

From: [Celia Karp](#)
To: [qlrc_mining_objections](#)
Cc: [REDACTED]
Subject: Re: SUBMISSION TO QLRC
Date: Friday, 31 January 2025 16:18:40
Attachments: [MEROLA By CeliaKarp PartA.pdf](#)
[MEROLA By CeliaKarp PartB.pdf](#)
[SpringvaleRIDA By CeliaKarp Part B.pdf](#)
[SpringvaleRIDA By CeliaKarp Part A.pdf](#)
[SpringvaleRIDA By EDO.pdf](#)
[SpringvaleRIDA By HoldingRedlich.pdf](#)

You don't often get email from [REDACTED] [Learn why this is important](#)

Please see enclosed my various submissions in the last 2-3 years - which will reinforce my below statement.

This submission is based on my experience dealing with Arrow Energy over a period of many years; being the Surat Gas Project on the Condamine Alluvium/Floodplain.

Many submissions have been written over the last few years to various government agencies. This submission highlights significant issues when conducting mining activity on private Freehold property/businesses!

I will write a brief overview. I want to keep it simple.

To share my experience I enclose 2 submissions written by myself, cited below

- Submission to RIDA, Reference RPI22/004, relating to our property [REDACTED] (joint owners), January 2023
- SUBMISSION ON THE MEROLA BILL 9 MAY 2024 (Mineral and Energy Resources and Other Legislation Amendments Bill

And a third & fourth submission written by Holding Redlich & EDO on our behalf;

- Submission to RIDA, Reference RPI22/004, relating to our property (joint owners), January 2023 - Holding Redlich
- Submission to RIDA, Reference RPI22/004, relating to our property (joint owners), January 2023 - EDO

OVERVIEW:

Farmers have recently been notified by Arrow Energy that they're withdrawing the Regional Interests Development Application (RIDA), Reference RPI22/004 mainly relating to the district of Springvale on the Darling Downs.

SOME BACKGROUND:

The RIDA is a legislative legal process, administered under the Regional Planning Interests Act 2014 for assessing the suitability of prime farming land on the Darling Downs for coal seam gas extraction (known as the Surat Gas Project) from underneath - what is private Freehold property above.

The intent of the Act was enacted to protect Priority Agricultural Areas (PAA) from incompatible resource activity (gas) on the Condamine Alluvium, which is prescribed as a regionally significant water source. PAA means agriculture takes priority over gas

extraction. I stress this project encompasses is Freehold private property, and not just one private property, but hundreds, and over a very very large area. This is a unique, immoral situation.

I stress it's clear in the Regional Planning Interests Act that gas extraction underneath farms on the Condamine Floodplain was off-limits!! Yet the Surat Gas Project was approved!!?? The Regional Planning Interests Act statutory guideline 02/14 stresses the precautionary principle (please EPBC Act 1999).

Predicted and actual impacts on individual farms include loss of underground water (the lifeblood of these communities) and subsidence (sinking of the land) as a consequence of under drilling private property, to reach the gas! Impacts have already occurred on some properties in the region! Claims for compensation have not been forthcoming!

The Surat Gas Project since 2020/21 has run into technical and legal problems due to the previous Queensland Government allowing Arrow to self-assess and interpret relevant sections of the Regional Planning Interests Act to suit their operational agenda. Challenging these decisions currently goes unchecked!

CURRENT SITUATION:

Four Springvale farmers fought to ensure no deviated gas well arms & its impacts from neighbouring properties extended underneath their private property.

Those 4 Springvale landowners in the RIDA have fought for many years, (along with other farmers on the Condamine Floodplain), to protect their land, homes and way of life for the next generation, including Australia's food/water security. Let's not forget, some of us have lived here for more than 70 years and are justified in fighting to keep this land in its original condition.

These farmers pay their taxes (same cannot be said for Arrow), work hard to produce export income for Queensland and face a future with a drying climate and other weather extremes; to guarantee food and water security in the future! Note: our farms consist of black soil which retains moisture and is perfect for growing food in a drying climate. Black soils are limited globally. Yet it's beginning to feel like we're treated as second class citizens whose land is there for the taking with the State Government a willing participant with no accountability regarding the legal framework. For example: Some farmers have experienced subsidence and yet it seems no compensation has been paid for those affected landowners; even though there is a legislative process/requirement for impacted farmers to be compensated! A grave injustice with no Queensland Government intervention!!

The withdrawal of the RIDA without waiting for a decision from the Queensland Government is seen as a cynical ploy by Arrow to manipulate sections of the Regional Planning Interests Act to avoid an unfavourable decision from the Government!

Simply put, it's an abuse of process. The Regional Planning Interests Act is not a "plaything" for resource companies. It's a legal mechanism designed to protect prime agricultural land for the future generations. It also ensures that all Queenslanders are treated fairly and equitably before the law without fear or favour. We hope Arrow Energy will not re-apply under potentially changed Regional Planning Interests Act amendments in the future (the QLD govt has indicated they would make amendments). Otherwise this legislative process is a farce.

The tragedy is that by approving the Surat Gas Project, politicians whom we elect to

safeguard our legal rights, completely ignored those legal mechanisms outlined in the Act, thus allowing gas extraction on a sensitive floodplain. Some farmers don't want any gas extraction to occur on their properties (a right under the Queensland Human Rights Act 2019), and know any activity on neighboring land will impact their properties. Impact does not stop at the fence. This outcome is a consequence of ignoring the implementation of an Act that was intended to protect agricultural land located on the Condamine Floodplain, thus preserving the rights of all in a fair and equitable manner. That's why the State, on our behalf, drafts laws to ensure everyone is treated equally before the law. **There is no way, under the current Regional Planning Interests Act, could the Qld Govt approve the RIDA in Arrow Energy's favor. If the Qld Govt had done their job and ruled in the farmers favor, then it would have set a precedent, which would have halted Arrow Energy's activities. That's why Arrow Energy most likely withdrew the RIDA and it was easier for the Qld gov't not to make a decision.**

This currently is not the case when one landowner decides to say NO yet will be negatively impacted by those landowners who say YES to deviated gas wells. Meaning deviated drilling underneath those who say NO (land) will still be allowed.

The Petroleum & Gas Act 2004, section 804: A person who carries out an authorised activity for a petroleum authority must carry out the activity in a way that does not unreasonably interfere with anyone else carrying out a lawful activity. This whole 5 year process of helping Arrow Energy & the Qld Govt amend legislation, assist in scientific research is unreasonable. Who would believe that us farmers were used to help draft legislative amendments and aid & assist in scientific research to ensure the gas goes ahead (based on our knowledge of the land, farming, subsidence, water hydrology). It's truly unbelievable. And then they (Arrow Energy & Qld Govt) tried to manipulate the science - to use it against us. And it's still going on - legislative amendments and scientific research.

This region now faces a future where divided communities are threatened by the reality of a gas industry threatening the long-term viability of farming on the Darling Downs and Australia's food/water security.

The QLRC PROCESS AND HOW TO REMEDY THIS POWER INEQUALITY:

Surely there's no point in "reviewing the processes for making objections to applications for mining leases and associated environmental authorities", and having "community engagement", if the Queensland Government is going to ignore legal and statutory obligations (our laws...eg. the Regional Planning Interests Act) when decision making. For example when the Queensland Government discarded/ignored the intent of the RPI Act when assessing Arrow's Surat Gas Project on Priority Agricultural Areas (PAA'S), etc. Meaning agriculture takes priority!!

It makes a mockery of the process and thus creates a climate for inequitable decision making which results in applying the laws unfairly; the consequences we're faced with today, with unwanted impacts on those landowners who haven't signed up and/or didn't want drilling underneath their properties!!

Those landowners have now been treated inequitably and are suffering mental and economic impact to their lives!

The question now is: how will the QLRC tackle this problem because that's the reality of what happened when the SGP was approved without due regard to RPI ACT 2014 and its statutory instruments!

There needs to be a censure mechanism for a government whose parliamentarians ignore

their legislative obligations! It's a breach of duty and trust to those who elected them!

Furthermore some sections of the mining industry appear to be advocating for a removal of the Regional Planning Interests Act 2014.

This would be a catastrophe for the future of agriculture in Queensland. I can't believe this suggestion could even be put in writing as a suggestion.

It clearly demonstrates how some factions of the mining industry think and what farming families/agriculture are up against to protect their livelihoods to guarantee water and food security for the future of this State!!!

Celia Karp (a farmer in Springvale District)

[REDACTED]

[REDACTED]

[REDACTED]

Celia Karp
Springvale - Dalby 4405

SUBMISSION

TO THE COMMITTEE

A BRIEF OVERVIEW TO THE SURAT GAS PROJECT - JOINT VENTURE SHELL/PETROCHINA AND ARROW ENERGY

We are landholders at [REDACTED], Dalby, owners of Wysall Park, a dryland farm that's been in the family since 1947/8 and continually farmed since that time! Our farm [REDACTED] is currently part of the Surat Gas Project, RIDA application RPI 22/004 Kupunn-Springvale along with 2 neighbouring properties on Springvale Road. This project sits on the Condamine Alluvium floodplain, prescribed as a regionally significant water source, a critical groundwater resource for agriculture (Arrow's own document on the Condamine Alluvium)

This submission will be written from the perspective of a dryland farmer who believes in the democratic process that voters elect a government to uphold the laws of Queensland; in this case, the Regional Planning Interests Act 2014 (RPI) which aims to manage the impact of resource activities on areas of regional interest throughout Queensland, on Priority Agricultural Areas (PAAs) by applying relevant assessment criteria. It is now apparent that the Queensland Government ignored the intent of the RPI Act and approved the Surat Gas Project without due regard to the Priority Agricultural Areas and the precautionary principle (please refer to the RPI Act, Statutory Guideline 02/14).

My submission will take a broad brush approach in dot point form and will not explore complex scientific/technical issues. I will leave that to others who have a clear understanding of what's involved. I will comment on the relevant sections of the MEROLA based on the sequence as they appear in the Bill but first a general observation.

The amendments to the MEROLA are complex and have serious legal ramifications; for the sake of fairness and justice, the advice of a QC is needed, who is experienced in: coal seam gas activity impacts encompassing hydrology/subsidence, an agronomic expert, and an arbitration and contract law expertise. It's impossible to expect our Parliamentary representatives to get their heads around such complex issues, including other bundled pieces of legislation before parliament, who are then expected to vote without a clear understanding of what they are voting on, within a particular time frame. This observation is meant with the best of intentions and not personally directed to any individual, but I stress these amendments do impact private property and the future financial livelihood of farmers. Can I suggest that our parliamentary representatives ensure they are comprehensively briefed by those experts who understand the complexities of coal seam gas on a shallow aquifer/floodplain and have adequate time to comprehend these complex issues! Thank you!

Also to be noted: at the bottom of each Page are the words "Authorised by Parliamentary Counsel. Is that purely a formality or have these lawyers experience in complex scientific matters in, for example, hydrogeology and associated coal seam gas activities/extraction, Agronomy and contract law etc

Coexistence is a rubbery concept that carries no legal weight. Yet the government legislates with the expectation that landholders will embrace it. People cannot be forced to coexist. It's a mutually beneficial arrangement between 2 parties. Coexisting with a resource company knowing it will damage one's property is not Coexistence. Some sections of the MEROLA are drafted with coercive intent, which will not lead to a mutually beneficial outcome (within the parameters of coexistence), with the possibility of a compensation claim ending in an expensive legal battle with no winners!

The name change from GasFields is to Coexistence Queensland seems a strange choice. In the future a landholder who is seeking advice on a proposed development would do a word search on either gas, renewables, solar, wind turbines, transmission lines. Most people wouldn't be familiar with the word coexistence! Regarding the composition of the GasFields Commission board, the existing members seem to have a strong resources/industry

background. To bring balance, there should be a board member with an agriculture/agronomy background who has a practical working knowledge of farming practices. This oversight needs to be rectified!

LAO

Part 8: Amendment of Mineral and Energy Resources etc. To include "manage (prevent and mitigate) in clause 69 & 70.

Chapter 5ACSG-induced subsidence management.

184AA Purpose of chapter

(1) The purpose of this chapter is to provide a framework for managing the impacts of CSG-induced subsidence that includes—

(b) (ii) requiring particular relevant holders for the area to undertake particular activities or take particular action; and

(iii) giving the Minister, the chief executive and the office functions and powers related to the identification, assessment, monitoring and management of the impacts of CSG-induced subsidence in the area

COMMENT:

The above dot point relating to Chapter 5A is of concern for the following reasons:

- It's clear that the Queensland Government intends to pursue a legislative framework with the knowledge that subsidence is predicted and is largely irreversible (See Coffey report link below) which will cause an act of deliberate harm to the landholder, thus triggering a Qld Human Rights violation under the Act 2019.

- No risk assessments have yet been carried out identifying which areas will be categorised as A, B, or C.

- The Government is forcing landholders to coexist with a Coal Seam Gas Company using legislative powers to develop a framework; ultimately to provide a pathway to compensation for subsidence impacts/damages.

Firstly in relation to (iii) above (highlighted), the Minister has been given powers to manage subsidence. Coffey, Arrow's consultants state in their report commissioned by Arrow that subsidence is largely irreversible.

See.....Page 29

With due respect the Minister, under these amendments, will have the power to further investigate subsidence and consider the long-term consequences/damage to prime agricultural land on private property across the Condamine Floodplain. This longer-term damage also impacts farmer's financial livelihoods of lost production.

Ultimately the Minister will have to face the reality of the destruction of the agricultural industry on this area of the Darling Downs. This raises the issue of water and food security. In other words: ALL COAL SEAM GAS ACTIVITY MUST CEASE - the power to do this exists. What is needed is the political will, in order to protect the future of agriculture in this region.

Secondly, the question that needs asking in relation to compensation is, compensatory effect is already defined in the MERC Act yet to my knowledge no compensation claims have been successful. The latest being by a farmer at Kupunn who has been refused as Arrow Energy have claimed CSG-induced subsidence was not caused by them. As a landholder not yet sure what category our farm will be classified as, my risk profile is zero, meaning no subsidence, not 1mm. I have a right to expect NO surface impacts from being under-drilled from a neighbouring well pad, from which I have no say and no control over. The point I am making is: why should I suffer the impacts of subsidence and its consequences on my own private prop when it's highly unlikely I will receive compensation based on the cost of proving subsidence in court and Arrow's record of denying liability! Onus of proof needs to be reversed onto the resource holder. It's cold comfort to read (2) on Page 87 which states "Also, this chapter provides for the payment of compensation by particular relevant holders for a Subsidence Management Area for particular cost, damage or loss arising from the impacts of CSG-induced subsidence". I stress once again to the Government, that as an owner of Freehold private property, I should not have to experience impacts and interference to my farming operations/practices. That is a right under the Human Rights Act. See "Human Rights Act 2019

• CSG induced subsidence triggers the HR Act Section 24(2.) A person must not be arbitrarily deprived of the person's property. The inability of landholders to be able to make profitable use of their subsided land is unjust and unreasonable • HR Act 2019 section 13(2) (c) the relationship between the limitation and its purpose". Arguably

being deprived of the "highest and best use" is limiting one's right and is unreasonable under the circumstances (as argued in this context). Therefore these amendments conflict with the Queensland Human Rights Act 2019.

- Has the Government given any thought to expanding the Industry levy in Subdivision 2 regarding a resource authority holder who may suffer financial difficulties, facing bankruptcies/or any other reason such as upon cessation of a project, who is unable to meet his financial penalty obligations for compensation for damage caused to a landholder; whereby the court process has proven that the resource authority holder is liable for damages payable.

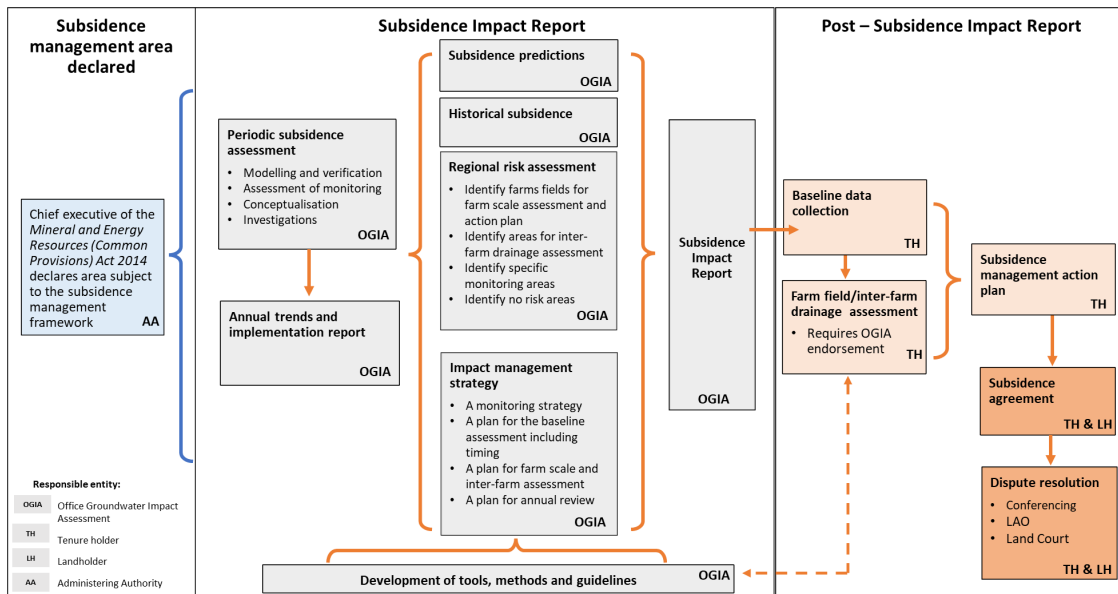


Figure 1 – Overview of the subsidence management framework

I have attached my original submission to the MEROLA Amendments as part of the current submission process. This current submission is in response to various points raised in the above Statement of Reservation.

1) LNP committee members support the intent of this bill, however we wish to place on record some concerns. As has become a regular occurrence with current government, most issues stem from a complete lack of meaningful consultation.

COMMENT:

- It was interesting to read that LPG committee members had some concerns. Local landholders within the tenure of the Surat Gas Project, including those landholders who've already suffered subsidence at considerable economic cost to themselves, have been very vocal about the impacts CSG extraction will have on the productivity of their Freehold land!

Yet during the last 4 years, the LNP have been largely silent on CSG impacts except for a few questions raised in Parliament by relevant members at the urging of a few local landholders wanting answers. Where was the voice of the LNP defending the right of a farmer to say NO CSG ACTIVITY ON MY FARM!

Instead we have the concept of coexistence, having no legal basis; just a myth dreamed up by some overzealous official who has found a way to make the process more acceptable to the gullible landholder. Coexistence means both parties benefit to some degree; except there is a power imbalance (one party doesn't even own the land) with a large payment dangled in front of the landowner to tempt him into signing a CCA; never mind the feelings of the adjoining neighbour who doesn't want it (otherwise he would've signed up) and/or if he experiences subsidence. This NOT coexistence!!

I myself upon contacting the LNP Brisbane office of the Opposition Leader, more than a year ago, was largely unsuccessful in generating a meaningful response; never mind all this is taking place on Freehold land! Land ownership is sacrosanct and conveys certain rights and should be upheld and respected!

