



Appendix D

Weed and Pest Management Plan - Final



Townsville City Council

Lansdown Eco-Industrial Precinct – Enabling Infrastructure: Weed and Pest Management Plan

2 May 2025

Table of Contents

Acronyms and Abbreviations	v
Section 1 Introduction.....	1
1.1 Background	1
1.2 Purpose	4
1.3 Objectives.....	4
1.4 Scope	4
1.5 Proponent Details	4
1.6 Project Overview	5
1.7 Related Documents.....	6
1.8 Management Review and Document Control.....	6
1.8.1 Review	6
1.8.2 Document Updates and Control	7
Section 2 Existing Environment	8
2.1 Bioregion	8
2.2 Climate	8
2.3 Terrestrial Ecology.....	8
2.3.1 Fauna and Flora.....	8
Section 3 Relevant Pest and Weed Species	10
3.1 Weed Species	10
3.2 Pest Species.....	46
Section 4 Roles and Responsibilities.....	49
Section 5 Management Actions, Controls and Responsibilities	51
Section 6 Incidents, Complaints, Corrective and Preventative Actions	55
6.1 Induction and Training	55
6.2 Incidents and Complaints.....	55
6.3 Non-Conformances and Corrective Actions.....	55
6.4 Data Retention and Record Management	56
6.5 Document Control.....	56
Section 7 References	57

Figures

Figure 1-1 Project Location and Project Components	3
--	---

Tables

Table 1-1	Proponent Details.....	4
Table 1-2	Summary of project components forming LEIP enabling infrastructure	5
Table 3-1	Weed Species	11
Table 3-2	Pest Species	46
Table 4-1	Project Roles and Responsibilities	49
Table 5-1	Weed and Pest Objectives and Management Measures.....	51

Document history & status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
Draft	06/03/2023	S. Mainey	S. Mainey	07/03/2023	Draft, Rev A
Final	13/03/2023	S. Mainey	S. Mainey	14/03/2023	Final, Rev 0
Final	01/09/2023	SS	DT	01/09/2023	Final, Rev 3
Final	26/02/2025	SG	SG	26/02/2025	Final, Rev 4
Final	02/05/2025	ER	DT	02/05/2025	Final, Rev 5

Distribution of copies

Version	Date issued	Quantity	Electronic	Issued to
Draft Rev A	07/03/2023	1	Word / PDF	Townsville City Council
Final Rev 0	14/03/2023	1	PDF	Townsville City Council
Final Rev 3	01/09/2023	1	PDF	Townsville City Council
Final Rev 4	17/04/2025	1	PDF	Townsville City Council
Final Rev 5	02/05/2025	1	PDF	Townsville City Council DCCEEW

Last Saved:	2 May 2025
File Name:	LEIP_Weed and Pest Management Plan_Final_02052025
Author:	Shenna van Melick, ER
Project Manager:	SM, SG
Client:	Townsville City Council
Document Title:	Lansdown Eco-Industrial Precinct – Enabling Infrastructure: Weed and Pest Management Plan
Document Version:	Final, Rev 5
Project Number:	1001483

Acronyms and Abbreviations

Acronym	Definition
BoM	Bureau of Meteorology
BMP	Bushfire Management Plan
CEMP	Construction Environmental Management Plan
EPBC Act	<i>Environmental Protection and Biosecurity Conservation Act 1999</i>
Ha	hectares
LEIP	Lansdown Eco-Industrial Precinct
MNES	Matters of National Environmental Significance
MNES MP	Matters of National Environmental Significance Management Plan
NC Act	<i>Nature Conservation Act 1992 (QLD)</i>
BS Act	<i>Biosecurity Act 2014 (QLD)</i>
TCC	Townsville City Council
WoNS	Weeds of National Significance
WPMP	Weed and Pest Management Plan

Section 1 Introduction

1.1 Background

Townsville City Council (TCC) is delivering the Lansdown Eco-Industrial Precinct (LEIP) Project, Northern Australia's first environmentally sustainable advanced manufacturing, technology, and processing hub. The LEIP will realise the objectives of the Townsville City Deal (a tri-partisan agreement spanning 15 years and all levels of government) to activate industry and export growth for Townsville and its regional partners as the Industry Powerhouse of the North.

The LEIP is located on approximately 2,200 hectares (ha) of freehold land owned by TCC.

Five initial proponents have been conditionally allocated land in the precinct following tender processes conducted by TCC. These proponents are:

- Queensland Pacific Metals;
- Edify Energy;
- Origin Energy Future Fuels Pty Ltd;
- Solquartz Pty Ltd; and
- North Queensland Gas Pipeline.

A tract of Sport & Recreation zoned land directly adjacent the LEIP was leased to DriveIT NQ in 2016 for the creation of a multi-use motorsport facility. Construction commenced in 2021 with the main track recently completed.

On 25 March 2022, TCC formally endorsed the infrastructure masterplan for the LEIP. Under the masterplan, over the next 15 – 20 years the LEIP will be developed in the following stages:

- Stage 0 Enabling Infrastructure (2022-2025) – essential early enabling infrastructure works (as shown on Figure 1-1) to service the LEIP that primarily involves road access at the northern and southern section of the LEIP and a raw water network (including external pipeline, storage reservoir, internal pump station and internal pipeline) to service the initial proponents;
- Stage 1 (2022 – 2025) – Initial proponents obtain all various approvals and commence construction of their facilities;
- Stage 2 (2026-2030) – Initial proponents move into full and expanded operations. Expansion to the south, with provision of necessary infrastructure to service other proponents; and
- Stages 3 & 4 (2031-2041) – Final expansion and infill of infrastructure to service those areas remaining. Proponents' operations continue to grow. Enhancement of infrastructure as the LEIP continues to be further developed.

Stage 0 (Enabling Infrastructure) is the action that is the subject of the EPBC referral (2022/09383) and this Preliminary Documentation. Therefore, only the water infrastructure network and access roads shown in Figure 1-1 are considered under this Preliminary Documentation. Further information on the Project's enabling infrastructure is detailed in Section 1.3.

Development of the various land parcels within the LEIP (i.e., Stages 1 to 4) will be undertaken by the various proponents, with separate EPBC Act processes where applicable. Other future infrastructure to support future proponents would also be subject to separate EPBC Act processes.

While future projects within the LEIP project boundary will be subject to future EPBC Act processes, an overarching constraints analysis assessment was undertaken as part of the Master Planning process which included identifying environmentally sensitive areas (refer to the TCC LEIP Master Plan 2022). As a result of this assessment, mapped

regional ecosystems (up to 308 ha), which have the potential to provide suitable habitat for EPBC listed species, have been classified as moderate to highly constrained areas. Therefore, of the total LEIP Project area of 2,056.5 ha, it is considered that only 1,627.6 ha is developable land.

Future projects will need to carry out detailed assessment before development can proceed. The mapped regional ecosystems and environmentally sensitive areas require ground truthing to understand the condition and suitability of habitat for EPBC listed species. Two proponents (Drive-it NQ and QPM) have carried site specific environmental investigations, including EPBC referrals/self-assessment, for sections of the developable land within the precinct, therefore a total of 1,459.8 ha of land remains, of which 1,161.6 ha is considered developable.

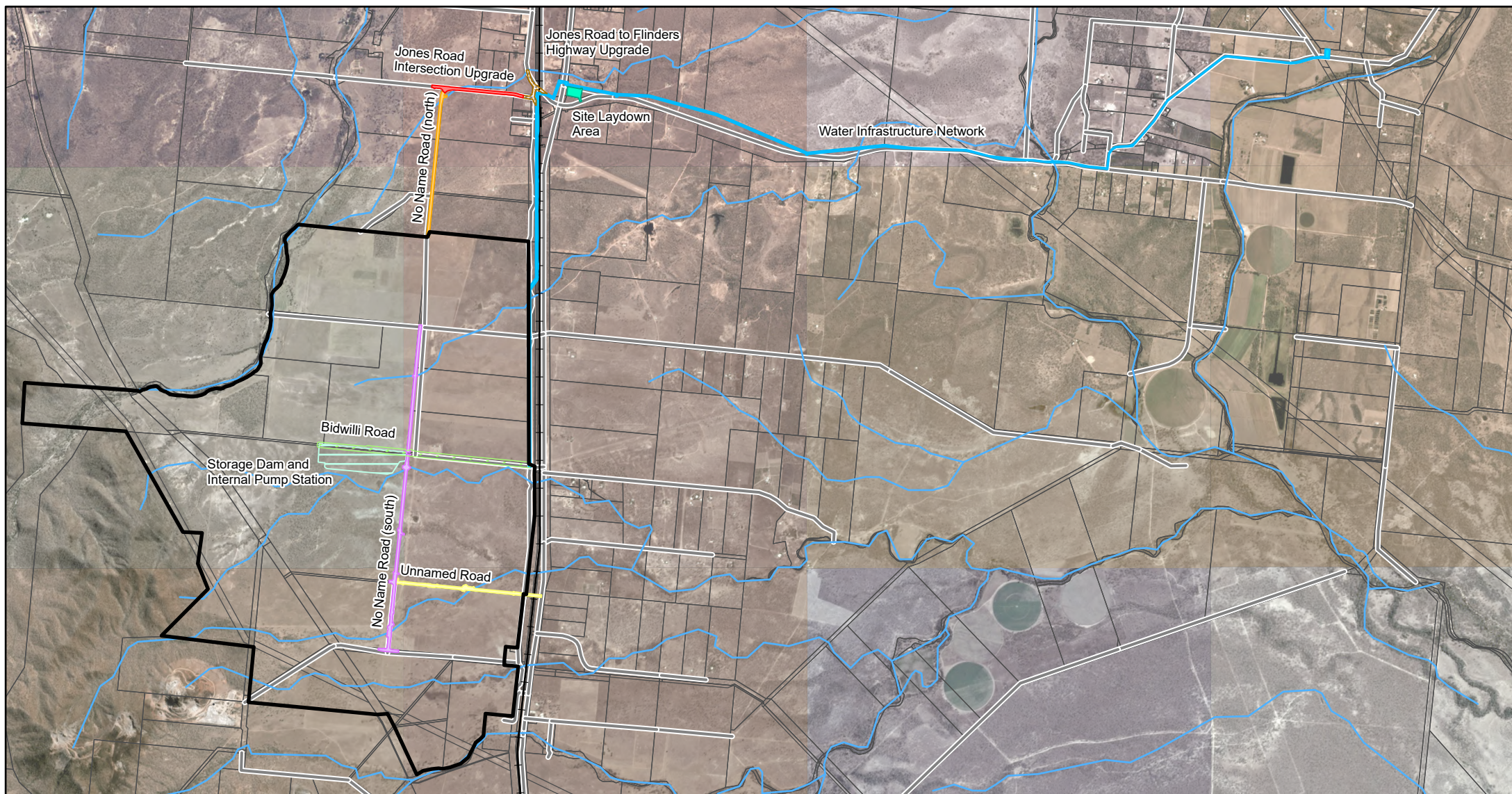
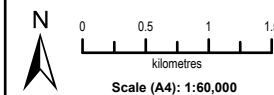


Figure 1 Project Location and Project Components

LEGEND

- | | | |
|--|---------------------------------------|-----------------|
| LEIP Precinct Boundary | Bidwilli Road | Rail Network |
| Jones Road Intersection Upgrade | Unamed Road | Existing Roads |
| Jones Road to Flinders Highway Upgrade | Water Infrastructure Network | Watercourse |
| No Name Road (north) | Storage Dam and Internal Pump Station | Cadastre (DCDB) |
| No Name Road (south) | Site Laydown Area | |



User: selgete 13/02/2025
 Project:
 Figure_1_1_ProjectLocation&Components.aprx
 Client: 1001483 TCC - LEIP Prelim Documentation

Projection: GDA 1994 MGA Zone 55
 Esri, Geoscience Australia, NASA, NGA, USGS, Esri, USGS.
 Imagery: Queensland Satellite Data QSat 2017.

