GOVERNMENT OF WESTERN AUSTRALIA

Environmental Protection Authority

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.

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) 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 (if applicable)	✔	
Included Attachment 3 – confidential information (if applicable)		✔
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, Pamela Kaye, *(full name)* declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature	PKaye	Name (print)	Pamela Kaye
Position	General Counsel	Company	Pluton Resources Ltd
Date	4 AUGUST 2011		

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	Pluton Resources Limited
Joint Venture parties (if applicable)	N/A
Postal Address	Ground Floor, 470 St Kilda Rd, Melbourne, VIC, 3004
Key proponent contact for the proposal • Name • Address • Phone • Email	Pamela Kaye; General Counsel, Pluton Resources Limited Level 2, 322 Hay Street Subiaco WA 6008 Phone: 08 6142 0390 Facsimile: 03 6244 1887 (Tasmania) Email: PamelaKaye@plutonresources.com
Consultant for the proposal (if applicable) • Name • Address • Phone • Email	Name: Tim Bowra, Principal, Strategen Address: Level 2, 322 Hay Street, Subiaco WA 6008 Ph: 9380 3100 Fax: 9380 4606 Email: t.bowra@strategen.com.au

1.2 PROPOSAL

Title	Pluton Resources Irvine Island Project
Description	See description below table.
Extent (area) of proposed ground disturbance	The total area of terrestrial disturbance is approximately 400 hectares and up to approximately 5 ha for marine infrastructure
Timeframe in which the activity or development is proposed to occur. (Include start and finish dates where applicable)	See timeframe outline below.
Details of any staging of the proposal	This is not a staged Proposal.
Is the proposal a strategic proposal?	This is not a strategic Proposal.
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.	This Proposal is not related to any other proposals.
Does the proponent own the land on which the proposal is to be established? If not, what other	The Proponent does not own the land as it is Unallocated Crown Land. The

arrangements have been established to access the land?	Proponent does hold Exploration License E04/1172 and P04/242 for the land which are to be replaced by Mining Lease MLA04/452 issued under the *Mining Act 1978.*
What is the current land use on the property, and the extent (area in hectares) of the property?	The land is Unallocated Crown Land. Pluton currently has environmental approval to conduct exploration drilling (E04/1172) over the Isthmus Region and Hardstaff Peninsula on Irvine Island. Pluton referred the exploration proposals to the Environmental Protection Authority (EPA) under section 38 of the *Environmental Protection Act 1986* (WA). The EPA decided not to assess the exploration programs. Approximately 3.01 ha of E04/1172 are subject to Crown Reserves No. 44670 and 44669. No exploration has been conducted within the reserves. Pluton will not mine on these reserves. The Crown reserves are excluded from the area of mining lease application. Part of Irvine Island is within Yampi Sound Port. This area is declared a port under section 10 of the *Shipping and Pilotage Act 1967* (WA) and has been proclaimed under section 9 of the *Marine and Harbours Act 1981* (WA). The area has been a dedicated port for many years. Irvine Island forms part of Kimberley Iron Ore Hub together with Cockatoo and Koolan Islands. Exploration for iron ore was previously undertaken by BHP on Irvine Island from the 1960s to the 1980s.

Proposal exclusions

For the purposes of section 41 of the *Environmental Protection Act 1986*, the Irvine Island Proposal under this referral specifically excludes the following minor and preliminary works:

- all surveys, investigations and/or other similar works of a geological, geotechnical, environmental, hydrological, planning or heritage nature, including any physical impacts associated with such surveys and investigations.

Proposal Description

Pluton Resources Ltd (Pluton) proposes to construct, operate and maintain iron ore mining operations on Irvine Island, in the Kimberley Iron-ore Hub, north Western Australia (refer to Figure 1 in attached support document).

Pluton has identified two main areas of high iron ore prospectivity, both located on the eastern side of Irvine Island:

- Isthmus region: a narrow neck of land which is the northern-most of the two areas.
- Hardstaff Peninsula: which is the southern-most of the two areas.

The Proposal involves the mining and shipping of iron ore through the development of two mine pits, one on the Hardstaff Peninsula and the other on the Isthmus Region dry ore processing and materials offloading facility (MOF) and transhipment facilities, waste rock disposal areas, a borefield and a range of other ancillary support infrastructure.

