Referral of proposed action

Project title: Development of ATP1188 Anya

1 Summary of proposed action

NOTE: You must also attach a map/plan(s) and associated geographic information system (GIS) vector (shapefile) dataset showing the location and approximate boundaries of the area in which the project is to occur. Maps in A4 size are preferred. You must also attach a map(s)/plan(s) showing the location and boundaries of the project area in respect to any features identified in 3.1 & 3.2, as well as the extent of any freehold, leasehold or other tenure identified in 3.3(i).

1.1 **Short description**

Use 2 or 3 sentences to uniquely identify the proposed action and its location.

QGC Pty Limited ACN 089 642 553 (**QGC**) (the Proponent) proposes to develop, for the production of natural gas from coal seams, a new area adjacent to its QCLNG Project (Figure 1) (all figures are provided in Attachment A). The proposed development, known as Anya, is located within four sub-blocks of Queensland petroleum tenure Authority to Prospect (ATP) 1188.

This referral is for construction, operation, decommissioning and rehabilitation of the proposed development which comprises 25 wells with associated gathering and access tracks (about 54 ha proposed disturbance).

The referral area is adjacent to, and is intended to be operated as a part of the QCLNG Project. The existing QCLNG Project has been approved at State and Commonwealth level (EPBC 2008/4398). Gas and water produced from the development will be gathered to storage and compression facilities constructed as part of the approved QCLNG Project. It is proposed that the referral area will be managed using the same systems and processes as the QCLNG project.

The proposed action is **not likely to have a significant impact** on a matter protected under the EPBC Act.

1.2 **Latitude and longitude**

Latitude and longitude details are used to accurately map the boundary of the proposed action. If these coordinates are inaccurate or insufficient it may delay the processing of your referral.

Proposed referral area boundary coordinates

	Latitude			Longitude		
Location	**Degrees**	**Minutes**	**Seconds**	**Degrees**	**Minutes**	**Seconds**
1	-27	7	54.984	150	55	4.007
2	-27	7	54.984	150	56	3.011
3	-27	8	54.996	150	56	3.011
4	-27	8	54.996	150	58	4.008
5	-27	9	52.991	150	58	4.008
6	-27	9	52.991	150	55	4.007

1.3 **Locality and property description**

Provide a brief physical description of the property on which the proposed action will take place and the project location (e.g. proximity to major towns, or for off-shore projects, shortest distance to mainland).

The proposed development is located about 30 km west of Dalby and about 50 km south east of Chinchilla in the Surat Basin, southern Queensland (refer to Figure 1).

1.4 **Size of the development footprint or work area (hectares)**

ATP 1188 covers an area of about 1,200 ha with the construction footprint of the proposed development anticipated to be about 54 ha.

As a comparison, ATP1188 is comprised of 4 sub-blocks, compared with QCLNG (EPBC 2008/4398) operational development area which is comprised of 1234 sub-blocks (approximately 370,200 ha).

1.5 **Street address of the site**

Not applicable

1.6 **Lot description**
Describe the lot numbers and title description, if known.

The proposed development will occur wholly within Lot/Plan 4FTY475 and comprises ATP1188 granted under the *Petroleum and Gas (Production and Safety) Act 2004* (P&G Act) and any petroleum leases granted subsequent to it.

1.7 **Local Government Area and Council contact (if known)**
If the project is subject to local government planning approval, provide the name of the relevant council contact officer.

The development is wholly within the Western Downs Regional Council area.

1.8 **Time frame**
Specify the time frame in which the action will be taken including the estimated start date of construction/operation.

Construction will start on receipt of applicable approvals and permits and is currently scheduled for 2015, with gas production required by early 2016. The development lifespan (including the construction period) is the term of the petroleum lease which is typically 30 years.

1.9	**Alternatives to proposed action** Were any feasible alternatives to taking the proposed action (including not taking the action) considered but are not proposed?	✓	No
			Yes, you must also complete section 2.2
1.10	**Alternative time frames etc** Does the proposed action include alternative time frames, locations or activities?	✓	No
			Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	**State assessment** Is the action subject to a state or territory environmental impact assessment?	✓	No statutory EIS expected but the action will be subject to State assessment of application to amend Environmental Authority (EA) (EPPG00797813) which involves extensive environmental assessment, as described in section 2.5.
			Yes, you must also complete Section 2.5
1.12	**Component of larger action** Is the proposed action a component of a larger action?		No
		✓	Yes, Section 2.7 has been completed

1.13	**Related actions / proposals** Is the proposed action related to other actions or proposals in the region (if known)?		No
		✓	Yes – The proposed development is related to the existing QCLNG Project which has been approved at State and Commonwealth level (EPBC 2008/4398). Gas and water produced from the development will be gathered to storage and compression facilities constructed as part of the approved QCLNG Project (EPBC 2008/4398). Subject to approvals the proposed development will be managed using the same systems and processes as QCLNG. Existing QCLNG infrastructure does not form part of this referral.
1.14	**Australian Government funding** Has the person proposing to take the action received any Australian Government grant funding to undertake this project?	✓	No
			Yes, provide details:
1.15	**Great Barrier Reef Marine Park** Is the proposed action inside the Great Barrier Reef Marine Park?	✓	No
			Yes, you must also complete Section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

NOTE: It is important that the description is complete and includes all components and activities associated with the action. If certain related components are not intended to be included within the scope of the referral, this should be clearly explained in section 2.7.

2.1 Description of proposed action

This should be a detailed description outlining all activities and aspects of the proposed action and should reference figures and/or attachments, as appropriate.

The proposed development comprises 25 wells which will be connected by gas and water gathering lines to existing approved QCLNG project infrastructure. In particular, the Field Compressor Station (FCS) and regional storage pond in the neighbouring David block to the west. All gas and water from this development will then be transferred to QGC's existing and approved Ruby Jo Central Processing Plant (CPP) and Kenya Water Treatment Plant (WTP) respectively. All of this infrastructure is already approved and operational (EPBC 2008/4398).

Gas from the Ruby-Jo CPP will be supplied into the QCLNG gas pipeline (providing connection to domestic market infrastructure and to the two LNG trains at the QCLNG facility on Curtis Island near Gladstone). Water from the Kenya WTP will be supplied to SunWater's Kenya to Chinchilla Weir pipeline and made available for Beneficial Use under the Chinchilla Weir Water Supply Scheme (EPBC 2011/6000). Those activities and their impacts have already been assessed and approved at the Commonwealth and State level.

No amendments or extensions to existing approved infrastructure will be required for the purpose of the proposed new development (for example, no additional capacity is required) and accordingly the continued operation of that infrastructure does not form part of this referral.

Construction activities will be undertaken in the same way as existing approved developments QCLNG (EPBC 2008/4398) and Surat North (EPBC 2013/7047) and will include:

- Well development (including construction of a well pad and access tracks, drilling and completion of wells and installation of down-hole and surface facilities, potentially including temporary flares); and

- Installation of the gathering system (including the trenching or ploughing of a network of gas and water pipelines to collect gas and water produced at each well and transfer it to gas and water management facilities. This may also include installation of fibre-optic and electrical cables).

Operational activities will include:

- Well operation and maintenance;
- Gathering system operation and maintenance; and
- Access road maintenance.

2.2 Alternatives to taking the proposed action

This should be a detailed description outlining any feasible alternatives to taking the proposed action (including not taking the action) that were considered but are not proposed (note, this is distinct from any proposed alternatives relating to location, time frames, or activities – see section 2.3).

The development is proposed pursuant to QGC's development rights and obligations with respect to the relevant petroleum tenure. The timing of the development relates to its prospectivity for gas production, its proximity to existing gas and water management infrastructure and market demand. Accordingly the proposed action has no feasible alternatives.

2.3 Alternative locations, time frames or activities that form part of the referred action

If you have identified that the proposed action includes alternative time frames, locations or activities (in section 1.10) you must complete this section. Describe any alternatives related to the physical location of the action, time frames within which the action is to be taken and alternative methods or activities for undertaking the action. For each alternative location, time frame or activity identified, you must also complete (where relevant) the details in sections 1.2-1.9, 2.4-2.7, 3.3 and 4. Please note, if the action that you propose to take is determined to be a controlled action, any alternative locations, time frames or activities that are identified here may be subject to environmental assessment and a decision on whether to approve the alternative.

