APA Group
APA Group Limited
ACN 091 344 704
Level 25, 580 George Street, Sydney NSW 2000
PO Box R41, Royal Exchange NSW 1225

P:+61 2 9693 0000
F:+61 2 9693 0093
apa.com.au

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These documents remain accurate and relevant and are made available for compliance, transparency and reference purposes. Revised versions incorporating APA branding and references will be progressively updated and published.

For any clarification, please contact environment.national@apa.com.au and or (07) 3003 5342

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Rehabilitation Plan

Atlas to Reedy Creek Pipeline

Date: 27 February 2024

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Document Status

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Abbreviations

The abbreviations provided below are used throughout this document.

ARCP	Atlas to Reedy Creek Pipeline
ATW	Authority to Work
CCA	Conduct and Compensation Agreement
CSG	Coal Seam Gas
DES	Department of Environment and Science (formerly DEHP)
EA	Environmental Authority
EP Act	*Environmental Protection Act 1994* (Qld)
EPBC Act	*Environment Protection and Biodiversity Conservation Act* (1999) (Cth)
ESA	Environmentally Sensitive Area
GIS	Geographic Information System
MNES	Matters of National Environmental Significance
PPL	Petroleum Pipeline Licence
QPWS	Queensland Parks and Wildlife Services
RE	Regional Ecosystem
RoW	Right of Way
Senex	Senex Energy Pty Ltd

1 Introduction

1.1 Purpose

ARC Pipeline Pty Ltd, a wholly owned subsidiary of Senex Energy Pty Ltd (Senex), is planning to construct and operate the Atlas to Reedy Creek Pipeline (ARCP) approximately 57 km long, pursuant to Petroleum Pipeline Licence (PPL) 2075.

Due to the different types of existing land use and disturbance types across the ARCP, there is need for a diversified approach to rehabilitation.

This Rehabilitation Plan (the Plan) identifies a range of rehabilitation methods that will be undertaken to successfully rehabilitate disturbed land. This plan has been developed to meet the requirements of the State Environmental Authority (EA) conditions and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**).

The Plan will assist to minimise impacts to Matters of National Environmental Significance (MNES) through the reinstatement of surfaces to match original contours and ground covers across the RoW construction corridor and other disturbed areas. The Plan also identifies rehabilitation monitoring requirements; and indicators and acceptance criteria to be met in the standard pipeline Environmental Authority conditions.

Additional details relating to rehabilitation methods and monitoring are detailed within the following procedures:

- Queensland Reinstatement and Rehabilitation Procedure (SENEX-QLDS-EN-PRC-002); and
- Queensland Environmental Rehabilitation Monitoring Procedure (SENEX-QLDS-EN-PRC-001).

1.2 Project Approvals

1.2.1 Environmental Authority Conditions

An EA (Permit No. P-EA-100487720) for the ARCP was issued on the 18 December 2023. This plan has been developed in accordance with the EA conditions. In the EA, rehabilitation means:

'the process of reshaping and revegetating land to restore it to a stable landform and in accordance with acceptance criteria and, where relevant, includes remediation of contaminated land. For the purposes of pipeline rehabilitation, rehabilitation includes reinstatement, revegetation and restoration'.

Relevant conditions to the implementation of the Rehabilitation Plan include:

Schedule C – Operating standards

Documentation

PPSCC 1 (S)
All plans, procedures and reports must:
(a) be certified by a suitably qualified person
(b) be kept on record for a minimum of 5 years.

Soil management

Variation 18
For activities involving significant disturbance to land, control measures that are commensurate to the site-specific risk of erosion, and risk of sediment release to waters must be implemented to:

a) Preferentially divert stormwater around significantly disturbed land, or allow stormwater to pass through the site in a controlled manner and at non-erosive flow velocities;
b) Minimise soil erosion resulting from wind, rain and flowing water;
c) Minimise the duration that disturbed soils are exposed to the erosive forces of wind, rain and flowing water;
d) Minimise work-related soil erosion and sediment runoff; and
e) Minimise negative impacts to land or properties adjacent to the activities (including roads).

PPSCC 15 (S)
Green waste may be used on-site for rehabilitation and/or sediment and erosion control purposes.

Schedule E – Construction conditions
Pipeline reinstatement and revegetation

PPSCE 17 (S)
Pipeline trenches must be backfilled and topsoils reinstated within 3 months *after pipe laying.*

PPSCE 18 (S)
Reinstatement and revegetation of the pipeline right of way must commence within 6 months after completion of petroleum activities for the purpose of pipeline construction.

PPSCE 19 (S)
Backfilled, reinstated and revegetated pipeline trenches and right of way must be:

- *a stable landform*
- *re-profiled to a level consistent with surrounding soils*
- *re-profiled to original contours and established drainage lines*
- *vegetated with groundcover which is not a declared pest species, and which is established and self-sustaining.*

Schedule F – Post-construction conditions including operations, maintenance and decommissioning
Final acceptance criteria for rehabilitation

PPSCF 4 (S)
After decommissioning, all significantly disturbed land caused by the carrying out of the petroleum activity(ies) must be rehabilitated to meet the following final acceptance criteria:

(a) *any contaminated land (e.g. contaminated soils) is remediated and rehabilitated*
(b) *rehabilitation is undertaken in a manner such that any actual or potential acid sulfate soils on the area of significant disturbance are treated to prevent or minimise environmental harm in accordance with the Instructions for the treatment and management of acid sulfate soils (2001)*
(c) *for land that is not being cultivated by the landholder:*
    i. *groundcover, that is not a declared pest species is established and self-sustaining*
    ii. *vegetation of similar species richness and species diversity to pre-selected analogue sites is established and self-sustaining*
(d) *for land that is to be cultivated by the landholder, cover crop is revegetated, unless the landholder will be preparing the site for cropping within 3 months of petroleum activities being completed.*

PPSCF 5 (S)
Monitoring of performance indicators must be carried out on rehabilitation activities until final acceptance criteria in standard condition (PPSCF 4) have been met for the rehabilitated area.

Schedule G – Monitoring and reporting conditions
Monitoring

PPSCG 1 (S)
All monitoring must be undertaken by a suitably qualified person.

Reporting

PPSCG 10 (S)
The annual return must include an Update Report detailing activities during the annual return period, demonstrating:

(a) *significant disturbance during the period*
(b) *rehabilitation undertaken*
(c) *a list of all valid complaints relating to environmental issues made including the date, source, reason for the complaint and a description of investigations undertaken in resolving the complaint*
(d) *the results of all monitoring undertaken*

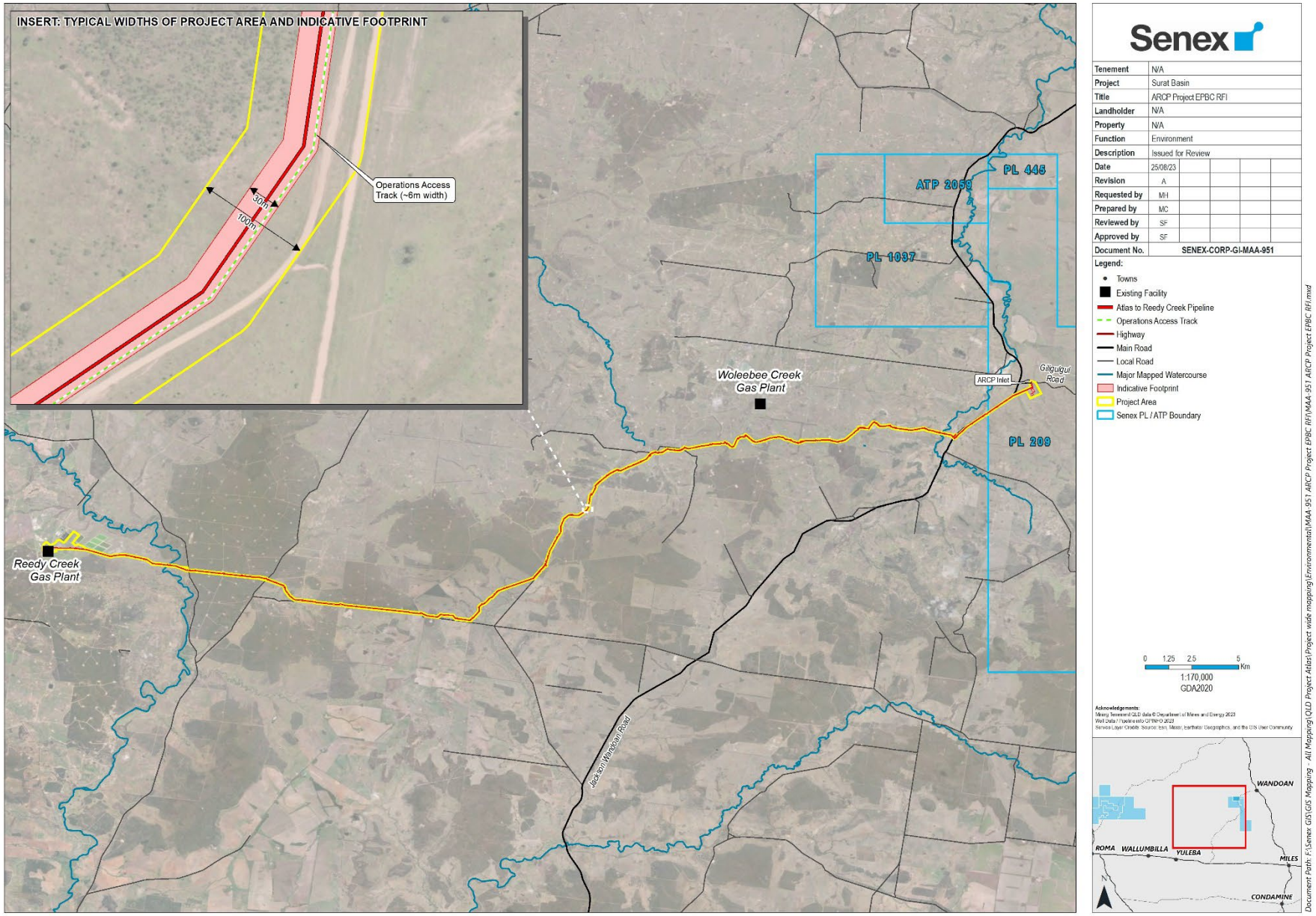

Figure 1.1 Location of ARC Pipeline Project

1.2.2 Environment Protection and Biodiversity Conservation Act 1999

The ARCP has been determined to be a controlled action under the EPBC Act and is currently undergoing assessment via Preliminary Documentation. Where necessary this plan will be updated post-approval.

This plan has been prepared with consideration to the MNES values potentially impacted by the project. To minimise impacts on MNES, the plan will be implemented in conjunction with other key documentation including the ARCP Significant Species Management Plan [SENEX-ARCP-PLN-002] and the ARCP Environmental Management Plan [SENEX-ARCP-EN-PLN-001].

Based on the ecological assessments undertaken for the project, the following MNES have been identified as known or likely and impacted or potentially impacted by the project:

- Listed Threatened Ecological Communities (TEC)
    - Brigalow (*Acacia harpophylla*) dominant and co-dominant Threatened Ecological Community
    - Poplar Box Grassy Woodland Threatened Ecological Community
- Listed Threatened Birds
    - Glossy Black-cockatoo (*Calyptorhynchus lathami lathami*)
    - Squatter Pigeon (southern) (*Geophaps scripta scripta*)
- Listed Threatened Mammals
    - Greater Glider (*Petauroides volans / Petauroides armillatus*)
    - Koala (*Phascolarctos cinereus*)
- Listed Threatened Invertebrates
    - Dulacca Woodland Snail (*Adclarkia dulacca*).

This plan focuses on the principle of restore (remediate and rehabilitate), actively remediate, and rehabilitate impacted areas to achieve a long-term safe and stable landform. Habitat features will be reinstated as per Section 4.2.8.

1.2.3 Relevant Standards and Guidelines

The following standards and guidelines have been used to develop this plan and will be considered accordingly for periodic revision and implementation purposes:

- Final rehabilitation report for resource activities – Department of Environment and Science: Version 4.01, 4 September 2020
- Indicators of Ecosystem Rehabilitation Success – CSIRO July 2003.
- BioCondition: A condition assessment framework for terrestrial biodiversity in Queensland: Assessment manual. Version 2.0 February 2015.
- Best Practice Erosion and Sediment Control. International Erosion Control Association. 2008.
- Australian Standard 2885.3—2012, Pipelines—Gas and liquid petroleum Part 3: Operation and maintenance.
- Australian Petroleum Production and Exploration Association, Code of Environmental Practice, October 2008.
- Australian Pipelines and Gas Association *Code of Environmental Practice* – Onshore Pipelines *(Rev 5 2022).*

1.2.4 Supporting Plans and Procedures

The Rehabilitation Plan will be updated:

- to reflect new or additional permit conditions when issued, other regulatory requirements; or
- as required by a risk assessment, audit or changed project outcomes.

ARCP P/L contractors will be provided with a copy of this Rehabilitation Plan and will be required to comply with its contents.

ARCP P/L, as a subsidiary of Senex Energy, will use the internal plans and procedures developed for corporate policy compliance, including but not limited to the following:

- GIS tracking of disturbance, no-go areas and location of habitat features (to inform the Authority to Work (ATW) permits);
- Senex Action Item Tracking Register (**AITR**) database which tracks complaints, grievances and all other items required to be actioned;
- Biosecurity Management Plan [SENEX-CORP-EN-PLN-003];
- Queensland Weed Hygiene Procedure [SENEX-QLDS-EN-PRC-023];
- Queensland Erosion and Sediment Control Procedure [SENEX-QLDS-EN-PRC-003]; and
- Queensland Fauna and Stock Management Procedure [SENEX-QLDS-EN-PRC-021].

