

SUBMISSION

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Submission: Environmental Impact Statement for the Carmichael mine and rail project

Thank you for the opportunity to make a submission to the Environmental Impact Statement for the Carmichael coal mine and rail project.

We are glad to have the opportunity to have input into this process because the standard of work and analysis in this Environmental Impact Statement is extremely poor, and requires significant revision and further work to meet statutory requirements and provide adequate information to the public about this project.

The proponent proposes to construct what would be the biggest coal mine in the country, in a region that has not been subject to coal mining previously. It is proposed that this mine operate for 90 years and to make way for it, the proponent proposes to clear 12,586ha of remnant vegetation, much of it threatened species habitat. The proponent also proposes activities that would remove 1,000m³ of water per day from the Carmichael River. The extent and intensity of the impacts associated with this project would be profound, and yet the treatment this is given in the Environmental Impact Statement is cursory, generic and at times incoherent.

The standard of writing and composition is poor. There are spelling mistakes, incoherent sentences, and incomplete analyses. There are several instances where the Environmental Impact Statement contradicts itself.

The Federal Government will not be in a position to make a determination on this project without this information being provided beforehand, and will expose itself legally and will erode public confidence in the environmental assessment process if proper, comprehensive, accurate and detailed assessment is not conducted for this and other species and communities for which it has statutory responsibility.

- It is expressly stated that the EIS does not consider the impacts of the project on species “Whose distribution does not encompass the Study Area” and this approach is described as “conservative” (5-46). This is despite acknowledgement that the impacts of the project,

particularly on groundwater dependent ecosystems, extend well beyond the project area, both upstream and downstream.

- Furthermore, the proponent proposes extensive additional development of “offsite infrastructure” the impact of which appears to have not been assessed at all.
- The EIS, in this respect, cannot be said to have fulfilled its terms of reference for the following nationally threatened species and communities: Koala, Waxy cabbage palm, two endangered plants, *Eryngium fontanum* and *Eriocaulon carsonii*, and the endangered ecological community, the community of native species dependent on natural discharge of groundwater from the Great Artesian Basin. The deficiencies of the assessment are such that we cannot be confident that there are no other nationally-threatened species on which this project is likely to have a significant impact.
- There are two nationally threatened species, *Eryngium fontanum* and the Black-throated finch (southern) for which it appears this mine will remove or damage habitat “critical to their survival.” For one of these, the endangered plant, *Eryngium fontanum*, there no assessment of the impact of the draw down associated with the mine.
- The mapping produced for the black-throated finch is incorrect, as are the estimates of important habitat present and, presumably, the area of important habitat proposed to be cleared.
- There is no assessment of the impact of the mine and its consequential impacts on the nationally vulnerable Waxy cabbage palm. Specifically, there needed to be an assessment of the impact of any intensification of flooding of the riparian zone caused by the proposed levy banks on the Carmichael River, and of the impact of the dramatic 30m draw down of groundwater expected in the 60th year of the mine’s operation.
- There is no assessment of the impact of the dramatic levels of drawdown of groundwater expected for this mine on groundwater-dependent species in the surrounding area, nor is there any discussion of whether the Koala habitat for which Bygana Nature Refuge was proclaimed is groundwater dependent.
- The EIS does not directly acknowledge that the black-throated finch (southern) habitat proposed to be cleared may be habitat “critical to the survival of the species.” This may be because the proponent did not have access to a document prepared by SEWPAC that states that other woodland in the region would be characterised this way if the subspecies were confirmed to be present, which it has at this site. We have appended a copy of this document for the proponent’s information.
- The proponent proposes to clear nearly 10,000 ha of what we believe is likely to be deemed habitat critical to the survival of the Black-throated finch (southern). On this ground, it is clear that the project would have unacceptable impact on this subspecies.
- For the limited number of species that are assessed, there are serious holes and deficiencies in the work, and these are outlined in the body of our submission.
- The Nature Conservation Chapter omits discussion of Dunmall's Snake and Brigalow Scaly-foot, which both have habitat within the industrial area. We can only speculate that these species were excluded because they were both deemed unlikely to be present by the Terrestrial Ecology Report.
- The three paragraphs that comprise the entirety of the assessment of cumulative impacts on the three key threatened fauna species, Black-throated finch (southern), Squatter pigeon and

Koala are not an adequate assessment, nor do they fulfil the terms of reference. There is no quantification of the Black-throated finch (southern) and Squatter Pigeon habitat loss for the four mines discussed, and neither is there discussion of the impacts on the Koala expected at Kevin's Corner and the South Galilee Project.

- The Terms of Reference required the EIS to include "a detailed discussion on the potential impacts of the proposal on the Great Barrier Reef Marine Park (the Marine Park)." This includes assessment of the potential for "Persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment." These pollutants, known to be associated with coal and mining operations, are not mentioned in the chapter dealing with matters of national environmental significance, World Heritage, and the Great Barrier Reef.
- At its greatest extent of operations and development, after approximately 60 years (of a ninety year mine life), drawdowns of up to between 30 to 60 m have been predicted for the groundwater table in the vicinity of the Carmichael River. The lack of serious analysis of the impact of this on local and regional water availability, and on groundwater dependent communities is unacceptable.
- The proponent does not seem certain about how much water this mine will use. At one point, the EIS states that it will be between 4-10GL which would be up to 15% of the total current use of water resources in the catchment, but elsewhere it is stated that, the offsite water supply infrastructure will extract up to 20GL of flood water, 2 GL of in-stream storage water and up to 2.5 GL of ground water per annum." This would be more than 30% of the current volume of water allocations in the catchment.
- As the proponent proposes to fulfil their water needs from ground and surface water harvesting, there needs to be a closer examination of the impact this will have at the subcatchment level. The overview of water use in the Belyando/Suttor catchment is too coarse to understand the impact of the mine on water resources, and more detailed work on the water use and impacts on the Carmichael and Belyando Floodplain subcatchments is needed before the public can accurately understand how this mine will impact on the region.

