pda	**SMS:** Middle Arm Planning Proposal adjacent to APA Pipelines	**As per AS2885.6 - 2018 Section 3.2** ıent Process as per AS2885.6 -

Threat		Threat Identification							Threat Control	
ID	LS/NLS	Category	Source	Description (cause of harm, what/how)	Potential Impact/s (for Failure analysis)	Dimension	Credible?	Reason	Other Controls	Threat Controlled?
1	NLS	External Interference	**Construction Phase**: Loading over pipeline	Construction equipment driving over easement, laydown area etc.	ovality of pipeline, requiring future repair	Supply	Yes		1. Lot Layout segments the easement in NW corner and not part of Lot Development 2. Construction access is in SW corner using existing entrance 3. Permanent fence erected as initial site activity 4. Utility vehicle (light) activity controlled during vegetation works eg avoid bogging	Yes
2	NLS	External Interference	**Construction Phase:** Excavation	Bulk earth moving, road work etc during subdivision, installation of service conduits, foundations for street lighting etc Size of equipment expected to be limited to 20T excavator using GP teeth.	contact with pipeline if excavate in wrong location, resulting in coating damage or penetration with ignited loss of containment	All	Yes		1. Pot-holing program (eg 2-3 holes) to be defined to confirm location of pipeline in easement & survey 2. Final lot design to be submitted to APA 3. Construction Management Plan (CMP) to be submitted to APA ie includes construction equipment & teeth type limitation 4. Permanent eastern fence delineation	Yes
3	LS	External Interference	**Construction Phase**: Road Construction over easement ie Middle Arm Road Re-configuration for turning lane	Excavation during proposal sub-division road works - including sub-coarse, road furniture footings, kerbing, surface drainage etc. Expect use of 20T excavator with GP teeth.	contact with pipeline if excavate in wrong location, resulting in coating damage or penetration with ignited loss of containment	All	Yes		1. Road design contains only short section of re-pavement into easement, to be submitted to APA for review & approval 2. DBYD & APA 3rd Party Works Authorisation required Note - seeking reduced speed limit will avoid re-configuration	Yes
4	NLS	External Interference	**Construction Phase:** Boundary Fencing	Post excavation during fence installation around site perimeter	contact with pipeline if excavate in wrong location, resulting in coating damage or penetration with ignited loss of containment	Supply	No	Nil changes to easement perimeter fencing.		
5	LS	External Interference	**Construction Phase**: Pedestrian / Maintenance Vehicle Pathway over easement	Excavation during proposal pathway construction. Expect use of small (eg 5T) excavator with GP teeth.	Contact with pipeline if excavate in wrong location, resulting in coating damage or dent/gouge only (refer APA table). Repair would be required.	Supply	Yes		1. Pathway design (depth) to be reviewed & approved by APA 2. Size of machine limited to 5T 3. 2. DBYD & APA 3rd Party Works Authorisation required	Yes
6	NLS	External Interference	**Future DA's:** Utilities Crossings	HDD activity could go wrong and across pipeline, if requires easement crossing	contact with pipeline and resultant coating damage or penetration hole with loss of containment which could ignite	All	No	Lot Layout has nil easement crossings for future DA's		
7	LS	Corrosion	**Residential Phase:** New Sewer Pump Station & power supply	Stray currents from sub-station could impact CP effectiveness	Reduced CP effectiveness can lead to external corrosion and potential failure of pipeline, requiring pipeline repair.	Supply	Yes		1. APA to assess as part of review of final Lot Layout & station/power aspects	Yes
8	NLS	External Interference	**Land Use Change:** Unauthorised Work in Easement (either side of DA site)	Largest Credible Threat could be greater than current APA assumed HDD or excavator threats	Could result in hole size that exceeds allowable maximum discharge energy for T1. Assumed ignition source from offending machine exhaust.	All	Yes		1. APA to re-validate external interference threat within new extended upstream ML Note - existing fencing	Yes

AS2885.6 Safety Management Study – Validation Workshop & Risk Assessment
SMS Work Plan - agreed actions to be implemented by project stakeholders

