

Statement of Evidence on the Black-throated Finch

Prepared for the Land Court of Queensland

Prepared by Lindsay Agnew

Adani Mining Pty Ltd ats Land Services Of Coast and Country Inc. & Conservation Action Trust

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The cumulative impact of an insufficiently comprehensive assessment, together with an inadequately constructed offset, leads to the inescapable conclusion that the mining proposal should not proceed as approved.

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Attachment D	BTF Recovery Team Meeting Minutes - 3 May 2013
Attachment E	Instructions to Expert

1. Statement of Capacity

I have a Bachelor of Science (Ecology; Griffith University, 1990) and have a specialist Ecology certification from the Environment Institute of Australia and New Zealand (CEnvP Ecology Specialist).

I am currently the Director of Austecology. Austecology provides specialist terrestrial ecological consultancy services to industry and Government, and is based in Brisbane.

I have over 25 years of experience as a practicing ecologist. My Curriculum Vitae is attached to this Statement (Attachment A). The attached Curriculum Vitae highlights the following:

- Extensive experience in the design and implementation of threatened and migratory fauna surveys and fauna biodiversity assessments throughout eastern and northern Australia.
- A depth of project experience in regards to “declared” projects of State significance and major projects deemed to be “controlled” actions under Commonwealth legislation, including projects as diverse as natural area management, mining, residential, ecotourism, ports, and major infrastructure and transport developments.
- Preparation of reports commissioned by the Commonwealth Government, and the Northern Territory, Victorian, New South Wales, and Queensland Governments.

I have also been a member of expert panels advising the Commonwealth Government on threatened bats, reptiles, Squatter Pigeon (southern), and Koala as listed under the EPBC Act, and subsequently provided input into the development of significant impact assessment guidelines for the same.

Since 1998, I have provided expert advice on over 130 matters before Queensland’s Planning and Environment Court and Land Court.

In regards to Black-throated Finch *Peophila cincta cincta* (BTF) within other parts of its known distribution, I have implemented a wide variety of dry and wet season target surveys and dedicated nest search surveys focused on the Townsville population and populations to the south-west (to Charters Towers) and throughout coastal landscapes south to Bowen. I have recorded birds throughout that part of their range and observed a diverse range of their behaviors – feeding, drinking, socialising, courtship nesting, rearing young, etc. I also have familiarity with the Black-throated Finch *P. c. atropygialis*, having implemented surveys on the Atherton Tablelands.

In regard to the Moray Downs property, I have implemented at least 12 days of BTF surveys and habitat assessments across adjacent stations and surrounding lands since 2011¹. One of those surveys provided evidence of a previously unrecorded aspect of the diet of the BTF (Meyer and Agnew 2012). During each of those surveys I was assisted in the field by a fellow biologist with experience in BTF surveys and habitat assessments.

¹ including in part, Yarrowmere, Moonoomoo, Carmichael, Dongmabulla, Laglan, Waltham, Lestree Downs, Degulla, and Disney Stations.

I have implemented a wide-ranging inspection of the Mining Lease Area and surrounding parts of the Moray Downs property, over a two-day period in late-November 2014. That work was augmented by a further two days of survey and habitat assessments on lands adjacent and to the west and north of the Moray Downs property. Over a three-day period in early-March 2015, I undertook surveys and habitat assessments along and adjacent to the western parts of the Moray Downs property, primarily to consider the proposed offset areas. During each of those periods, I was assisted in the field by a fellow biologist with experience in BTF surveys and habitat assessments.

In regard to BTF surveys and habitat assessments in other parts of the Galilee Basin, I have implemented at least 28 days of dry and wet season target surveys and dedicated nest search surveys for BTF within the southern part of the Galilee Basin (2011-2012) as part of a targeted BTF field program comprising 62 survey-person days. That large site (69,267ha) is of a similar size to the subject site, supported habitat characteristic of the eastern Desert Uplands Bioregion, and habitats similar to the subject site.

2. Materials Relied on to Prepare this Statement

In producing this Statement, I have relied on all of the reports, studies, and databases referred to within both the 1st and 2nd Joint Reports in regard to BTF.

The BLA (2015) report which was referenced in the 2nd Joint Report (JR), though not attached to that JR, is attached to my Statement for completeness (Attachment B). Other documents referred to in the 2nd JR, though not fully referenced, and upon which part of my evidence relies, are listed below for completeness:

- AMCI (Alpha) Pty Ltd (2012). South Galilee Coal Project Environmental Impact Statement.
- AMCI Bandanna Energy (2014). Additional Environmental Impact Statement.
- Hancock Prospecting Pty Ltd (2011). Alpha Coal Project Supplementary Environmental Impact Statement Issue 4A, August 2011.
- Hancock Prospecting Pty Ltd (2010). Alpha Coal Project Environmental Impact Statement.
- Hancock Galilee Pty Ltd (2011). Kevin's Corner Project Environmental Impact Statement.
- Hancock Galilee Pty Ltd (2012). Kevin's Corner Project Supplementary Environmental Impact Statement.
- Waratah Coal Pty Ltd (2011). Galilee Coal Project Environmental Impact Statement.
- Waratah Coal Pty Ltd (2013). Galilee Coal Project Supplementary Environmental Impact Statement.

In the preparation of the 2nd JR, both experts considered a report provided by the BTF Recovery Team (Attachment 3 of the 2nd JR). In their response to issues relevant to the assessment of BTF habitat values, the BTF Recovery Team report referred to the findings of a scientific paper by Vanderduys *et al.* (2015), i.e. *Addressing potential cumulative impacts of development on threatened species: the case of the endangered black-throated finch*. I have been provided with a copy of this paper by the authors and it is attached to my Statement for completeness (Attachment C).

Subsequent to the completion of 2nd JR (dated 27 February 2015), I have been provided with a copy of an affidavit by Hamish Manzi (dated 27 February 2015). That affidavit refers to issues arising from the 1st BTF JR, including agreements arising from a meeting with the BTF Recovery Team (3 May 2013).

A request for a copy of any agreed minutes arising from that meeting have been sought from the Applicant. In the absence of such information, I have contacted Dr. Grice, Chairperson of the BTF Recovery Team and have been advised there were no agreed meeting minutes. On 13 March 2015, following the BTF Recovery Team meeting the evening before, I was provided with a copy of the BTF Recovery Team's minutes from the 3 May 2013 meeting with Mr. Hamish Manzi. I have relied on these minutes in considering the issues raised in the affidavit by Hamish Manzi (27 February 2015). For completeness, a copy of the covering email and BTF Recovery Team's minutes are attached to my Statement (Attachment D).

