan West commenced on the 19 May 2014. Longwall (LW1) at Ulan West completed in May 2015**
2020 Monitoring Photo	

Year	December 2015	December 2016	October 2017	February 2019	December 2020
Result	No perceptible change	No perceptible change	No perceptible change	No perceptible change	No perceptible change

Comments / Interpretation

- UCFL2 Site 1 is approximately located on eastern edge just outside of LW1. To date no perceptible change has been identified as a result of longwall mining at this monitoring site.
- During the 2020 inspection no evidence of subsidence related impacts were identified. Increased flood debris was noted.
- This site could be considered for removal from the post mining monitoring program of Ulan Creek tributaries due to no perceptible change since the completion of LW1 in May 2015.

Recommendations

- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Upstream	Downstream
2015		
2016		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2017		
2019		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		

Site UCFL2 Site 2 (Removed from 2021 monitoring by UCMPL)

Site Attributes	
Date Sampled	02 December 2020
Approximate Easting	756430
Approximate Northing	6432149
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW1) at Ulan West commenced on the 19 May 2014. Longwall (LW1) at Ulan West completed in May 2015**
2020 Monitoring Photo	

Year	December 2015	December 2016	October 2017	February 2019	December 2020
Results	No perceptible change	No perceptible change	No perceptible change	No perceptible change	No perceptible change

Comments / Interpretation

- UCFL2 Site 2 is approximately located towards the western edge of LW1. To date no perceptible change has been identified as a result of longwall mining at this monitoring site.
- During the 2020 inspection there was no evidence of subsidence related impacts identified. There was an increase in ground vegetation, additional flood debris within and along the banks of the flow line were observed.
- This site should be considered for removal from the post mining monitoring program of Ulan Creek tributaries due to no perceptible change since the completion of LW1 in May 2015.

Recommendations

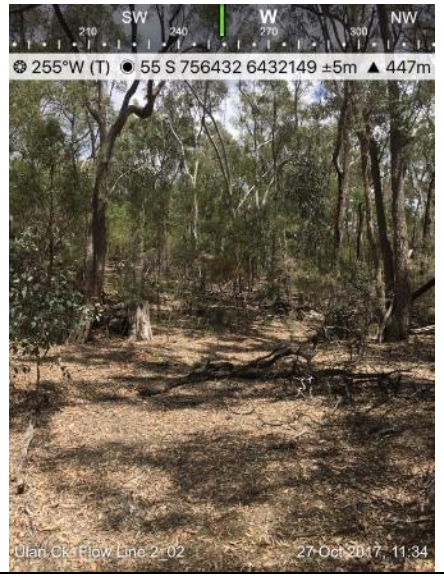
- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Upstream	Downstream
2015		
2016		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2017		
2019		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		

APPENDIX B – UCFL2

Site UCFL2 Site 1A (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	756323
Approximate Northing	6432193
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW2) at Ulan West commenced in May 2015. Longwall (LW2) at Ulan West completed in May 2016.**
2021 Monitoring Photo	

Year	October 2017	February 2019	December 2020	October 2021
Result	Perceptible impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	Perceptible impacts (no change)

Comments / Interpretation

- UCFL2 Site 1A (near site 2A) is above LW2 and was identified during the 2017 monitoring program. Perceptible impacts in the form of a potential ponding site and minor surface cracking were observed.
- During the 2020 inspection there was no perceptible change to historical cracking in the channel bed as previously recorded. There was observed infilling of the crack. There was an increase in ground vegetation, additional flood debris within and along the banks of the flow line observed.
- Continue to monitor infilling of crack with the channel bed.
- During the 2021 the crack could not be located, the site had not deteriorated since previous monitoring
- Remove from monitoring.

Recommendations

- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

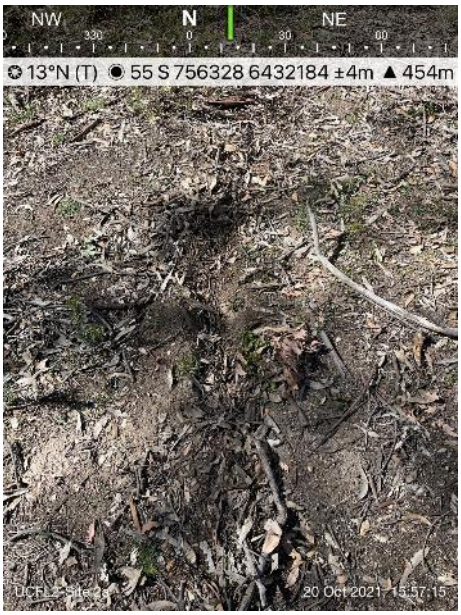
Year	Upstream	Downstream
2017		
2019		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		
2021		

APPENDIX B – UCFL2

Site UCFL2 Site 2A (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	756333
Approximate Northing	6432176
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW2) at Ulan West commenced in May 2015**. **Longwall (LW2) at Ulan West completed in May 2016**.
2021 Monitoring Photo	

Year	October 2017	February 2019	December 2020	October 2021
Result	Perceptible impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	Perceptible impacts (no change)

Comments / Interpretation

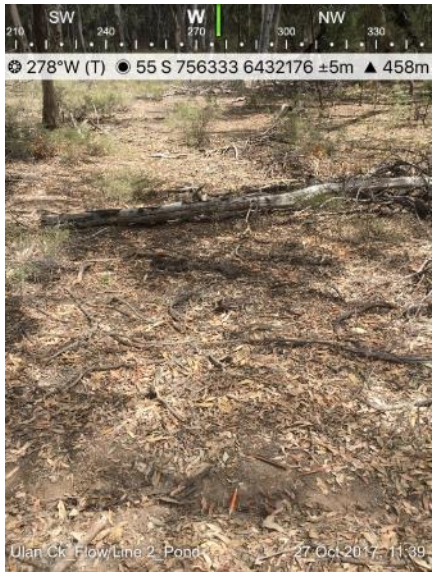
- UCFL2 Site 2A (near site 1A) is above LW2 and was identified during the 2017 monitoring program. Perceptible impacts in the form of a potential ponding site and minor surface cracking were observed.
- During the 2020 inspection no perceptible change to historical cracking, partial infilling of cracking, an increase in ground vegetation, additional flood debris within and along the banks of the flow line were observed.
- Continue to monitor infilling of crack with the channel bed noted 2020.
- Partial infilling of cracks noted in 2021 – had not deteriorated since 2020.
- Remove from monitoring

Recommendations

- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Upstream	Downstream
2017		
2019		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		
2021		

APPENDIX B – UCFL2

Site UCFL2 Site 3 (Removed from 2021 monitoring by UCMPL)

Site Attributes	
Date Sampled	02 December 2020
Approximate Easting	756190
Approximate Northing	6432179
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW2) at Ulan West commenced in May 2015**. **Longwall (LW2) at Ulan West completed in May 2016**.
2020 Monitoring Photo	

Year	December 2015	December 2016	October 2017	February 2019	December 2020
Results	No perceptible change	No perceptible change	No perceptible change	No perceptible change	No perceptible change

Comments / Interpretation

- UCFL2 Site 3 is centrally located above LW2. To date no perceptible change has been identified as a result of longwall mining at this monitoring site.
- During the 2020 inspection there was no evidence of subsidence related impacts identified. There was an increase in ground vegetation, additional flood debris within and along the banks of the flow line observed.
- This site could be considered for removal from the post mining monitoring program of Ulan Creek tributaries due to no perceptible change since the completion of LW2 in May 2016.

Recommendations

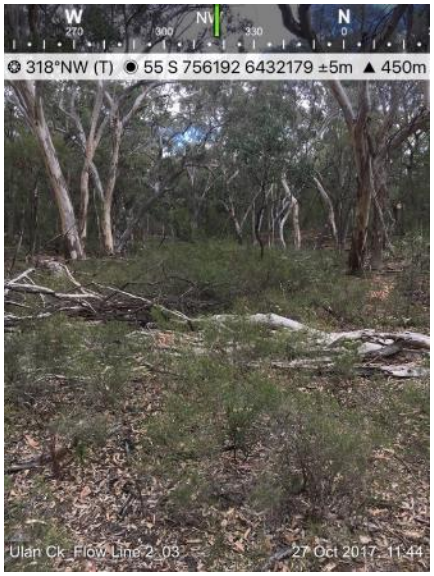
- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Upstream	Downstream
2015		
2016		

