PERTH GAS LATERAL

ENVIRONMENT PLAN SUMMARY

Decommissioning & Abandonment

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1. Introduction

1.1 Background and Purpose

The Perth Gas Lateral Pipeline (PER) forms part of the Parmelia Gas Pipeline System (PGPS) and was commissioned in 1970 (PAR-EMP-457; Rev 1.2; 26/06/2013). It runs for about 14.3 km from the offtake at Caversham, through Bassendean and Bayswater, to the foreshore of the Swan River at East Perth (Figure 1).

The PER was originally installed to supply gas to the old power station (since decommissioned) at East Perth and the cement works at Burswood (since decommissioned and removed form site). The pipeline has been unused since 1988. Pipeline licence (PL1) has been retained, with routine maintenance and statutory reporting carried out as required.

The Public Transport Authority of Western Australia (PTA) proposes to construct the Forrestfield-Airport Link (FAL), a new railway line spurring off the existing Midland line immediately after Bayswater Station, running under the Perth Airport estate, and terminating at Forrestfield. Where the FAL intersects the PER at Bayswater, a dive structure is planned for a rail tunnel.

To accommodate the FAL tunnel dive, APA proposes to decommission and abandon the pipeline, from its offtake at the Parmelia mainline valve (MLV11) in Caversham, through to its end at the East Perth foreshore, including the Perth Gas Works at Caversham (decommissioned and no longer in use), and the Bassendean, Bayswater, and East Perth valve pits. This will be known as the Perth Gas Lateral Bayswater Project (PERB)

The proposed abandonment will benefit stakeholders (including landholders, Main Roads WA, and the PTA) along the PER route in the long term, as it will allow the pipeline to be removed from land titles, and obviate costly future relocations as the Perth metropolitan area develops further.

1.2 Scope

The scope of this Environment Plan (EP) includes all works associated with decommissioning and abandonment of the PER (designated "PERB").

The PERB Environment Plan (EP) has been prepared in accordance with the *Petroleum Pipelines Act 1969*, *Petroleum Pipelines (Environment) Regulations 2012* (Pipeline Regulations), and the *Guidelines for the Preparation and Submission of an Environment Plan* (DMP 2016) (EP Guidelines).

1.3 Objectives

The environmental objectives of this EP are to:

- Minimise environmental and social impacts resulting from the works;
- Mitigate all identified environmental risks to be as low as reasonably practicable (ALARP);
- Comply with all relevant environmental regulations and adopted standards; and
- Minimise disturbance to surrounding landholders.

