

Jonathan Hander

21 March, 2018

To: Queensland Parliamentary Committee Members

Dear Committee members,

Thank you for the opportunity to make a submission on the Vegetation Management and Other Legislation Amendment Bill 2018.

I am a farmer (cattle - SWQld), amongst other things, and an environmental advocate. I have observed the sad destruction of our beautiful natural environment over the decades because of short-term, money-driven goals. This approach is unsustainable and unethical: it permanently diminishes, depletes and destroys the natural environment and resources available for future generations. Future generations will wonder why we took such a selfish and self-serving path. I am a farmer - I know how to farm sustainably, and with a minimal impact on our natural environment, and yet most farmers either don't, or aim for short-term goals and dollars. The gradual change of farms to corporate and international ownerships has made this so much worse.

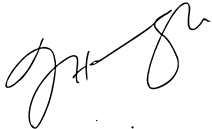
We have destroyed enough of our natural environment in Queensland that we cannot in good conscience allow any more to be destroyed. I strongly support the reintroduction of meaningful legislation to stop land-clearing in Queensland, and protect our precious and unique wildlife. We need to farm smarter - not more. Please consider the following recommendations to strengthen the legislation on the management of vegetation and wildlife habitats in Queensland:

1. All remaining wildlife habitats must be subject to proper assessment and approval prior to clearing approval being given. Category X and other exempt vegetation must not be given exemption from this - we've lost too much already. There is too much important vegetation currently in Cat X areas to allow it to be exempt.
2. Enforce the *Nature Conservation Act*, for goodness' sake, and ensure that the new VMA insists that any vegetation clearing **MUST** comply with the NCA - not be exempt from it. Specifically, vegetation clearing must not occur unless all reasonable measures (as defined in a *guidelines* or *code of practice* or regulation or *conservation plan*) are taken. Approval for vegetation clearing **MUST NOT** imply approval for the killing of all of the wildlife that lives in that vegetation/habitat. This is essentially what happens now.
3. Ensure that the VMA acknowledges, and appropriately addresses the offsetting of, ALL impacts of vegetation clearing - the loss of habitat, the loss of protected animals, the impacts on climate change, the impacts on the GBR, the impacts on local and regional ecosystems, etc. These costs must be acknowledged and paid for by the proponent - not by future generations. It is simply not enough to require some pathetic and inadequate, poor-quality offset as occurs now in so few cases.
4. The appropriate use of qualified wildlife managers must be a requirement of any vegetation clearing - the new Act must acknowledge the direct causation of the killing of protected and vulnerable species during vegetation clearing, and require proponents to minimise and mitigate this using the application of *appropriate measures*, *due diligence* and *duty of care* principles. The "poor farmers" should not be exempt from this.
5. Riparian vegetation along all waterways must be protected - not just the GBR catchment. All of our waterways are suffering from declines and damage due, amongst other things, to the loss of the riparian vegetation that acts as a filter and cleaner of run-off water.
6. End the exemption of "thinning". This was just used to allow clearing of vegetation.
7. Regrowth vegetation in the Brigalow Belt and other endangered ecosystems types must be protected. That ecosystem is bugged now, and needs every bit of help it can get if it has any chance of recovering, and many others aren't much better.

Our natural ecosystems are dying a death of a thousand cuts, as are so many of our native species. The NCA has failed miserably to halt this decline, and this is the opportunity to have the VMA address it to some extent. The current Bill needs to be strengthened to remove exemptions and provide at least some protection to ALL remaining vegetated areas, or at least proper assessment and protection of the fauna that live in them. The committee must take a long-term view of where we want to be, and consider the ethics of not protecting the small remnants we have left for the sake of future generations as well as the other species we share this planet with. Please ensure that recommendations are made that strengthen, rather than weaken this Bill.

Yours sincerely

Jon Hanger

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22 March, 2018

Dear Parliamentary Committee members,

Please accept and consider this, my second submission to the Committee in respect of the *Vegetation Management and Other Legislation Amendment Bill, 2018*.

The stated purpose of the Vegetation Management Act is as follows:

- (1) The purpose of this Act is to regulate the clearing of vegetation in a way that—
- (a) conserves remnant vegetation that is—
 - (i) an endangered regional ecosystem; or
 - (ii) an of concern regional ecosystem; or
 - (iii) aleastconcernregionalecosystem;and
 - (b) conserves vegetation in declared areas; and
 - (c) ensures the clearing does not cause land degradation; and
 - (d) prevents the loss of biodiversity; and
 - (e) maintains ecological processes; and
 - (f) manages the environmental effects of the clearing to achieve the matters mentioned in paragraphs (a) to (e); and
 - (g) reduces greenhouse gas emissions; and
 - (h) allows for sustainable land use.

The above is the purpose of the current VMA, word for word. The current Act and its implementation are failing badly to achieve that purpose. In particular, purposes related to land degradation, biodiversity, ecological processes and reduction of greenhouse gas emissions, are certainly not at all being met, and nether is the purpose of allowing for sustainable land use.

I want to make a particular point about the management of vegetation on the relatively poor and thin soils of central and western Queensland, where large areas of remnant vegetation and regrowth continue to be cleared in a manner that directly opposes the purposes of the Act. And most of this clearing is permitted/authorised under the very Act, whose purpose it is to prevent those adverse consequences. Broad-scale clearing of remnant and regrowth vegetation, particularly in those areas has the following effect:

1. It devastates (kills and maims) the protected wildlife living in it (tens or hundreds of millions, every year), many of which are endangered, critically endangered, and vulnerable; therefore it is inconsistent with preventing the loss of biodiversity (**Purpose 1(c)**);
2. It contributes significantly to greenhouse gas emissions, particularly when windrows of felled vegetation are burnt, as they usually are; (**Purpose 1(g)**)
3. It very substantially depletes the nutrient content of these thin and poor soils, particularly when felled vegetation is burned - much of the mineral is lost in ash; (**Purpose 1(h)**)
4. It devastates the soil ecology, by destroying root systems and diminishing soil dwelling organisms (insects, other invertebrates and vertebrates, such as burrowing animals), in turn leading to compaction and long-term loss of productivity and soil health; (**Purposes 1(e) and (h)**)
5. It very significantly impedes, or even permanently, impacts ecological processes necessary for sustainable use of the land in the long-term, including the loss of biodiversity, the loss of soil

thickness, the loss of soil aeration, and loss of soil-dwelling organisms. These are all things that directly affect productivity, and so loss of them causes a long-term and even permanent and ongoing loss of productivity, to the point of creation of wastelands.

Even a vaguely sensible approach would have been to allow some clearing, but to insist on the retention of windrows of standing vegetation, at least every 20-20 meters to:

1. Provide some protection from loss of soil from run-off and wind;
2. Allow recruitment of seed and vegetation from those windrows;
3. Allow recruitment of soil-dwelling organisms from the standing vegetated areas, into cleared areas;
4. Maintaining at least some remnants of local biodiversity;
5. Providing refuge areas for protected wildlife displaced from the cleared areas.
6. etc.

These things would at least have demonstrated a token effort to achieve the purposes of the original Act, but sadly they were not applied. The new Act must seriously provide for the specific mechanisms that cause the stated purposes of the Act to be achieved, such as the things I've listed above this paragraph, as a start. Otherwise, the purpose statement is meaningless, despite the fact that it should be the clear and definitive goal of the Act. In broad terms, the new Act must:

1. Prohibit clearing of all remnant and regrowth vegetation without a proper and independent assessment of the impact of the proposed clearing on:
 - (a) The death or maiming of protected fauna species and biodiversity loss;
 - (b) The local and/or regional ecological processes (including the value of the vegetation as a wildlife corridor or essential habitat);
 - (c) The health and long-term sustainability and productivity of the soil, particularly in poor, thin and marginal soil areas (western Queensland, for example);
 - (d) Greenhouse emissions/carbon storage loss
 - (e) The available wildlife habitat in the local area/region - are low-end thresholds being approached if the clearing proceeds - leading to likelihood of localised species extinction?
2. Ensure that if clearing is approved, then the matters outlined in point 1 (above) are appropriately avoided, minimised, mitigated and/or offset.
3. Ensure that the full and holistic costs of the clearing are factored in (and paid for) by the proponent. That is, the cost of greenhouse contribution, loss of protected species (by number and nominal value of each individual of that species - refer to NCA for value of individuals of certain species); incremental loss of biodiversity; loss of ecosystem services; loss of soil productivity and health etc. That is, the full and complete costs of the clearing must be estimated accurately, and weighed up against the benefit of the clearing. This does not happen currently, and so the long-term ecological costs of clearing and soil degradation are defrayed to future generations. This situation is entirely inconsistent with the purpose of the Act, and must be addressed in the new Act.
4. Given that vegetation clearing is by far the mechanism causing the greatest numerical death of protected fauna, and is also the most significant animal welfare issue in Australia, the new Act must acknowledge this and provide detailed and definitive methods for mitigating this impact. The cost of such mitigation must be the responsibility of the proponent. The ***Draft Code of Practice for the Welfare of Wild Animals Impacted by Vegetation Clearing and Other Habitat Impacts*** (Hanger and Nottidge, 2012), provides some guidance on reasonable and appropriate methods, as a start. I have attached this as an appendix to this submission.

In summary, I respectfully urge the Committee to give proper consideration to strengthening the current Bill to ensure that the stated purposes of the Act are achieved, rather than being paid lip service. This will require the development of guidelines that are specific for bio-regional areas and/or regional ecosystem type, that might, for example, insist on the retention of windrows or networks of standing vegetation amongst cleared areas, to ensure that the ecosystems local to

the area continue to function, and that soil quality and health have some ability to regenerate in the future. The Act must consider the long-term consequences of permitted clearing and address those things that do not achieve the purposes of the Act. Also, specifically, the Act must address the current omission of any reference to, or mitigation of impacts on wildlife living in vegetation that is subject to clearing.

Yours sincerely

A handwritten signature in black ink, appearing to read 'JH', with a stylized flourish extending from the end.

Jonathan Hanger



AUSTRALIA ZOO
**WILDLIFE
WARRIORS**
WORLDWIDE



QUEENSLAND

CODE OF PRACTICE

FOR THE WELFARE OF WILD ANIMALS
AFFECTED BY LAND-CLEARING AND
OTHER HABITAT IMPACTS
AND
WILDLIFE SPOTTER/CATCHERS

Draft



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1. Introduction and Background

1.1 Purpose of the Queensland code of practice for the welfare of wild animals affected by land-clearing and other habitat impacts and wildlife spotter/catchers (The Code).

This code of practice provides standards and guidelines to ensure that fair, reasonable and appropriate measures are used by those involved in the destruction or modification of wildlife habitats to minimise the adverse effects on wild animal welfare and conservation. The principles set out in the Code are for the guidance of developers, town planners, plant and machinery operators, tree loppers and surgeons, farmers, and any other person, entity or agency involved in activities which are likely to cause suffering or death of wild animals, either directly or indirectly, as a result of destruction, modification or disruption of wildlife habitats, including land-clearing.

The Code emphasises the responsibilities of all relevant parties to:

- take all reasonable steps necessary to prevent cruelty or suffering to animals;
- minimise the loss of wildlife caused directly or indirectly by development or land-clearing;
- conserve, as much as possible, the ecological values of development sites and their surrounding natural environment.

The Code also provides standard operating procedures and guidelines for wildlife spotter/catchers, on whom much of the responsibility rests to ensure compliance with this Code, in respect of projects for which they are contracted or employed.

Although the greater community is largely ignorant of the impacts of development on wildlife welfare, there exists, nevertheless, an expectation that animals, whether domestic or wild, should not be treated cruelly. This Code reflects that general societal view by providing standards and guidelines to minimise cruelty to, or suffering of, wild animals as a result of development processes. There is also a rising awareness in the general community of the importance of protecting ecosystems, an expectation of the use of environmentally sustainable practices and minimisation of ecological harm.