APPENDIX B – UCFL2

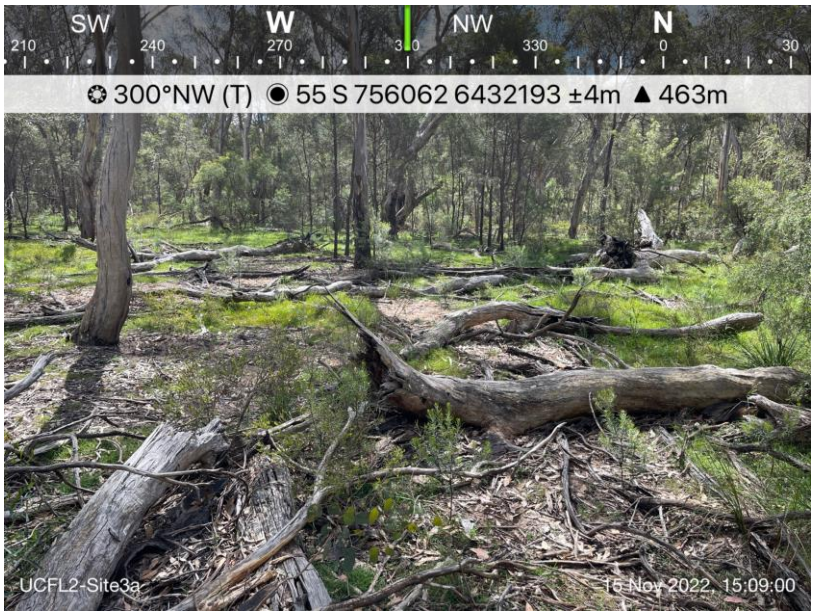
Year	Upstream	Downstream
2017		
2019		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		

APPENDIX B – UCFL2

Site UCFL2 Site 3A (Removed from 2023 monitoring by UCMPL)

Site Attributes	
Date Sampled	15 November 2022
Approximate Easting	756062
Approximate Northing	6432195
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW2) at Ulan West commenced in May 2015**. **Longwall (LW2) at Ulan West completed in May 2016**.
2022 Monitoring Photo	

Year	October 2017	February 2019	December 2020	October 2021	November 2022
Result	Perceptible impacts	Perceptible impacts	Perceptible impacts	Perceptible impacts (no change)*	Perceptible impacts (no change)*

Comments / Interpretation

- UCFL2 Site 3A is above LW2 towards the western edge of the longwall panel and was identified during the 2017 monitoring program. Perceptible impacts in the form of channel cracking were observed.
- During the 2019 inspection there were signs of potential tunnel erosion noted.
- During the 2020 inspection there were signs of increased tunnel erosion, although partial infilling was also observed.
- Partial infilling of cracks noted in 2021 – had not deteriorated since 2020.
- In 2022 the exact location of the erosion site was difficult to relocate due to increased ground vegetation and timber. The site in general appeared stable and past evidence of subsidence related impacts were not perceptible on the day of the inspection.

Recommendations

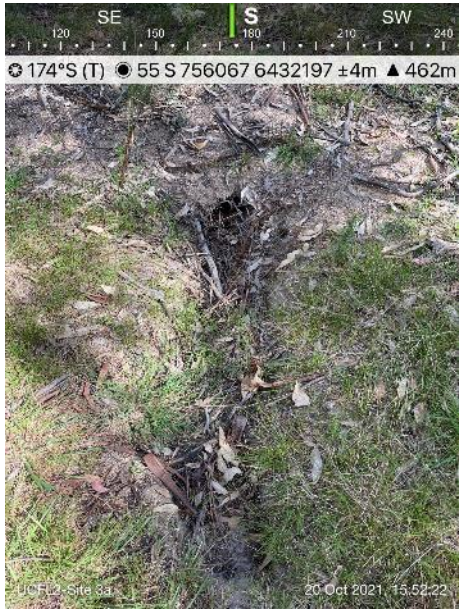
- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

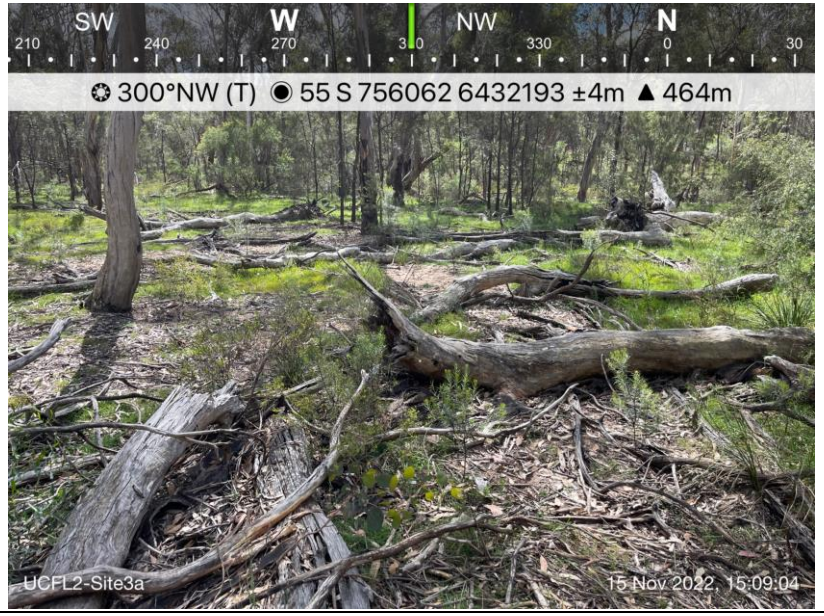
APPENDIX B – UCFL2

Year	Upstream	Downstream
2017		
2019		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		
2021		

APPENDIX B – UCFL2

Year	Upstream	Downstream
		

APPENDIX B – UCFL2

Site UCFL2 Site 4 (Removed from 2022 Monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	755680
Approximate Northing	6432216
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW3) at Ulan West commenced on the 26 June 2016. Longwall (LW3) at Ulan West completed in October 2017.**
2021 Monitoring Photo	

Year	December 2015	December 2016	October 2017	February 2019	December 2020	October 2021
Results	No perceptible change	No perceptible change	No perceptible change	No perceptible change	No perceptible change	No perceptible change

Comments / Interpretation

- UCFL2 Site 4 is approximately located towards the western edge of LW3. To date no perceptible change has been identified as a result of longwall mining at this monitoring site.
- During the 2020 inspection there was no evidence of subsidence related impacts identified. There was an increase in ground vegetation, additional flood debris within and along the banks of the flow line observed.
- This site could be considered for removal from the post mining monitoring program of Ulan Creek tributaries due to no perceptible change since the completion of LW3 in October 2017.
- During the 2021 there was no perceptible change to previous monitoring.
- Remove from monitoring

Recommendations

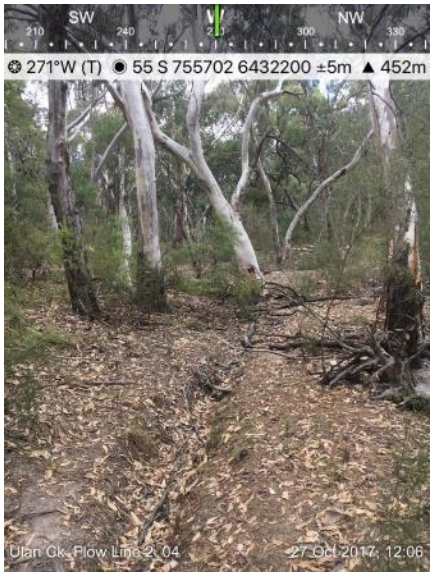
- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Upstream	Downstream
2015		
2016		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2017		
2019	 Notes: GPS locations incorrect on image due to loss of GPS signal	 Notes: GPS locations incorrect on image due to loss of GPS signal

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		
2021		

APPENDIX B – UCFL2

Site UCFL2 Site 4A (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	755978
Approximate Northing	6432183
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW3) at Ulan West commenced on the 26 June 2016. Longwall (LW3) at Ulan West completed in October 2017.**
2021 Monitoring Photo	

Year	October 2017	February 2019	December 2020	October 2021
Result	Perceptible impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	Perceptible impacts (no change)*

Comments / Interpretation

- UCFL2 Site 4A is above LW3 towards the eastern edge of the longwall panel and was identified during the 2017 monitoring program. Perceptible impacts in the form of channel cracking were observed.
- During the 2020 inspection there was no perceptible change to historical cracking previously recorded. There was partial observed infilling. There was an increase in ground vegetation, additional flood debris within and along the banks of the flow line observed.
- *Could not locate crack in 2021 – site had not deteriorated since 2020.
- Remove from monitoring.