Project specific plans and procedures that have been developed for the ARCP that are relevant to this Rehabilitation Plan are:

- ARCP Environmental Management Plan [SENEX-ARCP-EN-PLN-001];
- ARC Pipeline Environmental Management Plan – Combabula State Forest [OPS-ARCP-EN-PLN-001]; and
- ARCP Significant Species Management Plan [SENEX-ARCP-EN-PLN-002].

2 Responsibility

The Environmental Team will provide direction and instruction for all staff and contractors undertaking rehabilitation works, to ensure they are familiar with the content of this Plan and the rehabilitation program.
The contractors are responsible for the implementation of this plan during construction and through practical completion at the direction of the Environment Team and to ensure that staff and contractors comply with regulatory requirements including all relevant Approval conditions and requirements of the ATW.

The Operations Team are responsible for undertaking on-site checks to ensure the procedures in this Plan are followed. The Site Supervisors are responsible for implementing any corrective actions identified through assurance activities.

3 Background

The project is to construct and operate a buried high-pressure pipeline of approximately 57 km length between PL209 and the Reedy Creek to Wallumbilla pipeline.

The ARCP will be buried with a minimum depth of cover of 750 mm which will be increased as required (e.g. at crossings, locations susceptible to external interference or erosion, Rural-Residential [R2] location classes etc).

To install the ARCP, a Right of Way (**RoW**) of up to 30 m width will be cleared. Early pipeline route selection activities have allowed the alignment to avoid or minimise disturbance to environmental values and land users through aligning with existing pipelines, roads/tracks, fences, power lines and

other linear infrastructure wherever possible. The RoW has been narrowed from 30 m to 20 or 25 m to allow selective retention of habitat tress (including nest/den trees and launch trees facilitating dispersal/movement of greater gliders).

As the pipeline is buried, land users will be able to resume previous land use activities over the pipeline, provided that the use does not include heavy vehicles and excavation activities (unless authorised by ARCP P/L). Whilst deep-rooted vegetation cannot be re-established directly across the RoW; shallow root cropping and grassland re-establishment will be encouraged.

3.1 Tenure Overview

PPL 2075 crosses the following third-party Petroleum Leases (PLs)

- PL404;
- PL412;
- PL276;
- PL277;
- PL470; and
- PL471.

3.2 Landscape and Soils

The predominant land use within the project area is agriculture (cattle grazing), with some areas of State Forest (which is used for grazing under lease and petroleum development). The project area is predominantly cleared of remnant vegetation, with the remaining remnant vegetation associated with waterway riparian areas, state forest areas, and isolated patches that have remained uncleared.

The landscape ranges from gentle to moderately undulating or rolling lands, to strongly undulating or low hilly lands.

The land units and dominant soil types associated with the project are summarised in **Table 1**.

Table 1 Land Units and Dominant Soil Types

Government mapping code	Concept	Dominant soils
Rq1	Strongly undulating or low hilly lands	Gravelly mostly shallow loamy duplex soils with mottled clay subsoil. A wide range of other shallow duplex soils are associated, chiefly alkaline forms. Associated drainage lines have small floodplains with loamy soils together with small areas of clays.
Ub64	Moderately gentle undulating lands	Duplex yellow-grey hard setting A horizon, A2 horizon conspicuously bleached, neutral mottled B horizon.
Ro5	Undulating lands	Duplex brown, hard setting A horizon, A2 horizon sporadically bleached, alkaline pedal, whole columnar B horizon.
MM6	Gently undulating or almost level plains	Brown and red self-mulching cracking clays, Uniform fine cracking, smooth faced peds, brown clay horizon underlain by carbonate pan at or before 1.5m.

Acid-sulfate soil-prone areas or acid-bearing rock formations are not mapped or understood to exist within the project area.

3.3 Vegetation

The project area is located within the Queensland Brigalow Belt South bioregion. Native vegetation of the bioregion is characterised by woodland and forest communities of *Acacia harpophylla* (Brigalow) with scattered ecosystems dominated by eucalypt species, cypress pine, acacia species and grassland (Sattler and Williams, 1999).

There are no mapped high-risk areas under the *Nature Conservation Act 1992* (Qld).

Regional ecosystems (**RE**) listed under the *Vegetation Management Act 1999* (Qld) which have been ground-truthed as occurring within the project area are listed in **Table 2** and the ground-truthed RE mapping is included in Appendix 1.

Table 2 Validated Regional Ecosystems (Biodiversity Status) for ARCP

RE Code	RE Short Description	Biodiversity Status
11.3.2	*Eucalyptus populnea* woodland to open woodland.	Of Concern
11.3.4	*Eucalyptus tereticornis* woodland to open forest.	Of Concern
11.3.18	*Eucalyptus populnea* and/or E. *melanophloia* woodland.	No concern at present
11.3.19	*Callitris glaucophylla* woodland usually with codominant eucalypts including *Corymbia tessellaris*, *C. clarksoniana* that form a well-defined but discontinuous open forest to woodland canopy.	No concern at present
11.3.25	*Eucalyptus tereticornis* or E. *camaldulensis* woodland to open forest. Other tree species, including *Casuarina cunninghamiana*, *E. coolabah, Melaleuca bracteata, Melaleuca viminalis, Livistona* spp. (in north), *Melaleuca* spp.	Of Concern
11.5.1	*Eucalyptus crebra* and/or *E. populnea* +/- *Angophora leiocarpa* +/- *E. woollsiana* (in south of bioregion) woodland to open woodland.	No concern at present
11.5.4	*Eucalyptus chloroclada*, *Callitris glaucophylla*, *Angophora leiocarpa* woodland.	No concern at present
11.5.16	*Casuarina cristata* and/or *Acacia harpophylla* open forest.	Endangered
11.7.2	Monospecific stands of Acacia spp. Forest/woodland on Cainozoic lateritic duricrusts.	No concern at present
11.9.5 11.9.5a	*Acacia harpophylla* and/or *Casuarina cristata* or *Acacia harpophylla* open forest to woodland.	Endangered
11.10.8	Semi-evergreen vine thicket and microphyll rainforest. Occurs on medium to coarse-grained sediments that may be subject to local enrichment from adjacent rocks such as basalt as well as seepage.	Of concern

3.3.1 Environmentally Sensitive Areas

There are no Category A environmentally sensitive areas (ESA) within the disturbance footprint. PPL 2075 intersects areas of endangered and of concern Regional Ecosystems (Category B and Category C ESAs respectively), and also Combabula State Forest (Category C ESA).

A range of mitigation measures have been identified to minimise impacts on identified MNES, MSES and ESA. Where possible, impacts were avoided by realignment and narrowing of the RoW. For the impacts that could not be avoided the mitigation measures identified in the following plans will be implemented:

- Vegetation clearing measures (ARCP Significant Species Management Plan SENEX-ARCP-EN-PLN-002);
- Fauna management (ARCP Significant Species Management Plan SENEX-ARCP-EN-PLN-002);
- Weed management (Biosecurity Management Plan [SENEX-CORP-EN-PLN-003]); and
- Rehabilitation (as described in this Plan).

4 Rehabilitation Strategy

4.1 Approach

A distinction is made in this plan between transitional rehabilitation undertaken at the practical completion of construction and final rehabilitation after decommissioning of the pipeline and associated infrastructure. Transitional rehabilitation for the ARCP is required to commence within three months after pipe laying, while final rehabilitation will occur at the end of project life. This plan details transitional rehabilitation requirements with final rehabilitation to occur in accordance with the final acceptance criteria in place at the end of project life, including those matters that are subject to a Conduct and Compensation Agreement (**CCA**) for particular land parcels.

4.1.1 Transitional Rehabilitation/Reinstatement

Transitional rehabilitation (also known as reinstatement or partial rehabilitation) will be undertaken on disturbance associated with ongoing operational activities where part of the disturbed area is no longer required.

Examples include:

- The construction laydown areas;
- The construction width required for an access track is reduced to a narrower operational width; and
- The pipeline has been installed and the RoW can be reinstated.

The aim of transitional rehabilitation is to stabilise disturbed land during the operational phase, thereby minimising potential impacts on surrounding environmental values (e.g. minimising erosion and potential for weed establishment). Transitional rehabilitation will generally involve re-contouring the land surface (where required to achieve original contours and established drainage lines and to be consistent with the surrounding soils), replacing topsoil, and direct seeding groundcover species (pasture or native grasses depending on the final post-disturbance land use) or allowing natural recruitment of plant species, with ongoing maintenance where required.

Reinstatement of MNES habitat and/or remnant vegetation by reseeding will only use native species (apart from usage of a sterile cover crop where required for erosion control).

Pipeline trenches will be backfilled and topsoil reinstated within three months after pipe laying. Reinstatement and revegetation of the pipeline RoW will commence within six months after the cessation of petroleum activities for the purpose of pipeline construction.

Significantly disturbed areas that are no longer required for the on-going petroleum activities, will be rehabilitated within 12 months (unless an exceptional circumstance in the area to be rehabilitated (e.g. a flood event) prevents this timeframe being met) and be maintained to meet the acceptance criteria in EA (Permit No. P-EA-100487720).

4.1.2 Final Rehabilitation

Final rehabilitation of the pipeline will occur after decommissioning in accordance with the EA conditions in place at the time of cessation of pipeline operations. Where it is practical and safe to do so, the pipeline will be abandoned and left in- situ in accordance with *Australia Standard (AS) 2885 section 10.6* and *section 8 of the Australian Pipeline Industry Association Code of Environmental Practice*. The pipeline will be left in-situ to avoid disturbing the re-established vegetation through excavation and removal. The overall objective is to leave the RoW in a condition that is safe and stable and meet the agreed post-disturbance land use. If the pipeline is to be abandoned and left in-situ, an abandonment plan will be developed in accordance with regulatory requirements. When abandoning *in-situ*, the pipeline section shall be abandoned in such a way to ensure that ground subsidence and the risk of contamination of the soil or groundwater is minimised.

The pipeline will be disconnected from all sources of hydrocarbons that may be present in other pipelines, processing plant, meter stations, control lines and other appurtenances, and shall be purged of all hydrocarbons and vapour with a non-flammable fluid and then capped. Disposal of the purging fluid will meet all relevant environmental and safety requirements. The pipeline will be decommissioned in a manner that minimises potential impacts to the environment, land use and third parties and guidance should be taken from AS 2885. All above ground pipes and supports along the pipeline will either be cut-off at a minimum depth of 750mm below the natural surface, or at pipeline depth as determined by AS 2885.3. These pipes will be removed and capped off below the surface. All above ground signs and markers above the pipeline will be removed.

When it is either unsafe or not practical, decommissioning will be undertaken via removal, and the removal methods should be considered similar to those for pipeline construction and shall comply with the relevant requirements of AS 2885.1.

After decommissioning of the pipeline compacted hardstands, access tracks and disturbed areas will be tilled to aid binding of the soil layers, increase water retention, helping water infiltrate into the soil, and thus increase seed germination success. Seeding will be undertaken on the remaining areas with an appropriate seed mix, depending on the post-disturbance land use to be achieved. Reinstatement of MNES habitat and/or remnant vegetation by reseeding will only use native species.

4.2 Rehabilitation Methods

Generally, rehabilitation methods will be undertaken sequentially as outlined in this section. In some instances, site-specific variation to these methods may be necessary depending on the site requirements as detailed further in this Plan.

4.2.1 Vegetation Clearing and Stockpiling

Clearing and stockpiling of vegetation will be managed consistent with the requirements of the Significant Species Management Plan [SENEX-ARCP-PLN-002] to protect the MNES identified as known or potentially occurring in the indicative footprint and adjacent areas.

4.2.2 Natural Regeneration

Natural regeneration is one of the key methods used to re-establish vegetation, particularly in areas that were cleared of native vegetation for the construction of the project. It will be achieved by respreading the topsoil stockpile across the site, and recruitment of seed on the site from in situ sources and from wind borne seed from adjacent areas. Natural regeneration may be supplemented with direct seeding (refer Section 4.2.5). Reinstatement and rehabilitation of MNES habitat and/or remnant vegetation by reseeding will only use native species (apart from use of a sterile cover crop where required for erosion control).

Trees, shrubs and grasses will be allowed to regenerate naturally on cleared areas that are not required to be kept tree free (i.e. certain workspaces) for the purpose of operating and maintenance or under a CCA with the relevant landholder.

4.2.3 Soil Management

4.2.3.1 Topsoil and Subsoil Stripping

Topsoil contains the nutrients, microbes and seed bank required for regenerating vegetation during rehabilitation activities. Depending on the scale of disturbance, topsoil should be stripped prior to excavating subsoil. Prior to commencing soil stripping it is necessary to identify how the topsoil will be reinstated during rehabilitation, and to plan accordingly, to maximise direct re-spreading and to minimise the length of time that soil is stockpiled. Handling and storage methods should aim to minimise chemical and physical deterioration of the topsoil to maintain its viability.

Construction of point-to-point pipelines will require excavating the subsoil within the pipeline trench and cut and fill situations. As described above, depending on the soil type, subsoil can be sodic and dispersive and must be excavated and managed to:

- Prevent mixing and potential contamination of topsoil;
- Prevent degradation of the subsoil structure;
- Ensure reinstatement in the correct location and in the correct order; and
- Ensure effective management of unused subsoil.

4.2.3.2 Stockpiling

The primary objectives of topsoil and subsoil stockpiling are to:

- Minimise damage to, and maintain fertility of, stockpiled material;
- Ensure soil is stockpiled in a manner that will preserve its biological and chemical properties for use in rehabilitation activities; and
- Ensure stockpiles have minimal impact on surrounding environmental values.