1.2 Wildlife loss associated with land-clearing

The clearing of native vegetation, whether remnant or regrowth, represents the most significant cause of mortality of wildlife in Queensland. Based on land clearing rates in the state during 1997-1999, an estimated 100 million native mammals, birds and reptiles died yearly as a result of broad-scale clearing of remnant native vegetation¹. That study did not seek to estimate wildlife loss associated with clearing of non-remnant (regrowth) vegetation, which suggests that the combined total may be significantly higher.

Land-clearing may also isolate populations or individuals in pockets of habitat, leaving them susceptible to misadventure, urbanisation edge effects, natural disasters, overpopulation, genetic degradation through inbreeding, and a range of other deleterious effects.

The concept of “extinction debt” relates to the likelihood of species extinctions sometime in the future as a result of passing a threshold of habitat loss and/or impact². Extinction of rare species from habitat fragments in Queensland has been documented as occurring rapidly from small fragments or more slowly (over decades) from larger habitat fragments^{3,4}.

1.3 Animal welfare issues associated with land-clearing

Aside from the long-term ecological consequences of such a massive loss of wildlife, there are serious animal welfare issues associated with the methods used in the clearing of vegetation while animals are present. Although some animals may be killed instantaneously, it is likely that a much larger proportion suffer painful, distressing or prolonged deaths. Furthermore, displaced animals that survive the process of clearing may be subject to misadventure, motor vehicle trauma, starvation or attack by other animals or predators.

1.3.1 Animal injuries associated with land-clearing

Animals injured directly in the process of vegetation clearing generally suffer from major crushing, deceleration or fall related injuries. Arboreal species may suffer from trauma associated with falling from a tree and/or crushing and avulsive injuries associated with boughs falling on or beside them. Such injuries include severe internal bleeding and organ disruption, multiple bone breaks, eye and head injuries. Animals resting in hollows, similarly, may receive crushing injuries if the hollow bough disintegrates, or suffer internal organ injuries and tearing as a result of rapid deceleration (deceleration injury).

Ground dwelling animals, such as bandicoots, echidnas, snakes and lizards most commonly suffer from crushing and avulsive injuries (such as traumatic limb amputation), or may be buried alive during earthworks.

Highly mobile species such as birds and macropods may avoid direct injury by machinery, but may suffer injuries by running into fences, motor vehicle strike or other misadventure.

Injuries suffered by animals during land-clearing vary from mild to severe and fatal, but these animals are only rarely presented to wildlife hospitals or shelters. This is primarily because they are less likely to be discovered by members of the community and are more usually buried or confined in piles of debris during the process of clearing, which are then subsequently burnt or chipped.

1.3.2 Misadventure and starvation associated with land-clearing

Animals that survive the process of land-clearing may succumb later to starvation, predation, territorial aggression, misadventure (such as drowning in swimming pools, entanglement in fences, and the like) domestic animal attack, motor vehicle strike and maladaptation to new habitat. A small proportion of animals may disperse to adjacent habitat with little ill-effect, but, contrary to popular belief, the proportion of animals successfully doing this is likely to be small.

1.3.3 Isolation of wildlife and habitat fragmentation

Developments or land-clearing that result in destruction or diminishment of habitat corridors or loss of habitat connectivity may result in reduction or loss of the ability of individuals of a species to disperse from the isolated habitat fragment. This may lead to loss of wildlife through overpopulation and starvation, misadventure during dispersal attempts, and loss of individuals through edge effects (such as domestic animal attack), as well as marked diminishment of ecological values generally. Wildlife populations isolated by loss of corridors present larger and more complex management problems for future developments impinging on the remaining habitat, or alternatively may reach a critical population density at which mass mortality occurs, or causes human-animal conflict issues for surrounding communities.

1.4 Removal of wildlife prior to land-clearing and eco-friendly development

The removal of wildlife from sites shortly prior to, and during vegetation clearing represents the most proximate mechanism for reducing wildlife injury and mortality associated with land clearing. This requires the use of personnel skilled in the detection and removal of wildlife from vegetation and other terrestrial habitats, and the adoption of protocols and procedures for the humane handling, housing and disposition of wildlife following removal from their habitats.

The application of ecologically sound design and planning principles to proposed developments represents the most important method of reducing and minimising adverse impacts on wildlife and the ecological values of habitat remnants. These principles should be rigorously applied to all development proposals at an early stage in planning to minimise the requirement for expensive (and less desirable) wildlife and habitat management alternatives, some which are detailed in this code. It is important that all parties involved in urban and rural planning and development projects attempt to adhere to ecologically sound and sustainable development principles.

1.5 Relevant legislation

A number of state and federal statutes provide some degree of legislative protection for wildlife likely to be affected by land-clearing, including the Queensland *Nature Conservation Act 1992*, the Queensland *Vegetation Management Act 1999*, and the Federal *Environmental Protection and Biodiversity Conservation Act 1999*. In respect of animal welfare and the prevention of cruelty, the Queensland *Animal Care and Protection Act 2001* provides legislative protection to animals generally.

¹Cogger, H., Ford, H., Johnson, C., Holman, J. & Butler, D. 2003, Impacts of Land Clearing on Australian Wildlife in Queensland (January 2003): WWF Australia Report, WWF Australia, Brisbane.

²Hanski, I. & Ovaskainen, O. 2002, Extinction Debt at Extinction Threshold, *Conservation Biology*, 16 (3), pp. 666–673.

³Laurence, W.F. 1990, Comparative responses of five arboreal marsupials to forest fragmentation, *Journal of Mammalogy*, 71, pp. 641-653.

⁴Laurence, W.F. 1995, Extinction and survival of rainforest mammals in a fragmented tropical landscape, Ch. 3 in *Landscape Approaches in Mammalian Ecology and Conservation*, ed. by W.Z. Lidecker Jr. University of Minnesota Press, Minneapolis.

2. Scope and Aims of the Code

2.1 Scope

This code of practice provides standards and guidelines for the humane treatment of wild animals affected by the clearing of vegetation or other natural or artificial terrestrial wildlife habitats. The first section deals with the general responsibilities of any person engaged in, or directing, an activity that involves the destruction or modification of wildlife habitats, including artificial habitats. The second section deals with the specific roles and responsibilities of wildlife spotter/catchers.

Many minor activities or development processes relevant to this Code may not require the use of a wildlife spotter/catcher (see Section 1 of the Code below). However, for larger projects or activities in which wildlife is likely to be at risk, the use of accredited wildlife spotter/catchers is required for compliance with this Code.

Responsibility for compliance with the Code, therefore, rests both with the developer and any other person whom, by virtue of their activities or involvement in a development, has a “duty of care” towards animals that may be affected by the development or activity, including wildlife spotter/catchers.

It is not the intent of the Code to provide detailed description of ecological assessment procedures, but rather Standard Operating Procedures (SOPs) for wildlife spotter/catchers, aimed at ensuring consistency and effectiveness of practice; and guidelines to assist developers and others in their legal and ethical obligations to minimise injury, hardship, suffering or death to wild animals, associated directly or indirectly with land-clearing and other development processes.

The Code provides standards and guidelines aimed at protecting the welfare of wildlife affected by land-clearing to a standard consistent with the intent of the Queensland *Animal Care and Protection Act 2001*, and the general views of society. It is the responsibility of any person or entity involved or engaging in relevant activities, to ensure compliance with relevant state and federal statutes, this Code, and other relevant codes of practice.

2.2 Aims

The broad aim of the Code is to provide standards and guidelines to ensure that all reasonable steps are taken to protect the welfare of wild animals affected by land-clearing or other forms of wildlife habitat modification or destruction.

The specific aims of this code of practice are:

- to provide standards and guidelines to prevent or minimise cruelty or harm to wild animals associated with, or resulting from land-clearing and other development processes causing habitat impacts;

- to define the requirements for accreditation and licensing of wildlife spotter/catchers;
- to provide standard operating procedures for wildlife spotter/catchers;
- to provide guidelines on the management of wildlife likely to be affected by land-clearing and other development processes;
- to provide guidelines for minimising the ecological harm caused by land-clearing and development.

3. Important Guiding Principles Underpinning the Code and Definitions

IMPORTANT PRINCIPLES

3.1 Duty of care

“*Duty of care*” obligations to wild animals, in respect of the Code, are similar to those underpinning the Queensland *Animal Care and Protection Act 2001*. However, in respect of this Code the *duty of care* responsibility rests individually and collectively on any and all parties involved with, engaged in, or directing land-clearing or the destruction or modification of wildlife habitats. The duty of care does not require specific knowledge of wildlife presence, only a general awareness of what might constitute a habitat of wild animals.

Furthermore, the *duty of care* exists in respect of any wildlife habitat, irrespective of whether animals are known to use the habitat or not. In other words, wildlife must be *assumed* to be present in potential wildlife habitat unless or until proven otherwise by a person suitably experienced and/or accredited to make that judgment.

Duty of care relates to the legal responsibility of a person, or persons, involved in an activity that may result in harm to or death of an animal or animals, to take all fair, reasonable and appropriate steps to avoid or minimise that risk. Failure to meet *duty of care* responsibilities, that is; failing to take fair, reasonable and appropriate measures to avoid or protect wild animals from harm, may result in prosecution under the Queensland *Animal Care and Protection Act 2001* or the *Nature Conservation Act 1992* irrespective of proof of animal death or injury.

3.2 Due diligence

The term “*due diligence*” relates to the application of sufficient and appropriate techniques to detect the presence of animals, or determine the absence of animals, in a tree, structure or other habitat. It also applies to determination of whether a structure, habitat feature or site is likely to be important or essential to the survival of a wild animal or population. It may also apply to assessment of the risk posed by a development process, activity or structure, to wildlife or their habitats.

Due diligence is a requirement of the Code, and must be performed prior to engaging in an activity or development process relevant to this Code.

3.3 Fair, reasonable and appropriate measures

The principle of “*fair, reasonable and appropriate measures*” includes guidelines, recommendations and standard operating procedures included in this Code, plus any other measure or activity that is available, suitable and appropriate to minimise the risk of harm to animals, or deleterious impacts on the natural environment. This guiding principle recognises that any process that causes significant disruption or destruction of wild animal habitats may result in the death of some animals, (particularly small animals such as skinks, small frogs and the like), in spite of efforts to avoid it.

Current societal attitudes lead to an expectation that fair and appropriate steps are taken to avoid or minimise cruelty or suffering to animals, and that due respect is given to minimising adverse impacts on their habitats. The expertise of wildlife spotter/catchers and other suitably qualified or experienced people is important in determining what constitutes *fair, reasonable and appropriate measures*, in the present circumstances.

DEFINITIONS

For the purposes of this Code:

“vegetation” is any native or non-native tree, shrub or plant, including grasses and mangroves, including “remnant vegetation” and “regrowth (non-remnant) vegetation”.

“animal”, “wildlife” and **“fauna”** are any free-living native or non-native vertebrate animal, including feral animal and declared pest animal species, and any invertebrate animal specifically protected under the *Queensland Nature Conservation Act 1992* or its regulations, or the *Queensland Animal Care and Protection Act 2001* or its regulations.

“significant wildlife”, “significant fauna”, “significant species” are any species listed under federal, state or local statutes or policy as endangered, vulnerable or rare, local significant, critically endangered, or any designation other than common.

“wildlife habitat” is any natural terrestrial, subterranean or aquatic habitat, or man-made structure, or other structure known to be, or reasonably likely to be used by wildlife. Wildlife habitats include, but are not necessarily limited to:

- (a) vegetation, or vegetated areas, including forests, plains, mangroves, wetlands, heathlands, dunes, deserts, and marine environments; whether classified as “remnant” or “non-remnant”, and whether native, non-native or artificially created;
- (b) freshwater and marine habitats;
- (c) caves, rocky outcrops, river banks and other natural geological features;
- (d) man-made or artificial structures or habitats, such as drains, buildings, dams, canals, bridges, telecommunication towers, or any other structure known, or reasonably likely to be used by wildlife.

“wildlife corridor” is any section, strip or area of wildlife habitat (whether degraded or not), or cleared area, that is known to be used as, or may reasonably be expected to act as, a corridor for wildlife movement, between, or linking wildlife habitat areas.

