

# Environmental Defenders Office of Northern Queensland Inc.

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8 September 2011

**VIA EMAIL ([epbc.referrals@environment.gov.au](mailto:epbc.referrals@environment.gov.au))**

The Honourable Tony Burke MP  
Minister for Sustainability, Environment, Water, Populations and  
Community  
c/o Referrals Section (EPBC Act)  
Approvals and Legislation Division  
Department of Environment and Heritage  
GPO Box 787  
CANBERRA ACT 2601

*By facsimile: (02) 6274 1789 and email*

**Re: Referral of Proposed Action (EPBC Reference No. 2011/6092, 25 Aug. 2011); Aust-Pac Capital/Mining/150 km NW of Cooktown, QLD/QLD/Wongai Underground Coal Mine Project, Qld**

Dear Minister,

This is a public submission made on behalf of the Environmental Defenders Office of Northern Queensland Inc. (“EDO-NQ”) and the Cairns and Far North Environment Centre (“CAFNEC”) (collectively, “Submitters”), under s 74 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (alternately, the “Act” or “EPBC Act”) in relation to EPBC Referral No. 2011/6092, dated 25 August 2011. The proponent, Aust-Pac Capital Pty Ltd (“APC”) describes the proposed action as:

[A] small scale underground coal mine operation . . . located in the Laura Basin, some 150 kilometres north-west of Cooktown, 320 kilometres north of Cairns, and situated on the eastern side of Princess Charlotte Bay in the Cape York region. Only 1.5 million tonnes per annum would be mined . . . transferred via conveyors to a private barge loading facility and loaded directly to the hull of a covered barge for transfer to approximately one ship per month moored in deep waters within the adjacent shipping channel<sup>1</sup>.

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The total footprint of the Wongai Project will be approximately 316 hectares (predominantly linear) made up of both terrestrial and marine components:

- Terrestrial (road, mine, airstrip, camp, offices, conveyors, barge loading facility, environmental buffer, etc): approximately 282 hectares; and

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<sup>1</sup> Wongai Project Referral, EPBC Ref. No. 2011/6092, s 1.1, p 1 (25 Aug. 2011).

- Marine (barging routes, transhipper, environmental buffer, etc.): approximately 34 hectares<sup>2</sup>.

APC provides the following, further details regarding the proposed action in its referral notice:

[T]he proposed action will see the development of an underground coking coal mine (bord and pillar) and associated infrastructure. coal from the underground mine will be transported via a covered conveyor transport system to a barge loading facility where it will be barged prior to loading onto ships for export to market. . . .

The proposed action will include geotechnical and exploration activities, construction and operational activities associated with site access, mining and export of approximately 1.5Mtpa of coking coal, stockpile areas, ancillary infrastructure, amenities, clearing of previously disturbed areas, supporting infrastructure including offices, training centre, workshops, accommodation camp, caretakers houses, roadworks, onsite power generation, potable water treatment plant, stormwater management system, provisioning, sewage treatment, navigational aids, fire fighting infrastructure, development of a barge loading facility, jetty and moorings and ultimate decommissioning of the mine. New transport infrastructure will be developed and existing transport infrastructure upgraded to provide all weather road, air and water access to the Project Site<sup>3</sup>.

Although no total is provided by APC with respect to the coal reserves proposed to be extracted from the site of the proposed action, APC's referral notice advises that it will mine "the minimum tonnage per year to ensure the viability of the Project (1.5Mtpa over 25 plus years)"<sup>4</sup>. From this reference, it can be inferred that the proposed action will result in the extraction of at least 37.5 million tonnes of coking coal over 25 years minimum.

APC ultimately concludes that its proposed action is a "controlled action" subject to review and approval under the EPBC Act<sup>5</sup>. The Submitters agree.

However, APC suggests that the Matters of National Environment Significance ("MNES") called up by the proposed action are limited to those provisions of the Act dealing with "Listed threatened species and communities (section 18 and 18A)" and "Listed migratory species (sections 20 and 20A)"<sup>6</sup>. The Submitters disagree with APC's suggestion that the MNES potentially affected by the proposed action are so limited and urge the Minister to expand the scope of review and assessment in accordance with this submission. In addition, the Submitters urge the Minister to ensure that APC provides significantly more information related to issues associated

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<sup>2</sup> *Ibid*, s 1.4, p 2.

<sup>3</sup> *Ibid*, s 2.1, p 4. With regard to access to the site of the proposed action, APC further states that: "Access to the Site by road is currently a challenge during the wet season. Delivery of materials could come via barge or via roads during dry weather periods until such time as there is all weather access to the Project Site via road. *Ibid*, s 2.2, p 4.

<sup>4</sup> *Ibid*, s 2.3, p 5.

<sup>5</sup> *Ibid*, s 5.1, p 54.

<sup>6</sup> *Ibid*, s 5.3, p 54.

with subsidence and direct and indirect impacts upon MNES that may result from subsidence and that the scope of the environmental impact statement (“EIS”) prepared under Queensland state law is appropriately broad.

## **SUMMARY OF SUBMISSION**

This submission will cover:

- which controlling provisions under Part 3, Division 1 of the Act are relevant to review of the proposed action;
- the method of assessment that should be employed; and
- whether the Minister should enliven the power to request information from the proponent under s 76 of the Act.

Based upon their assessment of the potentially relevant statutory provisions, APC’s description of the proposed action in its referral notice and supporting materials, and the potential impacts of the proposed action on MNES, the Submitters urge the Minister to conclude that:

- the proposed action threatens to adversely impact on World Heritage values, enlivening review of the proposal against ss 12 and 15A of the Act;
- the proposed action threatens to adversely impact on National Heritage places, enlivening review of the proposed action against ss 15B and 15C of the Act; and
- the proposed action threatens to adversely impact on the Great Barrier Reef Marine Park, enlivening review of the proposed action against ss 24B and 24C of the Act;
- the method of assessment that should be employed; and
- whether the Minister should enliven the power to request information from the proponent under s 76 of the Act.

## **1.0. INTRODUCTION**

In deciding whether to declare the proposed action a controlled action because of its impacts on MNES, the proposed action must be assessed in accordance with the relevant provisions of the EPBC Act, the *Environment Protection and Biodiversity Conservation Regulations 2000 (Cth)* (“EPBC Regulations”) and the MNES Significant Impact Guidelines 1.1 (2009). This submission will address the impacts of APC’s proposed action in accordance with relevant provisions of those authorities. The submission will also outline the suggested method of assessment and the adequacy of the referral documents.

### **1.1 CONTROLLING PROVISIONS OF THE ACT**

The Submitters agree with APC that APC’s proposed action is a controlled action requiring a vigorous assessment process that pays particular attention to the direct and indirect impacts of the proposed activity on listed threatened species, communities and migratory species. The Submitters disagree with APC to the extent it suggests that direct and indirect impacts of the proposed Wongai project upon the nearby Great Barrier Reef and marine park are minimal and need not be the subject of close scrutiny by the Minister. Additional reasons for such a conclusion are set out in this section.