- Furthermore the statement "that most issues stem from a complete lack of meaningful consultation" is self-serving!

Yes, the current Labour government approved the Surat Gas Project without any meaningful consultation and most importantly completely ignoring the intent of the Regional Planning Interests Act which was to protect Priority Agricultural Areas and Priority Agricultural Land Uses. The Regional Planning Interests Act, Statutory Guideline 02/14 clearly states to use the Precautionary Principle to assess a project and I quote "If there is scientific uncertainty about the impacts of an activity and potential impacts are serious or irreversible, the precautionary principle is applicable". Let's not forget Coffey in their report, prepared for Arrow Energy, wrote that subsidence was largely irreversible. Please see my submission to the original MEROLA Amendments for more detail.

This project will have far reaching impacts on prime agricultural areas sitting over the shallow Condamine Alluvium, a regional resource, on a flat floodplain. I quote from Regional Planning Interests Act, Statutory Guideline 02/14 "The Condamine Alluvium is prescribed as a regionally significant water source under the RPI Regulation". Once again please refer to my previous MEROLA Amendments submission.

Instead Arrow Energy used an Adaptive Management framework to ensure the project could proceed with minimal interference from a government who took a largely hands off (with one exception - the million dollar fine) approach to clear breaches of the Regional Planning Interests Act!

Furthermore what is really reprehensible and deceitful behaviour by the current Queensland Government is the approval of the Surat Gas Project in the full knowledge that the occurrence of subsidence was a reality, causing harm to productive farmland that was classed as Priority Agricultural Areas needing protection! (Please refer to my previous MEROLA Amendments submission on the Act of harm)

Yet after approval I remember there were a number of shed meetings run by Arrow Energy who were still in denial stage of admitting to subsidence. By that time some farmers had become aware of the existence of subsidence!

2) The committee process for this bill was rushed and opposition committee members have concern there was not enough time and opportunity for a proper examination of this far-reaching legislation. The bill and explanatory notes lack clarity and the detail needed for legislation that establishes significant functions of government. This in turn resulted in submitters being unsure about the intent of various aspects of the bill.

COMMENT:

Of course it was rushed, there is a State election in October.

Also it's clear to this submitter that the intent of the current government and the opposition is to ensure the Surat Gas Project continues with albeit some necessary amendments conveying the impression that the Queensland Government has listened to our concerns!

In reality, the Queensland Government has approved the Surat Gas Project with no regard for the rights of farmers, and the consequential impacts that Gas extraction will cause harm, such as loss of underground water and subsidence.

Trying to unwind a bad decision by implementing, for example, a Subsidence Management Framework adds another layer of legalistic and complicated processes. Most farmers don't have time to understand the ramifications! It's a lawyer's picnic with huge costs attached to a court challenge. It's perfectly clear, subsidence must stay where it belongs, inside the Regional Planning Interests Act. Any watering down of this Act would be a betrayal of landholders rights and a gross breach of trust in government legislative powers! This Act always conveyed the intent that agricultural areas on Priority Agricultural Areas must be protected. In a drying climate also protecting our underground water is crucial. No exceptions for resource companies!

3) CSG induced subsidence has been a known concern for well over a decade. The fact that it has taken the state government this long to act has resulted in the lost opportunity to capture solid baseline data ahead of current extraction activities. The Federal Government has had research underway and subsidence related conditions on activities for many years, while the state has sat on its hands!!

COMMENT:

The obvious response to this point:

Yet the LNP also sat on it's hands and said nothing when the Surat Gas Project was approved by the Queensland Government in 2019. Truly shameful behaviour but at least the LNP has made a significant admission.

The Queensland Government, whether it's the current government or the LNP takes power in October, the government needs to call for a Moratorium on the CSG industry on Priority Agricultural Areas under the Regional Planning Interests Act!

This is about the Future of agriculture and water security on the Darling Downs!

4) Numerous submitters stated the subsidence proposals are lacking in detail and require much more consultation with affected stakeholders, to the extent that both landowners and resource companies were in favour of these elements of this bill to be withdrawn for this process. The management plan must be definitive and outline compensation for measurable impacts of CSG related subsidence. Ideally, this would be developed in conjunction with this legislation. It is important full impacts of any proposed legislative change are understood before a bill is passed. Stakeholders are being asked to take a huge leap of faith with the regulations not yet seen, which underpin this bill.

COMMENT:

You're asking me as a landholder to experience subsidence impacts even loss of underground water before any possibility of compensation (key word here is "measurable - how does one measure something that has already occurred) which so far Arrow have declined to do!! Proving it without baseline data prior to commencement of all CSG extraction in this region is now impossible; never mind OGIA will attempt to come up with some form of methodology to develop a baseline after the event - too many variables to safely measure accuracy! I am sure the scientific community would come up with sound reasons to argue against " an after the event baseline scenario".

Further to subsidence: My risk profile is zero. I DO NOT WANT ANY CSG ACTIVITY ON WYSALL PARK!, including from a neighbouring landholder.

I will not support any harmful impacts on the farm that the family built from scratch in the late 1940's! That includes any loss of underground water!

I repeat, a Moratorium needs to be called on the Surat Gas Project

5) The committee heard concerns around the measurement of CSG subsidence, and ambiguity around baseline data. Submitters raised conflicting views and opinions as to the accuracy of baseline data and methods of collection. While some studies have been undertaken, it is clear more needs to be done to ensure sound, scientific methods are being used to accurately identify CSG induced subsidence and their impacts on other activities, especially agriculture.

COMMENT:

Please refer to my previous COMMENT in response to (4) on baseline data!
It's clear from point 5 above that the scientific methods are in doubt; to assess CSG induced subsidence on agricultural land.

A halt needs to be called to the Surat Gas Project and a Moratorium declared on all Priority Agricultural Areas!

I have not responded to the questions and answers that have been generated since the closing date of the original MEROLA Amendments. The current Queensland Government will always come up with more words and reasons to fit the current argument! The farmer generally will be the loser!

I found the Statement of Reservation by the LNP committee far more relevant to our concerns. If the LNP wins government, it remains to be seen if they take action to halt CSG extraction on the Condamine Alluvium floodplain!

NOTE:

Further to the 2 outstanding RIDA'S, one being for the Springvale district.

I am asking that the Queensland Government refuse these 2 RIDA'S based on the following:

- Approval of the Surat Gas Project knowing full well that the existence of subsidence was a reality, causing harmful impacts to a farmer's land and his future productivity, resulting in lost income and destructive impacts to the land itself, including subsidence being largely irreversible (Coffey report - refer to previous submission for more detail).
- The Queensland Government ignoring the intent of the Regional Planning Interests Act to protect Priority Agricultural Areas and Priority Agricultural Land Uses. These designations are seen as high value intensive agricultural land uses, to be given priority over other uses such as resource extraction.

Celia Karp,

██████████ ████████,
Dalby.

████████████████████

**SUBMISSION FOR RP122/004 ARROW – KUPUNN SPRINGVALE CSG DEVIATED WELL PATHS
REGIONAL INTERESTS DEVELOPMENT APPROVAL FOR PROPERTY [REDACTED]**

PART A (THIS SUBMISSION IS BROKEN UP INTO 2 PARTS, PART A & B)

RPI ACT 2014 - POINTS TO NOTE PLUS COMMENT

IMPACTS

Background

Under the Regional Planning Interests Act 2014 (RPI Act), Statutory Guidelines 02/14 – Carrying out resource activities in a Priority Agriculture Area (PAA).

What constitutes a significant impact? – Page 4

A significant impact is an impact which is important, notable or of consequence, having regard to its context or intensity. Whether or not an activity is likely to have a significant impact on the PAA depends on the scale and the effect of the impact on the PAA.

The Australian Government Environment Protection and Biodiversity Conservation Act 1999 provides guidance on what may constitute a significant impact on a matter of national environmental significance.

To determine whether an activity is likely to have a significant impact, consideration needs to be given to the probability of the negative effects of the impact occurring.

If there is scientific uncertainty about the impacts of an activity and potential impacts are serious or irreversible, the PRECAUTIONARY PRINCIPLE IS APPLICABLE. (See RPI Act – Statutory Guideline 02/14)

One example of where an activity may be considered not likely to have a significant impact on a PAA may be where the activity will not:

- Result in a decrease in the particular agricultural product supplied from the PAA or region.
- Result in a decrease in the PAA or region's ability to undertake a particular PALU in the future.

COMMENT:

It is stressed that where there is scientific uncertainty and the use of the Precautionary Principle is applicable, this should have been the chosen method for the Surat Gas Project and arguably, the project would have been in doubt of proceeding! Instead Adaptive Management was selected as the management tool, which is used where uncertainty exists; it is a reactive tool to keep the Project moving along at all cost to landholders! This uncertainty relating to the Surat Gas Project is reflected in the scientific data; where further research was needed to be undertaken and still being undertaken, for example with OGIA on subsidence and the work of the GasFields Commission Queensland who released a Discussion Paper in May 2022: who found there is no clear jurisdictional responsibility for regulating and managing the impacts of CSG-induced subsidence. That is a significant admission by GasFields Commission headed by the CEO Mr. Warwick Squire who goes on to say “the risk associated with CSG development throughout Queensland.” (taken from Gasfields website).

Until there is clear jurisdictional responsibility for regulating and managing the impacts of CSG-induced subsidence on the Darling Downs, including assurances of protection for farmers/landholders occupying Priority Agricultural Areas (PAAs) and Priority Agricultural Land Uses (PALUs), the Surat Gas Project cannot proceed and should not proceed.

The last 2 dot points above highlight that where there is a significant impact such as subsidence, there will be a decrease in a particular agricultural product supplied from the PAA or region which in turn will impact the

ability to undertake a particular PALU in the future. Its immaterial the degree of subsidence; no farmer should be expected to tolerate any level of subsidence, causing economic loss/interruption/impediment to his farming operations and livelihood from subsidence/ponding of water which will delay and prevent his crop schedules from being implemented, including loss of a crop through water logging This situation is contrary to the RPI Act – Statutory Guideline 02/14 and would be a clear breach of Property Rights under the Human Rights Act 2019.

Adaptive management as a tool is explored further down in 42 (2) (a) (i).

The background information discussed above mounts a strong argument for refusal of the Springvale RIDA when measured and discussed against relevant sections of the RPI Act as outlined below.

Division 5 – Referral to assessing agency

41 – Assessing agency’s assessment of application

(2) (a)

The extent of the expected impact of the resource activity or regulated activity on the area of regional interest.

COMMENT:

We would expect that that Department of State Development, Infrastructure, Local Government and Planning (DSDILGP) as lead agency, including Department of Resources (DoR) and Department of Agriculture (DAF), would undertake:

- To uphold **Division 2 – Purposes and application of Act:**
- To achieve the purpose and application of Act, under 3 – Purposes and achievement:

(2) To achieve its purpose this Act provides for a **transparent and accountable process** for the impact of proposed resource activities and regulated activities on areas of regional interest to be assessed and managed.

Our experience of Arrow Energy, the Surat Gas Project and relevant State Governments, in this instance Department of State Development has not been transparent and accountable in regards to many aspects of the Surat Gas Project. This department has not been receptive. Direct answers regarding important questions about the role of State Government with oversight of the Surat Gas Project are often ignored or evasive because Arrow have been allowed to self-assess and self-regulate. Hence the reason contributing to the million dollar fine. Let’s accept it “Arrow did what they wanted” and interpreted legislation to suit their agenda. A reasonable person would draw the conclusion that allowing a proponent (in this case Arrow) to self-assess is NOT transparent and are not accountable. In other words “it wouldn’t pass the pub test”. Furthermore it is contrary to the intent of the RPI Act upholding the priority land use of PAAs and PALUs. This has been the downfall of the Surat Gas Project, due to the inability of the State Government to provide a transparent and accountable process with no oversight of Arrow and their activities. No one in State Government took responsibility because diffusion of responsibility is spread too widely so ultimately no one takes responsibility.

Therefore, it will be imperative for State Government and its relevant departments to thoroughly scrutinize and peer review, the relevant data supplied by Arrow Energy and its consultants. This action should include experts, without bias, who are experienced in their field of knowledge. This scrutiny should extend to OGIA and other relevant bodies that the Qld State Government have consulted/engaged with for the Surat Gas Project. The assessing agencies and the Springvale landholders must have confidence that the assessors and their agents have the appropriate independent professional qualifications and expertise needed to assess fairly, competently and professionally, all scientific data that will have been provided by Arrow and their consultants/agencies as part of their RIDA Application. It is critical to note that Arrow have been allowed/supported to self-assess by the Qld State Government. We repeat as affected landholders of the subject land situated within this RIDA, that all assessing agencies who are engaged in the assessment process should adhere to the highest standard, by thoroughly scrutinising data and especially all self-assessment data.


As landholders we rely on our business model to give us the confidence and ensure our income stream consistently remains the same and provides certainty over the ensuing life of the Surat Gas Project and

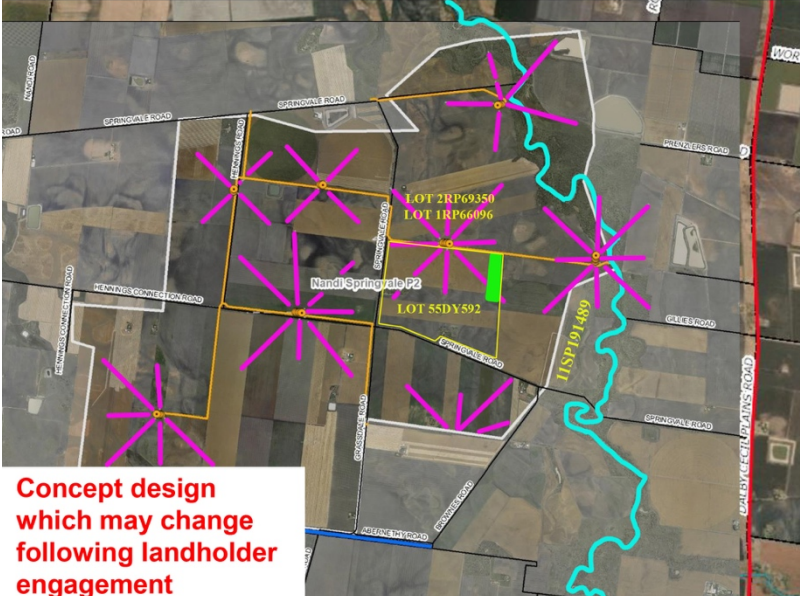
subsequent years when harmful impacts become more evident accompanied by serious financial implications, through loss of income in the future, as landholders. Any detrimental impact/interruption or threat to our business would seriously compromise our ability to continue leasing our land; for example, (1) Impact of subsidence with deleterious effects; (2) Any change to slope and overland flow/flooding regime would deprive the blacksoil/vertisol floodplain of natural replenishment of moisture levels (3) Any loss of water from the Condamine River Alluvial Aquifer thus impacting our underground bore. These threats would be viewed as contradicting the intent of PALUs in the Statutory Guidelines 02/14 which emphasise PALUs; “to ensure the continuation of the existing PALUs is not threatened” (Statutory Guidelines 02/14, Page 3 under the heading “A Priority Agricultural Area”.

These impacts include any change/reduction to our underground water via our bore which we rely upon to sustain our considerable gardens, tree planting, animal troughs and supplying water to our tenanted cottage. The State Government owes us a duty of care to safeguard our property rights and enable us to live on the property without any change to our operations and lifestyle. Anything less would be viewed as unconscionable conduct. Any argument raised by Arrow that this RIDA need only take into account the individual impacts on the farms included in this RIDA (and not the neighbouring properties) and thus is **not an overall significant impact**, is strongly refuted. This RIDA is defective in ignoring impacts occurring outside the scope of this RIDA, such as the neighbouring property which has a well pad to the north of our boundary (See **Area Wide Planning below**. Colours emphasised regarding deviated arms.

➤

Construction in Springvale area





Wells & gathering

- Approximately 44 wells over 7 multi-well pads
- Approximately 19km of water and gas gathering pipelines

Workforce

- Construction crews to stay in existing accommodation facilities in Dalby
- short-term (mobile) drilling camp at Tipton CGPF

Turnouts

- Locations to be determined, likely Springvale Road and Hennings Road (pending approvals)

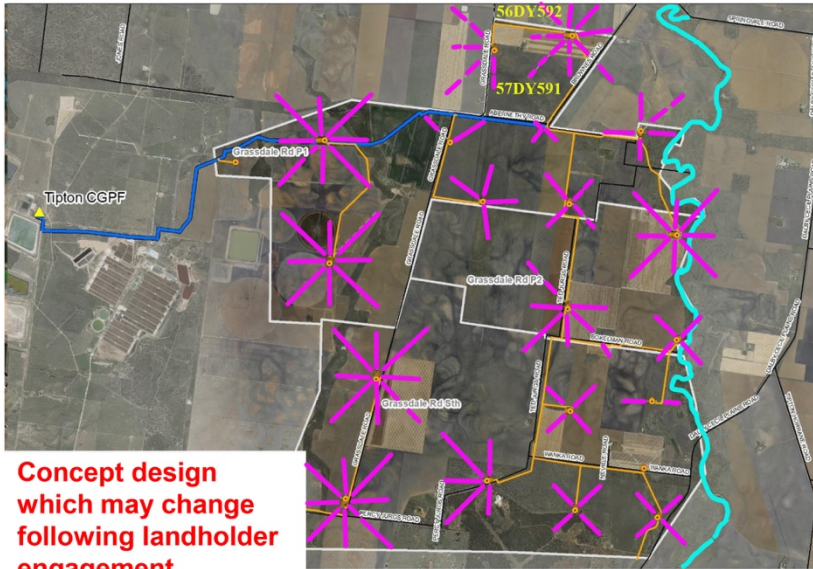
Water

- Construction water sourced from Tipton Dam or offtake at Plainview Pilot on Abernathy Road

Gravel

- Gravel to be sourced from existing quarry on private property

Concept design which may change following landholder engagement



Concept design which may change following landholder engagement

Wells

- Approximately 110 wells over 21 multi-well pads with locations still to be determined

Workforce

- Construction crews to stay in existing accommodation facilities in Dalby
- short-term (mobile) drilling camp at Tipton CGPF

Turnouts (roads)

- Locations to be determined, likely to include Grassdale Rd, Ted Jurgs Rd, Wanka Road and other local roads

Water

- Construction water sourced from Tipton Dam or offtake at Plainview Pilot on Abernathy Road

Gravel

- Gravel to be sourced from quarry on Arrow's Lynwood property or existing quarry on private property

Our aforementioned property/s cannot be viewed in isolation from the neighbours hosting gas; all impacts are relevant and significant when viewed on a regional scale; impacts don't stop at boundary lines and are cumulative!

Division 2 – Purposes and application of Act in regards to 3 – Purposes and achievement:

- has not provided for a transparent and accountable process etc.
- has not been fulfilled its intent within the meaning of the RPI Act to protect and prioritise PAAs and PALUs land use.

For this reason the Springvale RIDA should be refused!

41 (2) (b)

Any criteria for the assessment prescribed under a regulation.

COMMENT:

Arrow Energy has not fulfilled the required outcomes for PALU and prescribed solutions;

Required outcome 1: The activity will result in a material impact on the use of the property for a PALU.

