West Pilbara Iron Ore Project Stage 2

Hardey Referral Form and Proposal Overview

Prepared by API Management Pty Ltd

GOVERNMENT OF WESTERN AUSTRALIA

Environmental Protection

EPA REFERRAL FORM PROPONENT

Referral of a Proposal by the Proponent to the Environmental Protection Authority under Section 38(1) of the Environmental Protection Act.

1. PURPOSE OF THIS FORM

Section 38(1) of the *Environmental Protection Act 1986* (EP Act) provides that where a development proposal is likely to have a significant effect on the environment, a proponent may refer the proposal to the Environmental Protection Authority (EPA) for a decision on whether or not it requires assessment under the EP Act. This form sets out the information requirements for the referral of a proposal by a proponent.

Proponents are encouraged to familiarise themselves with the EPA's *General Guide on Referral of Proposals* [see Environmental Impact Assessment/Referral of Proposals and Schemes] before completing this form.

A referral under section 38(1) of the EP Act by a proponent to the EPA must be made on this form. A request to the EPA for a declaration under section 39B (derived proposal) must be made on this form. This form will be treated as a referral provided all information required by Part A has been included and all information requested by Part B has been provided to the extent that it is pertinent to the proposal being referred. Referral documents are to be submitted in two formats – hard copy and electronic copy. The electronic copy of the referral will be provided for public comment for a period of 7 days, prior to the EPA making its decision on whether or not to assess the proposal.

CHECKLIST

Before you submit this form, have you

	Yes	No
Completed all the questions in Part A (essential)	☑	
Completed all applicable questions in Part B	☑	
Included Attachment 1 – location maps	☑	
Included Attachment 2 – additional document the proponent wishes to provide • West Pilbara Iron Ore Project Stage 2 Hardey Proposal Overview • West Pilbara Iron Ore Stage 2 Hardey Proposal Supporting Information	☑	
Included Attachment 3 – confidential information (if applicable)	NA	
Enclosed the CD of all referral information, including spatial data and contextual mapping but excluding confidential information.	☑	

Following a review of the information presented in this form, please consider the following question. (A response is Optional)

DO YOU CONSIDER THE PROPOSAL REQUIRES FORMAL ENVIRONMENTAL IMPACT ASSESSMENT?
☑ YES ☐ NO ☐ NOT SURE
IF YES, WHAT LEVEL OF ASSESSMENT?
☑ASSESSMENT ON PROPONENT INFORMATION
☐ PUBLIC ENVIRONMENTAL REVIEW

PROPONENT DECLARATION (To be completed by the proponent)

I, …Piers Goodman……, *(full name)* declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature	Name (print) **Piers Goodman**
Position **Manager, Environment & Community**	Company **API Management Pty Ltd**
Date 10 July.2012	

PART A - PROPONENT AND PROPOSAL INFORMATION

(All fields of this Part must be completed for this document to be treated as a referral)

1.1 PROPONENT

Name	API Management Pty Ltd (API)
Joint Venture parties (if applicable)	Aquila Resources Limited (Aquila) American Metals and Coal International Inc. (AMCI)
Postal Address	Level 2 Aquila Centre 1 Preston Street Como WA 6152
Key proponent contact for the proposal • Name • Address • Phone • Email	Piers Goodman Manager Environment and Community API Management Pty Ltd Email: pgoodman@apijv.com.au Ph: (08) 9423 0222 Fax: (08) 9423 0233
Consultant for the proposal (if applicable) • Name • Address • Phone • Email	

1.2 PROPOSAL

Title	West Pilbara Iron Ore Project (WPIOP) Stage 2 - Hardey Proposal
Description	API Management Pty Ltd (API) is the proponent for the WPIOP Stage 2 Hardey Proposal (the Proposal), an iron ore mining and haulage operation. The Proposal is located approximately 50 km west-northwest of Paraburdoo in the Pilbara region of Western Australia. Production of up to 15 Mtpa of iron ore is planned for a period of up to 15 years. Ore would be mined by conventional open cut methods and transported via rail, approximately 150 km west-northwest, where it adjoins the southern end of the WPIOP Stage 1 railway.

Extent (area) of proposed ground disturbance	Up to 3,470 ha would be disturbed as part of the Proposal, comprising up to 650 ha in the mine area, up to 20 ha in the gas pipeline and up to 2,800 ha along the transport corridor.
Timeframe in which the activity or development is proposed to occur. (Include start and finish dates where applicable)	Construction and commissioning would occur from 2015 to 2017. Operations would occur from 2017.
Details of any staging of the proposal	No staging.
Is the proposal a strategic proposal?	No
Is the proponent requesting a declaration that the proposal is a derived proposal? If so, provide the following information on the strategic assessment within which the referred proposal was identified - • Title of the strategic assessment • Ministerial Statement number	No
Indicate whether, and in what way, the proposal is related to other proposals in the region.	The Proposal is a satellite development to the WPIOP Stage 1 Mine and Rail (Assessment No. 1767, Ministerial Statement 881). Ore would be transported via a railway that extends approximately 150 km west-northwest where it would link up with the WPIOP Stage 1 Mine and Rail. The Stage 1 railway would transport ore a further 285 km to a proposed deep-water port at Anketell Point, east of Karratha (WPIOP Anketell Point Port - Assessment No. 1794).
Does the proponent own the land on which the proposal is to be established? If not, what other arrangements have been established to access the land?	Land is not owned by the proponent. Access rights would be achieved via tenure granted under a State Agreement Act (in process), the *Mining Act 1978* and *Land Administration Act 1997.*
What is the current land use on the property, and the extent (area in hectares) of the property?	Low intensity pastoral activities and unallocated Crown land. Mine area: The identified iron ore deposits and exploration lease E47/1413 occurs on Rocklea Station. Rocklea Station has a total area of 379,791 ha. Transport corridor: The transport corridor traverses Mt Stuart, Wyloo, Cheela Plains and Rocklea Stations as well as 46 km of unallocated Crown land.

1.3 LOCATION

Name of the Shire in which the proposal is located	Shire of Ashburton
For urban areas – • street address • lot number • suburb • nearest road intersection	
For remote localities – • nearest town • distance and direction from that town to the proposal site	The Hardey Proposal is located approximately 50 km west-northwest of Paraburdoo in the Pilbara region of Western Australia.
Electronic spatial data - GIS or CAD on CD, geo-referenced and conforming to the following parameters: • GIS: polygons representing all activities and named • CAD: simple closed polygons representing all activities and named • datum: GDA94 • projection: Geographic (latitude/longitude) or Map Grid of Australia (MGA) • format: ArcView shapefile, Arcinfo coverages, Microstation or AutoCAD	Enclosed: Yes

1.4 CONFIDENTIAL INFORMATION

Does the proponent wish to request the EPA to allow any part of the referral information to be treated as confidential?	No
If yes, is confidential information attached as a separate document in hard copy.	N/A

1.5 GOVERNMENT APPROVALS

Is rezoning of any land required before the proposal can be implemented? If Yes, provide details.		No	
Is approval required from any Commonwealth or State Government agency or Local Authority for any part of the proposal? If yes, complete the table below -		Yes	
Agency/Authority	**Approval Required**	**Application lodged** **Yes / No**	**Agency/Local Authority contact/s for proposal**
Environmental Protection Authority (EPA)	The proposal may require approval under Part IV of the *Environmental Protection Act 1986* (EP Act).	Purpose of this document.	Mark Jefferies Mining and Industrial Assessment Manager Mining and Industrial Assessment Branch, OEPA The Atrium, Level 4, 168 St George's Terrace, Perth 6000.
Department of Environment and Conservation (DEC)/	The proposal will require Works Approvals and a Licence under Part V of the EP Act for crushing facilities, water treatment plants, waste disposal, sewage treatment plant, bulk fuel store and power generation. In the event the removal of declared Rare Flora cannot be avoided, approval to take will be sought under the provisions of the *Wildlife Conservation Act 1950* in accordance with any EPA recommendations. No declared Rare Flora have been recorded in the project area to date. A permit to clear native vegetation (for feasibility investigative works) under the EP Act was authorised on the 26th May 2011. This authorisation is subject to the granting of a section 91 from the Department of Regional Development and Lands.	No Yes (NVCP)	Grace Patorniti Environment Officer Native Vegetation Conservation Branch Department of Environment and Conservation Locked Bag 104, Bentley Drive Centre, Bentley 6983.

Department of Water (DoW)	Permits will be obtained from the DoW, under the *Rights in Water and Irrigation Act 1914*, for works associated with interference to the bed and banks of watercourses where structures such as bridges or crossings are proposed. Relevant licences will be obtained for the construction of wells and abstraction of groundwater.	Bed and Banks (pending). 5C and 26D Licences (for exploration, construction and operations).	Kevin Hopkinson Senior Natural Resource Management Officer Pilbara Region PO Box 836 Karratha 6714.
Department of Mines and Petroleum (DMP)	Application for Mining lease. Approval will be required from DMP to implement a mining proposal and programmes of work, under the *Mining Act 1978*.	No	The Environmental Officer Perth Inspectorate Environment Division Department of Mines & Petroleum 100 Plain Street East Perth 6004.
Department of Indigenous Affairs (DIA)	Where disturbance to Aboriginal Heritage sites cannot be avoided, approval will be sought from DIA under section 18 of the *Aboriginal Heritage Act 1972*.		TBA PO Box 7770 Cloisters Square Perth 6850.
Department of Regional Development and Lands	Approvals may also be sought for use of a pastoral lease for purposes other than pastoral, as appropriate.	No	Department of Regional Development and Lands Regional Manager – Pilbara Level 2, 140 William Street PERTH 6000.
Department of State Development (DSD)	Land tenure for the railway to be granted pursuant to a proposal to be approved by DSD pursuant to a State Agreement.	No	Project Officer 1 Adelaide Terrace East Perth 6004.

PART B - ENVIRONMENTAL IMPACTS AND PROPOSED MANAGEMENT

2. ENVIRONMENTAL IMPACTS

Describe the impacts of the proposal on the following elements of the environment, through the questions below:

(i) flora and vegetation ;

(ii) fauna ;

(iii) rivers, creeks, wetlands and estuaries;

(iv) significant areas and/ or land features;

(v) coastal zone areas;

(vi) marine areas and biota ;

(vii) water supply and drainage catchments;

(viii) pollution;

(ix) greenhouse gas emissions;

(x) contamination; and

(xi) social surroundings.

These features should be shown on the site plan, where appropriate.

For all information, please indicate:

(a) the source of the information; and

(b) the currency of the information.

2.1 Flora and Vegetation

* Do you propose to clear any native flora and vegetation as a part of this proposal?

(A proposal to clear native vegetation may require a clearing permit under Part V of the EP Act *(Environmental Protection (Clearing of Native Vegetation) Regulations 2004)*. Please contact the Department of Environment and Conservation (DEC) for more information.

(please tick)	☑ Yes	***If yes, complete the rest of this section***
	☐ No	***If no, go to the next section***

❑ How much vegetation are you proposing to clear (in hectares)?

It is proposed to clear up to 3,470 ha. This would comprise approximately 650 ha in the mine area, 20 ha in the gas pipeline and up to 2,800 ha along the transport corridor (including construction camps, borrow pits, access roads and ancillary infrastructure).

* Have you submitted an application to clear native vegetation to the DEC (unless you are exempt from such a requirement)?

☑ Yes ☐ No **If yes**, on what date and to which office was the application submitted of the DEC?

A permit to clear native vegetation under the EP Act was authorised on the 26th May 2011. This authorisation is subject to the granting of a section 91 from the Department of Regional Development and Lands. There were no appeals to the permit application. The permit covers an area of 64 ha for feasibility investigations to inform proposal design and environmental assessment and management.

❑ Are you aware of any recent flora surveys carried out over the area to be disturbed by this proposal?

☑ Yes ☐ No **If yes**, please attach a copy of any related survey reports and provide the date and name of persons / companies involved in the survey/s. (If no, please do not arrange to have any biological surveys conducted prior to consulting with the DEC.)

From 2008 to 2011, API completed a Level 2 vegetation and flora survey of the Proposal area in accordance with EPA Guidance Statement No. 51 (EPA, 2004).

* Has a search of DEC records for known occurrences of rare or priority flora or threatened ecological communities been conducted for the site?

☑ Yes ☐ No If you are proposing to clear native vegetation for any part of your proposal, a search of DEC records of known occurrences of rare or priority flora and threatened ecological communities will be required. Please contact DEC for more information.

Mine area

A search of the proposed mine area by the Protected Matters Search Tool indicated that there were no Threatened Ecological Communities or Threatened Flora listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

One terrestrial Threatened Ecological Community (TEC) was listed in region on the DEC Threatened Ecological Communities and Priority Ecological Communities (PECs) database '*Themeda* grasslands on cracking clays'.

No TECs or PECs have been recorded within 50 km of the mine area.

The DEC FloraBase and Western Australian Herbarium database searches indicated that two species listed as DRF, *Lepidium catapycnon* and *Thryptomene wittweri*, have been recorded within 50 km of the mine area (Astron, 21012a).

Transport corridor

A search of the proposed transport corridor by the Protected Matters Search indicated that there were no Threatened Ecological Communities or Threatened Flora listed under the EPBC Act.

One terrestrial Threatened Ecological Community (TEC) 'Themeda grasslands on cracking clays' (DEC, 2011a) and one Priority 3 Priority Ecological Community (PEC) Triodia sp. Robe River assemblages of mesas of the West Pilbara (previously named 'Triodia sp. Robe River assemblages of mesas of the Pilbara' was listed in the region on the DEC Threatened Ecological

Communities and Priority Ecological Communities database (DEC, 2012). No TECs PECs have been recorded within 50 km of the transport corridor (DEC, 2011b).

The DEC FloraBase and Western Australian Herbarium database searches indicated that two Declared Rare Flora species, *Lepidium catapycnon* and *Thryptomene wittweri* have been recorded within 30 km of the transport corridor (Astron, 2012b).

* Are there any known occurrences of rare or priority flora or threatened ecological communities on the site?

☑ Yes ☐ No **If yes**, please indicate which species or communities are involved and provide copies of any correspondence with DEC regarding these matters.

Mine area

Two hundred and ninety five (295) vascular flora species from 47 families and 131 genera have been identified during flora surveys (Astron, 2012a).

No Declared Rare Flora were recorded in the mine area or gas pipeline. One Priority flora species, *Nicotiana umbratica* (Priority 3) was recorded (Astron, 2012a).

