

**APPENDIX 1:
CURRICULUM VITAE – ADRIAN CANERIS**

BORN: 27 February 1965, Brisbane, Queensland.

CURRENT ADDRESS – 7 Dendy Place, Edens Landing, Queensland, 4207.

POSITION

Managing Director & Principal Wildlife Expert
Biodiversity Assessment & Management Pty Ltd (BAAM)

AREAS OF EXPERTISE

- Expert Witness – Ecological
- Wildlife management
- Biodiversity planning
- Ecological monitoring
- Koala management
- Vertebrate fauna assessment and identification
- Vegetation management
- Assessment of terrestrial habitats
- Feral species management
- Community liaison and facilitation
- Land use planning

CAREER OUTLINE

Adrian has been involved in research, management, consulting, tertiary teaching and community based studies of terrestrial ecology, particularly vertebrate fauna, across Queensland for over 20 years. He has experience at both State and Local government levels in all aspects of ecological management & planning, and community involvement. Adrian has previously held membership on several State Ministerial Advisory Committees and has been the nominated community representative for numerous committees.

Since 2002, Adrian has primarily undertaken specialist consultancy work for local and state governments and private organisations associated with ecological investigations, recommendations for fauna management and species recovery planning. Adrian has worked on numerous major infrastructure projects and has worked in all major Queensland townships.

Adrian is a recognised leader in wildlife management and through his career he has been a pioneer on and responsible for numerous projects which have advanced the knowledge or application of wildlife management.

Adrian has completed and been certified as an international Public Participation Practitioner by the International Association for Public Participation (IAP2)

Adrian is a certified environmental practitioner and is recognised under the EIANZ Certified Environmental Practitioner **CEnvP** and holds certification under CEnvP as an Ecological Specialist. Adrian has also completed the EIANZ NSW Environmental Expert Training Course.

CAREER HISTORY

2002 – ongoing: Managing Director - Biodiversity Assessment and Management

Specialist ecological assessment and management consultants. Consultancy work for all levels of local Government, industry and private clients. Conduct detailed field investigations and subsequent data collection and advice, including analysis and report compilation, for a range of clients on all aspects and issues relating to wildlife and habitat management. Project management and provision of high level expert advice and expert witness to Queensland's Planning and Environment Court.

2000 - ongoing: Director, Wildlife Land Trust Ltd Qld

Management board for not for profit company to acquire lands for conservation of Qld Wildlife. Recently purchased remnant rainforest jointly with State and Federal Governments, Bukulla Conservation Park. A first for Qld. Ongoing acquisition and management of lands held under the trust control.

**2007 - 2012:- The Redland Institute - President 2010,
Reference Committee Member – Environment 2007-2009**

The Redlands Institute is an independent, community-based not-for-profit organisation working to create, implement and promote a shared vision for Redland City Council area. The Institute consists of committed business and community representatives who share a desire to create a clear identity for the new City of Redlands to 2020 and beyond. Adrian was selected to provide advice on ecological aspects and a sustainable future for the Redland City Municipality. As president Adrian represents the Redlands community on a wide range of social and environmental issues.

2005 - ongoing:- Glossy Black Cockatoo Conservancy

Adrian conceived the concept for the Glossy Black Conservancy (GBC) and he obtained the support needed to establish the group. The GBC was officially formed in 2005 and has since gone on to be recognised as a significant step in the application of species specific wildlife management. Through Adrian's leadership, since 2005 the number of partners within the GBC has continually grown, with the GBC currently made up of 18 partners:

2004 - 2007: Greenspace Advisory Committee, Redland Shire Council

One of three community representatives which provide expert advice and guidance to this Redland Shire Council Advisory Committee. This committee primarily advises the council on the strategic management of lands holding important ecological values within the shire.

2001 – 2004: Australian Wildlife Management and Services, Director

Specialist wildlife management consulting business. Consultancy work for local Government, development applications, recovery planning, and species management. Expert wildlife field investigations and management recommendations.

2003 - 2004: Chair, Queensland Wildlife Rehabilitation Council

This committee was formed to provide the state of Queensland with a single entity body to provide the required framework to advance the intentions of the recent legislation changes. Adrian was appointed by the Queensland EPA to chair the group and advise the state on how to form and operate such a association. The position required ongoing liaison with the Minister and departmental staff and all licensed groups and individuals on all aspects and issues pertaining to wildlife rehabilitation and permitting.

2002 - 2003: Pest Animal and Plague Advisory Committee

Appointed by the State Minister, Department Natural Resources.

This committee provided advice on appropriate responses to the Minister and departmental staff on all aspects and issues pertaining to pest and plague animal management. Broad ranging advice on relevant legislation, policies and practices.

1999 - 2003: Recreational & Commercial Animal Management Committee

Appointed by the State Minister for Environment and Natural Resources 1999-2000 and reappointed by Minister for Environment 2000. This committee was established to advise the State Environment Minister and departmental staff on all aspects and issues pertaining to the trade and utilisation of wildlife throughout Queensland. Broad ranging advice on relevant legislation, policies and practices. Formulation of legislation for Qld wildlife permitting system.

1999 - 2003: South East Queensland Conservation Strategy Committee – Community Representative

One of two community representatives on State Government committee involved in compiling a strategic planning document designed to help protect the biodiversity of SEQ. It was envisaged that this document when completed, would be adopted by the Queensland cabinet to form the basis for all landuse and planning decisions in natural areas. primarily in the southeast with plans for its use in other regions of Queensland.

1996 – 2002: Redland Shire Council, Senior Conservation Officer – Wildlife

Advise Redland Shire Council on all aspects and issues relating to wildlife management. Compile all associated reports on wildlife management, both formal and informal, for presentation to staff and committees. Conduct detailed field investigations and data collections to provide advice on fauna species presence, distribution and conservation significance.

Plan and present interpretative talks/training to council staff, volunteer workers and community interest groups. Liaise with community members on council policy for wildlife and bushland management.

Operation and coordination of Redland's After-hours Wildlife Ambulance service. This community service was a personal initiative and has been in operation since 1997 - Responsibilities include ensuring compliance

with relevant Acts and Codes of Practise, volunteer adherence to local by-laws training of volunteers in rescue techniques, safety issues and relevant legislation, development of agreements with state departments, volunteer roster and vehicle maintenance.

1998 – 2001: Moreton Institute TAFE , Environmental Sciences Teacher

Development and delivery of curriculum, course structure and learning outcomes for environmental sciences unit.

Modules included:

- Endangered Species Management
- Faunal Monitoring,
- Data Collection,
- Care of Sick and Injured Wildlife
- Management of Fauna Populations
- Conflict resolution,
- NatureSearching.

1999 - 2002: Koala Coast Council - Advisor on Koala management in Koala coast region

Committee appointed to review and advise Queensland Parks and Wildlife Service on management issues relating to koala preservation. Also for the implementation and achievement of policy objectives within the “State Planning Policy 1/97 Koala Coast”. Adrian represented the Redland Shire Council Mayor on this committee.

1994 - 2004: Wildlife Preservation Society of Queensland (WPSQ) State Council Member -

1994-1996 Elected Vice President
1996-2000 Elected State President
2001-2003 Vice President

Representation of 24 branches with over 2000 members. The position involved: Maintaining and growing the society in accordance with its constitution all society financial dealings. Including taxation, superannuation, holiday entitlements and investments, organisational planning, staff management and administration, policy formation, contract formulation, constitutional matters, public relations and media representation on State Departmental committees.

1997 - 2000: QPWS Macropod Management Advisory Committee

Appointed by the State Minister for Environment and Natural Resources. A State Ministerial advisory committee reporting to the Minister for Environment on the management of macropod populations (kangaroos & wallabies) and the harvesting of macropods for commercial use.

1997 -1999: National Heritage Trust - Technical Assessment Committee for NHT Grants SE Qld

Involved technical reviewing of all NHT grant applications, the rating of each on environmental and physical feasibility criteria and the compilation of reports for the Federal committee on funding and prioritisation of applications.

1993 – 1996: Ipswich City Council Environmental Advisory Committee Member

Responsible for the development of conservation policies and advisor to Ipswich City Council on all aspects of natural area management and policy formation.

1993 – 1996: Department of Environment and Heritage, NatureSearch - Wildlife Ranger

Required to locate, identify and record vertebrate and selected invertebrate species, process all survey results into report form. A vertebrate species monitoring project covering the entire Southeast Qld region. Development of monitoring plans, interpretative talk development and presentation.

Verification of all flora and fauna data collected by volunteers, public relations and field work. General maintenance duties such as the upkeep of a variety of traps, general fauna survey equipment and vehicles. Helping volunteers to focus their efforts to ensure the volunteers maintained a high level of motivation and enthusiasm for wildlife conservation and the objectives of the NatureSearch program.

Selected Expert Witness (Ecological) - Qld Planning and Environment and/or Land Courts.

- 2768 of 2009 Rainbow Shores v Gympie Regional Council & Ors

- BD1119 & 1120 of 2010 - Altitude Corporation Pty Ltd v Isaac Regional Council (flora and fauna expert)
- D60 of 2009 - Luis Serafini v Gladstone Regional Council (Koala Expert)
- 3566 of 2009 – Casagrande v Redland City Council & Ors
- BD6 of 2009 - Altitude Corporation Pty Ltd v Isaac Regional Council (flora and fauna expert)
- 889 & 890 of 2009 - Reynoldsman Pty Ltd & Bulimba Creek Catchment Committee v Brisbane City Council & Greendale Developments.
- BD531 of 2009 - Landmart Qld V Redland City Council
- 2153 of 2008 – Palmer v Redland City Council
- 3647 of 2008 - The Carindale Land Company v Brisbane City Council & Michael Pavlou
- BD3438 of 2007 Barro Group v Redland Shire Council & Ors
- 3413 of 2007 - Wilson & Godfrey v Brisbane City Council & BMD properties Pty Ltd
- 2529 of 2007 Randal & Lambert V Redland Shire Council
- 2434 of 1998 – James Thomas Barnes & Lynette Joy Barnes v Maroochy Shire Council
- 314 of 2006 - P.D & MA Wruck v Redland Shire Council and Esvee Pty Ltd (Maroochydhore)
- MD 205 of 2006 - Endless View Holdings Pty Ltd v Hervey Bay City Council & Corporation Of The Synod of The Diocese of Brisbane - Fraser Island Anglican College (Brisbane Registry)

CURRENT MEMBERSHIPS

- **Queensland Environmental Law Association (QELA)**
- **Environment Institute of Australia and New Zealand (EIANZ)**
- **Wildlife Preservation Society Qld**
- **Wildlife Land Fund Limited**
- **Queensland Bird Society**
- **Queensland Frog Society**
- **Redlands Institute**
- **Tweed Valley Bird Observers**

Additional information on Adrian and his experience can be obtained from www.baamecology.com

**APPENDIX 2:
FIRST BTF JOINT EXPERTS REPORT
JER1**

1st Fauna Experts Joint Report Black-throated Finch (southern) Land Court of Queensland

Land Court of Queensland Registry: Brisbane

Numbers: MRA428-14, EPA429-14, MRA430-14, EPA431-14, MRA432-14, & EPA433-14.

Applicant: Adani Mining Pty Ltd

First Respondent: Land Services of Coast and Country Inc.

Statutory Party: Department of Environment and Heritage Protection

Experts and Areas of Expertise:

- Lindsay Agnew (**LA**), biologist – area of expertise relevant to the current matter – Black-throated Finch southern subspecies (*Poephila cincta cincta*).
- Adrian Caneris (**AC**), biologist – area of expertise relevant to the current matter - Black-throated Finch southern subspecies (*Poephila cincta cincta*).
- Mike Olsen (**MO**), botanist - area of expertise relevant to the current matter – floristic and vegetation characteristics of habitat for Black-throated Finch southern subspecies (*Poephila cincta cincta*).
- Bruce Wilson (**BW**), botanist - area of expertise relevant to the current matter – floristic and vegetation characteristics of habitat in areas where Black-throated Finch southern subspecies (*Poephila cincta cincta*) occurs.

Meeting Dates: 15 December 2014 (AC & LA), 6 January 2015 (all experts) and various telephone and email communications in November 2014 to January 2015.

Expert's Statement

We acknowledge that we have been instructed to assist the Land Court of Queensland by investigating and reporting on issues relevant to the Black-throated Finch southern subspecies (*Poephila cincta cincta*). We assert that we are qualified to give opinion evidence as an expert witness in relation to this issue in dispute in the current proceeding.

We verify that our instructions have included the Land Court Rules 2000 (current as at 13 December 2013) and the Uniform Civil Procedure Rules 1999, which we have read and understand, and that no instructions were given or accepted to adopt or reject any particular opinion in preparing this Joint Report. We confirm that each expert understands the expert's duty to the court and has complied with that duty in preparing this Joint Report.

Important Note

In this Joint Report, **matters of agreement are unattributed**. Comments made by individual experts and/or matters of disagreement are prefixed by the relevant expert(s) initials.

Introduction

This joint report has been prepared by **AC and BW** on behalf of the Applicant, Adani Mining Pty Ltd and **LA and MO** on behalf of the First Respondent, Land Services of Coast and Country Inc (together, **the Experts**), in accordance with the **Order** made by the Land Court of Queensland on 20 October 2014.

Prior to the preparation of the joint report, on 28 November 2014, the First Respondent delivered a notice containing a list of the specific issues in respect of which it is proposed to seek agreement. An amended notice of issues was delivered on 2 December 2014 (**Preliminary Issues**).

This joint report sets out the areas of agreement and disagreement of the experts in relation to the issues in respect of the Black-throated Finch southern subspecies (*Poephila cincta cincta*) (**BTF**).

Abbreviations used in this report

Adani - Adani Mining Pty Ltd

BOS - Biodiversity Offset Strategy

DERM Queensland Department of Environment and Resource Management

EA Environmental Authority

EEM Ecological Equivalence Methodology Guideline Version 1

EIS Environmental Impact Statement

ELA Eco Logical Australia

GAB Great Artesian Basin

ML Mining Lease

MNES - Matters of national environmental significance

MSES - Matters of state environmental significance

NC Act - Nature Conservation Act 1992 (Old)

OAMP - Offset Area Management Plans

SEIS - Supplementary EIS

SSBV State significant biodiversity values

Project - Carmichael Coal Mine and Rail Project

UG - Underground Mine

VM Act - Vegetation Management Act 1999 (Old)

1. Background

- 1.1 Adani is proposing to develop a 60 million tonne per annum (product) coal mine in the north Galilee Basin approximately 160 kilometers north-west of the Town of Clermont in Central Queensland. All coal will be railed via a privately owned rail line connecting to existing rail infrastructure, and shipped through coal terminal facilities at the Port of Abbot Point. The Project will have an operating life of approximately 90 years.
- 1.2 The Project is comprised of three major components:
- (a) the Project (Mine) – a greenfield coal mine over Exploration Permit for Coal (**EPC**) 1690 and the eastern portion of EPC 1080, which includes both open cut and underground mining, on mine infrastructure and associated mine processing facilities;
 - (b) the Project (Rail) – a greenfield rail line connecting the Project (Mine) to the existing Goonyella and Newlands rail systems to provide for the export of coal via the Port of Abbot Point; and
 - (c) the Project (Offsite Infrastructure) – largely proposed to be developed under the yet to be finalised Galilee Basin State Development Area (**SDA**), including:
 - (i) a workers' accommodation village and associated facilities;
 - (ii) permanent airport site; and
 - (iii) water supply infrastructure.
- 1.3 The Project is a significant project for which an EIS was required under the State Development and Public Works Organisation Act 1971 (Qld) (SDPWO Act). The Project is also a controlled action requiring assessment and approval under the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act).
- 1.4 Approval process to date
- (a) On 22 October 2010, an initial advice statement (IAS) for the Project was submitted by Adani.
 - (b) On 26 November 2010, the Project was gazetted as a coordinated project (as they were then known) under the SDPWO Act.
 - (c) From 12 February 2011 to 28 March 2011, the terms of reference (TOR) for the EIS for the Project underwent public notification.
 - (d) On 25 May 2011, the TOR for the EIS were finalised.
 - (e) In November 2012, Adani submitted the EIS for the Project. Public notification of the EIS was carried out from 15 December 2012 until 11 February 2013. During this time, a total of 68 original submissions were received about the EIS, together with some 14,396 online facilitated submissions.
 - (f) After analysing the number and range of issues raised in the submissions, Adani proposed to respond to the submissions by way of an Supplementary Environmental Impact Statement (SEIS) in order to provide additional supporting information to the assessment of the Project's impacts.

1st Experts Joint Report - Black-throated Finch (southern)

- 1.5 On 26 March 2013, the Coordinator-General formally requested additional information to the EIS be provided. Adani prepared the Subsequent EIS (SEIS) which underwent public notification from 25 November 2013 to 20 December 2013
- 1.6 On 7 May 2014, the Coordinator-General's report evaluating the EIS was released. The Coordinator-General's report recommended approvals for the Project and contained a number of conditions and recommendations.
- 1.7 On 14 August 2014 the Coordinator-General approved the Adani rail line.
- 1.8 Concurrently, an approvals process had also been running under the EPBC Act. Adani obtained approval from the Minister for the Department of Environment under the EPBC Act on 24 July 2014, subject to conditions.
- 1.9 Adani applied for MLA 70441 on 8 November 2010. On 9 July 2013, Adani also applied for MLA 70505 and MLA 70506. It is proposed that all three MLs (if and once granted) will operate as part of a single mining project. Public notification of the ML applications was carried out together with the associated EA application.
- 1.10 On or around 9 July 2013, Adani submitted an application for a site-specific EA for the Project. A previous application had been submitted, however, it did not relate to any tenements other than MLA 70441. The EA application form as submitted at that time did not fully answer all of the questions set out in the prescribed form. A revised application form was submitted to DEHP as changed application documents on 14 April 2014. DEHP wrote to Adani confirming that it agreed to the change to the application documents on 15 April 2014. Combined public notification of the ML and EA applications was carried out, and the objection period closed on Tuesday, 17 June 2014.
- 1.11 The decision stage for the EA application commenced on Monday, 23 June 2014. Adani:
 - (a) lodged statutory declarations detailing compliance with public notification of the applications on 20 June 2014; and
 - (b) provided completed Land Court Form 9 to the Department of Natural Resources and Mines and ML Objectors on 20 June 2014.
- 1.12 At close of public notification on 17 June 2014, only two properly made submissions had been made about the EA application and one objection to the ML lodged. The relevant third parties are:
 - (a) Land Services of Coast and Country Inc. (LSCCI); and
 - (b) the Conservation Action Trust (CAT), a not-for-profit organisation based in Mumbai, India.
- 1.13 On 28 October 2014, a draft EA was provided to Adani and the submitters.
- 1.14 LSCCI is the primary objector in the Land Court proceedings and CAT has since elected to be a Level 1 objector, not taking an active role in the hearing.
- 1.15 LSCCI have raised objections to the applications in the following areas:
 - (a) groundwater;
 - (b) groundwater dependent ecosystems;
 - (c) surface water;
 - (d) biodiversity (primarily focused on impacts to the Black-throated Finch (BTF);
 - (e) climate change; and

1st Experts Joint Report - Black-throated Finch (southern)

(f) economic and social matters.

1.16 In terms of the biodiversity and the impacts to the BTF, LSCCI has specifically raised the following matters:

- (a) if the mine proceeds, it will cause severe adverse environmental impacts to biodiversity and ecosystems on, and associated with, the area of the mine (paragraph 18 of the LSCCI Objection);
- (b) the species that will be severely impacted by the mine include, but are not limited to, the BTF (paragraph 19 of the LSCCI Objection);
- (c) a nationally significant population of BTF is located within the mine lease area and will be severely and permanently adversely impacted by the mine through impacts such as the direct clearing of habitat and diminution of surface water and groundwater dependent ecosystems (paragraph 20 of the LSCCI Objection);
- (d) the exact extent of the impacts cannot be known as the application, EIS and SEIS did not adequately assess the presence of BTF or its habitat requirements (paragraph 21 of the LSCCI Objection);
- (e) no confidence can be placed in proposed offsets for the BTF as its requirements are insufficiently known to select any offset areas (paragraph 22 of the LSCCI Objection);
- (f) the full extent of the adverse environmental impacts to biodiversity and ecosystems cannot be particularised by the objector due to the inadequate information provided by the Applicant in the applications, EIS and SEIS (paragraph 23 of the LSCCI Objection);
- (g) it has not been adequately demonstrated that the mine will not have unacceptable adverse impacts on biodiversity, including threatened species, and ecosystems. In particular, the:
 - (i) mine will have adverse impacts on the environment by adversely impacting on biodiversity and ecosystems considering s 269(4)(j) of the MRA;
 - (ii) absence of adequate scientific information about potentially severe and long-term adverse impacts on biodiversity is good reason to refuse the mining lease applications considering s 269(4)(l) of the MRA; and
 - (iii) adverse environmental impacts and potentially severe adverse environmental impacts caused by these proposed mining operations on biodiversity and ecosystems is an inappropriate use of the land when current use does not pose a similar threat considering s 269(4)(m) of the MRA. (paragraph 24 of the LSCCI Objection)

1.17 The CAT submission raises issues not in relation to the Project locality or Queensland, but focusses on impacts overseas. Specifically, the submission is focused on the impacts of Adani's existing and in development power stations in India on the local environments and communities. These issues are not viewed as relevant to this JER or our areas of expertise.

2. Relevant EA conditions

- 2.1 The draft EA issued by DEHP which is the subject of these proceedings replicates the conditions contained in Appendix 1 to the Coordinator-General's report.
- 2.2 The conditions imposed by the Coordinator-General of primary relevance to our field of expertise are contained in Appendix 1 I2-I7 of the Coordinator-General's Report and the EPBC.
- 2.3 These conditions require Adani to:
- (a) Prepare a Black Throated Finch Species Management Plan within 10 business days of receiving the administering authority's approval in writing. The BTF SMP must include:
- (i) a baseline research program on the specific nesting and feeding requirements of the species that will be undertaken prior to and during project stage 1;
 - (ii) a baseline research program to establish whether the BTF at the project site are sedentary, locally migratory or regionally migratory;
 - (iii) a description of how the results of baseline research are to be used to determine any changes of classification of and/or impact on BTF habitat;
 - (iv) details of proposed impacts to BTF habitat from each project stage including impacts from clearing, subsidence, ecological function changes, hydrological changes and weed and pest infestation changes; and
 - (v) mitigation measures to be undertaken to avoid, mitigate and manage impacts resulting from each stage of the project, including rehabilitation of habitat.
- (b) The BTF SMP must be reviewed by an appropriately qualified person annually and a report prepared on 1 July each year. The report must assess the plan against the requirements under condition I6 and:
- (i) include recommended actions to ensure actual and potential environmental impacts are effectively managed for the coming year; and
 - (ii) identify any amendments made to the BTF SMP following the review.

3. Summary of Residual Project Impacts on BTF

- 3.1 A summary of the project's residual impacts on BTF, as provided by the Environmental Offset Package for the Carmichael Coal Mine and Rail Project (Revision 9 - 21 March 2014), with the extent of the impacts [represented by area (ha)] are presented in Table 1.