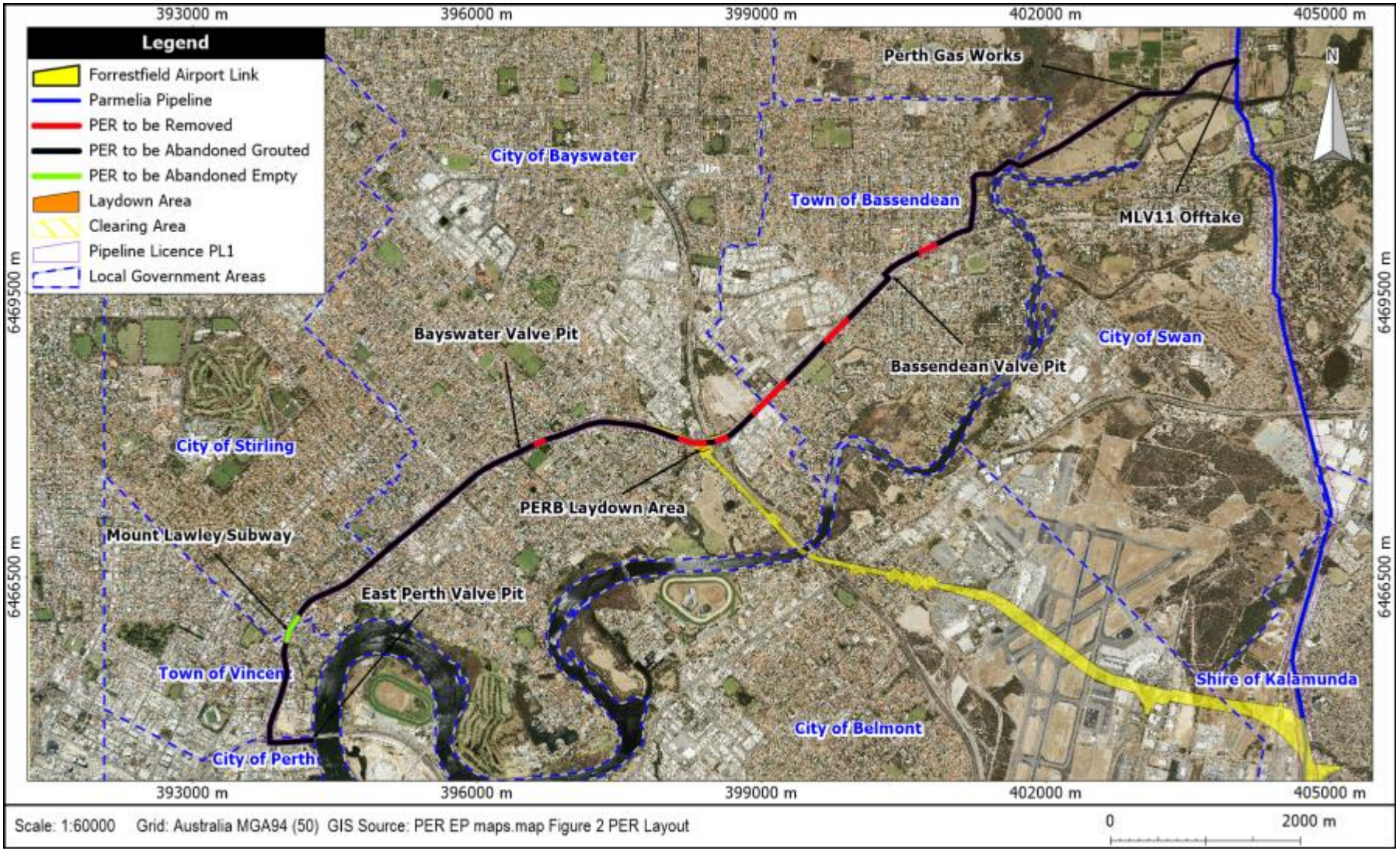

Figure 1: PER Layout

2. Description of Activity

2.1 Location and Layout

The PER is an approximately 14.3 km pipeline that runs in a south-westerly direction from the MLV11 offtake on the PGPS mainline, through Bassendean and Bayswater, to a valve pit located at the Swan River foreshore in East Perth.

The layout of the pipeline with aerial photography in relation to the PGPS is provided in Figure 1.

The PER is located within pipeline licence PL1 and is situated within an existing pipeline corridor, which has been maintained since the 1970s.

2.2 Timing

The work is scheduled to commence at the beginning of September 2017 and last approximately to 160 days. An indicative break down of project phases is provided in Table 1.

Table 1: Indicative Project Schedule

Project Phase	Estimated Timing	Duration
Mobilisation	September 2017	5 day
Decommissioning of pipeline including venting/purging	September 2017	7 days
Grouting of pipeline	September 2017	21 days
Demobilisation from FAL dive structure	September - October 2017	7 days
Decommissioning other infrastructure (e.g. pits, markers, CP points) and remediation	October 2017 - January 2018	120 days
Total		160 days

2.3 Operations

A summary of project activities is provided in Table 2.

Table 2: Indicative Project Schedule

Item	Details
General	
Disturbance	Up to 1.9 ha of disturbance will be required to provide laydown for equipment and machinery as well as to accommodate excavations required to access, remove and remediate existing infrastructure. Only 0.7 ha of clearing is required. Clearing will only take place in the Bayswater laydown area at the FAL site (Figure 2). Clearing of this area was approved as part of the FAL works in accordance with *Ministerial Statement 1022*. This will be undertaken by (or on behalf of) the PTA and has been authorised by their Principal Contractor, SINRWJV. Additional laydown will also be required at the East Perth Valve Pit (Figure 3). This area has been previously parkland cleared and no additional trees will require removal.
Rehabilitation	Following decommissioning and abandonment the residual landscape will be consistent with regional land use, which has typically been cleared and developed for urban use.
Operations	
Purging	Approximately 320 m^3 of natural gas is currently contained in the PER at approximately 200 kPa between MLV11 and the Perth Gas Works and 50 kPa in the remainder of the PER. Purging gas from the PER will be completed by: • Venting gas from the PER by opening the existing blowdown valve on the PER offtake, • At the East Perth Valve Pit injecting a nitrogen buffer followed by compressed air to purge out all natural gas. APA considered flaring as an alternative to venting, to reduce emissions attributed to the activity, however safety risks associated with flaring were not acceptable.

Item	Details
Isolation	Following purging the PER will be isolated by: • Exposing below ground pipework at the MLV11 offtake, • Physically isolating pipeline by cold cutting and removing a length of pipework at MLV11, • Installing blinds or end caps on remaining 'live' DN200 pipework of the Parmelia Pipeline at MLV11, • After welding end caps, coating and testing will be completed and the excavation will be backfilled. The fence around the MLV11 compound will then be reinstated.
Pigging	Following isolation the pipeline will be pigged from an excavation upstream of the East Perth valve pit to MLV11 via a bypass installed at the Perth Gas Works
Grouting and Abandoning Pipeline in situ	Approximately 12.6 km of pipeline will be filled with grout and abandoned in situ; the majority (10.8 km) will be grouted using an Elite Twin-Pump (HT-400) Cementing Trailer at the FAL site in Bayswater. A short (1.8 km) section will be grouted from an excavation upstream of the East Perth Valve Pit to the Mt Lawley Subway.
Removal of Buried Pipeline	Approximately 1.4 km of buried pipeline will be removed, from: • the FAL tunnel dive in Bayswater (Figure 2); • in Bassendean between Second Ave and Fourth Ave (Figure 4); • between Shackleton Street and Fisher Street in Ashfield (Figure 5); • between Moojebing St and Colstoun Rd in Bayswater (Figure 5); and • east of the Bayswater valve Pit before Roberts Street in Bayswater (Figure 6).
Abandoning Buried Pipeline Empty	Approximately 0.2 km of pipeline will be left empty in situ at the Mount Lawley Subway (Figure 7). An assessment of subsidence risk was undertaken for sections of the pipeline being abandoned empty (GHD 2017). The results of the study indicate that potential subsidence would be minimal.

