



4.5.3.2 Aboriginal Heritage

Sections of the development envelope have been subject to a number of previous archaeological and ethnographical studies, including those associated with the original surveys of the DBNGP easement and GNEGIC. As part of a staged process, a detailed desktop assessment was undertaken to inform the early selection of the preferred NGI alignment. The desktop assessment included a search of the DPLH Aboriginal Heritage Inquiry System (AHIS) and review of previous Aboriginal Heritage survey reports. A search of the register of Native Title claims maintained by the National Native Title Tribunal, as well as a review of the published Native Title claim maps to check for any new claims, was also undertaken for the purpose of identifying Traditional Owner groups intersected by the Proposal.

The information from the desktop review was used to determine the Traditional Owner groups with cultural heritage intersected by the Proposal and the extents of the respective claim areas. The Proposal intersects two determined claims, three registered claims, and four claims either not accepted for registration or pending outcome of the registration test (refer to **Section 2.11.7**).

Eight Traditional Owner groupings have been identified who may have cultural ties to the land within the Proposal. These (and the Indigenous representative bodies) are:

- Southern Yamatji – managed by YMAC;
- Mullewa Wajarri – managed by Heritage Link;
- Wadjari Yamatji – managed by YMAC;
- Widi Mob – managed by a law firm;
- Badimia – managed by Heritage Link;
- Badymia Barna Guda – a group that has ties to the Badimia listed above;
- Wutha – Native Title in this area has been dismissed, however, they are the primary Traditional Owners that identify with the land; and
- Darlot – a Traditional Owner group with a live Native Title claim (rejected for registration) that is in progress, managed by Grant Thornton and the Darlot Heritage Working Group.

Based on the outcomes of the desktop review, APA commenced scoping of Aboriginal heritage surveys along the full length of the pipeline alignment. APA sought to first clarify and confirm that each respective Traditional Owner group is the appropriate and relevant Traditional Owner for that particular section of the Proposal in relation to cultural heritage matters. Advice from specialist heritage advisers was sought as part of this process to facilitate engagement of the appropriate Traditional Owners groups and parties. Traditional Owners were also engaged to identify the preferred heritage consultants to be used to undertake cultural heritage surveys alongside the Traditional Owners. APA also proactively engaged with the Indigenous representative bodies for each of the Traditional Owner groups that were identified to ensure the scoping and undertaking of the surveys met their requirements.

From this, APA have refined the Aboriginal heritage survey program to accommodate the interests of the Indigenous representative bodies for preferred heritage advisors, to



provide a culturally appropriate survey effort (both archaeological and ethnographic surveys). APA have commissioned Terra Rosa and Brad Goode and Associates to coordinate the survey program and engage the representative Traditional Owners groups. The aim of the heritage survey program is to:

- Identify and record locations and descriptions of archaeological and ethnographical sites within the development envelope, through engagement of the representative Traditional Owners from the various Traditional Owner Groups (see **Table 3-1**); and
- Determine the extent of any Aboriginal heritage site, and complete a detailed recording of archaeological features, so as to meet the requirements of a Section 18 application (if required).

Table 4-20 provides a summary of the specialist heritage consultants engaged to date to coordinate, support and undertake the cultural heritage assessment and survey works for the respective sections of the Proposal.

In terms of formal agreements between APA and the Traditional Owners, APA has letter agreements in place with the Widi Mob, Mullewa Wajarri, the Badimia, and Grant Thornton for the Darlot via the Darlot Heritage Working Group. APA has been negotiating with YMAC for the Southern Yamatji and Wadjari Yamatji. As of late October 2020, there is a template Yamatji Proponent Standard Heritage Agreement that has taken effect, given that the Yamatji Nation determination was registered. The ex Wutha and Badymia Burna Guda groups are small and do not currently have resources available to negotiate formal agreements. With the assistance of the coordinating heritage consultant, APA has identified the local representatives from these two groupings associated with that particular section of country.

The Aboriginal heritage surveys commenced in December 2020 and are being conducted to archaeological and ethnographic site avoidance standards. All heritage places identified during the surveys are being assessed in consideration of whether they are likely to meet criteria for Aboriginal sites, as specified in Section 5 of the AHA. Traditional Owner groups have been actively participating in the surveys and preliminary advice reports have been prepared by the heritage consultants in consultation with the Traditional Owners, for the work completed to date. The preliminary advice reports contain recommendations in relation to heritage monitoring during geotechnical investigations and future ground-disturbing work.

To date, Aboriginal heritage surveys have been completed of the following sections of the proposed NGI pipeline alignment:

- Mullewa Wadjari (KP139 to KP160.5);
- Widi mob (KP160.5 to KP208.3);
- Badimia (KP208.3 to KP262);
- Wutha (KP440 to 445, KP460 to KP465 and KP471 to KP479); and
- Darlot (KP525 to KP580).

Survey of targeted areas, such as the proposed locations of the NGI aboveground facilities and specific geotechnical investigations of creek crossings, have also been completed as follow:

- Ambania compressor station (KP1.5);



- Yoweragabbie scraper station (KP281 to KP282)
- Congoo Hills (KP247) and Congoo Dam (KP248);
- Kerbar Well (KP298);
- Boolgarrbardoo (KP315);
- Creek crossing (KP423);
- Dandaraga MLV (KP465); and
- Wildara delivery station (KP579).

The preliminary advice reports received are assisting APA with the proposed management of cultural heritage values in the respective areas. APA are discussing the preliminary findings with the Traditional Owners to determine the potential impacts of the Proposal and how they can be avoided and/or minimised. The requirement for any specific management measures for the heritage sites is also being discussed.

Upon completion of the surveys, detailed survey reports will be prepared by the heritage consultants and the Traditional Owners. These reports will include the final heritage recommendations for the Proposal. APA will continue its engagement with the Traditional Owners to get acceptance of the findings and recommendations in the respective detailed reports. Preparation of the respective Cultural Heritage Management Plan(s) in consultation with the Traditional Owners for implementation, subject to the required Government and regulatory approvals being in place for the NGI project, will also be undertaken.



Table 4-20: NGI Aboriginal Cultural Heritage Assessment and Survey Program

NGI Pipeline KP Section	0 – 139	139 – 140.4	139 – 160.5	160.5 – 208.3	208.3 - 368	368 – 400.4	368 – 525	525 – 580
Native Title Claimant/ Traditional Owner Group	Southern Yamatji	Wajarri Yamatji	Mullewa Wadjari	Widi Mob	Badimia People	Badimaya Barna Guda	Wutha	Darlot
Native Title Status	Native Title does not exist					Application lodged, not accepted for registration (19/3/2020)	Application dismissed (12/3/2019)	Application lodged, not accepted for registration (25/6/2020)
Coordinating Heritage Survey Consultant	Terra Rosa (preferred supplier of YMAC/Yamatji Southern Regional Corporation)	Terra Rosa	Terra Rosa	Terra Rosa	Terra Rosa	N/A	N/A	Grant Thornton via Darlot Heritage Working Group and Brad Goode and Associates
Sub-contracted Survey Consultant(s)	Heritage Link			Horizon Heritage	Heritage Link	Terra Rosa	Terra Rosa	Brad Goode and Associates
Facilitation Consultant	Black Stump Resources			N/A				

**NGI PIPELINE – EPA ENVIRONMENTAL REFERRAL
SUPPORTING DOCUMENT**



NGI Pipeline KP Section	0 – 139	139 – 140.4	139 – 160.5	160.5 – 208.3	208.3 - 368	368 – 400.4	368 – 525	525 – 580
Subject to Previous Survey	DBNGP corridor (KP0 to KP81.5)	GNEGIC (KP81.5 to KP200.8)			KP200.8 to KP580			
	Yes				No			



Registered Sites

A search of the AHIS for Registered Aboriginal Sites identified five Registered Sites which intersect the development envelope, with only two of these overlapping the indicative disturbance footprint. The Registered Sites relate to artefact scatters, natural features, man-made structures, mythological significance, camps, archaeological deposits, water sources and historical significance. None of the Registered Sites identified are Protected Areas under the AHA.

Table 4-21 summarises the identified Registered Sites from the AHIS search, with these also shown on **Figure 4-7**.

Three of the five Registered Sites (Kerbar Cliffs, Warlawuru and Boolgarbarrdoo) that intersect the development envelope are located to the east of Mount Magnet. The two remaining sites are located adjacent to pre-existing pipeline infrastructure (MWP) to the west of Mount Magnet.

Two Registered Sites intersect the indicative disturbance footprint, with these being the Irwin River and Tenindewa Creek Registered Sites. These are large, extensive sites associated with waterbodies that run north-south through the landscape. Therefore, intersection is unable to be avoided. APA have conducted ground surveys with the Traditional Owners for these sites and will submit Section 18 applications for preliminary works inside the site boundaries and for the expected HDD crossings of these watercourses.

Table 4-21: Registered Sites Intersecting the Development Envelope

Name	Site ID	Significance	Approximate KP
Tenindewa Creek [^]	18905	Artefacts/Scatter, Mythological, Archaeological Deposit, Natural Feature, Water Source	KP15.0 to KP20.0
Irwin River (SC04) [^]	18907	Historical, Mythological, Camp, Natural Feature, Water Source	KP55.7 to KP56.1 and KP57.7 to KP61.9
Kerbar Cliffs	17094	Engraving, Painting, Rock shelter	KP299
Boolgarbarrdoo	17083	Artefacts/Scatter, Historical, Man-Made Structure, Archaeological Deposit, Camp, Water Source	KP315.5
Warlawuru	1507	Mythological	KP574.2

[^] Indicates the Registered Site also occurs within the indicative disturbance footprint.

Other Heritage Places

The search of the Register of Aboriginal Sites using the online AHIS found that there are 15 Other Heritage Places within the development envelope (**Table 4-22** and **Figure 4-7**). Of the 15 Other Heritage Places, 12 are lodged with the DPLH and are awaiting assessment by the Aboriginal Cultural Material Committee. The remaining three sites are 'stored data'



and were determined to not be sites. None of the Other Heritage Places have been declared a Protected Area under the AHA.

All three of the 'Stored Data/Not a Site' Other Heritage Places (Salt River and Burra Lakes, 14 Mile Creek (SC01) and Poison Creek (SC02)) intersect the entire width of the development envelope.

