

Response to Requirement Notices – RPI21/028 Arrow Coal Seam Gas (CSG) Wells and Gathering - Regional Interests Development Approval (No.1) application

Requirement Notice 1	
1.	<p><u>Issue:</u></p> <p>The proposed area of disturbance of the strategic cropping area (SCA) is stated as being:</p> <ul style="list-style-type: none"> • 47 ha in the Assessment Application Form • 44 ha at Section 5.3 (page 58) of the report • 46.12 ha in Table 5-1, Section 5.3 of the report during the construction phase. <p>Additionally, numbers in Table 5-1 are not presented with a consistent number of significant figures and contain rounding errors.</p> <p><u>Actions:</u></p> <p>Clarify the proposed total area of disturbance of the SCL for both temporary and permanent impacts and ensure that all areas and percentage values are presented with an accuracy and rounding of two decimal places.</p>
	<p><u>Arrow Response:</u></p> <p>The location and extent of infrastructure on any given property may change throughout Area Wide Planning and in response to discussions and feedback from the landholder. The proposed total area of disturbance of the SCL for the temporary impacts based on the most recent layout have been provided in the updated report and now equal 35.83 ha. There are no permanent impacts proposed.</p>
2.	<p><u>Issue:</u></p> <p>The GIS data provided in support of the application is insufficient, and more data is required to facilitate the calculation and checking of the proposed disturbance areas on Property 1 and on Property 2.</p> <p><u>Actions:</u></p> <p>Provide Shapefiles that accurately show the locations and extents of the disturbance areas of all proposed construction and operational activities to be undertaken (including deviated wells as detailed in Section 6 of the Coal Seam Gas (CSG) Wells and Gathering Interests Development Approval (No.1) (report) and Appendix 3). This is to include all temporary and permanent impact areas</p>
	<p><u>Arrow Response:</u></p> <p>Shapefiles of locations and extents of disturbance areas have been provided via email.</p>

3.	<p><u>Issue:</u></p> <p>Appendix 3 of the report details that the field layouts for Property 1 and Property 2 are indicative only at this stage. If the location of activities is to change at a later stage, the assessment of the application might not be relevant or appropriate.</p> <p><u>Actions:</u></p> <p>Confirm the final field layouts for Property 1 and Property 2 (and provide Shapefiles as discussed in the Item 2 above).</p> <hr/> <p><u>Arrow Response:</u></p> <p>The final field layout based on discussions with the landholder has been provided in the updated report. Shapefiles of locations and extents of disturbance areas have been provided via email.</p>
4.	<p><u>Issue:</u></p> <p>Section 1.6.3 refers to the Area Wide Planning (AWP) program developed by Arrow. The AWP is also referred to in Section 4.5 Measures to Minimise Impacts to PALU of the report.</p> <p><u>Actions:</u></p> <p>Confirm whether the landowner has been involved in the AWP program, as well as any neighbouring landowners, and if so, advise of the details and outcomes to support coexistence.</p> <hr/> <p><u>Arrow Response:</u></p> <p>All landowners, including the owners of the land the subject of this RIDA application, are offered the opportunity and encouraged to participate in Arrow's AWP program. Discussions also continue during the subsequent process of site assessment, where ecological and cultural heritage assessments are undertaken in the areas or proposed activities. Further opportunities to discuss field layouts occur after site assessment (when sketch maps are discussed with landowners) prior to the final layouts being presented within the Conduct and Compensation Agreement (CCA). To respect confidentiality, specific details about the landowner's involvement in AWP for the activities the subject of this RIDA application are provided in the confidential consultation report presented at Appendix 9.</p>
5.	<p><u>Issue:</u></p> <p>Table 3-1 Definition of activities in Section 3.1:</p> <ul style="list-style-type: none"> • excludes any details relating to the drilling of deviated wells, such as the locations and the trajectories and relevant well head installations • includes laydown assessment areas, however there are no laydown areas indicated on any of the maps or schematics, or information provided as to size and duration of these areas. <p>Only activities included in this table of activity and supporting spatial information will be considered as an approved activity should the application be approved</p> <p><u>Actions:</u></p> <p>a) Amend Table 3-1 to include details relating to deviated wells and to the size and duration of laydown assessment areas.</p> <p>b) Provide updated plans that show the location and extent to proposed laydown</p>

	<p>assessment areas.</p> <p>Arrow Response:</p> <p>Table 3-1 provides a definition for the relevant CSG activities rather than a detailed description of the activities the subject of the RIDA application. The latter is provided in the sections that follow Table 3-1 and has been included in the updated report.</p>
6	<p>Issue:</p> <p>Section 3.3.2 and Section 4.4.6 of the report refer to approvals under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). These are not included in Section 1.7 of the report which outlines the necessary approvals that Arrow already hold.</p> <p>Actions:</p> <p>a) Amend Section 1.7 of the report to include the approvals held under the EPBC Act.</p> <p>b) Provide information relating to approvals granted under the EBPC Act including any relevant conditions.</p> <p>Arrow Response:</p> <p>Information related to Arrow’s Surat Gas Project EPBC approval (EPBC 2010/5344) has been provided in the updated report and a copy of the approval is included in Appendix 1.</p>
7.	<p>Issue:</p> <p>Section 3.2 of the report includes well pads as one of the proposed activities. The size of each well pad is provided at Appendix 3, which states that ‘<i>The locations of above ground infrastructure is indicative only at this stage and once an engineering review has been undertaken they will be re-located to more strategic locations to minimise impacts to farming activities.</i>’</p> <p>This suggests that negotiations with the landowner have not progressed to a point where details are agreed. However, final locations and extents are required for assessing and deciding the application.</p> <p>Actions:</p> <p>Confirm and demonstrate that the landowner is aware of the proposed location of the activities or detail how the location is to be finalised.</p> <p>Arrow Response:</p> <p>To respect confidentiality, specific details about discussions with the landowner are provided in the confidential consultation report presented at Appendix 9.</p>

