

Assessment report

Water Act 2000

Underground water impact report

This assessment report is to assist officers to recommend a decision under section 385 of the Water Act 2000 (Water Act) about an underground water impact report (UWIR).

Organisation name:	Office of Groundwater Impact Assessment (OGIA)
Registered business address:	1 William Street, Brisbane QLD 4000 GPO Box 2247 Brisbane, Queensland 4001 Australia
Tenure number(s):	Surat Cumulative Management Area (CMA)
File number:	101/0037980-001(e)
Date UWIR received:	17 December 2021
Decision due date:	17 March 2022
Note the statutory timeframe for a decision to be made on a UWIR is 60 business days.	

1 Background

OGIA published the last UWIR for the Surat CMA in 2019. That version of the Surat UWIR was amended on 20 August 2021 to include the Santos Spring Impact Mitigation Plan.

OGIA submitted the UWIR to DES on 17 December 2021. Two minor addendums to the UWIR were requested by OGIA (24 February 2022 and 17 March 2022) during the assessment process which were accepted by the delegate.

2 Submission requirements—section 370 of the Water Act

The 2021 UWIR was submitted as a result of a direction by DES to submit the UWIR with inclusion of coal activities by end of 2021.

3 Public notice requirements—section 382 of the Water Act

The responsible entity undertook public consultation which met the requirements of section 382 of the Water Act.

The Notice published by OGIA for the UWIR met the requirements of section 382 of the Water Act. The submission summary included with the UWIR details that the Notice was sent to 11,134 bore owners and 25 tenure holders in the Surat CMA in accordance with section 382(1)(b) of the Water Act.

The Notice was published in the following newspapers on the corresponding dates, all of which were 20 business days before the closing date for submission on 26 November 2021.

Newspaper	Publication day(s)	Publication date
Clifton Courier	Wednesday	Wednesday 27 October
Chinchilla News and Murilla Advertiser	Thursday	Thursday 28 October
Queensland Country Life	Thursday	Thursday 28 October
Central Queensland News	Wednesday and Friday	Friday 29 October
The Courier-Mail	Monday to Saturday	Friday 29 October
Daily News (Warwick)	Monday to Saturday	Friday 29 October
Dalby Herald	Tuesday and Friday	Friday 29 October
Toowoomba Chronicle	Monday to Saturday	Friday 29 October
The Western Star	Tuesday and Friday	Friday 29 October

4 Submission summary—sections 370(2)(d) and 383 of the Water Act

The UWIR was accompanied by a submission summary that meets the requirements of section 383 of the Water Act.

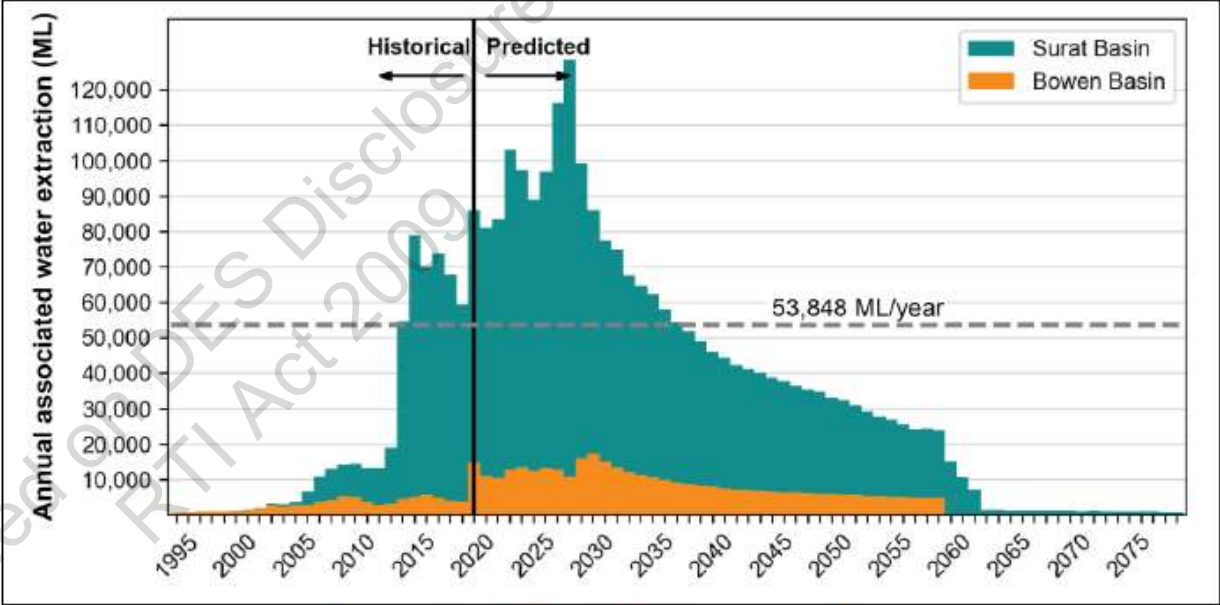
In accordance with section 370(2)(d) of the Water Act, the submissions summary summarised—

- (a) the 44 properly made submissions about the report; and
- (b) how the responsible entity addressed the submissions; and
- (c) any changes the responsible entity has made to the report because of the submissions.

Published on DES Disclosure Portal
RTI Act 2009

5 UWIR requirements—sections 376, 378 and 379 of the Water Act

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
376(1)(a)— For the area to which the UWIR relates—		
(i) the quantity of water produced or taken from the area because of the exercise of any previous relevant underground water rights.	YES	<p>The quantity of water produced or taken from the area is specified in Chapter 2 (section 2.3.5):</p> <ul style="list-style-type: none"> • for mining activities take is 1,000 ML/yr. • for P&G take is currently 54,000 ML/yr. <div style="text-align: center;"> <p>The chart displays the historical monthly water extraction rate in ML/year for P&G tenure holders in the Surat CMA from 1996 to 2021. The y-axis ranges from 0 to 70,000 ML/year. The x-axis shows years from 1996 to 2021. The extraction is split into two basins: Bowen Basin (blue, bottom) and Surat Basin (green, top). A vertical line is drawn at the year 2001. The total extraction rate remains low (under 10,000 ML/year) until around 2005, after which it rises sharply, reaching a peak of approximately 68,000 ML/year in 2015, and then fluctuates between 50,000 and 60,000 ML/year through 2021.</p> </div> <p>Figure 2-7: Historical associated water extraction by the P&G tenure holders in the Surat CMA</p>

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
(ii) an estimate of the quantity of water to be produced or taken because of the exercise of the relevant underground water rights for a 3-year period starting on the consultation day for the report	YES	<p>An estimate of the quantity of water to be produced or taken for a 3-year period starting on the consultation day for the report is included in Chapter 6 (section 6.5.3), is 80,000 ML/yr. as detailed in figure 6-6</p>  <p style="text-align: center;">Figure 6-6: Predicted CSG water extraction</p>
376(1)(b)—For each aquifer affected, or likely to be affected, by the exercise of the relevant underground water rights—		
(i) a description of the aquifer	YES	<p>A description of aquifers found in the Surat and Bowen is included:</p> <ul style="list-style-type: none"> • Chapter 1 of UWIR; • Appendix A; and • Companion document OGIA 2021a <i>Surat CMA and its groundwater systems (OGIA21CD04)</i>, Brisbane, Queensland, which was included in the information submitted with the UWIR.

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		<ul style="list-style-type: none"> • Companion document OGIA 2021h, <i>Modelling methods for impact assessment in the Surat CMA (OGIA21CD15)</i>, Brisbane, Queensland, which was included in the information submitted with the UWIR. <p>Figure 1-3 of the UWIR (below) summarises the aquifers in the Surat CMA.</p>

Published on DES Disclosure Log
 RTI Act 2009

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
(ii) an analysis of the movement of underground water to and from the	YES	An analysis of the movement of underground water to and from the aquifer, including how the aquifer interacts with other aquifers is included in:

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.																																			
aquifer, including how the aquifer interacts with other aquifers		<ul style="list-style-type: none"> • Chapter 4 – which conceptualises lithology and impacts pathways to aquifers – including faults (e.g. Horrane Fault and Hutton-Wallumbilla), formation outcrops, and formation contact zones • Chapter 5 – which summarises monitoring data, including isotope analyses, to identify impacts on groundwater levels and movement between aquifers • Chapter 6 – which details the predictions of groundwater impacts to aquifers from the exercising of underground water rights. • Appendix D – which analyses groundwater levels and movements between aquifers. <p style="text-align: center;">Table 6-2: Summary of impacts in key formations (P50)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: left;">Formation or subdivision</th> <th colspan="2" style="text-align: center;">Magnitude of impacts in less than 90% of the impact area*</th> </tr> <tr> <th style="text-align: center;">Short-term impact (m)</th> <th style="text-align: center;">Long-term impact (m)</th> </tr> </thead> <tbody> <tr> <td>Condamine Alluvium</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td>Main Range Volcanics</td> <td style="text-align: center;">38</td> <td style="text-align: center;">42</td> </tr> <tr> <td>Springbok Sandstone</td> <td style="text-align: center;">55</td> <td style="text-align: center;">80</td> </tr> <tr> <td>Upper Juandah Coal Measures</td> <td style="text-align: center;">200</td> <td style="text-align: center;">275</td> </tr> <tr> <td>Lower Juandah Coal Measures</td> <td style="text-align: center;">265</td> <td style="text-align: center;">340</td> </tr> <tr> <td>Taroom Coal Measures</td> <td style="text-align: center;">425</td> <td style="text-align: center;">450</td> </tr> <tr> <td>Hutton and Marburg sandstones</td> <td style="text-align: center;">3</td> <td style="text-align: center;">7</td> </tr> <tr> <td>Precipice Sandstone</td> <td style="text-align: center;">10</td> <td style="text-align: center;">12</td> </tr> <tr> <td>Bandanna Formation</td> <td style="text-align: center;">550</td> <td style="text-align: center;">225</td> </tr> <tr> <td>Cattle Creek Formation</td> <td style="text-align: center;">300</td> <td style="text-align: center;">300</td> </tr> </tbody> </table> <p>Note: * For the purpose of this table, the impact area is the extent of ≥1 m impact in the respective formation.</p>	Formation or subdivision	Magnitude of impacts in less than 90% of the impact area*		Short-term impact (m)	Long-term impact (m)	Condamine Alluvium	-	-	Main Range Volcanics	38	42	Springbok Sandstone	55	80	Upper Juandah Coal Measures	200	275	Lower Juandah Coal Measures	265	340	Taroom Coal Measures	425	450	Hutton and Marburg sandstones	3	7	Precipice Sandstone	10	12	Bandanna Formation	550	225	Cattle Creek Formation	300	300
Formation or subdivision	Magnitude of impacts in less than 90% of the impact area*																																				
	Short-term impact (m)	Long-term impact (m)																																			
Condamine Alluvium	-	-																																			
Main Range Volcanics	38	42																																			
Springbok Sandstone	55	80																																			
Upper Juandah Coal Measures	200	275																																			
Lower Juandah Coal Measures	265	340																																			
Taroom Coal Measures	425	450																																			
Hutton and Marburg sandstones	3	7																																			
Precipice Sandstone	10	12																																			
Bandanna Formation	550	225																																			
Cattle Creek Formation	300	300																																			

