# Appendix M

Biodiversity Australia – Rapid Habitat Assessment: Black Throated Finch



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## 1. Introduction

Biodiversity Australia Pty Ltd have been engaged by GHD to conduct preliminary habitat suitability investigations over three sites within the greater Townsville Region. These investigations will determine areas suitable for use as offsets for Black Throated Finches in conjunction with the Haughton River Pipeline project.

The three sites were initially selected due to their potential to contain essential habitat for Black Throated Finches.

## 2. Background

## 2.1 Location of the Study Area

The study area comprises of three sites (Figure 1) within the Townsville region namely:

- Site 1: Page Road (Hervey Range) on lot 26 (SP149308) comprised of two portions of land (281 ha and 157 ha) separated by an easement. The site is mapped as being primarily woodland at the base of an igneous range and dissected by several watercourses. The site includes two areas of essential habitat.
- Site 2: Ross Dam West on lots 1, 2 and 3 (RP725616). The site extends over 139.25 ha and is mapped as
  primarily containing woodland dominated by two Regional Ecosystems (RE) (under the Vegetation Act
  1999) and is located close to Ross River Dam. Most of the remnant areas on the site is mapped as
  essential habitat.
- Site 3: Ross Dam East on lot 21 (E124186) and lot 2 (RP725617) covering an area of 251.63 ha. The site is mapped as containing woodland in the southern extent dominated primarily by two REs, whilst the northern extent is mapped as non-remnant. A watercourse dissects the eastern portion of the site. The remnant woodland in the southern section of the site is mapped as essential habitat.

## 2.2 Scope of Works

The scope of work for this project comprised of the following:

- Conduct preliminary RE verification over the Study Area in accordance with the Methodology for Survey and Mapping of REs and Vegetation Communities in Queensland (Neldner et al. 2012)
- Characterise the remnant and non-remnant vegetation over the Study Areas
- Identify potential habitat for the Black Throated Finch



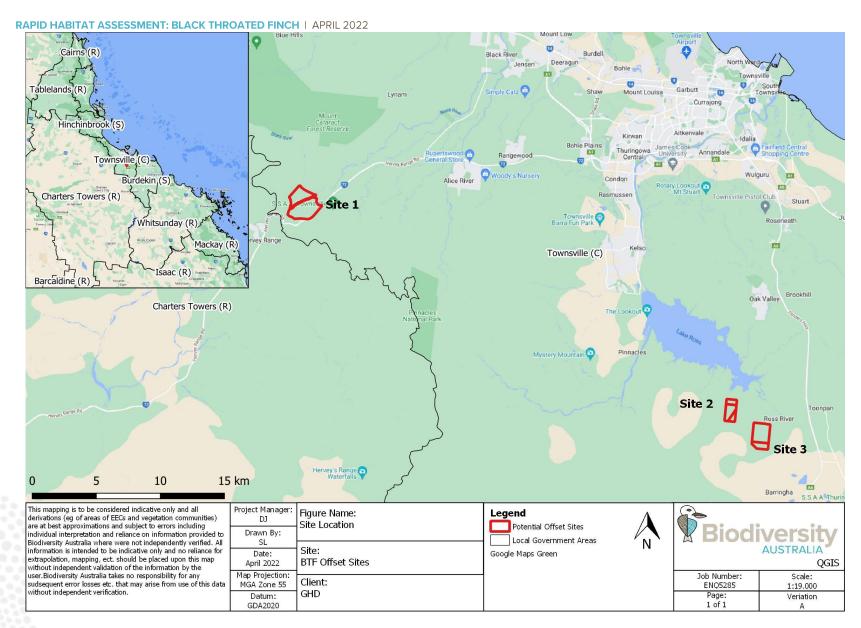


Figure 1: Location of the study area



## 3. Methods

## 3.1 Field Surveys

Field surveys were undertaken over the study areas by two Suitably Qualified and Experienced Ecologists (SQEP) on the 29<sup>th</sup> and 30<sup>th</sup> March 2022. The survey methods utilised are detailed in the following sections.