The limit of the terrestrial disturbance is approximately 400 hectares. The limit of marine disturbance is approximately 5 ha.

The key characteristics relevant to the Irvine Island project area identified in Table 1.

Table 1 Key characteristics of the Proposal

Proposal characteristic	Description
Non-spatial elements	
Project life	Approximately 20-25 years
Ore feed rate	Approximately 17 Mtpa
Dewatering	Required for deeper pit levels (determined upon completion of hydrogeological studies)
Ore transport	Onshore – haul trucks from pits to processor, conveyors from processor to MOF facility Offshore – to ships via barge at transhipment facility in deep water channel
Ore processing	Dry magnetic separation to produce pre-concentrate ore
Processed ore storage	At MOF in sheds
Waste	Overburden and dry tailings – approximately 15 Mtpa
Power station	Diesel powered generators approximately 40 MW
Water supply	Borefield on Island OR desalination OR a combination of both Demand approximately 3 GL/yr
Accommodation	Located on Cockatoo Island (existing facilities)
Workforce	Construction: approximately 500
	Operation: approximately 200
Workforce transport	Via helicopter and/or watercraft (from Cockatoo Island or mainland)
Spatial elements	

Proposal characteristic	Description
Pit area and depth (approximate)	Hardstaff: • Area at surface: up to 130 ha • Pit depth: up to 300 mbgl
	Isthmus: • Area at surface: up to 30 ha • Pit depth: up to 110 mbgl
Area of vegetation disturbance	Approximately 400 ha for mine pits, waste rock landforms, dry tailings, borefield, haul and access roads, loadout facilities, processed ore storage, helicopter landing and other terrestrial support infrastructure
Height of waste rock landform	Not more than approximately 150 m AHD

Please refer to Section 3 of the attached supporting document for further detail regarding the description of the Proposal.

Proposed Timeframe

Construction is anticipated to commence in the last quarter of 2013 with the first export of ore occurring early-mid 2014 depending upon receipt of approval for implementation of the Proposal from the Minister for the Environment.

The Project is expected to have a life of approximately 20-25 years.

1.3 LOCATION

Name of the Shire in which the proposal is located	Derby / West Kimberley
For urban areas – • street address • lot number • suburb • nearest road intersection	N/A
For remote localities – • nearest town • distance and direction from that town to the proposal site	Irvine Island is located in the Buccaneer Archipelago, approximately 130 km north of Derby and 10 km from the mainland and is within the Kimberley Iron Ore Hub. It is approximately 3 km from Cockatoo Island Mine and 10 km from the Koolan Island Mine. Irvine Island is located within the dedicated port of Yampi Sound.
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 GIS (Arcview shapefiles)

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.	NA

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
Department of Environment and Conservation (DEC)	Works Approvals and Licenses issued under Part V of the EP Act for wastewater treatment plant, power station, ore processing plant, mine dewatering and bulk material loading or unloading	No	To be confirmed
Department of Sustainability, Environment, Water, Population and Communities (SEWPAC)	Environmental Approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to implement the Proposal.	No	Mr James Barker, Environment Assessment Branch, SEWPAC
Department of Mines and Petroleum (DMP)	Mining Lease and Mining Proposal under the *Mining Act 1978*	No	Danielle Risby and Justin Robbins

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)?

Vegetation clearing for the mine pit area, waste dumps, stockpiles, processing plant and other associated infrastructure, including roads, will lead to the direct disturbance of approximately 400 ha of vegetation.

* 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?

- 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.)

  Several flora and vegetation surveys have been undertaken in the Proposal Area and include:

  - Mattiske 2008, Flora and vegetation survey of part of Irvine Island, unpublished report prepared for Pluton Resources
  - Onshore 2011, Irvine Island Study Area – Level 2 Flora and Vegetation survey, unpublished report prepared for Pluton Resources.

  Please refer to Section 4.2.1 of the attached supporting document for further detail.

* 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.

A 100 km radial search from Irvine Island was undertaken utilising databases maintained by EPBC and DEC to identify rare flora previously collected or identified (Onshore 2011).

There were no plant records listed on the Federal search of the EPBC database.

There were no DRF identified by the State DEC search. However, 34 Priority flora taxa were listed within a 100 km radius of Irvine Island including eight Priority 1 flora, eight Priority 2 flora, 17 Priority 3 flora, and one Priority 4 flora.