8.	<p><u>Issue:</u></p> <p>Section 3.3.2 Wells of the report states that ‘The well sites ...have been located on the fringes of Intensively Farmed Land (IFL), in corners of paddocks, and near access tracks, right of ways, easements and road reserves, in areas that minimize the impact on farming. These well locations were determined following consultation with the landholder ...’(page 21).</p> <p><u>Actions:</u></p> <p>Confirm the landowner is aware of the proposed location of the activities.</p>
	<p><u>Arrow Response:</u></p> <p>To respect confidentiality, specific details about discussions with the landowner are provided in the confidential consultation report presented at Appendix 9.</p>
9.	<p><u>Issue:</u></p> <p>Section 3.3 .3 Gathering Lines of the report states that ‘<i>The embedment material surrounding the pipe.....is screened so that the max particle size (is) less than 20mm.</i>’ (page 24).</p> <p><u>Actions:</u></p> <p>Confirm if there will be a need to import bedding material if the spoil material from the trench cannot be screened to the required size.</p>
	<p><u>Arrow Response:</u></p> <p>Arrow will typically not import pipeline backfill material unless the native material from the excavation is completely unsuitable (as it is too wet and clumps up so that a padding / screening machine cannot be used). Imported backfill material has occurred but only on rare occasions so it is unlikely that it will be required for this project.</p>
10.	<p><u>Issue:</u></p> <p>Section 3.4.1 Operational activities states that ‘<i>Given that the pipelines and associated cables of the gathering infrastructure will be buried to a minimum depth of 900mm, land users are able to resume previous land use activities on top of the gathering lines provided that the use does not include excavation activities</i>’ (page 28).</p> <p><u>Actions:</u></p> <p>Confirm that all buried infrastructure:</p> <ul style="list-style-type: none"> a) will be subject to ‘Dial before you Dig’ requirements b) will not constrain, restrict or prevent the ongoing conduct on the property including the future location of infrastructure including but not limited to bores and ring tanks.
	<p><u>Arrow Response:</u></p> <ul style="list-style-type: none"> a) Arrow confirms that all deviated wells will be subject to ‘Dial before you Dig’ requirements b) Agricultural activities can proceed on the RoW once construction has been completed however, generally the landowner cannot construct infrastructure on the RoW. It is understood that there is a Government moratorium on the construction of new ring tanks.

11.

Issue:

The information provided in support of the application regarding remediation, restoration, erosion, sediment control and subsidence monitoring is of limited detail.

Section 3.5.1 of the report states that:

the decommissioning of the pipeline will include '*Backfill, compaction and rehabilitation of all excavations in accordance with the Environmental Authority and the Environmental Management Plan.*' (page 34

'Following relinquishment of the relevant authority, the Government will assume the liability for the de-commissioned infrastructure.'

Section 8.3 Reinstatement and rehabilitation of the report references the Environmental Authority as the guideline for reinstatement and rehabilitation measures.

The measures in these sections as well as those referenced under the Soils Report at Appendix 8 are not considered adequately detailed to meet the relevant criteria detailed under the *Regional Planning Interests Act 2014* (RPI Act) and the RPI Regulation 2014.

Actions:

Provide the following detailed plans in a stand-alone format to cover all proposed works:

- a) Erosion and sediment control plan (ESCP), including details of how stripped/excavated soils will be managed during excavation, stockpiling and replacement/stabilisation
- b) Subsidence management plan (SMP) – including plans/actions to monitor/remediate subsidence in both pipeline and void areas
- c) Restoration Management Plan (RMP) that demonstrates that any disturbance considered temporary is in accordance with RPI Act Statutory Guideline 09/14 How to determine if an activity has a permanent impact on Strategic Cropping Land (RPI Guideline 09/14).

Arrow Response:

The soil survey was finally able to be undertaken on the 22 and 23 March. This survey and negotiations with the landowner for access to site to undertake the survey had been delayed on several occasions due to constant rain in late 2021; the covid lockdown in South-East Queensland in January 2022; and then the severe rain event in February 2022. Subsequently, draft versions of each of the three requested plans have been prepared and will be finalised once the soils laboratory results have been returned, which is due on 21 April. Once finalised, these plans will be forwarded to the Government.

The soils data from the laboratory will be utilised to inform development of the ESCP. The ESCP will be developed by a suitably qualified and experienced person (eg Certified Professional in Erosion and Sediment Control or Registered Professional Engineer in Queensland) in accordance with IECA Best Practice Environment and Sediment Control.

In the interim, the following Arrow Energy documents which detail erosion and sediment control, subsidence management and restoration and rehabilitation have been included as Appendix 12 of the updated RIDA supporting report and are a sample of some of the guiding documents which Arrow use:

	<ul style="list-style-type: none"> • Land Disturbance Procedure; • Land Rehabilitation Procedure; and • Specification for PE Gathering Networks.
12.	<p><u>Issue:</u></p> <p>Section 3.5.1 of the report refers to the decommissioning of the infrastructure and states that <i>'Following relinquishment of the relevant authority, the Government will assume the liability for the de-commissioned infrastructure'</i> (page 34).</p> <p>This statement is not technically correct. The Environmental Authority and the Petroleum Lease will be surrendered not relinquished. Further, buried pipelines that remain in the ground, despite the surrender, remain the property of the previous authority holder (see section 540 of the Petroleum and Gas (Production and Safety) Act 2004).</p> <p><u>Actions:</u></p> <p>a) Amend the report to reflect the current legislation framework.</p> <p>b) Confirm whether it is intended to transfer any of the decommissioned assets pre surrender to the landowner.</p> <hr/> <p><u>Arrow Response:</u></p> <p>a) The current legislative framework has been included in the updated report.</p> <p>b) To respect confidentiality, specific details about discussions with the landowner are provided in the confidential consultation report presented at Appendix 9.</p>
13.	<p><u>Issue:</u></p> <p>Section 4.4.6 of the report refers to overland flow and CSG activity induced subsidence but does not provide information relating to potential mitigation measures or discussions with the landowner regarding potential impacts of subsidence.</p> <p><u>Actions:</u></p> <p>a) Confirm that any change in slope, as a result of subsidence, is not material to the landowner's operations.</p> <p>b) Advise whether the landowner has been advised of the potential impacts of subsidence on their property and farming operations.</p> <hr/> <p><u>Arrow Response:</u></p> <p>a) The subsidence modelling indicates that any subsidence would be relatively widespread and even, and therefore is not expected to materially affect the landowner's farming operation. Historical observations of ground movement, combined with reviews of historical subsidence models, indicates that subsidence will be relatively small and uniform in this area. If subsidence is identified, Arrow's Water Monitoring and Management Plan (WMMP), as the modelling-monitoring-management framework, includes actions to mitigate impacts. In particular, a site-specific action plan will be developed bespoke to that particular incident and implemented to rectify the impact.</p>

