

# Bowen - EPBC Approval 2012/6377 Annual Compliance Report 2024/2025

Bowen Gas Project

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**Contents**

<b>1.</b>	<b>Purpose</b>	<b>3</b>
<b>2.</b>	<b>Description of activities</b>	<b>3</b>
<b>2.1</b>	<b>Approved activities</b>	<b>3</b>
<b>2.2</b>	<b>Current activities</b>	<b>3</b>
<b>3.</b>	<b>Approval conditions</b>	<b>3</b>
<b>3.1</b>	<b>Compliance table</b>	<b>3</b>
<b>3.2</b>	<b>Referenced management plans</b>	<b>4</b>
<b>4.</b>	<b>Non-compliance</b>	<b>4</b>
<b>5.</b>	<b>New environmental risks</b>	<b>4</b>
<b>6.</b>	<b>Reconciliation of impacts against approval limits for listed threatened species</b>	<b>4</b>
<b>7.</b>	<b>Declaration of Accuracy</b>	<b>5</b>
<b>8.</b>	<b>Document Administration</b>	<b>6</b>
	<b>Appendix A: EPBC Approval 2012/6377 Conditions Compliance Table</b>	<b>7</b>

## 1. Purpose

This report addresses compliance with the *Environmental Protection and Biodiversity Conservation Act 1994* (EPBC Act) Approval 2012/6377 (EPBC Approval) for the annual period of 14 February 2024 to 13 February 2025.

## 2. Description of activities

### 2.1 Approved activities

EPBC Number – 2012/6377

Arrow Bowen Gas Project (BGP)

Approval Holder : Arrow Energy Pty Ltd

ACN : 73 078 521 936

Approved Action: To develop, operate and decommission a coal seam gas field in the Bowen Basin, Queensland referred under the EPBC Act on 9 May 2012; and as described in the Arrow Bowen Gas Project Environmental Impact Statement (March 2013) and Supplementary Report (May 2014).

Decision Date: 27 October 2014

Variation Date: 26 September 2019

Action Commencement Date: 14 February 2019

Location of Project: Bowen Basin

Person Accepting responsibility for the report: Gary Cardiff, Operations Director

Dates for Reporting period: 14 February 2024 to 13 February 2025

Date of Preparation of report: 6 May 2025

### 2.2 Current activities

No new disturbance activities associated with the action were undertaken during the reporting period. Gas production activities and groundwater monitoring occurred on PL486.

## 3. Approval conditions

### 3.1 Compliance table

EPBC approval conditions and an assessment of compliance against each condition is presented in Appendix A. The assessment demonstrates compliance with all conditions.

Records substantiating all activities associated with or relevant to approval conditions are stored in Arrow's file directories.

### 3.2 Referenced management plans

The following management plans required under the EPBC Approval conditions are available on Arrow Energy's website.

- Bowen Gas Project EPBC Species Impact Management Plan, October 2018 (SIMP)
- Bowen Gas Project Phase 1 Offset Strategy, October 2018 (Phase 1 Offset Strategy)
- Bowen Gas Project CSG Groundwater Monitoring and Management Plan Project Stage 1, October 2019 (GMMP)

## 4. Non-compliance

Nil

## 5. New environmental risks

Nil

## 6. Reconciliation of impacts against approval limits for listed threatened species

In accordance with Condition 30, Item (a), Table 1 below provides a *reconciliation of actual impacts against whole of project maximum disturbance limits for EPBC listed threatened species and communities listed in Table 1* [of EPBC Approval 2012/6377].

The 'Project Phase 1 proposed disturbance' limits presented in the table below are those included in the approved Phase 1 Offset Strategy.

As discussed in Section 2.2, there were no disturbances associated with the action during the current reporting period and therefore no impacts to the values listed in Table 1.

Table 1: Reconciliation of actual impacts against project maximum disturbance limits

	Whole of project approved limits (ha)	Project Phase 1 max. disturbance (ha)	Actual Cumulative impact total to date (ha)*
<b><u>Threatened Species</u></b>			
Black Ironbox ( <i>Eucalyptus raveretiana</i> )	258.32	21.33	0
Bluegrass ( <i>Dichanthium setosum</i> )	809.59	249.84	3.7^
King Bluegrass ( <i>Dichanthium queenslandicum</i> )	1,161.23	429.36	0
Ornamental Snake ( <i>Denisonia maculata</i> )	1,030.31	296.2	18.4
Squatter Pigeon ( <i>Geophaps scripta scripta</i> )	1,415.44	313.1	20.9
Red Goshawk ( <i>Erythrotriorchis radiatus</i> )	187.14	49.4	4.4
Koala ( <i>Phascolarctos cinereus</i> ) (combined populations of Queensland, New South Wales and the Australian Capital Territory)	2,466.04	376.59	3.8
South-eastern long-eared bat ( <i>Nyctophilus corbeni</i> )	2,282.57	618.12	0
Large-eared Pied Bat ( <i>Chalinolobus dwyeri</i> )	1,451.44	723.67	0
<b><u>Threatened Ecological Communities</u></b>			
Brigalow ( <i>Acacia harpophylla</i> dominant and co- dominant)	781.16	283.92	2.94
Weeping Myall Woodlands	198.48	79.68	0
Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin	871.10	278.4	0
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	107.42	97.6	0

\*Threatened species areas based upon Regional Ecosystem mapping version 10.

TEC areas based upon Regional Ecosystem mapping version 11.

^Area based conservatively on potential habitat mapping. *D. setosum* has not been observed within the approval area.