## 3.1.1 Preliminary RE Verification

The Study Areas were generally surveyed in accordance with the Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Neldner et al. 2020). This involved conducting predominantly driving transects over the properties with walking surveys conducted intermittently. During the surveys, ecologists conducted rapid vegetation surveys. As seen in Figure 2, 80 rapid assessment sites were conducted in the study area.

This allowed confirmation of the REs present on the sites and their approximate distribution and area as well as identification of potential REs in non-remnant areas.

## 3.1.2 Habitat Assessments

During the course of the field surveys, potential habitat for the Black Throated Finch were assessed on site. Habitats within and adjacent to the study site were defined and assessed according to the following parameters:

- Availability of potential breeding habitat (canopy trees)
- Extent of woody weeds (e.g. chinee apple)
- Shrub density
- Proportion of suitable foraging species in the understory
- Amount of bare ground
- Native tree health
- Extent of disturbance (e.g. grazing, fire, clearing etc.)
- Presence of introduced pests (i.e. signs of feral pigs, foxes etc.)
- Presence of observable BTF nests

The location of BTF habitat assessments conducted on site are shown in Figure 3.

#### 3.2 Limitations

The survey aimed to provide a snapshot of the primary REs available on site to be used as BTF habitat. However, due to the rapid nature of the surveys, portions of the site were unable to be assessed within the survey timeframe. Areas that were not able to be accessed were evaluated using desktop resources and the latest imagery available. Sites that are determined to have the highest suitability to be used as BTF habitat will be assessed in further detail during the BioCondition assessment surveys.



