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Department of Planning Transport and Infrastructure

email: [dpti.planningreformsubmissions@sa.gov.au](mailto:dpti.planningreformsubmissions@sa.gov.au)

### **Re: Consultation on Draft Planning and Design Code Urban Areas**

South East Australia Gas Pty Ltd (SEA Gas) is the owner and operator of the Port Campbell to Adelaide Pipeline that transports approximately 50% of the State's gas supply. Along with other pipeline industry stakeholders, we have reviewed the proposed 'Strategic Infrastructure Gas Pipelines Overlay' in the Draft Planning and Design Code and concluded that it is totally insufficient to manage the risk to both public safety and security of energy supply.

This letter outlines our objection to the current draft and proposes a scheme where public safety will be better safeguarded and consultation process will be more efficient for all parties involved.

Having made a submission to the State Planning Commission in November 2017 on the need to improve planning processes for land in the vicinity of high pressure natural gas pipelines through proposing amendments to the planning and design code under the Planning, Development and Infrastructure Act 2016, pipeline industry representatives met with representatives from the Department of Planning, Transport and Infrastructure (DPTI) in November 2018 to discuss appropriate overlays for high pressure natural gas pipelines and were assured that there would be further engagement on this matter. Such engagement did not occur and the overlays released in the Draft Planning and Design Code will afford less consideration to pipeline risk than existing processes, which have already been recognized by Councils and pipeline operators as being insufficient.

Our industry has given due consideration to the objectives of the new Planning and Design Code and would like to propose more specifically defined overlays, that recognize the requirements for pipeline safety under the South Australian Petroleum and Geothermal Energy Act 2000 (PGE Act), yet have a reduced footprint, than the overlay proposed, in areas where pipelines already have sufficient design safeguards to coexist with densely populated areas. This will substantially reduce the amount of consultation required with the pipeline industry for Land Divisions and Developments. These overlays would also ensure that developments that would interfere with safe pipeline operations or impact compliance with pipeline license requirements are referred to the Department for Energy and Mining. The proposed overlays are defined in Attachment 1, Table 1 and the basis for the proposed overlays is provided below.

Natural Gas Transmission Pipelines are critical infrastructure in South Australia, as they transport the fuel that provides 50% of the State's electricity generation and are also used to transport energy to industrial and residential customers.

Natural Gas Transmission Pipelines in South Australia are regulated under the PGE Act, that requires pipelines to be operated in accordance with Australian Standard (AS) 2885 Pipelines; Gas and Liquid Petroleum, which is in line with the agreement of the Council of Australian Governments to adopt AS 2885 to achieve uniform national pipeline standards across the country.

The primary purpose of AS 2885 is to ensure the safety of general public and pipeline operating personnel, security of gas supply and the protection of the environment. This purpose is aligned with the principles planners are required to follow for Statutory Instruments, that are outlined in State Planning Policy 10: Mineral and Energy Resources, as follows:

***Regional Plans** should identify mineral and energy resource areas, associated infrastructure, including connections via strategic access routes, transport corridors and pipelines. Strategies to minimise the impacts of encroachments by incompatible land uses should be identified to manage risk to public safety, the environment and security of energy supply.*

***The Planning and Design Code** should identify key mineral and energy resource areas, including resource areas, processing areas, separation areas, transport routes and pipelines used for energy transportation. Policies should prioritise the protection of land for extractive industry and ensure that potentially incompatible land use applications are appropriately assessed.*

To manage safety of the general public, security of gas supply and the protection of the environment with respect to ensuring that a pipeline design is compatible with the surrounding land use, a planning framework that aligns with the requirements of the PGE Act and AS 2885 must be provided by the Planning and Design Code. AS 2885 has specific safety provisions that apply to pipeline design in Residential, High Density, Industrial, Heavy Industrial and Sensitive locations and locations where Crowds gather.