## 7. Declaration of Accuracy

*In making this declaration, I am aware that sections 490 and 491 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) make it an offence in certain circumstances to knowingly provide false or misleading information or documents. The offence is punishable on conviction by imprisonment or a fine, or both. I declare that all the information and documentation supporting this compliance report is true and correct in every particular. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.*

Signed : \_\_\_\_\_

Full name: Gary Cardiff

Position: Operations Director

Organisation: Arrow Energy Pty Ltd

ACN: 73 078 521 936

Date: \_\_\_\_\_

**Appendix A: EPBC Approval 2012/6377 Conditions  
Compliance Table**

Condition	Description	Compliant/non-compliant or not applicable	Comments
1	The Minister may determine that a plan, strategy or program approved by the Queensland Government satisfies a plan, strategy or program required under these conditions.	Not applicable	There are no plans approved by the Queensland Government that are relevant to plans required under the conditions of the EPBC Approval.
2	For the purpose of the action, the approval holder must not take any action outside the Authorities to Prospect (ATPs) 1103, 1031, 1025, 749, 742 and 759, shown as the Bowen Gas Project Tenements at Attachment A.	Compliant	To date the action has only occurred on Petroleum Lease 486 (PL486), formerly part of tenure ATP1103.
3	The action is limited to a maximum of 4,000 coal seam gas production wells and associated infrastructure.	Compliant	No new production wells were drilled during the reporting period. The total number of production wells installed since the action commenced is 20.
4	The maximum disturbance limits in Table 1 apply to the action to protect those EPBC listed species and communities (identified in Table 1) within the project area. The approval holder must not exceed these maximum disturbance limits.	Compliant	Table 1 of this EPBC 2012/6377 Annual Compliance Report reconciles the actual impact with the maximum disturbance limits and confirms that Arrow has not exceeded these limits.
5	To protect those EPBC listed species and communities (identified in Table 2) within the project area the maximum disturbance limits in Table 2 apply to Project Phase 1. The approval holder must not exceed these maximum disturbance limits for Project Phase 1.	Compliant	Table 1 of this EPBC 2012/6377 Annual Compliance Report reconciles the actual impact of Project Phase 1 with the Project Phase 1 maximum disturbance limits and confirms that Arrow has not exceeded these limits.
6	The approval holder must undertake pre-clearance surveys of proposed disturbance areas.	Compliant	No new disturbances associated with the action occurred during the reporting period. Pre-clearance surveys of disturbance during previous reporting period(s) were undertaken in accordance with Arrow's Ecological Impact Assessment Procedure (ORG-ARW-HSM-PRO-00070).
7	Pre-clearance surveys must be supervised by a suitably qualified person and undertaken in accordance with the Department's survey guidelines in effect at the time of the survey or other survey methodology endorsed by the Department in writing.	Compliant	No new disturbances associated with the action occurred during the reporting period. All pre-clearance surveys in previous reporting years were undertaken by a suitably qualified person. The Department's survey guidelines were followed and are reflected in Arrow's Ecological Impact Assessment Procedure (ORG-ARW-HSM-PRO-00070).
8	A report of the outcomes of pre-clearance surveys must be included in annual reporting required by condition 30.	Compliant	No new disturbances associated with the action occurred during the reporting period.

Condition	Description	Compliant/non-compliant or not applicable	Comments
9	<p>Prior to the commencement of Project Phase 1, the approval holder must prepare and submit an EPBC Species Impact Management Plan (EPBC SIMP) for the Minister's written approval. The EPBC SIMP must include:</p> <ul style="list-style-type: none"> <li>a) measures that will be taken to avoid, mitigate and manage impacts to EPBC listed threatened species and their habitat during clearance of vegetation, including the involvement of a suitably qualified person at all times during clearance of vegetation;</li> <li>b) measures that will be taken to avoid, mitigate and manage impacts to EPBC listed threatened species and their habitat and to EPBC communities during construction, operation and decommissioning of the action;</li> <li>c) a monitoring program to determine the success of mitigation and management measures to ensure adaptive management for the duration of this approval;</li> <li>d) a discussion of relevant conservation advice, recovery plans and threat abatement plans and how measures proposed in the EPBC Species Impact Management Plan are consistent with the measures in these documents; and</li> <li>e) details of how the approval holder has addressed any residual significant impacts to any EPBC listed threatened species and its habitat and/or EPBC communities not identified in Table 1, to be offset in accordance with the EPBC Act Environmental Offsets Policy.</li> </ul>	Compliant	Arrow prepared and had approved by the Minister, an EPBC SIMP for Project Phase 1 (approval date 15 October 2018) which was prior to the commencement of Project Phase 1 on 14 February 2019.



Condition	Description	Compliant/non-compliant or not applicable	Comments
10	The approval holder cannot commence Project Phase 1 until an EPBC SIMP has been approved by the Minister in writing. The approved EPBC SIMP must be implemented by the approval holder.	Compliant	<p>Arrow prepared and had approved by the Minister an EPBC SIMP for Project Phase 1 (approval date 15 October 2018) which was prior to the commencement of Project Phase 1 on 14 February 2019. The approved EPBC SIMP is being implemented.</p> <p>Measures implemented from the SIMP, but not limited to, include:</p> <ul style="list-style-type: none"> <li>• Arrow follows hierarchical management principles used to avoid, minimise and mitigate impacts to ecological values when positioning infrastructure. These principles are reflected in standard Arrow procedures.</li> <li>• Undertaking pre-clearance surveys of disturbance areas to identify any MNES values actually, or potentially, present. MNES habitats and TECs are delineated spatially prior to disturbance commencing.</li> <li>• No go areas are demarcated on-ground to prevent over-clearing.</li> <li>• Where impacts cannot be avoided, a qualified fauna spotter-catcher is present during clearing, with capture/release points captured as GPS coordinates. Records of these are maintained.</li> <li>• 'As-disturbed' survey data is provided by construction contractors and used to track MNES disturbances against Table 1 of the approval.</li> <li>• Inspections and washdowns of vehicles, machinery and equipment to prevent the spread of biosecurity matters.</li> <li>• Soil management to maintain the viability of topsoil and prevent erosion and sedimentation.</li> <li>• Stabilisation of disturbed areas following completion of construction activities with rehabilitation completed post decommissioning.</li> </ul>
11	The approval holder must ensure that environmental offsets comply with the principles of the EPBC Act Environmental Offsets Policy. If the approval holder has provided an offset in respect of impacts predicted for a stage of the project which subsequently are not realised, such parts of the offset in excess of the obligation for that stage can be applied towards offsets required for the impacts of subsequent Project Stages.	Compliant	<p>Arrow has negotiated Call Option agreements to secure the necessary interests in two properties which comply with the principles of the EPBC Act Environmental Offsets Policy. It is anticipated that these properties will accommodate required offsets for all project stages associated with Project Phase 1.</p>