Item	Details
Decommissioning and Abandoning Above-ground Facilities	All above-ground pipework and facilities at the Perth Gas Works, Bassendean Valve Pit, Bayswater Valve Pit and East Perth Valve Pit will be demolished and removed. All supporting infrastructure including 145 pipeline markers, 23 cathodic protection points (CP points), 26 bonder boxes and 15 casing/breather pit pipes will be removed.
Backfill and Site Clean-up	All excavations will be backfilled and re-instated to natural elevations consistent with the surrounding landscape.

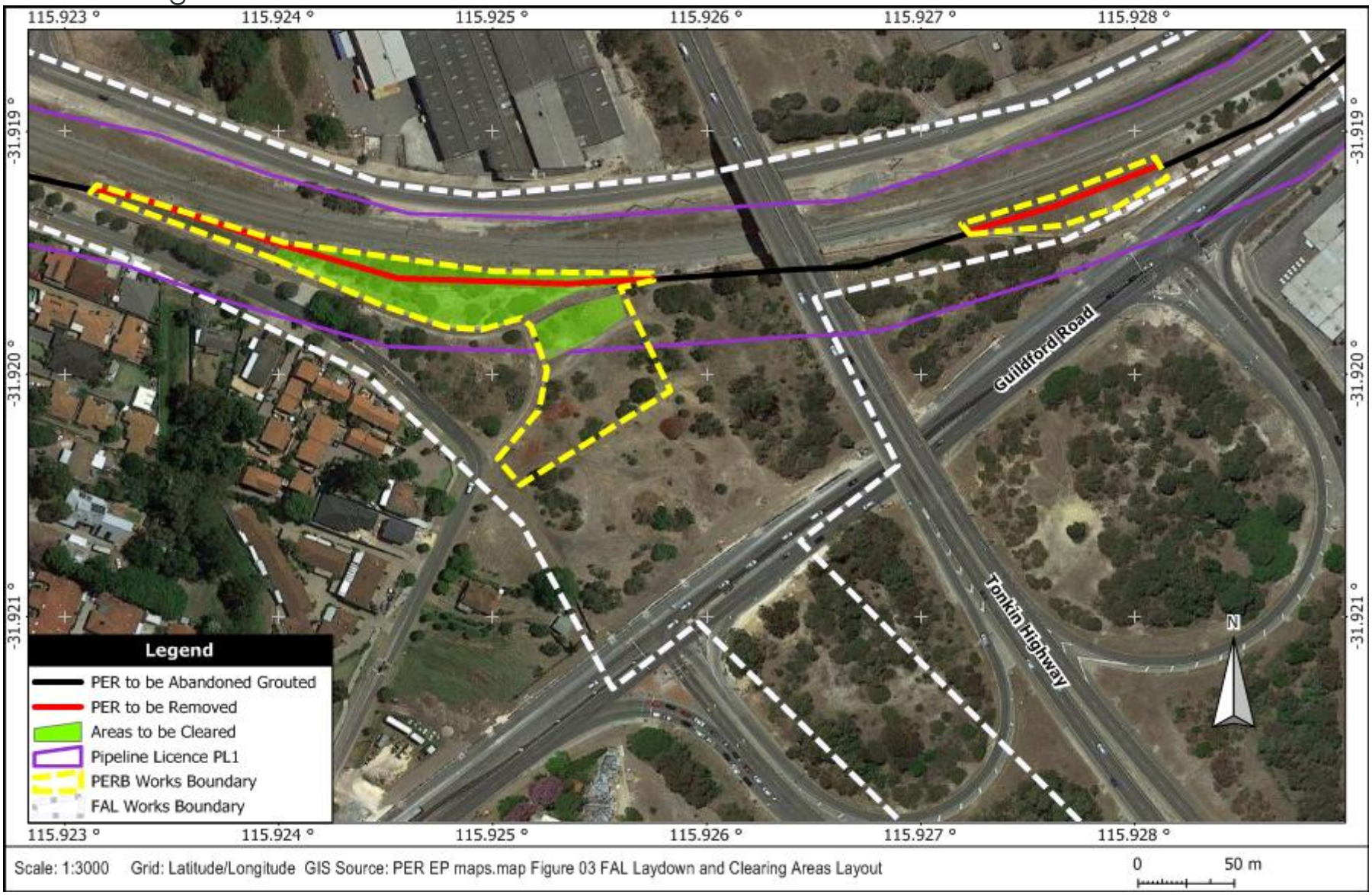

Figure 2: Laydown and Clearing at FAL

Figure 3: Laydown at East Perth Valve Pit

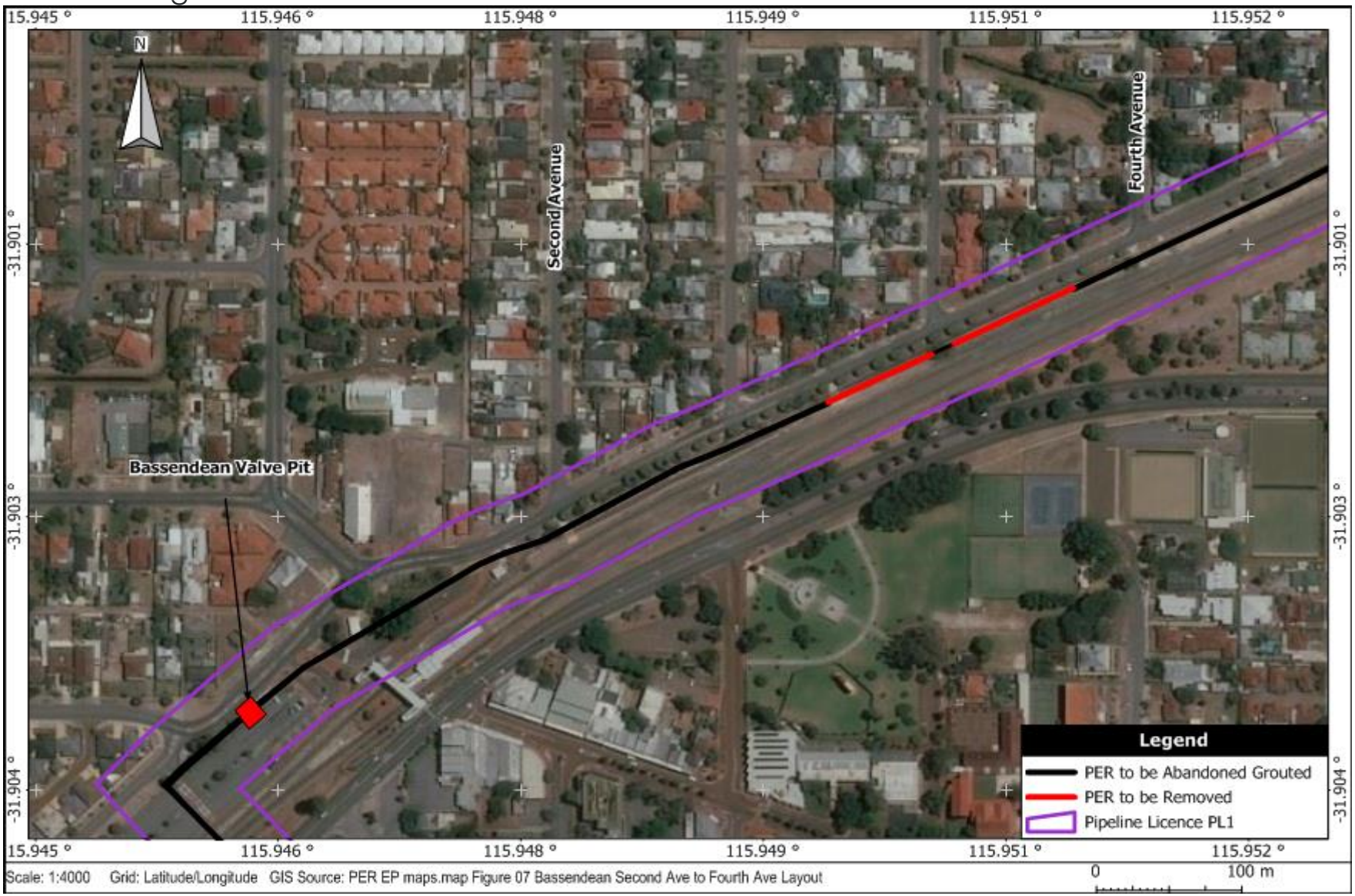

Figure 4: PER to be removed between Fourth Ave and Second Ave in Bassendean

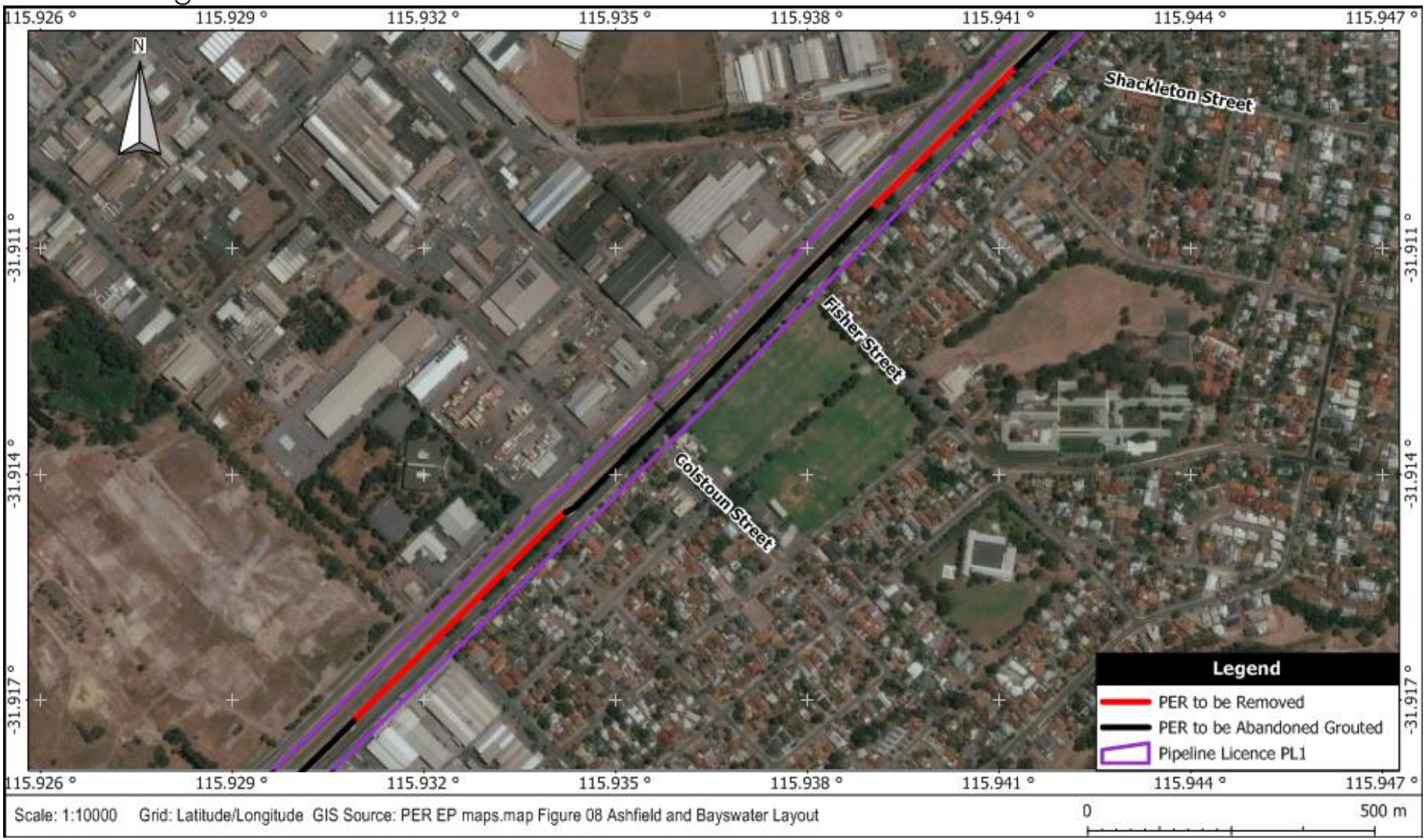

Figure 5 PER to be removed in Ashfield and Bayswater

Figure 6: PER to be removed east of Bayswater Valve Pit in Bayswater.