Introduction

We are very concerned at the poor quality of this Environmental Impact Statement and the lack of consideration and assessment for many aspects of this large scale project.

Throughout the EIS there are gaps in the assessment, contradictions and poorly explored implications of the proponent's information.

The impact of the infrastructure proposed to support this mine is barely assessed, if at all. This includes the intensity of use of the proposed rail way line, the proposed capacity of which defies logic. The proponent's claim that the Carmichael mine will produce 60Mtpa of coal, with the stated specifications of the rail line, by our calculation, is only achievable if the line operates constantly 365 days of the year with no maintenance.

The EIS states that there will be twelve trains per day each way to transport up to 60Mtpa of coal, consisting of four locomotives and 164 narrow gauge wagons and that these trains are expected to

run 24 hours per day, 320 days a year, with each wagon carrying 84 tonnes of product and each train would be approximately 2.76 km long.

This means 1,968 wagons of coal filled each day and each train carrying approximately 16,000 tonnes of coal. At the terminus the proponent proposes two balloon loops and loaders for the full 60Mtpa capacity. According to our calculations, this will mean that each wagon will need to be filled in 1.5 minutes and, overall, one wagon filled at the mine every 45 seconds of every day of the year.

No thought appears to have been given to the practical ramifications for anyone who lives near or has to cross this proposed rail line.

We have profound concern with the treatment in the EIS of matters of national environmental significance. Specifically, there are species and communities that are likely to be significantly impacted by this proposal for which no assessment is provided.

Even with the information available, it is clear that this proposal would have unacceptable impacts on at least one species, and on local and regional water. It is highly possible, given the extent of the groundwater impact of this proposal, that there would be significant impact on other species and communities, particularly those that are groundwater dependent, but it is impossible to know, because the EIS has not assessed them.

General failings of the EIS and supporting documents

This section outlines some broad and fundamental failures of the Environmental Impact Statement, not specific to any particular species or environmental value, but potentially impacting on a range of matters.

Offsite infrastructure impacts unassessed

Throughout the EIS, there is reference made to a range of consequential developments that support the mine, including a workers village, an airport and an “industrial area”. Why the proponent has chosen to refer to these developments as “offsite” when some appear to be immediately adjacent to the mine, and all are within a short distance, is not clear. What is clear is that a far lower standard of assessment has been applied to these developments. The field surveys described in the Terrestrial Ecology Report covered the mine site only (consisting of EPC 1690 and EPC 1080), with the majority of surveying taking place in EPC1690. The location and extent of the proposed offsite infrastructure was apparently changed after the surveys for the Terrestrial Ecology Report were undertaken (Terrestrial Ecology Report 1-18). As such, there appear to have been no field surveys of most the areas that are proposed now to host the offsite infrastructure (Terrestrial Ecology Report 1-9).

In general, offsite infrastructure locations have only been subject to desktop assessments. The exception is a one-day rapid site inspection of offsite water infrastructure areas on 27 June 2012 undertaken by Hyder Consulting. This rapid assessment was undertaken to identify any existing environmental values, such as remnant or native regrowth vegetation and significant habitat values. No targeted fauna searches or surveys were undertaken. The Hyder site inspection report is referenced in the EIS but a copy of the report is not provided.

The construction phase for the offsite infrastructure is scheduled to lead to the clearing of 86 ha of remnant vegetation and 3,227 ha of non-remnant vegetation (including 9 ha of high value regrowth

vegetation) (Nature Conservation 5-99). It is unclear why the construction phase requires the clearance of this much vegetation when the entire offsite infrastructure is only reported to be taking up 1,847 ha (Project Description 2-7)

Strangely, the Matters of National Environmental Significance chapter does refer to sightings of threatened species at the “offsite infrastructure.” The chapter states that “three black-throated finch (southern) and squatter pigeon (southern) sightings were made at water bodies surrounded by non-remnant vegetation, including at one site which was near the proposed location of the mine village” (11-46). This casual mention of the sighting of two threatened species in an area that will be developed for this project but has not been subject to species-specific surveys is symptomatic of the generally lax and unmethodical approach to this Environmental Impact Statement. There do not appear to be any records of the squatter pigeon or the Black-throated finch (southern) being near the mine village in the maps provided in the Appendices N1 (Terrestrial Ecology Report) or N3 (Black-throated finch Report). Perhaps the sightings are recorded in the report from the only official survey conducted at the offsite infrastructure areas, the Hyder’s one-day rapid site inspection. We cannot know as this report is not provided.

General gaps in the mine and rail assessment

It appears from our reading of the EIS that flora surveying was significantly weaker on EPC1080 and that samplings sites were distributed in a patchy manner which leaves significant geographic gaps in the data and may have led to under-reporting of important habitat for Black-throated finch (southern) and a severe lack of data on the impacted Mellaluka springs.

Table 1 compares the survey and sampling effort for flora and fauna in the two EPCs that make up the Carmichael mine site. Specifically, there are two significant areas where surveys appear to have missed – the western extent of the rail project, and the area at the southern end of EPC1080, where Mellaluka Springs is located.