Recommendations

- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

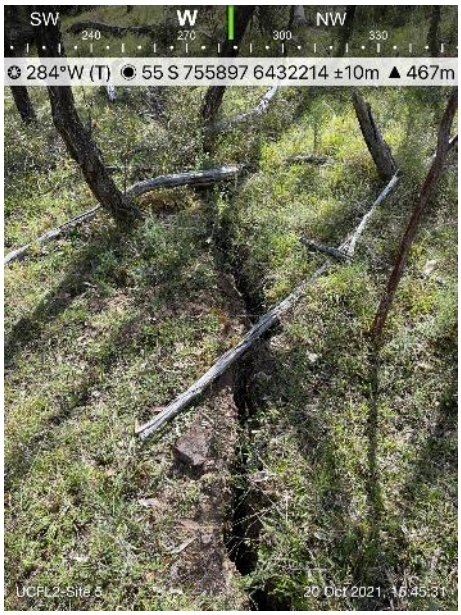
Year	Upstream	Downstream
2017		
2019		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		
2021		

APPENDIX B – UCFL2

Site UCFL2 Site 5 (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	755902
Approximate Northing	6432170
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW4) at Ulan West completed in December 2018.**
2021 Monitoring Photo	

Year	February 2019	December 2020	October 2021	
Result	Perceptible Impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	

Comments / Interpretation

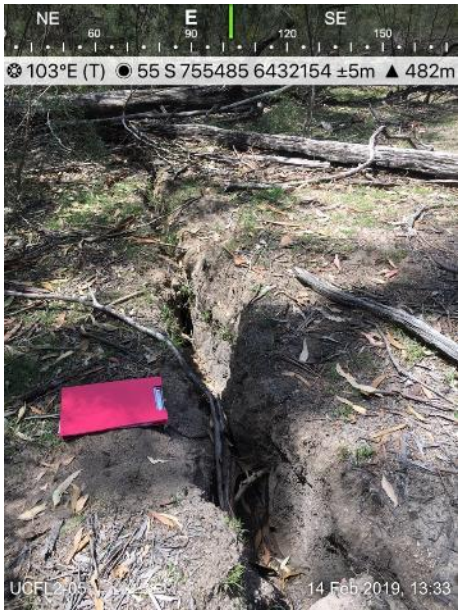
- UCFL2 Site 5 is located above LW4 near the eastern edge of the panel and was added to the monitoring program in 2019. This site is located well above the flow line.
- During the 2019 inspection, there was evidence of subsidence related impacts including a small step feature and cracking of approximately 200mm – 250mm in height along the LHB (approx. 70-80m in length)
- During the 2020 inspection there was no perceptible change to historical cracking previously recorded. There was no observed infilling.
- During the 2021 there was no perceptible change to previously noted impacts.
- Remove from monitoring

Recommendations

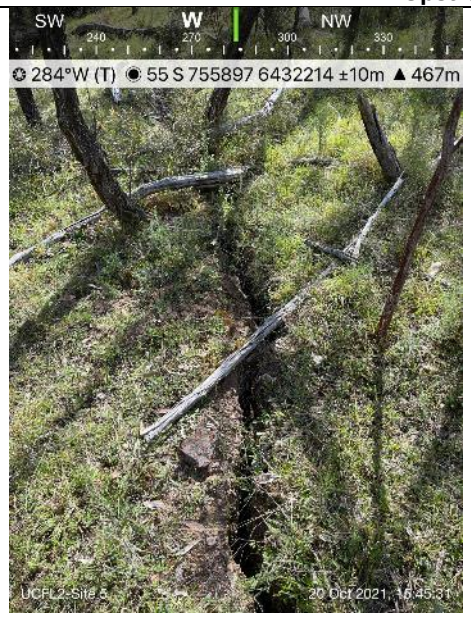
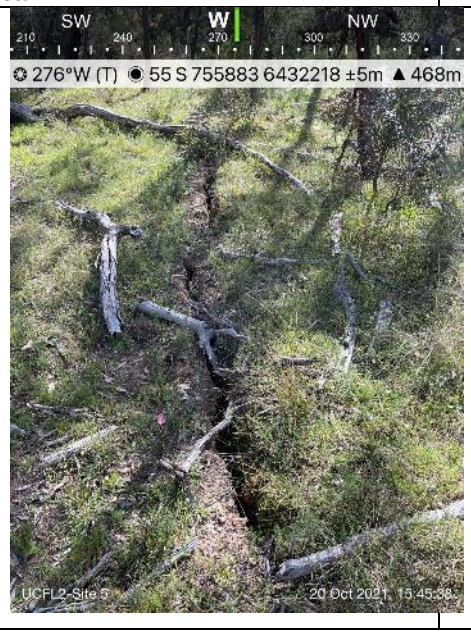
- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

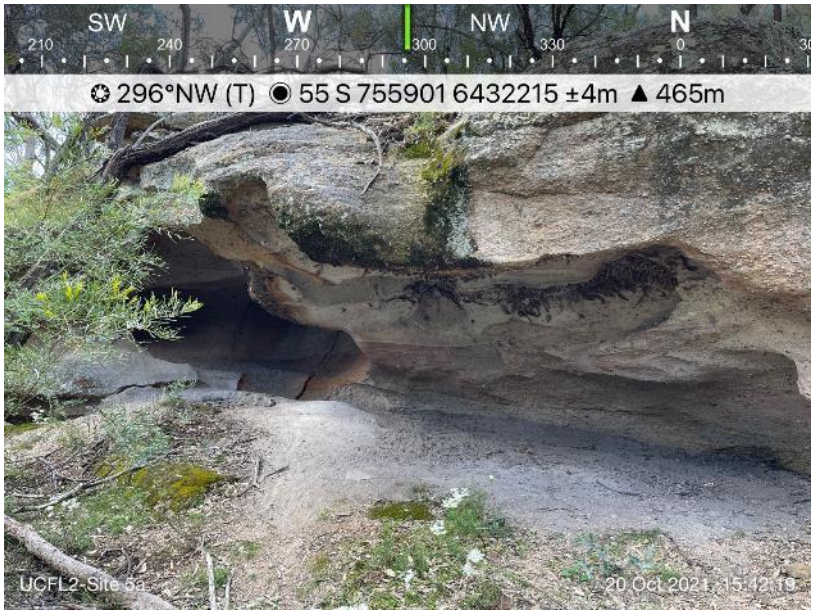
Year	Upstream	Downstream
2019		
2020		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2021	 	

APPENDIX B – UCFL2

Site UCFL2 Site 5A (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	755902
Approximate Northing	6432206
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW3) at Ulan West commenced on the 26 June 2016. Longwall (LW3) at Ulan West completed in October 2017.**
2021 Monitoring Photo	

Year	October 2017	February 2019	December 2020	October 2021
Result	Perceptible impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	Perceptible impacts (no change)

Comments / Interpretation

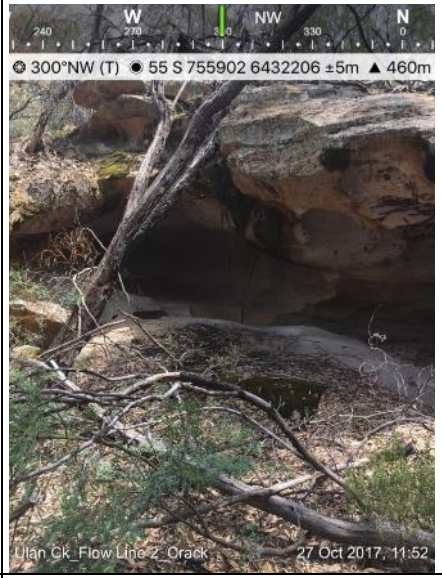
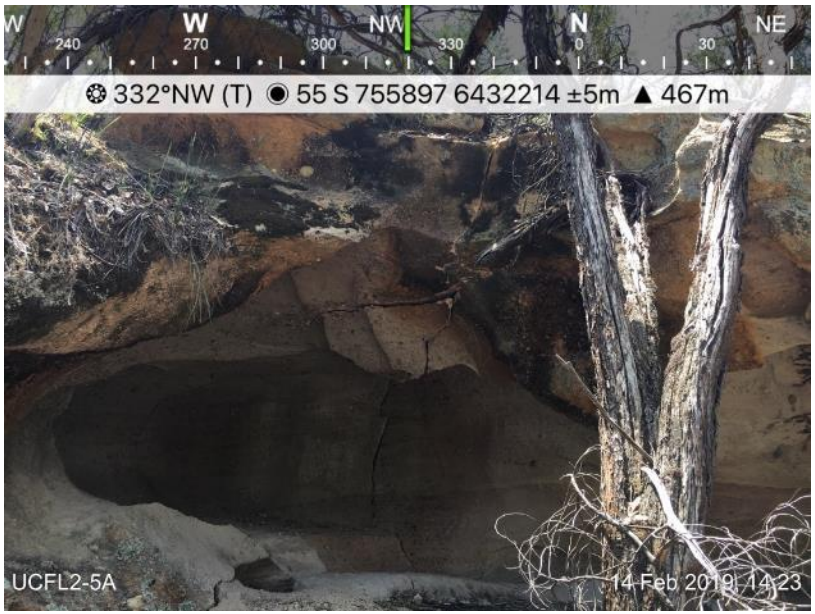
- UCFL2 Site 5A is above LW3 towards the middle of the longwall panel and was identified during the 2017 monitoring program. Perceptible impacts in the form of bedrock cracking with a small overhang above the flow line was observed.
- During the 2019 inspection cracking appeared noticeable in the bedrock, with no evidence of further instabilities or cracking.
- During the 2020 inspection there was no perceptible change to historical cracking previously recorded.
- This site could be considered for removal from the post mining monitoring program of Ulan Creek tributaries due to no perceptible change to historical impacts since the completion of LW3 in October 2017.
- During the 2021 there was no perceptible change to previously noted impacts.
- Remove from monitoring.

