METROTUNNEL

RAIL INFRASTRUCTURE ALLIANCE

Calder Park Stabling and Maintenance Yards Stage 3 - Growling Grass Frog Conservation Management Plan

Project Wide - Environmental - Technical support

RIA-MGA-SDL-ZWD-MPL-XEV-NAP-X0001

Revision 00

Package: RIA-000-134-3003

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AECOM CPB CONTRACTORS JOHN HOLLAND METRO RAIL PROJECTS VICTORIA

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1 Introduction

The Rail Infrastructure Alliance (RIA) is delivering Stage 3 of the Calder Park Stabling and Maintenance Yard (SAMY) Project (the Project) on behalf of Rail Projects Victoria (RPV). One of the key environmental requirements for the Project is the preparation of a Growling Grass Frog Conservation Management Plan (GGFCMP) for each successive stage.

RIA has prepared this Conservation Management Plan relating to Growling Grass Frog *Litoria raniformis* (GGF) for Stage 3 of the Project as required by Condition 2 of the approval EPBC 2012/6439 for the Project under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This GGFCMP provides a framework for the mitigation actions required during site establishment, construction and operation of Stage 3. These actions are to ensure that individual Growling Grass Frog and their dispersal, refuge and foraging habitat are protected in line with previous Project stages and their respective Conservation Management Plans. A detailed Action Plan is provided in Section 4.

This document should be read in conjunction with the Construction Environmental Management Plan (CEMP) for the Project.

1.1 Project Description

1.1.1 Background

The Project provides new train stabling yards and washing facilities at Calder Park and includes provisions for new High Capacity Metro Trains (HCMTs) dedicated to operating through the Metro Tunnel. With existing network stabling facilities at capacity, there is a need to deliver a new stabling facility at Calder Park. The Project will be delivered in a series of stages in order for the facility to be operational by 2025.

At completion, the Project will provide for more efficient rail operations on the Sunbury railway line by allowing more trains to be stabled along the line therefore limiting the need for trains to complete positioning runs from stabling at other locations. In conjunction with eight other stabling sites around Melbourne, it is anticipated that the capacity of the entire rail network will progressively improve.

The Project is a controlled action under the EPBC Act for listed threatened species and communities (Sections 18 & 18A).

1.1.2 Location

The Project is located at 1-75 Holden Road, Plumpton (Calder Park) (Figure 1). The SAMY Project spans a length of approximately 1600 metres alongside the existing mainline. The Project will be completed in multiple stages occupying a total of 68.49 hectares of the 89 hectares site. The remaining land will be retained as habitat.

PROJECT ID 60582706
CREATED BY brierej
LAST MODIFIED brierej 23 SEP 2019

RAIL INFRASTRUCTURE ALLIANCE

N

Coordinate System: GDA 1994 MGA Zone 55

0 75 150 300
metres
1:5,913 (when printed at A3)

LEGEND

- SAMY
- EPBC Approval Area
- Dams
- Watercourses
- Waterbodies

Site Location Plan
Calder Park SAMY

Rail Projects Victoria

Calder Park Stabling and Maintenance Yards

1-75 Holden Road, Plumpton

Figure

F1

Map Document: (G:\WTR\SpatialSys\Projects\2018\SquirrelProject\02_maps\2019\09\Calder_Samy\F1_SiteLocation.mxd)

1.1.3 Staging

Two stages of the Calder Park SAMY are relevant to this CMP (Figure 2):

- *Calder Park Stabling Stage 1 Works* commenced in 2014 and a GGFCMP was developed and approved by a delegate of the Australian Government Minister for Environment on April 30, 2014. Construction was completed in 2015 and the stabling yards, offices and amenities are now operational.
- *Calder Park Train Stabling and Maintenance Yards Stage 2 – Calder Park Light Stabling Facility* (LSF). This stage was approved by the Minister for planning in April 2019 and is currently under construction. A separate GGFCMP was prepared for Stage 2 and was approved by the Australian Government Minister for Environment on April 15, 2019. At completion, the LSF will provide for staff amenities, a graffiti removal building, train presentation area, cleaners shed and sealed access road.

Stage 3 is the next successive stage in the stabling facility (Figure 2). It will involve the construction of three stabling roads to accommodate nine HCMTs (three HCMTs per road). A substation will also be constructed on-site to power the facility.

1.1.4 Stage 3

Stage 3 works are required to construct additional infrastructure to facilitate the completion of the ultimate stabling layout to be operational by 2025.

Stage 3 is located between the Stage 1 and Stage 2 works areas (Figure 3). The Stage 3 works area is bound by Holden Road to the north, Stage 1 to the east, the Light Stabling Facility (LSF) to the west and unmanaged land to the south and south-west.

A revision of the Growling Grass Frog Conservation Management Plan (GGFCMP) is required at each successive stage of the Project. This revision of the GGFCMP covers Stage 3 works only. If any future stages of the Project are funded a separate GGFCMP must be prepared and submitted to the Department of Environment and Energy (DoEE) for approval prior to works commencing.

The mitigation measures outlined in this GGFCMP will be incorporated in a site Construction Environmental Management Plan (CEMP) and associated sub-plans for Stage 3 works, which will outline the performance standards upon which the approvals will be based.

Stage 3 works will be completed in two phases: Site Establishment and Construction. These phases are outlined below.

1.1.4.1 Phase 1 – Site Establishment

The following works are proposed to be undertaken as part of the Site Establishment phase:

- Temporary earthworks, including:
  - The creation of bunds, mounds and landscaping.
  - Salvaging and repatriation of Aboriginal artefacts if impacted by development and other preparatory works required to be undertaken in accordance with an approved cultural heritage management plan applicable to project works under the *Aboriginal Heritage Act 2006*.
- Construction site establishment, including but not limited to:
  - Use of existing access points and access roads and creation of temporary vehicle parking.
  - Construction of temporary site fencing, hoarding, barriers and security.
  - Displaying temporary construction and directional signage.
  - Establishment of temporary environment protection and traffic controls, including designated ‘no-go’ zones prior to commencement of works on site.

    - The erection of temporary Site offices, workshops, storage, administration and amenities buildings and testing sites and temporary hardstand and laydown areas.
    - Carrying out works to temporarily or permanently alter drainage and utilities.
- Works, including temporary or permanent vegetation removal, where planning approval would not be required under the provisions of the planning schemes.

1.1.4.2 Phase 2 – Construction

The following works are proposed to be undertaken as part of the Construction phase:

- Civil infrastructure works associated with local drainage, lineside security fencing, walkways, utility services, fire hydrants, stabling train gates, maintenance and access roads, train cleaning facilities and noise mitigation.
- Construction of a substation to power the facility
- Track work construction:
    - New up end run-off track;
    - Two new holding tracks for mainline turnouts;
    - Standing room on holding roads;
    - New LSF connection track (presentation track);
    - Three new stabling roads to accommodate three High Capacity Metro Train (HCMT) in each siding (nine in total) and connection of each new stabling road to the run-off track;
    - End of track protection equipment;
    - Install new sleepers and fixings (where required); and,
    - Tamper tracks and replace ballast for the extent of any modified or added track affected by the sidings' modifications.

To facilitate the construction of Stage 3, approximately five hectares will be cleared and graded to the required levels. This will result in the loss of existing vegetation considered suitable terrestrial habitat for GGF within the Stage 3 works boundary (Figure 3). Additional land will also be cleared to establish temporary laydown/stockpile areas and a site compound. The total area planned to be used for this purpose is an additional 12 hectares (Figure 3).

Through the design and development of Stage 3, the design has sought to mitigate impacts to GGF by avoiding the decommission of dams and impacts to the existing Taylors and Jacksons Creek tributaries. For this reason, no habitat creation for a translocation area (as identified under EPBC Condition 2e) is required and is not considered further in this CMP. Although terrestrial habitat will be cleared as part of Stage 3 works, the matrix of retained and protected aquatic habitat and existing terrestrial habitat is considered suitable to facilitate dispersal across the site and will provide adequate refuge and foraging habitat.

A detailed Action Plan/Scheduled Works Programme for Stage 3 has been included in Section 4.

HOLDEN ROAD
Jackeona Creek
THOMPSONS ROAD
CALDER OUT-HOLDEN RAMP OF CALDER FREEWAY
EDWARDS ROAD
TAME STREET DRAIN
Taylors Creek
TAYLORS CREEK
VICTORIA ROAD
SPEARGRASS DRIVE

PROJECT ID	60582706
CREATED BY	brierej
LAST MODIFIED	brierej 25 SEP 2019

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RAIL INFRASTRUCTURE ALLIANCE

N

Coordinate System: GDA 1994 MGA Zone 55

0 85 170 340

metres

1:6,750 (when printed at A3)

LEGEND

- SAMY
- Stage 1 Permanent Outline
- Stage 1 Works Area
- Stage 2
- Watercourses
- Waterbodies
- Cadastre

Previous Stages
Calder Park SAMY

Rail Projects Victoria

Calder Park Stabling and Maintenance Yards

1-75 Holden Road, Plumpton

Figure
F2

Map Document: (G:\WTR\SpatialSys\Projects\2018\SquirrelProject\02_maps\2019\09\Calder_Samy\F2_Previous_Stages.mxd)

PROJECT ID	60582706
CREATED BY	coddingtong
LAST MODIFIED	7 NOV 2019

METROTUNNEL
RAIL INFRASTRUCTURE ALLIANCE

N

Coordinate System: GDA 1994 MGA Zone 55

0 60 120 240

Meters

1:6,000 (when printed at A3)

LEGEND

- SAMY
- Stage 3 - Construction Footprint
- Stage 3 - Laydown Areas
- Stage 3 - Site Shed and Parking - Preferred Option
- Stage 3 - Site Shed and Parking - Second Option
- Watercourses

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Indicative Layout
Calder Park SAMY

Rail Projects Victoria

Calder Park Stabling and Maintenance Yards

1-75 Holden Road, Plumpton

Figure

F3

1.2 Objective of the GGFCMP

The primary objective of this GGFCMP is to outline measures to minimise impacts of Stage 3 works on GGF. The GGFCMP has been prepared to comply with EPBC Act Approval Conditions (EPBC 2012/6439) for the Project.

1.3 Peer Review

This GGFCMP has been peer reviewed by Tanya White. Tanya is the owner and managing director of Habitat Management Services, an environmental consultancy based in Melbourne. Tanya has over 25 years' experience in environmental management including fauna habitat surveys, threatened flora and fauna species management, environmental site supervision, and fauna rescue and relocation. A copy of her CV is provided in Appendix B:

The peer review is satisfied this document appropriately addresses the requirements for a GGF CMP for the scope of works proposed to be undertaken by RIA (see Appendix B:).

1.4 Legislative context

1.4.1 Environment Protection and Biodiversity Conservation Act 1999

The Calder Park SAMY project was referred to the Commonwealth under the EPBC Act and assessed as a 'controlled action' due to impacts to listed threatened species. The project was approved on 27 September 2013 (EPBC 2012/6439) subject to conditions including the preparation of a GGFCMP.

Separate GGFCMPs have been prepared for each stage of works; Stage 1 (AECOM 2014) and Stage 2 (Cardno 2019).

A list of the EPBC Act approval conditions is provided in Appendix A. Those conditions of particular relevance to this GGFCMP are listed in Table 1 noting the applicability of the conditions to Stage 3 works and the relevant section of the plan that addresses the relevant requirements. Note that Condition 2a and 2e are not relevant as the design of the Project does not require decommissioning of dams, nor does it propose actions to realign sections of the Jacksons or Taylors Creek tributaries which may have otherwise triggered the requirement to create additional habitat.

Table 1: EPBC approval conditions for Calder Park SAMY (EPBC 2012/6439)

EPBC approval conditions	Applicability	Relevant section
1. Construction activities must not occur outside the Study Area.	The construction of Stage 3 falls within the "Study Area" approved under the EPBC Act referral.	Figure 1
2. Prior to the commencement of construction activities, the person taking the action must submit a Growling Grass Frog Conservation Management Plan (CMP) for the Minister's approval. Prior to its submission, the CMP must be peer reviewed by a Growling Grass Frog expert and once approved must be implemented. At a minimum, the CMP must include:	This CMP has been prepared to cover Stage 3 which was not addressed in Stage 1 or Stage 2. The revised CMP will be submitted to the Minister for approval. Until this CMP is approved, the existing Stage 1 and Stage 2 CMPs must be implemented.	Entire document
a) Commitments that decommissioning of dams within the study area, will occur outside of Growling Grass Frog breeding season (i.e. decommissioning activities	Stage 3 works do not require the decommissioning of any dams within the study area.	n/a

EPBC approval conditions	Applicability	Relevant section
must not occur between September and March inclusive).		
b) Details of sedimentation and erosion control measures to be implemented at all stages of the proposed action, to prevent debris and sedimentation entering nearby waterways and drainage lines.	Applicable to pre-construction/construction and operations of Stage 3.	Section 3.2.9
c) Details of how hygiene measures to prevent the introduction of Chytrid fungus will be implemented in accordance with hygiene protocol for control of diseases in frogs (DECC 2008a; Appendix D).	Applicable to pre-construction/construction and operations of Stage 3.	Section 3.2.5
d) Details, including timing, materials and methods required for the installation of fencing to prevent Growling Grass Frogs from entering the construction site.	Applicable to pre-construction/construction	Refer to Section 3.2.3
e) A specific chapter that includes commitments to compensate for the unavoidable impact to the Growling Grass Frog by creating habitat, including wetlands in accordance with the current scientific literature.	Habitat creation is not proposed as part of this GGFCMP as significant impacts to GGF are not expected for the following reasons: • No dams will be decommissioned • Impacts to GGF habitat will be restricted to degraded terrestrial habitat that has limited potential to provide dispersal, refuge or foraging habitat. • GGF aquatic habitat will be protected by means of frog/sediment fencing prior to the commencement of construction • No GGF have been encountered on site via targeted surveys, general surveys and routine inspections since 2010; however, GGF may still use the site via tributaries of Jacksons and Taylors Creeks when conditions are favourable (i.e. years of above average rainfall when frogs disperse from key breeding habitat). GGF population monitoring is not proposed as habitat creation and translocation of the GGF population do not form part of the Stage 3 works.	n/a

1.4.2 Flora and Fauna Guarantee Act 1988

The *Flora and Fauna Guarantee Act 1988* (FFG Act) is the key piece of Victorian legislation that applies to the conservation of threatened species and ecological communities as well as the management of potentially threatening processes.

GGF is listed as threatened under the FFG Act. The Project site is not declared critical habitat for the species.

1.4.3 Wildlife Act 1975

All native wildlife in Victoria are protected under *The Wildlife Act 1975* (the Act) and *Wildlife Regulations 2002*. Under the Act it is an offence to kill, take, control or harm wildlife. It also requires persons engaged in wildlife handling (e.g. surveys, capture and relocation activities) to obtain a permit under the Act to ensure that these activities are undertaken in a manner consistent with the appropriate controls.

Any persons engaged to remove, handle or relocate GGF during Stage 3 works (including pre-construction, construction and operation) must hold a current Management Authorisation permit issued by DELWP under the *Wildlife Act 1975*.

1.4.4 Catchment and Land Protection Act 1994

The Catchment and Land Protection Act 1994 (CaLP Act) is the main piece of legislation concerning the management of noxious weeds and pest animals on private and public land. It provides a legislative framework for land managers and details the responsibilities to:

- Eradicate regionally prohibited weeds;
- Prevent the growth and spread of regionally controlled weeds; and,
- Prevent the spread of (and as far as reasonably possible) eradicate pest animals.

The Project site consists of several declared noxious weeds (Section 2.1; Cardno, 2019). There is also potential for pest fish to occur. Whilst this CMP details the mitigation measures specific to GGF, RIA is required, by law, to control CaLP Act listed weeds and Weeds of National Significance (WoNS) and to implement appropriate controls to prevent the spread of weeds.