Item	SMS Workshop Item	Proposed Action	Accountable	Due Date
Workshop Actions				
1	Lot Design and pipeline corridor interfaces	Sowdes to issue updated Lot Design to show road re-alignment for 100km/h Middle Arm road.	Sowdes	Design
2		Sowdes to issue final Lot Layout & Design package (including Site elevations, landscaping plan, easement access path) to APA for review & acceptance.	Sowdes	Design
3		APA to provide pot-holing guideline to Sowdes for implementation and design finalisation	Sowdes	Design
4	Approval of Construction Methodology	Sowdes to ensure Construction Management Plan submitted by Construction Contractor for APA review (ie equipment list/sizing)	Sowdes	Pre-construction
5	Pipeline corridor signage during construction	Sowdes to add appropriate pipeline Danger signage on easement fence during construction.	Sowdes	Pre-construction
WS6. Location Class Review - Review change of land use from Sub-division				
6	Apply T1 Location Class to Middle Arm development site	Extend T1 Location Class on alignment sheets to 1 x ML from site boundary	APA	Post Sub-division
7	Check Design Controls for T1 Location Class	APA to validate existing no-rupture compliance covers the extended T1 section (ie 1 x ML west from boundary)	APA	Design
8	External Interference procedural control methods	Check pipeline marking for compliance with AS2885 recommended T1 spacing (100m)	APA	Post Sub-division
9		Check APA patrol methods for extended T1 Location Class	APA	Post Sub-division
WS8. Threats - Controlled				
10	**Threat #1 - Construction: Loading over pipeline** Construction equipment driving over easement, laydown area etc.	Lot Layout segments the easement in NW corner and not part of Lot Development.	Sowdes	Complete
11		Construction access designated in SW corner using existing entrance track	Sowdes	Construction
12		Permanent easement fence to be erected as initial site activity	Sowdes	Construction
13		Light Utility Vehicle activity only permitted in easement and controlled during vegetation works eg to avoid bogging	Sowdes	Construction
14	**Threat #2 - Construction: Excavation** Bulk earth moving, road work etc during subdivision, installation of service conduits, foundations for street lighting etc	Sowdes to define pot-holing program (eg 2-3 holes) to be approved by APA to confirm location of pipeline in easement & survey	Sowdes	Design
15		Final lot design to be submitted to APA	Sowdes	Design
16		Construction Management Plan (CMP) to be submitted to APA ie includes construction equipment & teeth type limitation	Sowdes	Pre-construction
17		Permanent easement fence to be erected as initial site activity	Sowdes	Construction
18	**Threat #3 - Construction: Road Construction over easement ie Middle Arm Road Re-configuration for turning lane** Excavation during proposal sub-division road works - including sub-coarse, road furniture footings, kerbing, surface drainage etc.	Road design contains only short section of re-pavement into easement, to be submitted to APA for review & approval. Note - seeking reduced speed limit will avoid re-configuration	Sowdes	Design
19		Sowdes to undertake DBYD & ensure APA 3rd Party Works Authorisation obtained	Sowdes	Construction
20	**Threat #5 - Construction: Pedestrian / Maintenance Vehicle Pathway over easement** Excavation during proposal pathway construction. Expect use of small (eg 5T) excavator with GP teeth.	Pathway design (depth) to be reviewed & approved by APA	Sowdes	Design
21		Sowdes to ensure size of machine limited to 5T during construction of pathway	Sowdes	Construction
22		Sowdes to undertake DBYD & ensure APA 3rd Party Works Authorisation obtained	Sowdes	Construction
23	**Threat #7 - Sub-division Residential Phase: Corrosion** New Sewer Pump Station & power supply	APA to assess as part of review of final Lot Layout & station/power aspects	APA	Design
24	**Threat #8 - Sub-division Residential Phase: External Interference** Unauthorised Work in Easement either side of DA site eg farming or council/utility company activity in adjacent properties or Middle Arm road	APA to validate existing no-rupture ALARP compliance covers the extended T1 section (ie 1 x ML west from boundary) and all identified threats in Middle Arm road within the easement	APA	Design