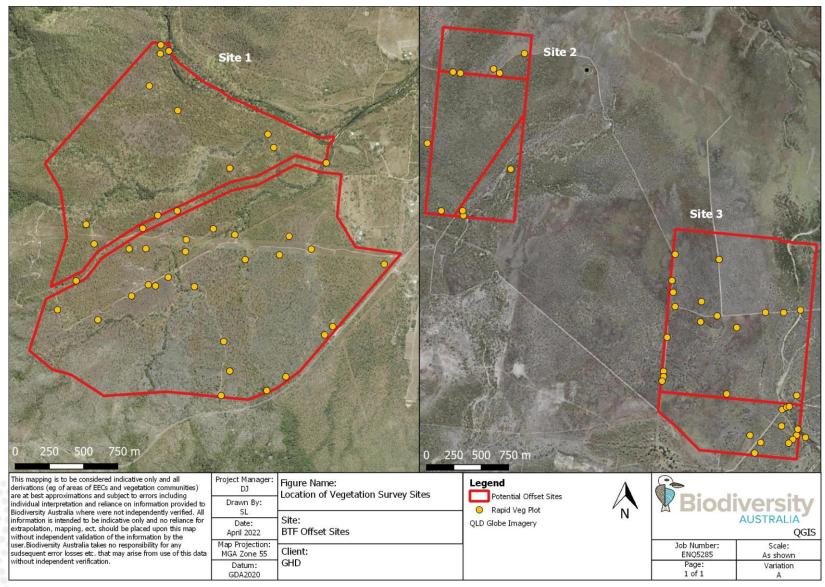


Figure 2: Location of vegetation survey sites



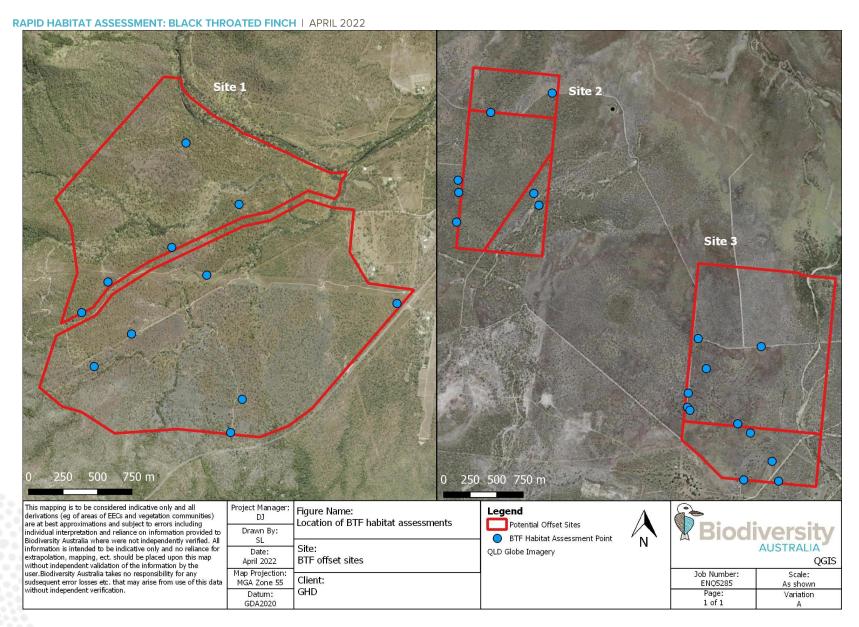


Figure 3: Location of BTF habitat assessment points



## 4. Results

## 4.1 Site 1 REs

Remnant REs currently mapped within Site 1 are presented in Table 1 below. Due to the rapid nature of the survey method, several areas within the Site were not able to be verified within the time constraints (see Figure 2 for areas assessed in the field). The RE for these areas are largely as per desktop mapping.

The site was noted to have a high variability of vegetation communities present. Of the 11 mapped REs, 4 are listed as Of Concern under the *EPBC Act* whilst 1 is listed as Endangered. The RE type and description of the vegetation communities mapped within Site 1 is detailed in Table 1 with the location of each RE shown in Figure 4. A selection of vegetation communities present within Site 1 is presented in Photo 1 and Photo 2.

Table 1: Site 1 REs

Revised RE	VMA Status	EPBC Status	RE Description
7.3.21a	ОС	ОС	Eucalyptus portuensis, Corymbia intermedia +- Corymbia drepanophylla +/- E. platyphylla +/- E. tereticornis +/- C. tessellaris +/- Lophostemon suaveolens +/- Syncarpia glomulifera open forest to woodland.
7.3.40	Е	Е	Eucalyptus tereticornis open forest on well-drained alluvial plains of lowlands
7.3.45a	LC	ос	Eucalyptus drepanophylla, Corymbia clarksoniana, +/- E. platyphylla, +/- C. tessellaris, +/- C. dallachiana woodland to open forest.
7.12.34	LC	Not listed	Eucalyptus portuensis and/or E. drepanophylla +/- C. intermedia +/- C. citriodora, +/- E. granitica open woodland to open forest on uplands on granite
7.12.61	LC	ос	Eucalyptus tereticornis +/- E. granitica woodland to open forest of foothills and uplands on granite and rhyolite
9.12.22	LC	Not listed	Eucalyptus drepanophylla, Corymbia clarksoniana or C. intermedia and C. dallachiana woodland on steep rugged igneous ranges.
9.12.34	LC	Not listed	Semi-evergreen vine thicket with Araucaria cunninghamii on steep hills on igneous rocks
11.3.25b	LC	ОС	Melaleuca leucadendra and/or M. fluviatilis, Nauclea orientalis open forest.
11.3.30	LC	Not listed	Eucalyptus crebra, Corymbia dallachiana woodland on alluvial plains
11.3.35	LC	Not listed	Eucalyptus platyphylla, Corymbia clarksoniana woodland on alluvial plains
11.12.9	LC	Not listed	Eucalyptus platyphylla woodland on igneous rocks





Photo 1: RE 11.3.30 in the Southern section of Site 1.



Photo 2: RE 7.3.45 with a Guinea Grass understory.