“essential wildlife habitat” is any wildlife habitat block or area, or feature that is reasonably likely to be essential to the survival of one or more wild animals, such as a dam that is the only source of water for a wild animal or local wildlife population. (Note: “essential wildlife habitat” has a different meaning and application in respect of the *Vegetation Management Act*.)

“land-clearing”, “development processes”, and “relevant activity” mean any process or activity that involves, causes, or results in, either directly or indirectly, the removal, destruction, or significant modification of natural or man-made wildlife habitats, that are known to contain, or may reasonably be expected to contain, support, or be used by, wildlife, for their survival, movement and reproduction, to an extent that is reasonably likely to cause death, suffering or significant hardship.

“wildlife spotter/catcher” is any person accredited in accordance with this code and licensed under the Queensland *Nature Conservation Act 1992* to conduct and/or supervise the preparation and implementation of Wildlife Protection and Management Plans, and the detection, capture, removal and disposal of wildlife from sites proposed to be developed.

“developer” is any person, corporation, entity, government body or agency conducting or proposing to conduct land clearing, vegetation clearing or other development processes, or any activity that results in the modification or destruction of wildlife habitats or corridors. For the purposes of the Code, this definition includes plant and machinery operators, tree loppers, site foremen, and any other person or persons engaging in, directing or supervising any activity or process involving the destruction or modification of a wildlife habitat, or other development process relevant to this Code.

“standard operating procedures (SOP)” are any documented procedures or protocols required to be routinely applied by relevant personnel to ensure compliance with the Code, or other relevant codes of practice.

“Wildlife Protection and Management Plan (WPMP)” is a document prepared by an accredited and licensed wildlife spotter/catcher, that defines all of the actions and measures, and their timing, in relation to a development or activity, required to protect the welfare of wild animals and minimise the adverse ecological impacts of that development or activity, to a level or standard required by the Code, and consistent with the intent of the Queensland *Animal Care and Protection Act 2001* and the Queensland *Nature Conservation Act 1992*. The WPMP is prepared before the onset of operational works, and must be approved by the Queensland DEHP prior to implementation.

“Wildlife Management Report” is a document prepared by an accredited and licensed wildlife spotter/catcher at the completion of a project, which details the wildlife and habitat management procedures used and recommended for the development. It contains detailed returns on animal capture, movement and disposal.

“Department of Environment and Heritage Protection” or **“DEHP”** refer to the Queensland Government Agency responsible for the administration and enforcement of the Queensland *Nature Conservation Act 1992* and its regulations, and the management of wildlife and the natural environment in Queensland.

“Department of Agriculture, Fisheries and Forestry” or “DAFF” The Animal Welfare Unit is a division within DAFF which is responsible for the administration of the *Animal Care and Protection Act 2001*.

CODE OF PRACTICE

SECTION 1: GENERAL PRINCIPLES FOR THE WELFARE OF WILD ANIMALS LIKELY TO BE AFFECTED BY DEVELOPMENT PROCESSES

Responsibilities of a developer

1.1. A developer must not proceed with any development process or activity (as defined in the previous section) without first:

- (a) determining whether, or not, a site, or portion of a site, or structure, that is proposed to be subject to a development process, is likely to be used as a wildlife habitat; and
- (b) applying due diligence in determining the presence or absence of wild animals (if a site or structure contains a wildlife habitat); and
- (c) determining that the site is *not* an essential wildlife habitat, and is *not* part of a wildlife corridor; and
- (d) determining that any wild animals using the habitat or site are unlikely to suffer any harm, or injury or death as a result of the proposed development process or activity; or
- (e) applying fair, reasonable and appropriate measures to avoid such harm, injury or death, including engaging a wildlife spotter/catcher in circumstances defined by this Code.

1.2. In the case of minor projects or activities, such as minor earth works on previously cleared land, or the removal of one or more small trees, the requirement for due diligence may be satisfied by simple observation.

For example: if a small tree is to be removed, “due diligence” and “fair, reasonable and appropriate measures” may be satisfied simply by close observation of the tree to confirm the absence of nests, hollows, animals under sloughing bark, and the absence of animals in the boughs or canopy.

1.3. A development assessor (usually a local government authority) may approve a development under the provisions of the IPA/IDAS regulatory framework with specific reference or conditions relating to compliance with this Code. However, approval of a development without specific reference to the Code does not relieve a developer of their obligations in respect of this Code.

Requirement for engagement of a wildlife spotter/catcher

1.4. In the case of any proposed project, activity or process, in which a lay person could not reasonably be expected to make the determinations defined in section 1.1 (a-e) above, then a licensed wildlife spotter/catcher or other appropriately qualified or experienced person, must be engaged to perform the same.

1.5. Furthermore, if a site, or portion of a site, or structure, forms part of a wildlife corridor, or forms a significant part of a wild animal's home range or territory, such that its destruction may result in harm or death to the animal, or have a significant adverse ecological effect, then a licensed wildlife spotter/catcher must be engaged to prepare and implement a *Wildlife Protection and Management Plan* (WPMP), to ensure compliance with this Code.

For example: the removal of a pole or stag used as a nesting site by ospreys must not occur without an appropriate replacement and the involvement of a licensed wildlife spotter/catcher.

1.6. Certain criteria relating to a site or proposed development processes or activities may determine the need for the engagement of a wildlife spotter/catcher, and include, but are not limited to:

- (a) removal of any tree, or trees, containing hollow boughs or trunks, bird or possum nests or dreys, or other features indicative of current or recent use by wildlife;
- (b) removal of all or part of a significant wildlife corridor, or essential wildlife habitat;
- (c) any process or activity that, for compliance with the Code, requires the capture, trapping or removal of native animals;
- (d) removal of any complex structure or habitat feature (such as an old farm shed, or log pile) which cannot, by cursory observation, be determined to be uninhabited by wildlife.

Discharge of a developer's responsibilities under the Code

1.7. If a developer has satisfied the provisions of section 1.1 above, then that is sufficient discharge of their responsibilities under this code, and a development activity or process may proceed, subject to other relevant regulatory approvals.

1.8. If a wildlife spotter/catcher, engaged in that role for a project or activity, makes a determination (in writing) that a development process is *unlikely* to cause significant adverse effects on wild animals, then that will be sufficient discharge of a developer's responsibilities in respect of this Code, and the development activity or process may proceed.

- 1.9. Notwithstanding sections 1.7 and 1.8 above, if new information becomes available regarding the presence of animals on, or using a site, then any determinations regarding the need for engagement of a wildlife spotter/catcher, and/or fair, reasonable and appropriate measures to protect the welfare of animals, must be reviewed.

Removal of wildlife from a site without assistance from a wildlife spotter/catcher

- 1.10. A person, other than an accredited and licensed wildlife spotter/catcher, may not catch, remove, harass or disturb any permanently protected animal (which includes all native vertebrate animals) under the Queensland *Nature Conservation Act 1992* and this Code, unless that person is licensed to do so by DEHP. In general, such licensing will be limited to accredited wildlife spotter/catchers.
- 1.11. Notwithstanding section 1.10 above, if an animal has wandered onto a site that has previously been assessed as fulfilling the requirements of this Code, *and* an accredited wildlife spotter/catcher is not immediately available, then the animal may be encouraged to move off the site, with due care and attention paid to minimising the stress or danger to the animal, subject to the following criteria being met:
- (a) the animal can be easily encouraged to move back into safe habitat without capture or undue interference or distress; and
 - (b) suitable habitat is easily able to be reached by the animal; and
 - (c) there are no proximate risks (such as busy roads) to the animal's safety; and
 - (d) there are no other apparent reasons to require the animal's capture (such as significant injury or illness).

For example: if a wallaby or group of wallabies is grazing on grassland (the development site) which is adjacent to an area of secure bushland, and no proximate danger is apparent (such as a busy road), then the animals may be carefully encouraged back into the vegetated area prior to the onset of operational works.

- 1.12. However, if a potential risk or danger to an animal is apparent (such as proximity to a busy road), or an animal would more appropriately be captured and translocated, then a licensed wildlife spotter/catcher must be engaged to manage the situation.
- 1.13. Notwithstanding section 1.12 above, if a wildlife spotter/catcher is not available within a reasonable timeframe, then a developer may contact the local or regional office of DEHP, or the local regulatory authority, for direction on an alternative course of action that will comply with the requirements and intent of the Code.

Use of wildlife spotter/catchers for development activities or processes

1.14. Licensed wildlife spotter/catchers must be used in all circumstances requiring, or likely to require, or cause:

- (a) the capture or removal of wildlife as required by the Code (except as exempted by virtue of section 1.11 of the Code, above);
- (b) the preparation of a *Wildlife Protection and Management Plan*;
- (c) the destruction or modification of an essential wildlife habitat or habitat feature, or a wildlife corridor;
- (d) any impact, either through operational works, or by virtue of the design or functioning of a development after completion, that is likely to have a significant adverse effect on a wild animal or wildlife population.

For example: if a development will require the construction of a road (which is likely to become busy) through a wildlife habitat, or if, by virtue of the development, an existing road is likely to bear a significant increase in traffic, then the engagement of a wildlife spotter/catcher and the preparation of a WPMP is required for compliance with the Code, even if the road is not part of the development or site.

1.15. The omission of a “wildlife spotter/catcher must be used” condition, or similar condition, on a local government development approval is not sufficient grounds for exemption from compliance with the requirements of section 1.14 above.

SECTION 2: ACCREDITATION, LICENSING AND RESPONSIBILITIES OF WILDLIFE SPOTTER CATCHERS

Roles of wildlife spotter/catchers

2.1. The proper conduct of wildlife management procedures at land-clearing and development sites involves processes such as:

- fauna and flora assessment;
- species identification;
- animal trapping, capture and handling;
- assessment of animal health and injuries;
- assessment of development risks and impacts on wildlife and ecosystems;
- preparation of *Wildlife Protection and Management Plans*;
- husbandry of captured wild animals;
- identification of suitable wildlife release sites;
- emergency management and/or euthanasia of injured or sick animals.

2.2. It is therefore necessary that personnel conducting these activities are suitably trained in these techniques, and also accredited and licensed by appropriate government authorities.

Licensing of wildlife spotter/catchers

2.3. A person engaged as, or performing the duties of a wildlife spotter/catcher in Queensland must be accredited and currently licensed as such by DEHP.

2.4. A person engaged as, or performing the duties of a wildlife spotter/catcher must have knowledge of, or be competent in:

- (a) survey techniques for all vertebrate fauna;
- (b) identification of vertebrate fauna, and significant invertebrate fauna;
- (c) the humane capture, trapping and handling of vertebrate fauna;
- (d) identification of habitat and or habitat resources of significant fauna;
- (e) ecological processes and the relevance for fauna;

- (f) locally occurring species, and those listed specifically under federal, state and local legislation or policy as significant;
- (g) data recording and written reporting;
- (h) humane techniques for emergency euthanasia of vertebrate animals;
- (i) all state, federal and local statutes and laws, and international agreements, relevant to the conduct of activities and responsibilities of wildlife spotter/catchers, including, but not limited to:
 - 1) the Queensland *Animal Care and Protection Act 2001*
 - 2) the Queensland *Nature Conservation Act* and its subordinate legislation
 - 3) the Queensland *Vegetation Management Act*
 - 4) the *Integrated Planning Act* and *Integrated Development Assessment System*
 - 5) JAMBA, CAMBA and other international wildlife agreements
 - 6) the federal *Environment Protection and Biodiversity Conservation Act*

2.5. A person engaged in the role of a wildlife spotter/catcher must have appropriate equipment at their disposal for the detection and humane capture, husbandry and management of vertebrate fauna (*a list of recommended equipment is contained in Appendix 1 to this Code*).