DISCLAIMER
 CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.



1.2 Purpose

This Weed and Pest Management Plan (WPMP) describes the measures to be implemented during the Project's construction and operation phases, to minimise the potential introduction of weed and pest species. The WPMP will also form the basis of an ongoing plan to control weed propagation and pests and reduce risk to local flora and fauna species within the Project area.

1.3 Objectives

The objectives of this WPMP is to establish appropriate management measures and controls to prevent the introduction and spread of invasive flora (weeds) and fauna (pests) species to the local environment as a result of the Project construction and operational activities. The key objectives of the WPMP include:

- Identify potential aspects of the Project construction and operation phases that may introduce or spread weed and pests species within and outside the Project area;
- Detail controls, mitigation measures and responsibilities to avoid the introduction and spread of weeds, and potential impacts to the environment associated with any such event;
- Detail monitoring and reporting requirements relating to weeds and pest species; and
- Ensure adequate response strategies are available and quickly activated in the event that invasive flora or fauna is detected and eradicated before they can impact local flora and fauna species.

1.4 Scope

The scope of the WPMP is limited to the following:

- All activities associated with the investigation, construction and operation of the LEIP, as described in Section 1.6 and shown in Figure 1-1; and
- All activities undertaken by representatives, including subcontractors and third parties associated with the LEIP.

1.5 Proponent Details

The proponent details are outlined in Table 1-1.

Table 1-1 Proponent Details

	Proponent Details
Organisation name (as registered for ABN/CAN)	Townsville City Council
ABN	44741992072
Business address	103 Walker Street, Townsville, QLD 4810
Postal address	PO Box 1268, Townsville, QLD 4810
Primary contact	Scott Muller
Job title	Program Manager – Lansdown Eco-Industrial Precinct Commercial & Project Services

1.6 Project Overview

The LEIP has been formed to foster Australia's first environmentally sustainable, advanced manufacturing, technology, and processing hub which will result in significant economic benefit to the local, regional and State economy. The LEIP is located approximately 38 km south of Townsville, adjacent and west of Flinders Highway. The enabling infrastructure is contained within the LEIP site and numerous existing road reserves including Flinders Highway, Woodstock Giru Road, Major Creek Road, Jones Road, Woodstock Avenue, Old Flinders Highway, No Name Road, Unnamed Road, Ghost Gum Road and Bidwilli Road. The LEIP location and its components are provided in Figure 1-1, refer to Appendix C of the Preliminary Documentation for a copy of detailed design plans. To facilitate the development of the LEIP, enabling infrastructure is required and a summary of project components is outlined in Table 1-2.

Table 1-2 Summary of project components forming LEIP enabling infrastructure

Project Component	Description Summary
Water Infrastructure	
External Pipeline	<ul style="list-style-type: none"> Extends from Ross River Dam Pipeline, connecting existing water supply network to LEIP; Connection occurs adjacent to three intersection junctions at Majors Creek; Total length of 16.25 km, within a 20 m construction corridor; 4.5 m from the nearest property boundary; Constructed using DN900 glass reinforced polymer (GRP) pipe; and Pipeline protection, erosion control and scour prevention materials used.
Internal Pipeline	<ul style="list-style-type: none"> Installed within the No Name Road existing and new road reserve from Ghost Gum Rd to Manton Quarry Rd; 3.8 km Ductile Iron Cement Lined (DICT) pipeline; and Various diameters including DN250 to DN500 to suit water demand of each individual proponent.
Storage Reservoir	<ul style="list-style-type: none"> Proposed immediately south of Bidwilli Road at the termination of the external pipeline; Occupies an area of approximately 26 ha; Storage capacity of approximately 437 ML; and Access via Bidwilli Road.
Internal Pump Station	<ul style="list-style-type: none"> New pump station immediately east of the storage reservoir; Connects storage reservoir and internal pipeline; and Access via Bidwilli Road.
Site Laydown Area	<ul style="list-style-type: none"> Approximately 1.7 ha in area, north east of Flinders Highway and Woodstock Giru Road intersection.
Access Roads	
Jones Road to Flinders Highway Upgrade	<ul style="list-style-type: none"> Modifications to existing roads and intersections required; and All roads are existing sealed roads within road reserves.
Jones Road Intersection Upgrade	<ul style="list-style-type: none"> Existing road; Connection to No Name Road (north) via an upgraded intersection; and Upgraded to 10 m wide pavement within the 30 m wide road reserve for approximately 900 m in length to connect to Old Flinders Highway.
Closure of Existing Level Crossings	<ul style="list-style-type: none"> Two existing level crossings will be closed; and No change to land tenure, road reserves or road infrastructure.
No Name Road (north) Upgrade	<ul style="list-style-type: none"> Extends 1.7 km from northern LEIP boundary to Jones Road; New road, new 10 m wide pavement within an existing 20 m road reserve; Designed to accommodate heavy vehicles; Road reserve will be expanded to 30 m in width with a 10 m wide land resumption on the western side of the road corridor; and Forecast for 2,340 vehicles per day, with 35% heavy vehicle usage.

Project Component	Description Summary
No Name Road (south) Upgrade	<ul style="list-style-type: none"> ▪ New, 10 m wide road pavement within a new 30 m road reserve; ▪ Designed to accommodate heavy vehicles; ▪ Extends approximately 2.2 km from Bidwilli Road to Manton Quarry Road; and ▪ Design is not yet complete but will adopt the same cross section as No Name Road (north)
Bidwilli Road	<ul style="list-style-type: none"> ▪ Minor modifications required to connect to No Name Road (south) and provide access to internal pump station and storage reservoir ; ▪ Raw water pipeline to be installed within Bidwilli Road reserve on the southern side; and ▪ Northern side of the road reserve will allow for a 4.25 m service corridor for future resources.
Unnamed Road	<ul style="list-style-type: none"> ▪ East-West road north of Manton Quarry Road. ▪ Existing road reserve is 20 m wide; ▪ Design is not yet complete, however will adopt the same cross section and details to No Name Road (north and south); ▪ New, 10 m wide road pavement designed to accommodate heavy vehicles; and ▪ New 10 m wide easement will be added to the northern boundary of Unnamed Road for drainage and future services.
Flinders Highway Upgrade	<ul style="list-style-type: none"> ▪ Shoulder widening required. The shoulder widening works are contained within the existing Flinders Highway road reserve
Creation of Easements	<ul style="list-style-type: none"> ▪ 45 m wide easement on western side of No Name Road (south); ▪ A 10m wide easement on the northern side of Unnamed Road; and ▪ A 20m wide easement within the southern side of the existing Ghost Gum road reserve.

1.7 Related Documents

The WPMP is one of several plans that outline management measures and controls for the Project, including the:

- Construction Environmental Management Plan (CEMP);
- Matters of National environmental Significance Management Plan (MNES MP); and
- Bushfire Management Plan (BMP).

1.8 Management Review and Document Control

1.8.1 Review

The WPMP will be reviewed regularly by TCC or their delegate annually, including by the Project Manager and by any Construction or Operations Manager. The reviews may be run in conjunction with wider Project team meetings and will consider the following:

- The level of environmental risk;
- Monitoring and inspection results;
- Recent and relevant introduction of pest and weed species from Project related activities or incidents, including lessons learnt;
- Opportunities for improvement;
- Any new legislative obligations or guidelines;
- Changes in internal and external policies and guidelines;
- Effectiveness of weed and pest controls; and

- Adequacy of resources.

Evaluation of compliance with legal and other obligations will be undertaken through regular internal checks. During Project activities, key Project personnel described in Section 4 will be responsible for facilitating the development, implementation and update of the WPMP. They will also be responsible for ensuring the adequacy of this WPMP for the tasks to be undertaken. Any changes or updates that are identified, are required to be signed off by the Project Manager, prior to distribution of an updated version.

The WPMP is a live document and may be reviewed and updated as necessary (in addition to regular internal reviews). Possible triggers for amendment outside of the review schedule include:

- Changes in legislation, weed and pest management guidelines or approval documentation;
- Introduction of new flora or fauna threats;
- Where feedback, complaints, monitoring or site inspections have identified the need to improve weed and pest control management in certain aspects or areas of the Project; and
- Where construction or operational procedures or methods necessitate the need to update the Project description and accordingly amend management measures.

1.8.2 Document Updates and Control

Relevant parties will be notified of any changes (key roles identified in Section 4) and then disseminated to the broader team. This can be through management meetings, special communications or toolbox talks.

Section 2 Existing Environment

2.1 Bioregion

The Project is located within the Townsville Plains biogeographic subregion, forming part of the Brigalow Belt biogeographic region. Major vegetation types within the Townsville Plains biogeographic subregion include eucalypt, Corymbia and Melaleuca woodlands. Land uses within the biogeographic subregion include grazing native vegetation, irrigated cropping, nature conservation, residential, managed resource protection, and transport and communication.

2.2 Climate

Townsville and immediate surrounds experiences a tropical climate with lower than expected rainfall. The region experiences an average annual rainfall of 1,143 mm, of which most falls during the wet season (November to April). The average annual evaporation for Townsville is approximately 2,587 mm (1970-2016). During the wet season, Townsville often experiences tropical cyclones and monsoon winds.

Based on data from the Townsville Bureau of Meteorology (BoM, 2022) at Townsville Aero weather station (032040), the mean minimum temperatures range from 13.8°C to 24.3°C in January; with maximum temperatures ranging from 25.2°C in July to 31.6°C in December.

2.3 Terrestrial Ecology

2.3.1 Fauna and Flora

There are a number of threatened fauna and flora species listed under both the *Environmental Protection and Biosecurity Conservation Act 1999* (EPBC Act) and *Nature Conservation Act 1992* (NC Act) that have the potential to or are known to occur within the Project area.

As part of the Project referral process, a likelihood of occurrence assessment was undertaken for the listed species based on the presence of suitable habitat within the Project area and confirmed records. Field surveys conducted by Evolve Environmental Solutions Pty Ltd (Evolve) in 2022 identified 91 fauna species (excluding domestic livestock), of which, three are listed under either the EPBC Act or NC Act, including Koala (*Phascolarctos cinereus*) listed as endangered, Black-throated finch (*Poephila cincta*) listed as endangered, and the Southern squatter pigeon (*Geophaps scripta scripta*) listed as vulnerable.

Weed and pests species may impact the Black-throated finch and an increase in domestic livestock and rabbits may impact the vegetation structures and the availability of food during the wet season (BTF Recovery Team 2004; NRA 2005). Exotic grasses when introduced may invade the natural habitat of the Black-throated finch (southern), changing vegetation structures and ultimately driving the species out of their habitat (DSEWPC, 2012).

