

**Regional Interests
Development Application
Assessment Report**

Okotoko North 2 Gas Well

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Abbreviations and Units

Acronym	Description
ATP	Authority to Prospect
DES	Department of Environment and Science, Queensland
DNRME	Department of Natural Resources, Mines and Energy
DSDMIP	Department of State Development, Mining, Infrastructure and Planning
EA	Environmental Authority
ESA	Environmentally Sensitive Area
P&G Act 2004	<i>Petroleum and Gas (Production and Safety) Act 2004</i>
PL	Petroleum Lease
RE	Regional Ecosystem
RIDA	Regional Interests Development Approval
RPI Act	<i>Regional Planning Interests Act 2014</i>
RPI Reg	<i>Regional Planning Interests Regulation 2014</i>
SEA	Strategic Environmental Areas

1.0 Introduction

Santos Limited (Santos) has prepared this assessment report to support an assessment application for a Regional Interests Development Approval (RIDA) as required under s29 of the *Regional Planning Interests Act 2014* (RPI Act).

This application is of an administrative nature. It seeks only to authorise petroleum production on Lot 1 on Plan SP133822 within Petroleum Lease (PL) 1047 within the Channel Country SEA from the Okotoko North 2 petroleum well and associated infrastructure. This is a result of a change in tenure from Authority to Prospect (ATP) to a Production Licence (PL), and subsequent requirement for a new Environmental Authority (EA). The new tenure and EA are to allow for commercialisation of the recovered petroleum product.

This assessment report has been prepared in accordance with the RPI Act *Statutory Guideline 01/14: How to make an assessment application for a regional interests development approval under the Regional Planning Interests Act 2014* and the RPI Act *Statutory Guideline 05/14: Carrying out resource activities and regulated activities within a Strategic Environmental Area*.

This assessment report provides the following:

- Description of the proposed activities;
- Identification of the relevant environmental attributes of the land subject to the application;
- Evaluation of the potential impacts on the identified relevant environmental attributes; and
- An assessment of how the proposed activities meet the required outcome for Strategic Environmental Areas (SEA) as detailed in the *Regional Planning Interests Regulation 2014* (RPI Reg).

1.1 Landholder Copy of the Application

Separate regulatory systems are in place that require Santos to notify the landholder of petroleum activities occurring within their properties. Given the operational nature of the activities subject to PL 1047 (refer Section 2.0), notification to the landholder will already have ensued at the time that PL 1047 is granted. Notwithstanding, a copy of this application will be given to the landowner within 5 business days after this application is made, in accordance with Section 30 of the RPI Act and Schedule 5 of the RPI Reg.

1.2 Non-Notifiable Application

In accordance with Section 34(2) of the RPI Act, and Section 13 of the RPI Reg, notification of the assessment application is not mandatory, as the activities are not proposed to be carried out in an area of regional interest that is a priority living area.

The proposed activities would be located solely on Lot 1 SP133822 forming part of Durham Downs Pastoral Station, an 8,910 km² cattle station operated by S Kidman & Co Ltd. Discretionary notification under s34(4) would not be necessary given the operational nature of the activities proposed (notification to the landholder will have already ensued), the very large size of the cattle station relative to the activities and that the landholder will receive a copy of the application as described below.

1.3 Referable Application

In accordance with Section 12(2) and Schedule 1 of the RPI Reg, the application is referable to the Department of Environment and Science (DES) and the Department of Natural Resources, Mines and Energy (DNRME).

2.0 Proposed Activity

Santos is seeking to undertake 'petroleum production' on Lot 1 on Plan SP133822 and PL 1047 within the Channel Country SEA from the infrastructure and disturbances listed in Table 1 and shown in Figure 1:

Table 1: Existing Surface Disturbance

Infrastructure Name	Disturbance Conducted Under ATP 1189	
	Length	Area
Petroleum Well Pad (Okotoko North 2)	N/A	1.0 ha
Buried Gas Pipeline	0.016 km	0.05 ha
Access Tracks	0.012 km	2.4 ha
Upgraded Station Track	0.010 km	1.72 ha
Borrow Pits	N/A	3.0 ha
		8.17 ha

The infrastructure listed in Table 1 is to be constructed for the purposes of exploration and production testing activities in Q1 2020 under the current authorisation of ATP 1189 and EA EPPG03518215. Should the production testing show successful results, Santos intends to utilise this infrastructure for the purpose of "petroleum production" as authorised by PL 1047 – once granted, which is likely to be in Q2/Q3 2020. The application for PL 1047 was submitted to DNRME on 2 February 2018 and an amendment application to EA EPPG03518815 to add PL 1047 was approved on 14 December 2018.

Given that the construction of the infrastructure will be conducted under ATP 1189 and EA EPPG03518215, this application is of an administrative nature only and seeks only to authorise petroleum production from the Okotoko North 2 petroleum well and associated infrastructure to be conducted under PL 1047. This is a result of the change in tenure from ATP to a PL, and subsequent requirement for a new EA. The new PL and EA are to allow for commercialisation of a petroleum product, following extended production testing, conducted under ATP 1189.

The activity of petroleum production will not change the nature of the activities already conducted at this location at the time PL 1047 is granted. 'Production' primarily refers to the commercialisation of the petroleum product generated from the activity. No new surface disturbance to land is required as part of this activity at this location. Activities under PL 1047 at Okotoko North 2 will be limited to 'production' operational maintenance and restoration at their end-of-life. Descriptions of these activities are provided below (Section 2.1 to 2.4) with definitions provided in Appendix A.

Okotoko North 2 and associated infrastructure is located on the Durham Downs Pastoral Station (Lot 1 on Plan SP133822). Durham Downs is a pastoral lease that operates as a cattle station with a capacity of up to 21,500 head of cattle¹. The primary land uses are cattle grazing and petroleum activities.

