

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC08

Coordinates (MGA/Zone 55): 757800.6 (E) 6434755.0 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water pooling and flowing at this location above LDP6. LDP6 was not discharging into Ulan Creek at the time of the inspection. In 2020, flood debris was recorded above flow line on both the LHB and RHB. The channel bed at the discharge point is formed from bedrock and provides stability at this location. Several meters upstream of LDP6 (the assessment site), the RHB has a moderate slope above, established trees with decreasing ground vegetation coverage in 2023. The LHB has a gentle slope above with areas of exposed bare ground and is also tree lined. The LHB wall has steep sections (when not covered by water) which are bare and exposed with signs of instability. As in 2021 and 2022 the channel bed assessment in 2023 could not be completed due to water in the creek. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the LHB and water flowing. The creek bed could not be assessed in 2023. The site appeared potentially stabilising above the water line upstream of LDP6. As a general comment algal discoloration of the bedrock at LDP6 had increased notably since 2021. The water appeared slightly turbid upstream and downstream of LDP6. Decreasing vegetative ground cover noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
<p>Ulan Creek UC08 19 Oct 2021, 08:44:38</p>	<p>UC08 11 Oct 2022, 08:53:00</p>	<p>Ulan Creek Site 08 28 Nov 2023, 08:18:19</p>
Downstream 2021	Downstream 2022	Downstream 2023
<p>Ulan Creek UC08 19 Oct 2021, 08:44:09</p>	<p>UC08 11 Oct 2022, 08:52:05</p>	<p>Ulan Creek Site 08 28 Nov 2023, 08:18:35</p>

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023






Monitoring Site: UC09

Coordinates (MGA/Zone 55): 757770.2 (E) 6434734.0 (N)

CISRO Ephemeral Stream Assessment: Very Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. Exposed bedrock is within the floor of the channel, although channel bed assessment in 2023 could not be completed due to water in the creek. A high flow event in the 2020 monitoring period moved the log that was across the channel. In 2020, flood debris was recorded above the banks. In 2022 signs of additional sand and silts deposits were noted just above the water line on the LHB. Signs of instabilities along both banks was observed in 2021 and 2022. The LHB walls are near vertical, exposed with signs of recent erosion. The RHB wall is a more moderate slope and mostly vegetated. Both banks are tree lined with fewer trees along the LHB. The tunnel erosion deep into the RHB, is comparable to previous observations since 2020. The observations in 2023 are comparable with recent years. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'very active'.

**Notes:** In 2023 observations were limited to the LHB and water flowing. The creek bed could not be assessed. The water appeared slightly turbid. Decreasing vegetative ground cover noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC09 19 Oct 2021, 09:01:20</p>	 <p>UC09 11 Oct 2022, 09:01:07</p>	 <p>Ulan Creek Site 09 28 Nov 2023, 08:25:14</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC09 19 Oct 2021, 09:01:41</p>	 <p>UC09 11 Oct 2022, 09:01:25</p>	 <p>Ulan Creek Site 09 28 Nov 2023, 08:24:59</p>

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC10

Coordinates (MGA/Zone 55): 757647.7 (E) 6434676.0 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. The channel bed assessment in 2023 could not be completed due to water in the creek. From previous monitoring, the creek bed is a mix of silt, sand and small gravel. In 2020, flood debris was located above the LHB with fine sand deposits. Decreased groundcover in 2023 above the LHB and RHB. The RHB walls are near vertical, mostly exposed with signs of recent erosion. Tree roots are exposed along the RHB with signs of minor bank undercutting. The LHB is a more moderate slope and was vegetated. Both banks are tree lined. Tree of Heaven was noted along the LHB at this location. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to water flowing and the LHB. The creek bed could not be assessed. In 2020, 2021, 2022 and 2023 the site appeared potentially stabilising above the water line. Decreasing ground vegetation noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>3°N (T) ● 55 S 757648 6434680 ±4m ▲ 466m</p> <p>Ulan Creek UC10 19 Oct 2021, 09:08:43</p>	 <p>347°N (T) ● 55 S 757652 6434676 ±4m ▲ 465m</p> <p>UC09 11 Oct 2022, 09:10:10</p>	 <p>2°N (T) ● 55 S 757647 6434680 ±4m ▲ 464m</p> <p>Ulan Creek Site 10 28 Nov 2023, 08:29:07</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>177°S (T) ● 55 S 757650 6434677 ±4m ▲ 465m</p> <p>Ulan Creek UC10 19 Oct 2021, 09:09:03</p>	 <p>187°S (T) ● 55 S 757651 6434674 ±4m ▲ 465m</p> <p>UC09 11 Oct 2022, 09:09:51</p>	 <p>175°S (T) ● 55 S 757650 6434677 ±4m ▲ 465m</p> <p>Ulan Creek Site 10 28 Nov 2023, 08:29:21</p>

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC11

Coordinates (MGA/Zone 55): Stable

CISRO Ephemeral Stream Assessment: 757651.1 (E) 6434633.0 (N)

**General Observations:** Ulan Creek had water flowing at this location in 2023. Exposed bedrock is within the floor of the channel providing stability, although the channel bed assessment (immediately upstream) in 2023 could not be completed due to water in the creek. Flood debris was located above the LHB in 2020. Groundcover had decreased above the LHB and RHB in 2022. The LHB is formed from bedrock with a moderate slope. The RHB has a gentler slope partially vegetated in 2023 with some signs of minor undercutting. Both banks are tree lined. A tree had fallen into the creek from the LHB prior to monitoring in 2021. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'stable'.