1.5 Associated documents

This GGFCMP provides a framework for the conservation management approach during construction and operation of Stage 3 and should be read in conjunction with the Construction Environmental Management Plan (CEMP).

2 Growling Grass Frog at Calder Park

GGF (Plate 1) is listed as vulnerable under the EPBC Act, is listed as threatened under the Victorian *Flora and Fauna Act 1988* (FFG Act) and is considered endangered on the Victorian Advisory List of Threatened Vertebrate Fauna (DSE, 2013).

The species is active during the day and night time during the breeding season and inhabits a wide range of still water bodies across its range, including lagoons, swamps, lakes, ponds, farm dams, irrigation channels and quarries, as well as slow-flowing sections of streams and rivers (DEC 2005). Important habitat features of favoured sites generally contain high densities of emergent and waterside vegetation and still or slow-flowing water in, or near, permanent freshwater waterbodies; although the species has also been recorded in low saline waters (Clemann & Gillespie, 2012).

Plate 1: Male GGF active in a dam at night (Jonathan Billington)

The species has declined dramatically in the northern and north-eastern plains of Victoria (DEC 2005) and disappeared from upland areas of eastern Victoria (Clemann & Gillespie, 2012). However, remnant populations still occur in scattered localities throughout lowland regions including the greater Melbourne area, and the south-east, north-west and central regions of Victoria (DEWHA 2009).

Historically in Greater Melbourne the species was widespread; nowadays it is restricted to urban-fringe environments where wetland habitat and open space remain prominent landscape features (Heard & Scroggie, 2009). There are four distinct clusters of the species around the Greater Melbourne area comprising a cluster to the south-east in the Pakenham area, to the north around the Merri Creek, to the south-west near Werribee and in the north-west around the Taylors Lakes/Caroline Springs townships. The broader contemporary distribution of GGF around Melbourne is located outside the urban boundary and many remnant populations occur in areas being, or likely to be, urbanised in the future (Heard et al, 2010).

The Calder Park SAMY site is located near the north-west cluster, also on the urban fringe immediately north of Hillside residential area, west of Calder Park Dome, Sunbury Rail line and Calder Freeway, and approximately 4 km south of Diggers Rest township. Land to the west and immediate north has been historically modified for agricultural, interspersed with very low density and scattered housing/farmsteads.

2.1 Habitat values

The Project footprint is located within and adjacent to areas historically modified predominantly for agriculture. The main fauna habitat type across the site is modified floodplain grassland paddocks comprising a mosaic of degraded secondary native grassland with an absence of natural rocks, exotic grasses and weeds. The site also contains drainage lines that are tributaries of Jacksons and Taylors Creek and five dams (dams 2-6) which vary in size and dimension (Figure 1). Two additional dams (dams 1 and 7) are located in the adjoining neighbouring property (Figure 1). These drainage lines and dams provide ephemeral aquatic habitat for GGF, albeit generally of poor quality (AECOM, 2010). Photos of the AECOM (2010) assessment are provided in Appendix C: .

The most recent site assessment completed by Cardno (2019) suggests the broader project area has been unmanaged and noxious weeds such as Chilean Needle-grass (*Nasella neesiana*), Serrated tussock (*Nasella trichotoma*) and Artichoke Thistle (*Cynara curdunculus*) now dominate (Cardno, 2019). Minor habitat enhancement works associated with the realignment of a small branch of Taylors Creek have been completed – this includes the addition of basking logs to the small realigned section of the creek and some minor habitat enhancement plantings (J. Billington, AECOM, pers. obs.).

With the exception of dam 1, all dams and tributaries were observed to be dry during the site assessment in early 2019 (Cardno, 2019). Aquatic habitat was also considered poor quality with a high cover of non-indigenous weed species observed in tributaries and dams (Cardno, 2019). However, a more recent site assessment completed by AECOM in August 2019 found all dams and small sections of the tributaries to be partially filled with water except for dam 2 which was dry (J. Billington, AECOM, pers. obs.). Photo of the August site assessment are provided in Appendix B. Weather data from the closest meteorological recording station (Melbourne Airport-086282) shows below average rainfall across all months in 2019 except for May (59.8 mm), June (58.4 mm) and August (46.8 mm).Thus, the differences in conditions observed between early 2019 and August 2019 are likely due to above average rainfall over winter. However, it is likely that without substantial follow-up rain in spring, dams will dry out before the GGF breeding season.

It is considered likely that the conditions experienced in 2010 (above average rainfall and a break in drought) provided favourable conditions for GGF to disperse from preferred breeding habitat along Jacksons Creek into the wider landscape in search of mating opportunities. Based on previous survey results and the precautionary principle, the site could be assumed to support a breeding population of GGF and may be used as a dispersal corridor during years of above average rainfall.

2.2 Species' occurrence

GGF have previously been recorded at the Project site. In the original site assessment AECOM (2010) recorded GGF at two dams (dams 2 and 7) during targeted surveys over the 2010/2011 breeding season. Targeted surreys complete in 2013/14 did not detect the species (AECOM, 2014). Since this time all subsequent targeted surveys have failed to detect the species (AECOM, 2014). In addition, no frogs were recorded by on-site ecologists during pre-construction vegetation clearance surveys for Stage 1 Works (KBR, 2015) or by ecologists during general walkover surveys in 2018 (BL&A, 2018) or early 2019 (Cardno, 2019) for Stage 2 works.

The most recent local record within the vicinity of the Calder Parks SAMY site is from 2017 (Figure 4). This record is located approximately 2-3 km south-east of the site (accessed via VBA, 2019). Older records for GGF in the surrounding area located along tributary branches of Jacksons Creek to the east of the railway line and the Calder Freeway.

Although there have been no GGF records since 2010, the species still has the potential to disperse into, and, occupy the site from connected waterways when conditions are favourable (i.e. extended wetter periods).

PROJECT ID 60582706
CREATED BY brierej
LAST MODIFIED brierej 25 SEP 2019

METROTUNNEL
RAIL INFRASTRUCTURE ALLIANCE

N

Coordinate System: GDA 1994 MGA Zone 55

0 500 1,000 2,000

metres

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LEGEND

- SAMY
- SAMY 5km Buffer
- Growling Grass Frog Victorian Biodiversity Atlas records
- Watercourses
- Waterbodies

Litoria raniformis

GGF Records
Calder Park SAMY

Rail Projects Victoria

Calder Park Stabling and Maintenance Yards

1-75 Holden Road, Plumpton

Figure
F4

Map Document: (G:\WTR\SpatialSys\Projects\2018\SquirrelProject\02_maps\2019\09\Calder_Samy\F4_GGF_Records.mxd)

2.3 Threats

Key threatening processes thought to contribute to the decline of GGF populations since the 1970s are identified in the National Recovery Plan for Growling Grass Frog (Clemann & Gillespie 2010). The key threatening processes that relate to the Calder Park SAMY project being referred under the EPBC Act are identified in Table 2 below.

Table 2: Key threatening processes identified under Calder Park SAMY EPBC referral (2012/6439)

Threatening process	On-site example	Adverse impact to GGF
Loss and degradation of habitat	Habitat loss, degradation and modification of existing habitat.	• Draining, infilling or changes to flooding pattern or permanent and non-permanent waterbodies, or their adjoining watercourses and surrounding vegetation; • Alteration of wetland hydrology, diversity and structure; • Removal of aquatic vegetation; • Clearing of terrestrial vegetation, fallen logs and ground debris surrounding waterbodies; • Deterioration of water quality and introduction of pollutants and biocides.
Dispersal barriers	Fragmentation and isolation of GGF population	• Construction of barriers that limit frog movements between waterbodies (e.g. constructed buildings, fences and roads); • Removal or disturbance of existing on-site waterbodies resulting in a '*net reduction in the number of water bodies available to an important population'* (DEWHA, 2009). • Removal or aquatic and terrestrial habitat corridors through the loss of the southern drainage line feeding into the Taylors Creek tributary and the removal of land to build the stabling yards resulting in '*removal or alteration of available terrestrial or aquatic habitat corridors including alteration of connectivity during flood events'* (DEWHA, 2009).
Introduced diseases	Introduction of Chytrid fungus	• Introduction of the waterborne 'Chytrid fungus' disease caused by the fungal pathogen *Batrachochytrium dendrobatidis*.

3 Conservation Management Strategy

This GGFCMP has been developed to consider the potential impacts of the proposed Stage 3 works and outlines the mitigation measures to avoid and/or minimise the ecological impacts to individual GGF or their habitat. The Stage 3 GGFCMP has been prepared with reference to, and to be consistent with, the GGFCMPs prepared for the previous stages: Stage 1 (AECOM 2014) and Stage 2 (Cardno 2019). The strategy includes:

- Identifying potential adverse impacts to GGF populations and associated habitat;
- Identifying the mitigation measures and timing required for Stage 3 of the Project;
- Identifying training and awareness tools required to support the implementation of mitigation measures;
- Outlining the reporting program to ensure the ongoing compliance with the CMP; and,
- Identifying the responsible persons for each stage of the implementation and timing for implementation of this plan.

3.1 Potential impacts

The Stage 3 concept design avoids direct impacts to dams and the Taylors and Jacksons Creek tributaries (Figure 5).

Construction and operation of Stage 3 may impact on individual GGF and their associated habitat as a result of the following activities:

- Land/vegetation clearance (soil stripping and all excavation works)
- Stockpiling material
- Frog/sediment fencing not properly installed or poorly maintained
- Rubbish disposal
- Vehicle/machinery movements
- Poorly reinstated surfaces
- Upgrades to existing water drainage infrastructure
- Train traffic
- Chemical spills.

A summary of these activities and the potential impacts is provided in Table 3. Mitigation measures related to each of these impacts is provided in Section 3.2.

Table 3: Summary of potential impacts to GGF related to Stage 3

Activity	Project Phase	Potential impact
Land clearance (soil stripping works, and all excavation works)	Site establishment (pre-construction) and construction	• Direct injury and/or death of GGF via traffic movement and soil removal activities • Degradation of frog habitat quality through mechanisms such as sedimentation of waterways.
Stockpiling material	Site establishment (pre-construction), construction and operation	• Contamination of waterways via inappropriate stockpile location (too close to waterways) • Creation of artificial barriers that may isolate individual frogs
Installing frog fencing/sedimentation fencing	Site establishment (pre-construction) and construction	• Frogs not effectively excluded due to poor installation of fencing and/or

Activity	Project Phase	Potential impact
		inadequate materials resulting in possible direct injury and/or death
Rubbish disposal	Site establishment (pre-construction), construction and operation	• Degradation of habitat • Potential population demise through increased predator predation
Vehicle movement	Site establishment (pre-construction), construction and operation	• Direct injury and/or death of GFF • Introduction and/or spread of pathogens (Chytrid fungus) • Fatalities and population decimation as a result of Chytrid fungus. • Spread of noxious weed species that degrade the quality of aquatic habitat.
Land stabilisation and reinstatement of disturbed areas	Post-construction	• Degradation of frog habitat quality • Lower vegetation cover leading to increased erosion
Surface reinstatement	Construction	• Poor reinstatement practices (unstable contours, poor landscaping, poor land stabilisation) resulting in degraded terrestrial frog habitat
Upgrades to existing water drainage infrastructure	Construction and operations	• Degradation of aquatic habitat due to unintended alteration of site hydrology
Train traffic	Operations	• Direct injury and/or death of GGF
Chemical storage and/or refuelling	Construction and operations	• Degradation of on-site habitat and potential contamination/spread of fuel or chemicals to waterways downstream of the site

3.2 Mitigation measures

The following mitigation measures will be applied to Stage 3 works. Measures may be applicable to both site establishment and construction phases. To avoid repetition and confusion, measures are outlined in detail Section 3 and their applicability to each phase is identified at a higher level in the Action Plan provided in Section 5.

3.2.1 Training and awareness

Training is a key element to effective environmental management on site.

All staff (including permanent staff, contractors and sub-contractors) should be made aware of their roles and obligations in relation to the environmental aspects of the Project to ensure that mitigation procedures are implemented correctly and to increase environmental awareness for the betterment of common work practices.

Training will be delivered through site inductions and toolbox talks and will primarily focus on GGF and the reporting procedure to follow if GGF are found. The talk will also outline other environmental aspects that have the potential to impact GGF; namely land/vegetation clearance, erosion and sedimentation control, waste management and proper use and storage of chemicals.

To encourage engagement of staff on environmental matters, the contact details for the Site Environmental Representative and zoologist will be displayed on notice boards in common areas.

3.2.1.1 Site induction

All employees, contractors and subcontractors are required to attend a site induction and sign onto a site training register before the commencement of their first day on site.

The project zoologist will conduct an initial induction with the Site Supervisor (SS) and Site Environmental Representative (SER). At a minimum the induction will cover the following topics:

- GGF species information and key habitat within the site (as detailed in Section 2);
- Protection status and the law (individual and corporate penalties for failing to comply with EPBC Act approval conditions and this plan);
- ‘No-go’ zones;
- Hygiene measures;
- Individual obligations as identified in this CMP – procedures to follow if a frog is encountered including specialist vet clinics and other emergency clinics (for other fauna too that may be encountered) (Section 3.2.8); and,
- Resources and contact details in relation to GGF and implementation of this CMP.

Following this, the SER will deliver the induction briefings to all contractors. A detailed site training register of personnel who have received an induction will be kept at the site office and be made available upon request. At a minimum the induction will cover:

- Protection status and the law (individual and corporate penalties for failing to comply with EPBC Act approval conditions and this plan);
- ‘No-go’ zones;
- Hygiene measures; and,
- Individual obligations as identified in this CMP – reporting communication chains for all site incidents and procedures to follow if a frog is encountered (Section 3.2.8).
- Contact details for nominated person(s) if GGF is encountered.

3.2.1.2 Toolbox talks

Toolbox talks will be delivered daily. These toolbox talks will include reminders for site personnel of their obligations under this GGFCMP and the procedures to follow if GGF are encountered. The procedures will include measures such as:

- Stop work, maintain visual contact of the GGF and contact the SER.
- SER or delegated person to contact the persons authorised under a DELWP permit (below) to capture and relocate the frog.

3.2.2 'No-go' zones

GGF habitat and buffer areas are considered to be 'no-go' zones and need to be protected for the duration of Stage 3.

'No go' zones are defined a minimum of 1 m from the frog exclusion fence (on the construction side) to protect the integrity of the fence during construction. The frog exclusion fence alignment has been defined in Figure 5 and includes a minimum 10 m buffer from the dams.

'No go' zones will be fenced prior to machines and plant mobilising onto site to prevent damage to vegetation/frog habitat and to prevent the spread of diseases.