	<p>b) To respect confidentiality, specific details about discussions with the landowner are provided in the confidential consultation report presented at Appendix 9.</p>
14.	<p><u>Issue:</u></p> <p>Section 5.3 of the report includes the statement ‘The majority of impacts to SCL are temporary in nature, (particularly) the wellpads ...’ (page 60). This statement appears to suggest that there will be areas of permanent SCL impact, but there is no discussion of areas of permanent impact on SCL in the report.</p> <p><u>Actions:</u></p> <p>Clarify any areas of permanent impact on SCL.</p> <p><u>Arrow Response:</u></p> <p>There are no permanent impacts to SCL. There are short term impacts during construction and then temporary impacts during operation which are all subject to reinstatement and rehabilitation at the end of the life of the project. Compensation is provided to landowners to address these impacts.</p>
15.	<p><u>Issue:</u></p> <p>Section 6 of the report and Appendix 3 indicate that deviated wells the subject of the application extend beyond the boundaries of Property 1 and Property 2 into land not the subject of this application. It is not clear if these are considered to be exempt resources activities.</p> <p><u>Actions:</u></p> <p>a) Confirm if the resource activities that are shown beyond the boundaries of Property 1 and Property 2 are considered to be exempt resource activities and if so, the basis of any exemptions.</p> <p>b) If these are considered to be exempt resource activities (under section 22 of the <i>Regional Planning Act 2014</i>), confirm that conduct and compensation agreements or voluntary written agreements apply with the landholders of the properties on which the well pads and in-part the location of the subject deviated wells are located and provide relevant extracts of such agreements (To be identified as Confidential).</p> <p><u>Arrow Response:</u></p> <p>a) Arrow undertakes assessments on a case-by-case basis to determine if exemptions are able to be validly applied. In the cases where exemptions are not available for individual lots, Arrow will apply for a RIDA.</p> <p>b) If Arrow is unable to enter into voluntary written agreements and exemptions are not available, a RIDA will be prepared and lodged for the relevant lots.</p>
16.	<p><u>Issue:</u></p> <p>Section 6 of the report states that ‘<i>Deviated Well trajectories are considered preliminary activities ...</i>’ (page 61).</p> <p>A view that directional drilling is a preliminary activity is not consistent with the land access framework under the <i>Mineral and Energy Resources (Common Provisions) Act 2014</i> (MERC Act,) as any consideration of whether directional</p>

drilling is an advanced activity or a preliminary activity must be determined on a case-by-case basis and must have regard to the impact (if any) of the activity on the landowner's business or land use activities.

The report further states that '*... wells will enter the land at a subterranean point and be drilled from neighbouring properties ... This is in addition to the trajectories from wells proposed to be located on the subject land*' (page 61).

Actions:

- a) Amend the report to exclude reference to directional well trajectories as being preliminary activities.
- b) Demonstrate that the impacts of each well on the landowner's property has been considered on a case-by-case basis and that the landowner has been consulted and is aware of the impacts to current and future farming operations.

Arrow Response:

- a) The RIDA supporting report has been updated to exclude the general reference to directional well trajectories as being preliminary activities. Case by case assessments are completed prior to reaching this determination.
- b) Arrow assesses impacts on a case by case basis for all single well pads and multi-well pads as follows:
 - a. identifying if there are any long-term affected area (LAA) or immediately affected area (IAA) water bores on the property identified in the Underground Water Impact Report for the Surat Cumulative Management Area (Surat UWIR), and assessing if there are any impacts to the Condamine Alluvium which is a regionally significant water resource under the RPI Act. Management process under Chapter 3 of the Water Act 2000 and the Surat UWIR, (being the bore baseline assessment, bore assessment and make good process) are applied to IAA and LAA water bores. Impact to the Condamine Alluvium will be mitigated by Arrow's substitution of allocations through the beneficial use network to ensure there is no net impact to the Condamine Alluvium;
 - b. undertaking an assessment of the potential for subsidence by reviewing the baseline InSAR and LiDAR data, reviewing Arrow's and the Office of Groundwater Impact Assessment (OGIA) subsidence models, and determining if there will be a change in slope within a 3 km radius of a well. The OGIA models for dewatering/depressurisation are coupled with mechanical models and history matched to subsidence observations to predict future subsidence. The predicted subsidence is subtracted from the Digital Elevation Model (DEM 2020) to determine the maximum subsidence potential. An assessment of change in land slope classes is undertaken in two ways by:
 - i. taking maximum subsidence as modelled occurs locally at the well location, with subsidence decreasing to zero at 3km away from the well (this is a conservative assumption as interaction between wells in a field development result in more uniform subsidence).
 - ii. assuming regional scale subsidence occurs as per model.
 - c. Considering the planned infrastructure in light of potential impacts to existing and future farming practices/operations.