¹ S. Kidman & Co Ltd (2018) *Durham Downs*, <https://www.kidman.com.au/properties/5/durham-downs>

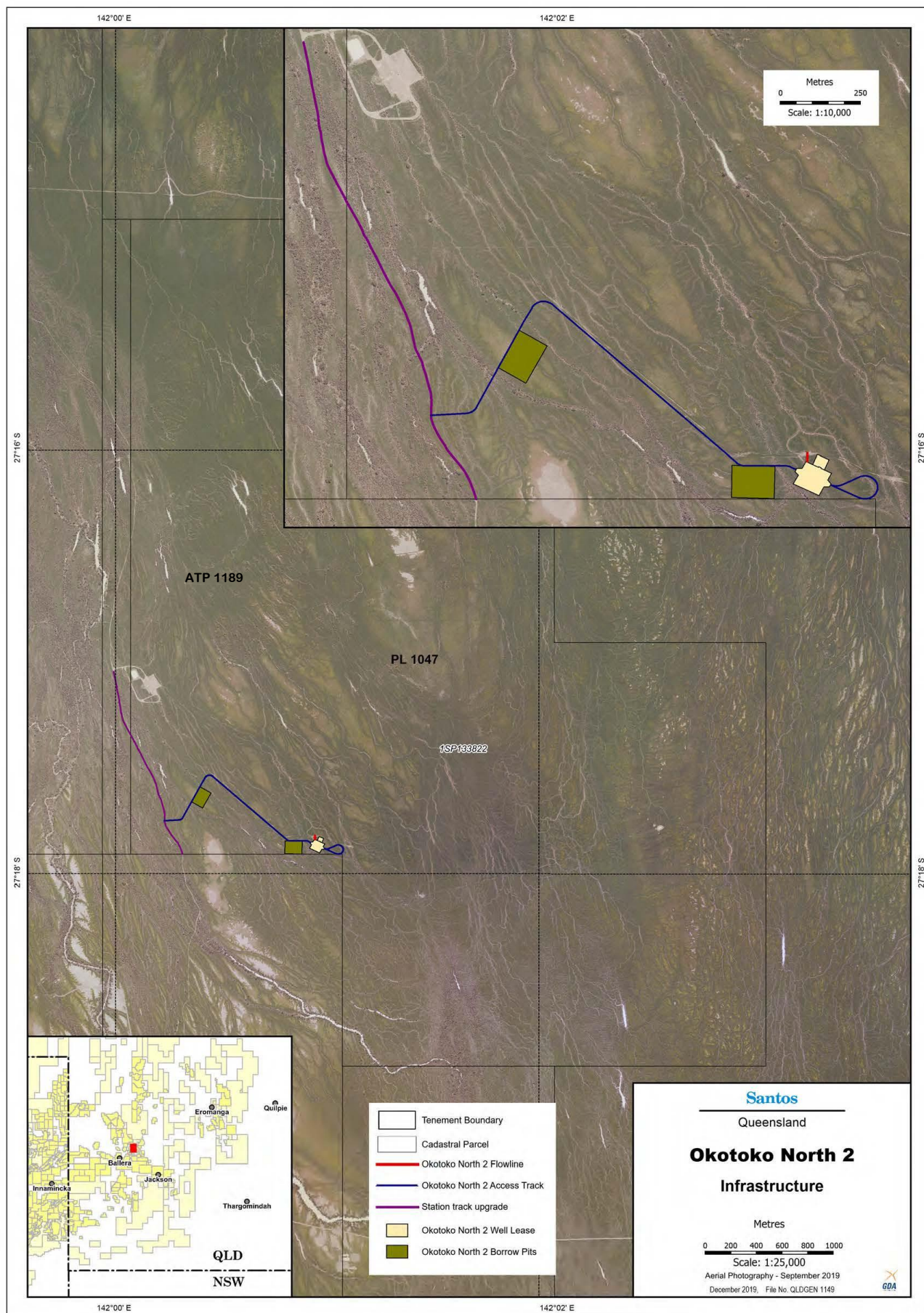


Figure 1: Location of Infrastructure Constructed Under ATP 1189

2.1 Conventional Petroleum Well and Lease

The Okotoko North 2 well will extract petroleum for exploration and production testing purposes under ATP 1189 via surface facilities including a well head, which comprises equipment supporting the various pipe strings, seals off the well, and controls the paths and flow of reservoir fluids. Once PL 1047 is granted, the petroleum well will extract petroleum for production via the existing surface facilities, as described above.

It is feasible that workover operations will be required for the Okotoko North 2 well in the future. Workover operations include activities such as, cleaning out of production conduits and replacing tubing, retrieving or drilling out obstructions in the well, repairing casing, drilling deeper, perforating zones of interest or reperforating existing zones in production, fracturing and well bore decommissioning. For some workovers, only wireline equipment to lower tools into the hole to conduct operations are required. For others, a workover rig and associated infrastructure (i.e. a drilling fluids sump) would need to be set up within the existing disturbance footprint for a temporary duration. Workover activities will be scheduled to be completed when no surface water is expected to be present on site and outside of flood events/inundation periods.

Extracting petroleum for 'production' will not change the nature of the activities already conducted at this location when PL 1047 comes into effect (i.e. when granted). The change in tenure is to enable the commercialisation of the petroleum product only. No new surface disturbance to land outside of the existing disturbance footprint is required at this location to facilitate ongoing production. The well will be restored at end-of-life in accordance with the P&G Act 2004 and the relevant EA conditions.

2.1 Buried Pipeline

Once operational, the pipeline is proposed to be utilised for transporting extracted petroleum for production. The pipeline will be buried underground and the surface will have been rehabilitated to reinstate existing drainage. It will be connected to the existing pipeline gathering network, tying into the Okotoko North 1 buried gas flowline located approximately 40 m north of the Okotoko North 2 well lease. Transporting petroleum for sale will not change the nature of the activities already conducted at this location when PL 1047 comes into effect (i.e. when granted). No new surface disturbance to land is required. The pipeline will be restored at end-of-life in accordance with the relevant EA conditions.

2.2 Access Tracks

Access tracks are proposed to be used for ongoing access to the Okotoko North 2 well. No new access tracks are proposed to be constructed under PL 1047. The Okotoko North 2 access tracks and the upgraded Station Track (Landholder owned) have not been designed to be used during wet weather conditions, and therefore will not be constructed to any flood immunity, and will facilitate the passage of water keeping with existing hydrology. Maintenance of the tracks may be required over time (e.g. light grade). The access tracks will be restored at end-of-life in accordance with the *Petroleum and Gas (Production and Safety) Act 2004* (P&G Act 2004) and the relevant EA conditions.