**Notes:** In 2023 observations were limited to the LHB and water flowing. In 2020, 2021, 2023 and 2023 the site appeared stable above the water line upstream of the bedrock. Decreasing vegetative ground cover noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC11 19 Oct 2021, 09:12:06</p>	 <p>UC11 11 Oct 2022, 09:13:31</p>	 <p>Ulan Creek Site 11 28 Nov 2023, 08:31:15</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC11 19 Oct 2021, 09:12:14</p>	 <p>UC11 11 Oct 2022, 09:12:22</p>	 <p>Ulan Creek Site 11 28 Nov 2023, 08:31:26</p>

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023


Monitoring Site: UC12

Coordinates (MGA/Zone 55): 757649.4 (E) 6434531.0 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. The channel bed is characterised by gravel size and some larger rock, with signs of increasing vegetation along the low flow channel. Flood debris was located above the LHB in 2020. Increased erosion along the LHB was noted again in 2022. A tree had fallen into the creek from the LHB as noted back in 2020. The LHB wall is near vertical, almost entirely bare, with exposed tree roots, signs of very recent erosion and some minor undercutting. The RHB is a gentler slope, mostly with bare areas and sparse vegetation. decreased groundcover above the LHB and RHB was noted in 2023. Both sides of the creek are tree lined. An infestation of Tree of Heaven was noted between sites UC11 and UC12. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the LHB and water flowing. Decreasing vegetative ground cover noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC12 &amp; XS6 19 Oct 2021, 09:21:05</p>	 <p>UC12 11 Oct 2022, 09:17:34</p>	 <p>Ulan Creek Site 12 28 Nov 2023, 08:37:22</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC12 &amp; XS6 19 Oct 2021, 09:20:49</p>	 <p>UC12 11 Oct 2022, 09:16:34</p>	 <p>Ulan Creek Site 12 28 Nov 2023, 08:36:41</p>

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC13

Coordinates (MGA/Zone 55): 757621.8 (E) 6434447.0 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. From previous monitoring, the channel bed is a mix of silt, sand and gravel. In 2022 additional sand and sediments had deposited along the creek bed with little vegetation. Flood debris was located above the LHB in 2020. Active erosion along both banks was again observed in 2022. The LHB and RHB walls are near vertical, bare with exposed tree roots, signs of erosion and undercutting. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the LHB and water flowing. The creek bed could not be assessed. Decreasing vegetative ground cover noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
<p>25°NE (T) ● 55 S 757626 6434444 ±4m ▲ 464m</p> <p>Ulan Creek UC13 19 Oct 2021, 09:28:51</p>	<p>4°N (T) ● 55 S 757631 6434448 ±4m ▲ 464m</p> <p>UC13 11 Oct 2022, 09:23:50</p>	<p>10°N (T) ● 55 S 757628 6434447 ±4m ▲ 464m</p> <p>Ulan Creek Site 13 28 Nov 2023, 08:41:13</p>
Downstream 2021	Downstream 2022	Downstream 2023
<p>249°W (T) ● 55 S 757632 6434450 ±3m ▲ 462m</p> <p>Ulan Creek UC13 19 Oct 2021, 09:27:56</p>	<p>249°W (T) ● 55 S 757639 6434457 ±4m ▲ 463m</p> <p>UC13 11 Oct 2022, 09:23:12</p>	<p>253°W (T) ● 55 S 757633 6434454 ±4m ▲ 458m</p> <p>Ulan Creek Site 13 28 Nov 2023, 08:40:50</p>

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC14

Coordinates (MGA/Zone 55): 757522.5 (E) 6434327.0 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek was flowing at this location in 2023. Active erosion along both banks was observed in 2022. From previous monitoring, the channel bed is a mix of silt, sand and smaller gravel. In 2022 additional build up of sand, silt and small gravel deposits were noted. Flood debris was located above the LHB in 2020. Increased erosion along both the LHB and RHB with undercutting more notable under the top edge of the banks in 2022. The LHB and RHB have near vertical walls from the top of the bank, bare with exposed tree roots and with signs of erosion. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'

**Notes:** In 2023 observations were limited to the LHB and water flowing. Decreasing vegetative ground cover noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
<p>W 270 NW 300 330 N 0 NE 30 60 90 E              359°N (T) ● 55 S 757516 6434311 ±4m ▲ 462m              Ulan Creek UC14 19 Oct 2021, 09:44:02</p>	<p>W 270 NW 300 330 N 0 NE 30 60 90 E              359°N (T) ● 55 S 757517 6434311 ±4m ▲ 460m              UC14 11 Oct 2022, 09:36:02</p>	<p>W 270 NW 300 330 N 0 NE 30 60 90 E              0°N (T) ● 55 S 757515 6434311 ±4m ▲ 462m              Ulan Creek Site 14 28 Nov 2023, 08:50:28</p>
Downstream 2021	Downstream 2022	Downstream 2023
<p>SE 150 S 180 SW 210 240 W 270 NW 300              228°SW (T) ● 55 S 757517 6434321 ±4m ▲ 463m              Ulan Creek UC14 19 Oct 2021, 09:43:18</p>	<p>SE 150 S 180 SW 210 240 W 270 NW 300              224°SW (T) ● 55 S 757518 6434318 ±4m ▲ 461m              UC14 11 Oct 2022, 09:35:09</p>	<p>E 150 S 180 SW 210 240 W 270 NW 300              230°SW (T) ● 55 S 757519 6434317 ±4m ▲ 462m              Ulan Creek Site 14 28 Nov 2023, 08:50:09</p>

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC15

Coordinates (MGA/Zone 55): 757408.6 (E) 6434095.0 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek was flowing at this location in 2023. Active erosion along both banks was observed in 2022. From previous monitoring, the channel bed is a mix of silt, sand and gravel. In 2022 additional build-up of sand, silt and small gravel deposits were noted. The LHB and RHB have near vertical walls from the top of the bank, bare with exposed tree roots, with signs of erosion and bank undercutting. Both sides of the creek are tree lined. Decreased groundcover in 2023 along the flow channel and above the LHB and RHB. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the LHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC15 19 Oct 2021, 09:58:23</p>	 <p>UC15 11 Oct 2022, 09:49:58</p>	 <p>Ulan Creek Site 15 28 Nov 2023, 08:57:32</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC15 19 Oct 2021, 09:59:09</p>	 <p>UC15 11 Oct 2022, 09:49:19</p>	 <p>Ulan Creek Site 15 28 Nov 2023, 08:58:05</p>