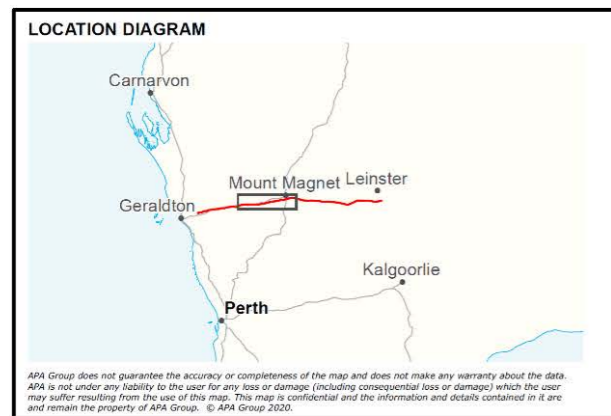
Table 4-22: Other Heritage Places Intersecting the Development Envelope

Name	Site ID	Status	Significance	Approximate KP
Kockatea Creek Artefact Scatter [^]	19478	Lodged	Artefacts/Scatter, Grinding Patches/Grooves	KP18.6
Woderarrung Creek Artefact Scatter [^]	19479	Lodged	Artefacts/Scatter	KP40.9
Salt River and Burra Lakes [^]	4497	Stored Data/ Not a Site	Mythological	KP114.2 to KP122.1 and KP139.0 to KP143.4
Wurarga Rock Shelters [^]	20468	Lodged	Artefacts/Scatter, Mythological, Rock Shelter, Natural Feature	KP114.5
Wangara Creek/Salt River (SC03) [^]	18906	Lodged	Mythological, Rock shelter, Named Place, Water Source	KP114.5 to KP143.8
Wurarga Rockhole 2	19483	Lodged	Water Source	KP132.7
Noorgung Hill - Site 3 [^]	19480	Lodged	Artefacts/Scatter	KP140.7 to KP141.2
WMSC15 - Granite Outcrop [^]	19520	Lodged	Mythological	KP237.2 to KP238.4
Congoo Dam [^]	19543	Lodged	Mythological	KP248.1 to KP249.7
Congoo Tanks [^]	19523	Lodged	Historical, Camp, Meeting Place	KP238.3
Yoweragabbie Station Isolated Artefact 01	32907	Lodged	Artefacts/Scatter, Grinding Patches/Grooves	KP262.6



Name	Site ID	Status	Significance	Approximate KP
Lake Noondie Dreaming Track	19541	Lodged	Mythological	KP508.5 to KP509.8
14 Mile Creek (SC01)^	18904	Stored Data/ Not a Site	Artefacts/Scatter, Mythological, Archaeological Deposit, Camp, Hunting Place, Meeting Place, Natural Feature, Water Source	KP559.0 to KP561.1
Poison Creek (SC02)^	18903	Stored Data/ Not a Site	Artefacts/Scatter, Ceremonial, Historical, Mythological, Archaeological Deposit, Camp, Hunting Place, Meeting Place, Natural Feature, Water Source	KP559.0 to KP569.4
Emu Dreaming Site^	19540	Lodged	Mythological	KP571.7 to KP572.2

^ Indicates the Other Heritage Place also occurs within the indicative disturbance footprint.



LEGEND:

- Kilometre Point (KP)
- Proposed Pipeline Alignment
- ▭ Development Envelope
- ▭ Other Heritage Places
- ▭ Registered Heritage Sites

PROJECT: Northern Goldfields Interconnect

TITLE: Aboriginal Heritage Values

SUBTITLE: Map 1

DATE: 4/12/2020

DATA SOURCE:
Pipelines: APA Group

DOCUMENT NUMBER: 560-MAP-L-7846

Revision	Description	Drawn	Checked/QC	Approved	DATE
0.4	Revision	ID			04/12/20
0.2	Revision	ID			02/12/20
0.1	Draft	ID			19/11/20

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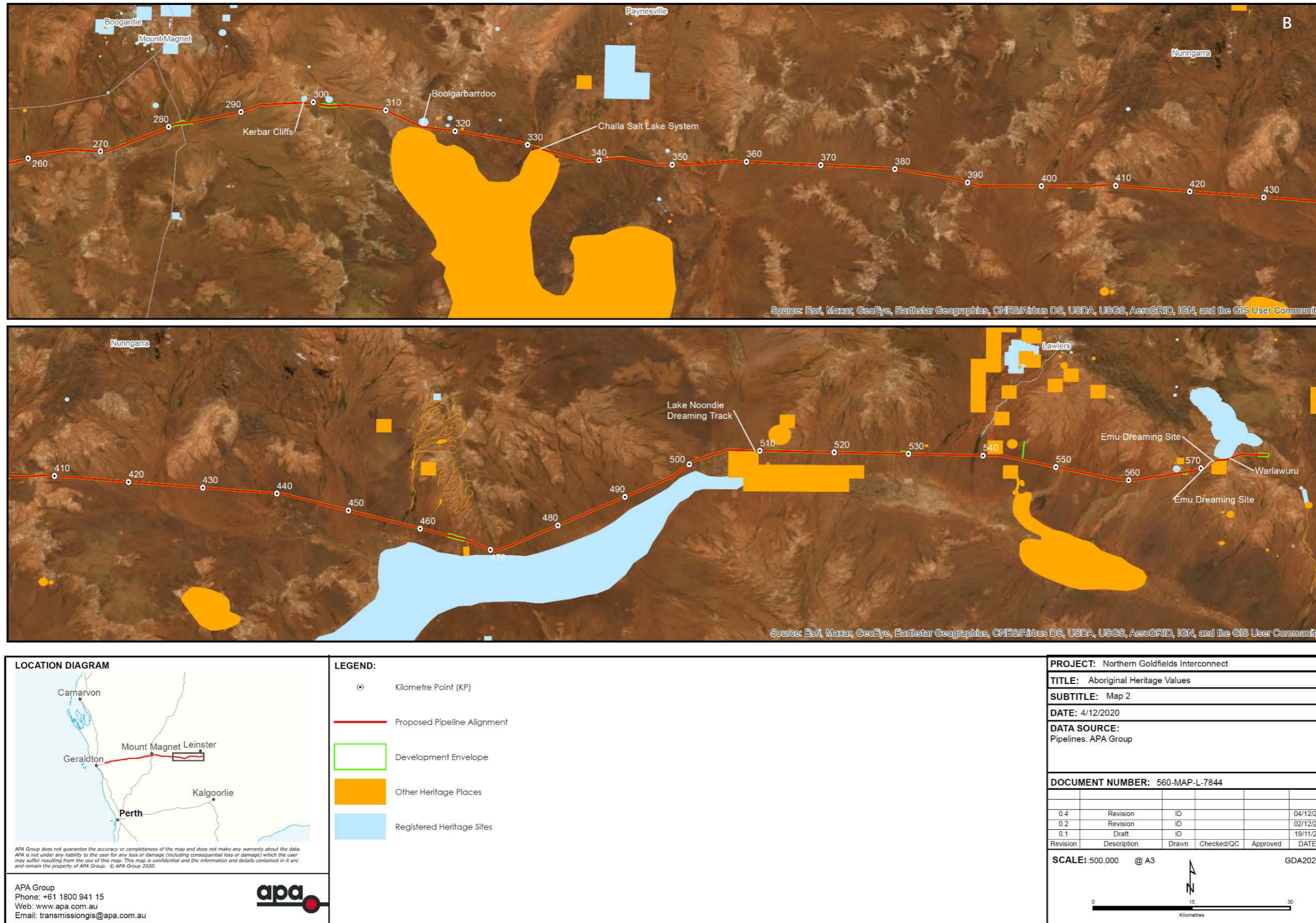


Figure 4-7: Aboriginal Heritage Values within the Development Envelope and Surrounds



4.5.3.3 Noise

Noise associated with construction will be short-term and localised. While the Proposal is predominantly remote and does not pass through densely populated residential areas, there are a number of homesteads in relatively close proximity to the pipeline alignment. The closest homestead to the alignment is approximately 120 m from the development envelope.

During operations, the main aboveground facility that will generate noise is the Ambania compressor station. The Ambania compressor station is proposed to be located near the start of the NGI pipeline (KP1.5), approximately 50 km to the east of Geraldton, in a rural environmental setting predominantly used for agriculture (**Figure 2-4**). Key contributors to noise in the area are from vehicles/trucks travelling on nearby roads and the existing DBNGP compressor station 7, which is located approximately 700 m to the south-west of the proposed Ambania compressor station.

An environmental noise modelling assessment was undertaken by Wood (2020) for the Ambania compressor station to determine if noise emitted from the compressor station would exceed assigned levels outlined in the Environmental Protection (Noise) Regulations 1997 for nearby sensitive receptors. There are a number of noise sensitive receptors within the surrounds of the Ambania compressor station, including individual rural residences (the closest being approximately 3 km away) and work areas (non-residential) and the DBNGP compressor station 7. The work areas are not normally manned and are therefore not considered as industrial, commercial or residential receivers, in line with the Environmental Protection (Noise) Regulations 1997. The noise modelling evaluated potential impacts (including cumulative impacts) to relevant receptors and modelled compliance from both normal and emergency operational.

4.5.4 Potential Impacts

The Proposal has the potential to impact on social surroundings through:

- Disturbance to historic heritage sites during construction;
- Loss or disturbance to Aboriginal heritage sites during clearing and/or construction; and
- Noise emissions impacting on sensitive receptors from localised blasting during construction of the NGI pipeline, and operation of the Ambania compressor station.

Indirect impacts from the implementation of the Proposal on social surroundings are anticipated to be limited or negligible.

4.5.5 Assessment of Impacts

4.5.5.1 Disturbance to Historic Heritage Sites

The Rabbit Proof Fence No 2 and No 3 (Emu Barrier Fence) (Place No. 5022) was the only historic heritage site identified to be affected by the Proposal from the desktop search. The Rabbit Proof Fence No 2 intersects the indicative disturbance footprint and is unable to be avoided due to its linear nature, as it runs north-south through the indicative disturbance footprint. The No 2 Rabbit Proof Fence has a total length of approximately 1,165 km.



Implementation of the Proposal will require approximately 30 m of the Rabbit Proof Fence (No 2) to be disturbed to allow for the CROW and operational ROW. It is proposed that the fence will be reinstated, and a fence installed, once construction activities have been completed within that section of the development envelope. However, it is noted that the reinstatement of the fence will be subject to agreement with the DPIRD, as the Government agency responsible for the management of the fence. Given the localised nature of the disturbance associated with the Proposal, impacts to the Rabbit Proof Fence No 2 are not considered significant.