Table 1. Summary of Project (Mine and Rail) Impacts on BTF

ENVIRONMENTAL VALUE	EPBC ACT STATUS	NC ACT STATUS	PROPOSED IMPACT AREA (ha)			
			MINE		RAIL	TOTAL
			ON SITE AND SUBSIDENCE	OFF SITE		
Black-throated finch (southern)	E	E	9,770.99	2.53	16.24	*9,789.75

* This may be subject to change if the northern portion of the site is converted to underground mining.

1st Experts Joint Report - Black-throated Finch (southern)

- 3.2 **AC:** notes that immediately prior to the JER commencement there was consideration of a change in the mine design and that the northern portion of the lease may have a reduced footprint size and an increased area of underground mining where previously open cut mining was intended. This change would alter the potential direct and indirect impacts on the BTF habitats and given the northern portion is recognised as the area holding the higher value habitats this change, if undertaken, is viewed as a reduction in potential impacts on the finch habitats and habitat connectivity in the local landscape.
- 3.3 **AC:** Despite the potential reduction in impacts, given the high value of the habitats within the northern portion of the mining lease, and significance of the extant BTF population that proposed offsets for BTF as a result of stage 1&2 should remain to provide an increase in potential net benefit.
- 3.4 **LA:** I am unable to assess the implications of **AC's** notation above as I do not have any details nor has such a change to the proposed action been notified formally.

4. OFFSET REQUIREMENTS

- 4.1 The Coordinator-General's Report and the EPBC Act approval include the requirement for Adani to prepare and implement a Biodiversity Offset Strategy that outlines how the project proposes to address offset requirements for significant residual impacts on matters of national environmental significance (MNES) and matters of state environmental significance (MSES).
- 4.2 Condition 8 of the project's EPBC Act approval requires that Adani must legally secure the minimum offset areas detailed in **Table 2** within two years of commencement of each component of the project.
- 4.3 The required minimum offset areas are for impacts on BTF resulting from; the open-cut mine, off-lease infrastructure, and the rail components.
- 4.4 As per the requirements of the EPBC Act approval there is also an initial offset contribution of 2,000 ha for subsidence impacts associated with the underground mine. This initial contribution of 2,000 ha was conditioned by the Commonwealth Government with regards to the modelling of the cumulative impacts of subsidence, cracking and ponding as per the Draft Subsidence Management Plan (Adani 2013).
- 4.5 The project's has impacts on MSES that require offsets. However, we note the Queensland Coordinator-General's decision to not require any additional offsets for impacts to MSES if the Commonwealth Government also requires an offset for the same value, which is the case for BTF.

Table 2 Minimum Offset Area Required for BTF (ha)

Mining Operations North of the Carmichael River	Mining Operations South of the Carmichael River	Underground Mining	Off-lease Infrastructure	Rail East	Rail West
18,204.06	10,739.39	2,000.00	7.62	2.44	46.48

5. Assessments Relevant to the MLA and Surrounds

- 5.1 The Applicant's reporting relevant to BTF which we have reviewed for this Joint Report comprise the following:
- GHD (2012a). Report on Carmichael Coal Mine and Rail Project Mine Technical Report: Terrestrial Ecology 16 November 2012. Appendix N1 of EIS.
 - GHD (2012b). Moray Downs Black-throated Finch Surveys. Carmichael Coal Mine Project 22 October 2012.
 - GHD (2013a). Report for Black-throated Finch On-site Monitoring Survey 1. Carmichael Coal Mine and Rail SEIS. 17 October 2013.
 - GHD (2013b). BioCondition Assessment Report. Report for Offsite Infrastructure Project. Carmichael Coal Mine and Rail Report SEIS. 31 October 2013.
 - GHD (2014a). Report for Black-throated Finch On-site Monitoring Survey 2. Carmichael Coal Mine and Rail SEIS. February 2014.
 - GHD (2014b). Black-throated Finch Management Plan. Carmichael Coal Mine and Rail Project. 11 February 2014.
 - CO2 (2014). Biodiversity Offset Strategy. Carmichael Coal Mine and Rail Project. 29 October 2014.
 - Eco Logical Australia (2014a). Carmichael Coal Mine Ecological Equivalence Assessment Stage 2. 30 January 2014.
 - Eco Logical Australia (2014b). Moray Downs West Ecological Equivalence Assessment Stage 2. 9 October 2014.
- 5.2 The experts note that a "3rd round" of BTF monitoring has been completed. No reporting or interim findings in regard to that monitoring event have been provided to us at the time of preparing this Joint Report. The experts have requested the data from that monitoring event to assist in the preparation of this Joint Report, though unfortunately it was not available (as at 15 January 2015).
- 5.3 **AC** visited the subject site over 7 days, noting that 1 full day was spent undertaking onsite inductions and 2.5 hours on an additional day. The assessment was primarily a broad site familiarisation targeting the key BTF watering holes, known record locations and broader habitat values of the disturbance area and nominated offset habitats within the Moray Downs property and surrounding lands. AC was assisted in the field by Dr Lindsay Popple.
- 5.4 **LA** has undertaken BTF surveys and habitat assessments on and/or around the Moray Downs property since 2011. **LA** implemented a wide-ranging inspection of the MLA and adjacent land over a two-day period in late-November 2014. Following that site inspection, a further two days were spent investigating habitat values and surveying for BTF on land to the west/south-west/north-west of the Moray Downs property¹. **LA** has also implemented BTF surveys and habitat assessments within the surrounds of the Moray Downs property over a four day period in late October 2011², and a

¹ including in part, Moonoomoo, Carmichael and Dongmabulla Stations.

² including in part, Yarrowmere, Moonoomoo, Carmichael and Dongmabulla Stations.

1st Experts Joint Report - Black-throated Finch (southern)

further day of survey in April 2012³. In early 2013, properties were surveyed to the near south and east of the MLA⁴. During each period I was assisted in the field by a fellow biologist with appropriate experience in BTF surveys and habitat assessments.

5.5 A summary of BTF records derived from field investigations by **AC** and **LA** is presented in **Attachments 1 and 2**.

5.6 Notable aspects of that data include the following:

- 15 records of BTF.
- Two BTF nesting records.
- One record of a very large flock of 120 BTF. Other records include larger flocks of 36, 25, and 22 BTF.
- Four locations where BTF were recorded, where previous Applicant surveys have been implemented though no BTF recorded. Some of these locations have been subjected to repeated surveys by the Applicant.

³ including in part, Dongmabulla Station.

⁴ including in part, Laglan, Waltham, Lestree Downs, Degulla, and Disney Stations

6. Grounds and Issues

- 6.1 The relevant grounds and issues as identified by the Appellant and provided on amended notice of issues as delivered on 2 December 2014 are individually provided (numbered as listed on the amended notice) below with specific responses by the experts.
- 6.2 **Issue No. 15** “On the available evidence the area of the proposed mining lease supports habitat for a significant number of Black-throated finches (BTF) which may contribute to a core component of one of only three nationally (thus internationally) significant subpopulations of the endangered BTF”.
- 6.2.1 **AC & LA agree** that the proposed mining lease supports habitat for a significant number of BTF which represents a significant population of the endangered BTF.
- 6.2.2 **AC & LA:** Whilst an accurate estimate of the number of BTF is unavailable at the time of writing, based on existing data and our own site investigations, it is our view that the proposed mining lease and near surrounds supports a significant population which may be, at least, one of the largest known sub-populations of the southern subspecies of BTF.
- 6.2.3 **LA:** Reviews of the Applicant’s reports identifies significant numbers of BTF⁵, e.g. surveys in May 2013 provided a cumulative total of 276 BTF, whilst surveys in May 2011 provided a cumulative total of 195 BTF. The Coordinator-General’s report⁶ noted that “The sub-population of BTF in the landscape that encompasses the mine area and adjacent properties to the north and west is seemingly large and significant in the context of existing known populations (i.e. Townsville)” (pg. 61).
- 6.2.4 **LA:** Over a two-day survey period in September 2013, researcher Stanley Tang⁷ estimated that between 400-500 BTF were present at, and in the near surrounds of, 10 Mile Bore in the northern part of the MLA. I have reviewed a photograph taken during that survey which provides a record of at least 124 BTF. Discussions with a variety of biologists with experience of the BTF (including members of the BTF Recovery Team) indicate that there is no known record comparable to this aggregation of BTF. The Coordinator-General’s report noted that the sighting of a single flock of at least 400 BTF on the mine site is “... the largest number of BTF ever recorded at a single location.” (pg 63). The Applicant’s reporting provides only cursory acknowledgement of this highly significant record.
- 6.2.5 **LA:** Reviews of the Applicant’s reports identifies a variety of records of larger flocks (6 records of 20-29 BTF and 7 records of 30-41 BTF; from five surveys). I have reviewed records of BTF available to me for the area surrounding, but excluding the MLA and the Moray Downs property. Of those records, the median flock size was 5 BTF, and a flock of 16 BTF was the largest recorded (*pers. obs.* October 2011)⁸.
- 6.2.6 **AC:** There is no disputing that the MLA, Moray Downs and wider landscape hold a significant number of Black-throated finches and constitute habitat which is critical for the species survival. During my site investigations I observed significant numbers of BTF within the lease and offset

⁵ The Applicant’s reporting makes repeated reference to (though provides little detail of) the surveys undertaken by Ecology and Heritage Partners Pty Ltd during June/July 2012, which provided a total of 155 BTF from 12 sites within “the Mine Study Area and broader Moray Downs property”.

⁶ Carmichael Coal Mine and Rail project: Coordinator-General’s evaluation report on the environmental impact statement May 2014.

⁷ PhD Candidate, James Cook University.

⁸ That observation was made to the near west of the MLA.

1st Experts Joint Report - Black-throated Finch (southern)

area. My site investigations and review of the prior results clearly show that the northern most portions of the MLA are holding the higher value habitats and larger bird numbers. Of particular note was the largest flock record which I estimated as being a minimum of 120 BTF which was recorded in habitats immediately north of the 10 Mile tank within the proposed offset area (**see Attachment 1**).

- 6.2.7 **AC and LA** acknowledge that the 10 Mile Bore and surrounds may maintain an important function in sustaining the BTF population, though the extent of this needs further investigation.
- 6.2.8 AC:** Whilst there are significant numbers of birds known from the proposed disturbance area, there is also relatively high numbers utilising proposed offset areas. It is not unreasonable to also suggest that with increased survey effort there is likely to be BTF and similar habitat values present within areas outside of the MLA and proposed offset (Moray Downs West).
- 6.3 **Issue No. 16** “Since the early 1980s the extent of occurrence of BTF has declined by approximately 80%. It is already extinct south of the Burdekin River”.
- 6.3.1 **AC & LA agree**, the BTF has had a significant reduction in its known range.
- 6.3.2 **AC:** though the decline would have commenced well prior to the 1980’s.
- 6.4 **Issue No. 17** “The Townsville subpopulation of BTF is thought to be the largest surviving subpopulation with no more than 600 mature individuals”.
- 6.4.1 **AC & LA agree**, though based on the increased information obtained by the subject application and investigations within the local landscape it is highly likely that the subject site and surrounds supports a larger, more viable population than previously thought.
- 6.5 **Issue No. 18** “BTF present on the proposed mining lease area form part of a regional subpopulation previously thought to have no more than 400 mature individuals”.
- 6.5.1 **AC & LA agree**, however, based on increased observations and more recent data it is highly likely that the regional subpopulation previously thought to have no more than 400 mature individuals is a notable underestimate given the significant numbers of BTF recorded on the MLA and Moray Downs property.
- 6.6 **Issue No. 19** “The baseline information provided within the EIS document and subsequent supplementary reporting is not sufficient to adequately understand the existing values of the site commensurate with the potential significance of the site’s BTF population. This includes information on site habitat preferences for foraging and breeding, distribution and abundance, movement patterns, and population dynamics”.
- 6.6.1 **AC & LA agree**, and recommend further more detailed and targeted studies are required to fully understand the existing values of the site and specific values, particularly in regard to BTF population size, foraging and breeding habitats.
- 6.6.2 **AC & LA:** The 20-minute bird surveys have been implemented during three survey events at a total of 96 2ha survey locations⁹. Whilst these “rapid assessment” surveys have the capacity to provide a useful overview of the avifauna assemblage using a particular habitat area, they do not represent a suitable method to investigate BTF site usage. Other notable inadequacies in this

⁹ i.e. 29 sites (May 2012), 52 sites (May 2013), and 67 sites (October 2013).

1st Experts Joint Report - Black-throated Finch (southern)

survey approach are as follows:

- 6.6.2.1 A review of the spatial layout of the 2ha survey sites identifies that the majority (92%; 88 sites) are within very close proximity to the existing track system (adjacent to or <100m). Only eight 2ha survey sites are located at distance to the track system¹⁰. The 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 MLA. This issue represents a significant weakness in the Applicant's assessment of BTF habitat values across the MLA and adjacent areas of the Moray Downs property.
- 6.6.2.2 Whilst the description of this survey methodology acknowledges the importance of early-morning surveys and standardised survey protocols, it is apparent that this has not been adhered to in the implementation of this survey program approach¹¹.
- 6.6.2.3 Whilst the Applicant's reporting consistently claims that the 20-minute bird survey is a method "based on" the Commonwealth Government's BTF assessment guideline (DEWHA 2009), that method is not referred to in the national guideline (or any nationally threatened bird species; DEWHA 2010)¹².
- 6.6.3 **AC & LA:** A review of the water body survey data shows 104 surveys have been implemented, with average survey duration (i.e. presence at a water body) of approximately 55 minutes. In regard to survey effort (survey person hours), the average water body survey effort was approximately 1.8 survey person hours. Neither measure is consistent with the Commonwealth Government's BTF assessment guideline (DEWHA 2009). There is also no evidence of any standardised protocol in regard to survey timing or survey duration. Notably, there appears to be little attention being given to implementing water body surveys during an optimum period which follows dawn.
- 6.6.4 **AC & LA:** It is our shared view that water body counts need to be conducted from dawn and for a period of at least 6 hours. These counts should incorporate a methodology which ensures that water bodies in close proximity (up to 5km) are all simultaneously counted to provide more accurate capture of BTF populations within an area, i.e. a "nearest neighbor" survey design.
- 6.6.5 **LA:** A review of the Applicant's reporting indicates that approximately 272 survey person days have been expended in BTF surveys (November 2010 to October 2013), though there has been no dedicated search effort for BTF nests. Whilst two potential nest trees were detected, these appear to have been located incidental to the 2ha 20-minute surveys. During my comparatively brief 2-day site assessment, it was possible to record two BTF nests (new locations), incidental to the primary objective of site familiarisation. 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

¹⁰ CHAB67 (app. 250m from track; October 2013); C1S07 (May 2012); C1S09 (May 2012); CHAB04 (May & October 2013); CHAB22 (May & October 2013); CHAB02 (May & October 2013), CHAB50 (October 2013), and CHAB34 (October 2013).

¹¹ e.g. "The two bird surveys at each site were undertaken throughout the day; however, efforts were made to survey each site at least once in the premium survey period, between dawn and 3 hours after dawn". GHD (2014a). Carmichael Coal Mine and Rail SEIS Report for Black-throated Finch On-site Monitoring Survey 2. Report produced by GHD for Adani Mining Pty Ltd.

¹² DEWHA (2010). Survey guidelines for Australia's threatened birds. Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999. Department of the Environment, Water, Heritage and the Arts, Canberra.

1st Experts Joint Report - Black-throated Finch (southern)

and proposed offsets).

- 6.6.6 **AC:** whilst I agree that there needs to be a better more refined assessment of breeding habitat values and accurate estimation of breeding present within the disturbance areas, the lack of such information does not preclude a successful offsetting of lost values. What is important is to have a measure of breeding success in order to demonstrate that similar levels of breeding are being maintained. It is likely that with a more refined and targeted monitoring program information collected will provide suitable benchmarks by which the offsets can be assessed.
- 6.6.7 **LA:** The BTF Recovery Team provided a submission to the Coordinator-General (8 February 2013) which was highly critical of all aspects of the Applicant's BTF survey program, concluding that as a result of the identified deficiencies, the abundance of BTF had been grossly understated and the description of BTF habitat was incorrect. As I understand, that review applied to the Applicant's reporting up to mid-December 2012. Having reviewed the Applicant's subsequent reporting, it is my view that concerns raised in the BTF Recovery Team critique remain relevant to the post-December 2012 survey approaches to assess BTF population characteristics and habitat values.
- 6.6.8 **AC,** whilst I agree that 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.
- 6.6.9 **LA:** The current monitoring program is based on a previous survey design which has been identified as deficient. The deficiencies could only result in a significant constraint to understanding BTF site usage. The Coordinator-General's report was highly critical of all aspects of that BTF survey program, concluding that as a result of the identified deficiencies, the abundance of BTF had been grossly understated and the description of BTF habitat was incorrect. If those survey design deficiencies are to be perpetuated through the on-going monitoring program, it follows that such a program could not be relied upon to adequately detect impacts to BTF.
- 6.6.10 **LA:** The following example highlights the abovementioned concerns. Over a 9-day survey in October 2013, GHD (2013) implemented the 2nd monitoring event, which included surveys at 67 2ha sites, 16 water bodies, and 17 camera trap sites (36 survey-person days). That survey effort yielded only 12 BTF sightings (cumulative total of 84 BTF which may include double-counts). A few weeks earlier, an over a two-day period, researcher Stanley Tang mist-netted approximately 140 BTF (banding 45 individuals) on the mine site. It was during this survey that Stanley Tang recorded the significant aggregation of in excess of 400 BTF. It is difficult to reconcile such low results from the Applicant's substantive monitoring survey program (36 survey-person days) in contrast to the substantive results recorded by the independent researcher Stanley Tang (two survey-person days). I note that the GHD (2013) report, whilst referring to the Stanley Tang records, does not attempt any meaningful discussion in regard to the disparity in survey results. Furthermore, it is now apparent that the report reference only provides a partial account of the significance of the Stanley Tang survey records (e.g. see Coordinator Generals report).
- 6.7 **Issue No. 20** "The existing information review of the EIS documents does not adequately describe the characteristics of the regional population or known/potentially suitable habitat within the region in order to contextualise site values for the BTF".

1st Experts Joint Report - Black-throated Finch (southern)

- 6.7.1 **AC & LA agree** 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.
- 6.7.2 **AC**, The Biodiversity Offset Strategy prepared by CO2 Australia (29/10/14) provides a broad measure and context of the extant habitat values primarily based on remnant vegetation and whilst BTF habitat values are not restricted to remnant vegetation it provides a broad context of where habitat values are located.
- 6.7.3 **AC**, it is my view that the work to date although generally broad in nature provides reasonably sufficient context to demonstrate that the required offset values can be met. In addition, as the project progresses there is a requirement to undertake more detailed and specific assessment of the habitat values and to have these assessments reviewed (See: Coordinator Generals report conditions 12 to 17) within the disturbance area. The proposed establishment of a BTF Bioregional Management Plan will further describe the characteristics of the regional population and identify known/potentially suitable habitat and where information is required. It should be noted that there has been a considerably higher level of assessment within the subject area and that there is a lack of such information in other areas across the region to allow accurate comparative assessment on a regional basis.
- 6.7.4 **LA**: None of the Applicant's reporting provides a suitably detailed assessment of the site's BTF population or BTF habitat values within a regional context. There has been no apparent attempt to draw on the various publicly available recourses (databases, recent survey reports, etc) or consult with researchers in order to review BTF records or other relevant data for the region. The reliance on extrapolating habitat values from publicly available remnant vegetation mapping and the Commonwealth's 2009 mapping of important habitat areas (based on BTF records between 1995 to 2009), whilst generally useful, does not provide in itself, a context assessment commensurate with the significance of the findings on the site.
- 6.7.5 **MO**: With respect to the grasses (Poaceae) that **MO** understands is a critical component of the feeding habitat for BTF, the existing information does not provide data that enables an adequate assessment of the spatial patterning of Poaceae across either the proposed mine site or the proposed offset areas. The use of Broad Vegetation Groups (BVGs) (ELA, 2014a & 2014b) and Regional Ecosystems (Res) (GHD, 2014b) is considered by **MO** to be a poor surrogate for the evaluation of the occurrence and relative abundance of the species of Poaceae known to be of significance to BTF as a critical food resource (refer to **LA**'s list provided in response to Issue No. 31 - paragraph 6.18.5). The existing information only refers to a limited sub-set of Poaceae where such information can be gleaned from the supplied reports (e.g. GHD, 2014b where different reference sources (page 23 (DEWHA, 2009a – 7 genera, 8 species) vs. page 29 (BTF Recovery Team, 2007 - 6 genera) have resulted in different Poaceae being discussed therein). It may be that other raw data lies beneath the reporting of various indices such as Bio-Condition (GHD, 2013b), but such data is not readily apparent in the reports or other data made available to date. Given the current lack of a detailed understanding of the patterning of these Poaceae and the relationship to BTF across the study area, the Precautionary Principle must be invoked given the global significance of the BTF population across the study area (See discussion under paragraphs 6.2 to 6.6 above by the nominated fauna experts).
- 6.7.6 **BW**: The grasses surveyed for in ELA 2014a and 2014b included the 8 species listed in the significant impact guidelines for the BTF (DEWHA, 2009a). The Broad Vegetation Groups and Regional Ecosystems are considered useful as broad surrogates for the distribution of grass species. I agree that more intensive survey of grass species would provide more detailed information on the occurrence and abundance of these grass species. However, given that **LA**

1st Experts Joint Report - Black-throated Finch (southern)

and **AC** agree that “little is known about dietary preferences or the comparative values to BTF of the variety of grass species within the region.” (issue 31) I consider a more intensive survey of Poaceae species may not provide a lot more additional guidance about BTF habitat at this time.

6.7.7 **LA:** Whilst acknowledging that there is comparatively less known about BTF dietary patterns within the broader area surrounding the site, there is a larger body of information available in regard to BTF foraging habits in other parts of its distribution (see LA advice in response to Issue 31). That useful information is not considered in preparing a suitable response to assessing BTF habitat values in both the ELA reports (2014a & b).

6.8 **Issue No. 21** “The design and application of the field survey program for the EIS documents was inadequate to properly understand site usage and site values for BTF, especially in regards to breeding”.

6.8.1 **AC & LA agree**, and especially in regard to investigating and assessing breeding habitat values.

6.8.2 **LA:** The BTF Recovery Team provided a submission to the Coordinator-General (8 February 2013) in regard to the EIS. That submission was decidedly critical of the EIS in regard to BTF survey program, noting that:

6.8.2.1 In regard to the water body surveys - “... the Proponent's surveys do not provide an accurate record of the BTFs on the site nor will they have identified the important water holes for this sub-species”.

6.8.2.2 In regard to terrestrial surveys, the methodology was “not appropriate” and that “The RT believes the Proponent has failed to conduct adequate surveys for the BTF and as a result will have understated the BTF presence on the site.”

6.8.2.3 In regard to surveys for nests and breeding activity – “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.”

6.8.2.4 In regard to the survey program generally – “...the survey effort provided by the Proponent for the EIS documents is totally inadequate for a project of this importance to the BTF population. We maintain that significant additional survey works are required before the Proponent can fully assess the impacts of proposed works and provide mitigating actions to offset long term damage to the BTF population.”