Recommendations

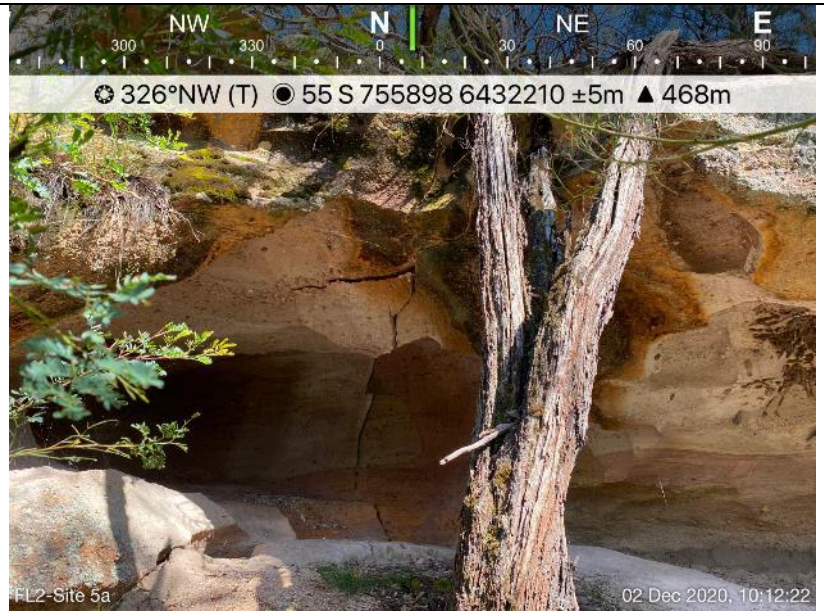
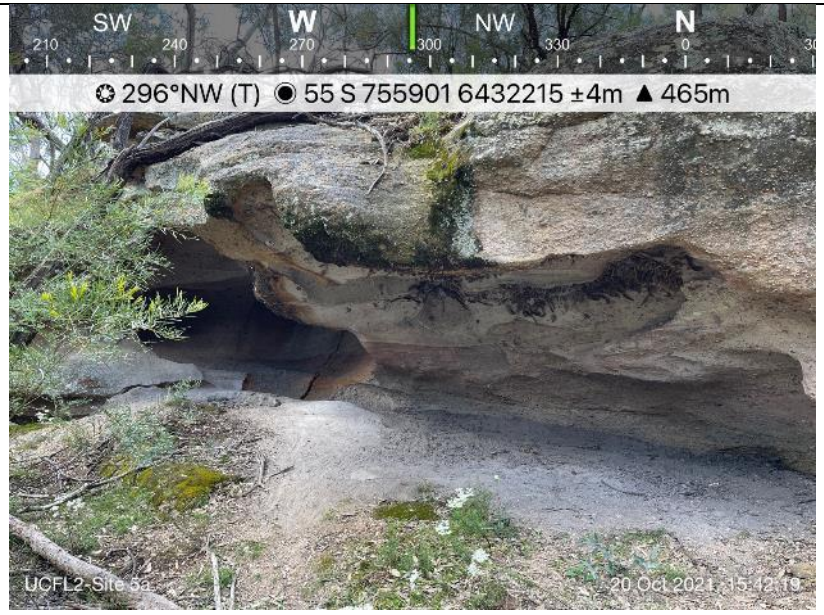
- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Upstream	Downstream
2017	 	
2019		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		
2021		

APPENDIX B – UCFL2

Site UCFL2 Site 6 (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	755485
Approximate Northing	6432154
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW4) at Ulan West completed in December 2018.**
2021 Monitoring Photo	

Year	February 2019	December 2020	October 2021	
Result	Perceptible Impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	

Comments / Interpretation

- UCFL2 Site 6 is located above LW4 near the eastern edge of the panel and was added to the monitoring program in 2019.
- During the 2019 inspection, there was evidence of subsidence related impacts including minor uplifting noted in the channel bed.
- During the 2020 inspection there was almost no perceptible change to historical cracking previously recorded. There was partial observed infilling. Increased flood debris and ground vegetation was noted.
- Continue to monitor infilling of crack with the channel bed. Review options for remedial works.
- During the 2021 there was no perceptible change to previously noted impacts.
- Remove from monitoring

Recommendations

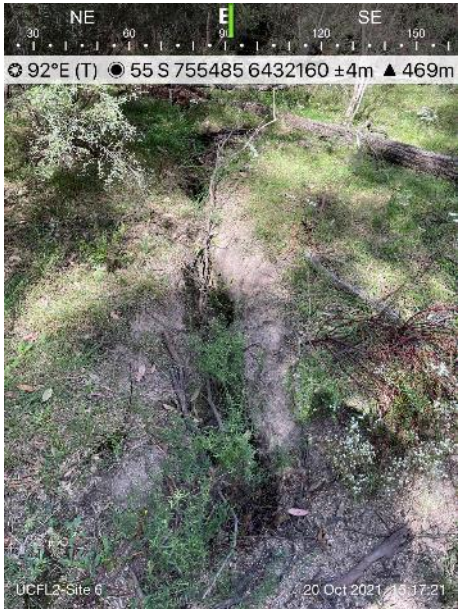
- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Upstream	Downstream
2019		
2020		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2021		
2021		

APPENDIX B – UCFL2

Site UCFL2 Site 6A (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2012
Approximate Easting	755865
Approximate Northing	6432180
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW3) at Ulan West commenced on the 26 June 2016. Longwall (LW3) at Ulan West completed in October 2017.**
2021 Monitoring Photo	

Year	October 2017	February 2019	December 2020	October 2021
Result	Perceptible impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	Perceptible impacts (no change)

Comments / Interpretation

- UCFL2 Site 6A is above LW3 towards the middle of the longwall panel and was identified during the 2017 monitoring program. Perceptible impacts in the form of channel cracking were observed.
- During the 2020 inspection there was no perceptible change to historical cracking previously recorded. There was however infilling of the crack observed. Increased ground vegetation was noted.
- Continue to monitor infilling of crack within the channel bed.
- During the 2021 there was no perceptible change to previously noted impacts (previous cracking could not be located in 2021).
- Remove from monitoring

Recommendations

- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Upstream	Downstream
2017		
2019		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		
2021		

APPENDIX B – UCFL2

Site UCFL2 Site 7 (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	755385
Approximate Northing	6432099
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW4) at Ulan West completed in December 2018.**
2021 Monitoring Photo	

Year	February 2019	December 2020	October 2021	
Result	Perceptible Impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	

Comments / Interpretation

- UCFL2 Site 7 is located above LW4 near the center of the panel and was added to the monitoring program in 2019.
- During the 2019 inspection, there was evidence of subsidence related impacts including minor uplifting noted in the channel bed including tree roots uplifted within the channel bed. A mature eucalypt tree had also recently fallen across the flow line at this location.
- During the 2020 inspection there was no perceptible change to historical impacts previously recorded. There was increased ground vegetation and flood debris noted.
- During the 2021 there was no perceptible change to previously noted impacts.
- Remove from monitoring.

Recommendations

- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Upstream	Downstream
2019		
2019		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		
2021		

APPENDIX B – UCFL2

Site UCFL2 Site 7A (Removed from 2023 monitoring by UCMPL)

Site Attributes	
Date Sampled	15 November 2022
Approximate Easting	755787
Approximate Northing	6432196
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW3) at Ulan West commenced on the 26 June 2016. Longwall (LW3) at Ulan West completed in October 2017.**
2022 Monitoring Photo	

Year	October 2017	February 2019	December 2020	October 2021	November 2022
Result	Perceptible impacts	Monitor perceptible impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	Perceptible impacts (no change)

Comments / Interpretation

- UCFL2 Site 7A is above LW3 towards the middle of the longwall panel and was identified during the 2017 monitoring program. Perceptible impacts in the form of channel cracking and cracking along the banks were observed.
- During the 2019 inspection, there were signs of active slumping and movement occurring since the 2017 monitoring.
- During the 2020 inspection there was no perceptible change to historical impacts previously recorded in 2019. There was increased ground vegetation and flood debris noted.
- During the 2022 there was no perceptible change to previously noted impacts, although the vegetation had increased which hindered observations.
- Remove from monitoring

Recommendations

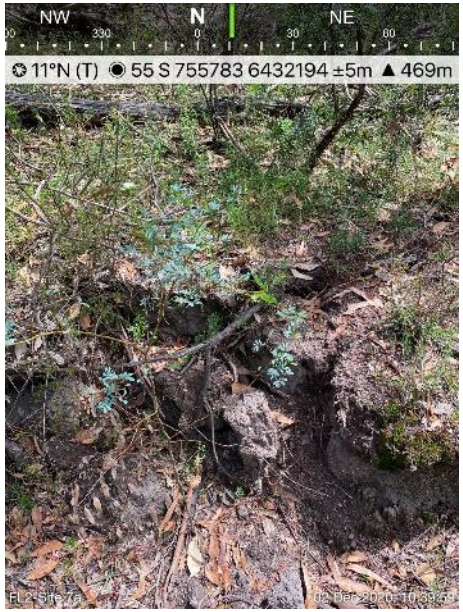
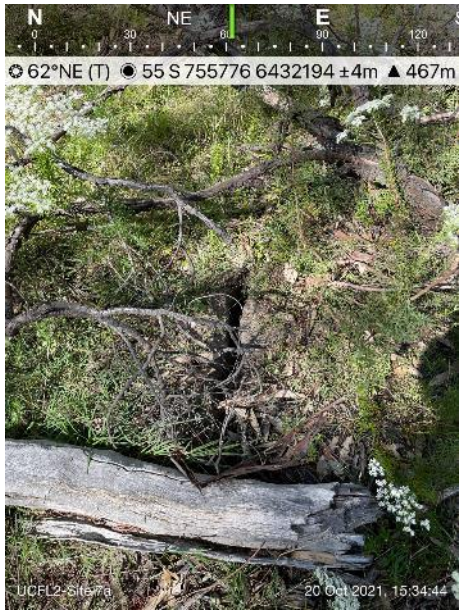
- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