Topsoil will be stockpiled separately from other site reinstatement material and stabilised to minimise erosion. Topsoil and subsoil stockpiles will be separated by an adequate distance to ensure they are not mixed during construction or rehabilitation works. This is because subsoil can be highly saline, sodic and dispersive.

Any backfill/subsoil material not utilised may be stockpiled in locations approved by the Site Supervisor or removed prior to topsoil placement. Subsoil and topsoil stockpile locations will be identified by the Site Supervisor prior to commencement of construction work.

The following should be considered in stockpiling topsoil and subsoil:

- Where both topsoil and subsoil are stripped and stockpiled, topsoil stockpiles will

be clearly identified to avoid any inadvertent losses;

- Topsoil will not be stockpiled against fence lines or vegetation to be retained;
- Senex Priority Weeds as defined in the Biosecurity Management Plan (SENEX-CORP-EN-PLN-003) occurring on the stockpiles will be monitored and controlled to help prevent further spread;
- Unless the stockpiles create a workspace issue in approach to watercourse crossings, stockpiles will be located close to the original location and in a manner that does not block diversion or natural drainage flow paths;
- Stockpiles will be located where they will not interfere with or be disturbed by other activities; and
- Erosion and sediment control measures must be implemented where stockpiles are to be located within 50 m of watercourses to prevent sedimentation of waterways.

4.2.3.3 Backfilling

Backfilling of trenches and other areas generally involves the following, although site-specific requirements may apply depending on soil type:

- Pipeline trenches will be backfilled within three months of pipe laying;
- During backfilling of pipeline trenches, soil will be replaced so that topsoil does not mix with subsoils;
- Topsoil will not to be used as backfill;
- Subsoil will not be contaminated with general rubbish or any foreign material that may damage the pipe during backfill;
- Pipeline backfill, and compaction of the fill will be controlled to minimise subsidence and the need for excessive temporary soil mounding;
- Excess subsoil material will be disposed of appropriately or stockpiled for use in future rehabilitation or construction or utilised elsewhere in consultation with landowners; and
- During construction and maintenance operations, open excavations (including trenches) will be inspected for trapped by a qualified spotter catcher twice daily (once in the morning and once in the late afternoon). Trenches will also be inspected for trapped fauna immediately prior to pipe laying and back-filling.

4.2.3.4 Re-contouring

Re-contouring disturbed areas will be required to reinstate surface drainage lines, and to create a stable, non- polluting landform consistent with the surrounding landform. This will ensure water flowing over the surface is comparable with the surrounding landscape and minimises the risk of erosion. It also ensures that the final landform is consistent with the surrounding land features. Temporary workspace siting will aim to reduce the need for significant cut and fill to minimise the need for re-contouring. Surface re-contouring will be completed prior to re-spreading of topsoil.

4.2.3.5 Tilling and Scarification

Prior to the re-spreading of topsoil, the ground surface may need to be ripped, depending on soil type. Ripping assists with binding of the soil layers, increases retention time of water on the slope, aids water infiltration into the soil increasing the opportunity of seed germination success, and reduces the volume and velocity of runoff generated from the slope. Requirements for ripping depend on the degree of compaction of the ground surface.

Ripping should be undertaken along contours, particularly on heavily trafficked areas such as temporary access tracks, and workspaces. Ripping depth will be reduced to no greater than 300 mm in areas where pipelines are buried, as ripping any deeper could potentially result in the rupture of buried pipelines.

After topsoil is spread the surface may be lightly scarified to assist with relief of compaction, water penetration and plant establishment. Scarification will be completed using appropriate equipment prior to seeding (after topsoil is spread) and should ensure no subsoil is brought to the surface. Alternatively, scarification can also be achieved by ploughing the sub-surface material prior to topsoil reinstatement. A figure eight or zigzag rip lines may be appropriate to prevent rill erosion in flat to low gradient areas.

Where topsoil is limited (less than 100mm thick) and it will be difficult to apply after ripping, consideration should be given to applying the topsoil before ripping and scarification.

4.2.3.6 Soil Amelioration

The need for soil amelioration will depend on soil type and associated chemical and physical properties, and the length of time soil has been stockpiled (or if *in situ*, the time it has been exposed and previous treatments). This will be determined on a case-by-case basis.

Vertosols and Sodosols should be assessed for dispersive tendencies using accepted techniques (Emerson 1967) and potential toxicity if acidic subsoils are encountered. Highly dispersive soils should be treated with gypsum to alter the soils exchangeable sodium content (with calcium ions) and further stabilised using mulched material where available. Organic or inorganic fertiliser may also be used to improve soil quality and the likelihood of revegetation success.

4.2.3.7 Topsoil Re-spreading

Topsoil will be replaced on disturbed areas and generally be spread to the following specifications, although site specific requirements, including depth of spreading will be determined by the Site Supervisor in consideration of on-site conditions:

- Topsoil will be spread back over the disturbance in an even layer and left ‘rough’ (rather than smooth and compacted) to minimise potential erosion, increase water infiltration and to trap seed;
- Topsoil will be spread to cover the entirety of the disturbed area so that there is no exposed sub- surface material. This will ensure seed has the best opportunity to germinate and establish groundcover;
- Topsoil depths will be determined by that recovered from the disturbed site, recognising that the soil types in the area have limited depth and delineation of topsoil;
- If insufficient topsoil exists, additional materials may be sourced from other locations but confirmation of the source and quality, including that it is weed free (declaration), must be obtained and provided to the Site Supervisor. Importing topsoil from other areas in the tenure must be approved by landholders. If no other sources exist on tenure, then amelioration techniques should be employed to ensure the soil is as optimal as reasonably practicable for growing conditions;
- Topsoil re-instating will only take place following initial reinstatement of the subsoil, construction of contour banks on steep slopes and compaction of subsoils to account for subsidence as required; and
- Topsoil stockpiled for extended periods will be turned over and mixed prior to reinstating on the site.

Sites where reinstated topsoil fails to promote vegetative growth should be assessed and cost-effective soil amelioration options employed to restore soil condition and health.

4.2.4 Erosion and Sediment Control

Erosion can have an adverse effect on soil structure and fertility, which can impact the success of revegetation. Erosion levels are expected to be more significant in coarser textured soils, where there is little structure and organic matter to assist in binding the soil. The prompt seeding and establishment of vegetative cover is key in the management of these soils.

Deep clay soils have a low to moderate erosion rating where undisturbed. However, subsoils can be sodic to strongly sodic and these soils will erode due to clay dispersion where soil is exposed after vegetation removal. Such soils can be particularly prone to gully and tunnel erosion.

Where applicable, the following erosion and sediment control measures should be considered (refer Queensland Erosion and Sediment Control Procedure [SENEX-QLDS-EN-PRC-003]):

- Where diversion of clean runoff water around a disturbed area is required, design will address possible erosion effects, including potential gully and tunnel erosion;
- Drainage lines and areas of concentrated water flow near project facilities will be inspected regularly for erosion and to determine whether remedial action is required;
- Sediment and erosion control measures and areas receiving concentrated flows will be inspected on a regular basis, replaced where damaged and maintained following rainfall events, as required;
- Erosion and sediment control measures, such as contour banks, will be placed as needed at intervals along flow paths, and discharge locations created to ensure discharges have low velocities and volumes, rather than channeling discharges to a central point exacerbating erosion;
- Point source discharges of runoff will be directed into stable waterways and/or drainage lines with engineering controls, such as scour protection and flow velocity limits as required;
- Slopes will be re-vegetated within 12 months after disturbance. Annual monitoring of vegetation cover established over RoW in vulnerable areas will determine whether reseeding or other remedial actions are required;
- Tracks will be preferably aligned across slopes, but where this is not possible, contour banks should be used at intervals appropriate to the slope and soil type to control the flow of surface water;
- Where necessary, erosion and sediment control devices will be constructed in consideration of the IECA Best Practice Erosion and Sediment Control Guidelines 2008; and
- Watercourse crossing reinstatement for point-to-point pipelines will be recontoured to match surrounding land and temporary waterway barriers will be removed and disturbed areas stabilised to minimise erosion.

4.2.5 Direct Seeding

Where sites are no-longer required for operational activities, direct seeding of grass cover species (native/introduced species) will be undertaken soon after topsoil has been re-spread but before spreading any mulch. Exotic species (e.g., buffel grass or other exotic species that

can lead to more intense fires) that are harmful to the Dulacca woodland snail will not be used where these exotic species do not already occur. Reinstatement of MNES habitat and/or remnant vegetation by reseeding will only use native species (apart from use of sterile cover crop where required for erosion control).

Direct seeding can be undertaken using a spreader attached to the rear of a tractor delivering seed onto the soil. Alternatively, a drill seeder with press wheels may be used. Hand seeding should be considered for steep slopes due to safety concerns regarding the use of machinery in these areas. Rehabilitation crews should assess each site on a case-by-case basis, according to the topography and level of risk involved if machinery is utilised.

Native seed should be sourced as locally as possible, preferably from undisturbed naturally occurring remnant vegetation in the vicinity of the intended rehabilitation areas. Seed should be procured from a reputable supplier that can vouch that the seed is of good genetic quality, viable and has been collected in a suitable manner. When procured seed is not of local provenance, efforts should be made to match the key environmental characteristics of the intended rehabilitation sites with the locations from which the seed is sourced.

Timeframes for seeding will consider the most appropriate season for germination and establishment of seedlings (i.e. immediately before the commencement of the wet season).

4.2.6 Direct Planting

The use of tubestock or direct planting of vegetation will only be done as a corrective action as part of the final rehabilitation where monitoring identifies that the success criteria “vegetation of similar species richness and species diversity to pre-selected analogue sites is established and self-sustaining” are not being met in a reasonable timeframe as determined by a suitably qualified ecologist or rehabilitation specialist.

4.2.7 Reinstatement of Connectivity for MNES species

A Significant Species Management Plan [SENEX-ARCP-PLN-002] has been developed that outlines specific requirements for managing potential impacts to Threatened Ecological Communities and significant species during preconstruction, construction and operation phases of the project. Rehabilitation activities will have regard to the MNES habitat values identified during the preclearance surveys and assessments for the project.

The aim of rehabilitation of disturbed areas is to not inhibit species’ ability to move across the landscape. Rehabilitation measures to avoid the creation of barriers for fauna movement include:

- Burial of pipes during construction;
- Prompt reinstatement of pipeline trenches;
- Limiting vegetation windrow length to no more than 50 m; and
- Implementation of biosecurity measures and where required, guard against excessive vegetation thickening which could create a fire risk after rehabilitation has occurred.

The rehabilitation methods described in this plan allow for appropriate and effective reinstatement and management of landscape connectivity.

4.2.8 Habitat Feature Reinstatement

Following the completion of construction earthworks, reinstatement of habitat features for listed species will be undertaken to reduce impacts to connectivity and edge effects and will include:

- Selection of habitat features (e.g. hollows, woody debris, logs and rocks) to be

salvaged for re-use in rehabilitation areas if/where MNES fauna species are found to be present during pre- clearance surveys; and

- Installation of salvaged hollows and/or nest boxes for glossy black-cockatoo and greater glider where actively occupied hollows (identified during pre-clearance surveys) are removed.

To minimise impacts to movement opportunities for greater glider, Dulacca woodland snail and koala, the following measures will be applied:

- Retention of individual mature Eucalypt and/or Corymbia trees where possible in areas where the RoW intersects areas of potential MNES habitat;
- A Characterisation of Habitat Connectivity Pre- and Post-Development [OPS-ARCP-EN-REP-002] has been undertaken that identifies areas of RoW narrowing and individual trees that are able to be retained for protection of MNES values (TECs, greater glider and Dulacca Woodland Snail habitat) including nest/den trees and launch trees facilitating dispersal/movement of greater gliders. Trees are to be retained based on Appendix B of this characterization assessment. For patches of greater glider habitat where the Project potentially impacts on connectivity that is not able to be avoided through HDD, RoW narrowing or tree retention (described above) glider refuge poles will be installed to facilitate movement across the disturbance area. Glider poles will be installed at the following locations as shown in the maps in Appendix 2:
    - Chainages 20980-21300: 2 x 15 m tall poles
    - Chainages 23200-23300: 2 x 15 m tall poles
    - Chainages 31500-31550: 1 x 20 m tall pole
    - Chainages 32320-32380: 1 x 20 m tall pole
    - Chainages 32830-32950: 1 x 20 m tall pole
    - Chainages 33700-33800: 2 x 15 m tall poles
    - Chainages 44480-44520: 2 x 15 m tall poles
- For Dulacca woodland snail where pre-clearance surveys at night after rain have not been possible, all suitable shelter habitat within the Indicative Footprint (including coarse woody debris, rocks, exfoliating bark at the base of trees, and loose soil/humus under logs) will be searched for snails during daylight hours. Due to the difficulty of locating animals buried in deep leaf litter, large accumulations of litter will also be gathered in disposable garbage bags for redistribution at translocation sites; and
- Relocation/deployment of coarse woody debris removed during construction to sections of the RoW intersecting areas of known (occupied) Dulacca woodland snail (i.e., in areas where the presence of Dulacca woodland snails is detected during pre-clearing surveys).

Further information on proposed measures to manage impacts on MNES can be found in the Significant Species Management Plan [SENEX-ARCP-PLN-002].

4.2.9 Weed and Pest Management

Weed and pest management is governed by the Biosecurity Management Plan (SENEX-CORP-EN-PLN-003) and associated procedures. In relation to rehabilitation, controlling Senex Priority Weeds is required during reinstatement and after routine RoW inspections during the operational phase.