These provisions include:

**1. A pipeline must be designed such that rupture is not a credible failure mode.**

*(This provision is in place because a pipeline rupture is considered an uncontrolled catastrophic event that could result in multiple fatalities if it was to occur in a populated area. Where there is an existing pipeline designed for rural or open space land use that does not meet this requirement and the land use changes, there is a requirement to carry out a detailed Safety Management Study and demonstrate that the risk of pipeline rupture has been reduced to As Low as Reasonably Practicable (ALARP). The demonstration of ALARP can only be satisfied through early consultation between planners, developers and the pipeline operator.)*

**2. A pipeline must be designed such that the maximum energy release rate from the hole size caused by the largest credible threat in a residential or industrial area does not exceed 10 GJ/sec.**

*(This provision is in place to further limit the allowable energy release rate due to pipeline failure in a populated area. 10 GJ/sec corresponds to an energy release which if ignited would have a 4.7kW/m<sup>2</sup> radiation contour of approximately 200m. This means that persons within 200m of the pipeline failure would need to move out of the area within 30 seconds to avoid injury of at least 2<sup>nd</sup> degree burns. 10 GJ/sec corresponds to an energy release which if ignited would have a 12.6kW/m<sup>2</sup> radiation contour of approximately 125m. This means that persons within 125m of the pipeline failure would need to move out of the area within 30 seconds to avoid third degree burns or fatality.)*

*Where there is an existing pipeline designed for rural land use that has a credible threat that could result in a failure that exceeds the 10 GJ/sec energy release rate and the land use changes to residential or industrial, there is a requirement to carry out a detailed Safety Management Study and demonstrate that the risk of pipeline failure has been reduced to ALARP. The demonstration of ALARP can only be satisfied through early consultation between planners, developers and the pipeline operator.)*

**3. A pipeline must be designed such that the maximum energy release rate from the hole size caused by the largest credible threat in a High Density or Sensitive area does not exceed 1 GJ/sec.**

*(This provision is in place to further limit the allowable energy release rate due to pipeline failure in areas populated by persons that may not be able to promptly vacate an area. It applies to schools, hospitals, aged care facilities, prisons and land that is developed for high density community use where multi-storey development is predominate, or major retail, business or sporting complexes. 1 GJ/sec corresponds to an energy release which if ignited would have a 4.7kW/m<sup>2</sup> radiation contour of approximately 70m. 1 GJ/sec corresponds to an energy release which if ignited would have a 12.6kW/m<sup>2</sup> radiation contour of approximately 40m.)*

*Where there is an existing pipeline designed for rural land use that that has a credible threat that could result in a failure that exceeds the 1 GJ/sec energy release rate and the land use changes to incorporate a high density or sensitive development, there is a requirement to carry out a detailed safety management study and demonstrate that the risk of pipeline failure has been reduced to ALARP. The demonstration of ALARP can only be satisfied through early consultation between planners, developers and the pipeline operator. In this case, experience has shown that for high pressure transmission pipelines, designed for rural or open space land use, the most practical resolution is to relocate sensitive and high density developments to a distance from the pipeline where they will not be impacted by a pipeline failure.)*

**4. A Pipeline's Safety Management Study must be reviewed and updated where a change in land use introduces a new threat to a pipeline or a development contains features that may cause a pipeline failure event to escalate in terms of fire or the potential release of toxic or flammable material.**

*(This provision exists to ensure that developments in the vicinity of a high pressure transmission pipeline are suitable to co-exist with a pipeline and do not create the potential for a material increase in the risk to the general public, operating personnel, security of gas supply or the environment).*

**5. A maximum spacing of 15 km between mainline valves, to allow isolation of the pipeline, and vents, to allow evacuation of the fluid from a pipeline for maintenance and repairs after a loss of containment, is recommended in residential and high-density areas.**

