



Surat Low Pressure Header Pipelines Regional Interests Development Approval

An application for a RIDA under the *Regional Planning Interests Act 2014*



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1. Introduction

1.1 Purpose

The Applicant proposes to undertake petroleum activities within an Area of Regional Interest (ARI) including Priority Agricultural Area (PAA) and Strategic Cropping Area (SCA). This report provides the required supporting information for an application for a Regional Interest Development Approval (RIDA) under the *Regional Planning Interests Act 2014* (RPI Act).

1.2 Scope

The Applicant proposes to construct up to three pipelines and associated infrastructure within a common right-of way (RoW), known as the Surat Low Pressure Header Pipelines (LPH pipelines). Two of the proposed LPH pipelines will transport gas and produced water from gas production areas in the Surat Basin to field compression and water management facilities that are currently in operation in Arrow's Daandine and Tipton fields. In some sections of the RoW, there will be two gas pipelines. A third pipeline, known as the Beneficial Use Network (BUN), will transport treated water from Arrow's Daandine storage dams to beneficial water users on Arrow's tenures. The associated infrastructure includes low point drains and high point vents, all of which will be located within the boundaries of the RoW.

Figure 1-1 shows the alignment of the LPH pipelines and the overlap between the majority of the alignment and PAA and SCA.

The LPH pipelines will be located across five seperate petroleum authorities being Petroleum Lease (PL) 198, PL230, PL252, PL260 and Petroleum Pipeline Licence (PPL) 2052. PLs 198, 230, 252 and 260 are authorised by the same Environmental Authority (EA) EPPG00972513 and PPL2052 is authorised by a separate EA (EA0002659).

The LPH pipelines traverse 37 land parcels. The Applicant has been negotiating Conduct and Compensation Agreements (CCAs) with the relevant parties of these land holdings. To date, agreements have been reached or will shortly be reached for 27 of the 37 land holdings. Negotiations will continue with the relevant parties of the remaining 10 land holdings.

The scope of this application is the LPH pipelines as described above and illustrated on Figure 1-1 on the 10 land pacels traversed by the proposed alignment where a CCA has not yet been agreed. Section 1.5 provides additional details with regards to the land holdings the subject of this RIDA application (see Table 1.3) and those land holdings traversed by the alignment but are not the subject of this RIDA application (see Table 1-4).

This RIDA application does not include resource activities associated with the installation or operation of CSG wells. Such activities would be the subject of a separate RIDA application if required.



1.3 Context

Section 29 of the RPIA requires that a RIDA be accompanied by a report that:

- Assesses the resource activity or regulated activity's impact on the area of regional interest; and
- Identifies any constraints on the configuration or operation of the activity.

The *RPI Act Guideline 01/14 - How to make an assessment application for a regional interests development approval under the Regional Planning Interests Act 2014* provides further guidance about the matters to be addressed by an assessment application report. These requirements and the sections where they are addressed, is listed in Table 2-1.

This report has also been drafted in accordance with the RPI Act Guidelines that directly address resource activities proposed in PAA and SCA, the guideline on identification of Priority Agricultural Land Use (PALU) and the RPI Act Guideline companion guide.

Information Requirement	Section Addressed
The location, nature, extent (in hectares) and duration of the surface impacts of the proposed activity.	Refer Sections 4.3 & 5.2
A description of the impact of the proposed activities on the feature, quality, characteristic or other attribute of the area.	Refer to sections 4 & 5
Include a table identifying the location and surface area of each of the proposed activities.	Refer to Section 2.1
The report must also include an explanation of how the proposed activity will meet the required outcome/s and address the prescribed solution/s contained in the assessment criteria for the area of regional interest.	Refer to Section 11

Table 1-1: Assessment Report Information Requirements



Figure 1-1 - LPH and overlap with PAA and SCA



151°5'0"E



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1.4 Applicant

The Applicant for this assessment application are the following Arrow Energy entities:

- Arrow Energy Pty Ltd ABN 73 078 521 936;
- Arrow (Tipton) Pty Ltd ABN 17 114 927 507;
- Arrow (Tipton Two) Pty Ltd ABN 36 117 853 755;
- Arrow CSG (Australia) Pty Ltd ABN 54 054 260 650;
- Arrow (Daandine) Pty Ltd 99 114 927 481.

1.5 Land Subject to the Application

Table 1-2 identifies the relevant Local Government Area, zoning and Regional Plan for all of the land the subject of this application.

Table 1-2 – Land Description

Local Government	Western Downs Regional Council
Zoning	Rural and Rural Activity
Regional Plan	Darling Downs Regional Plan
Areas of Regional Interest	PAA, SCA

The land parcels traversed by the LPH pipelines which are the subject of this application are described in Table 1-3 and illustrated on Figure 1-2.



Lot Plan	Area of Reginal Interest (ARI)		
	PAA	SCA	
27SP253612	Yes	No	
2RP210387	Yes	Yes	
2DER3455	Yes	Yes	
1RP181072	Yes	Yes	
2RP181072	Yes	Yes	
3RP181072	Yes	Yes	
46DER34223	Yes	Yes	
49DER34223	Yes	Yes	
50DY39	Yes	Yes	
2RP71519	Yes	Yes	

Table 1-4 lists the land parcels traversed by the LPH pipelines but are outside the scope of this application.

The land parcel situated on the LPH listed as Lot 12 SP134957 is owned by Arrow (Tipton) Pty Ltd. While this is the same entity as the petroleum authority holder for this section of the LPH, a RIDA already exists for this lot and includes the LPH as an authorised activity under that approval. This RIDA (SARA Reference is RPI18/011/Arrow Glenelg) was completed on 22 October 2018 with an amendment finalised approximately a month later on 26 November.

Also, the land parcel at the northern end of the alignment listed as Lot 2 SP214220 and held by the Western Downs Regional Council is not located within any RPI Act trigger mapping layers and therefore is not the subject of this application.

Further, the Arrow RIDA (SARA Reference 16/007/Arrow Tipton – Longswamp Gatherign Project) authorised a small, now constructed project (disturbance area of 0.068 ha) on an Arrow owned property which is near to but not on the LPH alignment and is therefore not relevant to this application.



Figure 1-2 - LPH and Land Parcels Traversed

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Lot Plan	Voluntary	Mapped as	Mapped as	
	Agreement in place	PAA	SCA	
1SP194537	Yes	Yes	No	
94SP194432	Yes	Yes	Yes	
92SP194432	Yes	Yes	Yes	
2RP74646	Yes	Yes	Yes	
4RP15795	Yes	Yes	Yes	
3RP196767	Yes	Yes	Yes	
34DY632	Yes	Yes	Yes	
107DY848	Yes	Yes	No	
12SP134957	Yes	Yes	Yes	
	Existing RIDA			
	RPI18/011/Arrow			
	Glenelg			
26SP216179	Yes	Yes	No	
3RP860821	Yes	Yes	Yes	
11SP134957	Yes	Yes	Yes	
1DY1034	Yes	Yes	Yes	
2RP203843	Yes	Yes	Yes	
69DY133	Yes	Yes	Yes	
65DY890	Yes	Yes	Yes	
1RP71519	Yes	Yes	Yes	
51DY50	Yes	Yes	Yes	
130DY762	A voluntary	Yes	Yes	
	agreement is being			
	negotiated			
14DY228	A voluntary	Yes	Yes	
	agreement is being			
070)((000	negotiated			
67DY1009	A voluntary	Yes	Yes	
	agreement will be			
	Regoliated with the			
	the usual practice			
	when working on			
	State land			
71SP129746	A voluntarv	Yes	Yes	
	agreement will be			
	negotiated with the			
	State for this lot as per			
	the usual practice			
	when working on			
	State land			
2SP214220	Yes	No	No	
3DY133	Yes	Yes	Yes	
2RP104460	Yes	Yes	Yes	
2RP79536	Yes	Yes	Yes	
2RP99604	Yes	Yes	Yes	

Table 1-4 – Land Parcels not the subject (i.e. outside the scope of) of this RIDA Application



1.6 Arrow Activities

Arrow is an integrated coal seam gas (CSG) company, exploring and developing gas fields, producing and selling CSG, and generating electricity. Arrow has been safely and sustainably developing CSG since 2000 and supplying it commercially since 2004. Arrow delivers approximately 20 per cent of Queensland's gas from CSG fields in the Bowen and Surat basins.

Arrow owns one of Queensland's largest power stations, Breamar 2 near Dalby, and has interests in a further two, with power generation capacity equivalent to the power requirements of around 800,000 homes. Arrow's first Surat Basin tenure was granted in March 2000 and Arrow drilled its first Surat Basin exploration well in June 2001.

The proposed Surat LPH will transport CSG and produced water from Arrow's Surat Basin gas fields to field compression stations and water treatment facilities in the Tipton and Daandine fields and treated water for beneficial use to Condamine Alluvium water users.

1.6.1 Overview of the Surat Gas Project

Arrow Energy is expanding its coal seam gas (CSG) operations in the Surat Basin through the SGP. The project seeks to commercialise gas reserves held in Arrow's petroleum tenements. The proposed LPH water, gas and BUN pipelines are essential infrastructure to the SGP.

On 1 December 2017, Arrow Energy and the Shell-operated QCLNG joint venture announced a Gas Sales Agreement (GSA) to commercialise the majority of Arrow's gas reserves in the Surat Basin. The collaboration between the parties will see the use of existing QGC-operated infrastructure such as gas compression, processing and transmission infrastructure as well as water transport and treatment facilities. Improving the utilisation of the existing upstream infrastructure will reduce impacts to landholders, communities and the environment.

The nature of the delivery points for the sales gas within this commercial agreement enables Arrow to develop and commercialise its Surat tenure whilst reducing the land disturbance footprint of its SGP development in comparison with the proposed development approved in 2013. Arrow is also progressing a Water Services Agreement for the receipt of raw water, storage, processing and re-delivery of treated water, utilising capacity made available by the Water Services provider. This similarly reduces the land disturbance footprint of the SGP development in comparison to plans presented in 2013.



1.6.2 Applicant's co-existence commitments

Arrow considers coexistence to mean allowing Australia to enjoy the full benefits from both agricultural and resource industries. Arrow has made 12 commitments to coexistence on Intensively Farmed Land ("IFL") in the Surat Basin:

- 1. No permanent alienation
- 2. Minimised operational footprint less than 2% of total IFL area

3. Flexibility on CSG well locations, but all wells located by edge of farm paddocks

4. Pad drilling (up to 8 wells from a single pad) used where coal depth and geology allows

- 5. Spacing between wells maximised (average of between 800m 1500m)
- 6. Pitless drilling only

7. No major infrastructure facilities on IFL (dams, compression stations, gas gathering stations, water treatment)

- 8. Treated CSG water used to substitute existing users' allocations on IFL
- 9. No brine/salt treatment or disposal on IFL
- 10.Flexibility on power supply option above or below ground
- 11.Fair compensation including elements of 'added value'

12.Continued proactive engagements with community and transparency on coexistence field activities

*Commitment 8 refers to the area of greatest predicted drawdown on the Condamine Alluvium resulting from CSG extraction by Arrow Energy.

