

## GHG Abatement Plan - SGP North Stage 1

The EA amendment application for EA0001399 for SGP North Stage 1 (the application) meets the medium to high Greenhouse Gas (GHG) emission category in accordance with Section 3.2 of the Greenhouse Gas Emissions Guideline<sup>1</sup> published by DESI in May 2024; i.e., expected GHG emissions (Scope 1 and Scope 2) of 25,000 tonnes CO<sub>2</sub>-e or more per year (at any time during the life of the project).

As per Table 3 of the GHG Emissions Guideline, a GHG abatement plan is required as part of the application. The following table outlines the requirements of a GHG abatement plan for SGP North Stage 1 in more detail as per Appendix A of the GHG Emissions Guideline.

Section 2.2 of the GHG Emissions Guideline states that the Safeguard Mechanism is not an approval framework and does not require details of how emissions will be reduced. Therefore, the GHG emissions information is still required for the Queensland Government to decide on a new EA or to amend an EA.

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<sup>1</sup> [Greenhouse gas emissions \(desi.qld.gov.au\)](https://desi.qld.gov.au)

**Table GHG Abatement Plan Requirements as per DESI GHG Emissions Guideline**

GHG Emissions Guideline Requirement	Description	Details
a) Project details	<ul style="list-style-type: none"> <li>Applicant</li> <li>Project name and description (including location)</li> </ul>	Refer to <b>Section 1.1 of Appendix A.</b>
b) Emissions projections and commencing abatement measures	<ul style="list-style-type: none"> <li>Emission inventory and estimates as developed in section 3.1 of the guideline; i.e.:               <ol style="list-style-type: none"> <li>Include an emissions inventory identifying the GHG to be emitted and the stage of the project at which the emissions will occur. Include a breakdown of GHG emissions by source.</li> <li>Estimate the projected annual Scope 1 and Scope 2 CO<sub>2</sub>-e emissions over the life of the project. Include both unabated emissions and emissions after all avoidance and abatement measures (as outlined in section 3.3) have been accounted.</li> <li>Provide an estimate of annual Scope 3 emissions and total Scope 3 emissions over the life of the project (refer to Section 3.1.1).                   <ol style="list-style-type: none"> <li>As they are outside the control of the EA holder, they are not required to be included in a GHG abatement plan.</li> <li>Estimated Scope 3 emissions are not required to be included in applications where projected Scope 1 and Scope 2 emissions are expected to be less than 25,000 tonnes of CO<sub>2</sub>-e per annum.</li> </ol> </li> <li>Emissions data should be supported by a description of how the values were determined including:                   <ul style="list-style-type: none"> <li>information about the methodology used (including software)</li> <li>assumptions made (such as the boundary of where Scope 3 emissions were considered)</li> <li>identification and justification of any emissions that were excluded from the calculation.</li> </ul> </li> </ol> </li> <li>Management practices proposed to be implemented at commencement to reduce GHG emissions as per section 3.3 of the guideline.</li> </ul>	<ul style="list-style-type: none"> <li>No Scope 2 emissions apply to SGP North Stage 1 as discussed in Section 5.2.5 of <b>Appendix A</b> of this RFI response.</li> <li>Breakdown of unabated annual emissions by source for the life of SGP North Stage 1 provided in <b>Table 5-9</b> (Scope 1) and in <b>Table 5-10</b> (Scope 3) in Section 5.2.5 of <b>Appendix A</b> of this RFI response.</li> <li>Estimated abated emissions and emissions after all avoidance and abatement measures (Scope 1) are provided in <b>Table 5-14</b> and <b>Figure 5-4</b> in Section 5.2.6 of <b>Appendix A</b> of this RFI response.</li> <li>Total Scope 1 and Scope 3 emissions over the life of SGP North Stage 1 are presented in Section 5.2.5 of <b>Appendix A.</b></li> <li>Emissions estimation methodology is provided in <b>Table 5-8</b> of Section 5.2.5 of <b>Appendix A</b> of this RFI response.</li> <li>Assumptions such as Scope 3 emissions boundaries and justified emissions exclusions are provided in Section 5.2.5 of <b>Appendix A</b> of this RFI response.</li> <li>Management practices proposed to be implemented are outlined in <b>Section 5.2.6 of Appendix A</b> of this RFI response.</li> </ul>