2.6. A person engaged in the role of a wildlife spotter/catcher should maintain currency of vaccination against the following infections or infectious conditions:

- (a) Australian Bat Lyssavirus (ABL) – rabies vaccination
- (b) *Coxiella burnetti* (Q Fever) – Q Fever vaccination
- (c) Tetanus

2.7. A person engaged in the role of a wildlife spotter/catcher should maintain currency of certification and/or competency relating to:

- (a) use of chainsaws
- (b) use of elevated work platform
- (c) construction blue card
- (d) basic first aid

Powers of wildlife spotter/catchers under this Code

- 2.8. A licensed wildlife spotter/catcher engaged in that role for a development or activity may make an *Animal Welfare Direction* in respect of operations, activities or structures that may impact on the welfare of wild animals. The direction should be made in an approved written format (Appendix 2). This direction may define the timing of and actions or measures required to protect the welfare of animals likely to be affected by such operational works, activities or structures. Any breach of the direction may be considered to be a breach of this Code.

For example: the wildlife spotter/catcher may make a direction that a wildlife-proof fence be constructed along the border of a busy road adjacent to a development site to prevent animals from moving onto the road during clearing activities.

- 2.9. Such directions may form part of the *Wildlife Protection and Management Plan*, or may be made separately upon identification of a specific risk. An *Animal Welfare Direction* shall be made in writing in an approved form, and copies given to all relevant persons; or, in the case of a clear and present risk to animal welfare, an *Animal Welfare Direction* may be made verbally. In general, an *Animal Welfare Direction* will only be used in circumstances in which the wildlife spotter/catcher considers that there exists a real and proximate risk to animal welfare.
- 2.10. In circumstances in which an *Animal Welfare Direction* has been breached, or in the opinion of the wildlife spotter/catcher an activity is occurring, or is likely to occur that may result in significant risk of harm to, or death of animals, the wildlife spotter/catcher may make a *Stop Work Order*. This order will remain in force until the wildlife spotter/catcher is satisfied that appropriate measures have been taken to mitigate the risk.

Responsibilities of wildlife spotter/catchers

- 2.11. The wildlife spotter/catcher has ethical responsibilities guided by the *Animal Care and Protection Act 2001* and *Nature Conservation Act 1992* to ensure the protection of the welfare of wild animals in respect of a development or activity for which they are acting in that role. A wildlife spotter/catcher also has an obligation to comply with this Code.
- 2.12. In terms of the performance of duties and standard operating procedures required by the Code for each project, the wildlife spotter/catcher's responsibilities include, but are not limited to:
- (a) thorough site assessment and fauna survey (or validation of a previously conducted fauna survey);
 - (b) preparation of a *Wildlife Protection and Management Plan* (WPMP);

- (c) ensuring that relevant persons associated with developments and operational works or activities are provided with copies of the WPMP and understand their responsibilities under the *Animal Care and Protection Act 2001*, and the importance of complying with *Animal Welfare Directions*;
 - (d) clearly identifying to all relevant persons the specific wildlife welfare risks associated with the project, and recommended risk mitigation measures;
 - (e) ensuring the timely and appropriate removal and management of animals from development sites prior to and/or during operational works or activities;
 - (f) ensuring the appropriate housing, husbandry, veterinary assessment and care, translocation, euthanasia or other appropriate disposal of animals removed from development sites;
 - (g) preparation of a *Wildlife Management Report* (WMR) on completion of a development project or activity, which is to be submitted in a timely manner to the local regulatory authority, the Animal Welfare Unit of DEEDI and DEHP if required;
 - (h) notification of the Director of the Animal Welfare Unit, DEEDI, or his delegate, of breaches of the *Animal Care and Protection Act 2001*.
- 2.13. In addition, the wildlife spotter/catcher should be aware of their own “duty of care” obligations under the Queensland *Animal Care and Protection Act 2001*, as these apply to animals captured, trapped or held in the course of their duties.

Use of unlicensed personnel by a wildlife spotter/catcher

- 2.14. In order to ensure compliance with the Code and other regulations regarding the welfare and protection of wild animals on a site, a licensed wildlife spotter/catcher must ensure that the level of supervision of personnel involved in the capture, management and care of animals takes into account their experience and competence.
- 2.15. Licensed wildlife spotter/catchers are responsible for the proper supervision and direction of their personnel.

Accountability of wildlife spotter/catchers for powers given under this code

- 2.16. Accredited and licensed wildlife spotter/catchers must be accountable for the correct and proper use of any powers given under the Code, and appropriate discharge of their responsibilities in respect of the Code.
- 2.17. Wildlife spotter/catchers are commonly contracted by a developer or developer’s agent to perform services required as a condition of a development approval, and therefore have certain responsibilities towards their employer. They also have important responsibilities to

the community generally to ensure that all reasonable measures are taken to protect the welfare of wild animals likely to be impacted by a development.

- 2.18. Any powers given to a wildlife spotter/catcher under the provisions of the Code must be used strictly in accordance with the intent and provisions of the Code.
- 2.19. This Code confers no specific legal powers to a wildlife spotter/catcher in respect of any Federal or State Act or Regulation. However, breaches of this Code may concurrently breach relevant Acts or Regulations, and as such may lead to investigation and prosecution under the provisions of those Acts, in particular, the *Queensland Animal Care and Protection Act 2001*.

Disagreement between a developer and a wildlife spotter/catcher

- 2.20. In some circumstances there may arise some disagreement between a developer and a wildlife spotter/catcher with regard to what constitutes “fair, reasonable and appropriate measures” to protect the welfare of wildlife. Such disagreements may occur particularly in instances in which a measure, or measures, proposed by a wildlife spotter/catcher, is/are time or resource intensive. In such instances, resolution of disagreements should be attempted by reference to this Code, or some other standard operating procedure or code of practice. In all cases, however, the welfare of animals is of paramount importance and is the primary responsibility of the wildlife spotter/catcher.
- 2.21. Irreconcilable disputes between a developer or their agent, and the wildlife spotter/catcher should be referred, for resolution, to a tribunal consisting of a representative of DEHP, a representative of the local regulatory authority and a representative of the Queensland Association of Professional Wildlife Managers.

Termination of a contract by a developer

- 2.22. A developer may wish to terminate the contract of the wildlife spotter/catcher and contract a new wildlife spotter/catcher for completion of a project. However:
 - 2.22.1. If the reason for termination is as a result of disagreement over a measure or measures proposed by a wildlife spotter/catcher in the interests of protecting the welfare of wild animals, then the termination may only occur with the written consent of the Tribunal.
 - 2.22.2. A developer may terminate a contract with a wildlife spotter/catcher without the written consent of the Tribunal if:

- (a) the wildlife spotter/catcher has failed to perform any standard operating procedure or duty reasonably expected to be performed in the course of their duties as a wildlife spotter/catcher; or
- (b) the wildlife spotter/catcher has misused a power given under the Code; or
- (c) the wildlife spotter/catcher has failed to perform their duties to a standard expected, or in accordance with their contract; or
- (d) any other reason, notwithstanding section 2.22.1 above.

Termination of a contract by a wildlife spotter/catcher

- 2.23. A wildlife spotter/catcher may terminate a contract with a developer for any reason, by giving due notice in writing, stating the reasons for termination of the contract, to:
- (a) the developer or developer's nominated agent; and
 - (b) DEHP; and
 - (c) the relevant local government authority in respect of developments requiring approval from local government.
- 2.24. Notwithstanding section 2.23 above, a wildlife spotter/catcher may be sued under Common Law for damages resulting from breach of contract.

Misconduct by a wildlife spotter/catcher

- 2.25. A wildlife spotter/catcher may be guilty of misconduct if:
- (a) there has been an abuse of the powers given under the Code; that is, either *Animal Welfare Directions* or *Stop Work Orders* have been issued inappropriately, and/or in circumstances not supported by the Code;
 - (b) he or she has failed to apply due diligence in the detection of wildlife at a site, resulting in injury or death to a wild animal, or the likelihood of injury or death to a wild animal;
 - (c) he or she has failed to apply, or define in the *Wildlife Protection and Management Plan*, fair, reasonable and appropriate measures, resulting in injury or death to a wild animal, or the likelihood of injury or death to a wild animal;
 - (d) he or she has failed to make adequate or appropriate provision for the husbandry and veterinary needs of a captured animal, particularly those that are sick or injured.*

*Note: Under the provisions of the current *Animal Care and Protection Act 2001*, any person “in charge” of an animal has a duty of care to provide for its husbandry and veterinary needs irrespective of ownership of the animal.

STANDARD OPERATING PROCEDURES FOR WILDLIFE SPOTTER/CATCHERS

SECTION 3: SITE ASSESSMENT

General principles

- 3.1. The wildlife spotter/catcher has a significant burden of responsibility to ensure that the animal welfare and ecological impacts resulting from a development or activity, for which they are engaged in that role, are minimised.
- 3.2. The general principles of due diligence in the detection of wildlife, and fair, reasonable and appropriate measures in preventing wildlife loss or ecological damage, apply to the practice of wildlife spotter/catching as they do for any individual engaged in a relevant activity.
- 3.3. Wildlife spotter/catchers are expected to have specialised knowledge in the detection, identification and removal of wildlife; assessment of potential impacts of developments or activities on wildlife; an understanding of basic ecological principles; good animal handling and husbandry skills; local knowledge of appropriate release sites for wildlife; and a good general understanding of local, state, and federal statutes and non-statutory instruments and agreements relating to wildlife, habitat and development issues.
- 3.4. Wildlife spotter/catchers should maintain currency of information in their field of expertise by attendance at workshops, training days and by other means of continuing education.
- 3.5. In order to ensure consistency between, and high standards of practice by, wildlife spotter/catchers, the following minimum Standard Operating Procedures should be applied.

Wildlife Protection and Management Plan (WPMP)

- 3.6. A WPMP should be prepared for any project or activity in which:
 - (a) wild animals are likely to be captured or removed from a site to comply with the Code;
 - (b) an essential wildlife habitat or wildlife corridor will be, or is likely to be impacted by the development or activity; or
 - (c) operational works, or any of the operational aspects or features of the completed development, will have, or are likely to have significant impacts on local wildlife populations.

3.7. The WPMP should be in the format shown in Appendix 3 of the Code.

3.8. Notwithstanding sections 3.6 and 3.7 above, if a *Vegetation and Fauna Management Plan* has been prepared by other consultants to a project, a separate WPMP may not need to be prepared if:

- (a) The *Vegetation and Fauna Management Plan* describes all of the measures required for wildlife management that would otherwise have been provided for in a WPMP; and
- (b) The *Vegetation and Fauna Management Plan* makes a provision for all relevant wildlife protection and management measures to be conducted by an accredited and licensed wildlife spotter/catcher; and
- (c) The wildlife protection and management measures satisfy the requirements this Code of Practice.

3.9. The detail in the WPMP should reflect the complexity or scale of wildlife management required for the site or activity.

For example: for a project in which a large area of highly significant wildlife habitat will be cleared the WPMP will be a long, thorough and detailed document, whereas that for the removal of a few small eucalypts would be short and simple.

3.10. The WPMP must include the following:

- 1) A description of the project (including timeframes for operational works) with special reference to features likely to affect wildlife or wildlife habitats.
- 2) A pre-development site plan with recent aerial photograph (if available) showing wildlife habitats, corridors, riparian features, and relevant adjacent habitat. Proposed development site plan should indicate areas of habitat likely to be removed or affected, and structures, roads or other potential hazards that may impact on wildlife after the development is completed.
- 3) Fauna survey results, including reference to species that were not detected, but are likely to be present (Wildnet, Queensland Museum databases).
- 4) Wildlife and habitat impact assessment detailing all aspects of development activities, operational works, and features likely to have an impact on wildlife, as well as likely future impacts on wildlife after completion of the development or activity. This section should include reference to adjacent habitat as well as that contained on site.
- 5) *Wildlife and Habitat Impact Mitigation Plan* indicating:
 - (a) measures required to be taken to minimise wildlife and habitat effects during operational works;
 - (b) wildlife capture and removal plan;
 - (c) contingency plan for wildlife requiring euthanasia, other veterinary procedures or captive care;

- (d) wildlife storage and housing plan;
- (e) wildlife release and disposal plan;
- (f) measures required to be taken to minimise adverse wildlife impacts following completion of works.

