Application for Pipeline Licence

Pipelines Act 2005 – Sections 28, 29 and 30
Pipelines Regulations 2017 – Regulation 8

1.	**Application Reference (PLXX)**		**PL007732**
	Applicant details		
	Name and registered address		**ABN/ACN/ARBN**
	Lochard Energy (Iona Operations) Pty Ltd Level 10, 2 Southbank Boulevard, Southbank VIC 3006, Australia		ACN 608 441 729
	Phone	**Fax**	**E-mail**
	1800 848 879	-	Hugs.project@lochardenergy.com.au

2.	**Application contact person name and address (lead person managing process)**		
	Susie Bartlett, Stakeholder and Approvals Manager Level 10, 2 Southbank Boulevard, Southbank VIC 3006, Australia		
	Phone	**Fax**	**Email**
	1800 848 879	-	Susie.bartlett@lochardenergy.com.au

3.	**Describe what the proposed pipeline will be used for, and the product conveyed.**
	Lochard Energy (Iona Operations) Pty Ltd (Lochard Energy) is proposing to construct and operate a new pipeline near the towns of Timboon and Port Campbell in western Victoria. The pipeline is part of the Heytesbury Underground Gas Storage (HUGS) Project and is therefore referred to as the HUGS Pipeline. This application for a Pipeline Licence pursuant to the Pipelines Act 2005 (Vic) (Pipelines Act) and the Pipelines Regulations 2017 (Vic) is for the construction and operation of the HUGS Pipeline, a 5.3 km high pressure 300mm diameter gas pipeline between the North Paaratte Production Station (NPPS) and the Mylor, Fenton Creek and Tregony (MFCT) wellsite. The proposed pipeline is bi-directional and will allow for natural gas or hydrogen, or a blend of both to be transported to the wellsite for injection for gas storage, and then from the wellsite to the Iona Gas Storage Facility (IGSF) for reprocessing and export.

	The HUGS Project will develop a new wellsite which has potential to access three underground depleted natural gas fields being Mylor, Fenton Creek, and Tregony (referred to as the MFCT wellsite). The Mylor field base case storage capacity of 1.8PJ (Petajoules) has been assessed using a history-matched dynamic simulation model, with two planned drill wells. The Mylor capacity is also benchmarked against other Onshore Otway Basin storage reservoirs as analogues. The HUGS Project will increase the Iona Gas Storage Facility's (IGSF) export rate from 570TJ/d (Terajoules per day) to 615TJ/d. The HUGS Pipeline will connect the MFCT wellsite into Lochard Energy's North Paaratte Production Station (NPPS) - Iona DN300 gathering line (this existing gathering line provides a connection to Lochard Energy's IGSF). The HUGS Pipeline will also have a small off-take to connect to the existing North Paaratte wellsite (NP-4/5). See Figure 1 for an overview of the HUGS Pipeline and locations. The HUGS Pipeline trench will also incorporate a buried 2-inch diameter (DN50) pipeline that will be used to supply mono-ethylene glycol (MEG) at each wellhead to prevent hydrates and prevent pipeline internal corrosion. A fibre optic cable will also be buried in the pipeline trench to a provide a communication link to monitor and control the MFCT wellsite wellheads and the HUGS Pipeline operation. In recognition of the likely future role of hydrogen in the energy transition, Lochard Energy is pre-investing in hydrogen infrastructure installed by the HUGS Project.

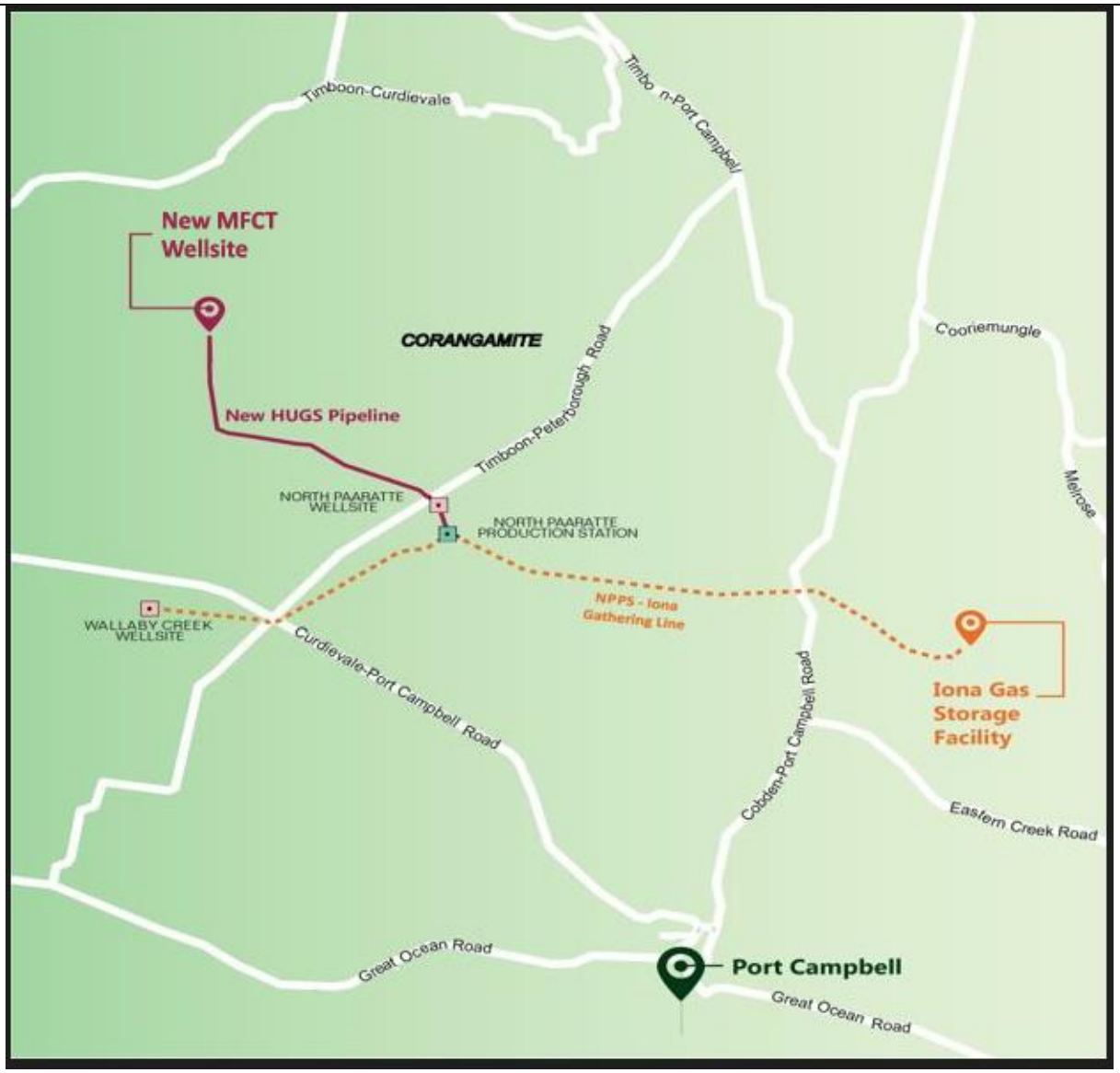

Figure 1 - HUGS Pipeline location and Lochard Energy's existing gathering line and IGSF

Applicant

Lochard Energy (Iona Operations) Pty Ltd are energy storage specialists who own and operate the IGSF near Port Campbell, Victoria and have headquarters in Southbank (Melbourne), Victoria.

Lochard Energy is the largest independent provider of gas storage services to the Australian east-coast gas market, enabling seasonal and peak energy demand periods to be met across Victoria.

This demand is based on the IGSF supplying the Victoria DTS (Declared Transmission System) with an export rate of 570 TJ/d.

Lochard Energy is majority owned by Australian superannuation funds and our investment managers currently manage a combined portfolio of more than AUD$150bn.

Lochard Energy supports Australia's net zero emissions targets and is committed to supporting the transition towards a more sustainable energy future.

Operational Arrangements

Lochard Energy is acting, in respect of the HUGS Project and HUGS Pipeline, in its capacity as trustee of the Lochard Energy (Iona Operations) Trust ABN 25 151 811 449.

The Iona Gas Storage Facility (IGSF)

The Iona Gas Field was first discovered in 1988 and subsequently drilled for natural gas before being converted into a gas storage facility in 1998 and the IGSF was officially commissioned for commercial operations in July 1999.

The IGSF is a gas processing and compression facility connected to a series of underground gas storage reservoirs (depleted gas fields). Iona currently comprises the following infrastructure:

- Iona gas conditioning and gas compression facility and associated wells;
- Wellsite's at North Paaratte and Wallaby Creek and a Gathering Line hub at North Paaratte Production Station (NPPS);
- A Gathering Line network comprising:
  - DN300 NPPS – Iona Gathering Line;
  - DN300 Wallaby Creek wellsite - NPPS Gathering Line; and
  - DN150 North Paaratte wellsite - NPPS Gathering Line.

4.	**Describe the proposed pipeline corridor and proposed route of the pipeline including:** • **Commencement and termination points of the proposed pipeline corridor and the proposed route of the pipeline.** • **Length of the proposed pipeline route, the nominal diameter of pipeline, depth of cover and the number of pipelines proposed.** • **Maximum allowable operating pressure of the proposed pipeline.** • **Map book of proposed corridor and route to be attached.**

The pipeline corridor refers to the area of land within which the pipeline is proposed to be constructed. The nominated pipeline corridor in this application includes all required land for the construction, commissioning and reinstatement of the pipeline.

The HUGS Pipeline route is the alignment taken by the pipeline itself. Sections 10 and 11 of this application set out the alternative pipeline routes considered and describes the process undertaken to refine the pipeline route.

The Pipeline Corridor (yellow) and Pipeline Route (red) are mapped in Figure 2 (please also refer to Att A Part 1 for a larger version). Please refer to Att B for a map book of the proposed pipeline corridor and pipeline route of the HUGS Pipeline.

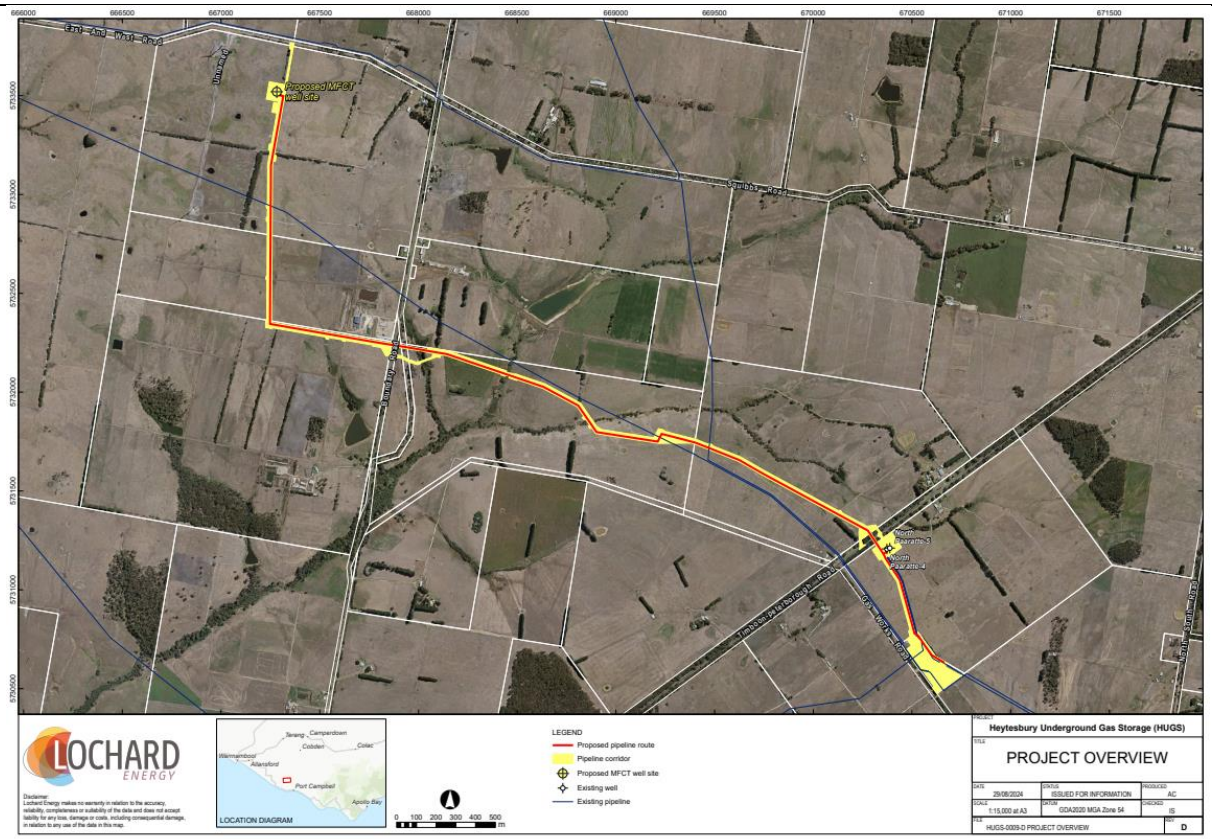

Figure 2 – HUGS Pipeline Project Corridor

Pipeline Commencement and Termination Points

The pipeline commencement and termination point co-ordinates are shown below in Table 1 and are in coordinate system MGA z54, GDA2020.

Table 1 - Pipeline Commencement and Termination Point Summary

Site	Kilometre Point (KP)	Easting	Northing
HUGS Pipeline – NPPS-Iona Gathering Line Connection	0	670,660	5,730,634
HUGS Pipeline to NP-4/5 wellsite offtake	0.65	670,355	5,731,182
HUGS Pipeline Termination at MFCT wellsite	5.30	667,293	5,733,503

Commencement and Termination Points are shown in map HUGS-0013-A Connections (refer Figure 3) and also included in Att A Part 2 Pipeline Commencement & Termination.

Figure 3 - HUGS Pipeline Connection and Termination Points Map – also shown in Att A Part 2

Pipeline Connection Point with NPPS - Iona Gathering Line – KP0

HUGS Pipeline commences and connects into the NPPS - Iona DN300 Gathering Line within the NPPS compound.

HUGS Pipeline to NP-4/5 Wellsite Offtake – KP0.66

A barred tee offtake from the HUGS Pipeline is required to connect to the NP-4/5 wellsite piping. The offtake location is at the first above ground flange pair to the NP-4/5 wellsite process piping, which is regulated under the Petroleum Act 1998 (Vic). The offtake will ensure that gas can be transferred to / from the NP-4/5 wells through the HUGS Pipeline to provide enhanced operability of the NP-4/5 wells.

HUGS Pipeline Connection to the MFCT Wellsite – KP5.3

The pipeline terminates at the end of a pipeline inspection gauge launching/ receiving arrangement at the MFCT wellsite (KP 5.3).

A barred tee branch will be installed at the MFCT wellsite with an isolation valve installed upstream of the HUGS Pipeline. The point of transition for the HUGS Pipeline is the downstream flange face of the branch isolation valve, at which point the MFCT wellsite and infrastructure will be regulated under the Petroleum Act 1998 (Vic).

HUGS Pipeline Technical Aspects

Table 2 details the HUGS Pipeline technical aspects. The HUGS Pipeline will:

- Convey natural gas or hydrogen or a blend of both, to and from the wellsite (i.e. bi-directional);
- Include a buried fibre optic cable to connect the well monitoring systems;
- Include a buried 2-inch diameter (DN50) mono-ethylene glycol (MEG) pipeline to supply MEG to act as anti-freeze and prevent internal pipeline corrosion;
- Include a DN300 pig launcher located at the MFCT wellsite; and
- Include an offtake at the NP-4/5 wellsite to provide enhanced operability of the NP-4/5 wells.

Table 2 – HUGS Pipeline Technical Aspects

Design Aspect	DN300 HUGS Pipeline
Length	Approximately 5,300m
Product Transport	Natural Gas or Hydrogen or Blend of both
Material	API 5L X65
Coating System	Dual Layer FBE
Nominal Diameter	DN300
Pipe Wall Thickness	12.7mm
Depth of Cover	900mm (min), 1200mm (typical)
Easement Width	12m
Design Pressure / Maximum Allowable Operating Pressure (MAOP)	16.0 MPag
Measurement Length – 4.7 kW/m^2	440m (Natural Gas only), 132m (Hydrogen only)
Cathodic Protection System	Impressed current
Design Code	AS2885 Pipelines Gas and Liquid Petroleum ASME B31.12 Hydrogen Piping and Pipelines
Design Life	25 years

HUGS Pipeline Corridor

The pipeline corridor refers to the area of land within which the pipeline is proposed to be constructed. The nominated pipeline corridor in this application includes all required land for the construction, commissioning and reinstatement of the pipeline.

The pipeline corridor comprises a 12m wide permanent pipeline easement which is consistent along the full extent of the pipeline corridor from KP0 to KP5.3.