The development proposal meets QGC's development rights and obligations for the relevant petroleum tenure. Development is constrained and defined by these tenures and the physical location of the gas field. Location of wells, gathering systems and other infrastructure will be finalised subject to geological, safety and engineering requirements and following consultation with landholders and field survey to avoid environmentally or culturally sensitive locations in accordance with regulatory requirements and wherever practicable.

2.4 Context, planning framework and state/local government requirements

Explain the context in which the action is proposed, including any relevant planning framework at the state and/or local government level (e.g. within scope of a management plan, planning initiative or policy framework). Describe any Commonwealth or state legislation or policies under which approvals are required or will be considered against.

The primary State approval will be the grant of relevant petroleum tenure under the *Petroleum and Gas (Production and Safety) Act 2004* (Qld) (P&G Act) and grant of the relevant Environmental Authority (EA) under the *Environmental Protection Act 1994* (Qld) (EP Act).

It is expected that QGC will require the following State tenure and approvals for the development:

- Petroleum lease under the P&G Act granted subsequent to ATP 1188;
- Amendments to QGC's existing EA (EPPG00797813) under the EP Act to support proposed development activities. This will incorporate ATP1188 into a QCLNG project area EA. Currently EA (EPSX01914924) covers ATP1188 and is currently held QGC Pty Ltd jointly with BG International (Aus) Pty Ltd and Australia Pacific LNG Pty Ltd, but will be surrendered as part of the process of amending EA EPPG00797813.

Other approvals and permits may be required under other legislation applicable to specific development components such as clearing permits under the *Nature Conservation Act 1992* (Qld).

QGC is also subject to other statutory obligations under State legislation and policies including those related to underground water impacts in Chapter 3 of the *Water Act 2000* (Qld) which have already been implemented for this development area under the Underground Water Impact Report (UWIR) for the Surat Cumulative Management Area (CMA).

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

If you have identified that the proposed action will be or has been subject to a state or territory environmental impact statement (in section 1.11) you must complete this section. Describe any environmental assessment of the relevant impacts of the project that has been, is being, or will be carried out under state or territory legislation. Specify the type and nature of the assessment, the relevant legislation and the current status of any assessments or approvals. Where possible, provide contact details for the state/territory assessment contact officer.

Describe or summarise any public consultation undertaken, or to be undertaken, during the assessment. Attach copies of relevant assessment documentation and outcomes of public consultations (if available).

The development will be subject to extensive environmental assessment and conditioning through the State's EA application process. QGC will submit an application to the DEHP to amend EA (EPPG00797813) under the Queensland EP Act. Because the application will involve the addition of tenure, it will be assessed as a major EA amendment.

2.6 Public consultation (including with Indigenous stakeholders)

Your referral must include a description of any public consultation that has been, or is being, undertaken. Where Indigenous stakeholders are likely to be affected by your proposed action, your referral should describe any consultations undertaken with Indigenous stakeholders. Identify the relevant stakeholders and the status of consultations at the time of the referral. Where appropriate include copies of documents recording the outcomes of any consultations.

The tenure application process involves public notification and submission rights. Major EA applications in Queensland may be subject to public notification, subject to EP Act (Qld) requirements.

QGC has built and maintained effective working relationships based on good faith negotiations with both the State of Queensland and those registered Lessees within ATP1188. QGC will continue to build on these relationships to ensure that key issues and concerns are understood and appropriately addressed. Consultation with interested and affected stakeholders is ongoing and QGC recognises that stakeholder engagement is a core assurance element of new development approval processes and implementation.

Currently, one native title claim covers the referral area: QI2010/006 (BCJWY). To meet the requirements of the *Native Title Act 1993* (Cwlth), QGC has negotiated an Indigenous Land Use Agreement (ILUA) with the Traditional Owner Group, BCJWY. This agreement extends across a significant area beyond the limits of the referral area and does not overlap other native title claims.

In signing the land use agreement, the traditional owners have consented to grant rights to QGC over the land, allowing QGC to plan, investigate, construct, operate and maintain, decommission and rehabilitate direct and incidental works associated with natural gas developments in the referral area. To address the *Aboriginal Cultural Heritage Act 2003* (Qld), QGC has agreed a Cultural Heritage Management Strategy (CHMS) with the BCJWY which fulfils QGC's obligations under the ACH Act. This plan is embedded in the ILUA.

2.7 A staged development or component of a larger project

If you have identified that the proposed action is a component of a larger action (in section 1.12) you must complete this section. Provide information about the larger action and details of any interdependency between the stages/components and the larger action. You may also provide justification as to why you believe it is reasonable for the referred action to be considered separately from the larger proposal (eg. the referred action is 'stand-alone' and viable in its own right, there are separate responsibilities for component actions or approvals have been split in a similar way at the state or local government levels).

Natural gas and water from the proposed development will be supplied to the existing approved storage and compression facilities in the adjacent QCLNG project area (EPBC 2008/4398). From there, gas is first supplied to the Ruby-Jo CPP and then into the QCLNG gas pipeline (providing connection to domestic market infrastructure and to the two LNG trains at the QCLNG facility on Curtis Island near Gladstone). Water is transferred to the Kenya WTP, and then supplied to the SunWater Kenya to Chinchilla Weir pipeline project for beneficial use through the Chinchilla Weir Water Supply Scheme.

This development was not referred with EPBC 2008/4398 because QGC only purchased this tenure area in 2014. The proximity of the referral area to the QCLNG project means that this area can be developed efficiently and with minimum disturbance because no major infrastructure (such as storage ponds or compression facilities) is required. There is also sufficient capacity in the approved QCLNG project infrastructure to accommodate inputs from the proposed wells.

The relationship between the proposed development and other existing projects is set out in Table 1.

Table 1: Relationship between this referral and other projects

Project	Summary Description	Relationship between this Referral and other project	Status of Referral
QCLNG – coal seam gas field component	Development, construction, operation and decommissioning of the gas field component of the Queensland Curtis LNG Project, including the Kenya and Ruby Jo facilities.	The development will transport gas and water to QCLNG infrastructure at David and on to Kenya WTP and Ruby-Jo CPP.	Approved – EPBC 2008/4398
QCLNG - pipeline network	Development, construction, operation and decommissioning of a pipeline network linking gas fields in the Surat Basin to the QCLNG plant on Curtis Island, near Gladstone. Pipeline network will include: ▪ Main pipeline (gas);and ▪ Collection lateral(s) (gas).	Gas from the Ruby-Jo CPP is supplied into the QCLNG pipeline network. This pipeline network will provide interconnection between the development and supply points into the domestic gas network and to the QCLNG LNG plant on Curtis Island near Gladstone.	Approved – EPBC 2008/4399
Chinchilla Weir Discharge and Pipeline Project	Construction and operation of a 20 km water supply pipeline and disposal of up to 85 ML/day of treated coal seam gas water into Chinchilla Weir.	Treated water from the Kenya WTP is supplied into the Kenya to Chinchilla Weir pipeline, allowing treated produced water to be on-supplied for beneficial use through the Chinchilla Weir Water Supply Scheme.	Approved – EPBC 2011/6000

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest.

Your assessment of likely impacts should refer to the following resources (available from the Department's web site):

- specific values of individual World Heritage properties and National Heritage places and the ecological character of Ramsar wetlands;
- profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;
- *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*; and
- associated sectoral and species policy statements available on the web site, as relevant.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The Minister has prepared four marine bioregional plans (MBP) in accordance with section 176. It is likely that the MBP's will be more commonly relevant where listed threatened species, listed migratory species or a Commonwealth marine area is considered.

Note that even if your proposal will not be taken in a World Heritage area, Ramsar wetland, Commonwealth marine area, the Great Barrier Reef Marine Park or on Commonwealth land, it could still impact upon these areas (for example, through downstream impacts). Consideration of likely impacts should include both direct and indirect impacts.

3.1 (a) World Heritage Properties

Description

There are **no World Heritage properties** within the referral area.

Nature and extent of likely impact

Address any impacts on the World Heritage values of any World Heritage property.

There are **no impacts to any World Heritage Properties**. This includes no downstream impacts on the Great Barrier Reef World Heritage area.

3.1 (b) National Heritage Places

Description

There are **no National Heritage Places** within the referral area.

Nature and extent of likely impact

Address any impacts on the National Heritage values of any National Heritage place.

There are **no impacts to any National Heritage Places**.

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Description

The closest wetland of international importance within the same catchment (Narran Lakes) is over 400 km from the referral area.

Nature and extent of likely impact

Address any impacts on the ecological character of any Ramsar wetlands.

There are **no impacts to wetlands of international importance**.