Figure 7: Mount Lawley Subway Decommissioning and Abandonment

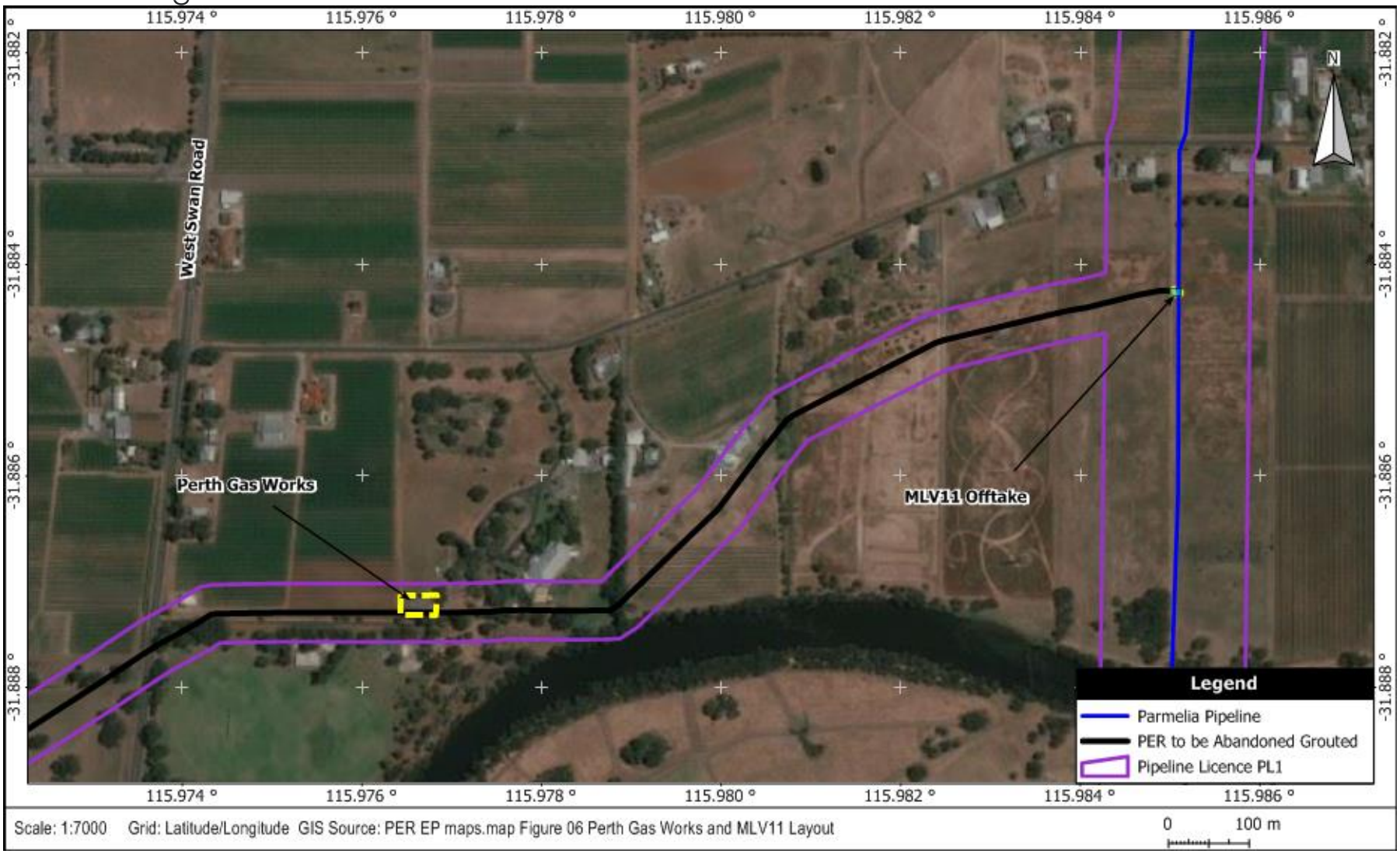

Figure 8: PER Decommissioning and Abandonment between Perth Gas Works and the MLV11 offtake

3. Existing Environment

The PER lies within the eastern metropolitan area of Perth, an area that has been largely developed for residential and light industrial use, with some farmland and native remnants through north-eastern Bassendean and Caversham.