For the purpose of construction, a right of way (ROW) is required. The 12m wide easement and the ROW together form the Pipeline Corridor.

The ROW is typically 13m wide, providing a 25m wide Pipeline corridor when added to the permanent easement, however it is wider in some sections to allow for additional workspace, stockpile locations, vehicle turnarounds and access tracks that enable the safe and efficient construction of the pipeline.

The ROW reduces to 4m wide, resulting in a pipeline corridor width of 16m at the crossing of Leech Creek to maintain an acceptable buffer between the Pipeline Corridor and a registered Aboriginal Place (VAHR 7420-0063 – refer to section 7). The ROW is not required for the Timboon-Peterborough road and Boundary road crossing sections where the pipeline will be installed by HDD (noting that a wider ROW will be required immediately either side of the HDD crossings to allow for the drill rig to set up on one side and the pipeline drill string to be prepared on the other prior to being pulled into position).

The pipeline corridor intersects ten (11) freehold land parcels and three (3) road reserves (Crown land) (refer to Section 12 of this application).

Pipeline Route Overview

The pipeline route can be described as:

- **KP0 – KP0.737: NPPS – Iona DN300 Gathering Line Tie-in to Timboon-Peterborough Road**

  The pipeline commences at the NPPS – Iona DN300 gathering line tie in and runs in a north-westerly direction. This section of pipeline has an offtake into the NP-4/5 wellsite (KP0.66). The Timboon-Peterborough Road crossing (KP0.737) will be constructed using Horizontal Directional Drilling (HDD).

- **KP0.737 – KP3.456: Timboon – Peterborough Road to Boundary Road**

  The pipeline continues in a north-westerly direction and crosses Beach Energy Halladale Pipeline (KP1.699), APA Group Paaratte to Allansford Pipeline (KP1.970), Skull Creek (KP2.372) and Leech Creek (KP2.872). Skull Creek and Leech Creek will be crossed using trench excavation. The Leech Creek crossing area will have a reduced construction ROW due to the exclusion zone for cultural heritage purposes to the north of the pipeline route. Boundary Road crossing (KP3.456), including an adjacent minor watercourse, will be constructed using HDD.

- **KP3.456 – KP5.263: Boundary Road to MFCT Wellsite**

  The pipeline continues in a westerly direction and bends north (KP4.096). This section of pipeline crosses Epic Energy's buried High Voltage line (KP4.588) and APA Group Paaratte to Allansford Pipeline (KP4.693) and terminates at the MFCT Wellsite (KP5.263). These crossings will be constructed using trench excavation.

5. Proposed dates for commencement and completion of construction of the pipeline, including mobilisation, construction/commissioning and rehabilitation.

Subject to regulatory approvals, the schedule for the pipeline construction is tabulated below in Table 3.

Table 3 – HUGS Pipeline Construction Schedule

Year	Quarter	Activity
2024	Q1-Q4	Pipeline Licence application process
	Q4	MFCT wellsite well pad construction for drilling (pursuant to the Petroleum Act)
2025	Q1-Q2 (February – April 2025)	Pipeline Construction HUGS Pipeline ROW reinstatement
2026	Q1	IGSF and HUGS Pipeline commissioning
	Q2	IGSF and HUGS Pipeline operational
	Q2-Q3	HUGS Pipeline ROW rehabilitation complete

It is expected that the HUGS Pipeline ROW rehabilitation will take up to 18 months from completion of reinstatement.

6. Identification of the environmental, social and safety impacts arising from the proposed pipeline construction and proposed operation, based on the surrounding current land uses and reasonably foreseeable future land uses.

Including:

- **Consideration of the objectives of the Flora and Fauna Guarantee Act 1988.**
- **Confirmation of the climate resilient design of the proposed pipeline.**
- **Greenhouse gas emissions to construct and operate the proposed pipeline, the emissions associated with the product conveyed and the implication for Victorian greenhouse gas emission targets.**

The HUGS Pipeline corridor is located within the Corangamite Shire in the rural parishes of North Paaratte and Timboon West. The closest townships are Timboon (6.8km north east; population 830) and Port Campbell (7.4km south south east; population 440).

The first 55m of the HUGS Pipeline is located within a Special Use Zone (SUZ) originally created for the previous Heytesbury Gas Plant (which has been decommissioned and demolished).

The remainder of the pipeline route (KP0.055 – KP5.3) is located within Farming Zone (FZ1 – Clause 35.07). FZ1 applies to areas of land utilised for agriculture and aims to ensure that land practices are sustainable to retain productive land for agriculture.

Land use is dominated by dairy and pasture crops with some intermittent forestry and shelter belts for cattle.

The HUGS pipeline corridor comprises a total area of 19.1ha and is predominantly located within freehold farmland, bounded by rural roads and crosses four small, ephemeral watercourses that

form a part of the Otway Coast drainage basin. The pipeline corridor is largely flat with some small depressions that slope towards the watercourses.

59 Residential receptors are located within 5.3km of the HUGS Pipeline corridor, of which 10 occur within 1km. The closest residential receptor is 216m away from the pipeline corridor boundary.

The HUGS Pipeline corridor crosses two licenced pipeline corridors - the APA Group Paaratte to Allansford Pipeline and Beach Energy's Halladale Pipeline and a buried high voltage cable owned by Epic Energy connecting the adjacent Timboon West Wind Farm to the nearest substation.

HUGS Pipeline Corridor Development

The establishment of the HUGS Pipeline Corridor has been an incremental process. A broad study area was initially defined between the NPPS and the MFCT wellsite. The purpose of the study area was to encompass an extensive area of land that could be assessed and refined using survey findings into a final narrow pipeline corridor that preferentially avoids or otherwise minimises impact on existing values and receptors.

Consultation commenced in 2021 with the engagement of landowners whose land would be impacted by the new pipeline, local Council and regulatory authorities. The study area was assessed by ecologists to quantify and understand the presence of native vegetation, ecological communities, rare or threatened species (including Flora and Fauna Guarantee Act 1988 listed species), weed species and flora pathogens.

This culminated in the preparation of the Biodiversity Assessment: Heytesbury Underground Gas Storage (HUGS) Gas Pipeline, Victoria. (Att D).

A study area termed 'activity area' for the purpose of Aboriginal Cultural Heritage assessment was assessed by archaeologists and traditional owners to define areas of significance, importance or value. This involved standard and complex assessment and the preparation of Cultural Heritage Management Plan (CHMP) 18865 (Att K Part 1) which was approved by the Eastern Maar Aboriginal Corporation (EMAC) on 10 November, 2023.

The HUGS Pipeline corridor was further defined using route selection considerations consistent with S4.7.3 of AS2885.1 Pipelines – Gas and liquid petroleum design and construction. This included:

- Identifying residential receptors in proximity of the study area and selecting a corridor that maximised separation distance as far as practicable.
- Engagement with landowners and public land managers to establish land use and identify any expected land use change.
- Analysis of topography based on desktop assessment and site walkthroughs to identify a corridor with fewest features and a gradual gradient.
- Engagement with stakeholders and incorporating feedback into pipeline alignment and design consideration.
- Identification of existing underground services, minimise the number of crossings and develop suitable design and construction methodologies to enable safe crossing.

The completion of this route optimisation provided the basis for assessment of the following specialist assessments that accompany this application:

- Att C – EES Self Assessment
- Att D – Biodiversity Assessment
- Att E – Native Vegetation Offset Assessment

- Att F – Greenhouse Gas Assessment Report
- Att G Part 1 – Noise Impact Assessment
- Att G Part 2 – Noise Contours
- Att H – Climate Change Act Assessment
- Att I – Traffic Management Plan
- Att J Part 2 – Environmental Line List
- Att J Part 3 - Environmental & Social Impact Assessment
- Att K Part 1 - CHMP 18865
- Att L Native Title Analysis
- Att N Basis of Design
- Att O – Constructability Assessment
- Att P – Safety Management Study Report

More recently, two additional areas of land have been incorporated into the Pipeline corridor. These are:

- Lot 2\LP201745 (Lochard owned parcel) – to provide access from Timboon-Peterborough Road and connection to the NP4/5 Wellsite Offtake
- Additional area incorporating more of Lot 4\PS426303 (Heytesbury Gas Processing Plant – Lochard leased area) and Lot 1\LP201744 (North Paaratte Production Facility – Lochard owned parcel). This is required for pipe laydown adjacent to KP0.

It is noted that the additional areas consist of a small section of agricultural grazing land and areas of Lochard Energy's existing operations that are either hard stand or have been subject to significant ground disturbance.

A Notice of Intent to amend CHMP 18865 was lodged on 12 August 2024 requesting the incorporation of these two additional areas into the Activity area. Please refer to section 8 of this Pipeline Licence application for further detail. The areas are provided in Figure 4.

Figure 4 - HUGS Pipeline Amended Activity Area.

With the exception of cultural heritage, Lochard have reviewed the pre-dated impact assessments provided to support this Pipeline licence application and confirm that they represent a complete and accurate assessment of impact for the entirety of the Pipeline Licence Application's Pipeline Corridor.

Full evaluation of the pipeline corridor against the route selection considerations in S4.7.3 of AS2885.1 is provided in Section 10.

Socio-economic Overview

The key economic drivers in the Corangamite region are agriculture, food product manufacturing, service industries and tourism. The region is host to three (3) operating gas facilities, including Lochard Energy's IGSF, that employ approximately fifty (50) people within Corangamite Shire.

The region attracts a high number of tourists during summer months, particularly to the Great Ocean Road with the twelve apostles attracting approximately 2 million visitors per year. In addition to the Great Ocean Road, there are a number of local eateries and recreational activities to attract and retain visitors in the area.

In the localities of Paaratte and Timboon West, primary production and gas asset operation are the two primary economic activities. Local roads are limited to intermittent traffic patterns that are removed from the Great Ocean Road and the primary loop taken by tourism operators returning to Melbourne via the A1. The Timboon-Peterborough Road is mapped on the 12 Apostles Food Artisans Trail which is promoted as a self-drive tour with Schultz Organic Creamery & Cafe approximately 4km north of the pipeline corridor.

Landowners and the broader community are familiar with gas pipeline operations with several Lochard Energy buried gathering line assets in proximity to the HUGS Pipeline Corridor in addition to the NPPS and former Heytesbury Gas Plant on Gas Works Road, Paaratte. The Beach Energy Halladale Pipeline and APA Group Paaratte to Allansford Pipeline are two additional operating licenced pipelines that intersect the HUGS Pipeline Corridor.

Identification of Environmental, Social and Safety Impacts

To understand the extent of environmental and social impacts attributable to the construction and operation of the HUGS Pipeline, a risk-based impact assessment was undertaken in May, 2024. Credible Environmental and Social impacts were identified through consultation with directly and indirectly affected landowners and Project stakeholders (identified in the Pipeline Consultation Plan). Environmental and Social impacts were evaluated with reference to:

- APGA Code of Environmental Practice – Revision 5, 2022.
- AS 2885.1-2018 Gas and Liquid Petroleum - Design and Construction.
- Applicable Commonwealth and Victorian legislation.
- Lochard Energy personnel and risk assessment participant collective construction and operational experience.

The assessment process involved evaluation of the untreated consequence of each impact against Lochard Energy's risk matrix followed by the identification of controls to minimise the extent of each impact that are practical, achievable and appropriate to the nature and scale of the impact. A residual consequence level was than assessed assuming that all nominated controls are implemented, providing a final residual consequence rating.

The impact assessment identified 16 credible social and environmental impacts that are presented for consideration in this section.

Control measures that would contribute to minimisation of impacts have been incorporated into the Environmental Management Plan (Att J Part 1) to provide the minimum expectation for acceptable behaviour and compliance for the construction and operation of the HUGS Pipeline.

Environmental and Social Impacts

An environmental impact can be described as:

The consequence of a measurable change to the existing environment created by a new activity.

A social impact can be described as:

The consequence of a change to a place or land created by a new activity that affects owners or custodians of the land, members of the local community or members of the broader public.

Of the 16 impacts identified in the impact assessment, two (2) are considered positive impacts.

Energy Security and Reliability

The HUGS Project will provide ~1.8PJ of storage capacity and increase export rate from 570 TJ/day to 615 TJ/day.

The construction of the HUGS Pipeline will enable connection of the MFCT wellsite to the IGSF bringing with it enhanced energy security and reliability. Section 14 of this pipeline licence application expands on the benefit of the proposed pipeline to Victoria relative to its impact.

Local Business Opportunity

Lochard Energy has an ingrained understanding of the social impacts associated with gas pipeline construction and operation given their local operational experience and sustained presence as an employer and operator of gas assets in the area.

The IGSF is supported by a number of contractors in addition to approximately 50 employees.

Local individuals, contractors and consultants may be engaged on the HUGS Project in a number of capacities during Construction including civil works, plant and equipment hire, construction personnel, equipment supply and provision of professional services.
There will also be an indirect benefit to local services in Timboon and Port Campbell (e.g. fuel, supermarkets, cafes, hotels / motels, vehicle wash, etc).

Beyond construction, there is an ongoing opportunity to support operational activities as part of Lochard Energy's ongoing commitment to use of local businesses and contractors for maintenance activities.

Other Impacts

The remaining 14 identified impacts are considered negative in nature although the severity of each impact is considered negligible or minor with the majority of impacts being limited to the HUGS Pipeline Corridor.

Most impacts are temporary and limited to the duration of the construction period and are recoverable following completion of construction (i.e. the HUGS Pipeline Corridor will be rehabilitated to enable the resumption of pre-existing land use).

Those impacts that will extend beyond the construction corridor are limited to a local impact for the duration of construction activity and can be effectively managed by applying environmental management controls and ensuring that there is sufficient compliance oversight by Lochard Energy during construction.

Greenhouse gas emissions associated with construction, operation, decommissioning and rehabilitation of the HUGS pipeline have been calculated on an annual basis through the whole of

project lifecycle. Emissions created by the HUGS Pipeline will contribute to the overall emissions of Victoria and Australia and have been reduced as far as is reasonably practicable.

Negative impacts are summarised in Table 4. The severity of impact has been evaluated in a way that is consistent with Lochard Energy's Risk Matrix which is supplied for reference with the full impact assessment in Att J Part 3.

Table 4 – Summary of HUGS Pipeline Environmental and Social Impacts

Impact	Severity of Impact	Duration of Impact	Impact limited to the Pipeline Corridor?	Management Mechanism(s) (References)
Aboriginal and Victorian Cultural Heritage Avoidance of registered Aboriginal Places. CHMP 18865 approved; amendment incorporating additional areas for Project activities is under assessment).	Insignificant	Pipeline construction period only.	Yes	• Att J Part 1 • Att K Part 1
CHMP 18865 Amendment Request to add two additional areas into the Activity area.	Severity pending outcome of the amendment assessment.	Pipeline construction period only	Yes (Amended sections)	• Att K Part 2
Soil Compaction Ripping during rehabilitation expected to break up compaction around heavily trafficked areas.	Minor	Pipeline construction and rehabilitation period only.	Yes	• Att J Part 1 • Att J Part 3
Land Use Restriction Caused by pipeline corridor establishment	Minor	Pipeline construction and rehabilitation period only.	Yes	• Att J Part 1 • Att P
Future Land Use 12m wide easement in gross will be established across the full 5.3km length of the pipeline.	Minor	Operational life of the Pipeline.	Yes	• Att P
Biodiversity Impacts – Flora and Fauna Residual impact on native vegetation 0.131ha.	Minor	Pipeline construction period only.	Yes	• Att D • Att E • Att J Part 1 • Att J Part 2

Impact to Fauna movement and foraging has been minimised.				
Biosecurity Prevention of the introduction or establishment of weeds, Pest Species and Pathogens	Minor	Operational life of the Pipeline.	Yes (may extend beyond if uncontrolled)	• Att D • Att J Part 1
Surface Water and Watercourses Crossings at: • KP2.372 (Trenched - Skull Creek) • KP2.872 (Trenched -Leech Creek) • KP3.313 (HDD) • KP3.827 (Trenched)	Minor	Pipeline construction period only.	Yes	• Att J Part 1
Ground Water Impact No ground water expected to be intercepted by trench excavation.	Insignificant	Pipeline construction period only.	Yes	• Att J Part 1
Noise generating activities 8 receivers will experience exceedance of daytime criteria >46dB during pipeline construction.	Minor	Pipeline construction period only.	No	• Att G Part 1 • Att G Part 2 • Att J Part 1 • Att J Part 2
Visual Amenity Limited to local road users, landowners and 2 additional residential receptors	Minor	Pipeline construction period only.	No	• Att J Part 1
Air Quality Limited to Dust generation and vehicle exhaust emissions.	Minor	Pipeline construction period only.	No (condition dependent)	• Att J Part 1
Greenhouse Gas Emissions Pipeline construction emission estimate: 952t CO_2-e. Pipeline operational annual emission estimate: 62t CO_2-e. Pipeline operation represents 0.000081% of Victorian annual emissions (DEECA, 2021 data) and 0.000014% of Australia's annual greenhouse emissions (DCCEEW Australia's National	Minor	Construction of the pipeline. Operational life of the pipeline.	No	• Att F • Att J Part 1

Greenhouse Inventory March 2023 quarterly update).				
Traffic and Transport Roads used to access the pipeline corridor are: • Port Campbell Curdievale Road • Timboon-Peterborough Road • Boundary Road • East and West Road (dirt road) • Gas Works Road (dirt road)	Minor	Pipeline construction period only.	No	• Att I • Att J Part 1
Vibration Soil profile and geology indicate sands, clays and low strength calcatenite with occasional thin bands of limestone. This indicates low vibration potential.	Insignificant	Pipeline construction period only.	Yes	• Att J Part 1

Safety Impacts

A safety impact can be described as:

The consequence of a measurable change to public safety or a safe working environment created by a new activity.