In producing this Statement, where I have relied on factual information from other sources, I have referenced this material throughout the text of this Statement.

3. Opinion and Findings

3.1. Opinion Summary and Conclusions

It is my opinion that the evidence, reviewed from both the Applicant's reports and a large body of additional information, demonstrates that:

- The mine site supports a nationally significant population of BTF.
- That in regard to the wider surrounding landscape, there is no supporting evidence to conclude that there is a population yet to be recorded that would be close to comparable with the abundance of BTF detected on the mine site.
- That this significant population of BTF represents the largest population within what is considered to be only one of two remaining strongholds for BTF (the eastern Desert Uplands).
- That the review of a variety of population characteristics highlighted the significance of the population on the mine site, in comparison with the Townsville BTF population, which was previously thought to be the largest and most significant population of BTF and the core population of the second remaining stronghold for BTF.
- That it is highly likely that this significant population of BTF on the mine site supports a core function in the maintenance of BTF within its remaining stronghold of the eastern Desert Uplands.

It is my opinion that given the clear evidence of the national significance of the BTF population of the site, that this demands a very high standard of assessment in regard to and understanding of BTF site usage and site values, potential impacts (including cumulative impacts) arising from the project, impact mitigation, and finally, measures to be taken to address significant residual impacts – such as habitat offsets.

It is my opinion that:

- There is widespread evidence that key information has either not been well understood or taken into account in the assessment process.
- The reviewed evidence demonstrates that all of the key components of the Applicant's responses to the environmental impact assessment hierarchy are not commensurate with assessments of this nationally significant population of BTF.
- The reviewed evidence demonstrates that there are significant residual uncertainties which remain within all of the key components of the Applicant's responses to the environmental impact assessment hierarchy.

Base on the evidence I have reviewed, it is my opinion that the project as proposed will generate a high potential for a serious and irreversible negative impact on this nationally significant population of BTF. Furthermore, that this impact will generate flow-on negative consequences for BTF metapopulation within the eastern Desert Uplands, being one of only two remaining strongholds within the known distribution of the BTF.

It is my opinion, that given the nationally significant values of the site for BTF, and the weight of the cumulative significant residual uncertainties which remain in the project assessment, that any further consideration of the project proposal requires that a precautionary approach should be adopted. This should be consistent with the application of the precautionary principle, i.e.:

“Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.”²

In my view, the *Precautionary Principle* is entirely applicable to this matter in regard to BTF. The cumulative impact of an insufficiently comprehensive assessment, together with an inadequately constructed offset, leads to the inescapable conclusion that the mining proposal should not proceed as approved.

² The *National Strategy for Ecologically Sustainable Development 1992*. Prepared by the Ecologically Sustainable Development Steering Committee. Endorsed by the Council of Australian Governments. December, 1992.

3.2. Population Significance and Context

Evidence reviewed within the 1st and 2nd Joint Reports confirms the national significance of the BTF population on the mine site. Key evidence includes:

- The Applicant's own BTF survey records derived from a suite of reports covering surveys from 2010 to late 2014³ - cumulative total of 1,025 BTF recorded from 125 observations.
- A significant body of additional BTF records for the mine site⁴, which did not form part of analysis within the Applicant's reporting⁵ - cumulative total of 1,019 BTF recorded from 40 observations.
 - This importantly includes:
 - a record of at least 400 BTF which is recognised as the largest flock of BTF ever recorded⁶; and
 - a record of >150 BTF which is the largest flock recorded by an employee of the Applicant⁷.
- The notable differences arising from the comparative review of key BTF data characteristics between the population recorded on the mine site and BTF records database maintained by the BTF Recovery Team (BTF RT)⁸.
 - Those reviews also highlighted the significance of the population on the mine site, in comparison with the Townsville BTF population, which was previously thought to be the largest and most significant population of BTF (section 7 of the 2nd JR).

Whilst Mr Caneris and I are in agreement in regard to the significance of the BTF population on the mine site (and at least one of the largest known; 1st and 2nd JR), I disagree with the view expressed by Mr Caneris in the 2nd JR that similar numbers of BTF could be recorded with more detailed work within the wider landscape⁹.

Having reviewed a wide variety of information sources, and in consultation with researchers, I am not aware of any evidence whatsoever that might indicate that there is a population yet to be recorded that would be anything close to comparable with the abundance of BTF detected on the mine site¹⁰.

From the information I have reviewed in the 2nd JR, I estimate that since late 2011, in excess of 103 survey person-days have been expended on searches for BTF within similar habitats within the area surrounding the mine site. A number of those target surveys provided no evidence of

³ GHD (2012a, 2012b, 2013, 2014a, 2014b) and Niche (2015).

⁴ See Table 1 of the 2nd JR, which highlights notable differences in the key data parameters between "existing" and additional data sets.

⁵ See Attachment 1 of 2nd BTF Joint Report.

⁶ Co-ordinator-General's report (2014) – "... the largest number of BTF ever recorded at a single location." (pg 63).

⁷ Record by Shaun Lovelock (Adani Environment Officer) in the mine site BTF register reviewed in the 2nd BTF JR.

⁸ That database contains nearly 3,000 records, spanning the period 1800 to present, and widely regarded as the most comprehensive BTF database – see Attachment 1, 2nd JR.

⁹ An example of Mr Caneris' view is expressed in point 7.5 of the 2nd JR.

¹⁰ See information review provided in point 7.7 of the 2nd JR – including the results of the Applicant's own BTF off-site surveys, BTF target surveys associated with significant infrastructure projects throughout the Galilee Basin, and target surveys by experienced bird observers within the surrounding landscape.

BTF (including those of the Applicant), whilst the records from other surveys were insignificant in comparison with the results derived from the mine site¹¹.

Whilst I cannot provide a suitable estimate of BTF survey effort (in survey person-days) which has been expended within other parts of the eastern Desert Uplands Bioregion, it is clear to me that a considerable effort has been focussed on surveys for BTF as part of the environmental impact assessments for a variety of major infrastructure projects¹². All of these large sites support similar habitats to the mine site in respect to BTF, though despite targeted BTF surveys on all of those sites, no evidence of BTF was recorded.