2.3 Borrow Pits

Two borrow pits are proposed to be used to provide a source of material required for ongoing well lease and access track maintenance under PL 1047. The side batters of the borrow pits will be maintained at a slope of approximately 3:1, and the batters of the entrance / exit will be maintained at a slope of approximately 7:1. The borrow pits will be progressively restored by ripping the floor and sides of the borrow pit to a minimum depth of 500 mm generally along the contour (Figure 2). Stockpiled topsoil and

vegetation is then respread to a uniform depth over the entire area from which it was removed. The sides and floor of the pit are graded to give a contoured finish, as required by the relevant EA conditions.

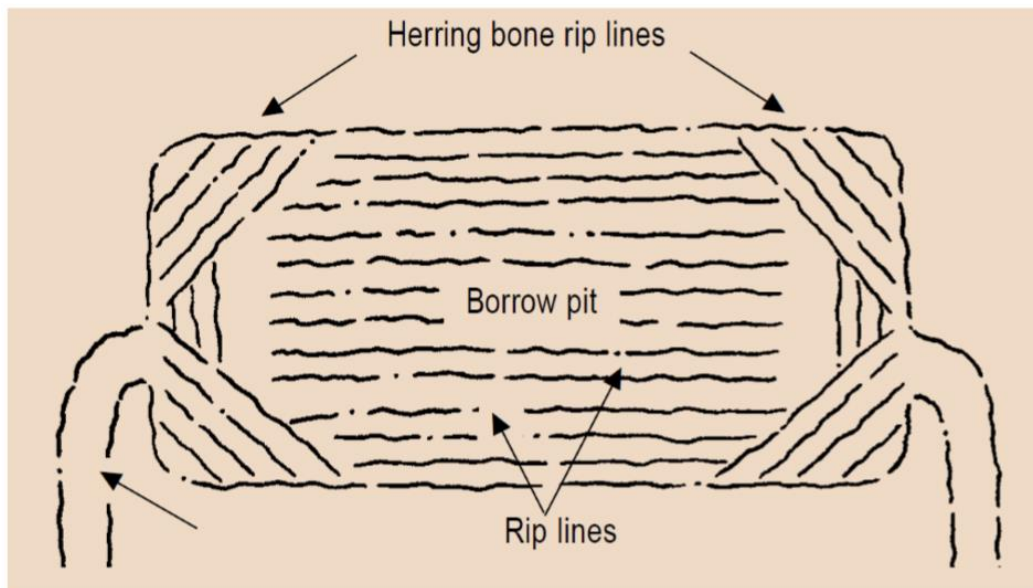


Figure 2: Example Borrow Pit Ripping for Rehabilitation

3.0 Environmental Attributes and Potential Impacts

Section 7 of the RPI Reg prescribes the following environmental attributes relevant to the Channel Country SEA:

- (a) *the natural hydrologic processes of the area characterised by—*
 - (i) *natural, unrestricted flows in and along stream channels and the channel network in the area; and*
 - (ii) *overflow from stream channels and the channel network onto the flood plains of the area, or the other way; and*
 - (iii) *natural flow paths of water across flood plains connecting waterholes, lakes and wetlands in the area; and*
 - (iv) *groundwater sources, including the Great Artesian Basin and springs, that support waterhole persistence and ecosystems in the area;*
- (b) *the natural water quality in the stream channels and aquifers and on flood plains in the area;*
- (c) *the beneficial flooding of land that supports flood plain grazing and ecological processes in the area.*

DSDMIP's RPI Act *Statutory Guideline 05/14: Carrying out resource activities and regulated activities within a Strategic Environmental Area* summarises the above attributes to broadly relate to:

- Riparian process;
- Wildlife corridors;
- Water quality;
- Hydrologic processes;
- Geomorphic processes; and
- Beneficial flooding.

As discussed in Section 2.0, the proposed activity of petroleum production will not change the nature of the activities already conducted at this location at the time PL 1047 is granted. The proposed activity is limited to production, operational maintenance and restoration of infrastructure at end-of-life. Notwithstanding, the relevance of the above environmental attributes to the activity is described below

3.1 Riparian Process

The proposed activity would be undertaken within Regional Ecosystems (REs) 5.3.18b/5.3.18a/5.3.8a (60/30/10) and REs 5.3.13a/5.3.8a (70/30) (see Figure 3). All REs are listed as of No Concern at Present (NCAP). These REs are known to include riparian vegetation, particularly within the Cooper Creek and its braided channels, which surround the proposed activity. They consist of sparse to open-herbland with either grasses or forbs dominating the ground layer depending on incidence of flooding and seasonal conditions, *Chenopodium auricomum open shrubland*, frequently with pure stands of *Chenopodium auricomum*, and *Eucalyptus coolabah* low open woodland with a distinct and semi-continuous, low shrub layer dominated by *Duma florulenta*. The braided channels associated with the Cooper Creek surround the proposed activity; at its closest point, the Cooper Creek is located approximately 250m to the east of the Okotoko North 2 well.