3.2.2.1 Installation

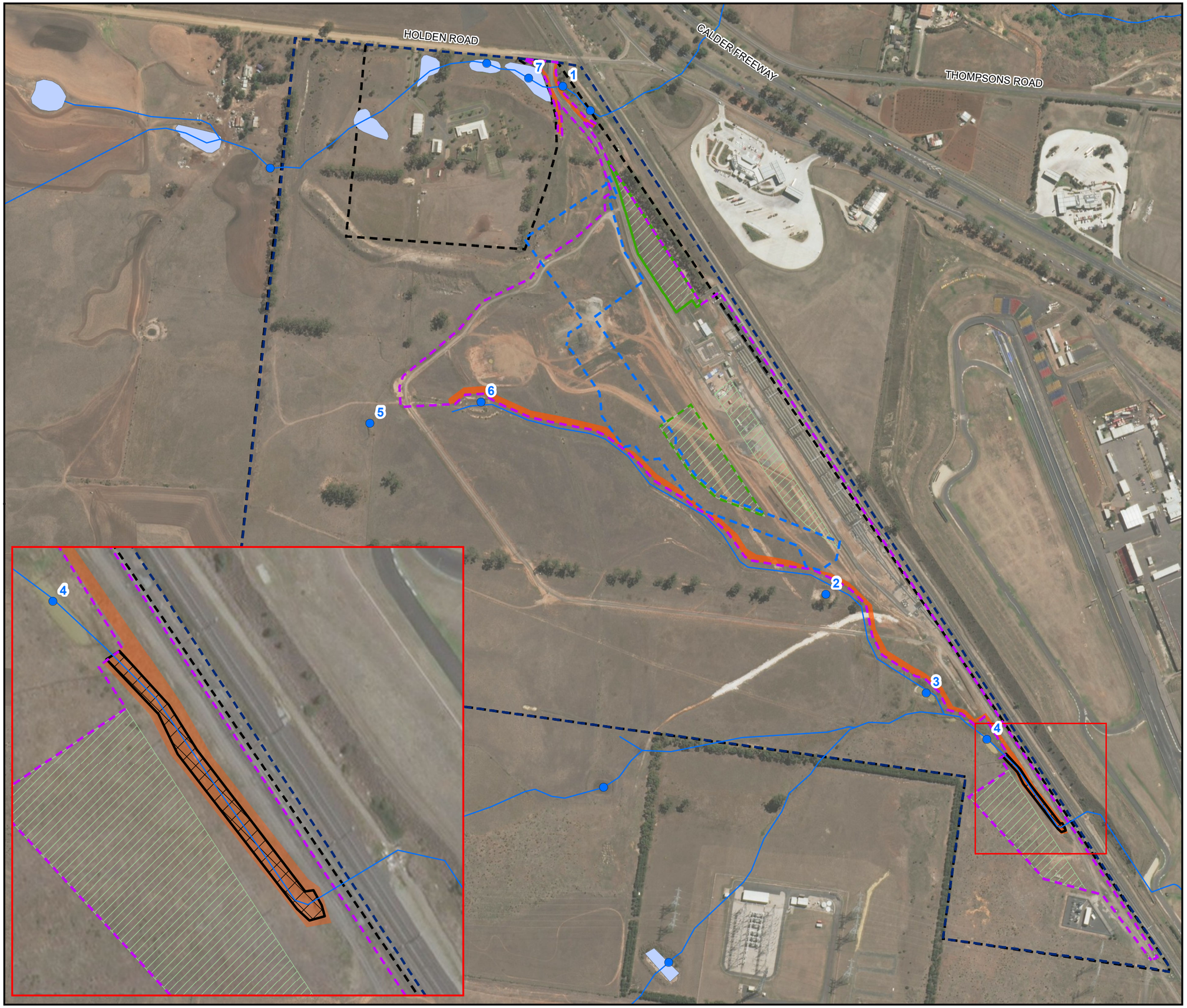
To identify the 'no-go' zones throughout the site:

- Fence 'no-go' zones (see Figure 5). Area demarcated by Site Environmental Representative in conjunction with Site Supervisor and Project Engineer.
    - Install 'no-go' signs clearly stating that no access is permitted without the approval of the Site Environmental Representative. Signs must identify that hygiene control is required after exiting the 'no go' zone. Site Environmental Representative contact details should be displayed on the signs.

3.2.2.2 Maintenance

To ensure the restricted 'no-go' zones are maintained:

- Site Environmental Representative or Site Supervisor to perform weekly site inspections to ensure 'no-go' zone signage is clearly visible and the fence is in-tact and functional.
- Keep a monitoring log to document inspections and any repairs completed.



PROJECT ID	60582706
CREATED BY	coddingtong
LAST MODIFIED	7 NOV 2019

METROTUNNEL
RAIL INFRASTRUCTURE ALLIANCE

N

Coordinate System: GDA 1994 MGA Zone 55

0 60 120 240

Meters

1:6,000 (when printed at A3)

LEGEND

- SAMY
- EPBC Approval Area
- Stage 2
- Stage 3 - Construction Footprint
- Stage 3 - Laydown Areas
- Stage 3 - Site Shed and Parking - Preferred Option
- Stage 3 - Site Shed and Parking - Second Option
- No Go Zones
- Frog/Sediment Fence (Indicative Alignment)
- Dams
- Watercourses
- Waterbodies

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Mitigation measures
Stage 3
Calder Park SAMY

Rail Projects Victoria

Calder Park Stabling and Maintenance Yards

1-75 Holden Road, Plumpton

Figure

F5

3.2.3 Frog exclusion fencing

Frog exclusion fencing will be installed to deter frogs from entering construction impact zones and to guide frog movements between aquatic habitats by maintaining and protecting connective routes.

3.2.3.1 Location

An indicative location of the frog exclusion fence is shown in Figure 5. The precise alignment of the frog exclusion fence will be informed by on-ground conditions and may therefore need to be adjusted at the time of installation.

Frog exclusion fencing will be:

- Installed between the Stage 3 construction areas and GGF habitat (dams and watercourses)
- Installed a minimum of 10 m from dams (where there is the greatest impact risk to GGF).
- Connected into the Stage 2 frog exclusion fence.
- Designed to incorporate frog gates where the frog exclusion fence crosses access tracks.

3.2.3.2 Installation

Fencing will be installed by a qualified contractor with a track record of installing frog fences.
A zoologist will be present to complete pre-installation searches the morning of ground preparation works (Section 3.2.6) and to supervise fence installation to capture any frogs found (Section 3.2.7).

Any frogs encountered during fence installation works will be relocated by persons authorised under a DELWP permit following procedures outlined in Section 3.2.7.

3.2.3.3 Specifications and materials

Frog exclusion fencing specifications include:

- Construct fence at least 1 metre high with a 200 mm section buried into the ground to prevent frogs from getting underneath the fence.
- Use fine metal mesh or other robust material such as sediment fencing fabric or shade cloth.
- Fasten frog exclusion fence material to star pickets and wire strands installed on the inside of the fence (i.e. construction side of fence) and at spacings sufficient to maintain tension of the fence material.
- Place frog exclusion fence material on the frog habitat side of the posts.
- Overlap joins in fencing material and secure against the fence posts to ensure no gaps are created that would enable frogs to move through the fence line/or climb up and escape.
- Avoid vegetation, rock or other debris within 500 mm of the fence and vegetation that exceeds 300 mm up to 1 m from the fence.
- Ensure frog exclusion fence is taught and smooth, and in an upright (vertical) position.
- Install removable gates constructed from frog fencing material (height specification as above) hand-fitted to tightly interlock with the adjacent frog fence if human access is required. Incorporate a weighted bottom (e.g using flexible chain) to reduce gaps under the fence.

If frog fencing is to serve the dual purpose of sediment control, apply the same specifications as above with the addition of sediment control fabric attached on the construction side of the frog

exclusion fence to a maximum 600mm height. Provide additional supports to the fence if addition of sediment controls affects the integrity of the frog exclusion fence.

An illustration of the frog exclusion fence design is provided in Figure 6.

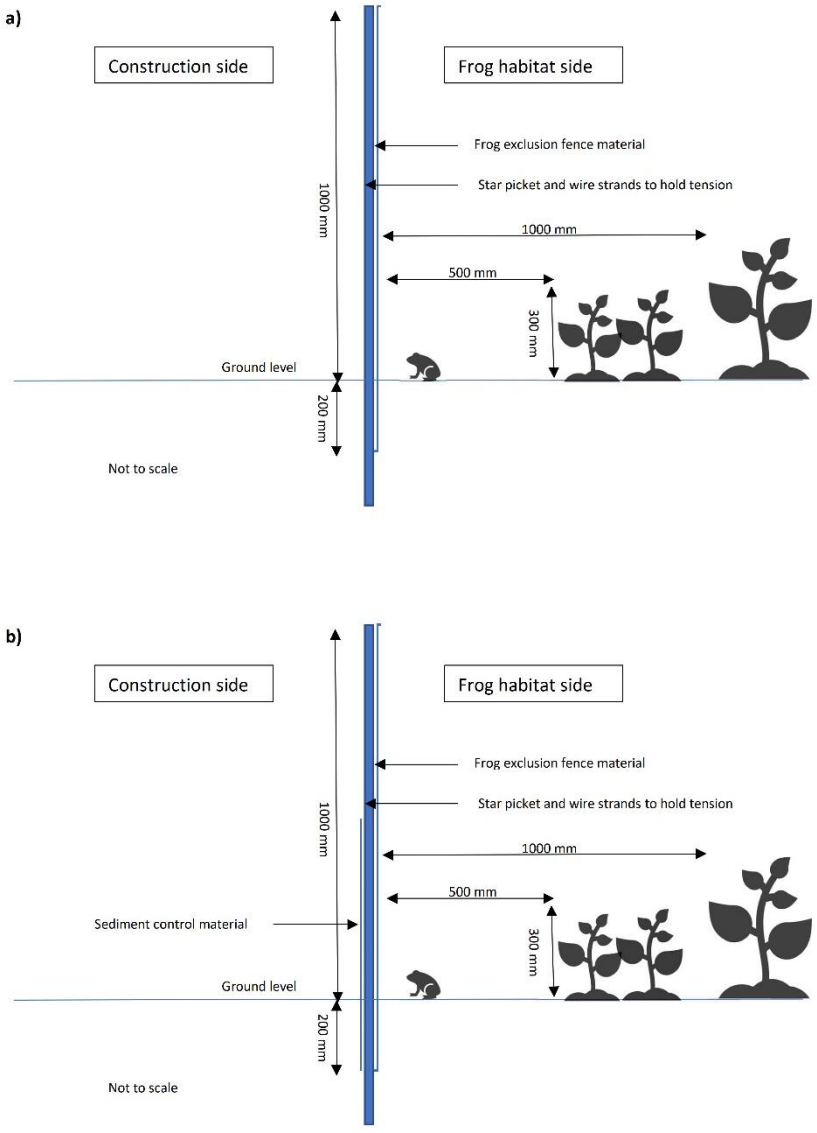


Figure 6: Schematic cross section of frog exclusion fence: a) free-standing frog exclusion fence and b) frog exclusion fence with sediment fencing attached

3.2.3.4 Checks and maintenance

To ensure the frog exclusion fence remains intact post-installation:

- Site Environmental Representative or Site Supervisor to conduct weekly inspections.
- Site Environmental Representative will be trained in frog-fence repairs and materials will be available on site to perform repairs.
- Shut any gates in the frog fence at the end of each day to prevent any frogs dispersing along the fence at night from entering the construction area (thereby reducing the requirement for any capture and relocation from the construction zone the following day).
- Repair any fence damage:
    - On the same day in the active season (September to March).
    - Within 5 days in the inactive season (April to August)
- Maintain cleared ground within 500 mm of the fence and vegetation within 500mm to 1m of the fence to a maximum height of 300 mm m to prevent frogs using the vegetation to climb over the fence (Figure 6).

3.2.4 Stockpile areas

Stockpile areas will be created on site from any fill generated from ground disturbance and vegetation removal works. To reduce impacts on GGF habitat:

- Determine the location of stockpile areas during the site establishment phase.
- Locate stockpiles at least 10 m from a minor drainage line or depression, and 30 m from any waterbody (e.g. dam) or tributary (Taylors Creek Northern Tributary and Jacksons Creek).
- Design stockpiles to include:
    - An offsite rainwater diversion upslope of the stockpile and sediment fence downslope
    - A height to width ratio of less than 2:1
    - A flattened top to reduce runoff
    - Sediment fencing or other erosion and sediment controls applied if stockpile will remain for a period that exceeds 28 days (see Section 3.2.9). This may include wrapping the stockpiles in tarpaulin.
    - Topsoil will be separated and stored separately. Topsoil will be treated with appropriate frog-friendly (environmentally friendly) chemical control to avoid the spread of weed seed bank (see section 3.2.11) applied by a qualified contractor
- Conduct weekly site checks to ensure appropriate controls are in-tact; checks will be completed by the Site Environmental Representative.
- Conduct additional checks following periods of heavy rain to ensure the integrity of the controls is not compromised; checks will be completed by the Site Environmental Representative.
- Observe EPA Publication 960 outlining best practice stock piling measures.

3.2.5 Hygiene controls

The waterborne fungal pathogen *Batrachochytrium dendrobatidis* responsible for the amphibian disease Chytridiomycosis (hereafter referred to as Chytrid fungus), is thought to be the major cause behind a recent mass decline and increased extinction rate within frog populations around the world (Philott et al 2010). Chytrid fungus is known to affect GGF and cause high fatality rates within populations. As a result, a national abatement plan to tackle the spread of Chytrid fungus has been prepared by DoEE (2016).

To ensure the project is compliant with the objectives of the threat abatement plan, hygiene controls will be implemented in accordance with best practice publications such as DECC (2008a; refer to Appendix D) and Murray et al. (2011). Hygiene controls for weeds and pathogens include:

- Installing rumble grids and brush/washdown stations to remove soil/plant material from vehicles, equipment and/or footwear that are not free of soil/plant material as they enter and exit the site.
- Sourcing fill material (if required) from a reputable company.
- Cleaning rumble grids and washdown/brush areas of mud and debris as required.
- Designating potential GGF dams and tributaries of Jackson and Taylors Creek as 'no-go' zones with work prohibited unless approved by the SER. If works are approved by the SER, then:
    - Machinery and plant must be free of mud and debris.
    - Personnel must disinfect hands, boots/shoes and any other clothing that has contacted water, mud or damp soil with a solution of 70% ethanol at least 10 metres from waterbodies to minimise the risk of chemical contamination.
- Including a requirement for new plant and machinery to be free of (weed seed and pathogen free) prior to arrival on site in the plant pre-acceptance checklist. Works on site must not commence until this checklist is complete.
- Maintaining a register that includes details such as date, personnel and equipment approved to enter the 'no-go' zone.
- Contain waste from rumble grids and washdown stations to prevent contaminants entering waterways.
- Seek Melbourne Water approval to discharge water into any tributary.

For the purposes of this CMP it is assumed the Chytrid fungus is present on site within dams, drainage lines and tributaries.

3.2.6 Pre-clearance GGF surveys

Pre-clearance surveys will be conducted:

- One month prior to ground-breaking works to determine the presence of GGF within the broader SAMY Project site.
- On the day of ground-breaking works for Stage 3 to capture any frogs unearthed.

3.2.6.1 Survey (one month prior to works)

A Zoologist will undertake survey for GGF one month prior to ground-breaking works to determine the presence and location of any GGF within Stage 3 and the broader Project site.

Survey methods are informed by guidelines for surveying Australia's threatened frogs (DEWHA 2009, Heard et al 2010). Methods and timing of surveys are provided in Table 4 below.

Table 4: Pre-clearance survey methods for GGF

Time period	Survey timing	Methods
September to March (inclusive)	One month prior to works commencing.	Two consecutive days/nights Active searches Male call back and spotlighting areas of suitable habitat (dams, tributaries and table drain)
April to August (inclusive)		Four consecutive days/nights Active searching only

3.2.6.2 Searches on the day of works

A suitably qualified person/s[1] authorised under a permit issued by DELWP under the *Wildlife Act 1975* will be present the day/s of works to supervise activities including:

- Installation of frog fencing;
- Ground-breaking (land/vegetation clearing) works;
- Ground-covering (stockpiling) works if clearing not undertaken prior;
- Disturbance to aquatic habitat (if proposed); or,
- Removal of refuge such as rock piles (if required).

These activities will occur progressively throughout pre-construction and construction phases. Through this approach, areas where ground disturbance works are proposed will be searched by the qualified person as they unfold. The authorised person will complete a walkover immediately prior to any of the above listed activities and then be present as works are undertaken to capture any frogs unearthed in accordance with the measures outlined in Section 3.2.7.