As I have described previously in this Statement, I have implemented at least 28 days¹³ of dry and wet season target surveys and dedicated nest search surveys for BTF within the southern part of the Galilee Basin (Desert Uplands Bioregion). No evidence of BTF was recorded.

I highlight that much of abovementioned information would have been available to the Applicant and contend that it should have been taken into account in preparing an assessment of the site's BTF population in a regional context. Both the 1st and the 2nd JRs also drew attention to other important sources of information which should have been taken into account in preparing that assessment, but were not.

On this issue, Mr Caneris and I agreed in the 1st JR "... that none of the Applicant's reporting provides a detailed assessment of the site's BTF population or BTF habitat values in a regional context."¹⁴

¹¹ I am aware of that an EIS is being prepared for the China Stone Project (EPC 987) which is adjacent and to the north of the Carmichael mine. The limited information provided within the Project's EPBC Act Referral indicates that there are nine BTF records for the site, though these appear to be within an area of overlap of between the China Stone and Carmichael projects. From the information available, I cannot discern whether these are new records or existing records from the previous Carmichael mine surveys.

¹² e.g. Clermont Coal Project EIS (2004), South Galilee Coal Project EIS & AEIS (2012-2014), Alpha Coal Project EIS & SEIS (2010-2011), Kevin's Corner Project EIS & SEIS (2011-2012), and the Galilee Coal Project EIS & SEIS (2011-2013).

¹³ As part of a targeted BTF field program comprising over 62 survey-person days (Galilee Coal Project).

¹⁴ See responses to Issue No. 20 of the 1st JR.

Figure 3-1 Part of a BTF flock of at least 400 BTF



This photograph identifies 124 Black-throated Finches. These birds were part of flock of at least 400 BTF observed on the mine site by researcher Stanley Tang (10 Mile Bore; September 2013). That observation is now recognised as the largest BTF flock ever recorded (BTF Recovery Team, Coordinator General's Report, and Birdlife Australia). None of the Applicant's reporting has ever acknowledged the significance of this record or included this record in any analysis of site significance.

3.3. Capacity to Describe the Current Environment

The description of the current environment is a fundamentally important body of information which underpins other key components in the environment impact assessment process, i.e. impact assessment, impact mitigation, and the formulation of responses to any significant residual impacts (e.g. offsets).

Having reviewed the Applicant's BTF survey and monitoring program (2010-2014), Mr Caneris contended that whilst "...there could be substantial improvements in the information collection from site assessment, the ongoing monitoring is contributing to a significant increase in knowledge of BTF in this area. Further, with refinement the monitoring program and specifically the type and location of data collected could provide a systematic improvement of knowledge and specific quantification of the extant habitats and habitat values. The adaptive management intent as detailed within the BTF Management Plan provides for such changes."¹⁵

I disagree with Mr Caneris' propositions for the following reasons:

- Whilst the Applicant's work spans a period of five years, to date, that work has not provided a sufficient description of the existing values of the site for BTF.
- The BTF survey and monitoring protocols employed by the Applicant and the spatial extent of that work across the site is considered inadequate.
- That the perpetuation of fundamental flaws and constraints throughout the assessment program (survey program then monitoring program) can only serve to provide a constrained and inadequate understanding of the site's BTF values.
- That there is no evidence of any notable change or modification to the assessment approach in response to new information, thus no practical evidence of an adaptive management strategy is actually being implemented.

Evidence reviewed within the 1st and 2nd Joint Reports confirms that in regards to BTF, the Applicant has not provided sufficient information to adequately understand the existing values of the site, e.g. site habitat preferences for foraging and breeding, distribution and abundance, movement patterns, and population dynamics.

On this issue, Mr Caneris and I were in agreement that the Applicant has not provided sufficient information to adequately understand the existing values of the site¹⁶. The agreed findings of our review¹⁷ highlighted the following criticism of the primary approaches relied upon by the Applicant to investigate and describe site values for BTF:

- The 2ha/20-minute bird surveys did not represent a suitable method to investigate BTF site usage.
 - That despite claims in all of the Applicant's BTF reporting, the 20-minute survey is not a method "based on" or consistent with Commonwealth Government's BTF assessment guideline (DEWHA 2009) or the national survey guidelines for Australia's threatened birds (DSEWPaC 2010).
 - That there was widespread evidence in the reporting that the implementation of this survey work was not consistent with the survey methodology stated in each report.

¹⁵ See point 6.6.6 of the 1st JR.

¹⁶ See points of agreement in regards to Issue 19 of the 1st JR.

¹⁷ See discussion in response to Issue 19 (point 6.6) of the 1st JR.

- That the spatial layout of the 2ha survey sites created a bias towards survey site locations adjacent to the existing track system has resulted in a notable absence of survey coverage across extensive areas of potential BTF habitat throughout the MLA¹⁸ and represents a significant weakness in the Applicant's assessment of BTF habitat values across the MLA and adjacent areas of the Moray Downs property.
- That for the water body survey program, neither the survey effort (survey person hours) nor the survey duration (i.e. presence at a water body) were measures consistent with the Commonwealth Government's BTF assessment guideline (DEWHA 2009).
 - Furthermore, there was no evidence of any standardised protocol in regard to survey timing or survey duration, and little attention given to implementing water body surveys during an optimum period which follows dawn (despite the described survey protocol).

As a result of our shared view on the deficiencies of the assessment program, Mr. Caneris and I provided an agreed set of seven key recommendations¹⁹. If implemented, I contend the depth and breadth of those recommendations represents in practical reality, a complete overhaul of the Applicant's assessment approach, *cf.* Mr Caneris' view that "With relatively simple improvements to the existing monitoring protocols/approach the current level of field assessment could be far better targeted to provide the required information on BTF and their habitats."²⁰

I also find surprising the view expressed by Mr. Caneris that the lack of information in regards to breeding habitat values within the disturbance areas does not preclude a successful offsetting of lost values (see point 6.6.6 of the 1st JR).

I strongly disagree with Mr. Caneris' view. I contend that an appreciation of breeding habitat values is a vitally important contribution to the assessment and understanding of comparative BTF habitat values across the site, and equally important in determining suitability of any proposed offsets.