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
(iii) an analysis of the trends in water level change for the aquifer because of the exercise of the rights mentioned in paragraph (a)(i)	YES	<p>An analysis of the trends in water level change is included in:</p> <ul style="list-style-type: none"> • Chapter 5 – which summarises monitoring data to identify impacts to aquifers from the exercising of underground water rights. The analysis identifies that impacts on groundwater levels in aquifers has increased over the time of CSG activities have occurred in the Surat CMA • Chapter 6 – which details the predictions of groundwater impacts to aquifers from the exercising of underground water rights. The analysis identifies that impacts on groundwater levels in aquifers will continue to increase over the lifetime of CSG activities in the Surat CMA. • Appendix D of the UWIR – which includes contour maps of the aquifers with indications of movement.

Published on DES Disclosures
RTI Act 2009

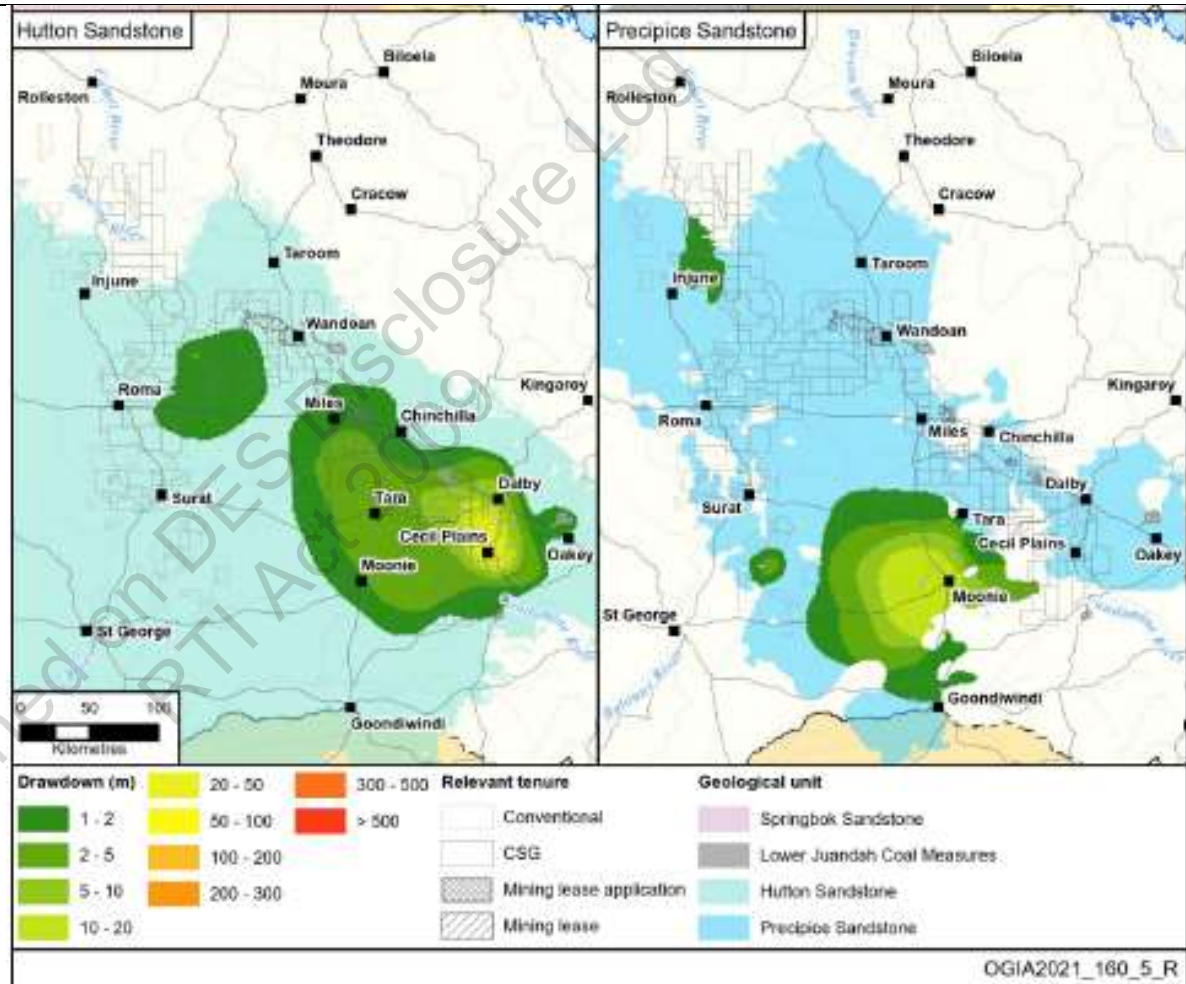
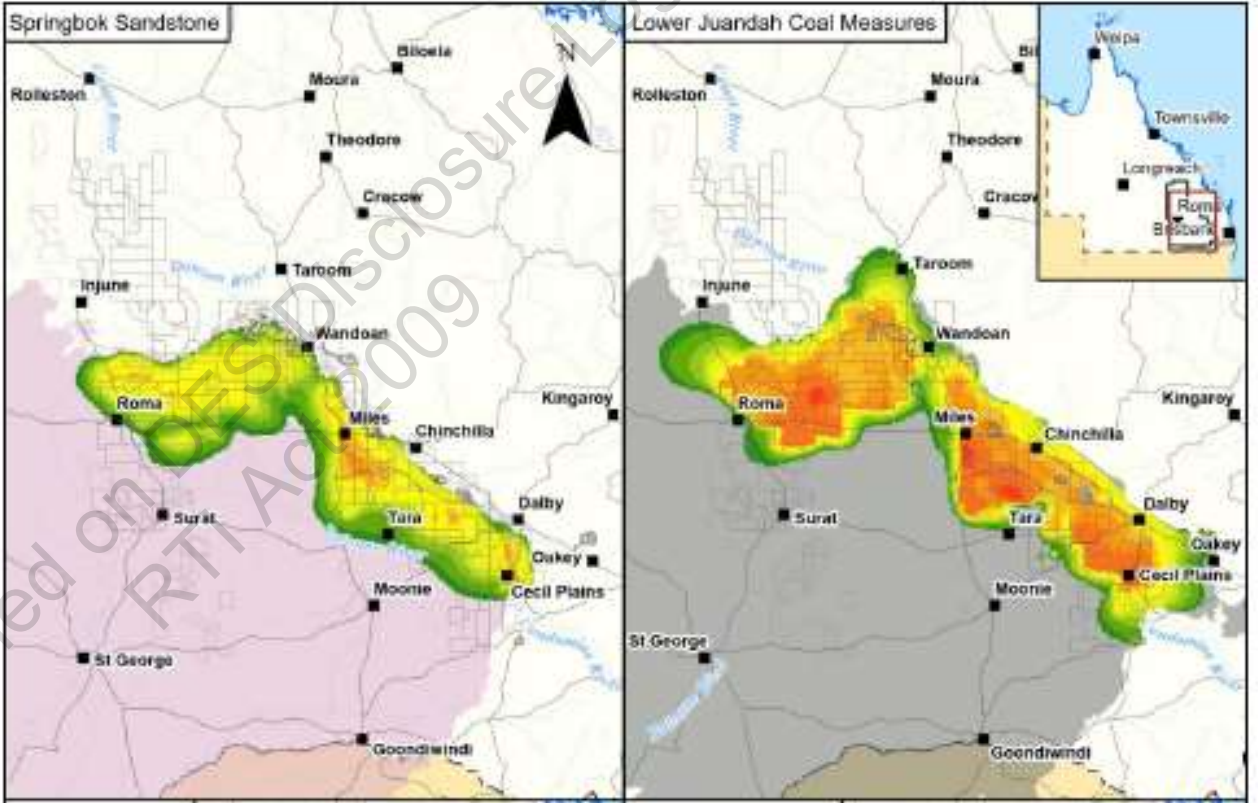
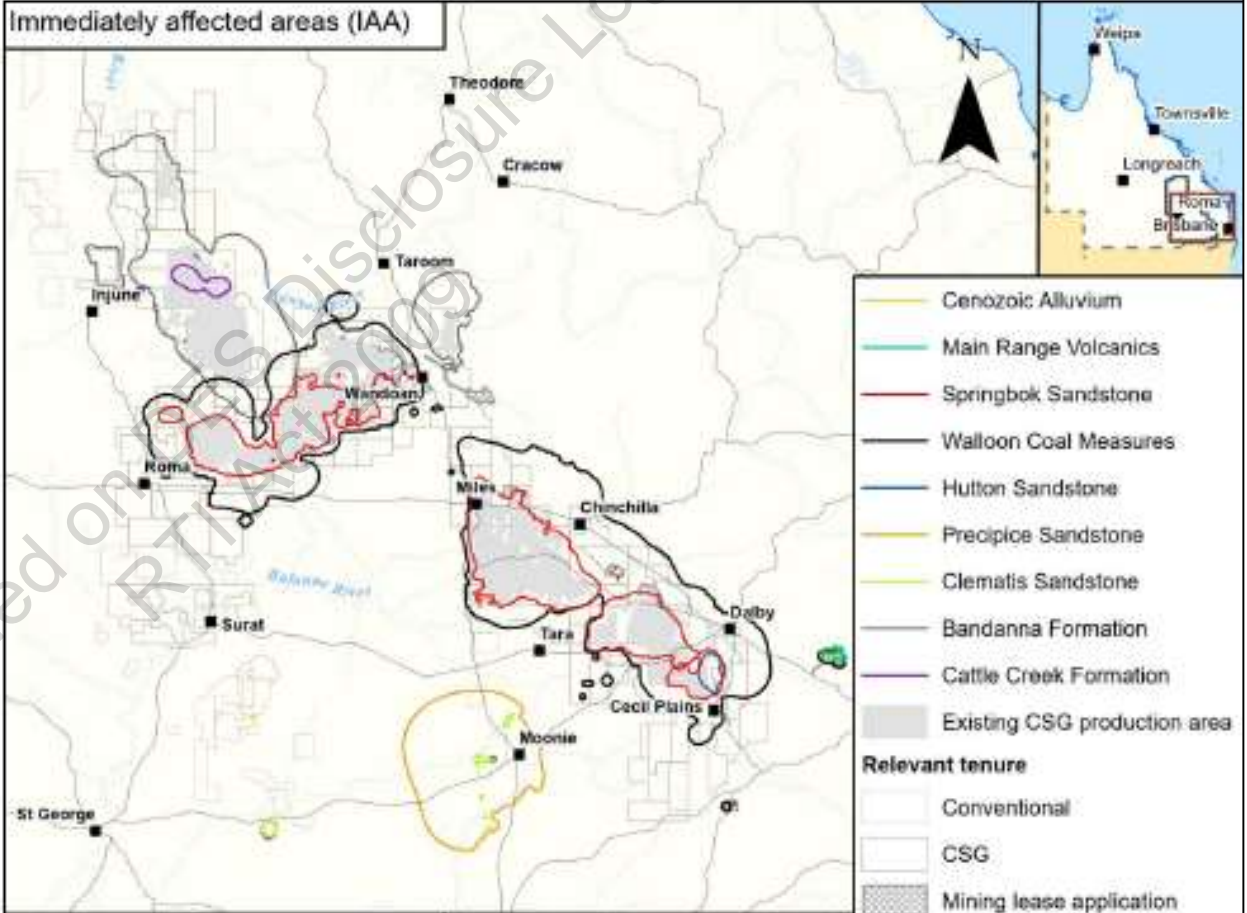
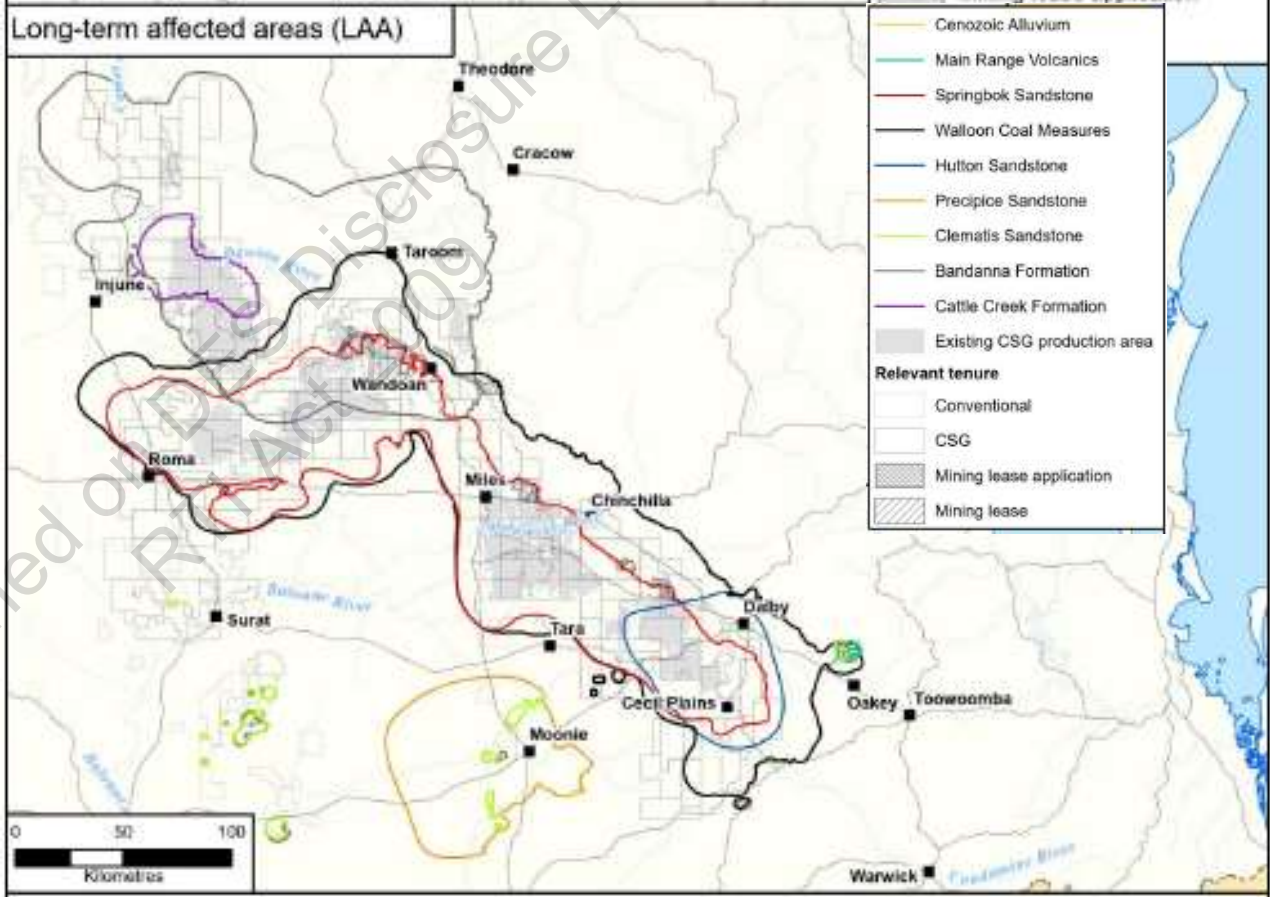