Condition	Description	Compliant/non-compliant or not applicable	Comments
12	The approval holder may carry out the action in stages. The approval holder must deliver environmental offsets for each Project Phase related to the residual impacts of each respective Project Phase on EPBC listed threatened species and communities.	Compliant	Arrow has negotiated Call Option agreements to secure the necessary interests in two properties which comply with the principles of the EPBC Act Environmental Offsets Policy. It is anticipated that these properties will accommodate required offsets for all project stages associated with Project Phase 1.
13	The Offset Strategy may be prepared and submitted to the Minister for approval in stages. Each stage of the Offset Strategy must provide information in respect of the next Project Phase to commence and all earlier Project Phases. A Project Phase must not commence until an Offsets Strategy addressing offset obligations for that Project Phase has been approved by the Minister.	Compliant	<p>The Phase 1 Offset Strategy was approved by the Minister on 12 October 2018 prior to commencement of the BGP Phase 1 development activities on 14 February 2019.</p> <p>A revised Phase 1 Offset Strategy was submitted to the Department on 23 April 2023 to support the request to vary EPBC Approval 2012/6377 to remove <i>Dichanthium setosum</i> from Phase 1 limits. The Phase 1 area is no longer considered to support 'Core Habitat Known' and impact to <i>Dichanthium setosum</i> as a result of Phase 1 activities is considered unlikely. This is as a result of the reclassification of specimen records by the Queensland Herbarium.</p> <p>On 8 February 2024, Arrow requested a variation to the definition of Project Phase 1 in the EPBC Approval 2012/6377 to extend the timeframe from 5 years to 10 years from commencement. The proposed development concept for Phase 1 as addressed in the Phase 1 Offset Strategy has been delayed but will otherwise remain the same.</p> <p>Notwithstanding the revision to the revised Phase 1 Offset Strategy to remove <i>Dichanthium setosum</i>, there have been no changes to the Phase 1 development concept as contemplated in the approved Phase 1 Offset Strategy. Accordingly, the approved Phase 1 Offset Strategy continues to address the offset obligations for these activities.</p> <p>The Department is yet to approve the variation to Table 2 to remove <i>Dichanthium setosum</i>, the revised Phase 1 Offset Strategy and the variation to the definition of Project Phase 1.</p>

Condition	Description	Compliant/non-compliant or not applicable	Comments
14	The Offset Strategy must include: a) a strategy to secure the minimum offsets proposed for the residual significant impacts for the next Project Phase;	Compliant	As described in the Phase 1 Offsets Strategy (Section 4.1), Arrow will secure Phase 1 offsets proposed for the residual significant impacts to the EPBC listed species and EPBC communities through a combination of direct land-based offsets and indirect offsets (i.e. other compensatory measures) in accordance with the EPBC Act Offsets Policy.
14	The Offset Strategy must include: b) a reconciliation of impacts predicted in the next Project Phase and actual disturbance in earlier Project Phases against the maximum disturbance limits set out in Table 1;	Compliant	Arrow has described the process to reconcile impacts predicted in the next phase against actual disturbance in earlier phases in Section 4.4 of the Phase 1 Offset Strategy. This involves tracking actual annual and cumulative impacts and reporting annually against the limits (each phase and whole of project) in EPBC Approval 2012/6377. Prior to the next Phase commencing, Arrow will prepare an updated Offset Strategy which will summarise realised impact for the present phase and previous phases as well as predicted impact for the next phase. If there is any balance remaining from impact in present and previous phases, this will be used as 'offset credit' for the next phase.
14	The Offset Strategy must include: c) a process to offset, in accordance with the EPBC Act Environmental Offsets Policy, any significant impact for the next Project Phase to any EPBC listed threatened species or EPBC community not identified in Table 1;	Compliant	<p>No significant residual impacts to EPBC listed threatened species and its habitat and/or EPBC communities that were listed under the EPBC Act at the time of the approval but not identified in Table 1 of the EPBC approval have occurred.</p> <p>The Phase 1 Offset Strategy (Section 4.5) describes the process that Arrow follows to identify potential residual impacts to EPBC listed threatened species and their habitat and/or EPBC communities that were listed under the EPBC Act at the time of the approval but not identified in Table 1 of the EPBC approval. This includes notification to and seeking of approval for additional unavoidable residual impacts and subsequently securing an offset.</p> <p>Some species have been listed under the EPBC Act since the approval of EPBC 2012/6377 and as advised by the Department, Arrow will be offsetting these species under the State approval process and the <i>Environmental Offsets Act 2014</i> (Qld).</p>
14	The Offset Strategy must include: d) a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria;	Compliant	Section 5 of the Phase 1 Offset Strategy addresses monitoring of activities that may impact species and vegetation communities, monitoring of impacts upon EPBC Act species and communities and the monitoring of management measures against performance and completion criteria that will be implemented to maintain or improve the offset site(s).