The BTF is known from a variety of grassy savannah woodland habitats dominated by *Eucalyptus* and/or *Corymbia*, though also woodlands dominated by *Melaleuca* and/or *Acacia* tree species. BTF require access to three key resources for survival and breeding: water sources, grass seeds, and trees providing suitable nesting habitat. The presence and spatial configuration between and within these three key resources governs the distribution of BTF.

As stated by the Commonwealth's EPBC Act Policy Statement 3.13²¹ – "Any disruption to the connectivity between these resources will have a serious impact on an area's ability to sustain BTF."

¹⁸ 92% of the 2ha survey sites were located adjacent to or <100m from the existing track system. Only eight 2ha survey sites are located at distance to the track system. See details in point 6.6.2.1 of the 1st JR.

¹⁹ See point 7.8 of the 1st JR.

²⁰ See point 6.8.5; 1st JR.

²¹ *EPBC Act Policy Statement 3.13 Significant impact guidelines for the endangered black-throated finch (southern) (Poephila cincta cincta) Nationally Threatened Species and Ecological Communities.* Department of the Environment, Water, Heritage and the Arts (2009a).

The results of research on BTF breeding behavior indicates that nest sites are rarely more than one kilometre from permanent water, that pairs remained within close proximity to their nests when feeding, and that birds return to relatively the same area every breeding season²².

The proximity and connectivity of the nesting resources to water and foraging habitat is considered to be critical in the choice of nesting sites. Thus, habitat where BTF breed highlights the vitally important nexus between all three key resources required by BTF and in my view, is a critical component of any assessment of site values for BTF.

As highlighted in the 1st JR, the Applicant's reporting indicates that approximately 272 survey person days were expended in BTF surveys (November 2010 to October 2013), though there were no dedicated search effort for BTF nests. Whilst two potential nest trees were detected, these appear to have been located incidental to other survey activities. During my comparatively brief two-day site assessment in November 2014, it was possible to record two BTF nests (new locations), incidental to my primary objective of site familiarisation (see Figure 3-3).

A further survey by the Applicant several weeks later noted the observation of a further six nests, though it is not apparent that these were the result of any dedicated nest surveys (Niche 2015). That report noted that all six nests were located in the same general area where nests and nesting activity were observed during the Applicant's surveys in May 2013. Thus there is no real advancement of our understating of the distribution of breeding habitat across the site.

The Applicant was alerted to concerns regarding the lack of breeding habitat assessment by way of the BTF Recovery Team submission to the Coordinator-General (8 February 2013) in regard to the project EIS. The BTF Recovery Team submission noted the following:

“The fact that the Proponent has failed to locate BTF nests during his surveys is of great concern to the RT. We maintain this demonstrates a lack of survey effort on the part of the Proponent and completely undermines his assessment of the importance of the habitat to the BTF.”

There has been no subsequent alteration to the Applicant's BTF assessment survey/monitoring approach, thus it is my view that the significant concerns raised by the BTF Recovery Team remain relevant. It is noted that the project's Terms of Reference required information on breeding, amongst discussion on other biological requirements for all species of conservation significance within the study area²³.

The lack of any apparent effort to detect nest sites, and resultant lack of any appreciation for breeding habitat values for this significant population of BTF represents a major failure of the Applicant's assessment of site values for BTF. Ultimately, the lack of survey effort to assess breeding habitat values significantly constrains and undermines the Applicant's assessment of the relative importance of the habitat to the BTF across the MLA and adjacent parts of the Moray Downs property (and stated impact significance and proposed offsets).

²² e.g. Mitchell (1996), Buosi (2005) in Isles (2007), NRA (2006) in DEWHA (2009b), Isles 2007, and *pers. obs.*

²³ Section 3.3.3, Coordinator General's Carmichael Coal Mine and Rail project Final terms of reference for the environmental impact statement (May 2011).

Figure 3-2 BTF Records within Poorly Surveyed parts of the Mine Site



Adult BTF (**above**) and young BTF (**below**) recorded as part of a flock of 9 BTF observed feeding along the edge of the Carmichael-Moray Downs Road within the central part of the mine site (EPC 1690; 17 April 2012). BTF were observed feeding on *Digitaria ciliaris* and *Urochloa mosambicensis*. The Adani mine camp is located within several hundred meters of this record location. The Applicant's survey results show few records for this part of the mine site, with the closet being about 4km to the north (incidental record; May 2012).





Grassy woodland habitat adjacent to the north (above) and south (below) of the BTF record location. There is a large part of the site to the north which supports suitable habitat for BTF, though subject to a very low level of survey effort (*cf.* the concentration of repeat survey effort within the northern part of the site). Permanent water is known within approximately 1km from this BTF record site.



Figure 3-3 BTF Nests



Site of two BTF nests recorded November 2014 (above). BTF nest with covering of dead Acacia leaves (below). Located within western part of Stage 1 offset area and within 110m of a seasonal watercourse (55K 427246 7565172).



Typical nest structure (below) recorded at a monitoring site in Townsville (March 2013).



3.4. Capacity to Assess Impacts

Impact assessment is a fundamental component of the EIS process and is informed by a suitable description of the existing environment.

In the 1st JR, we considered the issue of the adequacy or otherwise of the Applicant's impact assessment - see responses to Issue 22 (point 6.9) and Issue 23 (point 6.10) of the 1st JR.

Mr. Caneris, having previously agreed that the Applicant's baseline information was not sufficient to adequately understand the existing values of the site commensurate with the potential significance of the site's BTF population²⁴, then provided the following response to Issue 23²⁵:

“Whilst the above statement has some validity, it does not reflect the inherent approach to the project and relevant approval conditions. Given the project size and length of time over which the actions are taken, the approval conditions require ongoing assessment of the sites habitat values and significance of the potential impacts to BTF to provide the data required to demonstrate the suitability of mitigation measures and that commensurate offsets have been secured and appropriately managed.” (Point 6.10.1, 1st JR).

I disagree with Mr. Caneris' view. There is an apparent failure to describe site values for this nationally significant population of the endangered finch. I consider it a perverse proposition that any form of post-operational impact assessment can be a substitute for an adequate pre-operational understanding of impacts, which is required to establish the significance of the impacts and a basis to then consider an appropriateness (or otherwise) of achievable mitigation of those impacts (including proposing suitable offsets).

As I have noted in the 1st JR, there appears to be no impact thresholds nominated by the relevant approval conditions, thus the only likely primary response to any new knowledge which describes an increase in impact significance is by way of providing additional offsets.