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023


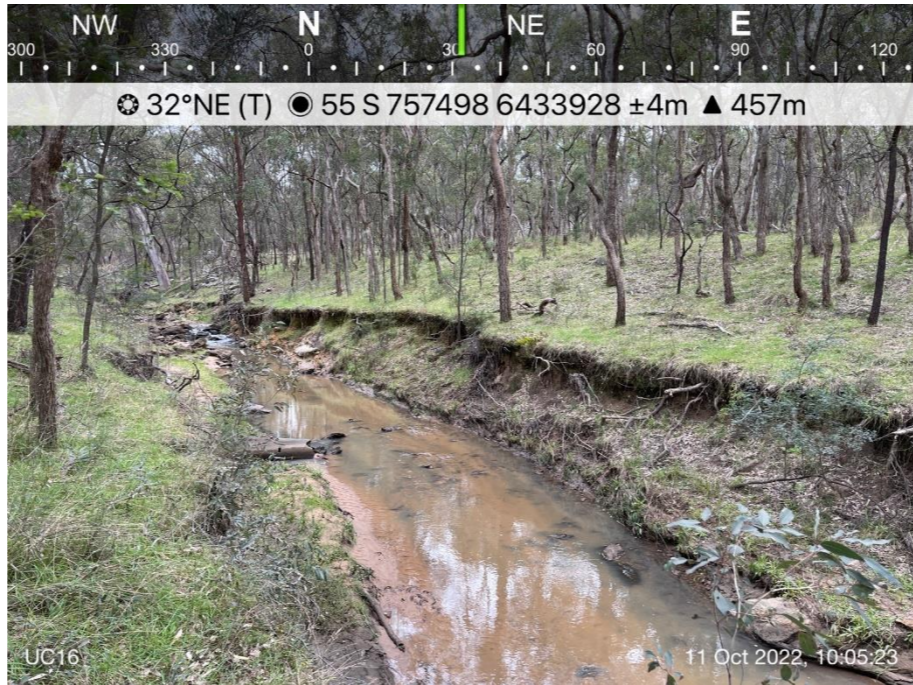

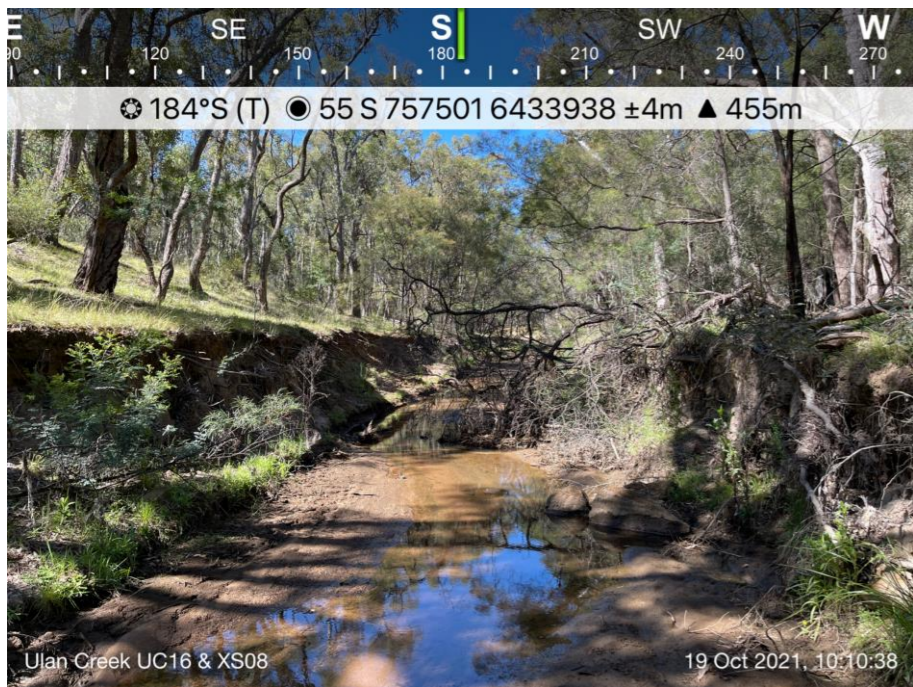


Monitoring Site: UC16

Coordinates (MGA/Zone 55): 757495.4 (E) 6433929.0 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. Active erosion along both banks was observed again in 2022. A tree had also fallen into the creek sometime after the 2019 inspection. In 2022 additional gravel, silt and sand deposits had accumulated but less obvious than in previous years. The LHB and RHB have near vertical walls from the top of the bank, mostly bare with exposed tree roots and signs of erosion. An old concrete pipe culvert remains upstream from the site. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the RHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
		