Condition	Description	Compliant/non-compliant or not applicable	Comments
14	The Offset Strategy must include: e) a description of potential risks to the successful implementation of the plan, and a description of the contingency measures that would be implemented to mitigate against these risks;	Compliant	The risks, existing controls, risk rating, monitoring and contingency measures are described in Section 6 of the Phase 1 Offset Strategy.
14	The Offset Strategy must include: f) a timeline for when actions identified in the Offset Strategy will be implemented for each offset area; and	Compliant	The Phase 1 Offset Strategy (Section 7) outlines in detail the timeline of Arrow's commitments relevant to the Phase 1 Offset Strategy.
14	The Offset Strategy must include: g) the proposed legal mechanism for securing the offset.	Compliant	The Phase 1 Offset Strategy (Section 8) identifies that the mechanism for securing the offset would be via a Voluntary Declaration under the <i>Vegetation Management Act 1999</i> (VM Act) (Qld) with the Phase 1 offsets being legally secured prior to commencement of Phase 2.  As explained in the comments for Condition 13 above, there have been delays to the carrying out of the Phase 1 activities contemplated in the approved Phase 1 Offset Strategy.
15	The approval holder must not commence Project Phase 1 until the Offset Strategy has been approved by the Minister in writing. The approved Offset Strategy must be implemented by the approval holder.	Compliant	Arrow submitted an Offset Strategy for Project Phase 1 to the Minister which was approved on 12 October 2018.  Project Phase 1 commenced on 14 February 2019, after approval in writing was received from the Minister.  The approved Offset Strategy is being implemented.

Condition	Description	Compliant/non-compliant or not applicable	Comments
16	Offsets for Project Phases must be in accordance with the mechanism identified in the Offset Strategy and must be registered and legally secured in accordance with Queensland legislation prior to commencement of any subsequent Project Phase.	Compliant	<p>Arrow did not commence a development Phase subsequent to Phase 1 during the reporting period.</p> <p>The Phase 1 Offset Strategy (Section 8), identified that the mechanism for securing the offset would be via a Voluntary Declaration under the <i>Vegetation Management Act 1999</i> (VM Act) (Qld) with the Phase 1 offsets being legally secured prior to commencement of Phase 2.</p> <p>As explained in the comments for Condition 13 above, there have been delays to the carrying out of the Phase 1 activities contemplated in the approved Phase 1 Offset Strategy and Arrow has sought a variation to the definition of "Project Phase 1". Activities for the subsequent development phase have not commenced despite entering the 6<sup>th</sup> year since project commencement. Commencement is defined in the EPBC Approval as involving "physical disturbance, including clearance of native vegetation, new road work and the establishment of well sites to develop the gas field project area". There has been no physical disturbance for any Project Phases subsequent to Project Phase 1.</p> <p>Call Options have been agreed with owners of offset properties to secure interests in suitable offset areas.</p> <p>Arrow's ability to apply to secure the offset via a Voluntary Declaration is pending the Department's approval of the Phase 1 OAMP. Noting that an updated OAMP will need to be resubmitted if the Department approves the variation to Table 2 to remove <i>Dicanthium setosum</i> and the revised Phase 1 Offset Strategy and the variation to the definition of Project Phase 1.</p>

Condition	Description	Compliant/non-compliant or not applicable	Comments
17	<p>At least 3 months prior to the commencement of any Project Phase after Project Phase 1, the approval holder must submit a revised Offset Strategy required at conditions 13 and 14 for approval by the Minister. The updated Offset Strategy must include:</p> <ul style="list-style-type: none"> <li>a) a strategy to secure the minimum offsets proposed for the residual significant impacts to the EPBC listed species and communities for the next Project Phase;</li> <li>b) a map of the location of each EPBC listed threatened species and its habitat and EPBC Community in relation to infrastructure for the next Project Phase;</li> <li>c) the information required for the Offset Strategy Conditions 14a to 14 g for the next Project Phase;</li> <li>d) demonstration of how any proposed offset builds on offsets already secured and will contribute to a larger strategic criteria for whole of project impacts; evaluating the management of offset;</li> <li>e) performance and completion criteria for evaluating the management of offset areas.</li> </ul>	Not applicable	<p>Project Phase 1 activities are not complete. Project Phase 1 activities are those described in the approved Phase 1 Offset Strategy.</p> <p>Arrow will remain within the maximum disturbance limits set out in the approved Phase 1 Offset Strategy. Accordingly, the approved Phase 1 Offset Strategy continues to address the offset obligations for these activities.</p> <p>Arrow has submitted a request to vary the definition of Project Phase 1 in the EPBC Approval 2012/6377 to extend the timeframe from 5 years to 10 years from commencement. See comments for Condition 13 above.</p> <p>As Project Phase 1 activities are expected to continue until 10 years from commencement of the action, the requirement to submit a revised Offset Strategy for subsequent phases has not been triggered.</p>

Condition	Description	Compliant/non-compliant or not applicable	Comments
17A	<p>Within 12 months of project commencement or the Minister approving a version of the Offset Strategy for a Project Phase, the approval holder must submit for approval of the Minister an OAMP which includes:</p> <ul style="list-style-type: none"> <li>a) a description of the management measures that will be implemented for the protection of EPBC listed threatened species and communities in each offset area,</li> <li>b) details of how the proposed offsets and OAMP meet the requirements of the EPBC Act Environmental Offsets Policy,</li> <li>c) a field validation survey and baseline description of the current condition (prior to any management activities) of the offset areas, including existing vegetation,</li> <li>d) a description and map (including shapefiles) to clearly define the location and boundaries of the offset areas, accompanied by the offset attributes,</li> <li>e) information about how the offset areas provide connectivity with other relevant habitats and biodiversity corridors including a map depicting the offset areas in relation to other habitats and biodiversity corridors,</li> <li>f) details of how proposed management measures take into account relevant approved conservation advices and are consistent with the measures contained in relevant recovery plans and threat abatement plans,</li> <li>g) completion criteria and performance targets for evaluating the effectiveness of OAMP implementation, criteria for triggering corrective actions (if necessary),</li> <li>h) a program to monitor, report on and review the effectiveness of the OAMP,</li> <li>i) a description of potential risks to the successful implementation of the offsets, and contingency measures that would be implemented to mitigate against these risks.</li> </ul>	Compliant	<p>Arrow submitted a draft Phase 1 OAMP to the Department for approval on 14 February 2020 (within 12 months of project commencement). The draft Phase 1 OAMP includes the requirements of Condition 17A a) – i).</p> <p>Arrow is awaiting the Department's approval of the Phase 1 OAMP. Noting that an updated Phase 1 OAMP will need to be resubmitted if the Department approves the application to remove <i>Dicanthium setosum</i> from Table 2 in the EPBC Approval and the revised Phase 1 Offset Strategy and the variation to the EPBC Approval definition of Project Phase 1.</p>