No TECs or any PECs were recorded in the mine area (Astron, 2012a).

Transport corridor

Four hundred and thirteen (413) vascular flora species from 53 families and 159 genera were identified during flora surveys.

No Declared Rare Flora were recorded in the transport corridor. Three Priority flora were recorded in the transport corridor:

- *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301), Priority 3;
- *Triodia* sp. Robe River (M.E. Trudgen et al. MET 12367), Priority 3; and
- *Rhynchosia bungarensis*, Priority 4.

No TECs or PECs were recorded within the transport corridor (Astron, 2012b).

* If located within the Perth Metropolitan Region, is the proposed development within or adjacent to a listed Bush Forever Site? (You will need to contact the Bush Forever Office, at the Department for Planning and Infrastructure)

☐ Yes ☐ No **If yes**, please indicate which Bush Forever site is affected (site number and name of site where appropriate).

❑ What is the condition of the vegetation at the site?

Vegetation condition in the mine area ranged from Excellent (97.5%) to Poor (0.2%) (Astron, 2012a). Sites in poorer condition were generally associated with creeks and floodplains, exhibited a higher density of introduced species, particularly *Cenchrus ciliaris* (Buffel Grass), and showed evidence of grazing.

Vegetation condition in the transport corridor ranged from Excellent (82%) to Completely Degraded (1%) (Astron, 2012b). Sites of Excellent condition had few weed species present and had no or minimal signs of disturbance. Sites considered Completely Degraded typically had increased density of introduced species, in particular *Cenchrus ciliaris*.

2.2 Fauna

* Do you expect that any fauna or fauna habitat will be impacted by the proposal?

(please tick) ☑ Yes ***If yes, complete the rest of this section***

☐ No ***If no, go to the next section***

- Describe the nature and extent of the expected impact.

It is proposed to clear up to 3,470 ha of vegetation. This would comprise of approximately 650 ha in the mine area, 20 ha in the gas pipeline and up to 2,800 ha along the transport corridor. All vegetation is considered fauna habitat.

- Are you aware of any recent fauna surveys carried out over the area to be disturbed by this proposal?

☑ Yes ☐ No **If yes**, please attach a copy of any related survey reports and provide the date and name of persons / companies involved in the survey/s. (If no, please do not arrange to have any biological surveys conducted prior to consulting with the DEC.)

API has completed a level 2 fauna survey of the mine area and transport corridor during 2010 and 2011 in accordance with EPA Guidance Statement No. 20 (EPA, 2009) and EPA Guidance Statement No. 56 (EPA, 2004) (Biota, 2011).

API has also completed surveys for subterranean fauna between 2009 and 2011 in accordance with Guidance Statement 54a (EPA, 2007) (Biota 2009, Rockwater 2010 and 2012).

Aquatic fauna surveys were also conducted in 2010 and 2011 (WRM, 2011).

* Has a search of DEC records for known occurrences of Specially Protected (Threatened) fauna been conducted for the site?

☑ Yes ☐ No (please tick)

See below.

* Are there any known occurrences of Specially Protected (Threatened) fauna on the site? #

☑ Yes ☐ No **If yes**, please indicate which species or communities are involved and provide copies of any correspondence with DEC regarding these matters.

API completed four phases of fauna surveys between 2010 and 2011. Eight fauna species of conservation significance were recorded within the Proposal area (Biota, 2011), comprising three mammal and five bird species.

Pilbara Leaf-nosed Bat *Rhinonicteris aurantius* (Schedule 1); Ghost Bat *Macroderma gigas* (Priority 4); Western Pebble-mound Mouse *Pseudomys chapmani* (Priority 4); Australian Bustard *Ardeotis australis* (Priority 4); and Peregrine Falcon *Falco peregrinus* (Schedule 4).

Three Migratory (Schedule 3) species were also recorded: Great Egret *Ardea modesta*, Fork-tailed Swift *Apus pacificus* and Rainbow Bee-eater *Merops ornatus* (Table 1).

Table 1. Fauna of conservation significance potentially occurring and/or recorded in the Proposal area

Species	State (status)	Commonwealth (status)	Recorded in mine area	Recorded in transport corridor
Northern Quoll (*Dasyurus hallucatus*)	Schedule 1	Endangered	No	No
Pilbara Orange Leaf-nosed Bat (*Rhinonicteris aurantius*)	Schedule 1	Vulnerable	Yes (echolocation calls)	Yes (echolocation calls)
Pilbara Olive Python (*Liasis olivaceus barroni*)	Schedule 1	Vulnerable	No	No
Mulgara (*Dasycercus blythi* (cristicauda))	Schedule 1	Vulnerable	No	No
Peregrine Falcon (*Falco peregrinus*)	Schedule 4		No	Yes
Pilbara Flat-headed Blind Snake *Ramphotyphlops ganei*	Priority 1		No	No
Brush-tailed Mulgara (*Dasycercus blythi*)	Priority 4		No	No
Australian Bustard (*Ardeotis australis*)	Priority 4		No	Yes
Bush Stone-Curlew (*Burhinus grallarius*)	Priority 4		No	No
Flock Bronzewing (*Phaps histrionical)*	Priority 4		No	No
Ghost Bat (*Macroderma gigas*)	Priority 4		Yes (old scat)	Yes (one echolocation calls)
Grey Falcon (*Falco hypoleucos*)	Priority 4		No	No
Long-tailed Dunnart (*Sminthopsis longicaudata*)	Priority 4		No	No
Short-tailed Mouse (*Leggadina lakedownensis*)	Priority 4		No	No
Star Finch (*Neochmia ruficauda subclarescens*)	Priority 4		No	No
Western Pebble-mound Mouse (*Pseudomys chapmani*)	Priority 4		Yes (mounds)	Yes (mounds)
Notoscincus bulteri	Priority 4		No	No
Great Egret (*Ardea modesta*)	Schedule 3	Migratory	No	Yes
Fork-tailed Swift (*Apus pacificus*)	Schedule 3	Migratory	No	Yes
Rainbow Bee-eater (*Merops ornatus*)	Schedule 3	Migratory	Yes	Yes

Specimens of three groups that include SRE taxa were recorded in the vicinity of the transport corridor. These groups were mygalomorph (trapdoor) spiders, pseudoscorpions and snails (genus *Rhagada*).

Specimens of three groups that include SRE taxa were recorded in the vicinity of the mine area. These include mygalomorph (trapdoor) spiders, millipedes and snails (*Rhagada*, *Quistrachia* and *Bothriembryon* genus).

2.3 Rivers, Creeks, Wetlands and Estuaries

* Will the development occur within 200m of a river, creek, wetland or estuary?

(please tick) ☑ Yes ***If yes, complete the rest of this section***

☐ No ***If no, go to the next section***

The Proposal does not include, and is not in proximity to any wetlands listed as Ramsar sites or listed on the Directory of Important Wetlands in Australia. The nearest Directory wetland is Kookhabinna Gorge, in the Barlee Range Nature Reserve (approximately 60 km southwest of the transport corridor) and not linked by any tributaries with the Proposal.

The ephemeral Hardey River is the main surface water feature in the vicinity of the mine area.

The drainage systems within the proposed transport corridor are tributaries of the Ashburton River. The transport corridor crosses several watercourses including Beasley River, Horseshoe Creek, Duck Creek and Mettawandy Creek.

* Will the development result in the clearing of vegetation within the 200 m zone?

☑ Yes ☐ No **If yes**, please describe the extent of the expected impact.

The project would require the clearing of vegetation within the 200 m zone of a number of drainage systems, as noted below.

* Will the development result in the filling or excavation of a river, creek, wetland or estuary?

☑ Yes ☐ No **If yes**, please describe the extent of the expected impact.

Development of the mine area would require alteration to first order drainage systems in the catchment of the Hardey River.

The transport corridor crosses several watercourses including Beasley River, Horseshoe Creek, Duck Creek and Mettawandy Creek.

A bridge is required to cross both Duck Creek and the Beasley River. A number of culverts are incorporated into the rail design to cross the lesser watercourses and ensure minimum interference to drainage and surface water flows.

Will the development result in the impoundment of a river, creek, wetland or estuary?

☐ Yes ☑ No **If yes**, please describe the extent of the expected impact.

* Will the development result in draining to a river, creek, wetland or estuary?

☐ Yes ☑ No **If yes**, please describe the extent of the expected impact.

* Are you aware if the proposal will impact on a river, creek, wetland or estuary (or its buffer) within one of the following categories? (please tick)

Conservation Category Wetland	☐ Yes	☑ No	☐ Unsure
Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998	☐ Yes	☑ No	☐ Unsure
Perth's Bush Forever site	☐ Yes	☑ No	☐ Unsure
Environmental Protection (Swan & Canning Rivers) Policy 1998	☐ Yes	☑ No	☐ Unsure
The management area as defined in s4(1) of the Swan River Trust Act 1988/	☐ Yes	☑ No	☐ Unsure
Which is subject to an international agreement, because of the importance of the wetland for waterbirds and waterbird habitats (e.g. Ramsar, JAMBA, CAMBA) #	☐ Yes	☑ No	☐ Unsure

2.4 Significant Areas and/ or Land Features

* Is the proposed development located within or adjacent to an existing or proposed National Park or Nature Reserve?

☐ Yes ☑ No **If yes**, please provide details.

* Are you aware of any Environmentally Sensitive Areas (as declared by the Minister under section 51B of the EP Act) that will be impacted by the proposed development?

☐ Yes ☑ No **If yes**, please provide details.

* Are you aware of any significant natural land features (e.g. caves, ranges etc) that will be impacted by the proposed development?

☐ Yes ☑No **If yes**, please provide details.

No important landscape, natural feature or environmental icons occur within the Proposal area.

The closest sites listed on the State Register of Heritage Places (important landscapes) as geological monuments are Woongarra Gorge and Duck Creek Gorge, which are located approximately 1.6 and 3.5 km from the transport corridor, respectively.

2.5 Coastal Zone Areas (Coastal Dunes and Beaches)

* Will the development occur within 300m of a coastal area?

(please tick) ☐ Yes ***If yes, complete the rest of this section***

☑ No ***If no, go to the next section***

* What is the expected setback of the development from the high tide level and from the primary dune?

* Will the development impact on coastal areas with significant landforms including beach ridge plain, cuspate headland, coastal dunes or karst?

☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

* Is the development likely to impact on mangroves?

☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

2.6 Marine Areas and Biota

* Is the development likely to impact on an area of sensitive benthic communities, such as seagrasses, coral reefs or mangroves?

☐ Yes ☑ No **If yes**, please describe the extent of the expected impact.

* Is the development likely to impact on marine conservation reserves or areas recommended for reservation (as described in *A Representative Marine Reserve System for Western Australia*, CALM, 1994)?

☐ Yes ☑ No **If yes**, please describe the extent of the expected impact.

* Is the development likely to impact on marine areas used extensively for recreation or for commercial fishing activities?

☐ Yes ☑ No **If yes**, please describe the extent of the expected impact, and provide any written advice from relevant agencies (e.g. Fisheries WA).

2.7 Water Supply and Drainage Catchments

* Are you in a proclaimed or proposed groundwater or surface water protection area?

(You may need to contact the Department of Water (DoW) for more information on the requirements for your location, including the requirement for licences for water abstraction. Also, refer to the DoW website)

☑Yes ☐ No **If yes**, please describe what category of area.

The Proposal is located within the *Rights in Water and Irrigation Act 1914* proclaimed Pilbara Groundwater Area and Pilbara Surface Water Area.

* Are you in an existing or proposed Underground Water Supply and Pollution Control area?

(You may need to contact the DoW for more information on the requirements for your location, including the requirement for licences for water abstraction. Also, refer to the DoW website)

☐ Yes ☑ No **If yes**, please describe what category of area.

* Are you in a Public Drinking Water Supply Area (PDWSA)?

(You may need to contact the DoW for more information or refer to the DoW website. A proposal to clear vegetation within a PDWSA requires approval from DoW.)

☐ Yes ☑ No **If yes**, please describe what category of area.

* Is there sufficient water available for the proposal?

(Please consult with the DoW as to whether approvals are required to source water as you propose. Where necessary, please provide a letter of intent from the DoW)

☑ Yes ☐ No (please tick)

The main source of construction and operational water in the mine area would be from dewatering one of the orebodies.

The annual demand for water during the two year construction period of the transport corridor is up to 4 GLpa distributed along the 150 km length of the corridor. Preliminary studies by Aquaterra (2011) indicate that sufficient water is available from targeted aquifers.

* Will the proposal require drainage of the land?

☐ Yes ☑ No **If yes**, how is the site to be drained and will the drainage be connected to an existing Local Authority or Water Corporation drainage system? Please provide details.

* Is there a water requirement for the construction and/ or operation of this proposal?

(please tick) ☑ Yes ***If yes, complete the rest of this section***

☐ No ***If no, go to the next section***

❑ What is the water requirement for the construction and operation of this proposal, in kl/year?

The requirement for the mine area is 2.5 GLpa for a two year construction period and 1.5 GLpa during operations.

The requirement for the transport corridor (distributed over the approximately 150 km length) is 4GLpa for a two year construction period and 0.5 GLpa during operations.

* What is the proposed source of water for the proposal? (eg dam, bore, surface water etc.)

Groundwater, as described above.

2.8 Pollution

* Is there likely to be any discharge of pollutants from this development, such as noise, vibration, gaseous emissions, dust, liquid effluent, solid waste or other pollutants?

(please tick) ☑ Yes ***If yes, complete the rest of this section***

☐ No ***If no, go to the next section***

* Is the proposal a prescribed premise, under the Environmental Protection Regulations?

(Refer to the EPA *General Guide for Referral of Proposals to the EPA under section 38(1) of the EP Act 1986* for more information)

☑ Yes ☐ No **If yes**, please describe what category of prescribed premise.

A category 5 (a) ore crushing facilities greater than 50 000 tonnes per annum.

A category 52 (greater than 10 megawatts) diesel power plant may be required for the crushing and accommodation facilities, as defined under the Environmental Protection Regulations 1987 (WA), if diesel is chosen as the preferred fuel source.

A category 54 sewage facility.

A category 89 (Putrescible landfill site). The landfill would be located within the footprint of the waste rock landform and would be used for the disposal of inert and putrescible wastes generated during mine operations.