Required outcome 2: The activity will result in a material impact on the region because of the activity's impact on the use of land in the PAA for 1 or more PALUs.

Arrow Energy has not fulfilled the required outcomes for SCL and prescribed solutions;

There will be impact on SCL in the SCA.

There will be material impact on SCL on the property (SCL).5

There will be material impact on SCL in an area in the SCA.

42 – Assessing agency’s response to application.

(ii) recommend **the refusal of all** or part of the application;

COMMENT: Any argument mounted by Arrow because their project, the Surat Gas Project has received overall approval and has advanced in the Kupunn/Nandi area does not and should not guarantee an automatic approval. The Surat Gas Project has embraced Adaptive Management as a tool to manage this project, to ensure it continues unimpeded. This reactive tool is defined in ADS 201.6 as a “structured approach to decision making that emphasizes **accountability** and explicitness in decision making”. It allows for adjustments to be made in response to new information and changes in context; it is about changing the path being used”. In other words when there is substantial uncertainty regarding the most appropriate strategy for managing natural resources. It is argued that the Surat Gas Project as it has progressed, and new research data has and is coming to light on a regular basis (See Division 6 – 46 (1) & 49 (1) (e) – (for example, GasFields Commission Queensland and their further research on subsidence), meets the requirement for a change in context; the external factors of subsidence and their impending risks on the Condamine floodplain, necessitate a change of direction by the Queensland Government regarding the Springvale phase and subsequent phases of the Surat Gas Project.

From the landholder point of view, who is facing a future of uncertainty regarding, for example subsidence and underground water extraction, which exists due to CSG extraction and not caused by the actions of the landowner. As farmers we shouldn't be facing uncertainty by the actions of another party (Arrow) regarding the future of our farm. The only certainty is prediction of occurrence but by how much is uncertain. No guarantees can be given. Any uncertainty obligates the State Government to require certainty otherwise the intent of the RPI Act under the Statutory Guideline 02/14, cannot protect PAAs and ensure the continuation of the existing PALUs is not threatened.

Also the Condamine Alluvium has a trigger threshold as cited in the Federal EPBC Act 1999 as being applied to a coal seam gas development. Further work is being conducted by OGIA, regarding the Condamine Alluvium. This indicates a degree of caution is required, regarding underground water loss which would be critical within the context of drought and the Condamine River forming part of the headwaters of the Murray Darling Basin. It is argued that Trigger thresholds in PAAs, are broad and generalised and need a targeted and localised approach to impacts, thus satisfying the intent of the RPI Act Statutory Guideline 02/14, regarding PALUs. The initial amount of water that is withdrawn prior to extracting the gas is significant. Any loss of water in a drying climate is an impact and cannot comply with the intent of the RPI Act Statutory Guideline 02/14.

No landholder/farmer should be faced with daily uncertainty over the 35 year life of this project threatening our business model with lost production and all the associated problems navigating our paddocks impacted by subsidence and projected loss of water. Due to this uncertainty the Precautionary Principle should be enacted as outlined in the EPBC Act 1999. (See RPI Act Statutory Guidelines 02/14).

For the reasons outlined above the Springvale RIDA should be refused.

ASSESSMENT

Division 6 – Additional Information etc. for Application

44 – Requirement Notice

(d) give an assessor an independent report by an appropriately qualified person, or a statutory declaration, verifying all or any of the following –

any information included in the application;

any additional information required under paragraph (b).

COMMENT:

Were these so-called independent reports peer reviewed and if so by whom? If not, why not? Its important to

ensure that an independent approach has been taken to these reports. The assessor should require these independent reports to be peer reviewed. Landholders are entitled to have confidence that these reports have been thoroughly scrutinized and I quote "Peer review also supports and maintains integrity and authenticity in the advancement of science. A scientific hypothesis or statement is generally not accepted by the academic community unless it has been published in a peer-reviewed journal" (8) (Peer Review in Scientific Publications: Benefits, Critiques, & A Survival Guide by Jacalyn Keey, Tara Sadeghieh, and Khosrow Adeli. 2014 Oct 24).

The Surat Gas Project has the ability to create a lot of damage to the Condamine Floodplain and associated Aquifers which sit in a Priority Agricultural Area (PAA), an area that, according to the Darling Downs Regional Plan Oct 2013, includes some of Queensland's most highly productive prime agricultural land. This should not be threatened by coal seam gas extraction for the benefit of short term profit. The gas will be long gone but agriculture will still exist for generations.

Peer reviews should be conducted as part of the assessment process.

46 – Additional advice or comment about assessment application

- (1) The chief executive must ask the Gasfield Commission for advice about an assessment application if -
 - (a) the application relates to a resource activity in a priority agricultural area, the strategic cropping area or a priority living area: and
 - (b) either -
 - (I) the application is notifiable, or
 - (ii) in the chief executive's opinion, the expected surface impacts of the resource activity are significant.
- (2) The chief executive or an assessing agency may ask for any other person for advice or comment about an assessment application.

Example -

The chief executive may appoint a panel of experts to provide advice to the chief executive about an assessment application or a particular matter relevant to the application.

49 – Criteria for decision

- (1) In deciding an assessment application , the chief executive must consider all of the following -
 - (a) the extent of the expected impact of the resource activity or regulated activity on the area of regional interest.
 - (b) any criteria for the decision prescribed under a regulation.
 - (c) any advice about the application given by the Gasfields Commission.

COMMENT:

I will deal with 46 and 49 together. There is a perception since inception, that Gasfields Commission is biased, that they are a facilitator for the coal seam industry. (See <https://www.theaustralian.com.au/news/landholders-cry-foul-over-campbell-newmans-links-to-gas-industry/news-story/d5ef57f42ceddfa0a16a67604350e00c> 2013 and I quote in part:

"Landholders say the commission is yet to provide a definition of sustainable co-existence and has so far failed to oppose any gas project on the grounds it compromises agricultural land".

"They have said that this is not their role. The commission is pro-industry and not accountable to farmers," says Graham Clapham, a cotton farmer at Cecil Plains near Toowoomba.

Mr Clapham said landholders were concerned about the commissioners' links to gas companies. "To many people it appears the commission is there to facilitate the industry, not to even up the power imbalances. It's there to grease the wheels of the industry," he said"

I also enclose a series of emails to highlight my experience as a member of the Stakeholders Advisory Group of Gasfields Commission. (Natalija Nikolic re My Statement sent 4th May 2022).

Gasfields Commission know there is a problem with subsidence hence their further work on it in regards to the Discussion Paper (outcome now released in the form of recommendations) and the Scoping Study in conjunction with OGIA still outstanding. Also Gasfields Commission CEO has been quoted as saying: [See various statements cited below from their website:](#)

"Importantly, OGIA has confirmed that CSG-induced subsidence has occurred and is predicted to occur in the future based on current CSG development patterns. However, OGIA's assessment of subsidence did not deal with consequential risk and mitigation measures as they were outside their legislative scope".

And: "Commission's CEO Warwick Squire commented, "Understanding the potential consequences and materiality of subsidence on farming operations is key to understanding the risk associated with CSG development throughout Queensland".

And: "We know that CSG-induced subsidence has and will continue to occur as CSG development extends across some of our best farming land".

In its Discussion Paper, "the Commission found that there is no clear jurisdictional responsibility for regulating and managing the impacts of CSG-induced subsidence. This is an area for potential regulatory improvement that would provide landholders with greater certainty and protection against the adverse consequences of CSG-induced subsidence".

These are all statements confirming subsidence from Gasfields Commission and any attempt to downgrade/minimise the impacts will be contested as clear proof of bias! No subsidence is acceptable and certainty of impact and protection is an obligation for PAAs under the RPI Act to protect the continuation of PALUs and not threatened.

See Division 2 – Purposes and application of Act. Section 3 (1c) (i) the impact of resource activities and other regulated activities on areas of regional interest: NOTE: there is no mention of the word "Significant" impact.

For the reasons as discussed above and as further research data is outstanding, this RIDA application should be refused.

Division 7 - Deciding Application

48- Decision generally

(1) The chief executive must decide to-

(b) **refuse the application.**

COMMENT:

Some of the issues raised in this submission have serious implications for the future of viable farming operations on the Condamine Floodplain. The RPI Act has the ability to refuse the Springvale RIDA to protect the intent of this Act (PAAs and PALUs) and ensure that prime agricultural land takes priority over CSG that threaten the very foundations of what the Darling Downs was built upon, to create a strong economic region to sustain generations to come. Anything else would be a betrayal of farmers who have striven and struggled to guarantee the future of this region. CSG is short-term!

Coexistence has no legal weight and is purely a mechanism to justify feeble decision making. We have not signed CCA'S and have no protections in place with a vague and meaningless notion of compensatable effects that Arrow are not obligated to honour under the MERCP Act. It will be a Land Court process, will be difficult and expensive to prove, if ever. Our rights have been totally ignored.

Division 8 - Steps after deciding application

51 - Notice about Decision

(4) If the chief executive's decision about the assessment application is inconsistent with advice about the application given to the chief executive by either of the following, the decision notice must include reasons for the inconsistency-

(b) the GasFields Commission

COMMENT:

I find this clause 51 (4b) giving power to a so-called independent statutory body that I have already discussed in "49 - Criteria for decision" is allowing the Government to escape responsibility for their actions. As it is the Government has never taken responsibility for the poor conduct of Arrow, allowing them to self-assess with no government controls or oversight. Gasfields are a non-elected body and have no right to be deferred to as a decision maker/arbitrator to decide something as important as the future of the Darling Downs.

Department of State Development etc. is the lead assessing agency and as such should have ultimate control of their department and thus the responsibility of decision making. It's critical that the integrity of decision making is paramount when making decisions about such an important region of Queensland, such as the Darling Downs and its agricultural importance to the economy of the region. Gas will be short term but agriculture is the backbone of the region. What Department of State Development decides will set a precedent for the rest of Queensland when implementing the intent of the RPI Act, regarding an area of regional interest.

Furthermore, the RPI ACT is clear in its intent to protect PAA'S and not threaten PALU'S. If the Government's decision for refusal of the Springvale RIDA is inconsistent with advice given by GasFields, the Government needs to adhere to the principles of RPI ACT and uphold their legislative obligations.

- to secure highly productive agricultural activities under PAA and PALU.

- to secure high value intensive agricultural land uses as the priority land use over other proposed land use. Anything less would be a dereliction of duty of care, in regards the impact on the area of regional interest, particularly in relation to Section 58 (see below) of the RPI Act.

This submission has been written by and signed by:

Celia Karp

[REDACTED]

Wysall Park

[REDACTED] Road,

Dalby 4405. Qld.

Tel: [REDACTED]

Signed by:

Tabitha Karp

[REDACTED]

Wysall Park

[REDACTED] Road,

Dalby 4405. Qld.

Tel: [REDACTED]

SUBMISSION FOR [REDACTED]

PART B – AN OVERVIEW OF THE KUPUNN SPRINGVALE COAL SEAM GAS (CSG) DEVIATED WELL PATHS REGIONAL INTERESTS DEVELOPMENT APPROVAL – REPORT ACCOMPANYING ASSESSMENT APPLICATION

I ACKNOWLEDGE THAT “FURTHER INFORMATION” HAS BEN REQUESTED BY THE GOVERNMENT. IT DOES NOT ALTER THE SUBSTANTIVE INTENT OF ARROW’S REPORT

Background Legislation

The Regional Planning Interests Act 2014 (RPI Act) was enacted to identify and protect areas of regional significance throughout Queensland.

To inform the RPI Act the PL's 238 and 198 and the subject area (which includes both PL's) of this submission is designated Priority Agricultural Area (PAA).

PAA's are defined under the Act as areas of strategic regional interest and I quote from RPI Act Statutory Guidelines 02/14, page 3,

"that contain significant clusters of the region's high value intensive agricultural land uses". "These uses are termed Priority Agricultural Land Uses (PALU'S) and **will be given priority in the consideration of applications for resource activities** and regulated activities to ensure the continuation of the existing PALUs is not threatened".

Furthermore "a PAA may also include other areas or features that are prescribed in a regulation, such as a regionally significant water source under the RPI Regulation" (Condamine Alluvium).

"Through the RPI Act, the government is seeking to manage:

- The impact of resource activities on the priority agricultural area: and
- The coexistence of potentially competing activities in the priority agriculture area.

To achieve this, the RPI Act provides an assessment process to consider each proposed resource activity or regulated activity on its merits".

The subject property identified as Lot [REDACTED] is mapped as Area of Regional Interest as PAA and SCA.

See Part A for a detailed background Summary of the RPI Act 2014

Surat Gas Project

Arrow's Accompanying RIDA Report:

Page 4: mention is made that "the scope of this assessment application is limited to the proposed activities under the subject land only".

Page 5: They go on to say: "These well pads will be constructed and operated under an exemption" etc. "Deviated well trajectories on land subject of this application will not be commenced until RPI Act requirements for the associated well pad have been satisfied"

COMMENT:

Arrow don't have an exemption! Once again they assume they have an exemption.

State Development (DSDILGP) should insist that Arrow abide by the RPI Act and no construction activity should take place in Springvale until the outcome of the RIDA has been decided. Because the outcome of the RIDA is unknown, the necessity for any well pad construction may be redundant. Landholders under the RPI Act have appeal rights and its intent should be honoured!

Arrow's Accompanying RIDA Report:

Page 9: 1.6.3: Applicant's co-existence commitments:

Arrow considers co-existence to mean allowing Australia to enjoy the full benefits from both agricultural and resource industries.

The first commitment, for example:

No.1: No permanent alienation.

COMMENT:

1.6.3: Applicant's co-existence commitments:

- I don't know what benefits Arrow is referring to. Tax payable by Arrow seems to be negligible according to various organisations.
How Australia benefits is a mystery when the gas profits are going overseas and agriculture is at risk of loss of water and significant impacts of subsidence to their farms, limiting production and putting their business model and land under threat. This is contrary to the intent of RPI Act and the continuation of PALUs. (See RPI Act Statutory Guidelines 02/14, page 3)
- The first commitment: No alienation?
When the landowners (Karp & Paterson), experience subsidence, she/he will experience alienation regarding their ability to maximise the economic use of his land and its production capabilities including any future plans that may present economic opportunities. Also water loss prior to gas extraction is a further threat to the viability of our only bore (and future siting of bores), which has always provided a reliable flow of water since late 1940's. Depending on the severity of the water loss (The Underground Impact Report 2021, page 94 shows predictions for the Condamine Alluvium. The P95 exceedance probability shows that the greatest drawdown in the Condamine Alluvium of 2,300ML will occur in 2063. There is a 5% chance that the P95 level will not be reached) this will further alienate the farm, precluding our family being able to live there and enjoy the lifestyle that has existed since late 1940's.

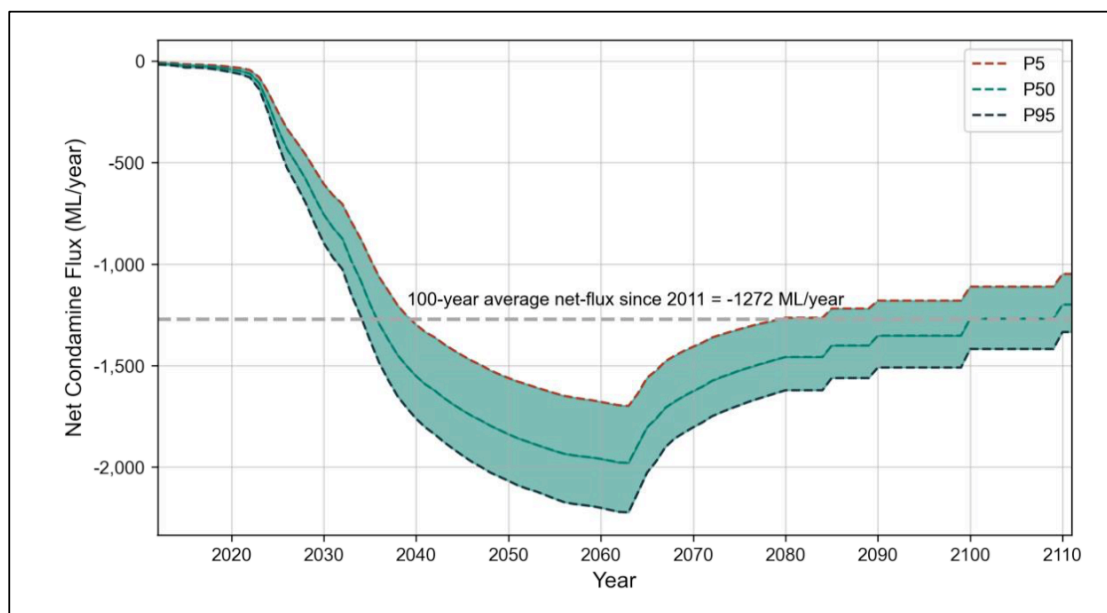


Figure 6-5: A time series of predictions of net loss of water from the Condamine Alluvium to the Walloon Coal Measures

Further to our BUSINESS MODEL and coexistence commitments embraced by Arrow:

- Wysall Park [REDACTED] is leased and any interruption to farming activities/operations, such as subsidence, would destroy our business model and permanently alienate our ability to sustain a lessee.

- In addition we have a cottage plus 20 acres of house paddocks on [REDACTED] which is rented/adjusted to defray costs of maintaining the surrounding land and buildings/houses including the house paddocks. Any difficulties in the future providing an adequate supply of water would permanently alienate our rental business model.

- There are 3 areas of Groundwater Dependent Regional Ecosystems sited in the paddocks under production. Any permanent alienation of these 3 ecosystems with loss of water combined with loss of integrity to the well trajectories, particularly after abandonment, would threaten our long-term ability to use them as carbon offsets on farming operations or any other government-sponsored climate programmes. These initiatives will ensure grain is competitive worldwide, when such conditions will be needed for international trade and sale of agricultural products in other markets.

Due to the positioning of the 3 ecosystems, the well trajectories will impact the long-term health of all three.

The depth of the trajectories is immaterial when maintaining long-term, a healthy and viable ecosystem, particularly when Droughts are a significant contributor to their viability.

We need to recognise the value of ecosystems as part of an integrated sustainable farming strategy for the future. (**Concerns expressed** as to land subsidence may affect a variety of assets, including infrastructure and environmental assets, aquifers, **groundwater dependent ecosystems**, streams etc; See IESC, Knowledge Report, Monitoring and management of subsidence induced by coal seam extraction - October 2014, page vii)

Identifying how Arrow can coexist with landholders is unsustainable, unrealistic and subjective and offers us no benefits. Coexistence by its definition offers both agriculture and resource activity, benefits. The outcome of gas extraction from underneath Wysall Park resulting in, for example, subsidence, would damage our farming operations and would economically disadvantage our business model which I have already explained. That outcome is certainly not coexistence. We owe the lessee a duty of care to safeguard his interests and by extension our interests.

Coexistence leaves a lot of unanswered questions. Wysall Park ([REDACTED]) is not a coexistence experiment to exemplify the benefits of social engineering. The SGP has some serious defects/limitations that need robust solutions. Anything less and Arrow should not be proceeding to extract gas from under these properties or any properties.

- Page 10 under the heading "Outcomes".