Condition	Description	Compliant/non-compliant or not applicable	Comments
17B	The approval holder must not commence the next Project Phase until the OAMP for the current Project Phase has been approved in writing by the Minister.	Compliant	See comments for Conditions 16 and 17A above. Arrow did not commence a development Phase subsequent to Project Phase 1 during the reporting period.
18	Offsets for each Project Phase subsequent to Project Phase 1 must be registered and legally secured in accordance with Queensland legislation prior to commencement of the next Project Phase.	Not applicable	See comment for Condition 16 above. Arrow did not commence a development Phase subsequent to Project Phase 1 during the reporting period.
19	The approval holder must not commence the next Project Phase until the Offset Management Plan, updated for that Project Phase, has been approved by the Minister in writing. The approved Offset Management Plan as updated for each Project Phase must be implemented by the approval holder.	Not applicable	See comments for Conditions 16 and 17A above. Arrow did not commence a development Phase subsequent to Project Phase 1 during the reporting period.
20	The approval holder must not discharge, irrigate or otherwise release CSG produced water, wastewater, stormwater or harvested water, into the Isaac River and its tributaries unless the discharge complies with the discharge criteria defined for the site and is in accordance with the requirements of an environmental authority issued under the <i>Environmental Protection Act 1994</i> (Qld) for the action.	Compliant	Arrow has not discharged any CSG produced water, wastewater, stormwater or harvested water into the Isaac River or its tributaries.
20A	The approval holder must carry out the action in Project Stages. Project Stage 1 must be carried out within the Bowen Gas Project tenements identified at Attachment B.	Compliant	Activities associated with Project Stage 1 were undertaken within PL486, which was formerly part of one of the tenements (ATP1103) identified within Attachment B.



<p>21</p>	<p>The approval holder must submit a Groundwater Management and Monitoring Plan (GMMP) for the written approval of the Minister who may seek the advice of an expert panel. The GMMP must contain:</p> <ul style="list-style-type: none"> <li>a) details of a groundwater monitoring network for the measurement of impacts on water resources associated directly or indirectly with the action, including the ability to: <ul style="list-style-type: none"> <li>i. provide for the early detection of any changes in the groundwater regime in terms of amplitude and frequency of fluctuations in water pressure, water level and water quality in groundwater systems and changes in connectivity with surface water;</li> <li>ii. monitor relevant formations to determine hydraulic connectivity and provide for early detection of impacts prior to reaching migration pathways to other formations (e.g. faults and areas of unconformities known to connect two or more formations);</li> <li>iii. monitor potential impacts on groundwater dependent ecosystems, including spring based and non-spring-based ecosystems, and provide for the early detection of impacts;</li> <li>iv. monitor changes to the project area groundwater balance; and</li> <li>v. monitor changes to water availability for water users and the environment.</li> </ul> </li> </ul>	<p>Compliant</p>	<p>The GMMP was approved by the Department October 2019. The GMMP includes the requirements of Condition 21 a) – h).</p> <p>The monitoring network is comprised of 35 monitoring points at 22 separate locations (comprising 12 single sites and 10 nested sites of 23 monitoring points) from the approved groundwater monitoring network for the BGP area. At present, 13 monitoring points have been installed at 9 locations, and additional bores will be added as the project increases in area. All monitoring points are monitored for groundwater pressure/level. For the first 12 months, each monitoring point is monitored for groundwater pressure/level, twice daily (via data logger), with 6-monthly manual readings for selected intervals. Following this period, the data will be reviewed to characterise temporal and spatial variations in groundwater levels. Where there is confidence that the observed trends are understood, the monitoring frequency will be reduced to 6-monthly manual readings. Groundwater quality monitoring is undertaken at specified groundwater monitoring locations across the Project area. During the initial twelve months following bore installation, groundwater quality monitoring was conducted on a 6-monthly basis and thereafter, annually.</p> <p>Analysis of baseline and ongoing groundwater level and quality data sourced from the monitoring network will be assessed to inform the early detection of changes to the groundwater regime and quality.</p> <p>In circumstances where potential baseflow occurs in proximity to predicted project related watertable drawdowns, changes to groundwater-surface water connectivity will be assessed by targeted groundwater level and stream flow monitoring. The current assessment has not identified any surface water features at risk of changes to connectivity from Project related CSG drawdowns. In accordance with Approval Condition 21(c) dedicated monitoring infrastructure will be installed to serve as an early detection of potential impacts to Lake Elphinstone. Should the assessment of risk to connectivity with surface waters change in the future, a commitment is made to develop a targeted monitoring network and accompanying early warning system (EWS) capable of providing for and responding to the early detection of changes to groundwater-surface water interconnection.</p> <p>Nested monitoring bores are employed to evaluate hydraulic gradients across relevant formations, and in locations with mapped geological features such as faults and unconformities that could function as preferential migration pathways. Monitoring locations will be selected by correlating predicted modelled drawdowns and mapped geology and geological features</p>
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		<p>to identify risk areas for inter-formation connectivity. Baseline and ongoing groundwater level monitoring at these nested site locations enable the early detection of changes to hydraulic connectivity prior to potential impacts being received.</p> <p>Monitoring sites are established at appropriate locations to enable ongoing monitoring of groundwater levels and quality in relevant aquifer formations identified as being associated with GDEs and/or sites of cultural or spiritual significance at risk of impact from project related drawdowns. The current assessment has not identified any surface expression or non-spring GDEs at risk of impact from Project related CSG drawdowns. While monitoring infrastructure with the intention of monitoring potential impacts to GDEs is not warranted, at present, two watertable bores (MB4 (contingent) and MB14-S) have been sited to fulfil multiple monitoring purposes in proximity to the upper Isaac River which is associated with field verified riparian vegetation. It is acknowledged that EIS Commitment B649 refers to the monitoring of sites with cultural and spiritual significance. Although such sites have been identified in the Project area, watertable drawdown in their proximity is not predicted at or beyond the adopted assessment criteria of 0.2 m. To demonstrate Arrow's commitment to the monitoring and management of potential GDEs in the Project area, watertable monitoring in proximity to the upper Isaac River, at sites associated with this feature, is proposed. Should this risk assessment change in the future, a commitment is made to develop a targeted monitoring network and accompanying EWS capable of providing for and responding to the early detection of impacts to GDEs and/or sites of cultural or spiritual significance.</p> <p>CSG development leads to changes in groundwater balance, primarily due to net groundwater extraction, which will be reflected in changes in aquifer storage. The monitoring network is designed to enable the monitoring of spatial and temporal variations in groundwater pressure / level within the Project area, which in turn will permit changes to aquifer storage to be approximated. Updates or revisions to the groundwater balance / aquifer storage in the Project area will be reported upon in the three yearly GMMP updates.</p> <p>Monitoring sites are established at appropriate locations to enable ongoing monitoring of groundwater levels and quality in relevant aquifer formations identified as being associated with groundwater users and GDEs at potential risk from project related drawdowns. Monitoring locations to assess potential impacts to existing groundwater users are selected in target formations by correlating predicted LAA modelled drawdowns and locations of existing</p>
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Condition	Description	Compliant/non-compliant or not applicable	Comments
			landowner bores. For existing groundwater users, collection of baseline and ongoing groundwater level and quality monitoring data sourced from the monitoring network will be assessed to inform the early detection of changes to the groundwater regime. The monitoring, assessment and management approach and reporting obligations comply with the requirements of the Queensland Water Act (2000). The requirement for baseline assessments and bore assessments of water bores potentially affected by the Action will be addressed in the 3 yearly revisions to the UWIR.
21	The GMMP must contain: b) details of a baseline monitoring data acquisition program for the approved action;	Compliant	The baseline data acquisition program takes into account existing baseline data collection, and the environmental monitoring. The monitoring network is designed and phased to ensure a suitable level of baseline groundwater level and quality data is acquired prior to development occurring in the area. Baseline monitoring locations are established with reference to the model outputs and the predictions of groundwater drawdown. The acquisition of baseline groundwater level and quality monitoring data provide a benchmark against which risk and impacts to connected receptors can be assessed and managed.
21	The GMMP must contain: c) a rationale for the design of the monitoring network with respect to the nature of potential impacts and the location and occurrence of matters of national environmental significance;	Compliant	Based on previous work, Lake Elphinstone was identified in the EIS/SREIS as a matter of national environmental significance (MNES). No other MNES with a known or potential groundwater-dependence were identified within the study area, or beyond the Project area where indirect impacts are predicted to occur. Baseline and ongoing groundwater level monitoring at a nested site location west of Lake Elphinstone enable the early detection of potential shallow groundwater level and connectivity changes prior to any potential impacts being received at the lake. A contingent nested monitoring site located in proximity to Lake Elphinstone, if warranted, will also serve to monitor and manage potential Project related impacts to this MNES feature.