3.1 (d) Listed threatened species and ecological communities

Description

There are no threatened ecological communities, no threatened flora and one species of threatened fauna (the Koala) found in the referral area.

A search of the EPBC Protected Matters Search Tool (PMST) database (Attachment B) identified the following as occurring or potentially occurring in the referral area:

- Four Threatened Ecological Communities (TEC)
- Six threatened flora species
- Thirteen threatened fauna species

A field survey (see reports in Attachment C; RPS 2015 and RPS 2014) was undertaken in accordance with *Neldner et.al (2005)* and the relevant EPBC fauna survey guidelines (DSEWPaC 2010 and DSEWPaC 2011) to verify desktop findings. Ground-truthed vegetation (regional ecosystems) are shown in Figure 2.

No TECs were observed during the field survey and all TECs identified at the desktop level using the PMST are considered unlikely to occur.

Only one threatened fauna species, the Koala, was identified during the field survey (via presence of scats). Based on habitat assessments and expert opinion a further seven species are considered to potentially occur (see Table 2) and are further described in RPS reports RPS 2015 and RPS 2014 in Attachment C. The remaining species are considered unlikely to occur (see Table 3). Species which are considered to potentially occur or unlikely to occur have not been assessed further.

Table 2: Species Known or Potentially occurring in the referral area

Scientific Name	Common Name	EPBC Act Status	Likelihood of Occurrence	Observed during field survey (Y/N)
Plants				
Homopholis belsonii	Belson's Panic Grass	Vulnerable	Potential	N
Philotheca sporadica	Kogan Wax flower	Vulnerable	Potential	N
Birds				
Lathamus discolor	Swift Parrot	Endangered	Potential	N
Mammals				
Nyctophilus corbeni (south eastern form)	South-eastern Long-eared Bat	Vulnerable	Potential	N
Phascolarctos cinereus	Koala (combined populations of QLD,	Vulnerable	Known	Y (scat)

	NSW and the ACT)			
Reptiles				
Anomalopus mackayi	Five-clawed Worm skink	Vulnerable	Potential	N
Delma torquata	Collared Delma	Vulnerable	Potential	N
Egernia rugosa	Yakka Skink	Vulnerable	Potential	N
Furina dunmalli	Dunmall's Snake	Vulnerable	Potential	N

Table 3: Species considered Unlikely to occur in the referral area

Scientific Name	Common Name	Justification
Acacia lauta	Tara Wattle	Not identified during field survey No recorded observations in the Qld Government's Wildnet database Suitable habitat does not occur within the referral area
Cadellia pentastylis	Ooline	Not identified during field survey No recorded observations in the Qld Government's Wildnet database Suitable habitat does not occur within the referral area
Rhaponticum australe	Austral Cornflower	Not identified during field survey No recorded observations in the Qld Government's Wildnet database Suitable habitat does not occur within the referral area
Thesium australe	Austral Toadflax	Not identified during field survey No recorded observations in the Qld Government's Wildnet database Suitable habitat does not occur within the referral area
Botaurus poiciloptilus	Australasian Bittern	Not identified during field survey No recorded observations in the Qld Government's Wildnet database Suitable habitat not present within the referral area
Erythrotriorchis radiatus	Red Goshawk	Habitat within the referral area is marginal for this species
Geophaps scripta scripta	Squatter Pigeon (southern)	Not identified during field survey No recorded observations in the Qld Government's Wildnet database Suitable habitat not present within the referral area
Rostratula australis	Australian Painted Snipe	Not identified during field survey Suitable habitat not present within the referral area
Chalinobus dwyeri	Large-eared Pied Bat	Not identified during field survey No recorded observations in the Qld Government's Wildnet database Suitable habitat not present within the referral area
Maccullochella peelii	Murray Cod	Not identified during field survey No recorded observations in the Qld Government's Wildnet database Suitable habitat not present within the referral area

Nature and extent of likely impact

Address any impacts on the members of any listed threatened species (except a conservation dependent species) or any threatened ecological community, or their habitat.

There will be **no impacts to TECs** because none were observed in the referral area during the on-the-ground survey and those identified at the desktop level are considered unlikely to occur.

The koala is the only threatened species identified by the PMST search considered known to occur, because of presence of scats. No species identified by the PMST search are considered likely to occur.

The EPBC Act *Referral Guidelines for the Vulnerable Koala* (DoE 2014) was used to determine that the **proposed action will not adversely affect habitat critical to the survival of the koala and will not interfere substantially with the recovery of the koala** (See Attachment D - ERM 2015 Annex A and B).

Proposed development activities have been assessed (RPS 2015 and RPS 2014 – Attachment C and ERM 2015 – Attachment D) and it has been determined that **the proposed development will not have a significant impact on threatened flora or fauna species.**

Description of proposed action impact to koala

The referral area covers an area of approximately 1,200 ha and it is proposed that approximately 54 ha will be subject to CSG infrastructure development resulting from the construction of 25 wells and approximately 18 km of collocated access and associated gathering. A preliminary significance impact assessment was undertaken by RPS in the RPS 2014 report (Attachment C) based on approximately the entire CSG footprint development area (51ha is referenced in the report) and it was determined that significant impact to the koala was unlikely.

ERM (ERM 2015 – Attachment D) further refined the preliminary habitat assessment undertaken by RPS to determine that approximately 19.78 ha of habitat critical to the survival of the koala will be subject to project disturbance. ERM analysed the ground-truthed vegetation survey data collected by RPS in conjunction with the definition of Koala Habitat from the *Referral Guidelines for the Vulnerable Koala* (DoE 2014) to refine the total predicted impact area. Koala Habitat is defined in the Guideline as "any forest or woodland containing species that are known koala food trees, or shrubland with emergent food trees".

In order to determine habitat critical to the survival of the koala an analysis of the presence of preferred (western and central Queensland) tree fodder species (*E. camaldulensis, E. tereticornis, E. coolabah, E. populnea, E. thozetiana and E. melanophloia*) was undertaken. Critical habitat was determined to be Queensland Regional Ecosystems (ground-truthed during site survey) that contained 1 or more of the six key tree fodder species across the referral area (see Figure 3). When these regional ecosystems are intersected with the initial infrastructure development proposal, 19.78ha of the referral area contains habitat critical to the survival of the koala which will be disturbed. After the initial disturbance, progressive rehabilitation will occur, which will further reduce the remaining operational impact of the activity.

The proposed action will not adversely affect habitat critical to the survival of the koala and will not interfere substantially with the recovery of the koala (See Attachment D - ERM 2015 Annex A and B).

Mitigation of impact on threatened species

To minimise potential impacts on threatened species, QGC will implement its Constraints Planning and Field Development Protocol (Constraints Protocol) (Attachment F). The Constraints Protocol is a mandatory part of QGCs project delivery process and prioritises the avoidance of MNES. The Constraints Protocol has been used for all development undertaken under EPBC 2008/4398 and has been updated to include the proposed Anya development.

QGC will also implement our Significant Species Management Plans (SSMP) (Attachment G) to manage and mitigate any potential impacts to threatened flora and fauna species. These detail species-specific management and mitigation measures and include rehabilitation and recovery commitments. A specific Significant Species Management Plan has been developed for the Koala (SSMP 55 – page 348) and will be implemented during the construction and operation of the Anya development.

In the unlikely event that a species considered unlikely or potentially occurring within the development area, is encountered, QGC will implement the relevant SSMP developed and implemented as part of the larger QCLNG project, authorised under EPBC 2008/4398 (Attachment G).

Both the Constraints Protocol and SSMP were originally approved as part of EPBC 2008/4398 and are described in greater detail in Section 4. The versions attached to this referral have been updated to include the Anya referral area.

3.1 (e) Listed migratory species

Description

Proposed development activities **will not have a significant impact on migratory species or their habitat**

A total of ten migratory species were identified by the PMST (Attachment B), but only one (Rainbow Bee-eater) was observed during the field survey. Of the remaining species, one was considered likely to occur (White-throated Needletail), two were considered to potentially occur and the remainder were considered unlikely to occur. Migratory species considered potentially occurring or unlikely to occur are not discussed further.

Nature and extent of likely impact

Address any impacts on the members of any listed migratory species, or their habitat.

Proposed development activities have been assessed and will not have a significant impact on migratory species or their habitat (RPS 2014 and RPS 2015 - Attachment C).

The referral area does not contain any core habitat for the species considered known or likely to occur (Rainbow Bee-eater and White-throated Needletail) and both species are widespread in Australia (RPS 2015 and RPS 2014).