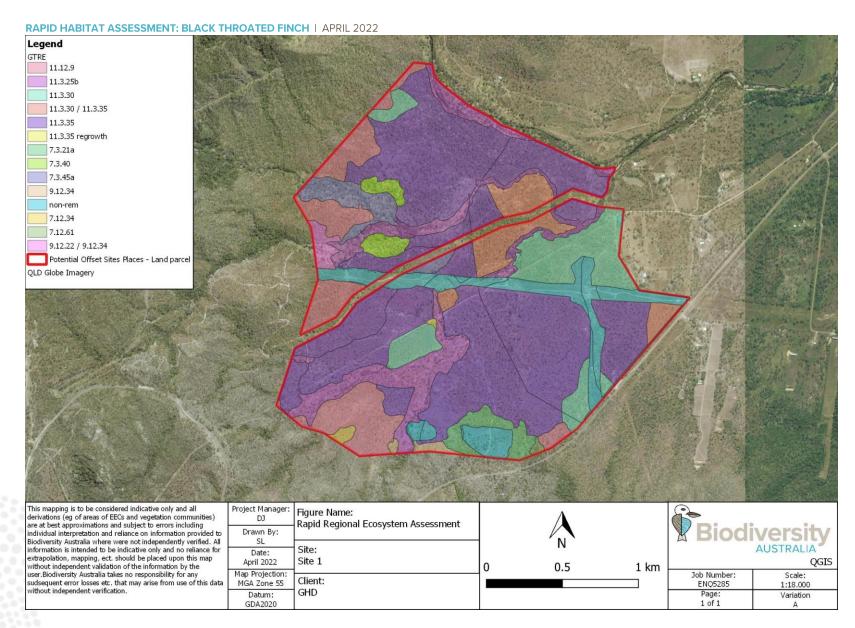


Figure 4: Rapid RE assessments at Site 1



## 4.2 Site 2 REs

Site 2 was largely homogenous with only 2 REs identified within the Site during the rapid field assessments. The majority of the Site was comprised of RE 11.3.12 with large bands of RE 11.3.35 dissecting the site from the North and South-east. The RE type and description of these communities are shown in Table 2. The location of the RE's observed on site are shown in Figure 5. A representative photo of RE 11.3.12 within Site 2 is shown in Photo 3 below.

Table 2: Site 2 REs

Revised RE	VMA Status	EPBC Status	RE Description
11.3.12	LC	Not listed	Melaleuca viridiflora woodland, occasionally with M. argentea and M. dealbata on alluvial plains
11.3.35	LC	Not listed	Eucalyptus platyphylla, Corymbia clarksoniana woodland on alluvial plains



Photo 3: RE 11.3.12 within Site 2

## 4.3 Site 3 REs

Four REs were identified within Site 3 during the rapid field assessments. The RE type and description of these communities are shown in Table 3 below and illustrated in Figure 6. Representative sections of RE 11.3.25 and 11.3.35 are shown in Photo 4 and Photo 5.

One REs identified on site (RE 11.3.25b) is listed as Of Concern under the EPBC Act.



Table 3: Site 3 REs

Revised RE	VMA Status	EPBC Status	RE Description
11.3.12	LC	Not listed	Melaleuca viridiflora woodland, occasionally with M. argentea and M. dealbata on alluvial plains
11.3.25b	LC	ОС	Melaleuca leucadendra and/or M. fluviatilis, Nauclea orientalis open forest.
11.3.30	LC	Not listed	Eucalyptus crebra, Corymbia dallachiana woodland on alluvial plains
11.3.35	LC	Not listed	Eucalyptus platyphylla, Corymbia clarksoniana woodland on alluvial plains



Photo 4: A section of 11.3.25b located within Site 3.





Photo 5: RE 11.3.35 along the Western edge of Site 3.