Downstream 2021	Downstream 2022	Downstream 2023
		

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023


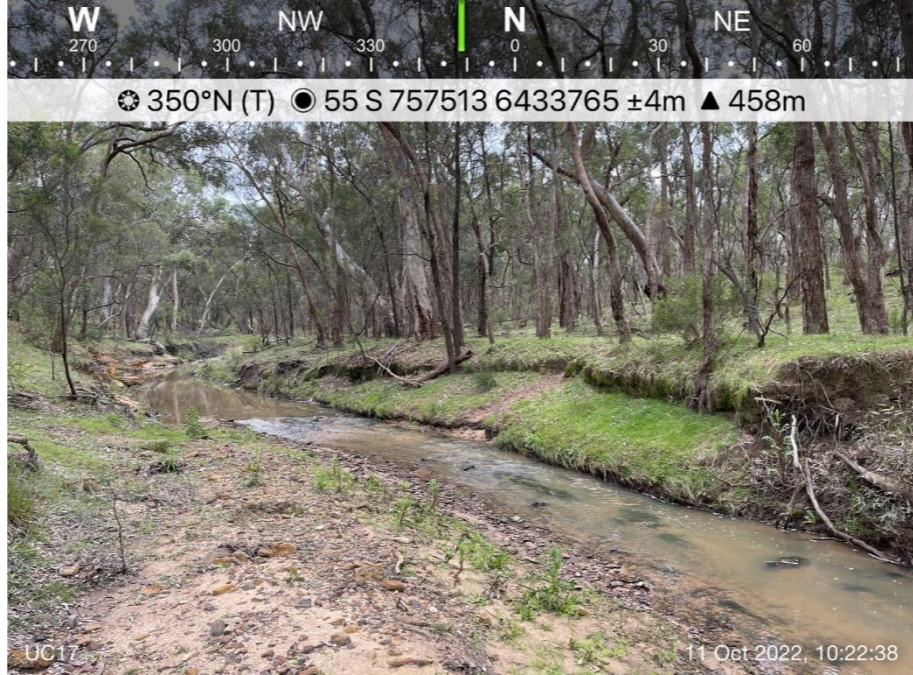




Monitoring Site: UC17

Coordinates (MGA/Zone 55): 757510.9 (E) 6433763.0 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. Water was seeping into the creek along the LHB from an entering drainage line in 2021. The low flow channel bed had no vegetation and was a mix of silt, sand, gravel and larger rock material noted. In 2022 additional build up of sand, silt and small gravel deposits were noted. The LHB wall is near vertical, bare with exposed tree roots and signs of active slumping. Undercutting also observed along the LHB in 2022. The RHB is a gentler slope, mostly with bare areas and no vegetation. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the RHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC17 19 Oct 2021, 10:33:33</p>	 <p>UC17 11 Oct 2022, 10:22:38</p>	 <p>Ulan Creek Site 17 28 Nov 2023, 09:16:18</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC17 19 Oct 2021, 10:33:20</p>	 <p>UC17 11 Oct 2022, 10:23:17</p>	 <p>Ulan Creek Site 17 28 Nov 2023, 09:15:52</p>

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC18

Coordinates (MGA/Zone 55): 757473.7 (E) 6433691.0 (N)

CISRO Ephemeral Stream Assessment: Potentially Stabilising

**General Observations:** Ulan Creek had water flowing at this location in 2023. Inflows into the creek were noted at this location in 2020. Continued undercutting (albeit minor) along the RHB was observed in 2021 and 2022. Silt, sand, small gravel and larger rocks noted in the channel bed. An increasing layer of silt sediments deposited within the low flow channel bed was noted in 2019. Flood debris and sand deposits were identified above the RHB in 2020. The RHB has a low slope with decreasing ground cover vegetation in 2023. The LHB wall is a steeper slope and partially vegetated in 2023. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'potentially stabilising'.

**Notes:** In 2022 observations were limited to the RHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC18 19 Oct 2021, 10:45:03</p>	 <p>UC17 11 Oct 2022, 10:27:36</p>	 <p>Ulan Creek Site 18 28 Nov 2023, 09:19:42</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC18 19 Oct 2021, 10:45:44</p>	 <p>UC18 11 Oct 2022, 10:29:17</p>	 <p>Ulan Creek Site 18 28 Nov 2023, 09:19:17</p>

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC19

Coordinates (MGA/Zone 55): 757372.3 (E) 6433508.0 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek was flowing at this location in 2023. The channel bed had little to no vegetation and is a mix of silt, sand, small gravel and rock material. In 2022 additional build up of sand, silt and small gravel deposits was noted. Sand deposits were noted above the RHB in 2020. The small fallen tree observed in the channel bed in 2022 has been transported further downstream in 2023 to Site 20a. The establishment of a Common Rush (*Juncus* spp) since 2019 on the RHB with increasing density in 2021 and 2022 appears to be going through a 'dieback' phase. Both the LHB and RHB have a moderate to steep slope and remain generally well vegetated. The LHB downstream displays recent signs of undercutting. A small section of the RHB had slumped into the flow channel in 2022. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the RHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
Downstream 2021	Downstream 2022	Downstream 2023

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC20a

Coordinates (MGA/Zone 55): 757348.6 (E) 6433349.0 (N)

CISRO Ephemeral Stream Assessment: Very Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. Active erosion along both banks was again observed in 2023. Accumulation of flood debris was observed in 2020 caught up around the dead tree located in the middle of the flow line. The flow channel bed had little to no vegetation and is a mix of silt, sand and small gravel material. In 2022 additional build up of sand, silt and small gravel deposits were noted. Both the LHB and RHB have a moderate slope above the channel and were well vegetated. Both banks display recent signs slumping and bank undercutting, in particular the RHB has significant active erosion. A tree has fallen along the edge of the RHB in 2022. Since 2015 the channel width at this location has increased. In 2018, XS-10 cross section was relocated to this site to quantify changes to the channel width. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring\*. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'very active'.

**Notes:** In 2023 observations were limited to the LHB and water flowing. \*The increased erosion on the RHB exposing >1m of wall height decreased the 2022 score. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023. Additional flood debris build up noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC20a 19 Oct 2021, 11:07:37</p>	 <p>UC20a 11 Oct 2022, 10:54:31</p>	 <p>Ulan Creek Site 20a 28 Nov 2023, 09:38:03</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC20a 19 Oct 2021, 11:05:23</p>	 <p>UC20a 11 Oct 2022, 10:52:55</p>	 <p>Ulan Creek Site 20a 28 Nov 2023, 09:35:56</p>

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC20b

Coordinates (MGA/Zone 55): 757339.7 (E) 6433297.0 (N)

CISRO Ephemeral Stream Assessment: Very Active

**General Observations:** Ulan Creek had flowing at this location in 2023. Active erosion along both banks was again observed in 2022 and 2023. The flow channel bed had little to no vegetation. Silt, sand and small gravel size rock material was noted in the channel bed. Significant loss of a bank material and widening of the flow channel observed in 2020. Sand deposits above the flow line along the RHB noted in 2020. In 2022 additional build up of sand, silt and small gravel deposits were noted. The channel bed contains much larger foreign rock placed in the creek at some point, to possibly stabilise the creek (a portion of the RHB displays stability due to the rock armouring), however it appears to be having a more destabilising impact. Both the LHB and RHB have a moderate slope above the bank. The banks walls are sparsely vegetated, display recent signs of slumping, bank undercutting and causing a widening of the creek (particularly along the LHB). Both sides are tree lined. Observations in 2023 noted a similar deteriorating trend when compared to previous monitoring\*. The CISRO *Ephemeral Stream Assessment* classification at this location as 'very active'.