1.6.3 Area Wide Planning

Area Wide Planning (AWP) is a unique program developed by Arrow to incorporate landholders' knowledge into its field development plans. Landholders and Arrow staff work together to identify locations for infrastructure, such as well pads, gathering lines and access tracks, across farming districts and on flood plains.

The process strengthens Arrow's ability to coexist with agricultural activities. Planning occurs one-on-one with landholders and, where appropriate, in local area meetings with neighbouring landholders. Specific landholder agreements are then formalised in Conduct and Compensation Agreements ("CCAs"). The program demonstrates a commitment to genuine engagement and a commitment to preserving the values that are important to landholders.





1.7 Existing Authorities

Arrow holds the following necessary approvals for the construction and operation of the proposed LPH, as outlined in the following sections.

1.7.1 Arrow's Petroleum Authorities

The following Petroleum Authorities issued under the *Petroleum and Gas (Production and Safety) Act 2004* (P&G Act) and Environmental Authorities issued under the *Environmental Protection Act 1994* relate to the LPH alignment (refer to Figure 1-1).

Table 1-5 – Arrow Petroleum Authorities

Tenure	Grant Date	Holder/s	Location	Dimension	EA Name	EA Number
PL198	9 December 2004	 Arrow (Tipton) Pty Ltd Arrow (Tipton Two) Pty Ltd Arrow CSG (Australia) Pty Ltd 	Tipton West (South-West of Dalby)	258.9 km²	Dalby Expansion Project(DXP)	EPPG00972513
PL230	19 December 2005	 Arrow (Daandine) Pty Ltd Arrow CSG (Australia) Pty Ltd 	Daandine (North-West of Dalby)	140.40 km²		
PL252	20 September 2008	 Arrow Energy Pty Ltd Arrow CSG (Australia) Pty Ltd 	Stratheden (South-West of Dalby)	76.25 km²		
PL260	1 April 2011	 Arrow (Tipton) Pty Ltd Arrow (Tipton Two) Pty Ltd Arrow CSG (Australia) Pty Ltd 	Longswamp (South of Dalby)	219.52 km²		
PPL2052	26 February 2021	Arrow CSG (Australia) Pty Ltd	West of Tipton	20 sub- blocks	Harry EA	EA0002659





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1.7.2 Regional Interests Development Approvals

The following RIDAs relate to land parcels along the LPH alignment.

Table 1-6 – Arrow RIDAs	
-------------------------	--

Name	Issue Date	Holder/s	RIDA No
Glenelg	26 November 2018	 Arrow CSG (Australia) Pty Ltd Arrow (Tipton Two) Pty Ltd Arrow (Tipton) Pty Ltd 	RPI18/011/Arrow Glenelg
Tipton CGPF	5 July 2018	 Arrow CSG (Australia) Pty Ltd Arrow (Tipton Two) Pty Ltd Arrow (Tipton) Pty Ltd 	RPI18/012/Arrow Tipton

1.7.3 Other Approvals Required

Further, the following agreements and approvals will be obtained prior to the commencement of construction of the LPH:

- Conduct and Compensation Agreements pursuant to the P&G Act with all impacted landholders on the proposed route, and
- Crossing agreements with State and Local Government agencies such as the Department of Transport and Main Roads and Western Downs Regional Council and infrastructure providers such as Powerlink and Alinta Energy, where applicable.

Where CCA's are reached with landholders within the scope of this application prior to the approval of the application, Arrow will apply to amend the application to exclude lots subsequently covered under a CCA.



2. Application Form Information

2.1 Property Details and Proposed Activity

Table 2-1 provides summary of the proposed activities, location and proposed disturbance area. Figures illustrating the location of disturbance on each land parcel are provided in Appendix 2.

Parcel	Whole/Part	Activity	Area of Surface Disturbance (ha)	
			ΡΑΑ	SCA
27SP253612	Part	Gas and Water Pipelines	0.6	0
2RP210387	Part	Gas and Water Pipelines	7.8	7.5
2DER3455	Part	Gas and Water Pipelines	5.3	5.1
1RP181072	Part	Gas and Water Pipelines	1.5	0.8
2RP181072	Part	Gas and Water Pipelines	5.5	3.6
3RP181072	Part	Gas and Water Pipelines	18.2	16.5
46DER34223	Part	Gas and Water Pipelines	7.4	6.7
49DER34223	Part	Gas and Water Pipelines	1.7	1.7
50DY39	Part	Gas and Water Pipelines	4	3.1
2RP71519	Part	Gas and Water Pipelines	2.4	2.4
Total			54.4 ha	47.4 ha

Table 2.4	Droport	Dotaila and	Dropood	Activition
1 apre 2-1 -	· Froberty	Details and	FIODOSEU	ACTIVITIES

The resource activity of gas and water pipeline is defined as a low pressure pipeline header comprising:

- Underground gas pipelines.
- Underground water pipelines.
- Underground power and fibre optic cables.
- Pipeline signage, low point drains (LPD), high point vents (HPV) and valve pits.

Refer to Section 3 for additional details.



2.2 Land Use

2.2.1 Current Land Use

The current land use for the vast majority of the Land along the alignment is primarily agricultural land with some grazing (refer to Figures in Appendix 2). The initial section of LPH beginning near Tipton also includes some industrial uses, primarily CSG Dams and the end of the LPH includes some forestry areas. The majority of lots are held as freehold land by private landholders.

2.2.2 Surrounding Land Uses

The existing surrounding land uses comprise areas used for ongoing operation of existing petroleum activities as well as for productive rural purposes, such as dryland cropping, irrigated cropping, grazing of beef cattle and some forestry areas (refer to Figures in Appendix 2).





2.2.3 Easements

Easements related to land parcels along the LPH alignment are listed in Table 2-2. Easements located on land parcels within the scope of this application and intersected by the LPH are marked with an asterisk (*) and illustrated in Appendix 2.

Table 2-2 – Easements Intersected

Land parcel	Easement	Purpose	Location	Dimension		
				Area	Length	Approx Width
27SP253612	ASP194537	* Easement	Grassdale	108,957 m ²	5,663 m	20 m
2RP203843	BRP203843	Easement associated with Ergon Poles and Towers	Ducklo	26,030 m ²	1,285 m	12 m
3RP860821	FSP194561	Easement associated with the Braemar 1 Pipeline (PPL102)	Springvale	12,009 m ²	600 m	20 m
2RP74646	JSP130884	Easement	Ducklo	58,077 m ²	1,347 m	31.5 m
3RP860821	FSP194561	Easement associated with the Braemar 1 Pipeline (PPL102)	Ducklo	58,077 m²	1,347 m	31.5 m
11SP134957	ESP194561	Easement associated with the Braemar 1 Pipeline (PPL102)	Springvale	23,366 m ²	1,168 m	20 m
2RP79536	ARP79536	* Easement	Ranges Bridge	15,188 m²	756 m	20 m





2.2.4 Overlapping Resource Authorities

In addition to Arrow held resource authorities (refer to Table 1-5), the following resource authorities exist over varying parts of the proposed LPH alignment.

Table 2-3 – Overlapping Resource Authorities

Tenure Number	Tenure Type	Holder	Grant Date	Related Environmental Authority	Location	Dimension
EPC899	Exploration Permit for Coal	New Emerald Energy Pty Ltd	05/08/2005	EPSX00647913	South of Chinchilla	47 Sub-Blocks
EPC1770	Exploration Permit for Coal	New Emerald Energy Pty Ltd	12/11/2009	EPSX00446313	20km West- South-West of Dalby	111 Sub-Blocks
PL279	Petroleum Lease	QGC Pty Ltd	27/06/2011	EPPG00797813	20km West of Dalby	70 Sub-Blocks
PPL102	Petroleum Pipeline Licence	Braemar Power Project Pty Ltd	22/10/2004	EPPG00373913	described as Tipton to Oakey; Tipton to Dalby; Dalby to Kogan	58.791 km
PPL2037	Petroleum Pipeline Licence	APT Petroleum Pipelines Pty Ltd	03/05/2019	EA0001655	South-West of Dalby	28.96 km







2.2.5 SCL Compliance Certificates

Apart from Arrow held RPI Decisions (refer to Table 1-6), Arrow holds a SCL Compliance certificate (reference no SCLRD2014/000178) over all or part of the land subject to this application.

2.2.6 Title Searches

Copies of titles searches for land parcels subject to this application accompany this application and are presented at Appendix 1.

2.2.7 Road Reserves

The following road reserves are not subject to this application due to their use as infrastructure. Further, Arrow will negotiate voluntary agreements with the relevant authority for each road prior to commencement of disturbance.

Table 2-4 – Road Reserves crossed by LPH

Road	Description
Kumbarilla Lane	Council Controlled Road
Unamed Road between 107DY848 & 34DY632	Unformed road
Duklo School Road	Council Controlled Road
Duleen Daandine Road	Council Controlled Road (Formed)
Kupuun Duleen Road	Council Controlled Road (Sealed)
Unamed Road between 1RP71519 & 51DY50	Council Controlled Road (Formed- Track)
Moonie Highway	State Controlled Road
Broadwater Road	Council Controlled Road
Jones Road	Council Controlled Road
Unamed Road between 12SP134957 & 26SP216179	Unformed Road



3. **Resource Activities**

3.1 Description of project and work activities

The function of the proposed Surat LPH gas and water pipelines is to convey gas from the well gathering networks to compression infrastructure, to convey produced water to the water treatment system and treated water to beneficial water users. Water pipelines, gas pipelines, fibre optic cables and power cables will be installed in a common easement. The RoW width for the co-located pipelines will be up to 50 m.

The LPH pipeline route will be located between the David Inlet Processing Facility (IPF) on PL230 and the Tipton Central Gas Processing Facility (CGPF) on PL198 approximately 40 kilometres to the south. A spur line of approximately 4.3 kilometres also connects the main trunk of the LPH to the Harry IPF on QGC's PL279.

Figure 1-1 and 1-2 show the extent of the pipeline alignment and the petroleum tenures and land holdings this alignment traverses. The LPH is a key component of the SGP which will develop Arrow's Surat Basin gas fields and deliver gas to the Southeast Queensland gas and energy markets.