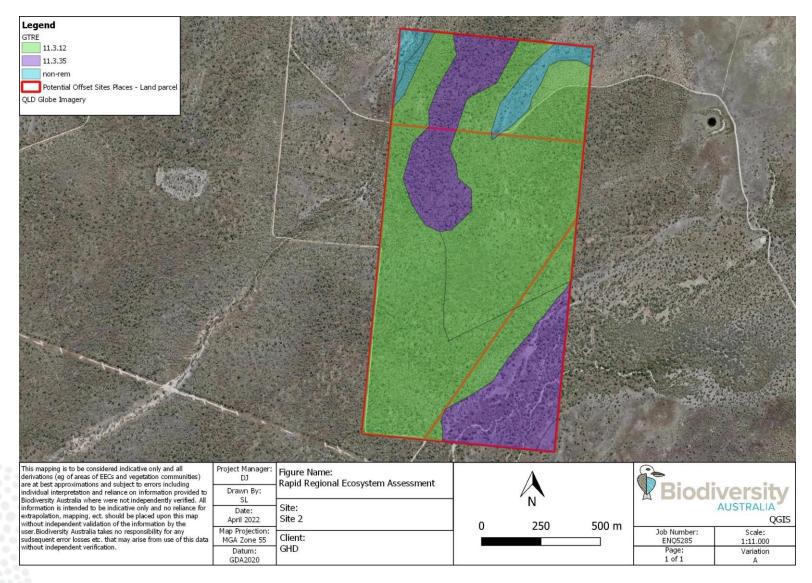


Figure 5: Rapid RE assessments at Site 2



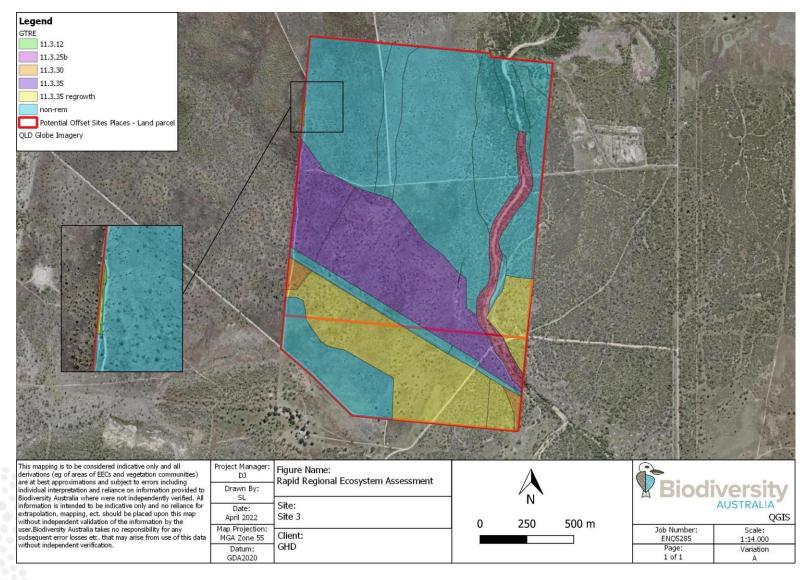


Figure 6: Rapid RE assessments at Site 3



## 4.4 Threatened Fauna Habitats

## 4.4.1 Black Throated Finch

Black-throated finch (southern) habitat is broadly defined as grassy open woodlands and forests, typically dominated by *Eucalyptus, Acacia* and *Melaleuca* (DEWHA 2009). However, more specific habitat attributes must be considered when determining site suitability.

The subject site has been determined to contain black-throated finch habitat, as defined by attributes outlined in Significant impact guidelines for the endangered black-throated finch (southern) (*Poephila cincta cincta*) (DEWHA 2009). These attributes are outlined in Table 4 and the full habitat assessment for each site is detailed in Appendix A-1Table 5: Habitat assessment points for BTF.