6.8.3 **LA:** Whilst the Coordinator-General's report (page 61) notes that “DEHP considers that adequate survey effort was undertaken in these off-lease areas”, in reference to the rail and off-lease infrastructure, there is no similar reference as to whether DEHP regards the survey on the MLA as “adequate”. On this, it would be useful to review a copy of the relevant State Government Department's submission in regard to the assessment of the Applicant's BTF survey program for the MLA and relevant adjacent parts of Moray Downs property.

6.8.4 **LA:** The Coordinator-General's report (Synopsis, page -x-) acknowledges that “Further baseline information and research is required to fully understand the habitat preferences of the species in the project area; to quantify distribution and abundance, movement patterns and population dynamics, ..”

1st Experts Joint Report - Black-throated Finch (southern)

- 6.8.5 **AC:** I agree that there is a need for the field assessment to provide the information required to fully understand the habitat preferences of the species in the project area (and region) to quantify distribution and abundance, movement patterns and population dynamics. It is only through the undertaking of detailed monitoring, as required by approval conditions that this information is or will be reliably obtained. 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.
- 6.8.6 **LA:** It is my firm view that the existing monitoring design replicates the suite of fundamental flaws evident in the preceding survey program. As suggested by **AC**, any “relatively simple improvements” to the existing monitoring program would in my view not be sufficient. It is also my view that the monitoring program should be completely redesigned by a biologist with a suitable experience in BTF ecology, that the survey design be peer reviewed, and only implemented by field investigators with suitable experience in surveys for BTF.
- 6.8.7 **LA:** In regard to the latter point, none of the Applicant’s reports provide any information in regard to who implemented the BTF surveys and habitat assessments, and importantly, what previous experience of BTF they might have had.
- 6.9 **Issue No. 22** “The EIS and subsequent supplementary reporting does not provide an adequate assessment of the cumulative impacts of the proposed activities to BTF subpopulation within the Galilee Basin”.
- 6.9.1 **AC,** whilst I agree there is insufficient data and knowledge to accurately and specifically quantify the cumulative impacts of the project. However this is due to the size and extent of the project, the timeframe over which actions will be undertaken and the relatively poor understanding of the BTF habitat partitioning in the local landscape and as such this is not unreasonable. There have been relatively significant levels of work conducted to gain base line understanding and the relevant approval conditions specify and require substantially more extensive detailed assessments to ensure accurate measurement of cumulative impacts and quantification of offset measures. The BTF monitoring and habitat assessments will continue to provide increased data and understanding over the projects development on temporal and spatial variation of habitat use in the disturbance area. With a refined monitoring program to better capture actual comparable data on the BTF numbers and breeding habitats this knowledge will increase. The increased understanding will add significant data on the local landscape which will be incorporated into the Black-throated Finch Species Management Plan for the Mine Area. This information will also be provided and contribute to the development of a bioregional management plan, which will further assist in refinement of species recovery actions. The onsite disturbance areas and offsite (offset areas) habitat management and monitoring program, as described above, will be developed, implemented and regularly reviewed in consultation with relevant stakeholders (i.e. Black-throated Finch Recovery Team, Commonwealth and State governments, key stakeholders). The EPBC approval condition 17 includes the approval holder must contribute \$100 000 (GST exclusive) per annum for 10 consecutive years to the pool of funds beginning from commencement of mining activities. The approval holder must provide notice of the establishment of and/or contribution to a pool of funds established for the better protection and long term conservation of EPBC Act listed threatened species.
- 6.9.2 **LA:** I agree with **AC’s** view that there is insufficient data and knowledge to accurately and specifically quantify the cumulative impacts of the project. I agree with **AC** that a relatively significant level of work has been undertaken. I also note that we have both previously agreed

1st Experts Joint Report - Black-throated Finch (southern)

that there are fundamental deficiencies in the design and implementation of that “relatively significant level of work”, and that the reporting is not sufficient to adequately understand the existing values of the site commensurate with the potential significance of the site’s BTF population.

6.9.3 **LA:** I consider that a significant level of additional survey work is required before the Applicant can fully appreciate the site values for BTF, then assess the impact of works proposed, then design a suitable mitigation strategy, to then provide an suitably informed assessment of the residual and cumulative impacts of the proposed activities to the BTF subpopulation within the Galilee Basin. Given the likely importance of the site for BTF, the potential significance of the impact arising from proposed action to BTF, and concerns regarding declines thought to be occurring elsewhere within the current distribution of BTF, it seems not unreasonable to require the Applicant to assess cumulative impacts in the context of the subspecies population.

6.9.4 **AC:** I agree that the significance of the site for BTF and the potential for a significant impact arising from residual and cumulative impacts warrants an appropriate mitigation strategy and measures by which the actions can be proven to have offset lost values. However, it is my view that with a more refined monitoring program the Black-throated finch surveys will continue over time to provide data on temporal and spatial variation of habitat use within the disturbance and offset areas which will contribute significant data for incorporation into the Black-throated Finch Species Management Plan and ultimately the refinement of mitigation and species recovery actions on and offsite.

6.10 **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”.

6.10.1 **AC:** 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.

6.10.2 **LA:** As I appreciate, project approvals have been granted on the understanding that the accepted deficiencies in the BTF survey and habitat assessments¹³, the assessment of impact significance, and utility of proposed offsets can all be improved post-approval, as a result of implementing the relevant approval conditions, to the extent that both project impacts and impact mitigation strategies can be ultimately deemed suitable/acceptable. There appears to be no impact thresholds nominated by the relevant approval conditions, thus the only likely primary response to new knowledge which describes an increase in impact significance is by way of providing additional offsets. It is my view that the outcomes likely to arise from the process as summarised by **AC**, are as follows:

6.10.2.1 A suitably-designed BTF monitoring survey and habitat assessment program is implemented and results will provide data which demonstrates wider site usage by BTF and greater clarity on comparative values and extent of BTF foraging and breeding habitat. The Coordinator-

¹³ The Coordinator-General’s report was highly critical of all aspects of that BTF survey program, concluding that as a result of the identified deficiencies, the abundance of BTF had been grossly understated and the description of BTF habitat was incorrect.

1st Experts Joint Report - Black-throated Finch (southern)

General report was highly critical of all aspects of that BTF survey program, concluding that as a result of the identified deficiencies, the abundance of BTF had been grossly understated and the description of BTF habitat was incorrect.

- 6.10.2.2 Data derived from the above will predictably necessitate revision of the BTF habitat values mapping - revision of comparative habitat values and an overall expansion of the area of habitat value to BTF.
- 6.10.2.3 The revision of the BTF habitat values assessment will in turn demonstrate that the previous impact calculations (gross measure in current use is habitat loss) underestimates the actual offset liability.
- 6.10.2.4 Revision of the offset proposal will be required – the current primary response is providing an extent of potentially suitable habitat in accordance with ratio calculation and based on “like for like” approach.
- 6.10.3 **LA:** It is possible that an outcome of the abovementioned process may indeed provide a greater future understanding of the significance of the site’s population in the context of the overall BTF population, such that a potential offset may not be commensurate with the significance of the impact to the Black-throated Finch southern subspecies, i.e. “Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment [being *Poephila cincta cincta*] that is protected by national environment law and affected by the proposed action” (Commonwealth of Australia 2012)¹⁴.
- 6.10.4 **LA:** In regard to assessing the suitability of the current proposed offsets, the three key documents reviewed were CO2 (2014) and Eco Logical Australia (ELA 2014a and 2014b). The CO2 (2014) report provides an overall summary of the Biodiversity Offset Strategy, which is based on the results of implementing the Queensland Government’s Ecological Equivalence Methodology (EEM) for the mine site ELA (2014a) and for the proposed offset sites ELA (2014b). ELA (2014b) notes that in addition to implementing the EEM, “... collection of additional data, such as the presence of micro-habitats” would be undertaken in regard to MNES, which includes BTF. My review indicates that whilst both reports provide references to a sub-set of BTF habitat characteristics as “additional survey considerations’ (e.g. “key grass species”), it is not apparent how the application of the standard EEM might have been augmented to provide specific attention to the assessment of BTF requirements.
- 6.10.5 **BW:** The EE assessments followed the standard method in DERM (2011) and included measurements of tree, shrub, grass and weed cover and species richness by life-form and the number of large trees. Additional attributes were collected to indicate BTF habitat including the presence/absence of all target grass species that were listed as a food source in the BTF recovery plan and the distance from permanent water. The target grass species were collected at all sites in the Carmichael Coal Mine Site and for high value finch habitat sites on Moray Downs West. This information was used to provide an ecological condition assessment of all communities as well as an additional indication of BTF habitat value for the entire mine footprint on the mine site. The ELA (2014b) study collected similar information on the Moray Downs offset site and calculated the same ecological condition assessment but used a different method to calculate BTF habitat value. The target grass species information was used to confirm that all assessment units classified as BTF habitat contained on average 2 target grass species per site,

¹⁴ Offset Principle 1 as stated in the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (October 2012).

1st Experts Joint Report - Black-throated Finch (southern)

and was not used further in the subsequent analysis. The BTF habitat value on Moray Downs was incorporated into the proposed offset area in the latest version of the BOS (CO2, 2014). My understanding is the analysis of this information for defining BTF habitat on the Mine and proposed offset sites is still ongoing.

- 6.10.6 **LA:** To date, BW has not been able to provide the data which substantiates his claim in regard to the “target grass species” or demonstrate how such data, as an additional attribute, has informed the assessment of BTF habitat values on the mine site or proposed offsets. Furthermore, it is evident from the information **BW** provides above, that the additional attribute “target grass species” may have only been used to assess part of the proposed offset.
- 6.10.7 **MO:** **MO** agrees with **LA** with respect to the sampling protocols developed (particularly for the proposed offset areas where sampling appears to be of a low intensity spatially and temporally), but also with the concern that the current process will not provide the required level of confidence in adequately accounting for the increasing level of knowledge the process may input into management actions and the impacts from the proposed mine. **MO** reiterates his concerns expressed in 6.7.5 above that the “target grass species” utilised in the EE assessments and the BVGs used as habitat surrogates do not provide adequate data on the spatial patterning of preferred Poaceae species eaten by BTF across either the proposed mine site or offset areas. **MO** is unable to advise the court on the species specific data for Poaceae relevant to BTF referred to by **BW** above as it is not apparent in the provided material (as discussed in 7.7.5 above).
- 6.10.8 **BW:** The sampling intensity used in the EE assessments in the ELA 2014a and 2014b meet or exceed the specifications in the DERM (2011) method and I consider it to be adequate for the assessing potential offsets. I agree that any new knowledge should be incorporated into the assessment and my understanding is that this can occur through the Biodiversity Offset Strategy process.
- 6.10.9 **LA:** It is my view that the application of the EEM has the capacity to provide a generally useful tool to provide a replicable assessment fauna habitat characteristics over a variety of sites and by way of a systematic approach, provide a basis to compare broad fauna habitat attributes across multiple sites. It is my view that the application of the standard EEM does not provide the scope for 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.
- 6.10.10 **MO:** **MO** agrees with **LA** that the EEM does not provide the species specific data required for assessment of Poaceae spatial patterning across the study area.
- 6.10.11 **LA:** There appears to be inequities in the application EEM across the suite of Assessment Units (AU) and between the mine site and the offset sites which have the potential to undermine the assessment conclusions. For example, AU 4 is 8,811 ha in area, representing approximately 90% of the area made up of six Assessment Units¹⁵ considered to provide BTF habitat on the mine site. Nine EE sites were established to assess AU 4. In contrast, 10 EE sites were established to provide assessment coverage of the 50ha Assessment Unit 2 (not 10). There is no explanation in the report for this apparent disparity or for other apparent survey effort

¹⁵ ELA (2014a) describes the Assessment Units relevant to BTF as AU1 (BVG 12a), AU2 (BBVG 16a), AU3 (BVG 34d), AU4 (BVG 17a/17b), AU5 (BVG 17c), and AU6 (BVG 18a).

1st Experts Joint Report - Black-throated Finch (southern)

inequities. In regard to a comparison of survey effort (number of EE sites) between the mine site and offset areas, it is apparent that there was a five-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 offset¹⁶. It is my view that these apparent inequities 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.

- 6.10.12 **BW:** I agree that there is no explanation given for the inequalities of sampling effort in the ELA documents. However, the sampling intensity does conform to the guidelines in the DERM (2011) method, which includes the requirement for “2-5 sampling sites per assessment unit”. I consider that sampling intensity should also be based on an assessment of variability within the assessment units. The AU2 is made up of riparian vegetation communities which, from my observations, are more variable in composition and condition compared to AU4 which is made up of eucalypt woodlands of more uniform condition. Therefore it is reasonable for a greater sampling intensity in AU2 to ensure the full range of variability in this unit is assessed. As per the guideline, the “scores are to be (were) averaged to determine a score for the overall assessment unit “ and therefore the unequal sampling effort does not distort the final EE score for each unit.
- 6.10.13 **LA:** In regard to the survey effort applied to the proposed offset areas, it is apparent that the majority of that effort was expended on the northern offset site, the largest of the four proposed offset areas. It is also apparent that there was a comparatively negligible survey effort for the remaining offset areas. My review of the ELA (2014b) report reveals the following:
- 6.10.14 2 EE Sites for the second offset area of approximately 4,000 ha (to the near north of the Moray Carmichael Boundary Road; Stage 2 offset).
- 6.10.15 5 EE Sites for the third offset area of approximately 4,000 ha (to the near south of the Carmichael River; Stage 1 offset).
- 6.10.16 3 EE Sites for the fourth offset area of approximately 7,000 ha (offset area adjacent and to the south of the aforementioned, Stage 2 offset).
- 6.10.17 In my view, the above 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.
- 6.10.18 **BW:** The sampling intensity on the offset area was less than the mine site although it still meets the minimum specifications. I believe the additional sampling effort in the northern area is justified on the basis this area contains greater areas of finch habitat (as indicated by the distribution of AU1, 2, 9 & 12 on Figure 5). I consider the current level of sampling adequate to indicate potential habitat values, although I agree that more intensive sampling would provide more detailed assessment of habitat values.
- 6.10.19 **LA:** Both ELA reports note a sub-set of Regional Ecosystems were used to provide focus for the assessment of BTF habitat values and that for these areas, the presence of BTF records in combination with known water points were used to determine whether the entirety of the assessment unit provided habitat for BTF. There are a number of concerns with this approach, For example, there is ample evidence to demonstrate that BTF use habitats other than those mapped as Regional Ecosystems (i.e. non-remnant vegetation communities) and that some of these habitats may actually provide comparatively high habitat values for a BTF population.

¹⁶ Source data provided in Table 2 of both ELA reports (2014a & b).

1st Experts Joint Report - Black-throated Finch (southern)

Notable areas non-remnant vegetation in which BTF are known to occur, or have the potential to occur have not been included in the assessment approach. For the project site, it is my view that limiting the assessment of BTF habitat values to the footprint of regional ecosystem mapping would result in an underestimate of the extent and values of habitat used by BTF. The fundamental flaws of BTF survey program have been highlighted previously in the Joint Report. The reliance of the ELA reports on the data derived from a deficient BTF survey program, as one of the key determinants in assessing the value of an assessment, notably constrains the capacity of the ELA assessments of BTF habitat values on the mine site. Furthermore, given the lack of, and for some areas, the absence of target BTF survey work on the proposed offset sites, there is little opportunity to include this as key determinant of habitat values in the same way on those proposed offset areas.

- 6.10.20 **BW:** Non-remnant areas of regrowth vegetation often have substantial biodiversity value. Non-remnant regrowth areas were not mapped in the updated regional ecosystem mapping used for the EE assessment on the Carmichael Mine in the ELA (2014a) study. Areas of incorrectly mapped non-remnant vegetation on the certified (under the Vegetation Management Act 1999) regional ecosystem mapping were included. From my field observations of the mine site, much of the non-remnant regrowth areas on the site are not advanced regrowth with relatively open/short woody layers and a ground layer dominated by the exotic grass *Cenchrus ciliaris*.
- 6.10.21 **MO:** **MO** agrees with **BW** regarding the areas of regrowth vegetation regarding biodiversity value, but is unable to assess the veracity of the statement regarding the spatial patterning of *Cenchrus ciliaris* on the basis of the available data and reports, although field observations during the recent site inspection did reveal substantive areas of *Cenchrus ciliaris* in some areas of cleared land with improved pasture.
- 6.10.22 **LA:** Both ELA reports provide summary of each Assessment Unit's characteristics and values to particular threatened fauna, including BTF. It is not clear how the reported interpretations of habitat values relate to the survey data that may have been collected. Furthermore, it is not clear what background information is relied upon to form the basis for a variety of conclusions in regard to particular resources and/or conditions which BTF may or may not favour.
- 6.10.23 **BW:** The ELA survey has relied primarily on the EE method to give an indication of habitat value. AUs that were considered to contain "areas of grassy woodland containing key seedling grass species" (ELA 2014b, page 31, para 2) and distance from water were added to the EE assessment to define areas of very high, high medium and low BTF habitat. I believe this current information is adequate to indicate the potential habitat of the site. Further work is required to define specific areas of actual habitat and the improvement in BTF habitat that would result from additional (compared to what would happen if it wasn't an offset site) management actions at the offset site.
- 6.10.24 **LA:** It is unclear to me how some of the ecological condition indicators can be considered to be of value in the process of assessing BTF habitat and in turn, support conclusions in regard to habitat values and comparative values. For example, there has been no targeted surveys to investigate BTF breeding habitat values.
- 6.10.25 **AC:** Whilst I agree that 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 it is my view that the reporting to date only seeks to establish that there is potential to meet the offset requirements. The EE assessments followed the standard methodology as is required by DERM (2011) and included

1st Experts Joint Report - Black-throated Finch (southern)

measurements of additional attributes to provide preliminary indication of the presence of suitable BTF habitat including the presence/absence of key grass species and the distance from permanent water. The use of EEM to identify offset values is the standard contemporary approach. I agree that to obtain a more accurate measure of specific BTF habitat values within the disturbance areas and proposed offsets is required and I note is a condition of existing approval/s.

6.11 **Issue No. 24** “It can be said with certainty that there will be a complete loss of any potential BTF habitat: **(A)** within the Open Cut Pit Area; **(B)** in areas taken up by related infrastructure such as soil storage areas, dams, roads and accommodation”.

6.11.1 **AC & LA agree.**

6.11.2 **MO and BW** agree with respect to native Poaceae that are known food resources for BTF (refer to **LA**'s list provided in response to Issue No. 31 – paragraph 6.18.5).

6.12 **Issue No. 25** “Above the underground mine any potential BTF habitat may be disturbed by subsidence, the extent to which is unknown”.

6.12.1 **AC & LA agree.**

6.12.2 **AC**, although the extent to which underground mining will impact on BTF habitat is unquantifiable at this time, it should be noted that impacts will take considerable time to eventuate and these will be measured as part of the monitoring program. Further the offset conditions include a requirement for estimated/predicted subsidence impacts and these are required as an upfront offset which removes and time lag. If ongoing monitoring identifies an increase in subsidence impacts these are to be further offset. Further, although an area/s is subjected to subsidence this does not necessarily remove all BTF habitat values, and it is reasonable to assume that there is likely to be ongoing habitat values retained or replaced through natural revegetation.

6.12.3 **LA**: The current monitoring program is based on a previous survey design which has been identified as deficient. The deficiencies could only result in a significant constraint to understanding BTF site usage. The Coordinator-General's report was highly critical of all aspects of that BTF survey program, concluding that as a result of the identified deficiencies, the abundance of BTF had been grossly understated and the description of BTF habitat was incorrect. If those deficiencies are to be perpetuated through the on-going monitoring program, it follows that such a program could not be relied upon to adequately detect impacts to BTF.

6.13 **Issue No. 26** “As well as direct loss of habitat, the mining and associated activities will cause further fragmentation of habitat and disturbance to existing feeding and breeding patterns.”

6.13.1 **AC & LA agree.**

6.13.2 **AC**, although the open cut and operational areas will result in fragmentation of habitat, to varying degrees, and disturbance to existing feeding and breeding patterns the provision of the offset and improvement to existing habitat values within (cattle removal, pest and feral predator control; provision of drinking sites) will provide alternative habitats and connectivity between areas which are currently of no, lower and/or high value habitats.

6.14 **Issue No. 27** “In response to habitat clearing and disturbance, BTF are likely to disperse to surrounding areas where they will experience one of the following potential outcomes: **(A)** Not find suitable habitat and die; **(B)** Find suitable habitat already occupied by other BTF which cannot support an increased carrying capacity, resulting in further dispersal or death; **(C)** Find suitable habitat that is already occupied by BTF and displace the original BTF; **(D)** Find suitable habitat not currently occupied by other BTF or occupied by a resident population in habitat which could support a further increase in the local population.”

6.14.1 **AC & LA agree.**

6.15 **Issue No. 28** “The first three scenarios represent higher probability outcomes for BTF displaced by the project.”

6.15.1 **AC**, The above statement is substantially correct under a no nearby offset scenario. Further as suggested throughout the objection grounds there is limited understanding of the actual BTF population and resource partitioning within the wider landscape. The level and extent of available habitat and resources is unknown and would change seasonally as a result of natural events such as fire, drought and high rainfall as well as anthropogenic changes and particularly farmers modifying landscapes. Further with habitat improvements as proposed to the adjoining offset areas it is not unreasonable to consider a likelihood of increased available habitat and greater carrying capacity within some areas currently occupied by BTF and currently unused areas becoming suitable to contribute to increased utilisation, if not ultimately occupation.

6.15.2 **LA**: I agree that the first three scenarios represent higher probability outcomes for BTF displaced by the project. As AC suggests, there may be potential to increase the carrying capacity of habitats within parts of the proposed offsets though improved land management, though there has been no analysis or assessment of what in reality, could be achieved. It is quite possible that whilst AC’s proposition is valid, in practical terms, any improvement in carrying capacity may only result in a relatively minor positive outcome in mitigating the impacts of habitat loss on such a large scale.

6.16 **Issue No. 29** “Reduction of habitat for a significant number of BTF is likely to have a corresponding significant impact on the regional population which is of international significance.”

6.16.1 **AC & LA agree.**

6.16.2 **AC**, Whilst I agree a reduction of habitat for a significant number of BTF is likely to have a corresponding significant impact on the regional population, the above statement implies or seems to assume there is no commensurate offset and thus a net loss of habitat and no management or mitigation actions to improve overall habitat values and reduction of recognised threats. For clarity, whilst I agree with the statement, I do not agree it has any relevance to the proposed actions. It is my view the offset and mitigation actions could provide an overall net benefit.

6.17 **Issue No. 30** “The EIS documents do not provide sufficient details of the proposed offset locations or the characteristics of those locations to assess their current or potential suitability as viable BTF habitat.”

6.17.1 **AC**, There has been a Biodiversity Offset Strategy prepared by CO2 Australia (29/10/14) which details how the initial offset requirements will be undertaken. The Coordinator-General's Report and the EPBC Act approval include specific requirement to prepare and implement a

1st Experts Joint Report - Black-throated Finch (southern)

Biodiversity Offset Strategy that outlines how the project will meet the offset requirements for significant residual impacts on and matters of national environmental significance and matters of state environmental significance. The Biodiversity Offset Strategy provides a substantive documentation of how the offset requirements can be fulfilled and prescribes ongoing offset delivery actions and outcomes. Whilst the scope and extent of the Biodiversity Offset Strategy covers the proposed offsets to fulfil the offset delivery requirements for stage 1 and 2 of the project. In December 2013 and September 2014, ecological equivalence assessments were conducted of the mine and off-lease infrastructure areas in order to determine baseline condition of impact areas and inform the suitability of offsets (Eco Logical Australia 2014a&b). As required by Queensland Government offset policies, the surveys were undertaken in accordance with the DERM Ecological Equivalence Methodology Guideline Version 1. The Ecological Equivalence Assessment results are presented in **Appendix C** of the 2014 Biodiversity Offset Strategy. The Biodiversity Offset Strategy includes an implementation and review plan including details for compliance reporting and updating of the document if and as required.