17.	<p><u>Issue:</u></p> <p>Section 8.3 of the report states ‘<i>The construction footprint of the land will be returned to its previous general state and use once construction is completed ...</i>’ (page 67). However, other sections of the report suggest all impacts will be temporary in nature and disturbed areas will be rehabilitated to mirror their pre-disturbance condition.</p> <p><u>Actions:</u></p> <p>Clarify what is meant by ‘<i>previous general state</i>’, with reference to RPI Guideline 09/14 for guidance on the requirements for returning land to its pre-activity condition and productive capacity.</p> <hr/> <p><u>Arrow Response:</u></p> <p>Previous general state was used to describe how Arrow will restore land to its pre-activity condition and productive capacity through its reinstatement and rehabilitation activities which will be undertaken following completion of the construction phase of the project and then at the end of the operational phase of the project. Rehabilitation and reinstatement procedures are included in Appendix 12 of the updated supporting report. Further site-specific information will be detailed in the Restoration Management Plan which is being produced to address Question 11 of this Requirement Notice.</p>
18.	<p><u>Issue:</u></p> <p>The Soils Report at Appendix 8 of the report is a desktop study, based on broad scale soil mapping information and does not contain detailed information to inform the above management plans or to accurately inform soil disturbance/management that may be required e.g. sodic soils. Additionally, not all available desktop information has been considered by this assessment e.g. publicly available departmental soil sits/descriptions.</p> <p>An appropriately detailed soil survey is required to inform the above management plans.</p> <p><u>Actions:</u></p> <p>Undertake a detailed soil survey of appropriate detail and scale as per:</p> <ol style="list-style-type: none"> i. Guidelines for Soil Survey along Linear Features (Soil Science Australia 2015) ii. Queensland Soil and Land Resource Survey Information Guideline (Department of Resources 2021). <hr/> <p><u>Arrow Response:</u></p> <p>Arrow undertook a soil survey of the subject lots at the appropriate detail and scale on the 22 and 23 March and a report will be finalised once the results are returned to the laboratory which is due on 21 April. As advised in the response to Question 11, delays to the soil survey have been unavoidable due to constant rain in late 2021; the covid lockdown in South-East Queensland in January 2022; and then the severe rain event in February 2022.</p>

19.	<p><u>Issue:</u></p> <p>Section 2.4.3 Soils of the Arrow CSG Water Management Plan at Appendix 10 of the report states that ‘Soil types across the SGP area have been classified under the Australian Soil Classification System.’ However, none of the descriptions following this statement contain an Australian Soil Classification (ASC) e.g. ‘Cracking Clays and Gilgai Clays’ would be Vertosols and ‘Uniform Non-cracking Clays’ would be Dermosols. This is especially relevant where ‘Texture Contrast Soils’ could be any one of three distinctly different Australian Soil Classifications.</p> <p><u>Actions:</u></p> <p>Include a full ASC in any soil description listed/discussed.</p> <hr/> <p><u>Arrow Response:</u></p> <p>The Arrow CSG Water Management Plan is a controlled document which has been prepared and supplied to Government to support a number of regulatory approvals. ASCs can be applied to this document the next time it is updated. Of more relevance to this RIDA, the ASC soil types identified on the subject lots are Vertosols (grey cracking clays and dark cracking clays). As outlined in the response to question 18, detailed information on the soil type to confirm management measures will be included in the Soil Assessment Report.</p>
20.	<p><u>Issue:</u></p> <p>The Example Baseline Report at Appendix 11 of the report contains an example of a baseline survey to monitor (among other things) subsidence over Lot 1 DY931 and Lot 1 RL2451. It is unclear whether this will be undertaken across all other disturbed lots.</p> <p><u>Actions:</u></p> <ul style="list-style-type: none"> a) Clarify whether a baseline survey will be undertaken on all affected lots prior to any proposed disturbance, including any dewatered/void areas that extend outside the boundaries of subject lots that require monitoring for subsidence. b) Include details of this survey and its methodology in an SMP. <hr/> <p><u>Arrow Response:</u></p> <ul style="list-style-type: none"> a) Arrow has baseline and LiDAR data across the entire SGP. Individual reports are prepared for landowners once Arrow is dealing directly with them and prior to disturbance activities. Baseline surveys for all affected lots have been undertaken and the reports are included at Appendix 11 in the updated RIDA supporting report. b) Arrow’s WWMP contains a subsidence framework, monitoring methods and management plan. A copy of the WWMP can be found on the Arrow website at: https://www.arrowenergy.com.au/environment/groundwater/water-monitoring-management-plans.

21.	<p><u>Issue:</u></p> <p>In response to Required Outcome 2 Part (1)(b), Table 12-1 at Section 12.1 of the report states that <i>'Information about the selection of the layout is provided in Section 7' (page 88).</i></p> <p>In response to Required Outcome 3, Table 12-5 at Section 12.5 of the report states that <i>'As discussed in Section 7.1, the current layout provides for the least impacts to landholders in the region and reduces the operational footprint as much as possible.'</i> (page 97)</p> <p>Section 7 provides an overview of the process of Landholder Consultation not activity location selection.</p> <p><u>Actions:</u></p> <p>Provide information to demonstrate:</p> <ol style="list-style-type: none"> a) that other locations for the activities have been considered b) the factors that led to the locations being considered the preferred locations c) that the landowner has been consulted regarding alternative locations for the activities. <p><u>Arrow Response:</u></p> <ol style="list-style-type: none"> a) Field layouts are initially conceived with a focus on targeting the coal seams, however layouts are continually modified to address constraints in particular during negotiations with landholders. Further information is provided in the confidential consultation report presented at Appendix 9. b) As discussed in Section 8.1 of the report: <i>The current layout has taken into account the competing interests of stakeholders, environmental and cultural values, cropping land and landholders whilst selecting a route that is feasible, safe and cost-effective. Engineering, constructability, environment, cultural heritage, overlapping tenure holders and landholders have all been considered during the route selection process. The design and construction of the layout has been focused on minimising impacts to land by locating the alignment along fence lines and roadways where possible (refer to Appendix 3). Where this is not possible, sections of the infrastructure has been located to try and minimize impacts as much as practicable and will be constructed on the edges of paddocks where possible (refer to Appendix 3, which contains a summary of property specific constraints impacting on the alignment on the land parcels).</i> c) To respect confidentiality, specific details about discussions with the landowner are provided in the confidential consultation report presented at Appendix 9.
Requirement Notice 2	
1.	<p><u>Issue:</u></p> <p>Section 1.2 of the Coal Seam Gas (CSG) Wells and Gathering Regional Interests Development Approval (No.1) report (report):</p> <ul style="list-style-type: none"> • does not refer to the 12 deviated wells shown on Figure 6-1 and Appendix 3. • advises that the proposed activities are authorised under Environmental Authority (EA) EPPG00972513, but a copy of the EA was not provided as an attachment to the application