## 1.2 CONTROLLED ACTION BECAUSE OF SIGNIFICANT IMPACT

Referral, assessment and approval processes under the EPBC Act is triggered where an action has, will have or is likely to have, a significant impact on MNES. The activities undertaken as part of APC's proposed coal mining and associated activities will fall within the definition of actions that trigger the EPBC Act (for a number of reasons – see above).

Determining whether an action will have a significant impact is the area where the Minister arguably has the greatest discretion as there is no definition in the EPBC Act. The MNES Guidelines compiled by the Commonwealth to assist in determining whether a proposed action will have or is likely to have a significant impact list the following considerations that should be taken into account when determining 'significance', including –

- all on-site and off-site impacts;
- all direct and indirect impacts;
- the frequency, timing and duration of the action;
- the total impact which can be attributed to the action over the entire geographic area affected and over time;
- the sensitivity of the receiving environment; and
- the degree of confidence with which the impacts of the action are known and understood.

APC has rightly characterized the proposed action as a “controlled action” and the Submitters agree with that characterization. However, the Submitters disagree with APC's suggestion that the proposed Wongai coal mine and associated activities do not threaten to have a significant impact on other MNES, specifically the Great Barrier Reef, which is both a World Heritage and National Heritage site, and the Great Barrier Reef Marine Park. It is important for the Minister to state that the above listed controlling provisions are triggered because of the potential for either direct or indirect impacts the proposed action will have on these MNES, in addition to the listed endangered species and listed migratory species MNES identified by APC.

### 1.2.1 Indirect Impacts of Proposed Action Must Be Considered

APC's referral documents concede that listed threatened species and ecological communities and listed migratory species are relevant MNES that will be *directly* affected by the proposed Wongai project. However, APC's referral documents make no mention of the indirect impacts that the large amount of greenhouse gas (“GHG”) emissions, whose release will be attributable to the project, will have on these listed species and communities.

Australia's obligations under the Biodiversity Convention, which are enshrined in the EPBC Act, are also relevant to the Minister's decision whether the proposed Wongai project is a controlled action, which controlling provisions apply and what impacts – direct or indirect – upon MNES the proposal threatens. The impact on listed threatened species, listed ecological communities and listed migratory species from global warming caused by the projects GHG emissions should be included in the Minister's review of the proposed action.

While there are a range of obligations imposed by the Biodiversity Convention, the most relevant for the proposed action are found in Article 8 of the Biodiversity Convention. This Article imposes a general obligation on Australia to conserve biodiversity (in both terrestrial and marine ecosystems).

### 1.2.2 Cumulative Impacts

In *Booth v Bosworth* [2001] FCA 1453, Justice Branson stated that a significant impact means an "*impact that is important, notable or of consequence having regard to its context or intensity.*" Consequently, an assessment of significance of impact should be made in the context of the cumulative impacts of similar activities. There are a large number of major coal mines proposed and under consideration within Queensland at this time.

The activities proposed by APC should be assessed for "significance of impacts" within the context of the other coal mines operating – or proposed to operate – in the State. Queensland's coal exports totaled 190 million tonnes in 2008-09, and plans are in place to increase that total by approximately 5% in the next 10 years.<sup>7</sup> This total coal extraction and anticipated increase is of paramount importance in terms of the cumulative effects the Wongai project is likely to have on global warming and its consequent effect on the Great Barrier Reef, listed threatened species, ecological communities and migratory species. In this regard, the impacts of the proposed mine and others must be considered *significant*.

### 1.3 PRECAUTIONARY PRINCIPLE

In accordance with s 391(1) & (3) of the Act, the Minister must also take into account the precautionary principle when deciding whether or not an action is a "controlled action" requiring approval under the Act. The precautionary principle provides that, if a proposal involves a threat of serious or irreversible environmental harm, then lack of scientific certainty about the potential impacts of that proposal should not be used as a reason for postponing preventative measures<sup>8</sup>. In other words, the Minister should err on the side of caution.

Application of the precautionary principle further warrants the Minister's consideration of the indirect, cumulative impacts of GHG emissions associated with the proposed Wongai projects on the MNES associated with the site. Failing to consider the impacts of GHG emissions from the mine contributing to climate change because the impacts of climate change or the contribution of these particular emissions are uncertain, would be inconsistent with this principle. As Pain J observed in *Gray v Minister for Planning* [2006] NSWLEC 720 at [131]:

. . . inherent in the precautionary principle . . . is the need for careful evaluation to avoid serious or irreversible damage to the environment and an assessment of the risk weighted consequences for various options. The role of environmental assessment is to assist in providing

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<sup>7</sup> Queensland Government (2010) Railing Queensland's Coal: A new era for Queensland's coal export industry.

<sup>8</sup> EPBC Act, s 391(2).

information to the decision-maker to enable him or her to consider that scientific uncertainty in relation to the serious, irreversible environmental threat, in this case climate change/global warming . . . . Amongst several matters identified as necessary to include in environmental assessments to inform the precautionary approach [are] that long term, ongoing or cumulative impacts of a project including the use and disposal of associated products and by products should be assessed.

#### **1.4 METHOD OF ASSESSMENT**

Section 9(1) of the bilateral agreement between Queensland and the Commonwealth<sup>9</sup> states that an action which is declared a significant project under the *State Development and Public Works Organisation Act 1974* (Qld) (“SDPWO Act”) for which an Environmental Impact Statement (“EIS”) is required, “does not require” a separate EPBC Act assessment.

The bilateral agreement stipulates that the other environmental assessment processes available under the EPBC Act (such as a public inquiry, a public environment report etc) will not need to be used when the project is declared a significant project. However, the words “does not require” a separate EPBC Act assessment is not the same as “cannot” or “must not require” separate EPBC Act assessment. Accordingly, the Minister retains the power to require a separate EPBC Act assessment and is not bound to rely on the EIS compiled under Queensland’s SDPWO Act.

The relevant consideration for requiring an alternative assessment process to the EIS generally contemplated under the bilateral agreement is whether an alternative process would further the EPBC Act’s objects, which include the implementation of Australia’s international environmental responsibilities. The Submitters suggest that an alternative assessment process would in this case. An EIS compiled and paid for by the proponent is an insufficient assessment method for a large, long-lived coal mine located in an area of demonstrably significant international and national environmental matters.

Accordingly, the Minister should request and undertake an independent public inquiry in order to properly and objectively assess the potential impacts of the proposed Wongai project on MNES.

#### **1.5 INADEQUACY OF APC’S REFERRAL DOCUMENTS**

The referral documents prepared by or on behalf of APC and submitted to the Minister are, on their face, inadequate. They do not adequately address the full range of impacts, direct or indirect, that the project will or is likely to have on the MNES, which is essentially the aim of a referral. These deficiencies are discussed in more detail below. The Minister should exercise his powers under section 76 of the EPBC Act to address these deficiencies.