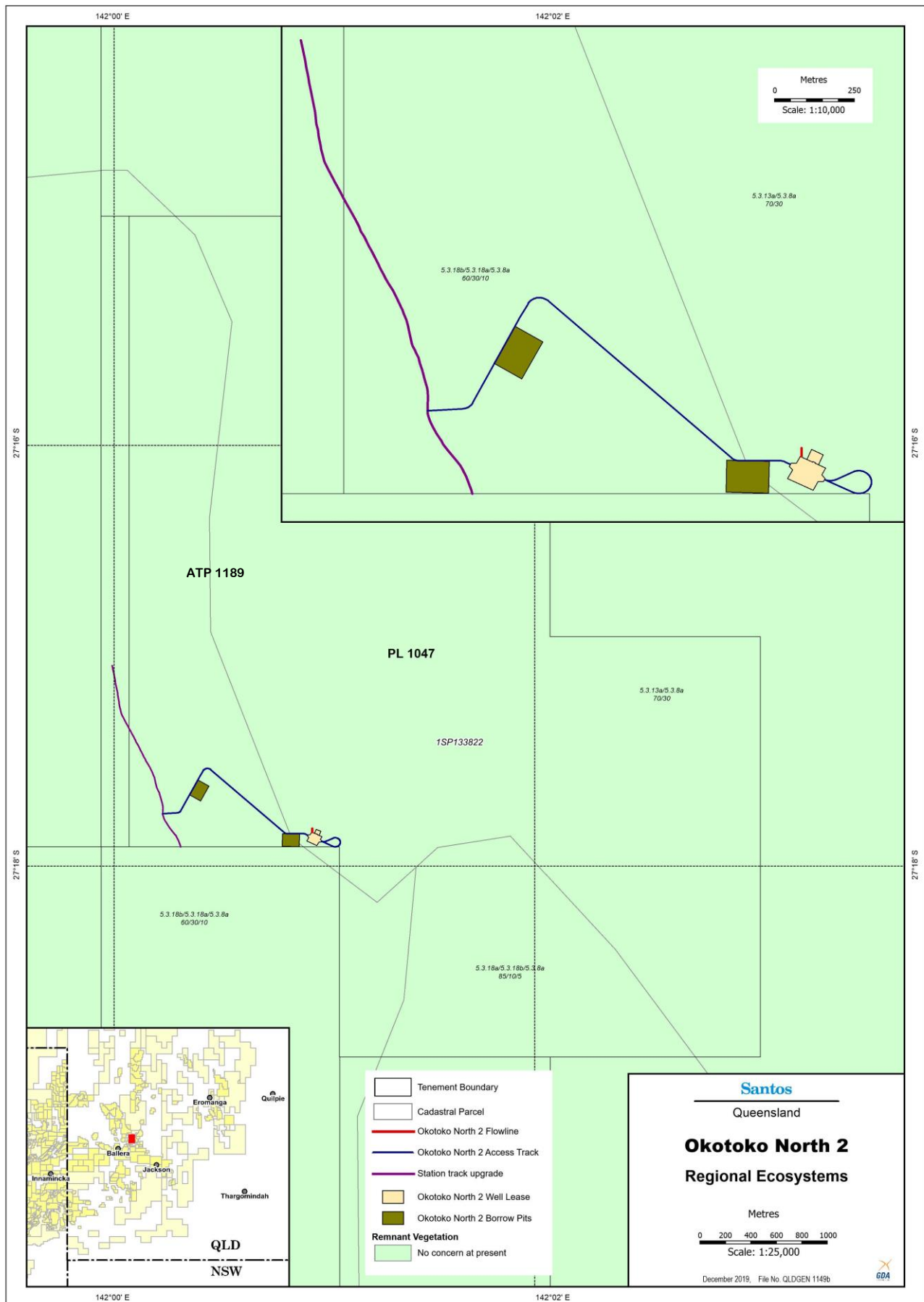


Figure 3: Regional Ecosystems

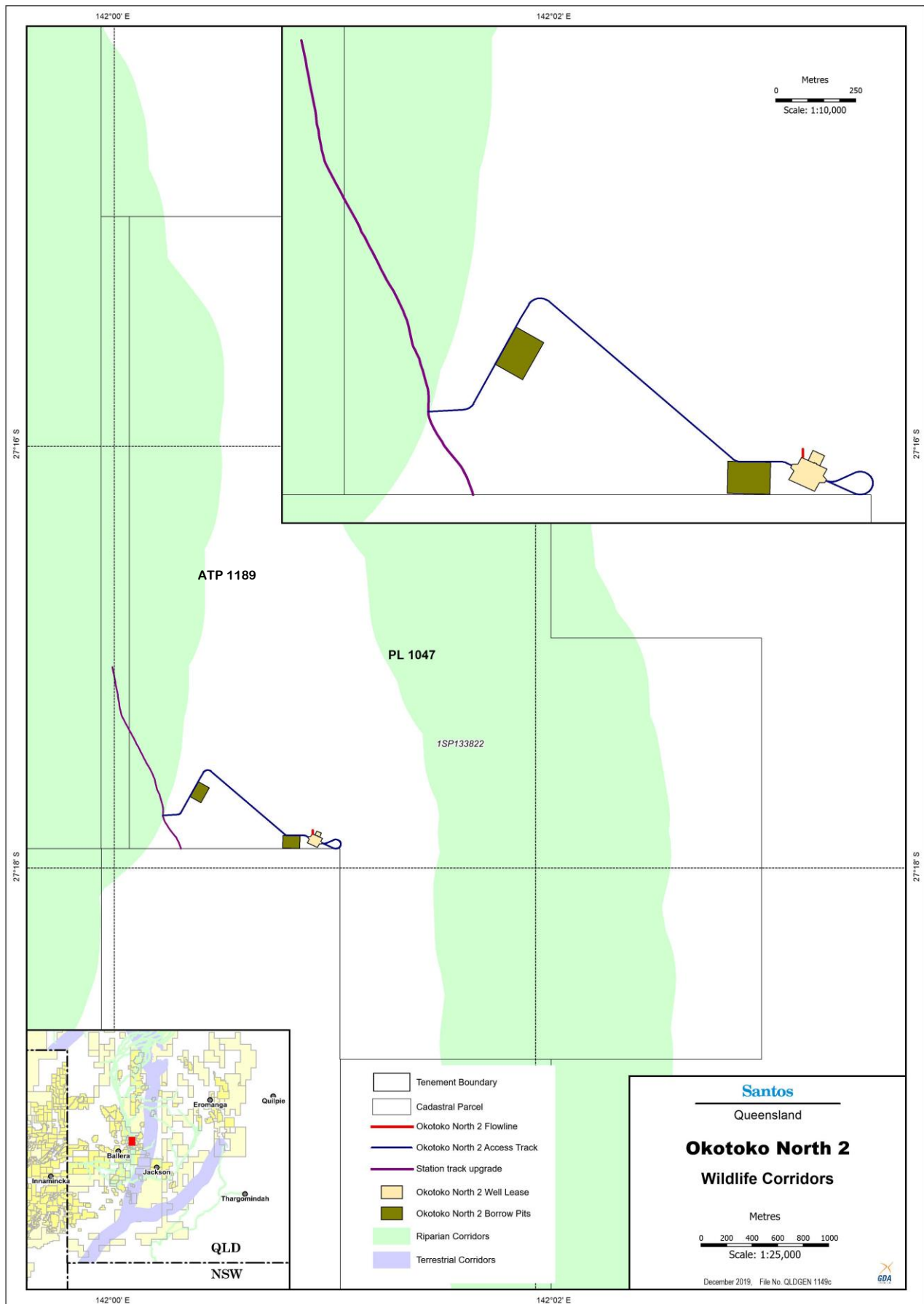


Figure 4: Wildlife Corridors

3.1.1 Potential Impacts

No new surface disturbance to land, such as clearing vegetation in or near streams, lakes, floodplains or wetlands, is required as part of the proposed operations on PL 1047. Access to and from the proposed activity will occur along the existing access tracks only. Following cessation of petroleum production, existing infrastructure would be rehabilitated to promote the natural re-establishment of vegetation consistent with the surrounding undisturbed land in accordance with the relevant EA conditions. As such, there will be no new disturbance or change to riparian corridors along streams and lakes and within floodplains and wetlands as a part of this activity. Accordingly, the proposed activities would not cause a widespread or irreversible impact on riparian processes within the Channel Country SEA.

3.1 Wildlife Corridors

Figure 4 shows state and regional riparian and terrestrial corridors present within PL 1047 as per DES *Biodiversity Planning Assessments and Aquatic Conservation Assessments* environmental reports.

Riparian corridors identified within these environmental reports are based upon major channels (250k geodata hierarchy 1) and minor channels (250k geodata hierarchy 2 and 3) necessary to capture permanent waterholes, buffered by 1 km either side and clipped to land zone 3². Terrestrial corridors identified within these environmental reports are based upon major themes of habitat connectivity across the bioregion. It includes the north/south and east/west links that cover areas characterised by a relative continuity of similar or related habitat².

Majority of the proposed activity is located outside of both mapped riparian corridors and terrestrial corridors. The upgraded station track is primarily located within a pre-disturbed area of existing riparian corridor. There are no mapped terrestrial corridors present within or surrounding the proposed activities or PL 1047. The area where the existing infrastructure is present has been subject to long-term cattle grazing from the operation the Durham Downs pastoral station. Notwithstanding, the REs surrounding the existing infrastructure (as described in Section 3.1) may provide suitable general habitat for a range of wetland water birds and other flora and fauna during periods of inundation.

There are no mapped Environmentally Sensitive Areas (ESA) near the Okotoko North 2 well; the closest ESA, Category C ESA Essential Habitat, is located approximately 4 km to the southeast.

3.1.1 Potential Impacts

No new disturbance(s) to aquatic and terrestrial fauna or wildlife corridors is to be undertaken as part of the proposed operations on PL 1047. Measures will be adopted to prevent fauna entrapment within operational areas, and hygiene protocols will be implemented as appropriate to minimise the introduction, spread and persistence of weed species, in accordance with relevant EA conditions. Access to and from the proposed activity will occur along the existing access tracks only. Following cessation of petroleum production, existing infrastructure would be rehabilitated to promote the natural re-establishment of vegetation consistent with the surrounding undisturbed land, in accordance with relevant EA conditions. As such, there is no disturbance or change to wildlife corridors as a part of this activity and therefore the proposed activities would not cause a widespread or irreversible impact on wildlife corridors within the Channel Country SEA.