4.5.5.2 Loss or Disturbance to Aboriginal Heritage Sites

During construction, clearing and earthworks have the potential to disturb Registered heritage sites. A total of two Registered Aboriginal Heritage Sites have the potential to be affected through implementation of the Proposal, based on the AHIS search. As outlined in **Section 4.5.3.2**, Aboriginal heritage surveys have been undertaken since early December 2020 with the relevant Traditional Owner groups. The outcomes and recommendations of the surveys and consultations with the Traditional Owners will inform the refinement of the Proposal. Aboriginal heritage sites, particularly Registered Sites, will seek to be avoided to the extent possible. Where avoidance is not possible, appropriate consent under Section 18 of the AHA (or current legislation at the time) will be obtained prior to disturbance activities, in consultation and agreement with relevant Traditional Owner Groups. The preparation and submission of any Section 18 applications will be completed in consultation with the Traditional Owners. Impacts on Aboriginal heritage sites will also be minimised and managed through the implementation of a Cultural Heritage Management Plan(s) that will to be developed in consultation with the respective Traditional Owner groups.

In order to align with the principles of the proposed new Aboriginal cultural heritage legislation in WA, APA has been engaging with the Traditional Owners in respect of the various aspects of the identification and possible disturbance of Aboriginal cultural heritage sites intersected by the Proposal, which will include the implementation of management and mitigation measures as appropriate.

APA have also developed an Aboriginal cultural heritage strategy for the Proposal. The following broad principles have been adopted by APA to enable appropriate management of cultural heritage matters associated with the Proposal:

1. Aboriginal cultural heritage is to be recognised as a finite and valuable resource;
2. Aboriginal community members are to be pivotal in the identification, assessment, and management of Aboriginal cultural heritage, as it is primarily Aboriginal people who should determine the significance of their heritage;
3. Places of Aboriginal cultural value within the CROW are to be conserved, where possible and practical, and managed to retain those cultural values. Appropriate conservation action will vary according to the level of significance;
4. Aboriginal cultural heritage is to be actively managed during the planning and construction stages of the Proposal, with direct input from Traditional Owners, to ensure that agreed and appropriate conservation and impact mitigation outcomes are achieved;
5. Compliance with relevant statutory controls is required; and



6. Sustainable, ongoing management strategies for Aboriginal cultural heritage should be promoted within APA, through heritage awareness training for APA staff and contractors working on the NGI project.

Given that the proposed construction methodology for the NGI is predominantly within a linear corridor, APA will have the flexibility to set the alignment of the pipeline (within the constraints of geotechnical issues, engineering requirements, and natural environment management measures) to practice the avoidance principle, i.e. where possible and practical, avoid cultural heritage sites by design.

In those instances, where a heritage site cannot be avoided by design, the controlled removal and storage of cultural objects in locations acceptable to the Traditional Owners will be necessary, subject to Ministerial consent first to be sought to disturb a heritage site in accordance with Section 18 of the AHA (or current legislation at the time).

Where the indicative disturbance footprint is located in close proximity to Aboriginal heritage sites, physical barriers (e.g. temporary fencing) or flagging will be used to delineate the sites. The recommendations from the Aboriginal heritage surveys will be considered and implemented in consultation with Traditional Owner Groups, noting constructability constraints. While subject to the outcomes of the heritage surveys, this may include targeted walkovers/pre-clearance surveys and oversight by Traditional Owners at key areas along the alignment, such as watercourse crossings.

A project induction will be developed for the Proposal and will include Aboriginal heritage to ensure that all site project personnel are aware of the location of Aboriginal heritage sites, and the necessity to avoid them. The induction will also include an immediate 'stop work' requirement if suspected heritage artefacts, that were not previously identified from the Aboriginal heritage surveys, are uncovered in the course of construction.

APA will continue to consult with the Traditional Owners and the Representative Bodies on the Proposal throughout the planning phase of the project and throughout construction.

4.5.5.3 Noise Emissions

Localised Blasting during Construction

Small-scale blasting at discrete, localised areas along the pipeline alignment may be required if particularly hard rock is encountered during trenching. The requirement for blasting will be informed by the geotechnical survey proposed, which has commenced and expected to be complete by Q1 2021.

If blasting is required, blasting operations will be carefully managed and undertaken by a specialist Contractor. The blasts will be highly contained with no excessive noise expected. The extent of noise from individual blasts is expected to be localised and dissipate within seconds. Considering this, and that the Proposal is not located within a densely populated area, little or no impact on surrounding areas is anticipated.

All blasts will be carried out in compliance with the relevant provisions of the Environmental Protection (Noise) Regulations 1997 and limited to daylight hours (6000 – 1800). APA will also consult with the relevant landholder(s) prior to undertaking any blasting. A Noise Management Plan will also be developed specifically for blasting, if required to be undertaken within relative proximity to sensitive receivers (e.g. homesteads).



Ambania Compressor Station Operations

Noise emissions will be generated through the operation of the Ambania compressor station and have the potential to influence the amenity of sensitive receptors, such as individual rural residences and the DBNP compressor station 7.

To determine the likelihood of potential impacts, an environmental noise modelling assessment was undertaken. The noise assessment considered 41 noise sensitive receptors within a 15 km radius of the proposed Ambania compressor station location. Sensitive receptors included the DBNGP compressor station 7, 28 individual residences and 12 work areas. As the work areas are considered to be non-residential, they were not assessed as they are not normally manned and not considered as industrial, commercial or residential receivers. This is in accordance with the Environmental Protection (Noise) Regulations 1997.

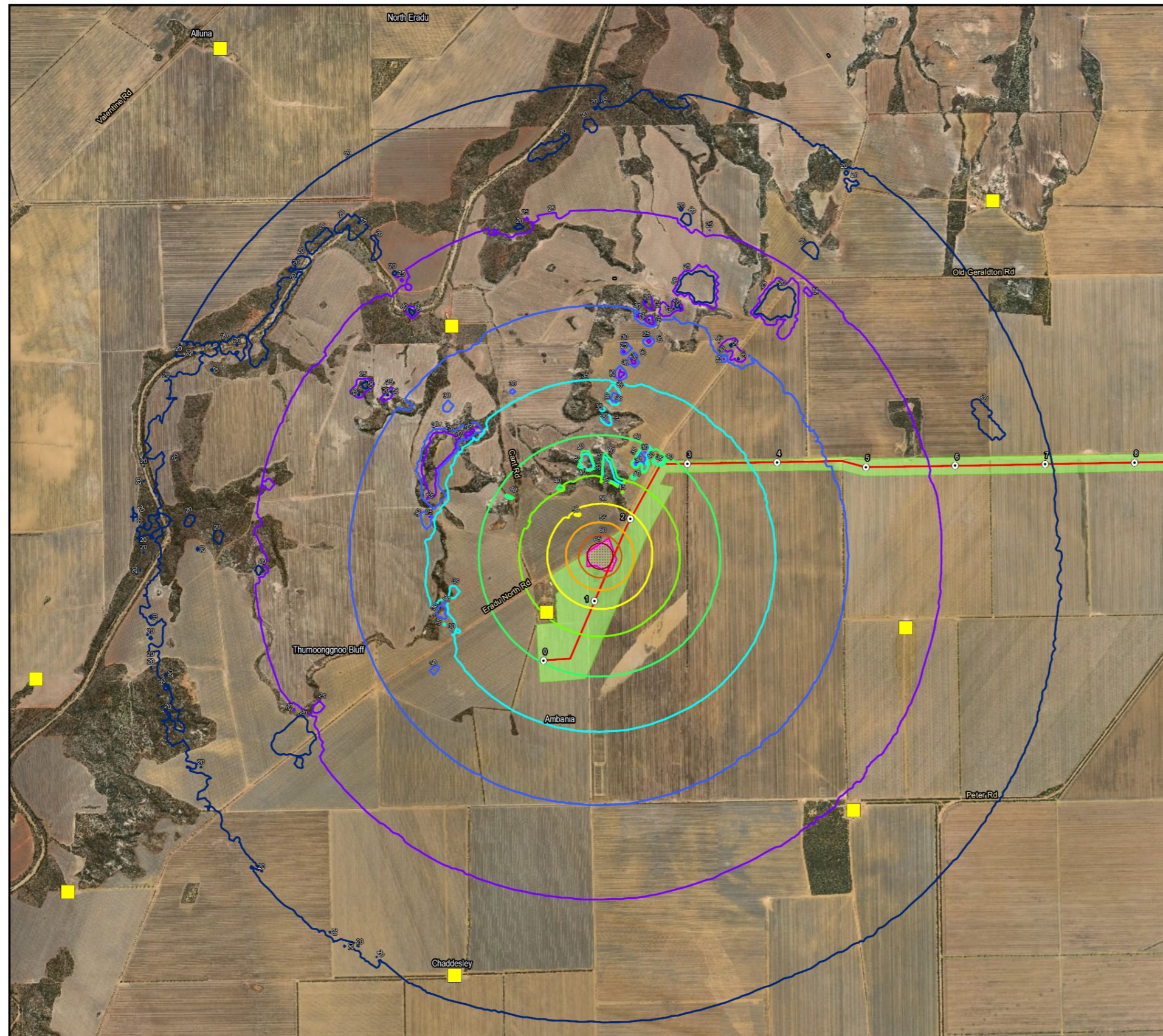
The modelling applied the following project noise levels, which were defined with reference to the assigned levels provided in the Environmental Protection (Noise) Regulations 1997, and take into consideration potential cumulative impacts from the DBNGP compressor station:

- Normal operations:
 - Residential – 30 dBa²; and
 - Industrial – 60 dBa.
- Emergency operations:
 - Residential – 40 dBa; and
 - Industrial – 75 dBa.

The modelling reported that noise levels emitted by the Ambania compressor station are predicted to be under the project noise limits at all noise sensitive receptors during both normal and emergency operations (Wood, 2020). The noise contours associated with the normal operation of the Ambania compressor station are shown in **Figure 4-8**. The highest predicted noise levels at a residential receiver was 1.4 dB and 5.1 dB below the project noise limit for normal operations and emergency operations, respectively.

The noise assessment study concluded that the Amabia compressor station is predicted to meet the assigned levels outlined in the Environmental Protection (Noise) Regulations 1997. Further, it is not expected to contribute to exceedances at noise sensitive receptors resulting from cumulative noise impacts.