Potential impacts to migratory species will be managed through the application of QGC's Constraints Protocol and relevant SSMPs (Table 4) developed and implemented as part of the QCLNG Project EPBC 2008/4398. In the unlikely event that a migratory species previously considered unlikely to or only potentially occurring within the development area, is encountered, QGC will implement the relevant SSMP (Attachment G).

Table 4: SSMPs for Known or Likely Migratory species

Species	SSMP Number
Rainbow Bee-eater (*Merops ornatus*)	48 (page 299)
White-throated Needletail (*Hirundapus caudacutus*)	44 (page 277)

3.1 (f) Commonwealth marine area

(If the action is in the Commonwealth marine area, complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

Description

There are **no Commonwealth Marine Areas in the vicinity** of the referral area.

Nature and extent of likely impact

Address any impacts on any part of the environment in the Commonwealth marine area.

There are **no impacts to Commonwealth Marine Areas**.

3.1 (g) Commonwealth land
(If the action is on Commonwealth land, complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land.)

Description
If the action will affect Commonwealth land also describe the more general environment. The Policy Statement titled *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* provides further details on the type of information needed. If applicable, identify any potential impacts from actions taken outside the Australian jurisdiction on the environment in a Commonwealth Heritage Place overseas.

There is **no Commonwealth land** within the boundaries of the referral area.

Nature and extent of likely impact

Address any impacts on any part of the environment in the Commonwealth land. Your assessment of impacts should refer to the *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* and specifically address impacts on:

- ecosystems and their constituent parts, including people and communities;
- natural and physical resources;
- the qualities and characteristics of locations, places and areas;
- the heritage values of places; and
- the social, economic and cultural aspects of the above things.

There are **no impacts to Commonwealth land**.

3.1 (h) The Great Barrier Reef Marine Park

Description

The development **does not occur within the Great Barrier Reef Marine Park**.

Nature and extent of likely impact

Address any impacts on any part of the environment of the Great Barrier Reef Marine Park.

Note: If your action occurs in the Great Barrier Reef Marine Park you may also require permission under the *Great Barrier Reef Marine Park Act 1975* (GBRMP Act). If so, section 37AB of the GBRMP Act provides that your referral under the EPBC Act is deemed to be an application under the GBRMP Act and Regulations for necessary permissions and a single integrated process will generally apply. Further information is available at www.gbrmpa.gov.au

No downstream impacts are expected on the Great Barrier Reef Marine Park.

3.1 (i) A water resource, in relation to coal seam gas development and large coal mining development

Description

If the action is a coal seam gas development or large coal mining development that has, or is likely to have, a significant impact on water resources, the draft Policy Statement Significant Impact Guidelines: Coal seam gas and large coal mining developments—Impacts on water resources provides further details on the type of information needed.

A hydrogeological conceptualisation has been prepared to assess the potential impacts of the proposed development on the Water Resource MNES. An assessment of the potential impacts of the development against the Water Resource Significant Impact Criteria (DoE 2013) is also included in this document. The findings of the conceptualisation are summarised below and the full document is provided as Attachment E.

Groundwater extraction from the proposed development has been modelled in isolation to determine potential aquifer drawdown impacts. This **modelling indicates no significant depressurisation of overlying and underlying water bearing aquifers.** Because predicted depressurisation of the Walloon Coal Measures is not sufficient to induce significant flow through the intervening low permeability layers, impacts to water quality are not expected. **Impacts to downstream water resources including Wilkie Creek, its associated riverine GDEs and the Condamine River are not expected.**

Groundwater

The proposed development comprises a total of 25 wells which will produce natural gas from the Walloon Coal Measures (WCM). Natural gas is held in the coal seam by water pressure. A necessary part of natural gas extraction is depressurisation of the target formation which is achieved through a dewatering process.

Estimated extraction from the proposed 25 wells is 5.75 GL over the 30 year development timeframe.

In the referral area the WCM is separated from the underlying Hutton sandstone by the low permeability Eurombah formation and from the overlying Springbok formation by a low permeability transition layer. These low permeability layers effectively limit the vertical propagation of drawdown from the WCM. Further to the east (3-4 km from the referral area) the Condamine River Alluvium directly overlies the WCM. A large volume of water is extracted from the alluvium in this area for irrigation purposes. This has created an upward hydraulic gradient (flow) where the drawdown effects from the alluvium are prominent. A stratigraphic cross-section of the referral area is provided as Figure 4.

The nearest spring to the referral area is the Wambo Creek spring complex located about 50km northwest (the closest EPBC listed spring – Cockatoo Creek – is about 200 km north). Field and desktop surveys suggest that the spring vent is sourced from a local flow system through sediments at outcrop, rather than discharge from deeper underlying GAB formations (KCB, 2012). Given this, and the distance between the development and this spring, no impacts are expected to occur.

The closest potential groundwater / surface water interaction is where the Condamine Alluvium directly overlies the WCM and there is the potential for a base flow contribution to the Condamine River. However, significant historical groundwater extraction in this area has resulted in groundwater levels declining to the point where the groundwater table is now up to 20 m below the base of the river bed (Barnett and Muller, 2008).

The Australian Government Bureau of Meteorology (BoM) currently maintains the National Atlas of Groundwater Dependent Ecosystems (the Atlas) which is '*…the most comprehensive inventory of the location and characteristics of groundwater dependent ecosystems for Australia.*' The Atlas maps Groundwater Dependent Ecosystems (GDEs) as occurring about 4 km to the northeast and east of the referral area in association with Wilkie Creek, and a number of small isolated riverine and vegetation GDEs to the northwest, west and south (Figure 5). This data set corresponds with the State Referable Wetlands data set.

Groundwater Users

The cumulative impacts of groundwater extraction from Coal Seam Gas have been assessed across the Surat Basin by the Queensland Government as part of the Surat Basin Cumulative Management Area (CMA) Underground Water Impact Report (UWIR). This included numerical groundwater modelling undertaken by the Office of Groundwater Impact Assessment (OGIA). The UWIR was released in 2012 and its findings have previously been, and are being used as the basis for conditions of approval relating to water monitoring and management at a State and Commonwealth level.

The UWIR identifies an immediately affected area (IAA) for aquifers where water level impacts are predicted to exceed the trigger threshold within three years from the report's release; and a long-term affected area (LAA) for aquifers where impacts are predicted to exceed the trigger threshold at any future time. Known groundwater bores have been assessed by the UWIR and where the trigger thresholds are exceeded these are either listed as IAA or LAA bores and responsible tenure holders are obliged to implement the make good provisions under the *Water Act 2000* (Qld).

In the referral area there is a single bore (RN5661) which is abandoned and destroyed. However, within 10 km of the referral area 129 bores have been identified. Of these, 36 are CSG monitoring bores, seven are sub-artesian monitoring bores, five are water resources investigation bores and 20 are abandoned and destroyed. This leaves 18 known water supply bores and 42 registered bores whose use is not known – a total of 60 bores which may be used for water supply (Table 5).

Table 5: Existing groundwater use within 10 km of the referral area

Target formation	Number of Bores	Total entitlement (ML) (number of bores with known entitlement)
Condamine Alluvium	17	854 (2)
Hutton Sandstone	3	1800 (3)
Kumbarilla Beds	2	Not specified or not listed (0)
Springbok Sandstone	10	Not specified or not listed (0)
WCM	15	249 (3)
Wilkie Creek Alluvium	1	Not specified or not listed (0)
Unknown	12	Not specified or not listed (0)
Total	**60**	**2,903 (8)**

Of these 60 bores, seven are in the WCM IAA (one of which is abandoned and destroyed). A further 20 bores are in a LAA (three in the Hutton Sandstone, 11 in the Springbok Sandstone and six in the WCM (Figure 6). QGC is the responsible tenure holder for seven of these (Table 6).

Table 6: QGC bores in the IAA / LAA within 10 Km of the referral area

Bore No.	Target Formation	Facility Status	IAA / LAA	Responsible Tenure Holder
137175	Walloon Coal Measures	Existing	IAA	QGC
119267	Walloon Coal Measures	Existing	IAA	QGC
137552	Walloon Coal Measures	Existing	IAA	QGC
61111	Springbok Sandstone	Existing	IAA	QGC
137958	Springbok Sandstone	Existing	LAA	QGC

8678	Springbok Sandstone	Existing	LAA	QGC
56702	Springbok Sandstone	Existing	LAA	QGC

Surface Water

The referral area is within the Condamine – Balonne catchment and is traversed by two unnamed creeks. These creeks flow in a generally east south-east and northerly direction towards Wilkie Creek (Figure 7). They are ephemeral systems with surface water flows generated during rainfall events in the wet season (November to March) and low flow to no flow conditions during remaining months. Wilkie Creek lies to the north east of the referral area and at its closest is approximately 4 km away. Wilkie Creek flows north-north west, eventually joining the Condamine River 17.5 km north of the referral area.