Please refer to Section 4.2.1 of the attached supporting document for further detail.

* 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.

No TECs or PECs have been identified within the Proposal Area. No Threatened species, pursuant to subsection (2) of section 23F of the *Wildlife Conservation Act 1950* and listed by the DEC have been located within the Proposal area to date.

No plant taxon listed as Threatened under Schedule 1 of the *EPBC Act 1999* have been recorded during surveys conducted in the area.

Three Priority Flora species were recorded during surveys:

- *Ipomoea* sp. A Kimberley Flora (L.J. Penn 84) (Priority 1)
- *Haemodorum gracile* (Priority 4)
- *Phyllanthus aridus* (Priority 3).

Please refer to Section 4.2.1 of the attached supporting document for further detail.

* 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).

N/A. This proposal is not located within the Perth Metropolitan Region.

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

Vegetation condition for the sites formally assessed in April and October 2010 surveys ranged from 'Pristine' to 'Very Good', with only minor disturbances recorded (Onshore 2011). The disturbances noted included access tracks and localised infrastructure dumps remaining from historical BHP exploration activities, and narrow walk tracks and camp laydown established during the current exploration program by Pluton Resources.

Please refer to Section 4.2.1 of the attached supporting document for further detail.

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.

The Proposal will involve the clearing of approximately 400 ha of vegetation which will directly disturb fauna habitat and may result in the loss of individual terrestrial fauna.

Terrestrial fauna may also be affected through:

- vehicle movements on the island may result in the loss of individual animals from collisions
- dewatering will lower ground water levels in proximity to the pits and therefore may affect potential groundwater dependent vegetation communities and subsequently affect fauna that occupy this habitat
- vibration and noise associated with mining infrastructure and machinery may disturb fauna
- introduction of foreign flora and fauna species may affect the ecological balance of Irvine Island terrestrial ecosystems by affecting fauna habitat and outcompeting native species.

Potential impacts on subterranean fauna include:

- mining activities and mine pit development will remove potential subterranean fauna habitat, has the potential to result in the loss of individual fauna through the extraction of material and may affect habitat quality through the generation of vibration
- modification of surface conditions through mining and infrastructure development may affect the existing infiltration and recharge regime leading to a decline in habitat availability and quality
- groundwater drawdown from dewatering may reduce the extent of Stygofauna habitat
- surface and groundwater contamination from hydrocarbon spills and discharge of wastewater may degrade the subterranean environment
- vegetation clearing beyond the mine footprint may lead to a reduction of organic inputs.

The marine component will comprise a MOF and transhipment ship loading facility in a nearby deepwater channel. The aim is to install infrastructure and undertake

operations with the least potential to disturb shore and benthic habitat areas and marine fauna. Other marine facilities to be constructed include:

- cyclone mooring for tugs (in a deep water channel)
- refuelling mooring buoys.

Potential impacts on marine fauna or fauna habitat include:

- shipping and mining activities can generate underwater noise which may disturb marine fauna
- marine vessel movements can result in loss or injury of individual marine fauna through collisions
- physical presence of marine vessels and infrastructure may disturb marine fauna
- anchoring of buoys and transhipment facilities may disturb benthic habitat areas
- shipping may introduce marine pests through hull fouling and ballast water
- release of marine debris may result in the injury or loss of individual marine fauna
- surface water may increase water turbidity, which may impact on benthic marine fauna and the marine food chain
- hydrocarbon spills may contaminate water, potentially having direct physiological impact on marine fauna or indirectly through impacts to the marine food chain.
- lighting at MOF areas and other locations close to shore may affect marine fauna behaviour
- piling for MOF construction can generate underwater noise and vibration which may disturb marine fauna
- blasting for MOF construction (if required) and mining has the potential to generate underwater noise and vibration which may disturb marine fauna
- intake of seawater for desalination may injure or kill marine fauna
- discharge of desalination brine may increase water salinity, harming marine fauna in affected areas
- direct removal of benthic primary producer habitat (BPPH) may affect the marine food chain
- indirect impacts on BPPH as result of alterations in water quality during MOF construction, 'halo' effects around MOF infrastructure due to alterations in sediment movement and flows and surface water runoff from disturbed catchments (e.g. waste dumps)
- discharge of surplus dewater from pit dewatering may alter marine water quality

- 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.)