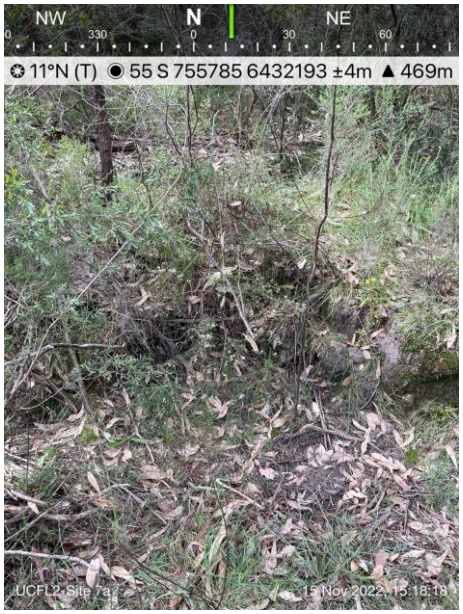
APPENDIX B – UCFL2

Year	Upstream
2017	
2019	 

APPENDIX B – UCFL2

Year	Upstream	
2020		
2021		

APPENDIX B – UCFL2

Year	Upstream	
2022		

APPENDIX B – UCFL2

Site UCFL2 Site 8 (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	755252
Approximate Northing	6432545
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW4) at Ulan West completed in December 2018.**
2021 Monitoring Photo	

Year	February 2019	December 2020	October 2021	
Result	Perceptible Impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	

Comments / Interpretation

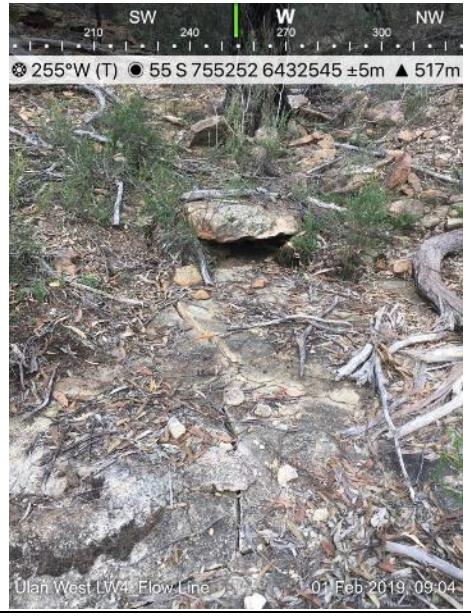
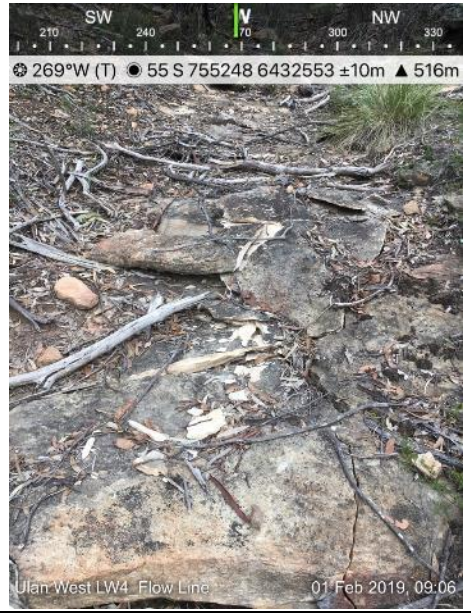
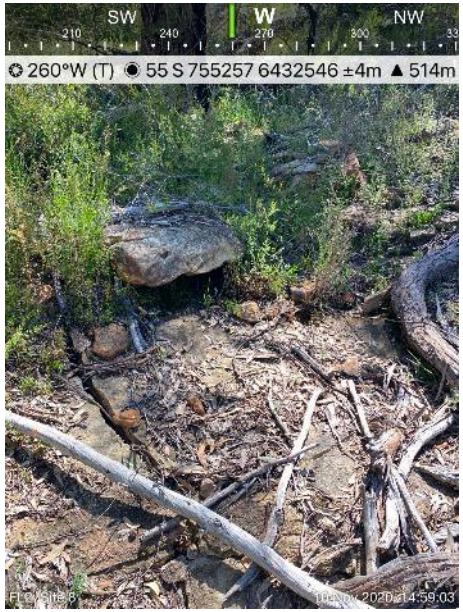
- UCFL2 Site 8 is located above LW4 near the western edge of the panel and was added to the monitoring program in 2019.
- During the 2019 inspection, there was evidence of subsidence related impacts including cracking of the bedrock material within the channel bed.
- During the 2020 inspection there was no perceptible change to historical impacts previously recorded.
- During the 2021 inspection there was no perceptible change to historical impacts previously recorded.
- Remove from monitoring

Recommendations

- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

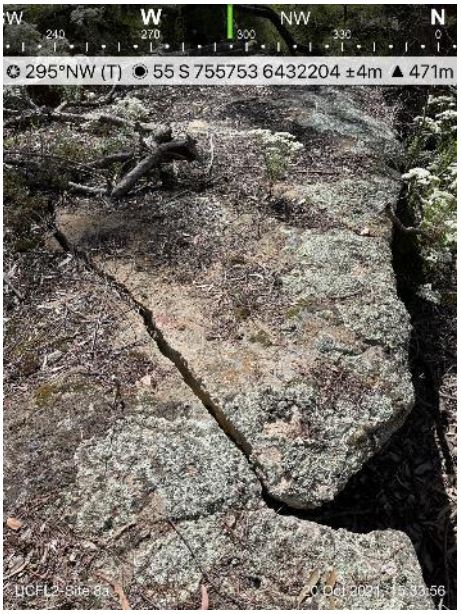
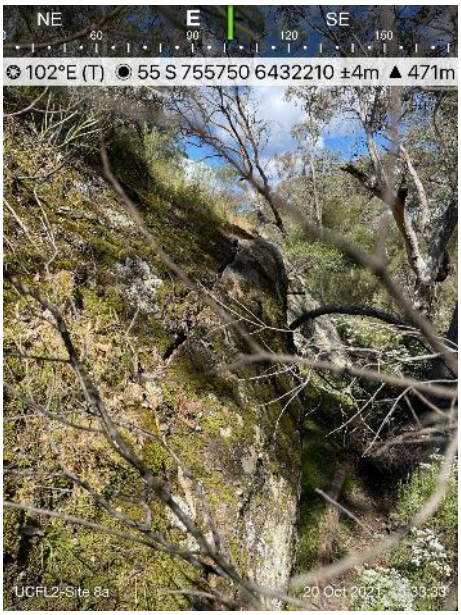
Year	Upstream/Downstream
2019	  
2020	 

APPENDIX B – UCFL2

2021	 
2021	  

APPENDIX B – UCFL2

Site UCFL2 Site 8A (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	755767
Approximate Northing	6432206
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW3) at Ulan West commenced on the 26 June 2016. Longwall (LW3) at Ulan West completed in October 2017.**
2021 Monitoring Photo	 

Year	October 2017	February 2019	December 2020	October 2021
Result	Perceptible impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	Perceptible impacts (no change)*

Comments / Interpretation

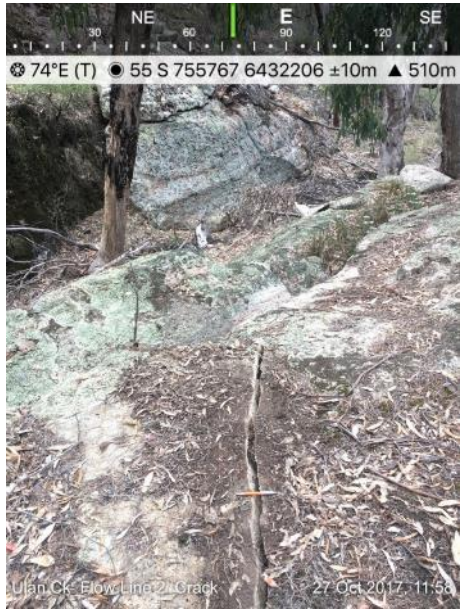
- UCFL2 Site 8A is above LW3 towards the middle of the longwall panel and was identified during the 2017 monitoring program. Perceptible impacts in the form of bedrock cracking above the channel on both the LHB and RHB were observed.
- During the 2019 inspection, there was no observed changes to the bedrock cracking since the 2017 monitoring.
- During the 2020 inspection there was no perceptible change to historical impacts previously recorded, however an additional impact (surface cracking) was identified along the flowline between sites 7A & 8A.
- Due to discovery of cracking along the flowline in 2020, review options for remedial repairs of the erosion hole within the channel bed and continue to monitor (could not locate in 2021).
- During the 2021 there was no perceptible change to previously noted impacts at Site 8A (discontinue monitoring)
- *Until confirmation of downstream cracking has remained unchanged – continue monitoring