Koalas are susceptible to dog attacks, as such, all domesticated animals (including dogs) are restricted from entering the Project area at all times. Evidence suggests that encountering mortality can pose a significant threat during post-weaning dispersal, which occurs at a young age in both male and female koalas (DAWE, 2022).

Squatter pigeon (southern) habitat is at risk to vegetation clearance and the overgrazing of habitat by pest species (i.e., livestock and rabbits) and the introduction of weed species, ultimately degrading important habitat for the Squatter pigeon (southern) and driving the species out of their natural habitats (TSSC, 2015).

A search of the WildNet Online database for threatened flora species and the EPBC Protected Matters Search Tool (PMST) was undertaken using a 5 km buffer of the Project area. The PMST identified seven vulnerable flora species including: Miniature moss-orchid (*Bulbophyllum globuliforme*), bluegrass (*Dichanthium setosum*), Mt Stuart ironbark (*Eucalyptus paedoglauca*), black Ironbox (*Eucalyptus raveretiana*), *Leichhardtia brevifolia*, *Omphalea celata* and

Section 2 Existing Environment

Tephrosia leveillei. The WildNet Online database did not return any confirmed records of threatened flora species within a 5 km buffer of Project area. No threatened flora species were detected during the 2022 field surveys by Evolve.

Section 3 Relevant Pest and Weed Species

Introduction of weed and pest species can be detrimental to the LEIP local environment. If inappropriately managed, the movement of equipment, machinery, vehicle and material during the construction and operational phases of the Project has the potential to introduce new weed and pest species. Examples of pest and weed contaminated material include:

- Live animals (including insects) may carry weeds;
- Personnel: shoes and clothing;
- Vehicles: tire tread;
- Plant pathogens: fungi, nematodes, bacteria and diseases etc.;
- Plant material: pollen, bark, spores, gum, leaves, branches, roots, stems, wood, flowers, seeds, fruits and vegetables;
- Soil: dirt, mud, gravel, clay and sand;
- Animal material: hair, fur, skin, faeces, blood and fluids, feathers, nests, honey, flesh and bone;
- Water: possibly harbouring mosquitoes, larvae and eggs; and
- Food refuse: food scraps.

Under the BS Act, a person who has control over a 'Restricted Matter' must not do the following:

- Category 3 – a person who has, or has a thing infested with, the 'Restricted Matter' in the person's possession or under the person's control must not distribute or dispose of the restricted matter unless the distribution or disposal is carried out via the methods set out in the BS Act;
- Category 4 – move the 'Restricted Matter', or cause or allow it to be moved;
- Category 5 – keep in the person's possession or under the person's control; and
- Category 6 – give food to the 'Restricted Matter'.

3.1 Weed Species



Field surveys conducted from March to April 2022 and May 2022 identified introduced flora species within the Project area. Table 3-1 provides a list of relevant weed species identified during field surveys.

Sections of the pipeline and road network fall within areas of agricultural grazing use as reflected by a high proportion of pastoral grass and legume species such as shrubby stylo (*Stylosanthes scabra*). Road reserves surveyed contain species reflective of the agricultural use of the wider region and weed species typical of disturbed sites such as grader grass (*Themeda quadrivalvis*) and Leucaena (*Leucaena leucocephala*).

The access road corridor is very weed-dense, with open (non-remnant) areas dominated by herbaceous weeds, primarily hyptis (*Hyptis sp.*), joyweed (*Alternanthera sessilis*), sicklepod (*Senna obtusifolia*), chinee apple, rubber vine and siratro (*Macroptilium atropurpureum*) and some grasses including signal grass (*Urochloa decumbens*) and Chloris spp. (EMM 2022). Chinee apple, rubber vine and sicklepod are listed as 'Category 3 restricted matters' under *Biosecurity Act 2014* (BS Act). Chinee apple and rubber vine are also Weeds of National Significance (WoNS) at Commonwealth level.

Section 3 Relevant Pest and Weed Species



Table 3-1 Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Alternanthera ficoidea</i>	Joyweed / Joseph's coat	-	No	<p>Chemical Control - Infestations should receive initial herbicide treatments before being subjected to physical removal. This reduces the risks of spreading viable fragments, reduces the bulk of the above-ground biomass, and creates better visual access to the site.</p> <p>Non-chemical control - There are two main physical removal techniques: (1) deep manual digging (2) shallow mechanical excavation.</p>	 <p>Source: Brisbane City Council¹</p>
<i>Lotononis bainesii</i>	Lotononis	-	No	<p>Chemical control – susceptible to 2,4-D and 2,4-DB</p> <p>Non-chemical control – hand pulling.</p>	 <p>Source: New South Wales Government²</p>

¹ Brisbane City Council: <https://weeds.brisbane.qld.gov.au/weeds/purple-joyweed>

² New South Wales Government: <https://www.dpi.nsw.gov.au/agriculture/pastures-and-rangelands/species-varieties/lotononis>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Malvastrum coromandelianum</i>	Prickly malvastrum	-	No	<p>Chemical control – spot spray herbicide treatment on extended stands with grass-selective active ingredients (2,4-D, Triclopyr, or combining the two active ingredients) (Davie, 2021).</p> <p>Non-chemical control – hand remove seedlings and whole plants, mechanical control also commonly used (Davie, 2021).</p>	 <p>Source: iNaturalistAU³</p>
<i>Sida acuta</i>	Common wireweed	-	No	<p>Chemical control – numerous herbicides are registered for the control of <i>Sida</i> sp. including fluroxypyr, atrazine, 2,4-Dm Glufosinate-ammonium, imazapic, dicamba etc. (Australian Pesticides and Veterinary Medicines Authority, 2022).</p> <p>Non-chemical control – manual removal by weeding under the surface of the ground, slashing using rotary cutters.</p>	 <p>Source: Government of Western Australia⁴</p>

³ iNaturalistAU: <https://inaturalist.ala.org.au/photos/23394914>

⁴ Government of Western Australia: <https://www.agric.wa.gov.au/declared-plants/sida-pest>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Sida cordifolia</i>	Flannel weed	-	No	<p>Chemical control – numerous herbicides are registered for the control of <i>Sida</i> sp. including fluroxypyr, atrazine, 2,4-Dm Glufosinate-ammonium, imazapic, dicamba etc. (Australian Pesticides and Veterinary Medicines Authority, 2022).</p> <p>Non-chemical control – manual removal by weeding under the surface of the ground, slashing using rotary cutters.</p>	 <p>Source: Central QLD Coast Landcare Network⁵</p>
<i>Styloanthus scabra</i>	Shrubby stylo	-	No	<p>Chemical control – Shrubby stylo is tolerant of Trifluralin and 2,4-D at establishment, and bentazone (e.g., Basagran), and fluzifop-butyl (e.g., Fusilade) post-emergence, but not acifluorfen (e.g., Blazer) (Progressive Seeds, 2018).</p> <p>Non-chemical control – hand pulling.</p>	 <p>Source: Pastures Australia⁶</p>

⁵ Central QLD Coast Landcare Network: <https://cqclandcarenetwork.org.au/plants/flannel-weed/>

⁶ Pastures Australia: https://keys.lucidcentral.org/keys/v3/pastures/Html/Shrubby_stylo.htm



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Mesosphaerum suaveolens</i>	Mint weed	-	No	<p>Chemical control – Herbicides including 2,4-D amine, glyphosate and MCPA are used to chemically control mint weed (DPI NSW, 2020b).</p> <p>Non-chemical control – Mintweed can be suppressed by maintaining vigorous perennial pastures (DPI NSW, 2020b).</p>	 <p>Source: Plants of the World Online⁷</p>
<i>Portulaca pillosa</i>	Hairy pigweed	-	No	<p>Chemical control – herbicides containing trifluralin, paraquat, Glufosinate, atrazine, dicamba and 2,4-D are effective in removing hairy pigweed (PennState Extension, 2016).</p> <p>Non-chemical control – manual removal by pulling plants and cutting them below the soil line.</p>	 <p>Source: North Queensland Plants⁸</p>

⁷ Plants of the World Online: <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:158297-2>

⁸ North Queensland Plants: <http://www.northqueenslandplants.com/Australian%20Plant%20Families%20N-S/Portulacaceae/Portulaca/Portulaca%20pilosa.html>




Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Senna obtusifolia</i>	Sicklepod	Category 3 Restricted Matter	No	Chemical control – herbicides including triclopyr, 2,4-D + picloram, dichlorprop as K salt, paraquate as dichloride and dicamba have been used to treat sicklepod (DAF, 2020m). Non-chemical control – Mechanical control by slashing (when flowering), rotary hoeing or discing (immediate after sowing) (DAF, 2020m).	 Source: Queensland Government ⁹
<i>Cyperus compressus</i>	Summer sedge	-	No	Chemical control – herbicides including glyphosate, methylarsonic acid and 2,4-D have been used to control sedge. Non-chemical control – manual removal by hand weeding and hoeing.	 Source: Atlas of Living Australia ¹⁰

⁹ Queensland Government: <https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/biosecurity/plants/invasive/restricted/sicklepod>

¹⁰ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2910879#gallery>

Section 3 Relevant Pest and Weed Species



Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Cryptostegia grandiflora</i>	Rubber vine	Category 3 Restricted Matter	Yes	Chemical control – Foliar spray (with strict conditions), aerial application of herbicides, basal bark spray, cut stump treatments and soil application of herbicides are commonly used to treat rubber vine (DAF, 2020). Non-chemical control – Mechanical control including slashing (medium density infestations), stick raking and blade-ploughing with follow up treatment (dense infestations) (DAF, 2020).	 Source: Weeds Australia ¹¹
<i>Paspalum dilatatum</i>	Paspalum	-	No	Chemical control – foliar spray a proven method for removing paspalum using herbicides containing glyphosate (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – hand removal, digging underneath the crown below soil level to remove entire plant.	 Source: Atlas of Living Australia ¹²
<i>Centrosema molle</i>	Centro	-	No	Chemical Control - Foliar spray - Glyphosate 360 at 1:100 with water applied to actively growing plants (WLM) (Smith, 2002). Non-chemical control – Hand pull isolated plants and small infestations, making sure that all roots and stem fragments are removed. Plant pieces should either be bagged and taken to the dump or hung up off the ground to prevent reshooting.	 Source: Queensland Government ¹³

¹¹ Weeds Australia: <https://profiles.ala.org.au/opus/weeds-australia/profile/Cryptostegia%20grandiflora>

¹² Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2888864#gallery>

¹³ Queensland Government: https://www.daf.qld.gov.au/data/assets/pdf_file/0005/57173/centro.pdf




Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Panicum maximum</i> var. <i>trichoglume</i>	Green panic	-	No	Chemical control – herbicides including glyphosate, Glufosinate-ammonium and pendimethalin have been used in the removal of green panic (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – removal of the root by hand.	 Source: Atlas of Living Australia ¹⁴
<i>Passiflora foetida</i>	Stinking passionflower	-	No	Chemical control - There are no herbicide products specifically registered for the control of stinking passion flower; however, several may work. A permit held by the Department of Agriculture and Fisheries allows people generally to use some herbicides including glyphosate, picloram and triclopyr (DAF, 2020p). Non-chemical control - Hand pulling vines when the soil is moist is the most reliable form of control.	 Source: Plants of the World Online ¹⁵