	<p><u>Actions:</u></p> <ul style="list-style-type: none"> a) Update Section 1.2 to include the 12 deviated wells detailed in Figure 6-1 and Appendix 3. b) Provide an extract copy of the EA to confirm the currency and coverage of activities over the land the subject of the RIDA application
	<p><u>Arrow Response:</u></p> <ul style="list-style-type: none"> a) Section 1.2 of the RIDA report has been updated to include details about the deviated wells. The well paths are included on Figure 2-1 and on additional Figures in Appendix 3. b) An extract copy of the EA to confirm the currency and coverage of activities over the land the subject of the RIDA application was included at Appendix A in the original report. A full copy of the EA has been included in the updated version and is also publicly available on the internet at https://storagesolutiondocsprod.blob.core.windows.net/register-documents-ea/EPPG00972513.pdf.
2.	<p><u>Issue:</u></p> <p>Section 1.6.1 of the report does not refer to the 12 deviated wells shown on Figure 6-1 and Appendix 3.</p> <p><u>Actions:</u></p> <p>Update section 1.6.1 to include the 12 deviated wells detailed in Figure 6-1 and Appendix 3.</p> <p><u>Arrow Response:</u></p> <p>Section 1.6.1 of the RIDA report has been updated to include details about the deviated wells. The well paths are included on Figure 2-1 and on additional Figures in Appendix 3.</p>
3.	<p><u>Issue:</u></p> <p>Section 1.6.2 of the report advises that Arrow has ‘innovations’ to support coexistence. However, no information is provided regarding these innovations or how they maximise opportunities for co-existence of resource and agricultural land uses within PAA, as required by Regional policy 2 in the Darling Downs Regional Plan 2013, and hence how the application meets Prescribed solution (PS) (1)(a) of Required outcome (RO) 2.</p> <p><u>Actions:</u></p> <p>Demonstrate how the innovations to support co-existence maximise the opportunities for co-existence of resource and agricultural land uses within PAA, as sought by Regional policy 2 of the Darling Downs Regional Plan 2013, and how the application meets PS(1)(a) of RO2.</p>

	<p><u>Arrow Response:</u></p> <p>As outlined in section 1.6.2 of the report, the major innovation developed from Arrow’s co-existence commitments is drilling deviated wells. Traditional 800m x 800m grid pattern field development, completely unsuitable for intensively farmed land (IFL), has been eliminated. The benefits of deviated drilling and multi-well pads include a smaller over-all footprint (between 25-50% of a traditional vertical well field design), including:</p> <ul style="list-style-type: none"> • up to eight wells on one pad up to 110m x 200m, instead of eight separate well pads of 110m x 100m • greater distance between pads (up to 2km) • less gathering pipelines • concentrated presence (infrastructure and staff access) in a smaller area • well pads can be located in paddock corners and less productive areas to reduce impact on farming practices. <p>IFL well designs include double concrete and steel casing to about 80m, sealing wells from shallow farming aquifers. Further down-hole, swellable packers above and below target coal seams, ensure zonal isolation.</p> <p>Surat Basin wells each target multiple coal seams, whose thickness is typically measured in centimetres not metres. Swellable packers have reduced solids production from interburden to negligible levels, reducing workover frequency, and staff visits to site and therefore impacts on farming operations.</p> <p>A number of forums including the Arrow Surat Community Reference Group and the IFL Committee along with multiple community meetings have been held for many years now to improve the flow of information to the community and to improve co-existence outcomes across the areas that Arrow operates. Through the IFL Committee, Arrow has developed a draft Construction and Operations simultaneous operations matrix (SIMOPS) to identify how Arrow can coexist with landholders throughout the construction and operations project phases. The draft SIMOPS will be tailored to individual property requirements, in collaboration with landholders.</p>
4.	<p><u>Issue:</u></p> <p>Table 2-2 of the report:</p> <ul style="list-style-type: none"> • provides a note concerning Lot 2 on RP85916 as being a parcel that comprises Property 1, but this lot is excluded from the parcel column. A title search provided in Appendix 2 confirms that this lot is owned by Warakirri Assets Management Pty Ltd, hence it should be included in Table 2-2 as a separate lot that makes up Property 1 • details that there is an overlapping resource tenure on some parts of the land the subject of the application but does not discuss what the implications are for either the landholder, the applicant or New Emerald Energy Pty Ltd (the holder of EPC 1770) given that the proposed activities are likely to exceed the threshold of 2% detailed in the PS (3)(a)(ii)(A) for RO1 (Refer to Table 4-2 and Table 4-3). <p><u>Actions:</u></p> <ol style="list-style-type: none"> a) Update Table 2-2 to include Lot 2 on RP89516 in Property 1. b) Confirm that there is a Joint Action Management Plan for areas where