Based on the evidence I have reviewed, it is my opinion that the project as proposed will generate a high potential for a serious and irreversible negative impact on this nationally significant population of BTF. Furthermore, that this impact will generate flow-on negative consequences for the remainder BTF metapopulation within the eastern Desert Uplands, being one of only two remaining strongholds within the known distribution of the BTF.

²⁴ See point 6.6.1 of the 1st JR.

²⁵ **Issue No. 23** “In the absence of an adequate assessment and understanding of the existing values of the site for the BTF, the information provided in the EIS documents cannot be relied upon to confidently assess the significance of the potential impacts to the BTF, the suitability of proposed mitigation measures, or the appropriateness of any offsets.” Point 6.10 of the 1st JR.

3.5. Suitability of Proposed Offsets

Within the project assessment framework implemented by regulatory agencies, the fundamental components of an adequate description of the environment, impact assessment and mitigation form the preceding stages before ultimately considering offsets. Where, after exhausting options to avoid and/or mitigate impacts, there remains a residual significant impact, consideration is then given to an environmental offset (e.g. DSDIP 2014 *Significant Residual Impact Guideline*).

As I have contended in the preceding sections of this Statement, there has been a failure to adequately demonstrate a sufficient understanding of the site values for this significant population, and that the subsequent impact assessment could not be relied upon due to the significant uncertainties within the information it relies upon.

I disagree with the view expressed by Mr. Caneris throughout the 1st JR, that "... the work to date although generally broad in nature provides reasonably sufficient context to demonstrate that the required offset values can be met."²⁶

I also disagree with the additional view expressed by Mr. Caneris that there can be confidence placed on the fact that approval conditions require that further assessments are to be undertaken and that the findings of these assessments will either confirm suitability of current offsets, or prove that additional offsets are required²⁷.

I disagree with the views expressed by Mr. Wilson within both the 1st and 2nd JRs that the methods implemented to assess the BTF habitat values of the proposed offsets could be regarded as "...adequate for the assessing potential offsets."²⁸

It is my opinion that evidence reviewed within the 1st and 2nd Joint Reports confirms that in regards to BTF, the Applicant has not demonstrated the suitability of the proposed offsets.

In my opinion, the implementation of the Ecological Equivalence Methodology (EEM) does not provide the level of assessment that is required in order to assess and compare habitat values for a particular threatened species, such as BTF. Furthermore, the application of the standard EEM is certainly not commensurate with the type of habitat assessment which is warranted given the significance of BTF population and the potential requirements to determine suitable offset habitat.

Both of the Applicant's reports²⁹ relevant to the assessment of the suitability of the proposed offsets provide references to a sub-set of BTF habitat characteristics as "additional survey considerations" (e.g. "key grass species"). I reject the suggestion by both Mr. Wilson and Mr. Caneris that the inclusion of those 8 grass species³⁰ is evidence that the "modified" EEM

²⁶ e.g. See points 6.6.6, 6.7.3, and 6.9.4 of the 1st JR.

²⁷ e.g. See points 6.10.1 of the 1st JR; and 6.20, 7.18, 7.22 of the 2nd JR.

²⁸ e.g. See points 6.10.8 and 6.10.23 of the 1st JR.

²⁹ Eco Logical Australia; ELA 2014a and 2014b.

³⁰ As part of my field observations on the mine site and surrounding land, I have observed evidence of BTF feeding on *Digitaria ciliaris*, *Eragrostis* sp., *Schizachyrium fragile*, *Urochloa mosambicensis*, *Aristida* sp., and *Eucalyptus whitii/melanophloia*.

methodology was sufficient to address the assessment of habitat values for this significant population of BTF³¹.

As highlighted in the 1st and 2nd JRs, there is a significantly wider suite of grass species which are known, or strongly suspected, to form part of the diet of the BTF and that suite of grass species should have been considered as part of designing a suitable approach to assessing BTF habitat values for both the mine site and proposed offset areas. I can only conclude from the lack of suitable assessment attributes, that a biologist with experience in BTF ecology was not consulted in the planning of the assessments which ELA undertook, and upon which decisions would ultimately be made in regard to assessing BTF habitat values on the mine site and the basis for the offset areas as proposed.

Other evidence brought to light in the 1st JR demonstrates a variety of deficiencies and biases which undermine the Applicant's assessment, which in my opinion, neither Mr. Wilson nor Mr. Caneris were able to adequately address. It is my view that these apparent deficiencies and biases would have the effect of distorting any basis for a suitable comparison between Assessment Units and in comparisons of the habitat values to be cleared and those to be offset.

Examples of these deficiencies and biases referred to in the 1st Joint Report included:

- Inequities in the application EEM across the suite of “constructed” Assessment Units (AU) within both the mine site and proposed offset areas³².
- Inequities in the application EEM between the mine site and the offset areas and manifest as a 5-fold difference in survey effort, i.e. a survey effort of 1 EE Site/293ha on the mine site in contrast to 1 EE Site/1,473ha for the proposed offset³³.
- Inequities in the application EEM across the suite of proposed offset areas. This is manifest in the contrast between the concentration of EE Sites within the northern offset area, whilst the remaining three offset areas were only subject to a very low survey effort, e.g. 1 EE Site per 2,300ha of habitat³⁴.
- Disparities between the application of method used to calculate BTF habitat values between the mine site and proposed offset areas involving the use of data for “key grass species”³⁵.
- A notable disparity in sampling effort between the mine site and the proposed offset areas in regards to the inclusion of the 8 “key grass species”³⁶.
- That the assessment of BTF habitat values largely relied upon a sub-set of Regional Ecosystems as “indicators” and that the presence of habitats other than those mapped as Regional Ecosystems (i.e. non-remnant vegetation communities) had little or no bearing on the assessment outcomes³⁷.

³¹ See information addressing Issue 31 and 32 of the 1st JR; and in section 6 and Attachment 2 of the 2nd JR.

³² See examples highlighted in 6.10.11 of the 1st JR.

³³ See point 6.10.11 of the 1st JR.

³⁴ See examples in 6.10.13, 6.10.14, 6.10.15, and 6.10.15 of the 1st JR.

³⁵ See examples in Point 6.10.5 of the 2nd JR.

³⁶ As acknowledged by Mr. Wilson in the 1st JR (point 6.10.12), there is no explanation given for the inequalities of sampling effort in the ELA documents.