² dBa: A-weighted noise level



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PROJECT: Northern Goldfields Interconnect
TITLE: Ambania Compressor Station Noise Contours
SUBTITLE: Normal Operations
DATE: 27/11/2020

DATA SOURCE:
 KPs, Pipeline Alignment, Sensitive Receptors, Development Envelope: APA Group
 Geonoma, Roads: LGATE
 Noise Contours: CDM Smith
 Aerial Imagery: ESRI

Legend

- Kilometre Point (KP)
- Sensitive Receptor
- Proposed Pipeline Alignment
- Ambania Compressor Station
- Development Envelope

Noise Contour
 Iso Value (dB(A))

- 20
- 25
- 30
- 35
- 40
- 45
- 50
- 55
- 60
- 65

DOCUMENT NUMBER: 560-MAP-L-7841

Revision	Description	Drawn	Checked/QC	Approved	Date
1.0	Issued for Use	AZ			27/11/2020
0.1	DRAFT	AZ			23/11/2020

SCALE: 1:42,000 @ A3

 Coordinate System: GDA2020 MGA Zone 50

LOCATION DIAGRAM

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Figure 4-8: Noise Contours from the Proposed Ambania Compressor Station – Normal Operations



4.5.6 Mitigation

Mitigation and management measures that will be implemented to minimise potential impacts to social surroundings are summarised in **Table 4-23**.

Table 4-23: Proposed Management Measures for Social Surroundings

Potential Impact	Management Measures
Disturbance to historic heritage sites	<p>Avoid</p> <ul style="list-style-type: none"> Avoid disturbance of historic heritage sites unless appropriate approval has been provided and consultation has been undertaken. <p>Minimise and Mitigate</p> <ul style="list-style-type: none"> Impacts to historic heritage values will be minimised through the implementation of a CEP.
Loss or disturbance to Aboriginal heritage sites	<p>Avoid</p> <ul style="list-style-type: none"> Completion of a route selection process that considers and seeks to avoid disturbance of Aboriginal heritage sites where practicable and through consultation with Traditional Owner groups. The pipeline alignment has been deviated to avoid intersection with the Kerbar Cliffs Registered Site, in the vicinity of KP298.5. Aboriginal heritage sites, particularly Registered Sites, will be avoided to the extent possible. Blasting will be avoided to the maximum extent possible or minimised in the vicinity of Kerbar Cliffs. <p>Minimise and Mitigate</p> <ul style="list-style-type: none"> HDD methods will be used to install the pipeline near the Kerbar Cliffs Registered site, where practicable (subject to the outcomes of the geotechnical survey), to avoid the potential for indirect impacts. Physical barriers (e.g. temporary fencing) or flagging will be used to delineate the Aboriginal heritage sites in close proximity to construction works. The outcomes and recommendations of the Aboriginal heritage surveys and consultations with the Traditional Owners will inform the refinement of the Proposal. Recommendations from the Aboriginal heritage surveys will be considered and implemented in consultation with Traditional Owner groups, noting constructability constraints. Impacts on Aboriginal heritage sites will be minimised and managed through the implementation of a Cultural Heritage Management Plan(s) that will be developed in consultation with the respective Traditional Owner groups.



	<ul style="list-style-type: none"> ▪ Appropriate consent under Section 18 of the AHA (or current legislation at the time) will be obtained prior to disturbance of any Registered Sites. The preparation and submission of any Section 18 applications (or applicable contemporary requirements at the time) will be prepared in consultation with the Traditional Owners. ▪ A project induction will be developed and include Aboriginal heritage to ensure that all site project personnel are aware of the location of Aboriginal heritage sites, and the requirement not to disturb these sites. ▪ During construction, disturbance activities will cease immediately in the event of finding Aboriginal artefacts/objects that were not identified during the Aboriginal heritage surveys. An exclusion zone of 20 m will be established and the Site Environmental Advisor and DPLH notified. DPLH will advise further management. ▪ APA will continue to consult with the Traditional Owners and the Representative Bodies on the Proposal throughout the planning phase of the project and throughout construction.
<p>Noise emissions from localised blasting during construction and operation of the Ambania compressor station</p>	<p>Avoid</p> <ul style="list-style-type: none"> ▪ Compliance with the Environmental Protection (Noise) Regulations 1997. ▪ The noise assessment identified that additional noise mitigation measures for the Ambania compressor station are not considered necessary based on the proposed design and location. ▪ Controlled blasting will be only be undertaken where conventional excavation, rock hammering or trenching equipment is ineffective. ▪ The refinement of the pipeline alignment has sought to avoid granite outcrops, breakaways and banded ironstone ridges. <p>Minimise and Mitigate</p> <ul style="list-style-type: none"> ▪ A Blasting Management Plan will be developed and implemented for the project. The plan will include, as a minimum: <ul style="list-style-type: none"> ○ Any blasting will be limited to daylight hours (6000 – 1800); ○ Any blasting will be controlled and undertaken by licensed and experienced specialist contractor; ○ Blast size and duration will be limited to the minimum required for the excavation of the pipeline trench; ○ Blast designs will be reviewed and modified as required for each blasting location; ○ Prior to blasting in a particular location, a site based environmental risk assessment will be undertaken to identify any additional environmental risks; and ○ In the event that the effects of blasting activities are likely to be affect nearby residents or environmental receptors, noise and vibration monitoring will be undertaken and appropriate



	<p>mitigation measures adopted if necessary.</p> <ul style="list-style-type: none"> ▪ Noise from the construction of the NGI pipeline will be minimised through the implementation of a project-specific CEP. ▪ APA will consult with the relevant landholder(s) and other third-parties (e.g. utilities, Main Roads Western Australia, Shires), where relevant, prior to undertaking any blasting. ▪ Consultation has been undertaken, and will continue, with the landholder whose property the Ambania compressor station is proposed to be sited on.
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4.5.7 Predicted Outcome

Only one historic heritage site will be affected by the Proposal; the Rabbit Proof Fence No 2. Avoidance of this site is not feasible as the fence runs north-south for approximately 1,165 km. However, the disturbance will be minimal (30 m section at most) and the fence fully reinstated following construction. The Rabbit Proof Fence will also not be disturbed until DPIRD has been consulted, and permissions granted for access as required.

APA have commenced a robust process of engagement with the Indigenous representative bodies and will be undertaking surveys across the development envelope with the Traditional Owners, in line with established regulatory processes under the AHA. APA will continue to consult with Traditional Owners throughout the project planning and design phase.

While the Proposal has sought to accommodate Aboriginal heritage values, as identified from a detailed desktop review and refinement of the NGI pipeline alignment, disturbance to Aboriginal heritage sites cannot be fully avoided. Applications for consent to disturb Registered Sites will be made under Section 18 of the AHA (or current legislation) in consultation with the relevant Traditional Owner groups. Any Section 18 applications (or applicable contemporary requirements at the time) will be prepared in consultation with the Traditional Owners. Impacts to the sites of Aboriginal heritage value of the Registered sites will be minimised as far as practicable through implementation of the recommendations arising from the outcomes of the Aboriginal heritage surveys. Potential impacts to Aboriginal heritage values will be managed through the implementation of a CEP and a Cultural Heritage Management Plan(s). These management plans will ensure that the Proposal is undertaken in a manner consistent with the consent and advice given.

Construction of the Proposal may result in localised and temporary increased noise for nearby sensitive receptors. Potential noise impacts will be managed through the implementation of the CEP and relevant provisions of the Environmental Protection (Noise) Regulations 1997. The operation of the Ambania Compressor Station is unlikely to result in the exceedance of noise thresholds for sensitive receptors resulting from implementation of the Proposal and cumulative noise impacts from the nearby DBNGP compressor station.

It is considered that the Proposal will not have significant residual impacts on Social Surroundings. As such, it meets the objective for this factor such that social surroundings are protected from significant harm. APA's continued and comprehensive stakeholder



engagement program will provide for regular and open dialogue with interested stakeholders.

4.6 Other Environmental Factors

Due to the low level of potential impact, application of standard construction controls and other established regulatory mechanisms, the following factors are not expected to require a detailed assessment:

- Terrestrial environmental quality;
- Inland waters; and
- Greenhouse gas emissions.

Table 4-24 summarizes the potential impacts, mitigation measures and outcomes for each of the other environmental factors.



Table 4-24: Other Environmental Factors

Element	Description
<i>Terrestrial Environmental Quality</i>	
EPA objective	<ul style="list-style-type: none"> To maintain the quality of land and soils so that environmental values are protected.
Policy and guidance	<ul style="list-style-type: none"> Environmental Factor Guideline – Terrestrial Environmental Quality (EPA, 2016f) <i>Contaminated Sites Act 2003</i> Assessment and Management of Contaminated Sites (DER, 2014) Identification and Investigation of Acid Sulfate Soils (ASS) and Acidic Landscapes (DER, 2015a) Treatment and Management of Soils and Water in Acid Sulfate Soil Landscapes (DER, 2015b)
Potential impacts	<ul style="list-style-type: none"> Soil erosion from vegetation clearing and earthworks. Disturbance of ASS during earthworks resulting in the acidification of soils and potential leaching of metals to surface and/or groundwater. While the development envelope is predominantly located in an area of Extremely Low Probability (1 – 5%), several discrete portions intersect areas of High Probability of occurrence (> 70%) (Commonwealth Scientific and Industrial Research Organisation, 2020). Contamination of ground and/or surface water due to release/spillage of environmentally hazardous materials. Waste (solid and/or liquid) discharge resulting in contamination of soils, surface and groundwater.