The proposed pipelines will be up to three buried HDPE pipelines up to DN800 in size, approximately 40 km carrying produced water, Coal Seam Gas (CSG) and treated water. The pipelines will be built to APGA Code of Practice for Upstream Polyethylene Gathering Networks in the Coal Seam Gas Industry (APGA Code of Practice).

In addition to the pipelines, the LPH comprises mimimal above ground facilities including pipeline signage, drains, vents and valve pits.

3.2 Definition of work activities

The pipelines will be installed by conventional trenching with a trenching machine or excavator. Where the pipelines are required to be installed below existing roads or infrastructure, other trenchless technologies may be used.

Conventional trenching involves an open trench as deep and as long as needed to install, inspect or maintain piping, conduits or cables. After installation, the trench is filled with the dirt removed during the trenching phase and the surface is restored.

Examples of a pipeline being laid using the trenching method is shown in Plate 3-1 and Plate 3-2.





Plate 3-1 – Image of pipeline being installed by trench method





Plate 3-2 – Image of pipeline being installed by trench method

3.3 Pipeline construction for purposes of assessment

Pipeline construction requires the following activities to be undertaken:

- Detailed survey of the RoW and construction areas
- Establishing temporary access tracks if necessary
- Installing temporary gates and fences as required
- Clearing vegetation, where required, and grading the RoW to prepare a safe construction working area (on average the construction RoW will be 50 m in width to provide area to spread soil during rehabilitation)
- Separating and stockpiling topsoil and subsoil to protect and preserve topsoil
- Crossing watercourses, roads and existing buried pipelines by open cut, boring or alternate trenchless technology (e.g. Horizontal Directional Drilling (HDD) methods) depending upon the type and nature of the crossing
- Delivering pipe sections along the RoW



- Welding the low pressure HDPE pipe sections together to form 'a string'
- Creating a trench in which to lay the pipeline. The trench is excavated by a trenching machine or excavator and may include the use of rock saws, excavators, rock hammers or blasting in hard rock terrain
- Lowering the pipeline strings into the trench and placing padding (e.g. screened trench subsoil) around the pipe to protect the pipe from external damage
- Returning the subsoil and topsoil to their original horizons
- Testing the integrity of the pipeline by pneumatic testing or filling it with water and pressurising it to above the maximum allowable operating pressure (i.e. hydrostatic pressure testing)
- Cleaning up, restoring and progressively rehabilitating the construction RoW and all temporary tracks, gates and fences
- Installing permanent gates and signage where required

Installation of multiple pipelines in a single RoW is generally sequential, i.e.; the first pipeline is installed and the trench backfilled before the next pipeline installation commences. A diagram of a typical construction Right-Of-Way (RoW) with multiple pipelines is provided in Figure 3-1.



Figure 3-1 - Typical Profile ROW Layout (Exact configuration to be confirmed during design)



The width of the construction RoW has been reduced as far as possible to minimise surface imapcts, however, Arrow has also ensured that adequate space is available to safely construct the pipeline and implement the necessary mitigation measures (e.g. separation of soil stockpiles) to provide the best reinstatement outcome. The ROW width will also be influenced by the number of pipelines required for each section of the LPH.

Where possible, construction vehicles will utilise existing roads, road verges and tracks to further reduce the width of the RoW. The nature and extent of extra work areas (outside of the RoW) has also been minimised and is generally only required for road crossings. The extent of any extra work areas for each parcel are illustratrated in Appenidix 2.

3.3.1 Watercourse Crossings

Watercourse crossings will be constructed using the method most appropriate to the crossing, having regard to the protection of the riparian zone, erosion potential and construction difficulty. Crossing methods will include:

- Minor watercourses, ephemeral streams and gullies will be crossed using an open cut construction method.
- Watercourses with standing or flowing water will be crossed by open cut methods, or if required by open cut methods with water flow controls.

In addition to pipe laying, temporary vehicle crossings will be constructed to facilitate the movement of construction vehicles over watercourses. To minimise the period of construction and subsequent environmental disturbance, the construction contractor will complete watercourse crossings within the shortest period practicable.

3.3.2 Road Crossings

Paved and sealed road crossings will be bored to reduce impacts on traffic flow and ensuring no damage to \ road pavement integrity. Boring is a low impact technique involving drilling short distances from below ground within an enlarged trench area (borepit) either side of the road or rail within the ROW. The feasibility of using a bore is limited by site conditions including depth required, width of crossing, geology, landform, soil type and service / infrastructure. Soil measures for removal, stockpiling and reinstatement for the bore pits will follow the same protocols as for the ROW.

Minor roads (including where permitted, minor roads that are paved) will be crossed using open cut construction methods.



3.3.3 Extra Work Areas

Areas of additional work areas (EWA) adjacent to the ROW will be required to provide additional temporary construction areas for a range of activities including truck turn around areas, equipment storage areas, soil and vegetation stockpiles and space for installation of bore pits for bored crossings. The location of EWA's on land parcels included in the scope of this application are illustrated in Appendix 2.

These EWA are temporary during construction only and are typically fully rehabilitated within 12 months of use.

3.3.4 Access Tracks

Access to the pipeline RoW will occur predominanty via existing access tracks located adjacent the RoW. In some instances new tracks my need to be constructed, however there are no new tracks required on any of the lots subject of this application.







4. **Priority Agricultural Land Use (PALU)**

4.1 Overview

PAAs are strategic areas, identified on a regional scale, that contain significant clusters of a region's high value intensive agricultural land uses. The PAA surrounding the Land includes areas of high value agricultural land uses, in particular areas of dryland cropping and grazing.

Within the PAA, Priority Agricultural Land Use (PALU) is given priority by ensuring that the location of resource activities can coexist with these uses.

4.2 Identification of PALU

The RPI Act Guideline 07/14: *How to identify a priority agricultural land use* (PALU) was consulted to determine if the Land within the Darling Downs Regional Plan is, or has been, utilised as PALU.

Section 2 of the RPI Regulation states that :

For land or property in relation to PALU, means the land or property has been used for PALU for at least 3 years during the 10 years immediately before an assessment application is made in relation to the land.

To determine the extent of PALU on land included within the scope of this application, an assessment of the historical and current land use within the study area was undertaken for the years 2011 - 2020 utilising the following information sources:

- Reference to GIS satellite imagery (Appendix 2) and the Darling Downs Regional Plan (Department of State Development, Infrastructure and Planning, 2013) to confirm the Project is located within a PAA.
- Reference to the Queensland Land Use Mapping Program (QLUMP) to confirm dominant Australian Land Use and Management (ALUM) classification for the area, cropping and grazing native vegetation (Appendix 3).
- Department of Science, Information Technology, Innovation and the Arts (DSITIA) Forage Crop Frequency Data for the years 2011 – 2020 (Appendix 4),
- Examination of aerial photography and satellite imagery for years 2011-2020 (Appendix 5)

A summary of the findings is provided in Table 4-1 and additional details provided in Appendices 2 to 5 as outlined above.





Table 4-1 – Outcome of Identification of PALU on land parcels

Parcel	QLUMP Classification	Cropping Frequency >3 in past 10 years	Field Review of Area to be disturbed (refer to Appendix 2)	PALU
27SP253612	Grazing native vegetation / reservoir	No – 2 or fewer crops recorded	Parcel used for grazing and resource activities (gas wells and associated infrastructure. No evidence of recent cropping.	No
2RP210387	Cropping	Yes	Used for cropping dryland cereals and pulses	Yes
2DER3455	Irrigated Cropping	Yes on parcel	Parcel utilised for dryland cereals and forage crops for cattle. Proposed area of disturbance is close to the western	Yes on parcel
		No on proposed area of distubance	boundary, which has no evidence of recent cropping. ROW will be located adjacent to area utilised for forage cropping for cattle	No on proposed area of distubance
1RP181072	Cropping	Yes	Used for dryland and irrigated crops	Yes
2RP181072	Cropping	Yes		Yes
3RP181072	Irrigated Cropping	Yes		Yes
46DER34223	Cropping	Yes	Used for dryland cropping	Yes
49DER34223	Cropping	Yes	Used for dryland cotton, cereals and pulses	Yes
50DY39	Cropping	Yes		Yes
2RP71519	Cropping	Yes		Yes







4.2.1 Outcome of PALU Identification

As outlined in Table 4-1, PALU has been identified as occurring in the disturbance area on all impacted land parcels apart from:

- 27SP253612; and
- 2DER3455.

27SP253612

This parcel is presently utilised for resource activities (gas wells and water infrastructure) and was found to have been cropped <3 times in the past 10 years (refer to Appendix 4). This is supported by examination of aerial/satellite imagery over the past 10 years (refer to Appendix 5).

2DER3455

This parcel presently was confirmed as having PALU occurring on the land parcel, however, the location of the proposed disturbance will avoid this area (refer to Appendix 2). The area of the ROW is located close to the western boundary of the property which has not been cropped in the past 10 years (refer to Appendix 4). This is supported by examination of aerial/satellite imagery over the past 10 years (refer to Appendix 5). As PALU activities occur to the east of the alignment, the construction and operational activities will not have an impact on the conduct of PALU on the remainder of the parcel.

As a result, the potential impact of the proposed activities on PALU on these properties is not addressed further in this application.

4.3 Extent & Impact PALU on LPH

The LPH will be constructed within a RoW up to 50 m in width which temporarily impacts no more than 6% of an individual lot during construction and less than 1% during operations. Additionally, construction of the pipeline is relatively quick, with the duration of construction expected to be a maximum of 3 months on each property and surface activities able to recommence post constructon.

However, construction activities will only be occurring on a portion of the properties and agricultural activies on the balance of the properties will not be impacted. Agricultural activites on the area used for construction will be able to recommence upon completion of rehabilitation after construction and the disruption to agricultural activities will be limited to less than one cropping season.

On some properties, high point vents and/or low point drains will be required to be installed (refer to Appendix 2). This infrastructure will be located on property boundaries and outside of cropping areas to limit the potential impact on landholders.



The surface area of such infrastructure will typically be between 16 and 36 m^2 per site.