  Terrestrial fauna surveys undertaken in the Proposal Area include:

  - Biota 2007, *Irvine Island Level 1 Fauna Assessment*, unpublished report prepared for Pluton Resources, which is provided in Attachment 2.
  - Biota 2011, *Irvine Island Fauna Survey*, undertaken for Pluton Resources, report pending.

  Please refer to Section 4.2.2 of the attached supporting document for further detail.

  Detailed studies of the marine fauna assemblage which inhabit the waters adjacent to Irvine Island have yet to commence. A 'state of knowledge' report regarding Humpback Whales has been prepared for Pluton by the Centre for Whale Research as part of desktop exercise to frame further studies.

  In addition, a search of the Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) Protected Matters Search Tool has also been undertaken to identify matters of National Environmental Significance which may occur in the area. Scoping work for other potential future studies is currently underway. To date the key marine studies undertaken relate to the bathymetry, benthic primary producer habitat and baseline hydrodynamic studies.

  Please refer to Section 4.2.4 of the attached supporting document for further detail.

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

✔ Yes ☐ No (please tick)

The DEC database search yielded the following Protected (Threatened) fauna (Biota 2007) as potentially occurring on Irvine Island:

Table 1 Threatened and protected fauna potentially occurring on Irvine Island

Species	State *Wildlife Conservation Act 1950*	Federal *Environment Protection and Biodiversity Conservation Act 1999*
Haliaeetus leucogaster (White-bellied Sea-Eagle)		Migratory
Hirundo rustica (Barn Swallow)		Migratory
Charadrius veredus (Oriental Plover)		Migratory
Glareola maldivarum (Oriental Pratincole)		Migratory
Falcunculus frontatus whitei (Crested Shrike-tit [northern])	Schedule 1 (endangered)	Vulnerable, Migratory
Dasyurus hallucatus (Northern Quoll)	Schedule 1 (endangered)	
Amplirhagada astuta (Land Snail)	Schedule 1 (endangered)	-
Crocydylus porosus (Saltwater Crocodile)*	Schedule 4	
Lerista praefrontalis (Buccaneer Burrowing Skink)	Schedule 1 (vulnerable)	-
Amplirhagada herbertena (Land Snail)	Priority 1	-
Ctenotus yampiensis (Skink)	Priority 2	-
Hipposideros stenotis (Northern Leafnosed-bat)	Priority 2	-
Ramphotyphlops yampiensis (Koolan Blind Snake)	Priority 2	-
Wyulda squamicaudata (Scaly-tailed Possum)	Priority 3	-
Macroderma gigas (Ghost Bat)	Priority 4	-
Mesembriomys macrurus (Golden-backed Tree-rat)	Priority 4	Vulnerable
Burhinus grallarius (Bush Stonecurlew)	Priority 4	
Hydromys chrysogaster (Water Rat)*	Priority 4	-
Numenius madagascariensis (Eastern Curlew)	Priority 4	Marine, Migratory

* 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.

The terrestrial environment of Irvine Island is not known to support vertebrate fauna species of elevated conservation significance. The survey collected several invertebrate taxa from groups known to support SREs, including camaenid land snails, millipedes and mygalomorph spiders. Data for SREs is pending final identifications from the Australian Museum and the WA Museum.

Taxonomic uncertainties within the geckoes surveyed and a land snail (*Torresitrachia* sp. nov.) on Irvine Island suggest these may be of elevated conservation significance. This is to be confirmed pending resolution of taxonomy with the Australian and WA Museums and liaison with the DEC Kimberley Island Survey team.

Irvine Island is located within an important aggregation and calving area for the largest population of Humpback Whales in the world. Dugongs also occur in Kimberley waters and have a high reliance on large meadows of seagrass in shallow waters close to land. Some potential dugong habitat is located to the west of the Hardstaff Peninsula and may support dugong grazing. The mangal communities of Irvine Island are known to support saltwater crocodiles and marine turtles have been reported as common on its fringing reefs (Biota 2010).

Please refer to Sections 4.2.2 and 4.2.4 of the attached supporting document for further detail.

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***

There are no significant or large rivers, creeks or estuaries on Irvine Island; the island core is comprised of an undulating central plateau of about 150 m AHD at its highest elevation leading to a series of valley drainage lines contained within a number of generally small subcatchments.