<p>Mitigation</p>	<p>Avoid</p> <ul style="list-style-type: none"> ▪ Establishment of clearly delineated access points to prevent unauthorised disturbance and access to/along the CROW. ▪ All wastes to be disposed off-site at appropriately licensed facilities and in consultation with the local Shires relevant to the project. ▪ Hydrocarbons will be stored in accordance with Australian Standard 1940:2017 The Storage and Handling of Flammable and Combustible Liquids. ▪ Hydrocarbons and chemicals will be stored appropriately in designated areas. ▪ A Dangerous Goods Licence will be obtained, as required, for inventory levels of substances stored on site. ▪ Storage of hazardous substances within a dedicated chemical storage area which is bunded, ventilated and located away from core construction areas, creeks/tributaries and sensitive environmental/heritage areas. ▪ Generators and oil storage areas self-bunded. ▪ Bund capacity is sufficient to contain quantity of largest stored container, i.e. 110% of largest container or 25% total stored. ▪ Use of drip trays/portable bunded containers when handling hazardous substances outside of bunded areas. ▪ Refuelling of light vehicles will be preferentially undertaken at dedicated refuelling areas. ▪ Refuelling will not be undertaken within proximity (100 m) of designated major watercourses. <p>Minimise and Mitigate</p> <ul style="list-style-type: none"> ▪ A CEP will be submitted and accepted by DMIRS prior to the commencement of construction. The CEP will include a suite of management and mitigation measures that will address all environmental aspects and potential risks/impacts associated with the project. ▪ Procedures for chemical management including refuelling, handling and spill response. ▪ Hydrocarbon and chemical spills addressed in Oil Spill Contingency Plan (OSCP) (which may form part of the project-specific CEP) and/or Emergency Response Plan (ERP). ▪ A geotechnical survey will be undertaken prior to construction and include assessment of ASS. ▪ Should ASS be discovered a specific ASS Management Plan will be developed and implemented.
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Element	Description
	<ul style="list-style-type: none"> ▪ Testing kits available on site to assess for ASS/potential ASS if occurrence is identified as potentially being present during construction activities. ▪ The project site induction will provide awareness of ASS/potential ASS. ▪ Vehicle and machinery traffic will be confined to the indicative disturbance footprint and designated access tracks. ▪ Clearing will be limited to the extent required for construction of the project. ▪ Topsoil collection and stockpiling will be undertaken immediately following vegetation clearing to prevent loss of topsoil from wind/water erosion. ▪ Drip trays will be used when refuelling equipment or light vehicles on the CROW. ▪ Refuelling will be undertaken under direct supervision at all times. ▪ Additional measures will be implemented to minimise erosion post-construction in collaboration with the local landholder as identified through consultation. <p>Rehabilitate</p> <ul style="list-style-type: none"> ▪ Topsoil and vegetation will be progressively returned following installation of the pipeline to minimise the duration they are stored. ▪ Construction areas reinstated using rehabilitation techniques detailed in the APA Native Vegetation Procedure (APA HSE EP 13.02.01), namely: <ul style="list-style-type: none"> ○ Respreading stockpiled vegetation over topsoils to encourage vegetation re-establishment; and ○ Limiting access to the rehabilitated area until vegetation stability is established.
Outcomes	<p>The Proposal has the potential to affect soil or land quality. Disturbance and excavations associated with the Proposal will be relatively localised and linear in nature, shallow (typically up to 2 m, with a maximum depth of approximately 5 m) and predominantly temporary in nature as the NGI pipeline will be buried, backfilled and reinstated. It is expected that potential impacts can be mitigated through the implementation of appropriate management and mitigation measures, including implementation of a specific ASS Management Plan, if required. All impacts are manageable and will be fully assessed by DMIRS, under the Petroleum Pipelines (Environment) Regulations, through the CEP.</p>



Element	Description
	Overall, it is not anticipated that the construction and operation of the Proposal will result in significant or lasting impacts to soil and land quality within the construction areas and adjacent to the Proposal. Therefore, APA considers that the Proposal can be effectively managed to meet the EPA’s objectives for Terrestrial Environmental Quality.
Inland Waters	
EPA objective	To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.
Policy and guidance	<ul style="list-style-type: none"> ▪ Environmental Factor Guideline – Inland Waters (EPA, 2016g) ▪ RIWI Act ▪ Water Quality Protection Note 13: Dewatering of soils at construction sites (DoW, 2012)
Potential impacts	<p>Potential Impacts</p> <p>Construction of the Proposal will require a linear, shallow trench or discrete HDD entry/exit pits for the installation of the pipeline. The typical maximum depth of the trench is approximately 2 m. However, the depth of the trench may be up to approximately 5 m where trenching is required to cross major watercourses or where HDD construction methods are employed. Note, intersection with major watercourses is limited within the alignment (e.g. Tenindewa Creek, the upper reaches of the Irwin River and Salt Creek), with the majority of the watercourses being ephemeral drainage lines and tributaries that are largely dry throughout most of the year. The trench is expected to be a minimum of 600 mm wide and will be backfilled on installation of the pipe.</p> <p>The Proposal has the potential to impact on inland waters through:</p> <ul style="list-style-type: none"> ▪ Localised alteration to surface water flows; ▪ Localised interaction with groundwater; and ▪ Localised and temporary interaction with the groundwater related PECs. <p>Construction of the NGI pipeline and associated aboveground facilities is shallow by design, with minimal sub-surface intersection. Therefore, interaction with groundwater is expected to be limited, particularly in those areas mapped at a regional scale, from published geology data, as supporting calcrete.</p>



Element	Description
	<p>Assessment of Impacts</p> <p>The construction of the Proposal has the potential to alter surface water flows due to the presence of linear infrastructure (i.e. the NGI pipeline). While a number of ephemeral creeks and tributaries intersect the Proposal, the number of larger water crossings is limited with the main being intersection of Tenindewa Creek, the upper reaches of the Irwin River and Salt Creek. The Proposal is also unlikely to significantly impact surface water flows as the pipeline will be buried and, therefore, will not affect natural surface water flows. Management measures will be implemented, such as a bed and banks permit(s) and maintenance of breaks in topsoil stockpiles, to minimise any potential impacts during the temporary construction period. The watercourse crossings will also be subject to more detailed construction design.</p> <p>The aboveground facilities are small and therefore affects to surface water flows are expected to be highlight localised. The largest aboveground facility, the Ambania compressor station (approximately 4.1 ha), is located in a disturbed, agricultural area (i.e. paddock) (Figure 2-4).</p> <p>The Proposal intersects five Priority 1 PECs that are recognised for supporting unique assemblages of invertebrates in the groundwater calcretes. These are:</p> <ul style="list-style-type: none"> ▪ Wagga Wagga and Yalgoo calcrete groundwater assemblage type on Yalgoo palaeodrainage on Wagga Wagga Station and Moore Palaeodrainage on Yoweragabbie Station; ▪ Yoweragabbie calcrete groundwater assemblage type on Moore palaeodrainage on Yoweragabbie Station; ▪ Windimurra calcrete groundwater assemblage type on Murchison palaeodrainage on Windimurra Station; ▪ Dandaraga calcrete groundwater assemblage type on Raeside palaeodrainage on Dandaraga Station; and ▪ Pinnacles calcrete groundwater assemblage type on Raeside palaeodrainage on Pinnacles Station. <p>DBCA’s PEC list states that the threats to the PECs are related to hydrological changes associated with mining (DBCA, 2020). The nature of this Proposal (linear shallow excavation, that is backfilled and reinstated upon completion of construction, is a different impact scenario to a large-scale void from mining or other developments, where dewatering and changes in water balance is more relevant.</p> <p>As described in Section 2.11.3.1, calcrete typically occurs along the margins of salt lakes and locally in parts of the main sub-catchments in the palaeodrainages. The NGI alignment has pre-emptively avoided shallow groundwater features and waterbodies, as per standard practice for the construction of new pipelines. The Proposal has also avoided saline features, for the reason that infrastructure located in these environments requires additional protection and/or more regular maintenance to ensure integrity is maintained.</p>



Element	Description
	<p>The development envelope intersects a small portion (< 4%) of the mapped area of each of these PECs (Table 4-25). Review of historical groundwater level data available from bores near the Proposal indicates that groundwater levels are typically 15 m bgl – 25 m bgl, but have been recorded as shallow as 4 m bgl (BoM, 2020). Sampling of groundwater for the Yogi Magnetite Mine Project, which occurs in relatively close proximity to a portion of the Proposal (near KP177), recorded groundwater levels ranging between a minimum of 6.1 m bgl to a maximum of 35.4 m bgl (GHD, 2020). The Yogi Magnetite Mine Project is also approximately 5 km north-east of the Wagga Wagga and Yalgoo calcrete groundwater assemblage PEC. Stygofauna sampling was undertaken within the proposed Yogi mine development envelope. Stygofauna individuals were observed to be located in a superficial aquifer up to a depth range of approximately 12 m bgl – 25 m bgl (GHD, 2020). The stygofauna were not observed within a calcrete groundwater feature, with individuals being recorded in colluvium and alluvial sand/silt/gravel deposits.</p> <p>While geotechnical investigations for the Proposal are progressing, sampling has been undertaken at the Yoweragabbie scraper station. This aboveground facility is located at approximately KP282 and regional geology mapping information shows the area to comprise calcrete deposits. The scraper station is approximately 3 km east of the Yoweragabbie calcrete groundwater assemblage type on Moore palaeodrainage on Yoweragabbie Station PEC. The sample boreholes and test pits (maximum depth of 15 m) observed that the subsurface soils are characterised by a mixture of predominantly sandy clay with some sandstone present. No groundwater was intersected by the sample locations. Additionally, potholing to verify the location of the existing MWP (to depths of approximately 1.5 m – 2 m), which is in close proximity to KP1 to KP343 of the proposed NGI pipeline, did not report any intersection with groundwater.</p> <p>The likelihood of interaction with the groundwater values of the PECs is highly unlikely as the typical pipeline burial depth is up to 2 m, with the maximum depth being up to 5 m at discrete locations along the route, such as major watercourse crossings or HDD (Table 2-4). Given the expected depth to groundwater and the typical pipeline burial depth there is expected to be a degree of vertical separation, which will provide a buffer between the disturbance and the PEC values. Therefore, the potential interaction risk with the unique assemblages of invertebrates in the groundwater calcretes is very low. The pipeline trench also represents a small, linear footprint (approximately 0.6 m wide) within a locally extensive PEC. The indicative disturbance footprint, in which the pipeline trench is a subset of, intersects < 1% of each PEC (Table 4-25). Furthermore, in the unlikely event that interaction occurs with the values of the PEC, only a very small portion of the available habitat would be affected as the thickness of the calcrete layer is generally up to 10 m (refer to Section 2.11.3.1).</p> <p>Overall, potential impacts to the groundwater calcrete invertebrate assemblage PECs are considered negligible considering the:</p>



- Expected depth to groundwater along the pipeline within areas mapped regionally as comprising calcrete;
- General thickness of the calcrete layer of up to 10 m;
- Nature and scale of the Proposal, i.e. only very small intersection of < 1% with the indicative disturbance footprint, of which the shallow linear pipeline trench is a subset, with the total mapped PEC assemblages;
- Expected vertical separation between the pipeline trench and the groundwater; and
- Proposal is not related to mining and will not result in regional hydrological changes, which is the key threat recognised by DBCA to these PECs.

Detailed site-specific information will be collected as the geotechnical survey progresses. In the unlikely event that localised and temporary dewatering is required within the mapped extents of the PECs, any potential impacts are expected to be highly localised, temporary, and manageable through the CEP as administered by DMIRS. The trench will be also backfilled after installation of the pipeline such that there will be no permanent loss of habitat and connectivity of the groundwater will be maintained.