Recommendations

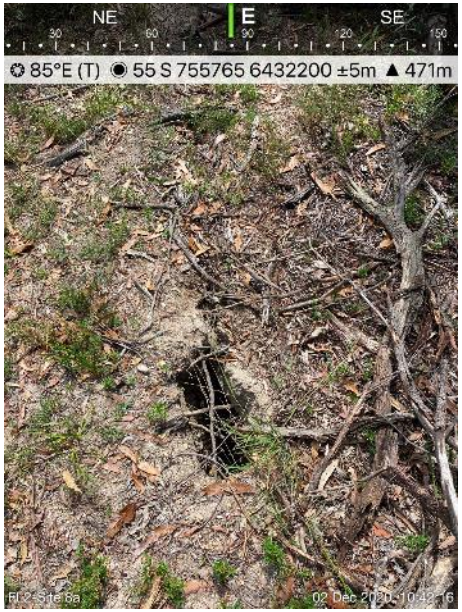
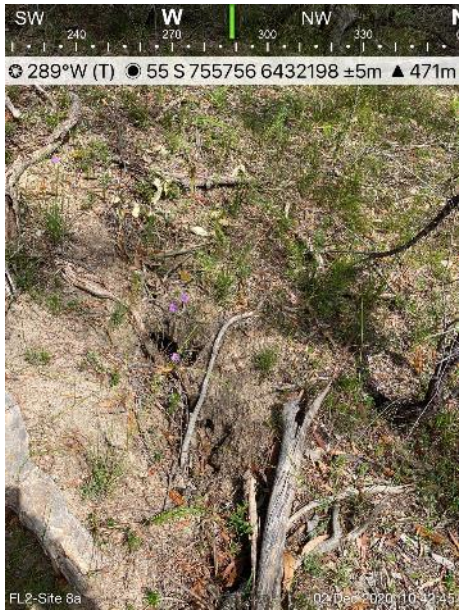
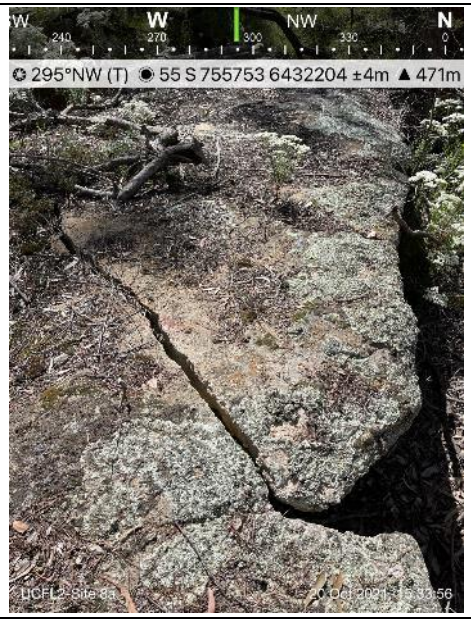
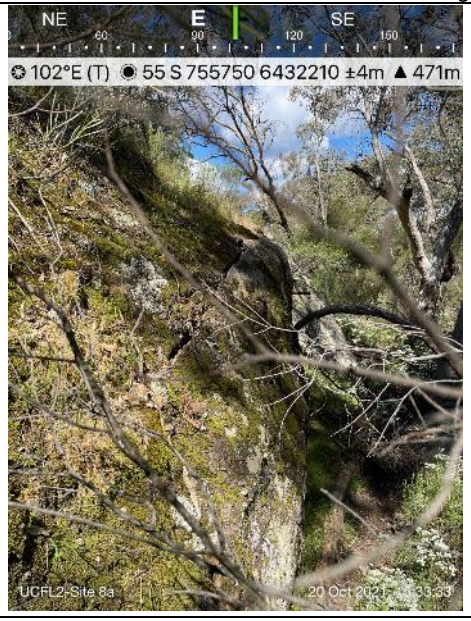
- If unchanged and past two year recommend remove from annual monitoring program (yes/**no**)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Downstream
2017	
2019	 

APPENDIX B – UCFL2

Year	Downstream
2020	   Recently identified cracking within flowline Cracking associcted with 8A
2021	 

Site UCFL2 Site 9 (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	755287
Approximate Northing	6432096
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW4) at Ulan West completed in December 2018.**
2021 Monitoring Photo	

Year	February 2019	December 2020	October 2021	
Result	Perceptible impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	

Comments / Interpretation

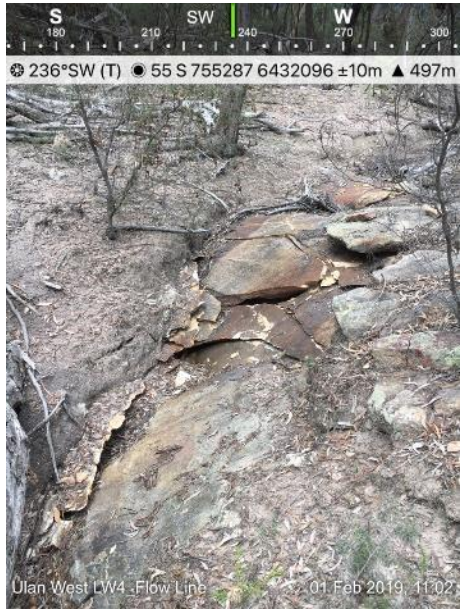
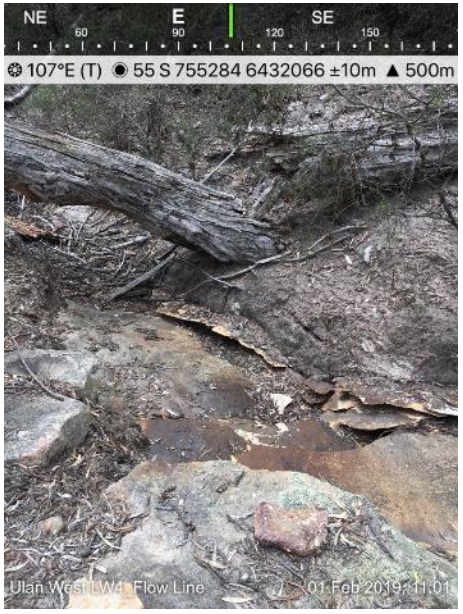
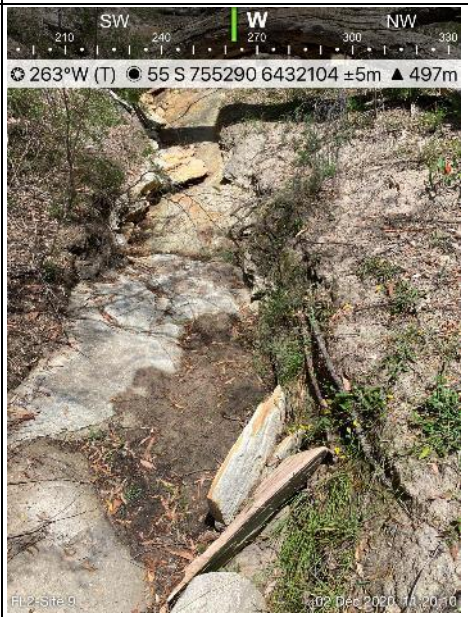
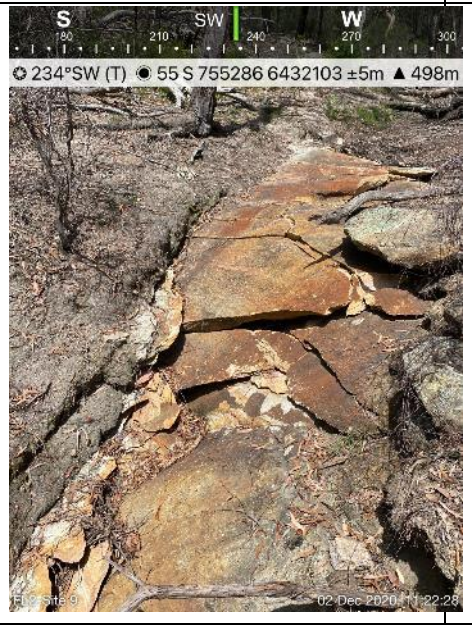
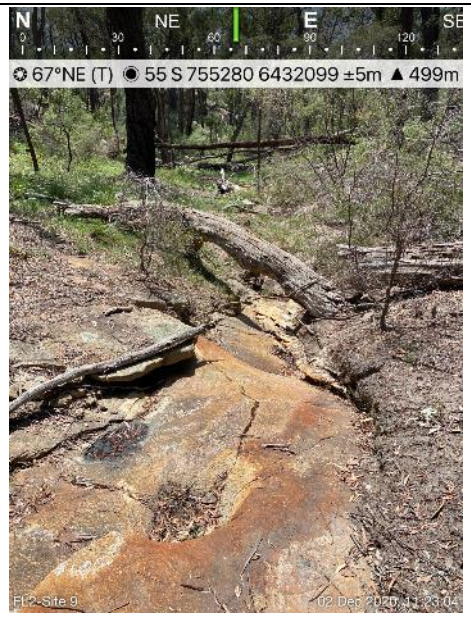
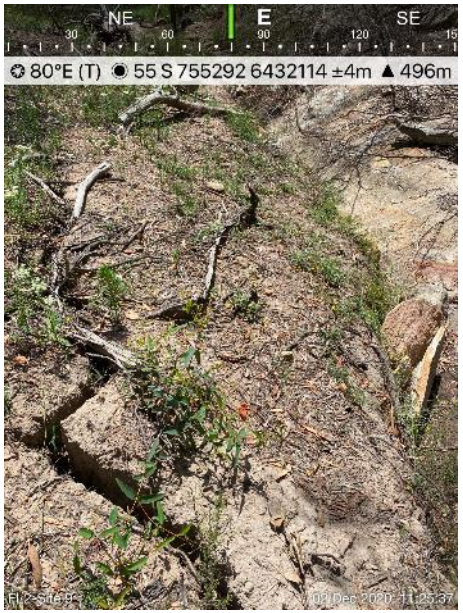
- UCFL2 Site 9 is located above LW4 towards the western edge of the panel and was added to the monitoring program in 2019.
- During the 2019 inspection, there was evidence of subsidence related impacts including cracking of the bedrock material within the channel bed.
- During the 2020 inspection there was no perceptible change to historical impacts previously recorded, with no evidence of infilling. Dislodged rock material had been transported downstream approximately 10m. Additional flood debris noted downstream.
- During the 2021 there was no perceptible change to previously noted impacts.
- Remove from monitoring.