To identify and understand the safety impacts created by construction and operation of the HUGS Pipeline, a Safety Management Study (SMS) has been conducted as per the requirements of AS2885.6-2018: Pipelines – Gas and liquid petroleum pipeline safety management, to understand specific threats to the integrity of the pipeline and mitigate or minimise these through the pipeline location and design (Att P).

The SMS focused on risks related to external interference, natural events, and corrosion. Future revision of the SMS must also address the other categories of threats defined in AS/NZS 2885.6, which are: intentional damage, pipeline materials and design, construction, operation, maintenance and management of the pipeline.

The SMS identified six (6) uncontrolled failure threats, which were subject to risk assessment; two (2) of these – vertical augering for installation of power-poles and cable-ploughs for installation of fibre-optics – could result in a 'Major' consequence as they have potential for fatality of the equipment operator; this was the worst consequence identified on the HUGS Pipeline.

The likelihood of the threats were also assessed. Due to a 'Hypothetical' likelihood of occurrence, the risk from augering was determined to be 'Low', however the use of cable ploughs for fibre-optics was designated a 'Remote' likelihood by preliminary assessment and hence an 'Intermediate' risk. The remaining four (4) uncontrolled failure threats were considered 'low' to 'negligible', refer to the Safety Management Study (Att P) for further details.

Please refer to Section 9 for a more detailed summary of the proposed measures to control, mitigate and manage the identified risks.

	Broader safety impacts of pipeline construction and operation have been assessed during the preparation of the Pipeline's Safety Management Plan (SMP) (Refer Att Q).

7.	**Provide the outcome of the Future Act Assessment under the *Native Title Act 1993*.**
	Lochard Energy engaged King & Wood Mallesons (KWM) to undertake an assessment of the HUGS Pipeline. The assessment (shown in Att L) applies to the HUGS Pipeline Route that is the subject of this application and found that native title has been wholly extinguished with respect to the land comprising the Pipeline route due to 'previous exclusive possession acts' (PEPAs), as per sections 23B, 23C and 23E of the Native Title Act 1993 (Cth) (NTA) and sections 13H and 13I of the Land Titles Validation Act 1994 (Vic) (LTVA). The relevant PEPAs are the grant of fee simple interests, and the construction and establishment of roads that are 'public works', prior to 23 December 1996.

8.	**Outline the potential impact of the proposed pipeline on cultural heritage (including Indigenous cultural heritage).**
	<u>Aboriginal Cultural Heritage</u> The pipeline is located within the Eastern Maar Aboriginal Corporation (EMAC) Registered Aboriginal Party (RAP) jurisdiction. A mandatory Cultural Heritage Management Plan (CHMP) has been prepared for the HUGS Pipeline in accordance with the Aboriginal Heritage Act, 2006. CHMP 18865 (prepared by Ochre imprints, a specialist archaeology consultant) was approved by EMAC on 10 November, 2023. The 'activity area' referred to in the approved CHMP defines a corridor of land that was included in cultural heritage assessment in 2022 (refer to Figure 5 for the area) and included both Aboriginal and non-Aboriginal heritage assessment. Following completion of the Cultural Heritage assessment, two areas outside of the assessed activity area were added to the Pipeline Corridor: • Lot 2\LP201745 (Lochard owned parcel) – to provide access from Timboon-Peterborough Road and connection to the NP4/5 Wellsite Offtake • Additional area incorporating more of Lot 4\PS426303 (Heytesbury Gas Processing Plant – Lochard leased area) and Lot 1\LP201744 (North Paaratte Production Facility – Lochard owned parcel). This is required for pipe laydown adjacent to KP0. A Notice of Intent (NoI) to amend CHMP 18865 was lodged on 12 August 2024. EMAC have advised that they elect to evaluate the amendment and it is yet to be determined if further surveys are required. It is noted that the additional areas consist of a small section of agricultural grazing land and areas of Lochard Energy's existing operations that have been subject to significant ground disturbance. There is no land subject to the amendment that is within an area of mapped Cultural Heritage Sensitivity and there are no registered Aboriginal places within the additional areas. The additional areas for pipeline activities to be amended are shown in Figure 6 and can also be viewed in Att K Part 2. These areas are included in the HUGS Pipeline Corridor.

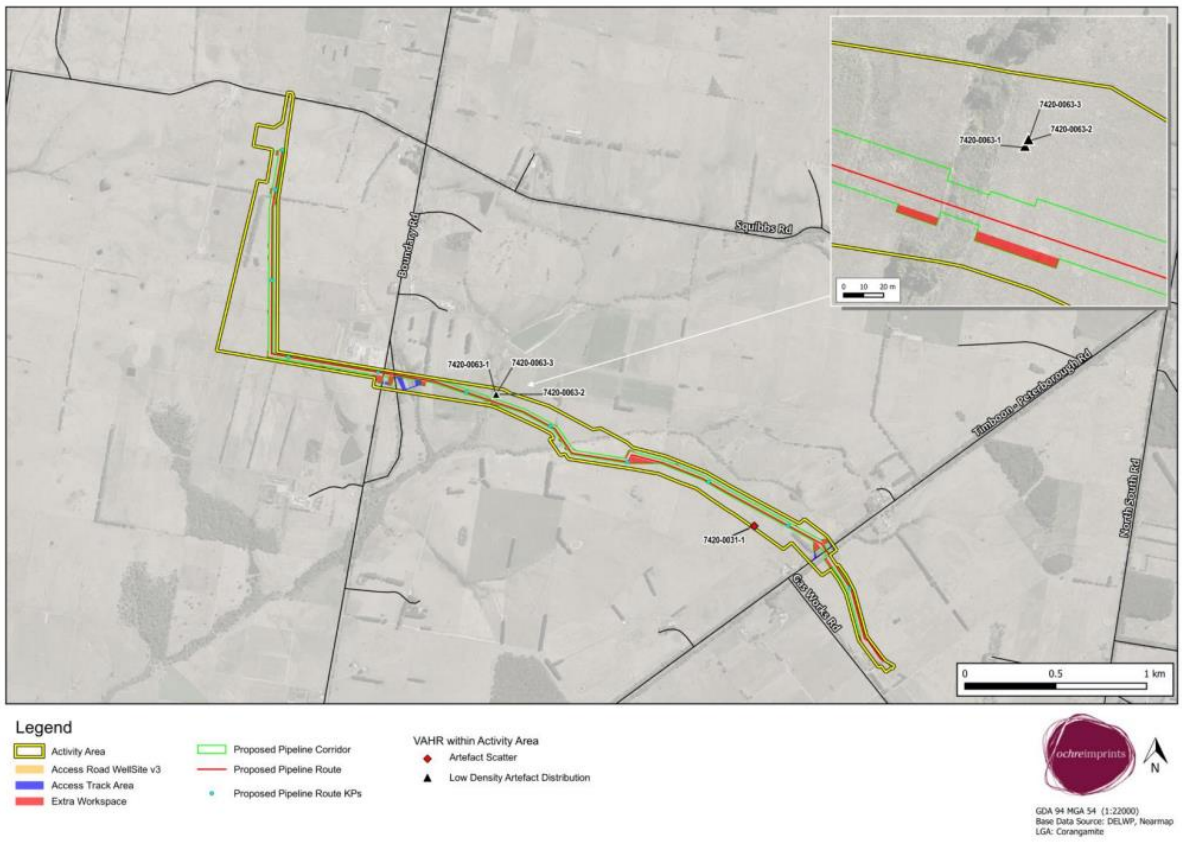

Figure 5 - Location of VAHR places in proximity to the Pipeline Corridor (please also refer to Figure 26 of CHMP 18865)

Figure 6 - CHMP Proposed Amended Activity Area – additional areas shown in yellow dashed areas

Cultural Heritage in the previously assessed Activity Area – CHMP 18865

The 2022 heritage assessment was undertaken by way of Desktop, Standard and Complex Assessments.

The Desktop Assessment established that one previously recorded Aboriginal place is present within the Activity area (VAHR 7420-0031), noting that a second Aboriginal place (VAHR 7420-0063) was identified during complex assessment. No registered Aboriginal places occur within the Pipeline corridor.

VAHR 7420-0031 is a single marine chert stone artefact that has previously been exposed by pipeline construction and collected. This Aboriginal place was subsequently permitted harm by CHMP 13060 which was prepared ahead of a gas pipeline.

As part of the Desktop assessment, a review of the Victorian Aboriginal Heritage Register (VAHR) found that 26 previously registered Aboriginal places occur within a 5km radius from the activity area, with seven places (five artefact scatters and two Low Density Artefact Distributions (LDADs) located within 200m of the activity area.

The Desktop Assessment established that one previously recorded Aboriginal place is present within the activity area (VAHR 7420-0031). It was considered reasonably possible that as-yet unrecorded Aboriginal cultural heritage could be present in the activity area.

The Standard Assessment was led by six (6) EMAC representatives and encompassed the entire activity area by inspecting the ground surface. No surface cultural heritage material was identified. The location of VAHR 7420-0031 was inspected during the Standard Assessment however no Aboriginal cultural material associated with this Aboriginal place was identified.

The Complex Assessment was led by six EMAC Representatives and consisted of a total of 3 (1 x 1 m) Excavation Pits (EPs), 38 (0.5 x 0.5 m) Shovel Test Pits (STPs) spaced approximately

every 250m for the length of the corridor, and 9 (0.5 x 0.5 m) radial STPs (Please refer to Figure 24 of CHMP 18865 for locations).

A total of 3 stone artefacts were identified from one EP, approximately 30m east of Leech Creek (1 artefact, 25m from the Pipeline Corridor) and one radial STP (2 artefacts 29m from the Pipeline Corridor), at depths between 0-100mm.

Two (2) Aboriginal places occur in the activity area: Victorian Aboriginal Heritage Register (VAHR) 7420-0031, a previously registered place and a LDAD, VAHR 7420-0063, which comprises three subsurface stone artefacts identified during the fieldwork undertaken to inform the CHMP.

Whilst VAHR 7420-0063 is located within the activity area, the HUGS Pipeline Corridor has been narrowed to 16m wide for approximately 22m in proximity to this location to ensure that a sufficient 'No Go Zone' can be established around the place. The HUGS Pipeline Corridor reduction ensures that all Registered Aboriginal Places will be avoided.

CHMP 18865 Management Conditions and Management Actions

Lochard Energy acknowledges that CHMP 18865 is subject to an amendment process involving the requested addition of land into the Activity area (Att K Part 2). This section has been prepared with reference to the approved CHMP 18865 (Att K Part 1) and associated activity area.

The CHMP contains a compliance checklist for use and reference when implementing the Plan. Obligations from the CHMP will be incorporated into the Project's Environmental Management Plan.

The primary controls to minimise potential impact on cultural heritage are outlined in CHMP 18865 and include:

- Cultural heritage inductions to be undertaken for project personnel working on site;
- Notification process to EMAC ahead of commencement of works;
- A copy of the approved CHMP will be available on-site;
- Compliance inspections by EMAC during the course of the works;
- Additional controls in relation to the area of cultural heritage sensitivity near Leech Creek such as reduced workspace and additional signage;
- Protocols and processes or actions in the event of potential Aboriginal Cultural Heritage being identified; and
- Two (2) areas from KP2.8-2.9 and the access north of KP5.26 that are subject to inspection by EMAC during topsoil stripping and trenching activities (where applicable).

General condition 1.1.7 and 1.1.9 of CHMP 18865 relate specifically to the provisions for the avoidance and contingency measures for VAHR 7420-0063. This will involve installation of a standard fence at least 15m from the defined edge of the registered site and installation of an orange barrier mesh fence inside the standard fence with appropriate 'No-go Zone' signage.

The CHMP, will be adhered to throughout the construction and operation of the HUGS Pipeline. Section 1.2.4 of CHMP 18865 has a compliance checklist to assist with the implementation of the management controls within the plan, including provisions for accidental discovery of aboriginal cultural heritage and aboriginal remains. The compliance checklist will be used by Lochard Energy to implement each control measure sequentially from pre-construction to ongoing operation of the HUGS Pipeline. Further information on this is provided in Att K – CHMP 18865.

	Historic Heritage The due diligence desktop review of the Victorian Heritage Register (VHR) or Victorian Heritage Inventory (VHI) listed sites, statutory databases, previous assessments and land use history of the study area has not identified any known or potential historical heritage sites within it. Historic heritage was also given due consideration during standard and complex archaeological assessment but no items or artefacts were identified during the survey. Accidental discovery provisions will extend to historic heritage items in addition to potential Aboriginal heritage items.

9.	**Outline of the measures to be undertaken to control, mitigate and manage identified impacts arising from the proposed pipeline construction and proposed operation as set out in 6 above.**
	The hierarchy of controls has been applied to minimise impact on environmental, social and safety impacts of the HUGS Pipeline. ***Elimination**:* Selection of the pipeline corridor sought to avoid/ eliminate impact to: • Registered Aboriginal Places; • Listed flora species; • Listed fauna species and their habitat; and • Landowner's key infrastructure (e.g. sheds and structures). ***Substitution**:* Where environmental values or public infrastructure were identified, substitution of standard construction methodology with HDD has avoided impact to those areas. ***Engineering Controls**:* Where pipeline safety or environmental risks have been raised, pipeline design solutions such as the introduction of trench breakers or an increase to the pipeline's depth of cover has enabled the effective control or management of those risks. ***Administrative Controls**:* The HUGS Pipeline Environmental Management Plan (EMP), its sub-plans, CHMP 18865 and the Pipeline Safety Management Plan will form the primary administrative controls for environmental, social and safety impacts and include provision for identification, response, reporting and rectification of unplanned events (i.e. accidental discovery, incident response and emergency response). In addition, an Environmental Line List (ELL – Att J Part 2) has been prepared as part of the EMP to identify all environmental values within and adjacent to the pipeline corridor. These include: • Native vegetation and defined Ecological Vegetation Classes; • Registered Aboriginal Places; • Watercourse locations; and • Sensitive receptor locations (within 1km of the Pipeline Corridor). The ELL will be active during construction and operation of the pipeline to ensure that all preventative and protective obligations that relate directly to identified environmental values are implemented.

This section provides an overview of the key control, mitigation and management measures that will be implemented to reduce and minimise impacts arising from the key environmental aspects identified in Section 6.

Energy Security and Reliability

Nominated as a positive impact – no further control, mitigation or management proposed.

Local Business Opportunity

Nominated as a positive impact – no further control, mitigation or management proposed.

Land Use Restriction

Lochard Energy are continuing to engage with landowners in relation to how impacts through construction and operation of the pipeline will be managed. Property Management Plans have been prepared in consultation with each landowner and detail to how their land/farming operations are to be managed through construction, including establishment of access crossings of the pipeline corridor during construction, reinstatement and rehabilitation requirements. Acquisition of easement for the construction and operation of the HUGS pipeline will be appropriately compensated and agreed with landowners.

Future Land Use

Predominantly in farming zone land, each property has a Property Management Plan that identifies existing and foreseeable future farmland use, by the landowner or occupier and detail any existing farming practices that involve deep ripping or extensive ground preparation.

The HUGS Pipeline has been designed with a sufficient depth of cover to ensure continuity of land use and agricultural operation following completion of construction and rehabilitation within the pipeline corridor.

Landowners will be compensated through the acquisition of an easement which will impose restrictions on land use over the easement (e.g. change in land use such as building a new agricultural shed).

Landowners will also be compensated for use of the ROW during construction. This incorporates site access / exit locations.

Any future change to land use (i.e. intensification of land) would be identified by Lochard Energy's operational engagement with landowners and would be subject to evaluation by Lochard Energy to determine if pipeline location class would be affected by the proposed change.

Lochard Energy will continue to administer and implement a pipeline awareness program for the duration of the pipeline's operation.

Aboriginal Cultural Heritage

Control and management conditions are provided in section 1.2.4 of CHMP 18865 (Att K – Part 1). CHMP 18865 is subject to an amendment process that relates to the inclusion of additional areas into the Activity area (Att K Part 2).

Biodiversity – Flora and Fauna

Following completion of the field assessment, the pipeline corridor was refined by moving the pipeline corridor to avoid the identified native vegetation whilst remaining within the study area.

Where impact could not be completely avoided, the pipeline corridor was realigned to minimise impact on native vegetation.

