

Environmental Risk Assessment – Golden Beach Energy Gas Project

An environmental planning risk assessment has been undertaken for both onshore (**Attachment 07**) and offshore activities (**Attachment 08**). As part of the risk assessment, environmental assets/values were identified, sources of risk identified, potential project impacts were articulated, including ancillary and facilitated works and control measures identified to mitigate risks.

As noted in the referral document, there is a high level of inherent uncertainty around the final pipeline corridor and gas plant location due to the conceptual nature of the project design. However, the absence of a detailed design and finalised footprint for the project does not prevent the development of preventative and proactive measures that will condition the design to be considerate of environmental and cultural assets. The uncertainty associated with the project is temporary in nature.

The risk assessment matrix applied for the onshore environmental risk assessment and the offshore environmental risk assessment are based on preliminary concept of the project and will be evaluated at an ENVID workshop prior to the project commencing.

A - Onshore Environmental Risk Assessment Risk Matrix

Figure 1: Probability and Consequence Table

Severity level	Consequence Table				PROBABILITY		CONSEQUENCE				
	Health & Safety	Environmental	Financial / Production	Reputation	Likelihood		A	B	C	D	E
A Severe	Multiple fatalities or multiple permanent disabilities	Environmental aspect with long term impact resulting in prosecution	Above \$200,001 Severe event with potential to lead to business failure	Trading Suspended. National loss of reputation.	Expected to occur in most circumstances	1 Almost certain	E	E	H	H	M
B Major	Single fatality or single permanent disability	Uncontrolled, long term but reversible impact to localised area resulting in regulatory breach.	\$50,001 - \$200,000 Critical event which will be endured with Proper management.	Legislative breach. Prohibition Notice. Certification Failure. Sustained Adverse Publicity. Industry wide loss of reputation	Will probably occur in a calendar year	2 Likely	E	E	H	M	M
C Moderate	Medical Treatment Injury or Lost Time Injury	Environmental aspect with medium term reversible impact to localised area resulting in non-conformance report (or similar).	\$20,0001 - \$50,000 Significant event which can be managed under normal circumstances.	National media attention, major social issues. Individual client loss of reputation	It is possible for occurrence once every few years	3 Possible	E	H	M	M	L
D Minor	Medical Treatment Injury – immediate return to work	Environmental aspect with short to medium term impact resulting in an improvement notice (or similar).	\$5,001 - \$20,000 Event with consequences which can be readily absorbed but requires management effort to minimise impact.	Public concern generated. Improvement Notice. Non-conformance Report. Individual client issue, requires management resolution	Might occur at some time in the future	4 Unlikely	H	H	M	L	L
E Insignificant	No medical treatment required	Environmental aspect with negligible impact.	Up to and less than \$5000. Negligible business impact. Existing controls and procedures will cope with the event.	Minor public annoyance with negligible impact. Individual client issue, easily resolved.	Should occur only in exceptional circumstances	5 Rare	H	M	L	L	L

B - Offshore Environmental Risk Assessment

The risk assessment matrix applied for the offshore environmental risk assessment evaluates likelihood and consequence based on standard risk assessment methodology. The consequences applied in the offshore risk assessment are defined as follows:

	SAFETY <i>(Impact to GBE or contracting personnel)</i>	ENVIRONMENT <i>(Impact to the physical and ecological environment and cultural heritage)</i>	FINANCIAL <i>(eg. due to loss of revenue, business interruption, commodity trading, asset loss)</i>	REPUTATION/SOCIAL <i>(eg. services interruption, community interruption)</i>	REGULATION <i>(eg. OHS, environment, industrial relations, trade practices, industry acts)</i>
5 Catastrophic	Multiple fatalities or serious irreversible disability (>30%) to multiple persons	<p>Effects at the landscape level (hundreds or thousands of square kilometres or hectares).</p> <p>A very large group of plants or animals affected. Entire habitat type or species population. Several populations of one or more threatened species or habitats experiences mortalities.</p> <p>Permanent impact (e.g., >50 years) and irreversible. Rehabilitation is unlikely to be successful. Habitat or species is highly unlikely to recolonise.</p> <p>An extensive hydrocarbon spill (e.g., over 100,000 litres) that requires clean up over weeks or months.</p> <p>Permanent loss of item/place of international or national cultural heritage significance.</p>	<p>EBIT Impact, loss or deterioration from expectation greater than \$30m.</p> <p>CASH FLOW Severe cash flow crisis.</p> <p>Difficulty to source funds.</p> <p>Probable credit rating downgrade.</p>	<p>State-wide or national interest/outrage beyond the area of operations.</p> <p>Business or residency is no longer viable.</p> <p>Permanent exclusion from operations or nuisance that cannot be mitigated.</p> <p>Community outrage, conflict between neighbours/towns over months to years.</p>	<p>Very significant fines and prosecutions.</p> <p>Prolonged multiple litigations and fines.</p>
4 Major	Single fatality or major permanent injury / illness or moderate irreversible disability (<30%) to one or more persons.	<p>Extensive area of effect (hundreds of square kilometers or hectares).</p> <p>Large group of plants or animals affected. Nearly an entire habitat type or species population affected. One or more populations of a threatened species or habitat experiences injuries or mortalities.</p>	<p>EBIT Impact, loss or deterioration from expectation greater than \$3m but less than \$30m.</p> <p>CASH FLOW Loss of flexibility and/or increase in cost to source funds.</p>	<p>Very large community affected (e.g., multiple suburbs/towns or city, entire fishery).</p> <p>High increased cost of living or business operations (e.g., hundreds of thousands of dollars),</p>	<p>Major breach of regulation and significant prosecution including class actions.</p>

	SAFETY <i>(Impact to GBE or contracting personnel)</i>	ENVIRONMENT <i>(Impact to the physical and ecological environment and cultural heritage)</i>	FINANCIAL <i>(eg. due to loss of revenue, business interruption, commodity trading, asset loss)</i>	REPUTATION/SOCIAL <i>(eg. services interruption, community interruption)</i>	REGULATION <i>(eg. OHS, environment, industrial relations, trade practices, industry acts)</i>
		<p>Long-term duration of impact (e.g., 20-50 years), wholly or partially reversible damage. Active rehabilitation required over many years. Habitat or species is unlikely to recolonise.</p> <p>A very large hydrocarbon spill (e.g., up to 100,000 litres) that requires clean up over weeks.</p> <p>Damage to item/place of international or national cultural heritage significance that is very difficult to repair or may result in permanent scarring. Permanent impact.</p>		<p>high-level/long-term nuisance. Business or residency unlikely to remain viable.</p> <p>Long-term (e.g., months) exclusion from operations.</p> <p>Community outrage, conflict between neighbours/towns.</p>	
3 Serious	<p>Serious reversible / temporary injury / illness (e.g. lost time > 3 days or hospitalisation or Alternate/Restricted Duties > 1 month).</p>	<p>Localised to extensive effect (tens of square kilometres or hectares).</p> <p>Large group of plants or animals affected. Partial habitat or population loss. A small population of a threatened species is affected.</p> <p>Long-term duration of impacts (e.g., 10-20 years), reversible damage. Active rehabilitation required over years. Habitat or species is likely to recolonise.</p> <p>A large hydrocarbon spill (e.g., up to 10,000 litres) that takes several days to clean up.</p> <p>Serious (e.g., extensive) but repairable damage to item/place of international or national cultural heritage significance. Repair/restoration may take months or years.</p>	<p>EBIT Impact, loss or deterioration from expectation greater than \$300k but less than \$3m.</p> <p>CASH FLOW Material impact to cash flow.</p>	<p>Large community affected (e.g., town/s of several thousand people, dozens of fisheries licencees).</p> <p>Moderate increased cost of living or business operations (e.g., tens of thousands of dollars), high-level nuisance. Business or residency may not remain viable.</p> <p>Long-term (e.g., weeks to one month) exclusion from operations.</p> <p>Noticeable community unrest/tension.</p>	<p>Serious breach of law/regulation with investigation or report to authority with possible prosecution.</p> <p>Performance Infringement Notice.</p>