Upon reading Page 10 Arrow seems to be in the formulation stage, meaning still preparing how to provide for mutual benefits to the landholder. There are no mutual benefits otherwise you would be listing them, not searching for solutions. If Arrow were genuine, solutions would be in evidence years ago.

For the properties listed in this RIDA, compensation will be a dream with no infrastructure upgrades!

Arrow's Accompanying RIDA Report:

On Page 11 Arrow's dot point coexistence commitment:

- Ensuring the land is returned to full productive capacity as quickly as possible etc.

COMMENT:

This statement is a misrepresentation of the facts. Particularly as Arrow's Coffey Reports No. 1 (1998) & 2 (2021) are referenced at the back of this RIDA Application Report. **The Coffey Report (December 2018), states subsidence will occur and be irreversible!** Also GasFields Commission have released their final report on subsidence titled "Regulatory review of coal seam gas-induced subsidence", November 2022, which include recommendations. Further research work is being carried on subsidence and OGIA's work is still outstanding. In a practical sense, "How will Arrow return these subject farms to their original condition"? If impacts occur as projected, returning the properties will be either impossible or very expensive to implement any remedial work (More technical detail is provided in Tabitha Karp's submission), for example, by laser levelling as suggested in "Further Information" – Item 23 headed "Permanent and Temporary Impact" as requested by the Department of State Development. The example used by Arrow in their RIDA "Further Information", portrays just how out of touch they are, regards farming operations. Subsidence reoccurs so the question is: when is laser levelling carried out, after subsidence first appears, or wait years for subsidence to exhaust itself which can take up to 2060, based on projections by the 2nd Coffey Report (Arrow Energy, Surat Gas Project, Subsidence monitoring and prediction, 754-MELENP268280-AA, by Coffey Services, 10 December 2021).

There will be disruption/interruption to farming operations during this period/over a period of years up to 2060, of remedial work and expensive to carry out. It is argued that 2060 is a lifetime stretching into the next generation/s for a farmer/s to be faced with potential for remedial work, if work is successful. There is no proof. Arrow will argue subsidence is due to other factors outside their control entailing further time and expenditure. During the laser levelling process there are other issues to consider: See below some thoughts by an agronomist:

"In normal farming rotations, re-levelling is a long planned major activity, as it comes with many secondary impacts reducing crop production, such as destruction of crop stubble, loss of production due to paddock unavailability, concentrating and removing nutrient rich topsoil from particular areas of the field and soil compaction.

Re-levelling to address subsidence is not viable during the time the subsidence is occurring."

Arrow's Accompanying RIDA Report:

1.6.4: Area Wide Planning:

The first paragraph tells me "Landholders and staff work together to identify locations for infrastructure such as well pads". The well pad was placed on my neighbour's host property; our northern boundary.

COMMENT:

No one worked with us by engaging in a professional manner, explaining how this operation would function, including the impact of subsidence. Arrow have known about subsidence for about 10 years and not once has it been raised as an issue except last year in 2022, when I engaged with the land Access Officer and I raised it as a point of concern.

All CSG information, including subsidence, I discovered as a member of GasFields Commission's Stakeholders Advisory Group.

The well pad was sited on my northern neighbour's boundary on their property and was presented as fait accompli. I tried to have input by writing to the CEO of Arrow asking for it to be removed but to no avail; due to the reasons that the deviated wells were encroaching and going under two of the ecosystems. (See email to CEO Cecile Wake of Arrow Energy dated 28th October 2021).

Springvale farmers opposing CSG asked to meet with Arrow in July 2022 to discuss our concerns. There was an attempt to hold a meeting end of August 2022 but the RIDA was issued and the goal of a meeting had to be abandoned. Does that fulfil the requirements of coexistence between 2 parties?

Department of State Development etc, need to ask whether this is a genuine attempt to consult with landholders and coexist in an open and transparent manner whilst admitting to and discussing subsidence and additional concerns.

If Department of State Development, Infrastructure, Local Government and Planning cannot answer YES, the RIDA MUST BE REFUSED.

Arrow's Accompanying RIDA Report

Page 13: 2.1 Parcel Details and Proposed Activity:

Table 2-1 provides a summary of the proposed activity and proposed disturbance etc.

COMMENT:

This table is significant by showing zero surface disturbance for the subject properties in the RIDA. I realise further information has been required by the State Government but it demonstrates the mindset relied upon by Arrow since the beginning of the Surat Gas Project by engaging in subterfuge, dissembling the facts and outright untruths. Furthermore, there is no information relating to well integrity upon abandonment, chemicals and other substances used in gas extraction? These are all unknown factors.

Page 18: 3.1 Definition of activities

COMMENT:

Originally Arrow stated that these activities will not require any access or disturbance to the subject land, as all activities will be subsurface. They were asked to address the issue of no surface disturbance given that was untrue. Once again it demonstrates that Arrow will be unlikely to acknowledge the impacts of subsidence however significant, the data will be exploited to present 100mm or less subsidence and maintain that Arrow are not responsible. Any subsidence or loss of water should be classed as advanced activity, as data has indicated that the Springvale properties will suffer subsidence with alterations to overland flow regime, which will be devastating to our farming operations. (All technical information relating to subsidence is further presented in Tabitha Karp's submission).

Arrow's Accompanying RIDA Report

COMMENT:

No. 4 in part has been dealt with under Part A. Originally Table 4-2, showed zero disturbance to PALU which in 4.4.2, states no surface disturbance will occur.

Yet on top of page 32, first paragraph - 4.4.4 - Overland Flow, and I quote "Predictions of subsidence within the Condamine Alluvium footprint **suggest** that most of the cropping area is **likely** to experience less than 100mm of subsidence by end of 2060". This will create surface disturbance!?! The highlighted words "suggest" and "likely" in bold infers scientific uncertainty about the impacts, without proof of certainty. Under the RPI Act any impact threatens the integrity of the PALU no matter how small. Small amounts of subsidence will alter the overland flow paths on a floodplain which will be devastating for farming activities and disrupt operations, resulting in erosion, loss of moisture levels that are relied upon to replenish soil moisture regimes, particularly in dry times. The Condamine River will be impacted by changes to inflows and flood patterns leading to downstream changes ultimately impacting the Murray Darling Basin.

On page 33, the third dot point regarding the Condamine River and I quote "would be **unlikely** to have **significant impact** on the performance of the Condamine River or tributary watercourses". These highlighted words indicate doubt without any proof of certainty of the impact. The RPI Act is clear about PAA and PALU categories. They are to be protected without any threat to their existence. Any uncertainty of impact is **not** acceptable on a PAA and doesn't fulfil the requirement of compliance with the RPI Act Statutory Guideline 02/14 prescribed solution, for a resource activity affecting a PALU.

On page 35 and I quote "Coffey's modelling indicates that any subsidence that occurs will be relatively widespread and even". Arrow have been requested to provide impacts at the individual property scale. Subsidence will **not** be evenly spread. Soil will subside at different rates depending on variables such as soil type, moisture levels and geological conditions, including thickness of coal seams underneath the surface (See Tabitha Karp's submission for reference).

The bottom of page 35 refers to Arrow's existing Daandine production field, they fail to mention the production field has vertical wells. Also the last paragraph on page 35 and top of page 36 contradicts as above, "evenly spread" by Coffey.

In page 37: Section 4.4.4 last top paragraph and I quote "Measures outlined in Sections 3, 4.5 and 7 will minimise the potential for impacts and ensure that impacts are not material to ongoing PALU activities. By this statement, Arrow are admitting there will be impacts. PALUs specifically require they are not threatened. Impacts such as subsidence will be detrimental to PALUs thus the precautionary principle should be employed as outlined in RPI Act Statutory Guideline 02/14, page 4. (See Tabitha Karp's submission for discussion of the technical data provided by Arrow in "Further Information" as requested by the Government).

Arrow's Accompanying RIDA Report

6. Landholder Consultation

COMMENT:

Consultation is dealt with separately.

Arrow's Accompanying RIDA Report

7 - Management of Mitigation Measures (See Tabitha Karp's submission on Management of Mitigation Measures)

7.1 Site Selection and Alternatives

The well trajectories the subject of this application.....The Majority of Arrow's Production Lease (PL) 198, 238 and 252 are mapped as PAA and therefore PAA is not possible to avoid.

Disturbance to SCA, PAA and PALU have been avoided for the subterranean deviated well trajectories on land subject of this RIDA application through the use of deviated well trajectories and well pads on adjacent properties.

COMMENT:

Regarding the following statement: "Disturbance to SCA, PAA and PALU have been avoided for the subterranean deviated well trajectories".

It is not correct to say that disturbance has been avoided to SCA, PAA, and PALU categories as prescribed under the RPI Act 2014. The Act was established to protect and prioritise the region's high value intensive agricultural land uses and not threaten their uses with resource activities.

The act of drilling deviated well trajectories underneath [REDACTED] will cause disturbance; called subsidence. It has been established by OGIA, the Coffey reports, IESC, and GFCQ and various other parties, including companies drilling to extract coal seam gas including, QGC, Santos, that subsidence will occur; a matter of degree. Any uncertainty at the rate which subsidence will occur is a risk to farming operations and agriculture's viability long-term. This is a constant burden the farmer will carry for the life of the project up to 35 years and beyond. It is predicted in the 2nd Coffey Report (Arrow Energy, Surat Gas Project, Subsidence monitoring and prediction, 754-MELENP268280-AA, by Coffey Services, 10 December 2021), until 2060, that subsidence will be an issue. That is beyond our lifetimes and the next generation/s.

Arrow shows a blatant disregard for the future of the Darling Downs and the farming families who work hard to sustain a thriving agricultural economy, that contributes significantly to the surrounding regions allowing them to grow and thrive. These regions classed as PAA should have been avoided by the resource industry and gone elsewhere. They knew the risks involved for the farming community. CSG is short term and is destructive to our underground aquifers, overland flow and stream regimes, including subsidence, interrupting the natural rhythm of the agricultural industry, that supplies grain to Australia and for export; giving us food security and securing the future for generations to come.

And let's not forget the mental health of the landowners who farm the land and who wish to stay and continue a family tradition; who will endure long-term, emotional and psychological pressure dealing with the impacts of CSG.

Arrow's Accompanying RIDA Report

8 - Potential Impact to Condamine Alluvium Aquifer

Paragraph 7 - The degree to which flow is impeded therefore depends upon the combined thickness and vertical hydraulic conductivity of these two units. Assessment of the **potential for connectivity** between the Condamine Alluvium and underlying Walloon Coal measures has continued, with more recent data reaffirming previous findings that suggested low connectivity, as modelled in the 2016, 2019 and 2021 versions of the UWIR.

Paragraph 9 on Page 52 - It is predicted that there will be an average net loss of water from the Condamine Alluvium to the Walloon Coal Measures of about 1,270 ML/year over the next 100 years due to CSG development. This is higher than predictions in the 2019 UWIR but comparable to predictions in the 2012 and 2016 UWIRs.

COMMENT:

Regarding Paragraph 7 "**potential for connectivity**", indicates that work on this issue is continuing, to assess whether recent data indicates any change. Furthermore, OGIA have been assuring us that an Aerial Electric Magnetic Survey, will be flown over the Horrane Fault (UWIR21), not yet done! Springvale and the properties, the subject of this RIDA, are in proximity to the Horrane Fault. Therefore, any future impacts caused by interaction with the fault should be approached with utmost care and caution, taking into account future research findings.

(The Underground Impact Report 2021, page 94 shows predictions for the Condamine Alluvium. The P95 exceedance probability shows that the greatest drawdown in the Condamine Alluvium of 2,300ML will occur in 2063. There is a 5% chance that the P95 level will not be reached)

Arrow should not engage in any further CSG activity on all properties in Springvale until the Electric Magnetic Survey is carried out, including those properties who have signed a CCA.

Regarding paragraph 9 on Page 52 "net loss of water from the Condamine Alluvium to the Walloon Coal Measures" and measuring Arrow's activity/take of about 58 GL over the next 100 years against other users in the Condamine Alluvium, is self-serving. In an era of drying climate trends, justifying and measuring any loss of water in a drying climate against other users in the Condamine Alluvium who live and work and rely upon it economically to provide water and food security for Australia and beyond, is contrary to the intent of the RPI Act Statutory Guideline 02/14. Any loss of water in a PAA resulting from a resource activity, within the Condamine Alluvium area, will be an impact affecting the PALU's.

Any loss of water from the Condamine Alluvium through extraction of water by CSG activity is unacceptable in a drying climate and is rejected.

To sum up the RIDA application:

- Statutory Guideline 02/14 states that the government relies on the RPI Act to manage and assess the activity on its merits, the impact of resource activity on priority agricultural area (PAA) and how it is used.
- Under the Guideline, a significant impact is measured against its importance and consequence and its context of scale and effect on the impact, including the real likelihood of its impact and occurrence/happening.
- The Guideline states that any scientific uncertainty about the impact whether serious or irreversible, potential or otherwise, necessitates the precautionary principle being applied.
- The assessment of impacts to PAA under the RPI Act is against how Priority Agricultural Land Uses are impacted in the PAA. For example, impacts such as loss of underground water and subsidence which, when measured against a cumulative impact across the Condamine Floodplain when all the wells are producing (switched on), constitute a significant threat to the viable and productive future of farming operations across the Condamine Floodplain. This assessment includes the recharge of the Condamine Alluvium and the Condamine River Alluvial and its tributaries which are the headwaters of the Murray Darling Basin system. Furthermore any alteration/interruption to the overland flow/, flood regime is an added and significant threat to the health and viability of the PALU's.
- The example as described above, specifically refers to the impacts on PALUs and how the precautionary principle should be applied under the Guideline.

It is argued based on the reasons outlined above, that for the resource activity, the subject of this RIDA Application, the applicant does not meet the threshold for approval. The government does not sufficiently understand the potential impacts to PALU of this proposed activity and therefore the precautionary principle must apply. Without sufficient information and understanding of the potential impacts, the government cannot effectively manage the impact of these threats, as detailed above thereby not satisfying the prescribed solutions and outcomes in the RPI Act Statutory Guideline 02/14.

Therefore, the RIDA must be Refused.

This submission has been written by and signed by:

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Further Information attached as an Addendum: Aquifers

The Surat Gas Project "Make Good" provision highlights the state of the aquifers in the Kupunn region with their influence stretching east to the Dalby area.

The "Make Good" options have focused attention on how little water is left in the aquifers around Kupunn.

The farms in the RIDA application are in areas where the Springbok Sandstones & Hutton Sandstones are predicted to reach their trigger thresholds.

The Huttons are going down 2 m per year and takes thousands of years to recharge. The precipice is smaller and no further licences are given to go into either of these. Country towns survive on this water. Dalby town is putting in 2 new Hutton bores and 1 new Precipice bore at the moment.

Dalby is the economic centre for this region (See Darling Downs Regional Plan Oct 2013), and its future water security has been an issue for many years. The reality is Coal Seam Gas extraction and the subsequent loss of water by Arrow Energy prior to extracting the gas, is adding pressure to that water security.

It is predicted that Arrow will dewater 500 metres of Walloon Coal measures.

Any loss of water as part of coal seam gas extraction cannot be justified by "pointing the finger" at other existing users. The reality is any extraction of water over and above current users will be an added burden that will ultimately curtail the future expansion of the Dalby urban footprint and threaten its existing footprint.

The question that needs to be asked: will this hasten a town like Dalby being unable in the future, to access aquifers with an adequate supply of potable water? Gas is short-term, leaving the region to face an uncertain future regards an accessible water supply. And end up like Stanthorpe!

Water is a public asset belonging to all Australians and needs to be viewed through the prism of climate change and loss of water, a crime against future generation's "right to access" .

Any unnecessary loss of water through gas extraction in a PALU threatens its use and viability, and by extension puts pressure on a Priority Living Area. Both these categories are addressed in the RPI ACT Statutory Guideline 02/14 and 04/14 - Prescribed Solution.

Dalby is identified as a Priority Living Area (PLA) under the RPI Act Statutory Guideline 04/14. (See Darling Downs Regional Plan Oct 2013).

A PLA is identifying an area for the future growth of the existing settled area. It acts as a buffer between existing and future settled areas and resource activities. The purpose of a PLA is to provide greater certainty for investment in the development of a region's towns, in this case Dalby. The gas industry is not considered long-term. Agriculture will be the backbone of the Dalby region, and with the advent of the Inland Rail, will encourage the growth of value added industry building on the back of agriculture.

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Submission against RPI22/004 Arrow – Kupunn Springvale CSG Deviated Well Paths

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Lodgement Date: 27th Jan 2023

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1. Introduction

1.1 The Regional Planning Interests Act

- 1 This submission is made with respect to the application lodged by Arrow Energy Pty Ltd, Arrow (Tipton) Pty Ltd, Arrow (Tipton Two) Pty Ltd and Arrow CSG (Australia) Pty Ltd (**Arrow**) for a Regional Interests Development Approval (**RIDA**) (Application Ref RIP22/004 - Kupunn Springvale CSG Deviated Well Paths) (**Application**).
- 2 Arrow's Application seeks a RIDA for resource activities comprising 14 sub-surface well trajectories (paths) (**Activity**) on six lots within Petroleum Leases 198, 238 and 252, being:
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
- 3 It is noted that the proposed related well platforms are located on land adjacent to the Subject Land and do not form part of this Application.
- 4 The Subject Land is in an area of regional interest more particularly being a priority agricultural area (**PAA**) and the strategic cropping area (**SCA**) under the *Regional Planning Interests Act 2014* (Qld) (**Act**) and the Darling Downs Regional Plan (**Regional Plan**).
- 5 One of the key drivers of the Regional Plan is to protect areas of regionally significant agricultural production from incompatible resource activities.
- 6 The Act seeks to achieve this by requiring proposed resource activities on such 'protected land' to undergo an additional assessment process where not exempt.
- 7 The qualities of land in the region and land on the Condamine Floodplain more particularly, is that the soil is a rich fertile black self-mulching vertosol clay, with a high water-holding capacity.¹
- 8 The soil, along with ideal climactic conditions and access to good quality irrigation water from the Condamine River catchments and the Condamine Alluvium, make the Darling Downs region ideal for growing good quality and high yielding crops on a consistent basis. Such land is scarce in Queensland, making up less than 3% of its surface land mass.
- 9 It is this unique and rare mix of characteristics that make this area a critical agricultural production zone for domestic and international food and fibre markets, and a significant contributor to Queensland's GDP.
- 10 This unique and rare mix of characteristics is the basis for the land being characterised as land in a PAA and the SCA under the Act and the Regional Plan.

¹ Australian Society of Soil Science Inc., Submission No. 24 to the Senate Committee, *Inquiry into the Impacts of Mining in the Murray Darling Basin* (September 2009)
<https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Completed_inquiries/2008-10/miningmdb/submissions>.

- 11 While the Regional Plan contemplates the possibility of the coexistence of resource and agricultural land uses in some circumstances, in reality the cumulative impact of resource activities have significant, and in some respects irreversible, adverse impacts on the very characteristics that make it PAA and SCA land.
- 12 The risk is exacerbated by insufficient information and scientific certainty about the long-term adverse impacts on PAA and SCA land.
- 13 For this reason, it is our submission that:
 - a. the adverse impacts on the unique characteristics of the PAA and SCA land in the region, from the proposed Activity and related resources activities, are so significant that the activities cannot co-exist;
 - b. the precautionary principle must be adopted in the assessment of the Application due to the lack of reliable information about the impacts and the significance of impacts and the qualities of the land at risk;
 - c. the significant impacts cannot be sufficiently mitigated under conditions of approval; and
 - d. the Application should be refused.