Approval of Wildlife Protection and Management Plan

3.11. A completed WPMP should be submitted to DEHP for approval, prior to implementation.

3.12. In the case of a development or activity requiring local government approval, a DEHP-approved WPMP should be submitted to the relevant local government authority prior to its implementation.

Wildlife Protection and Management Plan not required

3.13. A wildlife spotter/catcher is not required to prepare a WPMP if:

- (a) wildlife are not detected at a site, or will not be impacted by activities proposed for the site; and
- (b) wildlife will not be required to be captured or moved from the site; and
- (c) the site is not wholly, or part of, an essential wildlife habitat or wildlife corridor; and
- (d) operational works, or operational aspects or features of the completed development, are unlikely to have adverse effects on local wildlife populations or individuals.

3.14. If an activity or development fulfils the requirements of section 3.12 above and is an activity or development requiring local government approval, then the wildlife spotter/catcher should give notice in writing to the relevant local government authority, that a WPMP is not required, and the reasons for that.

Site and Fauna Surveys

3.15. Each site or project must be assessed using fauna survey equipment and methodologies sufficient for the wildlife spotter/catcher to form a reasonably accurate picture of the species diversity and, whenever possible, broad estimates of the number of individuals likely to be present.

- 3.16. Such assessments, along with the project design and operational works plans and schedules, form the basis of the information required for the formulation of the WPMP.
- 3.17. In some instances, site, fauna and flora surveys may have been previously conducted by other consultants to the project. In such cases, duplication is not required by the wildlife spotter/catcher unless discrepancies are suspected or observed.
- 3.18. The use of resource bases such as the Queensland Museum, DEHP, and Queensland Herbarium are encouraged in the preparation of fauna and/or flora surveys by wildlife spotter/catchers.

Site Survey

- 3.19. A site survey should be conducted and a basic site plan drawn up indicating terrain features, waterways, vegetation types and other habitat features. DEHP regional ecosystem (RE) maps should be consulted to determine if vegetated areas have been mapped as requiring special attention. Detailed site plans may be available from surveyors consulting on larger projects.
- 3.20. Site survey plans should be of sufficient detail to enable easy interpretation of the WPMP.

For example: large habitat/hollow-bearing trees should be individually identified, as should special habitat features likely to contain ground dwelling or burrowing wildlife, known feed trees of significant species, such as Casuarinas with chewed cones, and the like.

Fauna Survey

- 3.21. Fauna survey methodology and effort should reflect the size, biodiversity and ecosystem attributes of the proposed development site. Survey methodology recommendations are provided in Appendix 4.
- 3.22. Fauna surveys must take into account seasonal, temporal and climatic variation in the detectability of fauna species, in particular, those species known to be cryptic.
- 3.23. Specific methodology and/or effort should be employed for the detection of significant fauna, particularly those classified under State or Federal legislation, or those listed as locally significant.
- 3.24. Fauna surveys may have been performed by other consultants to development projects, but it is not uncommon for such surveys to be deficient with respect to fauna present on, or utilising the site. Furthermore, such surveys may give little indication of the numbers of individuals present. Hence, the wildlife spotter/catcher should validate the findings of any previous fauna surveys, by conducting their own inspection of the site and/or performing additional surveys.

- 3.25. The results of the wildlife spotter/catcher's own fauna survey, or discrepancies identified by the wildlife spotter/catcher in previous fauna surveys, should be reported in the *Wildlife Protection and Management Plan*.

Reduction of wildlife load prior to operational works

- 3.26. Significant effort may be required to avoid or minimise the injury to, or death of wild animals from vegetation clearing, habitat damage or other operational works. The measures and timing of such measures should be defined in the *Wildlife Protection and Management Plan*.
- 3.27. Wildlife load reduction measures must be implemented or conducted by the wildlife spotter/catcher for an appropriate period of time immediately prior to the onset of operational works. Such measure may include, but not be limited to:
- (a) thorough fauna trapping using an appropriate range of trapping methods;
 - (b) erection of fauna exclusion fencing;
 - (c) use of fauna aversion techniques;
 - (d) manual or pharmacological capture and removal of fauna.
- 3.28. Wildlife load reduction methods and effort must be appropriate for the diversity and abundance of fauna present, and be guided by the results of prior fauna survey and the extent and nature of proposed operational works.
- 3.29. The seasonal, temporal, climatic and behavioural variation in the detection, and ease of capture of different fauna species must be reflected in the timing and methods used for wildlife load reduction.

Wildlife safety risk mitigation measures

- 3.30. In some circumstances, the removal of wildlife from development sites may not be necessary due to the retention of habitat, and/or minimal impacts of the development or activity on wildlife or habitats. However, operational works may still present hazards to wildlife retained on site or inhabiting areas adjacent to the site.

For example:

- I. *Operational works may require the use of heavy earthmoving equipment on a site adjacent to wallaby habitat bounded by a major road. Risk mitigation may require temporary fencing of the road to minimise risk of motor vehicle accident.*

- II. *Operational works may require the construction of deep ditches or footings, presenting risks to wildlife wandering onto the site. Risk mitigation may require the use of temporary wildlife-proof fencing around trenches during operation works.*

3.31. It is the responsibility of the wildlife spotter/catcher to identify significant wildlife safety risks both for wildlife retained on site, as well as wildlife in adjacent areas or widely ranging wildlife that may use, or move through the site during operational works. Measures required for mitigation of such risks should be included in the *Wildlife Protection and Management Plan*.

Pre-works meeting

3.32. After preparation and approval of the WPMP, and prior to the onset of operational works or land-clearing, the wildlife spotter/catcher should have a briefing meeting with the project manager, site foreman and plant operators, for the purposes of discussing the requirements of the plan.

3.33. The wildlife spotter/catcher should clearly detail the sequence of land-clearing and wildlife capture, identify special habitat features, state any requirements for special plant or equipment (such as cherry pickers or cranes), and clearly outline the importance of compliance with any *Animal Welfare Directions*.

3.34. The wildlife spotter/catcher should ensure that the project manager or developer understand fully the requirements of the WPMP, and request their sign-off on the plan.

Vegetation or other habitat clearing or destruction

3.35. A wildlife spotter/catcher must be present during the clearing of any vegetation or damage or disturbance to any structures that may serve as habitat or refugia for wild animals.

3.36. The wildlife spotter/catcher must clearly define the allowable and non-allowable methods of vegetation clearing, such that the risk of harm or death to wild animals is minimised.

3.37. Acceptable and unacceptable methods of vegetation clearing or removal should be explicitly indicated in the *Wildlife Protection and Management Plan*, and should be discussed with the project manager well prior to the scheduled start of operational works.

3.38. Any technique, method or machine that causes, or may cause, an unmitigated risk of harm to wild animals must not be used as the primary method of vegetation removal. Unacceptable methods include, but are not limited to:

- (a) the use of mobile mulching machines (for example: excavator-mounted mulching head or grinder) as the primary vegetation removal technique;
- (b) the felling of hollow-bearing trees prior to thorough wildlife removal;
- (c) the mulching or burning of vegetation windrows or other potential wildlife refugia without appropriate level of supervision by a wildlife spotter/catcher;
- (d) the burning of standing vegetation or other habitat or refugia of wild animals.

3.39. Notwithstanding section 3.37 above, if the wildlife spotter/catcher has *positively* determined the absence of wild animals from a section of vegetation, then such methods or machinery may be used to clear that section only; however, the wildlife spotter/catcher must supervise such vegetation removal, and maintain radio communication with machinery operators.

3.40. A wildlife spotter/catcher must have, and maintain, a clear view of vegetation or habitat features being cleared by machinery, such that wild animals that are disturbed or uncovered during such activities are rapidly detected.

3.41. A wildlife spotter/catcher must, at all times, maintain two-way radio contact with machinery operators during the removal of vegetation or other potential wildlife habitats or refugia.

3.42. If wildlife is detected during such activities, the wildlife spotter/catcher must take immediate action to notify the machinery operator to cease work, either verbally using two-way radio or by visual commands, until such time as the wildlife is captured or otherwise removed from danger.

3.43. A wildlife spotter/catcher must not authorise, and must, in the WPMP, expressly prohibit, the felling of a tree known to contain, or likely to contain wildlife, including any hollow-bearing tree, by any means or method that is likely to:

- (a) injure or kill any wild animal;
- (b) result in the unmanaged dispersal or escape of arboreal fauna.

3.44. Notwithstanding section 3.42 above, any hollow-bearing tree, stag or other tree that may previously have contained wildlife, may be felled by any method if:

- (a) the wildlife spotter/catcher has determined definitively that no wild animals are present in the tree at the time of felling; or
- (b) the wildlife spotter/catcher has removed all wild animals from the tree immediately prior to felling.

3.45. Methods which a wildlife spotter/catcher may approve and use for the felling of a hollow-bearing tree containing, or likely to contain, wild animals are limited to:

- (a) segmental removal of the tree by a tree surgeon, with hollow-bearing limbs being checked by the wildlife spotter/catcher and cleared of fauna using a cherry picker;

- (b) segmental removal of the tree by a tree surgeon, with hollow-bearing limbs plugged and lowered to the ground for inspection by the wildlife spotter/catcher;
 - (c) use of an excavator with vertical grab to lower the main trunk (after removal of lateral limbs);
 - (d) a combination of the above methods.
- 3.46. For smaller trees, or in circumstances where access of a cherry picker is impossible, an excavator with a vertical tree-grab attachment may be used to lower a tree to the ground for inspection by the wildlife spotter/catcher.
- 3.47. A wildlife spotter/catcher must not authorise or recommend the “bumping” of a hollow-bearing tree with an excavator or other machine as a method of dispersing wild animals.

Timing and sequence of vegetation clearing

- 3.48. Whenever possible, vegetation clearing should be scheduled for mid to late summer so that:
- (a) impacts on nesting and hatching avifauna and herpetofauna are minimized (greatest impacts in spring);
 - (b) likelihood of detection and capture of herpetofauna is maximised;
 - (c) wildlife load reduction measures are most productive.
- 3.49. Clearing of vegetation sequentially or segmentally to encourage natural movement of wild animals into habitat remnants may be appropriate as an adjunctive measure when:
- (a) suitable habitat of sufficient area and resources is adjacent to the vegetation clearing boundary;
 - (b) target wildlife species are able to avoid potential harm caused by vegetation clearing;
For example: sequential clearing may be a sufficient measure to mitigate risk of harm to wallabies where suitable adjacent habitat exists, but is not an appropriate measure for arboreal fauna using tree hollows for nesting, or for herpetofauna, when clearing occurs during cold weather.
 - (c) mitigation measures are in place to avoid or minimise harm to wild animals that do not respond appropriately to sequential clearing.
For example: erection of wildlife-proof fences to prevent wildlife moving on to roads or into built-up areas.
- 3.50. Sequential clearing must not be used as a substitute for wildlife load reduction, when wildlife load reduction is essential for proper management of wildlife in the present circumstance.

*For example: sequential clearing **must not** be used as a primary fauna management measure when remnant habitat is likely to be insufficient to sustain displaced fauna, or is deficient in key resources, such as water sources, food trees or shelter opportunities or refugia.*

Vegetation and rubble piles

- 3.51. It is essential that piles of rubble, felled timber or any other material, proposed to be burnt, buried or chipped, are not left to serve as refugia for displaced or roaming wildlife. Felled vegetation piles and earth often provide attractive habitats for a range of small mammals, birds, reptiles and frogs, presenting a high risk of poor animal welfare outcomes if not managed appropriately.
- 3.52. Appropriate risk mitigation measures include immediate destruction or removal of such materials, or erection of wildlife-proof barriers to prevent wildlife use.
- 3.53. Old (>12 hours) piles of felled vegetation or other material must be treated in the same way as any other potential wildlife habitat, and must be assumed to be inhabited by wildlife, unless proven otherwise.
- 3.54. Cleared vegetation windrows or piles that have been left standing for >12 hours provide refugia for displaced wildlife and must be treated as wildlife habitat accordingly.