Table 1: Comparison of surveys conducted for the two EPCs

Survey method	EPC 1690	EPC 1080
Flora Comprehensive survey sites	20 ¹	0 ²
Flora Rapid assessment sites	160 ³	48 ⁴
Fauna Comprehensive survey	16 ⁵	6 ⁶
Fauna Rapid assessment sites	36 ⁷	40 ⁸

¹GHD (2012) Adani Carmichael Coal Mine Project EIS Appendix N1 Terrestrial Ecology Report p 1-18

²GHD (2012) Adani Carmichael Coal Mine Project EIS Appendix N1 Terrestrial Ecology Appendix B p 1-9

³GHD (2012) Adani Carmichael Coal Mine Project EIS Appendix N1 Terrestrial Ecology Report p 1-18

⁴GHD (2012) Adani Carmichael Coal Mine Project EIS Appendix N1 Terrestrial Ecology Appendix B p 1-9

⁵GHD (2012) Adani Carmichael Coal Mine Project EIS Appendix N1 Terrestrial Ecology Report p 1-21

⁶GHD (2012) Adani Carmichael Coal Mine Project EIS Appendix N1 Terrestrial Ecology Appendix B p 1-12

⁷GHD (2012) Adani Carmichael Coal Mine Project EIS Appendix N1 Terrestrial Ecology Report p 1-21

⁸GHD (2012) Adani Carmichael Coal Mine Project EIS Appendix N1 Terrestrial Ecology Appendix B p 1-12

Fauna farm dam assessments	0	18 ⁹
Size of EPC including road easements	26,016 ha ¹⁰	18,714 ha ¹¹
Total number of sites/surveys	232	112

If the project goes ahead Mellaluka Springs are likely to experience 0.7 to 0.8 m due to mine dewatering (Water Resources 6-113). The EIS states that: “Further assessment of the ecology and hydrogeology of the springs themselves and of the area between the springs and the proposed mining area is required to better understand the potential for impact in this area.” This is not acceptable. An area of potentially high ecological value in the area, such as a spring, needs to have been surveyed and considered before the Government is asked to make a decision about the project.

The Nature Conservation Chapter omits discussion of Dunmall's Snake and Brigalow Scaly-foot, which both have habitat within the industrial area (Rail Ecology Report 3-29). We can only speculate that these species were excluded because they were both deemed unlikely to be present by the Terrestrial Ecology Report (Terrestrial Ecology Report 2-13).

Problems with the assessment of matters of national environmental significance and water resources are elaborated below.

Matters of national environmental significance

The chapter dealing with matters of national environmental significance contains much that is not specifically relevant to the matters that will be impacted by this mine, and very little that is.

In the threatened species section, the impact on most species is not quantified, nor is the scale of the impact accurately contextualised with the species’ extent, status and needs. The mitigation and impacts subsections describe very broad actions (“identification of weed infested areas,” design waste storage areas to “minimise” leaking, review literature on mine rehabilitation, for example), without relating these to specific matters of national environmental significance, or describing how they will prevent or minimise impact on those matters. Instead, the chapter refers vaguely to benefits for “ecological values” and “regional biodiversity.”

The authors of the EIS do not appear to consider that the development of most of the “offsite infrastructure” triggers any matters of national environmental significance. Only the water supply infrastructure is mentioned, the airport, industrial area and workers village are not.

The layout of the chapter is confusing and ambiguous and as with other parts of the EIS, there are sentences in the chapter on matters of national environmental significance that are actually incoherent. This is a significant barrier to anyone understanding the scale of the impact to the various environmental values, and the proponent’s efforts to avoid those impacts.

⁹ GHD (2012) Adani Carmichael Coal Mine Project EIS Appendix N1 Terrestrial Ecology Appendix B p 1-12

¹⁰ GHD (2012) Adani Carmichael Coal Mine Project EIS Chapter 02 Project Description p 2-4 Table 2-1

¹¹ GHD (2012) Adani Carmichael Coal Mine Project EIS Chapter 02 Project Description p 2-4 Table 2-1

It is stated that “approaches” to offsetting “have been identified” but the proponent cannot expect that approval can be given for the loss of so much known habitat for an endangered species without very strong ameliorative measures in place and justified. This simply has not occurred.

Threatened species

Black-throated finch

The incredible significance of sighting so many individuals of this species on the site is not acknowledged in the EIS, and the specific impacts to this species from the project are dealt with in four short paragraphs comprised mostly of generalisations and unfounded speculation.

Unfortunately, the poor quality of the EIS is again evident in sections that deal with the Black-throated finch. It is clear that the EIS has not rigorously studied the potential impact of the mine on this subspecies because the estimates of present habitat, and proposed clearing are not consistent. The MNES chapter is severely deficient in its description and analysis of the impacts of the proposal on this species. For example it is acknowledged that “mining in the southern part of the Study Area is expected to fragment a belt of remnant vegetation that extends from west of the Study Area, through the Study Area (at the Bygana West Nature Refuge) to the east towards the Belyando River.” But there is no analysis of the importance of this connection to the species. (5-28)

Incorrect mapping and area estimates

The matters of national environmental significance chapter states that “A total of 9,862 ha of the 21,246 ha of identified black-throated finch (southern) important areas is proposed to be impacted by vegetation clearing over the life of the mine.” Yet this estimate of “important areas” for the subspecies does not match the estimated area of important Black-throated finch (southern) habitat provided in the Black-throated finch report. Table 4 of that document estimates 32,070ha of important habitat across the two EPCs.

This may be because the Terrestrial Ecology Report uses a Black-throated finch (southern) map that incorrectly maps “Important” areas, only mapping this where its criteria overlaps with “Potential Habitat” (3-26). This does not conform to the Department of Sustainability Environment Water Population and Communities’ specification for identifying Important Areas which makes no mention of excluding non-Potential Habitat areas from the 5km radii of Important Areas (*Significant impact guidelines for the endangered black-throated finch (southern) (Poephila cincta cincta)* 2009, 10)

This mistake is corrected in the Black-throated Finch Report, which displays a map showing important areas as a radius around sightings, as per the SEWPAC guidelines, and states that “revised habitat mapping was undertaken.” It also includes all new sightings of the subspecies, which may have further increased the area defined as “important.” However, failure by the proponent to correct this mistake in the Matters of National Environmental Significance report, to reproduce the correct maps, and to correctly estimate the area of important habitat for this subspecies present in the mine study area is either a deliberate omission, or evidence that the proponent has failed to rigorously assess the impacts of this project to the standard required for robust decision-making.