Recommendations

- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

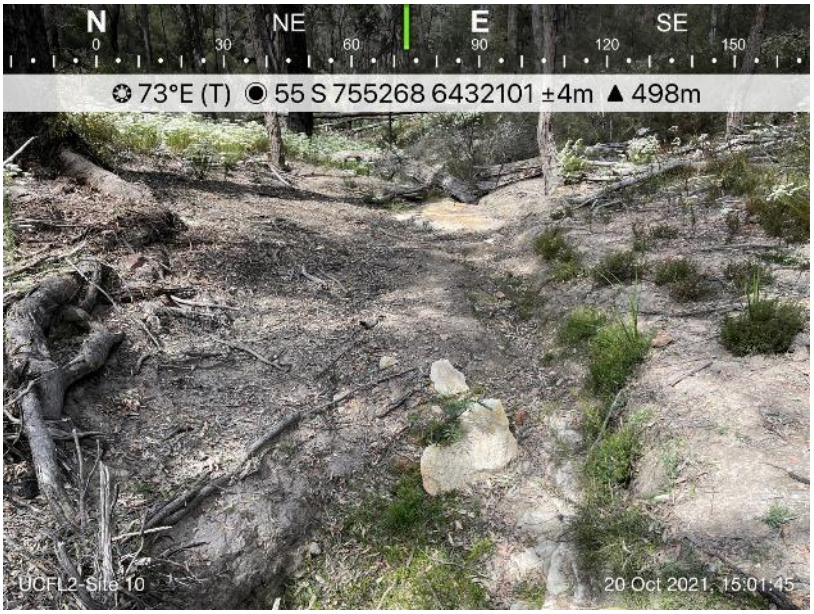
Year	Upstream	Downstream
2019		
2020	 	 

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		
2021		

APPENDIX B – UCFL2

Site UCFL2 Site 10 (Removed from 2022 monitoring by UCMPL)

Site Attributes	
Date Sampled	20 October 2021
Approximate Easting	755275
Approximate Northing	6432089
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW4) at Ulan West completed in December 2018.**
2021 Monitoring Photo	

Year	February 2019	December 2020	October 2021	
Result	Perceptible Impacts	Perceptible impacts (no change)	Perceptible impacts (no change)	

Comments / Interpretation

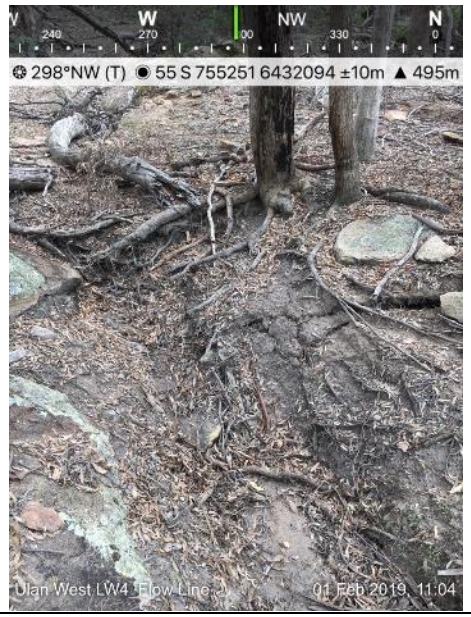
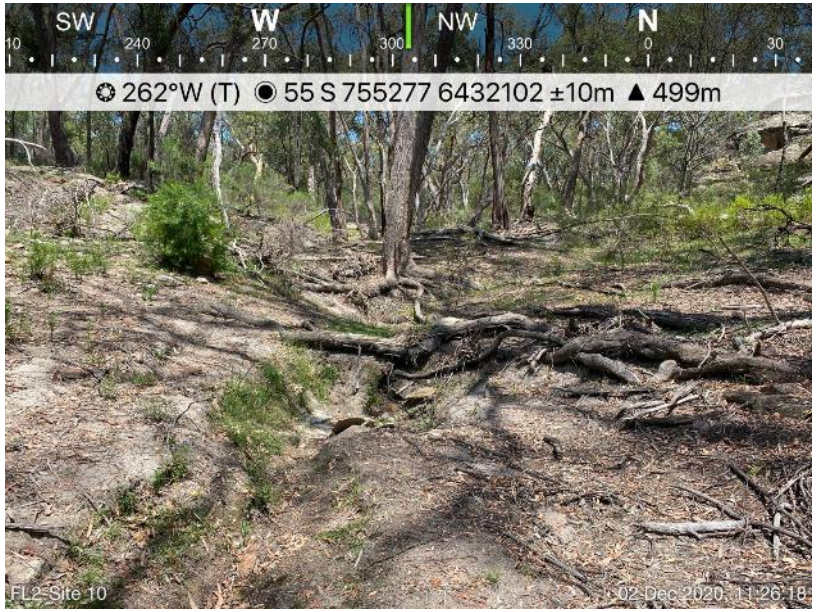
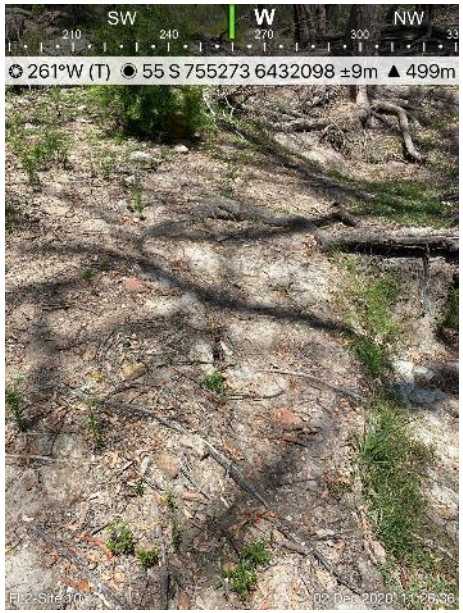
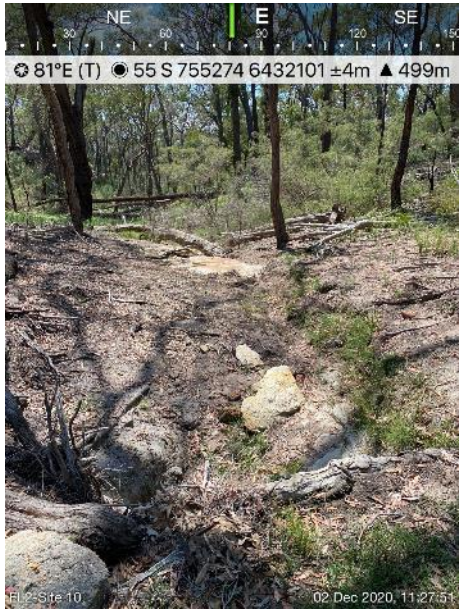
- UCFL2 Site 10 is located above LW4 towards the western edge of the panel and was added to the monitoring program in 2019.
- During the 2019 inspection, there was evidence of subsidence related impacts including minor uplifting noted in the channel bed, cracking along the RHB/LHB and uplifting of tree roots within the channel bed.
- During the 2020 inspection there was no perceptible change to historical impacts previously recorded, although the cracking along the edges appeared to be infilling. Also dislodged sandstone rock material also noted in the flowline.
- During the 2021 there was no perceptible change to previously noted impacts.
- Remove from monitoring.