Table 4: BTF habitat attributes

Attributes	Description of attribute	Attribute present
Availability of nesting sites	<ul> <li>Trees providing suitable nesting habitat are one of the three key resources (DEWHA 2009).</li> <li>BTF nest in 4 tree species, preferentially using Eucalyptus platyphylla and Melaleuca viridiflora, but occasionally in Corymbia tessellaris and C. dallachiana in areas of low tree density (Rechetelo 2015).</li> </ul>	Eucalyptus platyphylla is abundant across Site 1 and Site 3. Site 2 has a high abundance of Melaleuca viridiflora with pockets of Eucalyptus platyphylla in the bands of RE 11.3.35 present in the North and Southeast of the site.  Corymbia dallachiana and C. tessellaris were largely absent across the three sites.
Extent of woody weeds	<ul> <li>BTF avoid sites with high shrub coverage and abundance, particularly chinee apple (Ziziphus mauritiana), lantana (Lantana camara) and Townsville wattle (Acacia leptostachya) (Rechetelo 2015).</li> </ul>	Site 1 had a scattered density of chinee apple and lantana present. A high density of chinee apple was present across a large portion of Sites 2 and 3.
Density of shrub layer	<ul> <li>Woody vegetation thickening threatens grass seed production (Buosi 2011).</li> <li>BTF prefer low shrub density and presence of <i>Eucalyptus platyphylla</i> and <i>Melaleuca</i> spp. They are negatively associated with shrub abundance, shrub cover, large tree abundance and total ground cover (Rechetelo 2015).</li> <li>Reducing woody vegetation thickening considered a priority management approach - Aim for an open woodland vegetation structure with a sparse shrub stratum (Buosi 2011).</li> </ul>	Across the three sites, 27.6% of the surveyed points recorded a moderate shrub density whilst 44.8% of the surveyed points showed a high density. The high shrub density in these sites is considered unsuitable for BTF.  The shrub layer in Sites 2 & 3 is largely comprised of chinee apple, whereas additional native species in Site 1 contributed to the shrub layer.
Proportion of suitable forage species in the understorey	<ul> <li>Grass seeds are one of the three key resources (DEWHA 2009), especially Urochloa mosambicensis, Enteropogon acicularis, Panicum decompositum, Panicum effusum, Dichanthium sericeum, Alloteropsis semialata, Eragrostis sororia and Themeda triandra (Mitchell 1996),</li> <li>Understorey dominated by native early flowering perennial grasses (e.g Cockatoo Grass), also contains a variety of later flowering perennial grasses that are mostly native (Buosi 2011).</li> <li>Some grass species can form very thick monospecific swards which may be physically impenetrable or so thick as to make foraging difficult (Buosi 2011). The spread of some of these introduced grasses is considered a threatening process for BTF (TSSC, 2005).</li> </ul>	Site 1 was dominated by Guinea Grass over large portions of the site. The presence of Guinea Grass within the Site has reduced the availability of preferred BTF fodder due to its ability to outcompete native vegetation. The Guinea Grass has also reduced areas of bare ground available for BTF to forage in.  Within Sites 2 & 3 several species of grass suitable for BTF were present. This includes Setaria surgens, Eragrostis spp., Urochloa mossambicus. It is likely that other BTF forage species are present but could not be identified.



	<ul> <li>A performance indicator is at least six different grass species occurring in 20 randomly spaced (Buosi, 2011).</li> <li>BTF require open area finely interspersed with grassy areas incorporating patches with suitable forage species and bare or sparse areas (Rechetelo 2015).</li> <li>Although Rechetelo (2015) notes that patches with the introduced legumes Stylosanthes scabra are avoided, but Stylosanthes humilis is eaten (Zann 1976).</li> </ul>	Bare or sparse areas of ground cover were moderate to high in all of assessment points from site 2, whilst site 1 and 3 recorded a low amount of bare ground cover in over 70% of the assessment points.
Degree and extent of disturbance (e.g. grazing, fire, clearing etc)	<ul> <li>Clearing, drought, increased grazing pressure (domesticated and non-domesticated), altered fire regimes, predation, competition, weeds, exotic pasture grasses and woody vegetation thickening threatens grass seed production (Buosi 2011).</li> <li>Persistent overgrazing, feral pigs and annual burning are known to change the composition and reduce the abundance of some grasses and this may reduce the continuity of seed supply (Buosi, 2011).</li> <li>Overgrazing particularly in combination with drought has had significant impacts on this subspecies (TSSC, 2005), however, livestock grazing can be compatible with persistence of BTF (Buosi, 2011, Rechetelo 2015).</li> </ul>	72% of the assessment points recorded a low level of disturbance.  Site 1 recorded moderate disturbance in 36% of assessed points and high disturbance in 9% of the assessed points.  Site 2 had 9% of the assessed points as having a moderate disturbance whilst Site 3 recorded 9% high disturbance.
Presence or distance to surface water i (e.g. rivers, dams, creeks)	<ul> <li>remnant woodland within 1 km of water sources is considered most valuable (DEWHA 2009).</li> <li>Water sources are one of the three key resources as they to drink daily so presence of seasonal and (mostly) permanent water is critical for refuge habitat during the dry season (DEWHA 2009).</li> <li>BTFs nested on average 167 m from water, but as a guideline, they require water sources to be within 200 m of and not more than 400 m from foraging and nesting habitat (Buosi, 2011).</li> </ul>	The primary water source within Site 1 is the ephemeral creek line that intersects the site.  The primary water source for Sites 2 & 3 are dams on adjacent properties including Ross River Dam as well as the ephemeral creek line that intersects the sites.  All parts of the proposed offset are within 2km of either a dam or the ephemeral ek lines.  Access to water is not a limiting factor for BTF on the proposed sites.
Presence of finch nests	<ul> <li>Peak breeding period is during the wet season between February and May (DEWHA 2009).</li> <li>Nests are mostly built high in the outer branches of trees and tall shrubs, in tree-hollows, in mistletoes, and in the base of raptor nests (Buosi, 2011)</li> <li>BTFs usually nest in loose communal sites, with multiple nests occurring in a small area or even within a single tree (Buosi, 2011)</li> </ul>	One finch nests was observed but was not likely to be BTF nests. The nest was seen in a Chinee Apple shrub. The position of the nest at a low height in a dense Chinee Apple tree is consistent with that of the Zebra Finch ( <i>Taeniopygia guttata</i> ) or Double-barred Finch ( <i>Taeniopygia bichenovii</i> ); both of which place their nest within the foliage of shrubs or small trees