The omission of information or acknowledgment of relevant matters in the referral may make it false and misleading and, as such, an offence may have

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<sup>9</sup> *An Agreement between the Australian Government and the State of Queensland under Section 45 of the Australian Government Environment Protection and Biodiversity Conservation Act 1999 Relating to Environmental Assessment* (13 August 2004).

occurred in submitting it under the EPBC Act (*see Mees v Roads Corporation* [2003] FCA 410). The proponent is required to “paint the whole picture” of what the project will entail. Of relevance here is the fact that it is not only what is stated in the referral documents, but also what is left out, that could be considered misleading. These omissions or misstatements are discussed in more detail below.

## **1.6 NO CONSIDERATION OF PUTATIVE BENEFITS OF PROPOSED ACTION**

In its referral, APC suggests that there may be some beneficial impacts associated with the proposed action. For example, under the heading of “No project option”, APC asserts that “[t]his Project provides a real opportunity for the Kalpowar People to benefit financially from their land” and that “[t]he Project will also contribute royalties to the State of Queensland”<sup>10</sup>. Later, APC notes that “improved access to the site [due to clearing and roadworks associated with the proposed action, for example] may allow resettlement of some of the old folk as caretakers and cultural heritage custodians and the potential for new eco-tourism business opportunities”<sup>11</sup>. Similarly, APC asserts elsewhere that the proposed Wongai project “will offer a real opportunity for improved environmental protection of the land through alternative access to the beach areas and control of public access”<sup>12</sup>.

Whatever the potential benefits associated with the proposed Wongai project – and they are by no means established by APC or conceded by the Submitters – they are ultimately irrelevant. Section 75(2)(b) of the EPBC Act makes it clear that the Minister “must not consider any beneficial impacts the action” will or is likely to have. Accordingly, the putative benefits of the proposed Wongai project claimed by APC may not be taken into account by the Minister.

## **2.0 SPECIFIC IMPACTS ON MNES**

### **2.1 THREATENED SPECIES**

As noted above, APC concludes that its proposed coal mine is a “controlled action” based on its potential impact upon threatened species of flora and fauna, as well as the threatened ecological community of “Littoral Rainforest and Coastal Vine Thickets of Eastern Australia”<sup>13</sup>. The Submitters agree with APC’s conclusion.

### **2.2 MIGRATORY SPECIES**

Likewise, the Submitters concur with APC’s conclusion that the proposed Wongai project is a “controlled action” under the EPBC Act because of its potential impact on listed migratory species.

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<sup>10</sup> APC Referral, s 2.2, p 4.

<sup>11</sup> *Ibid*, s 3.3(m), p 39.

<sup>12</sup> *Ibid*, s 3.3(i), p 38.

<sup>13</sup> APC Referral, s 3.1(d), pp 18-20.

### 2.3 WORLD HERITAGE VALUES, NATIONAL HERITAGE PLACES AND THE GREAT BARRIER REEF MARINE PARK

As APC recognizes, the location of aspects of the proposed Wongai project in, or in close proximity or adjacent to the Great Barrier Reef enliven numerous provisions of the EPBC Act that deal with World Heritage values, National Heritage places and the Great Barrier Reef Marine Park (collectively, these matters are subsumed under the rubric of the “GBR MNES”)<sup>14</sup>. However, in its referral materials APC asserts that the proposed Wongai project is unlikely to impact upon these particular MNES<sup>15</sup>. The Submitters disagree with this assertion and its underlying bases and urge the Minister to include consideration of MNES relevant to the GBR in the Minister’s assessment under the Act.

There is no question that the proposed Wongai project is located in or in close proximity to the GBR and therefore has the potential to impact MNES associated with the GBR. Under the Act, the Minister must consider all adverse impacts (if any) that the action “has, will have or is likely to have” upon a matter protected by Part 3 of the EPBC Act. Moreover, the impacts that the Minister must consider include both direct and indirect impacts upon MNES.

The Full Court of the Australian Federal Court specifically considered the EPBC Act’s definition of “impact” in the *Nathan Dams Case*<sup>16</sup> at paragraphs [53] to [57] inclusive. Drawing from these paragraphs, the following propositions are established:

- "Impact" in the relevant sense means the influence or effect of an action;<sup>17</sup>
- "Impact" in its ordinary meaning can readily include the "indirect" consequences of an action
- “Impact” may include the results of acts done by persons other than the principal actor (facilitated impacts).<sup>18</sup>
- "Impact" in the sense used in the EPBC Act:
  - is not confined to direct physical effects of the action on the matter protected but can include downstream, downwind or upstream impacts;
  - includes effects which are sufficiently close to the action to allow it to be said, without straining the language, that they

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<sup>14</sup> APC Referral, s 5.3, p 54. These MNES are addressed in the Act at ss 12 & 15A (World Heritage values), 15B & 15C (National Heritage places) and 24B & 24C (Great Barrier Reef Marine Park), respectively.

<sup>15</sup> *Ibid.*

<sup>16</sup> *Minister for the Environment and Heritage v Queensland Conservation Council Inc.* [2004] FCAFC 190 (30 July 2004) (“*Nathan Dams Case*”).

<sup>17</sup> *Nathan Dams Case*, para. [53], citing *Oxford English Dictionary*, 2<sup>nd</sup> ed, vol VII, 694-695.

<sup>18</sup> *Nathan Dams Case*, para. [53]

are, or would be, the consequences of the action on the protected matter.<sup>19</sup>

- It is not appropriate for the Court to attempt to provide an exhaustive definition of "adverse impacts" which an "action" may be likely to have.<sup>20</sup>
- It is sufficient in this case to indicate that "all adverse impacts" includes each consequence which can be reasonably considered as being within the contemplation of the proponent of the action, whether those consequences are within their control or not.<sup>21</sup>

On their face, the referral and related materials provided by APC fail to fully account for the adverse impacts the proposed Wongai project "has, will have, or is likely to have" on GBR-related MNES, as well as MNES associated with threatened species and ecological communities and listed migratory species located on or near the Wongai site or which interact with the nearby GBR.

Consideration of these MNES – as well as threatened species and ecological communities and migratory species - by the Minister is necessitated by the inadequacies in APC's referral notice and materials addressing potential impacts on these matters.

### **3.0 INADEQUACIES IN APC'S REFERRAL AND SUPPORTING MATERIALS**

APC's referral notice and supporting materials contain a host of unsubstantiated assumptions and material omissions that render them inadequate for purposes of assessing the scope of impacts on MNES likely to be associated with the proposed Wongai project. The Submitters will address each of these critical deficiencies in detail.

#### **3.1 LACK OF INFORMATION REGARDING COAL TO BE MINED AND POTENTIAL SUBSIDENCE**

First and foremost, the Submitters note that APC's referral notice and supporting materials are significantly lacking in detail regarding such things as the coal proposed to be mined on the Wongai site, the geology and hydrology of the area to be mined or potentially affected by the proposed project, or the method (and more particularly, rate) of coal extraction. All the Minister (and the public) knows from APC's referral notice is that 1.5Mtpa of coking coal will be extracted from the Wongai site over the span of at least 25 years, and that this coal will be extracted by a "bord and pillar" method of underground mining.