Condition	Description	Compliant/non-compliant or not applicable	Comments
21	The GMMP must contain: d) details of proposed early warning indicators, trigger thresholds and limits for detecting impacts on groundwater levels and a description of how and when these measures will be finalised and subsequently reviewed in accordance with the requirements of the Underground Water Impact Report;	Compliant	<p>Early warning system (EWS) for BGP is developed for both consolidated and unconsolidated aquifer systems, and includes tiered investigation levels with escalating responses:</p> <ol style="list-style-type: none"><li>1. Early warning indicators, for early identification of potential groundwater drawdown issues to enable additional baseline monitoring data to be collected.</li><li>2. Trigger thresholds, for identifying the potential for groundwater drawdown (as a consequence of the Action) to affect groundwater users and enable monitoring and management measures to be implemented to mitigate the potential for impact.</li><li>3. Limits, that define groundwater levels of drawdowns not to be exceeded.</li></ol> <p>The EWS is based on comparing modelled groundwater drawdowns derived from the BGP GMMP groundwater model (AGE 2018) with staged early warning indicator levels, trigger thresholds, and drawdown limits, to inform escalating response actions. EWS levels will be established based on the latest model version and will incorporate (where available) updated production data for other (non-Arrow) extractors.</p>

Condition	Description	Compliant/non-compliant or not applicable	Comments
21	<p>The GMMP must contain:</p> <p>e) details of a risk-based exceedance response for the actions the approval holder will take, and the timeframes in which these actions will be undertaken, if early warning indicators and trigger threshold values are exceeded;</p>	Compliant	<p>If an early warning indicator is exceeded, then:</p> <ul style="list-style-type: none"> <li>- Within 12 months of exceeding an early warning indicator, Arrow will conduct a baseline assessment of water bores potentially affected by the Action.</li> <li>- Within 30 days of completing the revised baseline assessments, Arrow will submit these to the relevant Queensland state agencies (OGIA or their successor) and the bore owner.</li> <li>- Within 15 months of exceeding an early warning indicator, Arrow will prepare and submit to the Department an Early Warning Indicator Exceedance Report which includes: <ul style="list-style-type: none"> <li>a) The results of an evaluation of the reasons for the predicted EWI exceedance, and the likelihood of a future exceedance of a trigger threshold or limit.</li> <li>b) The outcomes of the baseline assessment program.</li> </ul> </li> </ul> <p>If a trigger threshold exceeded, then:</p> <ul style="list-style-type: none"> <li>- Within 1 month of exceeding a trigger threshold, advise the Department of the exceedance, and of the obligation to conduct bore assessments of those water bores within the new IAA.</li> <li>- Within 60 business days of exceeding a trigger threshold (or later if the chief executive of DES agrees), conduct bore assessment(s) for those water bores within the new IAA.</li> <li>- Within 15 months of exceeding a trigger threshold, prepare and submit to the Department a Trigger Threshold Exceedance Report which includes: <ul style="list-style-type: none"> <li>a) The results of an evaluation of the reasons for the predicted trigger threshold exceedance, and the likelihood of a future exceedance of a limit.</li> <li>b) Details of compliance with any make good obligations arising because of the trigger threshold exceedance including the outcomes of the bore assessment program.</li> <li>c) The outcomes of the bore assessment program and any make good obligations.</li> </ul> </li> </ul>