3.2.7 Frog capture and relocation

If GGF are encountered during pre-clearance surveys, the suitably qualified person/s[2] authorised under a permit issued by DELWP under the *Wildlife Act 1975* will:

- Implement procedures for handling frogs to reduce the risk of cross-contamination and the spread of Chytrid fungus in accordance with hygiene protocols for the control of diseases in frogs (DECC 2008a; refer to Appendix D). These include:
    - Only those persons identified and approved on a permit issued by DELWP under the Wildlife Act will handle frogs.
    - Wear single-use gloves or disinfect hands with a solution such as 70% ethanol
    - Replace gloves or sanitise hands between each frog being handled.
    - Disinfect hands at a safe distance from waterbodies to minimise the risk of chemical contamination.
    - Place each individual frog into a clean, separate zip lock bag.
    - Dispose of bags and gloves after each use.
    - Ensure that all equipment used is sterilised after each use.
- Consider the following aspects during the relocation of any GGF:
    - Collect specific information for each frog encountered (body size, sex and reproductive condition) prior to release.
    - Keep detailed records of the frog capture and relocation point – document the GPS location and take photos for reference
    - Conduct an assessment on the visible health of the frog. Visibly sick or dying specimens are not to be translocated, but instead taken to a registered veterinarian/pathologist for further analysis. All materials used to handle/transport/dispose of infected frog are to be sterilized or disposed of in accordance with Chytrid fungus management protocols (DECC 2008a, Murray et al 2011).
    - Preserve dead frogs as soon as possible and offer to Museum Victoria.
- Release GGF in accordance with requirements of the DELWP permit. Authorisations of this nature typically require frogs to be released:

[1] For the purposes of this document, suitably qualified person refers to a person with proven experience of identifying, capturing, handling, ageing and sexing *Litoria raniformis*. This person will have a permit to handle wildlife under the Wildlife Act 1975.
[2] For the purposes of this document, suitably qualified person refers to a person with proven experience of identifying, capturing, handling, ageing and sexing *Litoria raniformis*. This person will have a permit to handle wildlife under the Wildlife Act 1975.

    - Within the same site and within 100 m of the point of capture.
    - Into nearest suitable micro-habitats (e.g. densely vegetated areas near a waterbody) away from construction works.
- Notify RPV if any GGFs are captured and relocated.
- Report any frogs captured and relocated to DELWP and DoEE on behalf of RPV.

3.2.8 Upgrades to stormwater draining infrastructure

In the event existing culverts and other stormwater infrastructure needs to be modified/replaced (e.g. following consultation with catchment/council authorities), the following actions are to be implemented:

- Ensure design is in line with the Growling Grass Frog Masterplan (DELWP 2017) to promote population connectivity and good water quality (e.g. upgrades inadvertently enabling the desiccation of frog habitat)
- Conduct GGF targeted surveys in accordance with method outlined in Section 3.2.6
- Discuss design and approval from DoEE, DELWP, Catchment Authority (Port Philip and Westernport CMA) and Council (City of Melton).
- Conduct upgrades between May and August (i.e. outside of the active season for GGF) and implement controls to appropriately mitigate impacts to GGF and their habitat.

3.2.9 Sediment and erosion controls

Measures to prevent the introduction of sediments or increased flows into GGF habitat will focus on minimising the amount of exposed soil and implementing appropriate erosion and sedimentation controls to minimise sedimentation. Erosion and sediment controls will be installed progressively to adapt the control measure(s) to the planned construction activities.

Erosion and sediment control measures will be consistent with Melbourne Water's Principles of Erosion Management (2017) such as:

- Scheduling vegetation stripping works at a drier time of year to avoid bogging and deep rutting the soil profile where practicable.
- Seeding, hydromulching or laying stabilisation matting atop cleared areas to minimise soil exposure, erosion and issues with water run-off (sedimentation). Stabilisation matting should be biodegradable.
- Installing erosion controls around stockpile areas (e.g. silt fences, mulch, soil binders or wrapping stockpiles in tarpaulin).
- Installing sediment fencing in conjunction with frog-exclusion fencing (see Figure 6).
- Assessing and managing how water is directed to, within, and from site and ensure any diversions don't lead directly to waterbodies or tributaries.
- Installing a sediment pond to capture sediments and pollutants where overland flow pathways lead to waterbodies and tributaries.
- Providing sealed access tracks that lead to loading, unloading, maintenance and washdown areas.
- Installing rumble grids at site entrance/exit to remove mud and debris in line with hygiene controls.

Where appropriate, erosion controls will be installed at the same time as frog fencing works.

All erosion and sedimentation controls will be monitored by the Site Environmental Representative during weekly site inspections.

3.2.9.1 Maintenance

Maintenance actions include:

- Weekly inspections completed by Site Environmental Representative or delegated person(s) to assess the adequacy of sediment and erosion controls and implement changes (where necessary).
- Maintaining a monitoring log to document inspections and any repairs completed.
- Inspection of controls immediately following heavy rains to ensure that the integrity of structures is maintained for the purposes of sediment and erosion control.
- Routine checks following the initial soil removal works to ensure appropriate sediment and erosion controls remain in place.
- SER to raise any issues and advise on the implementation of corrective actions.

3.2.9.2 Land reinstatement

Land will be reinstated post-construction to mitigate the effects of erosion and sedimentation. Reinstatement measures include:

- Progressive stabilisation of disturbed land. This is generally the most effective way to avoid erosion mitigation/remediation costs.
- Implementation of a landscape plan incorporating planting of native species, to improve the quality of GGF terrestrial habitat. The inclusion of rocks and logs as habitat will be considered.

3.2.10 Weed management

All necessary action must be taken to control CaLP Act declared weeds and WoNS during and after construction. Appropriate weed management may benefit GGF habitat by reducing the establishment of threatening weeds that degrade the quality of aquatic and terrestrial habitat. Weed management measures will be consistent with the CEMP and follow best practice guidelines (DECC 2008b). Chemical control of weeds around aquatic habitats will be kept to a minimum and follow Water and Rivers Commission (2001). The following general guidance is provided for frog-friendly weed management:

- Minimise using herbicide control during the months of September to April (inclusive) season to prevent any impacts to early life stages of frogs.
- Understand the biology of the weed of interest and use an integrated approach to management – a combination of techniques including hand removal, smothering with jute mat or mulch, , slashing before annual seed, inject and stem cut (woody weeds) and herbicide spraying may be appropriate.
- Use frog-friendly herbicides such as Roundup Bioactive and Fusilade if herbicide control methods are required. These herbicides are considered safe to use as they biodegrade quickly and have low toxicity.
- Apply herbicide according to the recommended rate and in accordance with the Material Safety Data Sheet (MSDS).
- Consider the timing of herbicide control to optimise effectiveness of treatment; such as;
    - Avoid spraying on hot days when plants are stressed or immediately prior to rain to ensure herbicide is absorbed adequately through the leaf surface
    - Avoid spraying on windy days to prevent off-target/over spraying

3.2.11 Chemical management

A spill of hazardous materials (hydrocarbons and other chemicals) on site could potentially enter waterways and may lead to mortality, impede reproduction and affect the physiology of frogs as well as their early life stages (tadpoles). Hazardous chemical management will be guided by the requirements of the CEMP. In the first instance, chemicals will be stored in approved containers in bunded areas ensuring the following requirements:

- Bund constructed of impervious materials.
- Bund, other than for minor storage, located at least 50 m from any waterbody (pond, waterway or drainage channel).
- All bunded areas will contain a spill kit, water source and fire extinguisher.

Any spillage of hydrocarbons will be contained and cleaned up immediately with a spill kit and disposed of in accordance with the CEMP. All spills are to be reported and investigated. The Site Environmental Representative will complete regular audits to ensure chemicals are stored appropriately.

3.2.12 Housekeeping

Housekeeping measures to prevent environmental degradation include:

- Leave the site in a tidy condition, with excess material disposed of in line with waste avoidance hierarchy (prioritize reuse) and EPA requirements (e.g. EPA Publication 1655 Toolkit for the management of solid waste from civil and construction & demolition sites (EPA 2017).
- Install (or retain existing) perimeter fencing to restrict access to the premises (minimize illegal dumping).
- Provide appropriate waste disposal facilities (bins and skips to separate construction debris).
- Schedule regular collection of waste disposal units to prevent overfilling.

3.2.13 Removal of frog fence

Suitably qualified person to supervise removal of frog fence to capture and relocate any frogs encountered in accordance with a permit issued by DELWP under the Wildlife Act.

3.2.14 Operations

Measures to mitigate impacts to GGF during pre-construction and construction are also applicable during operations. Less onerous commitments are required during operations and the following actions will be implemented:

- Hygiene – vehicles and persons accessing the site will remain on sealed roads to avoid the spread of weeds and pathogens.
- Rubbish disposal - good house-keeping practices will be adopted and regular waste collection scheduled to prevent pollution and/or degradation of frog habitat.
- Water quality (train wash) – ongoing maintenance of the train wash facility will be completed to ensure train wash water is contained. Upgrades will be implemented as required.

3.2.15 Adaptive management

Adaptive management that incorporates lessons learned in the implementation of the Project is paramount to the protection and long-term viability of GGF populations. Some additional items that may arise include:

- Barriers to GGF dispersal (e.g. via sedimentation following heavy storms)
- Damage from feral animals (e.g. broken, ineffective fencing)
- Poor water quality (e.g. from changes and/or intensification to upstream activities)
- Weed infestation. Some noxious weeds (e.g. Salvinia) have the capacity to severely degrade water quality and even create anoxic conditions inhospitable to frogs and other aquatic life. Ongoing monitoring shall identify the presence of such weeds at an early stage before they cause adverse impact to GGF habitat
- Frog fencing around other water-bodies if GGF is discovered on site during regular monitoring.

Weekly inspections, record keeping, GGF surveys and supervision during land clearance activities will identify if any of the above listed items result in a change to the impact level to GGF at the site. If any of these are considered to have a significant impact to GGF at the site and/or impact the long-term viability of the GGF population then a review of this CMP will be completed.

Any change to the GGFCMP will need to be approved by DoEE (Condition 7 of the EPBC Act approval) and DELWP.

4 Action Plan / Schedule of Works

The Action Plan/Schedule of Works Programme identifies the order of tasks required to implement the GGFCMP during each phase of Stage 3 (Table 5). Works are scheduled to occur between December 2019 and June 2020 as follows:

- Site establishment (pre-construction) – December 2019; refer to Section 1.1.4.1 for works associated with the site establishment phase
- Construction phase – March to June 2020; refer to Section 1.1.4.2 for works associated with the construction phase
- Operations - June 2020 onwards.

Table 5: Calder Park SAMY GGF management Action Plan

Control reference	Control	Relevant Section of this plan	Stage 3 project phase	Timing	Responsibility
PERMITS					
GGFC1	Obtain permit to handle and relocate GGF. Permit issued by DELWP under the *Wildlife Act 1975*	3.2.8	Prior to works commencing	At the inception of works	Zoologist and Site Environmental Representative
RECORD KEEPING					
GGFC2	Maintain record of induction and toolbox talk attendance in site register	3.2.1 & 4	All Phases	For the duration of Stage 3	Site Environmental Representative or Site Supervisor
GGFC3	Maintain record of weekly site control checks completed to ensure all controls are intact and functional	All controls	All Phases	For the duration of Stage 3	Site Environmental Representative
GGFC4	Maintain a register of all personnel, plant and machinery approved to enter 'no-go' zones	3.2.2 3.2.5	All Phases	For the duration of Stage 3	Site Environmental Representative

Control reference	Control	Relevant Section of this plan	Stage 3 project phase	Timing	Responsibility
GGFC5	Maintain logbook of any GGF found and relocated (approval condition 5)	3.2.8	All Phases	For the duration of Stage 3	Site Environmental Representative
TRAINING AND AWARENESS					
GGFC6	Conduct / attend site induction to outline environmental controls and detail individual responsibilities	3.2.1	Pre-construction	Before commencement of first day on site	Project Zoologist, Site Supervisor or Site Environmental Representative All employees, contractors and subcontractors
GGFC7	Conduct / attend daily toolbox talks for updates to the works program and environmental controls	3.2.1	Construction	Daily	Superintendent Site, Site Environmental Representative, all employees, contractors and subcontractors
SITE CONTROLS					
GGFC8	Provide sealed tracks leading to loading, unloading, maintenance and washdown areas to prevent 'off-track' movement of machinery	3.2.5 3.2.9	Pre-construction	During Site Establishment and prior to plant and machinery mobilising site	Site Supervisor
GGFC9	Fence 'no-go zones to prevent damage to vegetation and GGF habitat.	3.2.2.2	Pre-construction	Prior to plant, machinery and	Site Environmental Representative

Control reference	Control	Relevant Section of this plan	Stage 3 project phase	Timing	Responsibility
				personnel mobilising site	Site, Superintendent and Project Engineer
GGFC10	Install 'no-go' zone signs to prevent machinery, plant and personnel entering 'no-go' zones	3.2.2.1	Pre-construction	Prior to plant, machinery and personnel mobilising site	Site Environmental Representative Site Supervisor
GGFC11	Identify stockpile locations to ensure they are outside of 'no-go' zones and located at least 10 m from a minor drainage line and 30 m from a dam or tributary	3.2.5 3.2.9	Pre-construction	During Site Establishment works	Site Environmental Representative or Site Supervisor
GGFC12	Identify fuel refill and chemical storage areas outside of 'no-go' zones. Major chemical storage will be located at least 50 m from a dam or tributary	3.2.11	Pre-construction	During site establishment works	Site Environmental Representative or Site Supervisor
GGFC13	Install rumble grids (or equivalent) and brush/washdown stations to remove mud and debris to reduce the spread of weeds and pathogens	3.2.5 3.2.9	Pre-construction	Prior to plant and machinery mobilising site	Site Environmental Representative or Site Supervisor
GGFC14	Complete plant pre-acceptance checklist for all new plant and machinery mobilising site to ensure machinery is free of mud or debris before ending the site to prevent the spread of Chytrid fungus in accordance with DECC (2008a).	3.2.5 Appendix D	All phases	Prior to new plant and machinery mobilising site	Site Environmental Representative or Site Supervisor
GGFC15	Contain washdown waste from rumble grids and washdown areas to prevent sediments and contaminants entering waterways	3.2.5	All phases	N/A	Site Environmental Representative or Site Supervisor
GGFC16	Source fill and road construction materials from reputable companies	3.2.5	All phases	Prior to reinstatement works	Site Environmental Representative or

Control reference	Control	Relevant Section of this plan	Stage 3 project phase	Timing	Responsibility
					Site Supervisor
GGFC17	Refuel vehicles and store chemicals (in approved containers) in bunded areas to prevent spills entering waterways	3.2.11	All phases	At all times	All site personnel
GGFC18	Install chemical spill kits at fuel refill and chemical storage locations so that spills can be contained immediately	3.2.11	Pre-construction	Prior to plant and machinery mobilising site	Site Environmental Representative or Site Supervisor
GGFC19	Implement good housekeeping procedures and schedule regular waste collection to prevent environmental degradation on site	3.2.12	All phases	Implemented from the outset of Site Establishment	Site Supervisor
GGFC20	Install frog exclusion fence to exclude frogs from the construction works area using a suitably qualified contractor.	3.2.3 3.2.3.2 Figure 6 (schematic)	Pre-construction	Prior to Site Establishment	Qualified contractor to install fence. Zoologist or Site Environmental Representative
GGFC21	Assess site conditions and water run-off routes to determine appropriate placement of controls to prevent water from entering dams and tributaries and to ensure controls are fit for purpose	3.2.8 3.2.9	Pre-construction Construction	As needed for the duration of construction works	Site Environmental Representative
GGFC22	Install sediment and erosion controls prior to land-clearing works to prevent contamination of waterways	3.2.9	Pre-construction	Progressively	Site Environmental Representative or Site Supervisor
GGFC23	Install erosion controls around stockpile areas to prevent increased sediment load entering waterways	3.2.9	Pre-construction Construction	For the duration of ground-breaking works	Site Environmental Representative or Site Supervisor

Control reference	Control	Relevant Section of this plan	Stage 3 project phase	Timing	Responsibility
GGFC24	Install a sediment pond to capture sediments and pollutants to prevent them entering waterways (if control GGF27 identifies it is required)	3.2.9	Pre-construction Construction	Prior to land-clearing works	Site Environmental Representative and Site Supervisor
GGFC25	Seek Melbourne Water approval to discharge water into a tributary to ensure any proposed discharge is in line with current policies and procedures	3.2.5	All phases	Prior to discharging water	Site Environmental Representative or Site Supervisor
GGFC26	Schedule vegetation stripping works at a drier time of year to prevent unnecessary deep rutting and bogging of the soil profile and excessive mud build-up on plant and machinery.	3.2.9	Construction	For the duration of ground-breaking works	Site Environmental Representative or Site Supervisor
GGFC27	Seed, hydromulch or lay stabilisation matting atop cleared areas to minimise soil exposure, erosion and sedimentation	3.2.9	Pre-construction Construction	During site stripping and vegetation removal works	Site Environmental Representative or Site Supervisor
GGFC28	Seek approval from the SER to enter 'no-go' zones	3.2.5	Pre-construction Construction	As required	All personnel Site Environmental Representative
GGFC29	Complete GGF surveys prior to Stage 3 construction commencing to determine if GGF are occupying the broader Project site	3.2.6	Construction	One month prior to construction works commencing	Zoologist
GGFC30	Remove terrestrial habitat for GGF under supervision of a suitably qualified person to prevent direct impacts to GGF during any ground-breaking works which include (but are not limited to) installation of frog exclusion fencing, sediment	3.2.6 3.2.7	Pre-construction Construction	Morning of, and at time of, any ground-breaking works.	Person authorised under DELWP permit to supervise works and handle frogs.