Please refer to Section 4.1 of the attached supporting document for further detail.

* 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.

Several small (1-100 ha) sub-catchment areas on Irvine Island will be subjected to vegetation clearing.

* 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.

Several small sub-catchment areas will be partially or totally covered or otherwise disturbed by waste dumps, infrastructure areas and mine pits.

* 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.

Refer to Section 2 of the attached supporting document for detail regarding historical recommendations for Irvine Island and about 20 other islands in the Buccaneer Archipelago to be declared an 'A' Class Reserve for Conservation of Flora and Fauna. These recommendations were accepted by the EPA which published them in the Red Book Status Report in 1993 (EPA 1993). No declaration of reserve status has been issued by the State Government to date.

* 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.

Irvine Island is one of the islands of the Buccaneer Archipelago, composed of rugged sandstone islands, with high sea cliffs and headlands separating inlets and bays. The archipelago attracts tourists on cruises and scenic flights.

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?

This proposal includes a Materials Offloading Facility and transhipment facilities and will include both a marine and terrestrial footprint. Mine and infrastructure areas will be located close to high tide levels (within 20 m in some sections).

* 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.

Mining will impact the ridgelines and cliffs of the Hardstaff Peninsula and the Isthmus region of Irvine Island. The most prominent cliff areas on the Hardstaff Peninsula will be retained as much as possible to maintain the visual character of the island.

* Is the development likely to impact on mangroves?

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

Mangroves have been identified within the Proposal Area but these are not restricted to the Proposal Area or regionally restricted. Similar habitats have been observed throughout the Buccaneer Archipelago.

Mangroves occur in various embayments around the island, with the largest single area of mangroves located adjacent to the proposed Isthmus region mine pit. Mine and MOF design and planning has included the careful consideration of the avoidance of impacts on mangroves. The Isthmus region iron ore resource partly underlies the large mangrove area, however, the Isthmus pit area has been scaled back significantly to avoid any impact on the mangrove community.

Hydrogeological and tidal investigations indicate that the mangrove area adjacent to the proposed Isthmus pit is driven by tidal movement. The potential impact of pit dewatering on the mangrove community adjacent to the Isthmus deposit will be

further investigated as the dependence of the mangrove on fresh or sea water or the degree and frequency of tidal ingress into the mangrove community has yet to be fully characterised.

Excavation staging and direction will be undertaken in such a way as to push materials away from any interface between sea and land (shorelines and cliff areas) or other sensitive areas (e.g. mangroves) to avoid rock fall or other secondary impacts on these areas.

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.

A comprehensive assessment of the key marine benthic habitats (coral, microalgae, sediment, filter feeder and seagrass) was undertaken in January 2011, following preliminary work completed in 2010 (Oceanica 2011). The Oceanica 2011 report is provided in Attachment 2.

BPPH distribution has been mapped using information collected during the assessment (Figure 5). BPPH around Irvine Island includes areas of mangrove, coral assemblages and intertidal reef, as well as areas of macroalgae and seagrass

This Proposal will result in the direct removal of small areas of intertidal coral habitats to allow for the construction of the MOF.

No area of mangrove or seagrass will be directly affected by the Proposal. Potential indirect impacts to sensitive benthic communities may occur through:

- direct removal or burial of marine and near shore habitats through the development of MOF infrastructure
- introduction of exotic marine species due to ballast water and hull quarantine practices
- attenuation/smothering from turbidity generated during construction of MOF infrastructure and shipping movements during operation
- changes in water quality as a result of run-off generated from land-based mining and MOF infrastructure
- decline in health of BPPH as a result of alterations to the water column (light penetration and physio/chemical profile), through marine disposal of abstracted groundwater from mining operations.

* 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.

The nearest boundary of the proposed Camden Sound Marine Park is located approximately 16 km north of Irvine Island.

* 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).

Irvine Island is one of the islands of the Buccaneer Archipelago, which attracts tourists on cruises and scenic flights. Recreational anglers are also attracted to the region, however, this is a relatively minor activity, with most recreational fishing concentrated in inshore areas around the key population centres. A number of commercial pearl farms exist along the Kimberley coast, however, none are located at, or nearby, Irvine Island. The Irvine Island proposal will lead to an increase in shipping traffic in the area, but this not expected to have any significant effect on recreational or commercial fishing.