6.17.2 **LA:** The abovementioned ground of the Appeal was based on a review of documents which preceded the submission of the CO2 Biodiversity Offset Strategy (BOS) cited by **AC**. The 315-page BOS report does provide sufficient detail of the extent and location of the areas proposed offset impact to BTF (*cf.* the previously redacted offset reports). As I have outlined in my response to Issue No. 23, I have reservations in regard to the capacity of the EEM as a suitable means to assess BTF habitat values and why I have concluded that neither of the assessment reports by ELA provide a suitable basis to describe and compare BTF habitat values on the mine site and proposed offset areas.

6.17.3 **MO: MO** reiterates his concerns regarding the EEM discussed above in 6.7.5, 6.10.6 and 6.10.9 regarding constraints of the EEM to provide species specific data on the relevant Poaceae for BTF.

6.18 **Issue No. 31** “BTF are dependent on the seed of native grasses, although little is known about dietary preferences or the comparative values to BTF of the variety of grass species within the region.”

6.18.1 **AC & LA** agree.

6.18.2 **AC:** Although there is a recognised need for improved knowledge of specific grasses and dietary preferences to fully understand the comparative values; it is known that there are BTF utilising the proposed offset areas, that a similar suite of dominant vegetation communities occur within and it is not unreasonable to suggest that there is feeding resources present. Further the prescriptions within the BTF Management Plan, monitoring protocols and proposed development of a bioregional Management plan will all contribute to an improved understanding of the species utilisation of native grasses. In addition, the proposed management actions within the offset area/s will result in an overall increase in native grass cover.

6.18.3 **LA:** **AC** is correct in that there are BTF records for the northernmost of the four offset areas (part of the Stage 1 offset), albeit poorly surveyed. 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

1st Experts Joint Report - Black-throated Finch (southern)

minutes of foot survey, a one-hour of water body survey, and deployment of one camera trap¹⁷. 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.

- 6.18.4 **LA:** Whilst it holds true that a greater understanding of the BTF diet is required, it is apparent that the Applicant's reporting only considers a subset of the suite of grass species known to be used by BTF (eight species from seven genera)¹⁸. The BTF Management Plan (GHD 2014b) references 8 species from 7 genera. The ELA (2014a & b) reports refer to "key grass species" though these are not listed in the report. Later in both ELA reports, there is reference to several grass species associated with preferential habitat (5 species from 5 genera). The source of the information relied upon by the ELA reports is not provided.
- 6.18.5 **LA:** In contrast to the seven genera cited within the Applicant's reporting, I am aware of 22 grass genera which provide known feeding resources for BTF. These are: *Alloteropsis* spp., *Bothriochloa* spp., *Chloris* spp. (native and introduced sp.), *Dactyloctenium* spp., *Dicanthium* spp., *Digitaria* spp. (native and introduced sp.), *Echinochloa* spp., *Echinopogon* sp., *Eleusine* sp., *Enteropogon* sp., *Eragrostis* spp., *Eremochloa* sp., *Eriachne* sp., *Melinis* sp., *Panicum* spp., *Paspalidium* sp., *Paspalum* sp., *Schizachyrium* spp., *Setaria* spp., *Sporobolus* spp., *Themeda* sp., and *Urochloa* sp. Other genera for which there are no positive feeding records, though suspected of being used by BTF include, *Eulalia* spp., *Aristida* spp., and *Triodia* spp.
- 6.19 **Issue No. 32** "Grass species richness and/or condition of grass cover are variable and Regional Ecosystem (RE) mapping cannot be confidently relied upon to identify the extent or value of suitable habitat for BTF."
- 6.19.1 **AC & LA** agree.
- 6.19.2 **AC:** there is a need for and it is requirement of approval conditions to more accurately measure the extant values of both disturbance and offset area habitat values. My site visit identified that there are areas which the large scale mapping methodology has incorrectly allocated values. However, it should be taken into account that these inaccuracies are converse and both understate and overstate extant values in various locations. Although my site visit was relatively short and only provided for rapid assessment of mapped values, it is my view that the actual overall estimated values present is substantially correct for the purpose of which it is being applied. Further, with ongoing more refined assessment of the disturbance site and offsets areas will provide added detail to current mapping of BTF habitats lost and gained.
- 6.19.3 **BW:** grass species richness and/or condition of grass cover are variable, but there is generally a relationship between these attributes and the mapped extent of regional ecosystems. Regional ecosystem mapping is the most readily available and appropriate tool to allow rapid mapping of these values over the large areas required for the Carmichael Mine project. More detailed site assessments of these values would provide more detailed and accurate information.

¹⁷ Survey effort for the 2nd offset area (near north of the Moray Carmichael Boundary Road; Stage 2 offset) was limited to a 2ha survey site (CHAB08, surveyed May and October 2013) and one camera trap site (CCAM07, surveyed once in May 2013). There is one BTF record for the 2ha survey site (May 2013). This does not represent any meaningful survey effort for an area of approximately 4,000 ha. BTF survey effort on the 3rd offset area (near south of the Carmichael River; Stage 1 offset) was limited to one water body watch survey at Rocky Dam (October 2013). There are no BTF records for this offset area and one water body watch does not represent any meaningful survey effort for an area of over 4,000 ha. For the remaining Stage 2 offset area (adjacent to the aforementioned), there are no BTF records and no evidence of any BTF survey for this offset of over 7,000 ha.

¹⁸ The BTF Management Plan (GHD 2014b) references 8 species from 7 genera. The ELA (2014a & b) reports refer to "key grass species" though these are not listed in the report. Later in both ELA reports, there is reference to several grass species associated with preferential habitat (5 species from 5 genera). The source of the information relied upon by the ELA reports is not provided.

1st Experts Joint Report - Black-throated Finch (southern)

- 6.19.4 **MO: MO** agrees with **BW** with respect to broad scale mapping, but, given the global significance of the BTF population from the study area (see discussion between paragraphs 6.2 to 6.6 above), **MO** considers that a less “broad-brush” approach is required in this instance regardless of regional based policies or methodologies. **MO** has not been presented with any data that indicates the relationship between regional ecosystems and the preferred species of Poaceae (see **LA** comments in paragraph 6.18.5) (or mapping thereof other than related to BVGs or Res) for the study area.
- 6.19.5 **LA: I** agree with **MO**. I also disagree with **AC**’s conclusion that “the actual overall estimated values present is substantially correct”.
- 6.20 **Issue No. 33** “Creation or modification of understory species is not currently feasible.”
- 6.20.1 **AC**, The primary management Actions proposed for offset areas will be the removal and/or reduction of cattle, provision of additional water sources and the implementation of a weed control program targeting *Cenchrus ciliaris*. This is to ensure that seeding grass species diversity is optimised. Other management actions include the development of a fire management plan or prescriptions to minimise fuel loads where appropriate towards maintaining appropriate fire regimes and to provide a mosaic of grass species and diversity.
- 6.20.2 **BW**, the composition and abundance of understory species varies with management particularly of grazing and fire. Some useful and relevant management guidelines are available for the region and its ecosystems although there is likely to be a need for the development of more detailed knowledge and/or quantification of the regimes required to meet specific habitat requirements.
- 6.20.3 **MO: MO** considers that the pasture management discussed above by **BW** remains unknown for the study area, but concurs that such information is required to provide a level of confidence in the proposed offset strategy.
- 6.21 **Issue No. 34** “It follows that not enough is known about the BTF floral habitat to confidently identify or create offset sites.”
- 6.21.1 **AC, Disagree**,
- 6.21.2 **AC**, Although it is currently impossible to specifically quantify the offset values and how they meet the stated requirements, the Biodiversity Offset Strategy prepared by CO2 Australia (29/10/14) has followed contemporary methodology and specifically the assessment of values was undertaken in accordance with the Ecological Equivalence Methodology Guideline Version 1 (DERM 2011; EEM). There is no prescribed BTF specific methodology. I do agree that there are additional actions and/or modifications which can be incorporated into the existing BTF Management and Monitoring Plans which would provide improved results and understanding of the BTF habitats within offset sites overtime.
- 6.21.3 **MO and LA agree**. Refer to information provided in our previous responses.
- 6.22 **Issue No. 35** “Offset sites that do not provide appropriate native understorey grasses are of no use in mitigating the risk of population decline.”
- 6.22.1 **AC, Disagree**,

1st Experts Joint Report - Black-throated Finch (southern)

6.22.2 **AC:** I am unaware of any proposed offset site that does not provide appropriate native understorey grasses. If a portion of an offset site does not provide appropriate or suitable native grasses it does not inevitably imply they are of no use in mitigating the risk of population decline. It is more correct to state they have little direct value. However these areas can contribute through provision of habitat linkages, watering points and even potentially breeding habitats. Further the areas identified as holding little or no grasses are predominately ranked as being of no value to BTF by the EEM and subsequent habitat mapping, although there is likely to be areas missed or under mapped due to the large scale of mapping there is also areas mapped as low or no value which hold suitable native grasses. To be clear, I do not believe there are any large notable areas that do not provide appropriate native understory grasses that will be relied upon to offset the loss of areas which provide such values.

6.22.3 **LA:** I accept the statement of this issue. I disagree with **AC's** comments on the basis of the Applicant's reports I have reviewed, though I unable to fully assess the veracity of the statement without the opportunity to inspect some of the proposed offset sites.

7. Closing Comments and Recommendations

7.1 We understand that a 3rd round of BTF monitoring has been completed and believe there is value in having opportunity to jointly review the methodology and results.

7.2 **AC** and **LA** have concern about the timing of the 3rd monitoring event in that it was a "dry-season" monitoring event and the site work was undertaken in December 2014 following rainfall and with ongoing rainfall events. **AC** was onsite during this time and observed numerous pools of surface water along tracks and elsewhere which provided a significant increase in drinking sites at the time. **AC** observed BTF drinking from several water sources which are not included in the monitoring program.

7.3 **AC** and **LA** agree that, in order to fully complete our joint assessment, and to further clarify the issues in agreement and/or dispute, would require the following information:

7.3.1 The results of the 3rd round of BTF monitoring and associated reporting.

7.3.2 Any further botanical or site specific (disturbance area and proposed offset area) assessment of extant habitat values;

7.3.3 Confirmation and details of, if any, proposed changes to the mine layout, and specifically if the north-eastern portion of the mine is being converted from open cut to underground.

7.3.4 In regards to the BTF surveys and monitoring events, confirmation of personnel and experience in relation to BTF and target surveys for BTF.

7.4 **LA** and **AC** agree that there would be value in receiving;

7.4.1 For each survey event:

a) Details of the most senior ecologist actively participating in BTF surveys or monitoring events and a list of all field workers for each survey event, including their experience in surveys for BTF;

b) Any anecdotal evidence of BTF that have been observed at and around the mine site or camp;

1st Experts Joint Report - Black-throated Finch (southern)

- c) Confirmation that there is a process in place to inform relevant Adani staff (environment officer) of such sightings and provision of any anecdotal records currently held. **AC**, notes that the site induction included specific mention of the species and requirement to report any sightings;
 - d) Various reports refer to BTF records derived from field work undertaken by Ecology and Heritage Partners Pty Ltd. This work has not been described in any detail. Provide details of the surveys and records associated with various references to the same, e.g. "Within the Mine Study Area and broader Moray Downs property during June/July 2012 surveys (by Ecology and Heritage Partners Pty Ltd (unpublished data, 2012) - approximately 155 black-throated finches (southern) were observed at 12 sites." (page 111 of GHD (2013). Report for Carmichael Coal Mine and Rail Project SEIS - Matters of National Environmental Significance).
- 7.5 **AC** and **LA** agree that, in order to fully complete our joint assessment, LA should be afforded the opportunity to inspect/assess the suite of proposed offset sites.
- 7.6 Once the above information has been adequately provided, and **LA** has had the opportunity to inspect/assess the suite of proposed offset sites, further analysis and assessment of site ecological values could be undertaken/completed.
- 7.7 **AC** and **LA** defer to the court and relevant parties if such assessments are to be the subject of a 2nd Joint experts report or any further findings included and addressed within individually authored court reports.
- 7.8 **AC** and **LA**, agree and recommend that the monitoring program should be revised and targeted more specifically on BTF and their habitats. These changes should include as a minimum:
- 7.8.1 The monitoring of water bodies should be conducted over at least a 6 hour period and commencing from dawn in order to accurately capture utilisation of the watering points. These counts should incorporate a methodology which ensures that all water bodies in close proximity (up to 5km) are all simultaneously counted to provide more accurate capture of BTF populations within an area;
 - 7.8.2 Detailed botanical assessment should be focused on all BTF sighting locations to record habitat values present within habitats being utilised (with particular emphasis given to the assessment of grass species richness and cover structure);
 - 7.8.3 The 2-Ha survey plots should be ceased as they have little relevance to BTF and more effort should be placed into actively locating BTF and collection of information on their movements across the project and offset areas;
 - 7.8.4 Call playback should be used when BTF are encountered to assist in gaining a more complete identification of birds present in the local area (other than at water hole monitoring);
 - 7.8.5 Specific surveys targeting breeding should be undertaken to provide details on locations and habitat values present in locations in which the birds are breeding;
 - 7.8.6 Persons undertaking the surveys/monitoring should be experienced ecologists with sound understanding of the BTF and its habitats; and
 - 7.8.7 That any future revision of the current survey and monitoring programs should be developed in consultation with researchers from the BTF Recovery Team and independently peer-reviewed.

1st Experts Joint Report - Black-throated Finch (southern)



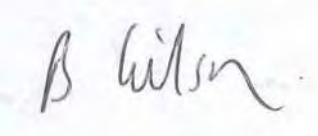

- 7.9 Whilst **AC** and **LA** are in a position to offer our recommendations in regard to improving the BTF survey and monitoring program, we rely on further information to assist in preparing recommendations in regards to the assessment of BTF habitat values and habitat suitability assessments in regard to determining offset suitability. This includes further consideration of the potentially important role that the 10 Mile Bore and surrounds may support in sustaining the BTF population.
- 7.10 **MO: MO** recommends that more spatially relevant survey of the target species of Poaceae (see LA comments in paragraph 6.18.5) be completed in order for an adequate evaluation of the impact of the proposed mine on this globally significant population of BTF and thence an assessment of the efficacy of the proposed offset areas with respect to these target species. A sampling strategy that allows assessment of not only species presence/absence but also relative abundance will be the most suitable to be relevant to habitat mapping of such parameters relevant to BTF.

Attachments

Attachment 1: Map showing **AC** and **LA** BTF Records

Attachment 2: Spreadsheet detailing **AC** and **LA** BTF Records

Date of Agreement: 15 January 2015

	
Adrian Caneris	Lindsay Agnew
	
Bruce Wilson	Mike Olsen

Attachment 1 - Experts' BTF Records

White numbered dots - Experts' BTF Records

Pink dots - Applicant's BTF Records
Yellow outline - Moray Downs property
Red outline - extent of mining leases

Google earth

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Attachment 2: Summary of BTF Observations by Adrian Caneris and Lindsay Agnew for the Moray Downs Property and Proposed Carmichael Mine

Record Site	Observer	Date	BTF Record	Previously surveyed by Applicant	Previous Survey Result	Comments
1	AC	03/12/2014	3	No	n/a	GHD 2ha survey site app. 300m to south (2 surveys in May & October 2013; 1 record of 8 BTF).
2	AC	03/12/2014	3	No	n/a	GHD 2ha survey site app. 1km to north-west (2 surveys in May & October 2013; no BTF records).
3	AC	04/12/2014	3	Yes	No BTF	GHD water body survey site (April 2011 and May 2011). Also a 2ha survey site app. 300m south (2 surveys in May & October 2013; no BTF records) and one water body survey site app. 900m to south-east (Sept 2011; no BTF records)
4	AC	04/12/2014	13	No	n/a	GHD 2ha surveys sites within 900m to north and south (four surveys; 1 record of 1 BTF).
5	AC	04/12/2014	17	No	n/a	GHD water body survey site app. 500m to north (2 surveys, April & May 2011; 1 record of 10 BTF). Also, a 2ha survey site app. 600m south (2 surveys in May & October 2013; 1 record of 10 BTF).
3	AC	05/12/2014	36	Yes	No BTF	GHD water body survey site surveyed in April 2011 and May 2011 (2 surveys for each event).
2	AC	05/12/2014	22	No	n/a	GHD 2ha survey site app. 1km to north-west (2 surveys in May & October 2013; no BTF records).
6	AC	06/12/2014	120	No	n/a	GHD water body survey site app. 700m south (6 surveys; 1 record of 1 BTF). Also, a 2ha survey site app. 600m to north (2 surveys in 2013; no BTF records).
7	AC	07/12/2014	3	Yes	1 record of 11 BTF	GHD camera trap survey site (May 2013 & October 2013) and water body survey site (May & October 2013).
7	AC	08/12/2014	8	Yes	1 record of 11 BTF	GHD camera trap survey site (May 2013 & October 2013) and water body survey site (May & October 2013).
8	LA	17/04/2012	9	No	n/a	GHD 2ha survey sites - one app. 1km to south-east (surveyed October 2013; no BTF records) and one app.1.1km to north (surveyed May 2013 & October 2013; no BTF records).
9	LA	17/04/2012	2	No	n/a	GHD survey site app. 900 to south-west (adjacent to road). 6 water body surveys (November 2010, April 2011, May 2011, & October 2013) and 2 camera trap surveys (May 2013 & October 2013). No BTF records.
10	LA	24/11/2014	2	Yes	1 record of 1 BTF	Numerous GHD surveys at this site - 4 camera trap surveys (May 2012, May 2013, & October 2013); 7 water body surveys (November 2011; May 2013, October 2013); and two 2ha surveys (May 2012).

Record Site	Observer	Date	BTF Record	Previously surveyed by Applicant	Previous Survey Result	Comments
11	LA	24/11/2014	25	Yes	1 record of 3 BTF	GHD water body survey site - 3 surveys (November 2011 & May 2013).
12	LA	24/11/2014	6	Yes	No BTF	GHD water body survey site (November 2011).
13	LA	24/11/2014	1	No	n/a	GHD 2ha survey site app. 300m to south. Surveyed in May 2013 and October 2013. No BTF records.
14	LA	24/11/2014	2 BTF nests	No	n/a	GHD 2ha survey site app. 100m to north-west. Surveyed May 2012, No BTF record. Incidental GHD survey record of 19 BTF app. 200m to north-west (May 2013).
15	LA	25/11/2014	9	Yes	No BTF	GHD water body survey site surveyed twice in April 2011 and in May 2011. Also a 2ha survey site app. 300m south (2 surveys in May & October 2013; no BTF records) and one water body survey site app. 900m to south-east (Sept 2011; no BTF records).
16	LA	25/11/2014	2	No	n/a	GHD water body survey site - 2 surveys in November 2011.

**APPENDIX 3:
SECOND BTF JOINT EXPERTS REPORT
JER2**

2nd Fauna Experts Joint Report

Black-throated Finch (southern)

Land Court of Queensland

Land Court of Queensland Registry: Brisbane

Numbers: MRA428-14, EPA429-14, MRA430-14, EPA431-14, MRA432-14, & EPA433-14.

Applicant: Adani Mining Pty Ltd

First Respondent: Land Services of Coast and Country Inc.

Statutory Party: Department of Environment and Heritage Protection

Experts and Areas of Expertise:

- Lindsay Agnew (**LA**), biologist – area of expertise relevant to the current matter – Black-throated Finch southern subspecies (*Poephila cincta cincta*).
- Adrian Caneris (**AC**), biologist – area of expertise relevant to the current matter - Black-throated Finch southern subspecies (*Poephila cincta cincta*).
- Mike Olsen (**MO**), botanist - area of expertise relevant to the current matter – floristic and vegetation characteristics of habitat for Black-throated Finch southern subspecies (*Poephila cincta cincta*).
- Bruce Wilson (**BW**), botanist - area of expertise relevant to the current matter – floristic and vegetation characteristics of habitat in areas where Black-throated Finch southern subspecies (*Poephila cincta cincta*) occurs.

Meeting Dates: Various telephone and email communications from 20 February 2015 onwards.

Expert's Statement

We acknowledge that we have been instructed to assist the Land Court of Queensland by investigating and reporting on issues relevant to the Black-throated Finch southern subspecies (*Poephila cincta cincta*). We assert that we are qualified to give opinion evidence as an expert witness in relation to this issue in dispute in the current proceeding.

We verify that our instructions have included the Land Court Rules 2000 (current as at 13 December 2013) and the Uniform Civil Procedure Rules 1999, which we have read and understand, and that no instructions were given or accepted to adopt or reject any particular opinion in preparing this Joint Report. We confirm that each expert understands the expert's duty to the court and has complied with that duty in preparing this Joint Report.

Important Note

In this Joint Report, **matters of agreement are unattributed**. Comments made by individual experts and/or matters of disagreement are prefixed by the relevant expert(s) initials.

1.0 BACKGROUND

- 1.1 This 2nd Joint Report has been prepared by **AC** and **BW** on behalf of the Applicant, Adani Mining Pty Ltd and **LA** and **MO** on behalf of the First Respondent, Land Services of Coast and Country Inc (together, **the Experts**), in accordance with the **Order** made by the Land Court of Queensland on 30 January 2015.
- 1.2 This 2nd Joint Report provides focus on materials of relevance received following the completion of our 1st Joint Report dated 15 January 2015.
- 1.3 As part of our duty to the Court, we have sought additional information in order to adequately investigate the facts in relation to the issues in dispute in the proceeding.
- 1.4 To that end, we have, jointly or individually, sought the following information to assist in the preparation of this 2nd Joint Report:
- a. The results of the 3rd round of BTF monitoring and associated reporting.
 - b. Any further botanical or site specific (disturbance area and proposed offset area) assessment of extant habitat values.
 - c. Confirmation and details of, if any, proposed changes to the mine layout, and specifically if the north-eastern portion of the mine is being converted from open cut to underground.
 - d. In regards to the BTF surveys and monitoring events, confirmation of personnel and experience in relation to BTF and target surveys for BTF. For each survey event:
 - i. Details of the most senior ecologist actively participating in BTF surveys or monitoring events and a list of all field workers for each survey event, including their experience in surveys for BTF.
 - e. Any anecdotal evidence of BTF that have been observed at and around the mine site or camp.
 - f. Confirmation that there is a process in place to inform relevant Adani staff (environment officer) of such sightings and provision of any anecdotal records currently held. AC, notes that the site induction included specific mention of the species and requirement to report any sightings.
 - g. Various reports refer to BTF records derived from field work undertaken by Ecology and Heritage Partners Pty Ltd. This work has not been described in any detail. Provide details of the surveys and records associated with various references to the same, e.g. "Within the Mine Study Area and broader Moray Downs property during June/July 2012 surveys (by Ecology and Heritage Partners Pty Ltd (unpublished data, 2012) - approximately 155 black-throated finches (southern) were observed at 12 sites." (page 111 of GHD (2013). Report for Carmichael Coal Mine and Rail Project SEIS - Matters of National Environmental Significance).
 - h. Data and information to assist in assessing BTF population characteristics and habitat usage across the known BTF distribution.
- 1.5 This 2nd Joint Report provides a review of that additional information and includes our areas of agreement and disagreement in relation to the issues in respect of the Black-throated Finch southern subspecies (*Poephila cincta cincta*) (**BTF**). Wherever possible, in our discussions regarding the review of that additional material, we have attempted to provide cross-referencing with the specific issues contained within the First Respondent's amended notice of issues was delivered on 2 December 2014 (**Preliminary Issues**) as discussed in the 1st JR.