Since the Black-throated Finch Report does not estimate the area of clearing proposed, it is impossible to know if the area of important habitat for this subspecies proposed to be cleared for this mine is greater than the stated 9,862 hectares, though we suspect this is the case.

Cumulative impacts

The three paragraphs that comprise the entirety of the assessment of cumulative impacts on the three key threatened fauna species, BTF (southern), Squatter pigeon and Koala are not an adequate assessment, nor do they fulfil the terms of reference. There is no quantification of the BTF and SP habitat loss for the four mines discussed, nor the impacts on the Koala expected at Kevin's Corner and the South Galilee Project.

Critical habitat

The EIS does not directly acknowledge that the black-throated finch habitat proposed to be cleared may be habitat "critical to the survival of the species." It is stated that works for the mine may "Adversely affect habitat critical to the survival of the black-throated finch," (our emphasis) but this equivocal statement is virtually meaningless without substantiation of what is meant by "adversely affect" and quantification of how much critical habitat is captured by this. The lack of clarity may be a result of the proponent not having access to a document prepared by SEWPAC that states that other woodland in the region would be characterised this way if the subspecies were confirmed to be present, which it has at this site. We have appended a copy of this document for the proponent's information. (5-49).

The proponent notes that SEWPAC identifies "any habitat within 5 km of a post-1995 sighting as an 'important area' for the subspecies." (4-27) and that by this definition, there are 21,246 ha of important habitat for the Black-throated finch (southern), but fails to register the significance of having so many sightings in one area, and so much contiguous important habitat. It also notes that "it is considered likely that the black-throated finch (southern) is breeding at the Study Area" that the individuals they sighted are likely to comprise a population, and that the mine may "result in a long-term decrease in the size of the black-throated finch (southern) population in the landscape in which the Project Area occurs" (6-56) and yet it completely fails to register the importance of this population within the regional and national context of the subspecies' conservation status. The ambiguity and lack of clear and accurate written composition of the assessment means we cannot be confident that the proponent understands that the nearly 10,000ha of important habitat they propose to clear is likely to be critical to the survival of the subspecies.

Water resources are identified by the EIS as a critical habitat feature for this species (MNES 4-16) and the EIS identifies stock watering troughs and dams as key features of habitats where finches were recorded (4-18). And yet, loss of surface water is not identified as a potential impact on this species, or others, in the MNES chapter (5-8 and 5-9). The loss of a farm dam is mentioned in the narrative, but no substantiation is offered for the assertion that this will not have an impact on the population. There is brief mention of this possibility, in an entirely speculative aside: "The provision of surface water in the eastern part of the Study Area (water management dams) may provide

additional localised access to drinking water for the subspecies (or at least compensate for the loss of surface water resources in nearby parts of the Study Area)” (5-30).

In a separate section, it is noted that “Draw down of water levels during periods of flood harvesting to the extent that dams are drained on Obungeena Creek and North Creek may also result in the mortality of resident aquatic species. Beyond this dams may also naturally dry during periods of drought” (5-33-34). But this aspect of the mine’s impact is not discussed in relation to the black-throated finch (southern).

Unacceptable impact

On these grounds, particularly on the loss of a large area of critical habitat for a population of a significant size, it is clear that the project would have an unacceptable impact on this subspecies. The Black-throated finch significant impact guidelines list the chief threats to the subspecies, and this project is contributing to the first three that are listed there:

- clearing and fragmentation of nesting sites
- clearing and fragmentation of foraging habitat (grasslands and grassy woodlands)
- reduction in the availability (location and duration) of water

The EIS asserts that, “Research works will contribute to the maintenance of this subspecies within this bioregion and therefore, in general, to the recovery of the subspecies” (MNES Chapter ix) citing the Recovery Plan for the species. Nowhere in the Recovery Plan does it state that undertaking research can ameliorate the loss of nearly 10,000ha of known important habitat for an important population of the subspecies.

We strongly believe that the impact to this species proposed for this mine are unacceptable.

Squatter pigeon

The proponent proposes that the project will require clearing over the life of mine operations of 12,391ha of habitat for this species. Yet, there is severe deficiency in the assessment of the impact this scale of habitat loss, particularly combined with the habitat loss for this species in the railway, and the cumulative impact with other projects nearby.

For both the Squatter pigeon and the Black-throated finch (southern), the availability of water is acknowledged to be a crucial feature of their habitat requirements. One of the pictures of Squatter pigeons observed on the mine site shows an individual perched on a cattle trough. It has come to our attention that the proponent may have caused cattle troughs to become empty, thereby potentially impacting on these two bird species without first obtaining an approval.

An identical three sentences about the availability of water from new dams compensating for the loss of water from clearing appears for this species, as for the Black-throated finch (southern).

The three paragraphs that comprise the entirety of the assessment of cumulative impacts on the three key threatened fauna species, Black-throated finch (southern), Squatter pigeon and Koala are not an adequate assessment, nor do they fulfil the terms of reference. There is no quantification of

the Black-throated finch (southern) and Squatter Pigeon habitat loss for the four mines discussed, and neither is there discussion of the impacts on the Koala expected at Kevin's Corner and the South Galilee Project.

Waxy Cabbage Palm

Surveys undertaken for the EIS detected the endemic waxy cabbage palm (*Livistona lanuginosa*) in the channel of the Carmichael River. The Terrestrial Ecology Report says of this species that "The entire species is believed to be represented by only seven discrete populations, with the Carmichael River population located at the most southern extent of the species' distribution (SEWPAC, 2012a)." (Terrestrial Ecology Report)

There is some ambiguity in the description of the intended works for the riparian zone around the Carmichael River. The statement that "The *initial* mine design identified a 500m corridor to be retained either side of the centre line of the Carmichael River to protect it and the riparian zone from mining operations." (6-98, our emphasis) indicates that subsequent to this, the design may have changed, but does not describe how. There is no real assessment of the impact of the mine and its consequential impacts on this species, nor is there clear indication of the proximity of clearing and building works for the river crossing in relation to the ten individuals of this species found on site. Specifically, the proponent should be required to investigate the effect of the proposed levies around the Carmichael River, designed to prevent the pits flooding during flood events. Will this result in flooding of the ten individuals present, and what effect will this have on them and their ability to reproduce?