Design features and wildlife safety risks

- 3.55. In addition to wildlife risks associated with operational works, the wildlife spotter/catcher must attempt to identify any features of the design or plan of the completed project that may present a significant risk to wildlife, and recommend risk mitigation measures.

For example: swimming pools are a common cause of wildlife death by drowning. Wildlife species that are commonly affected include koalas and bandicoots which may be able to traverse pool fencing. Risk mitigation measures in sensitive areas may include provision of wildlife ramps or exit mechanisms from pools (such as thick ropes) and modification of pool fences to prevent wildlife incursion.

- 3.56. Design features likely to have undesirable impacts on wildlife should be brought to the attention of the developer. Early intervention in terms of recommending design changes may lead to significant reduction in costs associated with wildlife management and impact mitigation measures, caused by poor design.

Notification of unmanageable wildlife risk situations

- 3.57. In circumstances that result in risks to wild animal welfare or safety that are unable to be adequately managed, the wildlife spotter/catcher has an obligation to notify both DEHP and local government regulatory authorities.

For example: an approved development may cause an essential wildlife corridor to be severed or significantly affected, resulting in starvation or misadventure of isolated wildlife.

- 3.58. Unmanageable wildlife risk situations are *serious* animal welfare issues that may require intervention beyond the scope of the wildlife spotter/catcher contract with the developer, and it is essential that regulatory authorities are appropriately informed of such circumstances.
- 3.59. Notification of unmanageable wildlife risk situations should be made in writing in the approved form (Appendix 2), and submitted promptly to DEHP and local regulatory authority when appropriate. A copy should also be submitted to the developer.
- 3.60. If possible, the wildlife spotter/catcher should attempt to identify potential unmanageable wildlife risk situations pre-emptively, by developing a sound knowledge of surrounding habitat and important ecological features.

SECTION 4: WILDLIFE MANAGEMENT

General Principles

- 4.1. It is the responsibility of the wildlife spotter/catcher to direct and/or take all reasonable steps to protect the welfare of wildlife that may be impacted by vegetation clearing, construction, operational works or design features of development sites.
- 4.2. In many cases this will necessitate the removal and relocation of wildlife to other suitable habitat, or temporary housing of displaced wildlife during operational works.
- 4.3. It is preferable to remove as much wildlife as possible prior to the commencement of vegetation clearing to minimise the risk of injury to animals during the clearing process (see sections 3.25 to 3.28 above).
- 4.4. Attention must be paid to all habitat strata (arboreal, terrestrial, leaf litter etc), as well as all taxonomic groups in the removal of animals.
- 4.5. Seasonal and temporal variation in the visibility of animals must be taken into account when wildlife detection and capture procedures are being performed.

For example: many herpetofauna are primarily nocturnal, and are less visible and active during winter months. They are therefore much more at risk from earth works and land-clearing during these times, and in colder weather.

- 4.6. Particular attention must be paid to the results of the fauna survey to ensure that the specific methods used to detect and capture animals reflect the diversity of species expected at the site.

For example: in a site identified as habitat for bandicoots, echidnas or other ground-dwelling fauna, it is insufficient to simply concentrate effort on habitat trees. Thorough searching of all strata and wildlife habitats is necessary.

Removal of terrestrial wildlife

- 4.7. Terrestrial wildlife may be removed from the site prior to the onset of vegetation clearing using a variety of trapping methods. These methods will generally have been detailed in the fauna survey report prepared by the wildlife spotter/catcher or by other consultants to the project.
- 4.8. Specific habitat features of interest, such as log piles, rocky outcrops, riparian and wetland areas should be indicated on the site map prepared by the wildlife spotter/catcher and deserve special attention. These areas should be cleared or disturbed only after less

important surrounding habitat areas have been cleared. This is important because it provides opportunity for more intensive trapping around the feature, improved visibility for the wildlife spotter/catcher, and allows more flexibility to apply less destructive clearing methods.

- 4.9. The wildlife spotter/catcher must ensure that he/she has adequate numbers of appropriately trained staff working on habitat features likely to contain high numbers of wildlife that may scatter when the feature is disturbed.
- 4.10. It is the responsibility of the wildlife spotter/catcher to ensure that clearing methods used on terrestrial habitat features of special interest are appropriate to ensure minimal risk of injury or death to wildlife contained therein.

For example: log piles should be gently dismantled one by one, rather than bulldozed en masse. Hollow logs should be carefully inspected using a torch, and may require windows to be cut with a chainsaw for thorough inspection, prior to disposal or burning.

- 4.11. The wildlife spotter/catcher should pay particular attention to observing for the presence of burrows, tracks, scats, or other indications of recent use by wildlife, substrates adjacent to rock or log piles or other habitat features.

Removal of arboreal wildlife

- 4.12. Removal of arboreal wildlife should be accomplished initially by thorough trapping efforts. Appropriate use of traps will minimise the risk of injury to wildlife collected by more direct methods, or at the time of clearing.
- 4.13. Trees contain a variety of different habitats for wildlife including hollows in the limbs and primary trunk, under bark, as well as foliage and upper limbs. All such habitats should be thoroughly explored for the presence of wildlife.
- 4.14. It is the responsibility of the wildlife spotter/catcher to ensure that appropriate methods are used to retrieve wildlife from arboreal habitats such that the risk of injury to the resident wild animals is minimised.
- 4.15. Trees containing wildlife *must not* be felled until all reasonable efforts have been made to remove wildlife.
- 4.16. Habitat trees of high importance should be felled last, after surrounding less important vegetation has been cleared to allow easy access of special plant and equipment (such as cherry pickers), traps (such as koala traps), and to allow unhindered lowering of hollow-bearing limbs. It is not acceptable to fell or push over hollow-bearing trees without first removing wildlife, due to the high risk of severe deceleration and/or crushing injuries to wildlife inhabiting such trees.

- 4.17. Hollow-bearing limbs can be cut and lowered gently to the ground using a variety of techniques, such as the use of cranes or special rigging. Prior to any intervention, exit holes should be plugged with rags or newspaper to prevent escape of wildlife during cutting or lowering of hollow-bearing limbs.

Removal of specific arboreal species

Koalas:

- 4.18. Under most circumstances koalas should be removed using koala traps set at or before dusk. It is desirable that traps are fitted with an indicator or transmitter to allow remote monitoring of trap operation. Traps without such remote monitoring devices should be checked a minimum of once every two hours.
- 4.19. Trapping represents the safest option (for both wildlife spotter/catcher and koala) for the capture of koalas. Pole and flagging techniques may be used if koalas are low to the ground and unlikely to be injured by an accidental fall or deliberate jump.
- 4.20. Cherry pickers may be used in circumstances which preclude the use of other methods.
- 4.21. Noosing techniques traditionally used for capture of koalas present unacceptable risks and must not be used under any circumstances.
- 4.22. Notwithstanding section 4.21 above, the use of a solid ring attached to a pole as an adjunct to traditional pole and flagging techniques, is acceptable in some circumstances, as long as the ring is of sufficient diameter to pass freely over the head of a koala (approximately 150mm diameter).

Possums and gliders:

- 4.23. Large possums (common brushtail possum and bobuck) may be captured using similar traps to those used for koalas, conventional baited traps, or manually with the assistance of cherry pickers.
- 4.24. Any noosing technique carries risk and is unacceptable.
- 4.25. The placement of appropriately sized and baited nest boxes in targeted trees may facilitate the removal of larger arboreal mammal species that are not utilising hollows.
- 4.26. Smaller possums and other arboreal species likely to use tree hollows or nest boxes, should be captured during daylight hours by blocking the entrance holes, and gentle removal of the hollow-bearing limb, or nest-box.

Tree kangaroos:

- 4.27. It is recommended that specialist advice is sought by wildlife spotter/catchers in the capture of tree kangaroos.
- 4.28. Notwithstanding section 4.27 above, modified koala traps may be useful in the capture of tree kangaroos from trees with sufficient isolation of their canopy to cause the animal to climb to the ground in order to move to another tree.

Preservation of tree hollows and other habitat features

- 4.29. Whenever possible, the integrity and structure of tree hollows contained in trees which are to be removed should be preserved. These should be relocated to appropriate habitat retained on the site, or to appropriate habitat close to the site.
- 4.30. The wildlife spotter/catcher should aim to ensure that there is no net loss of important habitat features, such as tree hollows.
- 4.31. In the case of tree hollows containing wildlife that are particularly sensitive to translocation (such as greater gliders for example), special efforts should be made to record the height and orientation of the hollow, and tree species from which it was obtained to enable it to be reproduced at the translocation site.
- 4.32. Other valuable habitat features such as large fallen logs, log piles, rock piles or outcrops etc should be preserved as much as possible, and translocated and re-established at appropriate habitat close to their site of removal.
- 4.33. In the interests of “no net loss” of tree hollows, the wildlife spotter/catcher should ensure that in instances in which natural tree hollows are destroyed, the replacement of artificial hollows occurs at a rate of 4 artificial replacements per natural hollow destroyed. This replacement should occur irrespective of whether hollows were used by wildlife at the time, or not.

Species Identification

- 4.34. All species removed or captured for translocation must be properly identified by the wildlife spotter/catcher to the species level.
- 4.35. For correct identification of any specimens that cannot be identified by the wildlife spotter/catcher the Queensland Museum should be consulted.
- 4.36. DEHP must be notified within 24 hours of capture of any animal unable to be identified.

- 4.37. Any captured animal must not be disposed of unless its species has been positively identified.

Notification of species of special significance

- 4.38. Any individual animal captured by a wildlife spotter/catcher of a species that is indicated in lists published periodically by the Queensland Museum, or DEHP as species of special significance, must be retained by the wildlife spotter/catcher, or retained at an approved wildlife holding facility pending notification by DEHP as to its disposal. Species lists may vary according to bio-geographic region.
- 4.39. The finding of specimens of species outside of their known geographic range should be reported to the Queensland Museum, DEHP and (when appropriate) the local regulatory authority. Photographs or other confirmatory information should be supplied.

Restraint and holding of captured wildlife

- 4.40. All animals removed from development sites must be captured, restrained and held in a manner that is unlikely to result in injury, unacceptable distress or suffering. Animal welfare is the primary priority and responsibility of the wildlife spotter/catcher.

Capture, restraint and examination

- 4.41. In general, capture methods that utilise netting, bagging, restraint with a blanket, trapping (not including snaring) or (in special circumstances) sedation/anaesthesia, are preferable to direct manual restraint.
- 4.42. As soon as possible after capture, and prior to release, all animals should be examined for signs of injury or illness. Restraint for examination may only require placing an animal into a transport cage for observation, or may require manual restraint using a calico bag, cloth or blanket.
- 4.43. Physical examination of an animal should include observation of normal movement, check for injuries, discharges, lumps, asymmetry, breathing pattern, bleeding or any other lesion indicative of injury or significant illness.
- 4.44. Any animal showing signs of injury or illness, or showing abnormal behaviour should be immediately referred to an experienced wildlife veterinarian or approved wildlife rehabilitation facility.

Capture and restraint of macropods

- 4.45. Capture and restraint of macropods carries a high risk of injury and fatal hyperthermia/myopathy syndrome, and must not be performed by inexperienced personnel, or without appropriate equipment and sedation.
- 4.46. Capture and restraint of healthy macropods (other than pouch young) must be performed using sedation or anaesthesia due to the high risk of development of myopathy, and other capture and restraint-associated conditions. Sedative and anaesthetic drugs may only be used under the direct supervision of a registered veterinarian, or by appropriately licensed persons.