Due to the nature, duration and limited extent of the expected area of impact of the authorised petroleum activities, the Applicant considers the authorised activities would not have a significant impact on PALU. Measures implemented to minimise potential adverse impacts to PALU include:

- Preferentially locating the alignment adjacent to roadways, property boundaries or edge of cropping as far as possible given other contraints (e.g. EA conditions around the primary protection zones of Environmentally Sensitive Areas, restricted land requirments under the *Mineral and Energy Resources (Common Provisions) Act 2014*). This maximises the balance of land for agricultural activities;
- Minimising the ROW width, while also still ensuring sufficient work area to safety construct the pipeline and ensure adequate space for separation of soil stockpiles and implementation of sediment and erosion control measures;
- utilising the minimum area possible
- Locating the the RoW on previously disturbed areas where available;
- Locating the RoW alongside roadways and existing landholder tracks removing the requirement for an additional access track;
- Location and design of the RoW to avoid interference with farm machinery such as tractor routes and will not interfere with the use of booms on farm machinery as they can be raised above when turning close to the infrastructure. In this way, the design of the infrastructure will not impact on the style of farming on the property;
- Locating with the input of landholders any high point valves, low point drains, inspection pits or valves adjacent to property boundaries and access tracks and outside of cropped areas so that they do not have any impact on PALU on the property;
- Minimising the construction period on each land parcel. Construction period for the LPH will be minimised to as short as possible to avoid impacts to landholders as much as possible (refer also to 4.3.2);
- Implementation of control measures during construction to minimise impacts to areas subject to disturbance and ensure soil is returned to pre-construction productive capacity (refer to Section 7);
- Implementation of rehabilitation techniques to ensure the construction footprint does not have a significant or long term impact on the ability to use the underlying area for agricultural activities in the future (refer to Section 7);; and
- Implementation of rehabilitation techniques to ensure that when the LPH is decommissioned, the operational area is rehabilitated and returned to productive agricultural use, in accordance with the Environmental Authority (refer to Section 7).
- Once the project has been decommissed, all pipelines are made safe and left in the ground. Above ground infrastructure is removed.



4.3.1 Nature of Surface Impacts

The nature of surface impact to PALU subject to this application will involve construction duration disturbance of up to 44.8 ha (across all Lots combined) to the existing land use, consisting of up to 12.5 km of pipeline construction RoW and extra work areas on PALU. The scale of impact to PALU on each land parcel is illustrated on the Property Maps in Appendix 2 and summarised in Table 4-2.

Following completion of the construction, reinstatement and commissioning phases of the pipeline, with normal agricultural activities, including cropping activities, able to be re-established over the pipeline. While there are some impacts following initial rehabilitation, compaction in the construction area will be naturally remediated by the wetting and drying of soils. The minimum depth of cover for the pipeline will be 900mm which is considered sufficient to enable existing cropping activities to occur post construction. This has been evidenced on previous pipeline projects on intensively farmed land between Daandine and Tipton.

As an example, the image below (Plate 4-1) shows Arrow's Theten farm and a RoW where crops have been re-established post construction compared to the condition of the surrounding crops. The photo was taken approximately 12 months after construction. The rehabilitated RoW includes two HDPE pipes (DN630 and DN450) running parallel to the access track within the edge of the cropped area of the paddock.







Plate 4-1 - Image of the re-establishment of crops within a pipeline ROW





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For larger diameter pipes, the trench depth may be up to 2 m deep at road crossings.

Future activities requiring excavation or establishment of permanent infrastructure are restricted above the pipelines during their operational life. This includes high point vents, low point drains and isolation valves. This area is recorded as surface impacts post construction in Table 4-2. Such infrastrucute is located on property boundaries, outside of areas of cropping.

Additional temporary indirect impacts to PALU will occur on some land parcels including:

- Use of alternate access for accessing areas adjacent the RoW;
- Limitation of access to adjacent land with large agricultural equipment, particularly where the alignment runs perpendicular to the cropping direction;
- Temporary isolation of areas of paddocks due to the location of the pipeline alignment.

In general, the landholder will be able to plant or harvest directly up to the RoW corridor as there will be no gap or break between the RoW and where a landholder can farm. Circumstances where temporary impact may occur include:

- Parallel scenario can disrupt planting rows along the edge of the RoW during construction, where the RoW doesn't line up with the guess row of the planter
- Perpendicular scenario creates a new headland alongside the RoW during construction only and this may result in a reduction in potential yield due to vehicle traffic and double planting
- Compaction in the ROW area

The majority of surface impacts will be temporary and limited to the duration of construction only (refer to Section 4.3.2). Areas where indirect impacts may potentially occur as a result of the construction process have been identified in Appendix 2.





Table 4-2 – Extent of Impact on PALU

Parcel	LPH Infrastructure	Parcel Size (Ha)	PALU on Parcel (Ha)	Surface Disturbance to PALU (Ha) during Construction	Surface Impact to PALU (Ha) – during Operations	% PALU Impacted during construction	%PALU impacted during operations
2RP210387	2 x pipelines, fibre option cable & 2 x low point drains	132.7	132.7	7.8	0.007	5.88%	0.005%
1RP181072	2 x pipelines, fibre option cable, 1 x low point drain & 1 x high point vent	436.7	363.4	1.5	0.005	0.41%	0.001%
2RP181072	2 x pipelines, fibre option cable, 1 x high point vent	328.0	286.0	5.4	0.002	1.89%	0.001%
3RP181072	3 x pipelines, fibre option cable & 1 x high point vent	465.5	424.4	14.8	0.002	3.49%	0.000%
46DER34223	3 x pipelines, fibre option cable, electrical cable & 2 x high point vents	129.6	125.7	7.3	0.003	5.81%	0.002%
49DER34223	3 x pipelines, fibre option cable & 3 x high point vents	125.7	123.6	1.7	0.005	1.38%	0.004%
50DY39	3 x pipelines, fibre option cable, electrical cable & 1 x high point vent	127.0	126.8	3.9	0.002	3.08%	0.002%
2RP71519	3 x pipelines & fibre option cable	93.3	93.3	2.4	0	2.57%	0.000%





4.3.2 Construction Timeframe

The installation timeframe is variable for each property. Factors to determine the overall installation timeframe include:

- The number of pipelines to be installed and their associated lengths
- The number of features along the pipeline e.g. LPDs, valves, HPVs, crossings
- The sequence of construction
- Soil conditions (construction progress is slower in rock areas)
- If there is fibre optic or electrical cables to be installed

The pipeline construction crews move in train like fashion. They will be on the property to install the first line (moving at 400-500 m/day) and will then move off the property to continue installing on neighbouring properties. Backfilling is carried out soon after the pipe is laid in the trench and is nearly always concluded in less than a week. The process is repeated for each of the three pipelines.

FOC/electrical cables are typically installed after pipeline installation and can be installed much faster than pipeline installation.

This is followed by ROW reinstatement and commissioning activities including pressure testing.

As a guide for an average size property the overall construction duration is usually from 2 to 3 months from start to finish. This is subject to the factors outlined above.

The number of pipes and the timing for construction on each property the subject of this application is included in the Table 4-3.



Parcel	Number of pipes on each property	Approximate construction time on each property		
27SP253612	2	1 month		
2RP210387	2	1-2 months		
2DER3455	2	1-2 months		
1RP181072	2	1-2 months		
2RP181072	2	1-2 months		
3RP181072	3	2-3 months		
46DER34223	3 + elec cable	1-2 months		
49DER34223	3	1-2 months		
50DY39	3 + elec cable	1-2 months		
2RP71519	3	1-2 months		

Table 4-3 - Number of pipes and construction timing

4.3.3 Production & Productive Capacity

Construction of the LPH may result in the temporary loss of crop from within the area impacted by construction where:

- Crop is disturbed prior to harvesting;
- Crop is unable to be planted or planting is delayed due to timing of construction.
- Compaction post rehabilitation for a period until remediated by wetting of soils.

In addition, the nature of disturbance may result in a temporary decrease in the productive capacity of the disturbed area. Arrow will implement a range of management measures during construction to minimize the extent of impacts and duration of recovery of the productive capacity. These measures include preservation of removed topsoil, clear separation to excavated topsoil and sub-soil, replacement to match existing horizons compaction relief and utilization of ameliorants (gypsum and organic matter/fertilizer) during rehabilitation (refer to Section 7 for additional details). Based on past experience in the area, Arrow have found that implementation of such measures returns the impacted areas to full productive capacity within 12 months. This period is also dependent on soil type, rainfall and cropping regime.



4.3.4 Overland Flow

A review of the topography of the proposed alignment indicates that the slope within majority of the LPH study area range from near level (<1%) to 3%, with only minor patches of land with slope >3%.

This is illustrated by mapping of subject lots of this application with contour lines at 1 m intervals within a 1,000 m buffer of the proposed pipeline which is provided in Appendix 6.

Drainage on these land parcels flow from the south-east to the northwest. The construction of the pipeline will be prepared to work with this natural drainage line and allow water to flow across the alignment or around it during construction. Pre-construction flow pathways will be reinstated post construction, including irrigated levelled properties.

Based on past experience in the area (previous pipelines constructed), Arrow have not observed any pipeline subsidence or impacts to overland water flow or creation of waterlogged areas.

4.3.5 Weed & Pathogen Management impact on PALU

During construction, comprehensive biosecurity management measures will be implemented to prevent the introduction or spread of weeds or pathogens during construction. This will include:

- Contact with landholders and identification biosecurity matters and plans for each property;
- Ensuring vehicles and equipment are clean of any biosecurity contamination upon arrival on site;
- Clean down of vehicles/equipment between properties to prevent transfer of soil and biosecurity matter;

4.4 Measures to Minimise Impacts to PALU

Arrow has undertaken extensive consultation with landholders and will continue to do this to identify existing and future agricultural activities, location of farm infrastructure and property management logistics and develop an alignment of the pipeline route to minimise potential impacts.

The construction and operational footprint of the activity and potential impacts to PALU have been minimised through:

• Reducing the number and location of extra work areas (EWAs) to the minimum necessary to safety construct the pipeline in compliance with EA requirements. This has taken into consideration the extra work area required to construct watercourse crossing & infrastructure crossings,


areas for stockpiling of heavy vegetation, areas of side slope and additional stockpile areas adjacent areas of ROW narrowing.

- Increasing the minimum depth of cover above the pipeline to 900mm, to enable pre-existing landholder activities, in particular agricultural activities such as ploughing, planting and harvesting to continue post construction;
- Alignment of the pipeline adjacent to land parcel and/or property boundaries whereever possible and in consultation with the landholder;
- Aligning the pipeline around the boundary of cropped areas or within areas of properties with less intensive agricultural activity;
- Placement of end of pipeline infrastructure adjacent to existing petroleum infrastructure;
- Alignment of the pipeline adjacent to existing pipeline infrastructure;
- Utilisation of existing disturbance/infrastructure for access tracks and laydown areas;
- Locating with the input of landholders any high point valves, low point drains, inspection pits or valves adjacent to property boundaries and access tracks and outside of cropped areas so that they do not have any impact on PALU on the property
- Prompt reinstatement of the ROW to enable cropping activities to reestablish post construction and continue during pipeline operation;
- Implementation of soil management measures as detailed in the following sections;
- Arrow willadopt a simultaneous operations approach where it is safe to do so so that agricultural activities in the balance of the paddock can be undertaken while construction is occurring;
- Arrow has previously provided heavy vehicle crossing points and if this is agreed to by the relevant landholder along the RoW, they will be installed in appropriate locations;
- The pipeline has been engineered such that a vehicle of 14 tonne axle weight can be driven over the top of it, thus enabling typical farm machinery (such as a John Deere Cotton Round Bale Picker) to continue operation post construction of the pipeline;
- Adopting appropriate weed management practices as described earlier in section 4.3.5.