Recommendations

- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Upstream		Downstream
2019			
2020			

APPENDIX B – UCFL2

Year	Upstream	Downstream
2021		

APPENDIX B – UCFL2

Site UCFL2 Site 11 (Removed from 2023 monitoring by UCMPL)

Site Attributes	
Date Sampled	15 November 2022
Approximate Easting	755275
Approximate Northing	6432089
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW5) at Ulan West completed in June 2020.**
2022 Monitoring Photo	

Year	December 2020	October 2021	November 2022	
Result	Perceptible impacts*	Perceptible impacts* (no change)	Perceptible impacts* (no change)	

Comments / Interpretation

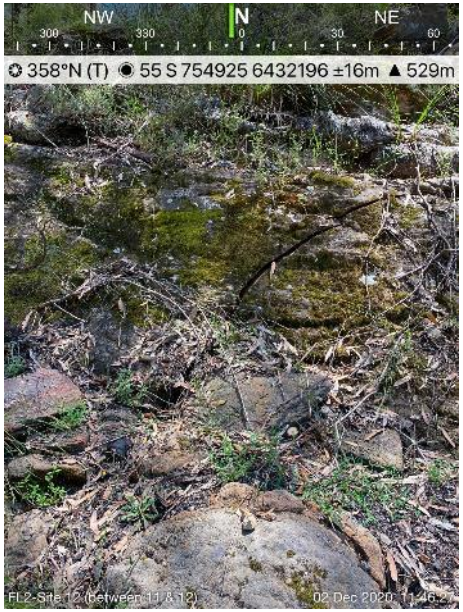
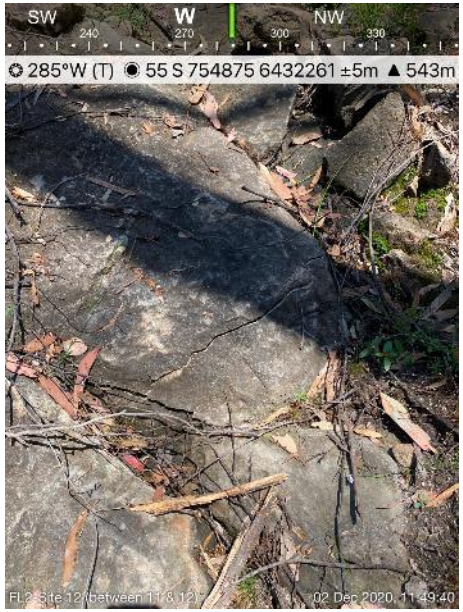
- UCFL2 Site 11 is located above LW5 towards the eastern edge of the panel and was added to the monitoring program in 2020.
- During the 2020 inspection there was no evidence of subsidence related impacts, with no perceptible change to the flow line identified as a result of longwall mining at this monitoring site. Flood debris was also noted at this site.
- *In 2020 small, isolated cracking of the bedrock within the flowline between monitoring sites 11 and 12 was noted.
- During the 2022 there was no perceptible change when compared to 2021. * Minor cracking in bedrock downstream (between Site 12 and 11) noted in 2020 remained unchanged in 2021 and 2022. Increased vegetation in 2022 hindered observations along the flow line outside of exposed bedrock.
- Remove from monitoring.

Recommendations

- If unchanged and past two year recommend remove from annual monitoring program (**yes**/no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

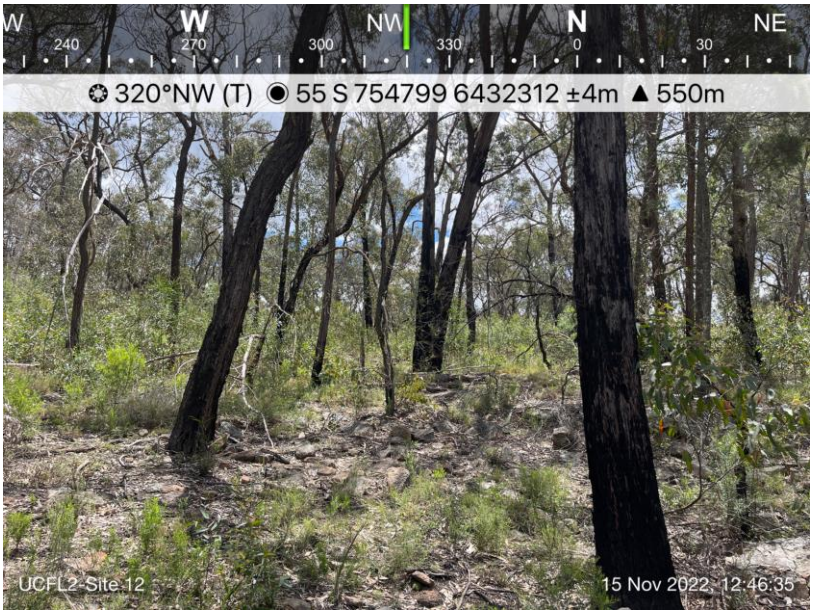
Year	Upstream	Downstream
2020		
2020	 	Isolated cracking in the bedrock with the flow between monitoring sites 11 and 12.

APPENDIX B – UCFL2

Year	Upstream	Downstream
2021		
2022		

APPENDIX B – UCFL2

Site UCFL2 Site 12 (Removed from 2023 monitoring by UCMPL)

Site Attributes	
Date Sampled	15 November 2022
Approximate Easting	755275
Approximate Northing	6432089
Monitoring Requirement	Monitoring to distinguish between natural erosion and erosion from mine subsidence instability, surface cracking, surface ponding and out of channel flows. Monitoring before longwall retreats and annually for a period of two years. **Notes: Longwall (LW5) at Ulan West completed in June 2020**
2022 Monitoring Photo	

Year	December 2020	October 2021	November 2022	
Result	Perceptible impacts*	Perceptible impacts* (no change)	Perceptible impacts* (no change)	

Comments / Interpretation

- UCFL2 Site 12 is located above LW5 towards the western edge of the panel and was added to the monitoring program in 2020 at the head of this flow line.
- During the 2020 inspection there was no evidence of subsidence related impacts, with no perceptible change to the flow line identified as a result of longwall mining at this monitoring site*.
- *In 2020 small, isolated cracking of the bedrock within the flowline between monitoring sites 11 and 12 was noted.
- During the 2022 there was no perceptible change when compared to 2021. * Minor cracking in bedrock downstream (between Site 12 and 11) noted in 2020 remained unchanged in 2021 and 2022. Increased vegetation in 2022 hindered observations along the flow line outside of exposed bedrock.
- Remove from monitoring.

Recommendations

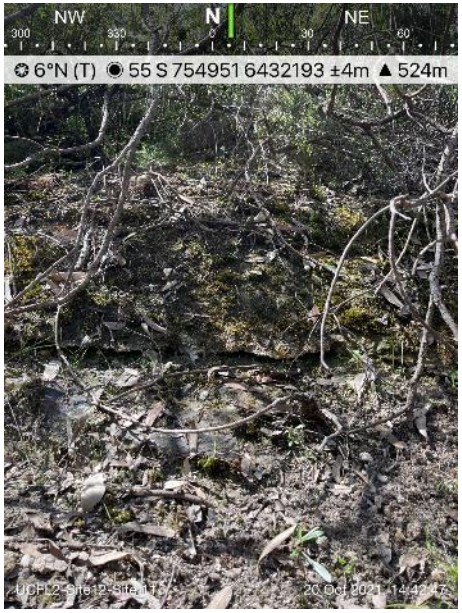
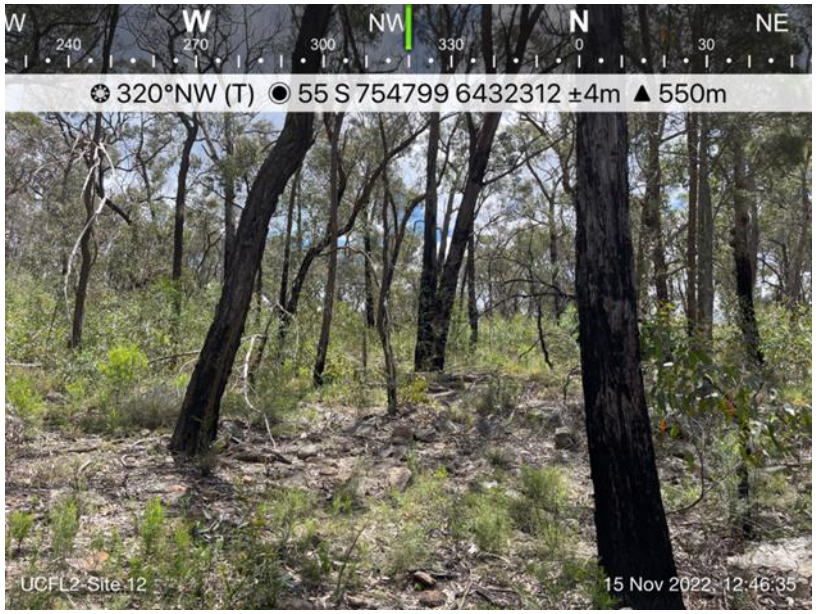
- If unchanged and past two year recommend remove from annual monitoring program (**yes/**no)
- Recommend recording cross sections at locations identified with channel and/or channel bank cracking as a result of subsidence, to monitor for erosion and/or changes to the channel width (yes/**no**)

Photographic Recording (see below)

APPENDIX B – UCFL2

Year	Upstream	Downstream
2020		
2021		

APPENDIX B – UCFL2

Year	Upstream	Downstream
2021		 
2022		

APPENDIX B – UCFL2

	Downstream	Downstream
2022