*(This provision is in for the benefit of public safety and enables the rate of gas release and the area impacted by the ignition of a gas escape to be rapidly reduced after a pipeline failure. While venting is a very infrequent event it results in extremely high noise levels and will exceed the requirements of both the Environmental Protection Act for occasional noise and the requirements of the Work Health and Safety Act for acceptable noise levels. Pipelines are designed with vents located in wide open spaces and if development is allowed to encroach on these vents, they will be unable to be operated, which will have a direct impact on public safety.)*

To enable the provisions of AS 2885 to be considered under the existing planning regime, pipeline operators have been notified of all land divisions within the pipeline Measurement Length<sup>1</sup>, which represents the largest area around a pipeline that can be affected by the AS 2885 provisions. The Department of Energy and Mining is a referral agency for these developments and seeks to ensure that the provisions of AS 2885, outlined above, have been addressed.

To limit Planning considerations to what is in the current overlay will put both public safety and security of natural gas supply at significant risk, as it is often impossible to make the necessary engineering changes to the pipeline once a new built environment has been constructed near the pipeline.

We believe that the most efficient and effective way of ensuring pipeline risk is appropriately managed is to adopt the overlays in Attachment 1, Table 1. We have provided Attachment 2, Figure 1 to demonstrate the size of the overlay proposed in Table 1 compared to the 'Measurement length' overlay proposed in the 'Strategic Infrastructure Gas Pipelines Overlay' in the Draft Planning and Design Code for the Port Campbell to Adelaide pipeline. This demonstrates the potential reduction in overlay size achievable through implementation of our preferred approach. Overlay data could be provided promptly to DPTI if this approach was agreed.

If this approach is unacceptable to DPTI, then an alternate approach would be to have a single overlay of a size equal to the Pipeline Measurement Length<sup>1</sup>. All Land Divisions and Development Applications within this overlay would need to be referred to DEM, so an assessment could be made of the impact of the Land Division or Development against the provisions for safety and security of supply in AS 2885. This would provide a process equivalent to the existing planning regime. An appropriate overlay to meet this purpose is defined in Attachment 1, Table 2. DPTI already has access to spatial data for pipelines that includes the measurement length.

We trust that this submission has provided sufficient information to inform amendment of the Draft Planning and Design Code to adequately address public safety and security of gas and energy supply and would welcome the opportunity to engage further on this matter. Please Contact our Head of Asset Management, Liz Brierley ( [REDACTED] ) should you require further information.

Yours sincerely



Liz Brierley  
**Head of Asset Management**

Attachment 1 – Proposed Overlays

Attachment 2 - Comparison between the 'Measurement length' overlay in the Draft Planning and Design Code 'Strategic Infrastructure Gas Pipelines Overlay' and alternate proposed overlay.

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<sup>1</sup> Measurement Length is the radius of the 4.7kW/m<sup>2</sup> radiation contour for an ignited rupture, calculated in accordance with AS/NZS 2885.6, applied at all locations along a pipeline.

TABLE 1 – PROPOSED OVERLAY

**Strategic Infrastructure Gas Pipelines Overlay**

Assessment Provisions (AP)

**Desired Outcome (DO)**

Management of risk to public safety, the environment and security of energy supply from developments encroaching on high-pressure gas transmission pipelines and associated infrastructure.

Performance Outcome (PO)	<ul style="list-style-type: none"> <li>• Deemed to Satisfy Criteria (DTS) (required for development to be classified as Deemed-to-Satisfy)</li> <li>• Designated Performance Feature (DPF) (used for development to be assessed on its merits against the applicable policies of the Planning and Design Code)</li> </ul>
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Land Division