At the other extreme, the dramatic drawn down of groundwater predicted in the mine's 60th year of operation is expected to significantly impact on flows in the Carmichael River.

The EIS states that "At its greatest extent of operations and development, after approximately 60 years (of a ninety year mine life), drawdowns of up to between 30 to 60 m have been predicted for the groundwater table in the vicinity of the Carmichael River" (MNES Chapter 5-34). It notes that this species is groundwater dependent. And yet, in the chapter on matters of national environmental significance, there is no discussion, analysis or assessment of the impact this dramatic change in the groundwater of the surrounding area will have on the individuals present on the site, or on any other individuals in the surrounding area, for which a search has presumably not been undertaken. It is noted that there are 25 individuals at Doongmabulla Springs, but the impact of the altered flow regime and reduced availability of groundwater on the species is mentioned without being investigated. In the Terrestrial Ecology Report, it is stated that the Waxy cabbage palm is particularly vulnerable to this draw down, and that populations of it may be lost, and yet there is no acknowledgement that the mine will have a significant impact on this species.

No mention is made of the impact of the hydrological disturbance caused by the levies may have on the plants, or of the difference in flow regime if the dry season flow is reduced from the Doongmabulla Springs into the Carmichael River. The EIS contradicts itself about the degree to which this species is dependent on groundwater, but evidence from the Doongmabulla Springs suggests it may be. No assessment is made of individuals of this species off the mining site that may be impacted by groundwater drawdown.

Koala

As for other nationally threatened species, the assessment of the impacts of this project on the Koala is incomplete and, in places, unsubstantiated. The discussion on the impact of the mine's groundwater extraction on groundwater dependent ecosystems in the area, for example, discusses the significant extraction proposed by the proponent and states that "A worst case scenario would involve localised dieback of riparian vegetation communities such as river red gums and paperbarks." (5-36). The impact of this on the Koala is not discussed.

The Terrestrial Ecology Report contains clearer statements that acknowledge the impact of the draw down on groundwater dependent riparian communities, including River Red Gum, predicting: "Progressive mortality of characterising riparian species in the middle to latter parts of the operational life of the mine (after 60 years) beginning with less deeply rooted individuals (and species), and continuing to more persistent species such as river red-gums in the latter part of the mine life." (6-68) And yet, the impact of this on any nationally threatened species that may be dependent on this community, including the Koala, is not discussed.

It is stated that, "The Bygana West Nature Refuge in the southern part of the Project Area was proclaimed, amongst other reasons, as it contains suitable koala habitat." (4-31) But the degree to which the koala habitat in this Nature Refuge is groundwater dependent is not discussed, nor is the regional importance of the habitat corridor that is proposed to be broken by clearing for this mine.

Further surveys and analysis is proposed, and a "Species Specific Management Plan." It is completely inappropriate for this to occur after the publication of the EIS, and the Federal Government should not have allowed this document to be publicly exhibited without adequate surveys and analysis being conducted. The Federal Government will not be in a position to make a determination on this project without this information being provided beforehand, and will expose itself legally and will erode public confidence in the environmental assessment process if proper, comprehensive, accurate and detailed assessment is not conducted for this and other species and communities for which it has statutory responsibility.

Threatened flora and TECs

GAB discharge spring wetlands

The *Recovery Plan* for the ecological community known as 'The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin' (hereafter, GAB discharge spring wetlands), which listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) lists aquifer draw down as the first threat to this community. The impact of draw down associated with this project is not satisfactorily dealt with, and we believe that the impact on the Doongmabulla Springs particularly, and the threatened and endemic species that live there, is poorly described in the EIS and may well be understated.

We cannot agree with the unsubstantiated assertion that the impact on this important wetland, and its dependent species, of groundwater draw down associated with this project in the short to medium term "is deemed to be insignificant."

The long term impact is acknowledged to be likely to be much worse, considering the extensive groundwater drawdown predicted for the 60th year of the mine, yet the EIS does not assess this impact, and states instead that “In the longer term, while the predicted drawdowns are less than that currently regarded as having a potential adverse impact on GAB springs, management measures may be derived during the course of the monitoring program to enable any potential threat to ameliorated during the latter operational phases of the mine (i.e. beyond 60 years).” (5-35)

Information provided about the degree of draw down expected at and around Doongmabulla Springs is contradictory. It is repeatedly stated that the draw down at the Springs, at the peak of intensity, will be around 0.2m, and yet, elsewhere in the EIS, it is stated that dewatering for safety reasons will result in “declining groundwater levels, drawn down by more than one metre up to around 10 km from the Project (Mine) site during the operational phase.” (Water Resources 6-108). Doongmabulla Mound Springs Nature Refuge is less than 10km from the Project Area. As we have stated for other groundwater-dependent threatened species, we do not have confidence that this EIS has accurately or adequately described and understood the impact this draw down is likely to have. The EIS is riddled assumptions, deferrals and conclusion-leaping that cannot provide the basis for a sound decision on the impact of this mine on this community.

The Water Resources chapter states that:

Groundwater modelling results suggest that groundwater discharges to local water courses, predominantly the Carmichael River, will be reduced by up to 1,000 m³/d or 7 per cent of pre-development discharge during the operational phase. Where groundwater discharge is reduced by 7 per cent as predicted then this may have some impact on the duration of zero flow and/or low flow periods in the Carmichael River and also possibly the Belyando River downstream. Ongoing monitoring and measurement of flows in the Carmichael River and of discharges from the Doongmabulla Springs is required to quantify the magnitude of these impacts. The Carmichael River also receives a proportion of its water from Doongmabulla Springs; hence any reduction in the rate of flow from the springs as a result of the minor predicted impacts on groundwater levels at two of the springs may also contribute to a reduction of flow in the river. (6-114)

It is not reasonable to expect a sound decision to be made on the basis of this lack of knowledge.