Control reference	Control	Relevant Section of this plan	Stage 3 project phase	Timing	Responsibility
	and erosion controls, bunds, and stripping of vegetation.				
GGFC31	Capture and relocate GGF to ensure no direct impacts, injury and/or death of frogs occurs	3.2.7	All phases	Any time	Person authorised under DELWP permit to handle frogs
GGFC32	Monitor GGF population if GGF are found during Stage 3 work	6	Construction and one spring/summer season post-construction	Between October and January	Zoologist
INSPECTIONS AND MAINTENANCE					
GGFC33	Perform weekly site inspections to ensure the integrity and functionality of all controls is maintained	3.2.2.2 3.2.3.4 3.2.5 3.2.9	All phases	Weekly	Site Environmental Representative
GGFC34	Perform inspections following major vegetation removal and soil disturbance works to ensure the integrity and functionality of sedimentation and erosion controls is maintained	3.2.9.1	Pre-construction Construction	Immediately following major vegetation and soil disturbance works	Site Environmental Representative
GGFC35	Perform inspections immediately following heavy rain to ensure erosion and sedimentation controls are intact and effective to withstand increased runoff	3.2.9.1	All phases	Immediately following heavy rain	Site Environmental Representative
GGFC36	Identify and implement any corrective actions to all GGF controls to ensure the integrity and functionality is fit for purpose	3.2.15 7.2	All phases	As needed	Site Environmental Representative
GGFC37	Complete repairs of any compromised controls to ensure integrity and functionality is maintained	All controls	All phases	As needed	Site Environmental Representative

Control reference	Control	Relevant Section of this plan	Stage 3 project phase	Timing	Responsibility
GGFC38	Clean rumble grids and washdown/brushdown areas of mud and debris to ensure site hygiene controls are maintained	3.2.5	All phases	As needed	Site Environmental Representative or Site Supervisor
SITE REINSTATEMENT					
GGFC39	Progressively stabilise disturbed land to reduce erosion	3.2.9	Pre-construction Construction	Following vegetation clearance works	Site Environmental Representative or Site Supervisor
GGFC40	Reinstate land post-construction to reduce the effects of erosion and sedimentation	3.2.9.2	Post-construction	As phases of construction are completed	Site Environmental Representative or Site Supervisor
GGFC41	Monitor site for CaLP Act weeds and WoNS and treat as necessary	3.2.10	All phases	As CaLP Act weeds and WONS issues arise	Site Environmental Representative
GGFC42	Determine if the frog-exclusion fence is required for future stages of the project. If not, remove under the supervision of a suitably qualified person to capture and relocate any GGF encountered.	3.2.13	Post-construction	At the completion of construction	Site Supervisor
ONGOING OPERATION					
GGFC43	Install or retain perimeter fencing to minimise illegal dumping and environmental degradation	3.2.1.3	All phases	During site establishment works	Site Supervisor and Project Engineer
GGFC44	Perform ongoing maintenance of train wash facility to ensure train wash water is contained and disposed of appropriately	3.2.1.14	Post-construction	As needed	Site Supervisor

Control reference	Control	Relevant Section of this plan	Stage 3 project phase	Timing	Responsibility
GGFC19	Implement good housekeeping procedures and schedule regular waste collection to prevent environmental degradation on site	3.2.12	All phases	Implemented from the outset of Site Establishment	Site Supervisor
GGFC45	Maintain and upgrade chemical spill kits at fuel refill and chemical store locations	3.2.11	All phases	As needed	Site Environmental Representative or Site Supervisor
GGFC41	Monitor site for CaLP Act weeds or WoNS and treat as necessary	3.2.10	All phases	Implemented from the outset of Site Establishment	Site Supervisor

5 Roles and Responsibilities

RIA/RPV are responsible for the implementation of the CMP throughout Stage 3 and any future works. They will also be responsible for developing standalone documents for Stage 3 CEMP which detail the further management requirements and protocols in compliance with this document.

The suitability of this plan and associated documents will also be assessed by DELWP to determine whether the plan meets all requirements stipulated by the FFG Act, Wildlife Act, and any other relevant state-based legislation. It will then be at the discretion of DELWP to issue relevant permits.

The successful implementation of this plan relies on the cooperation of all levels of the project - from RIA to all contractors and sub-contractors. Project management will lead by example and deliver the project to the highest standards of environmental management and performance. Table 6 summarises the key personnel and responsibilities to execute this CMP.

Table 6: Roles and responsibilities

Role	Key accountabilities
Project Manager (PM)	• Ensure the project achieves legislative compliance • Ensure resources are available to achieve the requirements of the GGFCMP • Provide leadership in the development and implementation of the GGFCMP • Ensure all environmental incidents and near misses are promptly investigated and reported • Resolve any non-compliance issues.
Site Supervisor (SS)	• Communicate the requirements of this plan to all staff, contractors and sub-contractors • Promote environmental awareness and lead by example • Ensure all activities are carried out in accordance with this GGFCMP • Attend an induction prior to commencement of the project.
Project Engineer	• Construction detailed design and incorporation of project environmental controls.
Site Environmental Representative (SER)	• Principal on-site delegate for technical and practical guidance in relation to GGF • Implements controls and actions listed in Table 5 to ensure compliance with the GGFCMP • Lead and inspire others to achieve the Projects environmental goals • Attend an induction prior to commencement of the project • Ensure all environmental issues are identified, reported and managed appropriately • Assist the PM in reporting any non-compliance issues and ensure corrective actions are developed and implemented • Report any significant impacts as required by law and under the Project's approval conditions • Ensure the GGFCMP is implemented for the duration of Stage 3 • Track compliance of the GGFCMP throughout the life of the Project) • Initiate a review of this GGFCMP as required • Ensure reporting requirements are completed and published within the timeframes identified in the approval conditions.

Role	Key accountabilities
	• Conduct weekly inspection of controls (e.g. frog exclusion fencing, sediment and erosion controls)
Project Zoologist (Permit)	• Hold a current DELWP permit issued under the Wildlife Act 1975 • Undertake pre-clearance GGF survey. • Translocate GGF if required
Persons authorised under a permit issued by DELWP under the Wildlife Act	• Capture and relocate any GGF found on site in accordance with the procedures detailed in section 3.2.7 • Provide advice and guidance on the management of frogs found on site • Maintain a register of frogs captured and relocated during Stage 3 and provide details to DELWP • Undertake GGF searches immediately prior to vegetation removal.
Construction staff, contractors and sub-contractors	• Attend an induction prior to their commencement on the project • Attend daily toolbox talks • Immediately stop work if they encounter a GGF and contact the SER • Undertake work in accordance with this GGFCMP • Adhere to all regulatory and contract specific requirements • Immediately report any environmental hazards or near misses that have the potential to impact GGF or its associated habitat • Seek clarification and assistance from the SER for any queries in relation to this GGFCMP.

6 Monitoring

Monitoring will be conducted for GGF if GGF are found at any time throughout the life of the Stage 3 works program. At this stage, conditions are not regarded as favourable for GGF occupancy of the site (see Section 2) and it is unlikely GGF will be encountered. However, if conditions on site become more favourable during the course of Stage 3 works, and GGF are found, the monitoring program detailed in Table 7 will commence.

Monitoring will consist of nocturnal surveys or two non-consecutive nights during the main breeding season (October and January). Surveys will include spotlighting and call playback to detect breeding males. GGF numbers will be recorded, with climatic data (rainfall, temperature) also collected to account for natural variations in populations.

An assessment of GGF habitats at each dam will be conducted in accordance with microhabitat attributes identified by Heard et al (2008) as detailed in the template form (Appendix E:).

Table 7: GGF Monitoring Programme for individual work stages

Monitoring Requirements	Timing	Method	Frequency	Duration
Frog census	Between October and January	Spotlighting, active searches, male call playback	2 x per year	During the construction period and one season following construction

The outcomes of monitoring will be documented in a report which will be made available to DoEE and/or DELWP on request.

7 Reporting and review

7.1 Reporting

Reporting requirements for Stage 3 works in accordance with the referral conditions are outlined in Table 8. RIA will complete these reporting tasks on behalf of RPV unless otherwise agreed with RPV.

Table 8: Reporting requirements as per EPBC approval

Approval condition number	Requirement	Timeframe
4	Notify DoEE in writing of the actual date of commencement	Within 5 days of commencement of the action (i.e. construction activities[3])
5	Maintain accurate records of all activities associated with conditions of approval and make them available to the department.	Upon request.
6	Publish a report on a website addressing compliance with each approval condition, including implementation of this GGFCMP.	Within 3 months of every 12-month anniversary of the commencement of the action. For the first 6 years post-commencement of construction activities (unless otherwise specified by the Minister in writing). Construction activities commenced at Stage 1 in 2014.
	Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of the approval must be provided to DoEE at the same time as the compliance report is published.	
7	Submit to the department for the Minister's written approval a revised version of the management plan.	Upon variation to originally proposed activity. The varied activity shall not commence until the Minister has approved the varied management plan in writing.
9	Publish current version of GGFCMP on their website	Within 1 month of Ministerial approval (unless agreed to in writing by the Minister).

7.2 Review

This GGFCMP has been developed using the best available methods, procedures, expertise and experience available and as such is considered to represent best practice environmental management standards. It has also been developed in consideration of the two previous CMPs for the Project and builds upon those standards already established.

A review of this GGFCMP will be required for any future stages of the Project. The CMP will also be automatically be reviewed following any mortality to GGF.

[3] Defined in the referral conditions as: all works undertaken, including preparatory works, fencing, clearing vegetation, the erection of any onsite temporary structures and the use of heavy-duty equipment for the purpose of breaking the ground for buildings or infrastructure excavation, soil movement and stockpiling.

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APPENDIX A: EPBC APPROVAL (EPBC 2012/6439)

Australian Government
Department of the Environment

Approval

Calder Park Stabling and Maintenance Yard, Calder Park, Victoria (EPBC 2012/6439)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	Public Transport Development Authority
proponent's ACN (if applicable)	ABN 375 090 505 93
proposed action	The proposed action is to construct and operate a passenger train stabling and maintenance yard facility at Calder Park, approximately 25 kilometres north-west of the Melbourne central business district [See EPBC Act referral 2012/6439].

Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	Approved with conditions

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 31 December 2025.

Decision-maker

name and position	James Tregurtha Assistant Secretary South-Eastern Australia Environment Assessment Branch
Signature	
date of decision	27 SEPTEMBER 2013

Conditions attached to the approval

1. **Construction activities** must not occur outside of the **study area** as illustrated in Appendix A.

2. Prior to the **commencement** of **construction activities**, the person taking the action must submit a **Growling Grass Frog** Conservation Management Plan (CMP) for the **Minister's** approval. Prior to its submission, the CMP must be peer reviewed by a **Growling Grass Frog** expert and once approved must be implemented. At a minimum, the CMP must include:

    a. Commitments that decommissioning of dams within the **study area**, will occur outside the **Growling Grass Frog** breeding season (i.e. decommissioning activities must not occur between September and March inclusive);

    b. Details of sedimentation and erosion control measures to be implemented at all stages of the proposed action, to prevent debris and sedimentation entering nearby waterways and drainage lines;

    c. Details of how hygiene measures to prevent the introduction of Chytrid fungus, will be implemented in accordance with the *Hygiene protocol for control of diseases in frogs* (DECC NSW, 2008);

    d. Details, including timing, materials and methods required for the installation of fencing to prevent **Growling Grass Frogs** from entering the construction site;

    e. A specific chapter that includes commitments to compensate for the unavoidable impact to the **Growling Grass Frog** by creating habitat, including wetlands, in accordance with **current scientific literature**. This chapter must also include:

        i. specific details including maps and diagrams of the construction, operation and maintenance of the proposed translocation area;

        ii. diagrams that show the boundaries of the proposed translocation area, particularly in relation to the proposed stabling yards;

        iii. commitments that the proposed translocation area will be completed prior to the removal of Dam 2 (as illustrated in Appendix A);

        iv. evidence the proposed translocation area will be protected in perpetuity within 12 months of its creation;

        v. details of ongoing management and maintenance of the proposed translocation area, including timeframes, activities, funding arrangements and responsibilities;

        vi. details of a monitoring and reporting program to document the success of the proposed translocation area in supporting **Growling Grass Frog** populations; and

        vii. commitments that three years after the construction of the proposed translocation area, the person taking the action will engage a **Growling Grass Frog** expert to review and report on the success of the proposed translocation area. This report must be provided to the **department** on request.

3. Prior to the **commencement** of **construction activities**, the person taking the action must provide the **department** with illustrations and maps that clearly define the location and boundaries of the proposed translocation area. This must be accompanied with the **offset attributes** and a **shapefile** for each proposed translocation area.

4. Within five days after the **commencement** of the action, the person taking the action must advise the **department** in writing of the actual date of **commencement**.

5. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plan required by this approval, and make them available upon request to the **department**. Such records may be subject to audit by the **department** or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **department's** website. The results of audits may also be publicised through the general media.

6. Within three months of every 12 month anniversary of the **commencement** of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the **department** at the same time as the compliance report is published. Unless otherwise specified in writing by the **Minister**, this condition is specifically limited to the first 6 years post **commencement** of the **construction activities**.

7. If the person taking the action wishes to carry out any activity otherwise than in accordance with the management plan as specified in the conditions, the person taking the action must submit to the **department** for the **Minister's** written approval a revised version of that management plan. The varied activity shall not commence until the **Minister** has approved the varied management plan in writing. The **Minister** will not approve a varied management plan unless the revised management plan would result in an equivalent or improved environmental outcome over time. If the **Minister** approves the revised management plan, that management plan must be implemented in place of the management plan originally approved.

8. If the **Minister** believes that it is necessary or convenient for the better protection of listed threatened species and ecological communities to do so, the **Minister** may request that the person taking the action make specified revisions to the management plan specified in the conditions and submit the revised management plan for the **Minister's** written approval. The person taking the action must comply with any such request. The revised approved management plan must be implemented. Unless the **Minister** has approved the revised management plan then the person taking the action must continue to implement the management plan originally approved, as specified in the conditions.

9. Unless otherwise agreed to in writing by the **Minister**, the person taking the action must publish all management plans referred to in these conditions of approval on their website. Each management plan must be published on the website within 1 month of being approved.