An application for a Works Approval and licences for the above prescribed premises under the *Environment Protection Act 1986 (WA)* would be made to the Department of Environment and Conservation following completion of the environmental impact assessment process.

* Will the proposal result in gaseous emissions to air?

☑ Yes ☐ No **If yes**, please briefly describe.

Greenhouse gas and other gases (e.g. SO_2 and NO_x) emissions from the Proposal would be generated through the combustion of hydrocarbons, clearing of native vegetation, use of explosives during blasting operation and the use of electricity.

* Have you done any modelling or analysis to demonstrate that air quality standards will be met, including consideration of cumulative impacts from other emission sources?

☑ Yes ☐ No **If yes**, please briefly describe.

Modelling has been completed on the impacts of the Proposal to air quality from fugitive dust emissions and products of combustion CO, NO_x and SO_2) (Environ, 2011).

Predicted levels of particulate matter, CO, NO_x and SO_2 from mine operations do not exceed the standards for nearby sensitive premises described in Table 2.

Table 2. Distance from mine area and transport corridor to potential receptors

Potential receptor	Distance from mine area (km)	Distance (at closest point) from transport corridor (km)
Accommodation Village	3.5	3.5
Cheela Plains Station homestead	15	15
Rocklea Station homestead	18	18
Wyloo Station homestead	112	12

* Will the proposal result in liquid effluent discharge?

☑ Yes ☐ No **If yes**, please briefly describe the nature, concentrations and receiving environment.

Treated effluent from a wastewater treatment plant will be discharged to an evaporation pond and/or irrigated onto a spray-field.

* If there is likely to be discharges to a watercourse or marine environment, has any analysis been done to demonstrate that the State Water Quality Management Strategy or other appropriate standards will be able to be met?

☑Yes ☐ No **If yes**, please describe.

API will seek approval to discharge excess groundwater from orebody dewatering in an unnamed drainage line within the catchment of the Hardey River.

Groundwater salinity ranged from 645 to 818 mg/L total dissolved solids.

* Will the proposal produce or result in solid wastes?

☑ Yes ☐ No **If yes**, please briefly describe the nature, concentrations and disposal location/ method.

The Proposal would produce general (office, packaging, administrative and domestic putrescible wastes), vehicle and equipment parts (oil filters, batteries, tyres, etc.), and industrial waste (scrap metal etc.). The predominant solid waste produced would be waste rock.

The waste rock material is typically pH neutral, of low electrical conductivity, low total oxidisable sulfur values, low acid neutralising capacity values, and are classified as non-acid forming. The waste rock also typically contains very low concentrations of environmentally significant metals/metalloids compared to background concentrations and applied health-based guideline values.

Management of solid waste would be governed by relevant legislation and API management plans.

* Will the proposal result in significant off-site noise emissions?

☐ Yes ☑ No **If yes**, please briefly describe.

The Proposal is located in a remote area, approximately 50 km west-northwest of Paraburdoo and approximately 15 km from the closest neighbouring pastoralist. The noise level at the nearest noise sensitive receiver, Cheela Plains homestead, is predicted to be inaudible.

* Will the development be subject to the Environmental Protection (Noise) Regulations?

☑ Yes ☐ No **If yes**, has any analysis been carried out to demonstrate that the proposal will comply with the Regulations?

Please attach the analysis.

The Proposal would be constructed and operated in accordance with the Environmental Protection (Noise) Regulations 1997.

Modelling of the noise impacts of the Proposal to sensitive receptors has occurred and the noise level to the nearest noise sensitive receiver is predicted to be inaudible.

* Does the proposal have the potential to generate off-site, air quality impacts, dust, odour or another pollutant that may affect the amenity of residents and other “sensitive premises” such as schools and hospitals (proposals in this category may include intensive agriculture, aquaculture, marinas, mines and quarries etc.)?

☐ Yes ☑ No **If yes**, please describe and provide the distance to residences and other “sensitive premises”.

The closest sensitive premise to the Proposal is a proposed accommodation village, located approximately 3.5 km from the mine area, and separated by a topographic feature.

Predicted levels of particulate matter, CO, NO_x and SO_2 from mine operations do not exceed the standards for nearby sensitive premises described in Table 2 (above).

* If the proposal has a residential component or involves “sensitive premises”, is it located near a land use that may discharge a pollutant?

☐ Yes ☑ No ☐ Not Applicable **If yes**, please describe and provide the distance to the potential pollution source

2.9 Greenhouse Gas Emissions

* Is this proposal likely to result in substantial greenhouse gas emissions (greater than 100 000 tonnes per annum of carbon dioxide equivalent emissions)?

☑ Yes ☐ No **If yes**, please provide an estimate of the annual gross emissions in absolute and in carbon dioxide equivalent figures.

Greenhouse gas emissions from the Proposal would be generated through the combustion of hydrocarbons, clearing of native vegetation and use of explosives during blasting operations.

An estimate of the greenhouse gas emissions are:

- up to 70,000 tonnes per annum for the mine area; and
- up to 60,000 tonnes per annum for rail corridor.

The total emission is less than 0.18% of the State's emissions, based on 2010 statistics (DCCEE, 2012).

* Further, if yes, please describe proposed measures to minimise emissions, and any sink enhancement actions proposed to offset emissions.

A preliminary Carbon Strategy has been developed (as per EPA Guidance 12), which includes targets for emissions reduction and sinks/offsets and procedures that can also be applied to the Proposal.

2.10 Contamination

* Has the property on which the proposal is to be located been used in the past for activities which may have caused soil or groundwater contamination?

☐ Yes ☑ No ☐ Unsure **If yes**, please describe.

* Has any assessment been done for soil or groundwater contamination on the site?

☐ Yes ☑ No **If yes**, please describe.

* Has the site been registered as a contaminated site under the Contaminated Sites Act 2003? (on finalisation of the CS Regulations and proclamation of the CS Act)

☐ Yes ☑ No **If yes**, please describe.

2.11 Social Surroundings

* Is the proposal on a property which contains or is near a site of Aboriginal ethnographic or archaeological significance that may be disturbed?

☐ Yes ☐ No ☑ Unsure **If yes**, please describe.

There are a number of Department of Indigenous Affairs (DIA) registered sites in the vicinity of the Proposal. Ethnographic and archaeological surveys are ongoing within the Proposal area.

API recognises the Traditional Owners' cultural association to country and the concerns regarding the potential to disturb sites. API would comply with the *Aboriginal Heritage Act 1972* and continue to consult with the Traditional Owners and their representatives.

A Cultural Heritage Management Plan (CHMP) would also be developed in consultation with representatives of the Traditional Owners and would be the primary tool for management of impacts on indigenous cultural heritage.

* Is the proposal on a property which contains or is near a site of high public interest (for example, a major recreation area or natural scenic feature)?

☐ Yes ☑ No **If yes**, please describe.

* Will the proposal result in or require substantial transport of goods, which may affect the amenity of the local area?

☑ Yes ☐ No **If yes**, please describe.

The Proposal involves the transport of up to 15 Mtpa of iron ore by rail.

3. PROPOSED MANAGEMENT

3.1 Principles of Environmental Protection

- Have you considered how your project gives attention to the following Principles, as set out in section 4A of the EP Act? (For information on the Principles of Environmental Protection, please see EPA Position Statement No. 7, available on the EPA web.)

1.	The precautionary principle.	☑ Yes	☐ No
2.	The principle of intergenerational equity.	☑ Yes	☐ No
3.	The principle of the conservation of biological diversity and ecological integrity.	☑ Yes	☐ No
4.	Principles relating to improved valuation, pricing and incentive mechanisms.	☑ Yes	☐ No
5.	The principle of waste minimisation.	☑ Yes	☐ No

- Is the proposal consistent with the EPA's Environmental Protection Bulletins/Position Statements and Environmental Assessment Guidelines/Guidance Statements (available on the EPA web)?

☑ Yes ☐ No

3.2 Consultation

- Has public consultation taken place (such as with other government agencies, community groups or neighbours), or is it intended that consultation shall take place?

☑ Yes ☐ No **If yes**, please list those consulted and attach comments or summarise response on a separate sheet.

Building on the engagement undertaken for the WPIOP Stage 1 proposal, API has consulted broadly during the course of ongoing investigation, design and evaluation of WPIOP Stage 2. Table 3 summarises the topics of discussion that have occurred with stakeholders.

Table 3. Proposal-specific topics of discussion

Stakeholder	Topics
Government agencies	
Office of the Environmental Protection Authority (OEPA)	Mine and rail development update.
	Environmental impact assessment processes and timing.
Department of Environment and Conservation, Environmental Management Branch and Science Division	Mine and rail development update.
	Environmental survey methodologies, extent and timing.
	Request for consideration of *Acacia* sp. Mulga Paraburdoo (P1), which may occur in the vicinity of the Proposal. Provision of survey results on species not recorded in Proposal area.
	Consideration of groundwater drawdown intersecting the Hardey River.
	Level of assessment potentially API.
Department of Mines and Petroleum	WPIOP Stage 1 and 2 update briefing.
	Approvals process, tenement applications and requirement for mining proposal.
Main Roads Western Australia	WPIOP Stage 1 and 2 update briefing.
	Discussion on infrastructure placement.
	Proximilty to Nanutarra Munjina Road.
Department of Indigenous Affairs	WPIOP Stage 1 and 2 update briefing.
Department of Water (Karratha office)	Stream diversion and surface water management.
	Mine-site water and dewatering management.
	Groundwater modelling development and results.
Indigenous groups (with representatives from Pilbara Native Title Service)	
Puutu Kunti Kurrama and Pinikura	WPIOP Stage 1 and 2 update briefing, including project layout sensitivities.
	Native title agreement negotiation.
	Working group meetings, including a site visit.
	Management of indigenous heritage archaeological and ethnographic sites.
	Survey methodologies and participation.

Stakeholder	Topics
Yinhawangka	Mine and rail development update, including project layout sensitivities.
	Working group meetings, including a site visit.
	Management of indigenous heritage archaeological and ethnographic sites.
	Survey methodologies and participation.
Local Government	
Shire of Ashburton	Mine and rail development update and presentation to the Shire Council Meeting and CEO.
	Responsibility for, and upgrading of, roads in the Shire.
	Plans for accommodation and air access for the FIFO workforce.
	Planning application requirements for mining activities.
	Potential interest in the Regional Water Strategy.
Local community	
Pastoralists	Mine and rail development update.
	Upcoming programmes of work at the Proposal site.
	Access and accomodation during feasibility investigations.
	Location of infrastructure and rail to minimise impacts on station activities and productivity.
	Project design – land and drainage characteristics and historical flood and fire events.

West Pilbara Iron Ore Project Stage 2

Hardey Proposal Overview

Prepared by API Management Pty Ltd

Front cover image: Matthew Galligan

WEST PILBARA IRON ORE PROJECT STAGE 2 – HARDEY PROPOSAL SUMMARY					
Report	Version	Prepared by	Reviewed by	Submitted	
				Copies	Date
Final Report for EPA review	0	API	PG	6	10/7/2012

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1 Summary and key characteristics

This document describes the main features of the West Pilbara Iron Ore Project Stage 2 Hardey Proposal, and summarises the environmental investigations and environmental impact assessment undertaken by API.

1.1 Overview

API Management Pty Ltd (API) is developing the West Pilbara Iron Ore Project (WPIOP). Stage 1 comprises a series of open cut mines south of Pannawonica, a railway and port facilities at Anketell Point (Anketell Port). The mine and rail components of WPIOP Stage 1 have been approved for implementation by the Minister for Environment

The West Pilbara Iron Ore Project Stage 2 Hardey Proposal (the Proposal) is a satellite development that builds on Stage 1 infrastructure. The Proposal is located approximately 50 km west-northwest of Paraburdoo in the Shire of Ashburton (Figure 1.1).

The Proposal consists of two major components:

1. A conventional open cut iron ore mining operation.
2. A transport corridor that extends from the mine area approximately 150 km west-northwest to connect to the southern end of the Stage 1 railway. Ore will be transported to Anketell Port for export.

The key characteristics of the Proposal are presented in Table 1.1 and illustrated in Figure 1.2 and Figure 1.3. A summary description of the Proposal is provided in Table 1.2.

Table 1.1. Key characteristics of the Proposal

Element	Location	Proposed Extent
Physical Elements		
Mine, accommodation village and associated infrastructure	Mine area Figure 1.2	Clearing no more than 650 within a 1060 ha disturbance envelope.
Railway and associated infrastructure	Transport corridor Figure 1.3	Clearing no more than 2,800 within a 150 km alignment inclusive of roads, borrow pits, laydown areas and construction camps.
Gas pipeline (if required)	Figure 1.3	Clearing up to 20 ha.
Operational elements		
Orebody dewatering	Mine area	Extraction of no more than 1.5 GLpa.
Water extraction	Mine area	No more than 2.5 GLpa for a two year construction period. No more than 1.5 GLpa during operations.
	Transport corridor	No more than 4 GLpa for a two year construction period. No more than 0.5 GLpa during operations.
Production rate	Mine area	10-15 Mtpa
Overburden material management	Mine area	In pit and out of pit placement. Pits will be backfilled above the pre-mining water table.