**Notes:** In 2023 observations were limited to the LHB and water flowing. \*The increased erosion on the LHB exposing >1m of wall height decreased the 2022 score. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023. Loss of bed/bank material since 2022 monitoring.

Upstream 2021	Upstream 2022	Upstream 2023
Downstream 2021	Downstream 2022	Downstream 2023

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2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023





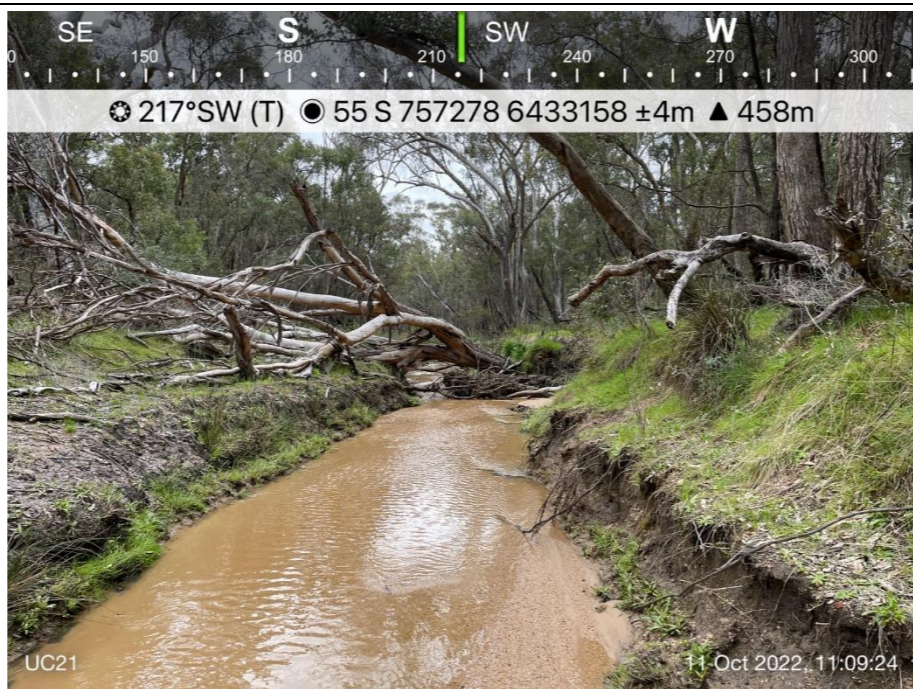

Monitoring Site: UC21

Coordinates (MGA/Zone 55): 757289 (E) 6433168 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. Water was seeping from the LHB into the channel in 2022. Active erosion along both banks was again observed in 2022 and 2023. The flow channel bed had little to no vegetation and is a mix of sand, small size gravel and rock material. Decrease of vegetation above the banks in 2023. Both the LHB and RHB have a moderate slope. Both banks have exposed bare areas and display recent signs of erosion. The RHB has near vertical sections with bank undercutting. The LHB displayed bank undercutting in 2021 although in 2022 additional build up of sand, silt and small gravel deposits had infilled. The formation of small scour holes in 2019 appeared to have been infilled since 2020. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the RHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023. One tree upstream and another tree downstream had fallen across the creek from the RHB since 2022 monitoring.

Upstream 2021	Upstream 2022	Upstream 2023
		
Downstream 2021	Downstream 2022	Downstream 2023
		

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023




Monitoring Site: UC22

Coordinates (MGA/Zone 55): 757246 (E) 6433127 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. Active erosion along both banks was again observed in 2022. The flow channel bed had little to no vegetation and is a mix of silt, sand, small size gravel and rock material. In 2022 additional build up of sand, silt and small gravel deposits was noted. Decrease of vegetation above the banks in 2023. A small scour in the channel bed forming in 2019 was infilled in 2020. Both the LHB and RHB have a moderate slope above the bank. Both bank walls are exposed and display recent signs of erosion. The RHB has a near vertical lower section with ongoing bank undercutting. The LHB also displays signs of bank undercutting although increased vegetation on the LHB was noted in 2022. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the RHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC22 19 Oct 2021, 11:37:05</p>	 <p>UC22 11 Oct 2022, 11:14:04</p>	 <p>Ulan Creek Site 22 28 Nov 2023, 09:53:45</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC22 19 Oct 2021, 11:37:25</p>	 <p>UC22 11 Oct 2022, 11:14:34</p>	 <p>Ulan Creek Site 22 28 Nov 2023, 09:53:57</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC23

Coordinates (MGA/Zone 55): 757162 (E) 6432943 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. The channel bed had little to no vegetation and is a mix of sand and small to medium size gravel. In 2022 additional build up of sand, silt and small gravel deposits were noted. The channel also has larger foreign rock and geofabric material to possibly stabilise the creek, however it appears to be having a more destabilising impact. Very active erosion along both banks was observed in 2022 and again in 2023, particularly along the RHB causing a widening of the creek at this location. The RHB has a gentle slope above the bank. The bank wall is bare and exposed, near vertical walls and displays recent signs of erosion and undercutting. The LHB has a steeper slope above the bank and is partially stabilised by the foreign rock material. An old concrete pipe also sits downstream from this location and has been moved further downstream since 2019. Both sides of the creek are tree lined. Observations in 2023 noted a similar deteriorating trend when compared to previous monitoring\*. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'very active'.