² DERM 2009 *Biodiversity Planning Assessment, Channel Country Bioregion, Landscape Expert Panel Report, Version 1.1*

3.2 Water Quality

Surface Water

The braided channels associated with the Cooper Creek surround the proposed activity. Generally, the Cooper Creek is confined to the main channels, but every 3-4 years, flows are sufficient to inundate parts of the Cooper floodplain via a network of tributary channels. During extended periods of no flow, the Cooper Creek contracts to a series of waterholes. Very large Cooper Creek flood events with the potential to inundate the broader Channel Country region, and flow water into the lower Cooper Creek in South Australia, occur on average once every 10 years, reaching Lake Eyre North in an estimated 1 in every 20 years.

Historical (1965-2016) water quality data from the QLD Government's Cooper Creek gauging station 003103A, located approximately 95 kilometres south west, is summarised in Table 2.

Table 2: Cooper Creek Surface Water Quality (1956-2016)

Parameter	Average Value
Conductivity @ 25°C	345 µS/cm
Turbidity	512 NTU
pH	7.4
Total Nitrogen	1.4 mg/L
Total Phosphorus as P	0.4 mg/L
Sodium as Na	44.6 mg/L
Magnesium as Mg	7.4 mg/L
Chloride as Cl	62.6 mg/L
Fluoride as F	0.2 mg/L

Groundwater

The main GAB aquifers (i.e. in the Eromanga Basin stratigraphy) in relation to PL 1047 are the Winton Formation, Cadna-owie Formation, Hooray Sandstone, Hutton Sandstone and Poolowanna Formation (Precipice Sandstone equivalent). The aquifers of the Eromanga Basin are considered highly productive aquifers over most of the GAB. Shallow groundwater is generally found within the Quaternary and Tertiary alluvium formations associated with the very flat structures of flood plains and is absent where the Winton Formation occasionally outcrops. Groundwater from Tertiary sediments and the Winton Formation are characterised by a higher proportion of sodium and magnesium ranging in EC values from 3,000 to 13,000 µS/cm³.

The aquifers of the Cooper Basin, which underlies the GAB sediments of the Eromanga Basin, are not considered sandstone aquifers of the GAB. Groundwater yields from the Cooper Basin may be feasible from the Wimmera Sandstone, Toolachee Formation, Epsilon Formation, Patchawarra Formation and Tirrawarra Formation.

The Okotoko North 2 well primarily targets the Toolachee Formation (PC35 and PC 40), but also intersects the secondary Patchawarra formations of the Cooper Basin. Together with the Tirrawarra

³ Golder Associates 2013 *Underground Water Impact Report For Santos Cooper Basin Oil & Gas Fields, SW QLD*

Sandstone, these formations are the main gas reservoirs within the Cooper Basin and are located at depths of 2000 m or more.