The residual impact of 0.131 ha of native vegetation comprises three (3) EVCs (Lowland Forest, EVC 16, Swamp Scrub, EVC 53, and Heathy Woodland, EVC 48) and 2 large trees.

The EMP (Att J Part 1) contains Performance Standards, Objectives and compliance criteria that are focused on biodiversity impact minimisation.

The offset requirement for native vegetation removal is 0.050 General Habitat Units and two (2) large trees. Att E provides a quotation from a Native Vegetation Credit Register registered broker. Availability is good and Lochard Energy will obtain the required offset before commencement of construction.

Weed Presence and Biosecurity

In addition to the noxious weed observations in Att D, it has been identified through engagement with directly affected landowners that the majority of properties have an active farm biosecurity management plan. The restrictions and requirements of property entry outlined in these plans have been captured and reflected in each Property Management Plan and will be adopted into overall requirements for access to site.

Lochard Energy have prepared a Weed and Biosecurity Management Plan as an appendix to the EMP (Att J Part 1) that describes best management weed hygiene practice and outlines primary controls that should be undertaken to manage the impact of weeds, pests and pathogens.

The EMP (Att J Part 1) contains Performance Standards, Objectives and compliance criteria that are focused on effective biosecurity management and minimisation of weed presence.

Soil Disturbance and Compaction

Soil disturbance will occur throughout the HUGS Pipeline corridor, apart from areas above the HDD. Areas particularly susceptible to compaction concentrate around stockpiles, lay down areas, access/egress points and the active driving side of the pipeline ROW. Construction schedule will be coordinated to minimise the time required between clear and grade (topsoil removal and stockpiling) and pipeline reinstatement. Reinstatement of the pipeline corridor will be undertaken progressively.

Lochard Energy have incorporated a requirement to rip the subsoil during the reinstatement of the ROW. This will enable restoration of the disturbed soil profile prior to respreading of topsoil back across the extent of the ROW.

Additionally, Lochard Energy will engage an agronomist to evaluate the HUGS Pipeline Corridor and construction schedule and prepare a property reinstatement and rehabilitation report that will contain analysis, advice and recommendations on effective ground preparation and amelioration during reinstatement.

The report will also reflect any property specific requirements that relate to protecting and establishing reinstated areas from the ongoing use and operation of the property during the rehabilitation period.

The EMP (Att J Part 1) contains Performance Standards, Objectives and compliance criteria that are focused on effective reinstatement and rehabilitation.

Surface Water and Watercourse Crossings

As part of the project EMP (Att J Part 1), a minor watercourse crossing procedure will be prepared to detail proposed methodology for the construction of each crossing.

This will include provision for the establishment of site, implementation of controls, demonstrating compliance and reinstatement to ensure that all impacts are contained to the right of way.

The minor watercourse crossing procedure will include methodology for both dry crossing and flowing watercourse that is consistent with

Figure 7 – extract from Section 7.9 of the Australian Pipeline and Gas Association Code of Environmental Practice Rev5. Methodology for minor watercourse crossings will be prepared in

accordance with the requirements of the works on waterway permit issued by Corangamite Catchment Management Authority.

The EMP will also include the preparation of an erosion and sediment control plan and a trench dewatering methodology that will be reviewed with context to controls and management measures within and adjacent to watercourses. Construction timing will be targeted from January – April to minimise impacts to surface water during active construction in the vicinity of each watercourse crossing.

Trench breakers will also be designed and installed at watercourse crossings where there are sections of slope to reduce this potential impact on subsurface flow paths developing following completion of construction, as a contingency.

The EMP (Att J Part 1) contains Performance Standards, Objectives and compliance criteria relating to watercourse crossings.

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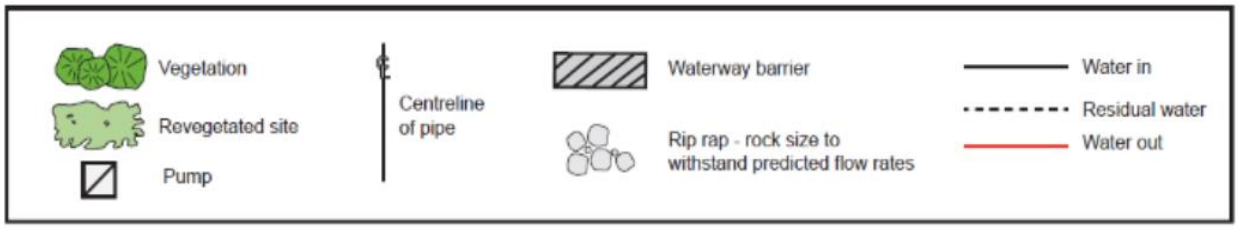
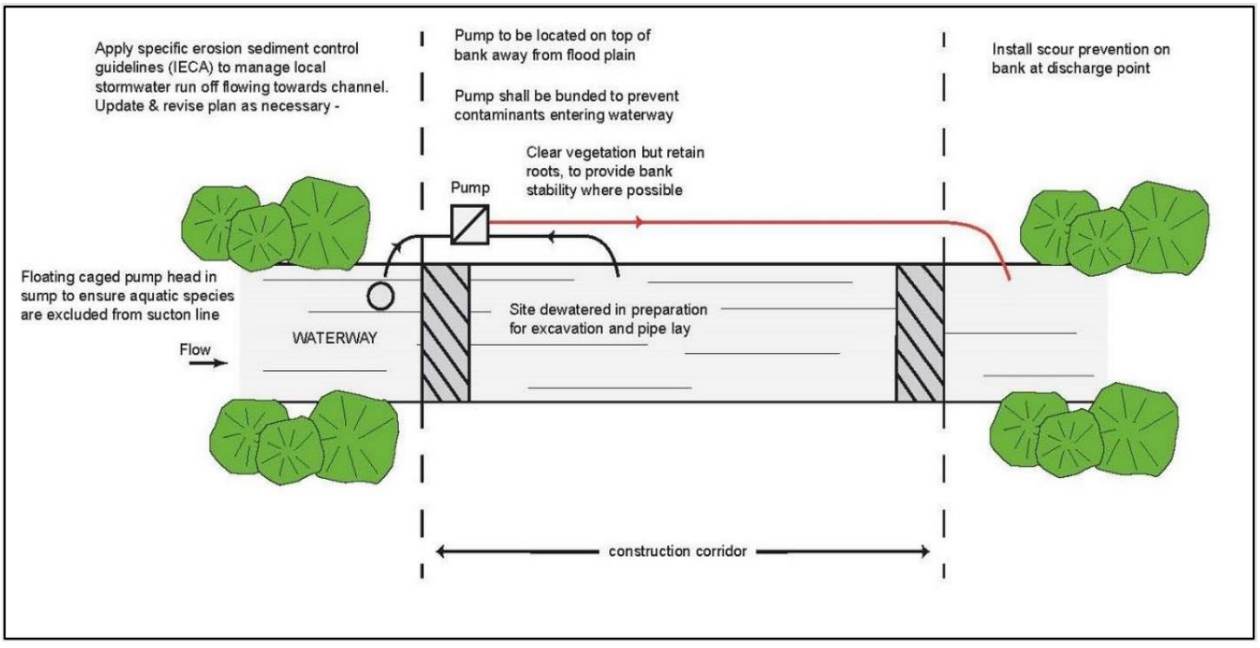


Step 1



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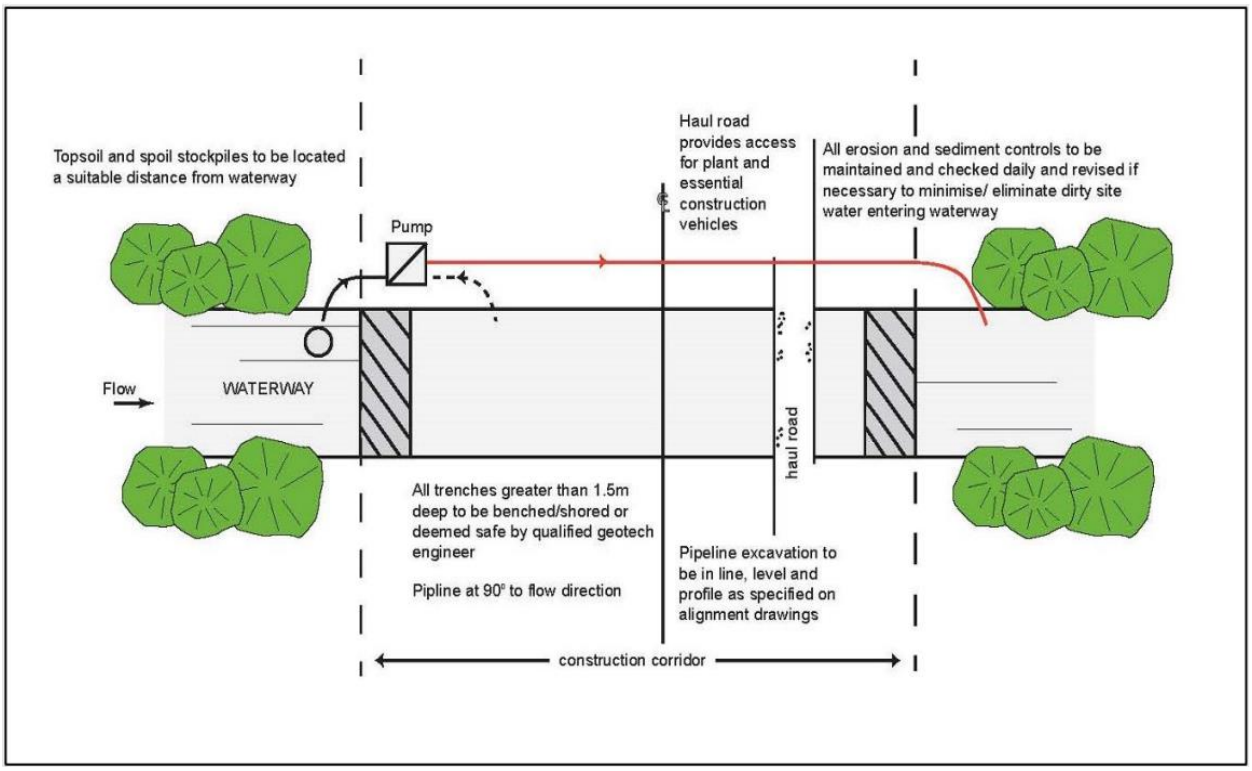

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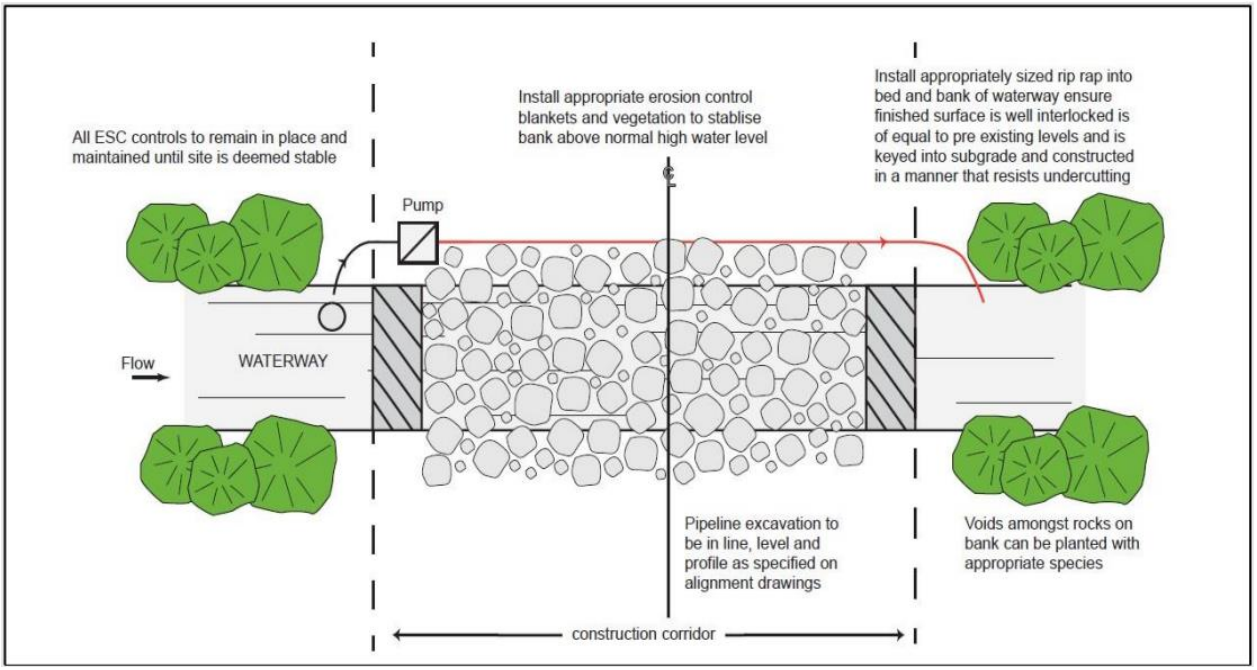

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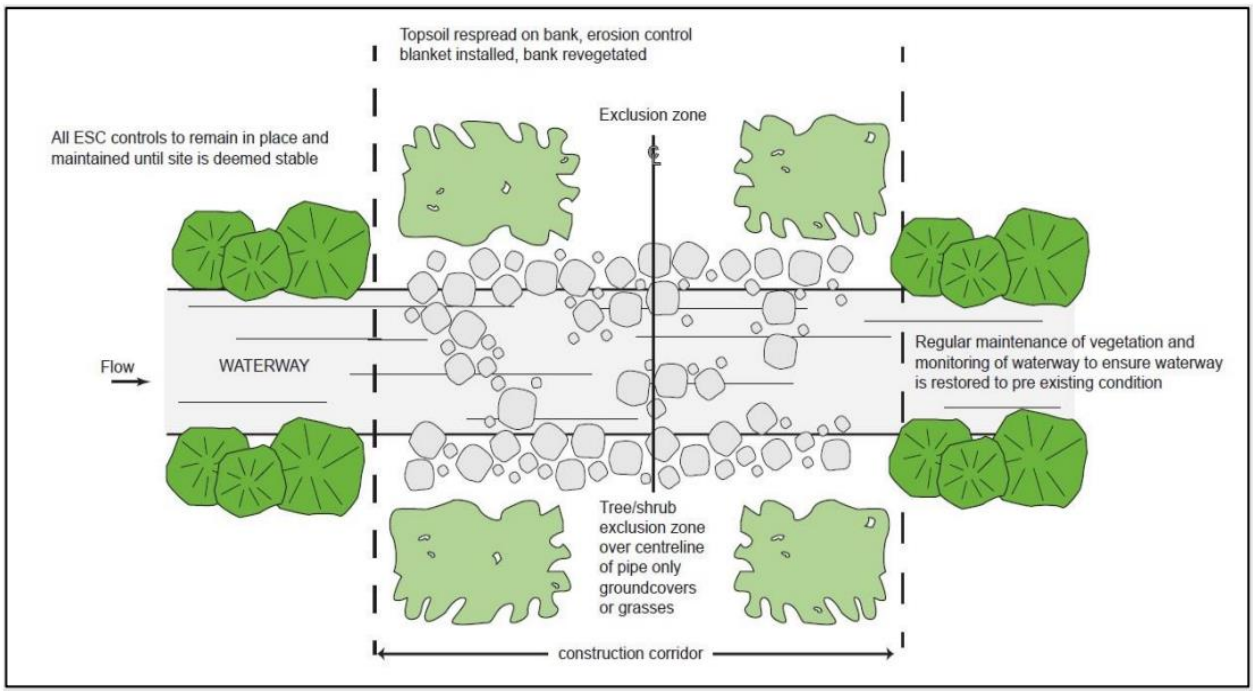

Figure 7 - Diagrammatic representation of a typical open cut water crossing (AGPA CoEP, 2022)

Groundwater

Construction of the pipeline is not expected to impact groundwater flow path.

The EMP will contain a dewatering procedure that outlines the expectations for dewatering of trenches and excavations in the event of rainfall infiltration or unexpected groundwater inflow.

The HDD Management Plan will contain details on how subsurface interception of aquifer/ ground water flow will be managed during the activity.

The EMP (Att J Part 1) contains Performance Standards, Objectives and compliance criteria that are focused on effective management of groundwater.

Noise Generating Activities

Due to predictions of temporary exceedances of noise in discrete locations during construction of the pipeline, construction noise control practices will be implemented where practicable to minimise noise impacts. These will be assessed for each location but consideration will include:

- Respite for affected residents;
- Regular inspection and maintenance of machinery;
- Location of machinery and site entrances away from sensitive receptors (where possible); and
- Schedule activities to minimise noise impacts.

The EMP requires preparation of a Construction Noise Management Work Procedure to demonstrate compliance required by EPA Publication 1834.

Noise generation associated with HDD activities will be analysed as part of the HDD Management Plan.

Affected residential receptors and landowners will be engaged by Lochard Energy and notified in advance of work. Protocols for notification, complaints and response/ rectification are described in the EMP (Att J Part 1).