Slightly more information is provided in APC's Initial Advice Statement, which is Attachment D to its referral notice. For example, in Attachment D, APC advises that "exploration by [Utah Development Company] identified a potentially economic seam of low in-situ coking coal at a depth of

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<sup>19</sup> *Nathan Dams Case*, para. [53].

<sup>20</sup> *Ibid*, para. [57].

<sup>21</sup> *Ibid*.

approximately 250 metres” and that over 50 million tonnes of coal reserves were identified<sup>22</sup>. This additional information does not suffice however.

For example, there is no further information provided by APC regarding the coal resource it proposes to extract from the Wongai site, such as ash or sulphur content or Btu values. The depth to, and of, the coal seam to be mined remains largely estimated or unidentified. APC fails to even identify – on the property maps provided – the approximate location and extent of coal it proposes to extract from the site. Attachment B to APC’s referral notice provides a very high-level Concept Plan, which shows only the approximate location of the proposed “mine portal and infrastructure”, located near the centre of the site, some associated improvements (road, airstrip), and a cross-hatched study area which may, or may not, reflect the surface area associated with underground mine workings<sup>23</sup>.

Likewise, APC describes the method of mining it proposes to use simply as “bord and pillar” mining<sup>24</sup>. The extraction rates associated with this form of underground mining vary considerably, depending on how much of the coal is left behind in the form of “pillars” or extracted via “retreat extraction”. Absolutely no information is provided regarding the extraction rate APC proposes to use in association with this method of underground mining. Omission of such information makes it virtually impossible to make any assumptions about possible impacts (or lack thereof) on MNES associated with the proposed coal mine.

A significant environmental impact likely to be associated with APC’s proposed underground coal mine is surface subsidence and consequent impacts on surface waters (including watercourses and wetlands) and groundwater on the site and nearby.

The Mine Subsidence Board of New South Wales provides the following, useful description of subsidence associated with underground coal mining:

Subsidence can be described as the lowering or settling down of the land’s surface. When underground mining takes place, the earth’s forces are redistributed and there is a tendency for the void to close. Some of this effect may be transferred to the surface as mine subsidence. The extent to which subsidence occurs in a particular location depends upon the width and height of the coal extracted, its depth from the surface, and the rock types found in the overlying strata.

Not all mining results in subsidence nor does all subsidence cause damage to surface structures. Today’s coal mines are required to provide detailed information regarding mining and its effects prior to extraction approval being granted. The amount of subsidence and type of structure will influence the extent of damage that may occur<sup>25</sup>.

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<sup>22</sup> APC Referral, Attachment D, s 2.1, p 2.

<sup>23</sup> See APC Referral, Attachment B.

<sup>24</sup> Also known as “room and pillar” mining.

<sup>25</sup> “Mine Subsidence: A Community Guide”, NSW Mine Subsidence Board, p 1 (NSW 2007), available at <http://minesubnswgovau.ozstaging.com/SiteFiles/minesubnswgovau/MSB6ppA4Community07.pdf> (accessed 6 Sept 2011).

The following discussion in a 2008 report by the Illinois State Geological Survey (“Illinois SGS”) (United States) provides further relevant details regarding the relationship between underground coal mining – and mining methods – and surface subsidence:

The amount, effects, and timing of subsidence differ depending on the mining technique. For a coal seam approximately 7.5 feet thick, the average maximum subsidence over the center of a mined-out high-extraction retreat panel is about 4 feet, or about 50% to 60% of the mined-out height underground at the mine level. . . . The amount of subsidence is never as much as the mining height, and most subsidence occurs within days to several weeks after an area is undermined by longwall or high-extraction retreat methods, depending on the actual rate of mining.

On the surface, cracks in the ground are usually caused by tension (pulling apart) near the edges of the mining area undergoing subsidence at the location of maximum tension (fig. 6). The tension cracks are also associated with a moving longwall face (and moving subsidence wave on the ground surface), usually close naturally, whereas some along the sides of the panel may need to be filled. Areas inward from the tensile cracks (closer to the center of the panel) are compressed (pushed together) at the location of maximum compression (fig. 6), causing the soil to sometimes buckle upward a few inches. ***The surface effects of subsidence depend on the original slope of the land before mining.*** Subsidence may or may not be visible if the land is hilly, because slope changes caused by subsidence are harder to see. ***In flatter terrain, drainage interruption may be more evident.***

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High-extraction retreat mining produces similar surface effects except that, depending on the topography, high-extraction retreat panels may be less clearly demarcated on the surface than longwall panels are (Darmody et al. 1988). ***Depending on the amount of pillar extraction, the final subsidence profile for high-extraction retreat mining is less regular and predictable than the profile for longwall mining. The irregular effects of high-extraction retreat mining indicate the uneven stump pillar sizes, which, even when crushed, produce different amounts of support for the subsided roof of the mine*** (Peng 1992)<sup>26</sup>.

From the Submitters’ review of APC’s referral and supporting materials, it appears that the underground mine workings are likely to be located beneath relatively flat terrain located in the centre of the proposed Wongai project site. This appears to be borne out by APC’s referral, which notes that: “The Study Area consists of generally flat coastal planes [sic] moving to undulating hills and plateau interspersed with some high ridges (200 metres to 320 metres AHD) and exposed cliffs in the north”<sup>27</sup>. Thus, any effects of subsidence occurring at the proposed Wongai project site are more likely to be pronounced than if the terrain undermined were steeper.

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<sup>26</sup> Robert A. Bauer, “Planned Coal Mine Subsidence in Illinois: A Public Information Booklet, Illinois Department of Natural Resources State Geological Survey, circular 573 (2008), p 6, available at <http://www.isgs.uiuc.edu/education/pdf-files/c573.pdf> (accessed 5 Sept. 2011).

<sup>27</sup> APC Referral, s 3.3.(f), p 37.

The Illinois SGS 2008 study provides a useful description of the sorts of surface movement that can be expected to result from underground coal mining, depending on the amount of coal extracted.

Longwall and high-extraction retreat mining cause vertical and horizontal surface movements. The ground drops vertically and moves horizontally toward the center of the trough (Bauer 2006), which may affect surface structures or other features.

**Vertical Subsidence** Structures such as railroads, canals, and sewers, which must retain a certain elevation, are most affected by vertical subsidence (Peng 1992). ***Water may pond in flat areas that have subsided vertically***; hilly areas are less affected.

**Tilt** The difference in the amount of vertical movement between two points is called tilt. Tilt may also affect surface structures that depend on gravity, including gutters, drains, and water treatment plants<sup>28</sup>.