Table 4-25: Calcrete Groundwater Assemblage Type PECs Intersected by the Proposal

PEC	Total Area (ha)	Extent within the Development Envelope (ha) (%)	Extent within the Indicative Disturbance Footprint (ha) (%)
Wagga Wagga and Yalgoo calcrete groundwater assemblage type on Yalgoo palaeodrainage on Wagga Wagga Station and Moore Palaeodrainage on Yoweragabbie Station	28,509.2	735.6 (2.6%)	194.3 (0.7%)
Yoweragabbie calcrete groundwater assemblage type on Moore palaeodrainage on Yoweragabbie Station	8,830	292.1 (3.3%)	44.8 (0.5%)
Windimurra calcrete groundwater assemblage type on Murchison palaeodrainage on Windimurra Station	20,977.6	195.4 (0.9%)	30.0 (0.1%)
Dandaraga calcrete groundwater assemblage type on Raeside palaeodrainage on Dandaraga Station	21,275.6	242.0 (1.1%)	41.8 (0.2%)



Element	Description			
	Pinnacles calcrete groundwater assemblage type on Raeside palaeodrainage on Pinnacles Station	23,011.7	257.9 (1.1%)	38.5 (0.2%)
Mitigation	<p>Avoid</p> <ul style="list-style-type: none"> ▪ The pipeline alignment avoids intersection with any freshwater lakes and permanently flowing rivers. ▪ The pipeline alignment avoids intersection with Public Drinking Water Supply Areas. <p>Minimise and Mitigate</p> <ul style="list-style-type: none"> ▪ A hydrological and scour (geomorphic) assessment will be undertaken as part of the project design phase. The assessment will include a desktop review of watercourse crossings, targeted field investigations at key watercourse crossings identified for geomorphic conditions, and a desktop hydrology and flood level study relevant to the aboveground facility locations. ▪ Bed and banks permit(s) will be sought for watercourse crossings within designated proclaimed surface water area(s). ▪ If groundwater bores are required to be constructed and used for construction water purposes, water licences (5C and 26D) will be obtained from DWER, under the RIWI Act, for groundwater abstraction and taking of water. ▪ Topsoil stockpiles maintained at a height not exceeding 2 m with breaks left in the stockpiles to allow surface water flows. ▪ If required, measures to minimise erosion and sediment transport from any topsoil stockpiles during heavy rains/flooding will be implemented through external bunding of stockpiles using coir logs or other similar temporary materials. ▪ Topsoil stockpiles will not be stored within 10 m of designated watercourses. ▪ Minimise the potential for erosion through the use of sediment control structures (sediment fences, berms, etc.) at water crossings, as required. ▪ A Water Management Plan will be developed and implemented for the Proposal. The plan will include the management of dewatering, if required, to ensure that this activity does not impact on existing and future uses of aquifers or surrounding 			



Element	Description
	<p>vegetation. The plan will also consider hydrotesting water management, including the sourcing of water, chemical dosing, water quality testing and disposal.</p> <ul style="list-style-type: none"> ▪ Management of dewatering will take into consideration the Water Quality Protection Note 13: Dewatering of soils at construction sites (DoW, 2012). ▪ Hydrotest water will be discharged in a controlled manner to either a turkeys nest or within the development envelope. Prior to discharge, hydrotest water will be sampled and analysed. No hydrotest water will be discharge until sampling has occurred and the results compared to the 2018 Australian and New Zealand guideline values. If the guideline values are met then water will be discharged to land at approved locations, and in a manner that minimises erosion and scour. If the guidelines are exceeded, then water treatment will be undertaken as required or the water left to evaporate in the turkeys nest. ▪ Hydrocarbons and chemicals will be stored appropriately in designated areas. ▪ Storage of hazardous substances within a dedicated chemical storage area, which is bunded, ventilated and located away from core construction areas, creeks/tributaries and sensitive environmental/heritage areas. ▪ Bund capacity is sufficient to contain quantity of largest stored container, i.e. 110% of largest container or 25% total stored. ▪ Procedures for chemical management including refuelling, handling and spill response. ▪ Hydrocarbon and chemical spills addressed in Oil Spill Contingency Plan (OSCP) (which may form part of the project-specific CEP) and/or Emergency Response Plan (ERP).
Outcomes	<p>The Proposal has the potential to affect hydrological regimes and the quality of groundwater and surface water. However, it is expected that potential impacts can be mitigated through the implementation of appropriate management and mitigation measures. All impacts are manageable and will be fully assessed by DMIRS, under the Petroleum Pipelines (Environment) Regulations, through the CEP. The bed and banks permit(s) will be assessed and approved by DWER.</p> <p>Overall, it is not anticipated that the construction and operation of the Proposal will result in significant or lasting impacts to the hydrological regime and groundwater and surface water values of the area. Therefore, APA considers that the Proposal can be effectively managed to meet the EPA's objectives for Inland Waters.</p>



Element	Description
Greenhouse Gas Emissions	
EPA objective	<p>To reduce net greenhouse gas emissions in order to minimise the risk of environmental harm associated with climate change.</p> <p>For the purposes of environmental impact assessment, the EPA Greenhouse Gas Emissions guideline relates to the six categories of GHGs covered by the United Nations Framework Convention on Climate Change Reporting Guidelines on Annual Inventories. These gases are carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydro fluorocarbons and perfluorocarbons (EPA, 2020c).</p>
Policy and guidance	<ul style="list-style-type: none"> ▪ Environmental Factor Guideline – Greenhouse Gas Emissions (EPA, 2020c) ▪ <i>National Greenhouse and Energy Reporting Act 2007</i> (NGER Act) ▪ National Greenhouse and Energy Reporting Regulations 2008 ▪ Emissions Reduction Fund and associated Carbon Credits (Carbon Farming Initiative) Rule 2015 ▪ Greenhouse Gas Emissions Policy for Major Projects (Government of Western Australia, 2019) ▪ Climate change in Western Australia: Issue paper – September 2019 (DWER, 2019) ▪ Western Australian Climate Policy (DWER, 2020) <p>APA Corporate Guidance</p> <p>APA is committed to supporting Australia’s successful transition to a lower-carbon future. In addition to continued investigation of renewable and new energy technologies, APA is continuing to take steps to understand and demonstrate the Company’s commitment to addressing the complex challenge presented by climate change.</p> <p>APA’s climate change risk management approach includes:</p>



- Carbon Management Plan – the plan focuses on four key areas being; GHG emissions reporting and analysis, GHG emissions reductions, GHG offsets and climate scenario analysis. The plan is supported at an executive level and is proposed to be integrated into APA's broader Climate Change Management Plan and Sustainability Roadmap.
- GHG reporting and analysis – building on APA's existing national greenhouse and energy reporting (NGER) processes to expand and improve emissions reporting and analytics capability. The disclosure of information to stakeholders is also aligned with the Taskforce on Climate-related Financial Disclosures (TCFD) framework.
- GHG emissions reduction – establishment of a representative Emissions Reductions Working Group, which is tasked with developing a 'current state' understanding of emissions reductions activities. To inform this process, APA conducted an emissions reduction assessment, in line with the internationally recognised Methane Guiding Principles in 2020. Workshops focusing on emissions reduction opportunities related to infrastructure development and operations were also undertaken. The feasible short- and medium-term opportunities will be analysed and sought to be integrated into APA's Climate Change Management Plan.
- GHG offsets – investing in, and purchasing carbon offsets as part of a strategic long-term contribution to APA's emissions reductions efforts. In 2020, APA began screening potential approaches and opportunities.
- Climate scenario analysis and resilience testing – testing the resilience of APA's existing business under a range of climate scenarios. The resilience testing incorporates insights from the International Energy Agency scenario datasets and International Institute for Applied Systems Analysis' Shared Socioeconomic Pathways. On completion, the outcomes of the analysis will be made publically available, in line with the TCFD framework.

For further details on APA's approach to climate change, refer to APA's Sustainability Report 2020 (<https://www.apa.com.au/globalassets/documents/annual-reports/2020-annual-reports/apa-group-sustainability-report-2020.pdf>) and Climate Change Position Statement (<https://www.apa.com.au/globalassets/documents/corporate-governance-docs/corporate-governance-statement-principles-and-policies/apa-climate-change-position-statement.pdf>).

The NGI pipeline project plays an important role in supporting the energy transition by providing short- to mid-term energy security for the domestic market. Other key benefits associated with the NGI pipeline project include:

- Enabling transfer of gas from the North West Shelf and Perth Basin via the DBNGP and NGI;
- Providing the ability to increase gas supply capacity and certainty for downstream users in the Mid West and Goldfields Regions;
- Provision of gas to customers at a competitive price;
- Provision of employment opportunities in regional WA; and



- Support for local community initiatives and programs.

APA has also proactively pre-designed the pipeline specifications to be hydrogen ready, in anticipation of hydrogen becoming part of the future blended energy mix consistent with the Western Australian Renewable Hydrogen Strategy and Roadmap.

APA's Position

APA appreciate a dynamic shift in the energy landscape is in progress, with the drive towards decarbonisation creating a structural shift in energy policy, composition and investment. APA understands that embracing the opportunities that come from supporting a lower carbon economy is critical for long term success. APA supports the shift in the energy mix and the road to decarbonisation. APA has been progressively re-shaping its power generation portfolio, such that currently 54% of APA's portfolio is renewable energy (**Figure 4-9**).

Renewable energy generation will remain an important part of APA's portfolio as the Company pro-actively look at the role of APA's energy infrastructure in a decarbonised clean molecule future. APA see natural gas playing a role in firming renewable power generation, which will support increasing penetration of renewables in the Australian energy grid into the future.

To supplement existing investments in renewable energy assets, such as wind and solar farms, APA are proactively investigating the role of new technologies and options for future growth. APA are exploring the intersection of its existing assets with new energies (e.g. renewable methane and hydrogen), improving the understanding of the role of carbon capture utilisation and sequestration technology and investigating how energy storage technologies (e.g. batteries) could complement renewables generation and support gas in firming of future energy networks.