	<p>resource tenures overlap, and what strategies are in place to ensure that the cumulative impacts of all activities will not exceed those detailed in PS (3)(a)(ii)(A) for RO1.</p> <p><u>Arrow Response:</u></p> <p>a) Table 2-2 of the report has been updated to include Lot 2 on RP89516 in Property 1.</p> <p>b) Arrow is not required to have an overlapping Tenure Agreement with New Emerald Energy Pty Ltd, the holder of EPC1770, as only one party (the petroleum resource authority holder) holds a production tenure, i.e. a petroleum lease.</p> <p>A Joint Development Plan (the statutory overlapping tenure agreement) is only required in circumstances where both parties (the petroleum resource authority holder and the coal resource authority holder) hold, or are applicants for, a production tenure (i.e. a petroleum lease or a coal mining lease) – s130, s142 – <i>Mineral and Energy Resources (Common Provisions) Act 2014</i>.</p> <p>Similarly, a Joint Interaction Management Plan is only required where the petroleum resource authority holder proposes to operate operating plant in the area of a petroleum tenure; and activities carried out, or proposed to be carried out, at the plant may adversely affect the safe mining of coal in the area of a coal mining tenement – s386(1)(a) & (b) – <i>Petroleum and Gas (Production and Safety) Act 2004</i>.</p> <p>Given that New Emerald Energy have advised Arrow that they do not propose undertaking any activities on the tenement until 2023, there is no potential for any interaction, nor will the operation of operating plant adversely affect the safe mining of coal in the area of a coal mining tenement, until at least that time.</p>
5.	<p><u>Issue:</u></p> <p>Section 7.4 details inspections for soil stability but does not provide proposed responses to instances of subsidence, compaction, ponding and erosion.</p> <p><u>Actions:</u></p> <p>Detail responses to instances of subsidence, compaction, ponding and erosion in the project area during the life of the project. This should include further discussion on management actions should such matters be required.</p> <p><u>Arrow Response:</u></p> <p>Arrow holds obligations in a number of approvals (eg: EA and EPBC approval) and agreements (eg: CCAs) to ensure that impacts from its operations are ameliorated. As such, all stabilised or rehabilitated sites are subject to ongoing monitoring to ensure relevant rehabilitation objectives continue to be met during their operational life and decommissioning process. Should remedial actions and maintenance requirements be identified during monitoring they will be rectified. Further details about instances of subsidence, compaction, ponding and erosion in the project area during the life of the project will be discussed in the plans required to be produced in response to Question 11 from the first Requirement Notice.</p>

6.	<p><u>Issue:</u></p> <p>Table 3-1 of the report:</p> <ul style="list-style-type: none"> • does not include standard wells, subterranean deviated wells, tie-ins or access points • details valves and extra workspaces, however it is not certain if this is intended to mean isolation valves and extra work areas, both of which are detailed in Appendix 3 • details future service connections, however, the discussion on the use and purpose of such is unclear. It is uncertain if future service connections could provide for the connection of other wells and gathering lines in the future as the proposed activities are decommissioned. <p><u>Actions:</u></p> <p>(a) Update Table 3-1 to include all activities proposed on land the subject of the application.</p> <p>(b) Update Table 3-1 to confirm the nature of all activities and to ensure a consistent use of terminology in the application.</p> <p>(c) Clarify the use and purpose of future service connections, including any intention for future use for activities that are not included in this application.</p> <hr/> <p><u>Arrow Response:</u></p> <p>(a) Table 3-1 has been updated to include all activities proposed on land the subject of the application.</p> <p>(b) Table 3-1 has been updated to confirm the nature of all activities and to ensure a consistent use of terminology in the application.</p> <p>(c) The purpose of a future service connection (FSC) is to connect temporary equipment used during the commissioning phase of a pipeline, such as hoses, valves and vents. Once commissioning has been completed and prior to the operation of the pipeline, this equipment will be removed and the FSC will not be used again, unless it was necessary for maintenance purposes.</p>
7.	<p><u>Issue:</u></p> <p>Section 3.2 of the report:</p> <ul style="list-style-type: none"> • at the second dot point, details seven extra workspaces, however, a review of maps provided in Appendix 3 identifies eight extra work areas • at the fourth dot point, concerns the installation of three gas and water gathering lines, however, it is not detailed if the lines will be buried in separate trenches or if they will be vertically stacked on top of each other in one trench. • at the fifth dot point, details 14 high point vents, 10 pairs of isolation valves and 22 future service connections, amongst other activities. However, a review of the maps provided in Appendix 3 identified 13 high point vents, 15 individual isolation valves and 19 future service connections • does not detail the number of subterranean deviated wells as shown on Figure 6-1. <p><u>Actions:</u></p> <p>(a) Confirm the number of extra work areas and amend the narrative and/or</p>

	<p>mapping as required.</p> <p>(b) Confirm how the gathering lines will be installed and located.</p> <p>(c) Confirm the number of high point vents, isolation valves and future service connections and amend the narrative and/or mapping changes as required.</p> <p>(d) Include the number of subterranean deviated wells intended for the land the subject of the application.</p> <hr/> <p><u>Arrow Response:</u></p> <p>(a) The number of extra work areas and the narrative and mapping has been updated in the RIDA report.</p> <p>(b) The gathering lines will be installed in one trench in a parallel formation, rather than vertical.</p> <p>(c) The number of high point vents, isolation valves and future service connections and narrative and mapping have been updated in the RIDA report.</p> <p>(d) The number of subterranean deviated wells the subject of the application has been included in the RIDA report.</p>
8.	<p><u>Issue:</u></p> <p>Section 3.3.2 of the report provides no detail on subterranean deviated wells and the potential for any future restrictions placed on farming land located above these.</p> <p><u>Actions:</u></p> <p>(a) Provide details on the proposed subterranean deviated wells, including locations, trajectories, widths, depths and lengths.</p> <p>(b) Provide updated Shapefiles that include the matters discussed in (a) above.</p> <p>(c) Demonstrate that the proposed subterranean deviated wells comply with PS (3)(d) for RO1.</p> <hr/> <p><u>Arrow Response:</u></p> <p>(a) Maps and details about all deviated wells the subject of this application including locations, trajectories, widths, depths and lengths have been included in Appendix 3 of the RIDA report.</p> <p>(b) Shapefiles of all deviated wells have been included with the response to the Requirement Notices.</p> <p>(c) There are no surface impacts from the deviated wells which are located at least 190 m below the surface of the land on the properties the subject of this application. The well trajectories are not considered to constrain, restrict or prevent the ongoing conduct of PALU on the properties.</p>
9.	<p><u>Issue:</u></p> <p>The fourth dot point under Gathering Line Construction in Section 3.3.3 of the report concerning ROWs is not consistent with the areas marked on maps provided in Appendix 3.</p> <p><u>Actions:</u></p> <p>Update relevant maps to show the area of impact for all proposed ROWs, not</p>