Condition	Description	Compliant/non-compliant or not applicable	Comments
21	The GMMP must contain: f) details of the timeframe for a regular review of the GMMP in accordance with the requirements of the Underground Water Impact Report and subsequent updates of the GMMP, including to incorporate the outcomes of updates to the numerical groundwater model and water balance calculations;	Compliant	In accordance with the requirements of Approval Condition 21(f), and consistent with the UWIR, the GMMP will be reviewed to determine its ongoing suitability, adequacy and effectiveness at three-yearly intervals. Outcomes of any review will be incorporated into an updated GMMP where required. The updated GMMP will be prepared and delivered concurrently with three-yearly updates to the UWIR for the purposes of aligning and achieving consistency between the two documents, to the extent practicable. Updates to the GMMP will ensure any revisions to the numerical groundwater model and water balance calculations (for example, in response to significant operational changes, new knowledge becoming available that informs predicted impacts, and/or upon review and consideration of monitoring outcomes) are captured and addressed in the updated document.
21	The GMMP must contain: g) provisions to make monitoring results publicly available on the approval holder's website for the life of the project	Compliant	Arrow will make public the results of data obtained from the water-related aspects of their monitoring network for the life of the project via two mechanisms: 1. Publication of the BGP GMMP and UWIR (and subsequent revisions) on Arrow's website, which will include monitoring results from associated investigations undertaken as a requirement of the GMMP. 2. Supply of data collected by Arrow, including bore and baseline data, will be reported to the Office of Groundwater Impact Assessment (OGIA) associated with obligations under the UWIR, and baseline and bore assessment obligations.
21	The GMMP must contain: h) provisions to make monitoring data available to the Department and Queensland Government authorities (if requested) for inclusion in any cumulative impact assessment, regional water balance model, bioregional assessment or relevant research.	Compliant	Arrow will make provisions for the availability of monitoring data to the Department and Queensland Government authorities, as requested, for inclusion in cumulative impact assessments, regional water balance modelling, bioregional assessments or other relevant research. Arrow will store monitoring data in an internal database which can easily be exported and provided as part of any such information requests. This approach is consistent with groundwater monitoring results currently being provided to the OGIA.
22	The GMMP must be peer reviewed by a suitably qualified water resources expert/s approved by the Minister in writing. A peer review must be submitted to the Minister together with the GMMP and a statement from the suitably qualified water resources expert/s stating that they carried out the peer review and endorse the findings and the content of the GMMP.	Compliant	The Approved GMMP was peer reviewed by an independent suitably qualified water resources expert (who was approved by the Minister on 7 July 2015) on 14 March 2019. The peer review and the requisite statement from the expert were submitted to the Minister prior to approval of the GMMP and are included in Appendix H of the GMMP.

Condition	Description	Compliant/non-compliant or not applicable	Comments
<b>23</b>	The approval holder must not commence the extraction of water or coal seam gas for Project Stage 1 until the GMMP has been approved by the Minister in writing. The approved GMMP must be implemented by the approval holder.	Compliant	Arrow commenced extraction of water and coal seam gas for Project Stage 1 on 21 June 2022 after the GMMP was approved in writing by the Minister on 24 October 2019.  The approved GMMP is implemented and a monitoring report released annually.
<b>23A</b>	The approval holder may undertake subsequent Project Stages which must not exceed 4000 coal seam gas wells and must be located within the Bowen Gas Project tenements in Attachment A.	Not applicable	Arrow has not yet completed Project Stage 1.
<b>23B</b>	The approval holder must update the approved GMMP accordingly to cover the additional Project Stage(s) addressing matters in condition 21B(a) to (h) above and submit the updated GMMP for approval.	Not applicable	Arrow has not yet completed Project Stage 1. Accordingly, Arrow has not needed to update the GMMP.
<b>23C</b>	Each update of the approved GMMP prepared for a further Project Stage must be peer reviewed by a suitably qualified water resources expert/s approved by the Minister in writing. A peer review must be submitted to the Minister together with the updated GMMP and a statement from the suitably qualified water resources expert/s stating that they carried out the peer review and endorse the findings and the content of the updated GMMP.	Not applicable	Arrow has not yet completed Project Stage 1. Accordingly, Arrow has not needed to update the GMMP.
<b>23D</b>	The approval holder must not commence the extraction of water or coal seam gas from wells covered by a further Project Stage until the updated GMMP has been approved by the Minister in writing. The approved updated GMMP must be implemented by the approval holder	Not applicable	Arrow has not yet completed Project Stage 1. Accordingly, Arrow has not needed to update the GMMP.
<b>24</b>	The Minister may direct in writing that the approval holder cease water or gas extraction and/or water discharge or use if an early warning indicator, trigger threshold or limit is exceeded, and if the Minister is not satisfied that the action proposed or taken by the approval holder will remedy the situation. The Minister may direct the approval holder to implement alternative action at the expense of the approval holder.	Not applicable	Arrow has not received any such direction from the Minister.