Figure 6-3: Long-term groundwater level impact patterns (P50) – overlying Springbok Sandstone, Lower Juandah Coal Measures (coal target formation) and underlying Hutton and Precipice sandstones (detailed maps are in Appendix E)

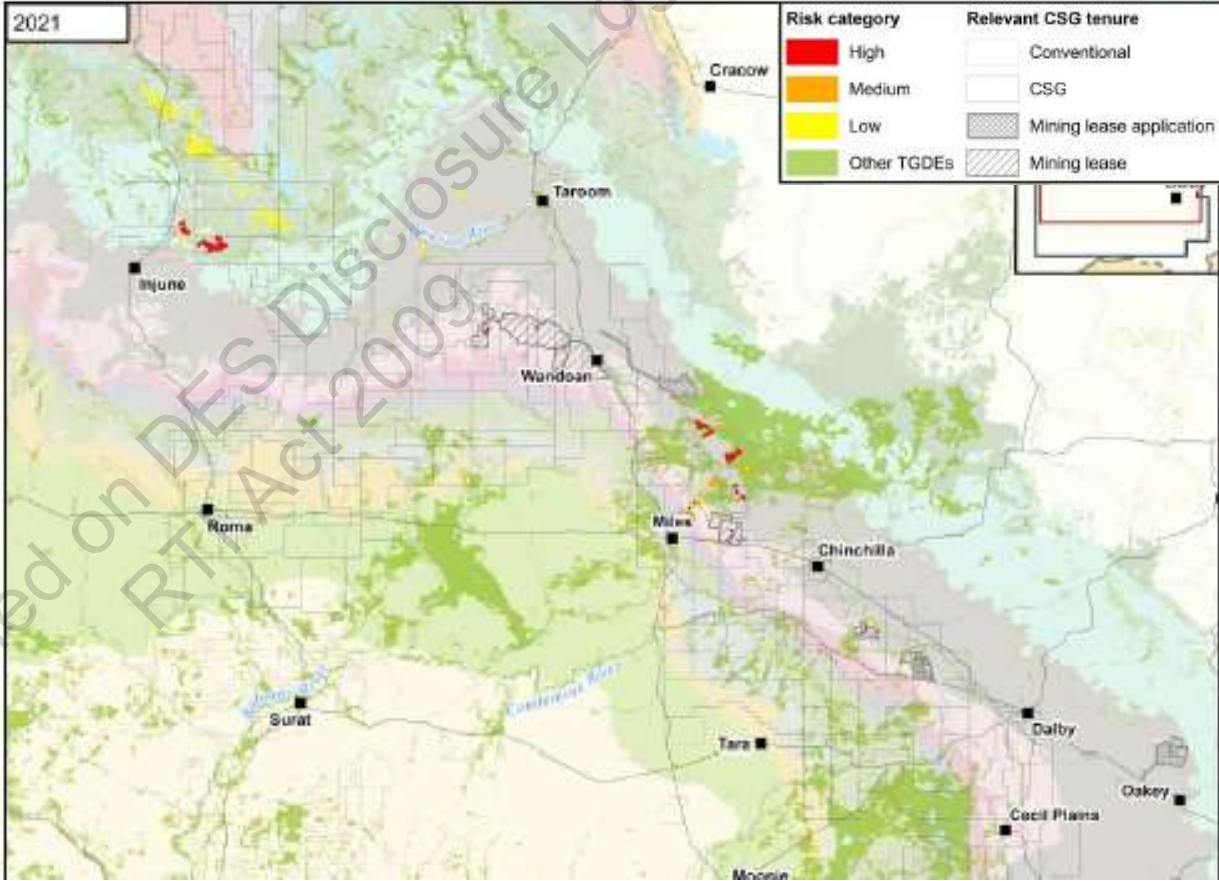
Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		
<p>(iv) a map showing the area of the aquifer where the water level is predicted to decline, because of the taking of the quantities of water mentioned in paragraph (a), by more than the bore trigger threshold within 3 years after the</p>	<p>YES</p>	<p>A map showing the IAA and is included in Chapter 6 (Figure 6-4)</p>