The EIS states that “further assessment will be undertaken to further refine an understanding of the status of each of the registered bores that may be significantly impacted by drawdown” (6-116). It is not appropriate for approval to be given to this mine without the assessment being complete and contravenes the requirements of the Terms of Reference, which required analysis of “pumping parameters, draw down and recharge at normal pumping rates and seasonal variations (if records exist) of groundwater levels.”

Given the significance of nearby Great Artesian Basin springs, it is untenable that this project should be given approval to go ahead without additional work being undertaken. We strongly suspect that

once it is undertaken, it will become clear that the project would have unacceptable impacts on the Doongmabulla Springs.

The most glaring omission of the EIS is the failure to assess the potential impact of the mine on the threatened and endemic flora and fauna of the Doongmabulla Springs. Of particular concern are the threatened plant species *Eryngium fontanum* (Blue devil), *Eriocaulon carsonii* (Salt pipewort) and the Waxy cabbage palm. It is acknowledged that these species are present, and that they are groundwater dependent, but the impact on these species of drawdown and altered hydrology generally in the area surrounding the mine is not assessed at all. The EIS notes that the springs support “six flora species of conservation significance, including two species known to be endemic to the Doongmabulla spring (the herb *Eryngium fontanum* and the grass *Sporobolus pamelae*)” (MNES Chapter 4-42). There is mention in the Doongmabulla Springs Report of the endemic mollusc that inhabits the springs, *Gabbia rotunda*, but this creature does not rate a mention in the Terrestrial Ecology Report, the Aquatic Ecology Report or the chapter on matters of national environmental significance.

The EIS proposes that the proponent will undertake, prior to any dewatering, “An ecological survey of the spring complex to establish its ‘health’ and to establish any seasonal variations. The survey would include measurement or estimation of discharge flows, assessment of the water quality and assessment of the ecology (for example extent, health and species present).” This assessment should have been completed prior to the EIS being exhibited for public comment. In fact, this assessment is supposed to the purpose of an EIS. The Queensland Government erred in exhibiting the document without this full assessment having been conducted.

Most alarmingly, the impact of the most intensive phase of the mine, when draw down in some surrounding areas is estimated to reach tens of metres, is not described, assessed and analysed. It is stated that this phase of the mine will lead to “Loss of a small area of vegetation, including species of conservation significance, along the outer boundary of the [Doongmabulla Springs] wetland as the volume of flow from the spring declines” (5-35) but this is the extent of the discussion of this significant impact on a federally threatened ecological community, which harbours two federally threatened endemic species.

Eryngium fontanum

The EIS does not include an assessment of the impact of the draw down associated with the mine on the nationally endangered *Eryngium fontanum*. Moses Springs hosts one of only two known populations of *E. fontanum*. It also hosts an important population of *Eriocaulon carsonii* (see the Recovery Plan 45 and 48).

It is expressly stated that the EIS does not consider the impacts of the project on species “Whose distribution does not encompass the Study Area” and describes this approach as “conservative” (5-46). This is despite acknowledgement that the impacts of the project, particularly on groundwater dependent ecosystems, extend well beyond the project area, both upstream and downstream. The EIS, in this respect, cannot be said to have fulfilled its terms of reference and should not have been publicly exhibited.

The importance of Doongmabulla Springs for this species is not accurately represented. The EIS states that, “Essential habitat for this species occurs approximately 10 km south-west of the Project Area in Doongmabulla Mound Springs Nature Refuge.” Yet, the Recovery Plan for GAB discharge spring wetlands describes Doongmabulla Springs as “Habitat *critical to the survival of the species*” (our emphasis). So, there are two nationally threatened species for which this mine will remove or damage habitat “critical to their survival,” and one has no assessment undertaken at all.

The critical habitat for *E. fontanum* is described in the Recovery Plan as habitat “based on permanent spring-fed wetlands with a groundwater source from the GAB *within a 5km radius of Doongmabulla and Edgbaston/Myross Springs*” (our emphasis). Since the EIS states that the springs are only 8km from the study area (Water Resources 6-88) then there is habitat critical to the survival of a federally engendered plant species just 3km from the study area. This is well within the intense zone for groundwater draw down.

Great Barrier Reef Marine Park

The Terms of Reference required the EIS to include “a detailed discussion on the potential impacts of the proposal on the Great Barrier Reef Marine Park (the Marine Park).”

This includes assessment of the potential for “Persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment.” These potential pollutants, known to be associated with coal and mining operations, are not mentioned in the chapter dealing with matters of national environmental significance.

The EIS claims that water from the mine will be “be subject to significant scrubbing prior to reaching the coast” (MNES 2-4). It is not clear to us what is meant by this statement. Is the proponent claiming that any pollutants released into the river as a result of this project will be deposited downstream before reaching the Great Barrier Reef? If so, some substantiation for this assertion should be provided, as should assessment of where these pollutants are likely to accumulate, and the effect this would have on the local environment.

Water

As in other sections of the EIS, there are apparent contradictions in the statements made about the water impacts of this project. At one point, in the Matters of National Environmental Significance report, it is stated that, “Accordingly no impacts to other users of water resources within the Study Area will occur.” Later in the same paragraph, it is stated that “Additional assessments of potential effects of the Project on groundwater and the interaction between groundwater and the Carmichael River will clarify potential for indirect impacts to downstream users.” The scale of water use and impact of this project needs to be thoroughly understood before the community and Governments can be expected to make informed decisions about whether or not it is in the public interest for this project to go ahead.