Controlling Senex Priority Weeds (as identified in the Biosecurity Management Plan) during germination and establishment of vegetation on rehabilitation areas will be undertaken to increase the chance of revegetation success where uncontrolled weeds can out- compete establishing vegetation for resources including nutrients, space and sunlight.

Pest control on establishing rehabilitated areas may also be required to minimise grazing, trampling and uprooting of vegetation (e.g. by rabbits and pigs) occurring.

Treatment applications will consider the impact on established vegetation and comply with requirements of the Biosecurity Management Plan [SENEX-CORP-EN-PLN-003] and supporting documentation.

4.2.10 Maintenance and Rework

Following rehabilitation works, limited access to infrastructure will be allowed to perform essential maintenance requirements. Traffic will be restricted on the rehabilitation areas to enable successful establishment of groundcover. Depending on results of rehabilitation monitoring (refer Section 7 and 8) or other observations, maintenance and rework activities will be undertaken wherever required to ensure:

- Landforms remain stable;
- Erosion control measures remain effective and stormwater runoff and seepage from rehabilitated areas does not impact on nearby watercourses;
- Senex Priority Weed species are managed on rehabilitated areas; and
- The ability of wildlife to disperse across the landscape is protected.

Unstable sites (e.g. erosion) or those lacking adequate vegetation groundcover will be subject to corrective actions such as re-seeding (or replaced with tube stock) depending on the location and groundcover type.

Areas requiring rapid stabilisation (e.g. slopes, creek banks etc.) will be watered whenever reasonably practicable (i.e. this is a weather dependent action) to promote groundcover establishment. If watering is undertaken, the water used will be of a quality suitable for the intended purpose.

4.3 Nuisance Management

The potential for environmental nuisance relating to noise and dust generation exists during rehabilitation activities. Key mitigation measures are included within the relevant Environmental Management Plan [SENEX-ARCP-EN-PLN-001] and will be considered when planning for rehabilitation.

5 Disturbance Type

Reinstatement and rehabilitation methods for infrastructure types are detailed within relevant reinstatement and rehabilitation procedures. **Table 3** outlines the key rehabilitation requirements for the primary types of infrastructure present within the project area. Reinstatement of MNES habitat and/or remnant vegetation by reseeding will only use native species (apart from use of a sterile cover crop where required for erosion control).

Table 3 Typical rehabilitation methods

Infrastructure Type	Rehabilitation Technique
Pipeline RoW	▪ Backfill trenches with subsoil. Do not mix with topsoil. ▪ Re-profile natural contours and drainage lines to their original profile.

Infrastructure Type	Rehabilitation Technique
	▪ Rip subsoil and compacted areas. ▪ Install whoa-boys along slopes, as per Senex ESCP. ▪ Restoration of watercourses by installing, as required, jute matting on the banks, contour berms on the high bank, rock lining the creek base to minimise scour, and limiting the use of fertilisers. ▪ Seeding will be utilised where rapid restoration is required (e.g. watercourse crossings and potential high erosion areas). ▪ Respread topsoil (should be a minimum depth of 150 mm). Do not compact topsoil. ▪ Surface roughness is encouraged when respreading topsoil in order to trap water and seeds. ▪ Lightly tyne topsoil, but no do mix with subsoil. ▪ Felled vegetation to remain windrowed on the edge of the RoW. ▪ In known (occupied) MNES habitat areas (where MNES species identified as present during the pre-clearance survey): • Select habitat features salvaged for re-use in rehabilitation areas. • Installation of nest boxes for glossy black-cockatoo. • Spread timber/rocks within Dulacca woodland snail habitat. ▪ Retained trees for greater glider between potential habitat dissected by pipeline. ▪ Allow for natural regeneration. Seed areas, if natural regeneration (>70% groundcover) has not occurred within six months. ▪ Restrict vehicle access from driving on rehabilitated areas. ▪ Temporary ESCs should be removed from site only once sufficient rehabilitation has been established to ensure site stability. ▪ Manage weeds to remove existing and prevent spread of any new plants.
Access Tracks	▪ Where retained, grade wheel ruts to prevent erosion on access track. ▪ Maintain ESC's as per Senex ESCP [SENEX-QLDS-EN-PRC-003] (whoa-boys, table drains, etc.) ▪ Temporary access tracks not required for operations or retained by the landholder are to be rehabilitated by ripping to remove compaction, re- spreading stockpiled topsoil. ▪ Allow for natural regeneration. Seed areas, if natural regeneration has not resulted in groundcover achieving 70% of adjacent land use cover/analogue site within six months. ▪ Manage weeds.
Non-operational areas (excess construction site area not required for ongoing operations)	▪ Undertake reinstatement of areas not required to remain open during operations. ▪ Re-profile natural contours and drainage lines to their original profile. ▪ Rip subsoil and compacted areas. ▪ Respread topsoil (should be a minimum depth of 100 mm and up to 300 mm where available). Do not compact topsoil. ▪ Surface roughness is encouraged when respreading topsoil in order to trap water and seeds. ▪ Lightly tyne (scarify) topsoil, but no do mix with subsoil. ▪ Revegetation with native grasses and ground cover species (remnant vegetation) or pasture grasses (cropping or

Infrastructure Type	Rehabilitation Technique
	grazing). ▪ Manage weeds. ▪ Temporary ESCs should be removed from site once sufficient rehabilitation has been established to ensure site stability.

6 Rehabilitation Completion

6.1 Transitional Rehabilitation/Reinstatement Acceptance Criteria

Significantly disturbed areas that are no longer required for the on-going petroleum activities, will be rehabilitated and be maintained to meet the following acceptance criteria:

(a) contaminated land resulting from petroleum activities is remediated and rehabilitated

(b) the areas are:

i. non-polluting
ii. a stable landform
iii. re-profiled to contours consistent with the surrounding soils

(c) re-profiled to original contours and established drainage lines

(d) top soil is reinstated; and

(e) either:

i. vegetated with groundcover, that is not a declared pest species, is established and self-sustaining; or
ii. an alternative soil stabilisation methodology that achieves effective stabilisation is implemented and maintained.

6.2 Final Rehabilitation Acceptance Criteria

Final rehabilitation of the pipeline will occur after decommissioning in accordance with the EA conditions in place at the time of cessation of pipeline operations. The criteria will also be subject to QPWS requirements identified in the ARC Pipeline Environmental Management Plan – Combabula State Forest and the relevant landholder agreement or CCA provisions which may specify the way in which the rehabilitated land will be accepted by the landholder.

Final rehabilitation acceptance criteria:

(a) any contaminated land (e.g. contaminated soils) is remediated and rehabilitated

(b) rehabilitation is undertaken in a manner such that any actual or potential acid sulfate soils on the area of significant disturbance are treated to prevent or minimise environmental harm in accordance with the Instructions for the treatment and management of acid sulfate soils (2001)

(c) for land that is not being cultivated by the landholder:

i. groundcover, that is not a declared pest species is established and self-sustaining

ii. vegetation of similar species richness and species diversity to pre-selected analogue sites is established and self-sustaining

(d) for land that is to be cultivated by the landholder, cover crop is revegetated, unless the landholder will be preparing the site for cropping within 3 months of petroleum activities being completed.

6.3 Indicators

The rehabilitation indicators developed for this plan and for which monitoring will be undertaken have been selected to best characterise the ecological and environmental values represented in the acceptance criteria, cognisant of the resources available to monitor those indicators (Dale 2001; Erskine 2008; CSIRO 1998). The indicators are:

- Easily measured, repeatable, auditable and are suited to long-term assessment;
- Receptive to stresses;
- Predictable;
- Responsive to corrective actions as a result of various stress factors; and
- Able to produce responses with low variability.

7 Rehabilitation Monitoring

Rehabilitation monitoring is undertaken in accordance with the relevant reinstatement monitoring procedures. These procedures will be developed to address site specific requirements and set out the monitoring methods for the following key project stages:

- Practical Completion (of construction);
- Operations; and
- Decommissioning.

A summary of the monitoring requirements and details are provided in **Table 4** below.

Table 4 ARCP Project Rehabilitation Monitoring Requirements

Project Stage	Purpose	Criteria	Frequency
Completion of construction	Identify any corrective actions during the defects liability period (or similar).	No contamination No erosion or subsidence present Landform is stable Contours consistent with surrounding landform Erosion and sediment controls installed Installation of habitat features in MNES habitat areas No clearing in no-go areas	Upon completion of project construction (Practical completion)
Transitional	Monitor the effectiveness of reinstatement activities.	Risk rating applied based on the presence of: ▪ Erosion / subsidence ▪ Restricted/priority weeds ▪ Groundcover	Annual throughout operations
Final rehabilitation	Monitor achievement of final acceptance criteria	No contamination No exposure of acid sulfate soils Groundcover that is not declared pest species and is self-sustaining. Vegetation is of similar species richness and diversity as pre-selected analogue sites is established and self-sustaining; or as agreed with landholder for grazing / cropped land or under CCA.	Annual after decommissioning until criteria achieved.

Where referenced within the above table, annual monitoring will be undertaken during the growing season to provide an ongoing representation of rehabilitation progress and success.

8 Corrective Actions

Where inspections, monitoring and analysis for reporting indicate that performance criteria are not being met or are trending towards criteria not being met, corrective actions will be applied to the matter to protect environmental values and improve predicted outcomes.

This may include re-application of control measures, increased frequency of inspection or revision of methodologies. The standard rehabilitation monitoring timeframes are presented in Section 7.

As described in the ARCP Environmental Management Plan [SENEX-ARCP-EN-PLN-001] and ARCP Significant Species Management Plan [SENEX-ARCP-PLN-002] corrective actions may also include a revision of control measures and rehabilitation procedures to improve effectiveness of rehabilitation programs, consistent with an adaptive management approach.

Performance or acceptance criteria, corrective action triggers and monitoring timeframes for Transitional/Reinstatement Rehabilitation are included in Table 5.

Table 5 Corrective Actions for non-achievement of Transitional Rehabilitation/Reinstatement Acceptance Criteria

Performance / Acceptance Criteria	Corrective Action Trigger	Timeframe
No contamination	▪ Inspection of refueling area indicates leaks or spillage ▪ Incident notification of leak or spillage during construction activities	Weekly during construction and at practical completion
No erosion or subsidence present	▪ Backfilled and reprofiled areas developing rills following rainfall events	Weekly during construction and at practical completion and annual after practical completion
Landform is stable	▪ Backfilled and reprofiled areas are slumping ▪ Groundcover seeding has not occurred	At practical completion
Contours consistent with surrounding landform	▪ RoW backfilling has left excess material at surface ▪ Subsoils are present at surface ▪ Watercourse crossings are inconsistent with adjoining bed and banks	Weekly during construction and at practical completion
Erosion and sediment controls installed	▪ Disturbance areas have not included sediment and erosion controls	Weekly during construction and at practical completion
Installation of habitat features in known MNES habitat areas (i.e. where the relevant MNES species has been recorded)	▪ Areas mapped in pre-clearance survey for Glossy Black-cockatoo presence do not have nest boxes installed	At practical completion
	▪ Areas mapped in pre-clearance survey for Dulacca woodland snail presence do not have respread timber and rocks	At practical completion
	▪	
No clearing in no-go areas (any areas outside of finalised	▪ GIS mapped no-go areas have disturbance or evidence of vehicle entry	Weekly and at practical completion

Performance / Acceptance Criteria	Corrective Action Trigger	Timeframe
construction footprint)		
Restricted/priority weeds	▪ Weed inspections show emergence of restricted/priority weeds in rehabilitated areas	Quarterly during construction and after practical completion
Groundcover	▪ Groundcover is not achieving 70% of adjacent land use cover/analogue site	Annually after practical completion

The final acceptance criteria are expected to be met within 10 years of decommissioning. Table 6 identifies corrective action triggers and potential corrective actions are identified to ensure that the rehabilitation areas continue to progress towards the final acceptance criteria.

Table 6 Corrective Actions for, non-achievement, or trending towards non-achievement of, Final Rehabilitation Acceptance Criteria

Acceptance Criteria	Corrective Action Trigger	Potential Corrective Actions
No contamination	▪ Identification of contamination	Clean up / remediate contamination and revegetate
Groundcover that is not declared pest species and is self-sustaining	▪ Groundcover is declared pest species and is self-sustaining	Implement weed control
	▪ Groundcover targets not met in successive years	Investigate cause and implement appropriate response – potentially reseed, ameliorate or apply fertilizer, control weeds
Vegetation of similar species richness and species diversity to pre-selected analogue sites	▪ Year 3 - Species richness and/or species diversity <50% of pre-selected analogue sites ▪ Year 5 - Species richness and/or species diversity <80% of pre-selected analogue sites ▪ Year 8 - Species richness and/or species diversity similar to pre-selected analogue sites	Investigate cause and implement appropriate response - Seed with appropriate native species - Direct plant vegetation species where seeding is unlikely to be successful - Implement weed and/or grass control
	▪ Species richness and diversity criteria not met for 3 successive years sustaining	Investigate cause and implement appropriate response - Seed or direct plant with new native species suited to the site
Landholder requirements in CCA	▪ Landholder agreement is not able to be signed off	More time needed or review of potential causes to develop appropriate response
QPWS requirements (refer to ARC Pipeline Environmental Management Plan – Combabula State Fores)	▪ QPWS has not accepted rehabilitation of Combabula State Forest	More time needed or review of potential causes to develop appropriate response

9 Data Management and Reporting

Information on site rehabilitation activities carried out on the project area will be recorded upon completion of transition or final rehabilitation works.

Monitoring data recorded by Senex staff or external consultants will be stored within GIS spatial data. Monitoring data will be analysed to evaluate rehabilitation progress over time and may also be

used for financial assurance calculations.