2.0 3RD ROUND OF BTF MONITORING

- 2.1 The report is entitled *Black-throated Finch Monitoring Report Pre-wet season survey 2014* (Niche Environmental and Heritage 2015). The report was provided by the Applicant by email on 13 February 2015.
- 2.2 **LA & AC:** The title of the report indicates that it was neither a dry season nor a wet season survey. The Niche Environmental and Heritage (Niche) report makes various references to a “substantial amount of rainfall” prior to the survey, rainfall during the survey period, and that ephemeral water sources were present which would have impacted on the results of the water source watches. The report concludes that “To make comparison between survey periods valid it is important that the assessment method is consistently applied and that survey effort is comparable”. Given that it is neither a wet nor a dry season survey, and the survey period is not directly comparable with any of the previous BTF monitoring events, the Niche commentary on data comparisons between inconsistently timed survey events is highly relevant.
- 2.3 **LA & AC:** Given the above, the Niche (2015) field work program could not validly be considered to represent a dry or a wet season monitoring event. If the intention was to implement a survey which would augment the understanding of BTF occurrence and habitat usage across the site (which is not made clear in the Niche report), then it is considered that the reported work does indeed achieve that.
- 2.4 **LA & AC:** All monitoring reports should provide details of weather and field conditions.
- 2.5 **LA & AC:** There is certainly value in having information obtained during the pre-wet season although this would need to be undertaken repeatedly and systematically to contribute meaningfully to monitoring results.
- 2.6 **LA & AC:** In addition to the above, there are a variety concerns which are apparent following the review of the Niche (2015) report. Some of these are highlighted below:
- 2.6.1 In regard to consistency in monitoring methodology, the pre-wet season monitoring establishes a number of notable departures from the monitoring program¹ as described in the 2014 BTF Management Plan (GHD 2014b). The Niche (2015) report does not provide any rationale for departures in monitoring methodology or suite of monitoring sites which formed the basis of the on-going monitoring program as established in the 2014 BTF Management Plan.
- 2.6.2 In regards to water source surveys, the Niche (2015) report states in Section 2.2.3.2, that the following was implemented at each of the survey sites: 1 x 3-hour early morning and 1 x 1-hour late afternoon surveys. The report’s Annexure 8 clearly shows that for the majority of survey sites, the stated methodology was not applied². In the 1st JR, our shared view in reviewing previous water body survey methodologies, was that counts needed to be conducted from dawn and for a period of at least 6 hours (Issue No. 19; 1st JR).

¹ GHD (2014b) noted the following: “The following monitoring program was developed in consultation with the black-throated finch Recovery Team (meeting on 3 April 2013, James Cook University, Townsville), and DotE (meeting on 7 June 2013, Canberra). It also incorporates information and advice provided by DEHP via their submission on the Project’s SEIS (November 2013).”

² Annexure 8 describes water source surveys at 10 sites. Average effort for each survey was 1.65 person-hours. Average effort for each survey site was 2.98 survey person-hours and the range was between 0.1 to 4.77 survey person-hours.

2nd Experts Joint Report - Black-throated Finch (southern)

- 2.6.3** In regards to water source surveys, the Niche (2015) report states in Section 2.2.3.2, that all water source surveys were "... conducted between sunrise and 3 hours after sunrise". With reference to the Geoscience Australia database³, three hours after sunrise would have been 0822 hours. Annexure 8 of the Niche (2015) report clearly shows none of water watch surveys complied with the methodology stated earlier in the report.
- 2.6.4** The Niche December 2014 survey program implemented the 2ha/20-minute survey methodology at a variety of locations on the site, with the majority being implemented in the northern part of the site. This survey approach has been reviewed in the 1st JR, with both experts agreed that the 2ha/20-minute approach does not represent a suitable method to investigate BTF site usage (Issue No. 19; 1st JR)⁴.
- 2.7 LA & AC:** It should be noted that the 3rd round BTF monitoring report does not include the results of camera traps. The results from camera traps could change results provided in **Table 1**.
- 2.8 LA & AC:** Notwithstanding the abovementioned concerns, the Niche (2015) report provides confirmation that the site continues to support a significant BTF population. As the report's Graph 2 demonstrates, the survey results generated by the December 2014 survey (329 BTF) was notably the highest total aggregate of BTF recorded for any of the seven site surveys to date.
- 2.9 AC:** Although there is variation on the standard monitoring protocols, this monitoring event has contributed valuable information in regard to BTF presence and usage on the site during pre-wet season conditions. This information is only available due to the undertaking of such monitoring as a result of the proposed mine and conditions.
- 2.10 LA & AC:** The Niche (2015) report review provided in Graph 2 only considers site records derived from the EIS and SEIS reporting stream and does not incorporate other site records, some of which are highly significant, e.g. site records of Stanley Tang (BTF aggregation of >400 BTF) as previously discussed in the 1st JR.
- 2.11 LA:** Other notable results arising from the December 2014 survey include:
- 2.11.1** Six BTF nests were detected, though it is not apparent that these were the result of "targeted nest surveys". The report notes that all six nests were located in the three discrete locations within the northwest corner of Moray Downs and within the same general area where nests and nesting activity were observed in May 2013.
- 2.11.2** A notably high proportion of "incidental" BTF records, which included a variety of new BTF record locations.
- 2.12 AC:** The results have highlighted and confirmed the prior agreement that the 2ha monitoring sites are of low value. The effort would be far better off focused on locations where BTF are sighted to gain information on habitat values in those locations.
- 2.13 AC:** The additional records of breeding add to the recognised value in conducting targeted nest surveys and these should be undertaken following early rainfall events at the start of the wet season.

³ Australian Government's Geoscience Australia calculates that for Moray Downs (21°57'00" 146°38'00"), sunrise would be at 0522hrs for 03/12/2014. <http://www.ga.gov.au/bin/geodesy/run/sunrisenset>

⁴ In the 1st JR, it is agreed that 20-minute bird survey is not a method recommended in the Commonwealth Government's BTF assessment guideline (DEWHA 2009) or the in the national survey guideline for BTF or other threatened bird species (DEWHA 2010).

2nd Experts Joint Report - Black-throated Finch (southern)

- 2.14 LA:** In regards to discussion on the survey results, Niche (2015) report noted the following:
- 2.14.1** “The low mean and median group/flock size recorded during surveys in December 2014 may be attributed to the high proportion of smaller groups/flocks (i.e., 2-4 birds) recorded during surveys (Graph 4). It appears that large flocks comprising >20 birds)”. Whilst part of the results interpretation, in regard to large flocks, is obviously missing, it is my view that the high proportion of observations of flock/group size of 2-4 BTF may also be attributed to larger flocks breaking up into smaller family breeding flocks (cf. what would not be an expected finding from a dry season survey).
- 2.14.2** “The spatial distribution of BTF records during this survey is also similar to that reported previously, with the majority of records occurring in the north-western corner of Moray Downs (including the far north of the Project Area) ...”. Given that the vast majority of the December 2014 survey effort was focussed on largely the same parts of the site as surveyed in the previous six surveys, the report’s finding is not surprising.
- 2.15 AC & LA:** There is confusion within the Niche (2015) report in respect to site names and locations. This is apparent in the statements about the trough that had not previously been surveyed (5 Mile Bore). This location is the 4 Mile bore and has been previously surveyed. There is a clear need for the monitoring program to standardise data collection. This includes but is not limited to site name/s, datum units, and duration of monitoring events.
- 2.16 AC:** Further although the new site 5 mile bore is referred to as being a ‘site’ it was only visited once for 6 minutes. This seems an anomaly given the reference to it as a site and the number of birds recorded in this location at the time.
- 2.17 AC:** There clearly needs to be more rigor and uniformity in BTF monitoring events and subsequent reporting. Whilst there is room for improvement, the monitoring to date provides highly valuable data and the required changes are not onerous.
- 2.18 AC:** It is not unusual for monitoring programs to be adaptive and to be adapted following identification of improved techniques or logistical constraints etc. It is important that any changes provide improved results or analysis.
- 2.19 AC & LA:** The recommended changes provided within the 1st and 2nd JRs should be adopted for future monitoring events.

3.0 2012 ECOLOGY AND HERITAGE PARTNERS BTF REPORT

- 3.1 **LA & AC:** The EIS and SEIS reporting stream⁵ has provided various references to surveys by Ecology and Heritage Partners (unpublished, 2012), and whilst acknowledging that the report does "... provide excellent baseline data on the presence and broad distribution of the species... " (GHD 2012b) on the site, no details have been provided in any of the Applicant's BTF reports. We requested details of the surveys and records associated with various references to the same, as raised in the 1st JR, and a summary report was provided by the Applicant by email on 13 February 2015.
- 3.2 **LA & AC:** The EHP (2012) report notes that the primary focus of the work was to survey for, record and monitor BTF within EPCs 1690 and 1080. Field work was undertaken by three ecologists during the period 4 June to 4 July 2012. It is clear from the report that only a minority of the survey work, due to field conditions, was undertaken within the southern part of the site.
- 3.3 **LA & AC:** The EHP (2012) report provides details of 12 separate BTF records, including two notable sightings of flocks of >50 BTF. Mapping of the record data indicates that these 2 large flocks are from the same location and are located in the northern portion of the site in proximity to the 10 Mile Bore where other large flocks have also been located previously.
- 3.4 **AC & LA:** Where such information is collected it is important that these results are provided for, and obtained by, the monitoring program to allow inclusion in known records and locations.

4.0 ADDITIONAL INCIDENTAL BTF RECORDS FOR THE SITE

- 4.1 **LA & AC:** We both were aware of the potential for BTF observations which might derive from activities other than the reported BTF surveys. In the 1st JR, we requested that any evidence of BTF that have been observed at and around the mine site or camp be provided, as well as confirmation that there is a process for recording such information. A copy of the "BTF register" was provided by the Applicant by email on 13 February 2015.
- 4.2 **LA:** In regard to BTF sightings on the site, we are advised, by way of a letter from the Applicant's lawyers (dated 13 February 2015), that "Sightings of the BTF are to be reported to the Environmental Adviser for entry in the register".
- 4.3 **AC:** This requirement is specifically and clearly conveyed during the site induction.
- 4.4 **LA & AC:** The copy of the "BTF register" provides 10 BTF records during the period 15 July 2012 to 18 April 2014. Of these 10 records, 7 are listed as "confirmed sightings".
- 4.5 **LA & AC:** Of the 7 "confirmed sightings", two are regarded as highly significant, being observations of two large flocks, one observation of >150 BTF (17 September 2013) and another flock of 75 BTF (6 April 2013). Both records are attributed to Shaun Lovelock (Adani employee).

⁵ i.e. GHD 2012a, 2012b, 2013, 2014a, and 2014b.

2nd Experts Joint Report - Black-throated Finch (southern)

- 4.6 LA:** It is probable that the record of the flock of >150 BTF, may be part of the records referred to in GHD (2014a), though this is unclear as reported flock size is notably different (about 100 BTF versus >150 BTF). The relevant reference in GHD (2014a), though also referred to in subsequent reporting, is as follows:
- 4.6.1** "... though anecdotally a few weeks prior to our survey, a student (Stanley Tang) from James Cook University, trapped and banded 50 birds, and located a flock of about 100 birds, at 10 Mile Bore. Prior to his successful trapping, he spent a number of days searching for birds and was unable to locate any (S. Lovelock, Adani, pers. comm.)."
- 4.7 AC:** I agree that it is likely these are likely to be the same sighting records, being recorded in separate datasets.
- 4.8 LA:** It is understood that Shaun Lovelock was the Adani chaperon for Stanley Tang during his site survey over the three-day period 17 to 19 April 2013 (*pers comm.* S. Tang, 2015).
- 4.9 LA & AC:** The addition of the abovementioned records has been incorporated into a table which provides a summary of those BTF records which have not formed part of any data analysis within the Applicant's EIS or SEIS reporting on BTF (**Attachment 2**). A summary comparison of the key data parameters of the Applicant's BTF records and those additional to that reporting for the mine site is presented in the following table (**Table 1**).
- 4.10 LA:** That data comparison has highlighted notable differences between the two data sources.

Table 1: Comparison of the key data parameters of existing and additional BTF records

Key BTF Record Parameters	Applicant's BTF Records (within reporting)	Additional BTF Records (not within reporting)
Number of BTF record observations	125	40
Cumulative Total of BTF recorded	1025	1019
Number of flocks >30 BTF recorded	9	7
Number of flocks >50 BTF recorded	0	5
Number of flocks >100 BTF recorded	0	At least 3

- 4.11 AC:** A site register is a valuable tool in collection of incidental records for the site and surrounds. Ideally there is a nominated person, as is the case currently with Mr. Shaun Lovelock being the nominated person. It is important to ensure accurate capture of these records and they are provided to, and included within, each monitoring event reporting and ultimately with the BTF Recovery team. Further, it is important that the analysis of records is thorough and includes identification of potential double ups and follows up with relevant recorders/observers to check sightings details.
- 4.12 AC:** Based on my own site visit and incidental observations within reports to date, it is apparent that incidental sightings provide a valuable source of data.

5.0 BTF SURVEY TEAM PERSONNEL AND BTF SURVEY EXPERIENCE

5.1 LA & AC: In the Commonwealth Government's *Survey guidelines for Australia's threatened birds*, DSEWPaC (2010)⁶, the following is noted:

- a. "It is an expectation of EPBC Act assessors that surveys should be conducted by appropriately experienced observers who have excellent identification skills, including familiarity with species' calls and a good knowledge of bird behaviour, at least in relation to the taxa/taxon being targeted."

5.2 LA & AC: In the Commonwealth Government's *Significant impact guidelines for the endangered black-throated finch*, DEWHA (2009a)⁷, the following is noted:

- a. "It is an expectation of the department that surveys be conducted by appropriately experienced observers who have excellent identification skills, including familiarity with species calls and a good knowledge of avian ecology, at least in relation to the species being targeted."

5.3 LA & AC: As it was not clear to the experts in their reviews, we requested in the 1st JR that information be provided in regard to the following:

- a. "In regards to the BTF surveys and monitoring events, confirmation of personnel and experience in relation to BTF and target surveys for BTF. For each survey event: details of the most senior ecologist actively participating in BTF surveys or monitoring events and a list of all field workers for each survey event, including their experience in surveys for BTF."

5.4 LA & AC: In response to our request in the 1st JR, the Applicant's lawyers (by cover letter dated 13 February 2015), advised that they have provided the following "Details of the staff involved in EIS and SEIS surveys are provided in responses to point 3 above. The Niche report includes a summary of survey personnel."

5.5 LA & AC: We have reviewed a spreadsheet which provides a listing of staff involved in EIS and SEIS surveys. It is our view that the persons overseeing the field work (team leaders) and reporting were of suitable experience.

⁶ This document provides a guide to planning and undertaking surveys on threatened birds listed under the *EPBC Act*, relevant to a referral to the Commonwealth Environment Minister.

⁷ This document provides a guide to planning and undertaking surveys in regard to the Black-throated Finch (southern) as part of a significant impact, relevant to a referral under the *EPBC Act* to the Commonwealth Environment Minister.

6.0 ADDITIONAL VEGETATION ASSESSMENT INFORMATION

- 6.1 LA & AC:** In responding to Issue 20 of the 1st JR (though also others), there was considerable discussion between the experts in regard to the extent to which the methodology applied to assess BTF values of both the mine site and proposed offsets might have suitably incorporated grasses (*Poaceae*), which form a critical component of the feeding habitat for BTF. That discussion was not informed by any detailed data which could have been reviewed to assess claims made in the relevant reports (ELA 2014a & 2014b).
- 6.2 LA & AC:** As a result, the experts requested “Any further botanical or site specific (disturbance area and proposed offset area) assessment of extant habitat values”. In response, two spreadsheets were provided by the Applicant by email on 13 February 2015.
- 6.3 LA:** One spread sheet, entitled BTF_EE data Carmichael Mine (1).xlsx, provides data on the presence/absence of “key grass species”⁸ for 50 Ecological Equivalence Sites (EE Sites) located within the mine site. There is no other data for other grasses (*Poaceae*). Key features of that summary are as follows:
- 6.3.1** Of the 50 EE sites, “key grass species” were recorded at 26 EE sites.
 - 6.3.2** 7 of the 8 “key grass species” were recorded from the EE Sites; i.e. *Enteropogon acicularis*, *Alloteropsis semialata*, *Eragrostis sororia*, *Panicum decompositum*, *Themeda triandra*, *Dichanthium sericeum*, and *Panicum effusum*.
 - 6.3.3** The maximum number of “key grass species” recorded at any EE site was 4 species (1 EE site) and the average number of “key grass species” recorded across the suite of sites was 1 species.
- 6.4 LA:** The second spread sheet, BTF_EE data Moray Downs West.xlsx, provides data in regard to the presence/absence of “key grass species” at 9 sites within the proposed offset areas. It is my understanding that these 9 sites are the only locations within the proposed offset areas where assessments included surveys for the “key grass species”. Surveys at these locations were undertaken to augment the suite of other sites where the Ecological Equivalence Methodology was implemented, though did not include “key grass species” as part of the assessment. Key features of the spreadsheet are as follows:
- 6.4.1** “key grass species” were recorded at all 9 “BTF sites”.
 - 6.4.2** 4 of the 8 “key grass species” were recorded from the “BTF sites”., i.e. *Alloteropsis semialata*, *Eragrostis sororia*, *Panicum decompositum*, and *Themeda triandra*.
 - 6.4.3** The maximum number of “key grass species” recorded at any EE site was 3 species (5 EE sites), with the average number being 2 species.
- 6.5 LA:** In reviewing the abovementioned data, it is noted that there appears to be 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”. As acknowledged by **BW** in the 1st JR (point 6.10.12), there is no explanation given for the inequalities of sampling effort in the ELA documents.

⁸ The term “key grass species” used in both ELA reports refers to eight grass species listed in DEWHA (2009).

- 6.6 LA:** As noted in the 1st JR, there is significantly wider suite of grass species which are known, or strongly suspected, to form part of the diet of the BTF (see discussion for Issue 31, 1st JR). 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. Information drawn from readily available public sources, including the BTF Recovery Team, would have been available to the Applicant's consultants. Had such a process been implemented, that review is likely to have concluded the following, as I have done from implementing such a review:
- 6.6.1** That there is evidence of BTF feeding on 23 different grass species.
 - 6.6.2** That there is evidence of a further 12 grass species may form part of the BTF diet, though as noted by the report authors, observational data was not sufficient to completely confirm inclusion in the BTF diet.
 - 6.6.3** That of the 25 grass species recorded as confirmed or suspected of forming part of the diet of the BTF, approximately 16 species (over 60%) have been recorded on the mine site at survey sites where BTF have been recorded (see **Attachment 2**).
 - 6.6.4** Data on grass species occurrence was drawn from GHD (2013)⁹ as a complete list of grass species for the ELA (2014a and 2014b) ecological equivalence surveys was not available for review.
 - 6.6.5** That the list of the 8 "key grass species" used to inform the Ecological Equivalence assessments for the mine site and proposed offset areas represents, at best, only 50% of the suite of grass species which should have been included in a potential list of "key grass species".
- 6.7 LA:** It can only be concluded 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. Furthermore, I disagree with the reasoning of **BW** in the 1st JR that there is not enough information on the diet of BTF to have warranted a different approach to the assessment of BTF habitat values for the mine site and the proposed offset areas. It is my view that reliance on an "entry-level" enquiry to sourcing information on the BTF diet does not demonstrate rigor in the approach taken. In regard the concerns outlined above, and other concerns highlighted in the 1st JR, it remains my view that the application of the EEM assessment as implemented by ELA (2014a and 2014b) 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.
- 6.8 AC:** Whilst I agree there is additional information available on grass species of value to BTF, the utilisation of the 8 key species as undertaken does not prevent EE methodology from providing a suitable means by which to identify that proposed offset sites have similar values and potential to provide the required offset.
- 6.9 AC:** The more refined assessments, which are condition of approval, require assessment to measure the offset suitability and overall measures are commensurate with the impact.

⁹ Appendix C GHD (2013). – *Complete plant species list for 2-ha bird count areas, indicating mean cover within black-throated finch (southern) present and absent sites.*

- 6.10 BW:** The approach used in the ELA assessments on the Carmichael Mine and Moray Downs West offset site was to use broad groupings of regional ecosystems to quantify BTF habitat. The target grass species information was not collected to provide detailed habitat information but to provide qualitative verification of habitat types. This approach identified 94% of the remnant vegetation on the Carmichael Mine lease as BTF habitat (derived from ELA, 2014a, Table 2, Assessment Units 1-6), which has subsequently been used to determine the minimum offset requirements for the project (see JR section 4).
- 6.11 BW:** I agree with the **LA** assessment that many of the 25 grass species would be present on the mine site. However, these grass species are not evenly distributed across the mine site and therefore an assessment of BTF habitat based on their distribution and abundance is likely to identify less BTF habitat than the approach using the broad vegetation groups in the ELA 2014a assessment. More detailed assessments, as per the draft EA conditions, are required to fully assess the BTF habitat, but I consider that the ELA approach using broad vegetation groups is appropriate as this stage of the assessment process.
- 6.12 BW:** I have agreed in the JR (6.7.6) that more intensive surveys would provide more detailed information on the occurrence and abundance of grass species. From my extensive experience in carrying out fauna habitat surveys I consider more detailed information on the relative abundance of the different grass species and the interaction with other habitat requirements such as water and vegetation structure could also be important determinants of BTF habitat. Therefore, I expressed the opinion in the JR (6.7.6) that more intensive survey of Poaceae may not provide a lot more additional guidance about BTF habitat at this time. I consider that it is appropriate to carry-out such surveys in coordination with the detailed BTF research into nesting and feeding requirements and updates to BTF habitat classification that is required under the EA condition I6 for the project.
- 6.13 MO:** I agree with **BW** with respect to his comment at 6.12 with respect to the output of more intensive surveys, but the critical point remains that a limited subset of the known food plants of Poaceae were used (only 8 species of widespread taxa) and the recently supplied do not provide any additional contextual or spatial data relevant to the food resources of the BTF. This is not a situation such as the intimate link between plants such as *Pararistolochia praevenosa* and *Pararistolochia laheyana* as obligate food plants of the endangered *Ornithoptera richmondia*. BTF feed on common and widespread species of Poaceae (see **Attachment 2**), but within the study area, there are globally significant populations of BTF feeding on these Poaceae and we still have no spatial or autecological data to explain why this should be so. The recently supplied data does not aid in our knowledge of these relationships or provide any adequate spatial or contextual data on the habitat of BTF – the target species in this instance. Without such an understanding, it would be cavalier to remove the known habitat from these sites and threaten the viability and integrity of the known concentrations of BTF within the proposed Carmichael Mine footprint.
- 6.14 MO:** The following comments relate to the data supplied recently for both the proposed Carmichael Mine and the potential offset areas as addressed by **LA** above (comments 6.3 and 6.4 in particular). Given that each additional data gathering event on BTF appears to reinforce the global significance of the BTF population on the proposed Carmichael Mine (1st JR and subsequent data discussed above by **LA**), the import of data on the distribution of data on Poaceae is, in my view, of critical significance to any assessment of the proposed Carmichael Mine on this BTF population. I am unsure of the context of the comments by **AC** below (see comment 7.5) that appear to suggest that the significance of this population is in doubt on the basis of currently unknown sites and/or data and a lack of survey effort in other areas. It is true that the on-going studies for this project continue to reinforce the global

significance of the BTF population in the study area analogous to the situation with *Livistona lanuginosa*.