2. Priority Agriculture Land

- 14 Under the Act, Arrow's Application is assessable against Part 2 and Part 4 of Schedule 2 of the *Regional Planning Interests Regulation 2014* (Qld) (**Regulation**). The *RPI Act Statutory Guideline 02/14 Carrying out resource activities in a Priority Agricultural Area (PAA Guideline)* provides guidance on the assessment process. It is our opinion that Arrow's Application has failed to demonstrate that its proposed Activity can comply with the relevant PAA criteria. The basis for this position is set out in the table below, which adopts the approach and numbering provided in the PAA Guideline.

2.1 Does the Application address regional outcomes?

PRESCRIBED SOLUTION	
The application demonstrates—	
Table 3(a) if the activity is to be carried out in a PAA identified in a regional plan—the regional outcomes and regional policies stated in the regional plan are adequately addressed	
15	Arrow does not adequately address the regional outcomes and policies stated in the Regional Plan.
16	Chapter 4 of the Regional Plan sets out the following Regional Outcomes and Policies: <ol style="list-style-type: none"> a. Regional outcome – Agriculture and resources industries within the Darling Downs region continue to grow with certainty and investor confidence b. Regional policy 1 - protect priority agricultural land uses within priority agricultural areas c. Regional policy 2 - maximise opportunities for co-existence of resource and agricultural land uses within priority agricultural areas.
17	The Application does not sufficiently demonstrate that the <u>Regional outcome and the Regional policies</u> are met for the following reasons:

18 **Regional outcome** - The agriculture industry within the Darling Downs region will not continue to grow with certainty and investor confidence due to:

- a. The increased knowledge and mounting evidence of the adverse impacts of CSG activities on PAA land and PALU has resulted in a high degree of stakeholder uncertainty and anxiety about the future of the agricultural sector in the region;
- b. CSG activities will devalue directly and indirectly affected properties in the region, particularly as adverse impacts from CSG unfold and worsen. Devaluation of properties will detrimentally affect property equity ratios and farm operator's security risk ratings with lenders, leading to higher interest rates being applied. Such indirect impacts on agricultural businesses in the region affect their productive capacity, viability and future of farming operations;
- c. The increasing evidence of subsidence, overland flow impacts and water access issues, resulting in stakeholders questioning the future of the agriculture industry in the region and its ongoing ability to contribute to Queensland's economic, social and environmental prosperity. This is particularly the case in the context of new investment opportunities, such as carbon farming opportunities that may not be viable due to CSG impacts;
- d. The adverse impacts on groundwater discussed below will adversely affect regional communities and towns who rely on shallow aquifers like the Condamine Alluvium for their water supply, particularly in times of drought;
- e. As the adverse impacts of CSG activities on PAA land and PALU become more well-known and understood, there is an increased concern about the lack of reliable data and science. This perpetuates concern about the unknown, long-term adverse impacts and undermines investor confidence.

19 **Regional policy 1** - PALU within PAA will not be sufficiently protected because:

- a. There is insufficient information and scientific certainty about the long-term impacts of CSG activities on PALU within the PAA;
- b. The precautionary principle is not being applied in this context, despite there being scientific uncertainty (about impacts and the data collection methods used for measuring impacts) and the fact that the potential impacts may be serious and/or irreversible;
- c. Mitigation measures in conditions of approval do not adequately protect PALU in the PAAs because:
 - i. the adverse impacts are not fully known; and
 - ii. the adverse impacts that are known, such as subsidence, are not able to be fully addressed through mitigation measures.

Subsidence on a predominantly flat floodplain will cause considerable impacts to farming practices and PALU. Subsidence develops in an irregular manner (ie. different locations at different times across the same area of land), to different degrees (ie. depths) and depending on the location, will have different impacts ie. Drainage impacts. This can be contrasted with the uniform, natural contraction and expansion of the soil in the region.

Proposed 'mitigation measures' such as laser levelling create their own adverse impacts, including:

- i. Crop losses/yield decline due to compacted soils. Compaction results

- in reduced porosity, preventing water from accessing the root zone;
- ii. The uneven distribution of nitrogen and other nutrients following laser levelling;
- iii. The potential for sodic or saline subsoils to be exposed in the laser levelling process which could lead to long lasting low production effects;
- iv. Loss of moisture retaining stubble cover;
- v. Loss of biomass (carbon sequestration) from lost stubble cover; and
- vi. Missed crop opportunities while laser levelling remediation work is carried out.

d. As a consequence of the above, PALU will be under threat as farm operators and investors consider that the risks are too great and look to develop their land for other land uses, or in alternate locations where there is no CSG development.

20 **Regional policy 2** - Coexistence of resource and agricultural land uses within PAAs cannot be achieved because an approval will result in the following outcomes:

21 The outcome will not be mutually beneficial to both the agriculture and resource sectors because:

- a. The outcome for the agricultural sector has been demonstrated to be adverse, significant and potentially permanent, and Arrow's Co-existence Commitments do not adequately address this;
- b. There are unknowns about the long term impacts on the agricultural sector due to the lack of knowledge and scientific research in the adverse impacts on affected PAA land. For example, the possibility of contamination of land from 'methane leakage' from decommissioned wells could have devastating effects on the agricultural sector. Any purported 'mutual benefit' cannot be identified in the absence of this knowledge;
- c. Mitigation measures (and compensation) do not return the affected land to its original state, particularly where soil has been cultivated over many years and these benefits are lost where fill is proposed to address subsidence;
- d. Arrow claims it will provide for mutual benefits to landholders through compensation and infrastructure upgrades.
- e. Compensation is an attempt at mitigating negative impacts to landholders rather than a benefit to the agricultural sector. No information is provided about compensation for owners of land other than the subject properties. Arrow does not explain what infrastructure upgrades will benefit the agricultural sector.

22 The outcome will cause agricultural activity to pause then restart in order to fit in with resource development schedules because:

- a. The outcome will result in adverse impacts such as subsidence, overland flow impacts, water access issues and potential water and soil contamination;
- b. Implementation of mitigation and remediation measures addressing these impacts result in significant farming schedule interruptions, including:
 - i. The inability to plant crops at key times;
 - ii. The opportunity cost of time being spent on these measures instead of agricultural practices; and
 - iii. Issues as to crop and water access.

- c. Arrow purports that Simultaneous Operations Matrixes (**SIMOPs**) will be developed with landowners for land on which surface activities are being undertaken to improve co-existence outcomes. SIMOPs will not address coexistence issues because:
 - i. They are not intended to be developed for subterranean activities and therefore will not be developed for the subject properties, adjacent properties or other landholders in the region;
 - ii. SIMOPs will not cater for the ongoing farming schedule interruptions caused by consequential adverse impacts of CSG activities and decommissioned wells, such remediation of subsidence. This is addressed more fully below with respect to Arrow's Coexistence Commitments; and
 - iii. Arrow has not provided evidence of field testing of SIMOPs and how they have worked in practice.

23 The outcome does not recognise and ensure the continual and ongoing agricultural production in areas affected by resource activities for the reasons stated above (see 18d, 19a, 19b, 19d, 21a, 21b, 21c, 21e, 22a, 22b and 22c).

24 There is a qualification to this outcome without any discussion around the circumstances where it will not be practicable to align construction activities so that they do not disrupt harvesting and planting, and any consequences that will follow. No evidence is provided of any investigation that has been undertaken regarding the harvesting and planting processes and their timing in the area or the proposed time for construction to avoid these periods.

25 The outcome does not ensure that agricultural production is maintained and its capacity and values are enhanced for the reasons stated above (see 18a, 18b, 18c, 18e, 18d, 19a, 19b, 19d, 21a, 21b, 21c, 21e, 22a, 22b and 22c).

26 The outcome does not ensure that the material impacts are compensated and mitigated because mitigation measures (and compensation) cannot return the affected land to its original state for the reasons stated above (see 19c, 21a, 21b, 21c, 22b and 22c).

27 The Outcome does not provide positive flow-on effects for the agricultural supply chains in and out of the local or regional community for the reasons stated above. Arrow has produced no evidence of positive effects on agricultural supply chains.

Inadequacy of Arrow's 12 Co-existence Commitments

28 Arrow has published 12 co-existence commitments which are set out in the Application.² The 12 Commitments fail to address Regional Policy 2 for the following reasons.

29 Arrow's claim in Coexistence Commitment number 1 of '*No permanent alienation*' is a moot point in circumstances where:

- a. Landowners are left with the ongoing risks of adverse impacts into the future; and
- b. There are no 'Mitigation measures' that can be implemented to sufficiently address

² Arrow, *Kupunn Springvale Coal Seam Gas (CSG) Deviated Well Paths Regional Interest Development Approval; Report to accompany an assessment application for a RIDA made under the Regional Planning Interests Act 2014 ("Supporting Report")* page 9.

the risk of subsidence.

- 30 Arrow's claims in Coexistence Commitment numbers 2 and 3 of '*minimised operational footprint*' and '*Flexibility on well location*' are also moot given the consequential adverse impacts of the resource activity on PALU and PAA land is much broader than the operational footprint and the majority of the subject petroleum lease land is PAA land;
- 31 Arrow's claims in Coexistence Commitment numbers 4 to 10 do not address issues such as water access and subsidence. Subsidence will occur on the surface of land under which deviated wells are drilled. Subsidence will cause significant impacts including:
- a. Changes to water levels where subsidence is level, resulting in:
 - i. flooding where land is on the floodplain;
 - ii. reduced drainage to and volume of water bodies such as the Condamine River;
 - b. Pooling of stagnating water that does not drain;
 - c. Rendering current flood irrigation methods unworkable;
 - d. Rendering established laser levelling and irrigation systems redundant;
 - e. A need to change planting procedures to account for the different soil levels and water retention;
 - f. A reduction in crop yield due to water pooling and either seeds not germinating or plant roots rotting;
 - g. Subsidence on neighbouring properties can affect overland flow pathways that may affect drainage and/or increase erosion;
 - h. Land remediation measures such as re-levelling (ie. the placement of top soil to level out subsidence) will result in:
 - i. Loss of existing soil values that have been achieved over time ie. build-up of nutrients in soil;
 - ii. soil compaction;
 - iii. Loss of time and associated opportunity costs of dealing with rehabilitation measures;
 - iv. Interruptions to agricultural land uses of land being rehabilitated and other land while being rehabilitated;
 - v. Re-levelling can never reinstate land affected by subsidence which does not occur uniformly and is incremental. Fill would need to be continually applied at different times and places to fully reinstate the land. This is not achievable.
 - c. There is an increased risk of sink holes forming on land above depressurised wells;
 - d. Faults and fractures in the Surat Basin increase the likelihood of subsidence occurring;
 - e. Deviated wells increase ground permeability and access to coal seams, it also therefore increases the risk of subsidence.
- 32 Arrow's claim in Coexistence Commitment number 8 '*Substitution of treated water*' and number 9 '*no brine salt treatment or disposal on IFL*' does not achieve coexistence because using CSG treated water/brine to substitute existing users' allocation on Intensively Farmed Land (IFL) is not an acceptable solution for the following reasons:
- a. Many farm operators are reluctant to use CSG treated water for intensive cropping irrigation in circumstance where they currently have access to untreated water;
 - b. CSG treated water for farming activities is an unnecessary risk for operators. The reverse osmosis process fails to sufficiently remove Boron from CSG water resulting

in damage to plant growth. Treated water that is saltier than groundwater and rainwater will result in a build up of salt stores in the soil. The depletion of salt due to the treatment process affects the soils ability to retain water and nutrients;

- c. At a regional level, concerns exist as to the natural resource impacts from the mining sector on water quality and damage to soil resources.³
- 33 As to Arrow's claim in Coexistence Commitment number 11 of 'fair compensation', fair compensation does not contribute to coexistence because Compensation is a mechanism by which damage suffered is offset. The unique qualities of the Darling Down region that form the basis for categorising it as PAA land are not able to be offset where those unique qualities are at risk of being lost. This is particularly the case because the long term impacts of CSG Activity on PALU in PAA are not known and the land cannot be returned to its original condition.
- 34 Arrow's claim in Coexistence Commitment number 12 to continue to engage in '*proactive community engagement*' is at odds with its lack of transparency to date. The lack of transparency (and accountability) with respect to Arrow's claims of exemptions under the Act for the purposes of avoiding the need to apply for RIDA approvals is particularly alarming. Further to this, the lack of transparency around activities, such as the methodology used for collecting subsidence data, is not conducive to co-existence. Community engagement cannot achieve coexistence when Arrow regularly chooses to avoid sharing information.

2.2 Does the Application demonstrate the activity cannot be carried out on other land in the region?

PRESCRIBED SOLUTION

The application demonstrates—

Table 3(b) the activity cannot be carried out on other land in the region that is not used for a PALU including for example, land elsewhere on a property, on an adjacent property or at another nearby location

- 35 Arrow is unable to demonstrate compliance with this criteria.
- 36 Arrow concedes that the majority of its Petroleum Leases 198, 238, 252 are mapped as PAA and SCA land therefore PAA and SCA is not possible to avoid in these lease areas.⁴
- 37 In addressing this criteria, Arrow relies on its proposed use of multi-well pads on adjoining properties and the fact that the proposed Activity on the Subject Land is subterranean only and will not affect PALU on the surface.
- 38 Due to the adverse impacts on the region of this proposal, discussed at sections 2.4, 2.5, 2.6 and 3.2 we do not consider that this criteria is sufficiently satisfied.

³ The State of Queensland (Department of Fisheries), *Queensland Agricultural Land Audit; Darling Downs* (last updated 11 June 2020) page 617.

⁴ Supporting Report, p43.

39 Further to this, Arrow has failed to detail what alternative sites or solutions were investigated, and why the alternative sites/solutions are not suitable.

2.3 Does the Application minimise the footprint of the activity?

PRESCRIBED SOLUTION

The application demonstrates—

Table 3(c) the construction and operation footprint of the activity on the area in the region used for a PALU is minimised to the greatest extent possible

- 40 Arrow has failed to demonstrate how the construction and operational footprint has been minimized to the greatest extent possible because:
- It has overly relied upon proposed multi-directional well pads on adjoining land and the Activity on the subject land being subterranean. In so doing, it has ignored the sub-surface footprint that will be created by deviated wells infrastructure;
 - It has not investigated construction implications for PALUs in the area and tailored the construction of its well infrastructure to avoid disruption to PALUs; and
 - In our view operational footprint must also include consequential impacts such as subsidence. Arrow has failed to adequately address these in this context.
- 41 Arrow intends to use multi-directional well pads in an attempt to minimize its operational footprint. However multi-directional well pads create a sub-surface footprint which Arrow ignores in its Application.
- 42 A sub-surface footprint is an equally relevant consideration to a surface footprint because of its potential implications on PALU.
- 43 For example, the use of multi-directional wells result in:
- An increased footprint and greater construction and operational impacts due to the increased size of base infrastructure (well pads). These well pads are located along the boundary of adjoining properties, immediately adjacent to cropping pastures on the Subject Land;
 - An increase in the area of PALU affected by subsidence, as a result of an increase in the activities' sub-surface footprint;
 - Changes to the nature and degree of subsidence that is likely to occur. An increase in the activities' sub-surface footprint will result in uneven depressions and bowl shaped depressions around well pads;
 - An inability of assessment agencies being able to appropriately assess the Application due to the inaccuracy of the data being relied upon. The Application does not appropriately

	<p>consider the implications of this more intense, multi-directional drilling;⁵</p> <ul style="list-style-type: none"> • An increase in the impacts to groundwater movement by increasing connectivity between resource target formation and aquifers;⁶ and • Increased instability within the underground strata due to directional drilling through faults systems and highly fractured zones and causing new hydraulic (water) connectivity pathways between strata, in turn speeding up subsidence.
44	<p>Arrow’s construction footprint includes wells, cuttings, pits, voids, waste rock dumps, impoundments, rail, roads, access tracks, set down areas, camps, ancillary infrastructure, pipelines (surface or buried), power lines, service corridors, industrial and processing facilities. Arrow has not considered whether its construction and use of this infrastructure on, and travelling to and from paddock edges could disrupt farming activities as a result of heavy vehicle movement, traffic, dust, erosion etc.</p>
45	<p>The Application sets out a construction timeframe⁷ for some activities on adjoining land that have not taken into account impacts on PALUs on Subject Land, such as dust from vehicles accessing the site for construction and operation of well pads, impacting nearby crops.</p>
46	<p>‘Uncertainty’ around construction timeframes for well path installation indicate that Arrow’s plans in this regard are either under-developed or deliberately opaque. Either way this is evidence that impacts on PALUs on the Subject Land have not been appropriately considered.</p>
47	<p>Arrow Application fails to adequately show how its construction and operational footprint will be minimised to the greatest extent possible. It has not considered its sub-surface footprint and it has not made any effort to engage with landholders to develop its construction timeframe in a way that avoids impacts to PALUs.</p>

2.4 Will the activity result in widespread or irreversible impacts?

PRESCRIBED SOLUTION	
The application demonstrates—	
Table 3(d) the activity will not result in widespread or irreversible impacts on the future use of an area in the region for 1 or more PALUs	
48	Arrow has failed to demonstrate the productive capacity of the region will not experience

⁵ Zena Ronnfeldt, *Submission to RPI21/028 Coal Seam Gas (CSG) Wells and Gathering Regional Interests Development Approval (No.1)* (12 August 2022) page 16.

⁶ Office of Groundwater Impact Assessment, Department of Regional Development, Manufacturing and Water, *Analysis of groundwater from trends to identify impacts coal seam gas and coal mining in the Surat and southern Bowen basins* (OGIA/21/CD14/V1) (January 2023) page 15.

⁷ Supporting Report, page 29.

negative widespread or irreversible impacts. Arrow's reliance on its Co-existence Commitments as a basis for arguing that this criteria has been met, is insufficient for those reasons set out in section 2.1 above and expanded on in this part.

A widespread or irreversible impact on the future use of the PAA will occur as a number of properties will be affected by subsidence.

- 49 Arrow has not accurately measured the degree of subsidence that will affect properties in the region and therefore has not fully considered or addressed the impacts. Notwithstanding this, Arrow concedes that subsidence will be 'relatively widespread'. The degree to which subsidence is irreversible has also not been sufficiently considered. Particularly given the 'fix' proposed (ie. laser levelling) only perpetuates the damage suffered by farm operators by having further adverse impacts (discussed at paragraphs 70 to 72).