Element	Description
	<p>APA's Changing Power Generation Portfolio</p> <p>FY2020 Power Generation Portfolio Capacity Mix</p> <p>Figure 4-9: APA's Power Generation Portfolio</p>
Potential impacts	<p>Potential Impacts</p> <p>GHG emissions contribute to the changing climate. The effects of the changing climate are predicted to be significant in Western Australia. Some of the potential impacts include a drying climate in the south-west, an increase in the intensity and duration of hot spells, more intense short duration rainfall events and fewer tropical cyclones in the north (DPIRD, 2021; BoM, 2021; Bruyère et al., 2020).</p> <p>Greenhouse gas emissions resulting from the Proposal will be generated through the combustion of hydrocarbons (e.g. vehicles/equipment and generators), clearing of native vegetation, venting during commissioning and use of gas turbines/generators during operation of the Ambania compressor station. The Yoweragabbie scraper station and Wildara delivery station will be powered by a solar power system, while the Rosewick offtake does not require any power for operations.</p>



Element	Description
	<p>Australia currently contributes approximately 1.3% of global GHG emissions (World Resources Institute, 2017). Australia’s GHG emissions in the year to June 2020 were 513.4 Mt CO₂-e, a 16.7% (102.9 Mt CO₂-e) decrease from the year to June 1990 (Department of Industry, Science, Energy and Resources (DISER), 2020).</p> <p><i>GHG Emission Estimates</i></p> <p>National and international GHG reporting standards categorise emissions (‘scopes’) based on emission sources and associated responsibilities (EPA, 2020c). GHG emissions are defined as:</p> <ul style="list-style-type: none"> ▪ Scope 1 – GHG emissions released to the atmosphere as a direct result of an activity (also known as ‘direct emissions’). These include emissions from the burning of diesel fuel in vehicle fleets and generators, fugitive emissions and production of electricity using fossil fuels; ▪ Scope 2 – GHG emissions from the consumption of an energy product (also known as ‘indirect emissions’). For example, Scope 2 emissions come from the use of electricity produced by the burning of fossil fuels in another facility. Scope 2 emissions from one facility are part of the Scope 1 emissions from another facility; and ▪ Scope 3 – indirect GHG emissions other than Scope 2 emissions, that are generated in the wider economy. Scope 3 emissions occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility’s business. <p>For the purposes of this Proposal, GHG emissions were estimated from a detailed review of GHG emissions reported for comparable APA projects and subsequently scaled and refined to reflect the nature and scale of the Proposal. This included GHG emissions reported during the respective construction and commissioning periods of the Turee Creek Compressor Station in 2014, the Murrin Murrin Compressor Station and the Yamarna Gas Pipeline in 2018. GHG emissions reported in 2020 for the operational Turee Creek and Murrin Murrin Compressor Stations, the Yamarna Gas Pipeline and Goldfields Gas Transmission Pipeline were used to estimate the emissions for operation of the Proposal. The GHG emission estimates were derived in accordance with current published energy content and emission factors, and guideline methodology, contained in the National Greenhouse and Energy Reporting (Measurement) Determination 2008 and subsequent amendments emission factors and guideline methodology.</p> <p><u>Construction and Commissioning</u></p> <p>The Scope 1 and Scope 2 GHG emissions estimates (presented as tonnes (t) CO₂-e) for the construction and commissioning of the Proposal are provided in Table 4-26. As shown by Table 4-26, there will be no Scope 2 emissions associated with the construction and commissioning of the Proposal. The majority of the Scope 1 emissions are attributed to diesel consumption (75.5%).</p> <p>In placing the Proposal specific construction and commissioning emissions into context, the Proposal represents:</p>



- < 1.8% of APA Group’s emissions (1,404,995 t CO₂-e, FY2019), based on the 2020 Sustainability Report (APA Group, 2020);
- < 0.01% of Australia’s emissions, based on the Australian and New Zealand Standard Industrial Classification (ANZSIC) emissions data (2015-2016) for the construction and electricity, gas, water and waste services divisions (279,505 t CO₂-e and 186,769,602 t CO₂-e, respectively) (Clean Energy Regulator (CER), 2019); and
- < 0.01% of the national total emissions, based on 2020 sectoral emissions data (up to June 2020) for the stationary energy, transport and fugitive sectors (102.5 metric tonnes (Mt) CO₂-e, 93.9 Mt CO₂-e and 50.1 Mt CO₂-e, respectively) (DISER, 2020a).

Table 4-26: Estimated GHG Emissions for the Construction and Commissioning of the Proposal

Source	Total (t CO ₂ -e)	Percentage Breakdown of Source (%)
Scope 1		
Diesel consumption – vegetation clearing, transport (vehicles and equipment/machinery), construction camps and supporting facilities	19,364	75.5%
Venting during commissioning	231	0.9%
Fugitive emissions – hydrocarbon/chemical tanks	6,044	23.6%
Total Scope 1	25,639	100%
Scope 2		
There are no Scope 2 emissions as it is expected that the temporary construction camps will be powered by diesel generators, given their relative remote locations	0	0%
Total Scope 1 + Scope 2 (t CO₂-e)	25,639	100%



Element	Description
	<p><u>Operations</u></p> <p>The Scope 1 and Scope 2 GHG emissions estimates associated with the operation of the Proposal are provided in Table 4-27. No Scope 2 emissions are anticipated to be generated as a result of the Proposal. The majority of the Scope 1 emissions are associated with gas consumption (64.9%).</p> <p>Scope 1 GHG emissions are below the 100,000 tonnes CO₂-e per annum threshold, as defined under the Australian Government’s Safeguard Mechanism.</p> <p>The pre-design of the majority of the aboveground facilities to be supported by solar power for operations has reduced the reliance on traditional electricity sources and, as such, has significantly reduced the Scope 1 GHG emissions associated with the Proposal.</p> <p>In placing the Proposal specific operation emissions into context, the Proposal represents:</p> <ul style="list-style-type: none"> ▪ < 1.9% of APA Group’s emissions (1,404,995 t CO₂-e, FY2019), based on the 2020 Sustainability Report (APA Group, 2020); ▪ < 0.01% of Australia’s emissions, based on the Australian and New Zealand Standard Industrial Classification (ANZSIC) emissions data (2015-2016) for the construction and electricity, gas, water and waste services divisions (279,505 t CO₂-e and 186,769,602 t CO₂-e, respectively) (Clean Energy Regulator (CER), 2019); and ▪ < 0.01% of the national total emissions, based on 2020 sectoral emissions data (up to June 2020) for the stationary energy, transport and fugitive sectors (102.5 million tonnes (Mt) CO₂-e, 93.9 Mt CO₂-e and 50.1 Mt CO₂-e, respectively) (DISER, 2020a). <p>The maximum operational GHG emissions from the Proposal (approximately 27,065 t CO₂-e per year; noting this is a conservative estimate and includes allowance for additional future compression) represents an increase of approximately 0.03% to the State’s annual GHG emissions based on the 2018 figure of 91.5 Mt CO₂-e (DISER, 2020b). This is not a significant contribution to the total emissions in the State.</p>



Element	Description		
	Table 4-27: Estimated GHG Emissions Associated with Proposal Operations		
	Source	Total (t CO₂-e)	Percentage Breakdown of Source (%)
	Scope 1		
	Gas consumption – Ambania compressor station and Yoweragabbie scraper station (only if potential future compressor station is installed)	20,613	79.9
	Diesel consumption – transport (vehicles and equipment/machinery)	6,452	20.1
	Total Scope 1	27,065	100%
	Scope 2		
	There are no Scope 2 emissions, as no electricity is imported or exported.	0	0%
	Total Scope 1 + Scope 2 (t CO₂-e)	27,065	100%
	<p>Scope 3</p> <p>The Proposal represents the construction and operation of a new gas pipeline system, whose primary purpose is to provide an interconnection between two existing operational gas pipelines systems (i.e. the MWP and GGP). That is, the NGI pipeline will act as a conveyance system to enable the transfer of gas within WA (from existing and new natural gas fields) and provide an increase in gas supply capacity for multiple downstream users (existing and future) in the Mid West and Goldfields Regions. As such, the Proposal does not lend itself to a traditional Scope 3 GHG emissions assessment. The gas conveyed by the NGI pipeline will be used in a domestic market, however the end customers are unable to be comprehensively defined at this stage.</p>		



Element	Description
Mitigation	<p>Avoid</p> <ul style="list-style-type: none"> ▪ The Yoweragabbie scraper station and Wildara delivery station will be powered by a solar power system. The Rosewick offtake does not require any power for operations. ▪ APA has also proactively pre-designed the pipeline specifications to be hydrogen ready, in anticipation of hydrogen becoming part of the future blended energy mix consistent with the Western Australian Renewable Hydrogen Strategy and Roadmap. <p>Minimise and Mitigate</p> <ul style="list-style-type: none"> ▪ Implementation of the NGI pipeline project in a manner consistent with APA's Corporate Climate Change Position Statement. ▪ Undertaking routine GHG emissions monitoring and reporting in accordance with the NGER Act and Regulations, in accordance with APA Corporate Group commitments. ▪ Preventative maintenance to maintain current GHG emission levels and identify opportunities to minimise GHG emissions. ▪ The number of vehicles travelling to site will be reduced through transport a portion of the workforce via minibus(es). ▪ Venting for commissioning will be minimised to that required for the project. ▪ Record estimated quantities (and duration) of vented gas during commissioning for emissions reporting.
Outcomes	<p>With the predicted GHG emissions for the Proposal being below the 100,000 tonnes CO₂-e per annum threshold (Scope 1), APA considers it is unlikely that the Proposal would have a significant impact on GHG emissions and that the impacts to this factor are manageable.</p>



5. OFFSETS

The WA Environmental Offsets Policy 2011 and the EPBC Act Environmental Offsets Policy 2012 require that environmental offsets be applied to counterbalance the significant residual environmental impacts of Proposals, after mitigation has been applied.

Consistent with the WA Environmental Offsets Policy, environmental offsets are only intended to be considered after avoidance and mitigation options have been pursued. A key feature of this Proposal has been the early route options analysis and alignment, such that the top 'avoidance' tier of the mitigation hierarchy has been implemented to the maximum extent possible, to provide a lower net impact through design and refinement. Examples of this are provided in earlier sections of this referral, as demonstrated in **Section 2.2.2** and commitments reinforced in the subsequent **Section 4.3** to **Section 4.6** inclusive. Practicable measures have been identified for all relevant environmental factors, and will be implemented by APA and its Contractors. It is expected that these measures will be used as a benchmark that will be directly carried into next stage of approvals and implementation.

All impacts are concluded to be manageable through application of practicable avoidance and mitigation measures and will be fully assessed by DMIRS, under the Petroleum Pipelines (Environment) Regulations, through the CEP.

Given the above, the Proposal is not expected to result in significant residual environmental impacts, particularly to the key environmental factors of flora and vegetation, and terrestrial fauna.

The Proponent will engage DMIRS and DWER during the assessment of the native vegetation clearing permit application with regards to the requirement of an offset.



6. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

Referral of a Proposal to DAWE for assessment under the EPBC Act is required if a proposed action has the potential to significantly impact on any MNES. MNES include world heritage properties, national heritage places, wetlands of international importance (Ramsar wetlands), nationally threatened species and ecological communities, migratory species and other values.

An EPBC search using the Protected Matters Search Tool (PMST) was undertaken for the Proposal, which comprised the development envelope with a 5 km buffer applied. The PMST identified the following MNES as potentially occurring within the Proposal (DAWE, 2020a):

- One listed TEC;
- Twenty-eight listed Threatened species; and
- Ten migratory species.