<p><b>PO 1.1</b></p> <p>Land division does not expose high density or sensitive parts of the community to unacceptable safety risk in the event of a pipeline failure.</p>	<p><b>DTS/DPF 1.1</b></p> <p>Land Division does not incorporate the following land uses:</p> <ul style="list-style-type: none"> <li>(a) high rise;</li> <li>(b) medium rise buildings;</li> <li>(c) educational establishment;</li> <li>(d) emergency services facility;</li> <li>(e) hospital;</li> <li>(f) prison;</li> <li>(g) pre-school;</li> <li>(h) retirement facility; or</li> <li>(i) supported accommodation.</li> </ul> <p>Unless DEM has directed that an acceptable Safety Management Study has been undertaken by the pipeline operator and additional protective measures required by the Safety Management Study have been incorporated in the development.</p> <p><i>{Overlay 1 - this should be an overlay equal to the measurement length or if the pipeline meets 'no rupture' the 4.7kW/m<sup>2</sup> radiation contour for the greater of the largest credible hole size or a 50mm hole.}</i></p>
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Performance Outcome (PO)	<ul style="list-style-type: none"> <li>• Deemed to Satisfy Criteria (DTS) (required for development to be classified as Deemed-to-Satisfy)</li> <li>• Designated Performance Feature (DPF) (used for development to be assessed on its merits against the applicable policies of the Planning and Design Code)</li> </ul>
<p><b>PO 1.2</b></p> <p>The Land Division does not expose the general public to an unacceptable safety risk in the event of a pipeline failure.</p>	<p><b>DTS 1.2</b></p> <p>The Land Division does not increase the density of population within the overlay by including:</p> <ul style="list-style-type: none"> <li>(a) additional residential development; or</li> <li>(b) Industrial development.</li> </ul> <p>Unless DEM has directed that an acceptable Safety Management Study has been undertaken by the pipeline operator and additional protective measures required by the Safety Management Study have been incorporated in the development.</p> <p>{As per Overlay 1}</p>
<p><b>PO 1.3</b></p> <p>Land Division does not increase risk to public safety by creating the potential to cause or escalate a pipeline incident.</p>	<p><b>DTS 1.3</b></p> <p>Land Division does not incorporate the following types of development:</p> <ul style="list-style-type: none"> <li>(a) General Industry;</li> <li>(b) Special Industry;</li> <li>(c) Landfill;</li> <li>(d) Renewable energy facility;</li> <li>(e) Wind farm; or</li> <li>(f) Electricity Substation</li> </ul> <p>which could threaten pipeline safety or security of energy supply and the Land Division does not contain:</p> <ul style="list-style-type: none"> <li>(a) a Fuel Depot; or</li> <li>(b) any other features that could cause a pipeline failure event to escalate in terms of fire or the potential release of flammable or toxic materials.</li> </ul> <p>Unless DEM has directed that an acceptable Safety Management Study has been undertaken by the pipeline operator and additional protective measures required by the Safety Management Study have been incorporated in the development.</p> <p>{As per Overlay 1}</p>

Performance Outcome (PO)	<ul style="list-style-type: none"> <li>• Deemed to Satisfy Criteria (DTS) (required for development to be classified as Deemed-to-Satisfy)</li> <li>• Designated Performance Feature (DPF) (used for development to be assessed on its merits against the applicable policies of the Planning and Design Code)</li> </ul>
<p><b>PO 1.4</b></p> <p>Land Division does not present a risk to public health and safety due to:</p> <ul style="list-style-type: none"> <li>• continuous noise associated with pipeline facilities used for energy transportation which exceeds the guidelines for acceptable and continuous community noise set out in the Environmental Protection Act (SA) and Environment Protection (Noise) Policy; or</li> <li>• potential for occasional noise associated with high pressure venting which exceeds the allowable limits in the Work Health and Safety Regulations (SA); or</li> <li>• Potential for vented gas ignition.</li> </ul>	<p><b>DTS / DPF 1.4</b></p> <p>Land Division only incorporates the following land uses within the overlay:</p> <ul style="list-style-type: none"> <li>(a) open space</li> <li>(b) roadways</li> </ul> <p>Unless DEM has directed that an acceptable Safety Management Study has been undertaken by the pipeline operator and additional protective measures required by the Safety Management Study have been incorporated in the development.</p> <p><i>{ Overlay 2 - this should be an overlay equal to the greater of the hazardous area for a pipeline vent calculated in accordance with the appropriate Australian Standard or the distance from the vent at which acceptable noise limits in the WHSE Act are exceeded. Acceptable noise limits shall be based on 140 dB(C) peak for a person outside and 8 hour A weighted exposure of 85dB(A) for a person indoors }</i></p>