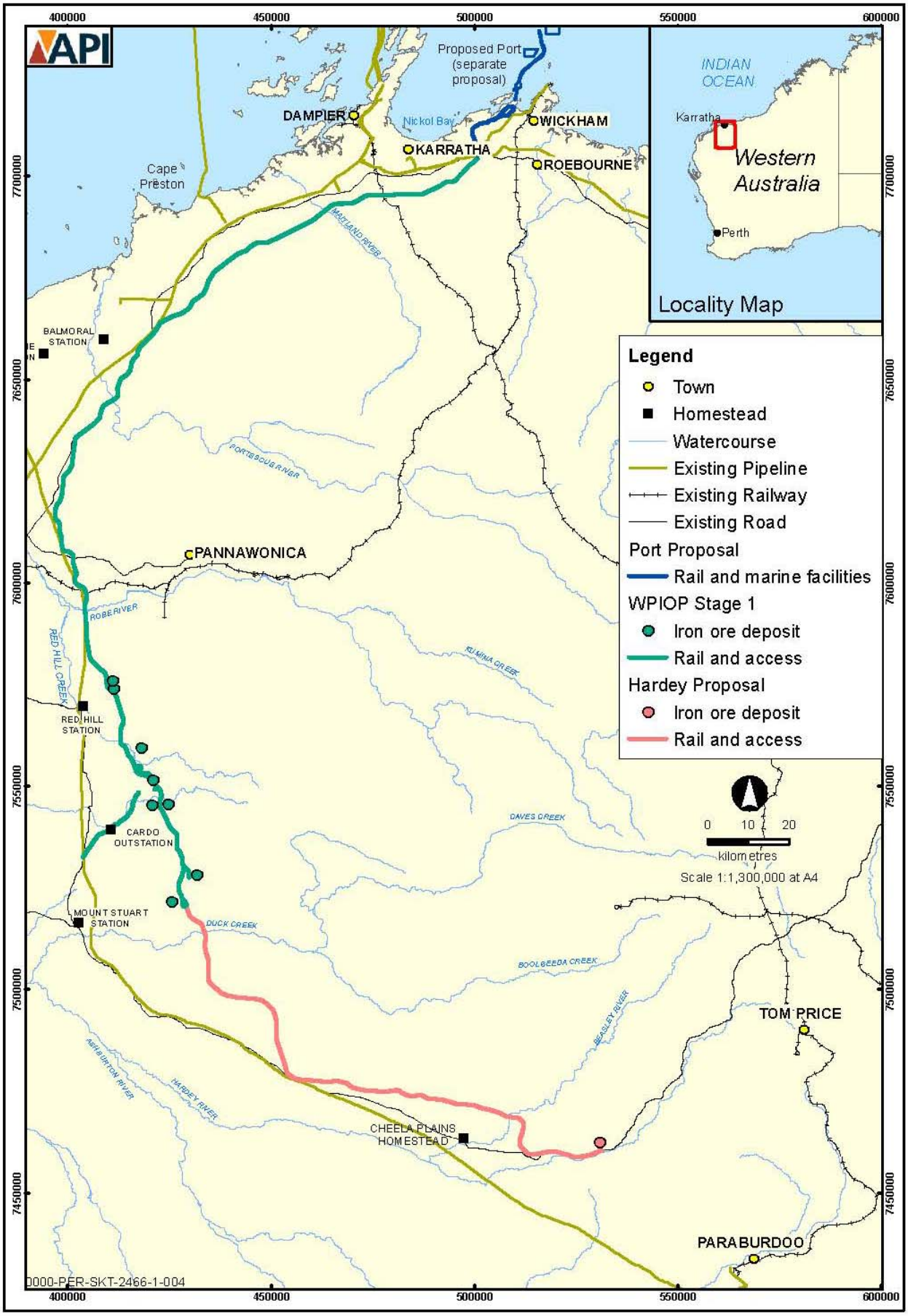

Figure 1.1. Location of WPIOP Stage 1 and WPIOP Stage 2 (Hardey) Proposals

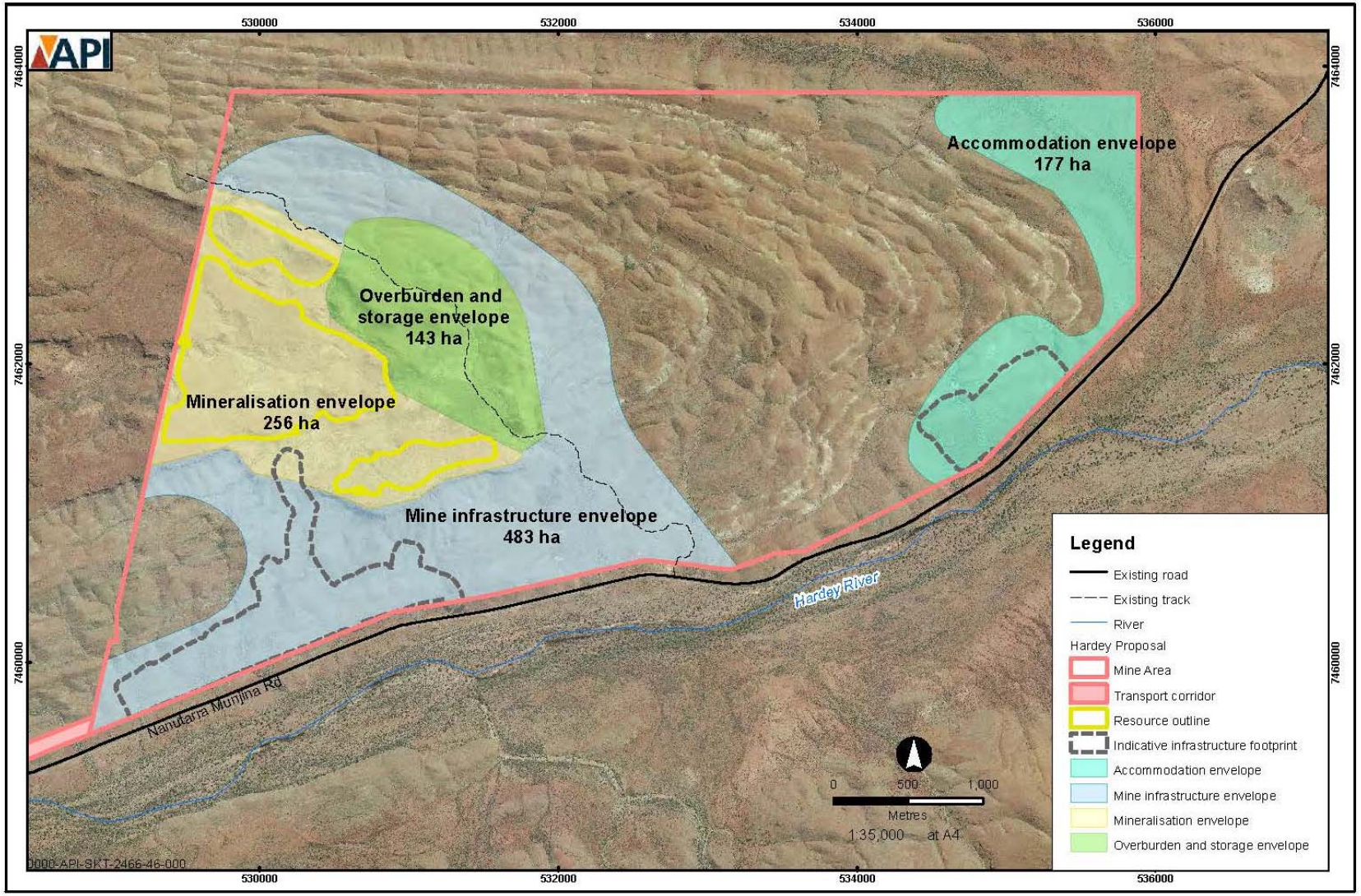

Figure 1.2. Indicative layout of the mine area

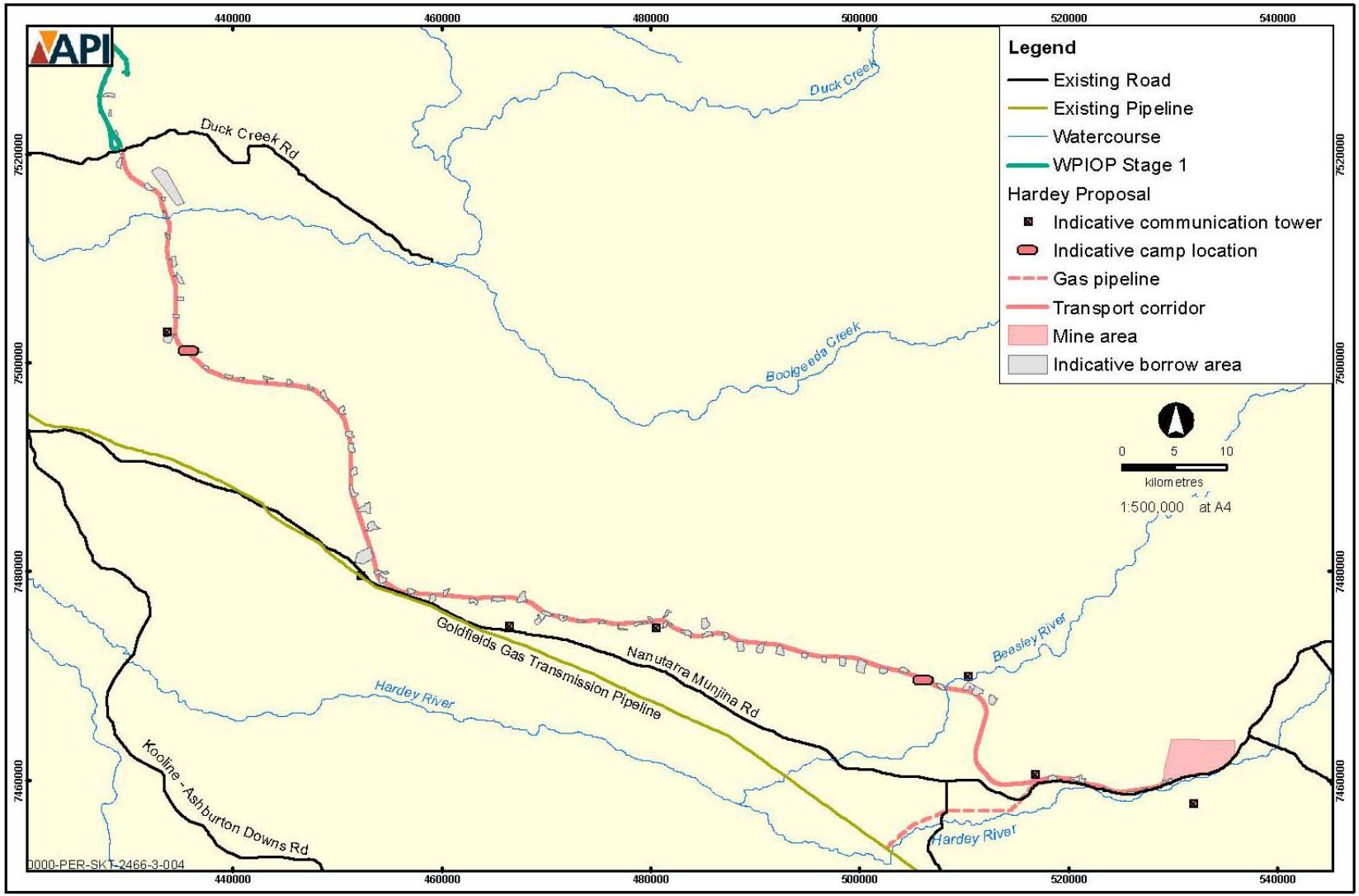

Figure 1.3. Indicative layout of the transport corridor

Table 1.2. Summary description of the Proposal

Area	Aspect	Description
Mine Area	Project life	10-15 years
	Production rate	10-15 Mtpa
	Resource	156 Mt (minimum) bedded iron deposit in 2 orebodies.
	Overburden material management	In pit and out of pit placement.
	Method	Open cut, conventional drill, blast and excavation.
	Dewatering	Orebody dewatering to a nominal maximum rate of 1.5 GLpa. Mining to 90 m below the water table (Brockman orebody). Dewatering rates will be optimised to match operational water demand and minimise the risk and volume of surplus water discharge. Mine pit will be backfilled to 5 m above the pre-mining water table.
	Water consumption	Groundwater will be abstracted from a local aquifer for orebody dewatering, and used for dust suppression, equipment washdown, construction and potable purposes. Up to 2.5 GLpa for a two year construction period. Up to 1.5 GLpa during operations.
	Vegetation disturbance	Up to 650 ha will be cleared for mine pits, overburden landforms, quarry, roads, accommodation and administrative buildings and other utilities.
	Ore processing	Crushing, grinding and screening ore.
	Power	The base generation capacity is up to 18 MW, which will be generated from diesel and/or gas.
	Natural gas pipeline	Up to 40 km spur from the Goldfield Gas Transmission Pipeline
	Roads	Service roads within the mine area will connect infrastructure and haul roads will deliver ore to crushing plants.
	Conveyors	Conveyors may be used to deliver ore to the crushing plants.
	Construction workforce	Up to 600
	Operations workforce	Up to 300
	Accommodation village	Approximately 3.5 km from the mine operations.
	Sewage treatment	Modular anaerobic/aerobic system and septic systems.
Transport corridor	Distance	150 km (approximately)
	Railway	Heavy-haul system.
	Major drainage crossings (bridge length)	Duck Creek (approximately 240 m) Beasley River (approximately 140 m)
	Access	A maintenance road will run parallel to the railway for the entire corridor.
	Water consumption	Groundwater for construction will be abstracted and distributed along the transport corridor. Some water will also be required for maintenance activities during operations. Up to 4 GLpa for a two year construction period. Up to 0.5 GLpa during operations.
	Vegetation disturbance	Up to 2,800 ha will be cleared for transport facilities, including railway, roads, borrow pits, signalling, communication towers. laydown areas and construction camps.

Area	Aspect	Description
	Construction workforce	Up to 800
	Operations workforce	Up to 40

Further information is provided in the *West Pilbara Iron Ore Stage 2 Hardey Proposal Supporting Information* document.

1.2 The proponent

API manages the Australian Premium Iron Joint Venture on behalf of joint venture participants Aquila Resources Ltd and American Metals and Coal International Inc (AMCI).

The proponent for the Proposal is:

API Management Pty Ltd
Level 2, Aquila Centre
1 Preston Street
COMO WA 6152
ABN: 66 112 677 595

The key contact for this Proposal is:

Mr Piers Goodman
Manager Environment and Community
API Management Pty Ltd
Level 2, Aquila Centre
1 Preston Street
COMO WA 6152
Ph: (08) 9423 0222
Fax: (08) 9423 0233
Email: wpiop@apijv.com.au

2 Supporting studies and survey effort

Over the past six years, API has utilised leading environmental specialists to characterise the existing environment, identify potential impacts and describe management measures to minimise and eliminate potential impacts associated with the Proposal (Table 2.1).

Specialists have completed several phases (multi-season) of terrestrial flora and vegetation, terrestrial and aquatic fauna, subterranean fauna and short-range endemic fauna baseline surveys (Table 2.2).

In addition, investigations into surface water, groundwater, soils, air quality, noise and waste rock have been completed and are part of ongoing project characterisation (Table 2.2).

Further information is provided in the *West Pilbara Iron Ore Stage 2 Hardey Proposal Supporting Information* document.