Refer also to measures provided in Section 4.3.



5. Strategic Cropping Areas

5.1 Overview

SCAs consist of the areas shown on the strategic cropping land (SCL) trigger map as SCL. SCL is land that is, or is likely to be, highly suitable for cropping because of a combination of the land's soil, climate and landscape features.

5.2 Extent of SCL on Alignment

For purpose of application, Arrow accepts the extent of SCL as mapped. The extent of SCL on the proposed alignment has been illustrated on Figure 1-1 and summarised in Table 5-1.

5.3 Nature of Surface Impacts

The nature of surface impact to SCL on parcels subject to this application will involve disturbance of up 47.4 ha (Lots combined) to the existing land use, consisting of up to 11.5 km of pipeline construction RoW, extra work area and access on SCL. The location of impact on each land parcel is illustrated in Appendix 2 and scale of impact on SCL detailed in Table 5-1 including construction impact and surface impact during operations (includes area of surface infrastructure including drains and vents).





Table 5-1 – Scale of Impact to SCA

Parcel	Parcel Size (Ha)	Area SCL on parcel (Ha)	Surface Disturbance (Ha) during Construction	Surface Impact (Ha) during operations	% Impact on SCL - construction	% Impact on SCL during operations
2DER3455	268.2	239.2	5.1	0.002	2.13%	0.001%
2RP210387	132.7	126.2	7.5	0.007	5.94%	0.006%
1RP181072	436.7	183.2	0.8	0.005	0.44%	0.003%
2RP181072	328.0	287.1	3.6	0.002	1.25%	0.001%
3RP181072	465.5	448.4	16.5	0.002	3.68%	0.000%
46DER34223	129.6	126.5	6.7	0.003	5.30%	0.002%
49DER34223	125.7	125.7	1.7	0.005	1.35%	0.004%
50DY39	127.0	126.0	3.1	0.002	2.46%	0.002%
2RP71519	93.3	93.3	2.4	0	2.57%	0.000%



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Following completion of the construction and reinstatement phases of the pipeline, normal agricultural activities will recommence, with existing agricultural activities, including cropping activities, able to re-establish over the pipeline. The minimum depth of cover for the pipeline will be 900mm which is considered sufficient to enable existing cropping activities to occur post construction. Activities requiring excavation or establishment of permanent infrastructure are restricted above the pipelines.

The activity will not result in a material or significant impact on SCL on the property or on the SCL in the area due to the implementation of mitigation measures (refer to Section 4.4 as applied to PAA and Section 7) and the small percentage of sort term construction disturbance comparable to the mapped SCL of impacted properties (refer to Table 5-1). Through implementation of these measures, the land can be restored to pre-existing land condition and pre-existing land use.

A soils assessment of the land associated with the Project has been undertaken and is documented within the AECOM LPH Soil Assessment Report which accompanies this application (Appendix 7). This report provides a characterisation of the current condition of the land and soils, evaluation of the potential impact of the proposed activity on SCL and recommendations in regards to management measures to minimise any predicted impacts to SCL.

In addition, Arrow will work closely with individual landholders to ensure that proposed measures are compatible with existing land management practices on the property. Adjustments to mitigation measures may be made (e.g. stripping depth, amelioration rates, fertiliser type and rates) based on feedback from landholders.



6. Landholder Consultation

6.1.1 Consultation Process

Consultation with both private and public landowners has commenced and will continue throughout the duration of the project. The owners of the land traversed by the pipeline alignment have been identified and the land parcels intersected by the current alignment, where mapped PAA and SCA will be impacted, are listed in Section 1.5 of this report.

Arrow is seeking voluntary agreements with each landholder along the alignment and will seek to amend this application should all agreements be obtained by providing additional notice to the Department of State Development, Infrastructure, Local Government and Planning (DSDILGP) of these agreements, and request that the relevant land parcels be removed from the scope of this application. Arrow's land access process involves four steps which are included in Table 6-1.

Step	Activities
Area Wide Planning (AWP)	 First landholder engagement including discussion of proposal and identification of areas of concern Concept layout Site scouting Issued For Site Assessment (IFSA) GIS layer
Site Assessment	 Subject Matter Experts review IFSA GIS layer to identify required agreements Site assessment including review and assessment of concerns raised by landholder Released From Survey (RFS) GIS layer
Drafting and presenting Conduct and Compensation Agreements (CCAs)	 RFS GIS layer reviewed, scope is locked, budget approved - termed Final Layout Approval (FLA) Drafting of CCA/AA Presenting CCA/AA to landholder including proposed measures to address concerns raised
Negotiating and executing CCAs	 Negotiating on measures to address any outstanding concerns Negotiations to settle terms and conditions and compensation amount Execution (signing) of CCA/AA by landholder and Arrow

Table 6-1 – /	Arrow Energy	Access	Process
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The strategy to engage with landholders is as follows:

Land Liaison Officer's (LLO) contact each landholder directly and then meet with them to describe the project. During intital discussions, all property constraints are discussed and captured on a map. A landholder questionnaire is used to capture additional information about the property. If it's considered appropriate, conceptual maps of Arrow's proposed development may be provided during this meeting.

Questions raised by the landholder are answered by the LLO either by phone or email-depending on the nature of the question and detail required. All intereactions are captured in file notes.

During initial scouting (which the landholder is encouraged to attend) the field design is established. If the property being scouted is used for cropping activities, then further consideration is given to the placement of infrastructure with regard to their farming operation ie HPV / LPD locations, placement and orientation of well pads to align with A-B Farming tracks, access tracks, pipelines (including placement of pipelines within the ROW).

This information is then surveyed and the results are included in a sketch map which is presented back to the LH to confirm the accuracy of the survey.

Arrow provides landholders with a minimum of 20 business days up to 140 business days to consider the sketch map and provide feedback. The timing allowed for this step is dependent on the proposed development and the complexity. Arrow always respond to any concerns about the proposed development or other issues identified by the landholder.

Arrow will negotiate in good faith with landholders and aim to reach voluntary agreement. This means that each of our engagements with landholders and their legal representatives are to be undertaken in a manner that:

- demonstrates respect
- demonstrates open and transparent dialogue
- adopts the technique of active listening
- is empathetic to grievances/complaints and seeks to resolve disputes in a timely manner
- provides transparency of our proposed activities and potential impacts
- allows sufficient time to negotiate and reach agreement (e.g. recognising that an agreement will not be resolved in a single or even a few meetings)
- Seeks to be as efficient as possible in the use of time and provides an acceptable outcome for both parties.

Several CCAs with landholders along the alignment have already been secured. These agreements are identified in Table 1-4.

6.2 Status of Consultation

A summary of the progress of consultation with landholders subject to this application is provided in Appendix 9. This Appendix is considered confidential and not subject to public release.



7. Management of Mitigation Measures

7.1 Route Selection & Assessment of Alternates

The initial stages of route selection for the LPH involved a desktop assessment of topographical and ecological mapping, preliminary landholder discussions and field scouting where access to the alignment was available.

Arrow commenced investigation of the pipeline alignment in 2018, which has involved:

- Site scouting activities;
- Ecological and cultural heritage desktop analyses;
- Ecological field assessments;
- Engineering and constructability assessments;
- Desktop soil assessment;
- Detailed landholder discussions; and
- Cultural heritage field assessments.

The current alignment has taken into account the competing interests of stakeholders, environmental and cultural values, cropping land and landholders whilst selecting a route that is feasible, safe and cost-effective. Engineering, constructability, environment, cultural heritage, overlapping tenure holders and landholders have all been considered during the route selection process.

As with most pipelines, the design and construction of the LPH will be focused on minimising impacts to land by locating the alignment along fence lines and roadways (refer to Appendix 2).

Where this is not possible, sections of the alignment has been located to try and minimize impacts as much as practicable and will be constructed on the edges of paddocks where possible (refer to Appendix 2, which contains a summary of property specific constraints impacting on the alignment on the land parcels).

Further minor refinements to the alignment may be required in response to design and engineering work and negotiations with landholders. Any proposed refinements that may arise will be subject to internal Arrow assessment processes.

Alternative routes were considered during the selection of the current proposed alignment of the LPH. The current alignment was preferred for a number of reasons including (refer to Figure 1-1 & Figure 1-2):

- The pipeline is a relatively direct route between the two facilities being the existing Tipton compression infrastructure and the future IPF at David;
- The pipeline was able to be located on existing Arrow petroleum authorities with no requirement for additional petroleum authority or environmental approvals;
- The pipeline also functions as Arrow's gathering pipelines therefore reducing cumulative impacts (refer to Appendix 2);



- The pipeline will be located amongst existing and future Arrow CSG wells and will make use of existing and future access tracks;
- The alignment avoids the Lake Broadwater Conservation Park which is a Category A Environmentally Sensitive Area; and
- An alignment further to the west would have had multiple interactions with other proponent's existing CSG wells and gathering infrastructure and would not have been viable because of the significant amount of existing infrastrucuture the pipeline would need to cross below.

7.2 Biosecurity Measures

Arrow is aware of the potential impact of the introduction of weeds and/or pathogens on land holdings as a result of their activities and have existing procedures in place to manage this such as Arrow's Biosecurity Guideline (ORG-ARW-HSM-GUI-00123). Comprehensive biosecurity measures will be introduced for the LPH and will include:

- Discussion of property specific biosecurity requirements with landholders;
- Preconstruction weed survey and removal where required;
- Establishment of approved access to the ROW;
- Wash down of vehicles and equipment prior to arrival on site & maintenance of 'clean' status;
- Brush down / clean down of equipment between properties to prevent the transfer of soil or pathogens between properties;
- Pre & post construction monitoring and control as required.

7.3 Reinstatement and rehabilitation

Reinstatement and rehabilitation measures will be applied to all areas disturbed during construction as soon as practical following the completion of the construction of authorised petroleum activities.

All reinstatement and rehabilitation will be carried out in accordance with the Environmental Authority requirements. Generally, this will include:

- Stockpiling of grasses, woody vegetation after clearing and prior to construction;
- Segregation of topsoil to ensure topsoil integrity when soil clearing is required as part of construction;
- Reinstatement of the land contours/land surface and drainage;



- Reinstatement of topsoils;
- Utilisation of soil ameliorants such as gypsum, fertiliser & organic matter;
- Implementation of stabilisation measures (which may include reseeding for local grass specifies if applicable).