¹⁴ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2910762#gallery>

¹⁵ Plants of the World Online: <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:321966-2>

Section 3 Relevant Pest and Weed Species




Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Tridax procumbens</i>	Coat buttons / Tridax daisy	-	No	Chemical control – herbicides including Glufosinate-ammonium and 2,4-D have been used to control <i>Tridax procumbens</i> (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – hand remove small populations and seedlings.	 Source: Atlas of Living Australia ¹⁶
<i>Macropitillium atropurpureum</i>	Siratro	-	No	Chemical control – Foliar spray – The herbicides including Glufosinate-ammonium and glyphosphate have been used to control this species. Non-chemical Control – Hand pull isolated plants and small infestations, making sure that all roots and stem fragments are removed. (DAF, 2020n).	 Source: Department of Agriculture and Fisheries ¹⁷
<i>Euphorbia heterophylla</i>	Milk weed	-	No	Chemical control – herbicides containing imazapic, fluroxypyr, paraquat and pendimethalin are effective in removing milkweed (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – hand remove small populations and seedlings ensuring entire plant is removed.	 Source: Atlas of Living Australia ¹⁸

¹⁶ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2905198#gallery>

¹⁷ Department of Agriculture and Fisheries: https://www.daf.qld.gov.au/_data/assets/pdf_file/0003/65289/siratro.pdf

¹⁸ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2920947>

Section 3 Relevant Pest and Weed Species



Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Bidens pillosa</i>	Cobbler's pegs	-	No	Chemical control – herbicides including glyphosate, diuron, bentazone, 2,4-D, glufosinate-ammonium, dicamba, fluroxypyr, metribuzin and pendimethalin are registered in Australia for removing cobbler's pegs (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – hand weeding, hoeing and mowing before flowering or mechanical weeding.	 Source: Brisbane City Council Weeds ¹⁹
<i>Megathyrsus maximus</i> var. <i>maximus</i>	Guinea grass	-	No	Chemical Control – There are no herbicide products specifically registered for the control of guinea grass in Queensland. However, a permit held by the Department of Agriculture and Fisheries allows people generally to use some herbicides including fluazifop and glyphosphate (DAF, 2020g). Non-chemical Control – Manual control of guinea grass may require the digging out of larger clumps with a mattock or similar tool (DAF, 2020g).	 Source: Brisbane City Council Weeds ²⁰
<i>Themeda quadrivalvis</i>	Grader grass	-	No	Chemical control – foliar spray with herbicides including glyphosate are effective in the removal of grader grass (Department of Primary Industries and Regional Development, 2019). Non-chemical control – hand pulling and grubbing, slashing and stock removal aid in the non-chemical control of grader grass (NT Government, 2023).	 Source: Brisbane City Council Weeds ²¹

¹⁹ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/cobblers-pegs>

²⁰ Brisbane City Council Weeds: <https://sown.com.au/megathyrsus-maximus-var-maximus-poaceae-green-panic-guinea-grass/>

²¹ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/grader-grass>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Leucaena leucocephala</i>	Leucaena	-	No	<p>Chemical control – There are no herbicide products specifically registered for the control of Leucaena in Queensland. However, a permit held by the Department of Agriculture and Fisheries allow people to generally use herbicide products including triclopyr + picloram, triclopyr + picloram + aminopyralid and picloram + aminopyralid (DAF, 2020i).</p> <p>Non-chemical control – Removing the roots by hand (DAF, 2020i).</p>	 <p>Source: Brisbane City Council²²</p>
<i>Clitoria ternatea</i>	Blue pea	-	No	<p>Chemical control – The herbicides imazethapyr and bentazone have been used to control this species.</p> <p>Non-chemical control – Hand pull isolated plants and small infestations, making sure that all roots and stem fragments are removed.</p>	 <p>Source: Atlas of Living Australia²³</p>

²² Brisbane City Council: <https://weeds.brisbane.qld.gov.au/weeds/leucaena>

²³ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2906023#gallery>

Section 3 Relevant Pest and Weed Species



Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Setaria sphacelata</i>	South African pigeon grass	-	No	Chemical control – herbicides including sartin, Butroxydim, pendimethalin, glufosinate-ammonium and atrazine etc. are effective in removing <i>Setaria sp.</i> Non-chemical control – Hand removal of the entire plant. Slashing and mowing is not recommended as it can promote growth (Department of Planning and Environment, 2022).	 <p>Source: Department of Primary Industries and Regional Development²⁴</p>
<i>Plectranthus sp.</i>		-	No	Chemical control – spot spray using glyphosate, metsulfuron-methyl or triclopyr. Non-chemical control – Hand remove and dispose appropriately or burn.	 <p>Source: Al-Ashwal M. (2017)²⁵</p>

²⁴ Department of Primary Industries and Regional Development: <https://www.agric.wa.gov.au/pasture-management/setaria?nopaging=1>

²⁵ Al-Ashwal M. (2017):

https://www.researchgate.net/publication/321965988_A_PRELIMINARY_STUDY_ON_POSSIBLE_EFFECT_OF_PLECTRANTHUS_SPP_EXTRACT_ON_HISTOPATHOLOGY_AND_PERFORMANCE_OF_BROILER_CHICKEN_INFECTED_BY_EIMERIA_TENELLA_IN_TAIZ_CITY_YEMEN



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Glycine tabacina</i>	Variable glycine	-	No	<p>Chemical control – There are no herbicide products specifically registered for the control of glycine in Queensland. However, a permit held by the Department of Agriculture and Fisheries allows people generally to use some herbicides including triclopyr, dicamba and fluroxypyr plus metsulfuron-methyl (DAF, 2020f).</p> <p>Non-chemical control – manual removal using a brush cutter (DAF, 2020f).</p>	 <p>Source: Atlas of Living Australia²⁶</p>
<i>Melinis repens</i>	Red natal grass	-	No	<p>Chemical control – herbicides including glyphosate acid, glufosinate-ammonium, oxyfluorfen and trifluralin are effective in removing <i>Melinis repens</i> (Australian Pesticides and Veterinary Medicines Authority, 2022).</p> <p>Non-chemical control – Remove by hand, optimal removal between November and April.</p>	 <p>Source: Atlas of Living Australia²⁷</p>

²⁶ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/taxon/apni/51285791#gallery>

²⁷ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2891550#gallery>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Eragrostis pilosa</i>	Soft love grass	-	No	Chemical control – Glyphosate as potassium is registered in Queensland to remove soft love grass. Non-chemical control – unknown to be effective.	 <p>Source: Atlas of Living Australia²⁸</p>
<i>Chloris gayana</i>	Rhodes grass	-	No	Chemical control – Foliar spray using glyphosate (DAF, 2020k). Non-chemical control – Manual control by digging using a mattock.	 <p>Source: Brisbane City Council Weeds²⁹</p>

²⁸ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2891008#gallery>

²⁹ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/rhodes-grass>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Aeschynomene villosa</i>	Villose jointvetch / Hairy jointvetch	-	No	Chemical control – herbicides including imazapic + imazapyr (Concenco et al., 2018), glyphosate, 2,4-D and dicamba (Duiker, 2010). Non-chemical control – Handpicking, grazing and fire.	 Source: Atlas of Living Australia ³⁰
<i>Stachytarpheta cayennensis</i>	Snake weed	-	No	Chemical control – 2,4-D amine is the only herbicide register for control, only effective on growing plants and most effective in summer (DAF, 2020o). Non-chemical control – Slashing, destock paddocks and promote native pasture growth through sowing (DAF, 2020o).	 Source: Department of Agriculture and Fisheries ³¹

³⁰ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2897462#gallery>

³¹ Department of Agriculture and Fisheries: https://www.daf.qld.gov.au/_data/assets/pdf_file/0005/54392/snakeweed.pdf



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Bothriochloa decipiens</i>	Pitted bluegrass	-	No	Chemical control – bluegrass species are controlled using herbicides containing imazapyr, fluazifop-p, pendimethalin, glyphosate and quizalofop-p-ethyl (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – Hand pulling.	 Source: Queensland Department of Environment, Land and Water ³²
<i>Eremophila mitchellii</i>	False sandalwood	-	No	Chemical control – herbicides containing triclopyr, tebuthiuron and hexazinone have been used to control false sandalwood. Non-chemical control – mechanical controls including blade ploughing and rubbing are effective in the removal of False sandalwood. Fire or grazing by goats and sheep are also effective.	 Source: Atlas of Living Australia ³³

³² Queensland Department of Environment, Land and Water: <https://apps.des.qld.gov.au/species-search/details/?id=8843>

³³ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2897914#gallery>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Sporobolus sp.</i>	Rats tail grass	Category 3 Restricted Matter	No	<p>Chemical control – Boom spray and spot spray with glyphosate or flupropanate. Some herbicides permitted or registered for giant rat's tail grass control have withholding periods and significant ongoing management requirements in grazing and dairy farming (DAF, 2021b).</p> <p>Non-chemical control – hand-chip, bag and remove tufts and burn them, where appropriate burn prior to cultivating to reduce viable seed bank (Business Queensland, 2021).</p>	 <p>Source: Brisbane City Council Weeds³⁴</p>
<i>Chloris truncata</i>	Windmill grass	-	No	<p>Chemical control – Butoxydim, chlorthal-dimethyl, glyphosate potassium salt, glyphosate trimesium and quizalofop-p-ethyl are registered for the control of windmill grass (DAF, 2016).</p> <p>Non-chemical control – tillage and crop competition.</p>	 <p>Source: Atlas of Living Australia³⁵</p>

³⁴ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/giant-rats-tail-grass>

³⁵ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2909038#gallery>




Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Sida rhombifolia</i>	Arrowleaf sida	-	No	Chemical control – numerous herbicides are registered for the control of <i>Sida sp.</i> including fluroxypyr, atrazine, 2,4-Dm Glufosinate-ammonium, imazapic, dicamba etc. (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – manual removal by weeding under the surface of the ground, slashing using rotary cutters.	 Source: Atlas of Living Australia ³⁶
<i>Leersia hexandra</i>	Swamp rice grass	-	No	Chemical control – Glyphosate, fenoxaprop-ethyl, fluazifop-butyl, fluazifop-P-butyl and imazapyr are used for control of swamp rice grass (CABI, 2019). Non-chemical control – Hand pulling.	 Source: Atlas of Living Australia ³⁷

³⁶ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2909922#gallery>

³⁷ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2903696#gallery>

Section 3 Relevant Pest and Weed Species



Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Ludwigia octovalvis</i>	Mexican primrose-willow	-	No	Chemical control – Spot spraying between September and June using glyphosate and follow up with burning (DPI NSW, 2023). Non-chemical control – seedlings can be pulled or dug out.	 Source: Atlas of Living Australia ³⁸
<i>Chloris virgata</i>	Feathertop Rhodes grass	-	No	Chemical control – <i>Chloris sp.</i> have been controlled using butoxydim, glyphosate-trimesium, terbacil and haloxyfop (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – Hand pulling.	 Source: Brisbane City Council Weeds ³⁹
<i>Echinochloa colona</i>	Awnless banyard grass	-	No	Chemical control – herbicides containing metribuzin, glufosinate-ammonium, pendimethalin, butoxydim have been effective in controlling awnless banyard grass. Non-chemical control – Hand pulling.	 Source: Brisbane City Council Weeds ⁴⁰