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
<p>consultation day for the report (an immediately affected area (IAA)).</p>		 <p>The map, titled 'Immediately affected areas (IAA)', shows the geographical context of the project. It includes an inset map of Queensland highlighting the location of the study area near Roma. The main map displays various geological formations such as Cenozoic Alluvium, Main Range Volcanics, Springbok Sandstone, Walloon Coal Measures, Hutton Sandstone, Precipice Sandstone, Clematis Sandstone, Bandanna Formation, and Cattle Creek Formation. It also identifies existing CSG production areas and relevant land tenures: Conventional, CSG, and Mining lease application. Key locations marked on the map include Injune, Roma, Surat, Mooloolah, Tara, Cattle Plains, Dalby, Chinchilla, Miles, Wandoo, Taroom, Gracow, and Theodore. A north arrow is present in the upper right corner of the map area.</p>

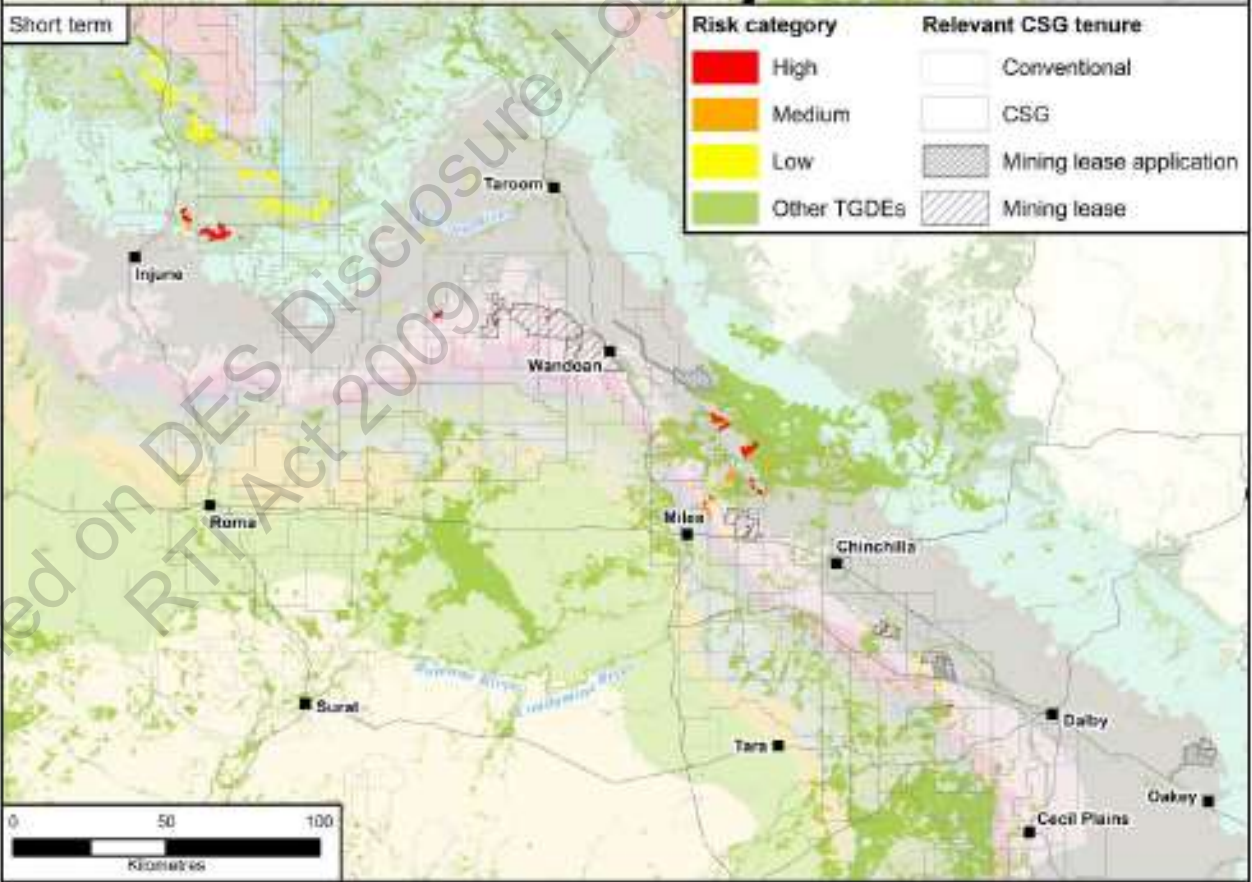
Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
<p>(v) a map showing the area of the aquifer where the water level is predicted to decline, because of the exercise of underground water rights, by more than the bore trigger threshold at any time (a long-term affected area (LTAA)).</p>	<p>YES</p>	<p>A map showing the LAA is included in Chapter 6 (Figure 6-4).</p> 
<p>376(1)(c)—A description of methods and techniques used to obtain the information and predications under paragraph (b)</p>	<p>YES</p>	<p>A description of methods and techniques used to obtain the predications of the IAA and LAA is included throughout the UWIR, in:</p>

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		<ul style="list-style-type: none"> • Chapter 2 – which provides background information about P&G and coal mining activities (tenures, description of activity and impact on groundwater, water usage) • Chapter 3 – which summarises water usage by non-resources users in the Surat CMA • Chapter 4 – which conceptualises lithology and impacts pathways to aquifers • Chapter 5 – which summarises monitoring to identify impacts from take associated with the exercising of underground water rights • Chapter 6 – which details the predictions of groundwater impacts to aquifers from the exercising of underground water rights. • Companion document OGIA 2021h, <i>Modelling methods for impact assessment in the Surat CMA (OGIA21CD15)</i>, Brisbane, Queensland, which was included in the information submitted with the UWIR
376(1)(d)—A summary of information about all water bores located within the IAA, including the number of bores, and the location and authorised use or purpose of each bore.	YES	<p>The number of IAA bores is mentioned throughout the UWIR – being 107 predicted by this UWIR and 340 overall. (note this figure will be revised to 108, as OGIA informed DES of an addendum to the UWIR on 24 February 2022 to include 1 more IAA bored).</p> <p>The location and authorised use or purpose of each IAA bore is included in Appendix G of the UWIR.</p>
376(1)(da)—A description of the impacts on environmental values (EVs) that have occurred, or are likely to occur, because of any previous exercise of underground water rights.	YES	<p>A description of the impacts on environmental values (EVs) that have occurred, or are likely to occur, because of any previous exercise of underground water rights is included in Chapter 12.</p> <p>Chapter 12 identifies the following EVs taken from the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Queensland Murray-Darling and Bulloo River Basins Groundwater Environmental Values and Water Quality Objectives</i>:</p> <ul style="list-style-type: none"> • biological integrity of aquatic ecosystems • cultural, spiritual and ceremonial values of water • the suitability of water for water supply (i.e. stock and domestic and town water supply) • the suitability of water for irrigation, farms supply and aquaculture • the suitability of water for industrial use

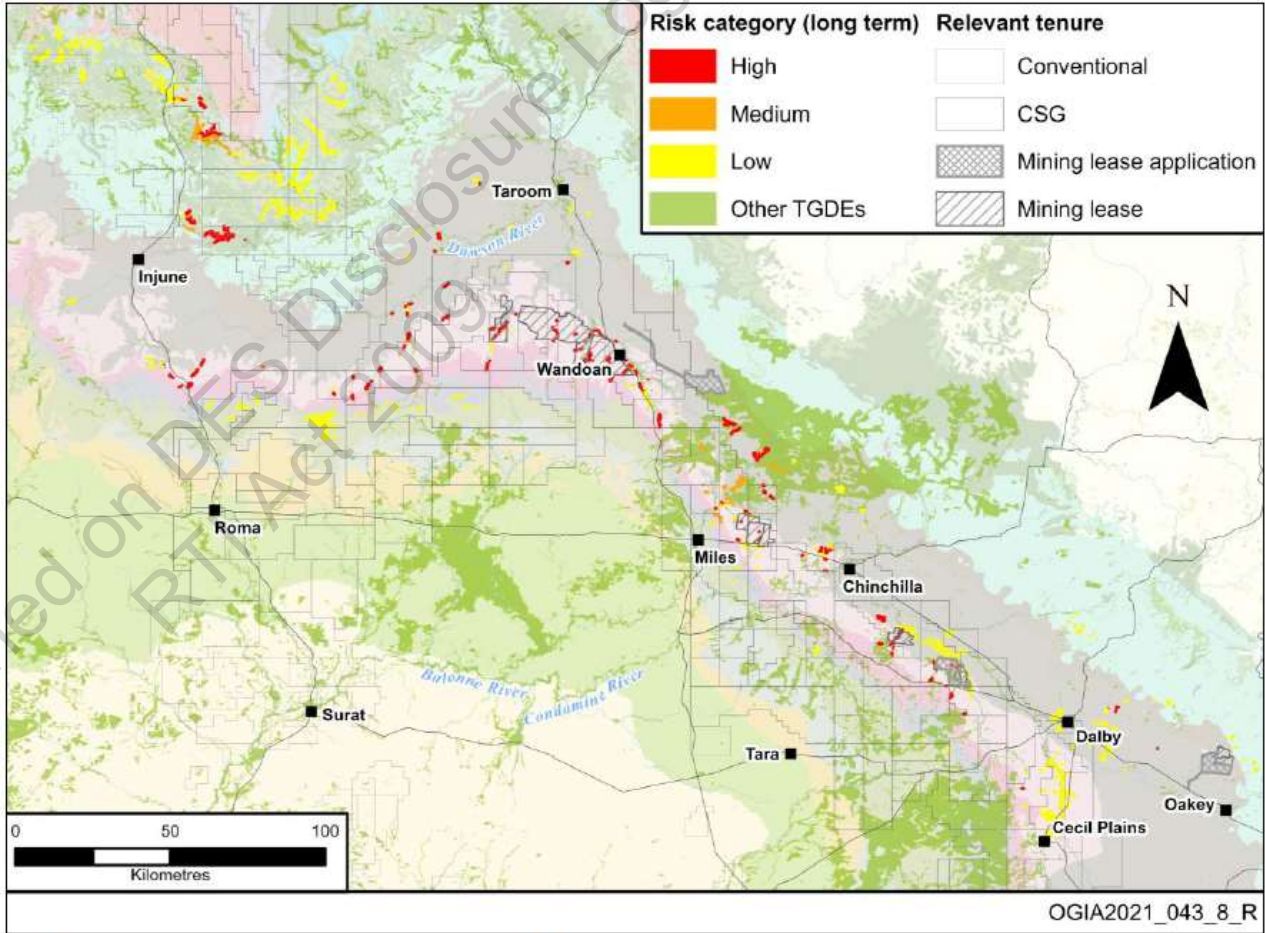
Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		<p>It is noted that human consumption and recreation EVs are not covered by the UWIR, which is in line with the EVs declared for groundwater in the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Queensland Murray-Darling and Bulloo River Basins Groundwater Environmental Values and Water Quality Objectives</i></p> <p>The UWIR identifies that analysis of water quality monitoring has found that:</p> <ul style="list-style-type: none"> • most water quality results are within the declared water quality objectives (WQOs) for the relevant aquifers, however some results exceed WQOs which is thought to be natural variability as the results pre-date resource development in the Surat region • water quality parameters have not changed significantly since resource development in the Surat region <p>In terms of EVs, the above indicates that the exercising of underground water rights has not negatively affected water quality and subsequently there are no water quality associated impacts to EVs.</p> <p>In relation to cultural values, the UWIR finds that the exercising of underground water rights has not diminished values through water take.</p> <p>In relation to biological integrity of aquatic ecosystems, the UWIR finds that:</p> <ul style="list-style-type: none"> • springs have not been impacted by the exercising of underground water rights; and • the exercising of underground water rights has lowered water levels in aquifers that support groundwater dependent ecosystems (GDEs) causing a potential risk to the GDEs (see image below).