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c) GHG emissions reference point	<ul style="list-style-type: none"> <li>Outline the level of emissions against which ongoing reduction of GHG emissions will be assessed throughout the life of the project (reference point).</li> <li>This is based on projected GHG emissions prior to implementation of the GHG abatement plan and may include multiple reference points developed for each stage of the activity.</li> <li>For projects captured by the Commonwealth Safeguard Mechanism, the reference points may be determined by the Safeguard Mechanism (referred to as baseline).</li> <li>Provide justification for the reference points proposed.</li> </ul>	<p>As discussed in Section 5.2.1 of <b>Appendix A</b> of this RFI response, it is anticipated that SGP North Stage 1 will form part of Arrow Energy's Surat Gas Operations Safeguard facility due to its commercial and operational interconnections. This would ensure that the Safeguard Mechanism applies to SGP North Stage 1 as greenhouse gas emissions would always be above the Safeguard DLF threshold.</p>																	
d) Emission reduction targets	<ul style="list-style-type: none"> <li>Identify interim Scope 1 and Scope 2 GHG emission reduction targets to be applied throughout the life of the project.</li> <li>Identify long-term overall Scope 1 and Scope 2 GHG emission reduction targets.</li> <li>Targets may be set at intervals of up to 5 years to take into account emerging technologies over that period and allow for production variability, provided they result in a reduction of GHG emission at the end of the period.</li> <li>For projects captured by the Commonwealth Safeguard Mechanism, the emission reduction targets may be determined by the Safeguard Mechanism.</li> <li>Provide justification for the emission reduction trajectory and targets proposed and how they support the Queensland Government's greenhouse gas emission reduction targets.</li> </ul>	<p>The interim and long-term Scope 1 GHG emission reduction targets will be in line with the Safeguard Mechanism baseline annual reduction for Arrow Energy's Surat Gas Operations Safeguard facility, which is anticipated to include SGP North Stage 1 when the asset becomes operational (refer to Section 5.2.1 of <b>Appendix A</b> of this RFI response).</p> <p>The site-specific emission intensity reduction targets relevant for this Environmental Authority and Arrow's Surat Gas Operations Safeguard facility are shown in the below table. It is noted that the emission reduction targets apply to Arrow's entire Surat Gas Operations under the Safeguard Mechanism and are not isolated to this project.</p> <p><b>Production Variable Emission Intensity Reduction Targets</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Year</th> <th>PV26 - Extracted Gas</th> <th>PV 57 - Electricity Generation</th> </tr> <tr> <th>(t CO<sub>2</sub>-e/GJ)</th> <th>(t CO<sub>2</sub>-e/MWh)</th> </tr> </thead> <tbody> <tr> <td>Year 5</td> <td>28%</td> <td>59%</td> </tr> <tr> <td>Year 10</td> <td>46%</td> <td>69%</td> </tr> <tr> <td>Year 15</td> <td>64%</td> <td>79%</td> </tr> <tr> <td>Year 20</td> <td>82%</td> <td>90%</td> </tr> </tbody> </table>	Year	PV26 - Extracted Gas	PV 57 - Electricity Generation	(t CO <sub>2</sub> -e/GJ)	(t CO <sub>2</sub> -e/MWh)	Year 5	28%	59%	Year 10	46%	69%	Year 15	64%	79%	Year 20	82%	90%
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# Management Plan



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e) GHG emission reduction program	<ul style="list-style-type: none"> <li>A program that details the GHG emission reduction measures for Scope 1 and 2 that will be implemented throughout the life of the project, as developed in section 3.3 of the guideline and outlined in Part B.</li> </ul>	<p>Refer to the 'Assessed GHG emissions abatement measures' subsection of Section 5.2.6 of <b>Appendix A</b> of this RFI response.</p>
f) Advancing technologies and opportunities	<ul style="list-style-type: none"> <li>Provisions for regularly reviewing new technologies to identify opportunities to further reduce emissions and energy efficiency.</li> </ul>	<p>Refer to the 'Commitment to continual improvement' subsection under Section 5.2.6 of <b>Appendix A</b> of this RFI response. <b>Figure 5-4</b> illustrates Arrow Energy's current GHG opportunity process including workshops with key internal stakeholders from various disciplines and ranks within Arrow Energy to brainstorm GHG abatement ideas. This involves the consideration of new technologies such as solar hybrid technologies and gas reinjection skids.</p>
g) Monitoring and auditing	<ul style="list-style-type: none"> <li>A program for monitoring GHG emissions and auditing against GHG emission reduction targets.</li> </ul>	<p>Arrow Energy's current key monitoring and assurance steps include:</p> <ul style="list-style-type: none"> <li>Monthly review of incoming and outgoing reports (Production Surveillance, Operations, HSE, Energy Markets). This includes disclosure to internal key stakeholders of set annual emission intensity targets and Safeguard Baseline, and how Arrow Energy is tracking against them.</li> <li>Quarterly report review of activity data (Operations) and emission estimates (HSE)</li> <li>Annual review and summary report (HSE, CEO)</li> <li>Targeted third-party voluntary assurance engagements on NGER emissions and energy estimates, which can be extended to also cover emission reduction targets.</li> </ul>
h) Reporting	<ul style="list-style-type: none"> <li>A program for periodic public reporting on progress towards the GHG emission reduction targets outlined in the GHG abatement plan including details about how public reporting will be undertaken.</li> <li>There is no intent to duplicate reporting requirements. Where companies are already reporting GHG emissions under another framework, this section can refer to that reporting. However, reporting must be against</li> </ul>	<p>Arrow Energy will be required to disclose climate-related risks and opportunities under the Australian Sustainability Reporting Standards (ASRS) from financial year 2025 onwards, including:</p> <ul style="list-style-type: none"> <li>Governance;</li> <li>Scope 1 and 2 emissions;</li> <li>Scope 3 emissions (optional);</li> </ul>

# Management Plan

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	<p>the emission reduction targets stated in the GHG abatement plan and must be publicly available.</p> <ul style="list-style-type: none"> <li>Where the GHG abatement plan includes commercial-in-confidence information, the applicant may request that specific details are treated as confidential and are not made publicly available, with justification to support this request.</li> </ul>	<ul style="list-style-type: none"> <li>climate scenario analysis;</li> <li>climate resilience assessment;</li> <li>climate transition plan; and</li> <li>GHG reduction targets (optional).</li> </ul> <p>However, the disclosures may not show the level of granularity that will capture SGP North Stage 1 as a standalone asset given all of the existing and future Arrow Energy assets will be treated as a single Safeguard facility from financial year 2024 onwards.</p>