³⁸ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2910049#gallery>

³⁹ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/feathertop-rhodes-grass>

⁴⁰ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/awnless-banyard>




Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Mimosa pudica</i>	Sensitive weed	-	No	Chemical control – In pasture situations, dicamba and fluroxypyr can be used to control common sensitive plant. Thorough wetting of all leaf surfaces is essential (DAF, 2020c). Non-chemical control – Manual control by hoeing and manipulating grazing regimes.	 Source: Atlas of Living Australia ⁴¹
<i>Chamaecrista rotundifolia</i>	Wynn cassia	-	No	Chemical control – Wynn cassia has previously been removed using fluazifop-p-butyl (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – Hand pulling.	 Source: Atlas of Living Australia ⁴²

⁴¹ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2895147#gallery>

⁴² Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/taxon/apni/51250761>

Section 3 Relevant Pest and Weed Species



Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Urochloa subquadrifida</i>	Signal grass	-	No	Chemical control – herbicides containing butoxydim, flumioxazin, imazapic and pendimethalin are used for chemical control (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – Hand pulling.	 Source: Atlas of Living Australia ⁴³
<i>Cynodon dactylon</i>	Common couch	-	No	Chemical control – Glyphosate is a proven method at controlling common couch. Non-chemical control –hand picking at the sprouts.	 Source: Atlas of Living Australia ⁴⁴
<i>Urena lobata</i>	Urena burr	-	No	Chemical control – herbicides containing fluroxypyr, MCPA, 2,4-D, glufosinate-ammonium and dicamba are effective in controlling urena burr (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – hand weeding before flowering and fruiting.	 Source: Brisbane City Council Weeds ⁴⁵

⁴³ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2905960>

⁴⁴ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2915319>

⁴⁵ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/urena-burr>




Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Commelina cyanacea</i>	Scurvy weed	-	No	<p>Chemical control – bentazone, glyphosate, fluroxypyr and pendimethalin are registered for the control of scurvy weed (Australian Pesticides and Veterinary Medicines Authority, 2022).</p> <p>Non-chemical control – removing the entire plant by hand, although drowning it is more effective (ABC, 2023). Mechanical controls including ploughing and cultivating are temporary controls.</p>	 <p>Source: Australian Native Plants Society⁴⁶</p>
<i>Gomphrena celosioides</i>	Gomphrena weed	-	No	<p>Chemical control – MCPA, clopyralid and diflufenican are control chemicals for this species.</p> <p>Non-chemical control – there are no mechanical or cultural controls for this species.</p>	 <p>Source: Atlas of Living Australia⁴⁷</p>

⁴⁶ Australian Native Plants Society: https://anpsa.org.au/plant_profiles/commelina-cyanea/

⁴⁷ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2918955>

Section 3 Relevant Pest and Weed Species



Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Passiflora suberosa</i>	Corky passionfruit	-	No	Chemical control – Fluroxypyr, glyphosate and Metsulfuron-methyl can be applied by spot spraying, cut, scrape and paint, splatter gun, basal barking or by wiping onto leaves (DPI NSW, 2020a). Non-chemical control – hand pulling, slashing or removal of above ground growth.	 Source: Brisbane City Council Weeds ⁴⁸
<i>Senna tora</i>	Stinking cassia	Category 3 Restricted Matter	No	Chemical control – herbicides including triclopyr, 2,4-D + picloram, dichlorprop as K salt, paraquat as dichloride and dicamba have been used to treat sicklepods (DAF, 2020m). Non-chemical control – Mechanical control by slashing (when flowering), rotary hoeing or discing (immediate after sowing) (DAF, 2020m).	 Source: Brisbane City Council Weeds ⁴⁹
<i>Macroptilium lathyroides</i>	Phasey bean	-	No	Chemical Control – The herbicides including Glufosinate-ammonium and glyphosphate have been used to control this species. Non-chemical Control – Hand pull isolated plants and small infestations, making sure that all roots and stem fragments are removed.	 Source: Plants of the World Online ⁵⁰

⁴⁸ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/corky-passion-vine>

⁴⁹ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/foetid-cassia>

⁵⁰ Plants of the World Online: <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:149066-2>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Eclipta prostrata</i>	False daisy	-	No	Chemical control – False daisy can be controlled using glyphosate acid, 2,4-D, glufosinate-ammonium, dicamba and metsulfuron-methyl (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – hand weed when plants are still small. Mowing and densely growing undercovers, gravel or ground cloth are also effective (Marble et al., 2021).	 Source: Atlas of Living Australia ⁵¹
<i>Rottboellia cochinchinensis</i>	Itch grass	-	No	Chemical control – Itch grass is controlled using pendimethalin followed by bentazone plus cyhalofop (Chauhan et al., 2015). Non-chemical control – hand weeding, slashing and mechanical cultivation.	 Source: Atlas of Living Australia ⁵²

⁵¹ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/taxon/apni/51268439#gallery>

⁵² Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2886801#gallery>




Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Calicotome spinosa</i>	Spiny broom	-	No	<p>Chemical control – Glyphosate, metsulfuron-methyl, fluroxypyr and triclopyr are registered in Queensland for spiny broom control (Office of Environment and Heritage, 2014).</p> <p>Non-chemical control – hand pulling, hand cutting and mechanical clearing using dozing. Grubbing, stick raking, slashing and/or mulching (Office of Environment and Heritage, 2014).</p>	 <p>Source: Atlas of Living Australia⁵³</p>
<i>Desmodium sp.</i>		-	No	<p>Chemical control – <i>Desmodium sp.</i> are chemically controlled using glufosinate-ammonium and acifluorfen (Australian Pesticides and Veterinary Medicines Authority, 2022).</p> <p>Non-chemical control – hand weeding, mow and bag clippings and tillage.</p>	 <p>Source: Atlas of Living Australia⁵⁴</p>

⁵³ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2888027#gallery>

⁵⁴ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2901327>

Section 3 Relevant Pest and Weed Species




Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Convolvulus sp.</i>		-	No	Chemical control – <i>Convolvulus sp.</i> are chemically controlled using 2,4-D, dicamba, picloram, dichlobenil, quinclorac and triclopyr (Morishita et al., 2005). Non-chemical control –tillage, cultivation, mowing, pulling and burning (Morishita et al., 2005).	 Source: Atlas of Living Australia ⁵⁵
<i>Calyptracarpus vialis</i>	Creeping Cinderella	-	No	Chemical control – Metsulfuron-methyl and glyphosate work to control creeping Cinderella. Non-chemical control – hand pulling.	 Source: Brisbane City Council Weeds ⁵⁶
<i>Conyza bonariensis</i>	Flaxleaf fleabane	-	No	Chemical control – a mix of glyphosate and 2,4-D or picloram + 2,4-D effectively control Flaxleaf fleabane (GRDC, 2013). Non-chemical control – hand pulling.	 Source: Brisbane City Council Weeds ⁵⁷

⁵⁵ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2886766#gallery>

⁵⁶ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/creeping-cinderella-weed>

⁵⁷ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/flaxleaf-fleabane>

Section 3 Relevant Pest and Weed Species



Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Indigofera spicata</i>	Creeping indigo	-	No	Chemical control – Creeping indigo can be controlled by diflufenican (Australian Pesticides and Veterinary Medicines Authority, 2022), 2,4-D amine, dicamba and metsulfuron-methyl (Mackay et al., 2021). Non-chemical control – hand pulling.	 Source: Brisbane City Council Weeds ⁵⁸
<i>Euphorbia hirta</i>	Asthma plant	-	No	Chemical control – Asthma plant can be controlled using pendimethalin, hexazinone and glyphosate (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – physical removal by hand.	 Source: Atlas of Living Australia ⁵⁹
<i>Plumeria sp.*</i>	Frangipani	-	No	Chemical control – There are no herbicide products specifically registered for the control of frangipani. Non-chemical control – tree cutting and grubbing.	 Source: Atlas of Living Australia ⁶⁰

⁵⁸ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/creeping-indigo>

⁵⁹ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/taxon/apni/51284110#gallery>

⁶⁰ Atlas of Living Australia: <https://bie.ala.org.au/species/NZOR-6-75021#gallery>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Morus alba</i> *	White mulberry	-	No	Chemical control – herbicides including glyphosate control white mulberry. Non-chemical control – hand pulling and tree cutting.	 <p>Source: Brisbane City Council Weeds⁶¹</p>
<i>Carica papaya</i> *	Pawpaw	-	No	Chemical control – There are no herbicide products specifically registered for the control of pawpaw. Non-chemical control – hand pulling, tree cutting, grubbing and removal of all fruits.	 <p>Source: Atlas of Living Australia⁶²</p>

⁶¹ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/white-mulberry>

⁶² Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2916206#gallery>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Modiola caroliniana</i>	Carolina weed	-	No	Chemical control – Carolina weed can be removed using dicamba (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – hand pulling.	 Source: Atlas of Living Australia ⁶³
<i>Khaya senegalensis</i>	African mahogany	-	No	Chemical control – African mahogany is chemically controlled using glyphosate (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – hand pulling.	 Source: Atlas of Living Australia ⁶⁴

⁶³ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2914881#gallery>

⁶⁴ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2911973#gallery>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Senna hirsuta</i>	Hairy senna	3	No	<p>Chemical control – There are no herbicides registered for the control of hairy senna in Queensland. However, a permit held by the Department of Agriculture and Fisheries allows people generally to use some herbicide products including triclopyr + picloram or triclopyr + picloram + aminopyralid (DAF, 2020h).</p> <p>Non-chemical control – Hand pull seedlings and small plants when soil is wet. If plants are cut, the stump must be immediately treated with herbicide (DAF, 2020h).</p>	 <p>Source: Brisbane City Council Weeds⁶⁵</p>
<i>Ipomea sp.</i>		-	No	<p>Chemical control – There are no herbicides registered for the control of <i>Ipomea sp.</i> in Queensland. However, a permit held by the Department of Agriculture and Fisheries allows people generally to use some herbicide products including dicamba, 2,4-D amine, MCPA and glyphosate (DAF, 2020a; 2020b).</p> <p>Non-chemical control – Manual removal by pulling roots and mulching heavily to discourage regrowth (DAF, 2020a). Manual removal by using a brush hook (DAF, 2020b).</p>	 <p>Source: Atlas of Living Australia⁶⁶</p>

⁶⁵ Brisbane City Council Weeds: <https://weeds.brisbane.qld.gov.au/weeds/hairy-cassia>

⁶⁶ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/taxon/apni/51270704#gallery>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Ziziphus mauritiana</i>	Chinese apple	3	No	<p>Chemical control – Basal bark spray, cut stump treatments, soil application and herbicides including triclopyr, fluroxypyr and picloram are used to treat chinee apple (DAF, 2021a).</p> <p>Non-chemical control – mechanical control by stick raking, ripping or using a cutter bar, however, broken and exposed stems and regrowth must be sprayed (DAF, 2021b).</p>	 <p>Source: Weeds of Australia⁶⁷</p>
<i>Physalis peruviana</i>	Peruvian groundcherry	-	No	<p>Chemical control – <i>Physalis peruviana</i> is chemically controlled using glyphosate (Australian Pesticides and Veterinary Medicines Authority, 2022).</p> <p>Non-chemical control – hand pulling.</p>	 <p>Source: Atlas of Living Australia⁶⁸</p>