Table 2.1. Supporting studies timeline

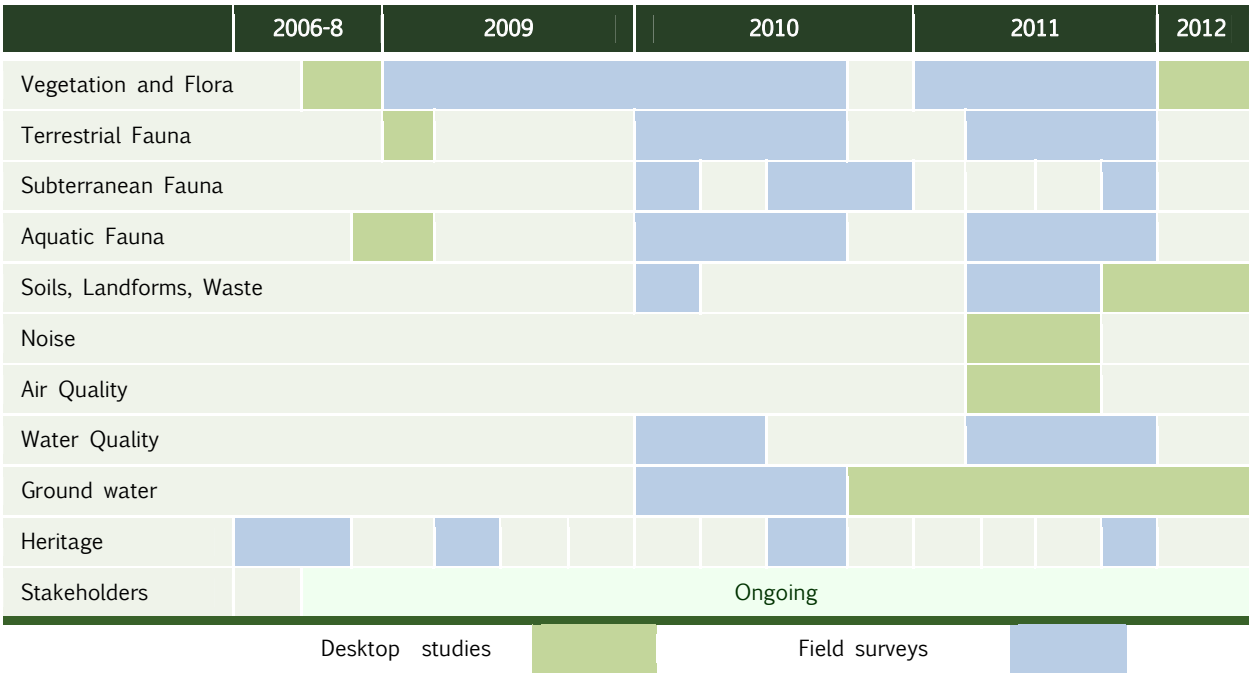

Table 2.2. Summary of supporting studies

Factor	Consultant	Survey effort	Report
Flora and Vegetation	Astron Environmental Services (Astron)	Level 1 2008-9 Level 2 Phase 1 2010 Phase 2 2011	API Hardey Resource Vegetation and Flora Survey (Phase 2) Final Report, March 2012 (2012a).
		Level 1 2008-9 Level 2 Phase 1 2010 Phase 2 2011	API Hardey Rail Corridor and Borrow Pits Vegetation and Flora Survey (Phase 2) Final Report, March 2012 (2012b).
		Desktop 2012	API Hardey Rail Corridor Desktop Risk Assessment for Potential Surface Water Flow Impacts, April 2012 (2012c).
Fauna	Aston (Bob Bullen)	Targeted Survey Spring 2011	Hardey Project Pilbara Leaf-nosed Bat (*Rhinonicteris aurantius*) Habitat and Activity Assessment, September 2011 (2011).
	Biota Environmental Services (Biota)	Level 1 2009-10	West Pilbara Iron Ore Project: Hardey Deposit and Rail Corridor (Level 1), March 2010 (2010).

Factor	Consultant	Survey effort	Report
	Biota	Level 2 Phase 1 Winter 2010 Phase 2 Spring 2010 Phase 3 Autumn 2011	Hardey Rail Corridor and Deposit Level 2 Fauna Survey, November 2011 (2011).
	Wetland Research Management (WRM)	Pre / Post Wet Jan and May 2010	Hardey Resource: Aquatic Ecosystem Surveys Pre and Post Wet 2010, January 2011 (2011a).
	WRM	Post wet (April) 2011	Hardey Resource: Aquatic Ecosystem Surveys Post Wet Sampling 2011. Final Report November 2011 (2011b).
Stygofauna Fauna	Rockwater Pty Ltd (Rockwater)	Phases 1-5 2010	Hardey Project Subterranean Fauna Sampling Programme, July 2011 (2011)
Troglofauna Fauna	Rockwater	Phases 1-7 2010 and 2011	Hardey Project Subterranean Fauna Sampling Programme, July 2011 (2011).
Groundwater	Rockwater	Desktop 2010	Hardey Project – Water Supply and Pit Dewatering Evaluation and Recommended Drilling Programme, February 2010 (2010).
		Field Programme 2010	Hardey Project – Results of Groundwater Modelling Scenarios, March 2011 (2011).
		Desktop 2011	Hardey Project - Drilling Bore Completion and Groundwater Modelling Report, August 2011 (2011).
	Aquaterra	Desktop 2010	Water Supply Desktop Study for the Hardey Deposit Rail Construction, March 2010 (2010).
		Desktop 2011	Water Supply Desktop Study for the Hardey Deposit Rail Construction Report, August 2011 (2011).
Surface Water	WorleyParsons	Desktop Phase 1	West Pilbara Iron Ore Project - Stage 1A (Hardey) - PFS Basis of Design for Hardey Mine, 2010 (2010).
		Desktop Phase 2	West Pilbara Iron Ore Project - Stage 1A (Hardey) - PFS Desktop Hydrology Report, June 2010 (2010).
		Desktop Phase 3	West Pilbara Iron Ore Project - Stage 1A (Hardey) - Mine Pit and Waste Dump Drainage Report, August 2010 (2010).
		Desktop Phase 4	API West Pilbara Iron Ore Project - Stage 2 (Hardey) Hardey Surface Water Investigations, September 2011 (2011).
Noise	Lloyd George Acoustics. Pty ltd	Desktop 2011	Noise Impact Assessment, West Pilbara Iron Ore Hardey Mine Project, June 2011 (2011).
Particulates	Environ Pty Ltd	Desktop 2011	Particulate Modelling Assessment for Proposed Mining Operations 15 Mtpa Scenario, November 2011 (2011).
Soil and Landforms	D.C. Blandford & Associates Pty Ltd	Field Programme 2010	An Investigation into the Soils and Soil Landscapes of the Hardey Project Area (Incorporating Waste Characterisation), March, 2011 (2011).
Waste Characterisation	RGS Environmental Pty Ltd (RGS)	Analysis Phase 1 2010	Geotechnical Assessment of Waste Rock from the Hardey Iron Ore Project (2010).
		Analysis Phase 2 2012	Hardey Iron Ore Project – Desktop Review and Gap Analysis, April 2012 (2012).

3 Stakeholder consultation

Building on the engagement undertaken for the WPIOP Stage 1 proposal, API has consulted broadly during the course of ongoing investigation, design and evaluation of WPIOP Stage 2.

The method of consultation varied depending on the forum, subject matter and purpose. The main forms of communication undertaken may be categorised as:

- broad project briefings and presentations;
- API/stakeholder meetings and discussions, including those undertaken on API's behalf by consultants (e.g. specific investigation methodologies and approach);
- written communications, distribution of project updates; and
- telephone discussions, generally regarding upcoming programmes of work.

Engagement with indigenous stakeholders will be maintained through a programme of heritage surveys, development of Cultural Heritage Management Plans, and participation in the native title process.

Table 3.1 summarises the topics of discussion that have occurred with stakeholders. Further information is provided in the *West Pilbara Iron Ore Stage 2 Hardey Proposal Supporting Information* document.

Table 3.1. Proposal-specific topics of discussion

Stakeholder	Topics
Government agencies	
Office of the Environmental Protection Authority (OEPA)	Mine and rail development update.
	Environmental impact assessment processes and timing.
	Mine and rail development update.
Department of Environment and Conservation, Environmental Management Branch and Science Division	Environmental survey methodologies, extent and timing.
	Request for consideration of *Acacia* sp. Mulga Paraburdoo (P1), which may occur in the vicinity of the Proposal. Provision of survey results on species not recorded in Proposal area.
	Consideration of groundwater drawdown intersecting the Hardey River.
	Level of assessment potentially API.
Department of Mines and Petroleum	WPIOP Stage 1 and 2 update briefing.
	Approvals process, tenement applications and requirement for mining proposal.
Main Roads Western Australia	WPIOP Stage 1 and 2 update briefing.
	Discussion on infrastructure placement.
	Proximilty to Nanutarra Munjina Road.
Department of Indigenous Affairs	WPIOP Stage 1 and 2 update briefing.
Department of Water (Karratha office)	Stream diversion and surface water management.
	Mine-site water and dewatering management.
	Groundwater modelling development and results.
Indigenous groups (with representatives from Pilbara Native Title Service)	
Puutu Kunti Kurrama and Pinikura	WPIOP Stage 1 and 2 update briefing, including project layout sensitivities.
	Native title agreement negotiation.
	Working group meetings, including a site visit.
	Management of indigenous cultural heritage archaeological and ethnographic sites.

Stakeholder	Topics
	Survey methodologies and participation.
Yinhawangka	Mine and rail development update, including project layout sensitivities.
	Working group meetings, including a site visit.
	Management of indigenous cultural heritage archaeological and ethnographic sites.
	Survey methodologies and participation.
Local Government	
Shire of Ashburton	Mine and rail development update and presentation to the Shire Council Meeting and CEO.
	Responsibility for, and upgrading of, roads in the Shire.
	Plans for accommodation and air access for the FIFO workforce.
	Planning application requirements for mining activities.
	Potential interest in the Regional Water Strategy.
Local community	
Pastoralists	Mine and rail development update.
	Upcoming programmes of work at the Proposal site.
	Access and accomodation during feasibility investigations.
	Location of infrastructure and rail to minimise impacts on station activities and productivity.
	Project design – land and drainage characteristics and historical flood and fire events.

4 Environmental impact assessment

API has completed an assessment of the environmental factors of the Proposal. It is API's opinion that groundwater constitutes the main environmental factor for consideration, primarily due to the requirement to lower the water table by up to 90 m in the Brockman orebody and the resulting drawdown, which may affect riparian vegetation along the ephemeral Hardey River, 2 km south of the orebody (Figure 4.1).

The Proposal is not near conservation estate or other sensitive receptors and is unlikely to significantly impact any flora or fauna species of conservation significance, or short range endemic species.

The majority of predicted impacts, such as, vegetation clearing, weed dispersion, noise and dust emissions are typical of an iron ore mining and rail infrastructure project and can be managed through routine methods within the existing regulatory framework and API management systems.

The Proposal can be implemented in accord with the environmental objectives of the Environment Protection Authority.

Table 4.1 (mine area) and Table 4.2 (transport corridor) present a high level summary of the environmental factors and potential impacts associated with the Proposal.

Table 4.1. Summary assessment of the environmental factors in the mine area

Main environmental factor for consideration	
Groundwater	Dewatering up to 90 m below water table (Brockman deposit). Predicted drawdown extends to riparian vegetation on the Hardey River (2 km south of the orebody), potentially impacting on riparian vegetation. Pit void will be backfilled above pre-mining water table.
Other environmental factors	
Vegetation and flora	Limited occurrence of conservation significant species (non-core habitat). One P3 (*Nicotiana umbratica*). No DRF, TEC or PECs.
Fauna	Limited risk of impact to conservation significant species. Very low risk to SREs, stygofauna and troglofauna communities (small proportion of habitat loss). 4 species of conservation significance: 1 NES - Pilbara Leaf-nose Bat (low activity echolocation calls <15) 2 P4s - Ghost Bat (old scat), Western Pebble-mound Mouse 1 S3 / Migratory - Rainbow Bee-eater.
Surface water	Diversion of first order drainage lines. No wetlands or permanent water bodies in proximity.
Indigenous cultural heritage	Some surveys completed, consultation with Traditional owners ongoing, *Aboriginal Heritage Act 1972* and *Native Title Act 1993* apply.
Dust/Noise	No sensitive receptors in proximity. Managed through routine methods.
Landform, geology and soils	Landform of the mine area well represented in the region.
Climate change	Managed under design and operation efficiencies.
Conservation estate, non- indigenous heritage	None in proximity.
Weeds	No Declared Plants or weeds of National Significance recorded. *Argemone ochroleuca* subsp. *ochroleuca* (Mexican Poppy) and *Datura leichhardtii* (Native Thornapple) are recognised as Declared Plants in other parts of the WA but not in the municipal district of Ashburton. Standard hygiene control and procedures will apply.
Closure and rehabilitation	Managed through routine methods. *Mining Act 1978* applies

Table 4.2. Summary assessment of the environmental factors in the transport corridor

Main environmental factor for consideration	
NIL	
Other environmental factors	
Vegetation and flora	Limited occurrence of conservation significant species. 1 P3 (Indigofera sp. Bungaroo Creek (S. van Leeuwen 4301) 2 P4s. (*Triodia* sp. Robe River (M.E. Trudgen et al. MET 12367) and *Rhynchosia bungarensis*. No DRF, TEC or PECs.
Fauna	Limited risk of impact to conservation significant species. Very low risk to SREs, stygofauna and troglofauna communities. 8 species of conservation significance: 1 NES - Pilbara Leaf-nose Bat (< 50 echolocation calls) 3 P4s - Ghost Bat (1 echolocation call), Western Pebble-mound Mouse, Australian Bustard 1 S4 - Peregrine Falcon 3 S3 / Migratory - Rainbow Bee-eater, Fork-tailed Swift, Great Egret.
Surface water	Duck Creek and the Beasley River bridge crossings and other minor drainage lines (culverts). No wetlands.
Indigenous cultural heritage	Consultation with Traditional Owners ongoing, Aboriginal Heritage Act and Native Title Act apply.
Dust/Noise	No sensitive receptors in proximity.
Landform, geology and soils	Linear infrastructure across well represented landscape. No unique or distinguishing features.
Climate change	Managed under design and operation efficiencies.
Conservation estate, non-indigenous heritage	None in proximity.
Weeds	No Declared Plants or weeds of National Significance recorded. *Argemone ochroleuca* subsp. *ochroleuca* (Mexican Poppy) and *Datura leichhardtii* (Native Thornapple) are recognised as Declared Plants in other parts of the WA but not in the municipal district of Ashburton. Standard hygiene control and procedures will apply.
Closure and rehabilitation	Railway treated as long-term strategic infrastructure. Rehabilitation of construction footprint managed in a routine way.