Condition	Description	Compliant/non-compliant or not applicable	Comments
25	If the Minister has directed in writing that the approval holder must cease water or gas extraction and/or water discharge or use pursuant to condition 24 the approval holder must not recommence such activities until the Minister has given approval in writing for the recommencement of those activities. Approval to recommence activities may be subject to conditions that the Minister considers reasonable.	Not applicable	Arrow has not received any such direction from the Minister.
26	In the event that hydraulic fracturing is required, no more than 1,000 of the total coal seam gas production wells may be hydraulically fractured.	Compliant	Hydraulic fracturing has not been undertaken since the action commenced.
27	The approval holder must ensure that gas wells are constructed, operated and decommissioned in accordance with best practice principles in the Queensland Code of Practice for Construction and Abandoning CSG wells.	Compliant	Wells installed since commencement of the Action are operated in accordance with the Queensland Code of Practice for the Construction and Abandonment of Petroleum Wells and Associated Bores in Queensland. Noting that there are three wells where steel casing is set over a mineable seam and that Arrow has an agreement in place with the overlapping tenure holder as to how to manage these occurrences.
28	Within 20 business days after the commencement of the action, the approval holder must advise the Department in writing of the actual date of commencement.	Compliant	On 7 March 2019, the Department was advised that Project Phase 1 commenced on 14 February 2019.
29	The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans, reports or strategies required by this approval, and make them available upon request to the Department. The annual report (condition 30) must state all confirmed cases of non-compliance along with details of any remedial actions. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	Compliant	<p>Arrow maintains plans and procedures and implements a Health, Safety and Environment Management System so that our activities are undertaken in compliance with our environmental approvals and to manage environmental risk.</p> <p>Accurate records substantiating all activities associated with or relevant to the conditions of this approval, including measures taken to implement the management plans, reports or strategies required are stored in Arrow file directories.</p> <p>There have been no confirmed cases of non-compliance for the reporting period.</p>



Condition	Description	Compliant/non-compliant or not applicable	Comments
30	<p>Within three months of every 12 month anniversary of the commencement of the action, the approval holder must publish a report on its website for the life of the approval outlining how they have been compliant with the conditions of this approval over the previous 12 months, including the implementation of any management plans, strategies or programs as specified in the conditions. The approval holder must also provide in this report:</p> <ul style="list-style-type: none"> <li>a) a reconciliation of actual impacts against whole of project maximum disturbance limits for EPBC listed threatened species and communities listed in Table 1;</li> <li>b) the number and spatial distribution of boreholes where hydraulic fracturing is expected to occur or has occurred; and</li> <li>c) details of constituent components of hydraulic fracturing agents used and any other reinjected fluid(s), their toxicity as individual substances and as total effluent toxicity and ecotoxicity.</li> </ul>	Compliant	This report has been published to provide information required by Condition 30 for the current reporting period. The report was published within the three-month timeframe and advice of publication was provided to the Department.
31	The approval holder must provide documentary evidence to the Department providing proof of the date of publication [and] of any non-compliance with any of the conditions of this approval at the same time as the report required at condition 30 is published.	Compliant	<p>There have been no non-compliances identified during the reporting period.</p> <p>Advice of the publication of the report required by Condition 30 was provided to the Department at the same time it was published.</p>

Condition	Description	Compliant/non-compliant or not applicable	Comments
32	<p>The approval holder must notify the Department in writing of potential non-compliance with any condition of this approval as soon as practical and in any event within ten business days of becoming aware of the potential non-compliance. The notice provided to the Department under this condition must specify:</p> <ul style="list-style-type: none"> <li>a) the condition which the approval holder has potentially breached;</li> <li>b) the nature of the potential non-compliance;</li> <li>c) when and how the approval holder became aware of the non-compliance;</li> <li>d) how the non-compliance will affect the anticipated impacts of the approved action, in particular how the non-compliance will affect the impacts on the matters of national environmental significance;</li> <li>e) the measures the approval holder will take to address the impacts of the</li> <li>f) non-compliance on the matters of national environmental significance and rectify the non-compliance; and</li> <li>g) the time by when the approval holder will rectify the non-compliance.</li> </ul>	Not applicable	There have been no potential non-compliances identified during the reporting period.
33	<p>Upon the direction of the Minister, the approval holder must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The audit must not commence unless and until the Minister has approved the independent auditor and audit criteria. The audit report must address the criteria to the satisfaction of the Minister.</p>	Not applicable	Arrow has not received any direction from the Minister to undertake an independent audit of compliance with the conditions of the EPBC Approval.

Condition	Description	Compliant/non-compliant or not applicable	Comments
34	If the approval holder wishes to carry out any activity other than in accordance with the management plans as specified in the conditions, the approval holder must submit to the Department for the Minister's written approval a revised version of that management plan. The approval holder must not commence the varied activity until the Minister has approved the varied management plan. The Minister will not approve a varied management plan unless the revised management plan would result in an equivalent or improved environmental outcome over time. If the Minister approves the revised management plan, that management plan must be implemented in place of the management plan originally approved.	Not applicable	Noted. In the event that Arrow wishes to undertake activities other than in accordance with the approved management plans Arrow will prepare and submit varied management plans.
35	If the Minister believes that it is necessary or convenient for the better protection of EPBC Act listed threatened species, listed migratory species or water resources to do so, the Minister may request that the approval holder make specified revisions to the management plans specified in the conditions and submit the revised management plan for the Minister's written approval. The approval holder must comply with any such request within the timeframe specified by the Minister. The revised approved management plan must be implemented. Unless the Minister has approved the revised management plan, then the person taking the action must continue to implement the management plan originally approved, as specified in the conditions.	Not applicable	Noted. Arrow has not been requested to make specific revisions to the management plans specified in the conditions.
36	If, at any time after five years from the date of this approval, the approval holder has not commenced the action, then the approval holder must not commence the action without the written agreement of the Minister.	Compliant	The action commenced on 14 February 2019 which is within 5 years of the original approval date of 27 October 2014.
37	Unless otherwise agreed to in writing by the Minister, the approval holder must publish all management plans referred to in these conditions of approval on their website. Each management plan must be published on the website within 1 month of being approved by the Minister and remain available on that website for the life of the approval.	Compliant	All approved management plans have been published on Arrow's website. Management plans approved by the Department and published within 1 month on the Arrow website include those listed in Section 3.2.