Within the Santos Cooper Basin tenements, only the upper aquifers of the Eromanga Basin sequence are of economic interest to the local community. This is due to the significant depth of the water bearing formations in the Cooper Basin and the general unreliability of the groundwater quality that may be encountered (i.e. it may have a high salinity and contain free and dissolved hydrocarbons).

No registered groundwater bores are located nearby to the proposed activity; the closest registered groundwater bore (RN23610) is located approximately 2.5 km south west of the Okotoko North 2 well. There are no known groundwater dependent ecosystems, including Great Artesian Basin springs, which support permanent waterholes or aquatic ecosystems in the area. The closest Great Artesian Basin discharge / recharge springs are located greater than 200 km from Okotoko North 2.

3.2.1 Potential Impacts

The activity does not involve any new surface disturbance to land undertaken as part of the proposed operations on PL 1047, such as clearing vegetation in or near streams, lakes, floodplains or wetlands. No activities proposed involve the discharges of water (point or diffuse sources) or the construction or operation of regulated dams and other major infrastructure (i.e. separation ponds, permanent camps).

Any fuels / chemicals used on site would be stored and handled in accordance with Australian Standards and spill kits will be located onsite where required to contain any spills should they occur. All waste materials and non-essential infrastructure will be removed at the end of the petroleum activities as soon as reasonably practicable, minimising risks associated with contamination, or a reduction in water quality, in accordance with EA conditions.

Contingency measures for unplanned releases of discharges of contaminants will be implemented in accordance with EA conditions. Moreover, due to the slow nature of the encroachment of flood waters in the Cooper Creek, sufficient time is generally available to prepare operational areas for potential flood impacts e.g. in these situations all non-essential materials present on site at the time (e.g. hydrocarbons, chemicals, infrastructure) shall be removed from operational areas prior to the arrival of floodwaters. The petroleum well has been completed with steel surface casing, steel production casing, and cement to isolate the well from aquifers, including the Great Artesian Basin, and other geological units.

Given the scope of proposed activities, combined with the above management measures, petroleum production from the Okotoko North 2 infrastructure is unlikely to disturb or alter the physical, chemical and biological quality of water in the watercourse channels and on floodplains that support and maintain the natural aquatic and terrestrial ecosystems. Accordingly, the proposed activities would not cause a widespread or irreversible impact on water quality within the Channel Country SEA.

3.3 Hydrological Processes and Beneficial Flooding

Regional

Topography is limited to low undulating topography between the drainage channel system. The Channel Country is characterised by vast flat-lying, braided, flood and alluvial plains surrounded by gravel or gibber plains, dunefields and low ranges. The low resistant hills and tablelands are remnants of the flat-lying Cretaceous sediments.

The drainage system is dominated by the Cooper Creek Basin draining towards Lake Eyre. During periods of high rainfall, the flat topography and drainage channel system becomes a largely flooded plain with water flow concentrating where Cooper Creek crosses the QLD-SA border. The Cooper Creek system catchment covers an area of approximately 300,000 km². Generally, Cooper Creek streamflow is confined to the main channels, but every 3-4 years, flows are sufficient to inundate parts of the Cooper

floodplain via a network of tributary channels. During extended periods of no flow, the Cooper Creek contracts to a series of waterholes. Very large Cooper Creek flood events with the potential to inundate the broader Channel Country region, and flow water into the lower Cooper Creek in South Australia, occur on average once every 10 years, reaching Lake Eyre North in an estimated 1 in every 20 years.

Local

The braided channels associated with the Cooper Creek surround the proposed activity; at its closest point, the Cooper Creek is located approximately 250m to the east of the Okotoko North 2 well (Figure 5). The area of the proposed activity is subject to intermittent flows associated with Cooper Creek flood events and will experience intermittent surface water flows during storm events, causing localised ponding of surface water, as discussed above.

PL 1047 contains areas of general ecological significance (GES) wetlands. There is no areas of high ecological significance (HES) wetlands within PL 1047. The Okotoko North 2 well is located within GES wetland. The majority of the associated infrastructure (i.e. access tracks, borrow pits) are located outside GES wetland. The GES wetland is mapped as palustrine RE (RE 5.3.13a / 5.3.8a) – arid/semi-arid floodplain lignum swamp. Palustrine wetlands are essentially low-lying clay pan lakes surrounded by sand dunes and sand plains. The clay pans receive local inflows from their surrounding catchment areas during local rainfall events (BOM, 2018).

3.3.1 Potential Impacts

No new surface disturbance to land, such as clearing vegetation in or near streams, lakes, floodplains or wetlands, or placing new infrastructure within the SEA, is to be undertaken as part of the proposed operations on PL 1047. The pipeline will be buried underground and surface rehabilitated to reinstate existing drainage. The access tracks will not be constructed to any flood immunity, allowing for natural passage of surface water to avoid impacts to the existing hydrology. The well will be completed with steel surface casing, chrome steel tubing, and cement in accordance with the Santos Management System (SMS) Onshore Drilling and Completions technical standards to ensure that the well is isolated from aquifers, and other geological units. The vertical separation of the target formation for the proposed well and the location of any potential terrestrial ecosystems that may be dependent on groundwater is too great to be at risk of hydraulic impact.

Any surface infrastructure required as a part of future workover activities (i.e. a drilling sump), may result in diversion or interception of a negligible amount of overland flow, when considering the small footprint of the activity relative to the sub-catchment area (typical drilling sump has an operating volume of approximately 300kL and is designed to exclude surface flow). However, all workover activities would be temporary in nature and would be scheduled to be completed outside of the wet season (infrastructure removed prior to Cooper Creek flood events), therefore diversion or interception of overland flow is not expected.

Following cessation of petroleum production, existing infrastructure would be rehabilitated to promote the natural re-establishment of vegetation consistent to the surrounding undisturbed land. Given no new disturbance or activities other than 'production' from existing authorised infrastructure is proposed (as described in Section 2.0), altered natural flow paths and natural extent of flooding across floodplains will not occur. Accordingly, there would be no widespread or irreversible impact on hydrological processes or beneficial flooding within the Channel Country SEA as a result of the proposed operations.