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		<div style="text-align: center;">  </div> <p>The UWIR assesses subsidence caused by the exercising of underground water rights and determines that the exercising of underground water rights has:</p>

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		<ul style="list-style-type: none"> • caused subsidence, which may impact irrigation land (noting that irrigation land is not considered an EV under the EP Act) • not caused impacts to the biological integrity of aquatic ecosystems. <p>The UWIR does not identify any impacts to environmental values of 'landform' as an EV under the EP Act (i.e. 'landform' as "a quality or physical characteristic of the environment that is conducive to ecological health") (note: this is mentioned in terms of a finding of the UWIR, rather than any perceived deficiency).</p>
376(1)(db)—an assessment of the likely impacts on EVs that will occur, or are likely to occur, because of the exercise of underground water rights—		
(i) for a 3-year period starting on the consultation day for the report.	YES	<p>An assessment of the likely impacts on EVs for a 3-year period (i.e. short term) starting on the consultation day for the report is included in is included in Chapter 12.</p> <p>Chapter 12 identifies EVs taken from the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Queensland Murray-Darling and Bulloo River Basins Groundwater Environmental Values and Water Quality Objectives</i>.</p> <p>The UWIR finds that the exercising of underground water rights will not negatively affect water quality in the short term, and subsequently there will be no water quality associated impacts to EVs. However, it should be noted that the UWIR does not explicitly state that water quality will not impact aquatic ecosystems (i.e. spring and GDEs) and cultural values in the short term (though this can be derived from the broader analysis of water quality impacts to EVs).</p> <p>In relation to biological integrity of aquatic ecosystems, the UWIR finds that in the short term:</p> <ul style="list-style-type: none"> • springs may be impacted by the exercising of underground water rights (noting that section 379(1) of the Water Act requires a UWIR to include a Spring Impact Management Strategy (SIMS), which identifies risk to springs). The timing of impact to springs is stated in Table H-2 in Appendix H; and • the exercising of underground water rights will lower water levels in aquifers that support GDEs causing a potential risk to the GDEs (see image below).

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		<p>Short term</p>  <p>In relation to cultural values, the UWIR finds that the exercising of underground water rights may cause impacts to cultural EVs in the short term – with the impacts linked to any impacts on the surface expression of groundwater (i.e. springs and GDEs).</p>

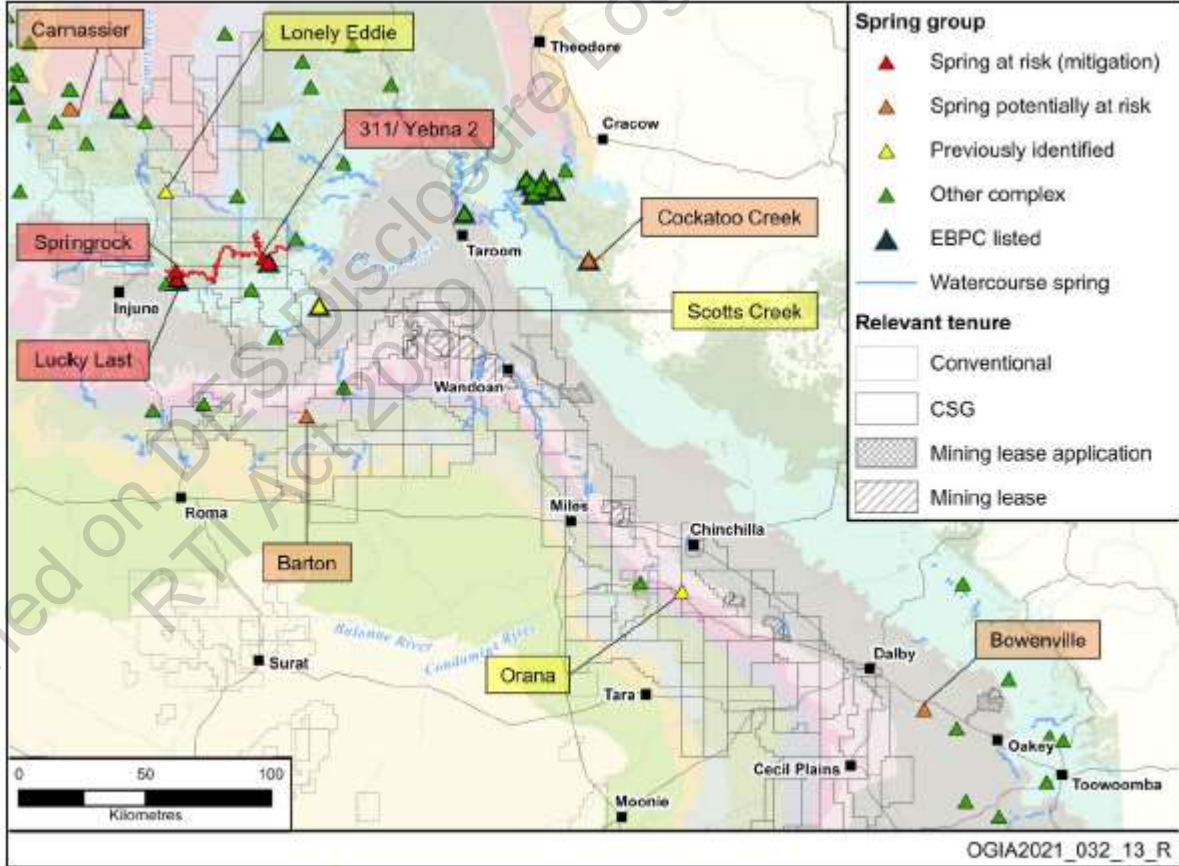
Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		<p>The UWIR assesses subsidence caused by the exercising of underground water rights and determines that in the short-term exercising of underground water rights will not cause impacts to the biological integrity of aquatic ecosystems.</p> <p>The UWIR does not predict any impacts to environmental values of 'landform' as an EV under the EP Act (i.e. 'landform' as "a quality or physical characteristic of the environment that is conducive to ecological health") (note: this is mentioned in terms of a finding of the UWIR, rather than any perceived deficiency).</p>
(ii) over the projected life of the resource tenure.	YES	<p>An assessment of the likely impacts on EVs over the projected life of the resource tenure (i.e. long term) is included in Chapter 12.</p> <p>Chapter 12 identifies EVs taken from the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019 Queensland Murray-Darling and Bulloo River Basins Groundwater Environmental Values and Water Quality Objectives</i>.</p> <p>The UWIR finds that the exercising of underground water rights will not negatively affect water quality in the long term, and subsequently there will be no water quality associated impacts to EVs. However, it should be noted that the UWIR does not explicitly state that water quality will not impact aquatic ecosystems (i.e. spring and GDEs) and cultural values in the long term (though this can be derived from the broader analysis of water quality impacts to EVs).</p> <p>In relation to biological integrity of aquatic ecosystems, the UWIR finds that in the long term:</p> <ul style="list-style-type: none"> • springs may be impacted by the exercising of underground water rights (noting that section 379(1) of the Water Act requires a UWIR to include a SIMS, which identifies risk to springs). The timing of impact to springs is stated in Table H-2 in Appendix H; and • the exercising of underground water rights will lower water levels in aquifers that support GDEs causing a potential risk to the GDEs (see image below).