All documents including rehabilitation monitoring reports will be kept for a minimum of five years and will be made available to DES upon request, as required by EA conditions.

10 References

International Erosion Control Association 2008, Best Practice Erosion and Sediment Control. Australasia, Picton, NSW.

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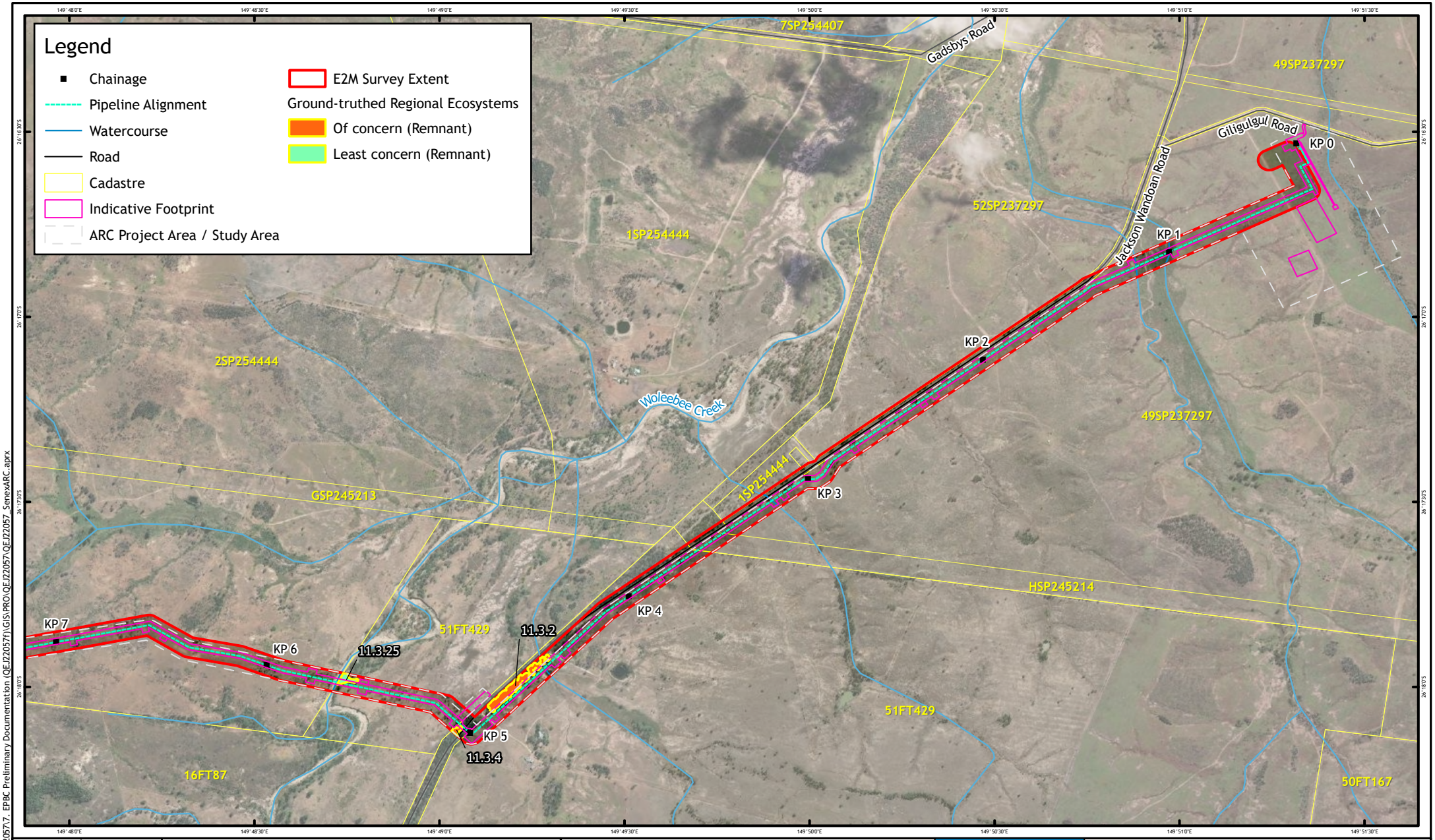
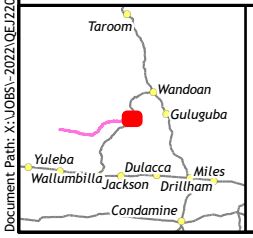
Sattler, PS, Williams, R and Queensland 1999, The conservation status of Queensland's bioregional ecosystems, Environmental Protection Agency, Queensland Government, Brisbane.

Appendix 1 Ground-truthed RE Mapping





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Kilometres

Coordinate System: GCS GDA 1994

Notes:
Aerial Imagery: © ESRI 2022
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Rev	Description	Drawn	Approved	Date
4	Issued for Use	GO	AP	26/02/2024
3	Issued for Use	GO	LW	18/08/2023

APPENDIX F: GROUND-TRUTHED REGIONAL ECOSYSTEM MAPPING

MNES Ecological Assessment Report
Senex Energy Limited

Map Number	Job Number	Rev
1 of 9	QEJ22057	4

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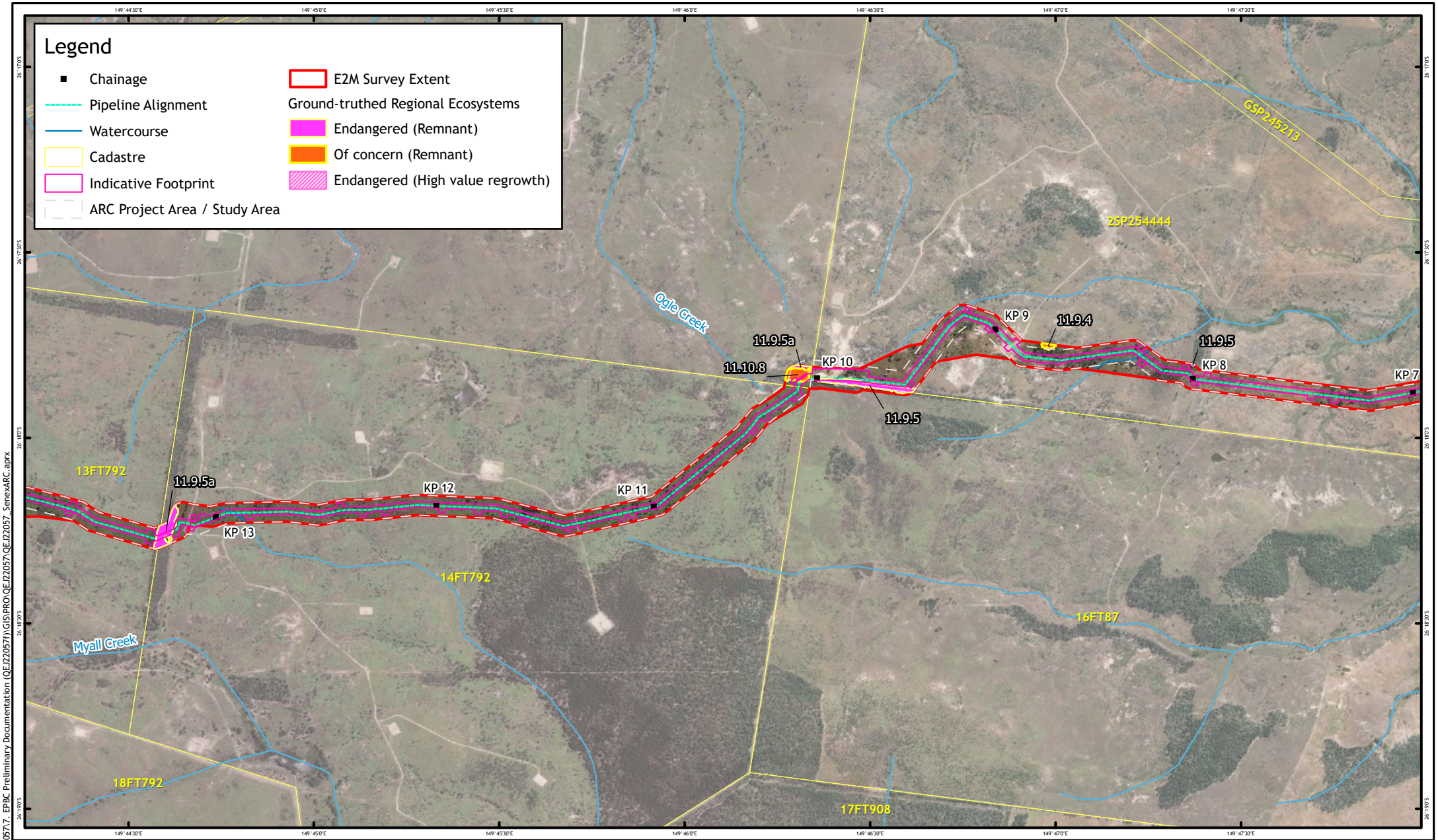

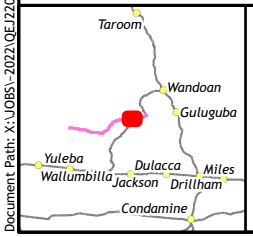

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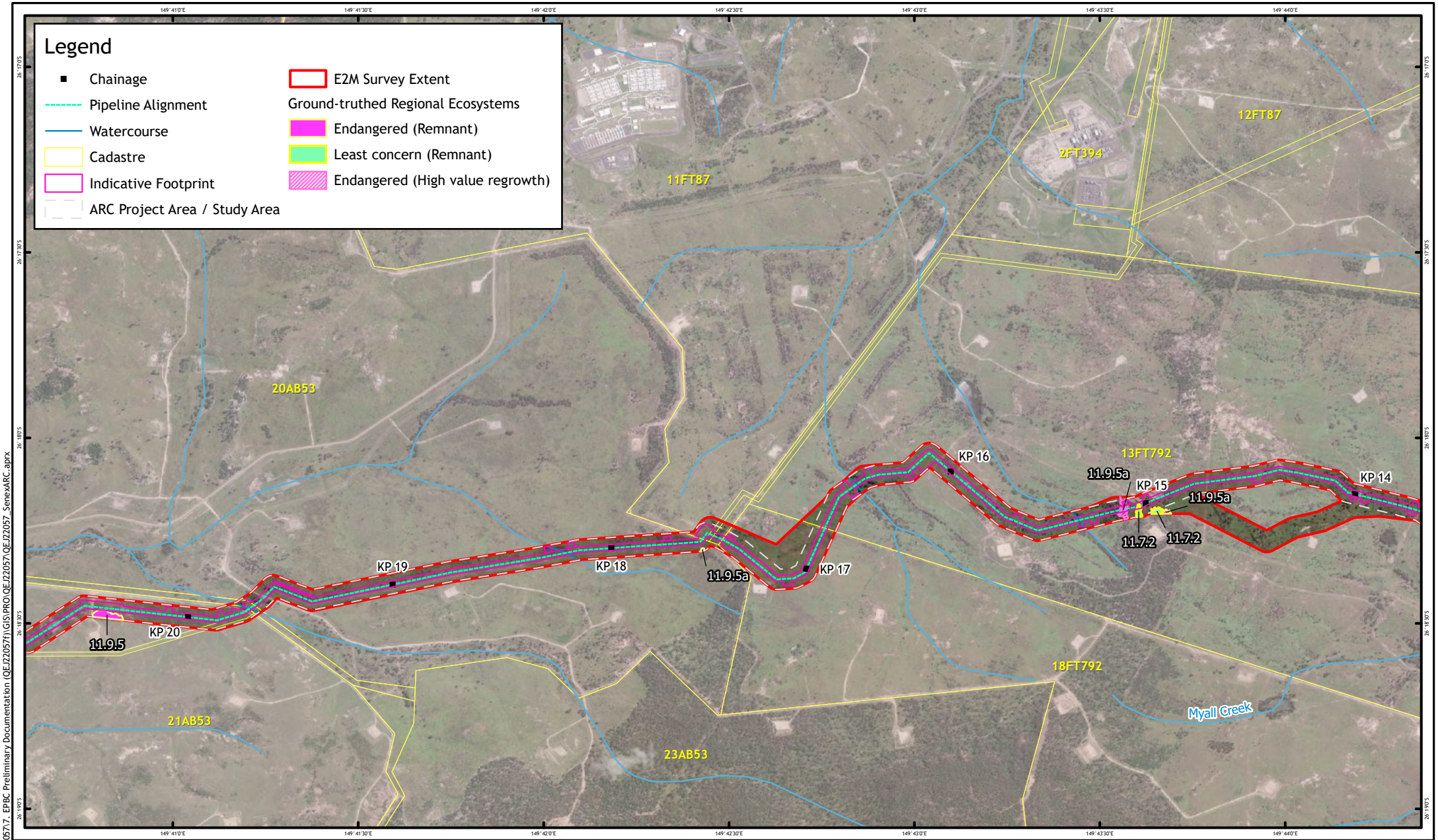