Inaccuracy of base data

- 50 Arrow refers to the 2021 Underground Water Impact Report (**UWIR**) prepared by the Office of Groundwater Impact Assessment (**OGIA**), a Data Farming Report it commissioned in 2021 and a Coffey report commissioned in the same year based on InSAR ground movement monitoring data and the 2019 UWIR regional groundwater model to predict CSG influenced subsidence in the Walloon Coal measures.⁸ Arrow concludes from these reports that subsidence will be relatively widespread and even.⁹

- 51 Arrows conclusions are erroneous as they are informed by a LiDAR survey method which is unreliable for the following reasons:
- LiDAR relies on lasers reflecting off surfaces. If there is standing water pooled in depressions, LiDAR method will produce false readings of surface soil levels;
 - Arrow has not informed landholders (by providing specific details) when conducting its surveys so landholders have had no opportunity to record conditions in the field or climate to cross-reference against the collected data;
 - It has not been established that LiDAR survey methods can quantify subsidence in intensively cropped areas where minimum and no-tillage cropping occurs. Arrow is not conducting any terrestrial surveys to supplement this gap in the LiDAR data it has obtained; and
 - LiDAR cannot detect subsidence at the required screening level which is 8mm/year movement;
 - LiDAR can be influenced by rain, low hanging clouds and high sun angles because of refraction;¹⁰
 - Airborne LiDAR is a cheap method of surveying large areas of land. It has a lower density of data points compared with drone LiDAR 5-10 pts per m² compared with drone LiDAR at 40-50

⁸ Arrow, Supporting Report, page 32.

⁹ Arrow, Supporting Report, page 35.

¹⁰ LiDAR Radar, *Advantages And Disadvantages of LiDAR* <<https://lidarradar.com/info/advantages-and-disadvantages-of-lidar>>.

pts per m²);¹¹ and

- LiDAR cannot be used to establish a change in elevation (a trend) due to its vertical accuracy (repeatability issues)¹²

Lack of transparency

- 52 Arrow has not provided sufficient information to landholders to allow the veracity of its reports as to subsidence to be reviewed or tested. Assessing Agencies should not rely upon subsidence data provided by Arrow in circumstances where investigations methods are not able to be reviewed and conclusions made are incorrect.
- 53 The unreliability of Arrow’s information can be demonstrated by the following conclusion it has made based on its inaccurate data:
- the predicted maximum change in ground slope will not impact farmland with shallower slopes as the land is already poorly draining; and
 - farmland with steeper gradients will retain their overall performance.¹³
- 54 Even small amounts of permanent ground movement on properties carrying out intensive dryland and irrigated cropping activities on the Condamine Alluvium (where the land has a low and managed slope) will be adversely impacted. While the preferred slope for irrigation furrows is 0.1% there are many irrigation farm fields with slopes of 0.05% and even lower that are successfully irrigated.¹⁴ So Arrow’s conclusions are incorrect.
- 55 Any unevenness in subsidence, and resultant slope change, at the farm scale may be sufficient enough to significantly impact on-farm drainage requiring additional farm management or potentially placing farm viability at risk.¹⁵ There is also scientific uncertainty about whether subsidence is worsened by the lack of uniformity of well spacing across the flood plain, variations in the commencement of water extraction across the region and the non-contiguous nature of multilayered coal seams.¹⁶ Subsidence is also predicted to be worse in the vicinity of the Horrane Fault.¹⁷

¹¹ Office of Groundwater Impact Assessment (Department of Regional Development, Manufacturing and Water), *Underground Water Impact Report 2021 for the Surat Cumulative Management Area; A report on the assessment and management of cumulative impacts from coal seam gas, coal mining and conventional oil and gas development in the Surat and southern Bowen basins* (December 2021) (“**UWIR 2021**”), page 110 <https://www.rdmw.qld.gov.au/data/assets/pdf_file/0008/1584728/uwir-2021-report.pdf>.

¹² UWIR 2021, page 110.

¹³ Supporting Report, page 33.

¹⁴ GasFields Commission Queensland, *Regulatory review of coal seam gas-induced subsidence Report* (November 2022) (“**GFC Subsidence Review 2022**”) page 8 <https://www.gfcq.org.au/wp-content/uploads/2022/12/GFCQ_Regulatory-review-of-coal-seam-gas-induced-subsidence-report_FINAL.pdf>.

¹⁵ GFC Subsidence Review 2022 page 6.

¹⁶ Zena Ronnfeldt, *Submission to RPI21/028 Coal Seam Gas (CSG) Wells and Gathering Regional Interests Development Approval (No.1)* (12 August 2022) Annexure A, Report by Wayne Newton, *Item 5 Subsidence Monitoring issues to be addressed* (22 May 2022) page 4.

¹⁷ Office of Groundwater Impact Assessment (Department of Regional Development, Manufacturing and Water), *Underground Water Impact Report 2021 for the Surat Cumulative Management Area; A report on the*

56 It is our position that subsidence will be widespread in the region as a consequence of CSG activity on or under many properties.

Knowledge gap regarding subsidence & its 'reversibility'

57 The impacts of CSG-induced subsidence on agricultural activities is poorly understood. The Act expressly requires the Department to consider any advice about an application given by the GasFields Commission.¹⁸ The GasFields Commission has lead two key bodies of work to review the regulatory framework that relates to CSG-induced subsidence and research potential consequence of subsidence on farms. This work arose from concerns around dryland and irrigated farming areas in the footprint of Arrow Energy's Surat Gas Project on the Condamine River floodplain.¹⁹

58 The review findings concluded that there was a knowledge gap regarding the potential on-farm consequences and material impacts of current and predicted CSG-induced subsidence.²⁰

59 The Commission identified a number of areas that required further clarification and recommended the Queensland Government:

- investigate mechanisms to ensure the protection of landholders from the impacts of CSG-induced subsidence *outside of tenure boundaries*;
- ensure appropriate agronomy and irrigation specialist services were available to landholders in negotiations;
- investigate potential impacts to regional overland flow caused by CSG-induced subsidence;²¹ and
- consider the potential for critical consequences where subsidence is predicted to have a critical impact to the land use occurring on a property and compensation for impacts would not be an appropriate resolution.²²

60 The Commission is leading a research project to assess the potential consequence and materiality of CSG-induced subsidence on farming enterprises, and to provide a framework for assessing the potential consequence of predicted subsidence on individual farming enterprises. The Commission expects to release a report on the consequence research early this year.

61 The knowledge gap includes a lack of information surrounding the vertical height of subsidence, areas affected and the duration over which subsidence will occur. Currently,

assessment and management of cumulative impacts from coal seam gas, coal mining and conventional oil and gas development in the Surat and southern Bowen basins (December 2021) page 107.

¹⁸ *Regional Planning Interests Act 2014* (Qld) section 49(e).

¹⁹ GasFields Commission Queensland, *Board Paper* (7 November 2022).

²⁰ GFC Subsidence Review 2022 page 3.

²¹ GFC Subsidence Review 2022 page 4.

²² GFC Subsidence Review 2022 page 20.

landholders cannot predict how subsidence will progress over time.²³

- 62 Arrow has not properly investigated the likelihood of a widespread or irreversible impact on the future of the PAA because:
- Arrow has not accurately or reliably measured the condition of the land affected by its activities;
 - Arrow conclusions regarding the negligible impact of subsidence is inconsistent with farming practices; and
 - There is a significant knowledge gap on the impacts of subsidence on agricultural land which continues to be investigated.

A widespread or irreversible impact on the future use of the PAA will occur as Arrow's activities will change the availability of water used for a PALU.

- 63 The Application proposes to drill a deviated well directly under the Condamine River and install another well pad directly next to the River.
- 64 There are many unknown and unquantified risks involved in this drilling especially in light of subsidence, including:
- changes to overland flow pathways, affecting capture of overland flow (localised and sub-regional);
 - changes to Murray Darling Basin river catchment pathways (regional);
 - risk of erosion;
 - risk of sediment deposition; and
 - subsidence induced faulting/fissure activation/development which could lead to further groundwater cross-flow contamination.²⁴
- 65 In addition, there are general risks to the availability of water from the Condamine Alluvium owing to depressurisation induced drawdown in overlying and underlying formations.
- 66 In the event there is insufficient uptake of Arrow's proposed Substitution Scheme, Arrow states that it intends to rely on water from the Condamine Alluvium. This will affect the availability of water for PALUs. This is discussed further at Table 3, section (f).
- 67 Arrow has not confirmed whether its measures to ensure the net replenishment of a regionally significant water source have been approved by DNRME.
- 68 Arrow has not addressed whether overland flows can be restored to their *pre-activity capacity* through laser re-levelling or by other means. If Arrow relies on laser re-levelling to address changes to overland flow, this has not been specifically discussed and the issues associated

²³GFC Subsidence Review 2022 page 8.

²⁴ Arrow, *Surat Gas Project Updated CSG WMMP Annual Report; Reporting Period: 22 October 2020 to 1 October 2021* (17 January 2022) pages 225 – 271 citing Office of Groundwater Impact and Assessment, *Attachment 1 (Condition 3 response) Report 2020 for the Surat Underground Water Impact Report 2019* (December 2020); IESC, *Information Guideline Explanatory Note: Characterisation and modelling of geological fault zones* (2021) page 57 <<https://www.iesc.gov.au/sites/default/files/2022-04/info-guidelines-explanatory-note-characterisation-modelling-geological-fault-zones.pdf>>.

with laser re-levelling are identified below.

Arrow has not demonstrated that there will be no negative widespread or irreversible impact as it has not shown that the land will be returned to its pre-activity productive capacity following the carrying out of the activity.

- 69 Arrow identifies that the subject properties fall within Class 1 capability class agricultural land.²⁵ Arrow has not collected enough data against which it can forecast changes to production and productivity as a result of its activities. A proper assessment would consider the conduct of the PALU, yield quantity or quality, farm inputs, operations and asset base.²⁶
- 70 Arrow suggests that subsidence impacts can be managed through laser re-levelling to re-establish the required slope for irrigation and runoff and that this demonstrates that the impact of subsidence is not permanent.²⁷
- 71 Levelling is only used in very limited circumstances by farm operators. Irrigators and dryland farmers minimise levelling because, in addition to the direct cost of levelling, there are flow on impacts such as:
- levelling involves running heavy machinery over farmland which causes compaction which can damage soil structures and contribute to a loss of nutrients and organic matter;²⁸
 - repairing soil structure takes time²⁹, requiring multiple wetting and drying cycles and may involve cultivation and the application of compost;
 - apart from the cost of levelling and restoration of soil structure, there is a period of loss of productivity from the land during levelling and restoration activities,³⁰ and
 - dryland farms potentially face greater difficulty because drainage is not engineered and may be less efficient at removing additional pondage;
 - vertical clay soils require more extensive re-levelling processes;³¹
 - longer restoration times may be experienced because wetting and drying cycles are limited to natural cycles; and
 - levelling is inconsistent with the zero-tillage methods employed by some farmers,³²
 - If ponding occurs over a series of years, laser re-levelling will need to be undertaken multiple times. Laser re-levelling is a niche industry. There are limited contractors available and the work is time-sensitive when considering weather and pending crops;

²⁵ Arrow, Kupunn Springvale CSG Deviated Well Paths (RP122/004); Response to Requirement Notice (December 2022) ("**RN Response**") page 31; Class 1 land is land suitable for a wide range of crops, is highly productive, presents no limitations to use of machinery or choice of implements and presents low wind and water erosion hazards even under intense cultivation. It requires simple management practices to maintain economic production (from the State of Queensland (Department of Science, Information Technology and Innovation and Department of Natural Resources and Mines), Guidelines for Agricultural Land Evaluation in Queensland) (second edition) (December 2015).

²⁶ The State of Queensland (Department of State Development, Manufacturing, Infrastructure and Planning), *RPI Act Statutory Guideline 02/14 (Guideline 02/14); Carrying out resource activities in a Priority Agricultural Area* (August 2019) <https://dsdmipprd.blob.core.windows.net/general/rpi-guideline-02-14-carrying-out-activities-in-a-paa.pdf>.

²⁷ Supporting Report, page 36.

²⁸ GFC Subsidence Review 2022 page 8.

²⁹ GFC Subsidence Review 2022 page 8.

³⁰ GFC Subsidence Review 2022 page 8.

³¹ GFC Subsidence Review 2022 page 8.

³² GFC Subsidence Review 2022 page 8.

- If soil were to be brought in from other areas to fill the depressions caused by subsidence, this could create a significant biosecurity risk;
- It is an extremely expensive exercise that could have devastating outcomes on carbon efficiency due to extra-large quantities of fuel being required to undertake the task in circumstances where sustainability is a key factor in the market.

72 If land in the area subsides evenly as claimed by Arrow, more extensive flooding will occur on those parts of the floodplain. Properties will need to be built up to their previous level, which is not a problem that laser re-levelling can solve.

73 With respect to impacts arising from the abandonment of well infrastructure see paragraphs 90 to 93 further below.

74 For further information regarding the adequacy of Arrow's restoration plan, see further at paragraphs 151 to 175.

Arrow has not demonstrated that the everyday farm practices essential to the productive capacity of the region will be able to continue.

75 Farm operators use laser levelling to optimise overland flow and drainage. Laser levelling is a significant financial investment for farm operators and it underpins irrigation design. A change in slope as a result of CSG-induced subsidence has the potential to undo management activities and impact productivity and profitability of their operations.³³

76 Arrow claims that slope degradation in flat land is negligible because the land is already poor draining. Flatness of paddocks does pose issues for dryland cropping fields and water logging can cause more crop loss than any other factor. Further reduction of drainage on these farms will exacerbate existing conditions contributing to the drowning of crop, lack of access to fields, and weed and pest outbreaks. Management of these impacts is made more difficult in the absence of reliable data on height of fall, area of impact and duration until settlement.³⁴

77 Operating efficiency relies on even slopes. Their existing slope is slight, meaning any variance will have significant implications for water flow. Any resultant ponding and water-logging would make flood irrigation difficult and is likely cause crop losses. Changes in overland flow paths would strand or inundate pumping infrastructure stranded in flood events.

78 Notwithstanding that Arrow's activities are proposed on paddock edges of neighbouring properties, there may be impacts to the current farming system. In a controlled traffic farming system, this may include changes to management zones, operating width, field layout, tillage systems and GPS guidance equipment. The Application is silent on these issues.

Arrow has not demonstrated how existing infrastructure, including irrigation, will be restored in

³³ GFC Subsidence Review 2022 page 6.

³⁴ Zena Ronnfeldt, *Submission to RPI21/028 Coal Seam Gas (CSG) Wells and Gathering Regional Interests Development Approval (No.1)* (12 August 2022) Annexure A, Report by Wayne Newton, *Item 5 Subsidence Monitoring issues to be addressed* (22 May 2022) page 2.

the PAA or offered any additional infrastructure to landholders to improve productive capacity.

- 79 Subsidence can impact farm infrastructure including:
- Costs to repair potentially impacted farm infrastructure as a result of leaking/seepage in storage dams or dam failure;
 - Loss of water from seeping/failed dams;
 - Lost crop opportunities due to a lack of water from subsidence caused seeping/failed dams;
 - Ineffective supply channels and return drains as a result of slope changes; and
 - Stress/strain on underground polypipe water supply networks and pipe joint failure.
- 80 Arrow has not suggested that any additional infrastructure will be provided to support landholders in improving the productive capacity.
- 81 Overall, the proposed activities will result in widespread and irreversible impacts on the future use of the area in the region for 1 or more PALUs because:
- Subsidence will be widespread and will not be reversible through laser re-levelling; and
 - Changes to overland flow will cause widespread and irreversible impacts on the availability of water.
- 82 The adverse impact on the agriculture industry within the Darling Downs region due to stakeholder uncertainty and loss of confidence (as addressed under (a) above) will have widespread impacts on the future use of the area PALUs. As stated in Part (a), a reduction in investor confidence and the uncertainty for farm operators will mean that, alternate land uses or alternate locations, that are not impacted by CSG will present a safer investment opportunity.

2.5 Will the proposed activities constrain, restrict, or prevent the ongoing use of an area in the region for 1 or more PALUs?

PRESCRIBED SOLUTION

The application demonstrates—

Table 3(e) the activity will not constrain, restrict or prevent the ongoing use of an area in the region for 1 or more PALUs, including for example, infrastructure essential to the operation of a PALU

- 83 Arrow has failed to demonstrate that Arrow's activities will not constrain, restrict or prevent the ongoing or future use of the area in the region for PALUs because:
- Its activities will change overland flow characteristics on which they rely;
 - Its abandonment of well infrastructure will create a physical impediment to the ongoing use of the area for PALUs; and
 - It will disrupt weed and pest management activities.

Arrow's activities will constrain, restrict or prevent the ongoing use of an area for PALUs by changing overland flow characteristics on which they rely.

- 84 The occurrence of subsidence can cause changes to flood plain morphology.³⁵ This could influence surface water runoff and may cause changes to flood regimes, and could precipitate a need to revise flood mapping if realised. This last statement feeds into the lack of research still around the effects of subsidence on regional overland water flows into the Murray-Darling Basin. There has been no evaluation and quantification of cumulative impacts to environmental values, overland flow pathways, water catchments, ecosystems (GDEs) and regional flooding.
- 85 The slope of farmland is critical for intensive farming operations that rely on precision techniques to optimise irrigation practices. The land needs to slope uniformly enough to enable irrigation water to run along furrows and for drains at the end of furrows to collect runoff. For dryland farms there needs to be enough slope to allow runoff to drain from the land. Farmers carry out levelling to achieve and maintain optimal land slope.³⁶ Subsidence will change the slope of the PALU, and in turn, change these overland flow characteristics which are critical to farming activities in the region.
- 86 Changes to the velocity and direction of water flow can also result in prolonged inundation (waterlogging) and erosive flooding or sediment deposition.³⁷
- 87 Any changes to the existing volume of water draining to each catchment as well as its velocity could impact PALUs which rely on harvesting downstream overland flow for cropping capability.³⁸
- 88 The following direct impacts can arise from waterlogging as a result of changes to overland flow:
- missed planting and harvesting crop opportunities due to inaccessibility of the waterlogged subsided areas/paddocks;
 - weed/pest/fungicide disease pressures and not being able to address these issues due to inaccessibility of the subsided waterlogged areas/paddocks by machinery, spray coupe etc;
 - lowering of oxygen levels in the root zone, which reduces plant growth;
 - inundation of the seedbed affecting germinating seeds and young seedlings;
 - root-tip death within days. Loss of root tips limits the uptake of nutrients (particularly nitrogen) and water after waterlogging. As a result, plants that have been waterlogged ripen early and grain is often pinched;
 - nitrogen is lost from waterlogged soils by leaching and denitrification – the process where nitrogen is converted to gaseous oxides of nitrogen. This loss of nitrogen is damaging to crop growth, strength, vigour & yield. The subsequent emissions of nitrous oxide (N₂O), a major greenhouse gas, is also detrimental to the atmosphere a farming business’s carbon footprint;
 - shallow rooting systems formed in waterlogged areas, which then in drier times are unable to obtain sufficient moisture to maintain full growth; and
 - increase in soil compaction which harms soil structure which is important for the

³⁵ S. Zekster, H. A. Loaiciga and J. T. Wolf, *Environmental impacts of groundwater overdraft: selected case studies in the southwestern United States* (12 October 2004).

³⁶ GFC Subsidence Review 2022 page 5.

³⁷ Arrow, *Surat Gas Project Updated CSG WMMP Annual Report; Reporting Period: 22 October 2020 to 1 October 2021* (17 January 2022) pages 225 – 271 citing Office of Groundwater Impact and Assessment, *Attachment 1 (Condition 3 response) Report 2020 for the Surat Underground Water Impact Report 2019* (December 2020).