³⁷ BTF use habitats other than those mapped as Regional Ecosystems, i.e. non-remnant vegetation communities. There are examples that demonstrate that non-remnant vegetation communities may actually provide comparatively high habitat values for a BTF population.

I disagree with view expressed by Mr. Wilson that the significantly lower sampling rate within eucalypt woodland habitats can be justified on the basis of less variability in composition and condition.³⁸ My own field observations indicate that there is variation in regard to the composition and condition of habitat for BTF and that there is notable variation and that such variation is not suitably accounted for by the current assessment approach or in the comparative habitat values mapping that has resulted from the assessment of proposed offsets. In regard to BTF, variation in habitat condition and resources, such as the composition of the grass cover and ground cover structure strongly influence the distribution of BTF³⁹. Examples which highlight these concerns are provided in Figure 3-4.

In regards to actual information on BTF occurrence and use of the proposed offset areas, I note that there are BTF records for the northernmost of the four offset areas (part of the Stage 1 offset, and an area that has consistently received a concentrated survey focus). My review of the survey program (baseline and monitoring) indicates there has been negligible effort given BTF surveys within the remaining three offset areas. There is one BTF record for one of those areas. The total BTF survey effort for these three proposed BTF offset areas, of over 15,000 ha, is limited to 80 minutes of foot survey, a one-hour of water body survey, and deployment of one camera trap⁴⁰. This does not represent any meaningful survey effort and cannot be relied upon to assist in any meaningful appreciation of BTF habitat values of the proposed offsets.

In regards to a wider context to support the proposed offsets, the Applicant has not provided any examples of a successful offset for BTF as context for the Applicant's proposal. To my knowledge:

- There is no current evidence to demonstrate the viability of a habitat offset for BTF, or ecologically similar threatened savannah granivore⁴¹.
- I am not aware of any working examples that demonstrate the viability of a habitat offset for a nationally significant population of a threatened bird species.
- I am not aware of any working examples of restoration (success or otherwise) of a habitat offset for BTF.

Throughout the 1st and 2nd JRs, Mr. Caneris notes that the project will be subject to on-going assessments of impacts and that were an increase in impacts to BTF to be detected, further offsets would be required⁴². As I have noted in the 1st JR, there appears to be no impact thresholds nominated by the relevant approval conditions, thus the only likely primary response to any new knowledge which describes an increase in impact significance is by way of providing additional offsets.

Whilst it is unclear on what basis a requirement for further offsets would be triggered, were it determined that further offsets were required, it is equally unclear whether there is indeed any

³⁸ See discussion in regards to points 6.10.11 and 6.10.12 of the 1st JR.

³⁹ BTF are known to feed in more open ground cover conditions (even sparsely vegetated or bare ground) where access to ground stored seed may be easier. It is likely that there is a density threshold above which ground foraging is likely to be difficult and access negatively affected. Dense ground cover, be it formed by the grass sward or other vegetation (e.g. low woody Acacia cover) can prevent BTF access to ground stored seed or that cover may significantly inhibit growth of seeding grasses which BTF rely on.

⁴⁰ See review details provided in 6.18.3 of the 1st JR.

⁴¹ e.g. Star finch *Neochmia ruficauda ruficauda*, and Gouldian Finch *Erythrura gouldiae*.

⁴² See point 6.12.2 of the 1st JR.

further capacity on the Moray Downs property to establish suitable offsets for BTF. Thus, to meet any further increase in an offset obligation, the Applicant may need to seek an off-site offset solution.

As highlighted previously, having reviewed a wide variety of information sources, and in consultation with researchers, I am not aware of any evidence whatsoever that might indicate that there is a population yet to be recorded that would be anything close to comparable with the abundance of BTF detected on the mine site⁴³. Thus there does not appear to be suitable habitat, which supports similar numbers of BTF, which could justifiably form the required part of a “like for like” offset requirement.

Seeking a suitable habitat offset within the surrounding landscape is further complicated by other potential demands on that landscape which may arise through the future approval of a further two large mine proposals (see Figure 3-5). Mining approvals are being pursued by the Alpha North Coal Project (extending northwards to join the Carmichael mining leases) and the China Stone Coal Project (extending southwards to join the Carmichael mining leases).

Of concern, is that both of these projects have EPC leases which extend across both Stages 1 and 2 offset areas proposed by the Applicant.

The abovementioned concerns in regards to finding suitable BTF habitat offsets within the Galilee Basin are explored in the paper by Vanderduys *et al.* (2015) – Attachment C of this Statement. To investigate this issue, the distribution of BTF was modelled using bioclimatic data⁴⁴ and the Regional Ecosystems which were associated with BTF records. The model data was then overlaid with granted, extant extractive and exploratory mining tenures within the known and modelled ranges of BTF to examine the level of incipient threat to this subspecies.

The analysis of the model data provided the following findings and conclusions (after Vanderduys *et al.* (2015)):

- The model of BTF habitat shows that over 60% of the remaining suitable habitat falls within granted, extant resource extraction or exploration tenures. On this, the authors concluded that insufficient BTF habitat exists to secure enough land to offset all the potential extraction or exploration developments.
- Given that the BTF has lost 80% of its historic range, losing over 60% of the remaining habitat would be a serious threat to the species' persistence.
- It was noted that it is unlikely that all of the extraction or exploration tenure areas will be developed as mines, though data for those sites with detailed mine plans, showed that approximately 41% of the original lease area was planned to be developed. Given that 80% of the BTF stronghold along the eastern edge of the Desert Uplands Bioregion is under resource extraction or exploration tenures, that suggests that if approximately 40% of lease

⁴³ See information review provided in point 7.7 of the 2nd JR – including the results of the Applicant's own BTF off-site surveys, BTF target surveys associated with significant infrastructure projects throughout the Galilee Basin, and target surveys by experienced bird observers within the surrounding landscape.

⁴⁴ Climate variables used were 30-year averages for the period 1976-2005 of annual mean temperature, temperature seasonality, maximum temperature of the warmest period, minimum temperature of the coldest period, annual precipitation, precipitation of the wettest period, precipitation of the driest period and precipitation seasonality.

areas are developed, then around 32% of the BTF's stronghold is likely to be lost to mining activities.