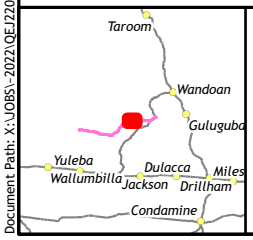

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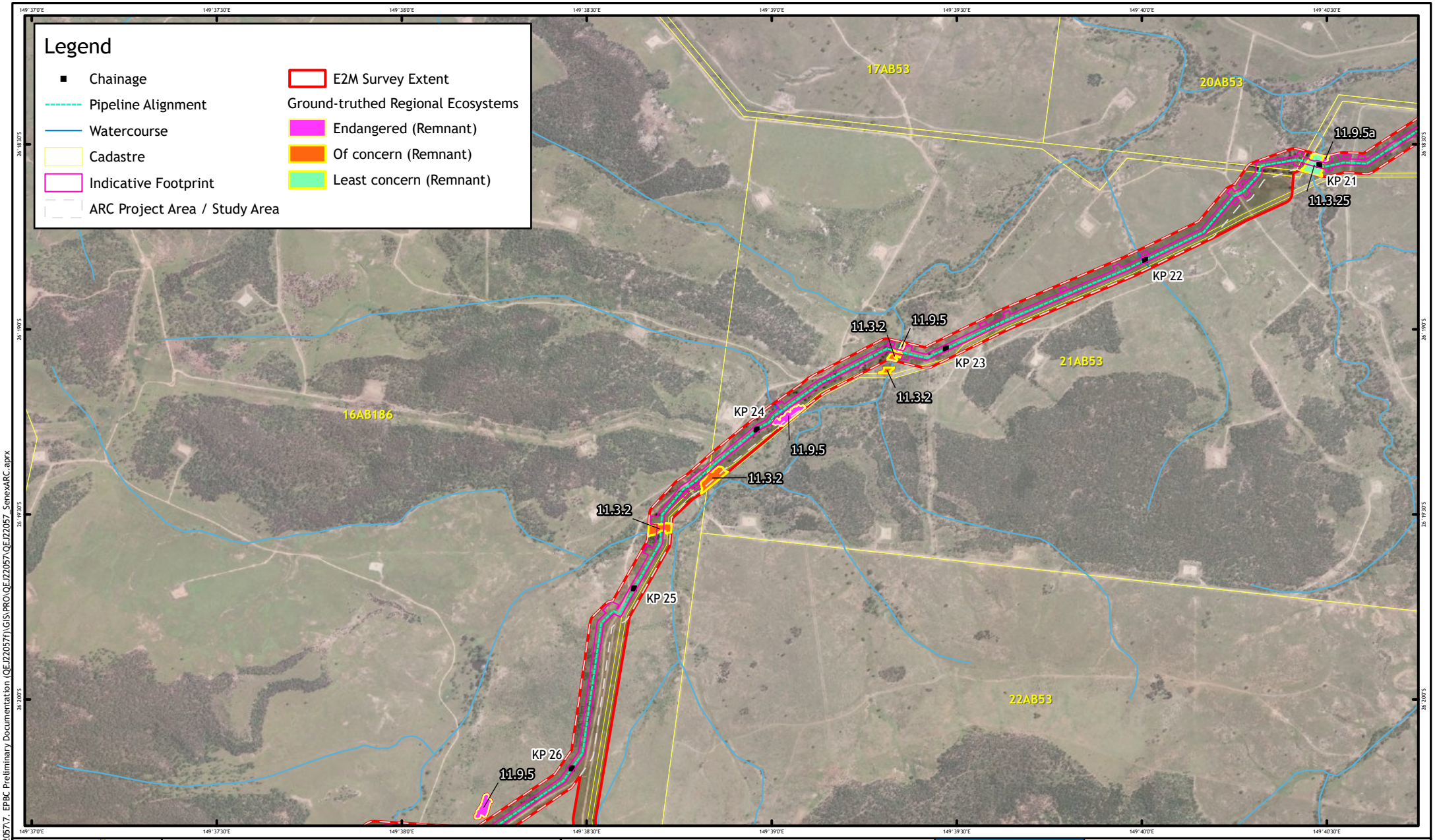

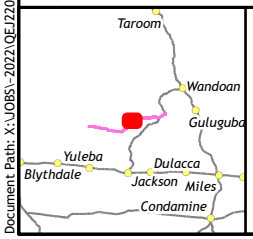

N

Scale 1:25,000 (A4)

0 0.5 1

Kilometres

Coordinate System: GCS GDA 1994

Notes:
Aerial Imagery: © ESRI 2022
Cadastre: © DoR 2022
Ordered Drainage: © DoR 2022
Road: © DoR 2022

Rev	Description	Drawn	Approved	Date
4	Issued for Use	GO	AP	26/02/2024
3	Issued for Use	GO	LW	18/08/2023

APPENDIX F: GROUND-TRUTHED REGIONAL ECOSYSTEM MAPPING

MNES Ecological Assessment Report
Senex Energy Limited

Map Number	Job Number	Rev
4 of 9	QEJ22057	4

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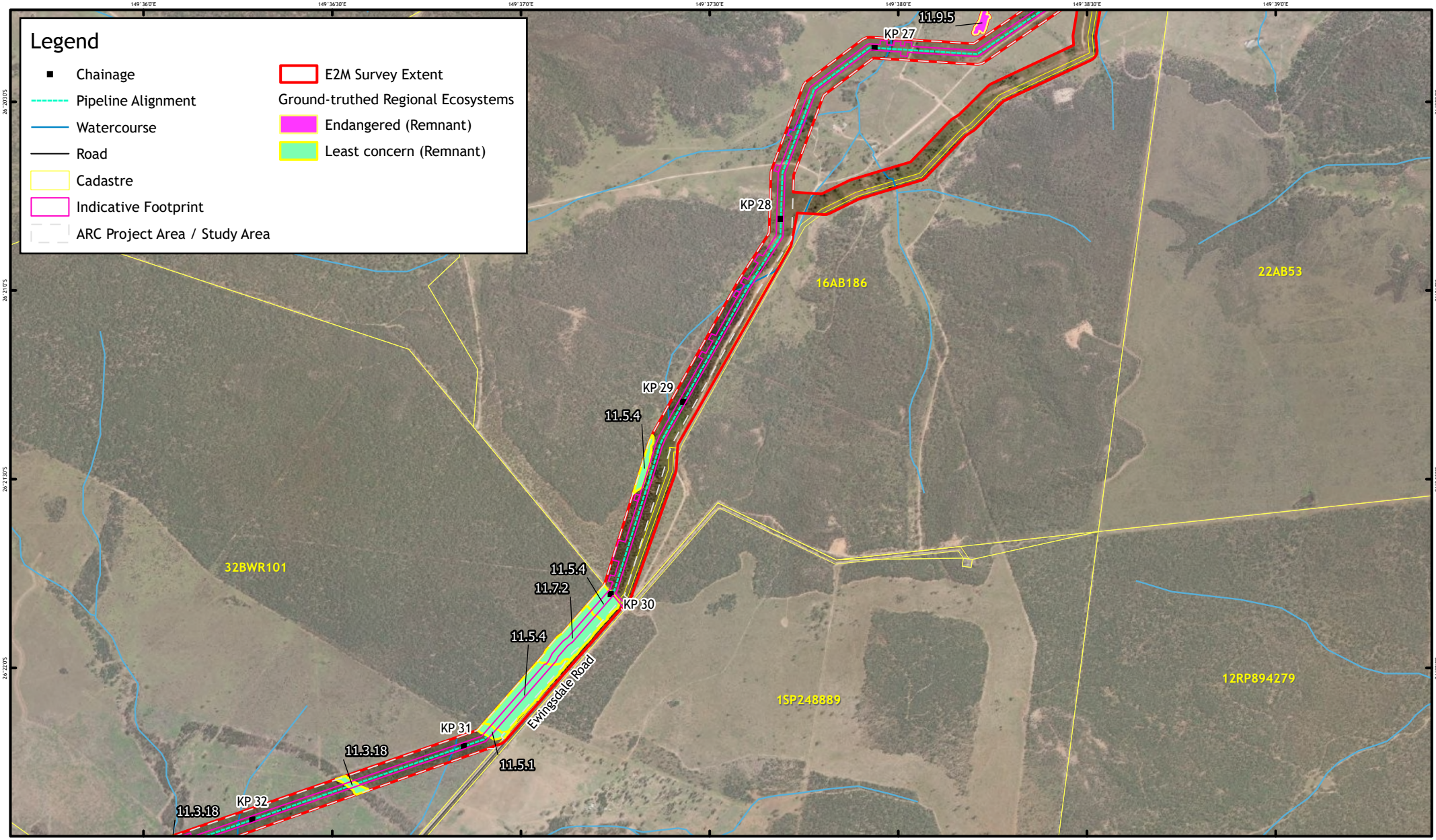

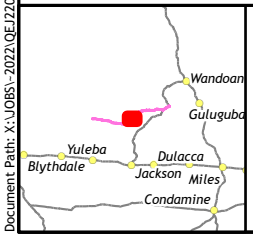

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Scale 1:25,000 (A4)

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Kilometres

Coordinate System: GCS GDA 1994

Notes:
Aerial Imagery: © ESRI 2022
Cadastre: © DoR 2022
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Rev	Description	Drawn	Approved	Date
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MNES Ecological Assessment Report
Senex Energy Limited

Map Number	Job Number	Rev
5 of 9	QEJ22057	4

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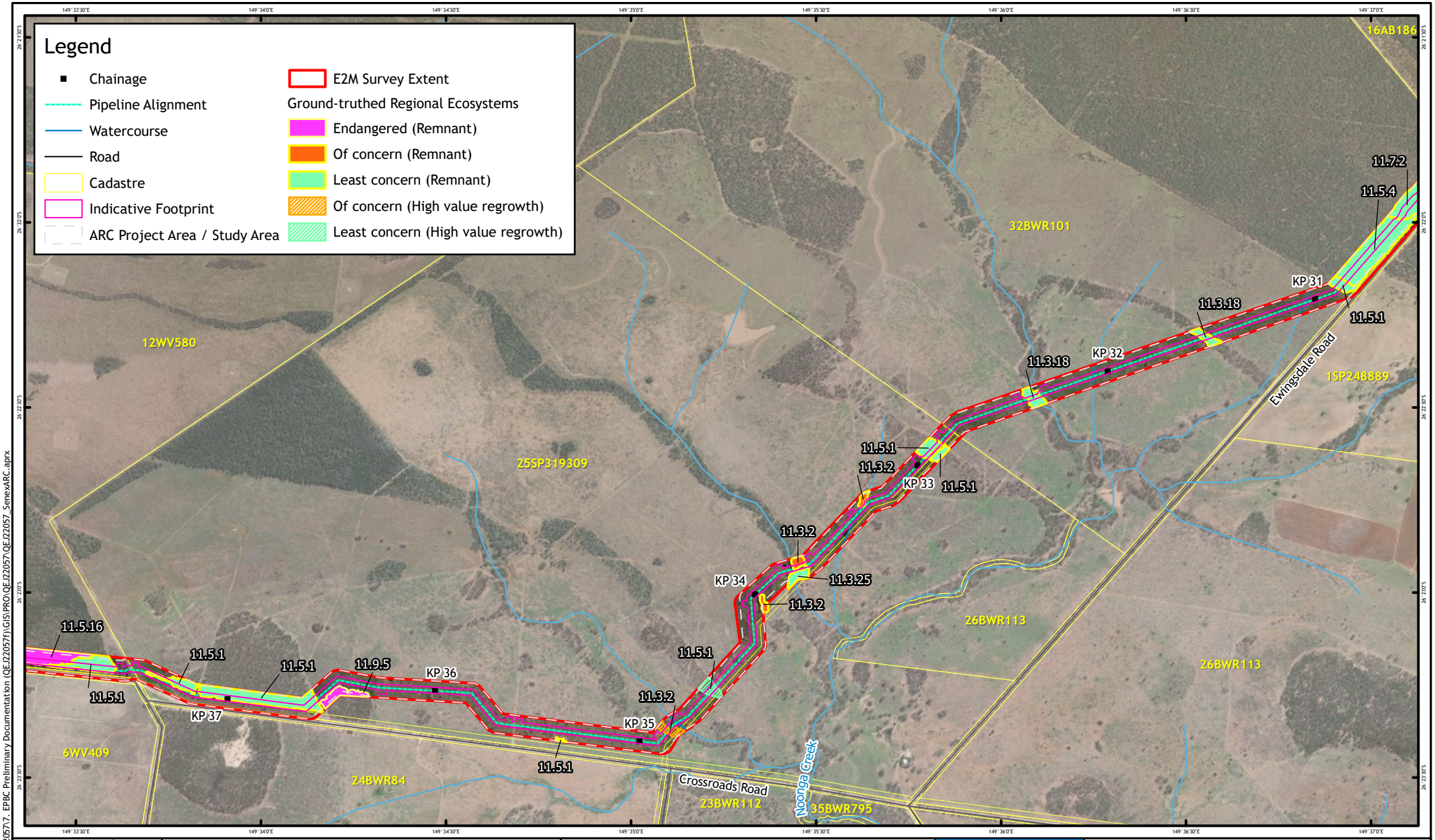

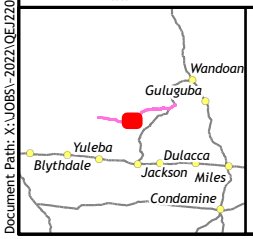

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Scale 1:25,000 (A4)

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Kilometres

Coordinate System: GCS GDA 1994

Notes:
Aerial Imagery: © ESRI 2022
Cadastre: © DoR 2022
Ordered Drainage: © DoR 2022
Road: © DoR 2022

Rev	Description	Drawn	Approved	Date
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APPENDIX F: GROUND-TRUTHED REGIONAL ECOSYSTEM MAPPING