**Notes:** In 2023 observations were limited to the RHB and water flowing. \*The increased erosion and mass wasting along the RHB decreased the 2022 score. Decreasing vegetative ground cover noted in 2023. Very active undercutting and bank instabilities noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
<p>Ulan Creek UC23 19 Oct 2021, 11:57:39</p>	<p>UC23 11 Oct 2022, 11:32:33</p>	<p>Ulan Creek Site 23 28 Nov 2023, 10:14:25</p>
Downstream 2021	Downstream 2022	Downstream 2023
<p>Ulan Creek UC23 19 Oct 2021, 11:55:49</p>	<p>UC23 11 Oct 2022, 11:30:21</p>	<p>Ulan Creek Site 23 28 Nov 2023, 10:12:48</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023


Monitoring Site: UC24

Coordinates (MGA/Zone 55): 757096 (E) 6432880 (N)

CISRO Ephemeral Stream Assessment: Very Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. Active erosion along both banks was again observed in 2022 and 2023. The low flow channel bed had little to no vegetation and is a mix of silt, sand, small size gravel and rock material. In 2022 additional build up of sand, silt and small gravel deposits were noted. The channel bed contains much larger foreign rock and geofabric material to possibly stabilise the creek, however it appears to be having a more destabilising impact. The RHB has a gentle to moderate slope above the bank, the bank wall is bare and exposed, near vertical and displays recent signs of erosion and bank undercutting. The LHB has a steeper slope above the bank and is partially stabilised by the imported rock. Both sides of the creek are tree lined. Observations in 2023 noted a similar deteriorating trend when compared to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'very active'.

**Notes:** In 2023 observations were limited to the RHB and water flowing. Decreasing vegetative ground cover noted in 2023. A tree had fallen across the creek from the RHB since 2022 monitoring.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC24 19 Oct 2021 12:01:45</p>	 <p>UC24 11 Oct 2022 11:40:28</p>	 <p>Ulan Creek Site 24 28 Nov 2023 10:18:10</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC24 19 Oct 2021 12:00:12</p>	 <p>UC24 11 Oct 2022 11:38:47</p>	 <p>Ulan Creek Site 24 28 Nov 2023 10:19:06</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC25

Coordinates (MGA/Zone 55): 757052 (E) 6432871 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had flowing at this location in 2023. The low flow channel bed had little vegetation and was a mix of silt, sand, small size gravel and rock material. In 2022 additional build up of sand, silt and small gravel deposits were noted. Active erosion was again noted along both banks in 2022. Both the LHB and RHB have a gentle slope above the bank. The LHB wall is near vertical, bare and exposed, with bank undercutting further downstream exposing tree roots. The RHB wall also has sparse vegetation with exposed tree roots, near vertical sections from the top of the bank. Both sides of the creek are tree lined. Observations in 2023 noted a similar deteriorating trend when compared to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the RHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>66°NE (T) ● 55 S 757039 6432858 ±4m ▲ 452m</p> <p>Ulan Creek UC25 19 Oct 2021, 12:03:57</p>	 <p>73°E (T) ● 55 S 757040 6432859 ±4m ▲ 453m</p> <p>UC25 11 Oct 2022, 11:44:43</p>	 <p>108°E (T) ● 55 S 757034 6432862 ±4m ▲ 453m</p> <p>Ulan Creek Site 25 28 Nov 2023, 10:22:07</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>249°W (T) ● 55 S 757052 6432865 ±4m ▲ 453m</p> <p>Ulan Creek UC25 19 Oct 2021, 12:02:49</p>	 <p>225°SW (T) ● 55 S 757047 6432865 ±4m ▲ 453m</p> <p>UC25 11 Oct 2022, 11:44:00</p>	 <p>212°SW (T) ● 55 S 757046 6432866 ±4m ▲ 453m</p> <p>Ulan Creek Site 25 28 Nov 2023, 10:21:21</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC26

Coordinates (MGA/Zone 55): 756929 (E) 6432750 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. The channel bed had little to no vegetation and is a mix of sand, silt and small size gravel. Active erosion was again noted along both banks in 2022. Both the LHB and RHB have a gentle slope above the banks. The RHB wall is near vertical, bare and exposed with signs of erosion back to bedrock. The LHB wall also has near vertical sections from the top of the bank, with bank undercutting further downstream exposing tree roots along the LHB. Both sides of the creek are tree lined. A large tree had fallen across the channel downstream since 2021. Observations in 2023 noted a similar deteriorating trend when compared to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the RHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>6°N (T) ● 55 S 756926 6432749 ±4m ▲ 451m</p> <p>Ulan Creek UC26 19 Oct 2021, 12:13:32</p>	 <p>5°N (T) ● 55 S 756929 6432747 ±4m ▲ 452m</p> <p>UC26 11 Oct 2022, 11:56:14</p>	 <p>20°N (T) ● 55 S 756918 6432742 ±4m ▲ 453m</p> <p>Ulan Creek Site 26 28 Nov 2023, 10:31:15</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>163°S (T) ● 55 S 756926 6432760 ±4m ▲ 451m</p> <p>Ulan Creek UC26 19 Oct 2021, 12:11:34</p>	 <p>146°SE (T) ● 55 S 756928 6432753 ±4m ▲ 452m</p> <p>UC26 11 Oct 2022, 11:57:19</p>	 <p>137°SE (T) ● 55 S 756923 6432754 ±4m ▲ 452m</p> <p>Ulan Creek Site 26 28 Nov 2023, 10:30:37</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC27

Coordinates (MGA/Zone 55): 756876 (E) 6432651 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. The channel bed had little to no vegetation and is a mix of silt, sand and small gravel material. Active erosion was again noted along both banks in 2022, particularly on the RHB. In 2022 additional build up of sand, silt and small gravel deposits were noted. Sand deposits above the RHB were recorded in 2020. Both the LHB and RHB have a gentle slope above the bank. The RHB wall is near vertical, bare and exposed with signs of erosion. The LHB wall also has near vertical sections and is also bare and exposed. Tree roots are exposed on both bank walls. There is slight bank undercutting along the LHB. Both sides of the creek are tree lined. Observations in 2023 noted a similar deteriorating trend when compared to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the RHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023. Upstream a tree had fallen from the LHB across the creek since 2022 monitoring.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC27 19 Oct 2021, 12:40:26</p>	 <p>UC27 11 Oct 2022, 12:21:22</p>	 <p>Ulan Creek Site 27 28 Nov 2023, 10:53:51</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC27 19 Oct 2021, 12:39:53</p>	 <p>UC27 11 Oct 2022, 12:22:31</p>	 <p>Ulan Creek Site 27 28 Nov 2023, 10:53:17</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC28

Coordinates (MGA/Zone 55): 756824 (E) 6432508 (N)

CISRO Ephemeral Stream Assessment: Potentially Stabilising

**General Observations:** Ulan Creek had water flowing at this location in 2023. The flow channel bed had little to no vegetation and is a mix of silt, sand, small size gravel and rock material. Deposited sediment was noted in the channel bed in 2020. Both the LHB and RHB have a gentle slope above the bank. The RHB wall is formed from bedrock and is stable. The LHB has near vertical lower sections, partially vegetated with signs of erosion and bank undercutting. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream* Assessment classification at this location as 'potentially stabilising'.