The EMP (Att J Part 1) contains Performance Standards, Objectives and compliance criteria that are focused on effective management of noise generating activities.

Visual Amenity

Site layout of HDD and Hydrotest where in proximity to residential receptors will include mitigations to minimise light spill in the direction of residential receptors. This may include barriers or mesh as required.

Existing access points will be used as far as possible to limit any long-term changes to the amenity of the road reserve.

Pipeline activities will be transient in nature so any visual impact created by construction activities will be temporary in duration.

Residential receptors and landowners will be engaged by Lochard Energy and notified in advance of work. Work will be scheduled and conducted with respect to directly impacted properties and residences. Consideration will include:

- Respite for affected residents;
- Location of machinery, equipment and site entrances away from sensitive receptors (where possible); and
- Schedule activities to minimise visual impacts.

Protocols for complaints and response/ rectification are described in the EMP.

The EMP (Att J Part 1) contains Performance Standards, Objectives and compliance criteria that are focused on visual amenity.

Air Quality

Lochard Energy will detail dust management and mitigation measures in the EMP. These will align with the requirements of local authorities and will be developed with consideration of EPA Victoria Publication 1834: Civil Construction, building and demolition guide (EPA 2020). Dust management in the EMP will include:

- A process for the management of plant and equipment maintenance to minimise emissions;
- The use of suitable dust suppressions techniques, such as water sprays on unpaved work area's and during loading and unloading of dust generating materials;
- Management of stockpiles, using either full coverage methods or water sprays; and
- Monitoring of weather conditions and modifying works in response to those conditions to minimise the generation of dust.

Residential receptors and landowners will be engaged by Lochard Energy and notified in advance of work. Protocols for notification, complaints and response/ rectification are described in the EMP.

The EMP (Att J Part 1) contains Performance Standards, Objectives and compliance criteria that are focused on effective management of Air Quality.

Greenhouse Gas (GHG)

The Scope 1 GHG emissions associated with construction of the HUGS Pipeline are attributed to the combustion of diesel. The EMP contains best practice guidance for the reduction of greenhouse gas emissions during construction.

The EMP (Att J Part 1) contains Performance Standards, Objectives and compliance criteria that are focused on limiting emissions generated as a result of pipeline construction.

GHG emissions during the operational phase of the HUGS Pipeline will be primarily related to compression of the gas. The pipeline has been sized to minimise frictional losses (i.e. to minimise compression size/consumption).

An estimate of GHG emissions during the HUGS Pipeline operations is provided in Att F. All operational emissions associated with the HUGS pipeline will be captured by organisational annual National Greenhouse and Energy Reporting Scheme (NGERS) reporting.

Traffic and Transport

The Timboon-Peterborough Road and Boundary Road crossings will be constructed via HDD to protect the integrity of the existing road structure and adjacent roadside vegetation.

In consultation with Corangamite Shire Council, and subject to relevant permitting, temporary traffic control will be required whilst pipeline access points are being actively used by plant, machinery and vehicles that will include temporary speed restrictions in the vicinity of pipeline access and egress for the duration of their use.

Road usage carries a residual risk that must be managed appropriately through engagement with community, local business, project personnel and haulage contractors.

A Traffic Management Plan (TMP) has been prepared to nominate the likely duration and extent of impacts and describes best management driver behaviours, best practice protocols and road user awareness guidance that should be implemented to effectively reduce and manage the impact of construction related traffic and transport (Att I). Surrounding residents will be notified in advance of work in accordance with the EMP.

The EMP (Att J Part 1) contains Performance Standards, Objectives and compliance criteria that are focused on effective management of traffic and transport. Protocols for complaints and response/ rectification are also described in the EMP.

Safety Impacts

Lochard Energy has undertaken a Front End Engineering Design (FEED) Stage Safety Management Study (SMS) study for the HUGS Pipeline in line with the requirements of AS/NZS 2885. The SMS Workshop included key personnel from both Lochard Energy and an Engineering Contractor, including HSE, operations and project teams and facilitated by a Third Party Facilitator ensuring a broad range of knowledge, experience and expertise was available for inputs.

The SMS focused on threats related to conditions that apply to the pipeline – external interference, natural events, and corrosion. Future revision of the SMS will also address the other categories of threats defined in AS/NZS 2885.6, which are: intentional damage, pipeline materials, and design, construction, operation, maintenance, and management of the pipeline. These future workshops will also include key personnel from the engineering, HSE, operations and project teams, and where relevant the pipeline contractor.

The SMS identified six (6) uncontrolled, failure threats relating to External Interference (EI), which were subject to risk assessment; two of these – vertical augering for installation of power-poles and cable-ploughs for installation of fibre-optics – could result in a 'Major' consequence as they

have potential for fatality of the equipment operator. The likelihood of the threats was also assessed as demonstrated in Table 5 below.

External interference (EI) threats are incidents in which a pipeline is struck by equipment due to digging activities above the pipeline.

Table 5 – External Interference Threats Summary

No.	Threat description	Consequence	Frequency	Risk class
E-007	Maxi HDD	Minor	Hypothetical	Negligible
E-008	Cable plough for fibre-optic	Major	Remote	Intermediate
E-011	Vertical auger for power-pole	Major	Hypothetical	Low
E-019	Drilling for water / Geotech	Severe	Hypothetical	Negligible
E-020	Drilling for oil / gas	Severe	Hypothetical	Negligible
E-022-FAC	Dropped objects	Severe	Remote	Low

External interference threats are assessed through the safety management process and are controlled in accordance with the External Interference Design requirements of AS/NZS 2885.1 & 5.4. Lochard Energy have considered in the design, controls such as:

- Burial Depth of the pipeline in relation to local features;
- Exclusion zones and barriers;
- Pipeline resistance to penetration controls, such as wall thickness selection; and
- Procedural controls such as:
  - Pipeline awareness – physical marker signs;
  - Pipeline awareness – registration with Before You Dig Australia;
  - Pipeline awareness – stakeholder awareness programs with utilities, local earthmoving contractors and the broader community;
  - Pipeline Patrolling – aerial surveillance or foot-based pipeline easement inspection.

The only non-EI risk subject to a risk assessment was ‘Lightning strikes’. These are capable of causing loss of containment in buried pipelines as a result of a pin-hole leak where a plug of metal has been melted and then blown out by internal pressure. Such a leak is unlikely to result in any injuries, because it would happen in a rural location. Consequently, the threat is assessed as ‘Trivial’. The likelihood is assessed as ‘Unlikely’, as demonstrated by Table 6 below.

Table 6 – Non-External Interference Threats Summary

No.	Threat description	Consequence	Frequency	Risk class
N-004	Lightning	Trivial	Unlikely	Negligible

No further controls are proposed to manage the threat of lightning beyond the implementation of the standard operation and controls philosophy.

10.	**Details of alternative pipeline routes considered by the applicant and reasons for selecting the proposed pipeline route in accordance with AS 2885.1—2018.**

Route options for the HUGS Pipeline were first initiated in mid-2021. Lochard Energy required to determine the best location to establish new well sites and optimise new pipeline connection options. Figure 8 outlines the pipeline route selection process and accompanying timeline.

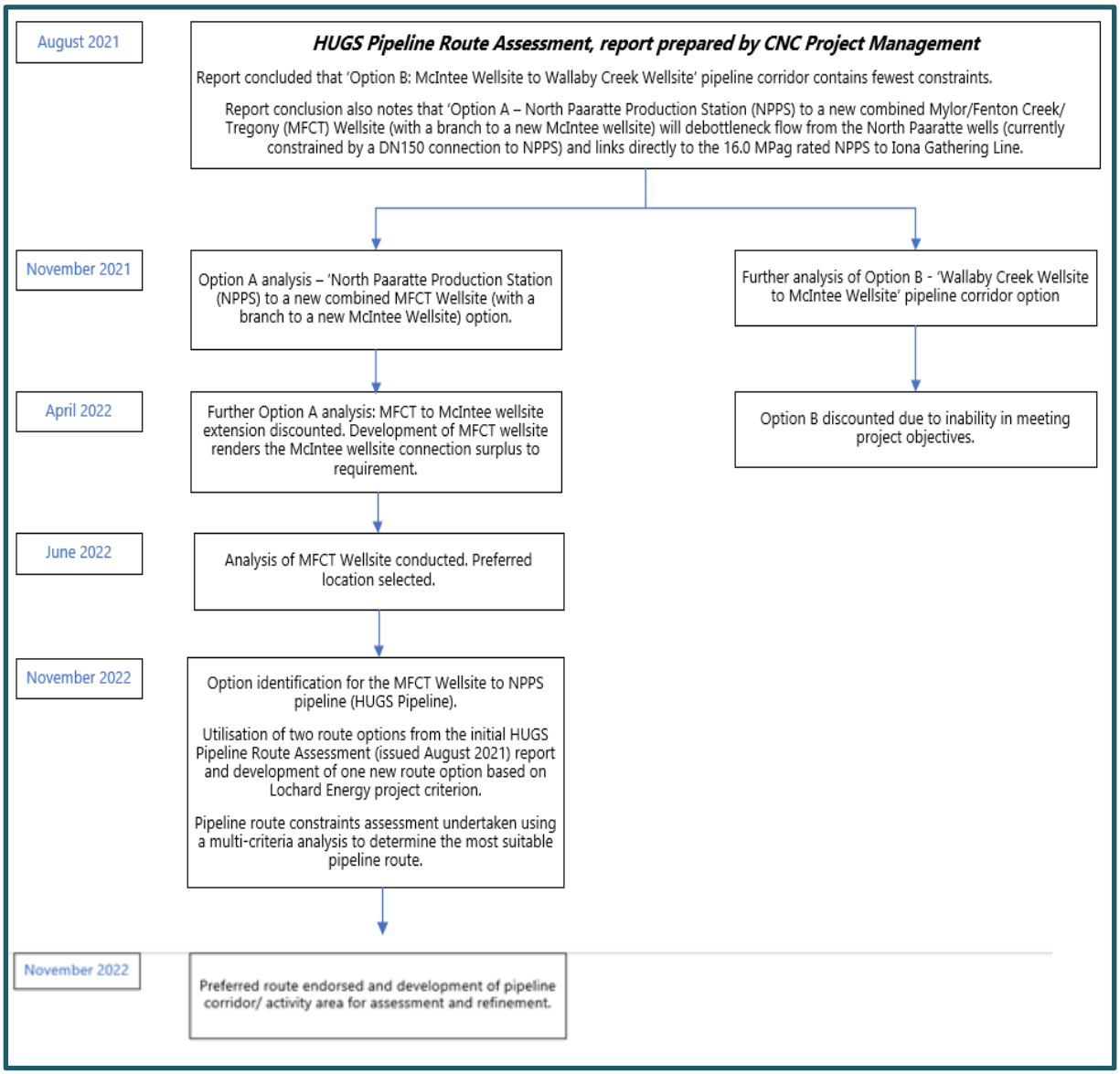

Figure 8– HUGS Pipeline Route Selection Flowchart

Initial HUGS Pipeline Route Assessment

In August 2021, CNC Project Management ('CNC') prepared a desktop concept pipeline route assessment exercise that analysed a broad arrangement of pipeline connections and options. Three (3) main options were evaluated against environmental, planning and social impacts using available desktop information and aerial imagery:

- **Option A** - North Paaratte Production Station (NPPS) to a new McIntee wellsite via a new combined Mylor / Fenton Creek / Tregony wellsite location (two (2) alternative routes).

- **Option B** - Wallaby Creek wellsite to a new McIntee wellsite via a new combined Mylor / Fenton Creek / Tregony wellsite location (two (2) alternative routes).
- **Option C** - North Paaratte Production Station (NPPS) to the Halladale, Black Watch & Speculant (HBWS) wellsite, via a new combined Mylor / Fenton Creek/ Tregony wellsite location, with a branch to a new McIntee wellsite.

Route options considered by CNC were broader than the HUGS pipeline route from the NPPS to the MFCT wellsite and were predominantly driven by wellsite selection. Figure 9 shows the extent of the CNC Options assessment.
The content of the report is now superseded with routes leading to discounted wellsite locations immaterial in the context of this application.
Relevant sections of route 1 and route 2 from the NPPS to the MFCT wellsite were adopted in a more focused route alignment options assessment (see below).

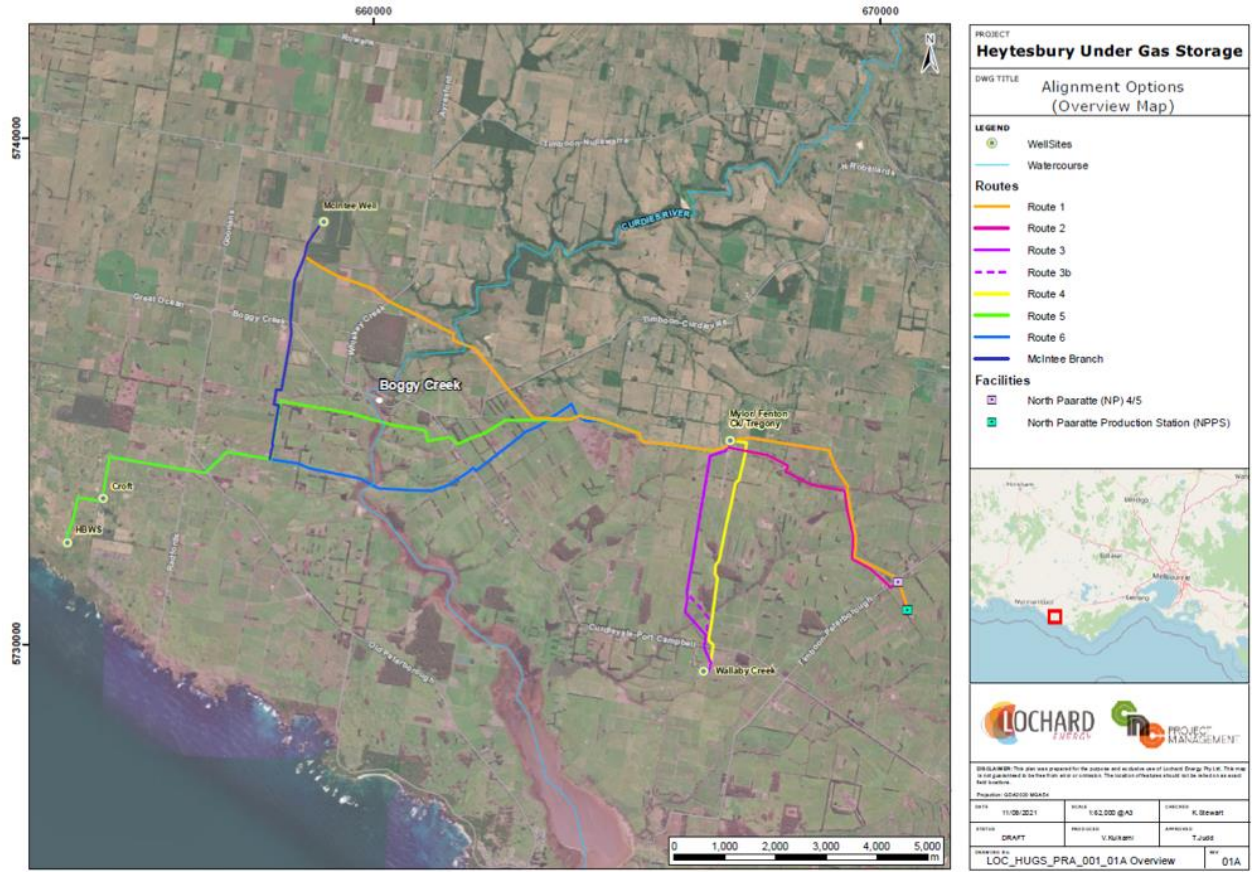

Figure 9 - Pipeline Route Options considered by the CNC Pipeline Route Assessment.

The CNC report concluded that a route from the Wallaby Creek wellsite to McIntee wellsite was most favourable but acknowledged that the option had pipeline design pressure constraints (i.e. the route option included utilising the existing gathering line which has a design pressure of 14.685MPag).

This constraint became evident following Pre-FEED assessment by the Lochard Energy design team who confirmed that the MFCT well requires a pipeline with a design pressure of 16.0MPag to operate effectively.

Wellsite Selection Refinement

The McIntee wellsite was removed from the scope in April 2022 due to its high development cost. Lochard Energy identified that a MFCT wellsite selection targeting the development of the Mylor field was the most economically viable option for the HUGS Project.

From this decision point, Pre-FEED activities concentrated on the site selection of the MFCT wellsite.

The existing MFCT well location that CNC used as the 'target location' for their pipeline route selection exercise was determined to be a sub-optimal drilling location due to the undulating nature of the site. Alternate wellsite location options were developed and evaluated to the north and south of the target location with the southern option being preferred due to a combination of favourable factors including geology, environmental values, topography and closer proximity to the North Paaratte Production Station.