³⁸ Zena Ronnfeldt, *Submission to RPI21/028 Coal Seam Gas (CSG) Wells and Gathering Regional Interests Development Approval (No.1)* (12 August 2022) page 15.

movement of water, gases and roots, which are all critical for a healthy soil.³⁹

- 89 The Application largely ignores the impact changes to drainage as a result of slope direction and changes in slope, which is what ultimately dictates the extent of adverse impacts on PALU and SCL.⁴⁰

Arrow's activities will constrain, restrict, or prevent the ongoing use of the area for PALUs by abandoning its well infrastructure and creating a physical impediment to the operation of PALUs.

- 90 The presence and abandonment of well infrastructure will create a physical impediment to the operation of PALUs by:
- Limiting landholders' ability to drill deep water bores to access to aquifers; and
 - Creating risks for groundwater contamination.

91 Arrow intends to abandon the sub-surface well infrastructure located underneath the subject properties.⁴¹ Separately, it notes that the placement of a CSG well beneath a property will preclude the drilling of a deep-water bore into the Hutton or Precipice aquifers where that infrastructure is located.⁴² If well infrastructure is abandoned, landholders who wish to drill water bores in the future are permanently prevented from drilling in areas that could potentially intersect with an underground gas well or its associated infrastructure.

92 Well abandonment also risks causing cross-flow and contamination between aquifers and CSG reservoirs (where well integrity is compromised or wells are incorrectly abandoned).⁴³ Well integrity can be compromised where the infrastructure corrodes (for example as a result of sulphate reducing bacteria). Saltel Industries was approached in 2016 by one of Australia's leading natural gas producers to assist them with severe and localised external corrosion in some of their CSG wells in Queensland which were suspected to be caused by bacteria growing under specific pressure and temperature environments. It was noted by Saltel Industries that microbiologically influenced corrosion seems to be systemic in the region.

93 The construction and abandonment of sub-surface well infrastructure will create a physical impediment that may affect everyday farm practices or an activity or infrastructure essential to the continual operation of a PALU.

Arrow's activities will constrain, restrict, or prevent the ongoing use of the area for PALUs by disrupting weed and pest management activities.

94 If subsidence disrupts farming activities, there are likely to be consequential flow-on impacts to farm operations such as crop rotations, weed and pest control programs and the scheduled movement of farm machinery.

³⁹ <https://www.qld.gov.au/environment/land/management/soil/soil-health/compaction>.

⁴⁰ Zena Ronnfeldt, *Submission to RPI21/028 Coal Seam Gas (CSG) Wells and Gathering Regional Interests Development Approval (No.1)* (12 August 2022) page 37.

⁴¹ Arrow, Supporting Report page 20.

⁴² RN Response page 15.

⁴³ Office of Groundwater Impact Assessment, Department of Regional Development, Manufacturing and Water, *Analysis of groundwater from trends to identify impacts coal seam gas and coal mining in the Surat and southern Bowen basins* (OGIA/21/CD14/V1) (January 2023) pages 16 and 32.

2.6 Does the Application demonstrate a strategy or plan for managing CSG water?

- 95 Section 5(2)(a), Part 2, Schedule 2 of the Regulation applies to require the Application to demonstrate that Arrow has in place a strategy or plan for managing the CSG water or associated water that provides for the net replenishment of the regionally significant water source. 'Net Replenishment' of the regionally significant water source is defined to mean the replacement to the water source, whether directly or indirectly, that is no longer available for a PALU in a PAA because carrying out a resource activity in the area produces CSG water or associated water.
- 96 In accordance with the numbering used in Guideline 02/14 this is addressed below as 'Prescribed Solution (f)'.

PRESCRIBED SOLUTION

The application demonstrates—

Table 3(f) the applicant has in place a strategy or plan for managing CSG water or associated water that provides for the net replenishment of the regionally significant water source

- 97 The Application, more particularly Arrow's CSG Water Management Plan (**WMP**), fails to provide for the net replenishment of a regionally significant water source, namely the Condamine Alluvium for the reasons set out below:
- The WMP fails to demonstrate that CSG treated water can be approved as a resource under the *Waste Reduction and Recycling Act 2011 (WRR Act)* and be beneficially used.
 - The WMP also does not seek to address whether Arrow:
 - can operate in accordance with the general conditions of the *General Beneficial Use Approval – Irrigation of Associated Water (including CSG)* issued under the WRR Act;
 - is operating under the statutory notice, *Decision to Approve a Resource for Beneficial Use – Associated Water (including CSG)*; or
 - has obtained a special beneficial use approval for the CSG water in accordance with the WRR Act.
 - The WMP states that Arrow evaluates 'potential management options' for water (and brine) against the Queensland Government's *Coal Seam Gas Water Management Policy 2012—ESR/2016/2381 (formerly EM738) (Policy)*. The WMP then merely presents 'water management options' of which its 'preference' is the substitution of existing groundwater allocations in the operating area.⁴⁴ Arrow aspires to achieve this option via a commercial scheme (**Substitution Scheme**) under which farm operators voluntarily exchange their groundwater allocations for CSG treated water from Arrow.⁴⁵

⁴⁴ Arrow, *Stage 1 CSG Water Monitoring and Management Plan* (December 2018) section 3.4 <https://www.arrowenergy.com.au/data/assets/pdf_file/0006/29994/Arrow-Energy-Stage-1-CSG-WMMP.pdf>.

⁴⁵ Supporting Report page 20.

There are a number of issues with this approach.

- 98 The Substitution Scheme cannot be said to be *a strategy or plan for managing CSG water* for the purposes of this criteria due to unresolved concerns about:
- a. CSG treated water quality;
 - b. reliability of supply;
 - c. increased costs to end users of implementing the necessary water infrastructure;
 - d. risks as to unknown impacts being borne by the end user; and
 - e. the lack of a contingency plan where there is insufficient uptake of the scheme.

Suitability of CSG treated water for irrigating

- 99 There are widely held concerns amongst farm operators in the Darling Downs area that CSG treated water has adverse impacts on soil characteristics and quality, resulting in reduced crop quality and yield.
- 100 Arrow clearly states in its Application that *CSG treated water and its use will be the responsibility of the end users.*⁴⁶
- 101 Despite this, the Application provides insufficient information to address concerns, more particularly:
- The Application fails to identify the quality standards of CSG treated water proposed to be used for irrigating the particular PALUs on the affected PAA land in the region;
 - The appropriateness of those standards; and
 - Consideration of any impacts of the use of CSG treated water for irrigating the particular PALUs on PAA land in the region, particularly salinity.
- 102 Despite water quality and suitability being identified as an issue in the Department's Requirement Notice⁴⁷, Arrow's Response also does not address the issue; merely stating that *none of the properties associated with the Application would use CSG water for irrigation.*⁴⁸
- 103 Arrow's Substitution Scheme cannot be relied upon for the purposes of satisfying this criteria as it fails to address these issues in its Application.

Department's obligation to assess salinity

- 104 The Queensland Government is obligated to assess salinity risk associated with new irrigation schemes developed post-1999 in the Murray Darling Basin.⁴⁹

⁴⁶ Arrow, *Stage 1 CSG Water Monitoring and Management Plan* (December 2018) page 21 cited in Appendix 7 to Supporting Report.

⁴⁷ The State of Queensland (Department of State Development, Infrastructure, Local Government and Planning) Requirement Notice; RPI22/004 Arrow – Kapunn Springvale CSG Deviated Well Paths (5 August 2022) Attachment A, Item 25.

⁴⁸ Arrow, *Kupunn Springvale CSG Deviated Well Paths (RP122/004); Response to Requirement Notice* (December 2022) page 54.

⁴⁹ These obligations are outlined under Basin Salinity Management Strategy 2030 (BSM2030) and its predecessor agreements, which were developed by the Murray-Darling Basin Authority to address salinity issues in the Murray-Darling Basin. The Queensland Government formally endorsed BSM2030 in 2015.

- 105 This is because development of irrigation areas inherently carries a salinity risk due to the unavoidable changes in water and salt balance associated with the activity. Salt stores could mobilise towards the Condamine River and result in a discharge of salt, affecting stream water quality. The likelihood of this occurring would depend on proximity to the River, presence of a hydraulic gradient towards the river, high salt stores in the landscape, existing regolith data and the presence of a saline seepage zone indicating that hydraulic connection was occurring.⁵⁰
- 106 Arrow has not conducted a salinity risk assessment for its Substitution Scheme and therefore the scheme cannot be relied upon for the purposes of satisfying this criteria.

Feasibility of Substitution Scheme

- 107 The Substitution Scheme cannot be said to be *a strategy or plan for managing CSG water* for the purposes of this criteria due to the unreliability of supply of CSG treated water in circumstances where farm operators may have relinquished or reduced water entitlements.
- 108 There is inherent variability and uncertainty in the supply of CSG water produced as a result of CSG activity as supply is tied to the physical properties of coal seams and the roll-out of CSG development.⁵¹ Where there is a deficit in supply, Farm operators will need to fall back on water from the Condamine Alluvium, defeating the purpose of the scheme.
- 109 An additional consideration for subscribers will be expense. The geographic spread of the wells means that significant infrastructure is required to capture, store and distribute water for irrigation.⁵² Under the Scheme the responsibility of constructing the necessary water infrastructure falls on the landholder.⁵³
- 110 There is a lack of transparency about the details of how the Scheme will operate. The only publicly available document on how the Scheme will operate is a presentation from a stakeholder workshop on Arrow's website.⁵⁴
- 111 In this context, it is difficult to see how the Substitution Scheme would be achieved in practice or how it can be said to be 'beneficially used' within the Prioritisation Hierarchy in the State Government's Coal Seam Gas Water Management Policy.

Lack of contingency plan

- 112 Arrow has only completed the *Expression of Interest (EOI)* process for the proposed Substitution Scheme. The Application relies on interest expressed in the EOI process only to justify the viability of the Scheme. This is misleading as the Application does not contain

⁵⁰The State of Queensland (Department of Natural Resources, Mines and Energy), Salinity risk assessment of an irrigation development within the Condamine-Balonne catchment: Fairymeadow Road area (October 2019), page 2.

⁵¹ The State of Queensland (Department of Fisheries), Queensland Agricultural Land Audit; Darling Downs (last updated 11 June 2020) page 662.

⁵² The State of Queensland (Department of Fisheries, Queensland Agricultural Land Audit; Darling Downs (last updated 11 June 2020) page 623.

⁵³ Arrow, Arrow's Condamine Alluvium Substitution Scheme; Expression of Interest (27 August 2021) slide 12.

⁵⁴ Arrow, Condamine Alluvium (January 2023) <<https://www.arrowenergy.com.au/environment/condamine-alluvium-substitution-scheme>>.

information about the number of participants that have entered into binding agreements with Arrow under the Scheme.

- 113 In the event that Arrow has insufficient uptake in the Substitution Scheme, Arrow intends to mitigate its impact on the Condamine Alluvium by purchasing other users' allocations and reduce extraction of groundwater.⁵⁵ When the Department queried how this would affect landholders undertaking PALUs, Arrow stated that at the present time it did not have plans to progress a purchase of allocation scheme.⁵⁶
- 114 Therefore, if there is insufficient interest in the Substitution Scheme, Arrow has no acceptable alternative solution for mitigating its impact on the Condamine Alluvium and consequently no strategy or plan for its net replenishment.

The proposed activities will have a significant impact on groundwater and the Condamine Alluvium.

- 115 Arrow's proposed activities will have a significant impact on groundwater and the Condamine Alluvium by causing a significant drawdown and in turn, affecting existing and future allocations.
- 116 As the Walloon Coal Measures are depressurised, water will naturally want to flow from the Huttons (higher pressure gradient) to the Walloon Coal Measures. This has occurred in the Kenya East, Broadwater and Isabella gasfields (QGC) where a significant drawdown was witnessed in the Springbok Sandstone.⁵⁷
- 117 Despite the conclusion drawn in the 2021 UWIR the '*Modelling of cumulative groundwater impacts in the Surat CMA*', (a companion document to the UWIR 2021), shows that the area of maximum all-time impact drawdown in the 2021 UWIR will trigger the exceedance threshold.⁵⁸
- 118 If the Condamine Alluvium were to experience drawdown of greater than the 2 metre trigger threshold, the Huttons would be a replacement 'Make Good' target formation. By the time that was to occur in the area (ie after further expansive development), the Huttons will likely no longer be a viable option owing to its future predicted capacity.
- 119 The Condamine Alluvium is a highly connected aquifer, and what happens in one zone will eventually be felt in other zones. This is consistent with the OGIA's drawdown map in the UWIR 2021 which shows drawdown impacts being felt across the entire central Alluvium.
- 120 Where a significant drawdown is likely to occur, and there is a risk that Arrow's Substitution

⁵⁵ Supporting Report, page 54.

⁵⁶ Arrow, *Kupunn Springvale CSG Deviated Well Paths (RP122/004); Response to Requirement Notice* (December 2022) page 35.

⁵⁷ Office of Groundwater Impact Assessment, Department of Natural Resources, Mines and Energy, *Analysis of groundwater level trends in the Hutton Sandstone, Springbok Sandstone and Condamine Alluvium* (December 2019).

⁵⁸ Office of Groundwater Impact Assessment, Department of Regional Development, Manufacturing and Water, *Modelling of cumulative groundwater impacts in the Surat CMA: approach and methods (OGIA/21/CD15/V1)* (December 2021) page 39, Table 6-11: Area of maximum all-time impact drawdown by formation.

Scheme will not be taken up, the proposed activities will have a significant impact on groundwater and the Condamine Alluvium.

- 121 In addition, there are general risks to the Condamine Alluvium such as depressurisation induced drawdown in overlying and underlying formations and methane and other contaminant migration which could also be exacerbated by well integrity failure.
- 122 The area of the proposed activities is in close proximity to the Horrane Fault, which has a heightened risk of connectivity, potential vertical transmission through fractures in the damage zone, and potential horizontal transmission where the Walloon Coal Measures are juxtaposed against other formations along the fault plane. This is the same case for the Hutton Sandstone in the larger displacement areas of the Horrane Fault zone.⁵⁹
- 123 The Condamine Alluvium has erosional contacts with the WCM, which can bring these aquifers into direct contact with the productive coal seams of the WCM.⁶⁰ The OGIA is yet to carry out an airborne electromagnetic survey to assess the Horrane Faults architecture above the Walloon Coal Measures, in order to assess for connectivity and subsequent potential contamination/loss of water in the Condamine Alluvium.

2.7 Does the Application demonstrate compliance with Tables 1 and 2?

- 124 Schedule 2, Part 2, section 5(5) and 5(6) require the Application to demonstrate compliance with the matters listed in the schedule, section 3.
- 125 Table 3(g) of Guideline 02/14 sets out the requirement.

PRESCRIBED SOLUTION

Where the applicant is not the owner of the land and has not entered into a voluntary agreement with the owner, the application demonstrates—
Table 3(g) the matters listed in Tables 1 and 2

Refer to **Tables 1 and 2** below.

⁵⁹ Office of Groundwater Impact Assessment, Department of Natural Resources, Mines and Energy, *Analysis of groundwater level trends in the Hutton Sandstone, Springbok Sandstone and Condamine Alluvium* (December 2019).

⁶⁰

126 Table 3(g) is addressed below in accordance with the numbering used in Guideline 02/14 for Tables 1 and 2.

PRESCRIBED SOLUTION

Table 1 The application demonstrates the activity will not be located on land in a PAA that is used for a PALU.

- 127 Arrow purports to 'circumvent' this criteria by proposing the use of multi-well pads on adjoining land and that the Activity being applied for, subterranean wells under the Subject Land, will not impact PAA land that is being used for a PALU.
- 128 The consequential impacts on the surface from subterranean wells being drilled under PAA land being used for a PALU, must be considered as part of the Activity. Subsidence, the resulting drainage impacts from subsidence and potential methane leakage from wells will impact the Subject Land, which is land in a PAA that is being used for a PALU. Further to this, PALU on the Subject Land will be adversely impacted by the placement of multi-well pads along the boundary of neighbouring properties.
- 129 For these reasons and those reasons set out in Table 3, section (b), we submit that Arrow has failed to demonstrate that this criteria has been met.

PRESCRIBED SOLUTION

The application demonstrates—

Table 2a) if the applicant is not the owner of the land and has not entered into a voluntary agreement with the owner—

- (i) the applicant has taken all reasonable steps to consult and negotiate with the owner about the expected impacts of carrying out the activity on each PALU for which the land is used; and
- (ii) carrying out the activity on the property will not result in a loss of more than 2 per cent of both—
 - (A) the land on the property used for a PALU; and
 - (B) the productive capacity of any PALU on the property.

- 130 This submission is not being made by an owner of the Subject Land.
- 131 However, due to Arrow's lack of transparency with respect to its data collection techniques for subsidence impacts and its failure to acknowledge and address expected impacts on PALU for which the Subject Land is used for, we consider that the first limb of this criteria (Table 2, section(a)(i)) cannot have been met.
- 132 In considering compliance with the second limb of this criteria (Table 2, section (a)(ii)), the Activity must include the consequential impacts on the surface from subterranean wells being drilled under PAA land being used for a PALU (see section 2.3). This is because the area of impact used to calculate the loss that has occurred under the second limb means

the area in which the activity is proposed to be carried out and where carrying out the activity is likely to have an impact.⁶¹ In a PAA a resource activity has an impact if it affects PALU in the area. Although Arrow intends to drill under PAA land, the area of impact includes surface effects of the activities such as subsidence as well as impacts arising from changes to overland flow, drainage, access to and availability of water, etc.

- 133 The ‘footprint’ of the resulting subsidence (see paragraphs 49 to 62) and the adverse impacts on drainage systems on the PALU (see paragraphs 84 to 89) means that carrying out the Activity on the Subject Land will result in a loss of more than 2 per cent of both:
- a. The land on the Subject Land that is being used for a PALU; and
 - b. The productive capacity of the PALU on the Subject Land.

PRESCRIBED SOLUTION

The application demonstrates—

Table 2b) the activity cannot be carried out on other land that is not used for a PALU, including, for example, land elsewhere on the property, on an adjacent property or at another nearby location

- 134 Arrow’s application has not considered the Activity cannot be carried out on other land that is not used for PALU because Arrow has failed to address as part of its proposed Activity the consequential impacts on the surface from subterranean wells being drilled under PAA land being used for a PALU. As a consequence, this criteria has not been complied with.

PRESCRIBED SOLUTION

The application demonstrates—

Table 2c) the construction and operation footprint of the activity on the part of the property used for a PALU is minimised to the greatest extent possible.

- 135 The Application has failed to demonstrate that the construction and operation footprint of the Activity on the part of the Subject Land use for a PALU is minimised to the greatest extent possible for those reasons set out in Table 3, section (c).

PRESCRIBED SOLUTION

The application demonstrates—

Table 2d) the activity will not constrain, restrict or prevent the ongoing conduct on the property of a PALU, including, for example, everyday farm practices and an activity or infrastructure essential to the operation of a PALU on the property

- 136 The Application fails to demonstrate that the Activity will not constrain, restrict or prevent the ongoing conduct on the Subject Land of a PALU for those reasons set out in Table 3,

⁶¹ Guideline 02/14, page 8.

section (e).