“Sag” or “trough” subsidence” is a particularly troublesome form of subsidence resulting from underground coal mining. In another, 2006 report by the Illinois SGS, this form of subsidence is examined in detail. The 2006 Illinois SGS report notes:

Sag subsidence forms a gentle depression over a broad area. Some sags may be as large as a whole mine panel—several hundred feet long and a few hundred feet wide (fig. 10). Several acres of land may be affected. The maximum vertical settlement is generally near the center of the depression and is 2 to 4 feet deep (fig. 10).

A major sag may develop suddenly (in a few hours or days) or gradually (over years). The rate of sag development depends on the type of failure in the mine. Sags may originate over places in mines where the coal pillars have disintegrated and collapsed (fig. 11), producing a rapid downward movement at the ground surface or slower downward movements where the coal pillars are being pushed into the relatively soft underclay that forms the floor of most mines (fig. 12). Sags can develop over mines of any depth. The profile in figure 10 shows settlement that took place over 45 weeks.

Tension cracks form as the ground is pulled apart by downward bending of the land near the outside edges of the sag. Generally, the cracks parallel the boundaries of the depression. Near the center of the sag, compression ridges may form as the ground is squeezed by downward bending of the land near the bottom of the sag. Ridges are observed less frequently than tension fractures because the area of compression is much smaller<sup>29</sup>.

The surface area associated with subsidence sag must be emphasized. For example, in the 2006 Illinois SGS report, the agency noted that, with subsidence sag:

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<sup>28</sup> 2008 Illinois SGS Study, pp 7-8.

<sup>29</sup> Robert A. Bauer, “Mine Subsidence in Illinois: Facts for Homeowners”, Illinois Department of Natural Resources State Geological Survey, circular 569, pp 6-8 (2006), available at <http://www.isgs.uiuc.edu/education/pdf-files/c569.pdf> (accessed 5 Sept. 2011).

The ground drops vertically and moves horizontally toward the center of the sag. **At the surface, the sag may be much broader than the collapsed part of the mine. For example, a failure in a mine 160 feet deep could cause minor surface subsidence more than 70 feet beyond the edge of the collapsed area underground (edge of panel). The deeper the mine, the larger the area affected out over the unmined area.** Collapsed areas in abandoned underground mines may occur in only part of a panel or mined-out area (fig. 15)<sup>30</sup>.

As previously noted, the degree to which subsidence can be expected to occur in conjunction with APC's proposed Wongai project depends in part upon the extraction rate associated with the "bord and pillar" method of underground mining proposed. Absolutely no information is provided by APC with respect to this critical issue.

The amount of coal extracted in "bord and pillar" mining varies considerably and the amount of coal extracted influences considerably the amount of surface subsidence that may be expected to occur as a result of underground mining. As a general matter:

With bord and pillar mining, a series of parallel headings connected by cut-throughs are developed to the furthestmost limit of the panel. Once these first workings are completed, the standing pillars and surrounding coal are systematically extracted, working back towards the main access roadways. This part of the operation is called second workings or pillar extraction.

It is possible to limit the surface subsidence by leaving a proportion of the pillars in place to support the overlying strata. This is known as partial extraction<sup>31</sup>.

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<sup>30</sup> *Ibid*, p 8. Likewise, a 2007 United States Geological Survey study noted:

In contrast to subsidence pits, subsidence troughs are broad, "dish-shaped" areas of lowered (subsided) ground surface that form in response to the process of trough subsidence (for example, see Turney, 1985; Matheson and Bliss, 1986). **Troughs are larger in areal dimension than subsidence pits and can be hundreds to thousands of feet in breadth** (Matheson and Bliss, 1986). A single trough might actually include numerous subsidence pits, which can form after the subsidence trough has developed (for example, see Dunrud and Osterwald, 1980). Troughs tend to develop over areas where continuous, high-extraction mining of a coal bed has generated a large, open cavity with little or no roof support. As the mine roof sags or collapses into the unsupported void, the overlying overburden can collapse or sag correspondingly. Ultimately, a trough of depression can form on the ground surface, as the sag is propagated upward (fig. 28) (Myers and others, 1975). **The surface disturbance resulting from trough subsidence exceeds the areal dimension (breadth) of the underground void** (for example, see Myers and others, 1975).

Roberts, S.B., "Coal in the Front Range Urban Corridor—An Overview of Coal Geology, Coal Production, and Coal-Bed Methane Potential in Selected Areas of the Denver Basin, Colorado, and the Potential Effects of Historical Coal Mining on Development and Land-Use Planning", U.S. Department of the Interior - U.S. Geological Survey, U.S. Geological Survey Digital Data Series DDS-69-P, p 35 (2007), available at [http://pubs.usgs.gov/dds/dds-069/dds-069-p/REPORTS/69\\_P\\_CH\\_3.pdf](http://pubs.usgs.gov/dds/dds-069/dds-069-p/REPORTS/69_P_CH_3.pdf) (accessed 5 Sept. 2011).

<sup>31</sup> *Ibid*.

The more coal that is extracted in “bord and pillar” mining – that is, the larger the voids and smaller/fewer the coal “pillars” – the greater the likelihood and severity of subsidence.

However, the proposed coal extraction rate is not the only determinant of subsidence likely to be associated with APC’s proposed Wongai project. The geology of the site, as well as the depth of the coal APC proposes to mine, are also critical factors for purposes of considering how much subsidence is likely to be associated with APC’s proposed underground coal mine. A United States Geological Survey 2007 study noted that such factors have a significant influence on the extent and degree of subsidence:

***In areas where room-and-pillar methods were used for coal extraction, trough subsidence can occur where multiple coal pillars in an abandoned, underground mine have collapsed simultaneously or in rapid succession, resulting in the development of a large open void encompassing all or parts of multiple mine rooms; this chain reaction of pillar failure can initiate when the weight of the overburden exceeds the strength of the existing coal pillars*** (Turney, 1985). As one pillar collapses, overburden stress on adjacent pillars increases, potentially causing successive pillar failure over a large area. ***Coal-mine fires in room-and-pillar mines can also facilitate trough subsidence through the process of burning multiple pillars of coal as the fire propagates through the mine, resulting in collapse of the overburden above the burned pillars. Additionally, subsidence troughs can also form as a result of “pillar punching” when the weight of the overburden essentially pushes intact coal pillars downward, into a softened mine floor, causing sag in the overlying rock*** (fig. 29) (for example, see Roenfeldt and Holmquist, 1986)<sup>32</sup>.

These factors are noted in other studies of subsidence associated with underground coal mining, most particularly a July 2008 study by the NSW Department of Planning regarding the impacts of underground coal mining in that state’s Southern Coalfield<sup>33</sup>.

The 2007 USGS study makes it clear that:

***[S]ubsidence prediction is not always straightforward, as varying conditions related to mining techniques, overburden characteristics, and data availability might necessitate modification to the subsidence concepts on a site-specific basis.*** In all cases, it is critical to have accurate map data depicting such elements as mine elevation, orientation and extent of mining operations, room-and-pillar locations and size, major and minor haulageways, entries, and shaft locations<sup>34</sup>.