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.

* 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)

Raw water for construction and then for operational requirements will be sourced from either a borefield or desalination plant, both located on the island.

* 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 desalination plant will be designed to supply a peak water requirement of 3 GL/year for construction and operational needs.

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

Water for construction and operational requirements will be supplied by a borefield on the island including up to 3 bores and one monitoring bore and/or a desalination plant utilising seawater.

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.

The proposed development will be a prescribed premise under the following categories:

Cat 05 – Processing or beneficiation of metallic or non-metallic ore

Cat 06 – Mine dewatering

Cat 52 – Electric power generation

Cat 85 – Sewage facility

Cat 58 – Bulk material loading or unloading

The Proposal will require a works approval and licensing under Part V of the EP Act.

* Will the proposal result in gaseous emissions to air?

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

Fugitive emissions will come from stationary combustion sources, vehicles and machinery utilised throughout the project.

Combustion gases will be also be released by the proposed power station, which will be up to 40 MW capacity.

Fugitive dust emissions will also occur during mining and handling of the iron ore.

* 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.

Studies to model or analyse air quality issues have not commenced at this stage, however the risks of significant impacts are understood to be very low. The nearest sensitive receptor is the accommodation facility associated with the mine at Cockatoo Island, approximately 3 km from Irvine Island. No other residential area or other sensitive premise is located in the vicinity of the proposal.

Dust will be generated during the construction and operational phases of the project, including from:

- clearing of vegetation
- open cut iron ore mining operations
- stockpiling of ore

- transport and transfer of ore.

Dust will be minimised through best practice dust suppression techniques, such as the application of water. Ore stockpiles, conveyors and ore carrying barges will be fully enclosed to suppress dust, maintain appropriate moisture levels and prevent fugitive emissions.

Air pollutants will be generated by the diesel-fuelled power station, which will operate throughout the life of the mine. Generators for the power station will be designed and run to the highest air-emission standards.

- Will the proposal result in liquid effluent discharge?

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

The desalination plant will discharge brine into the sea. The final location of the discharge point will be confirmed upon the completion of hydrodynamic modelling to identify the most acceptable location to achieve suitable dispersion of the brine and for least impact on the marine environment.

Dewatering to allow mining below the watertable will result in discharge of dewater, which is likely to be of elevated salinity. Dewater will be stored on the island and re-used where possible, however, it is possible excess may need to be discharged into the marine environment. The final location of the discharge point, if required, will be confirmed upon the completion of hydrodynamic modelling to identify the most acceptable location to achieve suitable dispersion of the dewater product.

Diversion drains will be constructed around waste dumps, infrastructure areas and any other disturbance zones to intercept and direct stormwater runoff away from any sensitive receiving environments, including the marine environment. Runoff shall be directed to settling ponds prior to discharging into the local environment in order for surface water runoff to remain of low turbidity.

Some liquid effluent will be generated on Irvine Island from wastewater treatment. Treated water will be re-used for dust suppression or discharged with desalination brine offshore.

* 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.

Studies to analyse discharge impacts have not commenced at this stage. Water quality studies and modelling will be undertaken to inform the environmental impact assessment of the proposal, particularly with respect to the marine environment.

* Will the proposal produce or result in solid wastes?

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

Solid waste will be generated during the construction and operational phases from clearing of native vegetation, disposal of chemical storage containers, plastic, paper, wood, scrap metal, tyres, rubber, batteries and domestic solid (including putrescible) wastes. All general and quarantine waste, including putrescible waste, will be transported to Cockatoo Island or the mainland for recycling (preferred) or disposal at a licensed landfill facility where recycling is not feasible, in accordance with a waste management plan and quarantine management plan.

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

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

The nearest sensitive receptor is the accommodation facility at Cockatoo Island, approximately 3 km from Irvine Island. No other residential area or other sensitive premise is located in the vicinity of the proposal.

* 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.

Studies to model or analyse noise emissions have not commenced at this stage, however the risks of significant impacts are understood to be very low. The nearest sensitive receptor is the accommodation facility at Cockatoo Island, approximately 3 km from Irvine Island. No other residential area or other sensitive premise is located in the vicinity of the proposal.