3.1 Soils and Geology

The PER lies within the Swan Province of the Western Region described by Tille (2006). The Swan Province corresponds with the Swan Coastal Plain, a narrow (<40 km wide) plain covered by sedimentary material. More specifically, the PER is located on the Bassendean dunes. The Bassendean dunes comprise pale deep sands with brown deep sands on poorly drained plains.

According to the Department of Water and Environment Regulation (DWER) acid sulfate soils (ASS) risk mapping (DER 2014):

- approximately 8.5 km of the PER lies Class II ASS risk areas ('moderate to low risk of ASS occurring within 3 m of natural soil surface, but high to moderate risk beyond 3 m of natural soil surface'); and
- approximately 3.2km of the PER lies in Class I ASS risk areas ('moderate to high risk of ASS occurring within 3 m of natural soil surface').

Given the majority of the pipeline will be grouted and abandoned in situ, minimal soil will be disturbed in ASS risk areas.

3.2 Hydrology, Hydrogeology and Water Resources

Hydrology in the area encompassing the PER has been highly modified for urban and industrial use. Drainage in the region has been integrated into urban water drainage systems, which direct surface water flows through controlled stormwater infrastructure.

Immediately south of the PER is the Swan River, which flows in a northeast to southwest direction, towards the coast. The PER crosses one major tributary of the Swan River, Bennett Brook.

Bennett Brook is protected as *Bush Forever Site 305 – Bennett Brook, Eden Hill to West Swan*. This Bush Forever site comprises 120 ha of bushland associated with seasonal and permanent wetlands (RPS 2016). According to the then Department of Parks and Wildlife (now the Department of Biodiversity Conservation and Attractions (DBCA)) mapping (DPaW 2017), at Bennett Brook the PER crosses two Multiple Use, one Resource Enhancement and one Conservation category wetlands. PERB works will not encroach on this site, except for removal of minor infrastructure such as markers, CP points and bonder boxes.

Groundwater is available in an unconfined superficial aquifer with typically fresh salinity ranging from approximately 250 to 1000 mg/L (DoW 2017).

Depth to groundwater along the PER route is typically 2 to 10 metres below ground level (mbgl) (DoW 2017). No dewatering will be required for the activities.

3.3 Vegetation and Flora

The majority of this PER lies beneath road/rail reserves, where land has been modified for urban use and lacks native vegetation. Vegetation present typically comprises intentionally planted grasses or trees that form part of urban landscaping.

Clearing will only be required for the laydown area at the FAL site. This area was assessed as part of the *Forrestfield-Airport-Link – Environmental Impact Assessment* (PTA 2015). This area is characterised by native and non-native species that were planted after road works. The PTA has obtained approval to clear this vegetation for the FAL and authorised APA to clear the area on their behalf.

3.4 Social Environment

The PER route lies within five local government areas that include: City of Perth, Town of Vincent, City of Bayswater, Town of Bassendean and City of Swan. These areas are dominated by established urban areas, which are used for residential and industrial purposes.

The proposed abandonment will benefit stakeholders (including landholders, Main Roads WA, and the PTA) along the PER route in the long term, as it will allow the pipeline to be removed from land titles, and obviate costly relocations as the Perth metropolitan area develops further.

PERB activities will result in a temporary increase in, and some minor interruptions in, local traffic.

Disturbance will be limited to areas previously disturbed during construction and maintenance of the PER. Consequently, no adverse impacts to heritage values are expected as a result of the PERB.

Overall no significant impacts to community or economy are anticipated.

3.5 Contaminated Sites

Historically the area encompassing the PER has been used for agricultural, urban and industrial uses. Activities typically associated with these land uses have potential to cause contamination. Consequently, a number sites adjacent to the PER are known to have contaminated groundwater. Some instance of soil contamination near the PER are also known.

4. Environmental Risk Assessment

An environmental risk assessment (ERA) addressing the environmental risks associated with the PERB was undertaken in June 2017. The ERA identified aspects of the PERB with potential to impact the environment and developed fit for purpose management measures that will adequately prevent or mitigate potential impacts.

The ERA methodology is intended to be consistent with:

- AS2885.1:2012 Section 2.5, addressing design and construction of the pipeline system;
- AS2885.3:2012 Section 4.7, addressing environmental management during maintenance and operations of the pipeline system, and;
- AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines.

Error! Reference source not found. provides a summary of aspects and hazards associated with the project, along with preventative and mitigation controls that are implemented to manage the risk to As Low As Reasonably Practicable (ALARP) and acceptable levels.