- 6.15 MO:** I note that **BW** states that the “sampling intensity used in the EE assessments in the ELA 2014a and 2014b meet or exceed the specifications in the DERM (2011) method” (1st JR). It is noted that **BW** is listed as one of the authors of DERM (2011). To rely on an assay of only 8 species out of the many dozens of known food species (23 species of Poaceae recorded from the study area are known or strongly suspected of being a food source for BTF (see **LA** comment 6.6) does not provide adequate data, in my view, to assess the actual use of either the proposed Carmichael Mine site or any potential use of the proposed offset area by the acknowledged globally significant population of BTF increasingly confirmed to be utilising the site. To rely on a sample size of only 25 ha of the proposed Carmichael Mine site for this globally significant population of BTF does not appear to provide any meaningful data on why this area sustains the greatest known concentrations of BTF on the planet. Still unanswered, from my perspective, is the landscape pattern of the relevant Poaceae that accounts for the known globally significant population of BTF at this site.
- 6.16 BW:** I am one of the authors of the BioCondition assessment method and participated in the development of the EE Method (DERM 2011) which relies to a large extent on the BioCondition method. Under the policies operating at the time, the Queensland Government required that the EE method be used to compare impact areas with offset sites. The EE method is similar to methods used in other parts of Australia for the comparison of impacts and offsets sites. The EE method includes specifications that each assessment unit be sampled by up to 5 sites (JR, 6.10.12). The sampling intensity on Carmichael Mine (ELA 2014a) was higher than for Moray Downs West (ELA 2014b) and higher than the recommendations in the EE method. Sampling sites were placed in representative areas to ensure the range of variation in habitat observed in the field was sampled in both studies. This is standard practice for these types of assessments and the sampling intensity in both studies was appropriate for the type and relatively uniform nature of the vegetation in this part of Queensland.
- 6.17 MO:** As an example of my concerns regarding the sampling intensity issue, the low sampling intensity is highlighted by utilising Broad Vegetation Groups (BVGs) as surrogates for biodiversity parameters with BVGs 17a and 17b (EE13-EE21) having a sample area of 4.5 ha for an impact area of 8,811 ha (ELA, 2014a). **MO** still considers BVGs or Regional Ecosystems (Res) to be poor surrogates, particularly for parameters such as the spatial distribution of Poaceae in JR1 as affirmed by the recently supplied data. This recent provision of the data on Poaceae from the EE sites further exemplifies the concerns of **MO** from JR1. Reliance on presence/absence data from such a small sample area with no correlation studies between BTF usage of even the restricted range of Poaceae reported in ELA 2014a and 2014b provides little comfort that the statutory agencies had adequate or appropriate data to assess the impact of the proposed Carmichael Mine or the efficacy of the potential offset areas to provide viable food resources for this globally significant population of BTF.
- 6.18 MO:** Whilst the recently provided data provide evidence of the presence (of perhaps only a single tussock of any of the target species) of the target 8 species, this does not provide any more validation of either the EE methodology or the utility of the offset areas to provide a food resource to the known globally significant population of BTF in these areas should for some unknown and unexplained reason they should move there when their known habitat is destroyed beneath the footprint of the proposed Carmichael Mine. **MO** does not expect any greater assurance could be afforded these matters if the data underlying other numerical indices such as Bio-Condition (GHD, 2013b) were available to assess in a similar fashion to that undertaken currently on the recently supplied data. Thus, the supplied data confirms that there remains an inadequate database available to assess the

2nd Experts Joint Report - Black-throated Finch (southern)

spatial patterning of the critical Poaceae across either the proposed Carmichael Mine or the potential offset areas.

- 6.19 MO:** I do not consider it to be useful to rely on a lack of knowledge (**BW** (1st JR) – “I consider a more intensive survey of Poaceae species may not provide a lot more additional guidance about BTF habitat at this time”) and this is the reason for the very real need to invoke the *Precautionary Principle* in this instance as espoused by **MO** in the 1st JR – “Given the current lack of a detailed understanding of the patterning of these Poaceae and the relationship to BTF across the study area, the *Precautionary Principle* must be invoked given the global significance of the BTF population across the study area.”
- 6.20 AC:** It is my view the conditions include a precautionary approach. That is the ongoing detailed assessments must demonstrate appropriate commensurate offsetting for the project to progress. The conditions require demonstration, and includes independent reviews, of appropriate mitigation being achieved.

7.0 2015 BTF RECOVERY TEAM REPORT

- 7.1 **LA & AC:** In the 1st JR, the experts were in agreement that none of the Applicant's reporting provided a detailed assessment of the site's BTF population or BTF habitat values in a regional context (see discussion addressing Issue No. 20). In the 1st JR, there was also criticism centered around the apparent failure of the Applicant's reporting to review a variety of publicly (readily) available recourses or any apparent meaningful attempts to seek or assess data from researchers in order to assist in addressing key issues such as the contextualisation of site's BTF population significance and information to assist in assessing and interpreting habitat characteristics and values (see: first JR 6.7 discussion addressing Issue No. 20).
- 7.2 **LA:** In order to assist in addressing the expert's concerns, one of us (**LA**), has sought data and information from one of those publicly accessible recourses, the Black-throated Finch Recovery Team (BTFRT). A report has been prepared by the BTFRT (BTFRT 2015; **Attachment 1**). The BTFRT is comprised of scientists and those involved in research in a variety of aspects of BTF biology. The BTFRT maintains a database of BTF records. That database contains nearly 3,000 records and spans the period 1800 to present (BTFRT 2015).
- 7.3 **LA & AC:** The BTFRT (2015) report provides data to assist in contextualising the BTF population on the mine site. Furthermore, the BTFRT report provides data which highlights the comparative significance of the BTF population on the mine site and the Townsville population – previously considered to be the largest and most significant population of BTF.
- 7.4 **LA & AC:** A review of the data and interpretation from the BTFRT (2015) report highlights the following contrasts:
- a. The largest flock size recorded for the Townsville population was 150 BTF, in 1996.
 - i. **cf.** the largest flock size recorded for the mine site is >400 BTF, in 2013.
 - b. There are no records of flocks of >100 BTF recorded for the Townsville population in the past 5 years.
 - i. **cf.** there are at least 3 separate records of flocks of >100 BTF on the mine site since 2013.
 - c. There are only 4 records flocks of >100 BTF ever recorded for the Townsville population¹⁰.
 - i. **cf.** for the mine site, there are at least 3 separate records of flocks of >100 BTF since 2013.
 - d. There is only 1 record of a flock >30 BTF recorded for the Townsville population in the past 5 years.
 - i. **cf. for the mine site, there are 16 records of flocks of >30 BTF in the past 5 years¹¹.**
 - e. "The BTFRT no longer assumes the Townsville population to be the largest BTF population. The largest numbers are now thought to be in central Queensland, in the eastern Desert Uplands Bioregion."
 - f. "... that the population in the eastern Desert Uplands Bioregion in the vicinity of Moray Downs is likely to be the most significant and largest population of BTF remaining".

¹⁰ Being 150 in 1996, 134 in 2004, 110 in 2005, and 104 in 2005.

¹¹ **Applicant's reports: 9 records** of >30 BTF flock size, comprising 1 record (April/May 2011), 1 record (November 2011), record (May 2012), 3 records (May 2013), 1 record (October 2013), and 2 records (December 2014). **Additional confirmed reports: 7 records** of >30 BTF flock size, comprising 2 record (July 2012), 1 record (April 2013), 2 records (September 2013), and 2 records (December 2014).

- 7.5 AC:** Much of the above information is only as a result of the subject application and associated assessments. It is not unreasonable to assume that with more detailed work in the wider landscape, similar habitat values (either existing or as ultimately required by conditions), that similar numbers of BTF could also be recorded. It is unlikely that as a result of the proposed actions in regard to the BTF population persistence in and around the eastern Desert Uplands Bioregion, the species and population future is restricted to or obligate upon the disturbance area.
- 7.6 LA:** I agree with **AC** that BTF are not restricted to the subject site or immediate surrounds. I disagree with **AC's** suggestion that with more detailed work in the wider landscape would result in similar numbers of BTF being recorded. I am aware of an expanding body of information which indicates that there is no evidence of BTF occurrence elsewhere which compares with the significance of the BTF population on the mine site.
- 7.7 LA:** For some time, the wider landscape has been of considerable interest to researchers and birdwatchers alike, and has been subject to various EIS surveys by ecological consultants. Despite this extensive work to date, there have been no findings which indicate anything close to the abundance of BTF detected on the mine site. Some examples of survey effort and findings within the wider surrounding landscape, and relevant to the mine site, include:
- 7.7.1** Applicant's own target surveys on adjoining Doongmabulla station and Mellaluka Springs stations in May 2012¹² and during a 12 survey period in March/April 2013¹³ - No BTF recorded¹⁴.
- 7.7.2** Applicant's own target surveys to the east of the mine site for offsite infrastructure assessment (GHD 2013)¹⁵ - included 44 hours of waterbody watches, 2,016 hours of remote camera trap surveys, 15 hours of bird surveys and 32 km of driving transects. Only 1 BTF was recorded.
- 7.7.3** Applicant's own target surveys to the west of the mine site for a quarry (CDM Smith 2013)¹⁶ – included 10 hours of terrestrial surveys over several days, 6 hours of surveys of water bodies, and 8 days of remote camera trap surveys during March and July 2013. No BTF recorded.
- 7.7.4** BTF researcher Stanley Tang spent more than a week in September 2013 searching for BTF on stations to the near north and west of the mine site, though no BTF were recorded (*pers comm.* S. Tang, 2015). That work was undertaken immediately prior to his 3-day survey on the mine site, where he did record BTF and in significant abundance, e.g. a flock of >400 BTF (the largest BTF flock ever recorded).
- 7.7.5** BTF target surveys associated with significant infrastructure projects within Galilee Basin, e.g. the 2010 South Galilee Coal Project EIS, 2011 Alpha Coal and Rail EIS, 2012 Kevin's Corner Coal EIS, and the 2012 Galilee Coal and Rail Project. No BTF recorded.

¹² GHD (2012). Doongmabulla Springs Technical Report. Report for Carmichael Coal Mine and Rail Project: Mine Technical Report.

¹³ GHD (2013). Report for Doongmabulla and Mellaluka Springs. Carmichael Coal Mine and Rail Project SEIS

¹⁴ GHD (2013) "... this species was not observed during either Doongmabulla wetland field survey (2012 and 2013). Large flocks of black-throated finches have been recorded on the Project (Mine) Area nearby (GHD, 2012g)."

¹⁵ GHD (2013). Report for Offsite Infrastructure Ecological Assessment. Carmichael Coal Mine and Rail Project SEIS.

¹⁶ CDM Smith (2013). Environment Protection and Biodiversity Conservation Act 1999: Adani Quarries Environmental Impact Review. Adani Mining Pty Ltd.

2nd Experts Joint Report - Black-throated Finch (southern)

- 7.7.6** I have implemented at least 10 days of target BTF dry and wet season surveys in the northern part of the Galilee Basin (2011-2014). This work has occurred on land to the west, south-west, north-west, south, and east of the Moray Downs property and formed part of a total survey effort of 14 survey-person days. I have recorded BTF and a review of those records shows that average flock size was 2-5 BTF, with a flock of 16 BTF being the largest recorded and observed on land immediately adjacent and to the west of the mine site (October 2011).
- 7.7.7** I have implemented at least 28 days of both dry and wet season target surveys for BTF within the southern part of the Galilee Basin (2011-2012) as part of a total program comprising 62 survey-person days. No BTF recorded.
- 7.7.8** Birdlife Australia (April 2012)¹⁷ – 16 highly experienced bird watchers over a one-month period implemented target surveys throughout the Galilee Basin, including the following stations of geographic relevance to the mine site – Moonoomoo, Doongmabulla, Yarrowmere, Mellaluka, Laglan, Bulliwallah, and around Lake Buchanan. BTF were recorded at 5 sites on 3 properties – Doongmabulla, Yarrowmere and Moonoomoo. One flock of 10 BTF were recorded (adjacent to the mine site) with the remaining sightings of 1 to 2 BTF elsewhere.
- 7.7.9** BTF Recovery Team database results for a search area within 100km of the mine site. All records of >15 BTF derive from the mine site. There is one record of a flock of 13 BTF within the surrounding area, with the majority of records being less than 5 BTF (BTFRT 2015 report; **Attachment 3**).
- 7.7.10** BTF Recovery Team members (2011 onwards) - various surveys, with results of typically of small of up to four BTF, though no large flocks (*pers comm.* E. Vanderduys, BTFRT, 2015).
- 7.7.11** Protect the Bush Alliance (October 2014)¹⁸ – target survey implemented on Mellaluka station by four highly experienced bird watchers over a five-day period. No BTF recorded.
- 7.8 MO:** It is my understanding that analogous detailed studies that conform to the prescribed survey methodologies have been conducted elsewhere in the Galilee Basin (see LA's summary in 7.7) and across the Desert Uplands Bioregion and no analogous concentrations of BTF have been found in those studies. Further, it is my understanding that there is a correlation between the presence of BTF and the following 3 factors:
- Water supply year round (artificial/natural);
 - Woody Habitat for perching and nesting: and,
 - Selected Poaceae that are known food sources for BTF.
- In my view, it is the correlation between these factors that is at the crux of the disagreements in this and the 1st BTF JER.
- 7.9 MO:** It is known that the aforementioned 3 factors are present across the landscape in various permutations and combinations. It is also known that at some, but not all, sites with these 3 factors present, there are known concentrations of BTF that form the globally significant population at the heart of this matter. What is not known is why these concentrations of BTF have not been recorded at seemingly similar sites with analogous habitat factors.

¹⁷ Birdlife Southern Queensland (2012). Galilee Basin Survey 1-30/4/12 Report.

¹⁸ Gillman, S. and Pritchard, T. (2013). Mellaluka Survey Report 2014. Protect the Bush Alliance, Brisbane.

- 7.10 LA:** The data summary in 7.4 clearly supports the view that the habitats of the mine site support a nationally significant BTF population, and one of the largest known BTF populations. Apart from seeking relevant data from the BTF Recovery Team, I have also sought an assessment from Birdlife Australia. In their report dated 28 January 2015¹⁹, Birdlife Australia stated the following:
- a. “The Moray Downs property supports Australia’s largest known population of the Southern Black-throated Finch.”
 - b. “Based on the number of BTF recorded at the site, BirdLife Australia considers the Moray Downs Property one of the most important sites for this species in Australia.”
- 7.11 AC:** It is clearly recognised and previously agreed that the BTF on and around the subject are a significant population. The approval conditions have resulted from both state and commonwealth regulators consideration of the potential impacts.
- 7.12 LA:** From the BTFRT (2015) report, I also note their comments in regard the diet of the BTF, Buffel grass management, and comments of the suitability of the Ecological Equivalence Methodology in regards to assessing BTF habitat values.
- 7.13 MO:** In particular, the recently supplied data does not provide any evidence of the distribution of *Cenchrus ciliaris* which is seen to be of importance for BTF autecology given its acknowledged poor food value to BTF (1st JR). **MO** notes that data on neither the distribution nor the management of *Cenchrus ciliaris* across either the proposed Carmichael Mine or the potential offset areas has been provided amongst the recently supplied data set despite this being a species of significance to BTF and the offset issue in particular. **MO** notes the comment in the BTFRT report (2015) “The BTF is not aware of any successful control programs for *Cenchrus ciliaris*, except for small scale controls using chemical and physical controls (e.g. Desert Park, Alice Springs; WA islands), but no large scale successes are known.”
- 7.14 BW:** There are few examples of the successful control of already established *Cenchrus ciliaris*. However, there is scope for management of this species, particularly on the sandy infertile soils associated with the BTF habitat on Carmichael Mine and Moray Downs West. *Cenchrus ciliaris* does not grow as well on these soils compared to higher fertility clay soils. Increased grazing pressure (Eyre et al. 2003, Franks, 2002) and hot fires (Butler and Fairfax (2003) have been associated with increased *Cenchrus ciliaris* abundance. Therefore management of these factors could lead to a reduction in *Cenchrus ciliaris* abundance. I have seen areas of dense *Cenchrus ciliaris* associated with *Eucalyptus melanophloia* woodlands on sandy infertile soils decrease in abundance and native species richness and abundance increase following decreased/removal of grazing pressure from cattle. In addition, bare ground is known to promote the establishment of *Cenchrus ciliaris* (McIvor, 2003). Therefore reducing grazing pressure, which will reduce the amount of bare ground, is likely to reduce the spread of *Cenchrus ciliaris* compared to a “business as usual” scenario at the offset site. The Alice Springs and WA examples of *Cenchrus ciliaris* control mentioned by **MO** above include manual/herbicide control and reseeding. These methods might be applicable for particular high value offset sites although may not be cost effective across wider areas.
- 7.15 MO:** I do not share the optimism of **BW** that future research **may** provide an answer to the management of *Cenchrus ciliaris* either within the footprint of the proposed Carmichael Mine or across the potential offset areas. I agree with **BW** that the examples proffered in the BTFRT report

¹⁹ A copy of BirdLife Australia report has been provided to AC (20 February 2015).

(2015) would not provide a cost effective management tool in a landscape where the site cannot be isolated from the continual ingress of dispersed seeds of *Cenchrus ciliaris*, the most widespread and abundant introduced plant found across Australia.

- 7.16 AC:** In respect to the sites BTF population and its context there is little doubt that local landscape holds a significant population. It should be noted that this information is only known as a result of the studies undertaken to date.
- 7.17 AC:** The proposed establishment of a BTF Bioregional Management Plan will further describe the characteristics of the regional population and identify known/potentially suitable habitat and where information is required. It should be noted that there has been a considerably higher level of assessment within the subject area and that there is a lack of such information in other areas across the region to allow accurate comparative assessment on a regional basis.
- 7.18 AC:** In addition, as the project progresses there is a requirement to undertake more detailed and specific assessment of the habitat values and to have these assessments reviewed (See: Coordinator Generals report conditions I2 to I7) within the disturbance area and offsets to accurately measure habitat values lost and gained.
- 7.19 AC:** The approval conditions and proposed offsets to date will result in the protection and long term management of suitable habitats for BTF in the local landscape. The ongoing protecting and management, including restoration actions, would otherwise be unrequired, and thus there would be no certainty the current BTF habitat values on the subject lands (project area and offset sites) would remain, due to ongoing pastoral activities and other recognised threats continuing unabated.
- 7.20 LA:** I understand **AC's** position outlined in 7.18, which has been expressed by **AC** in a variety of ways in the 1st JR. I reiterate that as I appreciate, project approvals have been granted on the understanding that the accepted deficiencies in the BTF survey and habitat assessments²⁰, the assessment of impact significance, and the utility of proposed offsets can all be improved post-approval, as a result of implementing the relevant approval conditions, to the extent that both project impacts and impact mitigation strategies can be ultimately deemed suitable/acceptable. As there appears to be no impact thresholds nominated by the relevant approval conditions, it seems that the only likely primary response to new knowledge which describes an increase in impact significance is by way of providing additional offsets.
- 7.21 LA:** As a result of my reviews of data for this 2nd JR, and as outlined in the 1st JR, it is certainly not clear to me that a significant component of the currently proposed offset areas provide habitat suitable to BTF or represent an acceptable discharge of the potential offset obligation, commensurate with the potential significance of the impact to this nationally significant BTF population. Furthermore, there is no existing information to demonstrate that a potential increase in the offsets required, could be found within the area surrounding the mine site.
- 7.22 AC:** The information on BTF and their habitat partitioning gained to date and ultimately obtained from the further assessments required by approval conditions, will result in a significant increase in understanding of BTF and their habitat requirements.

²⁰ The Coordinator-General's report was highly critical of all aspects of that BTF survey program, concluding that as a result of the identified deficiencies, the abundance of BTF had been grossly understated and the description of BTF habitat was incorrect.

7.23 MO: The statements above by **AC** confirm that the “Precautionary Principle” should be invoked until such times as there is greater certainty and understanding of the unique properties of this area supporting this globally significant population of BTF. **MO** is unaware of any other records even remotely similar to those from the study area, but concedes that **AC** and **LA** have greater expertise in that area. **MO** does not share the optimism of **AC** that there is adequate understanding of why the BTF populations in the study area utilise the areas (particularly the Poaceae food sources) they are currently known from or would move into offset areas when these areas are lost beneath the proposed Carmichael Mine footprint. Specifically, the recently supplied data (and that supplied to date) do not provide an adequate database to interpret the spatial distribution of the critical Poaceae or the relationships between the known concentrations of BTF and those Poaceae resources across the study area.

8.0 POTENTIAL CHANGES TO THE MINE LAYOUT

- 8.1 AC:** In relation to the proposed change in mine design referred to in paragraphs 3.2 to 3.4 of the 1st JR, we requested further information on any proposed changes.
- 8.2 LA:** It should be noted that “proposed changes to the mine layout” were alluded to in the 1st JR by **AC**, though no detail was divulged.
- 8.3 AC:** It is understood that Adani is pursuing approval of the Carmichael Coal Mine as described during the Environmental Impact Statement (EIS) process.
- 8.4 AC:** As part of that ongoing refinement and development of detailed engineering design, some modifications to the initial development phase of the Mine layout are being considered.
- 8.5 AC:** we were provided with 3 figures which showed the original layout, the revised layout, and a separate figure which highlighted some changes in disturbance footprint.
- 8.6 AC:** We are uncertain as to whether or not the proposed changes have been notified formally.
- 8.7 LA:** As I am aware, there is no formal notification of proposed changes for the experts to properly consider. Furthermore, I am not aware of any requests to other discipline experts to jointly assess any formal or informal changes to the mine layout as proposed by the Applicant.
- 8.8 MO:** I share the view of **LA** espoused in 8.7.
- 8.9 AC;** The modified layout would include:
- I. a new location for Underground Mine 1 (Pit A) which may be moved approximately two kilometres southeast towards and underneath the open cut Pit B;
 - II. the relocation of the mine infrastructure area located east of Underground Mine 1 to be within the footprint of Pit B. Open cut Pit B would remain in the same location as set out in the Supplementary EIS (SEIS) mine layout; and
 - III. the reduction of top soil storage areas located in the north east and east of the SEIS Mine layout, such that they would be accommodated within a spoil storage area located between Pit B and C.
- 8.10 AC:** as noted in the first JR that should a northern portion of the lease may have a reduced footprint size and an increased area of underground mining where previously open cut mining was intended. This change would reduce the potential direct and indirect impacts on the BTF habitats.