Vanderduys *et al.* (2015) also reviewed the objectives of the Galilee Basin Offset Strategy (GBOS) in regards to the strategy that promotes offsets to be established in degraded or cleared areas such that those areas can be improved or rehabilitated in order to actually offset biodiversity losses. In reviewing their models on this issue, Vanderduys *et al.* (2015) concluded that, given that the whole of the eastern part of the Galilee Basin is held under coal exploration tenure by a number of companies and given that over 50% of the modelled BTF habitat could be explored and/or developed for mining, it appears technically impossible to apply the current offset arrangements and achieve no net loss of BTF.

Vanderduys *et al.* (2015) concluded that their results demonstrate that the provision of offsets to provide protection for BTF is likely to be a difficult proposition in the stronghold area of the eastern Desert Uplands (the area encompassing the Carmichael mine). The authors recommended that remnant high value habitat should not be considered as offsetting as this can only result in a net loss of suitable habitat, and protection of offsets developed from cleared or degraded land is likely to be problematic for a number of reasons.

In this, Vanderduys *et al.* (2015) highlight a logical problem with offsetting in the Galilee Basin context, i.e. that if suitable areas that already have equivalent populations of BTF are located and designated as offsets, then the BTF will lose habitat with development of the mine. If suitable areas that are currently degraded are proposed to be utilised as offsets (through rehabilitation, management change, etc) to achieve no net loss, then the proposed offsets can have no guarantee of success, because there are currently significant uncertainties in regards to habitat requirements for BTF on the site, and that BTF habitat has never successfully been deliberately created from a degraded system.

Based on the evidence I have reviewed, it is my view that the proposed offset strategy is not capable of meeting the offset principles stated in either Commonwealth or State offset policies. These include:

- *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (October 2012):
 - **Offset Principle 1** - Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action.
- *Queensland Environmental Offsets Policy* (Version 1.1; December 2014):
 - **Offset Principle 4** - Offsets must provide environmental values as similar as possible to those being lost.
 - **Offset Principle 5** - Offset provision must minimise the time-lag between the impact and delivery of the offset.
 - **Offset Principle 6** - Offsets must provide additional protection to environmental values at risk, or additional management actions to improve environmental values.

Figure 3-4 Variation in Habitat Suitability and Inconsistencies between Ground-truthed and Modeled Habitats



Above - Habitat dominated by low and dense acacia and woody regrowth. This habitat is within 400m of a Ecological Equivalence survey site which is mapped as “high value” habitat for BTF. Photographed habitat mapped by ELA (2014b) as "medium value" habitat for BTF, though obviously not suitable foraging habitat (view east; 55K 426242 7560924).

Below - This habitat is within 350m of an Ecological Equivalence survey site which is mapped as “high value” habitat for BTF (view east; 55K 426231 7560741). Photographed habitat mapped by ELA (2014b) as "low value" habitat for BTF, which is correctly mapped according to the high/medium/low comparative habitat values hierarchy provided in ELA (2014b). Evidence in the field suggests that the actual ground extent of this “low value” habitat is more widespread than depicted in the ELA (2014b) BTF habitat values mapping for offset areas to the north and south of the Carmichael River.





Above - Habitat dominated by low and dense acacia regrowth. Area mapped by ELA (2014b) as "medium value" habitat for BTF, though obviously not suitable foraging habitat (view east; 55K 426379 7562276).

Below – Habitat dominated by low and dense shrub cover. Area mapped by ELA (2014b) as "medium value" habitat for BTF, though obviously not suitable foraging habitat (view north; 55K 426075 7565256).





Above – Highly degraded habitat and regarded as comprising low BTF habitat value at the time of inspection. Given the scale of the habitat values mapping in ELA (2014b), it is unclear whether this habitat was mapped as “high value” or “medium value” for BTF (view north; 55K 7566381 7566932)

Below - Highly degraded habitat mapped by ELA (2014b) as “high value” for BTF (view east; 55K 417643 7566932)



Photographs below depict a spectrum of variation in ground cover conditions and resources of relevance to BTF which were encountered along a 4 kilometre transect through part of a proposed offsets (55K 413049.64 7577567 through to 409210 7578173). A variety of these habitats do not support ground cover conditions or resources suitable for BTF. The Applicant implemented a survey of a "8 key grass species" at a location approximately 800m north of the start of this transect (BTF 2; ELA (2014b)). The next closest assessment sites was approximately 8 kilometres (BTF 7; ELA (2014b)) and 16 kilometres to the east (BTF 7 and BTF 3 respectively; ELA (2014b)). The closest Ecological Equivalence Site was approximately 10 kilometres to the south-east. The Applicant's survey regime is not capable of providing a suitable input to justify the habitat values of the proposed offsets relevant to BTF.