Definitions

a) Commencement: the date that preparatory works are first undertaken, including but not limited to clearing of vegetation, the erection of any onsite temporary structures and the use of heavy duty equipment for the purpose of breaking the ground for infrastructure or earthworks.

b) Construction activities: means all works undertaken, including preparatory works, fencing, clearing of vegetation, the erection of any onsite temporary structures and the use of heavy duty equipment for the purpose of breaking the ground for buildings or infrastructure excavation, soil movement and stockpiling.

c) Current scientific literature: includes peer reviewed scientific literature on the rehabilitation and protection of Growling Grass Frogs and their habitat i.e. *Guidelines for managing the endangered Growling Grass Frog in urbanising landscapes (Heard, Scroggie and Clemann, 2010, (former) Victorian Department of Sustainability and Environment).*

d) Department: the Australian Government Department administering the *Environment Protection and Biodiversity Conservation Act 1999.*

e) Growling Grass Frog: means the EPBC-listed vulnerable species *Litoria raniformis.*

f) Minister: the Minister administering the *Environment Protection and Biodiversity Conservation Act 1999* and includes a delegate of the Minister.

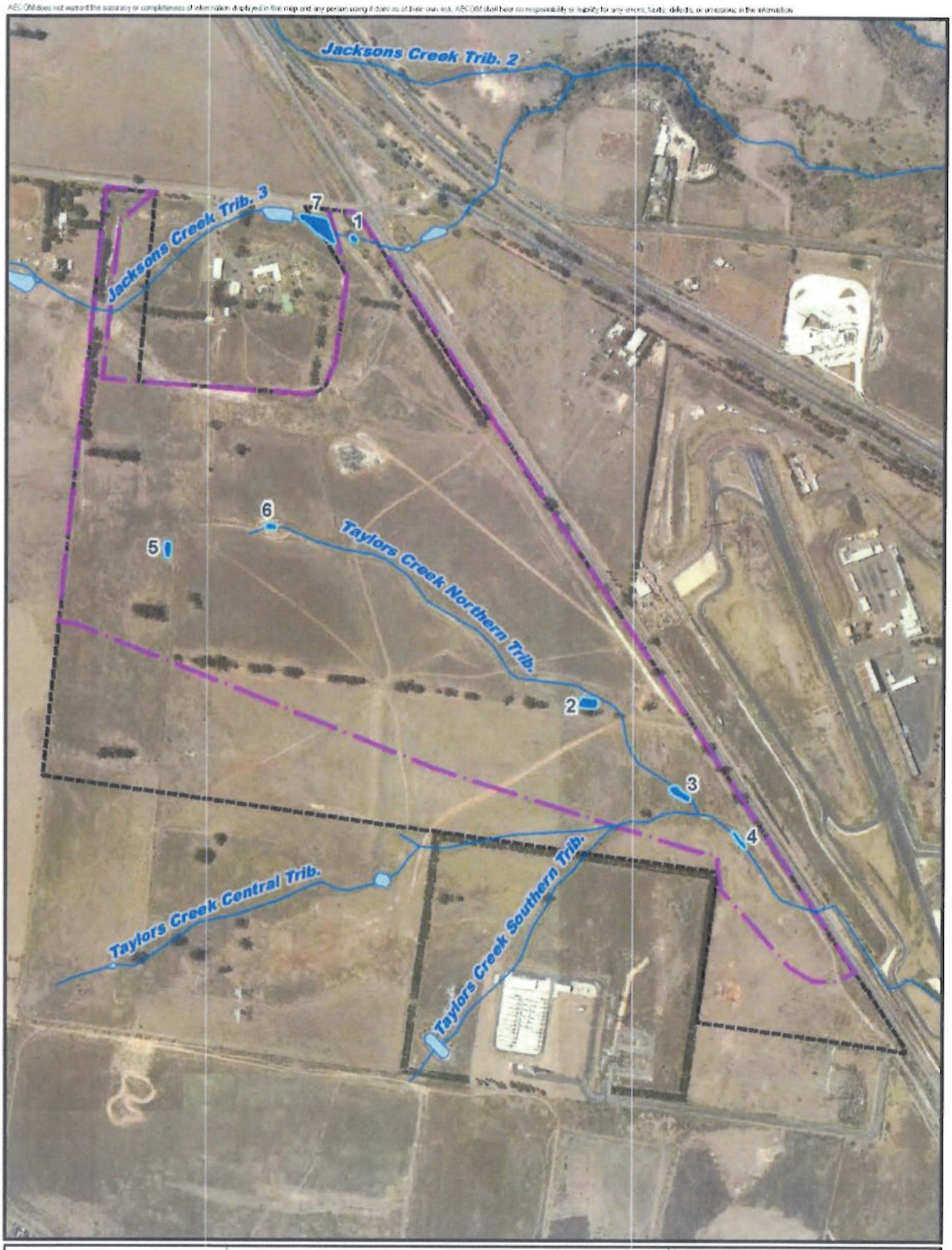
g) Offset attribute: means an '.xls' file capturing relevant attributes of the Offset Area, including the EPBC reference ID number, the physical address of the offset site, coordinates of the boundary points in decimal degrees, the EPBC protected matters that the offset compensates for, any additional EPBC protected matters that are benefiting from the offset, and the size of the offset in hectares.

h) Shapefile: means an ESRI Shapefile containing '.shp', '.shx' and '.dbf' files and other files capturing attributes including at least the EPBC reference ID number and EPBC protected matters present at the relevant site. Attributes should also be captured in '.xls' format.

i) Study area: the area defined by the broken black line on the map at Appendix A.

Appendix A

Figure 3 Site Location Plan



APPENDIX B: PEER REVIEW LETTER

HABITAT
MANAGEMENT SERVICES

A.C.N 057 792 293
A.B.N 42057 792 293

29th October 2019

To: Mr. Brett Purcell
Environment Manager
Rail Infrastructure Alliance
345 Macaulay Road,
Kensington, VIC 3031

From: Ms. Tanya White
Managing Director
Principal Zoologist/Ecologist
Habitat Management Services
PO BOX 882, Panton Hill, VIC 3759
M: 0408 700 096
E: tanyaw@hbtmgt.com
W: www.hbtmgt.com.au

OUR REF: JHGGGFPR

RE: CALDER PARK STABLING YARDS & MAINTENANCE YARDS STAGE 3
GROWLING GRASS FROG CONSERVATION MANAGEMENT PLAN: PEER REVIEW

Hi Brett,

Habitat Management Services have reviewed the Growling Grass Frog Conservation Management Plan for the Calder Park Stabling Yards and Maintenance Yards Stage 3 provided to myself on the 10th of October 2019.

The amendments requested by Habitat Management Services have been made by Aecom and I am satisfied with the reviews and content contained within the Growling Grass Frog Conservation Management Plan.

If you have any questions, please do not hesitate to contact me on 0408 700 096 or email tanyaw@hbtmgt.com

Kind regards,

Tanya White
Managing Director: Principal Zoologist/Ecologist
Habitat Management Services

DISCLAIMER:

Habitat Management Services accepts no liability for any actions and outcomes associated with the Conservation Management Plan.

APPENDIX C: PHOTOS

Photos of Calder Park SAMY terrestrial and aquatic habitat

December 2012

Photographs	
	
Plate 2: Dam 1 holding water at the time of the 2012 assessment	Plate 3: Dam 2 holding water at the time of assessment and surrounded by degraded terrestrial vegetation
	
Plate 4: Dam 3 holding water at the time of the 2012 assessment	Plate 5: Dam 4 holding water at the time of the 2012 assessment

Plate 6: Dam 5 holding water at the time of the 2012 assessment

Plate 7: Dam 6 holding water at the time of the 2012 assessment

Plate 8: Dam 7 holding water at the time of the 2012 assessment

August 2019

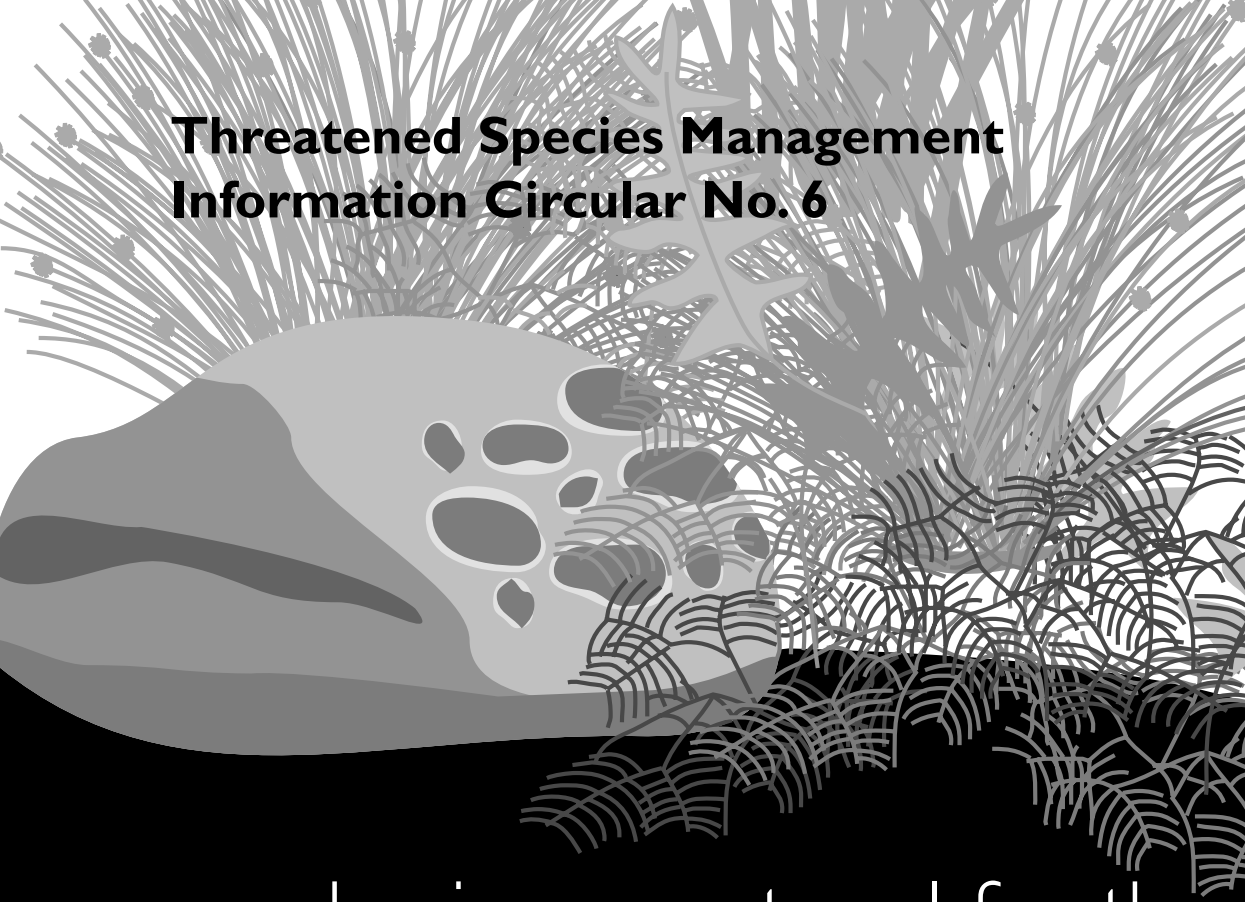
Photographs	
	
Plate 9: Dam 2 dry at the time of assessment and supporting a cover of exotic weed species)	Plate 10: Dam 3 holding water at the time of assessment and surrounded by degraded terrestrial vegetation
	
Plate 11: Dam 4 and the realigned tributary holding water at the time of assessment. Poor-quality aquatic and terrestrial vegetation for GGF present	Plate 12: Dam 7 (outside project area) holding water at the time of assessment

Plate 13: Realigned table drain with added basking logs. Drain supports a limited cover of indigenous aquatic plants and is mostly dominated by non-indigenous species.

Plate 14: Degraded terrestrial vegetation with high cover of Artichoke Thistle and Chilean Needle-grass

APPENDIX D: FROG HYGIENE PROTOCOL

Threatened Species Management Information Circular No. 6



hygiene protocol for the control of disease in frogs

April 2008

Department of **Environment & Climate Change** NSW

* The National Parks and Wildlife Service is part of the Department of Environment and Climate Change

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Website: www.environment.nsw.gov.au

This document can be sourced from the DECC website:
www.environment.nsw.gov.au/resources/nature/hypfrog.pdf

This document should be cited as:
Department of Environment and Climate Change (NSW) 2008.
Hygiene protocol for the control of disease in frogs.
Information Circular Number 6. DECC (NSW), Sydney South.

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DECC 2008/199

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This hygiene protocol is an adaptation of the Declining Amphibian Population Task Force (DAPTF) Fieldwork Code of Practice and the recommendations of Speare et al. (1999) and has drawn on recommendations from earlier guidelines prepared by Environment ACT.

Foundation for National Parks and Wildlife funded the printing of this protocol.

hygiene protocol for the control of disease in frogs

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1 introduction

This information circular outlines measures to:

- Prevent or reduce disease causing pathogens being transferred within and between wild populations of frogs.
- Ensure captive frogs are not infected prior to release.
- Deal safely with unintentionally transported frogs.
- Assist with the proper identification and management of sick and dead frogs in the wild.

1.1 Who should read this document?

This protocol is intended for use by all researchers, wildlife consultants, fauna surveyors and students undertaking frog field-work. In addition, the protocol should be read by Department of Environment and Climate Change (DECC) personnel, frog keepers, wildlife rescue and carer organisations, herpetological/frog interest groups/ societies, fauna park/zoo operators/workers and other individuals who regularly deal with or are likely to encounter frogs.

This protocol outlines the expectations of the DECC regarding precautionary procedures to be employed when working with frog populations. The intention is to promote implementation of hygiene procedures by all individuals working with frogs. New licences and licence renewals will be conditional upon incorporation of the protocol. The DECC recognises that some variation from the protocol may be appropriate for particular research and frog handling activities. Such variation proposals should accompany any licence application or renewal to the DECC.

1.2 Background

1.2.1 Amphibian Chytrid Fungus

The apparent decline of frogs, including extinctions of species and local populations, has attracted increased international and national concern. Many potential causes for frog declines have been proposed (eg see Pechmann et al., 1991; Ferrero and Bergin, 1993; Pechmann and Wilbur, 1994; Pounds and Crump, 1994; Pounds et al., 1997). However, the patterns of decline at many locations suggest that epidemic disease maybe the cause (Richards et al., 1993; Laurance et al., 1996; Alford and Richards, 1997). Recent research has implicated a water-borne fungal pathogen *Batrachochytrium dendrobatidis* as the likely specific causative agent in many of these declines both in Australia and elsewhere (Berger et al., 1998; 1999). This agent is commonly known as the amphibian or frog chytrid fungus and is responsible for the disease Chytridiomycosis (Berger et al., 1999).