⁶⁷ Weeds of Australia - <https://profiles.ala.org.au/opus/weeds-australia/profile/Ziziphus%20mauritiana>

⁶⁸ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2897276#gallery>




Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Eleusine indica</i>	Goose grass	-	No	Chemical control – Dithiopyr, foramsulfuron, pendimethalin, indaziflam etc., chemically control goose grass (Breedon and Brosnan, 2019). Non-chemical control – mowing, fertility and pest management, improving soil conditions and core aeration may control goosegrass (Breedon and Brosnan, 2019).	 Source: Atlas of Living Australia ⁶⁹
<i>Crotalaria sp.</i>	Rattlepods	-	No	Chemical control – Rattlepods are chemically controlled using MCPA, glufosinate-ammonium, hexazinone, atrazine and 2,4-D (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – hand removal.	 Source: Atlas of Living Australia ⁷⁰

⁶⁹ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2904956>

⁷⁰ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/taxon/apni/51300011#gallery>

Section 3 Relevant Pest and Weed Species



Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Cucumis myriocarpus</i>	Paddy Melon	-	No	Chemical control – A mixture of triclopyr, 2,4-D and metsulfuron in the early morning when plants are not stressed effectively control paddy melon (Department of Primary Industries and Regional Development, 2022). Non-chemical control – hand chipping and removing mature fruits, grazing by goats and planting perennial pastures (Shaik et al., 2016).	 Source: Atlas of Living Australia ⁷¹
<i>Chamaesyce hirta</i>	Asthma Plant	-	No	Chemical control – Asthma plant can be controlled using pendimethalin, hexazinone and glyphosate (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – physical removal by hand.	 Source: Atlas of Living Australia ⁷²
<i>Paspalum conjugatum</i>	Sour grass	-	No	Chemical control – foliar spray a proven method for removing paspalum using herbicides containing glyphosate, paraquat, atrazine, diuron, simazine and fluazifop-P (Australian Pesticides and Veterinary Medicines Authority, 2022). Non-chemical control – hand removal, digging underneath the crown below soil level to remove entire plant.	 Source: Atlas of Living Australia ⁷³

⁷¹ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/taxon/apni/51270837#gallery>

⁷² Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/taxon/apni/51284110#gallery>

⁷³ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2902672#gallery>



Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Ocimum basilicum</i>	Basil	-	No	Chemical control – There are no herbicide products specifically registered for the control of basil. Non-chemical control – hand pulling.	 Source: Atlas of Living Australia ⁷⁴
<i>Richardia stellaris</i>		-	No	Chemical control – herbicides containing dicamba are used to eradicate <i>Richardia stellaris</i> . Non-chemical control – hand pulling.	 Source: Atlas of Living Australia ⁷⁵

⁷⁴ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/taxon/apni/51287988#gallery>

⁷⁵ Atlas of Living Australia: <https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2894206#gallery>


Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Ocimum basilicum</i> var. <i>thrysiflora</i>	Thai Basil	-	No	Chemical control – There are no herbicide products specifically registered for the control of Thai basil. Non-chemical control – hand pulling.	 <p>Source: Plantworks Nursery⁷⁶</p>
<i>Chloris inflata</i>	Purple-top chloris	-	No	Chemical control – There are no herbicide products specifically registered for the control of Thai basil. Non-chemical control – hand pulling.	 <p>Source: DES⁷⁷</p>

⁷⁶ Plantworks Nursery: <https://www.plantworks nursery.com/plant/Basil-Thai>

⁷⁷ Department of Environment and Science: <https://apps.des.qld.gov.au/species-search/details/?id=15552>

Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Status		Recommended Treatments	Reference Image
		QLD BS Act	Cth WoNS		
<i>Digitaria ciliaris</i>	Crabgrass	-	No	Chemical control – There are no herbicide products specifically registered for the control of Thai basil. Non-chemical control – hand pulling.	 <p>Source: Plants of the World Online⁷⁸</p>

* Tree and shrub species have been planted along property boundary.

⁷⁸ Plants of the World Online: <https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:1038558-2>

3.2 Pest Species

Ten introduced and pest fauna species were recorded during field surveys, five of which are listed as Restricted Matters under the BS Act (DAF, 2020j) (Table 3-2). Wildlife Online searches identified an additional 12 introduced fauna species that are likely to be present within a 20 km radius of the Project area (Table 3-2).

Cane toads (*Rhinella marina*) are listed as a key threatening process under the EPBC Act. The species has had a dramatic impact on populations of native fauna in Australia, including numerous threatened species.

Table 3-2 Pest Species

Scientific Name	Common Name	Biodiversity Act Restricted Fauna Category ⁷⁹	Control methods
Species recorded during field surveys			
<i>Rhinella marina</i>	Cane Toad	-	<ul style="list-style-type: none"> Fencing; Egg removal; and Commercial spray.
<i>Acridotheres tristis</i>	Indian myna	-	<ul style="list-style-type: none"> Maintain and restore native habitat; Removal of nesting sites (palms, dead fronds), nests and eggs; Trapping – funnel entrance/tripped-gate entrance
<i>Felis catus</i>	Cat	Category 3, 4, and 6 (feral animals)	<ul style="list-style-type: none"> Shooting - highly selective and carried out at night; Poisoning – fresh meat baits containing 1080 poison; and Trapping – rubber-jawed, leg-hold traps in ideal locations (DAF, 2020d)
<i>Canis familiaris</i>	Dog	Category 3, 4, and 6 (feral animals)	<ul style="list-style-type: none"> Shooting – opportunistically; Poisoning – fresh meat or manufactured baits containing 1080, strychnine or para amino propiophenone (PAPP) poison; and Trapping – padded, laminated or offset foot-hold traps, poisoned with strychnine (DAF, 2020q)
<i>Vulpes vulpes</i>	Red fox	Category 3, 4, 5, and 6	<ul style="list-style-type: none"> Shooting - highly selective and carried out at night; Poisoning – fresh meat or manufactured baits containing 1080, strychnine or para amino propiophenone (PAPP) poison; and Trapping – soft-catch traps and snares in ideal locations (DAF, 2020r)
<i>Rattus sp.</i>	Rat	-	<ul style="list-style-type: none"> Poisoning – poisons containing brodifacoum Trapping – baited trap
<i>Sus scrofa</i>	Feral pig	Category 3, 4, and 6	<ul style="list-style-type: none"> Trapping – funnel entrance/tripped-gate entrance/pig-specific trigger; Shooting – ground shooting or shooting from helicopter; and Poisoning – 1080 poison baits selectively positioned (DAF, 2020e).

⁷⁹ Department of Agriculture and Fisheries: https://www.daf.qld.gov.au/_data/assets/pdf_file/0011/403868/restricted-invasive-animals.pdf

Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Biodiversity Act Restricted Fauna Category ⁷⁹	Control methods
<i>Bos taurus</i>	European cattle	-	<ul style="list-style-type: none"> Property fencing (domestic)
<i>Capra hircus</i>	Goat	Category 3, 4, and 6 (feral animals)	<ul style="list-style-type: none"> Property fencing (domestic); Trapping – trap at watering points using goat-proof fencing with one-way gates or ramps; and Shooting – ground shooting or shooting from helicopter (DAF, 2020o).
<i>Ovis aries</i>	Domestic sheep	-	<ul style="list-style-type: none"> Property fencing (domestic)
Species potentially occurring within 20 km of the Project area			
<i>Lonchura punctulata</i>	Nutmeg mannikin	-	<ul style="list-style-type: none"> Prevention/restriction of access to seeds and grains; Removal of bird nests; Non-harmful deterrents – scare windmills, sonic repellers (short term options); Shooting; and Trapping.
<i>Columba livia</i>	Rock dove	-	<ul style="list-style-type: none"> Pigeon traps; Shooting (using sound suppressed air rifles); Pigeon baiting (requires a permit); and Prevention – barriers.
<i>Pavo cristatus</i>	Indian peafowl	-	<ul style="list-style-type: none"> Shooting; Poisoning – alpha-chloralose and starlicide; Trapping – multi-capture traps; Rendering eggs unhatchable – coating eggs in liquid paraffin or corn oil (prevents embryo development); Non-harmful deterrents – scare windmills, sonic repellers (short term options); Removing or reducing food sources; Exclusion from nesting and roosting sites; and Fertility control – using bait containing nicarbazin (OvoControl®).
<i>Passer domesticus</i>	House sparrow	-	<ul style="list-style-type: none"> Removing or reducing food sources; Removal of bird nests; Non-harmful deterrents – scare windmills, sonic repellers (short term options); Shooting; and Trapping.
<i>Equus caballus</i>	Horse	-	<ul style="list-style-type: none"> Property fencing (domestic); Trapped in yards or mustered to be humanely killed or domesticated (feral horses); Aerial shooting (feral horses); Must be controlled as per <i>Animal Care and Protection Act 2001</i>.

Section 3 Relevant Pest and Weed Species

Scientific Name	Common Name	Biodiversity Act Restricted Fauna Category ⁷⁹	Control methods
<i>Mus musculus</i>	House mouse	-	<ul style="list-style-type: none"> Chemicals; Baiting; Trapping; Barrier fencing; Habitat modification; Biological control; and Repellents.
<i>Oreochromis mossambica</i>	Mozambique mouthbrooder	-	<ul style="list-style-type: none"> Humane killing following ethical euthanasia code in "Euthanasia of animals used for scientific purposes" (ANZCCART, 2001); Poisoning in ponds and small dams (not practical for rivers and streams as this also kills native fish).
<i>Gambusia holbrooki</i>	Mosquitofish	-	<ul style="list-style-type: none"> Humane killing following ethical euthanasia code in "Euthanasia of animals used for scientific purposes" (ANZCCART, 2001); Poisoning in ponds and small dams (not practical for rivers and streams as this also kills native fish); Biological control – introduction of larger, predatory fish species (i.e., Mouth Almighty in the summer months, which then die off during the winter and leave the water body devoid of the invasive species).
<i>Poecilia reticulata</i>	Guppy	-	<ul style="list-style-type: none"> Eradication although difficult in large or flowing waterbodies; Containment – eliminating human-assisted movement of fish; Biological control – introduction of larger, predatory fish species.
<i>Hemidactylus frenatus</i>	House gecko	-	<ul style="list-style-type: none"> Trapping – glue boards; and Insecticides.
<i>Spilopelia chinensis</i>	Spotted dove	-	<ul style="list-style-type: none"> Cage trapping; Shooting (using sound suppressed air rifles); Baiting; and Destruction of nests and eggs; Prevention – barriers.

Section 4 Roles and Responsibilities

All personnel involved in the Project (including Project employees, contractors and subcontractors) are required to undertake activities in accordance with this Management Plan. The key roles and responsibilities for the Project are outlined in Table 4-1.