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<sup>32</sup> USGS 2007 Study, p 35.

<sup>33</sup> “Impacts of Underground Coal Mining on Natural Features in the Southern Coalfield: Strategic Review”, NSW Department of Planning, ss 2.5.4.1 & 2.5.4.2, p 32 (July 2008) (“NSW 2008 Study”), available at [http://www.planning.nsw.gov.au/planningsystem/pdf/report\\_southern\\_coalfields\\_fi nal\\_jul08.pdf](http://www.planning.nsw.gov.au/planningsystem/pdf/report_southern_coalfields_fi nal_jul08.pdf) (accessed 6 Sept. 2011).

<sup>34</sup> USGS 2007, p 38; see also NSW 2008 Study, ss 4.1.1 – 4.1.3, pp 45-62.

APC's referral notice and supporting material provides none of this critical information. Without such information, APC can make no predictions or assertions regarding the extent and degree of potential subsidence associated with the proposed Wongai project – nor can the Minister.

However, the Submitters note that available scientific literature strongly suggests that some degree of subsidence associated with APC's proposed underground coal mine is virtually certain to occur in the vicinity of the proposed Wongai project. For example, in the NSW 2008 study of underground mining's impacts in that state's Southern Coalfield, the government agency observed:

With few exceptions, **at depths of cover greater than about 200 m coal cannot be mined economically by any mining method without causing some degree of surface subsidence**<sup>35</sup>.

As Attachment D to APC's referral makes clear, the coal reserves that are proposed to be mined are located at a depth of approximately 250 metres – perhaps more – and thus it must be assumed that the mining proposed will cause some degree of surface subsidence<sup>36</sup>.

Moreover, given the depth of the coal reserves APC proposes to mine, the Submitters seriously doubt that APC will be able to utilize the conservative "bord-and-pillar" mining method it proposes in order to minimize subsidence caused by its underground mining because such mining is likely to be economically unviable. This is again highlighted in the NSW 2008 study of the Southern Coalfields, in which the state agency noted:

For reasons of safety, the roof and often the sides of all roadways in bord and pillar mining have to be supported. This represents a major operating cost and can impact adversely on productivity. As the depth of mining increases, larger pillars are required in order to carry the extra weight of the overburden, resulting in a substantial decrease in resource recovery and a further decrease in productivity (see Figure 8). **Hence, with few exceptions, it is now uneconomic in Australia to use bord and pillar mining as the primary production method at depths greater than about 200 m.** However, it is used at greater depths for primary and secondary development<sup>37</sup>.

The materials submitted by APC are glaringly deficient in addressing these issues and make it virtually impossible for the Minister to make any determination regarding impacts on the MNES conceded by APC, let alone the GBR-related MNES APC claims are not expected to be impacted.

Nor does the geological profile supplied by APC in Attachment D to its referral notice provide any relevant information on these matters<sup>38</sup>. While APC identifies the geologic units in the study area for the proposed Wongai project, there is no way to identify in which units the coal resource is located, or what units overlie or underlie the coal resource. Such

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<sup>35</sup> NSW 2008 Study, p 4.

<sup>36</sup> APC Referral, Attachment D, s 2.1, p 2.

<sup>37</sup> NSW 2008 Study, s 2.5.4.1, p 32.

<sup>38</sup> See APC Referral, Attachment D, Table 4.1 and Figure 4.1, pp 12-13.

information is critical if the degree and area of surface subsidence likely to result from APC's proposed underground mining activities is to be predicted in any reasonable way.

### **3.2 NO INFORMATION REGARDING IMPACTS OF SUBSIDENCE ON RELEVANT MNES.**

The lack of information provided by APC regarding such things as proposed mining methods and extraction rates, as well as the geology and hydrology of the site – all of which are critically relevant to any assessment of the extent and degree of surface subsidence likely to be associated with APC's proposed Wongai project – is by no means a purely academic concern. Surface subsidence that occurs in conjunction with, and as a result of, APC's underground coal mining activities is likely to have significant adverse impacts – both direct and indirect – on the relevant MNES called up by APC's referral notice (*i.e.*, threatened species and ecological communities, migratory species, and the GBR).

APC's referral notice and supporting materials make it clear that little is known about the hydrology of the area of, and adjacent to, the proposed Wongai project. This is problematic in light of the likely interaction between surface and groundwater in the area and the watercourses and wetlands on or adjacent to the Wongai site that are likely to be important elements of the GBR ecosystem (hatchery and nursery areas, food sources, etc.).

For example, APC's referral notice indicates that there are substantial surface waters and wetlands associated with the proposed Wongai site. With respect to surface waters, APC advises that:

The Marrett River located on the western side of the Project Site is the stream that drains the western catchment area. It's [sic] lower reaches are tidal and flows into the far eastern side of Princess Charlotte Bay. . . . The upper catchment of Barramundi Creek, located in the south-eastern part of the Project site, drains north-east into Cape Melville National Park. There are a number of smaller creeks and streams located around the Project Site that drain directly into either Princess Charlotte Bay or Bathurst Bay. Most streams and creeks are ephemeral and flow strongly between December and March and are usually dry by June each year<sup>39</sup>.

The importance of these waters is made clear in the Queensland Department of Employment, Economic Development and Innovation ("DEEDI") Declared Fish Habitat Area Summary for Princess Charlotte Bay, which identifies:

Closed mixed mangroves with *Ceriops* along tidal creeks; open *Avicennia* and tall closed *Rhizophora*; extensive coastal seagrass beds; seagrass beds have amongst the greatest species richness and biodiversity between Cairns and Cape York; extensive salt pans; tidal flats with sand and mud, rocky headlands at Bathurst Head with fringing reefs; the shoreline of Princess Charlotte Bay is one of the largest tidal wetland areas in Australia; adjoining freshwater lagoons and billabongs in some areas<sup>40</sup>.

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<sup>39</sup> APC Referral, s 3.3(b), p 31; *see also ibid*, Attachment D, s 4.2.4, p 15.

<sup>40</sup> Declared Fish Habitat Area Summary for Princess Charlotte Bay, Qld DEEDI (Declared 1 July 2010), available at

Moreover, much of the Marrett River is part of the Declared Fish Habitat Area for Princess Charlotte Bay, including stretches of the river that apparently would be within the proposed Wongai project site<sup>41</sup>.

APC's referral documents acknowledge that little is known of the interaction between these surface water bodies and groundwater associated with the proposed Wongai project site, advising:

A preliminary hydro-geological survey conducted by BHP in 1981 concluded that aquifers in the area were relatively thin with noted rates unlikely to significantly hinder a mining operation. Aquifer recharge areas are known to occur in the Bathurst Range however the extent and depth is unknown and will be further investigated during the EIS process. Little is currently known about the groundwater resources in this area. Previous mining exploration works have encountered significant groundwater flows within the Laura Basin, however further studies and detailed hydrological assessment are required to assess environmental impacts<sup>42</sup>.