Route Selection Process

Following further consideration, Lochard Energy decided to extend from NPPS due to the following reasons:

- The distance was slightly shorter from NPPS to MFCT wellsite;
- The pipeline extension could be rated to 16.0MPag which would allow higher injection pressures at the new MFCT wellsite. (***Note:*** The Wallaby Creek – NPPS gathering line is rated to 14.685MPag – if it were to be utilised for the HUGS Project, it would place an unacceptable constraint on the rate required to optimise the fill and delivery of gas cycles to and from the IGSF).
- Construction and operation of a new DN300 pipeline including an offtake at the NP-4/5 wellsite enabled consolidation of assets and would allow an existing DN150 gathering line from the NPPS to the NP-4/5 wellsite to be decommissioned.

Three (3) route options were considered from the southern MFCT wellsite location to the NPPS. Two (2) route options that CNC had considered in the 2021 report were modified by Lochard Energy to link to the revised well location, approaching from the north whilst Lochard Energy introduced a third route option, a more direct route option that connected to the MFCT wellsite from the south. Refer Figure 10 for overview of HUGS Pipeline route options 1, 2 & 3.

Evaluation was undertaken by Lochard Energy using a multi-criteria analysis (MCA) consistent with AS2885.1-2018 (particularly S4.7) and the route selection principles in the APGA Code of Environmental Practice – Revision 5. Refer Table 7 below.

Each criterion was analysed and attributed with an assessment of 'High', 'Medium' or 'Low' risk based on pre-determined rationale. This then translated to a score which was tallied with the appropriate weightings applied to provide a final ranking of each option as shown in Table 8. Full MCA and scoring criteria are provided in the HUGS Pipeline PL007732 Route Selection Report (Att M).

Table 7 - Route Selection Evaluation Criteria

Aspect	Evaluation Criteria	% Weighting
1. Capital Cost	Overall estimated cost incurred in consideration of materials cost, pipeline length, construction cost (including labour), regulatory effort and cost of securing tenure for the pipeline corridor and any vegetation offsets.	20%

2. Constructability	Constraint analysis of existing topography, land use and location of assets and infrastructure as they relate to ease and speed of construction and commissioning of the new pipeline asset. Consider security risk (accessibility of site to third parties during construction).	
3. Regulatory / Approvals Pathway	Intricacy of regulatory pathway, estimated level of resource commitment and duration to gain consent to commence construction, level of residual uncertainty and risk.	35%
4. Environment	Presence of caveats or covenants, biodiversity (native vegetation, vegetative communities, fauna habitat), watercourse quality and frequency, low-lying land, weed/ pathogen presence, connectivity.	
5. Heritage	Intersection of areas of Cultural Heritage sensitivity, proximity to known/ registered sites.	
6. Landowner, Occupiers, Interests and Asset owners	Number of landowners / occupiers. Intensity of agricultural land use, impact to agricultural assets and operations, landowner sentiment, native title interest, public asset complexity, private asset complexity.	35%
7. Land-use	Number of affected land parcels, land zoning, encumbrance on existing easements, encumbrance on land use, public land intersection, analysis of potential for future land use conflict.	
8. Community	Public safety risk, impact to public assets, impact to 'business as usual' activities and business operation during construction.	
9. Operability	Operational and maintenance complexity, third party asset interface (including risk of third party damage), corrosion risk, ease of asset protection during operation.	10%

The MCA analysed 35 criteria spread across the nine aspects in Table 7. A score of 1 (Low), 2 (Medium) or 3 (High) was attributed according to the level of risk or impact that each route option presented to every criterion.

Each route option was provided with a 'risk score' and a 'totalised score'. The risk score is the total unweighted score for each Aspect when evaluated against each criterion. Low scoring demonstrates lower risk or impact on each aspect.

The totalised score is the normalised, weighted score when the weightings % in Table 7 have been applied to the risk score. The intent of the totalised score is to promote the aspects with a higher weighting (e.g. social, landowner, environment, heritage) to ensure that the preferred pipeline route represents the route of least risk or impact to these aspects. A comparison of environmental, heritage, social (community) and safety impacts (e.g. receptor distance, asset crossing/ paralleling) was undertaken with results presented in Table 8. Aspects have been grouped in the table according to their weighting categories in Table 7.

Route Option 3 ranked first substantially ahead of Route Options 1 and 2 which scored equally and ranked similarly. Summary of the MCA is provided in Table 8.

Table 8 - Route Options MCA Summary

Aspect (Weighting)	Route Option 1		Route Option 2		Route Option 3	
	Risk Score	Totalised score	Risk Score	Totalised score	Risk Score	Totalised score
Capital Cost & Constructability (20%)	21/30	3.68	18/30	3.16	12/30	2.11
Regulatory, Environment & Heritage (35%)	16/33	4.44	18/33	5.00	13/33	3.61
Landowner, Land use & Community (35%)	19/33	5.28	19/33	5.28	14/33	3.89
Operability (10%)	4/9	1.18	5/9	1.47	3/9	0.88
Total	**60/105**	**14.58**	**60/105**	**14.91**	**42/105**	**10.49**
Option Ranking	**2nd**		**3rd**		**1st**	

Capital Cost & Constructability Summary

Route Option 3 is the shortest route option and has the lowest overall constructability risk.

In addition to being longer, Route Options 1 and 2 have both been aligned to be offset from existing operational pipelines which brings constraint and crossing complexity, adding to overall construction costs.

Regulatory, Environment & Heritage

Route Option 3 ranked lowest risk due to lowest proximity to existing Aboriginal places and least impact to mapped vegetation layers.

Landowners, Land Use & Community

Route Options 1 and 2 scored the same whilst Route Option 3 has fewest road crossings and less impact on existing land use and agricultural operations. Route Options 1 and 2 would impact an irrigation pivot and several internal tracks central to the daily operation of dairies.

Route Option 3 has the shortest route and the lowest overall area of impact or encumbrance to landowners.

Operability

Route Option 3 ranked as lowest risk with Route Options 1 and 2 having increased risk of Third Party damage in proximity to existing operational assets.

Pipeline Route 3 - Optimisation

Following MCA evaluation, Route Option 3 was adopted as the preferred HUGS Pipeline route and was then surveyed by ecologists and representatives of EMAC accompanied by an appointed cultural heritage advisor. Refinement to access locations, construction methodology, activity sequencing, additional workspace and pipeline route were also undertaken in consultation with landowners and technical specialists. Table 9 summarises the key refinement activities that have been subsequently applied to the Route Option 3 – the preferred HUGS Pipeline Route.

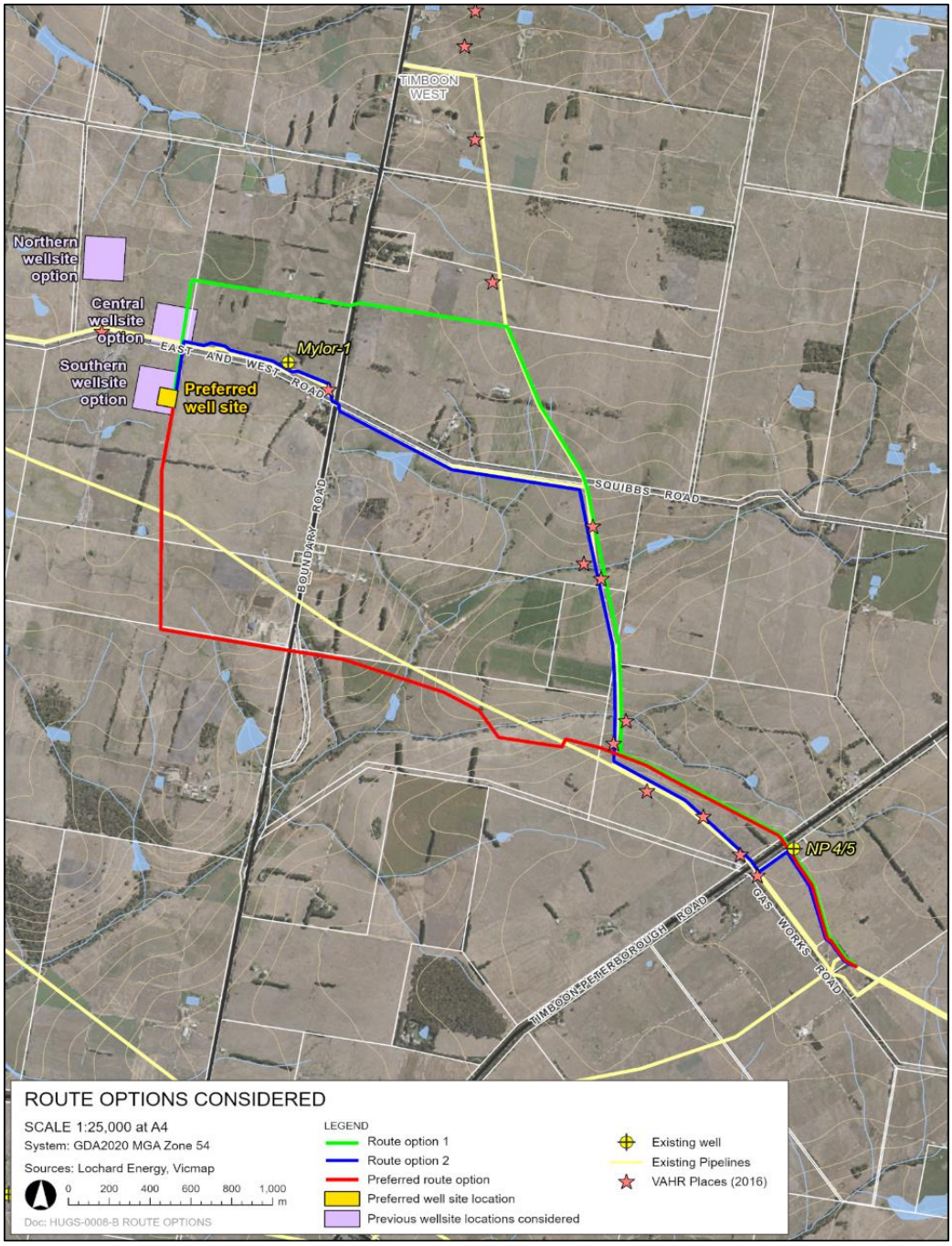

Figure 10 - Pipeline Route Options 1, 2 and 3 (refer to Att M)

Table 9 - Key Pipeline Route Refinement Activities

Activity	Chronology and Description	Resulting Change to Option 3
Constructability Site Walk Through	Commenced April 2022. Landowner engagement commenced to enable understanding of existing on-farm assets and operations so that pipeline construction can minimise disruption and disturbance to those operations. June 2022. Site visit with construction personnel with a focus on optimising constructability and evaluating whether landowner requests raised during initial consultation could be incorporated into route selection.	During this walk through, the option to follow the route of the existing APA line on the western side of Boundary Road was assessed at the request of the landowner. At the site visit, it was deemed that the construction risk was too great to parallel the route of the APA line due to the presence of a number of dams.
Ecology Assessment	A field assessment was undertaken in August 2022 by Ecology and Heritage Partners.	The output of this assessment was used to refine the pipeline route and workspace areas to minimise the impact on flora and fauna within the nominated study area. The result of the refinements was that the amount of native vegetation impacted has been reduced from an original area of 0.57 ha to 0.131 ha.
Cultural Heritage Complex Assessment	14-16th March, 20-23rd March, 26-27th April, 17-18th July and 24-25th August 2023. The result of the field surveys was that three (3) artefacts were located from one Excavation pit and one radial Shovel Test Pit on the eastern side of Leech Creek.	In consultation with representatives from EMAC, the pipeline corridor was moved approximately 25m to the south and the workspace area reduced to 16m for a length of 22m to avoid the area of cultural heritage sensitivity and provide a suitable buffer from the locations where artefacts were found.
Cultural Heritage Management Plan 18865 Amendment	Following completion of the Cultural Heritage assessment, two areas outside of the assessed activity area were added to the Pipeline Corridor: • Lot 2\LP201745 (Lochard owned parcel) – to provide access from Timboon-Peterborough Road and connection to the NP4/5 Wellsite Offtake • Additional area incorporating more of Lot 4\PS426303 (Heytesbury Gas Processing Plant – Lochard leased area) and Lot 1\LP201744 (North Paaratte Production Facility – Lochard owned parcel). This is required for pipe laydown adjacent to KP0. A Notice of Intent (NoI) to amend CHMP 18865 was lodged on 12 August 2024.	EMAC have advised that they elect to evaluate the amendment and it is yet to be determined if further surveys are required.

Table 10 details specifically how the preferred HUGS Pipeline Route selection reflects the considerations in S4.7.3 of AS2885.1-2018.

Table 10 - HUGS Pipeline Route AS2885.1-2018 Considerations

Route Selection Consideration	HUGS Preferred Pipeline Route Summary
Public Safety	Pipeline Option 3 maintains greatest distance from the pipeline route to residential receptors, minimising amenity impact (i.e. dust, noise, visual impact) and maintaining physical separation between the buried pipeline and residences. Access points to the pipeline corridor are in sections where there is a clear line of sight on roads with low traffic volumes. Based on the outcomes of the Safety Management Study, all credible threats, hazards or impacts to the public, the workforce and nearby land use and business operation can be effectively mitigated and controlled to a level of residual risk that is as low as is reasonably practicable.
Proximity to populated areas including the likelihood of external interference and the consequences of escape of fluid	Pipeline Option 3 has minimised proximity to populated areas. The regional location of the pipeline means that there are 10 residential receptors within 1km of the Pipeline Corridor. The MFCT wellsite is approximately 6.7km directly from Timboon and approximately 6.6km from Port Campbell. The likelihood of external interference has been quantified in the Safety Management Study (Att P), identifying one practice (cable plough for fibre optic) as being an intermediate risk with a remote likelihood of occurrence.
Present land use and any expected Land Use Change	The land along the route is Farming Zone and unlikely to be developed given its rural location and lack of broader connectivity to population centres and infrastructure Present land use is a combination of dairy pasture, shelter belt vegetation, road corridor, farm track or watercourse/riparian corridor. Construction of the pipeline would create a temporary disturbance to land use during construction and rehabilitation however land use will be able to be resumed across the land post construction. Pipeline Safety Management Study (Att – P) did not identify any reasonably foreseeable land use.
Easement width	Permanent easement width will be 12m. This is considered adequate to access and maintain the pipeline during its operational life.
Future access to pipelines and pipeline facilities, e.g. in a particular route option, the possibility of future developments by others limiting access to the pipeline	There are a number of other operational transmission pipelines and gathering lines in proximity to the route although the prospect of future development or looping of those assets is low. It is considered unlikely that access to the operating pipeline will be threatened by future developments in consideration of

	its rural location and the declining outlook for gas development in the region.
Special concerns associated with the use of common infrastructure corridors	Parallel routing of the pipeline in proximity to existing assets has been actively avoided to minimise risk of Third Party asset damage and complexities with corrosion protection.
Proximity of existing cathodic protection ground beds	There are no identified Cathodic Protection bed locations in proximity of the pipeline route.
Proximity of sources of stray direct current sources	There are no identified sources of stray Direct Current source in proximity of the route that have potential to significantly impact pipeline integrity.
Proximity of other underground services	Route crosses the APA Group Paaratte to Allansford pipeline twice, Beach Energy Halladale Pipeline, Epic Energy asset and buried Telstra assets. Proximity of other underground services is known, separation distance between the assets has been calculated and incorporated into the pipeline design and all asset owners are involved in dialogue in relation to the crossing of their assets.
Proximity of high voltage (HV) transmission lines	The pipeline crosses one buried High Voltage cable owned by Epic Energy, from the Timboon West Windfarm. This cable is AC. Proximity to the asset is known, separation distance between the assets has been calculated and incorporated into the pipeline design and the asset owner has been engaged by Lochard Energy in relation to crossing the asset.
Environmental Impact	Please see section 6 and section 9 of this application to review environmental impacts and proposed management and mitigation measures.
Cultural heritage	All planning, construction and operational activity will be undertaken in accordance with the provisions of approved CHMP 18865, and as amended in future.
Prevailing winds	Prevailing wind is from the south-west which requires consideration during the construction period with respect to amenity, particularly dust generation, during detailed risk assessment and daily work planning.
Topography	There is a 54m variance between highest and lowest point of the route. Major topographic features are absent from the pipeline corridor with the ground conditions consisting of gentle slope and mild undulation The steepest sections of the route are the creek crossings of Skull Creek and Leech Creek which remain minor in terms of slope although they will require suitable erosion and sediment controls to be installed for the duration of construction.
Geology	The pipeline route has a thin layer of topsoil ~100mm which sits on top of a layer of Hanson Plain Formation (Tpb), characterised by sandy clays and high plasticity clay. This layer extends to a range of depths typically between 4.5m to 7m. Below the Hanson Plain Formation is Weathered Port Campbell Limestone which is characterised by silty sand and

	soft Calcarenite with occasional bands of high strength limestone. These underlying soil conditions are suitable for pipeline construction and should not present any issues in terms of excavating the pipeline trench or installing the pipeline via HDD at the two nominated crossings of Timboon-Peterborough road and Boundary road.
Soil Types, e.g. for effect of soil properties on corrosion and cathodic protection (CP)	Soils along the full extent of the alignment are clays and sandy clays. No acid sulphate soil, potential acid sulphate soil or saline soils exist.
Possible inundation	The route crosses four (4) watercourses. Each is ephemeral (intermittent) in nature and has small upstream catchments. The crossing of Leech Creek is immediately downstream of a dam. If a dam failure occurred during construction, it would present an inundation risk however the likelihood of occurrence is remote.
Constructability	The Multi Criteria Analysis (MCA) reviewed constructability in detail and scored the preferred HUGS Pipeline route lowest (best). Subsequent ground walk throughs have confirmed that this option presents a certainty in existing ground conditions and constructability effort.
Ground stability, including other land uses which may create instability e.g. mine subsidence, land development/ excavation	Ground conditions are stable no mine subsidence or excavation in the vicinity. No existing land use has the potential to create instability within the Route Option 3 pipeline corridor.
Minimisation of bends and placement of bends at appropriate locations	Route Option 3 is the most direct route with fewest bends. Bends have been minimised and are required at the following locations: - KP0-KP0.5: Align close to the existing North Paaratte DN150 flowline. - KP0.8: Allows perpendicular crossing of Timboon-Peterborough Road. - KP1.54: Minor bend to maintain offset distance from adjacent landowner track. - KP1.95 & KP2: Allows perpendicular Crossing of the Paaratte to Allansford pipeline. - KP2.3: Allows perpendicular crossing of Skull Creek. - KP2.45: Bend to enable perpendicular crossing of Leech Creek. - KP4.1: 90degree bend – main change of direction north towards the MFCT wellsite. - KP4.9: Minor bend to allow perpendicular crossing of a farm track.