PRESCRIBED SOLUTION

The application demonstrates—

Table 2(e) the activity is not likely to have a significant impact on the PAA

137 The Application fails to demonstrate that the Activity is not likely to have a significant impact on the PAA for those reasons set out in Table 3, section (d).

PRESCRIBED SOLUTION

The application demonstrates—

Table 2(f) the activity is not likely to have an impact on the land owned by a person other than the applicant or the land owner mentioned in (a)

138 The Application fails to demonstrate that the Activity is not likely to have an impact on the land owned by a person other than the owners of the Subject Land because:

- a. The potential extent or 'footprint' of subsidence that will occur due to 'up to 14 deviated wells' being drilled under the Subject Land has not been fully considered;
- b. The potential impacts on PALUs on land adjoining the Subject Land has not been considered in the Application because it cannot be known without having first considered the extent of subsidence that will occur. Even where subsidence only occurs on the Subject Land, drainage systems on adjoining properties can be adversely impacted by changes in slope of the Subject Land.
- c. There is also a lack of information about the extent (and spread) of any soil or water contamination caused by methane leakage from decommissioned wells.

3. Strategic Cropping Land

139 Under the Act, Arrow's Application is also assessable against the assessment benchmarks in Part 4, Schedule 2 of the Regulation (**SCA Criteria**). The *RPI Act Statutory Guideline 03/14 Carrying out resource activities in a Strategic Cropping Area (SCA Guideline)* provides guidance on the assessment process.

140 It is our opinion that Arrow's Application has failed to demonstrate that its proposed Activity can comply with the relevant SCA Criteria. The basis for this position is set out in the tables below that adopt the approach and numbering provided in the SCA Guideline.

3.1 Does the Application demonstrate the activity cannot be carried out on other land in the region?

PRESCRIBED SOLUTION

The application demonstrates—

Table 3(a) the activity cannot be carried out on other land in the area that is not SCL, including for example, land elsewhere on the property (SCL), on adjacent land or at another nearby location

The Application fails to appropriately address the fact that the Activity cannot be carried out on other land in the area that is not SCL for the reasons set out in relation to PAA land in section 2.2 above.

3.2 Does the Application address regional outcomes?

PRESCRIBED SOLUTION

The application demonstrates—

Table 3(b) any regional outcome or regional policies stated in a regional plan for the area have been adequately addressed

- 141 The proposed activities will impede the growth of agriculture and resources industries with certainty and investor confidence within the Darling Downs region in the manner set out above in section 2.1 for PAA land.
- 142 A key regional issue in the Darling Downs are the significant economic impacts on agriculture from the mining sector include competition for land and water, and access to transport and labour.⁶²
- 143 In addition to this, the GasFields Commission has recognised that there is limited research on whether subsidence will have a material economic impact on specific farming operations at a property, sub-regional and regional scale.⁶³

⁶² The State of Queensland (Department of Fisheries) *Queensland Agricultural Land Audit; Darling Downs* (last updated 11 June 2020) page 617.

⁶³ GasFields Commission Queensland, Regulatory review of coal seam gas-induced subsidence Discussion Paper (May 2022) page 9 <https://www.gfcq.org.au/wp-content/uploads/2022/05/20220516-GFCQ-Discussion-Paper-Regulatory-review-of-CSG-induced-subsidence-FINAL.pdf>.

3.3 Does the Application minimise the footprint of the activity?

PRESCRIBED SOLUTION

The application demonstrates—

Table 3(c) the construction and operation footprint of the activity on SCL is minimised to the greatest extent possible

Arrow fails to adequately address how it has minimised its construction and operation footprint to the greatest extent possible for the reasons set out in relation to PAA land in section 2.3 above.

3.4 Will the activity have a permanent impact on the SCL in the area?

PRESCRIBED SOLUTION

The application demonstrates—

Table 3(d) either—

- (i) the activity will not have a permanent impact on the SCL in the area or
- (ii) the mitigation measures proposed to be carried out if the chief executive decides the approval and impose an SCL mitigation condition

- 144 Arrow has failed to demonstrate that the Activity will not have a permanent impact on SCL, more particularly Arrow has failed to demonstrate that the SCL impacted cannot be returned to its pre-activity condition following the carrying out of the Activity.⁶⁴
- 145 ‘Pre-activity condition’ means the condition of the land’s soil as identified and analysed within 1 year before the making of an assessment application for a resource activity to be carried out in the land.
- 146 The SCL that will be impacted by the proposed Activity will not be able to be returned to its pre-activity condition for the same reasons stated at paragraphs 69 to 74 as to PAA land and set out below:
- a. the unique qualities of land in the region a particularly the Condamine Floodplain, include the rich fertile black self-mulching vertosol clay soil, that has a high water-holding capacity. While the degree and particular impacts are not agreed, Arrow accepts that widespread subsidence will occur on SCA land impacted by its resource activities. Arrow proposes that subsidence can be remediated by re-levelling (ie. the placement of top soil to level out subsidence). Such remediation measures will have a permanent impact on the relevelled soil’s condition due to the loss of the existing soil values such as the loss of nutrients built up in soil and the consequence of soil compaction. The ‘rebuilding’ of the soil condition will be unachievable due to the incremental manner in which subsidence occurs. To maintain soil levels, the ongoing recurrence of subsidence would require the ongoing

⁶⁴ The State of Queensland (Department of State Development, Manufacturing, Infrastructure and Planning), RPI Act Statutory Guideline 09/14; How to determine if an activity has a permanent impact on Strategic Cropping Land (August 2019) (“**Guideline 09/14**”) <<https://dsdmipprd.blob.core.windows.net/general/rpi-guideline-09-14-permanent-impact-strategic-cropping-land.pdf>>.

releveling of cropping fields, making rehabilitation of soil qualities unachievable.

- b. the condition of the land's soil will be permanently affected by the impacts on drainage.
- c. the loss of existing soil values from the use of CSG treated water for irrigation is a significant concern for farm operators. As stated above at paragraph 99 the use of CSG treated water can have significant adverse impacts on soil characteristics.
- d. The cumulative adverse impacts from CSG activities on water and soil quality are not fully understood.⁶⁵ The compound effect of the ongoing and widespread use of releveling using incompatible soil, drainage impacts, the potential impacts from using CSG treated water for irrigation and post decommission methane escape represent an unacceptable risk to the unique qualities of the soil on SCL land.

147 Arrow has failed to demonstrate the mitigation measures proposed to be carried out if the Application is approved and a SCL mitigation condition is imposed.

148 Arrow has not properly investigated the nature and extent of the impacts of subsidence on CLA land so cannot sufficiently demonstrate mitigation measures proposed.

149 Arrow has not accurately or reliably measured the condition of the land affected by its activities and as a consequence there is a significant knowledge gap on the impacts of subsidence on agricultural land which continues to be investigated.

Data provided is unreliable

150 Arrow has not followed the general principles and land resource and soil survey methodologies outlined in the Act Statutory Guideline 08/14 to inform the basis for the initial fieldwork and laboratory analyses required to establish the pre-activity condition of land. In order to be able to restore land to its pre-activity condition, including the productive and potential productive capacity of the land, it is a basic prerequisite that a soil condition baseline is established.

Not sufficiently addressed

151 Arrow has failed to develop a restoration plan in the Application that demonstrates how permanent impacts will be avoided where possible.

152 The requirement in the Act⁶⁶ for the restoration of land to its pre-activity condition is an extremely high standard for land repair. Arrow will need to substantially alter, postpone or even abandon its Application in circumstances where the likely impacts that have been identified and the assessment of the land's potential for restoration indicate that:

- successful restoration using laser re-leveling is not feasible, or it is questionable if it can be

⁶⁵ The State of Queensland (Department of Fisheries) *Queensland Agricultural Land Audit; Darling Downs* page 617.

⁶⁶ Schedule 2, Part 1, section 1(2): A resource activity or regulated activity has a **permanent impact** on strategic cropping land if, because of carrying out the activity, the land can not be restored to its pre-activity condition.

- achieved (see paragraphs 70 to 72);
- restoration through laser re-levelling would take an uncertain or indefinite period of time (see paragraphs 70 to 72);
 - no other technology exists other than laser re-levelling exists to allow restoration; and
 - practical and economic limitations of laser re-levelling make it unviable as even a partial restoration method.
- 153 Further to this , Arrow has failed to provide the following information to prove that it will not have a permanent impact on the region (details which would normally be contained in a restoration plan):
- Arrow has failed to provide general details of the proposed activity including tenure and tenure holder details, applicant details, real property descriptions of the impacted land and contact details for all land owners other than the landholders of the subject properties or any other interested parties.
- 154 Guideline 03/14 states that the total area of impact includes areas outside of the construction and operation footprint where the pre-activity condition of the land may be consequently altered as a result of the activity, for example, by way of modification to overland flow or subsurface flow, sedimentation, erosion, discharge of wastewater or potential soil contaminants.
- 155 The GasFields Commission emphasises the importance of ensuring management actions are not limited by tenure boundaries.⁶⁷ Arrow has not provided sufficient details in its Application of other landowners (interested parties) who will be affected by subsidence. This is likely due to Arrow having ignored the widespread impact that subsidence will have in the area.
- Arrow has failed to provide an appropriately detailed description of the general environment and the proposed activity.
- 156 The Application does not adequately address geological faults in the area and their ability to exacerbate subsidence impacts. The implications of drilling near geological faults is discussed at paragraphs 43 and 55.⁶⁸
- Arrow has failed to provide suitably detailed maps or plans, drawn to scale, showing the proposed location of the activity and the relationship to SCL SCL on adjacent land, not the subject of the application.
- 157 The Application ignores SCL on adjacent land not subject of the application.
- Arrow has failed to provide *detailed* characterisation of the current (pre-activity) condition of the land and soils.
- 158 Guideline 09/14 states that due to the requirement for the restoration of the land to its pre-

⁶⁷ GFC Subsidence Review, page 6.

⁶⁸ Zena Ronnfeldt, Submission to RPI21/028 Coal Seam Gas (CSG) Wells and Gathering Regional Interests Development Approval (No.1) (12 August 2022) page 37.

activity condition, the methodology applied in assessing pre-activity condition needs to be rigorous. This increased rigour extends to the intensity of sites used to characterise an area under assessment. The higher density of assessment sites then allows for meaningful and statistical probabilities to be applied when assessing the success of the restoration, instead of relying on less objective means.⁶⁹

- 159 Arrow identifies that the subject properties fall within Class 1 capability class agricultural land. It has not made any attempt to assess the existing condition of the land beyond identifying this classification, which would allow it to monitor changes to the land as a result of its activities.
- 160 This lack of investigation extends to the region. Arrow largely ignores potential impacts outside of the subject properties, and has not attempted to conduct any scientific analyses outside of its strict interpretation of its operational footprint.
- 161 This is particularly relevant where subsidence is acknowledged to be an issue that extends beyond tenure boundaries but Arrow has only produced Surface Elevation Baseline Reports for the subject properties from InSAR monitoring and LiDAR data collected over the area.⁷⁰
- 162 The issues associated with LiDAR data collection are discussed separately at paragraph 51.
- Arrow has failed to evaluate the nature and risk of any predicted impacts on SCL
- 163 The predicated impacts on SCL are the same as those predicted for PALU. See paragraphs 2.4, 2.5 and 2.6.
- Arrow has failed to produce any evidence that scientifically proven and practical methods do exist for the restoration of each area of impacted land to its pre-activity condition.
- 164 See paragraphs 70 to 72 above.
- 165 Restoring the land means that the land is not only returned to its pre-activity use but that it is also returned to its pre-activity productive capacity or potential productive capacity.⁷¹ The Queensland Agricultural Land Audit for the Darling Downs Region acknowledges a variety of potential land uses that could be developed in parts of the region. Arrow has failed to address whether its activities will impact the potential productive capacity of SCL in the region for these potential land uses.
- 166 In the context of SCL, the productive capacity refers to the intrinsic capability of the land and soil to store and supply the water and nutrients required to sustain crops in the future'. There is a risk that CSG treated water will change the dynamic capability of the soil to consume water and nutrients due to the depletion of salts in the treatment process.
- Arrow has failed to provide any specific detail of how the identified restoration methods are

⁶⁹ Guideline 09/14.

⁷⁰ Supporting Report, page 30.

⁷¹ The State of Queensland (Department of State Development, Manufacturing, Infrastructure and Planning), *RPI Act Statutory Guideline 03/14; Carrying out resource activities in the Strategic Cropping Area* (August 2019) (**Guideline 03/14**).

to be applied and the time period which restoration will be completed in each of the affected areas.

- 167 Owing to the nature of Arrow's monitoring and management plan discussed below, Arrow has failed to provide any detail regarding how restoration methods are to be applied and the time period for restoration. This does not provide landholders with any information that would allow them to plan, for example, for a period where they may not have access to parts of their land and avoid impacts to their farming practices and farm viability.
- Arrow has failed to prepare a monitoring program that will comprehensively and clearly demonstrate benchmarked, time-bound progress in restoring the areas of affected land.
- 168 The Application states that a Restoration Plan will be developed *upon an exceedance* of a trigger threshold.⁷² Landholders cannot derive comfort from a plan to deal with what is a significant potential impact on their livelihood, at the time when the issue arises.
- 169 If a threshold be exceeded, Arrow will develop a Trigger Threshold Exceedance Action Plan which will consider magnitude of impacts, remediation or compensation. Whether or not the trigger threshold is exceeded depends on whether it is reasonably likely that Arrow has caused or significantly contributed to some form of demonstrated loss on the property and a material alteration to the drainage and slope of its surface coinciding with the demonstrated loss. Arrow will in turn consider if any material alteration to drainage and slope have contributed to the demonstrated loss including an evaluation of whether Arrow has caused the loss and alteration to drainage and slope.⁷³
- 170 The trigger threshold is not met where the loss is determined to be caused by a pre-existing characteristic of drainage or slope of the property or the alteration to drainage or slope of the property was caused by a non-CSG factor, activity or event.⁷⁴
- 171 The level of investigation to be undertaken before Arrow is required to take any real action appears to be considerably high. In an area where there is a limited understanding of impacts on agricultural activities, a number of opportunities are created for Arrow to blame the existing condition of the land. Where Arrow has decided to undertake its proposed activities on land sensitive to subsidence and slope changes, it should be expected to manage the impacts that arise.
- 172 Further, a Baseline Report on InSAR Monitoring in the Surat Bowen Basin carried out by Altamira in December 2012 for four LNG proponents (included in the Appendix to Santos' CSG Fields Ground Deformation Monitoring and Management Plan which formed part of the conditions of their approval for their GLNG Project) demonstrates that based on historical ground stability, any future subsidence can unquestionably be attributed to CSG development.
- 173 The GasFields Commission recommends that even where modelling does not predict sufficient subsidence to trigger a farm assessment, if there is a possibility of there being subsidence then there should be an avenue by which a landholder can have an independent

⁷² RN Response, page 32.

⁷³ RN Response, page 33.

⁷⁴ RN Response, page 33.

entity investigate drainage issues that the landholder believes are caused by subsidence.⁷⁵

- Arrow has failed to prepare a fully costed estimate, prepared by a suitably qualified third party, detailing the cost of undertaking the identified restoration works.

174 There is no evidence in the Application of the costs associated with laser leveling the land affected by subsidence.

- Arrow has failed to provide a set of restoration criteria that will need to be met to demonstrate that successful restoration has been achieved.

175 There is no evidence in the Application of restoration criteria.

176 Where there is evidence of permanent impact on SCL, the area of impact must be calculated which is defined as the land which will have its pre-activity condition altered by the activity whether or not it can be restored to its pre-activity condition.

177 To then meet part (ii) of the criteria Arrow is required to indicate whether, if the activity is improved and a mitigation condition is imposed, the condition will be met by entering into a mitigation deed or making a mitigation payment which satisfies the following mitigation criteria:

- a. Aims to increase the productivity of cropping in the State;
- b. Provides a public, rather than a private, benefit;
- c. Aims to provide an enduring effect;
- d. Be quantifiable and able to be independently valued;
- e. Benefit the largest possible number of cropping agribusiness; and
- f. if a cropping activity or cropping system existed for mitigated SCL land to which the measures relate—provide a benefit to that type of activity or system in the relevant local area.⁷⁶

178 By erroneously concluding that there will be no impacts on the Subject Land arising from its Activities, Arrow's Application does not appropriately address potential impacts or how those impacts will be managed/mitigated.

179 As a consequence, Arrow has failed to demonstrate mitigation measures proposed to be carried out should the Department approve the Application and impose an SCL mitigation measure.

3.5 Does the Application demonstrate compliance with Table 2?

180 Schedule 2, Part 2, sections 13(2) and 13(3) require the Application to demonstrate compliance with the matters listed in the schedule, section 11.

181 Table 3(e) of Guideline 03/14 sets out the requirement.

⁷⁵ GFC Subsidence Review page 8.

⁷⁶ section 65, Act.

PRESCRIBED SOLUTION

Where the applicant is not the owner of the land and has not entered into a voluntary agreement with the owner, the application demonstrates—
Table 3(e) the matters listed in Table 2.

Refer to **Table 2** below.

182 Table 3(e) is addressed below in accordance with the numbering used in Guideline 03/14 for Table 2.

PRESCRIBED SOLUTION

The application demonstrates—
(a) if the applicant is not the owner of the land and has not entered into a voluntary agreement with the owner—the applicant has taken all reasonable steps to consult and negotiate with the owner of the land about the expected impact of carrying out the activity on SCL

This criteria has not been met for those reasons set out above in relation to PAA land with respect to Table 2 section (a).

PRESCRIBED SOLUTION

The application demonstrates—
(b) the activity can not be carried out on land that is not SCL, including for example, land elsewhere on the property (SCL), on adjacent land or at another nearby location

This criteria has not been met for those reasons set out above in relation to PAA land with respect to Table 2 section (b).

PRESCRIBED SOLUTION

The application demonstrates—
(c) the construction and operation footprint of the activity on SCL on the property (SCL) is minimised to the greatest extent possible

This criteria has not been met for those reasons set out above in relation to PAA land with respect to Table 2 section (c).

PRESCRIBED SOLUTION

The application demonstrates—

- (d) if the activity will have a permanent impact on SCL on a property (SCL)—no more than 2 per cent of the SCL on the property (SCL) will be impacted

This criteria has not been met for those reasons set out above in relation to PAA land with respect to Table 2 sections (d) and (e).

4. Conclusion

- 183 Having regard to the matters set out above, Arrow's proposed activities cannot co-exist with the PALU and SCL on the Subject Property and in the PAA and SCA because:
- a. With respect to PALU, the Application:
 - i. Fails to satisfy required outcome 1, as the activities will materially impact on the use of the subject properties for a PALU;
 - ii. Fails to satisfy required outcome 2, as the activities will materially impact on the region because of the activity's impact on the use of the land in the PAA for more than one PALU;
 - b. With respect to SCL, the Application:
 - i. Fails to satisfy required outcome 1 for SCL because the activities will result in an impact on SCL in the SCA;
 - ii. Fails to satisfy required outcome 2 because the activities will result in a material impact on SCL on the subject properties; and
 - iii. Fails to satisfy required outcome 3 because the activities will result in a material impact on SCL in an area in the SCA.
- 184 In these circumstances, in order to further the purpose and provisions of the Act the PAA and SCA must be given priority over Arrow's activities and the Application should be refused.