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		 <p style="text-align: right;">OGIA2021_043_8_R</p> <p style="text-align: center;">Figure 11-1: The location of potential TGDEs and risk assessment outcomes (long term)</p>

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		<p>In relation to cultural values, the UWIR finds that the exercising of underground water rights may cause impacts to cultural EVs in the long term – with the impacts linked to any impacts on the surface expression of groundwater (i.e. springs and GDEs).</p> <p>The UWIR assesses subsidence caused by the exercising of underground water rights and determines that in the long-term exercising of underground water rights will not cause impacts to the biological integrity of aquatic ecosystems.</p> <p>The UWIR does not predict any impacts to environmental values of ‘landform’ as an EV under the EP Act (i.e. ‘landform’ as “a quality or physical characteristic of the environment that is conducive to ecological health”) (note: this is mentioned in terms of a finding of the UWIR, rather than any perceived deficiency).</p>
376(1)(e)—Include a program for—		
(i) conducting an annual review of the accuracy of each map prepared under paragraph (b)(iv) (IAA) and (v) (LTAA)	YES	Chapter 14 specifies that OGIA will ensure “an annual report is prepared to provide an update on changes to circumstances that would materially impact on the predictions reported in the UWIR, and to provide updates on the implementation of management strategies specified in the UWIR”. This is considered sufficient to meet this UWIR requirements.
(ii) giving the chief executive a summary of the outcome of each review, including a statement of whether there has been a material change in the information or predictions used to prepare the maps.	YES	Chapter 14 specifies that OGIA will ensure “an annual report is prepared to provide an update on changes to circumstances that would materially impact on the predictions reported in the UWIR, and to provide updates on the implementation of management strategies specified in the UWIR”. This is considered sufficient to meet this UWIR requirements.
376(1)(f)—A water monitoring strategy (WMS) (Insert WMS details in WMS section below).	YES	A WMS is included in Chapter 9 (see below for more detailed assessment).

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
376(1)(g)—A spring impact management strategy (SIMS) (Insert Spring info details in SIMS section below).	YES	A SIMS is included in Chapter 10 (see below for more detailed assessment).
376(1)(h)—If the UWIR has been prepared by the Office of Groundwater Impact Assessment (OGIA) —		
(i) a proposed responsible tenure holder for each report obligation mentioned in the UWIR	YES	Responsible tenure holders for each report obligation are detailed: <ul style="list-style-type: none"> • Appendix G for water bores • Appendix H for SIMS • Appendix J which summarises obligations for tenure holders in relation to water bores, water monitoring strategy, subsidence monitoring, reinjection, SIMS. <p>The rules for assigning obligation to tenure holders is described in Chapter 13.</p>
(ii) for each immediately affected area—the proposed responsible tenure holder or holders who must comply with any make good obligations for water bores within the immediately affected area.	YES	The responsible tenure holder for make good obligations are detailed in Appendix G.
Water Monitoring Strategy (WMS) requirements		
378(1)—The WMS must include the following for each immediately affected area (IAA) and long-term affected area (LTAA) identified in the UWIR—		
378(1)(a)— a strategy for monitoring —		
(i) the quantity of water produced or taken from the area because of the exercise of relevant underground water rights	YES	A strategy for monitoring the quantity of water produced or taken is specified in 9.7 of the UWIR.

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
(ii) changes in the water level of, and the quality of water in, aquifers in the area because of the exercise of the rights.	YES	A strategy for monitoring <ul style="list-style-type: none"> • changes in the water level in aquifers is specified in section 9.5 of the UWIR. • changes in the quality of the water quality in aquifers is specified in section 9.6 of the UWIR.
378(1)(b) the rationale for the WMS strategy.	YES	The rationale for the WMS strategy is specified in section 9.4.2 of the UWIR.
378(1)(c) a timetable for implementing the WMS strategy.	YES	The timetable for implementing the WMS strategy is specified in: <ul style="list-style-type: none"> • sections 9.5, 9.6, 9.7, 9.10 and summarised in section 9.11 of the UWIR. • Appendix 1 of companion document OGIA 2021j, <i>Details of the Water Monitoring Strategy (OGIA21CD20)</i>, Brisbane, Queensland
378(1)(d) a program for reporting to OGIA about the implementation of the WMS strategy.	YES	The program for reporting to OGIA about the implementation of the WMS strategy is specified in section 9.11 of the UWIR.
378(3)—The WMS must include a program for the responsible tenure holder(s) to undertake a baseline assessment for each water bore that is outside the area of a resource tenure, but within the predicted LTAA.	YES	The program for the responsible tenure holder(s) to undertake a baseline assessment is specified in section 9.10 of the UWIR.
Spring Impact Management Strategy (SIMS) requirements		
379(1)—The SIMS must include each of the following for each spring of interest in the area to which the UWIR relates—		
379(1)(a)—the details of the spring, including its location	YES	The details of springs of interest, including location, are specified in section 10.5.1 of the UWIR.

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		 <p style="text-align: center;">Figure 10-1: The location of springs of interest in the Surat CMA</p>
379(1)(b)—an assessment of the connectivity between the spring and the aquifer over which the spring is located.	YES	The methodology used to assess the connectivity between the spring and the aquifer over which the spring is located is discussed in section 10.5.2 of the UWIR (with conceptual theories of impact detailed in section 4.4.9 of the UWIR).

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
379(1)(c)—the predicted risk to, and likely impact on, the ecosystem and cultural and spiritual values of the spring because of a decline in water level of the aquifer over which the spring is located.	YES	<p>Ecological and cultural values of spring are discussed in section 10.5.3 of the UWIR. The UWIR finds that risk to ecological and cultural values will be linked to impacts to surface expression of groundwater and source aquifer pressure. The UWIR models groundwater pressures and levels in aquifers that support springs, then uses these predictions in a risk assessment to highlight springs at risk (see figure 10-1 from the UWIR above).</p> <p>Table H-1 in Appendix H covers:</p> <ul style="list-style-type: none"> • Maximum impact (i.e. drawdown in metres) to source aquifers • Timing of impact • Risk score (rating from risk assessment) • Responsible tenure holder • Action required for each spring.
379(1)(d)—a strategy, including the actions to be taken, for preventing or mitigating the predicted impacts on the spring or, if a strategy for preventing or mitigating the predicted impacts on the spring is not included, the reason for not including the strategy.	YES	A strategy, including the actions to be taken, for preventing or mitigating the predicted impacts on the spring is specified in section 10.7 and Appendix H of the UWIR. It is noted that the UWIR includes reference to the SIMP that Santos developed as part of the 2019 UWIR.
379(1)(e)—a timetable for implementing the strategy.	YES	<p>A timetable for implementing the strategy is broadly described within Chapter 10 and Appendices H and J of the UWIR. The UWIR identifies:</p> <ul style="list-style-type: none"> • 3 springs currently at risk (Springrock, Lucky Last, 311/Yebna 2) for which Santos' SIMS and proposed mitigation measures apply to • 4 springs potentially at risk (Cockatoo Creek, Carnassier, Barton, Bowenville) where further investigations are required • 3 springs identified in the previous UWIR as at risk, but are no longer considered at risk due to investigations (Lonely Eddie, Horse Creek, Scotts Creek). <p>Table H-2 in Appendix H details:</p>

Statutory requirement	Requirement met?	Provide details of how the UWIR does or does not meet the statutory requirements, or why the requirement is not relevant to the UWIR.
		<ul style="list-style-type: none"> • Mitigation actions for the 3 springs currently at risk • Trigger for when action is required • Timing of implementation for mitigation action <p>Tables H-4, H-5, H-6 and H-7 in Appendix H detail monitoring requirements for springs, including monitoring frequency.</p>
379(1)(f)—a program for reporting to the OGIA about the implementation of the strategy.	YES	A program for reporting to the OGIA about the implementation of the strategy is specified in section 10.9 of the UWIR.

Published on DES Disclosure Log
RTI Act 2009

6 Human Rights impact assessment

Proper consideration is required to determine the compatibility of any act, decision or statutory provision with human rights under the *Human Rights Act 2019* (HR Act). An act, decision or statutory provision will be compatible with human rights if it does not limit the human right, or if it limits the human right only to the extent that is reasonable and demonstrably justifiable. This involves a weighing up of a range of factors which are set out in [section 13 of the HR Act](#). Please refer to [Human Rights Act assessment guidance information sheet](#) (Policy Register #ESR/2019/4970), and [Human rights in decision making, a guide for Queensland Government staff](#) for guidance.

Consider the action or decision you are proposing and ask:

1. Which rights are relevant to the decision or act proposed to be taken?
 - 27 – Cultural rights – generally
 - 28 – Cultural rights of Aboriginal and Torres Strait Islander peoples
2. Will your action or decision limit or restrict any of the rights you've identified?

No – there are no reasonably foreseeable limitations to the human rights under the Human Rights Act 2019.

The rights identified in the previous section considered relevant to this application have been assessed as follows:

27 – Cultural rights – generally

- The exercising of underground water rights may impact water pressure in aquifers with a surface expression of groundwater (GDEs and springs).
- The UWIR identifies potential impacts to GDEs, while it requires research into and monitoring of springs and the implementation of mitigation actions if monitoring identifies those springs are being impacted.
- The UWIR therefore is an instrument designed to protect sites that may have cultural values, and its approval is not anticipated to impact cultural rights.

28 – Cultural rights – Aboriginal and Torres Strait Islander peoples

- The exercising of underground water rights may impact water pressure in aquifers with a surface expression of groundwater (GDEs and springs).
- The UWIR identifies potential impacts to GDEs, while it requires research into and monitoring of springs and the implementation of mitigation actions if monitoring identifies those springs are being impacted.
- The UWIR therefore is an instrument designed to protect sites that may have cultural values, and its approval is not anticipated to impact cultural rights.

If you answered NO to Q.2, please insert the statement '*There are no implications for human rights under the Human Rights Act 2019*'.

If you answered YES to Q.2, provide further details;

7 Actual and proposed consultation (provide for natural justice)

It is proposed to engage with OGIA about the proposed conditions for the UWIR Notice.

8 Advice from the Office of Groundwater Impact Assessment—section 385(3) of the Water Act

N/A - The UWIR was submitted by the Office of Groundwater Impact Assessment.

9 Recommendation

Legislative requirements

This assessment has found that UWIR has met all legislative requirements – therefore it is recommended that the UWIR be approved.