11. A comparison of the environmental, social and safety impacts arising from each of the alternative pipeline routes set out in 10 above and the proposed pipeline.

A direct comparison of the pipeline routes considered is provided in the Multi Criteria Analysis that was undertaken as part of the HUGS Pipeline Route Assessment (Att M). Table 11 provides a summary focused on the proposed pipeline (Route Option 3 in the HUGS Pipeline Route Assessment) and each of the alternative pipeline routes considered in relation to aspects of environmental, social and safety impact.

Table 11 - Comparison of environmental, social and safety impacts for each route option considered

Aspect	Route Option 1	Route Option 2	Proposed Pipeline (Route Option 3)
Length	6.1km	5.63km	5.3km
Environment			
Length of alignment >3 degrees slope	1.75km >3 degree slope	1.3km >3 degree slope	0.6km>3 degree slope
Mapped Native Vegetation intersected (assumed 25m ROW)	3,686m^2 EVC165 Damp Heath Scrub intersected	5,667m^2 EVC165 Damp Heath Scrub intersected	1,238m^2 EVC165 Damp Heath Scrub intersected
Watercourses/ Drains or dams intersected	4	3	4
Social (incl. Heritage)			
Private Land parcels	8	5	11
Roads intersected	4	3	2
Landowners, occupiers and public land managers intersected	8	5	7
Dwellings in proximity (<200m)	0	4	0
Intrusiveness on existing land use	Impacts centre-pivot irrigation and a number of high intensity forage paddocks. Intersects 6 x dairy tracks and dairy cattle access to dairy track for 630m	Impacts centre-pivot irrigation and a number of high intensity forage paddocks. Intersects 6 x stock accesses incl. 2 x main dairy accesses.	Impacts a number of high intensity forage paddocks and 4 x dairy accessed incl. one main dairy access.
Amenity Risk to receptors (dust, noise, visual impact)	Reasonably good separation from residential receptors. At least 200m buffer. Vegetation screening for most of the route.	Very close to four residential receptors	Good separation from residential receptors. At least 200m separation from closest receptor.

Cultural Heritage Sensitivity layer intersected	2.16km	2.26km	2.65km
Proximity to Registered Aboriginal Places	Within 20m:2 20m - 200m:4	Within 20m:6 20m - 200m:0	Within 20m:1 20m - 200m:5
Safety			
Length of third-party easements overlapped/ encountered	3.76km	5.2km	0.65km
Third party easements or assets intersected	Beach Energy x 3 Epic Energy x 1 Property access x 1 Telstra (rd reserves)	Lochard flow line x 1 Beach Energy x 1 Epic Energy x 1 Telstra (rd reserves)	APA x 2 Beach Energy x 1 Epic Energy x 1 Telstra (rd reserves and ~KP4.95)
Number of residences (<500m)	5	7	4

Comparison of Environmental and Social Impacts

Lochard Energy undertook evaluation of all available ecological State and Federal mapping, literature and desktop data in evaluating pipeline route Options 1 and 2 and the proposed pipeline (Option 3).

No threatened ecological communities listed under the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 were recorded. Pipeline construction and operation will not trigger significant impact criteria on any pipeline route.

Species listed under the Flora and Fauna Guarantee Act 1988 were limited to roadside corridor presence which would be avoided by trenchless construction.

There is a local vegetation protection overlay on the Timboon-Peterborough Road which is common to all three route options and will be avoided via trenchless construction.

Spear thistle (listed noxious weed under the Catchment and Land Protection Act 1994) and blackberry were found to be common to all three route options (*Note*: blackberry is listed under the Catchment and Land Protection Act 1994 and is also listed as a Weed of National Significance).

Other environmental values remained consistent between the pipeline route options with similar number of watercourse intersections with similar crossing complexity and disturbed, degraded riparian vegetation. There are no other intersections of dams or other low-lying areas other than the watercourses themselves.

Comparison of Heritage Impacts

During initial route selection, the Desktop assessment, a review of the Victorian Aboriginal Heritage Register (VAHR) found that 26 previously registered Aboriginal places occur within the greater region (5km radius from the mid-way point of each pipeline route option).

Route Option 1 was in close proximity to two registered places and near a further four whilst Route Option 2 was in close proximity to six registered Aboriginal places.

The proposed pipeline (Option 3) was in close proximity to one site and near a further five. Following its selection as preferred HUGS Pipeline route, an 'activity area' was developed around the proposed pipeline which was then subjected to desktop, standard and complex assessment.

Subsequent analysis and refinement avoided all registered sites. The proposed pipeline is subject to an amendment to CHMP 18865 (please refer to section 8 and Att K Part 2).

Comparison of Social Impacts

The proposed pipeline (Option 3) represented the shortest route of all three options, requiring the shortest amount of new easement. Landowner numbers were similar for all options.

The proposed pipeline (Option 3) has multiple operating transmission gas pipelines and flowlines already present on properties so the need to minimise the total area encumbered by easement on the HUGS Pipeline route was a heavily weighted consideration.

The proposed pipeline (Option 3) intersects the fewest road corridors (2) when compared to Option 1 (4) and Option 2 (3). The proposed pipeline (Option 3) avoids an irrigation pivot that Options 1 and 2 intersect.

Route Options 1 and 2 also impact operating dairies to a larger degree than the proposed pipeline (Option 3) with Option 1 in particular separating dairy track from pasture for a distance of approximately 630m. These operations require ongoing access 2-3 times per day, 7 days per week for dairy cattle to access the milking parlour.

Whilst it is possible to insert crossing locations, Route Option 3 minimises disturbance to landowners for on-going operations.

The proposed pipeline (Option 3) has the most separation from residential receptors with the nearest house being ~210m away from the HUGS Pipeline Corridor. Route Option 1 is also relatively separated but is longer with a higher potential risk of Third Party damage due to the proximity of existing operational assets. Route Option 2 is close to four (4) residential receptors which presents a high risk of amenity impact during construction. Public safety risk could be effectively managed however the proposed pipeline (Option 3) was selected as it had lowest overall impact on social aspects.

Comparison of Safety Impacts

Co-location with existing buried pipeline assets was assessed as part of pipeline route Option 1 and 2. Following evaluation, these were longer length options that had no material reduction in environmental or heritage impact.

Route Option 2 had fewest direct asset crossings although that was offset by it being the route with the longest shared corridor with Third Party infrastructure with an increased potential risk of Third Party damage during future operations.

Route Option 1 has the highest number of Third Party crossings and has the second highest shared corridor length with Third Party infrastructure.

The proposed pipeline (Option 3) has three (3) crossings of high-pressure operating gas assets and one (1) High Voltage power cable crossing in addition to at least one (1) Telstra cable identified via a Before You Dig Australia (BYDA) search. All crossings would be perpendicular, reducing the interface with Third Party assets and minimising the risk of potential future Third Party damage.

Lochard Energy has been actively engaging with landowners and occupiers, and third-party utility owners and managers, along the preferred pipeline route since April 2022 and has assessed all options to safely minimise impact on existing and future land use and agricultural operations.

The l preferred and proposed route (Option 3) is presented as the most optimised option following specialist assessment and detailed consultation with affected landowners.

12. Details of land ownership and title details (if applicable) for the land through which the proposed pipeline route or corridor is to be constructed.

Details of land parcels through which the proposed pipeline route or corridor is to be constructed are shown in Table 12 and Table 13.

Table 12 - Freehold Land Parcels through which the HUGS Pipeline Route or Corridor is to be constructed

Project ID	Lot	Land type	Landowner/ Land Manager
MFCT01	4\PS426303	Freehold	Corporate
MFCT02	1\LP201744	Freehold	Corporate
MFCT03	5\PS426303	Freehold	Private
MFCT03A	2\LP201745	Freehold	Corporate
MFCT04	26~1\PP3360	Freehold	Private
MFCT05	27~1\PP3360	Freehold	Private
MFCT06	1\TP884206	Freehold	Private
MFCTR3	1\TP436747	Freehold	Council
MFCT07	1\TP7190	Freehold	Private
MFCT08	1\TP888281	Freehold	Private
MFCT09	2\LP92940	Freehold	Private

Table 13 - Crown Land Parcels through which the HUGS Pipeline Route or Corridor is to be constructed

Project ID	Lot	Land Type	Landowner/ Land Manager
MFCTR1	Timboon – Peterborough Road	Road Reserve	Minister for Roads and Road Safety/Local Council
MFCTR2	Unused Road Reserve	Road Reserve	Minister for Roads and Road Safety/Local Council
MFCTR4	East and West Road	Road Reserve	Minister for Roads and Road Safety/Local Council

13. Plans and design specifications of the proposed pipeline including metering stations, aboveground and underground facilities.

Basis of Design

The HUGS Pipeline Basis of Design (Att N) has been developed by Lochard Energy to detail the design intent and technical requirements for the pipeline and associated appurtenances.

The pipeline is to be designed, constructed and operated in accordance with the AS 2885 suite of standards and the ASME B31.12 Hydrogen Piping and Pipelines.

The pipeline consists of the following main components:

- Above ground tie-in spools at NPPS connecting to the NPPS - Iona Gathering Line;

- Buried pipeline section running from NPPS to MFCT wellsite (via NP-4/5 wellsite);
- Above ground offtake spool with associated isolation valves at NP-4/5 wellsite connecting to the NP-4/5 wellsite piping system;
- Above ground tie-in spool with associated pig trap launcher and isolation valves at MFCT wellsite connecting to MFCT wellsite piping; and
- All above ground / below ground transition spools (risers) are installed with Monolithic Insulation Joints (MIJ) to electrically isolate the pipeline from installed wellsite and facility piping.

The key parameters of the pipeline design are summarised in Section 3 of this application.

The delineation between the pipeline and the connecting facilities is presented in Section 4 of this application.

The pipeline is designed for bi-directional flow to facilitate injection and withdrawal to/from the MFCT wellsite and the IGSF.

The HUGS Pipeline is designed to be piggable by utility (i.e. foam, cleaning pigs) and intelligent pigs (i.e. in-line inspection pigs) from the MFCT Wellsite through to the Iona Gas Storage Facility.

HUGS Pipeline Construction

Typical trench layout for the HUGS Pipeline is shown in Figure 11.

Hydrogen Compatibility

Lochard Energy has considered and included potential future hydrogen conveyance as a consideration in the design of the HUGS Pipeline. A hydrogen-ready design has been proposed, which primarily addresses the requirements of ASME B31.12 Hydrogen Piping and Pipelines.

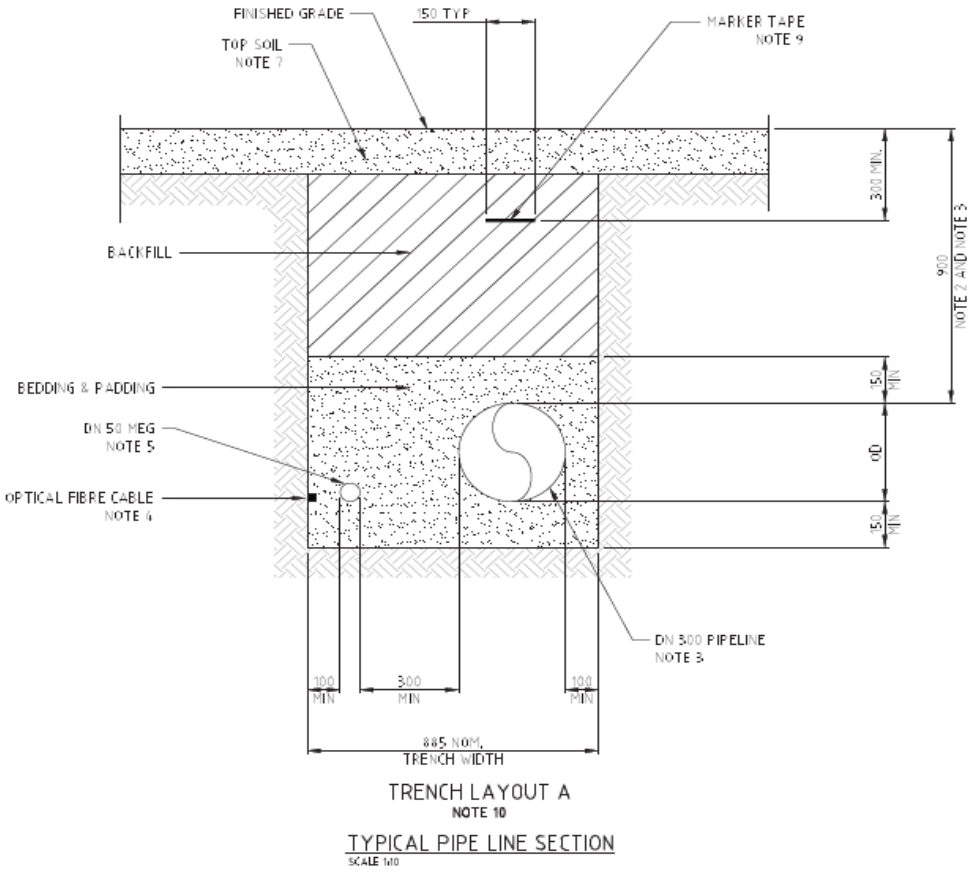

Figure 11 - Typical Trench Layout for HUGS Pipeline

Typical pipeline right of way set-up is shown in Figure 12.