A detailed flora and vegetation survey and basic/targeted fauna survey were undertaken for the Proposal. The surveys were based on the development envelope and included desktop and field components and likelihood of occurrence assessments. A summary of the technical studies and descriptions of factors for the relevant MNES is provided in the following sections:

- **Section 4.3** Flora and Vegetation; and
- **Section 4.4** Terrestrial Fauna.

An assessment was undertaken to identify whether MNES are likely or potentially present within the development envelope (**Table 6-1**). The assessment identified three Threatened flora species and one fauna species as known or likely to occur within the development envelope. A copy of the PMST report used for the assessment of MNES is provided in **Appendix 3**.

The Proposal is considered unlikely to have a significant impact on MNES. Impacts are considered to be manageable and implemented through the established regulatory process of a CEP, and native vegetation clearing permit (if required), as administered by DMIRS for natural gas pipelines under State jurisdiction.



Table 6-1: Assessment of MNES

MNES	Presence/Potential Presence within the Development Envelope
World Heritage Properties	None present
National Heritage Places	None present
Wetlands of international importance	None present
Threatened ecological communities	<p>The Eucalypt Woodlands of the Western Australian Wheatbelt (Eucalypt Woodlands) TEC (Critically Endangered) was identified within the development envelope from the PMST. The Eucalypt Woodlands TEC is typically found on flatter landscapes and lower rises of the wheatbelt and consists of a complex mosaic of about 30 Eucalypt species that typically have a single trunk (DoEE, 2016).</p> <p>The detailed flora and vegetation assessment confirmed the presence of the Eucalypt Woodlands TEC within the development envelope at four discrete locations (three patches) (Figure 4-3; Focused Vision, 2020). Approximately 0.74 ha occurs within the indicative disturbance footprint, with the vegetation condition rated as 'Excellent'. The width of the CROW has been reduced to the minimum extent practicable where intersection of the TEC cannot be avoided. HDD construction methods will be used where the alignment intersects the widest patch of the TEC (approximately KP86) to further avoid clearing of this vegetation community.</p>
Threatened species	<p>A total of 28 threatened species were identified to potentially occur within the development envelope and surrounds, which included 17 flora species, eight birds, one mammal, one reptile and one invertebrate species.</p> <p>Of the species identified as potentially occurring, the majority (23) are considered unlikely to occur in the development envelope based on the likelihood of occurrence assessment (Focused Vision, 2020; Kingfisher, 2020).</p>



MNES	Presence/Potential Presence within the Development Envelope		
	Species	EBPC Act Status	Likelihood of Occurrence
	Flora		
	Elegant Spider-orchid (<i>Caladenia elegans</i>)	Endangered	Unlikely to occur – suitable habitat may be present in the development envelope there are no known records close by. Closest record is approximately 18 km south-west.
	Hoffman's Spider-orchid (<i>Caladenia hoffmanii</i>)	Endangered	Unlikely to occur – suitable habitat may be present in the development envelope but closest record approximately 45 km west-south-west.
	Kalbarri Spider-orchid (<i>Caladenia wanosa</i>)	Vulnerable	Unlikely to occur – suitable habitat may be present but closest record approximately 15 km north.
	Irwin's Conostylis (<i>Conostylis dielsii</i> subsp. <i>teres</i>)	Endangered	Unlikely to occur – suitable habitat may be present in the development envelope, but records occur > 30 km south.
	Small-flowered Conostylis (<i>Conostylis micrantha</i>)	Endangered	Unlikely to occur – suitable habitat may be present in the development envelope, but records occur > 30 km south.
	Native Foxglove (<i>Dasymalla axillaris</i>)	Critically Endangered	Unlikely to occur – disturbance opportunist, occurs further south of the development envelope.
	Kneeling Hammer-orchid (<i>Drakaea concolor</i>)	Vulnerable	Unlikely to occur – suitable habitat may be present in the development envelope there are no known records close by.
	Silky Eremophila (<i>Eremophila nivea</i>)	Endangered	Unlikely to occur – known distribution south of Morawa, approximately 85 km to the south.
	Varnish Bush (<i>Eremophila viscida</i>)	Endangered	Likely – previously recorded in the development envelope.



	Beard's Mallee (<i>Eucalyptus beardiana</i>)	Vulnerable	Occurs – previously recorded in the development envelope and recorded during the flora and vegetation survey (Focused Vision, 2020). Where the development envelope traverses the single population identified (55 individuals), the Proponent is proposing to underbore the pipeline within this area to avoid disturbance to the species. Therefore, there will be no clearing of this species.
	Jingymia Mallee (<i>Eucalyptus synandra</i>)	Vulnerable	May occur – suitable habitat likely present in the development area and the species has been recorded 5 km south.
	Pythara Grevillea (<i>Grevillea pythara</i>)	Endangered	Unlikely to occur – known distribution occurs in the Dalwallinu area.
	Net-veined Gyrostemon (<i>Gyrostemon reticulatus</i>)	Critically Endangered	Unlikely to occur – closest record is approximately 40 km south-west of the development envelope.
	<i>Styphelia marginata</i> (formerly <i>Leucopogon marginatus</i>)	Endangered	Unlikely to occur – suitable habitat likely present in the development envelope but was recorded 8 km south 35 years ago.
	<i>Ricinocarpos brevis</i>	Endangered	Unlikely to occur – suitable habitat unlikely present in the development envelope.
	Saltmat (<i>Roycea pycnophylloides</i>)	Endangered	Unlikely to occur – suitable habitat unlikely present in the development envelope.
	Long-flowered Nancy (<i>Wurmbea tubulosa</i>)	Endangered	Unlikely to occur – suitable habitat may be present within the development envelope, but closest known occurrence approximately 25 km west-south-west.
Birds			
	Curlaw Sandpiper (<i>Calidris ferruginea</i>)	Critically Endangered/ Migratory	Unlikely to occur – minimal habitat present, expected to be a vagrant to the development envelope.



	Carnaby's Cockatoo (<i>Calyptorhynchus latirostris</i>)	Endangered	Unlikely to occur – minimal habitat present, expected to be a visitor to the development envelope.
	Grey Falcon (<i>Falco hypoleucos</i>)	Vulnerable	Unlikely to occur – no habitat present, expected to be a vagrant to the development envelope.
	Malleefowl (<i>Leipoa ocellata</i>)	Vulnerable	Occurs – recorded, suitable habitat present and likely resident in the development envelope and surrounds.
	Eastern Curlew (<i>Numenius madagascariensis</i>)	Critically Endangered/ Migratory	Unlikely to occur – minimal habitat present, expected to be a vagrant to the development envelope.
	Night Parrot (<i>Pezoporus occidentalis</i>)	Endangered	Unlikely to occur – minimal habitat present.
	Princess Parrot (<i>Polytelis alexandrae</i>)	Vulnerable	Unlikely to occur – no habitat present, expected to be a vagrant to the development envelope.
	Australian Painted Snipe (<i>Rostratula australis</i>)	Endangered	Unlikely to occur – minimal habitat present, expected to be a vagrant to the development envelope.
Mammals			
	Chuditch (<i>Dasyurus geoffroii</i>)	Vulnerable	Unlikely to occur – no habitat present, outside current distribution.
Reptiles			
	Western Spiny-tailed Skink (<i>Egernia stokesii badia</i>)	Endangered	Possible – no rocky outcrops or log piles supporting the species were recorded within the development envelope. However, the species was recorded in close proximity to the development envelope. The potential for this species to reside in the development envelope is considered to be low.
Invertebrates			
	Shield-backed Trapdoor Spider (<i>Idiosoma nigrum</i>)	Vulnerable	Unlikely to occur – The classification of the Shield-backed Trapdoor Spider has been undergone taxonomic revision in 2018 (Kingfisher, 2020). While the species was formerly



MNES	Presence/Potential Presence within the Development Envelope		
			<p>thought to occur in the region, it is now restricted to the central and central-western Wheatbelt (Rix et al., 2018, cited in Kingfisher, 2020). Considering this, the Shield-backed Trapdoor Spider is unlikely to occur within the development envelope (Kingfisher, 2020).</p>
Migratory species	<p>A total of 10 migratory bird species (two of which are also listed as Threatened species) were identified to potentially occur within the development envelope, these include:</p> <ul style="list-style-type: none"> ▪ Curlew Sandpiper (<i>Calidris ferruginea</i>) (also listed as Critically Endangered); ▪ Eastern Curlew (<i>Numenius madagascariensis</i>) (also listed as Critically Endangered); ▪ Fork-tailed Swift (<i>Apus pacificus</i>); ▪ Grey Wagtail (<i>Motacilla cinerea</i>); ▪ Yellow Wagtail (<i>Motacilla flava</i>); ▪ Common Sandpiper (<i>Actitis hypoleucos</i>); ▪ Sharp-tailed Sandpiper (<i>Calidris acuminata</i>); ▪ Pectoral Sandpiper (<i>Calidris melanotos</i>); ▪ Osprey (<i>Pandion haliaetus</i>); and ▪ Common Greenshank (<i>Tringa nebularia</i>). <p>Migratory waterbirds are expected to occur in the region during periods of flooding. However, the Proposal does not contain critical habitat suitable to support ecologically significant numbers of migratory waterbirds (Kingfisher, 2020). While a few temporary wetlands, in the form of seasonally or ephemerally inundated clay pans or depressions, are present within discrete areas of the Proposal, no major freshwater lakes or extensive saltwater lake systems are traversed. Therefore, the only potential habitat present in the development envelope is seasonally or ephemerally inundated areas in broad drainages. These habitats are limited in extent within the development envelope (drainage lines encompass approximately 290 ha or approximately 2%) and significance as waterbird habitat. Intersection of the Proposal with</p>		



MNES	Presence/Potential Presence within the Development Envelope
	<p>major watercourses is limited within the alignment, with the key watercourses being Tenindewa Creek, the upper reaches of the Irwin River and Salt Creek. Therefore, due to a lack of suitable habitat, these species are unlikely to occur within development envelope, except as occasional vagrants (Kingfisher, 2020).</p> <p>Regionally significant lakes occur adjacent to the pipeline (e.g. Lake Noondie) but the associated habitats suitable for migratory waterbirds do not occur in the Proposal. As a result, the habitat within the development envelope is not considered to be “important” under the EPBC criteria (Kingfisher, 2020).</p> <p>Migratory shorebirds and waterbirds are also wide ranging and highly mobile and, as such, it is considered unlikely that the implementation of the Proposal will adversely affect the availability of suitable habitat in the local and surrounding areas.</p>
Great Barrier Reef Marine Park	None present
Nuclear actions	None present
A water resources in relation to coal seam gas development and large coal mining development	None present

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