RAPID HABITAT ASSESSMENT: BLACK THROAT	RAPID HABITAT ASSESSMENT: BLACK THROATED FINCH   APRIL 2022							
	(Beruldsen and Chapman, 2003). In contrast, the endangered Black-throated Finch have specific nesting requirements for tree species. Of 50 active nests examined by Rechetelo (2015), all were placed high within one of only four tree species, as described above, with no nests seen in Chinee Apple.							



## 5. Conclusion

Biodiversity Australia carried out preliminary vegetation assessments and habitat suitability assessments for Black Throated Finch (BTF) within 3 potential offset sites mapping over approximately 827ha. The assessment will determine the preferred sites to use as an offset for the Haughton Pipeline project.

The field surveys were undertaken by two ecologists in March 2022. The surveys identified various vegetation types across the study area are contain potential habitat for the targeted Black Throated Finch. Although none were recorded during the vegetation mapping surveys, several historical records for BTF occur across the study site.

Several current restrictions to BTF in each Site were identified which have been detailed in Section 4.4. Restrictions identified included significant weed infestations across all sites which will require significant rehabilitation efforts.

Biodiversity Australia has carried out the assessment for the specific purpose of GHD as detailed in our correspondence and is solely for use by GHD. This report is only to be used in full and may not be used to support objectives other than those set out herein, except where written approval, with comments, is provided by Biodiversity Australia. Biodiversity Australia accepts no responsibility for the accuracy of information supplied to them by second and third parties. Should more detail be required please do not hesitate to call our office.

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## A-1 Black Throated Finch Assessment Data

Table 5: Habitat assessment points for BTF

Site	Potential Breeding Habitat	Woody Weeds	Shrub Density	Ratio BTF grass to undesirabl e grass	Bare Ground	Native Tree Health	Disturba nce	Signs of Introduced Pests	BTS Nest	Overall BTF Habitat Quality	Comments
Site 1 (Point 19)	Poor	Scattered	Scattered	Medium	Low	Good	Low	Absent	Absent	Poor	-
Site 1 (Point 20)	Medium	Absent	Medium	Low	Low	Good	Low	Absent	Absent	Poor	Dense Guinea grass would exclude BTF
Site 1 (Point 21)	Good	Absent	Medium	Low	Low	Medium	Low	Absent	Absent	Poor	E. Platyphylla community but dense stylos in under storey
Site 1 (Point 22)	Good	High	High	Low	Absent	Good	Low	Absent	Absent	Poor	Very dense Guinea grass, Lantana and Siam weed ,no foraging habitat except along track edge
Site 1 (Point 23)	Good	Medium	Medium	Medium	Medium	Good	Medium	Absent	Absent	Medium	Platyphylla with patchy Chinee apple and Guinea grass with areas of low growing Panicum accessible to BTF Site has experienced recent hot fire
Site 1 (Point 24)	Good	Absent	Medium	Medium	Medium	Good	Medium	Absent	Absent	Medium	Recently burnt, Guinea grass mostly restricted to gullies
Site 1 (Point 25)	Good	Absent	Low	Medium	Medium	Good	Medium	Absent	Absent	Medium	Ephemeral water puddle present
Site 1 (Point 26)	Good	Scattered	Low	Low	Low	Poor	High	Absent	Absent	Poor	Recent hot fire