Table 4-1 Project Roles and Responsibilities

Position	Responsibilities
The Client (Principal)	<ul style="list-style-type: none"> Obtaining state and Commonwealth statutory approvals; Reviewing contractors construction phase plans and submittals for executing works; Monitor and inspect Contractors construction activities for Health Safety and Environment (HSE) and Quality compliance; Monitor progress of site work to verify that the Contractors are executing works in accordance with their contract requirements; and Undertake environmental and cultural heritage audits to verify compliance with this CEMP.
Contractors	
Project Manager	<ul style="list-style-type: none"> Preparation of construction specific management plans, quality plans and HSE plans; Ensuring that the project environmental performance meets client requirements; Responsible for the integrity of the work and commercial performance of the Project; Ensure all environmental requirements are implemented in accordance with the project approvals, client requirements, the specification, the contract requirements and legislative obligations; Reviewing and implementing this CEMP; Communicating requirements of this CEMP to the Project team, and ensuring compliance; Ensuring Project environmental documentation records are maintained and provided to the client and their representatives as necessary; Engage qualified and experienced staff and provide management support to ensure all activities relating to environmental performance are undertaken by trained and competent personnel and in accordance with the contract; and Select subcontractors and suppliers based on an evaluation of their ability to meet the specified requirements including those for environmental and ensure compliance.
Site Supervisor	<ul style="list-style-type: none"> Ensure all environmental requirements are implemented in accordance with the project approvals, client requirements, the specification, the contract requirements and legislative obligations; Monitor the effectiveness of the environmental controls implementation and escalate issues for rectification to the Project manager; Monitor the subcontractors and suppliers based on an evaluation of their ability to meet the specified requirements including those for environmental and ensure compliance; Manage the development of construction methods, ensuring that complex of specific processes for safety, environment or quality aspects for the portion of the works are completed in accordance with construction codes of best practice, legislative requirements, client specifications and in coordination with the Project Manager and HSE Advisor; Ensure that all personnel are inducted in their roles and responsibilities; Establish and maintain a list of current contact names and telephone numbers for all personnel relevant to environmental matters. This list will include (but not limited to): <ul style="list-style-type: none"> Principle's Representative; Contractor's Site Supervisors; HSE Manager; and DES Pollution Hotline (PH 1300 130 372). Conduct daily visual inspections and weekly site checklists.

Section 4 Roles and Responsibilities

Position	Responsibilities
Contractor HSE Manager	<ul style="list-style-type: none"> Ensure all workers are aware of the CEMP requirements related to their scope of work; Establish and plan the controls for environmental compliance for the Project; and Maintain the Project non-conformance system.
All Site Personnel	
All personnel	<ul style="list-style-type: none"> Follow the requirements and carry out work in accordance with this CEMP and those of the Site Supervisor; Report any potential environmental issues to the site supervisor, including: <ul style="list-style-type: none"> Dust generation; Non-conformance to noise and vibration; Non-conformance to air quality; Uncontrolled waste storage. Exercise due care, skill and judgement when carrying out tasks; Implement corrective actions which have been approved by the appointed site supervisor; Comply with all relevant environmental laws associated with the delivery of the Project and undertake works in accordance with the BSC Environmental Policy (BSC, 2018).

Section 5 Management Actions, Controls and Responsibilities

Management and control measures have been developed to minimise the risk of introduction of invasive fauna and flora, and diseases to the local environment of the Project location as a result of construction and operational activities. The weed and pest management and control measures are described in Table 5-1 below. Activities undertaken inappropriately or without pre-established suitable controls may lead to adverse impacts to the local flora and fauna environment.

Table 5-1 Weed and Pest Objectives and Management Measures

Objectives					
<ul style="list-style-type: none"> No introduction of pest fauna and flora, and diseases to the Project location; No increase in existing weed infestations on site; There are no new weed species introduced to the site or adjacent areas resulting from proposed action; Environmental weed species and their extent are mapped, monitored and managed in line with this plan; No weed outbreaks in disturbed areas and soil stockpiles; Minimize the impact of established weeds in no go areas through management measures in this plan; and Overall health of native species is improved with management measures implemented in this plan. 					
Management and Control Measures					
No.	Action	Monitoring	Timing	Responsibility	Compliance Evidence
WPMP1	All relevant staff and contractors trained and aware of their weed and pest management responsibilities and procedures.	NA	Construction and Operation	Site Supervisor	Staff induction records
WPMP2	Weed and Pest Management Plan reviewed and updated every 12 months.	NA	Construction and Operation	Project Manager	MP document history
WPMP3	All staff and contractor to undergo inductions on biosecurity aspects, including weed and pest control and management measures, prior to working on the Project.	NA	Construction and Operation	Project Manager / Site Supervisor	Staff induction record and checklist
TF14	Formal weed mapping will be undertaken as part of pre-construction activities to confirm weed presences along the Project corridor and form the basis of a Project Weed and Pest Management Plan. The Plan must include management direction taken from the <i>Biosecurity Act 2014</i> and regional biosecurity and pest management plans.	NA	Construction and Operation	Site Supervisor	Baseline weed map

Section 5 Management Actions, Controls and Responsibilities

Objectives					
WPMP4	Annual weed mapping to understand nature of the spread of weeds and plan weed control activities for the following 12 months.	Undertake annual monitoring (after the wet season) to map any spread of weeds within the Project area.	Construction and Operation	Site Supervisor	Yearly weed map
WPMP5	Undertake routine inspections within the Project area to identify potential new weed species and to determine success of controlling existing species.	Quarterly	Construction and Operation	Site Supervisor	Inspection checklist
WPMP6	Maintain adequate weed control infrastructure (i.e., wash bay and inspection area).	NA	Construction and Operation	Site Supervisor / All personnel	Photos
WPMP7	<p>All machinery that is entering the Project area, including but not limited to light vehicles, heavy vehicles and mobile plant equipment is washed down in the washdown bay when the following is applicable:</p> <ul style="list-style-type: none"> Before a machine is to commence work in areas that require interaction with topsoil used for stockpiles or vegetation; Before a machine is due to work in an environmentally sensitive area; and After leaving the Project area and accessing locations that are not designated roads. 	NA	Construction and Operation	Site Supervisor	Environmental Representative records
WPMP8	If noticeable traces of weed materials are found during inspection in any vehicle, equipment or material, it should be detained at the facility until wash down treatment or elimination/removal of this material is complete.	Visual inspection on every equipment, machinery or material for biosecurity material prior to unloading.	Construction and Operation	Site Supervisor	Environmental Representative records

Section 5 Management Actions, Controls and Responsibilities

Objectives					
WPMP9	Report to the environmental representative as soon as possible if invasive flora species are identified on any vehicle, machinery or material prior to unloading within the Project area.	NA	Construction and Operation	All personnel	Environmental Representative records
WPMP10	Raising awareness to all staff and contractors to increase knowledge of weed and pest species and their potential impact, as well as provide advice on how this risk can be managed.	NA	Construction and Operation	Project Manager / Site Supervisor	Staff induction records
WPMP11	Flora and fauna (native and pest species) will be managed in accordance with the requirements of the: <ul style="list-style-type: none"> ▪ <i>Environmental Protection and Biodiversity Conservation Act 1999</i>; and ▪ <i>Biosecurity Act 2014</i>. 	NA	Construction and Operation	Project Manager / Site Supervisor	Environmental Representative records
WPMP12	If identified, implementation of a buffer zone around any dense infestations using physical/chemical control techniques.	NA	Construction and Operation	Project Manager / Site Supervisor	Environmental Representative records
WPMP13	Use of herbicides to control weed infestations within the Project area, if required.	NA	Construction and Operation	Site Supervisor	Environmental Representative records
WPMP14	Establish and enforce no-go areas adjacent to the approved clearing areas, to minimise the area of disturbance and minimise areas required to be rehabilitated.	NA	Construction and Operation	Project Manager / Site Supervisor	Photos and plans
WPMP15	Ensure no biosecurity materials (e.g., terrestrial or marine plants or animals, seeds, pets, etc.) are brought to the Project site.	Visual monitoring required for all vehicle, machinery and construction material brought to the Project site.	Construction and Operation	All personnel	Inspection checklist and incident register

Section 5 Management Actions, Controls and Responsibilities

Objectives					
G3	Ensure all vehicles are strictly controlled and do not operate in areas outside the needs of the Project construction and operation.	NA	Construction and Operation	Site Supervisor	Photos of site boundary flagging and incident records
G5	Minimise the occurrence of off-road vehicle movements.	NA	Construction and Operation	All personnel	Environmental Representative records
WPMP16	Report to the environmental representative as soon as possible if invasive fauna or flora species is identified on-site.	NA	Construction and Operation	All personnel	Environmental Representative records
FS19	No domesticated animals are to be brought on site.	NA	Construction and Operation	All personnel	Staff induction records and incident register

Section 6 Incidents, Complaints, Corrective and Preventative Actions

6.1 Induction and Training

All site personnel will undergo site specific inductions and training that will include environmental and biosecurity awareness. Toolbox meetings will also be undertaken as and when required to cover specific environmental or biosecurity issues.

Personnel required to conduct weed and pest control, monitoring and reporting activities are to be suitably trained or experienced. Records of all training are to be filed in accordance with the Project filing system.

6.2 Incidents and Complaints

When an incident or complaint occurs, appropriate action is to be undertaken immediately to address the complaint and/or minimise any further impacts⁸⁰. Corrective actions are to be implemented and an assessment shall be conducted to determine what preventative measure can be taken to prevent similar incidents from occurring in the future.

All incidents and complaints must be reported to the site supervisor and progressed up the reporting hierarchy as soon as possible via an incident report. Information within the incident report will include:

- Date of incident/complaint;
- Details of incident/complaint;
- Actions taken to prevent and control the incident/complaint; and
- Appropriate sign-off, indicating that the incident/complaint was investigated and followed up appropriately.

All complaints and incidents are to be reported within 24 hours of the incident/complaint and investigated within 48 hours to identify the corrective or preventative actions necessary. Actions will be implemented as soon as possible. All incident reports are to be filed in an incident/complaint register and kept on-site.

Subcontractors who become aware of an incident shall report the matter to the site supervisor.

6.3 Non-Conformances and Corrective Actions

Non-conformance or corrective actions detected during monitoring tasks such as site inspections and regular internal and external audits are to be reported within 24 hours to site supervisors via a 'non-conformance or corrective action' request form. The site supervisors responses to non-conformance and corrective actions are to be reported to management.

The proponent will prepare a compliance report annually in accordance with approval conditions.

Incidents, non-conformances, and potential non-conformance with approval conditions are to be reported as required under relevant condition of the approval, permit or licence.

An independent audit of compliance with conditions will be conducted every five-year period.

⁸⁰ For the purposes of this WPMP, an incident could involve the identification of pest or weed species in transit, during inspection and/or failure to complete monitoring and inspections.

6.4 Data Retention and Record Management

All records are to be legible, identifiable and traceable. Records will be stored and maintained so they are readily retrievable and protected against damage, deterioration or loss.

All data will be stored in an electronic database; and kept for seven years following the completion of construction, except when regulations specify longer storage is required.

6.5 Document Control

Documentation resulting under this WPMP including, but not limited to, correspondence (both incoming and outgoing), reports, licences, permits, receipts and certificates are to be filed and easily retrievable.

Documentation, particularly reports, must provide details of revision and version information in order to avoid confusion and to ensure the appropriate revision/version is being used.