Nature and extent of likely impact

Address any impacts on water resources. Your assessment of impacts should refer to the draft *Significant Impact Guidelines: Coal seam gas and large coal mining developments—Impacts on water resources*.

Groundwater extraction from the proposed development has been modelled in isolation to determine potential aquifer drawdown impacts. **This modelling indicates no significant depressurisation of overlying and underlying water bearing aquifers**. Extraction from the referral area may result in a drawdown of up to 0.2 m in the Hutton Sandstone (Figure 8) and a maximum of 1 m in the Springbok sandstone over the development area, reducing to 0.2 m at a distance of 8 km from the referral area (Figure 9).

Because predicted depressurisation of the WCM is not sufficient to induce significant flow through the intervening low permeability layers impacts to water quality are not expected.

The cumulative impacts of groundwater extraction from Coal Seam Gas have been assessed across the Surat Basin by the Queensland Government as part of the Surat CMA UWIR (QWC 2012) and included numerical groundwater modelling undertaken by OGIA. The UWIR did not model extraction from the referral area, but using the 1m WCM drawdown contour from the development only model, the UWIR did include extraction of 88 GL from tenures surrounding this area (Figure 10). Revised production estimates and variations to field development plans mean that current projected extraction from the same areas plus the referral area now totals 76 GL – significantly less than modelled.

Because the UWIR is a regional model and the geographic location of wells is not a critical factor, the findings of the UWIR are considered to include assessment of impacts from the development. Therefore, measures already in place to monitor and mitigate impacts to groundwater and groundwater users are already designed to monitor and mitigate potential impacts from the proposed development without amendment. QGC groundwater monitoring bores in the vicinity of Anya are in Figure 13.

The UWIR has resulted in the creation of a cross-CSG industry basin wide monitoring network to monitor drawdown impacts and impacts to EPBC listed springs. It has also identified those landholder bores potentially at risk from drawdown impacts and responsible tenure holders are obliged to 'Make Good' those bore under Chapter 3 of the *Water Act 2000* (Qld). Impacts to these bores have been assessed and management and mitigation measures, such as 'Make Good' agreements, under Chapter 3 of the Water Act are already being implemented. Make Good' agreements mitigate potential impacts on identified bores and groundwater users and potential impacts are therefore not considered significant.

The UWIR is updated with field data from proponents every three years with the next iteration due this year (2015). This will include predicted extraction from the referral area.

QGCs Water Monitoring and Management Plan (WMMP) approved under EPBC 2008/4398 details all relevant aspects of QGC's groundwater monitoring and management programs (including 'make good' agreements) (see Attachment H). Because measures specified in this plan are based on the findings of the UWIR which is considered to include extraction from the referral area. Potential impacts to water resources from the proposed development will be managed in accordance with this plan (or as amended from time to time).

Impacts to GDEs are not expected to occur. Those GDEs identified in association with Wilkie Creek are dependent on shallow groundwater from the Condamine Alluvium. Where the Condamine Alluvium overlies the WCM, the large volume of groundwater extracted from the alluvium for irrigation has caused an upward gradient from the WCM (KCB 2011). Identified GDEs at Wilkie Creek will not be impacted because the predicted flux from the proposed development is considered to be insignificant compared to the existing upward hydraulic gradient between the alluvium and the WCM. In other words, a downward flux from the CA to the WCM is not expected to occur and consequently impacts to GDEs are not expected to occur.

Similarly, **impacts to the Condamine River are not expected** and risks are further reduced because the water table in the Condamine alluvium is well below the base of the river bed. Therefore, should impacts to water levels in the alluvium occur, these would not manifest themselves in a reduction in flow rate of the Condamine River.

In relation to impacts to water quality, the proposed development does not include abstraction from watercourses, nor does it include discharge to any watercourses. Further, State environmental approval conditions limit activities which can be undertaken in watercourses to linear infrastructure (for example roads and pipelines) with other activities not authorised within 100 m of a watercourse.

As all watercourses in the referral area are ephemeral infrastructure crossings will be undertaken in times of low or no-flow minimising the risk of erosion and sedimentation. **Impacts to surface water quality in the referral area are therefore not expected and downstream impacts to Wilkie Creek, its associated riverine GDEs and the Condamine River will not occur.**

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

You must describe the nature and extent of likely impacts (both direct & indirect) on the whole environment if your project:

- is a nuclear action;
- will be taken by the Commonwealth or a Commonwealth agency;
- will be taken in a Commonwealth marine area;
- will be taken on Commonwealth land; or
- will be taken in the Great Barrier Reef marine Park.

Your assessment of impacts should refer to the *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* and specifically address impacts on:

- ecosystems and their constituent parts, including people and communities;
- natural and physical resources;
- the qualities and characteristics of locations, places and areas;
- the heritage values of places; and
- the social, economic and cultural aspects of the above things.

3.2 (a)	**Is the proposed action a nuclear action?**	✓	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (b)	**Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		

3.2 (c)	**Is the proposed action to be taken in a Commonwealth marine area?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))		

3.2 (d)	**Is the proposed action to be taken on Commonwealth land?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))		

3.2 (e)	**Is the proposed action to be taken in the Great Barrier Reef Marine Park?**	✓	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))		

3.3 Other important features of the environment

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed above). If at Section 2.3 you identified any alternative locations, time frames or activities for your proposed action, you must complete each of the details below (where relevant) for each alternative identified.

3.3 (a) Flora and fauna

A number of fauna species have been identified as potentially occurring in the referral area (Section 3.1 of this referral). Those that are listed as threatened under Queensland legislation (*Nature Conservation Act 1992* (NC Act)) and which are not also listed under the EPBC Act are presented in Table 7. Of these seven species only two were observed during the field survey (RPS 2015) and are known to occur. The full Ecological Assessment Report and Anya Protected Values Report for the referral area are in Attachment C(a) and C(b) respectively.

Table 7: Listed EVNT Fauna (NC Act status)

Common name	Scientific name	NC Act status[1]	Observed during field survey (Y/N)
Species known to occur			
Short-beaked Echidna	*Tachyglossus aculeatus*	S	Y
Little Pied Bat	*Chalinolobus picatus*	NT	Y
Species considered likely to occur			
Square-tailed Kite	*Lophoictinia isura*	NT	N
Glossy Black-Cockatoo	*Calyptorhynchus lathami*	V	N

Species considered potential to occur			
White-throated Needletail	*Hirundapus caudacutus*	S	N
Cicadabird	*Coracina tenuirostris*	S	N
Rufous Fantail	*Rhipidura rufifrons*	S	N

[1] Status abbreviations are as follows: E = Endangered, V = Vulnerable, NT = Near Threatened, S = Special Least Concern, C = Least Concern Wildlife.

3.3 (b) Hydrology, including water flows

Please refer to information contained in Section 3.1(i).

3.3 (c) Soil and Vegetation characteristics

The referral area is mainly underlain by the Cretaceous to Jurassic age Kumbarilla Beds and Cenozoic sand plains. Two land resource areas (LRA) Ironbark bulloak sodosols and sandstone forests dominate the area, with a third – Poplar box sodosols – present in the east of the referral area (Figure 11).

Two soil types have been identified within the referral area – sedimentary siliclastic and regolith (Figure 12). Soils are typically described as texture contrast with bleached surface soils which overlie poorly drained subsoils. Subsoils are predominately sodic and are often progressively more saline with depth.

The referral area is largely covered by remnant vegetation which is classified as 'Not of Concern' under the *Vegetation Management Act (1999)* (Qld). Further information on remnant native vegetation is detailed in Section 3.3 (e) below.

3.3 (d) Outstanding natural features

There are no outstanding natural features known to occur in the referral area.

3.3 (e) Remnant native vegetation

The referral area is located wholly within Braemar State forest. The mapping of remnant vegetation is shown in Figure 2. A summary of the extent of each Regional Ecosystem within the referral area is provided in Table 8.