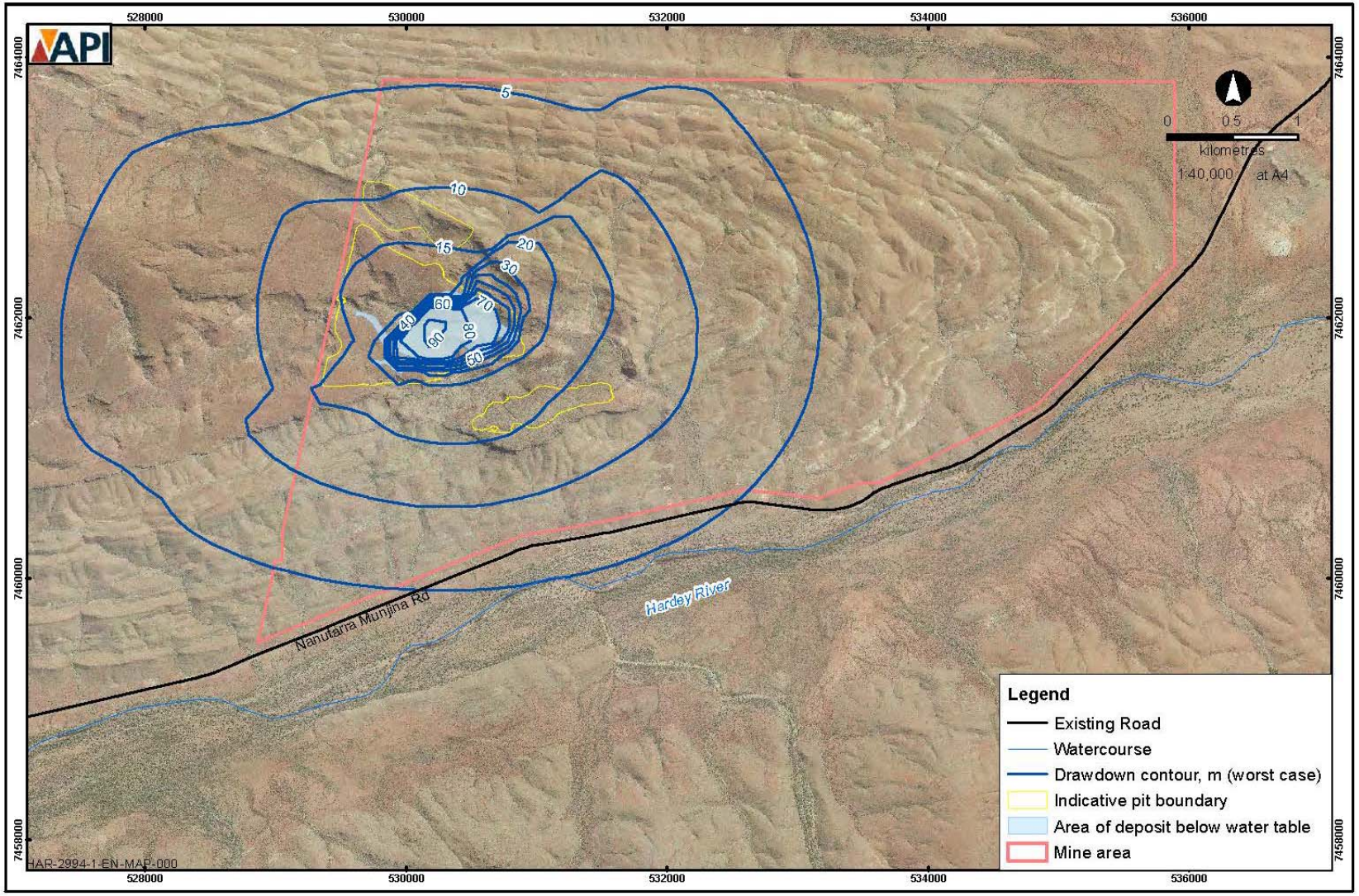

Figure 4.1. Predicted area below the water table and worst case groundwater drawdown contours

5 Summary of key findings

A summary of each the key environmental findings and reference to the relevant chapter in the *West Pilbara Iron Ore Stage 2 Hardey Proposal Supporting Information* document is provided in Table 5.1 (mine area) and Table 5.2 (transport corridor).

Table 5.1. Summary of key findings in the mine area

Factor	Key Findings	Chapter No.
Public Conservation System	No nature reserves, national parks, conservation parks, regional parks, marine parks, marine nature reserves and marine management areas occur within the Proposal area. Karijini National Park is the closest reserve, which is approximately 60 km east of the mine area (Figure 5.1).	20
Wetlands	The Proposal does not include, and is not in close proximity to, any wetlands listed as Ramsar sites or sites listed on the Directory of Important Wetlands in Australia. The nearest Directory wetland is Kookhabinna Gorge, which is in the Barlee Range Nature Reserve, approximately 124 km southwest of the mine area (Figure 5.1).	20
Rivers (Surface water)	No wild and scenic rivers occur within the Proposal area. The Proposal lies within the Ashburton River catchment. The ephemeral Hardey River and its tributaries are the main surface water features in the local area, and flow only after significant rainfall events. No permanent water bodies occur within the mine area. The proposed pits, overburden, associated roads and infrastructure will require the diversion of first order drainage lines of the Hardey River catchment.	13
Landscapes	No important landscape (National Heritage Places), natural feature or environmental icons occur within or in close proximity to the mine area (Figure 5.2).	19
Vegetation and flora	No Bush Reserve habitat occurs within the Proposal area. 24 vegetation associations have been described in the mine area and gas pipeline envelope, with no TECs or PECs recorded. 295 vascular flora species from 47 families and 131 genera were recorded. No Declared Rare Flora (DRF) were recorded. One Priority Flora, *Nicotiana umbratica* (Priority 3) was recorded. No species were considered to be outside their normal range (Figure 5.3). The footprint of the mine area is up to 650 ha and up to 20 ha for the gas pipeline.	16
Terrestrial and aquatic fauna	The mine area comprises five broad fauna habitat types. None of the habitats are considered to be of elevated conservation significance from the perspective of faunal values. Evidence of 42 bird, 14 mammal and 31 reptile species was recorded. 12 species recorded in the mine area were considered as regionally endemic (3 mammal and 9 reptile species). Aquatic fauna recorded (outside the Proposal boundary). 7 freshwater fish recorded in both the Hardey and Beasley rivers, including the Fortescue grunters (Priority 4) known from the Fortescue, Robe and Ashburton rivers; 135 microinvertebrates; and 163 macroinvertebrates. Evidence of 4 fauna species of conservation significance were recorded at the mine area (Figure 5.4). • Pilbara Leaf-nosed Bat *Rhinonicteris aurantius* (Schedule 1) (Low level echolocation calls <15); • Ghost Bat *Macroderma gigas* (Priority 4) (one old scat); • Western Pebble-mound Mouse *Pseudomys chapmani* (Priority 4); and • Rainbow Bee-eater *Merops ornatus* (Schedule 3) also listed as 'Migratory'. Although areas exhibiting the characteristics of Northern Quoll *Dasyurus hallucatus* (Schedule 1) habitat were recorded within the mine area, the species was not recorded in a survey effort totalling 1,500 trap nights over two years.	14

Factor	Key Findings	Chapter No.
Short-range endemics (SREs)	Potential SRE fauna recorded in the mine area include: mygalomorph (trapdoor) spiders (genus *Aname*); millipedes (*Austrotrophus* sp.) and the terrestrial snails, *Bothriembryon* sp. and *Quistrachia* sp., (empty shells) and *Rhagada* sp. (live and empty shells).	
Troglofauna	In 7 survey phases, 85 troglofaunal animals were collected on and off footprint, representing 12 orders. Pauropods dominated the collection, with several other groups represented in lower numbers. The Proposal area troglofauna community is considered moderately diverse and typical of Brockman Iron Formation habitats encountered by other studies in the Pilbara region. The isopod *Troglarmadillo* sp. B24 is currently known only from the Proposal area (eight specimens were collected from one hole) and may represent a new species. Proposed mine pits are small sections of larger formations and proportional loss of habitat is low.	15
Stygofauna	In 5 survey phases, 40 taxa were recorded in the region and 18 taxa were recorded in the mine area. Many of the species recorded have been collected by previous stygofauna surveys in the Pilbara and are known to have widespread distributions. Regional sites contained a high diversity and abundance, with approximately 74% of all stygal animals collected from outside the mine area. One species not confirmed to occur beyond the Proposal area, '*Maarka'* nr sp. *wolli* ms, may represent a new species. Based on the distribution of other amphipods found by this survey and the regional extent of the aquifers that constitute habitat, the likelihood of this species being restricted to the Proposal area is considered low.	12
Groundwater	Dewatering will be required to lower the water table up to 90 metres to enable the safe mining of approximately 30% of one of the two orebodies (the Brockman orebody). With an estimated mine water demand up to 1.5 GL per annum, the water obtained from dewatering will be predominantly consumed by operational demand. Up to 2.5 GLpa (for 2 years) will be required during the construction phase.	7
Indigenous cultural heritage	The mine area is situated within the Yinhawangka [WAD 340/10] Native Title Claimant area. There are a number of Department of Indigenous Affairs (DIA) registered cultural heritage sites in the vicinity of the mine area (Figure 5.5).	17
Landform and geology	The mine area occurs within the Hardey Syncline, located southwest of the Rocklea Dome. The orebodies occur within the sedimentary rocks of the Hamersley Group. The landforms of the mine area are well represented locally and regionally.	10
Soils	The surface soils of the mine area tend to be non-dispersive and exhibit moderate infiltration rates. Some waste rock materials have the potential to disperse. Organic carbon is low, indicating poor chemical fertility, poor moisture retention capability, and low levels of plant available nitrogen. Soil pH is variable, ranging between 5.9 (slightly acid) and 8.3 (strongly alkaline).	11
Amenity	The Proposal will generate noise and vibration as a result of ore extraction (including blasting), ore processing and vehicle movements. Iron ore processing, storage and transport infrastructure will be visible to travellers along Nanutarra-Munjina Road. The nearest residence, Cheela Plains homestead is approximately 15 km from the mine area.	8
Air quality (non-greenhouse)	The climate of the mine area is semi-arid and high levels of atmospheric dust are not uncommon during dry, windy conditions. Emissions of dust may result in localised deposition in the immediate vicinity of construction and operational areas.	9
Land use and tenure	The predominant land use in the region is pastoral grazing. The proposed mine area occurs within the Rocklea pastoral lease (Figure 5.6).	3

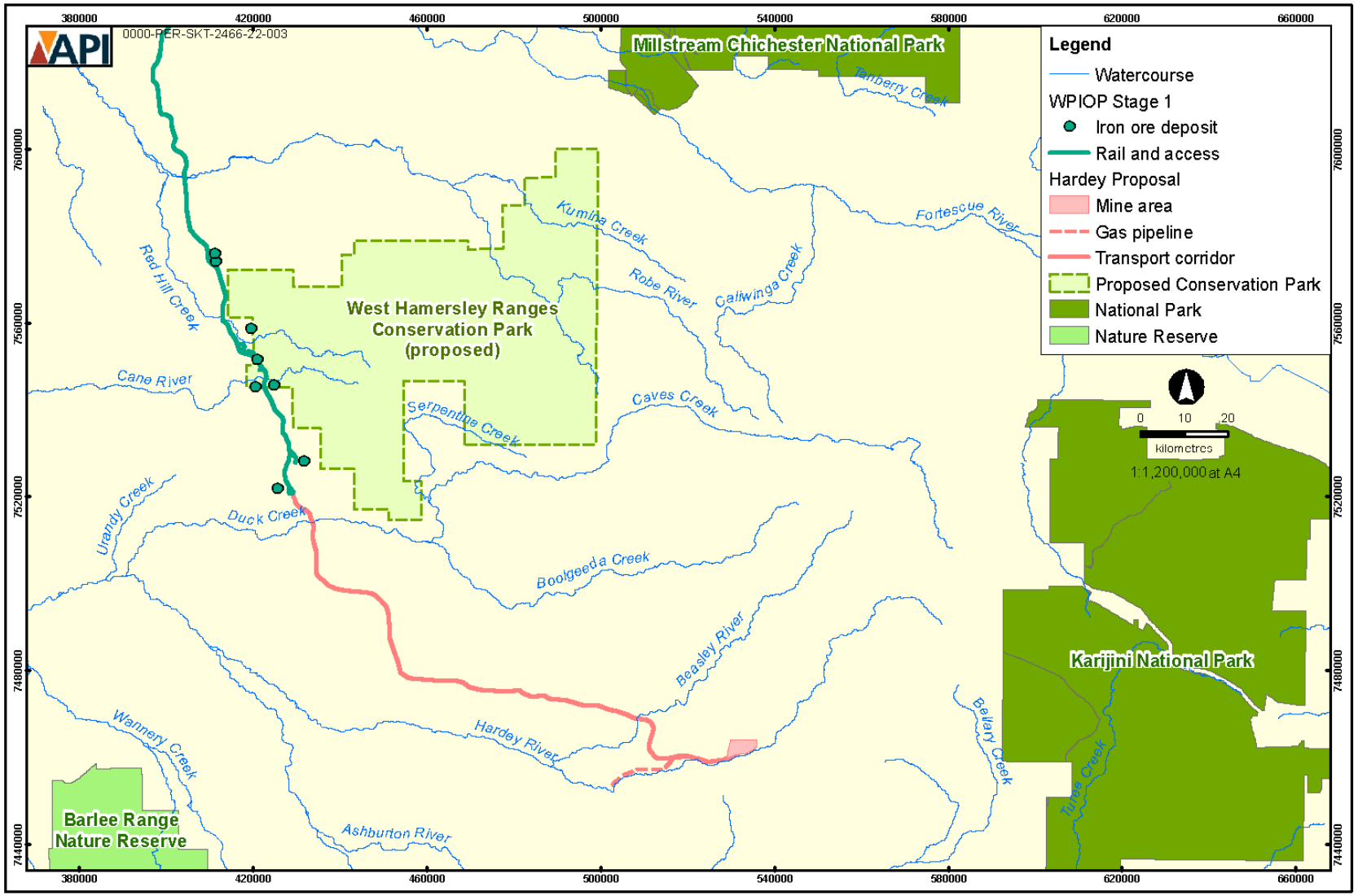

Figure 5.1. Conservation Reserves and National Parks in the region of the Proposal