Short-term holding

- 4.47. Captured animals may be held for short periods of time in calico bags, transport cages, box traps or any other appropriate container as long as the following criteria are met, and due regard is given for species differences:
- (a) the animal is protected from extremes of temperature;
 - (b) the animal is protected from accidental trauma by other animals, equipment, machinery and the like;
 - (c) the animal is protected from adverse sensory stimuli such as loud noises;
 - (d) the bag or container provides sufficient airflow to allow normal air exchange and radiation/dispersal of heat;
 - (e) the container, receptacle or bag is protected from direct sunlight, rain, wind or other environmental conditions likely to cause suffering or harm to the animal;
 - (f) the animal is able to hide, or be protected from threatening stimuli (such as providing a hide box, or covering a wire transport cage with a towel or blanket);
 - (g) the animal is checked regularly during its period of confinement;
 - (h) the container, bag or receptacle is clean, hygienic and safe for the animal.
- 4.48. All mammals and birds held in short term containment for more than 4 hours, must be given access to water.
- 4.49. Mammals and birds held in bags of calico or other material for longer than 2 hours must be transferred to appropriate transport or holding boxes or enclosures containing hide spaces or boxes when appropriate for the species.
- 4.50. All neonatal or juvenile animals other than completely independent juveniles must be fed and contained in a manner appropriate for their age and species. Supplemental warmth must be provided to any nestling or juvenile unable to adequately thermoregulate.

- 4.51. All dependent young unable to be returned to parental care within a reasonable timeframe or unlikely to be accepted back by their parents must be immediately transferred to a licensed wildlife carer or approved wildlife rehabilitation facility.
- 4.52. The following guidelines should be followed for short to medium term (4-24 hours) containment of adult animals (Table 1). Maximum times are indicated in hours unless otherwise indicated. Animals should be released or transferred to an approved wildlife holding facility for long-term holding at or before the expiry of the times indicated in the last column.

Species	Water	Food	Max. time in bag	Max. time in short-term enclosure (eg transport box)
Macropod	4	12	4 (*)	4 (*)
Koala	4	4	2	4
Echidna	4	8	2	24
Bandicoot	4	8	2	24
Possum/glider	4	8	2	24
Rodent	4	8	2	24
Insect bat	4	4	12 (**)	12
Dasyurid	4	4	2	24
Flying fox	4	8	2 (***)	12
Wombat	4	8	n/a	4
Snake	24	7 days	24	24
Lizard	24	2 days	24	24
Turtle	24	2 days	24	24
Frog	12 (#)	24	8 (#)	24

- * With sedation/anaesthesia only
- ** Only if fed and watered every 4 hours
- *** Calico bags containing flying foxes must be hung rather than laid down.
- # Containers for frogs must prevent drying. Plastic boxes with ventilation are preferred.

Table 1: Guidelines for the short to medium term (4-24 hours) containment of adult animals

Long-term animal holding

4.53. Animals may require long-term holding (> 24 hours) for a variety of reasons, such as:

- (a) delayed access to appropriate release sites;
- (b) accumulation of a number of individuals for group release;
- (c) treatment of injuries or illness;
- (d) inclusion in radio-tracking studies or other research;
- (e) hand-rearing of dependent young;
- (f) temporary housing during operational works prior to return to site.

4.54. Long-term holding of native animals should only occur in circumstances approved by DEHP and in facilities approved for such reason by DEHP.

4.55. Care and husbandry of animals in long-term care should be in accordance with the *Code of Practice - Care of orphaned, sick or injured protected animals by wildlife care volunteers* (DEHP), and current best practice.

4.56. Facilities used by wildlife spotter/catchers for the holding of native animals awaiting translocation or relocation back to the original development site are restricted to those facilities approved for that express purpose by DEHP. *(Such facilities may charge a fee for animal holding services, which the developer should be informed of prior to engagement by the wildlife spotter/catcher.)*

Disposal of wildlife

4.57. The ideal outcome for wildlife removed from a site during operational works is to be relocated back to the same site at the completion of works, so long as suitable and sufficient habitat remains. This ensures that any potential adverse ecological consequences associated with translocation and the potential adverse effects (on the individual) of placement in unfamiliar territory are avoided. However, this outcome is generally only achievable if there has been significant retention of habitat, and appropriately “eco-friendly” design and planning.

4.58. Translocation of animals is not a preferred option unless retention at, or relocation back to, the original site is inappropriate.

4.59. In order of preference, outcomes for removed wildlife are as follows:

- (a) relocation back to suitable and sufficient habitat on original site following operational works;

- (b) translocation to suitable habitat adjacent to site;
- (c) translocation to distant suitable habitat;
- (d) placement in captive institution for educational, conservation or research purposes;
- (e) euthanasia.

4.60. Each of these options is dependent on fulfillment of a number of conditions and criteria which affect its relative suitability under different circumstances.

4.61. In determining the most suitable option for each individual, the wildlife spotter/catcher must ensure that the chosen option is appropriate in terms of both animal welfare and ecological outcomes.

4.62. Any animal showing obvious clinical signs, or behaviour consistent with injury or illness must be treated in an appropriate manner, as detailed in sections 4.100-4.105 below.

Relocation of animals back to original site at completion of operational works

4.63. In some circumstances, the extent of destruction of habitat may not be sufficient to warrant permanent translocation of animals, but operational works or other factors may present unacceptable risks to the health and safety of some animals present on site.

4.64. In such cases, a range of measures may be used by the wildlife spotter/catcher to mitigate or minimise risks, including the temporary removal of animals from the site, with the aim of returning animals back to their habitats at the completion of risk-associated works.

4.65. Important criteria for return of animals to the original development site include:

- (a) sufficient habitat is, or will be retained on site to support the animal population, taking into account factors such as: viability of prey species populations; availability of nesting sites or hollows; availability of clean water; and availability of sufficient food resources;
- (b) habitat corridors retained are of suitable size, topography and vegetation cover to provide effective routes for normal ecological processes such as immigration, emigration, recruitment and dispersal;
- (c) habitat blocks and corridors are of sufficient size to maintain ecological integrity and effectiveness, taking into account likely edge effects;
- (d) long-term risk factors to individual and population survival associated with the development have been (or will be) adequately managed or mitigated.

For example: domestic animal control, motor vehicle/road impacts, swimming pool risk.

- 4.66. The temporary removal of native animals destined for return back to the site of origin, is conditional upon the availability of appropriate long-term holding facilities and resources, and the suitability of the species and individuals for long-term holding.
- 4.67. In some instances (for example: macropods), it may be appropriate to construct temporary holding yards or enclosures on site during operational works, which are removed on completion of risk-associated works.

Translocation of animals to suitable habitat adjacent to development site

- 4.68. If development of a site occurs adjacent to a large area of similar habitat, with little retention of habitat on site, native animals are most appropriately translocated into adjacent areas. Criteria for use of adjacent habitat areas for 4.65 (a-d) above, but include:

- (a) translocation of animals into adjacent habitat should only occur if the likelihood of significant impacts on resident animals in the recipient habitat is considered to be low (i.e. recipient habitat is not considered to be at maximum carrying capacity for that species);
- (b) recipient habitat is of sufficient size to allow for dispersal of individuals from the point of release, with minimal likelihood of misadventure;
For example: koalas may disperse long distances from the point of release, particularly in already occupied habitat and should not be released into small habitat fragments bounded by busy roads or other hazards.
- (c) recipient habitat is the same or very similar in type to the donor habitat, or is known to be able to support the species proposed to be translocated, and contains appropriate and sufficient sources of food and water, and shelter resources/refugia;
- (d) the recipient habitat is known to contain, or historically contained, the species proposed to be translocated;
- (e) the recipient habitat is either permanently protected or not likely to be developed in the foreseeable future.

- 4.69. Additional conditions for translocation of animals to adjacent habitat include:

- (a) appropriate wildlife-proof barriers must be used between adjacent habitat and risk-associated structures, such as swimming pools, busy roads, trenches, canals etc;
- (b) translocated animals show no signs of infectious/contagious disease and must be in good health and body condition;
- (c) species for which there is little or no information regarding efficacy of translocation should be fitted with radio-telemetry devices and radio-tracked for appropriate periods of time;
- (d) for species utilising tree hollows: that appropriate numbers and types of natural or artificial hollows or nest boxes are placed into recipient habitat to provide for the nesting and shelter requirements of translocated animals.

Translocation of animals to distant habitat

4.70. If development of a site is such that wildlife habitats are completely removed, or retained habitats (including habitats adjacent to the site) are insufficient to support retention of animals on or adjacent to the site, then animals inhabiting the site may be translocated to other areas of suitable habitat that may be distant to the site.

4.71. Criteria for choice of recipient sites include:

- (a) habitat is suitable for translocated species, either currently or historically inhabited by that species;
- (b) recipient habitat is not considered to be at carrying capacity for that species, and has sufficient food and water to sustain population increase resulting from translocation;
- (c) recipient habitat is of sufficient size, and/or with sufficient habitat corridors and connectivity to allow for expected dispersal of translocated individuals from the release site without significant likelihood of misadventure;
- (d) recipient habitat is either permanently protected or not likely to be developed within the foreseeable future;
- (e) notification of the proposed translocation is provided to DEHP prior to translocation of any animals.

4.72. Conditions for translocation of animals to distant habitat sites include:

- (a) animals are not showing signs of infectious/contagious diseases and are in good health and body condition;
- (b) species for which there is little or no information regarding the efficacy of translocation should be fitted with radio-telemetry devices and radio-tracked for appropriate periods of time;
- (c) for species utilising tree hollows: that appropriate numbers and types of natural or artificial hollows or nest boxes are placed into recipient habitat to provide for the nesting requirements of translocated animals;
- (d) translocated animals must be released at a point with sufficient proximity to water and food sources that maximise their chances of survival;
- (e) soft release methods should be used for species that are known to be susceptible to maladaptation syndromes and/or are likely to be exposed to excessive territorial aggression from resident conspecifics or other species;
- (f) written permission from DEHP has been obtained prior to translocation to distant site(s).

Placement of animals into permanent care or captivity

- 4.73. In some cases, animals may be captured or acquired by the wildlife spotter/catcher, that are either unsuitable for release back into the wild, or for which there is no suitable or appropriate habitat to be released into.
- 4.74. Unreleaseable native animals may be valuable for education, conservation and research purposes and may be suitable for permanent placement into a captive facility.
- 4.75. The Queensland branch of the Zoo and Aquarium Association (ZAAQ) provides mechanisms for the placement of unreleaseable native animals into their member park animal collections.
- 4.76. Other alternatives for captive placement of unreleaseable animals may also be available by negotiation with DEHP. These options should only be considered for animals that are unable or unlikely to survive in the wild, or for which no suitable translocation site is available.
- 4.77. Criteria for placement of unreleaseable native animals into captivity include:
- (a) the animal is likely to be given a quality of life sufficient to justify keeping it alive;
 - (b) the proposed recipient person or institution has suitable long-term holding facilities and sufficient resources (including veterinary care) to maintain an acceptable quality of life for the animal for the term of its natural life;
 - (c) the animal provides some educational, conservation or research benefit;
 - (d) the animal is not suffering from incurable disease likely to significantly affect its quality of life now, or in the future;
 - (e) appropriate licences and permits are obtained by the recipient institution or person for the acquisition and keeping of the animal.

Placement of animals into temporary care or captivity

- 4.78. In some cases, a native animal removed from a site may require hand-rearing (in the case of dependent young) or rehabilitation because of injury or illness. In these cases, the responsibility for the ultimate disposal of the animal may be shared by the licensed wildlife carer or care organisation, in accordance with the relevant Code of Practice.
- 4.79. A healthy native animal removed from a development site, may be placed into temporary captive care at a facility approved for that purpose by DEHP for the following reasons:
- (a) during operational works, for ultimate relocation back to the original habitat site;
 - (b) the purposes of “soft release” into other appropriate habitat;
 - (c) for the purposes of accumulation of sufficient individuals to allow release of a viable “colony” or family group, for relevant species;
 - (d) pending definitive identification of an unidentified animal, or confirmation of species identification by the Queensland Museum;
 - (e) pending inclusion in an approved radio-tracking or research project;
 - (f) pending approval by DEHP for the euthanasia of healthy native fauna (see section 4.84-4.86 below);
 - (g) for any other reason justifiable on animal welfare or ecological grounds.
- 4.80. Notwithstanding section 4.79 above, a healthy native animal should be held in temporary care only for the minimum amount of time required to achieve the relevant objective. Husbandry-related health issues, conditioning/imprinting and loss of survival skills and muscle tone may be consequences of excessive periods in captivity, leading to reduced survival following release.