That subsidence from underground mining has the potential to change the hydrologic dynamics of both groundwater and surface water resources is understood<sup>43</sup>. Among other things, subsidence-related impacts relevant to the Minister's consideration of the proposed Wongai project may include:

- Impacts on watercourses:

Direct impacts of subsidence on watercourses can include changes to stream bed and bank profiles, cracking of a watercourse bed and the creation or destruction of ponds. These impacts have been observed by the Panel at a number of locations throughout the Southern Coalfield. In turn, these effects have the potential to impact on the flow regime, leakage losses via subsurface cracking, stream water quality, fauna and flora, archaeological features, and amenity. The generation, extent and severity of these impacts are governed very much by site specific features that include the composition of the stream bed and banks and the physical orientation of the watercourse relative to a mine layout<sup>44</sup>.

- Impacts on wetlands:

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[http://www.dpi.qld.gov.au/documents/Fisheries\\_Habitats/FHA-Infosheet-Princess-Charlotte-Bay.pdf](http://www.dpi.qld.gov.au/documents/Fisheries_Habitats/FHA-Infosheet-Princess-Charlotte-Bay.pdf) (accessed 7 Sept. 2011).

<sup>41</sup> Princess Charlotte Bay Fish Habitat Area, Plan No. FHA-043, Qld Department of Environment and Resource Management (Feb. 2010), available at [http://www.dpi.qld.gov.au/documents/Fisheries\\_Habitats/FHA-map-princess-charl.pdf](http://www.dpi.qld.gov.au/documents/Fisheries_Habitats/FHA-map-princess-charl.pdf) (accessed 7 Sept. 2011).

<sup>42</sup> APC Referral, s 3.3(b), p 31.

<sup>43</sup> See "Impacts of Underground Coal Mining on Natural Features in the Southern Coalfield Strategic Review", NSW Dept. of Planning (July 2008), available at [http://www.planning.nsw.gov.au/planningsystem/pdf/report\\_southern\\_coalfields\\_fi nal\\_jul08.pdf](http://www.planning.nsw.gov.au/planningsystem/pdf/report_southern_coalfields_fi nal_jul08.pdf) (accessed 7 Sept. 2011).

<sup>44</sup> *Ibid*, s 4.2.1, p 63.

[I]nteractions between subsidence effects and impacts such as vertical displacement, strata fracturing, buckling and uplift (possibly leading to water loss) do have potential consequences for swamps. . . . [T]he issue of, and mechanisms associated with swamp impacts from mining-induced subsidence is an extremely complex one, for which there is no simple generic explanation at the present time. On the evidence available, it would appear that there is a distinct possibility that undermining of valley infill swamps has or will cause drainage, water table drop and consequent degradation to swamp water quality and associated vegetation<sup>45</sup>.

- Impacts on groundwater:

The impacts of subsidence on groundwater systems is best considered in two parts – shallow groundwater systems which are connected with the upland surface stream network and the upland swamps, and deep aquifer systems.

Subsidence impacts on shallow aquifer networks are intimately related to those which affect watercourses and swamps (see Table 9). These surface impacts include cracking of rock bars, draining of rock pools and diversion of creek flows. Tensile cracking and tensile/shear movement of near-surface strata, bending of strata and horizontal separation of bedding planes may lead to changed groundwater flow pathways. Surface flows may be redirected to the subsurface, while pre-existing subsurface flows may be redirected to the surface drainage network. One of the key impacts is the chemical interaction between freshly broken rock faces and percolating groundwater (discussed in section 4.2.1 above). Groundwater dependent ecosystems, including both valley infill and headwater swamps, may also be impacted by changes in the water table and water chemistry.

Deep aquifer impacts are less easily characterised. Aquifers within the fractured zone (see Figure 12) are likely to drain to the mine workings, as will any aquifer in the caved zone. . . . Such disruptions to aquifers may lead to long term changes in their storage capacity. This depressurisation of aquifers in strata overlying the coal seam may be of little long term significance, providing that the aquifer is isolated from the surface drainage network of the water supply catchments and that there is no current or prospective use for the groundwater otherwise contained in the aquifer. It may also lead to cross contamination between fresh and saline aquifers<sup>46</sup>.

- Impacts on aquatic flora and fauna.

Surface cracking as a result of longwall mining subsidence can have the following impacts on riverine features or attributes:

- Loss of surface flows or water levels (increased frequency, duration and magnitude of drying aquatic habitats)
- Loss of aquatic or instream habitats (complete drying of river pools, instream macrophyte beds and wetlands has occurred which may in some cases be irreversible)
- Loss of longitudinal connectivity (connectivity between pools and riffles may reduce migration opportunities)
- Changes to water quality (increased iron oxides, manganese, sulphides and electrical conductivity, and lower dissolved oxygen)

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<sup>45</sup> *Ibid*, s 4.2.3, p 73.

<sup>46</sup> *Ibid*, s 4.2.4, p 75.

- Reduced diversity of instream habitat due to the growth of iron-oxidising bacteria which can also be seen as a rusty-coloured mass in the water (see Figure 36)
- Release of gas into the water column (oxidation of gas may lead to death of riparian vegetation and instream fauna)'.

Where streambeds are damaged from mining activities, such that flow and pool water holding ability is temporarily lost or water quality chemically changed, the ecological processes are altered and biological 'corridors' or linkages broken. In these situations damage to the aquatic ecology is not confined to the immediate site, but may be quite widespread. Upstream habitats may no longer be accessible and movement of animals for feeding and spawning purposes may be restricted or halted completely. The flora and fauna that return to such sites after remediation and return of water flows are likely to be quite different (eg, perhaps less diverse) than the original communities<sup>47</sup>.

While the Submitters recognize that the NSW studies identifying hydrologic impacts associated with subsidence from underground mining focused, in some respects, on ecosystems considerably different from those on and adjacent to the proposed Wongai project site, the possibility that many of the aforementioned impacts may result from the proposed underground mine cannot be discounted. This is especially so in light of the paucity of data provided to the Minister in APC's referral notice and supporting materials. Moreover, in light of the significance of the ecosystems and species located in the vicinity of the proposed Wongai project, it is imperative that the potential for such impacts is carefully studied and any likely impacts are avoided.

### **3.3 POTENTIAL IMPACTS ON THE GBR MNES ARE NOT ADEQUATELY ADDRESSED**

APC's referral notice and supporting documents do not adequately address potential impacts on the GBR MNES associated with the proposed Wongai project in several additional respects.

First, APC understates the potential impacts associated with the marine component of the proposed project. As APC notes, it proposes to transport coal from a loading facility on Bathurst Bay by barge, transshipped to points further offshore, for loading onto ships for export to market<sup>48</sup>. According to APC, the project proposes to use "a covered barge of up to 5,000 dead weight tonnage (DWT) capacity", typically requiring "a draft between 3.5 and 4.5 metres", and APC notes that "[d]redging may be required immediately adjacent to the proposed barge terminal site or the facility constructed on a jetty type arrangement constructed to avoid the need for dredging"<sup>49</sup>.