Table 3: Key environmental hazards and control measures

Environmental Hazard	Control Measures and Mitigation Factors
Disturbance of vegetation	• Disturbance and clearing kept to minimum practicable. • Excavations backfilled and reinstated as soon as practicable.
Disturbance to fauna	• Temporary fencing erected before removing existing fences. • Vehicles and mobile plant keep to designated access routes. • Speed limit on unsealed /private roads 50km/hr; drivers to drive to conditions. • Traffic management plan to address speed limits and designated access routes.
Contamination from spills or leaks of hydrocarbons or hazardous chemicals / materials	• Chemical register and SDS maintained for all hazardous substances on site. • Storage of hazardous substances in accordance with SDS and safety specifications • Use of bunds and drip trays • Spill response equipment kept on site • Hydrocarbon and chemical spills addressed in Emergency Response Plan and Oil Spill Contingency Plan • Regular checks and maintenance of machinery, plant and equipment. • Bulk and intermediate hydrocarbon and chemical storage / containment areas sited well away from drainage lines and water bodies • Refuelling carried out away from drainage lines or water bodies
Waste disposal	• Wastes collected frequently by waste contractor for disposal at a facility licensed for the class(es) of waste. • Works to use existing local metropolitan facilities for waste disposal; minimum practicable quantities kept on site at any given time. • Housekeeping to address wind-blown waste and overfull bins; additional collections arranged as required. • All residual wastes to be removed at project completion
Ignition of fire	• Fire response equipment maintained on site • All vehicles and plant parked up in designated areas when not in use. • Vehicles and plant properly maintained to prevent fire hazard, verified by pre-start checks. • Dedicated smoking areas with enclosed ashtrays established.

Environmental Hazard	Control Measures and Mitigation Factors
Introduction and/or spread of weeds	• Good access to worksites from existing sealed/public roads; little need to use unsealed/private roads. • Vehicles to be certified clean before entry to site. • Vehicles redirected to local vehicle wash if not adequately clean on entry to site; all clean down/ washdown to be done off-site. • Vehicles and mobile plant keep to designated access routes and entry/exit points • Any imported fill material to be certified by supplier free of weeds
Dust/Air emissions	• Venting, purging, and pipe cleaning controlled by specific procedure • Dust suppression (water sprays, etc.) applied if required by conditions (hot/ windy weather, etc.). • Vehicle movements compliant with speed limits • Vehicle / plant movements on unsealed roads minimised to extent practicable • Disturbance and clearing kept to minimum practicable. • Excavations backfilled and reinstated as soon as practicable. • Excavations suspended if necessary during windy conditions with downwind residences.
Noise and vibration	• Venting noise short duration or low decibels. • Noise regulated with valve. • Venting in daytime hours. • Venting scheduled for best day / time to mitigate noise impacts.
Disturbance of landholders	• Landholders consulted on proposed works. • Access as per agreements with landholders. • Traffic management plan implemented including speed limits and designated access routes.
Disturbance to heritage	• No disturbance planned in undeveloped areas • Work area clearly marked or fenced to prevent disturbance outside of agreed boundaries.
Spills of grouting materials	• Grouting and additives environmentally benign. • Grout to be injected at below pipeline operating pressure; little or no chance of leak from pipe. • Grouting works to be closely monitored for indications of escape/ loss; two monitoring points (valve pits); volume reconciliation; substantial capture tanks at grouting injection site and end sites. • Manual and mechanical equipment on hand to recover grouting spills; containers available for disposal; grout is semi-solid and will flow only slowly if spilled. • Grout spills at point of injection will be contained within excavation; hoses will be arranged so that spills will tend to flow into excavation in event of failure.

5. Environmental Management

Environmental management will be implemented using the APA ISO 14001 aligned Environmental Management System (APA HSEQ-MS). The APA HSEQ-MS includes adopted standards, relevant regulations and regulatory or industry guidelines, as well as internal APA or project standards as set out in APA's corporate HSEQ-MS documents, procedures, or contract documents, and are supplementary to the requirements of this EP and the APA HSEQ-MS.

Elements of the APA HSEQ-MS include but are not limited to:

- A corporate policy stating APA's commitment to responsible environmental management;
- Clearly stated objectives consistent with this commitment;
- Clearly defined roles and responsibilities for personnel to indicate their obligations regarding environmental management;
- Appropriate induction and training of personnel;
- Monitoring and auditing programs to assess compliance with procedures and the achievement of objectives;
- A system of reporting for recording data and notification of relevant personnel; and
- Ongoing consultation to seek input from and inform all parties of relevant issues.

The APA HSEQ–MS provides for the implementation of all of the requirements outlined in the project EP. The APA Hazard and Incident Reporting System forms part of the APA integrated HSEQ-MS and caters for the reporting, recording and follow up of all safety and environmental hazards and incidents.

APA has a comprehensive database of procedures, forms and other guidance materials pertaining to environmental management. Additional site specific documentation has also been developed as appropriate.

6. Stakeholder Engagement

APA has consulted stakeholders relevant to the PERB, including:

- Western Australian Planning Commission (WAPC).
- DMIRS (formerly DMP).
- Department of Planning Lands and Heritage (DPLH; formerly Department of Planning).
- PTA.
- Main Roads.
- Town of Bassendean.
- City of Bayswater.
- City of Swan.
- Private land holders.
- DBCA and Swan River Trust.

APA is committed to maintaining positive relations with all stakeholders throughout the duration of its activities. A brief summary of engagement to date is provided in Table 4.

Affected stakeholders will be kept aware of scheduled activities and impacts as the project progresses. Ongoing consultation will occur for this project via email/letters, meetings and circulation of updates to relevant stakeholders.