Table 8: Regional Ecosystems in the referral area

RE	Management status applicable to the EP Act[1]	Short description
11.3.14	No Concern at Present	*Eucalyptus spp.*, *Angophora spp.*, *Callitris spp*. Woodland on alluvial soil
11.5.1	No Concern at Present	*Eucalyptus crebra* and/or *E. populnea*, *Callitris glaucophylla*, *Angophora leiocarpa*, *Allocasuarina luehmanii* woodland on Cainozoic sand plains and/or remnant surfaces
11.5.1a	No Concern at Present	Eucalyptus populnea woodland with *Allocasuarina luehmanii* low tree layer.
11.5.4	No Concern at Present	*Eucalyptus chlorocada*, *Callitris glaucophylla*, *C. endlicheri*, *Angophora leiocarpa* woodland on Cainozoic sand plains and/or remnant surfaces
11.5.20	No Concern at Present	*Eucalyptus moluccana* and/or *E. macrocarpa* and/or *E.*

		woollsiana +/- *E. crebra* woodland on Cainozoic sand plains and/or remnant surfaces
11.7.2	No Concern at Present	*Acacia spp*. woodland on Cainozoic lateritic duricrust. Scarp retreat zone.
11.7.4	No Concern at Present	*Eucalyptus decorticans* and/or *E. spp.*, *Corymbia spp.*, *Acacia spp.*, *Lysicarpus angustifolius* woodland on Cainozoic lateritic duricrust.
11.7.7	No Concern at Present	*Eucalyptus fibrosa subsp. nubile* +/- *Corymbia spp.* +/- *Eucalyptus spp.* woodland on Cainozoic lateritic duricrust.

[1] 'EP Act' status is based on the 'Biodiversity Status' prescribed on DERM's REs Description Database v8 as is the 'short descriprion'.

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

The referral area is between 330 m and 368 m AHD and slopes southward and eastwards from the high point in the north (Figure 12).

3.3 (g) Current state of the environment

Include information about the extent of erosion, whether the area is infested with weeds or feral animals and whether the area is covered by native vegetation or crops.

The area is largely covered by native vegetation as detailed in Section 3.1d and 3.3e.

Feral animals, including wild dogs and feral pig have been identified in the referral area as have weeds such as prickly pear (*Opuntia sp.*).

Soil assessments have identified most soil types within the referral area are dispersive and have 'moderate' erosion hazard. No significant areas of erosion were identified.

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

No Commonwealth Heritage Places or other listed non-indigenous cultural heritage sites occur in in the vicinity of the referral area.

However, if culturally significant structures, objects or other remains are encountered by chance in the field QGC's Stop Work procedure will be implemented, as follows:

- Stop work;
- The location of the find should be recorded;
- The find should be photographed by the person who made the find (if equipment is on hand). Photographs of the structure, object or feature should include a combination of contextual images, and any interesting details or features of the find, for example a name on an old homestead, or a label on a bottle;
- The Project Environmental Officer should be contacted as soon as possible who will then contact a suitably qualified heritage specialist;
- An assessment of the place will be required, undertaken by a suitably qualified heritage specialist, to determine whether the place is likely to have heritage significance at local or state level. If state significance values are determined, a legal obligation exists to report the place to DEHP. If the place is found to have local heritage values, the relevant Local Government Area should be contacted; and
- Following an initial assessment, an appropriate mitigation strategy will be developed.

3.3 (i) Indigenous heritage values

QGC has negotiated Indigenous Land Use Agreements with traditional owners and native title claimants covering the referral area and these provide consent for all current and future acts required to construct and operate the development.

Cultural heritage management agreements have been developed in accordance with the *Aboriginal Cultural Heritage Act 2003* (Qld) as a key step in the cultural heritage process and these provide for appropriate management and mitigation measures for potentially intrusive activities to ensure that they are undertaken legally and in a respectful manner to Aboriginal communities and traditions.

3.3 (j) Other important or unique values of the environment

Describe any other key features of the environment affected by, or in proximity to the proposed action (for example, any national parks, conservation reserves, wetlands of national significance etc).

The referral area is wholly within Braemar State Forest.

3.3 (k) Tenure of the action area (e.g. freehold, leasehold)

The referral area is State Forest with a single lot (State Forest tenure) covering the entire referral area. Three leases also occur over this area. No infrastructure exists on the site.

3.3 (l) Existing land / marine uses of area

The referral area is within Braemar State Forest and selective forestry activities (thinning and/or logging) occur throughout the area.

3.3 (m) Any proposed land / marine uses of area

Proposed land uses in the referral area involve:

- A continuation of existing forestry activities;
- Natural gas developments; and
- Coal development.

Expected natural gas development is limited to development the subject of this referral. Linc Energy Limited holds two permits for coal development which overlap the area (EPC 899 and MDL 480).

4 Measures to avoid or reduce impacts

Note: If you have identified alternatives in relation to location, time frames or activities for the proposed action at Section 2.3 you will need to complete this section in relation to each of the alternatives identified.

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

For any measures intended to avoid or mitigate significant impacts on matters protected under the EPBC Act, specify:

- what the measure is,
- how the measure is expected to be effective, and
- the time frame or workplan for the measure.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

Provide information about the level of commitment by the person proposing to take the action to implement the proposed mitigation measures. For example, if the measures are preliminary suggestions only that have not been fully researched, or are dependent on a third party's agreement (e.g. council or landowner), you should state that, that is the case.

Note, the Australian Government Environment Minister may decide that a proposed action is not likely to have significant impacts on a protected matter, as long as the action is taken in a particular manner (section 77A of the EPBC Act). The particular manner of taking the action may avoid or reduce certain impacts, in such a way that those impacts will not be 'significant'. More detail is provided on the Department's web site.

For the Minister to make such a decision (under section 77A), the proposed measures to avoid or reduce impacts must:

- clearly form part of the referred action (eg be identified in the referral and fall within the responsibility of the person proposing to take the action),
- be must be clear, unambiguous, and provide certainty in relation to reducing or avoiding impacts on the matters protected, and
- must be realistic and practical in terms of reporting, auditing and enforcement.

More general commitments (eg preparation of management plans or monitoring) and measures aimed at providing environmental offsets, compensation or off-site benefits CANNOT be taken into account in making the initial decision about whether the proposal is likely to have a significant impact on a matter protected under the EPBC Act. (But those commitments may be relevant at the later assessment and approval stages, including the appropriate level of assessment, if your proposal proceeds to these stages).

No significant impacts to MNES have been identified by assessments undertaken to support this referral.

Constraints Planning and Field Development Protocol (Attachment F)

QGC develops gas fields in accordance with a constraints protocol which was approved for use as a part of QGC's QCLNG Project EPBC 2008/4398. The constraints protocol has already been applied to the early development concepts for the Anya development, resulting in reduced impacts to MNES. The version of the Constraints Protocol attached has been updated to include the Anya referral area.

The Constraints Protocol forms a mandatory part of QGC's planning and gas field development process enabling environmentally sensitive infrastructure placement. Infrastructure locations are finalised in accordance with a set hierarchy. The hierarchy for MNES is:

1. Preferentially avoiding native vegetation that constitutes a listed threatened ecological community or provides habitat for listed threatened and migratory fauna species;
2. Exclude production wells from areas identified as very high constraint zone and requires justification for siting including site-based (survey) assessment that the potential impact on any MNES will be minimal, short term and recoverable; and
3. Either:
    a. exclude other non-linear infrastructure from the no impact zone; or
    b. where the location of other non-linear infrastructure in the no impact zone is justified given other constraints and cannot be avoided, only authorise the siting of that infrastructure in that zone where field ecological surveys demonstrate that there will be minimal, short term and recoverable, or no adverse impact on any MNES, including habitat for any listed species.

Linear infrastructure (e.g. pipelines) constraints are not generally assigned a very high constraint ranking because it is not always possible to avoid constraint areas, especially where they are also linear (e.g. watercourses).

Significant Species Management Plan (SSMP)(Attachment G)

The SSMP details measures to be implemented to avoid and mitigate potential impacts on threatened species and ecological communities.

QGC has developed a specific Significant Species Management Plan for the Koala (Plan 55 – page 348 of the SSMP) which has been incorporated into the QCLNG Project EPBC 2008/4398 SSMP.

Plans specific to threatened species identified as known or likely to occur will be implemented and in the unlikely event that other threatened species are identified in the referral area, the relevant QCLNG plan will be implemented or a new plan will be developed.