MNES Ecological Assessment Report
Senex Energy Limited

Map Number	Job Number	Rev
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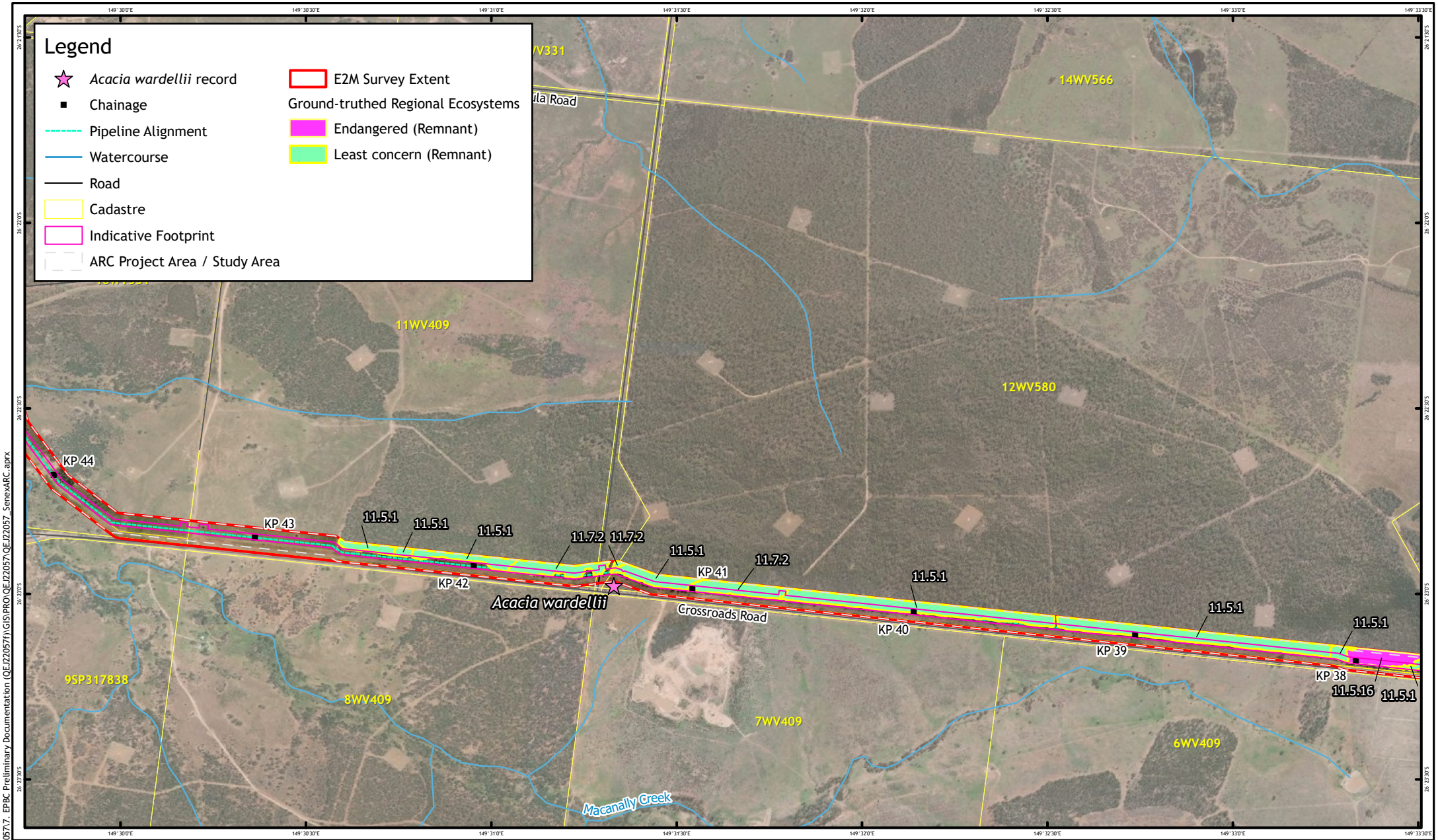

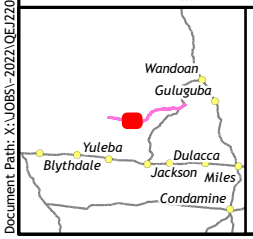

N

Scale 1:25,000 (A4)

0 0.5 1

Kilometres

Coordinate System: GCS GDA 1994

Notes:
Aerial Imagery: © ESRI 2022
Cadastre: © DoR 2022
Ordered Drainage: © DoR 2022
Road: © DoR 2022

Rev	Description	Drawn	Approved	Date
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APPENDIX F: GROUND-TRUTHED REGIONAL ECOSYSTEM MAPPING

MNES Ecological Assessment Report
Senex Energy Limited

Map Number	Job Number	Rev
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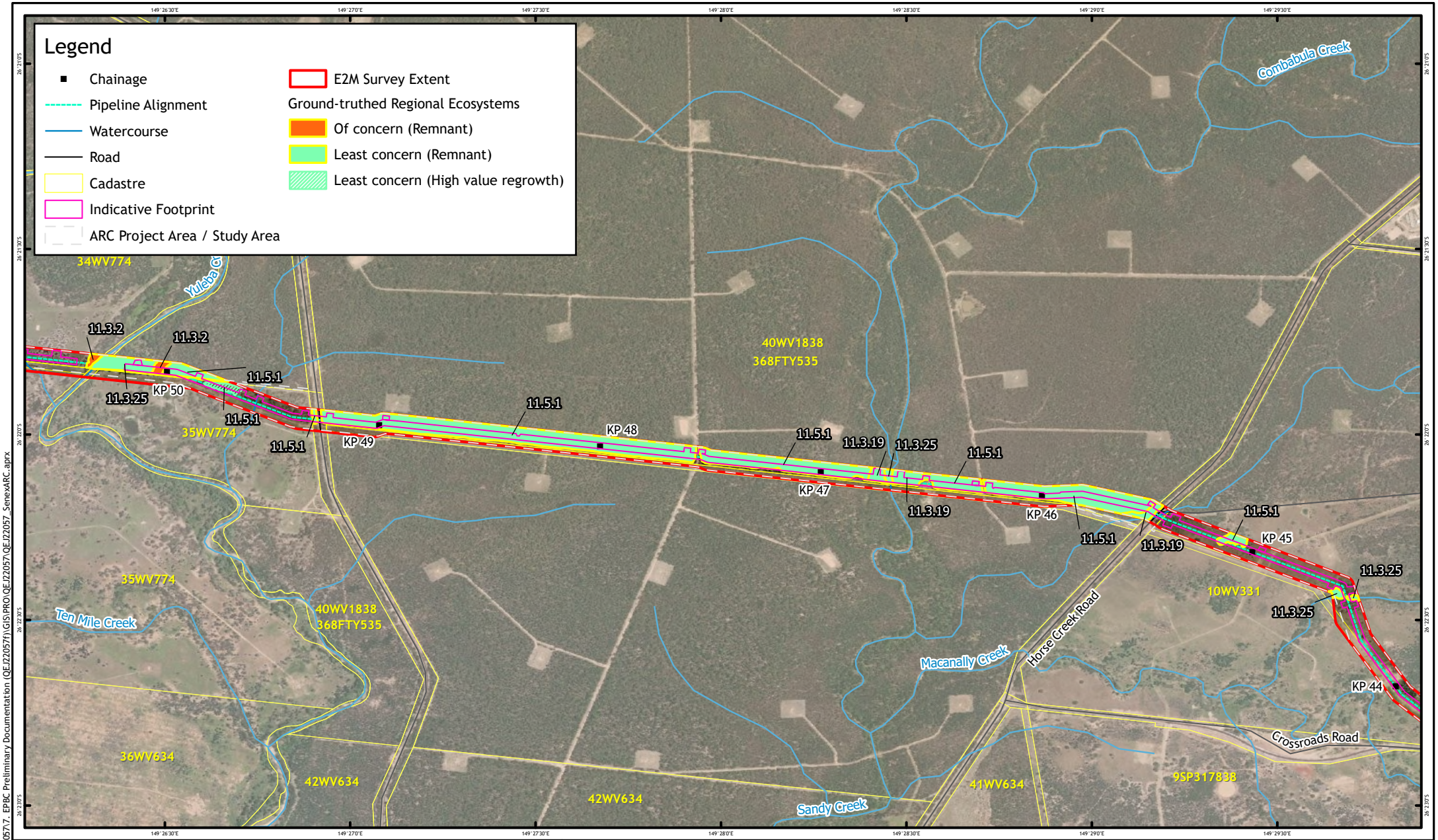

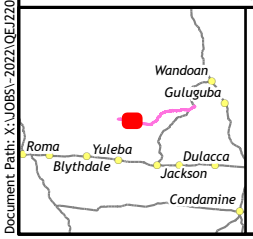

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Scale 1:25,000 (A4)

0 0.5 1

Kilometres

Coordinate System: GCS GDA 1994

Notes:
Aerial Imagery: © ESRI 2022
Cadastre: © DoR 2022
Ordered Drainage: © DoR 2022
Road: © DoR 2022

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3	Issued for Use	GO	LW	18/08/2023

APPENDIX F: GROUND-TRUTHED REGIONAL ECOSYSTEM MAPPING

MNES Ecological Assessment Report
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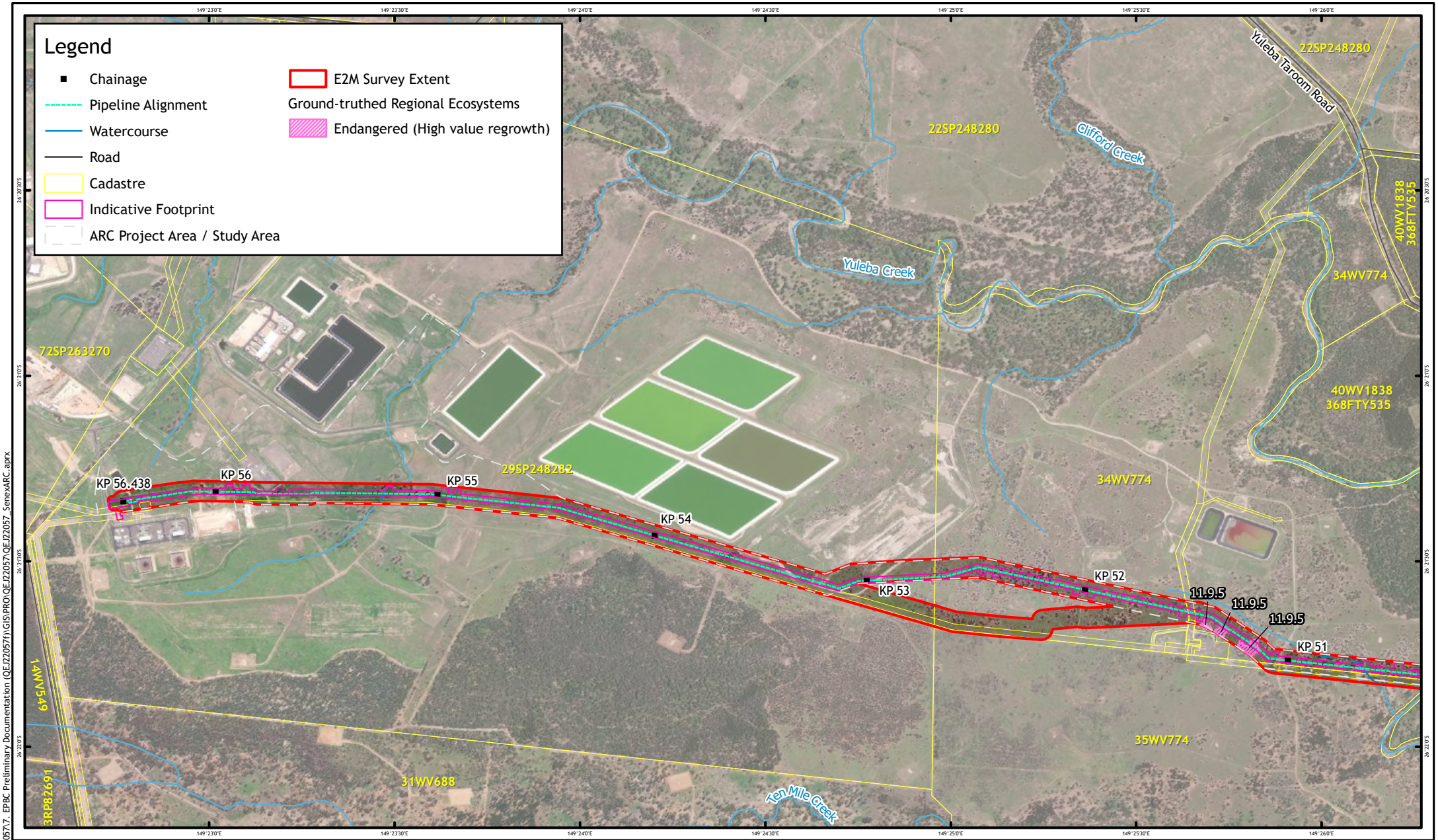

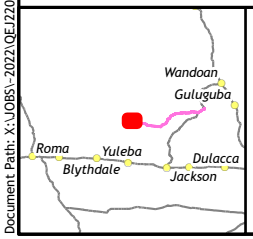

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Scale 1:25,000 (A4)

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Kilometres

Coordinate System: GCS GDA 1994

Notes:
Aerial Imagery: © ESRI 2022
Cadastre: © DoR 2022
Ordered Drainage: © DoR 2022
Road: © DoR 2022

Rev	Description	Drawn	Approved	Date
4	Issued for Use	GO	AP	26/02/2024
3	Issued for Use	GO	LW	18/08/2023