8.11 AC: Given the northern portion is recognised as the area holding the higher value habitats this change, if undertaken, is viewed as a reduction in potential impacts on high value BTF habitats.

9.0 CLOSING COMMENTS AND RECOMMENDATIONS

9.1 MO: I recommend that a research project be funded to determine the correlation between water source, woody habitat and Poaceae food resources across both the proposed Carmichael Mine and the potential offset areas to determine the inter-relationships between these factors. It is considered that only when the outcomes of this research project are known could the existing data gaps be filled and consequently, it would provide some degree of confidence that there is an adequate understanding of the autecology of BTF across the study area. Further, it is considered that then, and only then, could the utility of the potential offset areas be appropriately assessed to provide the habitat required for the globally significant population of BTF that is co-incident with the footprint of the proposed Carmichael Mine. I defer to the expertise of **AC** and **LA** regarding the question of the movement (natural or artificial) from the mine footprint into the potential offset areas. My understanding is that no concentrations of BTF have been recorded from the potential offset areas to date that are analogous to the concentrations observed within the footprint of the proposed Carmichael Mine.

9.2 AC: Considerable portions of the disturbance footprint contain high value habitats for BTF, as does the surrounding landscape including the proposed offsets. The provision and protection of the considerable offset values currently mandatory on the approval provides a long term net benefit in retained and secure habitat values.

9.3 LA: Evidence within this 2nd JR provides further confirmation of the national significance of the BTF population on the mine site. Furthermore, that the abundance of BTF on the mine site strongly contrasts with evidence of BTF abundance elsewhere in the wider landscape. This 2nd JR also provides further evidence of the fundamental deficiencies in the Applicant's BTF survey and habitat assessment reports. On the evidence within this 2nd JR, and in conjunction with evidence provided in the 1st JR, I have formed the view that there can be no confidence that a potentially significant impact to a nationally significant BTF population can be averted or suitably mitigated were the proposed mine to proceed on the basis of the current approval and suite of conditions. In both this Joint Report and the 1st JR, my counterpart and I are in firm agreement in regards to many issues, not the least, that there is a nationally significant BTF population on the mine site, and that the Applicant's survey and monitoring program is flawed. Beyond those strong points of agreement, our positions diverge as I do not share the same enthusiasm or confidence that **AC** and **BW** maintain in regards to the suitability of the proposed impact mitigation strategy, which is largely underpinned by the proposed offsets. Here the fundamental concerns I have are: a) there are no impact thresholds nominated by the relevant approval conditions to assess the performance of the impact mitigation strategy, and b) that there is insufficient evidence to assert that the proposed offsets are suitable.

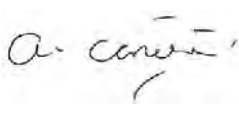

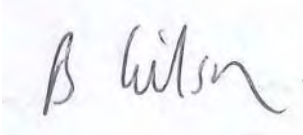

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Attachments

- Attachment 1:** Summary of Black-throated Finch Records not included within the Applicant's Reporting
- Attachment 2:** Grass Species Known or Suspected within the Diet of Black-throated Finch (southern) - A Data Comparison prepared by Lindsay Agnew
- Attachment 3:** Black-throated Finch Recovery Team Report

Date of Agreement: 27th February 2015

	
Adrian Caneris	Lindsay Agnew
	
Bruce Wilson	Mike Olsen

Attachment 1 - 2nd BTF Joint Report

Summary of Black-throated Finch Records not included within the Applicant's Reporting

Note: Records of SL (>150 BTF; 17/09/2013) and ST (100 BTF; 18/09/2013) are considered to represent part of other reported records and have not been included in the summary data analysis.

Location	Date	Observer	Adults	1	2-4	5-9	10-19	20-29	30+	Records	Sites	Number of BTF Observations	40
Intersection of 10 mile Rd & 40 line	15/07/2012	SL	12				1			1	1	Number of BTF Record Sites	33
10 mile Rd near 70 line	25/09/2012	SL	10				1			1	1	Cumulative # of BTF recorded	1019
10 mile bore	6/04/2013	SL	75						1	1	1	BTF Flock Size - Minimum	1
11 mile bore	11/07/2013	SL	15				1			1		BTF Flock Size - Maximum	400
10 mile bore waterhole	25/07/2013	SL	8			1				1	1	BTF Flock Size - Average	40
ten mile bore and water hole	17/09/2013	SL	150						1	1		BTF Flock Size - Median	9
middle Murphy bore	18/04/2014	SL	1	1						1	1	Number of records of 1 BTF	3
10 mile bore & surrounds	18/09/2013	ST	400						1	1	1	Number of records of 2-4 BTF	11
10 mile bore & surrounds	18/09/2013	ST	100						1	1		Number of records of 5-9 BTF	7
10 mile bore & surrounds	19/09/2013	ST	40						1	1		Number of records of 10-19 BTF	8
Site 1 - 1st JR	03/12/2014	AC	3		1					1	1	Number of records of 20-29 BTF	3
Site 2 - 1st JR	03/12/2014	AC	3		1					1	1	Number of records of >30 BTF	7
Site 3 - 1st JR	04/12/2014	AC	3		1					1	1		
Site 4 - 1st JR	04/12/2014	AC	13				1			1	1		
Site 5 - 1st JR	04/12/2014	AC	17				1			1	1		
Site 3 - 1st JR	05/12/2014	AC	36						1	1			
Site 2 - 1st JR	05/12/2014	AC	22					1		1			
Site 6 - 1st JR	06/12/2014	AC	120						1	1	1		
Site 7 - 1st JR	07/12/2014	AC	3		1					1	1		
Site 7 - 1st JR	08/12/2014	AC	8			1				1			
Site 8 - 1st JR	17/04/2012	LA	9			1				1	1		
Site 9 - 1st JR	17/04/2012	LA	2		1					1	1		
Site 10 - 1st JR	24/11/2014	LA	2		1					1	1		
Site 11 - 1st JR	24/11/2014	LA	25					1		1	1		
Site 12 - 1st JR	24/11/2014	LA	6			1				1	1		
Site 13 - 1st JR	24/11/2014	LA	1	1						1	1		
Site 15 - 1st JR	25/11/2014	LA	9			1				1	1		
Site 16 - 1st JR	25/11/2014	LA	2		1					1	1		
	09/06/2012	E&HP	10				1			1	1		
	10/06/2012	E&HP	2		1					1	1		
	12/06/2012	E&HP	8			1				1	1		
	14/06/2012	E&HP	6			1				1	1		
	18/06/2012	E&HP	1	1						1	1		
	20/06/2012	E&HP	10				1			1	1		
	29/06/2012	E&HP	2		1					1	1		
	26/06/2012	E&HP	10				1			1	1		
	30/06/2012	E&HP	1		1					1	1		
	02/07/2012	E&HP	50						1	1	1		
	05/07/2112	E&HP	50							1	1		
	05/07/2112	E&HP	4		1					1	1		
survey site BTF 1	9/09/2014	ELA	20					1					

Attachment 2 - 2nd BTF Joint Report

Grass Species Known or Suspected within the Diet of Black-throated Finch (southern) A Data Comparison prepared by Lindsay Agnew

Table Notes:

Column 1 - **Grey Literature** (Reported Observations – Confirmed genera and species)

Column 2 - **Grey Literature** (Reported Observations – Confirmed species only)

Column 3 - **Grey Literature** (Reported Observations - Suspected by researcher/report author, though not confirmed)

Column 4 - **Carmichael Mine** (Grass species recorded at survey sites where BTF recorded; APP C, GHD 2013)

Column 5 - **Carmichael Mine** (“Key Grass Species” used to augment the Ecological Equivalence Methodology; species listed in DEWHA (2009))

* - Introduced grass species

Species highlighted in **bold** – Grass species common to Columns 2/3 and 4, i.e. grass species reported in literature which were also recorded on the mine at survey sites where BTF were recorded.

Poaceae	Column 1	Column 2	Column 3	Column 4	Column 5
Alloteropsis semialata	1	1		1	1
<i>Alloteropsis cimicina</i>	1	1			
<i>Aristida calycina</i> var. <i>calycina</i>				1	
<i>Aristida contorta</i>				1	
<i>Aristida holathera</i>				1	
<i>Aristida hygrometrica</i>				1	
<i>Aristida ingrata</i>				1	
<i>Aristida jerichoensis</i>				1	
<i>Aristida latifolia</i>				1	
<i>Aristida queenslandica</i>				1	
<i>Aristida</i> sp.					
<i>Astrebla pectinata</i>				1	
Bothriochloa decipiens	1	1		1	
<i>Bothriochloa ewartiana</i>				1	
<i>Bothriochloa pertusa</i> *				1	
<i>Cenchrus ciliaris</i> *				1	
<i>Chloris inflata</i> *	1	1			
<i>Chloris</i> spp.	1				
Chrysopogon fallax			1	1	
<i>Cleistochloa subjuncea</i>				1	
<i>Cymbopogon obtectus</i>				1	
Dactyloctenium radulans	1	1		1	
<i>Dactyloctenium</i> sp.	1				
Dicanthium sericeum	1	1		1	1
<i>Digitaria ammophila</i>				1	
Digitaria brownii			1	1	
<i>Digitaria ciliaris</i> *	1	1			
Digitaria divaricatissima			1	1	
<i>Digitaria</i> sp.	1				
<i>Echinochloa colona</i> *	1	1			
<i>Echinochloa crus-galli</i> *				1	
<i>Echinopogon</i> sp.	1				
<i>Eleusine indica</i> *	1	1			
<i>Enneapogon polyphyllus</i>				1	
<i>Enneapogon robustissimus</i>				1	
<i>Enteropogon acicularis</i>	1	1			1
Enteropogon ramosus			1	1	
<i>Eragrostis basedowii</i>	1	1			
<i>Eragrostis cumingii</i>				1	

Poaceae	Column 1	Column 2	Column 3	Column 4	Column 5
<i>Eragrostis lacunaria</i>				1	
<i>Eragrostis leptostachya</i>				1	
<i>Eragrostis sororia</i>	1	1		1	1
<i>Eragrostis sp.</i>	1				
<i>Eragrostis speciosa</i>				1	
<i>Eragrostis tenuifolia*</i>				1	
<i>Eremochloa bimaculata</i>	1	1			
<i>Eremochloa sp.</i>	1				
<i>Eriachne mucronata</i>				1	
<i>Eriachne obtusa</i>				1	
<i>Eulalia aurea</i>			1	1	
<i>Heteropogon contortus</i>			1	1	
<i>Iseilema vaginiflorum</i>				1	
<i>Melinis repens</i>	1	1		1	
<i>Oxychloris scariosa</i>			1	1	
<i>Panicum decompositum</i>	1	1		1	1
<i>Panicum effusum</i>	1	1			1
<i>Panicum sp.</i>	1				
<i>Paspalidium rara</i>			1		
<i>Paspalidium sp.</i>	1				
<i>Paspalum sp.</i>	1	1			
<i>Sarga plumosum</i>				1	
<i>Schizachyrium fragile</i>			1	1	
<i>Schizachyrium spp.</i>	1				
<i>Sehima nervosum</i>				1	
<i>Setaria apiculata</i>	1	1			
<i>Setaria sp.</i>	1				
<i>Setaria surgens</i>	1	1			
<i>Sorghum spp.</i>	1	1			
<i>Sporobolus caroli</i>	1	1			
<i>Sporobolus diander</i>			1		
<i>Sporobolus indicus</i>			1		
<i>Themeda avenacea</i>					
<i>Themeda triandra</i>	1	1		1	1
<i>Triodia pungens</i>			1	1	
<i>Urochloa mosambicensis*</i>	1	1			1
Totals	33	23	12	45	8

Attachment 3 - 2nd BTF Joint Report



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Black-throated Finch Recovery Team
P.O. Box 1168
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27 January 2015

Lindsay Agnew
Austecology
5 Davina Street, Tarragindi, Q, 4121
By email (lindsay@austecology.com.au)

Re Request for information by Lindsay Agnew, 21 January 2015

Herein, we provide responses to your letter request, dated 21 January 2015.

The Black-throated Finch Recovery Team (BTFRT) maintains a database of Black-throated finch (BTF) records. The database contains 2907 lines of data ("records"), with abundances ranging from 0 (= an unspecified number of birds) to 400. The database spans the period 1800 – present, with 69 records having no timeframe given (i.e. the year of the record is not known). Accuracy of many of the earlier records is difficult to assess, with the earliest record that has an associated abundance being 1976.

1. Characteristics of the Townsville BTF population

1.1. What is the largest flock size (and record date) recorded for the Townsville population.

I clipped BTF records by the Townsville Coast Plains IBRA subregion for this query.

There are three flocks containing over 100 individuals, 134 (Oct 2004), 110 (Oct 2005), and 104 (Sept 2005) respectively.

1.2. How many records (and individual sites) are there for flocks of 100 or more BTF in the past 5 years for the Townsville population.

Area queried is the same as for 1.1.

None.

1.3. Apart from Mitchell's 1996 observation of 150 BTF, is the BTFRT aware of any other records of flocks greater than 100 BTF for the Townsville population.

See 1.1.

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1.4. How many records (and individual sites) are there for flocks of over 30 or more BTF in the past 5 years for the Townsville population.

Area queried is the same as for 1.1. Years queried were 2010, 2011, 2012, 2013, 2014, 2015.

There is one record over 30 individuals at one time and place. The record was of 43 birds in Oct 2013.

In addition to this, Juliana Rechetelo has collected data in the Townsville region for the last 3 years for her PhD thesis, and has recorded flocks of over 30 individuals on several occasions (in one location) – likely including many of the same individuals repeatedly observed. These records are not yet in the BTFRT database.

1.5. The 2010 Action Plan provided an estimate of no more than 600 "mature" individuals for the Townsville population. What is the BTFRT's current estimate for the Townsville population.

The 600 figure was a very rough guess and is unsubstantiated. The general feeling among BTFRT members is that the population is likely less than this figure.

2. 2010 action plan for Australian Birds

2.1. The 2010 Action Plan noted that the Townsville population is "assumed" to be the largest of three BTF subpopulations. Given that the assumption is approximately 5-years old, and further information has been collected throughout the distribution of the BTF, does the BTFRT maintain that the Townsville population remains the largest BTF subpopulation.

The BTFRT no longer assumes the Townsville population to be the largest BTF population. The largest numbers are now thought to be in central Queensland, in the eastern Desert Uplands Bioregion.

2.2. The 2010 Action Plan also characterised two other subpopulations, that of the Ingham region and the third subpopulation associated with "scattered sites in central-eastern Queensland.

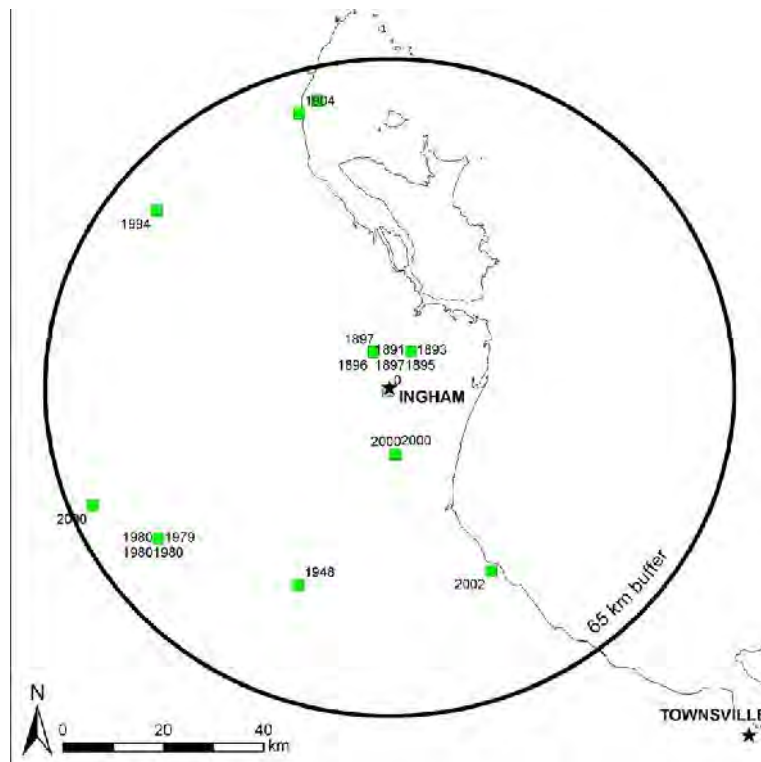
2.2.1. Can the BTFRT provide an estimate of the BTF subpopulation of the Ingham region.

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The BTFRT has insufficient data on BTF from the Ingham region to provide a subpopulation estimate for that region. In the BTFRT database there is a total of 23 records within a 65 km radius (chosen so as not to collect Townsville population records) of Ingham town centre, all of unspecified number, some suspected of being low spatial accuracy, and some probable duplicates.



2.2.2. Can the BTRF provide a view on the status of the BTF subpopulation of the Ingham region.

In view of the information given above, only broad inferences may be made about any BTF population in the Ingham region. It seems unlikely that it forms a significant and/or stable population, but without further records and investigation this assumption is only weakly supported by evidence.

2.3. The 2010 Action Plan, in referring to the third subpopulation, noted the following –
“Poorly known subpopulations in central-eastern Qld are assumed to have no more than 400 mature individuals.”

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2.3.1. Can the BTRF provide a view on the significance or otherwise of the BTF population recorded on the Moray Downs property.

It is the current (Jan 2015) view of the BTFRT that the population in the eastern Desert Uplands Bioregion in the vicinity of Moray Downs is likely to be the most significant and largest population of BTF remaining.

3. BTF records and Information for the Area surrounding the Site

3.1. Can the BTFRT provide any records for the area surrounding the Moray Downs property. I suggest a search area buffer of 100km based on the nominal centre of the site, being UTM 55 K 433555.15 m E 7565429.39 m S. A simple plan depicting that area is **attached**.

The following table has BTF records listed chronologically. Zero in the abundance column indicates that the number of individuals was not recorded. This table is derived from a 100 km radius buffer around the boundary of Moray Downs property, as opposed to the centroid provided above, and so is a slightly more generous area.

ABUND	YEAR	X	Y
0	1845	146.9167	-21.2000
0	1970	145.8667	-22.7500
0	1978	146.5000	-22.5000
0	1978	146.9167	-21.9167
0	1978	146.9167	-21.5833
0	1978	147.4167	-21.4167
0	1978	146.2500	-21.1667
0	1979	146.4167	-21.7500
0	1979	146.5833	-21.5833
0	1979	146.2080	-20.9580
0	1979	146.1678	-20.9485
0	1980	146.2500	-22.4167
0	1980	146.2500	-22.0833
0	1980	146.1761	-21.0901
0	1980	146.2511	-21.0818
0	1980	146.2928	-21.0401
0	1981	146.2910	-21.0410
0	1981	146.7511	-21.0818
0	1981	146.6428	-21.0401
0	1982	146.1750	-21.0910
0	1982	146.2910	-21.0830

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ABUND	YEAR	X	Y
0	1986	146.0000	-21.0000
0	1986	146.8719	-21.5151
0	1993	145.7796	-21.5168
0	1994	145.9358	-21.7558
0	1998	145.9656	-21.8364
0	1998	145.9467	-21.5328
0	1998	145.9460	-21.5330
0	1998	145.9656	-21.8364
0	1998	145.9467	-21.5328
0	1999	145.9995	-21.7919
0	1999	145.5375	-22.6531
1	1999	145.5375	-22.6529
1	1999	145.5375	-22.6529
4	1999	145.9994	-21.7919
0	1999	145.5370	-22.6530
0	1999	145.9650	-21.8360
0	1999	146.4787	-21.8046
0	2001	146.0417	-21.9639
0	2001	145.9906	-21.4469
0	2003	146.1181	-22.2910
0	2003	146.2156	-22.1681
0	2003	146.2350	-22.0923
0	2003	146.1181	-22.2910
0	2003	146.2156	-22.1681
0	2003	146.2350	-22.0923
0	2005	146.2183	-21.9383
0	2005	146.2318	-21.9372
0	2005	146.2375	-21.9104
13	2012	146.1950	-21.1735
1	2012	146.1992	-21.1888
3	2012	146.0687	-21.9660
2	2012	146.0824	-21.9692
5	2012	146.0896	-21.9717
4	2012	146.1354	-21.9905
8	2012	146.3753	-21.9972
19	2012	145.9756	-21.4581
10	2012	145.9974	-21.7929
10	2012	145.9824	-21.7771
4	2012	146.2858	-22.0454
1	2012	145.9769	-21.4598
1	2012	146.2684	-21.9147
20	2012	146.2733	-21.9150

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ABUND	YEAR	X	Y
3	2012	146.3673	-21.9612
3	2012	146.2292	-21.9071
30	2012	146.2197	-21.8515
10	2012	146.2145	-21.8508
13	2012	146.2424	-21.8542
10	2012	146.2685	-21.8573
5	2012	146.2877	-21.8596
4	2013	146.2604	-21.9368
10	2013	146.2479	-21.9210
30	2013	146.2137	-21.9512
1	2013	146.2305	-21.9335
11	2013	146.2167	-21.8820
1	2013	146.1968	-21.8489
8	2013	146.2699	-21.9278
33	2013	146.3306	-21.9759
1	2013	146.3264	-21.8766
19	2013	146.2165	-21.8677
14	2013	146.2221	-21.8517
24	2013	146.2157	-21.8827
2	2013	146.3458	-21.9980
30	2013	146.2412	-21.9340
8	2013	146.2569	-21.9263
8	2013	146.4099	-22.1687
3	2013	146.2913	-21.9406
1	2013	146.2582	-21.9197
41	2013	146.2573	-21.9202
1	2013	146.3099	-21.9012
3	2013	146.4092	-22.1873
10	2013	146.4329	-22.1775
11	2013	146.3833	-22.1376
2	2013	146.4092	-22.1873
400	2013	146.2574	-21.9200

3.2. I am aware of 22 grass Genera which are known to provide feeding resources for BTF to varying degrees. These are from the following Genera: *Alloteropsis* spp., *Bothriochloa* spp., *Chloris* spp. (native and introduced sp.), *Dactyloctenium* spp., *Dichanthium* spp., *Digitaria* spp. (native and introduced sp.), *Echinochloa* spp., *Echinopogon* sp., *Eleusine* sp., *Enteropogon* sp., *Eragrostis* spp., *Eremochloa* sp., *Eriachne* sp., *Melinis* sp., *Panicum* spp., *Paspalidium* sp., *Paspalum* sp., *Schizachyrium* spp., *Setaria* spp., *Sporobolus* spp., *Themeda*

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sp., and *Urochloa* sp. Other genera for which I am not aware of any positive feeding records, though suspected of being used by BTF include *Eulalia* spp., *Aristida* spp., and *Triodia* spp.

There does not seem to be any glaring omissions from the above list. See also Nicole Isles (2007) thesis. Available from BTFRT.

3.2.1. As I appreciate, much of the above is derived from observations within other parts of the BTF's distribution. Can the BTFRT provide a view as to the general relevance of this suite of grass Genera to BTF within the area I am considering.