Measures outlined in Section 6 of the LPH Soil Assessment Report (refer to Appendix 7) will also be implemented. Note, this report presently only contains the results of the Desktop Assessment. Further field assessment is progressing and mitigation measures will be revised (as required) based on the results of the field assessment.

The construction footprint of the land will be returned to its previous general state and use once construction is completed and rehabilitation is undertaken leaving only the operational footprint and, the land will be visually consistent with the surrounding land features. Periodic monitoring will be undertaken to ensure integrity of the rehabilitation.

Detailed erosion and sediment control measures will also be implemented and maintained consistent with the Environmental Authority during construction, and as required following construction.

Other reinstatement activities will include:

- Removal of any foreign construction material and waste;
- Restoration of fencing as required.

7.3.1 Rehabilitation from construction to operational footprint

To create a stable landform after pipelines are lowered in, the pipeline trenches are backfilled and compacted to the requirements of Australian Standard AS/NZS 2566 Buried Flexible Pipelines Part 1: Structural Design.

Compaction and testing of embedment / backfill in trenches and bell holes is completed to AS/NZS 2566 Buried Flexible Pipelines Part 2: Installation.

These requirements are specified for in the Arrow Specification for PE Gathering Systems (ORG-ARW-PPL-SPR-00005).

An extract of the backfill and compaction specification that Arrow mandates to contractors is provided in the below.



Table 7-1 – Backfill Grading

Description of Backfill Layer Material	Maximum Particle Size in any Dimension (Grading)
Around the pipe, and to 150 mm above pipe	Embedment material as specified in AS/NZS 2566.1
From 150 mm above pipe, to 300mm below natural surface	Rock -150 mm Clay- 150 mm
From 300mm below natural surface to underside level of topsoil or seed stock layer	Soft spoil to 80mm
Stored topsoil spread over finished surface	N/A

Table 7-2 – Minimum Relative Compaction (Note1)

0	-	Trafficable Areas		Non-Trafficable Areas	
Soil type	Test Method	Embedment Material %	Embedment Material %	Trench /Embankment Fill Material %	Trench /Embankment Fill Material %
Cohessionless	Density Index AS1289.5.6.1	70	70	60	60
Cohesive	Standard Dry Density Ratio AS1289.5.4.1	95	95	90	90

Note 1: Source: AS2566.2:2002 Table 5.5

The embedment material surrounding the pipe, and up to 150mm above the pipe, is screened so that the max particle size less than 20mm.

The Arrow gathering pipeline specification (ORG-ARW-PPL-SPR-00005_3.0_Specification for PE Gathering Systems) requires a minimum 90% standard dry density (SDDR) ratio in non-trafficable areas, and 95% in trafficable areas, tested to Aust Standard 1289.5.4.1.

90% SDDR refers to well compacted soil, which has been compacted mechanically, i.e. using a compaction roller on an excavator or similar. As an example of what 90% compaction feels like, if you press your thumb down as hard as you can on the surface there will be a slight indentation.

Trench compaction testing frequency is per below:

- Compact in 300 mm Layers (measured loose/unconsolidated).
- One test in the embedment zone every 250 m.



• One test in the backfill zone every 250 m - tests shall be conducted in alternate layers at locations nominated by the Principals Representative.

The installation contractor is required to comply with these compaction values and is required to provide compaction test reports from an accredited soil testing company, to verify that adequate compaction has been achieved. This process minimises the risk of localised subsidence over the pipeline.

Minimising subsidence post construction is controlled by strict adherence to the compaction specification described above. Compaction test records provided by the construction contractor are checked and verified by Arrow Energy.

The subsoil in the trenches is mechanically compacted (as described above) however the topsoil layer is not compacted. Once reinstatement of the ROW is completed, the landholder is able to resume cropping on the ROW.

7.4 Operational activities

Other ongoing activities will be required to be undertaken by the Tenement Holder to support the operation of the pipeline, including:

- Monitoring and maintenance associated with the above ground infrastructure
- Regular inspections to ascertain whether there are weeds and pests requiring management on the RoW and immediately surrounding areas and the most appropriate method of management given the surrounding activities (e.g. use of a pesticide or herbicide which will not negatively impact on any surrounding crops or cattle grazing or farm biosecurity requirements);
- Weed and pest management in accordance with the Environmental Authority, the *Biosecurity Act 2014*, the *Local Government Act 2009* and the Land Access Code 2016;
- Regular inspections for any erosion or subsidence along the RoW and its immediate surrounds, and the most appropriate method of management and mitigation;
- Regular inspections to ascertain whether the area used for construction has been successfully rehabilitated with an establishment of appropriate ground cover (as the case may be) and the soil has stabilised adequately and, if not, what further management actions are required.

Access to the site for operations and maintenance will be undertaken according to the Land Access Code (September 2016) and the requirements of the relevant legislation.

Generally, works will temporarily cease during wet weather to minimise impacts to the land and soil erosion.



In accordance with the co-existence commitments, operational activities will be undertaken in consultation with the Landholder and Occupier in in a manner (timing) to minimise impacts on the Land.

Given that the pipeline will be buried, land users are able to resume previous land use activities on top of the pipeline provided that the use does not include excavation activities. Whilst deep-rooted vegetation cannot be re-established directly across the pipeline, shallow root cropping and grassland reestablishment is encouraged and no long-term impacts would be expected to such areas.

7.5 Decommissioning

7.5.1 Decommissioning of the infrastructure

At the conclusion of the activity, the pipeline will be decommissioned. This involves:

- Purging the pipeline by filling it with water;
- Removal of all surface infrastructures;
- Leaving buried infrastructure in place; andLandholder endorsement of rehabilitated locations.

7.5.2 Final rehabilitation from operational footprint

The rehabilitation involves:

Rehabilitation Action	Description
Soil Assessment	Assessment of the soil type at the site and the risks of impacts of the proposed rehabilitation activities in accordance with Arrow's Land Disturbance Procedure. A plan of rehabilitation is then developed to support the return of the site to the surrounding land use.
Soil compaction	Where soil is likely to have become compacted the soil will be treated (i.e. deep ripped) to alleviate the compaction. This will occur prior to reshaping the upper layers of the soil stratum.
Sodic soil amelioration	When sodic soil is encountered it will be blended with an appropriate soil ameliorant (i.e. gypsum or a calcium based ameliorant) during rehabilitation to reduce depressiveness. Topsoil will then be placed above the sodic soils.
Topsoil management	Topsoil which was stripped and stored as part of the construction activities will be re-spread as part of the stabilisation and rehabilitation activities. Correctly preserved topsoil can assist greatly with establishment of vegetation. Where necessary, the topsoil will be



	ameliorated with gypsum, lime or organic mulch to improve soil structure, infiltration and soil aeration which in turn promotes vegetation establishment.
Establishment of vegetation	The surface of the land will be returned to its former use, or a use consistent with its former use and current surrounding land uses as identified in the initial rehabilitation assessment. Where the area is to be established for grazing this will involve reseeding with a seed mix complementary to the surrounding grasses, application of fertiliser if required and stock proof fencing of the area if required to protect the establishing vegetation.



8. Public Notification

The Land is not mapped as Priority Living Area (PLA). Accordingly this assessment application does not meet the definition of a notifiable application pursuant to Section 34(2) of the RPI Act or section 13 of the *Regional Planning Interests Regulation 2014*.

Arrow has also undertaken consultation with the relevant landholders as part of an Area-Wide planning process and negotiations related to the LPH. Pursuant to s35(1)(b) of the Act, if the application is to be notified, Arrow will provide a copy of the notice to each impacted landholder along the alignment where there is no voluntary agreement in place and therefore exemptions under the Act do not apply. Regardless if it is determined that notification is required or not, a copy of the full application will be provided to each landholder.



9. Financial Assurance

Arrow is required to provide estimated rehabilitation costs (ERC) for the LPH prior to any disturbance as per the conditions of the relevant EAs which authorise activities on the petroleum authorities where the LPH will be situated. This ERC provides for the rehabilitation of land back to its original landform.



10. Assessment Application Fees

This assessment application is accompanied by the fee prescribed under the RPI Regulation 2014.

Schedule 4 of the RPI Regulation provides a definition of the expected area of impact for an assessment application, which means the area in which:

- The activity is proposed to be carried out; and
- Carrying out the activity is likely to have an impact

Given the authorised petroleum activities and the expected area of impact (54.4 ha on PAA and 47.4 ha on SCA) on land parcels subject to this application, the following assessment application fees have been calculated and were paid on 8 April 2021 (Reference number RPI21/025).

Area of Regional Interest	Nature of assessment application	Fee
Priority Agricultural Area	For an assessment application with an expected area of impact of 30 hectares or more, but less than 100 hectares	\$13,490.00
Strategic Cropping Area	For an assessment application with an expected area of impact of 30 hectares or more, but less than 100 hectares	\$13,490.00
Total		\$26,980.00



11. Required Outcome Assessment

11.1 Priority Agricultural Area

The PAA Assessment Criteria provides a required outcome for activities in PAAs that deals with impacts on a property level and a regional level. As the authorised petroleum activities are situated on more than two lots across the region, impacts on a regional level (Required Outcome 2) apply for the purposes of this assessment application.

Schedule 2, Part 2 of the RPI Regulation set out the Required Outcomes and prescribed solutions for activities carried out in a PAA. Please refer to Table 11-1for evidence associated with the prescribed solution of Required Outcome 1 and refer to for evidence associated with the prescribed solution of Required Outcome 2.

Table 11-1 - PAA Assessment Criteria – Required Outcome 1

Required Outcome 1 - Managing impacts on use of property for priority agricultural land use in a priority agricultural area

This section applies if the activity is to be carried out on a property in a priority agricultural area.