Feedback from all interested parties will be encouraged and monitored during the entire project. A register will be maintained that records actions taken to address any issues/feedback received.

Table 4: Summary of Stakeholder Consultation

Stakeholder	Consultation	Key Dates
Dampier to Bunbury Gas Pipeline (DBNGP)	Consultation via letter and emails regarding the project proposal. DBP have no objection to the project with preference given to abandoning the pipe in situ. Ongoing consultation throughout the project.	1/05/2017
Western Australian Planning Commission (WAPC)	Consultation via letter and emails regarding the project proposal. Ongoing consultation with WAPC, however no outright objection.	23/02/2017 4/04/2017 24/04/2017
Western Power	Consultation via letter and emails regarding the project proposal. Ongoing consultation with Western Power through their stakeholder system.	23/03/2017 31/05/2017 26/06/2017
DMIRS (formerly DMP)	Ongoing meetings and phone calls have taken place with regards to licencing, safety and environment. Reporting will be ongoing throughout the project and into operations. It is anticipated that audits from multiple divisions will also take place throughout the project. Liaison throughout CEP and Safety Management Plan review and acceptance period.	8/12/2016 21/03/2017
PTA	Liaison has been ongoing since project conception. Interactions have broadly revolved around commercial contracts and requirements, land access, environmental aspects and approvals, safety planning, and heritage surveys. Communication channels remain open with all key contacts as the approvals process progresses towards practical kick-off. Reporting lines will be established for ongoing works together throughout construction, and then into operational contracts.	02/2017
Main Roads	Consultations included meetings, emails and phone conversations. Main Roads supports the pipeline abandonment proposal. APA are working together with Main Roads to ensure that their requirements are met.	22/03/2017 3/04/2017
Town of Bassendean	Consultation via letter, phone calls and emails regarding the project proposal. No response as yet. Consultation ongoing.	23/02/2017
City of Bayswater	Consultation via letter, phone calls and emails regarding the project proposal. APA received a letter dated 27 February 2017 with queries relating to the proposal.	27/2/2017 23/03/2017

Stakeholder	Consultation	Key Dates
City of Swan	Consultation via letter and emails regarding the project proposal. No objections to proposal but have requested appropriate traffic management.	23/02/2017 18/04/2017
Department of Planning Lands and Heritage (DPLH; formerly Department of Lands)	Consultation via letter and emails regarding the project proposal. The Department has no objection to the project with preference given to abandoning the pipe in situ. Ongoing consultation throughout the project.	11/04/2017
Bennett Brook - Department Biodiversity Conservation and Attractions	Notification via letter and follow-up phone calls. A decision was made that the Swan River Trust (SWT) would follow up with the enquiry. Site meeting was conducted on 31 August. SWT confirms that they are ok with the proposal and would like APA to submit a permit for the works that will intersect the development control area	31/05/2017 19/07/2017 21/08/2017 31/08/2017
Land holders - 102 Hamersley Road, Caversham	Consultation via letter regarding the project proposal. APA received a letter embracing the proposal dated 12 March 2017.	23/02/2017 12/03/2017
Land holders – 88 Hamersley Road, Caversham	Consultation via letter and phone calls regarding the project proposal. Landowners are happy with the proposal and have no objections.	23/02/2017 1/05/2017
Land holder – 14 Hamersley Road, Caversham	Consultation via letter and phone calls regarding the project proposal. Landowners are happy with the proposal and have no objections.	23/02/2017 1/05/2017
Land holders - 80 Hamersley Road, Caversham	Notification via letter and follow-up phone calls. No response as yet. Consultation ongoing.	23/02/2017
Landholders - 46 Hamersley Road Caversham	Notification via letter and follow-up phone calls. No response as yet. Consultation ongoing.	23/02/2017

Stakeholder	Consultation	Key Dates
Landholders - 34 Hamersley Road Caversham	Consultation via letter and phone calls regarding the project proposal. Landowners supports the pipeline abandonment proposal and additionally requests the above ground structures associated with the pipeline located on adjoining Lot 3 be removed and the site stabilised. Landowners have also given consent for APA to access their property if required, to remove the structures over Lot 3, subject to reasonable notification and it not interfering with the operations of Mulberry on Swan.	23/02/2017 1/05/2017

7. References

DER. 2014. Acid Sulphate Soil Risk Map, Swan Coastal Plain (DER-003) (ID: 3). Department of Environment Regulation. Government of Western Australia.

DoW. 2017. Perth Groundwater Map. Department of Water, Government of Australia. Available at: https://maps.water.wa.gov.au/#/webmap/gwm [Accessed 12 June 2017].

DPaW. 2017. Geomorphic Wetlands, Swan Coastal Plain (DPaW-017). Available at: https://catalogue.data.wa.gov.au/dataset/geomorphic-wetlands-swan-coastal-plai [accessed 12 June 2017].

GHD. 2017. Perth Gas lateral Pipeline-Subsidence Risk Geotechnical Assessment. Unpublished Report. Prepared for APA Group.

PTA 2015. Forrestfield-Airport Link – Environmental Impact Assessment. Public Transport Authority. Unpublished Report.

RPS. 2016. Environmental Assessment Report Bennett Springs East Residential Project. Unpublished report prepared for MIRVAC.

Tille, P. 2006. *Resource Management Technical Report 313: Soil Landscapes of Western Australia's Arid Interior*. Department of Agriculture and Food, Government of Western Australia.