<p>Performance Outcome (PO)</p>	<ul style="list-style-type: none"> <li>• Deemed to Satisfy Criteria (DTS) (required for development to be classified as Deemed-to-Satisfy)</li> <li>• Designated Performance Feature (DPF) (used for development to be assessed on its merits against the applicable policies of the Planning and Design Code)</li> </ul>
<p>Land Use</p>	
<p><b>PO 2.1</b></p> <p>Development does not expose sensitive parts of the community to unacceptable risk due to pipeline failure.</p>	<p><b>DTS 2.1</b></p> <p>Development does not incorporate the following land uses:</p> <ul style="list-style-type: none"> <li>(a) high rise;</li> <li>(b) medium rise buildings;</li> <li>(c) educational establishment;</li> <li>(d) emergency services facility;</li> <li>(e) hospital;</li> <li>(f) prison;</li> <li>(g) pre-school;</li> <li>(h) retirement facility; or</li> <li>(i) supported accommodation.</li> </ul> <p>Unless DEM has directed that an acceptable Safety Management Study has been undertaken by the pipeline operator and additional protective measures required by the Safety Management Study have been incorporated in the development.</p> <p>{As per Overlay 1}</p>
<p><b>PO 2.2</b></p> <p>Development does not expose the general public to an unacceptable safety risk in the event of a pipeline failure.</p>	<p><b>DTS 2.2</b></p> <p>Development does not increase the density of population within the overlay by including:</p> <ul style="list-style-type: none"> <li>(a) additional residential development; or</li> <li>(b) Industrial development.</li> </ul> <p>Unless DEM has directed that an acceptable Safety Management Study has been undertaken by the pipeline operator and additional protective measures required by the Safety Management Study have been incorporated in the development.</p> <p>{As per Overlay 1}</p>

<p>Performance Outcome (PO)</p>	<ul style="list-style-type: none"> <li>• Deemed to Satisfy Criteria (DTS) (required for development to be classified as Deemed-to-Satisfy)</li> <li>• Designated Performance Feature (DPF) (used for development to be assessed on its merits against the applicable policies of the Planning and Design Code)</li> </ul>
<p>PO 2.3</p> <p>Development type does not increase risk to public safety by creating the potential to cause or escalate a pipeline incident.</p>	<p>DTS 2.3</p> <p>Development does not incorporate the following types of development:</p> <ul style="list-style-type: none"> <li>(a) General Industry;</li> <li>(b) Special Industry;</li> <li>(c) Landfill;</li> <li>(d) Renewable energy facility;</li> <li>(e) Wind farm; or</li> <li>(f) Electricity Substation</li> </ul> <p>which could threaten pipeline safety or security of energy supply and the Land Division does not contain:</p> <ul style="list-style-type: none"> <li>(c) a Fuel Depot; or</li> <li>(d) any other features that could cause a pipeline failure event to escalate in terms of fire or the potential release of flammable or toxic materials.</li> </ul> <p>Unless DEM has accepted that a Safety Management Study has been undertaken by the pipeline operator and additional protective measures required by the Safety Management Study have been incorporated in the development.</p> <p>{As per Overlay 1}</p>