Stage 3 Water Monitoring and Management Plan(WMMP) (Attachment H)

The Stage 3 Water Monitoring and Management Plan (S3WMMP) is the third iteration of QGC's Water Monitoring and Management Plan, approved originally as part of EPBC 2008/4398. This plan details all measures QGC will implement to monitor and mitigate potential impacts to groundwater and groundwater users and forms part of a basin-wide approach to mitigate potential cumulative impacts. The measures detailed in the plan are informed by the results of the EPBC assessment and the Surat Basin CMA UWIR. The findings of the UWIR have previously been, and are being used as the basis for conditions of approval relating to water monitoring and management at a State and Commonwealth level.

Similarly, QGC considers that extraction from the referral area is accounted for in the UWIR and no amendments to existing commitments and measures as detailed in the approved WMMP (EPBC 2008/4398) are required as a result of this development. Therefore, QGC proposes to manage potential impacts to water resources from this development in accordance with this plan.

Pest and Weed Management Plan (Attachment I)

The Pest and Weed Management Plan (PWMP) has been approved for use by DoE as part of EPBC 2008/4398. It provides operations guidance and an action plan for the prevention, identification and management of pests and weeds within QGC tenement areas. The PWMP will be applied to ensure that gas field development and operations do not increase the presence or distribution of pests and weeds within the project area and neighbouring landholders' properties are not adversely impacted. The PWMP will be applied to the Anya referral area.

Remediation, Rehabilitation, Recovery and Monitoring Plan (Attachment J)

The Remediation, Rehabilitation, Recovery and Monitoring Plan (RRRMP) has been approved for use by DoE as part of EPBC 2008/4398. It details QGC's required standards and methods of re-instatement, rehabilitation and monitoring. The RRRMP specifically deals with the re-instatement and rehabilitation of disturbances from development activities and will be applied to ensure remediation, rehabilitation, recovery and monitoring activities are undertaken and completed to the required standard using approved techniques. The RRRMP will be applied to the Anya referral area.

5 Conclusion on the likelihood of significant impacts

Identify whether or not you believe the action is a controlled action (ie. whether you think that significant impacts on the matters protected under Part 3 of the EPBC Act are likely) and the reasons why.

5.1 Do you THINK your proposed action is a controlled action?

✓	No, complete section 5.2
	Yes, complete section 5.3

5.2 Proposed action IS NOT a controlled action.

Specify the key reasons why you think the proposed action is NOT LIKELY to have significant impacts on a matter protected under the EPBC Act.

The proposed development comprises 25 natural gas wells and associated gathering and access and has a small development footprint (about 54 ha). The proposed action is **not likely to have a significant impact** on a matter protected under the EPBC Act. The referral area is adjacent to, and will be operated as a part of the QCLNG project. The existing QCLNG Project has been approved at State and Commonwealth level (EPBC 2008/4398). Gas and water produced from the development will be gathered to storage and compression facilities constructed as part of the approved QCLNG Project. No significant impacts to MNES have been identified by assessments undertaken to support this referral.

The only known threatened species to occur in the development area is the Koala. The proposed action has been assessed against DoE Guidelines and it has been determined that it is not likely to have a significant impact on the Koala.

Groundwater extraction from the proposed development has been modelled in isolation to determine potential aquifer drawdown impacts. This modelling indicates no significant depressurisation of overlying and underlying water bearing aquifers. Impacts to water resources have already been accounted for in the Surat CMA UWIR and the associated numerical groundwater model. Therefore, existing monitoring and mitigation measures have been designed to assess and manage potential impacts from this development. QGC will monitor and manage impacts to water resources in accordance with the approved WMMP.

The proposed development will be managed using the same systems and processes as the existing approved developments QCLNG (EPBC 2008/4398) and Surat North (EPBC 2013/7047). All plans proposed for implementation have been previously approved by Department of the Environment (or its predecessors) and QGC has a track record of successful implementation of these plans over a number of years for QCLNG. QGC proposes to continue to manage its activities in accordance with these plans to deliver the proposed development in a way that minimises impact to MNES.

5.3 Proposed IS a action controlled action

Type 'x' in the box for the matter(s) protected under the EPBC Act that you think are likely to be significantly impacted. (The 'sections' identified below are the relevant sections of the EPBC Act.)

	Matters likely to be impacted
	World Heritage values (sections 12 and 15A)
	National Heritage places (sections 15B and 15C)
	Wetlands of international importance (sections 16 and 17B)
	Listed threatened species and communities (sections 18 and 18A)
	Listed migratory species (sections 20 and 20A)
	Protection of the environment from nuclear actions (sections 21 and 22A)

	Commonwealth marine environment (sections 23 and 24A)
	Great Barrier Reef Marine Park (sections 24B and 24C)
	A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
	Protection of the environment from Commonwealth actions (section 28)
	Commonwealth Heritage places overseas (sections 27B and 27C)

Specify the key reasons why you think the proposed action is likely to have a significant adverse impact on the matters identified above.

6 Environmental record of the responsible party

NOTE: If a decision is made that a proposal needs approval under the EPBC Act, the Environment Minister will also decide the assessment approach. The EPBC Regulations provide for the environmental history of the party proposing to take the action to be taken into account when deciding the assessment approach.

		Yes	No
6.1	**Does the party taking the action have a satisfactory record of responsible environmental management?** **Provide details** QGC has a strong record of responsible environmental management across its tenements in Queensland. QGC implements all reasonable and practical measures to ensure that environmental harm is not caused or threatened by its activities and that all of its activities are compliant with its permit and approval conditions. Appropriate resources are available to respond quickly to any potential environmental incidents and minimise the any impact upon the environment and landowner (where applicable).	✓	
6.2	**Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?** **If yes, provide details**		✓
6.3	**If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?** **If yes, provide details of environmental policy and planning framework** BG Group's Environmental Standard sets out how BG Group will meet its environmental commitments in our Business Principles and HSSE Policy. The Business Principles commitments with regard to environmental management are: ▪ We make a positive contribution to the protection of the environment; ▪ We go beyond compliance with local environmental regulation to meet internationally accepted best practice; and ▪ We reduce to the minimum practicable any adverse effects of our operations on the environment.	✓	
6.4	**Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?** **Provide name of proposal and EPBC reference number (if known)** BG International Limited (part of BG Group) and QGC referred various components of the QCLNG Project and has received Approvals and is undertaking action related to the following: ▪ EPBC 2008/4398 – QCLNG Gas Field development; ▪ EPBC 2008/4399 – QCLNG Export Pipeline (including the Narrows Crossing) development ▪ EPBC 2008/4401 – QCLNG Marine Facilities development; ▪ EPBC 2008/4402 – QCLNG LNG Plant development; ▪ EPBC 2008/4405 – QCLNG Shipping activities; and ▪ EPBC 2013/7047 – Development of Surat Basin Acreage	✓	

7 Information sources and attachments

(For the information provided above)

7.1 References

- List the references used in preparing the referral.
- Highlight documents that are available to the public, including web references if relevant.

Barnett BG and Muller J (2008) Upper Condamine Groundwater Model Calibration Report. A report to the Australian Government from the CSIRO Murray-Darling Basin Sustainable Yields Project. CSIRO, Australia. 51pp.

Department of Environment (DoE) EPBC Protected Matters Report. Created 23/02/2015.

Department of Environment (DoE) (2014). EPBC Act Referral Guidelines for the vulnerable koala (combined populations of Queensland and New South Wales and the Australian Capital Territory). Commonwealth of Australia, 2014.

Department of Environment (DoE) (2013). Significant impact guidelines 1.3, Commonwealth of Australia.

DSEWPaC 2010. Survey Guidelines for Australia's Threatened Bats. Commonwealth of Australia 2010.

DSEWPaC 2010. Survey Guidelines for Australia's Threatened Birds. Commonwealth of Australia 2010.

DSEWPaC 2011. Survey guidelines for Australia's threatened mammals. Commonwealth of Australia. 2011.

DSEWPaC 2011. Survey guidelines for Australia's threatened reptiles. Commonwealth of Australia. 2011.

ERM 2015 (unpublished) Koala (*Phascolarctos cinereus*) Significant Impact Assessment.

Klohn Crippen Berger (2011). Conceptualisation of the Walloon Coal Measures beneath the Condamine Alluvium, Final Report prepared for the Department of Environment and Resource Management, Healthy headwaters Coal Seam Gas Feasibility Study.

Klohn Crippen Berger (2012). Hydrogeological attributes associated with Springs in the Surat Cumulative Management Area. 315 pp. QWC, Brisbane.