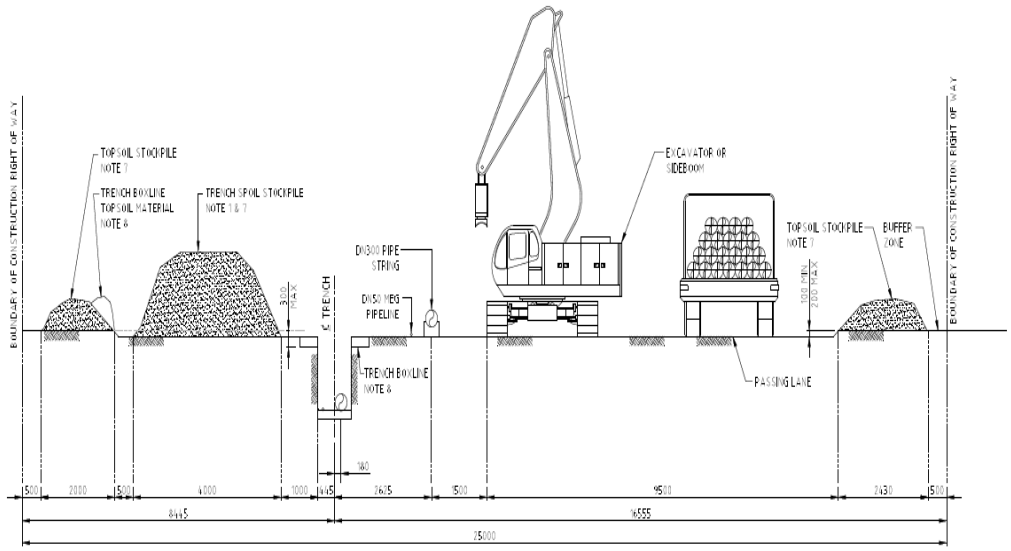

Figure 12 - Typical Pipeline Right of Way (ROW) Set-up

14.	**The benefit of the proposed pipeline to Victoria relative to its potential impacts.**
	The HUGS Project is designed to provide additional security of supply and reliability to meet the growing demands for energy storage in the eastern Australian energy market, which will help support the transition to a lower carbon future including by providing support to renewables development. The HUGS Project involves drilling for gas storage, it does not involve drilling for the development of new gas or petroleum production. The Australian Energy Market Operator (AEMO) Victorian Gas Planning Report Update 2024 ('VGPR Update') specifically outlines the role that the IGSF plays in the security of energy supply which is paraphrased in the following extracts: • *A seasonal supply demand imbalance indicates that a combination of Victorian production, Iona UGS, and interconnected pipeline flows is projected to be insufficient to meet forecast winter consumption."* • *"A peak day shortfall indicates that supply is projected to be insufficient to meet forecast demand on peak days only."* • *"Depletion of the Iona inventory impacts both seasonal gas supply and the daily capacity to support peak day demands.* **Seasonal supply shortfall predicted from 2028** The 2024 AEMO Gas Statement of Opportunities (GSOO) projects small seasonal gas supply gaps in 2026 and 2027 for the southern states, driven by Gas Powered Generation (GPG) demand, followed by a consistent and larger shortfall of gas from 2028 despite declining residential, commercial and industrial consumption of natural gas. **Peak day supply shortfall predicted in 2026 (for GPG) and 2027 (residential, commercial and industrial consumption)** The 2024 VGPR Update forecasts that there is sufficient peak day supply to meet demand until 2027, although "*there is likely to be insufficient supply capacity to support even moderate levels of GPG on a peak day during winter 2026"*. Peak day demand consists of a combination of GPG and industrial, commercial and residential usage. "*System demand exceeds available supply on a 1-in-20 system demand day in 2027, and on both a 1-in-2 and 1-in-20 system demand day in 2028*". (2024 VGPR Update) Forecast peak day shortfall has moved a year closer from the 2023 VGPR report which "*leaves little more than 3 years for projects to be developed and commissioned to resolve these forecast peak day shortfalls."* *"Anticipated projects improve peak day adequacy from 2026, but these projects cannot resolve any of the forecast supply adequacy gaps identified from 2027"* (2024 VGPR Update). **The role of gas storage in dispatchable electricity generation** Without investment in new sources of gas storage that can be utilised to fuel dispatchable gas powered electricity generation, there is a risk of Victorian customers experiencing extended periods of energy supply disruption from 2027 onwards.

	The benefit of the proposed pipeline to Victoria The HUGS Project represents a new storage project designed to deliver an enhanced capacity of 45TJ/day by mid-2026 to assist in meeting the need for greater seasonal and peak day capacity. The HUGS Project does not involve the drilling for new gas development but rather will increase the overall storage and export capacity of the IGSF. The HUGS Pipeline will enable the new storage to connect to the IGSF and fulfil its function in support of seasonal and peak day demand which will in turn play a contributing role in maintaining the State's energy security whilst transitioning to a lower carbon economy. **Assessment of benefit against planned impacts** During construction of the HUGS Pipeline, there will be planned localised access and amenity impacts. The temporary, localised impacts associated with pipeline construction are known and can be reduced as far as is reasonably practicable through effective management controls (please refer to the Pipeline Environmental Management Plan - Att J Part 1). Permanent impacts include the encumbrance and restriction of land use across the 12m wide pipeline easement for the duration of the pipeline's operation for a distance of 5.3km. The pipeline route will require above ground signage in accordance with AS2885.1 and Lochard Energy will be required to undertake regular surveillance activities to ensure the safe operation of the pipeline. Landowners will be appropriately compensated for the restriction of land use associated with the permanent pipeline easement whilst the localised land disturbance is recoverable and productive agricultural land use will be restored. Greenhouse gas emissions are unavoidable but have been minimised as far as is reasonably practicable and the HUGS Project will operate on 100% renewable energy which is consistent with the present operation of the IGSF. Landowners and the broader community are familiar with gas pipelines and are unlikely to be affected by the ongoing operation of the HUGS Pipeline. Relative to the broad benefits that the HUGS Project will deliver by enhancing seasonal supply and peak day supply capability that will contribute to meeting Victoria's predicted energy shortfalls, the impacts of the pipeline are small, localised, largely temporary and can be managed to minimise their effects.

15. Evaluation of proposal against Principles of Sustainable Development set out within section 4 of the *Pipelines Act 2005*.

Lochard Energy has assessed the principles of sustainable development from the Pipelines Act 2005 and has applied these principles throughout in the development of the HUGS Project and this application. The Principles are assessed in Table 14 and the relevant sections of this application.

Table 14 - Assessment of the Principles of Sustainable Development

Principle S4.2(2) of the Pipelines Act 2005	Relevant section(s) of this application	Relevance
a) Individual and community wellbeing and welfare should be enhanced by following a path of economic development that safeguards the welfare of future generations	**14**	Lochard Energy supports Victoria's net zero ambitions and has a sustainability action plan and defined targets in relation to emissions reduction. Lochard Energy's sustainability agenda includes taking an effective role in supporting the transition to a lower carbon future, considering climate change risks as part of running our business, providing employment opportunities and contributing to local communities where we can. Construction and operation of the HUGS Pipeline aligns with the principle of sustainable development. Gas storage has an important role to play in enabling transition to a lower carbon economy through supply of firming capacity in support of renewable development and fulfilling short term energy demand as coal fired power stations are decommissioned. Lochard Energy are committed to sustainable business practice. The IGSF operates on 100% renewable energy and Lochard Energy have considered and included potential future hydrogen conveyance in the design of the HUGS Pipeline as part of a broader program and commitment to the advancement of future fuel production and storage in Victoria.
b) There should be equity within and between generations	**6 13 Att J Part 3**	**Equity within generations** The HUGS Pipeline will contribute to meeting the need for new sources of seasonal and peak day supply that are required to meet forecast demand shortfalls from 2027. The Project aligns with the provision that all individuals, regardless of age, have fair access to essential resources. Enhanced supply will assist in meeting demand and therefore enable access to energy. The construction of the HUGS Pipeline and the continued operation and enhanced capacity of the IGSF supports continued economic opportunity for people at all stages of experience and development, particularly in regional Victoria.

			Equity between generations Construction and operation of the HUGS Pipeline aligns with the principle of sustainable development. Gas storage has an important role to play in enabling transition to a lower carbon economy through supply of firming capacity in support of renewable development and fulfilling short term energy demand as coal fired power stations are decommissioned. Lochard Energy are committed to sustainable business practice. The IGSF operates on 100% renewable energy and Lochard Energy have considered and included potential future hydrogen conveyance in the design of the HUGS Pipeline as part of a broader program and commitment to the advancement of future fuel production and storage in Victoria.
	c) Biological diversity should be protected and ecological integrity maintained	**9** **10** **Att D** **Att J Part 2**	The impact on biological diversity has been assessed with total impact on native vegetation amounting to 0.131 ha and two (2) large trees. This is a residual impact following application of the principles of avoidance and minimisation. No flora or fauna species or ecological communities listed under the Flora and Fauna Guarantee Act or EPBC Act will be impacted. Vegetation offsets will be obtained in accordance with the appropriate legislative requirements to account for the nominated impact. Impact to fauna passage and foraging within the Pipeline corridor has been minimised with the HDD of the Timboon-Peterborough Road reserve. The Pipeline route has also been selected and designed to avoid vegetation removal and offsets will be obtained where avoidance is not possible.
	d) There should be recognition of the need to develop a strong, growing, diversified and internationally competitive economy that can enhance the capacity for environment protection	**14**	The project will enhance he operability and capacity of the IGSF and in turn support the State's energy security and reliability, benefiting the broader economy.. Gas will play an important role in the firming of renewable developments as the energy market reduces reliance on coal fired power generation.
	e) Measures to be adopted should be cost effective and flexible, not disproportionate to the issues being addressed, including improved valuation, pricing and incentive mechanisms	**6** **9** **Att J Part 1** **Att J Part 3**	Following completion of the HUGS Project Environmental and Social Impact Assessment (Att J Part 3), a number of control and mitigation measures have been identified to address environmental, heritage, social, health and safety impacts of the Project. These measures are effective, appropriate and consistent with best practice, departmental guidance and industry standards. Applicable mitigation measures will be incorporated into the Project's Environmental Management Plan so that

			they can be actively measured and implemented during construction and operation of the HUGS Pipeline.
	f) Both long and short term economic, environmental, social and equity considerations should be effectively integrated into decision-making	**10** **11**	Pipeline route selection has been driven by consideration, avoidance and minimisation of impact on social and environmental values and a weighting that has been applied in favour of the existing environment, land use and amenity values when evaluating risk and impacts of the HUGS Pipeline construction and operation. Pipeline route and corridor selection has taken into account economic consideration reflected by constructability, route length and adoption of more costly construction methodologies in order to avoid impacts to identified environmental and heritage values. Changes to the route with consideration of vegetation have resulted in a significant reduction to the total impacted area of native vegetation. Changes to the pipeline corridor to avoid areas of cultural heritage sensitivity. Emissions associated with Construction and Operation of the Pipeline would contribute to 0.0031% of annual Victorian Greenhouse Gas emissions and 0.0005% of annual Australian Greenhouse Gas emissions.
	g) If there are threats of serious or irreversible environmental damage, lack of full scientific uncertainty should not be used as a reason for postponing measures to prevent environmental degradation	**Att J Part 1** **Att J Part 3**	There are no identified threats of serious or irreversible environmental damage associated with the HUGS Pipeline. The existing environment is well understood and the Pipeline's aspects and impacts relating to construction and operation of the pipeline have been comprehensively assessed. The Pipeline's impact has been assessed and evaluated against it's extent, severity and duration. All negative impacts have minimal extent, low severity and are largely restricted to the temporary construction period.
	h) Decision-making should be guided by: **I. A careful evaluation to avoid serious or irreversible damage to the environment wherever practicable; and** **II. An assessment of the risk-weighted consequences of various options.**	**9** **10**	Decision-making for the Pipeline location and route selection was carefully evaluated using a risk-weighted multi criteria analysis aimed at promoting the protection of existing environmental values. Following selection of the preferred pipeline route with least environmental impact, a process of repeated refinement was undertaken, applying the principles of avoidance and minimisation to field assessed data to ensure that the residual route is one that avoids all sites of known heritage value and has a minimal impact to listed flora, fauna, native vegetation and other environmental values. The existing environment is well understood and the Pipeline's aspects and impacts relating to construction and operation of the pipeline have been comprehensively assessed. There are no impacts that would constitute serious or irreversible damage to the environment.
	i) Development should make a positive contribution to	**6** **14** **Att J Part 3**	Lochard Energy has a sustained regional presence as an employer and operator of a gas facility in the area.

	regional development and respect the aspirations of the community and indigenous peoples		The IGSF is supported by a number of local contractors in addition to approximately 50 employees. Lochard Energy is committed to identifying opportunities for the involvement of local businesses in the delivery of our projects. During 2023, Lochard Energy took its first steps towards reconciliation by registering with Reconciliation Australia to undertake a Reflect Reconciliation Action Plan (RAP). Lochard Energy also engaged two Indigenous-led organisations to help us develop our Reconciliation Action Plan and a principal Indigenous advisor, who is a Gunditjmara man and was born and raised in South-West Victoria, local to the Iona Facility. Lochard Energy's Indigenous Advisor is teaching Lochard Energy about the history, culture, and ambitions of Indigenous Australians, and in particular the Eastern Maar people on whose lands Lochard Energy operate with Iona. We are also working with The Bulwul Njindiwan Group (TBNG), which exists to empower and grow Indigenous businesses and people by increasing commercial opportunities. Lochard Energy have engaged TBNG to review company procurement processes, with a view to extending opportunities for Aboriginal-owned businesses to supply to Lochard Energy.
	j) Decisions and actions should provide for community involvement in issues that affect them.	**10**	Consultation in relation to the HUGS Pipeline commenced in 2021 with the engagement of landowners whose land would be impacted by the new pipeline, local Council and regulatory authorities. Each directly affected landowner within the Pipeline corridor has been thoroughly consulted. Key Project Stakeholders and the community have been engaged using a mixture of active and passive communication methods. Consultation with directly affected owners, occupiers, stakeholders, and the broader community will continue to be conducted throughout the pipeline's construction and operation.

16.	**The assessment of the Environment Effects Minister in relation to the proposed pipeline if an assessment has been made. If the proposed pipeline is not subject to an assessment, attach the applicant's self-assessment under the *Environment Effects Act 1978*.**
	Lochard Energy has undertaken a self-assessment against the referral criteria stated in the Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978 for the HUGS Project. This self-assessment included consultation with DEECA's Impact Assessment Unit and determined that there are no triggers of the referral criteria stated in the Ministerial Guidelines

	and no adverse environmental effects of regional or State significance for the HUGS Pipeline or the overall HUGS Project. As a result, no referral to the Minister under the *Environment Effects Act 1978* has been prepared / undertaken and a self-assessment report is attached as Att C.

17. Outcome of the self-assessment under *Environment Protection Biodiversity Conservation Act 1999*.

Table 15 provides the outcome of the HUGS Pipeline self-assessment under the *Environment Protection and Biodiversity Conservation Act, 1999* (Cth). Self-assessment was completed by Lochard Energy with reference to S5.1 of the HUGS Pipeline Biodiversity Assessment (Att D). It was concluded that a referral was not required due to the absence of Matters of Environmental Significance (MNES) within or near the HUGS Pipeline corridor.

Table 15 - EPBC Self-Assessment

Matter of MNES	Potential impacts
World Heritage properties	The EPBC Protected Matters Search tool returned 'none'. Separate check of the World Heritage Property register has been completed. World Heritage Properties are absent from the HUGS Project area including the HUGS Pipeline Corridor
National Heritage properties	The EPBC Protected Matters Search tool returned 'none'. Separate check of the Australian Heritage Database has been completed. National Heritage properties are absent from the HUGS Project area including the HUGS Pipeline Route.
Ramsar Wetlands of international significance	The EPBC Protected Matters Search tool returned 'none'. Separate check of the Australian Heritage Database has been completed. Wetlands of international significance. The closest Ramsar wetlands to the project location are the Western District Lakes, of which Lake Corangamite is the largest and closest to the HUGS pipeline route approximately 45km away. There is no hydrological connectivity to the Western District Lakes and they will not be impacted by the HUGS Project.
Threatened species and ecological communities	The EPBC Protected Matters Search tool returned 43 listed threatened species with the potential to occur within 1km of the HUGS Project Activity Area. No threatened species or ecological communities were recorded during on ground survey. There are no threatened species or threatened ecological communities within the HUGS Project area including the HUGS Pipeline Route.
Migratory and marine species	The HUGS Project is not classed as an 'important habitat' as defined under the EPBC Act Policy Statement 1.1 Significant Impact Guidelines (Commonwealth of Australia 2013), It does not contain: • Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; • Habitat utilised by a migratory species which is at the limit of the species range; or • Habitat within an area where the species is declining.

	The EPBC Protected matters search tool returned 13 migratory species with the potential to occur within 1km of the HUGS Pipeline Corridor. The biodiversity assessment did not find any habitat that would support migratory species breeding or feeding habitat. Migratory and marine species are absent from the HUGS Project area including the HUGS Pipeline Route.
Commonwealth Marine Area	The EPBC Protected Matters Search tool returned 'none'. Separate check of the Commonwealth Marine Areas register has been completed. Commonwealth Marine Areas are absent from the HUGS Project area including the HUGS Pipeline Route .
Nuclear actions (including uranium mining)	The action is not a nuclear action.
Great Barrier Reef Marine Park	The EPBC Protected Matters Search tool returned 'none'. The Great Barrier Reef Marine Park is geographically remote from the HUGS Project area including the HUGS Pipeline Route and not impacted by the action.
Water resources impacted by coal seam gas or mining development	The action is not a coal seam gas or mining development.

18.	**Signature(s)**	
	Signature of authorised person	**Date**
	DocuSigned by: David Smith B47AD4521277459...	5/9/2024 | 2:12 AEST
	Full name	**Position**
	David Smith	**General Manager – Project Delivery**
	Company	
	Lochard Energy	

List of Attachments

Att A Part 1 – Overview Map

Att A Part 2 – Pipeline Commencement & Termination

Att B – Map Book

Att C – EES Self Assessment

Att D – Biodiversity Assessment

Att E – Native Vegetation Offset Assessment

Att F – Greenhouse Gas Assessment Report

Att G Part 1 – Noise Impact Assessment

Att G Part 2 – Noise Contours

Att H – Climate Change Act Assessment

Att I – Traffic Management Plan

Att J Part 1 – Environmental Management Plan

Att J Part 2 – Environmental Line List

Att J Part 3 - Environmental & Social Impact Assessment

Att K Part 1 - CHMP 18865

Att K Part 2 – CHMP proposed amended activity area

Att L – Native Title analysis

Att M – Route Selection Report

Att N – Basis of Design

Att O – Constructability Assessment

Att P – Safety Management Study Report

Att Q – Safety Management Plan