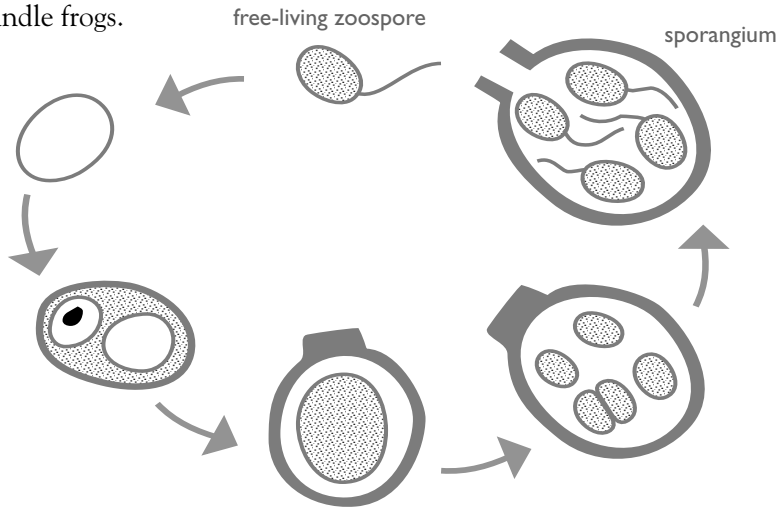
B. dendrobatidis is a form of fungus belonging to the phylum Chytridiomycota. Most species within this phylum occur as free-living saprophytic fungi in water and soil and have been found in almost every type of environment including deserts, artic tundra and rainforest and are considered important primary biodegraders (Powell 1993). *B. dendrobatidis* is a unique parasitic form of Chytridiomycete fungi, in that it invades the skin of amphibians, including tadpoles, often causing sporadic deaths with up to 100% mortality in some populations. Chytridiomycosis has been detected in over 40 species of native amphibian in Australia (Mahony and Workman 2000). However, it is not currently known whether the fungus is endemic or exotic to Australia.

The infective stage of *B. dendrobatidis* is the zoospore and transmission requires water (Berger et al.,1999). Zoospores released from an infected amphibian can potentially infect other amphibians in the same water. More research is needed on the dynamics of infection in the wild. *B. dendrobatidis* is known to be susceptible to seasonal temperature changes, dehydration, salinity, water pH, light, nutrition and dissolved oxygen (Berger et al., 1999).

1.3 Objectives

The objectives of the hygiene protocol are to:

- Recommend best-practice procedures for DECC personnel, researchers, consultants and other frog enthusiasts or individuals who handle frogs.
- Suggest workable strategies for those regularly working in the field with frogs or conducting fieldwork activities in wetlands and other aquatic environments where there is the potential for spreading pathogens such as the frog chytrid fungus.
- Provide background information and guidance to people who provide advice or supervise frog related activities.
- Provide standard licence conditions for workers engaged in frog related activities.
- Inform Animal Care and Ethics Committees (ACEC) for their consideration when granting research approvals.



Life cycle of frog chytrid fungus from infective free-living zoospore stage to sporangium (adapted from L. Berger).

2 site hygiene management

A checklist of risk management procedures and recommended standard hygiene kit is provided in Appendix 1. Please note Footnote 1 on page 4.

Individuals studying frogs often travel and collect samples of frogs from multiple sites. Some frog populations can be particularly sensitive to the introduction of infectious pathogens such as the frog chytrid fungus. Also, the arrangement of populations in the landscape may make frogs particularly vulnerable to transmission of infectious pathogens. Therefore, it is important that frog workers recognise the boundaries between sites and undertake measures which reduce the likelihood of spreading infection.

Where critically endangered species or populations of particular risk are known to occur, this protocol should be applied over very short distances ie a single site may need to be subdivided and treated as separate sites.

When planning to survey multiple sites, always start at a site where frog chytrid fungus is not known to be present before entering other infected areas.

2.1 Defining a site

Defining the boundary of a site maybe problematic. In some places, the boundary between sites will be obvious but in others, less so. Undertaking work at a number of sites or conducting routine monitoring at a series of sites within walking distance creates obvious difficulties with boundary definitions. It is likely that defining the boundary between sites will differ among localities. It may be that a natural or constructed feature forms a logical indicator of a site boundary eg a road/track, a large body of water such as a river or the sea, a marked habitat change or a catchment boundary.

As a guiding principle, each individual waterbody should be considered a separate site.

When working along a river or stream or around a wetland or a series of interconnecting ponds it is reasonable, in most instances, to treat such examples as a single site for the purposes of this protocol. Such a case would occur in areas where frogs are known to have free interchange between ponds.

Where a stream consists of a series of distinctive tributaries or sub-catchments or where there is an obvious break or division then they should be treated as separate sites, particularly if there is no known interchange of frogs between sites.

2.2 On-site hygiene

When travelling from site to site it is recommended that the following hygiene precautions be undertaken to minimise the transfer of disease from footwear, equipment and/or vehicles.

Footwear

Footwear must be thoroughly cleaned and disinfected at the commencement of fieldwork and between each sampling site.

This can be achieved by initially scraping boots clear of mud and standing the soles in a disinfecting solution. The remainder of the boot should be rinsed or sprayed with a disinfecting solution that contains *benzalkonium chloride* as the active ingredient. Disinfecting solutions should be prevented from entering any water bodies.

Rubber boots such as 'gum boots' or 'Wellingtons' are recommended because of the ease with which they can be cleaned and disinfected.

Several changes of footwear bagged between sites might be a practical alternative to cleaning.

Equipment

Equipment such as nets, balances, callipers, bags, scalpels, headlamps, torches, wetsuits and waders etc that are used at one site must be cleaned and disinfected before re-use at another site.

Disposable items should be used where possible. Non-disposable equipment should be used only once during a particular field exercise and disinfected later or disinfected at the site between uses using procedures outlined in 2.4 below.

Vehicles

Where necessary, vehicle tyres should be sprayed/flushed with a disinfecting solution in high-risk areas.

Transmission of disease from vehicles is unlikely to be a problem. However, if a vehicle is used to traverse a known frog site, which could result in mud and water being transferred to other bodies of water or frog sites, then wheels and tyres should undergo cleaning and disinfection. This should be carried out at a safe distance from water bodies, so that the disinfecting solution can infiltrate soil rather than run-off into a nearby water body.

Spraying with 'toilet duck' (active ingredient *benzalkonium chloride*) is recommended to disinfect car wheels and tyres.

Cleaning of footwear before getting back into the car will prevent the transfer of pathogens from/to vehicle floor and control pedals.

2.3 Handling of frogs in the field

The spread of pathogenic organisms, such as the frog chytrid fungus, may occur as a result of handling frogs.

Frogs should only be handled when necessary.

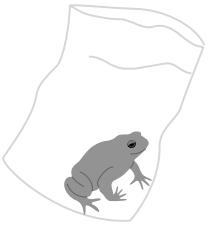
Where handling of frogs is necessary the risk of pathogen transfer should be minimised as follows:

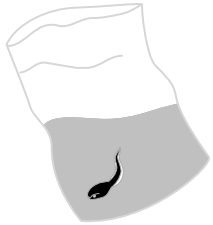
- Hands should be either cleaned and disinfected between samples or a new pair of disposable gloves used for each sample[1]. This may be achieved by commencing with a work area that has a dish containing a disinfecting solution and paper towels.
- A 'one bag – one frog' approach to frog handling should be used especially where several people are working together with one person processing frogs and others doing the collecting. Bags should not be reused.
- A 'one bag – one sample' approach to tadpole sampling should be used. Bags should not be reused.

Researchers who use toe clipping or Passive Integrated Transponder (PIT) tagging are likely to increase the risk of transmitting disease between frogs due to the possibility of directly introducing pathogens into the frogs' system. This can be minimised by using:

- Disposable sterile instruments
- Instruments disinfected previously and used once
- Instruments disinfected in between each frog

Disinfecting solutions containing *benzalkonium chloride* are readily available from local supermarkets. Some brands include Toilet Duck, Sanpic, New Clenz and Pine Clean.





[1] As a principle, this protocol assumes that not all frogs in an infected pond will be contaminated by the frog chytrid fungus. The infective load of a body of water may not be high enough to cause cross contamination of individual frogs in the same pond. Therefore care should be taken to use separate gloves and bags and clean hands for each sample, to avoid transmission of high infective loads between individuals.

Open wounds from toe clipping and PIT tagging should be sealed with a cyanoacrylate compound such as *Vetbond*© to reduce the likelihood of entry of pathogens. The DECC ACEC further recommends the application of topical anaesthetic *Xylocaine*© cream and *Betadine*© disinfectant (1% solution) before and after any surgical procedure. This should then be followed by the wound sealant.

All used disinfecting solutions, gloves and other disposable items should be stored in a sharps or other waste container and disposed or sterilised appropriately at the completion of fieldwork. Disinfecting solutions must not come into contact with frogs or be permitted to contaminate any water bodies

2.4 Disinfection Methods

Disinfecting agents for hands and equipment must be effective against bacteria and both the vegetative and spore stages of fungi. The following agents are recommended:

- Chloramine and Chlorhexidine based products such as *Halamid*©, *Halasept*© or *Hexifoam*© are effective against both bacteria and fungi. These products are suitable for use on hands, footwear, instruments and other equipment. The manufacturers instructions should be followed when preparing these solutions.
- Bleach and alcohol (ethanol or methanol), diluted to appropriate concentrations can be effective against bacteria and fungi. However, these substances may be less practical because of their corrosive and hazardous nature.

  When using methanol either:

  - immerse in 70% methanol for 30 minutes or
  - dip in 100% methanol then flame for 10 seconds or boil in water for 10 minutes

Fresh bleach (5% concentration) may be also effective against other frog pathogens such as Rana Virus.

Some equipment not easily disinfected in these ways can be effectively cleaned using medical standard 70% isopropyl alcohol wipes – *Isowipes*©.

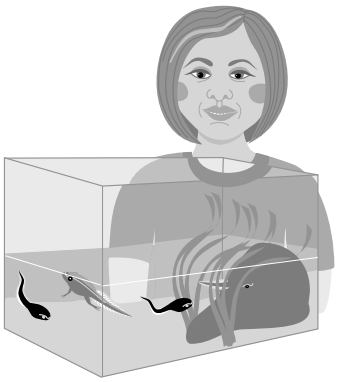
3 captive frog hygiene management

3.1 Housing frogs and tadpoles

Frogs and tadpoles should only be removed from a site when absolutely necessary.

When it is necessary for frogs or tadpoles to be collected and held for a period of time, the following measures should be undertaken:

- Animals obtained at different sites should be kept isolated from each other and from other captive animals.
- Aquaria set up to hold frogs should not share water, equipment or any filtration system. Splashes of water from adjacent enclosures or drops of water on nets may transfer pathogens between enclosures.
- Prior to housing frogs or tadpoles, ensure that tanks, aquaria and any associated equipment are disinfected.
- Tanks and equipment should be cleaned, disinfected and dried immediately after frogs/tadpoles are removed.



Careful maintenance of your enclosures will ensure a safe and hygienic environment for captive frogs and tadpoles.

When contemplating a release of captive bred tadpoles for conservation purposes a Translocation Proposal should be submitted to the DECC and pathological screening for disease should be undertaken (see also DECC Translocation Policy). Tadpoles can be tested by randomly removing 10 individuals at 6 weeks and again at 2 weeks before anticipated release. Testing could be undertaken by the pathology section at Taronga Zoo, Newcastle University, CSIRO Australian Animal Health Laboratories at Geelong and James Cook University at Townsville. Such an arrangement would need to be negotiated by contacting one of these institutions well before the anticipated release date. (see Appendix 2 for contact details)

DECC have licenced NSW Schools to allow students and/or teachers to remove tadpoles for classroom life cycle studies. They are authorised to remove individuals from only one location, each school also requires endorsement from Department of Education and Training Animal Care and Ethics Committee and comply with this protocol.

Tadpoles collected for these purposes are to be obtained from the local area of the school and are not to be obtained from DECC Reserves. As soon as tadpoles have transformed, froglets must be returned to the exact point of capture. Tadpoles from different locations are not to be mixed.

Antifungal cleansing treatments to clear tadpoles of the frog chytrid fungus are currently being trialed. In the future, such a treatment may be an added procedure required prior to froglet releases.

Detailed information on safely maintaining frogs in captivity is provided in Voigt (2001).

3.2 Tadpole treatment

In most instances:

Release to the wild of tadpoles held or bred in captivity should be avoided.

3.3 Frog treatment

The rigour with which frogs must be treated to ensure pathogens are not introduced to native populations means that any proposal for the removal of adult frogs (particularly threatened species) from wild populations should be given careful consideration.

When it is essential for frogs to be removed from the wild, the following should apply.

Individuals to be released should be quarantined for a period of 2 months and monitored for any signs of illness or disease.

Frogs must not be released if any evidence of illness or infection is detected. If illness is suspected, further advice must be sought from a designated frog recipient (Appendix 2) as soon as possible to determine the nature of the problem. Chytridiomycosis can be diagnosed in live frogs by microscopical examination of preserved toe clips or from shedding skin samples. Research is still in progress on the development of a simple technique for the detection of Chytridiomycosis and a treatment for infected frogs.

Current methods which may be used include:

- A technique for the treatment of potentially infected frogs is to place the frogs individually in a 1mg/L benzalkonium chloride solution for 1 hour on days 1, 3, 5, 9, 11 and 13 of the treatment period. Frogs are then isolated/quarantined for two months. This and other possible treatments are documented in Berger and Speare (1998)
- *Betadine*© and *Bactone*© treatments have also been used on adult frogs with some success (M. Mahony, Newcastle University pers. comm.)
- *Itraconazole*© is an expensive drug which has been used successfully (Lee Berger CSIRO Australian Animal Health Laboratory pers. comm.). Information on this method is available on the Website http://www.jcu.edu.au/school/PHTM/frogs/adms/attach6.pdf.

Frogs undergoing treatment should be housed individually and kept separate from non-infected individuals.

3.4 Displaced frogs

Displaced frogs are those native frog species and introduced Cane Toads (Bufo marinus) which have been unintentionally transported around the country with fresh produce, transported produce and landscaping supplies. Procedures to be undertaken when encountering introduced/displaced native frog species (as well as Cane Toads) are as follows.

3.4.1 Banana box frogs

'Banana Box' frog is the term used to describe several native frog species (usually Litoria gracilenta, L. infrafrenata, L. bicolor and L. caerulea) commonly transported in fruit and vegetable shipments and landscaping supplies. In the past, well meaning individuals have attempted to return these frogs to their place of origin but this is usually impossible to do accurately. There is risk of spread of disease if these frogs are transferred from place to place.

It is strongly recommended that:

Displaced Banana Box frogs should be treated as if they are infected and should not to be freighted anywhere for release to the wild unless specifically approved by DECC.

When encountering a displaced frog:

- Contact a licensed wildlife carer organisation to collect the animal. The frog should then undergo a quarantine period of 2 months along with an approved disinfection treatment.
- Post-quarantine, the frog (if one of the species identified above) may be transferred to a licensed frog keeper. All other species require the permission from DECC Wildlife Licensing and Management Unit (WLMU) prior to transfer. Licensed carer groups are to record and receipt frogs obtained and disposed of in this way.
- Licensed Frog Keepers are to list these frogs in their annual licence returns to DECC.

Frogs held by licensed frog keepers are not to be released to the wild except with specific DECC approval.

Displaced frogs may be made available to recognised institutions for research projects, display purposes or perhaps offered to the Australian Museum as scientific specimens once approval has been provided by the DECC WLMU.

Frogs are often unintentionally transported with fresh produce and landscaping supplies. They are collectively known as 'banana box' or displaced frogs.

3.4.2 Cane toads

Cane toads are known carriers of the Frog chytrid fungus and should not be knowingly transported or released to the wild.

If a cane toad is discovered outside of its normal range, it should be humanely euthanased in accordance with the recommended NSW Animal Welfare Advisory Council procedure (see Appendix 3). Care should be taken to avoid euthanasia of native species due to mistaken identity.

3.4.3 Local frog species

Frogs encountered on roads, around dwellings and gardens or in swimming pools should not be considered as displaced frogs.

Frogs encountered in these situations should be assisted off roads, away from dwellings, or out of swimming pools preferably to the nearest area of vegetation or suitable habitat.

Incidences of frogs spawning or tadpoles appearing in swimming pools should be referred to a wildlife carer/rescue organisation for assistance (see Appendix 4).

Contact the Frogwatch Helpline if you are unsure whether a frog is a local species or displaced.

An NPWS information brochure titled 'Cane Toads in NSW' provides further information on cane toads and assistance with identification of some of the commonly misidentified native species. This information is also available on the DECC website.