Section 7 References

- ABC. 2023. *Weed Control*. Available at: <https://www.abc.net.au/gardening/how-to/weed-control/9433118>
- Australian Pesticides and Veterinary Medicines Authority. 2022. *Public Chemical Registration Information System Search*. Australian Government. Available at: https://portal.apvma.gov.au/pubcris?p_auth=5Txr1r6j&p_p_id=pubcrisportlet_WAR_pubcrisportlet&p_p_lifecycle=1&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_pos=2&p_p_col_count=4&pubcrisportlet_WAR_pubcrisportlet_javax.portlet.action=search
- Black-throated Finch Recovery Team, Department of Environment and Climate Change (NSW) and Queensland Parks and Wildlife Service. 2007. National recovery plan for the black-throated finch southern subspecies *Poephila cincta cincta*. Report to the Department of the Environment and Water Resources, Canberra. Department of Environment and Climate Change (NSW), Hurstville and Queensland Parks and Wildlife Service, Brisbane. Available from: <http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-black-throated-finch-southern-subspecies-poephila-cincta-cincta>. In effect under the EPBC Act from 08-Jan-2008.
- Breeden G.K and Brosnan J.T. 2019. *Goosegrass (Eleusine indica)*. UT Institute of Agriculture.
- Bureau of Meteorology (BoM). 2022. *Climate of Townsville*. Available at: http://www.bom.gov.au/qld/townsville/climate_Townsville.shtml
- Business Queensland. 2021. *Giant rat's tail grass*. Queensland Government. Available at: <https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/biosecurity/plants/invasive/restricted/giant-rats-tail-grass>
- CABI. 2019. *Leersia hexandra (southern cut grass)*. CABI Compendium. Available at: <https://www.cabidigitallibrary.org/doi/10.1079/cabicompendium.30391>
- Chauhan B.S and Bajwa A.A. 2015. 'Management of *Rottboellia cochinchinensis* and other weeds through sequential application of herbicides in dry direct-seeded rice in the Philippines' in Crop Protection. Vol 78, pages 131-136. <https://doi.org/10.1016/j.cropro.2015.09.007>
- Concenco G., Andres A., Schreiber F., Moisinho I. 2018. *Control of Jointvetch (Aeschynomene spp.), Establishment and Productivity of Rice as a Function of [Imazapic + Imazapyr] Doses*. Journal of Agricultural Science 10(4). Pages 287. DOI: 10.5539/jas.v10n4p287
- Davie H. 2021. *Weed Management Plan*. Roy Hill. Available at: https://www.epa.wa.gov.au/sites/default/files/Proponent_response_to_submissions/Appendix%2011%20-%20Weed%20Management%20Plan%20%28OP-PLN-00145%29.pdf
- Department of Agriculture and Fisheries (DAF). 2016. *Windmill Grass*. Queensland Government. [https://qaafi.uq.edu.au/files/5958/Windmill-grass-ecology-and-management#:~:text=Windmill%20grass%20\(Chloris%20truncata%20R,is%20steadily%20encroaching%20on%20Queensland](https://qaafi.uq.edu.au/files/5958/Windmill-grass-ecology-and-management#:~:text=Windmill%20grass%20(Chloris%20truncata%20R,is%20steadily%20encroaching%20on%20Queensland)
- Department of Agriculture and Fisheries (DAF). 2020a. *Blue morning glory (Ipomoea indica)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0003/71688/blue-morning-glory.pdf
- Department of Agriculture and Fisheries (DAF). 2020b. *Coastal morning glory (Ipomoea cairica)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0004/71959/coastal-morning-glory.pdf
- Department of Agriculture and Fisheries (DAF). 2020c. *Common sensitive plant (Mimosa pudica)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0019/58015/common-sensitive-plant.pdf
- Department of Agriculture and Fisheries (DAF). 2020d. *Feral cat Felis catus*, Department of Agriculture and Fisheries. Available from: https://www.daf.qld.gov.au/_data/assets/pdf_file/0004/61987/feral-cat.pdf

- Department of Agriculture and Fisheries (DAF). 2020e. Feral pig *Sus scrofa*, Department of Agriculture and Fisheries. Available from: https://www.daf.qld.gov.au/_data/assets/pdf_file/0005/70925/feral-pig.pdf
- Department of Agriculture and Fisheries (DAF). 2020f. *Glycine (Neonotonia wightii)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0009/58869/glycine.pdf
- Department of Agriculture and Fisheries (DAF). 2020g. *Guinea grass (megathyrus maximum var maximus)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0006/67398/guinea-grass.pdf
- Department of Agriculture and Fisheries (DAF). 2020h. *Hairy senna (Senna hirsuta)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0015/60027/hairy-senna.pdf
- Department of Agriculture and Fisheries (DAF). 2020i. *Leucaena (Leucaena leucocephala)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0019/73450/leucaena.pdf
- Department of Agriculture and Fisheries (DAF). 2020j. *Restricted Invasive Animals of Queensland*. The State of Queensland: Department of Agriculture and Fisheries. Available at: https://www.daf.qld.gov.au/_data/assets/pdf_file/0011/403868/restricted-invasive-animals.pdf
- Department of Agriculture and Fisheries (DAF). 2020k. *Rhodes grass (Chloris gayana)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0014/51512/rhodes-grass.pdf
- Department of Agriculture and Fisheries (DAF). 2020l. *Rubber Vine - Cryptostegia grandiflora and Cryptostegia madagascariensis*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0020/52544/rubber-vine.pdf
- Department of Agriculture and Fisheries (DAF). 2020m. *Sicklepods - Sicklepod (Senna obtusifolia), foetid senna (Senna tora) and hairy senna (Senna hirsuta)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0013/51052/sicklepod.pdf
- Department of Agriculture and Fisheries (DAF). 2020n. *Siratro Macroptilium atropurpureum*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0003/65289/siratro.pdf
- Department of Agriculture and Fisheries (DAF). 2020o. *Snakeweed Stachytarpheta spp.* Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0005/54392/snakeweed.pdf
- Department of Agriculture and Fisheries (DAF). 2020p. *Stinking passion flower (Passiflora foetida)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0015/60027/hairy-senna.pdf
- Department of Agriculture and Fisheries (DAF). 2020q. Wild dog *Canis familiaris*, Department of Agriculture and Fisheries. Available from: https://www.daf.qld.gov.au/_data/assets/pdf_file/0003/74487/wild-dog.pdf
- Department of Agriculture and Fisheries (DAF). 2020r. Red fox *Vulpes vulpes*, Department of Agriculture and Fisheries. Available from: https://www.daf.qld.gov.au/_data/assets/pdf_file/0019/73810/european-red-fox.pdf
- Department of Agriculture and Fisheries (DAF). 2021a. *Chinee Apple Indian jujube (Ziziphus mauritiana)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0008/52766/chinee-apple.pdf
- Department of Agriculture and Fisheries (DAF). 2021b. *Rat's tail grasses (Sporobolus pyramidalis, S. natalensis, S. jacquemontii and S. fertilis)*. Queensland Government. https://www.daf.qld.gov.au/_data/assets/pdf_file/0010/69616/rats-tail-grasses.pdf
- Department of Agriculture, Water and the Environment (DAWE). 2022. Conservation Advice for *Phascolarctos cinereus* (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory. Canberra: Department of Agriculture, Water and the Environment. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/85104-conservation-advice-12022022.pdf>. In effect under the EPBC Act from 12-Feb-2022.
- Department of Planning and Environment. 2022. *Abating the threat of exotic perennial grasses in native grassy communities in eastern NSW*. NSW Government. Available at: <https://www.environment.nsw.gov.au/->

</media/OEH/Corporate-Site/Documents/Animals-and-plants/Pests-and-weeds/exotic-perennial-grasses-threat-north-coast-220310.pdf>

Department of Primary Industries and Regional Development. 2019. *Grader grass control*. Government of Western Australia. Available at: <https://www.agric.wa.gov.au/herbicides/grader-grass-control>

Department of Primary Industries (DPI NSW). 2020a. *Corky passionfruit (Passiflora fuberosa)*. NSW Government. Available at: <https://weeds.dpi.nsw.gov.au/Weeds/Corkypassionfruit>

Department of Primary Industries (DPI NSW). 2020b. *Mintweed (Salvia reflexa)*. NSW Government. Available at: <https://weeds.dpi.nsw.gov.au/Weeds/Details/86>

Department of Primary Industries (DPI NSW). 2023. *Long-leaf willow primrose (Ludwigia longifolia)*. NSW Government. Available at: <https://weeds.dpi.nsw.gov.au/Weeds/Longleafwillowprimrose>

Department of Primary Industries and Regional Development. 2022. *Summer Weeds*. Government of Western Australia. Available at: <https://www.agric.wa.gov.au/postharvest/summer-weeds?page=0%2C2>

Duiker S. 2010. *Hairy Vetch as a Crop Cover*. PennState Extension. Available at: [https://extension.psu.edu/hairy-vetch-as-a-crop-cover#:~:text=A%20good%20herbicide%20program%20to,or%20dicamba%20\(Table%202\).](https://extension.psu.edu/hairy-vetch-as-a-crop-cover#:~:text=A%20good%20herbicide%20program%20to,or%20dicamba%20(Table%202).)

Grains Research and Development Corporation (GRDC). 2013. *Flaxleaf fleabane fact sheet*. Australian Capital Territory.

Mackay R., Jennings E., Sellers B., Ferrell J., and House A. 2021. *Creeping Indigo, a Poisonous Plant of Concern in Florida Pastures*. University of Florida.

Marble C., Steed S. and Boyd N.S. 2021. *Biology and Management of Eclipta (Eclipta Prostrata) in Ornamental Crop Production*. University of Florida.

Morishita D., Callihan R., Eberlein C., McCaffrey J., and Thill D. 2005. *Field Bindweed (Convolvulus arvensis L.: Convolvulaceae)*. University of Idaho.

Natural Resource Assessment Environmental Consultants (NRA). 2005. *Enertrade North Queensland Gas Pipeline Black-throated Finch Studies (Post-Construction)*. Unpublished report prepared for Enertrade, Brisbane.

NT Government. 2023. *Grader grass*. Available at: <https://nt.gov.au/environment/weeds/weeds-in-the-nt/A-Z-list-of-weeds-in-the-NT/grader-grass>

Office of Environment and Heritage. 2014. *Broom management manual: current management and control options for Scotch (Cytisus scoparius), Montpellier (Genista monspessulana) and flax-leaf (G. linifolia) brooms in Australia*. Office of Environment and Heritage (NSW), Sydney.

PennState Extension. 2016. *Herbicide Recommendations for Noxious Pigweeds*. Available at: <https://extension.psu.edu/herbicide-recommendations-for-noxious-pigweeds>

Progressive Weeds. 2018. *Shrubby Stylo*. Available at: <https://progressiveseeds.com.au/shrubby-stylo/>

Shaik R.S, Burrows G.E., Urwin N.A.R., Gopurenko D., Lepschi B.J and Weston L.A. 2016. 'The biology and management of prickly paddy melon (Cucumis myriocarpus L.), an important summer annual weed in Australia' in Crop Protection. Vol 92, pages 29-40. <https://doi.org/10.1016/j.cropro.2016.10.005>

Smith, N. M. 2002. *Weeds of the Wet/Dry Tropics of Australia*. A Field Guide. Environment Centre NT Inc. Darwin.

Threatened Species Scientific Committee (TSSC). 2015. *Conservation Advice Geophaps scripta scripta squatter pigeon (southern)*. Canberra: Department of the Environment. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/64440-conservation-advice-31102015.pdf>. In effect under the EPBC Act from 27-Oct-2015.