3.4 Geomorphic Processes

Regional

Surface geology is dominated by Quaternary alluvium deposits associated with flood plains, with consolidated Tertiary sediments or Winton Formation on the higher ground. Cooper Creek is a large sedimentary sump accreting over a vast floodplain⁴.

Local

Land systems mapped at the location of the proposed activity are consistent with Landzone mapping. The proposed activity location is primarily mapped as Channel Country, flooded alluvial plains with anastomosing channels. The area is associated with the irregularly flooded Cooper Creek main channel area⁵. The land system present within proposed activity location is summarised in Table 3. Soils are mapped as grey clays (Ug5.24) and grey cracking clays, such as, Ug5.34 and Ug5.25 (Map Code: 490)⁶.

Table 3: Land System at Proposed Activity Location

Map Code	Land System Description	Agricultural Land Class
CC87	Flooded-plains of major rivers consisting of numerous braided stream channels that are seasonally flooded and slightly higher areas raised between the channels: chief soils are grey clays (Ug5.24) but other cracking clays such as (Ug5.34) and (Ug5.25) may occur.	C2 - Pasture Land - native pastures

3.4.1 Potential Impacts

No new surface disturbance to land, such as excavation, clearing or realigning the beds and banks of watercourse, cultivating soil or excavating on floodplains, is to be undertaken as part of the proposed operations on PL 1047. No new structures are proposed to be placed in a watercourse, lake or spring or on floodplains as a part of this activity.

The Okotoko North 2 well is located away from the sources / areas of significant geomorphic processes, approximately 250m from the closest watercourse. The access tracks will not be constructed to any flood immunity, and will facilitate the passage of water keeping with existing hydrology. The pipeline will be buried underground and the surface will have been rehabilitated to reinstate existing drainage. Any surface infrastructure required as a part of future workover activities (i.e. a drilling sump), may result in diversion or interception of a negligible amount of overland flow, when considering the small footprint of the activity relative to the sub-catchment area (typical drilling sump has an operating volume of approximately 300kL). However, all workover activities would be temporary in nature and would be completed outside of the wet season, therefore diversion or interception of overland flow is not expected.

Following cessation of petroleum production, existing infrastructure would be rehabilitated to promote the natural re-establishment of vegetation consistent with the surrounding undisturbed land. As such,

⁴ Maroulis, J (undated) *Channel Country landforms and the processes that shape them*. University of Southern QLD Faculty of Education/Australian Centre for Sustainable Catchments.

⁵ DES (2018). Land systems – western arid region land use study – part 1 – AWA2 (spatial dataset), Accessed 28/08/2019. Available online at: gldspatial.information.qld.gov.au

⁶ ASRIS (2018). Atlas of Australian Soils (spatial dataset), Australian Soil Resource Information System (CSIRO), Accessed 28/08/2019. Available online at: <http://www.asris.csiro.au/downloads/Atlas/soilAtlas2M.zip>

the proposed activity would not alter the delivery of sediment to the river system from adjacent lands and the natural erosion of the bed, banks and floodplains. Accordingly, it is not envisaged that the proposed activity would not cause a widespread or irreversible impact on geomorphic processes within the Channel Country SEA.