3.2.2. In regards to improving foraging habitat values relevant to BTF, is the BTFRT aware of any examples where the implementation of a weed control program targeting *Cenchrus ciliaris* has been successful on larger sites such as cattle grazing properties.

The BTF is not aware of any successful control programmes for *Cenchrus ciliaris*, except for small scale controls using chemical and physical controls (e.g. Desert Park, Alice Springs; WA islands), but no large scale successes are known.

4. Assessment of BTF habitat Values

4.1. In regards to the assessment of BTF habitat values, is the BTFRT aware of any habitat assessment guidelines which would provide particular focus on the habitat resources and conditions which are specifically relevant to BTF.

4.2. I am aware that two sets of widely available guidelines that have been used to assess, amongst other ecological values, those of habitat values for BTF. These have been used on the project site to determine the comparative values of habitats within project impact areas and proposed offset areas for BTF. These are the *Ecological Equivalence Methodology Guideline3* and the *BioCondition* methodology.

4.2.1. Does the BTFRT have a view on whether such assessment guidelines are specific enough to identify habitat values for BTF and form the basis for habitat modelling systems.

There is no single proven assessment guideline. There is geographic bias in the management guidelines (towards the Townsville region), but these are not BTF range wide. Habitat modelling based on bioclimatic and regional ecosystem data was used in Vanderduys et al "*Addressing potential cumulative impacts of development on*

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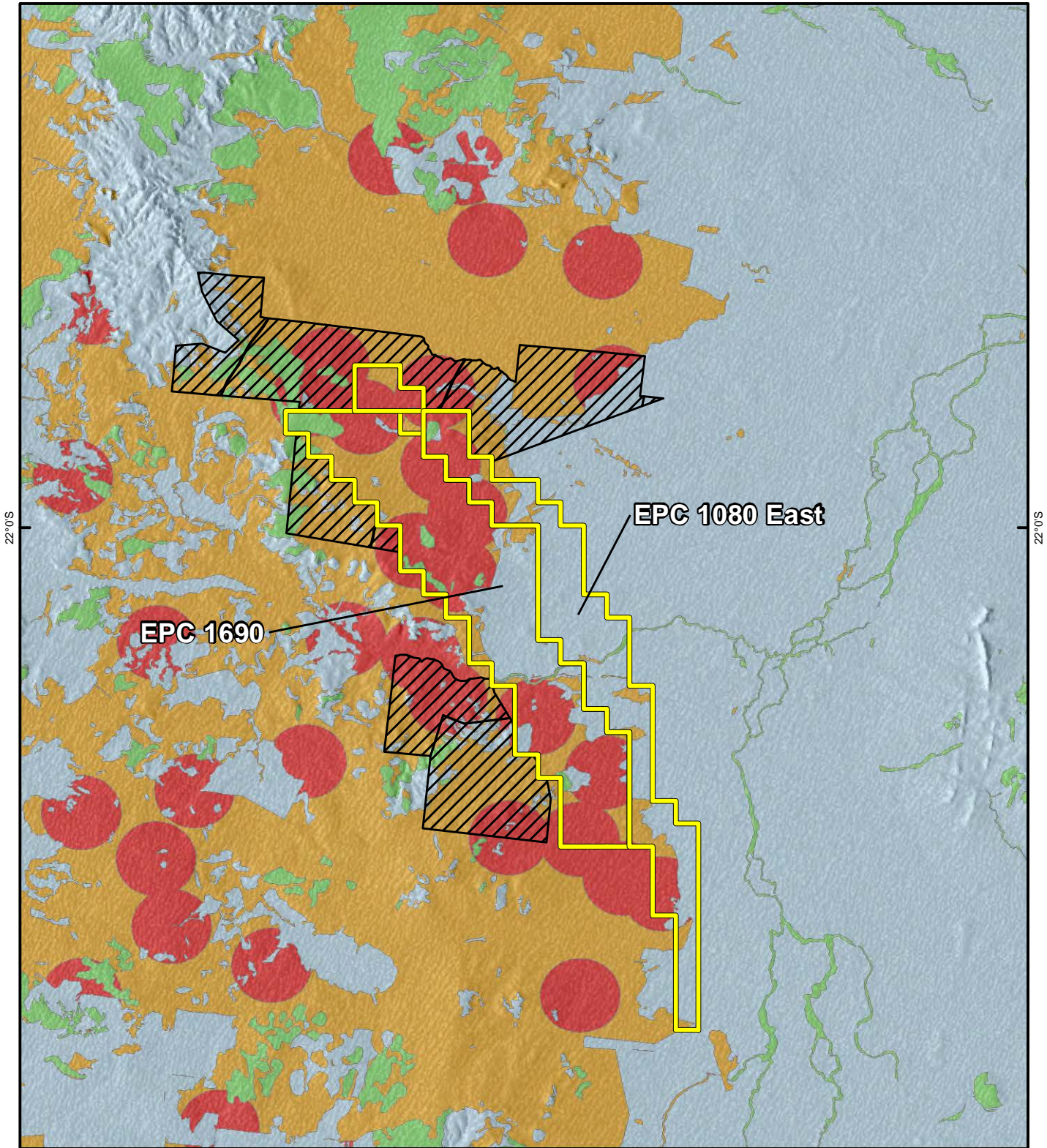
threatened species: the case of the endangered black-throated finch", and the layers generated can be provided if necessary.

There are also unpublished data arising from Juliana Rechetelo's work on the Townsville coast plains, but these analyses have not been finalised as yet.

Yours sincerely

Dr. A.C. Grice
Chair, Black-throated Finch Recovery Team

**APPENDIX 4:
BTF HABITAT VALUES MAPPED FOR SEIS**



Coordinate System: GCS_GDA_1994
 Datum: GDA_1994
 Units: Degree



1:447,284 at A4
 0 2.25 4.5 9 13.5 18 Kilometers

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LEGEND

- Adani Pty Ltd - EPC
- Moray Downs West Offset Areas

Black-throated Finch Habitat:

- HIGH VALUE HABITAT - PERMENANT WATER
- HIGH VALUE HABITAT
- LOW VALUE HABITAT

Figure: **1 Appendix 4**
 Title: Black-throated Finch habitat values mapping

Project: **Adrian Caneris expert statement on Black-throated Finch**

Client: **Adani Mining Pty Ltd**



Drawn By: MG Reviewed by: AC Date: 11/03/2015

**APPENDIX 5:
INSTRUCTIONS FROM MCCULLOUGH ROBERTSON**

Partner Peter Stokes
Writer Claire Meiklejohn
Direct line 07 3233 8760
Email cmeiklejohn@mccullough.com.au
Our reference CEM:PWS:159359-00022

13 March 2015

Mr A Caneris
Managing Director
Biodiversity Assessment and Management Pty Ltd

Email adrian@baamecology.com

Dear Adrian

**Adani Mining Pty Ltd v Land Services of Coast & Country Inc. & Anor
Land Court of Queensland Proceedings no. MRA428-14, EPA429-14, MRA430-14,
EPA431-14, MRA432-14 and EPA433-01 Land Court of Queensland Proceedings no.
MRA428-14, EPA429-14, MRA430-14, EPA431-14, MRA432-14 and EPA433-01**

We refer to:

- 1 Mining Lease Applications (**MLAs**) 70441, 70505 and 70506 made by Adani Mining Pty Ltd (**Adani**);
- 2 the associated environmental authority application, as re-made on 14 April 2014;
- 3 the Environmental Impact Statement (**EIS**), Supplementary EIS (**SEIS**) and Additional Information to the EIS (**AEIS**) prepared for Adani and made publicly available under the *State Development and Public Works Organisation Act 1971* (Old);
- 4 the draft Environmental Authority (**EA**) issued by the Statutory Party on 28 August 2011;
- 5 the Objection of Land Services of Coast and Country Inc (**LSCCI**) to the MLAs dated 16 June 2014;
- 6 the Objection of LSCCI to the EA made 10 September 2014;
- 7 the submission (dated 17 June 2014) and objection (dated 25 September 2014) about the EA made by Debi Goenka of the Conservation Action Trust (**CAT**);
- 8 our letter of instruction to you dated 5 November 2014;
- 9 the Preliminary List of Issues for the LSCCI dated 2 December 2014;
- 10 your joint report, with Lindsay Agnew, Bruce Wilson and Mike Olsen dated 15 January 2015, in relation to the black-throated finch (**BTF**) (**First BTF JER**); and
- 11 our email to you of 13 February 2015 responding to the information requests in the First BTF JER (including the report of Niche Environment and Heritage, *Black-throated Finch Monitoring Report: Pre-wet season survey 2014*, dated 29 January 2015 (**Niche Report**); and.

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- 12 your supplementary joint report, with Lindsay Agnew, Bruce Wilson and Mike Olsen dated 27 February 2015, also in relation to BTF (**Second BTF JER**).

Instructions

- 13 We require you to provide a further statement of evidence under the *Land Court Rules 2000* (Qld) (**Rules**).
- 14 In accordance with orders made by the Court, your further statement of evidence is required by **Friday, 13 March 2015**.

Format of report

- 15 When preparing the further statement of evidence, and responding to the questions dealt with in section E below, please deal with the following:

SECTION A - Qualifications and Curriculum Vitae

- 16 Please attach your curriculum vitae to the report.

SECTION B - Material relied on in preparing the statement

- 17 Lists are sufficient for the statement, it would be useful to ensure that you (and we) have a copy of all the listed material when finalising your report. In particular, you should list:

- (a) all material facts, written or oral, on which the statement of evidence is based; and
- (b) reference to any literature or other material relied on by you to prepare the statement.

- 18 It may also be necessary to review the First BTF JER and the Second BTF JER to ensure your lists include sources which may not be specifically identified in those reports. You do not need to list material you have **not** relied on.

- 19 Any inspection, examination or experiment conducted, initiated or relied on by you to prepare the statement must also be described. This will include any work you undertook on your site visit.

SECTION C – Background to Report

- 20 Please set out the extent of your previous involvement with the Mine. Specifically, we would like you to:
- (a) indicate whether you were involved in the preparation of any material in support of the proposed Mine and, if so, provide details of that work;
 - (b) confirm that you have since been engaged by McCullough Robertson, on behalf of Adani, to provide an expert report in the Land Court proceedings;
 - (c) confirm that you have read this letter of instruction (and attach a copy of this letter of instruction to your report), and confirm that you understand your duties to the Land Court as an expert witness;
 - (d) confirm that, notwithstanding your previous relationship with the Mine (if any), you consider you are able to provide an informed, independent opinion about the matters contained within your Report.

SECTION D – Opinion on objections

- 21 Please review the objections and respond to any issues within your field of expertise which concern the MLAs and EAs and which concern matters upon which you, Lindsay Agnew, Mike Olsen and Bruce Wilson have reported upon. In this regard please note paragraph 23 of these instructions.
- 22 In particular, we draw your attention to the grounds in paragraphs 1 to 3, and 8, of the MLAs objections, and each paragraph of the EA application objection. All of the grounds of each objection are set out below for convenience.

MLAs objection

The application for the mining leases under the Mineral Resources Act 1989 (Qld) (MRA) for the Carmichael Coal Mine (the mine) should be refused on the basis of the considerations stated in section 269(4)(c), (f), (i), (j), (k), (l) and (m) of the MRA:

- 1. If the mine proceeds, there will be severe and permanent adverse impacts caused by the operations carried out under the authority of the proposed mining leases.*
- 2. If the mine proceeds, the public right and interest will be prejudiced.*
- 3. Good reason has been shown for a refusal to grant the mining leases due to the risk of severe environmental impacts and the lack of scientific certainty regarding those impacts.*
- 4. Taking into consideration the current and prospective uses of the land, the proposed mining operation is not an appropriate land use.*
- 5. There is an unacceptable risk that there will not be an acceptable level of development and utilisation of the mineral resources within the area applied for because the mine, if it proceeds at all, is likely to cease to be economically viable within the term of the lease, resulting in some or all of the environmental impacts without realising the full economic benefits predicted.*
- 6. The Applicant does not have the necessary financial capabilities to carry on mining operations under the proposed mining leases.*
- 7. If the mine proceeds, the operations to be carried on under the authority of the proposed mining leases will not conform with sound land use management.*
- 8. In the alternative to grounds 1-7 above, if the applications are not refused, conditions should be imposed to address the matters raised in grounds 1-7.*

EA application objection

The application for the environmental authority for the Carmichael Coal Mine (the mine) should be refused under the Environmental Protection Act 1994 (Qld) (EPA) on the basis of the considerations stated in ss 3, 5, 171 and 191 of the EPA and other relevant considerations having regard to the subject-matter, scope and purpose of the EPA:

- 1. Approval of the mine is contrary to the object of the EPA stated in s 3 because approval and construction of the mine will not protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development).*

2. *Approval of the mine would be contrary to the requirement in s 5 of the EPA for the administering authority and the Land Court to perform a function or exercise its power under the Act in a way that best achieves the object of the Act.*
3. *Approval and construction of the mine would be contrary to the precautionary principle, which is a principle of environmental policy as set out in the Intergovernmental Agreement on the Environment and, therefore, part of the standard criteria for the decision.*
4. *Approval and construction of the mine would be contrary to intergenerational equity, which is a principle of environmental policy as set out in the Intergovernmental Agreement on the Environment and, therefore, part of the standard criteria for the decision.*
5. *Approval and construction of the mine would be contrary to the conservation of biological diversity and ecological integrity, which is a principle of environmental policy as set out in the Intergovernmental Agreement on the Environment and, therefore, part of the standard criteria for the decision.*
6. *Approval and construction of the mine will cause environmental harm to the character, resilience and value of the receiving environment.*
7. *Approval and construction of the mine would be contrary to the public interest.*
8. *Approval and construction of the mine will cause material and serious environmental harm.*
9. *In the alternative to grounds 1-8 above, if the application is not refused, conditions should be imposed to address the matters raised in grounds 1-8 above.*

23 We also ask you to again review and consider those 'Facts and Circumstances' relied on in support of each objection that are relevant to your field of expertise, namely:

- (a) paragraphs 18 to 24 and 34 of the Facts and Circumstances in the MLAs objection; and
- (b) paragraphs 18 to 24 and 29 of the Facts and Circumstances in the EA objection.

24 Your further statement of evidence should also build on the joint reports, which set out in detail those notified issues relevant to your field of expertise.

25 Please note that, pursuant to the Rules, your further statement may not:

- (a) contradict, depart from or qualify an opinion in relation to an issue the subject of agreement in either joint report; or
- (b) raise a new matter not already mentioned in the joint reports.

26 In discussing those areas of disagreement noted in the First BTF JER or the Second BTF JER, as they primarily obtain to LSCCI's notified issues, we ask that you expand on and relate your opinion back (by reference for example to its number) to any relevant Facts and Circumstances and Grounds of the objections.

27 For example, the joint reports discuss the potential offsets for the BTF. If appropriate, this discussion of these matters can be related back to a ground of the objections, that approval of the Mine will cause environmental harm to the character, resilience and value of the receiving environment.

28 This discussion may occur in the context of, or by reference to, the areas of agreement in the joint reports.

29 We also ask that you answer the following specific questions.

- (a) In paragraph 6.2.6 of the First BTF JER, you refer to Attachment 1 to indicate sightings of the BTF, including immediately north of 10 Mile tank. Please:
 - (i) explain where 10 Mile tank is by reference to the image in Attachment 1; and
 - (ii) explain the significance of the numbers which appear in that image.
- (b) Are you aware of any factors which might make it difficult for people to locate or attend places such as 10 Mile tank on the Mine site? Could this explain the confusion between '4 Mile bore' and '5 Mile bore' in the Niche Report, noted in the Second BTF JER (at paragraph 2.1.5)?
- (c) In paragraph 6.3.2 of the First BTF JER, you refer to the decline of the extent of occurrence of BTF. Please explain:
 - (i) the cause or causes of the decline referred to;
 - (ii) whether the proposed offsets strategy addresses such causes; and
 - (iii) whether, if the Mine does not proceed, you would expect that decline to continue and, if so, whether the decline would continue to the point of extinction.

It may be useful if you could include a map showing the extent of the known occurrence of the BTF within the region or State, as appropriate.

- (d) In paragraph 6.6 of the First BTF JER (and subparagraphs), you discuss further more detailed and targeted studies are required to fully understand the existing values of the site. In your opinion, if the Mine is not approved, will this work be carried out?
- (e) At paragraph 6.7.5 of the First BTF JER, and again at paragraph 6.19 of the Second BTF JER, Mike Olsen states that 'the Precautionary Principle must be invoked'. Please respond to this statement (to the extent additional explanation is required, having regard to paragraph 6.20 of the Second BTF JER). If you agree with the statements of Mike Olsen referred to in this paragraph, please explain your understanding of how the Precautionary Principle applies to assessment of the impacts on BTF, and whether or not the opinions you have given otherwise in your report have regard to the Precautionary Principle.
- (f) At paragraph 6.8.5 of the First BTF JER, you make the point that relatively simple improvements to existing monitoring protocols or approaches could be made to provide the required information on BTF (with which Mr Agnew disagrees at paragraph 6.8.6). Can you elaborate as to any specific improvements you consider would be appropriate? Can you also provide your opinion as to whether or not the information is, in your opinion, required prior to or post Mine approval (see also paragraph 29(h) below)?
- (g) In paragraph 6.10.2 of the First BTF JER, Lindsay Agnew states that providing additional offsets is the 'only likely primary response to new knowledge'. An apparently similar comment appears at paragraph 7.20 of the Second BTF JER. Can you explain what you understand to be the meaning of these statements? Is there some alternative approach that would be expected?
- (h) At paragraph 6.10.25 of the First BTF JER, you state that the reporting to date only seeks to establish that there is potential to meet the offset requirements. In your opinion, experience, or understanding, is that what is required at this stage?

- (i) At paragraph 6.15.2 of the First BTF JER, Lindsay Agnew states that while habitat improvements may result in greater carrying capacity, in practical terms any improvements may only result in a relatively minor positive outcome in mitigating the impacts of habitat loss. Do you agree? Can you explain the possible reasoning behind this statement?
 - (j) In paragraph 6.18.3 of the First BTF JER, Lindsay Agnew states that insufficient survey effort has been applied to the offset areas to date. Has any further work been done (if not otherwise described in the Second BTF JER)? If not, what would you expect the process would be going forward to achieve the required level of confidence in the proposed offset areas?
 - (k) Paragraphs 2.2 to 2.7 of the Second BTF JER include certain critiques or comments regarding confusing references contained in the Niche Report. Are you able to explain the apparent confusing references?
 - (l) Please explain the relevance of issue no. 33 of the First BTF JER, discussed in paragraph 6.20 and subparagraphs. Why do you understand LSCCI to contend this is not currently feasible?
 - (m) What do you understand to be the basis of Lindsay Agnew's statement in paragraph 6.19.5 of the First BTF JER?
 - (n) In both joint reports, Lindsay Agnew and Mike Olsen have complained that the use of the ecological equivalence method without adaptation for BTF-specific information, such as the use of a number of specific grasses, impact on the findings of a study such as those carried out by EcoLogical Australia. In your view, is such adaptation necessary, common place or required? Specifically, in paragraphs 6.5 and 6.6 of the Second BTF JER, Mr Agnew makes observations regarding the inclusion of 8 'key grass species'. Please provide your views as to:
 - (i) the reliability of the 8 'key grass species';
 - (ii) the benefits of surveying by references to those key grass species;
 - (iii) the extent to which it is standard practice for those key grass species to be referenced in the various stages of the surveys commented upon in the Second BTF JER.
 - (o) In the Second BTF JER, Lindsay Agnew appends a report from the BTF Recovery Team (**BTFRT**). Has Mr Agnew provided you with any other material arising from investigations he has made independently? Further, can you comment on the basis for the BTFRT's opinions about the Townsville BTF population? In particular, are the sightings discussed the result of surveys undertaken pursuant to the Commonwealth survey policy statement, or merely opportunistic sightings?
 - (p) In paragraphs 7.3 and 7.4 of the Second BTF JER, by agreement you and Mr Agnew summarise data and interpretation from the BTFRT report appended as mentioned above. Please explain your own explanation for the possible reasons for the size and number of sightings in respect to the Townsville population, flocks at the subject mine site and flocks elsewhere.
- 30 Please address the CAT submission and objection to the extent they are relevant to your field of expertise.
- 31 In your further statement of evidence, the Rules also require that where:
- (a) there is a range of opinion on matters dealt with, a summary of the range of opinion and the reasons why you have adopted a particular opinion be provided; and

- (b) access to any **readily ascertainable** additional facts would assist you in reaching a more reliable conclusion, a statement to that effect be included.

32 In dealing with the points of disagreement in the First BTF JER and the Second BTF JER, and responding to the relevant Facts and Circumstances and grounds of the objections, please also specifically identify any relevant conditions of the draft EA and express your opinion as to the appropriateness of the draft condition or its relevance to the grounds of the objections.

SECTION E – Summary of conclusions

33 The Rules require your further statement to provide a summary of the conclusions you have reached. In our view, this is often best presented in an Executive Summary at the start of the statement.

SECTION F – Expert’s confirmation

34 It is important that the report you prepare be an independent report prepared bearing in mind an expert witness’ overriding duty to the court. The overriding duty encompasses the following points:

- (a) You have an overriding duty to assist the Court on matters relevant to your area of expertise;
- (b) You are not an advocate for a party, even when giving testimony that is necessarily evaluative rather than inferential; and
- (c) Your paramount duty is to the Court and not to the person retaining you.

35 An example of the type of thing that might be said in this section is as follows:

- (a) *I have read and understood relevant extracts of the Land Court Rules 2010 (Qld) and the Uniform Civil Procedure Rules 1999 (Qld). I acknowledge that I have an overriding duty to assist the Court and state that I have discharged that duty.*
- (b) *I have provided within my report:*
 - (i) *details of my relevant qualifications;*
 - (ii) *details of material that I relied on in arriving at my opinions; and*
 - (iii) *other things as required by the Land Court Rules.*
- (c) *I confirm that:*
 - (i) *the factual matters included in the statement are, to the best of my knowledge, true;*
 - (ii) *I have made all enquiries I consider appropriate for the purpose of preparing this statement;*
 - (iii) *the opinions included in this statement are genuinely held by me;*
 - (iv) *this statement contains reference to all matters I consider significant for its purpose;*
 - (v) *I have not received or accepted any instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.*

- (d) *If I become aware of any error or any data which impact significantly upon the accuracy of my report, or the evidence that I give, prior to the legal dispute being finally resolved, I shall use my best endeavours to notify those who commissioned my report or called me to give evidence.*
- (e) *I shall use my best endeavours in giving evidence to ensure that my opinions and the data upon which they are based are not misunderstood or misinterpreted by the Land Court.*
- (f) *I have not entered into any arrangement which makes the fees to which I am entitled dependent upon the views I express or the outcome of the case in which my report is used or in which I give evidence.*

Confidentiality

36 Any report generated by you should remain in draft until such time as we are in a position to discuss the contents of the report with you. We ask that the report be kept strictly confidential as it is to be used for the purpose of obtaining legal advice or for use in legal proceedings. You are not authorised to provide these instructions or your report to any other person or party.

If you would like any further material, or have any questions, please contact us.

Yours sincerely



Peter Stokes
Partner