**Notes:** In 2023 observations were limited to the RHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
<p>Ulan Creek UC28 19 Oct 2021, 12:49:34</p>	<p>UC28 11 Oct 2022, 12:31:24</p>	<p>Ulan Creek Site 28 28 Nov 2023, 11:00:40</p>
Downstream 2021	Downstream 2022	Downstream 2023
<p>Ulan Creek UC28 19 Oct 2021, 12:49:55</p>	<p>UC28 11 Oct 2022, 12:31:04</p>	<p>Ulan Creek Site 28 28 Nov 2023, 11:00:07</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC29

Coordinates (MGA/Zone 55): 756821 (E) 6432374 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. The low flow channel bed had little to no vegetation and was a mix of sand and small to medium gravel size rock material. Deposited sediment was noted in the channel bed in 2020. Both the LHB and RHB have a steep rock/boulder slope above the bank. The RHB is near vertical formed from bedrock and is stable. The LHB wall has near vertical mid sections, sparsely vegetated with signs of active erosion in 2022. Both sides of the creek are tree lined. A piece of jute mesh that was most likely from Site UC25 was caught up on the RHB. Observations in 2022 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited to the LHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023. Jute mesh material from RHB transported downstream since 2022 monitoring.

Upstream 2021	Upstream 2022	Upstream 2023
<p>Ulan Creek UC29 19 Oct 2021, 12:57:33</p>	<p>UC29 11 Oct 2022, 12:39:38</p>	<p>Ulan Creek Site 29 28 Nov 2023, 11:05:58</p>
Downstream 2021	Downstream 2022	Downstream 2023
<p>Ulan Creek UC29 19 Oct 2021, 12:57:18</p>	<p>UC29 11 Oct 2022, 12:39:07</p>	<p>Jute mesh material wrapped around other flood debris now removed and transported further downstream.</p> <p>Ulan Creek Site 29 28 Nov 2023, 11:05:35</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC30 (Not visited in 2020 this site was inaccessible)

Coordinates (MGA/Zone 55): 756851 (E) 6432305 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water pooling at this location in 2023. The channel bed had little to no vegetation and is a mix of silt, sand and small gravel size rock material with several large boulders. In 2022 additional build up of sand, silt and small gravel deposits were noted. The RHB has a steep rock and boulder slope above the bank. The RHB wall is near vertical, bare and exposed, displays undercutting erosion with exposed tree roots. The LHB wall has near vertical sections from the top of the bank, a moderate to steep slope above the bank, increased vegetation in 2022 with signs of erosion. Both sides of the creek are tree lined. A large tree had fallen across the channel downstream since 2021. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 202 observations were limited to the LHB and water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
Downstream 2021	Downstream 2022	Downstream 2023

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC31 (Not visited in 2020 this site was inaccessible)

Coordinates (MGA/Zone 55): 756840(E) 6432211(N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. The channel bed had little to no vegetation and formed from bedrock with deposited sediments and sand. Large pieces of bedrock type material were noted in the channel bed. In 2022 additional build up of sand and silt deposits were noted. The RHB has a steep rock slope above the bank. The RHB wall is near vertical, bare and exposed, displays undercutting erosion with exposed tree roots. The LHB wall has near vertical lower sections, a steep rock/boulder slope above the bank. The LHB is partially vegetated with signs of erosion. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2022 observations were limited by water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023. A tree had fallen from the RHB across the creek since 2022 monitoring.

Upstream 2021	Upstream 2022	Upstream 2023
<p>Ulan Creek UC31</p>	<p>UC31</p>	<p>Ulan Creek Site 31</p>
Downstream 2021	Downstream 2022	Downstream 2023
<p>Ulan Creek UC31</p>	<p>UC31</p>	<p>Ulan Creek Site 31</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC32 (Not visited in 2020 this site was inaccessible)

Coordinates (MGA/Zone 55): 756816 (E) 6432138 (N)

CISRO Ephemeral Stream Assessment: Potentially Stabilising

General Observations: Ulan Creek had water flowing at this location in 2023. The low flow channel bed has no vegetation and is formed from bedrock with sediment deposits. In 2022 additional build up of sand, silt and small gravel deposits were noted. There is a steep rock (almost cliff line in appearance) slope above the RHB bank. The RHB wall is a moderate slope and is partially vegetated with rock boulders and appears stable. The LHB is similar to the RHB. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'potentially stabilising'.

Notes: In 2023 observations were limited by water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC32 19 Oct 2021, 13:32:06</p>	 <p>UC32 11 Oct 2022, 13:01:21</p>	 <p>Ulan Creek Site 32 28 Nov 2023, 11:21:56</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC32 19 Oct 2021, 13:32:38</p>	 <p>UC32 11 Oct 2022, 13:01:57</p>	 <p>Ulan Creek Site 32 28 Nov 2023, 11:21:52</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC33 (Not visited in 2020 this site was inaccessible)

Coordinates (MGA/Zone 55): 756812 (E) 6432094 (N)

CISRO Ephemeral Stream Assessment: Potentially Stabilising

**General Observations:** Ulan Creek had water flowing at this location in 2023. The low flow channel bed had little to no vegetation, on bedrock covered with sediment deposits. In 2022 additional build up of sand, silt and small gravel deposits were noted. The RHB has a steep slope above the bank. The RHB wall is near vertical, bare and exposed and formed from bedrock and loose rocks and boulders, with signs of erosion. Carbonaceous bedrock material is also exposed along the RHB. The LHB has a moderate, partially vegetated slope, with a moderate to slope with rock boulders above the bank. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'potentially stabilising'.