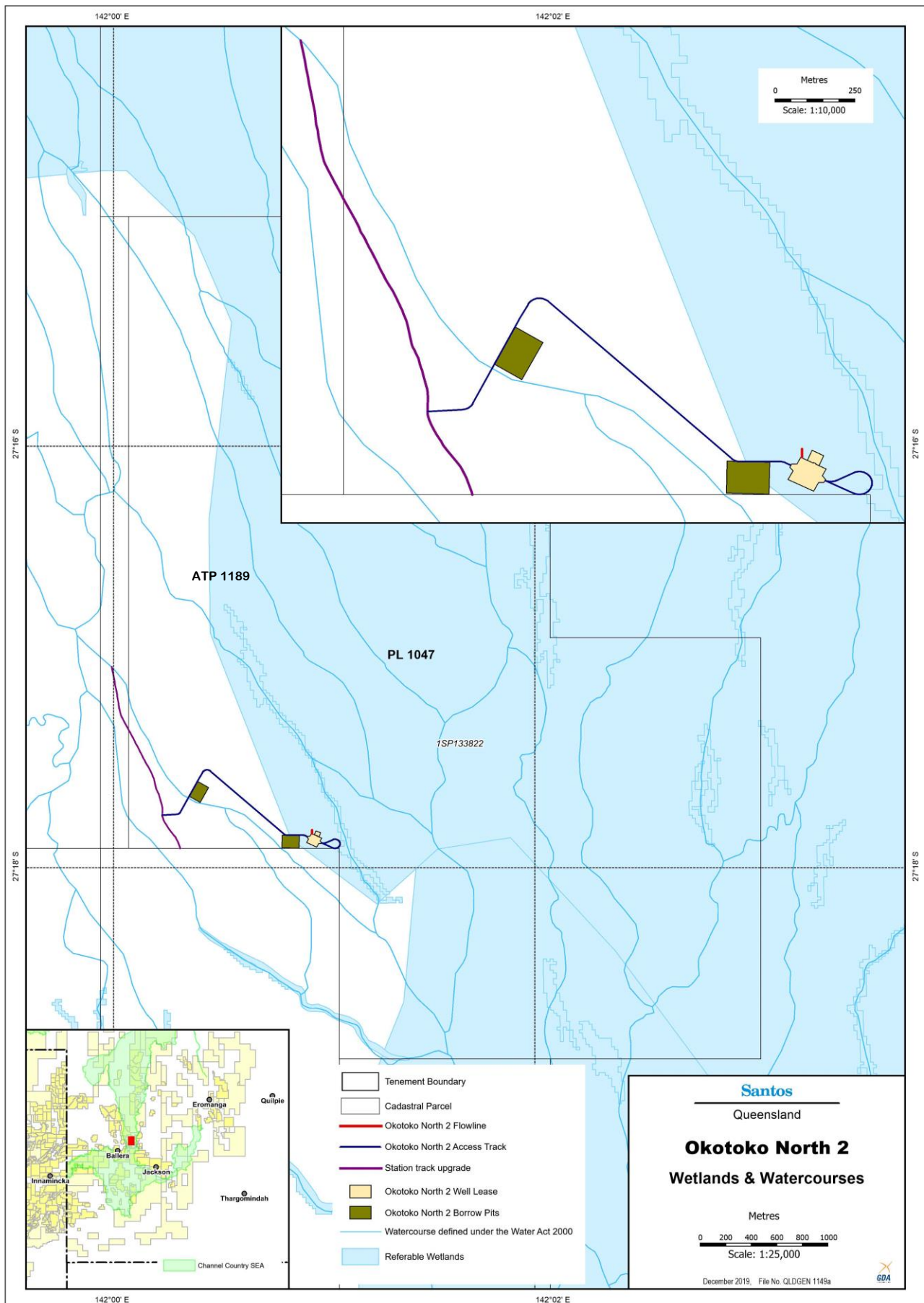


Figure 5: Watercourses, Wetlands and Strategic Environmental Areas

4.0 Required Outcome Assessment

Schedule 2, Part 5 of the RPI Reg provides criteria for assessment by agencies. In accordance with Section 14(3) of the RPI Reg, if the application demonstrates compliance with either of the prescribed solutions stated in Part 5, Schedule 2, the proposed activity will meet the required outcome for the regional interest. Critically, the application demonstrates that the prescribed solution provided in s15(1)(a) will be met as the proposed activity, the production of gas from the Okotoko North 2 gas well will not impact on an environmental attribute of the Channel Country SEA. The application also demonstrates the prescribed solution provided in s15(1)(b) will also be met (Table 4).

Table 4: Schedule 2, Part 5 RPI Reg

Schedule 2, Part 5 RPI Reg		Relevance To Application
14 Required outcome <i>The activity will not result in a widespread or irreversible impact on an environmental attribute of a strategic environmental area.</i>	✓	The petroleum activities will not result in widespread or irreversible damage to the environmental attributes listed in s7 of the RPI Reg for the Channel Country SEA as described in Section 3.0.
15 Prescribed solution <i>(1) The application demonstrates either— (a) the activity will not, and is not likely to, have a direct or indirect impact on an environmental attribute of the strategic environmental area; or</i>	✓	Refer to Section 3.0.
<i>(b) all of the following— (i) if the activity is being carried out in a designated precinct in the strategic environmental area—the activity is not an unacceptable use for the precinct;</i>	✓	The proposed activities do not include any of the unacceptable uses prescribed by Section 15(2) of the RPI Act.
<i>(ii) the construction and operation footprint of the activity on the environmental attribute is minimised to the greatest extent possible;</i>	✓	Existing surface disturbance authorised under ATP 1189 will be utilised entirely. No new disturbance footprint is proposed to be authorised under PL 1047 within this application.
<i>(iii) the activity does not compromise the preservation of the environmental attribute within the strategic environmental area;</i>	✓	Refer to Section 3.0.
<i>(iv) if the activity is to be carried out in a strategic environmental area identified in a regional plan—the activity will contribute to the regional outcomes, and be consistent with the regional policies, stated in the regional plan.</i>	✓	The South West Regional Plan does not identify the Channel Country SEA.

As discussed within Section 2.1, a drilling fluids sump may be required as a part of future temporary workover activities. The application also demonstrates the proposed use of a temporary drilling sump does not constitute a regulated activity as defined by the RPI Act.

Table 5: s11(3) and Schedule 6 of RPI Reg

s11(3) of the Regional Planning Interests Regulation 2014		Relevance To Application
<p><i>Water storage (dam) is storing water using a dam, other than storing water on land to be used only for any or all of the following purposes—</i></p> <p><i>(a) to meet the domestic water needs of the occupants of the land;</i></p> <p><i>(b) to water the stock that is usually grazed on the land;</i></p> <p><i>(c) to water stock that is travelling on a stock route on or near the land.</i></p>	✓	<p>N/A – the application does not propose to store water in a dam; The application proposes the temporary storing of drilling fluids in a drill sump designed to exclude surface flow if/when workover activities require it. Santos drilling sumps are designed to exclude surface flow and avoid the impounding of surface water. In addition, workover activities would be scheduled to be completed outside of the wet season, therefore all surface infrastructure, including a drill sump, would be removed prior to Cooper Creek flood events.</p>
Schedule 6 of the Regional Planning Interests Regulation 2014		Relevance to the application
<p><i>dam—</i></p> <p><i>(a) means the following—</i></p> <p><i>(i) a barrier, whether permanent or temporary, that does, could or would impound water;</i></p>	✓	<p>N/A – the drilling sump would not impound water. Santos drilling sumps are designed to exclude surface water and avoid the impounding of surface water. Workover activities would be scheduled to be completed outside of the wet season, therefore all surface infrastructure, including a drill sump, would be removed prior to Cooper Creek flood events.</p>
<p><i>(ii) the storage area created by the barrier;</i></p> <p><i>(iii) an embankment or other structure that is associated with the barrier and controls the flow of water; but</i></p>	✓	<p>N/A – the sump would not constitute a barrier for the storage of water.</p>
<p><i>(b) does not include a water tank, including a rainwater tank, constructed of steel, concrete, fibreglass, plastic or similar material.</i></p>	✓	<p>N/A – the proposed sump does not constitute a water tank.</p>

Appendix A – Definitions

Activity	Definition
Access Track	A cleared track constructed of earthen material to facilitate ongoing operational maintenance access to the petroleum well.
Borrow Pit	A source of shallow earthen material excavated to provide material for well lease and access track maintenance.
Buried Pipeline	A pipeline buried underneath the ground used to transport petroleum.
Petroleum Production	A petroleum well operated under normal producing conditions to extract gas for ongoing commercial sale.
Production Testing	A petroleum well operated under normal producing conditions to capture key production measurements used to inform whether commercially viable quantities of gas are present for extraction.
Petroleum Well	A hole in the ground made by drilling through which petroleum or a prescribed gas is produced.
Petroleum Well Pad	An area used to provide a stable platform for workover rigs and the operation of a petroleum well.