Neldner, V.J., Wilson, B.A., Thompson, E.J. and Dillewaard, H.A. (2012) Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland. Version 3.2. Updated August 2012. Queensland Herbarium, Queensland Department of Science, Information Technology, Innovation and the Arts, Brisbane. 124 pp

Queensland Water Commission (QWC) (2012) Underground Water Impact Report for the Surat Cumulative Management Area.

RPS Australia East 2015 (unpublished) Ecological Assessment: Braemar State Forest ATP 1188.

RPS Australia East 2014 (unpublished) Anya protected Values: Braemar State Forest ATP1188.

7.2 Reliability and date of information

For information in section 3 specify:

- source of the information;
- how recent the information is;
- how the reliability of the information was tested; and
- any uncertainties in the information.

The information presented in this referral is current, relevant and reliable and includes specialist third party desktop and field based assessment of the referral area completed in 2014 and 2015.

An EPBC protected matters search was undertaken by RPS on 04/06/2014 a further search was undertaken by QGC on 23/02/2015 to ensure currency of information.

Other documents referenced are from reliable third party sources and have been used as reference texts

against which field survey findings have been compared.

7.3 Attachments

Indicate the documents you have attached. All attachments must be less than three megabytes (3mb) so they can be published on the Department's website. Attachments larger than three megabytes (3mb) may delay the processing of your referral.

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	Attachment A – Referral Figures
	GIS file delineating the boundary of the referral area (section 1)		
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)		
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)		
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)		
	copies of any flora and fauna investigations and surveys (section 3)	✓	Attachment B – PMST results Attachment C – Ecological assessment; and Protected values assessment Attachment D – Koala Significant Impact Assessment
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)		Attachment E – ATP1188 Hydrogeological Conceptualisation Attachment F – Constraints Planning and Field Development

		Protocol Attachment G – Significant Species Management Plan Attachment H – Stage 3 Water Monitoring and Management Plan Attachment I – Pest and Weed Management Plan Attachment J – Remediation, Rehabilitation and Recovery Monitoring Plan
report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)		

8 Contacts, signatures and declarations

NOTE: Providing false or misleading information is an offence punishable on conviction by imprisonment and fine (s 489, EPBC Act).

Under the EPBC Act a referral can only be made by:

- the person proposing to take the action (which can include a person acting on their behalf); or
- a Commonwealth, state or territory government, or agency that is aware of a proposal by a person to take an action, and that has administrative responsibilities relating to the action[1].

Project title:

8.1 Person proposing to take action

This is the individual, government agency or company that will be principally responsible for, or who will carry out, the proposed action.

If the proposed action will be taken under a contract or other arrangement, this is:

- the person for whose benefit the action will be taken; or
- the person who procured the contract or other arrangement and who will have principal control and responsibility for the taking of the proposed action.

If the proposed action requires a permit under the Great Barrier Reef Marine Park Act[2], this is the person requiring the grant of a GBRMP permission.

The Minister may also request relevant additional information from this person.

If further assessment and approval for the action is required, any approval which may be granted will be issued to the person proposing to take the action. This person will be responsible for complying with any conditions attached to the approval.

If the Minister decides that further assessment and approval is required, the Minister must designate a person as a proponent of the action. The proponent is responsible for meeting the requirements of the EPBC Act during the assessment process. The proponent will generally be the person proposing to take the action[3].

1. Name and Title:	Tracey Winters – Vice President Asset Management, Land & Environment
2. Organisation (if applicable):	QGC Pty Ltd
3. EPBC Referral Number (if known):	
4: ACN / ABN (if applicable):	ACN: 089 642 553
5. Postal address	GPO Box 3107, Brisbane, QLD 4001
6. Telephone:	07 3024 7619
7. Email:	Tracey.Winters@bg-group.com
8. Name of designated proponent (if not the same person at item 1 above and if applicable):	
9. ACN/ABN of designated proponent (if not the same person named at item 1 above):	

[1] *If the proposed action is to be taken by a Commonwealth, state or territory government or agency, section 8.1 of this form should be completed. However, if the government or agency is aware of, and has administrative responsibilities relating to, a proposed action that is to be taken by another person which has not otherwise been referred, please contact the Referrals Gateway (1800 803 772) to obtain an alternative contacts, signatures and declarations page.*

[2] *If your referred action, or a component of it, is to be taken in the Great Barrier Reef Marine Park the Minister is required to provide a copy of your referral to the Great Barrier Reef Marine Park Authority (GBRMPA) (see section 73A,* EPBC Act*). For information about how the GBRMPA may use your information, see http://www.gbrmpa.gov.au/privacy/privacy_notice_for_permits.*

[3] *If a person other than the person proposing to take action is to be nominated as the proponent, please contact the Referrals Gateway(1800 803 772) to obtain an alternative contacts, signatures and declarations page.*

COMPLETE THIS SECTION ONLY IF YOU QUALIFY FOR EXEMPTION FROM THE FEE(S) THAT WOULD OTHERWISE BE PAYABLE

I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

□ an individual; OR

□ a small business entity (within the meaning given by section 328-110 (other than subsection 328-119(4)) of the *Income Tax Assessment Act 1997*).

If you are small business entity you must provide the Date/Income Year that you became a small business entity:

Note: You must advise the Department within 10 business days if you cease to be a small business entity. Failure to notify the Secretary of this is an offence punishable on conviction by a fine (regulation 5.23B(3) *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth)).

COMPLETE THIS SECTION ONLY IF YOU WOULD LIKE TO APPLY FOR A WAIVER

I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations. Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made:

Declaration

I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.
I agree to be the proponent for this action.
I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature Tracey Winters Date 14/4/15

8.2 Person preparing the referral information (if different from 8.1)

Individual or organisation who has prepared the information contained in this referral form.

Name	Fiona Marks
Title	Environment Manager
Organisation	QGC Pty Ltd
ACN / ABN (if applicable)	ACN: 089 642 553
Postal address	GPO Box 3107, Brisbane, QLD 4001
Telephone	07 3364 2410
Email	~~Phill.Wilkinson@bg-group.com~~ fiona.marks@bg-group.com
Declaration	I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature Date 17/4/15

REFERRAL CHECKLIST

NOTE: This checklist is to help ensure that all the relevant referral information has been provided. It is not a part of the referral form and does not need to be sent to the Department.

HAVE YOU:

- ❑ Completed all required sections of the referral form?
- ❑ Included accurate coordinates (to allow the location of the proposed action to be mapped)?
- ❑ Provided a map showing the location and approximate boundaries of the project area?
- ❑ Provided a map/plan showing the location of the action in relation to any matters of NES?
- ❑ Provided a digital file (preferably ArcGIS shapefile, refer to guidelines at Attachment A) delineating the boundaries of the referral area?
- ❑ Provided complete contact details and signed the form?
- ❑ Provided copies of any documents referenced in the referral form?
- ❑ Ensured that all attachments are less than three megabytes (3mb)?
- ❑ Sent the referral to the Department (electronic and hard copy preferred)?

Attachment A

Geographic Information System (GIS) data supply guidelines

If the area is less than 5 hectares, provide the location as a point layer. If the area greater than 5 hectares, please provide as a polygon layer. If the proposed action is linear (eg. a road or pipline) please provide a polyline layer.

GIS data needs to be provided to the Department in the following manner:

- Point, Line or Polygon data types: ESRI file geodatabase feature class (preferred) or as an ESRI shapefile (.shp) zipped and attached with appropriate title
- Raster data types: Raw satellite imagery should be supplied in the vendor specific format.
- Projection as GDA94 coordinate system.

Processed products should be provided as follows:

- For data, uncompressed or lossless compressed formats is required - GeoTIFF or Imagine IMG is the first preference, then JPEG2000 lossless and other simple binary+header formats (ERS, ENVI or BIL).
- For natural/false/pseudo colour RGB imagery:
    - If the imagery is already mosaiced and is ready for display then lossy compression is suitable (JPEG2000 lossy/ECW/MrSID). Prefer 10% compression, up to 20% is acceptable.
    - If the imagery requires any sort of processing prior to display (i.e. mosaicing/colour balancing/etc) then an uncompressed or lossless compressed format is required.

Metadata or 'information about data' will be produced for all spatial data and will be compliant with ANZLIC Metadata Profile. (http://www.anzlic.org.au/policies_guidelines#guidelines).

The Department's preferred method is using ANZMet Lite, however the Department's Service Provider may use any compliant system to generate metadata.

All data will be provide under a Creative Commons license (http://creativecommons.org/licenses/by/3.0/au/)