Performance Outcome (PO)	<ul style="list-style-type: none"> <li>Deemed to Satisfy Criteria (DTS) (required for development to be classified as Deemed-to-Satisfy)</li> <li>Designated Performance Feature (DPF) (used for development to be assessed on its merits against the applicable policies of the Planning and Design Code)</li> </ul>
<p>PO 2.4</p> <p>Development does not present a risk to public health and safety due to:</p> <ul style="list-style-type: none"> <li>continuous noise associated with pipeline facilities used for energy transportation which exceeds the guidelines for acceptable and continuous community noise set out in the Environmental Protection Act (SA) and Environment Protection (Noise) Policy; or</li> <li>potential for occasional noise associated with high pressure venting which exceeds the allowable limits in the Work Health and Safety Regulations (SA); or</li> <li>Potential for vented gas ignition.</li> </ul>	<p>DTS / DPF 2.4</p> <p>Development only incorporates the following land uses within the overlay:</p> <p>(a) open space (b) roadways</p> <p>Unless DEM has directed that an acceptable Safety Management Study has been undertaken by the pipeline operator and additional protective measures required by the Safety Management Study have been incorporated in the development.</p> <p>{As per Overlay 2}</p>

## Procedural Matters (PM)

Referrals		
Class of Development / Activity	Referral Body	Purpose of Referral
<p>All land division proposals within the specified overlay for the pipeline that either do not meet DTS/DPF criteria or require a Safety Management Study to meet DTS/DPF criteria.</p>	<p>Department for Energy and Mining (DEM)</p>	<p>To provide expert technical assessment to the relevant authority where a Safety Management Study is required on</p> <ul style="list-style-type: none"> <li>potential safety issues relating to development; and</li> <li>the potential for development to adversely impact upon the lawful continued operation of strategic infrastructure (gas pipelines).</li> </ul>

TABLE 2 – ALTERNATE PROPOSED OVERLAY

**Strategic Infrastructure Gas Pipelines Overlay**

Assessment Provisions (AP)

Desired Outcome (DO)
<p>Management of risk to public safety, the environment and security of energy supply from developments encroaching on high-pressure gas transmission pipelines and associated infrastructure.</p>

Performance Outcome (PO)	Deemed to Satisfy Criteria (DTS)
	<ul style="list-style-type: none"> <li>Deemed to Satisfy Criteria (DTS) (required for development to be classified as Deemed-to-Satisfy)</li> <li>Designated Performance Feature (DPF) (used for development to be assessed on its merits against the applicable policies of the Planning and Design Code)</li> </ul>