4 sick or dead frogs

Unless an obvious cause of illness or death is evident (eg predation or road mortality): Sick or dead frogs encountered in the wild should be collected and disposed of in accordance with the procedures described in section 4.2 below.

4.1 Symptoms of sick and dying frogs

Sick and dying frogs exhibit a range of symptoms characteristic of chytrid infection. Symptoms may be expressed in the external appearance or behaviour of the animal. A summary of these symptoms are described below. More detailed information can be found in Berger et al., (1999) or at the James Cook University Amphibian Disease website at: http://www/jcu.edu.au/school/phtm/PHTM/frogs/ampdis.htm.

Appearance (one or more symptoms)

- darker or blotchy upper (dorsal) surface
- reddish/pink-tinged lower (ventral) surface and/or legs and/or webbing or toes
- swollen hind limbs
- very thin or emaciated
- skin lesions (sores, lumps)
- infected eyes
- obvious asymmetric appearance

Behaviour (one or more symptoms)

- lethargic limb movements, especially hind limbs
- abnormal behaviour (eg a nocturnal, burrowing or arboreal frog sitting in the open during the day and making no vigorous attempt to escape when approached)
- little or no movement when touched

Great barred frog (*Mixophyes fasciolatus*) with severe Chytrid infection — note lethargic attitude and sloughing skin. Photo: L. Berger

Diagnostic behaviour tests

Sick frogs will fail one or more of the following tests:

test	healthy	sick
Gently touch with finger	Frog will blink	Frog will not blink above the eye
Turn frog on its back	Frog will flip back over	Frog will remain on its back
Hold frog gently by its mouth	Frog will use its forelimbs to try to remove grip	No response from frog

4.2 What to do with sick or dead frogs

A procedure for the preparation and transport of a sick or dead frog is given below[2]. Adherence to this procedure will ensure the animal is maintained in a suitable condition for pathological examination and assist the DECC and researchers to determine the extent of the disease and the number of species affected.

- Disposable gloves should be worn when handling sick or dead frogs. Avoid handling food and touching your mouth or eyes as this could transfer pathogens and toxic skin secretions from some frog species.
- New gloves and a clean plastic bag should be used for each frog specimen to prevent cross-contamination. When gloves are unavailable, use an implement to transfer the frog to a container rather than using bare hands.
- If the frog is dead, keep the specimen cool and preserve as soon as possible (as frogs decompose quickly after death making examination difficult). Specimens can be fixed/preserved in 70% ethanol or 10% buffered formalin.

Cut open the belly and place the frog in about 10 times its own volume of preservative. Alternatively, specimens can be frozen (although this makes tissues unsuitable for some tests). If numerous frogs are collected, some should be preserved and some should be frozen. Portions of a dead frog can be sent for analysis eg a preserved foot, leg or a portion of abdominal skin.

- The container should be labelled showing at least the species, date and location. A standardised collection form is provided in Appendix 5.
- If the frog is alive but unlikely to survive transportation (death appears imminent), euthanase the frog (see Appendix 3) and place the specimen in a freezer. Once frozen, the specimen is ready for shipment to the address provided below.
- If the frog is alive and likely to survive transportation, place the frog into either a moistened cloth bag with some damp leaf litter or into a plastic bag with damp leaf litter and partially inflated before sealing. Remember to keep all frogs separated during transportation.
- Preserved samples can be sent in jars or wrapped in wet cloth, sealed in bags and placed inside a padded box.
- Send frozen samples in an esky with dry ice (available from BOC/CIG Gas outlets).
- Place live or frozen specimens into a small styrafoam esky (available from K-Mart/Big W for approximately $2.50).
- Seal esky with packaging tape and address to one of the laboratories listed in Appendix 4.
- Send the package by courier.

Further information on sick and dying frogs is available on the Amphibian Disease Home Page at http://www.jcu.edu.au/dept/PHTM/frogs/ampidis.htm — in particular refer to *'What to do with dead or ill frogs'*.

[2] The measures described below are standard procedures and may vary slightly depending on the distance and time required to reach the intended recipient. Contact the intended recipient of the sick or dead frog prior to sending to confirm the appropriate procedure.

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appendix 1

hygiene protocol checklist and field kit

The following checklist and field kit are designed to assist with minimising the risk of transferring pathogens between frogs.

Have you considered the following questions before handling frogs in the field:

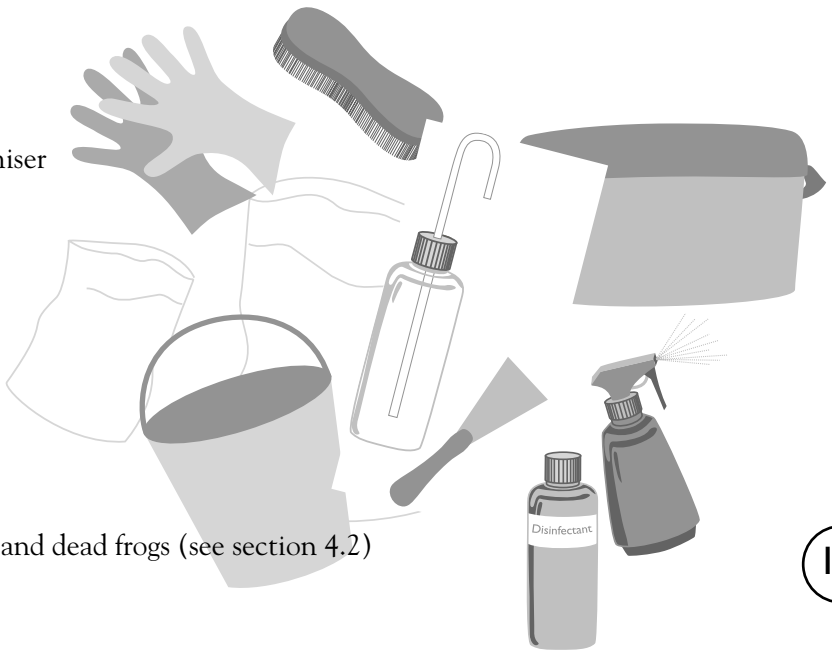
- Has your proposed field trip been sufficiently well planned to consider hygiene issues?
- Have you taken into account boundaries between sites (particularly where endangered species or populations at risk are known to occur)?
- Have footwear disinfection procedures been considered and a strategy adopted?
- Have you planned the equipment you will be using and developed a disinfection strategy?
- Are you are planning to visit sites where vehicle disinfection will be needed (consider both vehicle wheels/tyres and control pedals) and if so, do you have a plan to deal with vehicle disinfection?
- Have handling procedures been planned to minimise the risk of frog to frog pathogen transmission?
- Do you have a planned disinfection procedure to deal with equipment, apparel and direct contact with frogs?

If you answered NO to any of these questions please re-read the relevant section of the DECC Hygiene Protocol for the Control of Disease in Frogs and apply a suitable strategy.

Field hygiene kit

When planning to survey frogs in the field a portable field hygiene kit should be assembled to assist with implementing this protocol. Recommended contents of a field hygiene kit would include:

- Small styrofoam eski
- Disposable gloves
- Disinfectant spray bottle (atomiser spray) and/or wash bottle
- Disinfecting solutions
- Wash bottle
- Scraper or scrubbing brush
- Small bucket
- Plastic bags large and small
- Container for waste disposal
- Materials for dealing with sick and dead frogs (see section 4.2)



appendix 2

designated sick and dead frog recipients

Always contact the relevant specialist prior to sending a sick or dead frog. In some cases, only wild frogs will be assessed for disease. Analysis may also attract a small fee per sample.

Contact one of the following specialists to arrange receipt and analyse sick and dead frogs. Make contact prior to dispatching package:

Karrie Rose
Australian Registry if Wildlife Health
Taronga Conservation Society, Australia
PO Box 20
MOSMAN NSW 2088

Phone: 02 9978 4749
Fax: 02 9978 4516
Krose@zoo.nsw.gov.au

Diana Mendez or
Rick Speare
School of Public Health,
Tropical Medicine and
Rehabilitation Sciences
James Cook University
Douglas Campus
TOWNSVILLE QLD 4811

Phone: 07 4796 1735
Fax: 07 4796 1767
Diana.Mendez@jcu.edu.au
Richard.Speare@jcu.edu.au

Michael Mahony
School of Biological Sciences
University of Newcastle
CALLAGHAN NSW 2308

Phone: 02 4921 6014
Fax: 02 4921 6923
bimjm@cc.newcastle.edu.au

For information on frog keeping licences and approvals to move some species of displaced frog contact:

Co-ordinator, Wildlife Licensing
Wildlife Licensing and Management Unit
DECC
PO Box 1967
Hurstville NSW 1481
Ph 02 9585 6481
Fax 02 9585 6401
wildlife.licensing@environment.nsw.gov.au

For information on the possible identity of displaced frogs contact:

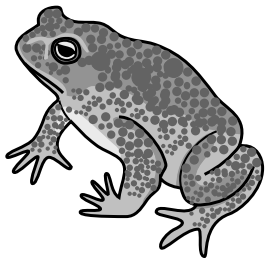
Frog and Tadpole Society (FATS)
Frogwatch Helpline

Ph: 0419 249 728

appendix 3

NSW Animal Welfare Advisory Council methodology

The NSW Animal Welfare Advisory Council procedure for humanely euthanasing cane toads or terminally ill frogs is stated as follows:



- Using gloves, or some other implement, place cane toad or terminally ill frog into a plastic bag.
- Cool in the refrigerator to 4°C.
- Crush cranium with a swift blow using a blunt instrument.

Note: Before killing any frog presumed to be a cane toad, ensure that it has been correctly identified and if outside the normal range for cane toads in NSW (north coast) that local DECC regional office is informed.

appendix 4

licensed wildlife carer and rescue organisations

Following is a list of wildlife rehabilitation groups licensed by Department of Environment and Climate Change (NSW):

Northern NSW

Australian Seabird Rescue
For Australian Wildlife Needing Aid (FAWNA)
Friends of the Koala
Friends of Waterways (Gunnedah)
Great Lakes Wildlife Rescue
Koala Preservation Society of NSW
Northern Rivers Wildlife Carers
Northern Tablelands Wildlife Carers
Tweed Valley Wildlife Carers
Seaworld Australia
WIRES branches in Northern NSW

Southern NSW

Looking After Our Kosciuszko Orphans (LAOKO)
Native Animal Network Association
Native Animal Rescue Group
Wildcare Queanbeyan
WIRES branches in Southern NSW

Sydney, Hunter and Illawarra

Hunter Koala Preservation Society
Ku-ring-gai Bat Colony Committee
Kangaroo Protection Co-operative
Native Animal Trust Fund
Organisation for the Rescue and Research of Cetaceans (ORRCA)
Sydney Metropolitan Wildlife Services
Wildlife Aid
Wildlife Animal Rescue and Care (Wildlife ARC)
Waterfall Springs Wildlife Park
Oceanworld
Wildlife Care Centre, John Moroney Correctional Centre
Koalas in Care
WIRES branches around Sydney, Hunter and Illawarra

Western NSW

Rescue and Rehabilitation of Australian Native Animals (RRANA)
RSPCA Australian Capital Territory Inc.
Wildlife Carers Network (Central West)
WIRES branches in Western NSW
Cudgegong Wildlife Carers

[4] Note: some of these organisations may not care for frogs.

appendix 5 — sick or dead frog collection form

Sender details:

name: address: postcode:

phone: (w) (h) fax: email:

Collector details: (where different to sender)

name: address: postcode:

phone: (w) (h) fax: email:

Specimen details:

record no: no. of specimens: species name: date collected: day/month/year

time collected: sex: male/female status at time of collection: healthy(H)/ sick(S)/ dead(D) date sent: day/month/year

location: map grid reference: (easting) (northing)

reason for collection:

Batch details for multiple species collection:

species	no.	locality	(AMG)	date	sex	status (H/S/D)

habitat type: eg creek, swamp, forest vegetation type: eg rainforest, sedgeland micro habitat: eg creek bank, under log, amongst emergent vegetation, on ground in the open

unusual behaviour of sick frogs: eg lethargic, convulsions, sitting in the open during the day, showing little or no movement when touched.

dead frogs appearance: eg thin, reddening of skin on belly and/or toes, red spots, sore, lumps or discolouration on skin

deformed frogs: eg limb(s) missing, abnormal shape or length dead/sick tadpoles: eg numbers/behaviour

unusual appearance of egg masses: eg grey or white eggs recent use of agricultural chemicals in area: eg pesticides, herbicides, fertilisers

other potential causes of sickness/mortality/comments/additional information:

NSW
NATIONAL
PARKS AND
WILDLIFE
SERVICE

General inquiries: PO Box A290 South Sydney 1232
Phone: 9995 5000 or 1300 361967
Fax: 02 9995 5999 **Web site:** www.environment.nsw.gov.au

Department of **Environment & Climate Change** NSW

APPENDIX E: HABITAT MONITORING SHEET

GGF Habitat Assessment Sheet							
Site details							
Date	Time and weather conditions:						
Surveyors	Air Temperature: °C						
GPS Location	Water Temperature: °C						
Waterbody No/Name	Cloud Cover (octas) /8						
	Wind (Beaufort scale)						
	Rain last 24 hrs none/ light/ moderate/ heavy Average monthly rainfall (mm)						
Structural Parameters							
Substrate type							
Type of waterbody	*Pond*	*Dam*	*Swamp*	*Creek*	*Drain*	*Ditch*	*Quarry*
Size of waterbody	L:			W:			
Depth	Min:			Max:			
Hydroperiodicity	*Permanent*	*Semi-permanent*		*Ephemeral*		*Dry*	
Vegetation Parameters							
Aquatic Plant species within 5 m of water margin:							
% bare ground	*0-5*	*6 to 10*	*11 to 30*	*31 - 50*	*51 - 70*	*71 - 90*	*>90*
% vegetation cover < 5 cm	*0-5*	*6 to 10*	*11 to 30*	*31 - 50*	*51 - 70*	*71 - 90*	*>90*
% emergent aquatic vegetation 5 - 30 cm	*0-5*	*6 to 10*	*11 to 30*	*31 - 50*	*51 - 70*	*71 - 90*	*>90*
% emergent aquatic vegetation 31 - 60 cm	*0-5*	*6 to 10*	*11 to 30*	*31 - 50*	*51 - 70*	*71 - 90*	*>90*

GGF Habitat Assessment Sheet							
% emergent aquatic vegetation 61 - 100 cm	*0-5*	*6 to 10*	*11 to 30*	*31 - 50*	*51 - 70*	*71 - 90*	*>90*
% emergent aquatic vegetation >100cm	*0-5*	*6 to 10*	*11 to 30*	*31 - 50*	*51 - 70*	*71 - 90*	*>90*
% terrestrial vegetation	*0-5*	*6 to 10*	*11 to 30*	*31 - 50*	*51 - 70*	*71 - 90*	*>90*
% Weediness	*0-5*	*6 to 10*	*11 to 30*	*31 - 50*	*51 - 70*	*71 - 90*	*>90*
Weed species							

Aquatic Vegetation Cover							
Emergent aquatic vegetation	*isolated emergent stems*	*< 5 sparse stands*	*> 5 sparse stands*	*< 5 medium stands*	*> 5 medium stands*	*< 5 dense stands*	*> 5 dense stands*
% cover							

Floating aquatic vegetation	*Isolated floating stands only*	*Numerous floating stands; lots of clear water*	*High densities of floating stands; extensive areas of clear water*	*Very high densities of floating strands; little clear water*
% cover				
Submerged aquatic vegetation	*Occasional submerged plants only*	*Numerous submerged plants; extensive bare substrate remaining*	*Numerous submerged plants; little bare substrate remaining*	*Unable to judge extent*
% cover				

Algae	*Small isolated areas only*	*Large Areas*	*Extensive areas*
% cover			
Evidence of potential predators			