	<p>just as a line but as a defined volumetric area.</p> <p><u>Arrow Response:</u></p> <p>Maps have been updated and included within the report showing all areas of impact expressed as a polygon rather than a line.</p>
10.	<p><u>Issue:</u></p> <p>Section 3.4.2 of the report:</p> <ul style="list-style-type: none"> • indicates that infrastructure is stated to remain in place for the life of the gas fields which is 10 years whereas Section 3.3.2 of the report details that wells are designed for a 30-year life. This includes future service connections. There is a significant difference in these timeframes. This might lead to a degree of uncertainty to how long the proposed activities are intended to be operational, as well as if there are future activities planned for the properties after the proposed activities are decommissioned • does not provide any details concerning the operation of the 12 subterranean deviated wells. <p><u>Actions:</u></p> <p>(a) Confirm the timeframes of all proposed activities to avoid any uncertainty to the length of timeframes of activities impacting the land the subject of the application, and if the Applicant has any future activities planned for both properties further to those the detailed in the application.</p> <p>(b) Provide narrative on the operation of the subterranean deviated wells.</p> <p><u>Arrow Response:</u></p> <p>(a) As advised within the report, while wells are designed for a 30-year life, the infrastructure will be in place for 10 – 15 years. Arrow confirms that no future activities are planned for both properties further to those detailed in the application.</p> <p>(b) Information about subterranean deviated wells has been included at Section 6 of the updated RIDA report.</p>
11.	<p><u>Issue:</u></p> <p>Section 3.5.2 of the report mentions the establishment of vegetation for grazing post rehabilitation, however, no grazing activities have been identified on either property.</p> <p><u>Actions:</u></p> <p>Confirm areas proposed for the establishment of vegetation for grazing, and detail how this is consistent with returning the land the subject of the application back to its former use as land used for dryland cropping.</p> <p><u>Arrow Response:</u></p> <p>Arrow confirms there are no grazing areas on the lots the subject of this application. The report has been updated to confirm this.</p>

<p>12.</p>	<p><u>Issue:</u></p> <p>Table 4-2 in Section 4.4 of the report details that the percentage of priority agricultural land use (PALU) on parcels impacted during construction on Property 1 is 2.7%. This exceeds the threshold of 2% detailed in PS (3)(a)(ii)(A) for RO1.</p> <p>Note that the area of impact includes land used during both construction and operation.</p> <p><u>Actions:</u></p> <p>Confirm how the extent of land impacted, as advised at 2.7%, is consistent with, and satisfies PS (3)(a)(ii)(A) of RO1.</p>
	<p><u>Arrow Response:</u></p> <p>Based on the updated layout, during the short-term construction phase, 2.16% of the PALU on property 1 will be impacted. This will be reduced to 0.13% during the carrying out of the activity consistent with PS (3)(a)(ii)(A) of RO1. The landowner will be compensated accordingly for the short-term construction period where a greater area is impacted and then also for the life of the project.</p> <p><i>(b) the activity can not be carried out on other land that is not used for a priority agricultural land use, including, for example, land elsewhere on the property, on an adjacent property or at another nearby location;</i></p> <p>The relocation of activities to other areas on the subject land and other land in the area has been explored and maximised within reason. The use of Multi well pads allows the minimum footprint possible and location of AGI to unfarmed areas and to the edge of farmed paddocks has been carried out.</p> <p><i>(c) the construction and operation footprint of the activity on the part of the property used for a priority agricultural land use is minimised to the greatest extent possible;</i></p> <p>The construction and operations footprints are minimised to the greatest extent possible. Non-essential Above Ground Infrastructure has been removed from the property and construction footprint has been minimised by ensuring the Right of Way width is fit for purpose.</p> <p><i>(d) the activity will not constrain, restrict or prevent the ongoing conduct on the property of a priority agricultural land use, including, for example, everyday farm practices and an activity or infrastructure essential to the operation of a priority agricultural land use on the property;</i></p> <p>With the exception of fenced out areas for well pads and valve locations, the operational footprint will not restrict the carrying out of everyday farm practices or the conduct of a PALU on the property.</p> <p><i>(e) the activity is not likely to have a significant impact on the priority agricultural area;</i></p> <p>The proposed activity will not have a significant impact on the use of the area as a PAA.</p> <p><i>(f) the activity is not likely to have an impact on land owned by a person other than the applicant or the land owner mentioned in paragraph (a).</i></p> <p>The proposed activity (on the subject land) will not impact land owned by other persons.</p>

13.	<p><u>Issue:</u></p> <p>Table 4-36 in Section 4.4 of the report details that the percentage of PALU on parcels impacted during construction on Property 2 is 2.23%. This exceeds the threshold of 2% detailed in PS (3)(a)(ii)(A) for RO1. Note that the area of impact includes land used during both construction and operation.</p> <p><u>Actions:</u></p> <p>Confirm how the extent of land impacted, as advised at 2.23%, is consistent with, and meets PS (3)(a)(ii)(A) for RO1.</p> <hr/> <p><u>Arrow Response:</u></p> <p>Based on the updated layout, during the short-term construction phase, 1.57% of the PALU on property 2 will be impacted and 0.09% of PALU will be impacted during the carrying out of the activity consistent with PS (3)(a)(ii)(A) of RO1.</p>
14.	<p><u>Issue:</u></p> <p>Table 4-3 in Section 4.4 details a number of high point vents, low point drains, extra work areas, valves and future service connections that is not consistent with Section 3.2 or with maps provided in Appendix 3.</p> <p><u>Actions:</u></p> <p>Update Table 4-3 to be consistent with Section 3.2 and the maps provided in Appendix 3.</p> <hr/> <p><u>Arrow Response:</u></p> <p>Table 4-3, Section 3.2 and Appendix 3 have been amended consistent with the updated layout.</p>
15.	<p><u>Issue:</u></p> <p>Section 4.4.1 of the report details that there will be an interruption of PALU activities during the construction period.</p> <p><u>Actions:</u></p> <p>(a) Confirm how the interruption of PALU is consistent with the guidance material provided on page 13 of in the RPI Act Statutory Guideline 02/14 Carrying out resource activities in a Priority Agricultural Area which states that coexistence may be achieved where the outcome ‘will not cause agricultural activity to pause then restart in order to fit in with resource development schedules’ (Page 13).</p> <p>(b) Confirm that the development schedule aligns with periods of fallow to avoid interruptions to PALU.</p> <hr/> <p><u>Arrow Response:</u></p> <p>(a) Arrow always aims to avoid impacts to farming operations and will undertake the short-term construction phase between harvesting and planting or when paddocks are in fallow if possible. Additionally, Arrow will discuss the timing with the landowner to try and minimise impacts as much as possible. Impacts to farming operations are an important consideration when negotiating with a landowner and in particular how to work together to achieve the best</p>