* 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 nearest sensitive receptor is the accommodation facility at Cockatoo Island, approximately 3 km from Irvine Island. No other residential area or other sensitive premise is located in the vicinity of the proposal. The Proposal is unlikely to generate off-site air quality impacts that may affect sensitive receptors due to its remoteness.

* 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.

The 40 MW diesel-fuelled generators used to generate electricity will emit in excess of 100 000 tonnes per annum of carbon dioxide equivalent emissions (preliminary estimate 280 000 tonnes CO_2-e). Other sources of greenhouse gas emissions will be the mine vehicle fleet and plant, transport to and from Irvine Island and shipping traffic.

An estimate has yet to be calculated, however, the level of emissions is unlikely to represent a significant proportion of total state or national greenhouse gas emissions.

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

Diesel has been selected as the fuel to be used for the power station. This was chosen over lower emission natural gas as the storage facilities required for natural gas are much larger than required for diesel and would therefore lead to an increase in the project disturbance footprint.

Selection of all generators, vehicles, vessels and machinery will be based on efficiency criteria and will be maintained regularly and to the highest standard to ensure all units are operating at maximum efficiency.

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.

There is no historical land use at Irvine Island that may have caused soil or groundwater contamination. No incidents with the potential to cause soil or groundwater contamination have occurred during the Phase I exploration program.

* 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.

Irvine Island is recognised as a significant site under the *Aboriginal Heritage Act 1972* (WA).

Please refer to Section 4.3 of the attached supporting document for further detail.

* 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.

Irvine Island is one of 200 islands of the Buccaneer Archipelago, which is composed of rugged sandstone islands, with high sea cliffs and headlands separating inlets and bays. The archipelago attracts tourists on cruises and scenic flights.

* 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 export of iron ore offshore, which require the presence and passage of Cape Class vessels (typical capacity above 140 000 deadweight tonne rating (DWT)) through the Buccaneer Archipelago. The export of the anticipated maximum 8.9 Mtpa of ore will require approximately 64 ships per year (i.e. 1.2 shipments per week).

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.

  Pluton extensively and regularly engages with key stakeholders about the Proposal, building on the comprehensive consultation programme undertaken before exploration commenced.

  Please refer to Appendix 1 of the attached supporting document for further detail regarding stakeholder consultation.

4. References

Biota Environmental Sciences (Biota) 2007, *Irvine Island Level 1 Fauna Assessment*, unpublished report prepared for Strategen, December 2007.

Environmental Protection Authority (EPA) 1993, *Red Book Status Report; on the Conservation Reserves for Western Australia*, as recommended by the Environmental Protection Authority (1976-1984), Perth.

Mattiske 2008, Flora and Vegetation Survey of Irvine Island, unpublished report for Pluton Resources.

Oceanica Consulting Pty Ltd and MScience Pty Ltd 2010, *Irvine Island Marine Investigations: Survey of Marine Benthic Habitats*, unpublished report prepared for Strategen, July 2010.

Onshore Environmental (Onshore) 2011, *Irvine Island Study Area: Level 2 Flora & Vegetation Survey October 2010*, unpublished report prepared for Pluton Resources, March 2011.

Attachment 1 (in enclosed CD) – location maps (also refer to supporting explanatory document)

1. Regional location
2. Project location
3. Conceptual project layout
4. Irvine Island vegetation mapping
5. Irvine Island benthic primary producer habitat

Attachment 2 (in enclosed CD) – additional information

1. Onshore Environmental (Onshore) 2011, *Flora and Vegetation survey, Irvine Island, October 2010,* unpublished report prepared for Pluton Resources, March 2011
2. Biota Environmental Sciences (Biota) 2007, *Irvine Island Level 1Fauna Assessment.*
3. Oceanica Consulting Pty Ltd (Oceanica) 2011, *Irvine Island Marine Investigations - Survey of Marine Benthic Marine Habitats: Habitat Map Extension*.
4. Strategen 2009, *Wonganin Iron Ore Project, Irvine Island, Buccaneer Archipelago, Quarantine Management Plan*.
5. Strategen 2010, *Conservation Management Plan – Phase III Environmental Drilling Program at Irvine Island*.
6. Pluton 2010, *Universal Drilling Platform*.
7. GHD 2011, Draft Report for Irvine Island Mine Pre-Feasibility Study Groundwater Investigations July 2011.

Enclosed CD – Shapefiles of project spatial data