Land Division

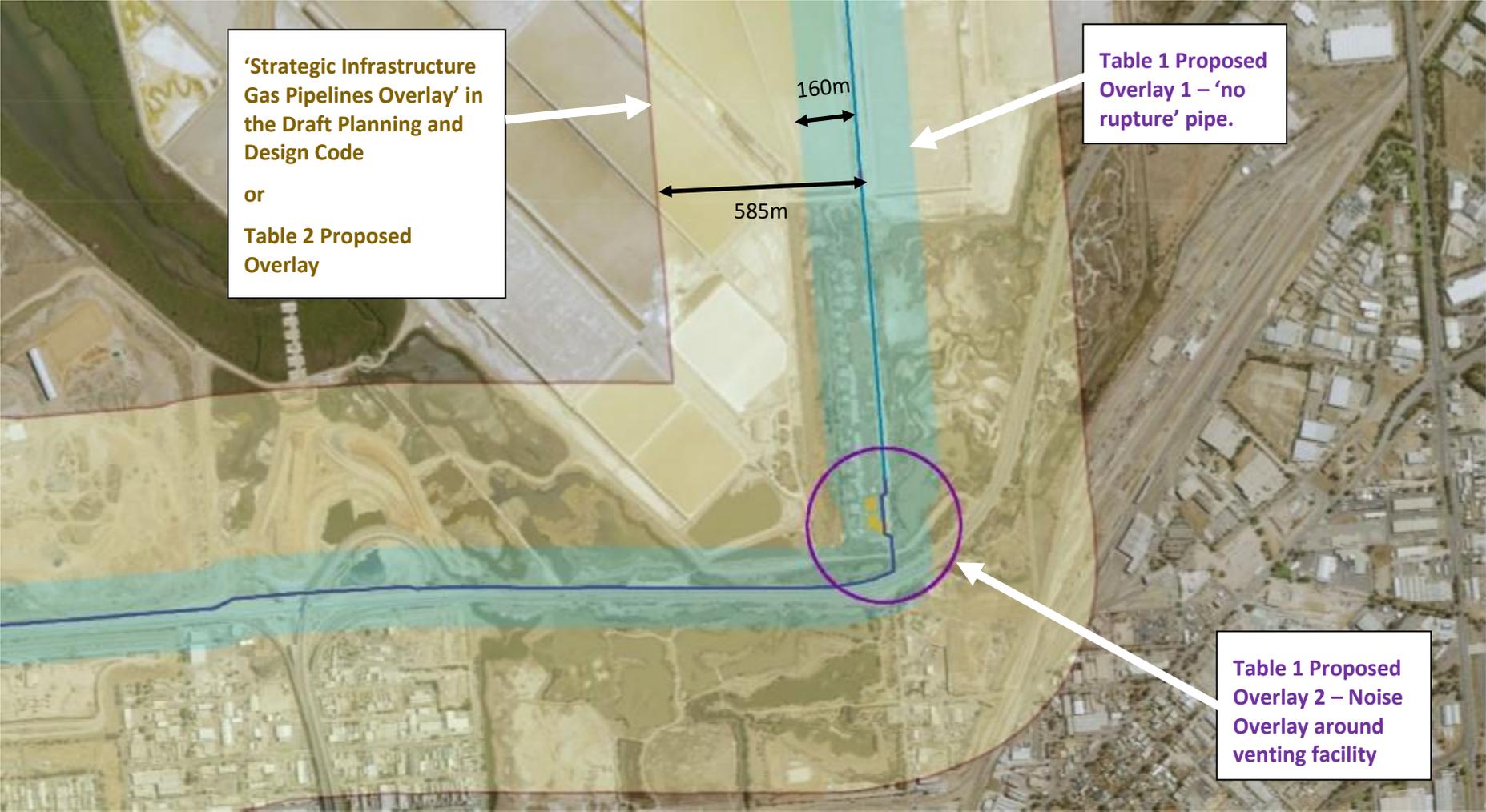
<p><b>PO 1.1</b> Development does not affect the compliance of high pressure transmission pipelines with the Petroleum and Geothermal Energy Act (2000).</p>	<p><b>DTS/DPF 1.1</b> None are applicable, unless DEM has directed that an acceptable Safety Management Study has been undertaken by the pipeline operator and additional protective measures required by the Safety Management Study have been incorporated in the development. <i>{ this should be an overlay equal to the measurement length }</i></p>
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Land Use

<p><b>PO 2.1</b> Development does not affect the compliance of high pressure transmission pipelines with the Petroleum and Geothermal Energy Act (2000).</p>	<p><b>DTS 2.1</b> None are applicable, unless DEM has directed that an acceptable Safety Management Study has been undertaken by the pipeline operator and additional protective measures required by the Safety Management Study have been incorporated in the development. <i>{ this should be an overlay equal to the measurement length. }</i></p>
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## Procedural Matters (PM)

Referrals		
Class of Development / Activity	Referral Body	Purpose of Referral
All land division and Development proposals within the specified overlay for the pipeline require a Safety Management Study to meet DTS/DPF criteria.	Department for Energy and Mining (DEM)	To provide expert technical assessment to the relevant authority where a Safety Management Study is required on <ul style="list-style-type: none"> <li>• potential safety issues relating to development; and</li> <li>• the potential for development to adversely impact upon the lawful continued operation of strategic infrastructure (gas pipelines).</li> </ul>



**Figure 1:** Comparison between the 'Measurement length' overlay in the Draft Planning and Design Code 'Strategic Infrastructure Gas Pipelines Overlay' and alternate proposed overlay.