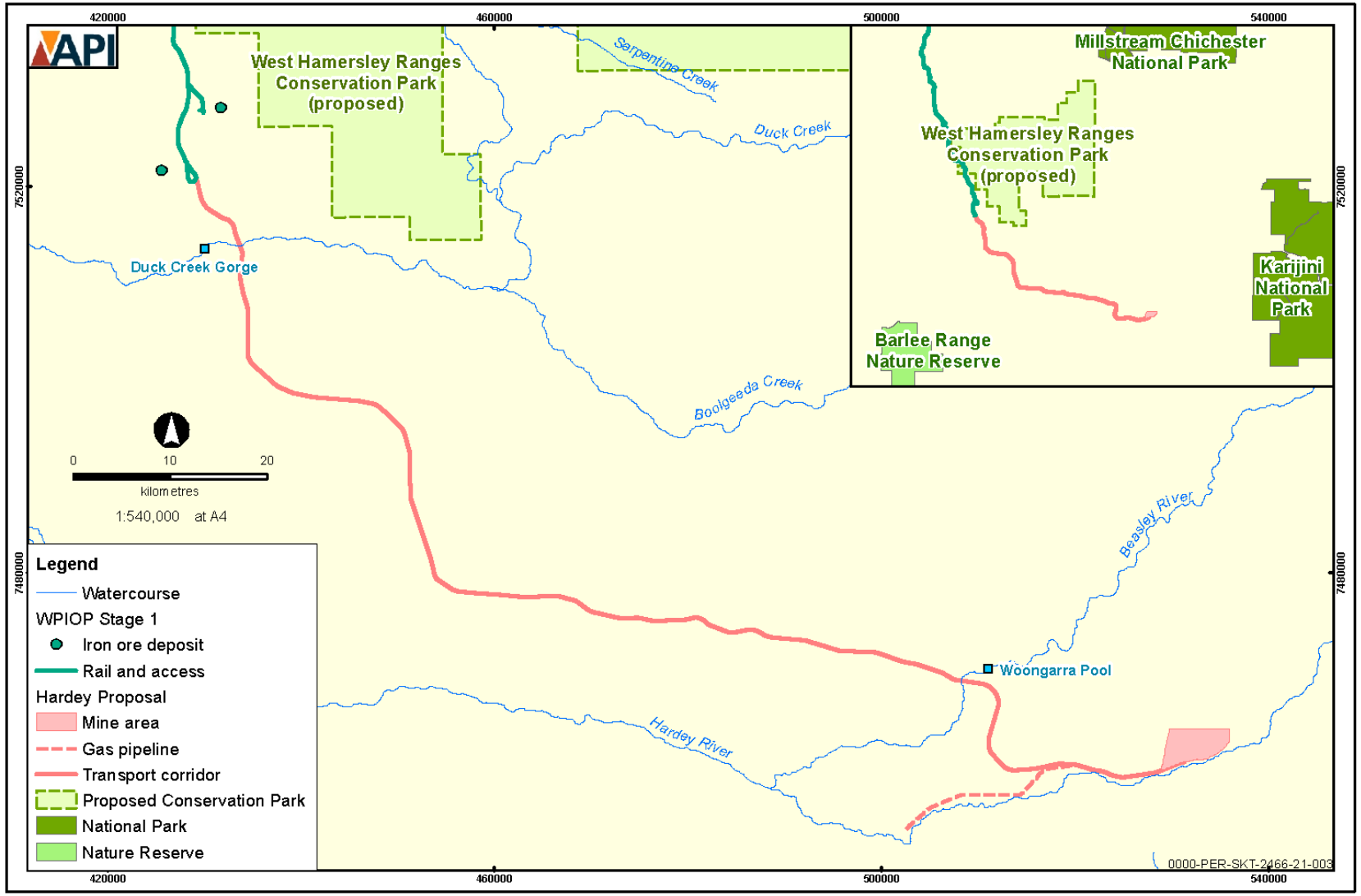

Figure 5.2. State Register of Heritage Places in the region of the Proposal

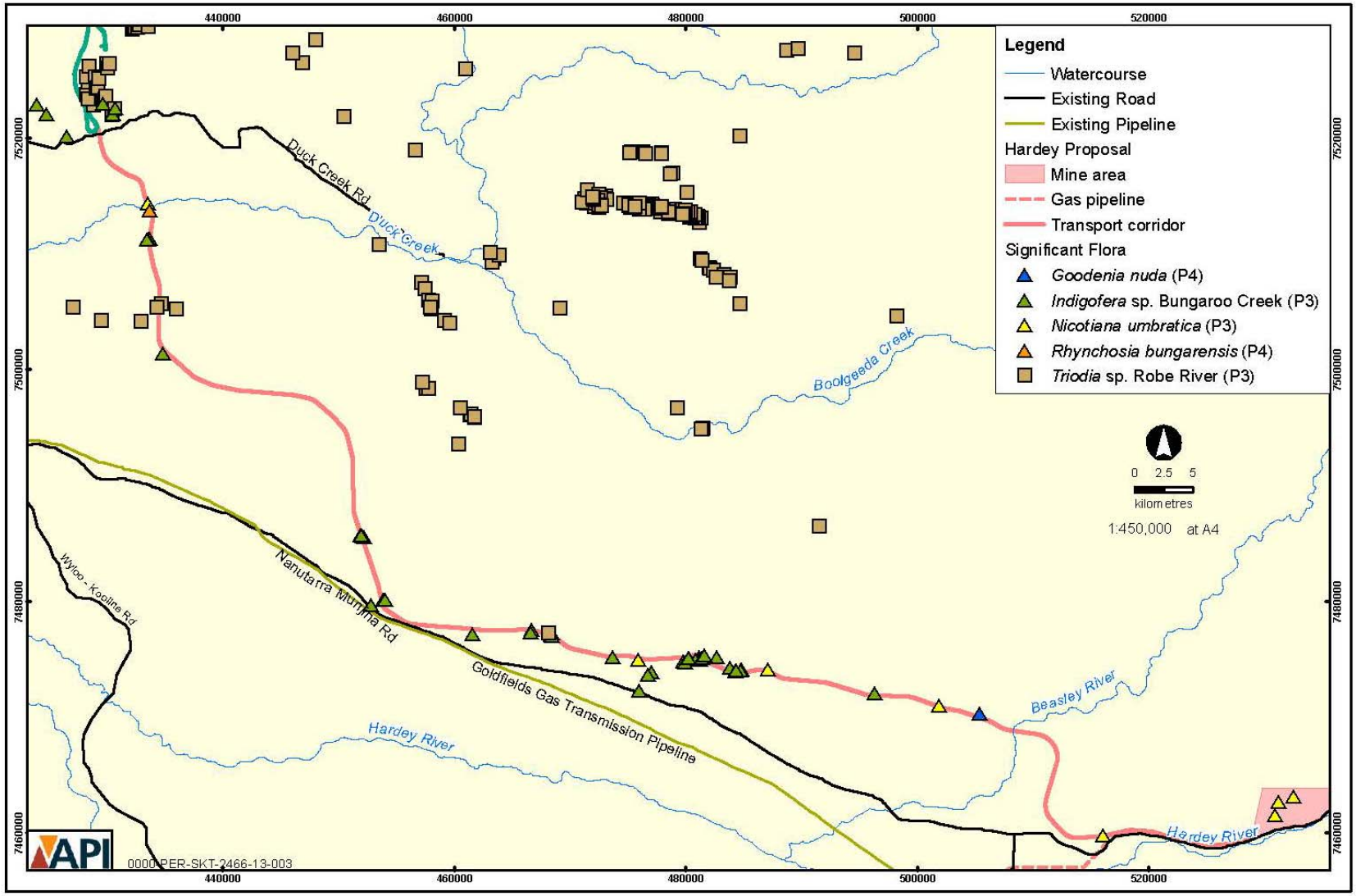

Figure 5.3. Priority Flora recorded in the vicinity of the Proposal

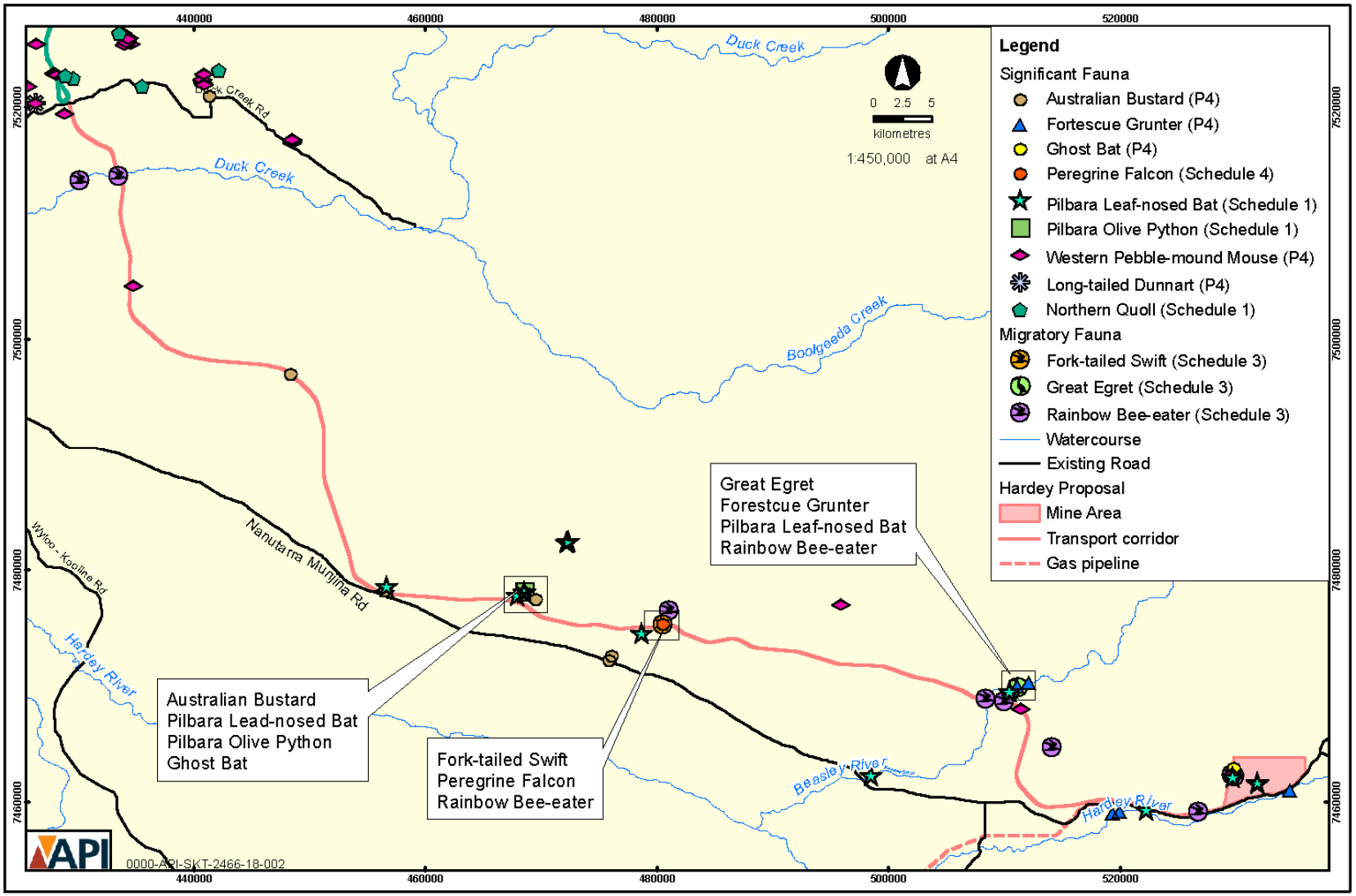

Figure 5.4. Records of fauna of conservation significance in the vicinity of the Proposal

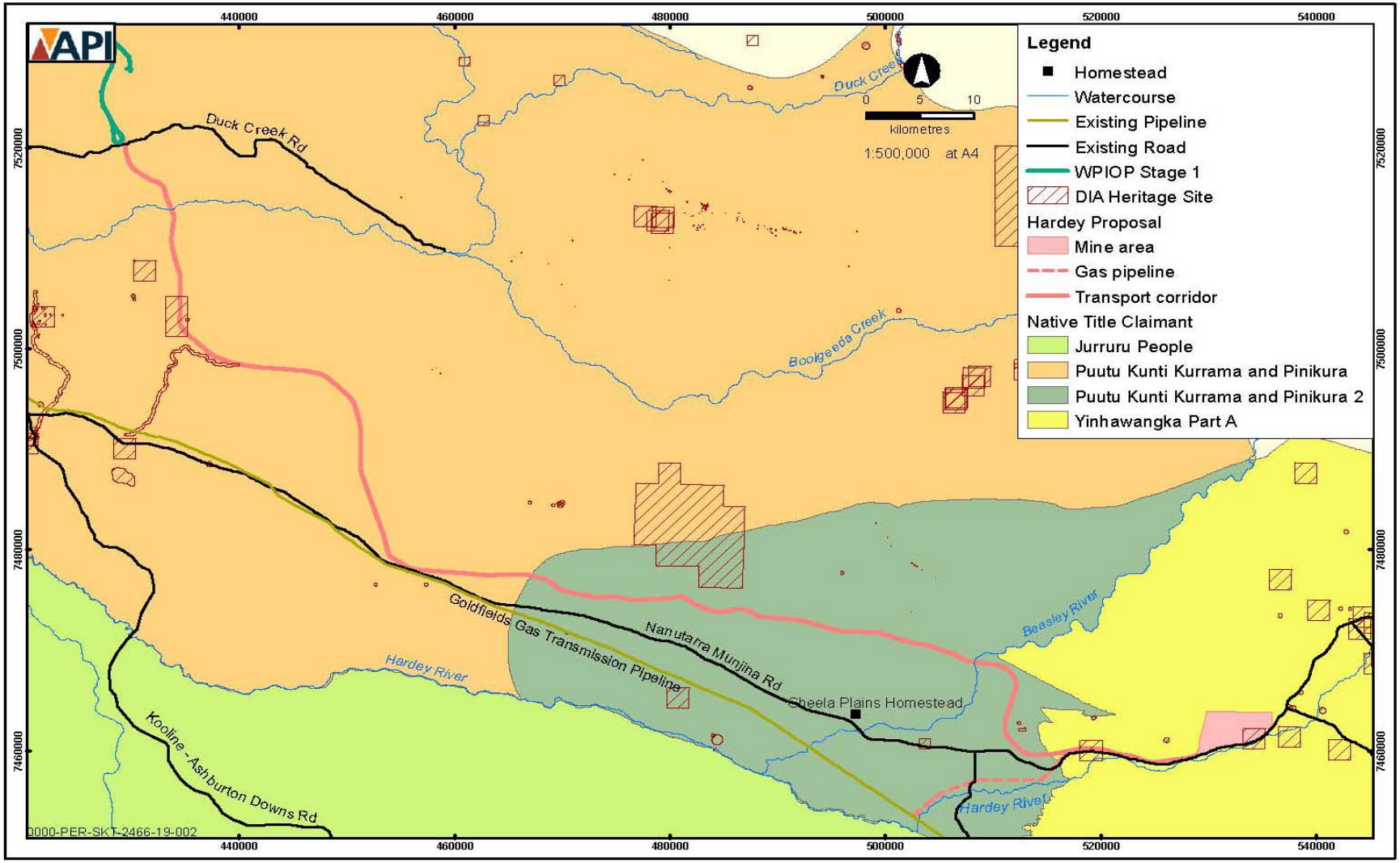

Figure 5.5. Registered DIA heritage cultural heritage sites in the vicinity of the Proposal