The activity will be carried out on a property in a priority agricultural area and will not result in a material impact on the use of the property for a priority

Prescribed Solution	Evidence/Response
(1) Subsections (2) and (3) each state a outcome 1.	prescribed solution for required
PS (2) The application demonstrates the activity will not be located on land that is used for a priority land use.	As demonstrated in Section 4.2. the proposed activity will not be located on land that is used for a priority land use on the following land parcels:
	• 27SP253612; and
	• 2DER3455.
1	



PS (3) The application demonstrates all	The applicant is not the owner of
of the following	land. A summary of landholder
 i. If the applicant is not the owner of the land and has not entered into a voluntary agreement with the owner: a. The applicant has taken all reasonable steps to consult and negotiate with the owner about the expected impact of carrying out the activity on each priority agricultural land use for which the land is used; and 	and. A summary of fandholder consultation undertaken is provided in Section 6. Voluntary agreements and CCA's reached with landholders are summarised in to Table 1-4



ii. Carrying out the activity on the	Carrying out the activity will not result
property will not result in a loss of	in the loss of more than 2% of both
more than 2% of both:	the land on the property used for
a. The land on the property used for	PALU and the productive capacity of
a priority agricultural land use; and	PALU on the property as :
b. The productive capacity of any	
priority agricultural land use on the property	 The surface impact due to the construction of the LPH is short term and temporary. The PALU will be able to recommence upon completion of constructon and will not be impacted by operational activities; The impact to the productive capacity of PALU will be limited to the area of disturbance and implementation of proposed mititagion measures will ensure the capacity is return
	condition.
	The area of temporary disturbance and the % impact for each property is summarised in Table 4-2 and demonstrates that less than 2% of each property will be impacted during operations by the LPH.
	Refer to Section 4.3 for additional details.
	One of Arrow's key Co-existence commitments (refer to Section 1.6.2) is to minimise it's operational footprint to less than 2% of the total Intensively Farmed Land area such as the land holdings along the LPH alignment.



iii.	the activity cannot be carried out	The LPH alignment has been
	on other land that is not used for a	selected to minimise impacts to
	priority agricultural land use,	PALU as much as practicable
	including for example, land	including locating the pipeline along
	elsewhere on the property, on an	fencelines and roads and across
	adjacent property or at another	non-productive areas of land where
	nearby location;	possible. Following landholder
		discussion, a section of the alignment
		was moved further to the east to run
		alongside Duleen Kupunn Road.
		This realignment avoided impacts to
		several properties and also reduced
		the overall length of the pipeline.
		Further discussion about the
		selection of the alignment is
		presented in Section 7 and specific
		land parcels constraints influencing
		the location of the alignment is
		presented in Appendix 2. Land that
		is not being used for PALU has been
		selected as much as possible,
		however the majority of the area is
		intensively farmed and therefore
		some PALU is unavoidable. The
		activity cannot be carried out on
		other land as evidenced by the need
		to transport gas and water from
		existing and future wells to existing
		facilities located at either end of the
		proposed LPH alignment. The use of
		these existing facilities greatly
		reduces the impacts from avoiding
		having to construct new facilities.



iv.	the construction and operation footprint of the activity on the part of the property used for a priority agricultural land use is minimised to the greatest extent possible	The proposed area of construction of the LPH has been selected to have minimal impact where possible (refer to Section 3.3 and property maps in Appendix 2). The following mitigation
		measures will be employed to avoid and minimise impacts as much as practicable during construction and operation of the LPH:
		 Minimise the disturbance footprint and vegetation clearing
		 Use existing roads and tracks, where practicable
		• Reduce the width of construction ROW within areas of sensitivity to the greatest extent practicable without compromising the safety of workers
		 Ensure construction activities do not extend beyond the work site boundaries
		 Mark site boundaries clearly for site-specific sensitive areas that require avoidance



V.	the activity will not constrain, restrict or prevent the ongoing conduct on the property of a priority agricultural land use, including, for example, everyday farm practices and an activity or infrastructure essential to the operation of a priority agricultural land use on the property	As outlined in Secton 4.3, the proposed activity will have a temporary impact on the operation of PALU associated with construction area, which will be able to recommence following construction. To this extent, the design and location of infrastructure minimises the impacts on the agricultural use of the Land.
		As evidenced by Section 4.3 the authorised petroleum activity will not constrain, restrict or prevent the ongoing use of the balance of the Land for agricultural activities.
vi.	the activity is not likely to have a significant impact on the priority agricultural area	Due to the nature, duration and limited extent of the expected area of impact of the authorised petroleum activities, there will not be significant impact on the use of the Land for agricultural purposes. The impacts on PALU will be temporary and the mitigation measure to be implemented will ensure that the producitve capacityof the land impacted by construction will be returned to pre-construction condition. Refer to Sections 4.3 and 7 for additional informaton



vii.	the activity is not likely to have an	The authorised petroleum activities,
	impact on land owned by a person	due to the nature and extent of the
	other than the applicant or the	expected area of impact, will not
	land owner mentioned in	have an impact upon other
	paragraph (a).	landowners or neighbours along the
		RoW.
		Further, the location of infrastructure, construction methods and rehabilitation has taken into
		on water overland flow. No additional impacts is expected from the proposed
		development and therefore no impacts on other landowners or
		neighbours should be expected from overland flow.

Table 11-2 PAA Assessment Criteria – Required Outcome 2

Required Outcome 2 - managing impacts on a region in relation to use of an area in the region for a priority agricultural land use

The activity will be carried out on out on 2 or more properties in a priority agricultural area in a region.

The activity will not result in a material impact on the region because of the activity's impact on the use of land in the priority agricultural area for 1 or more priority agricultural land uses.

Prescribed Solution	Evidence/Response
The application demonstrates all of the fol	lowing



(1)	(a) if the activity is to be carried out in a priority agricultural area	The PAA	Darling Downs Regional Plan co-existence criteria enable
	identified in a regional plan—the	com	patible resource activities to co-
	activity will contribute to the regional		within PAAs. This will in turn
	the regional policies stated in the	maxi	imise opportunities for economic
	regional plan	grow	th to ensure that the Darling
	. • 9.• · · · · · · · · · · · · · · · · · · ·	Dow	ns remains a resilient, diversified
		and	prosperous region.
		The inclu are s	key drivers for preparing the plan ded the following factors which supported by Arrow's SGP and
		gas :	and water to existing facilities
		and	provide economic and
		emp	loyment outcomes for the region
		the a	agricultural users of the area:
		• €	enable opportunities for economic
		r	esilient and prosperous
		• p	protect areas of regionally
		S f	significant agricultural production
		a	activities while maximising
		r L	esource and agricultural land uses
		• •	afeguard the areas required for
		t	he growth of towns
		• 0	rive the region's economic
		C	diversity and opportunity
		• i	dentify infrastructure outcomes
		t	hat will support economic growth
		Furth	ner, the proposed construction
		and	operation of the LPH is
		cons whic	bistent with Regional policy 2
		WING	11 IO IO.
		Max	imise opportunities for co-



	existence of resource and agricultural land uses within Priority Agricultural Areas.
(b) the activity can not be carried out on other land in the region that is not used for a priority agricultural land use, including, for example, land elsewhere on a property, on an adjacent property or at another nearby location	The LPH will feed gas and water from existing and future wells located near the existing Tipton facility and from the Tipton facility itself, to QGC's existing facility at David. The current alignment provides for the least impacts to landholders in the region and reduces the operational footprint as much as possible. Information about the selection of the alignment is provided in Section 7.1. Further, by utilising these existing assets, reduces the need for multiple new large facilities to be constructed in these areas and region. The alignment has been located on non-PALU land on Lots 27SP253612 and 2DER3455. Where PALU canont be avoided, the LPH alignment has been selected to minimise impacts to PALU as much as practicable including locating the pipeline along fencelines and roads and across non-productive areas of land where possible (refer to Appendix 2). There are no alternatives which would reduce impacts to the area any further than
	the current design will allow.



(c)	the construction and operation footprint of the activity on the area in the region used for a priority agricultural land use is minimised to the greatest extent possible	The proposed area of construction of the LPH has been selected to minimise the impact on land used for PALU thorugh route selection (refer to Section 7.1) and minimisation of disturbance on impacted properties (refer to Section 3.3 and property maps in Appendix 2). The following mitigation measures will be omployed
		to avoid and minimise impacts as much as practicable during construction and operation of the LPH:
		 Minimise the disturbance footprint and vegetation clearing
		 Use existing roads and tracks, where practicable
		 Reduce the width of construction ROW within areas of sensitivity to the greatest extent practicable without compromising the safety of workers
		 Ensure construction activities do not extend beyond the work site boundaries
		 Mark site boundaries clearly for site-specific sensitive areas that require avoidance



(d)	the activity will not result in	Arrow's first co-existence
	widespread or irreversible impacts	commitment states, no permanent
	on the future use of an area in the	alienation. Arrow is committed to co-
	region for 1 or more priority	existence with regional communities
	agricultural land uses	and in particular agricultural practices
		in the areas where it operates.
		As demonstrated throughout the
		application, the impact to PALU of
		the proposed LPH will be temporary,
		revsersible and limited to the land
		parcels on the alignment. Upon
		completion of construction, impacted
		PALU activites will be able to
		recommence and will not be
		impacted by operational activities.
		Arrow has constructed and operated
		multiple pipelines over the past 15
		years or more and is confident that
		the LPH will have no great impact on
		the area and certainly would not
		forsee any widespread or irreversible
		impact from its operation.
		····· ································



(e) the activity will not constrain, restrict	Arrow employs AWP to discuss its
or prevent the ongoing use of an	proposed development activities and
area in the region for 1 or more	to understand the operations, needs
priority agricultural land uses,	and requirements of an individual
including, for example, infrastructure	landholder. Information obtained
essential to the operation of a	during AWP and at shed meetings
priority agricultural land use	with local communities is used to
	best locate infrastructure to ensure
	impacts to the individuals and
	communities lifestyles, and
	employment and economic activities
	are minimised as much as possible.
	This is particularly so when co-
	required Details of existing forming
	practices machinery operation and
	future aspirations are key
	considerations to ensure co-
	existence but also for factors such as
	ensuring the safety of Arrow staff.
	contractors and personal but more
	importantly the safety and security of
	landholders, their families and their
	visitors as well as the local
	community.
(2) Subsection (3) applies if the activity	This is not relevant as the
is to be carried out in a priority	construction and operation of the
agricultural area that includes a	LPH, while authorised by existing
regionally significant water source	petroleum leases and petroleum
and—	pipeline licences, will not produce
	CSG water.
(a)if the activity is to be carried out	
under an authority to prospect or a	
petroleum lease under the Petroleum	
and Gas (Production and Safety) Act	
2004—the activity is likely to produce	
CSG water; or	
(b)if the activity is to be carried out	
under a mineral development licence or	
a mining lease under the <i>Mineral</i>	
<i>Resources Act 1989</i> —the activity is	
likely to produce associated water.	



(3) Also, the application must demonstrate the applicant 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.	It should be noted that the LPH will have no impact on the use and management of CSG water.
(4) For subsection (3), <i>net</i> <i>replenishment</i> of a regionally significant water source is the replacement to the water source, whether directly or indirectly, of all water that is no longer available for a priority agricultural land use in a priority agricultural area because carrying out a resource activity in the area produces CSG water or associated water.	
 (5) Subsection (6) applies for each property on which the activity is to be carried out if the applicant is not the owner of the land and has not entered into a voluntary agreement with the owner. (6) The application must demonstrate the matters listed in this schedule, section 3 for a prescribed solution for required outcome 1 for the property. 	Refer to Table 11-1 – PAA Assessment Criteria for Required Outcome 1.