	<p>outcomes for both parties.</p> <p>(b) Arrow confirms that it will aim to schedule the construction phase with periods of fallow.</p>
16.	<p><u>Issue:</u></p> <p>Section 4.4.2 of the report details that impacts to land used for a PALU due to construction activities can last five years with yields reduced by the order of 10-15% initially, to nil% by year five. No detailed modelling is provided to substantiate that the extent of the reduction in yields will not exceed the threshold of 2% detailed in PS (3)(a)(ii)(B) for RO1.</p> <p><u>Actions:</u></p> <p>(a) Detail those areas of lots that are likely to be affected by losses in yields for the five years after construction activities. This should detail the baseline yield per the lots impacted for both properties, the percentage of area affected, and percentage of yield lost per lot for each year through to year five.</p> <p>(b) Detail any strategy to use additional inputs on the balance of cropped areas to offset the losses as per the item above (for example, use of fertiliser on the balance of cropped areas during the rehabilitation time).</p> <hr/> <p><u>Arrow Response:</u></p> <p>(a) Section 4.4.2 of the RIDA report has been updated to provide further details about losses in yields.</p> <p>(b) Following construction and during rehabilitation, disturbed areas will be rough tilled or ripped prior to completion and sown to return the affected area to the regular cropping cycle, in consultation with the farm manager and meet the requirements of the Rehabilitation Procedure (Appendix 12, RIDA report). Landowners are offered an equal or superior grade of high-quality inputs, for example: lime or gypsum and fertiliser to assist rehabilitation results and so that the area of the RoW is included in the next cropping cycle.</p>
17.	<p><u>Issue:</u></p> <p>Section 4.4.3 of the report details that crops have been re-established on the Theten property following the rehabilitation of land used for a ROW.</p> <p><u>Actions:</u></p> <p>Confirm the area in Plate 4-1 that has undergone rehabilitation and is also used for cropping, including any baseline study concerning the return of this land back to the equivalent cropping yields of land cropped that was not included in the rehabilitation area.</p> <hr/> <p><u>Arrow Response:</u></p> <p>Arrow confirms the area in Plate 4-1 has undergone rehabilitation and is used for cropping. However, no baseline study was undertaken.</p>

18.	<p><u>Issue:</u></p> <p>Table 4-4 of the report does not include the subterranean deviated wells as detailed in Figure 6-1 and Appendix 3.</p> <p><u>Actions:</u></p> <p>Update Table 4-4 to include the 12 subterranean deviated wells as detailed in Figure 6-1 and Appendix 3.</p>
	<p><u>Arrow Response:</u></p> <p>Based on the current layout, Table 4-4 has been updated to include details of the deviated wells.</p>
19.	<p><u>Issue:</u></p> <p>Section 4.4.5 of the report details that a range of management strategies including the use of fertilizers will be implemented.</p> <p><u>Actions:</u></p> <p>Confirm whether the use of additional inputs will be required to maintain the pre-development productive capacity of impacted land.</p>
	<p><u>Arrow Response:</u></p> <p>If the landowner agrees and it is required, additional inputs will be used to maintain the pre-development productive capacity of impacted land.</p>
20.	<p><u>Issue:</u></p> <p>Section 4.4.6 of the report does not cover the impacts of proposed activities on overland flow to adjacent properties during rainfall and flood conditions.</p> <p><u>Actions:</u></p> <p>Confirm how impacts to overland flow will be managed to prevent diminished volumes of water from accessing areas used for a PALU, particular those on downstream properties that are dependent on the flow of water from rainfall and flood conditions.</p>
	<p><u>Arrow Response:</u></p> <p>During the planning phase, Arrow assesses planned surface activities such as well pads and access tracks, against the potential to affect overland flow, and particularly to ensure that the planned activities do not affect a person's take or use of overland flow water in water storages for a PALU. If impacts are identified, design changes and/or other mitigations are implemented to avoid impacts on overland flow for the subject properties as well as 'downstream' properties. The report for these properties or neighbouring lots has not yet been finalised.</p>

21.	<p><u>Issue:</u></p> <p>Section 8.4 of the report details the monitoring and management of subsidence.</p> <p><u>Actions:</u></p> <p>Confirm that the data sources detailed provide the most frequent, accurate and scalable data currently available. If not, discuss why such data is not proposed to inform the monitoring and management of subsidence.</p>
	<p><u>Arrow Response:</u></p> <p>Arrow confirms that the data sources detailed provide the most frequent, accurate and scalable data currently available.</p>
22.	<p><u>Issue:</u></p> <p>The maps provided in Appendix 3 to the report do not:</p> <ul style="list-style-type: none"> • do not identify the proposed laydown assessment areas • identify the proposed locations of buried gathering lines. <p><u>Actions:</u></p> <p>Update maps in Appendix 3 to identify</p> <p>(a) those areas proposed to be utilised as laydown assessment areas</p> <p>(b) the proposed locations of buried gathering lines.</p>
23.	<p><u>Issue:</u></p> <p>Appendix 9 (Commercial in Confidence) to the report details discussions on restricted land constraints, however this is not raised elsewhere in the application.</p> <p><u>Actions:</u></p> <p>a) Provide mapping to show that the proposed activities will not overlay any areas of restricted land.</p> <p>b) Confirm that the impact of the proposed activities will not overlay any areas of restricted land.</p>
	<p><u>Arrow Response:</u></p> <p>a) PL252 was granted in September 2008 and PL260 was granted in April 2011. Chapter 3 of the MERC Act commenced in September 2016 and therefore the restricted land provisions do not apply to the lots the subject of this RIDA application.</p> <p>b) Arrow confirms that the proposed activities will not overlay any areas of restricted land.</p>