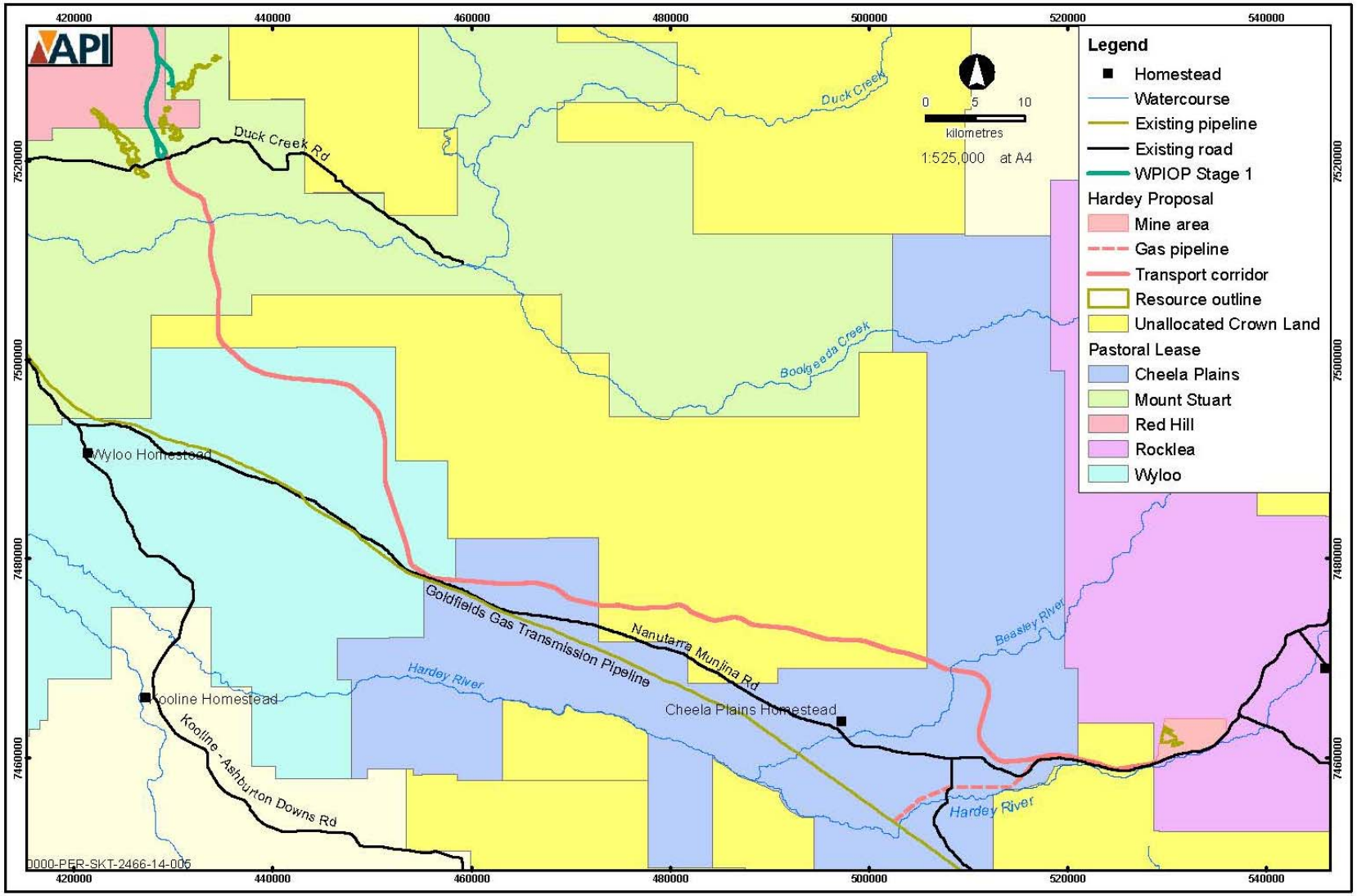

Figure 5.6. Location of Proposal relative to land use

Table 5.2. Summary of key findings in the transport corridor

Factor	Key Findings	Chapter No.
Public Conservation System	No nature reserves, national parks, conservation parks, regional parks, marine parks, marine nature reserves and marine management areas occur within, or in proximity to, the Proposal area. Karijini National Park is the closest reserve, which is approximately 60 km east of the transport corridor (Figure 5.1).	32
Wetlands	The Proposal does not include, and is not in close proximity to, any wetlands listed as Ramsar sites or sites listed on the Directory of Important Wetlands in Australia. The nearest Directory wetland is Kookhabinna Gorge, which is in the Barlee Range Nature Reserve, approximately 60 km southwest of the transport corridor.	32
Rivers (Surface water)	No wild and scenic rivers occur within the Proposal area. The Proposal lies entirely within Ashburton River catchment. Watercourses within the transport corridor are associated with the Ashburton River catchment. The transport corridor crosses several watercourses including Duck Creek, Beasley River, Horseshoe Creek, Gum Tree Creek and tributaries of Mettawandy Creek.	28
Landscapes	No important landscape (National Heritage Places), natural feature or environmental icons occur within the transport corridor. The closest sites of interest are Woongarra Gorge and Duck Creek Gorge, listed as geological monuments on the State Register of Heritage Places, which are located approximately 1.6 and 3.5 km from the transport corridor, respectively (Figure 5.2). The proposal will not impact on these sites,	30
Vegetation and Flora	No Bush Reserve habitat occurs within the Proposal area. 52 vegetation associations have been described within the transport corridor. No TECs or PECs recorded. 413 vascular flora species from 53 families and 159 genera have been identified in the transport corridor. No DRF was recorded in the transport corridor. Three Priority Flora were recorded: • *Indigofera* sp. Bungaroo Creek (S. van Leeuwen 4301), Priority 3; • *Triodia* sp. Robe River (M.E. Trudgen et al. MET 12367), Priority 4; and • *Rhynchosia bungarensis*, Priority 4 (Figure 5.3). One species, *Sporobolus caroli*, was considered outside of its normal range. The total footprint of the 150 km transport corridor is up to 2,800 ha.	22
Terrestrial and aquatic fauna	The transport corridor comprises five broad fauna habitat types. None of the habitats are considered to be of elevated conservation significance from the perspective of faunal values. Evidence of 72 bird, 17 mammal and 52 reptile species was recorded. This included three introduced fauna, (cattle, cats and mice). Evidence of 8 species of conservation significance were recorded in the proximity of the transport corridor. These were the: • Pilbara Leaf-nosed Bats (*Rhinonicteris aurantius*) (Schedule 1); • Ghost Bat *Macroderma gigas* (Priority 4) – foraging, no roosts; • Western Pebble-mound Mouse (*Pseudomys chapmani*) (Priority 4); • Peregrine Falcon (*Falco peregrinus*) (Schedule 4); • Australian Bustard (*Ardeotis australis*) (Priority 4); • Fork-tailed Swift (*Apus pacificus*) (Schedule 3, Migratory); • Great Egret (*Ardea modesta*) (Schedule 3, Migratory); and • Rainbow Bee-eater (*Merops ornatus*) (Schedule 3, Migratory) (Figure 5.4). No prospective core habitat for the Northern Quoll *Dasyurus hallucatus* occurs within the transport corridor.	27
Short-range endemics (SREs)	Potential SRE fauna recorded in the vicinity of the transport corridor include: possible mygalomorph (trapdoor) spiders, pseudoscorpions and snail specimens (*Rhagada* genus).	
Stygofauna	Groundwater abstraction will be dispersed over the 150 km length of the corridor and will occur predominantly in a two year construction period. Drawdown is predicted to	31

Factor	Key Findings	Chapter No.
	be localised and temporary. The temporary nature of the majority of groundwater abstraction along the transport corridor and the application of appropriate management controls will ensure that impacts to stygofauna habitat are minimised.	
Groundwater	The transport corridor is in the Pilbara groundwater proclaimed area. The demand for water during a two year construction period of the railway is estimated to be up to 4 GLpa. Up to 0.5 GLpa of water will be required during rail operations. The water requirement is primarily for railway maintenance.	23
Indigenous cultural heritage	The proposed transport corridor has a number of DIA registered sites in the vicinity (Figure 5.5). The transport corridor is situated within the area of Puutu Kunti Kurrama and Pinikura [WAD 6007/01 and WAD 126/05] and Yinhawangka [WAD 340/10] Native Title Claimant groups. Registered sites occurring within approximately 100 m of the transport corridor are: • Pilaru Creek (Mythological); and • Mundarie Pool (Ceremonial dance ground).	21
Soils	The transport corridor traverses a variety of land systems and encompasses many soil types.	29
Amenity	Current background noise and light levels are typical of a remote area with the closest residences being the Wyloo, Cheela Plains and Rocklea station homesteads. Predicted noise from rail operations is well below acceptable levels for rural residential premises.	25
Air quality (non-greenhouse)	The climate of the transport corridor is semi-arid and high levels of atmospheric dust are common during dry, windy conditions. Dust will be generated during construction (two years) and will be controlled primarily through standard suppression methods, minimising disturbance and rehabilitating as soon as practicable.	26
Land use and tenure	The predominant land use in the region is pastoral grazing. The proposed transport corridor transverses a number of pastoral leases including Cheela Plains, Mt Stuart, Rocklea, Wyloo and within unallocated Crown Land (Figure 5.6).	3

6 Closure

A comprehensive preliminary assessment of mine closure and rehabilitation has been undertaken as part of the *West Pilbara Iron Ore Stage 2 Hardey Proposal Supporting Information* document. Chapter 33 outlines the approach proposed by API to optimise land rehabilitation and ensure effective closure of the Proposal and has been structured to reflect the Guidelines for Preparing Mine Closure Plans, jointly developed by the Department of Mines and Petroleum (DMP) and the Environmental Protection Authority (EPA) (DMP and EPA, 2011).

API will prepare a Closure Plan. The Closure Plan will consider the matters identified in the EPA/DMP Guidelines and specifically address site-specific issues to be managed at closure, including final land use (anticipated to be pastoral), bunding of pit void and rehabilitation of the overburden storage areas to create safe and non-polluting landforms.

During closure planning, detailed mine planning and stakeholder consultation will be undertaken to inform long-term decisions. Relevant physical and biological data, including characterisation of materials, will be utilised to inform rehabilitation and closure planning.

The railway is considered long-term transport infrastructure servicing the west Pilbara region, with demand created by other projects made possible by the existence of WPIOP infrastructure. It is not proposed at this stage that the railway be removed on completion of the Proposal. The construction footprint associated with the transport corridor will be rehabilitated.

7 Conclusion

API has utilised leading environmental specialists to characterise the existing environment, identify potential impacts and describe management measures to minimise and eliminate potential impacts associated with the Proposal.

API considers that the environmental factors and potential associated impacts of the Proposal are limited in nature and can be managed through routine measures. The environmental factor identified by API that warrants most consideration is groundwater, due to the proposal to lower groundwater levels by up to 90 m in one orebody. Drawdown from orebody dewatering is predicted to extend to the Hardey River, 2 km south of the orebody, where groundwater levels may be lowered in the order of 5 m, potentially impacting riparian vegetation. API considers this a conservative (i.e. over-estimation) of potential impacts, primarily because: (i) the groundwater modelling to date has assumed a direct hydrological connection between the Hardey River and the Brockman orebody aquifer; and (ii) the periodic recharge of groundwater levels by flows in the Hardey River will offset any dewatering induced drawdown. On this basis, while dewatering currently constitutes a risk of environmental impact, API is not predicting the loss of any riparian vegetation on the Hardey River and commits to managing orebody dewatering to ensure this is achieved.

To attend specifically to the risk of drawdown impacts on Hardey River riparian vegetation, management will include the setting of contingency trigger groundwater levels between the dewatering site and the Hardey River, and at the Hardey River. Vegetation condition will also be monitored.

API will aim to minimise overall groundwater abstraction by matching, to the greatest extent practicable, mine water demand with orebody dewatering rates. A Water Management Plan incorporating an operating strategy and monitoring programme (quantity and quality) will be developed in consultation with Department of Water to manage orebody dewatering, water abstraction and discharge (where discharge is necessary).

Further investigations are planned to improve understanding of the hydrogeology and any hydrologic connection between the Hardey River and the Brockman orebody and assessment of the water management measures will be investigated during detailed project design. On current Proposal implementation scheduling, dewatering is not planned to commence before 2017.

API considers, given the outcomes of the investigations undertaken, that the Hardey Proposal warrants assessment by the Environment Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986* at the level of Assessment on Proponent Information, and that the information provided in *West Pilbara Iron Ore Stage 2 Hardey Proposal Referral Supporting Information* document, and as summarised in this document, provides a suitable basis for the EPA's assessment of this Proposal.