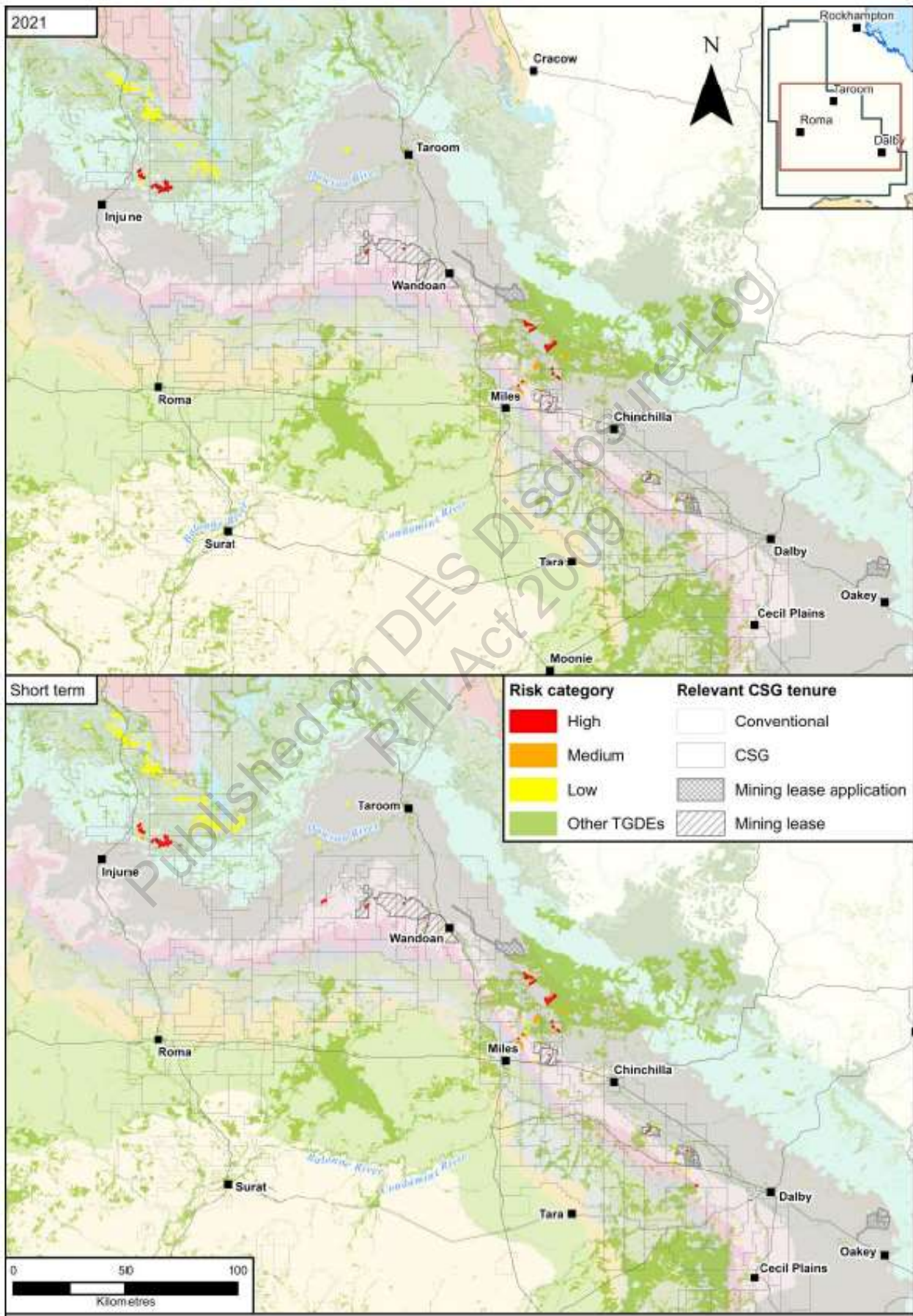
Recommendation 1: It is recommended that the UWIR be approved in accordance with section 385 of the Water Act.

Groundwater dependent ecosystems

As highlighted in the following figures and table, the UWIR identifies that impacts to GDEs have occurred, and are likely to continue to occur. The UWIR defines the following impacts:

- low risk – where predicted impacts to the aquifer which supports GDEs is between 0.2 and 1 m regardless of the biodiversity status
- medium risk – where predicted impacts to the aquifer which supports GDEs is greater than 1 m and the biodiversity status of the GDE is 'no concern at present'
- high risk – where predicted impacts to the aquifer which supports GDEs is greater than 1 m and the biodiversity status of the GDE is 'of concern' or 'endangered'

Published on DES Disclosure Log
RTI Act 2009



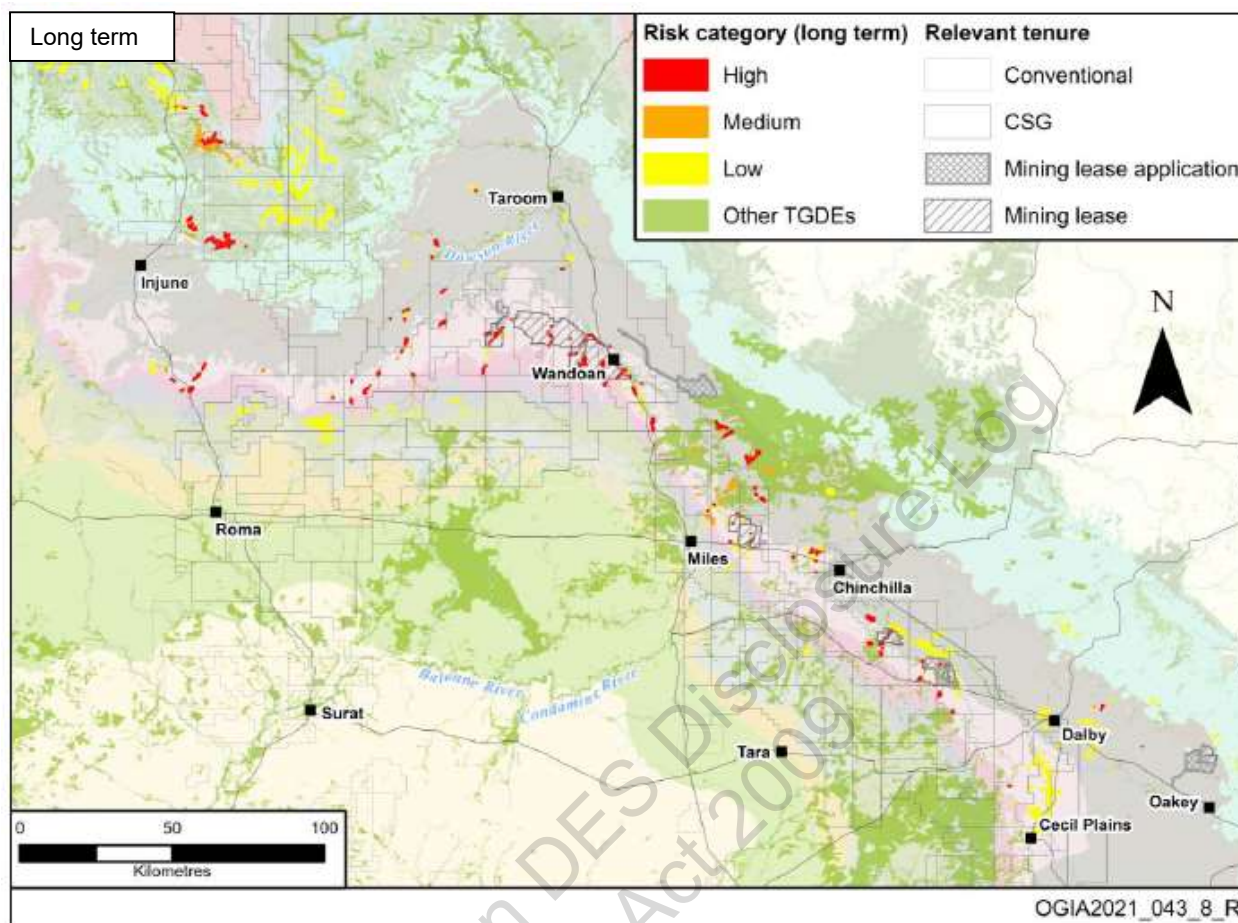


Table 11-1: Summary of risk assessment for TGDEs (area of interest)

Risk category	Area of TGDEs predicted to be affected		
	Past	2021–2024	Long-term
Low	0.4 % (2,543 ha)	0.6 % (4,067 ha)	0.7 % (4,641 ha)
Medium	0.1 % (842 ha)	0.1 % (886 ha)	2.3 % (15,529 ha)
High	0.3 % (1,845 ha)	0.3 % (1,885 ha)	0.3 % (1,766 ha)

Note:

TGDE percentages relate to the total extent of TGDEs of interest. The percentages in later time periods (i.e. 2021–2024 and long-term) include the area identified in the earlier time periods.

Section 215(1)(a) of the *Environmental Protection Act 1994* (EP Act) states that the “administering authority may amend an environmental authority...if: it considers the amendment is necessary or desirable because of a matter mentioned in subsection (2)”.

Section 215(2)(q) of the EP Act states “for an environmental authority for a resource activity—an underground water impact report under the Water Act 2000, chapter 3, identifies impacts, or potential impacts, on an environmental value”.

It is considered that sub-sections 376(1)(da) and 376(1)(db) of the Water Act are designed to identify any impacts to environmental values – while sub-section 215(1)(a) and 215(2)(q) of the EP Act are designed to allow the administering authority to amend any relevant EA in relation to the impacts.

The UWIR identifies that 21,936ha of GDEs maybe impacted, which represents 3.3% of GDEs in the ‘area of interest’ in the UWIR (i.e. area predicted to be impacted in the long term).

It is currently unclear whether the impacts to GDEs predicted by the UWIR are authorised by resource EAs overlapping the GDEs.

However, the 2021 UWIR is the first UWIR submitted to DES that identifies that the impacts to GDEs (in terms of a decline in water level that supports GDEs) may have occurred and are predicted to continue to occur in the short term.

Given the timing of these predicted impacts to GDEs, it is recommended that DES:

- investigate whether resource EAs in the Surat CMA authorise impacts to GDEs; and
- develop a strategy for managing the predicted impacts to GDEs.

It is recommended that investigation and strategy be completed in a timely manner after approval of the UWIR. If the outcome of the investigation and strategy is to use section 215(1) of the EP Act to amend EAs, then this should also occur in a timely manner to ensure any proposed amendments would be considered 'necessary and desirable' by the administering authority in accordance with section 215(1) of the EP Act.