A review of the bathymetry data provided by APC indicates that the depth of coastal waters in the vicinity of the loading facility is approximately 3-5 metres deep for approximately 750 metres, and then slightly more than 5 metres deep for at least an equal distance<sup>50</sup>. In order to provide sufficient

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<sup>47</sup> *Ibid*, s 4.2.5, pp 75-76.

<sup>48</sup> APC Referral, s 2.1, p 4 *and* Attachment B.

<sup>49</sup> *Ibid*, s 3.1(a), p 11.

<sup>50</sup> *See ibid*, Attachment B.

freeboard for barges of the 5,000 DWT proposed – even if a jetty is constructed – APC will need to dredge a channel approximately 1 km long of some undefined (but presumably considerable) width. This dredging – and shipping activity – is proposed to take place, over a span of 25 years or more, in an Marine Conservation Zone within the GBR, and within a marine ecosystem utilized by endangered dugongs and sea turtles.

Obviously a large area and a significant amount of seabed material will be dredged within the GBR Marine Conservation Zone as a consequence of the proposed Wongai project. There is, however, no discussion of how and where such material will be disposed of in APC’s referral or supporting materials.

In addition, it appears that more shipping within the Marine Conservation Zone of the GBR is contemplated than the barge traffic acknowledged by APC. APC’s referral notes that “[a]ccess to the Site by road is currently a challenge during the wet season” and that “[d]elivery of materials could come via barge or via roads during dry weather periods until such time as there is all weather access to the Project site via road”<sup>51</sup>. It is not clear whether the barge traffic associated with materials delivery to the proposed Wongai project will be substantially identical to the barge traffic associated with coal shipments. Nor does APC’s referral or supporting materials address what off-loading facilities would be necessary to take delivery of such materials, where materials delivered to the site would be stockpiled and this needs to be addressed in more detail.

Likewise, to the extent materials for the proposed Wongai project are barged in, there is another issue that is left unaddressed in the referral and supporting materials, namely what provision there is for transport of these materials from the loading facility on Bathurst Bay to the site of the mine and related infrastructure. Presumably such material would require roadworks in order to be transported to the mine workings or supporting facilities – the covered conveyor system clearly will not suffice. However, nothing in the referral notice or supporting materials addresses roadworks from the mine site to the loading facility.

Obviously, such roadworks may impact on MNES associated with the Wongai site and need to be addressed, particularly in light of the terrain associated with the Bathurst range at the northern end of the proposed Wongai project site. Moreover, to the extent roadworks are required for transporting materials to and from the loading facilities located on Bathurst Bay, it does not appear that the study area identified by APC in its referral and supporting materials adequately addresses the area of disturbance likely to be required for such infrastructure, since the study area appears to be largely limited to the confines of the conveyor system proposed by APC.

### **3.4 POTENTIAL IMPACTS ON THREATENED ECOLOGICAL COMMUNITIES ARE NOT ADEQUATELY ADDRESSED**

While APC’s referral notice and supporting materials note that the critically endangered ecological community of “Littoral Rainforest and Coastal vine Thickets of Eastern Australia” is “likely to occur with area”<sup>52</sup>, APC’s materials

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<sup>51</sup> APC Referral, s 2.2, p 4.

<sup>52</sup> *Ibid*, s 3.1 and Table 11, pp 18-19.

understate the extent to which that community likely exists on the proposed Wongai project site. The ecosystem data provided by APC provides a gross overview of ecosystems present on the site and suggests that much of the site is covered by “not of concern” vegetation<sup>53</sup>. A closer review of Commonwealth and Queensland data regarding the regional ecosystems associated with the critically endangered Littoral Rainforest ecological community suggests that the information provided by APC is misleading or inaccurate.

The Commonwealth’s EPBC Policy regarding Littoral Rainforest notes that:

In QLD, the Regional Ecosystems that currently equate wholly to the ecological community are: 3.2.1a, 3.2.1b, 3.2.12, 3.2.13, 3.2.28, 3.2.29, 3.2.31, 3.2.11, 3.12.20, 7.2.1a-i, 7.2.2a-h, 7.2.5a, 7.2.6b, 7.11.3b, 7.12.11d, 8.2.2 and 12.2.2<sup>54</sup>.

Regional ecosystem mapping data for the proposed Wongai project site, however, suggests that several of the Regional Ecosystems associated with Littoral Rainforest are present on the site or in close proximity, though even this mapping data is at too high a scale to accurately reflect where Littoral Rainforest is found on the property. Much more detailed investigation of the proposed Wongai project site will need to be undertaken to accurately reflect the extent of Littoral Rainforest on those portions of the property likely to be impacted – directly or indirectly – by the proposed mine and associated infrastructure.

### **3.5 OTHER POTENTIAL IMPACTS ON MNES ARE OVERLOOKED**

A number of other facilities and activities are proposed in APC’s referral and supporting materials that have the potential to adversely impact MNES but which received scant mention. Among other things, APC indicates that the proposed Wongai project will include “supporting infrastructure including . . . workshops . . . onsite power generation, potable water treatment plant, stormwater management system, provisioning, sewage treatment. . .”<sup>55</sup>. Such activities are likely to involve the transport, storage, use and disposal of significant amounts of hazardous materials, including fuel, chemicals and contaminated materials and equipment.

The introduction of such activities into an area with MNES such as those located on or near the proposed Wongai project site is a significant cause for concern that those MNES may be significantly impacted and the Minister must ensure that these activities are fully addressed in any assessment of the proposed action.

### **4.0 CONCLUSION AND RECOMMENDATIONS**

For all the foregoing reasons, the Minister should with regard to the proposed action (EPBC Referral No 2011/6072):

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<sup>53</sup> See *ibid*, Attachment H.

<sup>54</sup> EPBC Policy 3.9, “Littoral Littoral Rainforest and Coastal Vine Thickets of Eastern Australia: A nationally threatened ecological community”, Department of the Environment, Water, Heritage and the Arts, p 8 (2009).

<sup>55</sup> APC Referral, s 2.1, p 4.

- Declare the proposed action a controlled action under the EPBC Act.
- Declare that the EPBC Act controlling provisions that are applicable to the proposed action include consideration of impacts upon:
  - i. Listed threatened species and communities (ss 18 and 18A of the Act);
  - ii. Listed migratory species (ss 20 and 20A of the Act);
  - iii. World Heritage values (ss 12 and 15A of the Act);
  - iv. National Heritage places (ss 15B and 15C of the Act);and
  - v. The Great Barrier Reef Marine Park (ss 24B and 24C of the Act).
- The method of assessment may require a higher level of documentation than the EIS required by the SDPWO Act in order to compensate for deficiencies in the material provided by APC as part of the referral.
- The Minister should exercise his powers under s 76 of the EPBC Act to request APC to supply additional information regarding the aforementioned deficiencies.

All of the information included in this submission is true and correct to the best of knowledge and ability of the person making the submission.

Regards,



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