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2 Moderate	Reversible temporary injury/illness requiring Medical Treatment (e.g. lost time or Alternate/Restricted Duties for < 1 month).	<p>Moderately localised extent of effect (<10 square kilometres or hectares).</p> <p>Minor impact on a small to medium sized group of plants or animals. A small number of individuals of a threatened species is affected.</p> <p>Medium-term duration of impact (e.g., 5-10 years), reversible damage. Active rehabilitation may be required over weeks to months. Habitat or species is highly likely to recolonise.</p> <p>A medium-sized hydrocarbon spill (e.g., up to 1,000 litres) that requires clean up over several days.</p> <p>Repairable damage to item/place of state or national cultural heritage significance. Repair/restoration may take weeks or months.</p>	<p>EBIT Impact or loss greater than \$30K but less than \$300k.</p> <p>CASH FLOW Impact to project or business unit cash flow.</p>	<p>Small number of people or small community affected (e.g., town of several hundred people, <20 fisheries licences).</p> <p>Minor increased cost of living or business operations (e.g., thousands of dollars), medium-level nuisance. Short-term (up to several days) exclusion from normal operations.</p> <p>Some community unrest/tension, some locally-based complaints.</p>	<p>Breach of law/regulation or non-compliance.</p> <p>Minor legal issues</p> <p>Minor litigation possible.</p>
1 Minor	<p>Injury / illness not requiring Medical Treatment (no lost time, no Alternate / Restricted Duties)</p> <p>First Aid.</p> <p>Report Only.</p>	<p>Localised effect (<1 square kilometre or hectare).</p> <p>Little or no effect on small number of plants or animals or habitat. No threatened species are affected.</p> <p>Short to medium-term duration of impact (e.g., several months to 5 years), reversible damage. No active rehabilitation likely. Habitat or species will recolonise.</p> <p>A small hydrocarbon spill (e.g., less than 100 litres) that requires no active clean up.</p>	<p>EBIT Impact or loss greater than \$3K but less than \$30K.</p> <p>CASH FLOW No significant impact.</p>	<p>Up to several individuals affected (e.g., multiple landholders, <5 fishing licences).</p> <p>Minor increased cost of living or business operations (e.g., hundreds of dollars), low-level nuisance, minimal or no exclusion from normal operations.</p> <p>No community unrest.</p>	<p>Local investigation.</p> <p>Minor breach of regulation.</p> <p>On the spot fine or technical non-compliance.</p> <p>Prosecution unlikely.</p>

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		No visible damage to item/place of local, state, national or international cultural heritage significance.			

LIKELIHOOD			CONSEQUENCE				
			1	2	3	4	5
			Minor	Moderate	Serious	Major	Catastrophic
5	Almost Certain	Impact is occurring now. Could occur within days to weeks. 99% chance of occurring within the next year.	Medium	High	High	Extreme	Extreme
4	Likely	Balance of probability will occur. Could occur within weeks to months. >50% chance of occurring within the next year.	Low	Medium	High	Extreme	Extreme
3	Possible	May occur shortly but a distinct probability it won't. Could occur within months to years. >10% chance of occurring within the next year.	Low	Medium	Medium	High	High

2	Unlikely	<p>May occur but not anticipated.</p> <p>Could occur years to decades</p> <p>>1% chance of occurring within the next year.</p>	Low	Low	Medium	High	High
1	Remote	<p>Occurrence requires exceptional circumstances.</p> <p>Exceptionally unlikely event in the long term future.</p> <p><1% chance of occurring within the next year.</p>	Low	Low	Low	Medium	High