Recommendation 2: It is recommended that DES:

- (a) investigate whether EAs in the Surat CMA authorise impacts to GDEs
- (b) develop a strategy for managing the impacts to GDEs that are predicted in the UWIR.

Companion documents

The UWIR makes reference to the 'companion documents' contained in the following table. However, as the table highlights, some of these documents were not publicly available during public consultation, and some were not available at the time of submission of the UWIR.

Companion document reference in UWIR and name of document	Publicly available during consultation?	Publicly available now?	Submitted with the UWIR to DES?
OGIA 2021a, <i>Surat CMA and its groundwater systems (OGIA21CD04)</i>	Yes	Yes	Yes
OGIA 2021b, <i>Regional flow systems and potentiometry in the Surat CMA (OGIA21CD08)</i>	No	Yes	No
OGIA 2021c, <i>Status of coal seam gas and conventional petroleum development in the Surat CMA (OGIA21CD01)</i>	Yes	Yes	No
OGIA 2021d, <i>Existing and proposed coal mining in the Surat Basin (OGIA21CD02)</i>	Yes	Yes	No
OGIA 2021f, <i>Coal mining impact pathways (OGIA21CD06)</i>	No	No	No
OGIA 2021g, <i>Analysis of groundwater level trends to identify impacts from resource development in the Surat CMA (OGIA21CD14)</i>	No	No	No
OGIA 2021h, <i>Modelling methods for impact assessment in the Surat CMA (OGIA21CD15), Brisbane, Queensland</i>	Yes	Yes	Yes
OGIA 2021i, <i>Assessment of CSG-induced subsidence in the Surat CMA</i>	No	No	No

OGIA 2021j, <i>Details of the Water Monitoring Strategy (OGIA21CD20)</i>	Yes	Yes	Yes
OGIA 2021k, <i>Springs in the Surat Cumulative Management Area - conceptualisation, source aquifer, impact pathways and risk assessment (OGIA21CD13)</i>	No	No	No

OGIA has indicated that the companion documents do form part of the UWIR. However, not all of the documents were available during the consultation period, and some of the documents have yet to be made available to DES.

As this assessment has found, the UWIR that has been submitted (i.e. without the companion documents) has met legislative requirements.

It is considered that the companion documents do provide additional detail for certain areas of the UWIR – beyond that which is necessary to meet legislative requirements. Some documents, such as OGIA 2021j, *Details of the Water Monitoring Strategy (OGIA21CD20)*, contain detailed information about tenure holders monitoring requirements, which would help provide more clarity to tenure holders about their obligations and would aid in the enforceability of the obligations. Therefore there is benefit in clarifying that these documents form a part of the UWIR.

A condition included in the notice issued under section 385 of the Water Act which specified which documents that were available during public consultation formed part of the UWIR would help clarify the documents that formed part of the UWIR.

Recommendation 3: It is recommended that Notice issued under section 385 of the Water Act include a condition specifically clarifying which documents that were available during public consultation formed part of the UWIR.

Santos SIMP

Section 10.7.2 10 of the UWIR highlights that Santos submitted a SIMP to OGIA, and that “following a number of iterations and discussions between Santos, OGIA and DES, the SIMP was approved by OGIA in June 2021 and took effect through an amendment to the UWIR in August 2021”.

OGIA has confirmed that the obligations mentioned in the Santos SIMP have been included in the UWIR. It is therefore considered that there is no need to include a condition in issued under section 385 of the Water Act which specifies that the Santos SIMP forms part of the UWIR.

Recommendation 4: It is recommended that Notice issued under section 385 of the Water Act does not include a condition specifically clarifying that the Santos SIMP forms part of the UWIR.

Compliance obligations and tracking

DES and OGIA have discussed the inclusion of a condition in the notice issued under section 385 of the Water Act, which would require OGIA to provide all of the (tenure holder) obligations mentioned in the UWIR to DES within a specified format, and time.

The UWIR includes a range of obligations including: baseline assessments; bore assessments; monitoring of water take; monitoring of water quality; monitoring of water levels; investigation into springs; implementation of spring impact mitigation measures. Tenure holders report the outcomes of obligations to OGIA (such as supplying monitoring data; or the results of research etc.) and OGIA has confirmed that it records the submission of this information. It would be beneficial for DES if OGIA summarised the obligations, and then updated DES about whether the obligations are being met.

Recommendation 5: It is recommended that a condition be included in the UWIR that requires ;

1. OGIA to provide the obligations specified in the UWIR to DES in an agreed manner,
2. OGIA provide regular updates on whether tenure holders are meeting the obligations.

Minor comments recommended to be provided to OGIA

It is recommended that the following comments about the UWIR be provided to OGIA via email:

- The Submissions Summary submitted with the UWIR mentions that OGIA will refer a number of matters (that are discussed in the Submissions Summary) to DES and other government entities for consideration. Please provide a copy of the correspondence used to do this to DES.
- Section 12.3.5 – does not explicitly cover potential water quality impacts to cultural EVs in the short term and long term.
- Section 12.3.6 – does not explicitly cover potential water quality impacts to aquatic ecosystems EVs in the short term and long term
- It is recommended that future UWIRs specify which mines located within the Surat CMA that are not included in the UWIR.

Recommended conditions to be included in the notice issued under section 385 of the Water Act

It is recommended that the UWIR should be approved with the conditions outlined below:

Annual Review

- (1) The Office of Groundwater Impact Assessment must submit to the chief executive a summary of the annual review required under section 376(e)(ii) of the *Water Act 2000*, within 20 business days after each anniversary day, or another date agreed to in writing by the chief executive. The annual review must provide an analysis and a statement of whether there has been a material change in the information or predictions used to determine the Immediately Impacted Area (IAA).

Monitoring

- (2) All monitoring required of the responsible entity under the UWIR must be undertaken by a suitably qualified person.
- (3) All laboratory analyses and tests of monitoring undertaken under the UWIR water monitoring strategy must be carried out by a laboratory that has NATA accreditation for such analyses and tests.
- (4) Notwithstanding condition (3), where there are no laboratories that have NATA accreditation for a specific analyte or substance, then duplicate samples must be sent to at least two separate laboratories for independent testing or evaluation.
- (5) The methods of groundwater sampling required by the UWIR must comply with the latest edition of the *Queensland Monitoring and Sampling Manual*, AS/NZS 5667:11 1998 *Water Sampling Guidelines – Part 11 Guidance on sampling groundwater*, and the Australian Government's *Groundwater Sampling and Analysis – A Field Guide* (2009:27 GeoCat #6890.1) as relevant as may change from time to time.

Documents

- (6) For clarity, the UWIR includes:
 - a. *Underground Water Impact Report 2021 for the Surat Cumulative Management Area, December 2021* and appendices, Office of Groundwater Impact Assessment
 - b. OGIA 2021a, *Surat CMA and its groundwater systems* (OGIA21CD04), Office of Groundwater Impact Assessment, accessed from <<https://www.business.qld.gov.au/ogia>>

- c. OGIA 2021c, *Status of coal seam gas and conventional petroleum development in the Surat CMA* (OGIA21CD01), Office of Groundwater Impact Assessment, accessed from <<https://www.business.qld.gov.au/ogia>>
- d. OGIA 2021d, *Existing and proposed coal mining in the Surat Basin* (OGIA21CD02), Office of Groundwater Impact Assessment, accessed from <<https://www.business.qld.gov.au/ogia>>
- e. OGIA 2021h, *Modelling methods for impact assessment in the Surat CMA* (OGIA21CD15), Office of Groundwater Impact Assessment, accessed from <<https://www.business.qld.gov.au/ogia>>
- f. OGIA 2021j, *Details of the Water Monitoring Strategy* (OGIA21CD20), Office of Groundwater Impact Assessment, accessed from <<https://www.business.qld.gov.au/ogia>>.

Obligations

- (7) By 1 August 2022, the Office of Groundwater Impact Assessment must compile a register that includes all obligations of the Office of Groundwater Impact Assessment and the tenure holders stipulated in the UWIR, in a format agreed by the administering authority.
- (8) The Office of Groundwater Impact Assessment must maintain the register in Condition 7 to update, on a monthly basis, the status of current progress on each of the obligations listed in the register.
- (9) A responsible tenure holder for an obligation in the UWIR must provide information about an obligation in the register in Condition 7 and the current progress of the obligation in condition 8 to the Office of Groundwater Impact Assessment upon request, in the format and within the timeframe specified in the request.
- (10) The register in Conditions 7 and 8 must be provided to the administering authority upon request to support compliance against the obligations of the UWIR.

DEFINITIONS

Anniversary day means each anniversary of the day the first UWIR took effect – 16 December.

Chief executive means the Director-General of the department responsible for administering Chapter 3 of the *Water Act 2000* or the persons delegated the powers of the chief executive as stated in the *Water Act* (EHP-Chief Executive) Delegation (No. 1) 2017 or subsequent versions.

NATA accreditation means accreditation by the National Association of Testing Authorities Australia.

Responsible entity means the resource tenure holder identified in the underground water impact report in accordance with section 368 of the *Water Act 2000*.

Suitably qualified person means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis to performance relative to the subject matter using the relevant protocols, standards, methods or literature.

UWIR means the underground water impact report prepared by Office of Groundwater Impact Assessment for Surat Cumulative Management Area submitted on 17 December 2021.

Water management strategy includes OGIA 2021j, *Details of the Water Monitoring Strategy* (OGIA21CD20).

Assessment report
Underground water impact report

Assessing officer	
Signature:	Date: 16 March 2022
Name: Daniel Spelchan	Position: Team Leader

Reviewing officer	
Endorse the recommendation: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
<div style="border: 1px solid red; padding: 2px;">sch4p4(6) Personal information</div> Signature:	Date: 16 March 2022
Name: Adam Burt	Position: Principal Environmental Officer

10 Approval

The recommendation is approved.

<div style="border: 1px solid red; padding: 2px;">sch4p4(6) Personal information</div>  Signature	<div style="border: 1px solid black; padding: 5px; text-align: center;">17 March 2022</div> Date
--	---

Tristan Roberts
Manager
Delegate of the chief executive
Chapter 3 of the *Water Act 2000*
Department of Environment and Science