APPENDIX F: GROUND-TRUTHED REGIONAL ECOSYSTEM MAPPING

MNES Ecological Assessment Report
Senex Energy Limited

Map Number	Job Number	Rev
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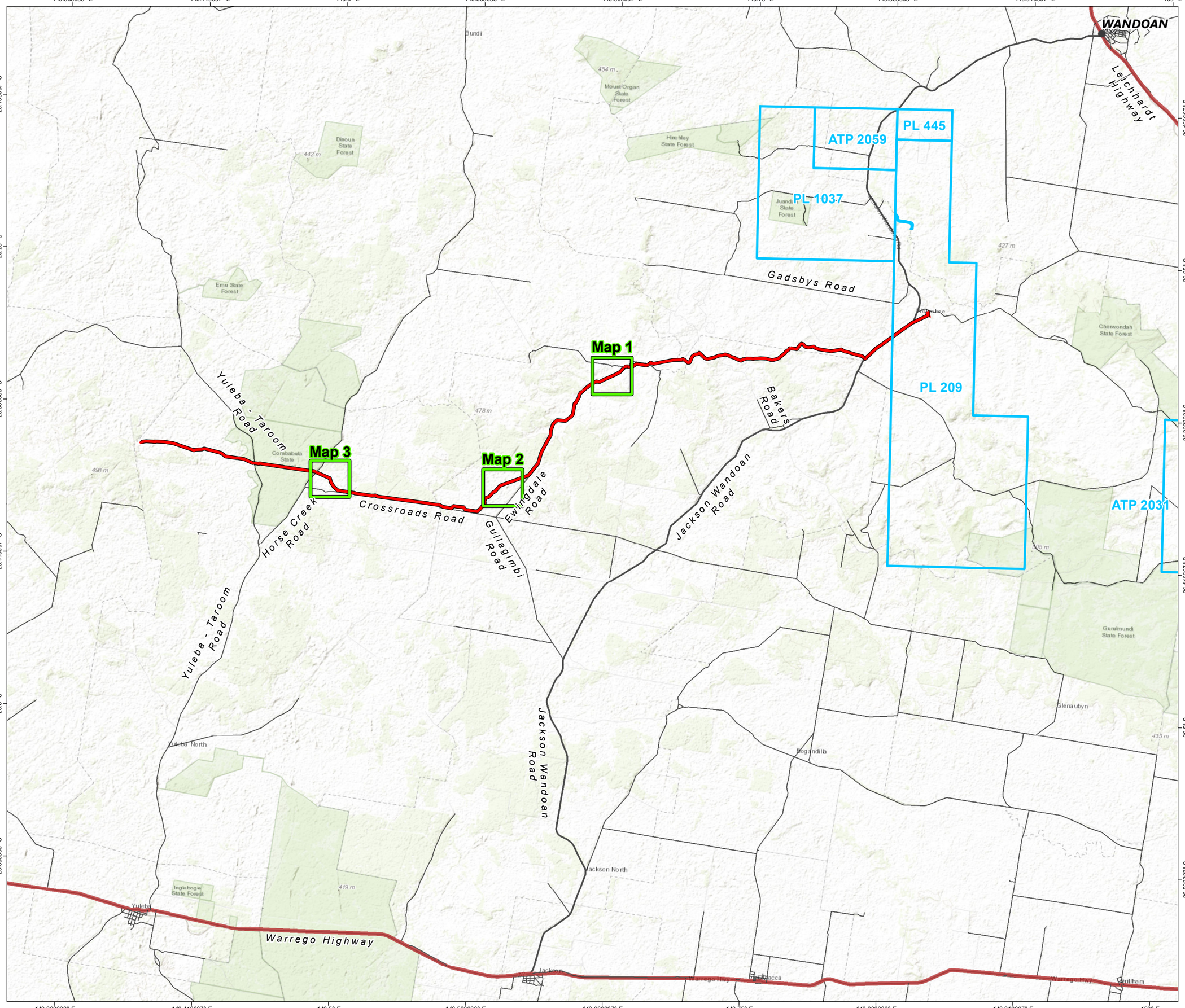
Appendix 2 ARCP Greater Glider Pole Location Maps



Senex

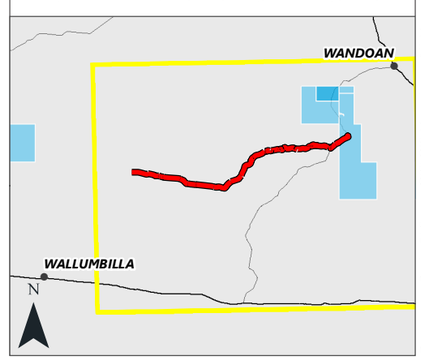
Tenement	N/A
Project	Surat Basin
Title	ARCP Greater Glider Pole Location Index
Landholder	As Shown
Property	As Shown
Function	Environmental
Description	Issued for Review
Date	16/02/24
Revision	A
Requested by	SF
Prepared by	MC
Reviewed by	SF
Approved by	SF
Document No.	SENEX-CORP-GI-MAA-1083-0

Legend:
- Towns
- Highway
- Main Road
- Local Road
- Atlas to Reedy Creek Pipeline
- Proposed Easement
- Mapbook Frame
- PL Boundary

0 1 2 4 Kilometers

1:210,000
GDA2020 MGA Zone 55

Acknowledgements:
Mining Tenement QLD data © Department of Mines and Energy 2024
Well Data / Pipeline info GPINFO 2024
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO,



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149.666666° E

17AB53

20AB53

21km

Chainages 20980 - 21300:
2 x 15m tall poles

22km

Chainages 23200 - 23300:
2 x 15m tall poles

23km

21AB53

149.666666° E

Senex

Tenement	N/A					
Project	Surat Basin					
Title	ARCP Greater Glider Pole Location Map 1					
Landholder	N/A					
Property	N/A					
Function	Environmental					
Description	Issued for Review					
Date	16/02/24	15/03/24				
Revision	A	B				
Requested by	SF	SF				
Prepared by	MC	MC				
Reviewed by	SF	SF				
Approved by	SF	SF				
Document No.	SENEX-CORP-GI-MAA-1083					

Legend:

- KP Marker
- Local Road
- Atlas to Reedy Creek Pipeline
- Glider Pole Location
- Proposed Easement
- Existing Third Party Easement
- Road Reserve
- Property Boundary
- PL Boundary

Map 1

0 50 100 200
Meters

1:8,000
GDA2020 MGA Zone 55

Acknowledgements:
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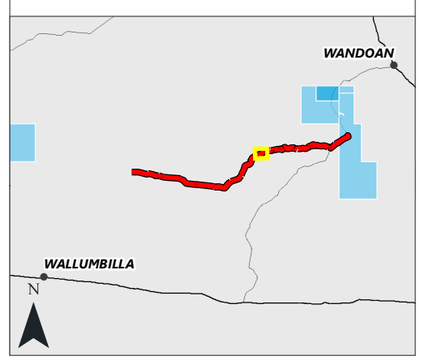
Well Data / Pipeline info GPINFO 2024
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



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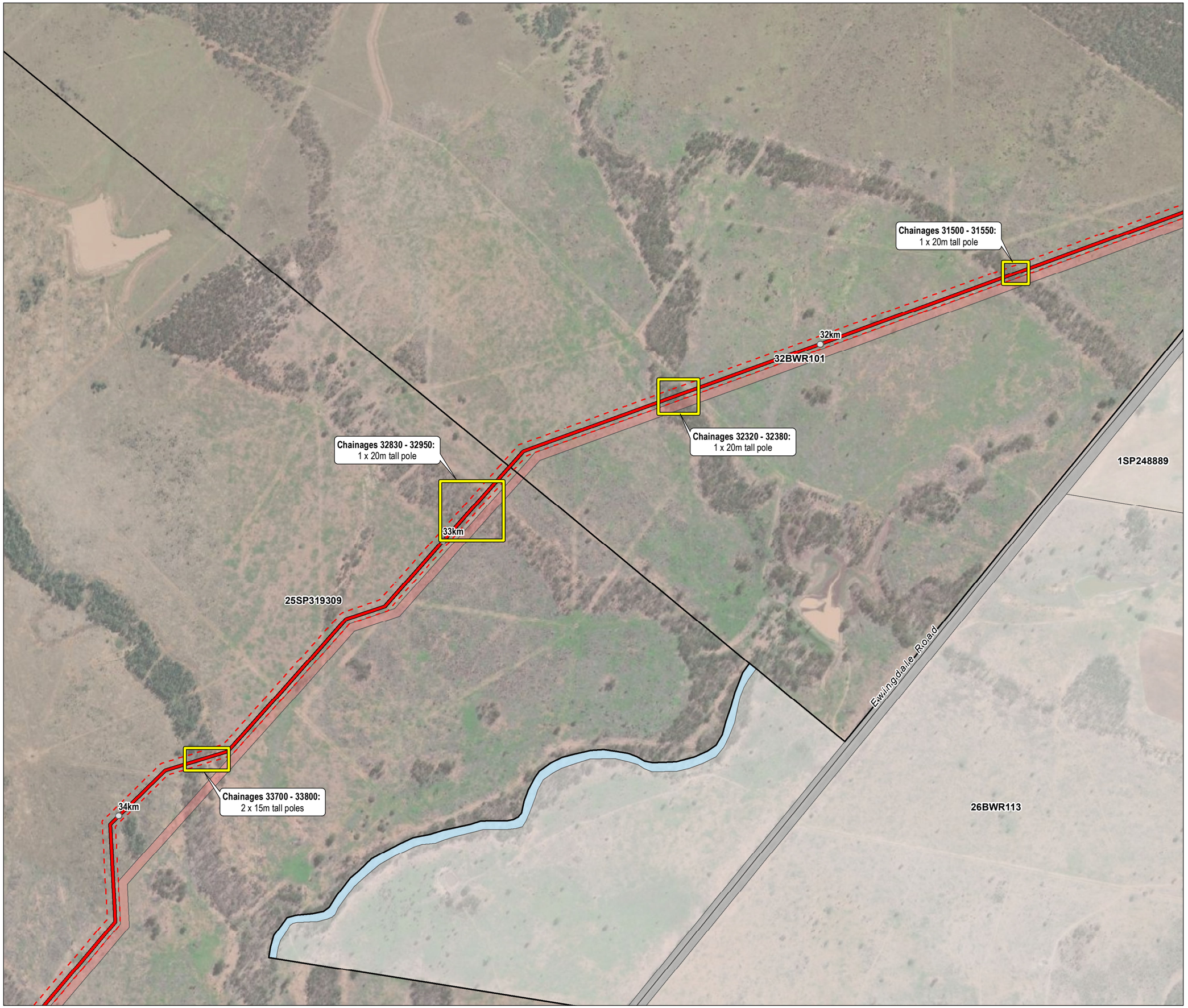

Senex

Tenement	N/A					
Project	Surat Basin					
Title	ARCP Greater Glider Pole Location Map 2					
Landholder	N/A					
Property	N/A					
Function	Environmental					
Description	Issued for Review					
Date	16/02/24	15/03/24				
Revision	A	B				
Requested by	SF	SF				
Prepared by	MC	MC				
Reviewed by	SF	SF				
Approved by	SF	SF				
Document No.	SENEX-CORP-GI-MAA-1083					

Legend:
- KP Marker
- Local Road
- Atlas to Reedy Creek Pipeline
- Glider Pole Location
- Proposed Easement
- Existing Third Party Easement
- Road Reserve
- Watercourse Parcel
- Property Boundary
- PL Boundary

Map 2

0 50 100 200 Meters

1:8,000

GDA2020 MGA Zone 55

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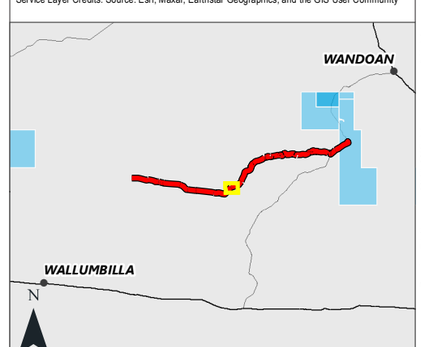
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Document Path: F:\Senex GIS\GIS Mapping - All Mapping\QLD Project Atlas\Project wide mapping\Environmental\MAA-1083 ARCP Greater Glider Pole Location Map\MAA-1083- ARCP Greater Glider Pole Location Mapbook.mxd

149.500002° E

40WV1838

368FTY535

Horse Creek Road

46km

45km

10WV331

Chainages 44480 - 44520:
2 x 15m tall poles

11WV409

44km

43km

Crossroads Road

9SP317838

8WV409

149.500002° E

Senex

Tenement	N/A					
Project	Surat Basin					
Title	ARCP Greater Glider Pole Location Map 3					
Landholder	N/A					
Property	N/A					
Function	Environmental					
Description	Issued for Review					
Date	16/02/24	15/03/24				
Revision	A	B				
Requested by	SF	SF				
Prepared by	MC	MC				
Reviewed by	SF	SF				
Approved by	SF	SF				
Document No.	SENEX-CORP-GI-MAA-1083					

Legend:

- KP Marker
- Local Road
- Atlas to Reedy Creek Pipeline
- Glider Pole Location
- Proposed Easement
- Existing Third Party Easement
- Road Reserve
- Property Boundary
- PL Boundary

Map 3

0 50 100 200 Meters

1:8,000

GDA2020 MGA Zone 55

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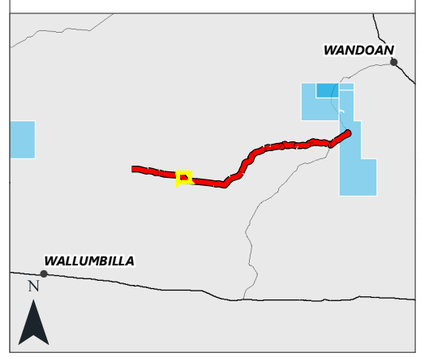

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Registered Office
Level 30, 180 Ann Street,
Brisbane Qld 4000
Postal Address
GPO Box 2233,
Brisbane Qld 4001
Phone: +61 7 3335 9000
Facsimile: +61 7 3335 9999
Web: senexenergy.com.au

Senex Energy Pty Ltd
ABN 50 008 942 827