11.2 Strategic Cropping Area

The SCA Assessment Criteria provides a required outcome for activities in SCAs that deals with impacts on Strategic Cropping Land (SCL). As the authorised petroleum activities are situated on an area of SCL and is being undertaken on more than two lots across the region, impacts on a regional level, Required Outcomes 1,2 and 3 apply for the purposes of this assessment application.

Schedule 2, Part 4 of the RPI Regulation set out the Required Outcomes and prescribed solutions for activities carried out in a SCA. Please refer to Table 11-3 for evidence associated with the prescribed solution of Required Outcome 1, Table 11-4 for evidence associated with the prescribed solution of Required Outcome 2 and refer to Table 11-5 for evidence associated with the prescribed solution of Required Solution of Required Outcome 5.

Table 11-3 - SCA Assessment Criteria – Required Outcome 1

Required Outcome 1 - managing impacts on strategic cropping land in the strategic cropping area		
Prescribed Solution	Evidence/Response	
The application demonstrates the	The construction and operation of the	
activity will not be carried out on	LPH will be carried out on SCL.	
strategic cropping land that meets the		
criteria stated in schedule 3, part 2		



Table 11-4 - SCA Assessment Criteria – Required Outcome 2

Required Outcome 2 - managing impacts on strategic cropping land in the strategic cropping area

(1) This section applies if the activity—

(a) does not meet required outcome 1; and

(b) is being carried out on a property (SCL) in the strategic cropping area.

(2) The activity will not result in a material impact on strategic cropping land on the property (SCL).

Prescribed Solution	Evidence/Response
The application demonstrates all of the fo	llowing
(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 strategic cropping land;	The applicant is not the owner of land. A summary of landholder consultation undertaken is provided in Section 6. Voluntary agreements and CCA's reached with landholders are summarised in Table 1-4 Arrow has already undertaken consultation with each relevant landholder along the proposed LPH alignment as part of an Area Wide Planning (AWP) process and as part of shed meetings and community consultation across the region
(b) the activity can not be carried out on land that is not strategic cropping land, including, for example, land elsewhere on the property (SCL), on adjacent land or at another nearby location;	As discussed in Section 7.1, the current alignment provides for the least impacts to landholders in the region and reduces the operational footprint as much as possible. The pipeline is aligned in a south- eaterly direction due to the location of the existing facilities and where the gas and water needs to be transported to and between. The vast majority of land between these two points is mapped as SCL and could not be avoided. Refer to Figure 1-1 and Figure 1-2.



		on each individual property by utilising boundaries and running in parallel with roads and fencelines where possible to try and minimise impacts to the landholder.
		The LPH cannot be entirely carried out on land that is not strategic cropping land due to the extent of SCL on the alignment and consideration of other constraints as detailed in Section 7.1 and Appendix 2.
(c)	the construction and operation footprint of the activity on strategic cropping land on the property (SCL) is minimised to the greatest extent possible;	The proposed area of construction of the LPH has been selected to have minimal impact where possible (refer to Section 3.3 and property maps in Appendix 2). The following mitigation measures will be employed to avoid and minimise impacts as much as practicable during construction and operation of the LPH:
		 Minimise the disturbance footprint and vegetation clearing
		 Use existing roads and tracks, where practicable
		• Reduce the width of construction ROW within areas of sensitivity to the greatest extent practicable without compromising the safety of workers
		 Ensure construction activities do not extend beyond the work site boundaries
		 Mark site boundaries clearly for site-specific sensitive areas that require avoidance



(d)	if the activity will have a permanent	Arrow co	onsideres that the carrying
	impact on strategic cropping land on	out the a	activity will not result in the a
	a property (SCL)—no more than 2%	permane	ent impact on SCL on a
	of the strategic cropping land on the	property	as:
	or the strategic cropping land on the property (SCL) will be impacted.	 I I C S I C V C I C I C I C I C C S S	The surface impact due to the construction of the LPH is short term and temporary. The pre-exisitng land use will be able to recommence upon completion of constructon and will not be impacted by operational activities; The impact to the productive capacity of the land will be imited to the area of disturbance and mplementation of proposed mititagion measures will ensure the capacity is return to the pre-construciton condition. Buried to a depth of at least 900 mm below surface to allow for most agricultural practices and use of
		The area and the property and den of each during o	a of temporary disturbance % impact on Sculfor each / is summarised in Table 5-1 nonstrates that less than 2% property will be impacted perations by the LPH.
			Section 5.3 for additional
		Lastly, c existenc Section operatio of the to area suc the LPH	one of Arrow's key Co- ce commitments (refer to 1.6.2) is to minimise it's anal footprint to less than 2% atal Intensively Farmed Land ch as the land holdings along alignment.



Table 11-5 - SCA Assessment Criteria – Required Outcome 3

Required Outcome 3 - managing impacts on strategic cropping land in the strategic cropping area

(1) This section applies if the activity—

(a) does not meet required outcome 1; or

(b) is being carried out on 2 or more properties (SCL) in the strategic cropping area.

(2) The activity will not result in a material impact on strategic cropping land in an area in the strategic cropping area.

Prescribed Solution	Evidence/Response			
The application demonstrates all of the following				
 (1) The application demonstrates all of the following— (a) the activity can not be carried out on other land in the area that is not strategic cropping land, including, for example, land elsewhere on the property (SCL), on adjacent land or at another nearby location; 	As discussed in Section 7.1, the current alignment provides for the least impacts to landholders in the region and reduces the operational footprint as much as possible. The pipeline is aligned in a south- eaterly direction due to the location of the of the existing facilities and where the gas and water needs to be transported to and between. The vast majority of land between these two points is mapped as SCL and could not be avoided. Refer to Figure 1-1 and Figure 1-2. Also, Arrow has located the alignment on each individual property by utilising boundaries and running in parallel with roads and fencelines where possible to try and minimise impacts to the landholder. The LPH cannot be entirely carried out on land that is not strategic cropping land due to the extent SCL on the alignment and consideration of other constraints as detailed in Section 7.1 and Appendix 2			
(b) if there is a regional plan for the area in which the activity is to be carried out—the activity will contribute to the regional outcomes, and be	The Darling Downs Regional Plan encourages co-existence between compatible resource activities with high-value agricultural land uses.			



consistent with the regional policies,	This will in turn maximise
stated in the regional plan;	opportunities for economic growth to
	ensure that the Darling Downs
	remains a resilient, diversified and
	prosperous region.
	The key drivers for preparing the plan
	included the following factors which
	are supported by Arrow's SGP and
	the proposed LPH which will deliver
	and provide economic and
	employment outcomes for the region
	while respecting and co-existing with
	the agricultural users of the area:
	 enable opportunities for economic
	growth to ensure our regions are
	resilient and prosperous
	 protect areas of regionally significant agricultural production
	from incompatible resource
	activities while maximising
	opportunities for co-existence of
	resource and agricultural land
	 safeguard the areas required for the growth of towns
	drive the region's economic
	diversity and opportunity
	 identify infrastructure outcomes
	that will support economic growth
	The proposed construction and
	operation of the LPH is consistent
	with Regional policy 2 which is to:
	 Maximise opportunities for co-
	existence of resource and
	agricultural land uses within
	Phority Agricultural Areas.



(c)	the construction and operation footprint of the activity on strategic cropping land is minimised to the greatest extent possible;		The proposed area of construction of the LPH has been selected to have minimal impact where possible (refer to Section 3.3 and property maps in Appendix 2). The following mitigation measures will be employed to avoid and minimise impacts as much as practicable during construction and operation of the LPH:
			 Minimise the disturbance footprint and vegetation clearing
			 Use existing roads and tracks, where practicable
			 Reduce the width of construction ROW within areas of sensitivity to the greatest extent practicable without compromising the safety of workers
			 Ensure construction activities do not extend beyond the work site boundaries
			 Mark site boundaries clearly for site-specific sensitive areas that require avoidance
(d)	aithar		Arrow's first co-existence
(u)	(i)	the activity will not have a	commitment states. No permanent
	(1)	permanent impact on the	alienation. Arrow is committed to co-
		strategic cropping land in the	existence with regional communities
		area; or	and in particular agricultural practices
	(ii)	the mitigation measures	in the areas where it operates.
		proposed to be carried out if	Arrow consideres that the carrving
		the chief executive decides to	out the activity will not result in the a
		grant the approval and	permanent impact on SCL on a
		impose an SCL mitigation	property as :
			The surface impact due to the
			construction of the LPH is
			short term and temporary.
			The pre-exisitng land use will
			be able to recommence upon


	 completion of constructon and will not be impacted by operational activities; The impact to the productive capacity of the land will be limited to the area of disturbance and implementation of proposed mititagion measures will ensure that the capacity is returned to the preconstruciton condition. Mitigation measures will be implemented to ensure that the productive capacity of the land is returned to its pre-existing conditon post construction (refer to Sections 5 and 7. Once the project concludes and the LPH is decommissioned, the land will be returned to its former use and rehabilitated to the same or similar condition as it was prior to the LPH being constructed, as per relevant conditions within Arrow's environmental approvals including each relevant environmental approvals including each relevant environmental approvals including
(2) Subsection (3) applies for each	authority. Arrow intends to negotiate voluntary
 property (SCL) on which the activity is to be carried out if the applicant is not the owner of the land and has not entered into a voluntary agreement with the owner. (3) The application must demonstrate the matters listed in this schedule, section 11 for a prescribed solution for required outcome 2 for the property (SCL). 	CCAs with each landholder along the alignment for the proposed LPH and has already successfully negotiated several CCAs with landholders along the alignment.



(4)	Refer to Table 11-4 – SCA
	Assessment Criteria for Required
	Outcome 2.
1	



12. References

Environmental Impact Statement (EIS) Assessment Report under the Environmental Protection Act 1994, Surat Gas Project

Code of Environmental Practice Onshore Pipelines, Australian Pipeline Industry Association, June 2013

RPI Act Statutory Guideline (11/16), specifically guidelines 2, 3, 6 and 7, Department of State Development, Infrastructure, Local Government and Planning, 2014



13. Definitions

Definitions of terms used in this standard:

Term	Definition
LPH	Surat Low Pressure Header pipelines
Arrow	Arrow Energy Pty Ltd
AS	Australian standard
BUN	Beneficial Use Network
CSG	Coal seam gas
DSDILGP	Department of State Development, Infrastructure, Local Government and Planning (
DoE	Department of Environment (Commonwealth)
EA	Environmental Authority
EIS	Environmental impact statement
EMP	Environmental management plan
EPBC Act	Commonwealth Environmental Protection and Biodiversity Conservation Act 1994
EP Act	Environmental Protection Act 1994
PPL	Petroleum pipeline licence
RIDA	Regional interests development application
ROW	Right of way