The proponent proposes the following major water extraction works:

- Construction of flood harvesting stations at the Belyando River and North Creek
- Construction of in-stream storage extractions at North Creek and Obungeena Creek
- Trenching and construction of pipelines, including waterway crossings
- Construction of seventeen borehole pumps to a depth of approximately 120 m in the Highland sub-artesian declared area

The impact of the mine on local and regional water will be dramatic. It is stated that “At its greatest extent of operations and development, after approximately 60 years (of a ninety year mine life), drawdowns of up to between 30 to 60 m have been predicted for the groundwater table in the vicinity of the Carmichael River. This results in a decrease (on average) in river baseflow of 7 per cent (approximately 1,000 m³/day).”

The Terms of Reference required that the EIS include “a comprehensive hydrogeological description covering: the coal seams and surrounding aquifers, both artesian and sub-artesian (including the Great Artesian Basin); inter-aquifer connectivity; flow of water; recharge and discharge mechanisms; and hydrogeological processes at work.”

In our view, the EIS does not display “a thorough understanding of the existing environment” when it comes to water resources (6-98), particularly groundwater. For example, the EIS admits that “limited data are currently available on the geology and hydrogeology of the area to the south of the Carmichael River and that little is known about the status or source of these springs.” (Water Resources 6-114)

Table 1 displays an estimate of overall water demand for the mine throughout its lifetime.

Table 1: Estimated overall water demand for Carmichael Project

Year (Stage)	(MROMt)/annum Coal washing	Potable Supply (GL/year)	Construction (GL/Year)	Dust Suppression (GL/year)	Coal Handling Preparation and processing (CHPP) (GL/year)	Total (GL/year)	Total with Recycling (GL/year)
2013	0	0.04	1	1	0	2.04	2.04
2014	0	0.09	2	1.5	0	3.59	3.59
2015	0	0.14	1.5	2.5	0	4.14	4.14
2016	20	0.17	2	2.63	2.8	7.6	6.76
2017	20	0.19	2	2.88	2.8	7.87	7.03
2018	25	0.2	0	2.63	3.5	6.33	5.28
2019	30	0.23	0	4.33	4.2	8.75	7.49
2020	35	0.25	0	5.83	4.9	10.98	9.51
2021	40	0.27	0	5.83	5.6	11.71	10.03

2022-2027	40	0.27	0	5.83	5.6	11.71	10.03
2028-2037	40	0.27	0	5.83	5.6	11.71	10.03
2038-2047	40	0.27	0	5.83	5.6	11.71	10.03
2048-2057	40	0.27	0	5.83	5.6	11.71	10.03
2058-2067	40	0.27	0	5.83	5.6	11.71	10.03
2068-2077	40	0.27	0	5.83	5.6	11.71	10.03
2078-2087	40	0.27	0	5.83	5.6	11.71	10.03
2088-2097	40	0.14	0	5.83	5.6	11.57	9.89
2097-2110	40	0.14	0	5.83	5.6	11.57	9.89
Total (2013-2110)	530	3.75	8.5	81.6	74.2	168.12	145.86

The EIS states that this water is to be sourced from

- Flood harvesting from the Belyando River
- In-stream storages on North Creek and Obungeena Creek
- Groundwater bores in the vicinity of the off-site infrastructure area
- Potential overland flow harvesting through capture in stormwater systems (Appendix P2 Preliminary Water Balance 2-89)

The proponent is not certain, however, how much water will be required, stating that “Preliminary water balance results indicate that raw water supply requirements may be as low as 4 GL/annum however, further design and modelling is required to confirm this and water supply requirements may be as high as 10 GL/annum.” (Appendix P2 Preliminary Water Balance 2-89). However, the EIS also states that “During operation, Project (Mine) offsite water supply infrastructure will extract up to 20 GL of flood water, 2 GL of in-stream storage water and up to 2.5 GL of ground water per annum.” (Water Resources 6-120) This appears to be at odds with the estimate that the mine may use 10GL of water per year.

The water allocations in the Belyando/Suttor catchment are summarised in the water resources chapter as:

- Urban: 140 MI per annum,
- Urban/Industrial: 610 MI per annum;
- Stock/Domestic: 710 MI per annum
- Irrigation 64,000 MI per annum.

The 10GL per year of water that the proponent may use for this project then, would be around 15% of the total current use of water resources in the catchment. The proposed extraction of

groundwater for use by the proponent would impact on flows in the Belyando River. The proponent proposes to place bores within 3km of that river, which it is admitted would result in “localised reductions in baseflows to the Belyando River system.” (5-35). This flow reduction is not quantified, and the extent of the area affected is not estimated or discussed. As with other parts of the EIS, there are contradictory statements made about the degree of water use. The up to 24.5GL of water that may be extracted if alternative figures in the EIS are to be believed indicates that perhaps the level of water use from this project may in fact be as much as 30% of the volume of water currently allocated in the entire Belyando/Suttor catchment.

As the proponent proposes to fulfil their water needs from ground and surface water harvesting, there needs to be a closer examination of the impact this will have at the subcatchment level. The overview of water use in the Belyando/Suttor catchment is too coarse to understand the impact of the mine on water resources, and more detailed work on the water use and impacts on the Carmichael and Belyando Floodplain subcatchments is needed before the public can accurately understand how this mine will impact on the region.

Most alarmingly, the nature of the alteration to the Carmichael River and its flow regime is only cursorily treated. In the chapter on matters of national environmental significance, it is revealed that in the 60th year of the mine’s operation, the level of drawdown in neighbouring aquifers may be 21 metres. Furthermore, this period of operation proposes to extract 1000m³ from the Carmichael River per day, amounting to 7% of the river’s flow and to “increase the duration of zero flow and/or low flow periods in the Carmichael River” (5-35). The extent of this increase and of the associated impact is not discussed, rather, it is glibly asserted that “No water will be sourced from the Carmichael River” (5-41).