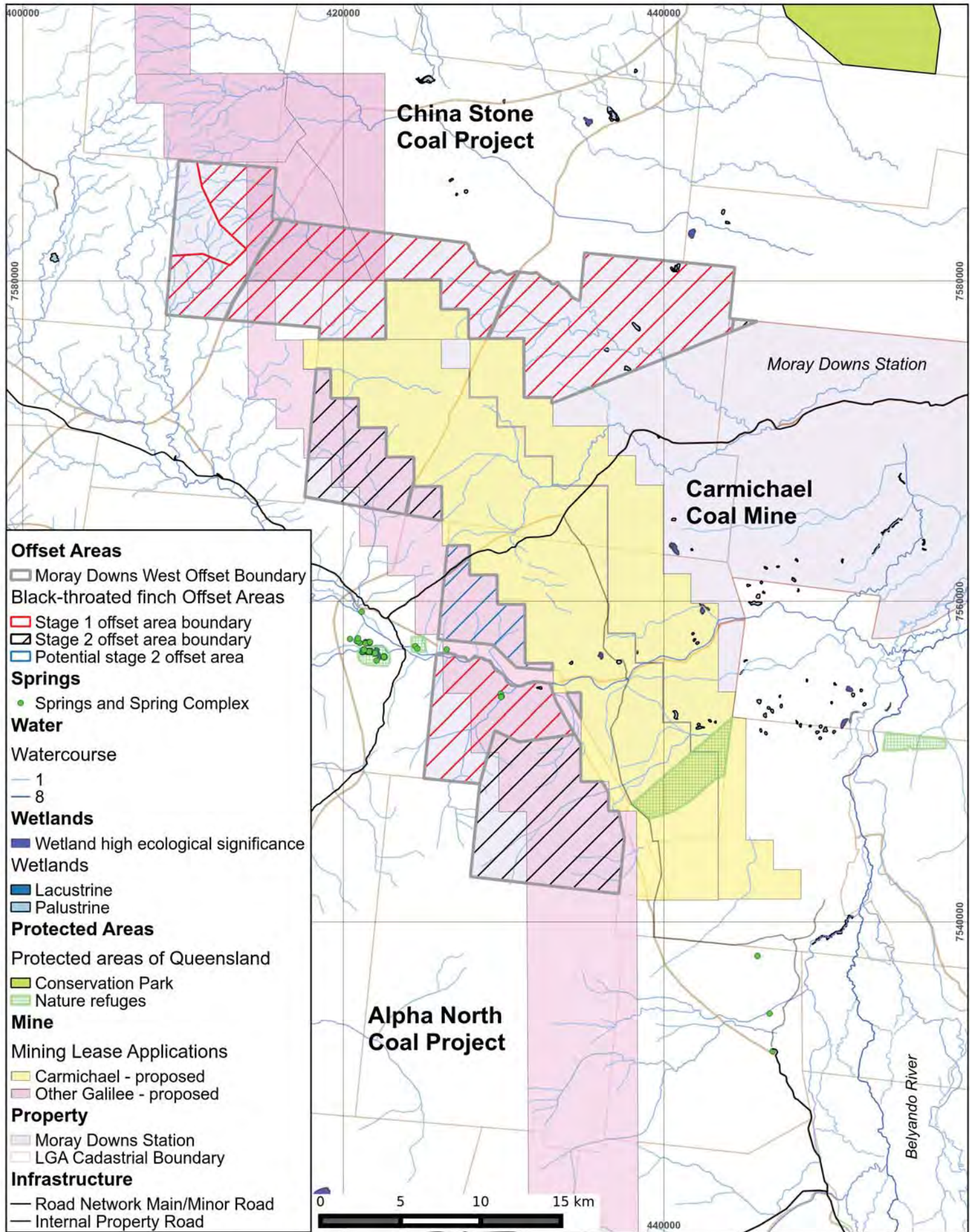


Figure 3-5 Relationship between proposed BTF Offsets and leases of the proposed Alpha North and China Stone Coal Projects

Location: Queensland. Galilee Basin - China Stone Coal Project to Alpha North Coal Project.
 Attributes: Black Throated Finch - proposed Offset Areas, Moray Downs West Offset Boundary, Springs, High Ecological Significance Wetlands & Watercourses. Protected Areas.
 Data Sources: Queensland Government - Information Queensland. Wetlands Info. Access Date: Dec 2013 to Jan 2015. CO2 Report: Offset Areas extracted (Note: +/- 100m of uncertainty to offset boundaries that are not aligned to cadastral boundaries)

Author: Coast and Country
 Client: Land Services of Coast and Country Inc.
 Date: 16 March 2015
 Version: 2
 REF #: 111LLSC5v2
 Datum: GDA94/MGA zone 55 - 28355

3.6. Applicant's consultation with BTF Recovery Team

Subsequent to the completion of 2nd JR (dated 27 February 2015), I have been provided with a copy of an affidavit by Hamish Manzi (dated 27 February 2015). That affidavit refers to issues arising from the 1st BTF JR, including agreements arising from a meeting with the BTF Recovery Team (3 May 2013).

A request for a copy of any agreed minutes arising from that meeting have been sought from the Applicant. In the absence of such information, I contacted Dr. Grice, Chairperson of the BTF Recovery Team, and have been advised there were no agreed meeting minutes.

On 13 March 2015, I was provided with a copy of the BTF Recovery Team's minutes from the 3 May 2013 meeting with Mr. Hamish Manzi (Attachment D).

For completeness, I provide the relevant points from the Affidavit by Hamish Manzi.

Point 5 – "In response to that submission, Dr Alex Kutt (who was then employed by GHD, consultants engaged by Adani Mining) and I travelled to Townsville and held a lengthy meeting with Tony Grice, April Reside, Rob Hunt, James Moloney and Alma Ridep-Morris of the BTFRT on 3 May 2013. All aspects of that submission were discussed, and a number of matters that both we (for Adani Mining) and the BTFRT representatives agreed should be undertaken were subsequently undertaken by Adani Mining to improve ongoing work in relation to the BTF."

Point 6 – "At that meeting, a general agreement was reached that the ongoing monitoring and surveying work, the methodology of which was discussed, would address the concerns of the BTFRT in relation to repeated and systematic survey effort for the Project. This was identified by the BTFRT as the highest priority."

Having reviewed the BTF Recovery Team's minutes, it is apparent that there were a wide variety of issues discussed, including those related to ongoing monitoring and surveying work. However it is not clear to me that there was agreement would address the concerns of the BTFRT in relation to repeated and systematic survey effort for the Project.

I note the following comments by the BTF Recovery Team:

- "This region (central QLD, Galilee Basin) the best region for BTF." (page 3)
- "Happy to give feedback – info important & help influence the decision that are made to protect BTF." (page 12)
- "Don't interpret that our meeting [???] mines are a great idea." (page 12)
- "RT would like to look @ BTF data Adani collected & we can give feedback on cooperation w/ Juliana & Stan's work and offsets and their limitations." (page 13)

4. Statement to the Court

In the Land Court

Land Court Nos.:
MRA428-14, EPA429-14
MRA430-14, EPA431-14
MRA432-14, EPA433-14

Held at: **Brisbane**

Between: **Adani Mining Pty Ltd**
And: **Land Services of Coast and Country Inc.**
And: **Conservation Action Trust**
And: **Chief Executive, Department of Environment
and Heritage Protection**

Applicant
First Respondent
Second Respondent
Statutory Party

Additional Facts

I am not aware of any further readily ascertainable additional facts that would assist me to reach a more reliable conclusion.

Declaration

In accordance with the *Land Court Rules 2000* (Part 5 (3)), I confirm the following:

- a) The factual matters included in the statement are, as far as I am aware, are true.
- b) I have made all enquiries considered appropriate to discharge my duty to the Court.
- c) The opinions within this Statement are my own, genuinely held opinions.
- d) This Statement contains reference to all matters that I consider significant.
- e) I understand the expert's duty to the court and have complied with the duty.
- f) I have read and understood the rules contained in this part, as far as they apply to the expert.
- g) I have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.

Signature: 

Name: Lindsay Robert Agnew

Date: 17 March 2015

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