**Notes:** In 2023 observations were limited by water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
<p>Ulan Creek UC33 19 Oct 2021, 13:35:36</p>	<p>UC33 11 Oct 2022, 13:05:16</p>	<p>Ulan Creek Site 33 28 Nov 2023, 11:23:48</p>
Downstream 2021	Downstream 2022	Downstream 2023
<p>Ulan Creek UC32 19 Oct 2021, 13:32:42</p>	<p>UC33 11 Oct 2022, 13:03:30</p>	<p>Ulan Creek Site 33 28 Nov 2023, 11:22:51</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC34

Coordinates (MGA/Zone 55): 756873(E) 6431844 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. Small to medium size rock material and deposited sediments noted in the channel bed. In 2022 additional build up of sand, silt and small gravel deposits were noted. The RHB is a moderate slope with increasing vegetation up slope, with little to no vegetation along the lower section. The LHB wall has near vertical sections from the top of the bank, mostly bare and exposed, with a moderate to steep slope above the bank. Signs of erosion was noted along both the LHB and RHB in 2022. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited by water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC34 19 Oct 2021, 13:48:29</p>	 <p>UC34 11 Oct 2022, 13:24:20</p>	 <p>Ulan Creek Site 34 28 Nov 2023, 11:34:24</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC34 19 Oct 2021, 13:49:02</p>	 <p>UC34 11 Oct 2022, 13:25:01</p>	 <p>Ulan Creek Site 34 28 Nov 2023, 11:33:36</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC35

Coordinates (MGA/Zone 55): 756809 (E) 6431741 (N)

CISRO Ephemeral Stream Assessment: Potentially Stabilising

**General Observations:** Ulan Creek had water flowing at this location in 2023. The low flow channel bed had little to no vegetation and is a mix of silt, sand and small to medium size gravel. In 2022 additional build up of sand, silt and small gravel deposits were noted. Minor bank instabilities were noted in 2022 along the LHB. A flow line enters Ulan Creek at this point. The LHB has a moderate slope and is well vegetated in 2022. The RHB is similar to the LHB. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'potentially stabilising'.

**Notes:** In 2023 observations were limited by water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
 <p>Ulan Creek UC35 19 Oct 2021, 14:00:02</p>	 <p>UC35 11 Oct 2022, 13:34:11</p>	 <p>Ulan Creek Site 35 28 Nov 2023, 11:37:21</p>
Downstream 2021	Downstream 2022	Downstream 2023
 <p>Ulan Creek UC35 19 Oct 2021, 13:59:33</p>	 <p>UC35 11 Oct 2022, 13:33:49</p>	 <p>Ulan Creek Site 35 28 Nov 2023, 11:36:28</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC36

Coordinates (MGA/Zone 55): 756754 (E) 6431673 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. The channel bed had little to no vegetation and is a mix of silt, sand and small to medium size gravel. In 2022 additional build up of sand, silt and small gravel deposits were noted. The LHB has a moderate slope above and was vegetated. The LHB wall displayed signs of undercutting. The RHB has a steeper slope above well vegetated. Both sides of the creek have some bare and exposed areas with evidence of past erosion although the amount. Both sides of the creek are tree lined. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'potentially stabilising'.

**Notes:** In 2022 observations were limited by water flowing. Decreasing vegetative ground cover noted in 2023. Silt deposits along the edges of the channel bed noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
<p>Ulan Creek UC36 19 Oct 2021, 14:03:43</p>	<p>UC36 11 Oct 2022, 13:38:28</p>	<p>Ulan Creek Site 36 28 Nov 2023, 11:44:19</p>
Downstream 2021	Downstream 2022	Downstream 2023
<p>Ulan Creek UC36 19 Oct 2021, 14:04:08</p>	<p>UC36 11 Oct 2022, 13:37:06</p>	<p>Ulan Creek Site 36 28 Nov 2023, 11:45:01</p>

APPENDIX B: Ulan Creek

2023 Channel Stability Monitoring - Site Inspection Details

Creek Name: Ulan Creek

Date: 28 November 2023

Monitoring Site: UC37

Coordinates (MGA/Zone 55): 756795 (E) 6431567 (N)

CISRO Ephemeral Stream Assessment: Active

**General Observations:** Ulan Creek had water flowing at this location in 2023. The flow channel bed had little to no vegetation. Larger size rock material was noted in the channel bed. The site is located at a failed gabion structure installed to gain access across the creek which has accumulated flood debris. Previous scour holes in the creek bed downstream from the gabion structure have been infilled. The RHB has a moderate to steep slope. The LHB is a more moderate slope. Both sides of the creek have some bare and exposed areas with evidence of past erosion and flood debris. The coverage of ground cover noted along the banks in 2021 and 2022 appeared to be decreasing. Both sides of the creek have few trees lining the banks. Observations in 2023 are comparable to previous monitoring. The CSIRO *Ephemeral Stream Assessment* classification at this location as 'active'.

**Notes:** In 2023 observations were limited by water flowing. Decreasing vegetative ground cover noted in 2023.

Upstream 2021	Upstream 2022	Upstream 2023
<p>Ulan Creek UC37 19 Oct 2021, 14:09:10</p>	<p>UC37 11 Oct 2022, 13:43:14</p>	<p>Ulan Creek Site 37 28 Nov 2023, 11:49:14</p>
Downstream 2021	Downstream 2022	Downstream 2023
<p>Ulan Creek UC37 19 Oct 2021, 14:08:37</p>	<p>UC37 11 Oct 2022, 13:42:35</p>	<p>Ulan Creek Site 37 28 Nov 2023, 11:49:46</p>

**APPENDIX B: Ulan Creek**