There is no cumulative analysis of the water consumption and waste water processing of the mines in the region. The Alpha mine proposed using 7500ML water on average per annum, some of which will be extracted from the Belyando/Suttor catchment, and the Kevin’s Corner mine will use a similar amount. The cumulative impact of the groundwater extraction, and waste water disposal of these mines has not been addressed.

Environmental record of the proponent

The Terms of Reference for the EIS required an outline of the environmental record of the proponent. This is not provided in the EIS, and must be corrected. Greenpeace has obtained evidence and reports that the environmental record of the proponent company in its home country India is not good, and provide this information below.

In 2012, Gujarat courts found that Adani had illegally constructed an intake channel for its power station at Mundra on private and government land. The company was ordered to compensate the individual on whose land the illegal construction had occurred¹².

¹² Gujarat High Court (2012) Order for Civil Application - For Direction No. 3370 of 2011

In another 2012 judgement, the Gujarat High Court found that construction was occurring inside an Adani Special Economic Zone (SEZ) at Mundra even though the SEZ had not received environmental approval (an Environmental Clearance from the central government of India). Adani was found to have contracts with tenants within the SEZ for rent and maintenance charges for providing infrastructural facilities despite having no permission to build infrastructure in the SEZ¹³.

Adani was also investigated last year by the Indian Ministry of Commerce and Industry after prima facie evidence indicated that the company had “deliberately concealed and falsified material facts” when applying for a 1,840 hectare SEZ in Mundra¹⁴. The Ministry found that the SEZ did not comply with various required conditions and, in October 2012, cancelled the SEZ¹⁵.

Over the past five years Adani have been the subject of a number of court cases alleging that mass clearances of mangroves have occurred at the Mundra site. According to media reports, in 2010, the Indian Ministry of Environment and Forests inspected Adani’s port and special economic zone at Mundra¹⁶. Environmental approvals for the development explicitly stated that no “existing mangroves shall be destroyed during construction/operation of project” and forbid the filling up and reclamation creeks. Despite this officials found multiple violations of these approvals:

- Large scale reclamation using dredged material had been carried out on mangrove areas at the site.
- Pipelines associated with dredging had obstructed tidal flows to mangroves resulting in them drying up.
- The large scale destruction of mangroves had occurred.
- Creeks systems and the natural flow of seawater was being obstructed by reclamation along the creeks.

The environmental problems at Mundra are still unresolved.

Since the 2010 inspection, and despite court orders ordering Adani to not clear mangroves, complaints and allegations against the company continue to be aired in Gujarat’s courts. Now another committee has been formed by the Indian Ministry of Environment and Forests. Due to report in the next two months, the committee is due to investigate a raft of allegations including: construction without authority, destruction of mangroves, blocking of creeks and compliance with environmental approvals¹⁷.

¹³ Gujarat High Court (2012) Judgement of Writ Petition (PIL) No. 194 of 2011

¹⁴ The Indian Express (2012) Centre puts Adani SEZ on notice. Available from: <http://www.indianexpress.com/news/centre-puts-adani-sez-on-notice/963044>

¹⁵ The Indian Express (2012) Govt denotifies Adani Group’s SEZ at Mundra. Available from: <http://www.indianexpress.com/news/govt-denotifies-adani-group-s-sez-at-mundra/1017782>

¹⁶ MoEF (2010) Site visit to M/s Mundra Port & SEZ Limited Port site at Mundra and M/s OPG Power Gujarat Private Limited on 6th – 7th December 2010. Ministry of Environment and Forests. Available from : <http://moef.nic.in/downloads/public-information/site-visit-Mundra-OPG.pdf>

¹⁷ MoEF (2012) Office Memorandum. Subject: Constitution of committee for inspection of M/s Adani Port and SEZ Ltd, Mundra, Gujarat. Available from: http://moef.nic.in/downloads/public-information/01_order_AdaniPort14092012.pdf

Furthermore, Adani lobbied hard for years to attain permission to build an open cut coal mine in Maharashtra. The project was rejected in 2009 as it was within the buffer zone of the Tadoba-Andhari Tiger Reserve (TATR) and the area was part of the tiger corridor. The most recent incarnation of the plan would have required the destruction of 1400 hectares of forest¹⁸. In 2012 a special committee of Maharashtra forest officials rejected clearance to Adani Power Ltd for the project¹⁹.

We believe that the above information is relevant to the current proposal by this company to undertake a very significant project in a rural landscape, with a large area of potential critical habitat for an endangered species and near sensitive wetland springs fed by the Great Artesian Basin that harbour endemic species.

Conclusion

This Environmental Impact Statement does not fulfil the terms of reference prepared for it, and does not constitute an adequate description of the environmental impacts of this project.

From the available information, it seems clear to us that this project would have unacceptable impact on at least two nationally threatened species, and that it poses significant risk to a nationally threatened community.

The impact of this project on regional supplies of surface and groundwater, and on groundwater dependent businesses and ecological communities is not adequately assessed, but appears, on the available information to be widespread and substantial. The failure of this EIS to assess the cumulative impact of this project, with others proposed in the region, on water resources, and the failure to clearly, unambiguously and thoroughly describe the impact of this project alone mean that no defensible decision can be made by either the Queensland or Federal Government regarding this proposal, unless both were to dismiss it as unacceptable.

¹⁸ Pinjarkar, Vijay (2012) Adani Power Ltd revives coal mine plan near Tadoba. Times of India. Available from http://articles.timesofindia.indiatimes.com/2012-07-17/nagpur/32713730_1_coal-blocks-lohara-forest-land

¹⁹ Deshmane, Akshay (2012) Forest panel rejects Adani's coal proposal. DNA India Available from: www.dnaindia.com/india/report_forest-panel-rejects-adanis-coal-proposal_1742575