Site	Potential Breeding Habitat	Woody Weeds	Shrub Density	Ratio BTF grass to undesirabl e grass	Bare Ground	Native Tree Health	Disturba nce	Signs of Introduced Pests	BTS Nest	Overall BTF Habitat Quality	Comments
Site 1 (Point 27)	Good	Low	High	Low	Low	Good	Low	Absent	Absent	Poor	Dense Guinea grass, stylos and scatter lantana and Siam excludes foraging
Site 1 (Point 28)	Medium	Low	Low	Low	Low	Medium	High	Absent	Absent	Poor	Melinus repens and Eragrostis spp on edge of track is potential BTF food but site generally with dense Guinea grass, lantana, Hyptis, Siam weed with no foraging opportunity for btf
Site 1 (Point 29)	Medium	Low	High	Low	Low	-None Selected-	-None Selected-	Absent	Absent	Poor	
Site 2 (Point 6)	Good	High	High	Low	Medium	Good	Medium	Absent	Absent	Poor	
Site 2 (Point 7)	Good	Low	Low	High	Medium	Good	Low	Low	Absent	Good	
Site 2 (Point 8)	Good	Low	Low	High	Medium	Good	Low	Low	Absent	Good	
Site 2 (Point 9)	Medium	High	High	Low	Medium	Good	Medium	Low	Absent	Poor	
Site 2 (Point 10)	Medium	Low	High	Low	High	Good	Low	Absent	Absent	Poor	
Site 2 (Point 11)	Good	High	High	Low	Medium	Good	Low	Absent	Absent	Poor	Corymbia clarksoniana with Petalostigma and Lantana under storey, mostly Aristide grasses, viridiflora absent
Site 2 (Point 12)	Good	Medium	Medium	Medium	Medium	Good	Low	Absent	Absent	Medium	
Site 3	Good	Low	Low	Low	Medium	Good	Low	Absent	Absent	Good	



Site	Potential Breeding Habitat	Woody Weeds	Shrub Density	Ratio BTF grass to undesirabl e grass	Bare Ground	Native Tree Health	Disturba nce	Signs of Introduced Pests	BTS Nest	Overall BTF Habitat Quality	Comments
(Point 1)											
ite 3 (Point 2)	Poor	High	High	Low	Low	Medium	Low	Absent	Absent	Poor	High Chinee
Site 3 (Point 3)	Good	High	High	Low	Low	Poor	Low	Low	Absent	-None Selected-	
Site 3 (Point 4)	Good	High	High	High	Medium	Medium	Medium	Absent	Absent	Poor	
Site 3 (Point 5)	Poor	High	High	Low	Low	Poor	Low	Low	Absent	Poor	
Site 3 (Point 13)	Good	Medium	Medium	Low	Low	Good	Low	Absent	Absent	Poor	Dense stylos
Site 3 (Point 14)	Good	High	High	Low	Low	Good	Low	Absent	Absent	Poor	
Site 3 (Point 15)	Good	Medium	Medium	Medium	Low	Medium	Low	Absent	Absent	Medium	
Site 3 (Point 16)	Good	Scattered	Scattered	Medium	Low	Good	Low	Absent	Absent	Medium	
Site 3 (Point 17)	Good	High	High	Low	Low	Good	Low	Absent	Absent	Poor	
Site 3 (Point 18)	Good	Low	Low	Medium	Low	Good	Low	-None Selected-	Absent	Medium	