Notification of intention to keep native animals in temporary or permanent care

- 4.81. The wildlife spotter/catcher should notify DEHP, within 72 hours of capture, of a requirement or intention to place a healthy native animal into temporary or permanent care. The wildlife spotter/catcher should retain acknowledgement of the notification by DEHP for inclusion in the *Wildlife Management Report* (see section 5.2 below).

Euthanasia of animals

4.82. In some circumstances, the euthanasia of some animals removed from a development site is the most appropriate or humane option. Reasons for euthanasia of animals include:

- (a) the animal is either feral, and/or a declared pest;
- (b) the animal is suffering from injuries or illness sufficient to warrant euthanasia on humane grounds;
- (c) the animal is unlikely to survive if released back into the wild.

4.83. Euthanasia of animals must be conducted in accordance with the provisions of the *Queensland Animal Care and Protection Act 2001*. In most cases, euthanasia should be performed by a registered veterinarian following anaesthesia of the animal.

Euthanasia of healthy protected fauna

4.84. The euthanasia of healthy native animals must be performed only:

- (a) as a last resort if no other approved alternative measure is possible;
- (b) after submission of a euthanasia request to DEHP stating the species, number, age group, sex, reason for euthanasia, proposed method of euthanasia and the credentials and experience of the person performing euthanasia;
- (c) only after a written approval is obtained from DEHP.

4.85. Dependent neonates of animals being killed must also be killed, or appropriate provision made for their care, in accordance with the relevant Code of Practice.

4.86. The euthanasia of healthy specimens of protected native animals must not be considered as a cheap or convenient alternative to the other preferred options described in previous sections.

Euthanasia of feral or declared pests, or other non-native species

4.87. The euthanasia of feral/non-native animals must be performed:

- (a) only by a suitably qualified and experienced person;
- (b) in accordance with the provisions of the Queensland *Animal Care and Protection Act 2001*;
- (c) only if dependent young are able to be humanely captured and killed, or provision made for their care;
- (d) in the case of domestic species, only if appropriate investigations have been made to rule out ownership of the animal(s).

4.88. In the case of a domestic animal whose status as feral (rather than owned) is not clearly determined, then the animal should be surrendered to the local government animal control authority.

Emergency euthanasia of sick or injured animals

4.89. If an animal is found to be suffering from injuries or illness likely to cause extreme suffering and/or distress, and a high likelihood of death, a wildlife spotter/catcher or other competent person may perform immediate euthanasia if the following conditions are met:

- (a) the assistance of a veterinarian is not available within an appropriate timeframe given the suffering of the animal; and,
- (b) the time taken to transport the animal to a veterinarian would impose undue further suffering on the animal; and,
- (c) the requirements of the *Animal Care and Protection Act 2001* will be met in respect of the method of euthanasia; and,
- (d) the chosen method of euthanasia will cause instant or rapid insensibility (loss of consciousness), followed shortly afterwards, (and before return of consciousness), by death; and,
- (e) the person proposing to conduct the euthanasia procedure is competent at the procedure; and,
- (f) The carcass is not disposed of until death is confirmed.

4.90. It is recommended that all wildlife spotter/catchers are appropriately trained in humane methods of euthanasia.

Use of veterinarians and veterinary services or drugs

- 4.91. Due to the nature of wildlife management, capture and translocation, the use of veterinary drugs and services is occasionally required.
- 4.92. Reasons for veterinary involvement in wildlife management processes include:
- (a) use of restricted drugs for sedation or anaesthesia of animals;
 - (b) examination and veterinary management of sick, injured or orphaned animals;
 - (c) euthanasia of animals;
 - (d) consultation on animal welfare issues;
 - (e) assessment and management of wildlife population health and reproduction.

Nomination of veterinarian on Wildlife Protection and Management Plan

- 4.93. A wildlife spotter/catcher must nominate one or more registered veterinarians, whom they will use in the event that veterinary services are required.
- 4.94. A nominated veterinarian must be able to provide resources and facilities appropriate for responding to wildlife emergencies that may occur in the field.
- 4.95. The nominated veterinarian(s) must be indicated in the *Wildlife Protection and Management Plan* under the section entitled "Contingency plan for wildlife requiring euthanasia, other veterinary procedures or captive care."
- 4.96. It is preferable that nominated veterinarians are experienced with wildlife, although it is recognised that, in some areas of the state, this may not be possible.

Wildlife spotter/catcher to inform client of obligations regarding the provision of veterinary care

- 4.97. It is the responsibility of the wildlife spotter/catcher to inform the client and/or project manager of the potential for requirement of veterinary services, and the expected costs of such services.
- 4.98. The wildlife spotter/catcher must also ensure that the client or authorised representative is aware of their "duty of care" obligations to animals captured or injured in the course of the conduct of relevant activities.
- 4.99. It is recommended that the wildlife spotter/catcher prepare a document detailing the above, to be signed by the client or client's authorised representative.

Provision of veterinary care to sick or injured animals

- 4.100. The wildlife spotter/catcher must make provision for the prompt veterinary examination and treatment of any animal injured, or caused to be sick, as a result of development processes or activities.
- 4.101. If an injured animal has not already been captured, then the wildlife spotter/catcher must make every reasonable attempt to capture the animal for the purposes of veterinary assessment and treatment. This may include the engagement of a veterinarian for the purposes of darting the animal with a tranquilliser or anaesthetic.
- 4.102. The wildlife spotter/catcher must also make provision for the veterinary assessment and treatment of any animal captured or trapped that is showing evidence of any significant injury or illness, irrespective of the cause of the injury or illness.

For example: a captured koala that is showing obvious signs of Chlamydial infection, such as weeping eyes or “dirty tail” should be referred to an approved wildlife rehabilitation facility for veterinary assessment and treatment, rather than being released back into the wild in that condition.

- 4.103. Any native animal requiring in-patient veterinary care must be referred to a recognised wildlife veterinary hospital or facility, or a private veterinary practice that has appropriate wildlife experience and facilities for the housing and treatment of native animals.
- 4.104. A wildlife spotter/catcher has not fulfilled their duty of care obligation to a sick or injured animal simply by delivering it to a veterinarian, unless that veterinarian or veterinary practice fulfils the requirements of section 4.103 above, and agrees to provide an appropriate level of care to the animal.
- 4.105. Similarly, the wildlife spotter/catcher has not sufficiently discharged their duty of care in respect of a sick or injured animal by simply delivering it to a wildlife rehabilitator.

Requirement for presence of veterinarian on site

- 4.106. In rare circumstances, a wildlife spotter/catcher may consider that, despite all reasonable measures being taken, a development process, activity or structure is likely to result in significant harm, injury or death to an animal.
- 4.107. In such circumstances the wildlife spotter/catcher must arrange for a registered veterinarian to be present on site, for the period of time during which the risk is present. If possible, the veterinarian should be experienced in the management and care of wildlife.
- 4.108. If any restricted or controlled drug is proposed to be used by a wildlife spotter/catcher, then this use must be on the direction of, and under the direct supervision of a registered veterinarian, except as allowed by licensing of non-veterinarians under the provisions of the *Queensland Health (Drugs and Poisons) Regulation 1996*, and relevant policy of Queensland Health.

Requirement for monitoring of sedated or anaesthetised animals

- 4.109. Both the wildlife spotter/catcher and on-site veterinarian have a 'duty of care' towards any animal affected by sedative or anaesthetic drugs, and must ensure that an appropriate level and duration of monitoring is applied to prevent injury, predation, drowning or other incident that may result from the impairment of the animal's normal abilities or responses.

SECTION 5: RECORD KEEPING AND REPORTING

Preparation of a Wildlife Management Report

- 5.1. During the course of the development or activity, the wildlife spotter/catcher should keep an accurate record of all animal captures, incidents and disposals for that project.
- 5.2. At the completion of a project, the wildlife spotter/catcher should prepare a *Wildlife Management Report* (WMR) in the approved format (Appendix 5) for submission to the Animal Welfare Unit, DAFF and DEHP.
- 5.3. If the development or activity for which the *Wildlife Management Report* was prepared was subject to local government approval, then the report should also be submitted to the relevant local government authority.
- 5.4. The *Wildlife Management Report* consists of three sections:
 - (a) *Wildlife and Habitat Management Plan*
 - (b) *Wildlife Capture and Disposal Record*
 - (c) *Animal Injury and Euthanasia Report*

Wildlife and habitat management plan

- 5.5. The *Wildlife and Habitat Management Plan* should contain the following information:
 - (a) Aspects of the design or planning of the development identified as risks to wildlife, essential wildlife habitat or wildlife corridors, and the measures taken to mitigate or avoid the risks;
 - (b) Aspects of operational works identified as risks to wildlife health or safety, and the measures taken to mitigate or avoid the risks;
 - (c) Aspects of the operation or function of the finished development (including traffic impacts) identified as posing risks to wildlife health and safety either presently or in the future, and the measures taken, or required to be taken, to mitigate or avoid those risks;
 - (d) Recommendations on the type, frequency and timeframes for monitoring of wildlife and habitat impacts resulting from the development.
 - (e) Requirements for ongoing wildlife, habitat or ecological management measures for the site or development to mitigate or avoid present or future wildlife impacts.

- (f) Any measures taken to replace or improve wildlife or habitat outcomes, including compensatory vegetation planting, nest-box or tree hollow replacement, and the like.
- (g) Recommendations and/or outcomes associated with unmanageable wildlife risks identified as being caused by, or associated with the development or activity (include measures recommended or implemented by government agencies such as DEHP and relevant local government authorities).

5.6. The detail contained in the *Wildlife and Habitat Management Plan* should reflect the size and/or likely environmental impacts of the development or activity.

Wildlife capture and disposal record

5.7. The *Wildlife Capture and Disposal Record* must contain the following details for each captured animal classified as *endangered*, *vulnerable* or *rare* under State legislation, classified by the local regulatory authority as *locally significant* or under the federal *EPBC Act* as *critically endangered*, *endangered* or *vulnerable*:

- (a) species;
- (b) identification name or number;
- (c) sex (M, F, or unknown);
- (d) approximate age or age class (neonate, juvenile, sub-adult, adult);
- (e) time and date of capture;
- (f) method of capture;
- (g) exact point of capture (GPS point);
- (h) state of health;
- (i) incidents associated with capture likely to affect the animal;
- (j) veterinary intervention or treatments;
- (k) time held in captivity;
- (l) disposal (euthanasia, re-release, translocation etc);
- (m) date and time of disposal;
- (n) details of disposal (if released, exact point of release GPS);
- (o) for released animals: distance in metres from point of capture to point of release.

- 5.8. For captured animals not listed in legislation as defined in section 5.7 above, such details should be recorded if fewer than 10 individuals are captured, however if greater than 10 individuals are captured, the following details should be recorded in the *Wildlife Capture and Disposal Report*:
- (a) species;
 - (b) total number captured;
 - (c) general location of capture;
 - (d) general location of release site;
 - (e) adverse incidents, mortality or euthanasia report;
 - (f) method of capture.
- 5.9. If any native animals were, or are presently, held in temporary or permanent captive care, then the wildlife spotter/catcher should provide details of the reason for such holding and a copy of DEHP acknowledgement of notification (see section 4.78-4.80 above).
- 5.10. Furthermore, the wildlife spotter/catcher should indicate the availability of husbandry and veterinary records for each animal placed into temporary or permanent captive care.

Animal injury and euthanasia report

- 5.11. A separate *Animal Injury and Euthanasia Report* must form part of the *Wildlife Management Report*, detailing the circumstances, management and final outcome of every animal injury or incident, and the circumstances and reason for each animal euthanasia.
- 5.12. For each animal euthanasia requiring a DEHP permit or written approval (see section 4.84-4.86), the reference or permit number must be recorded.
- 5.13. A “nil return” *Animal Injury and Euthanasia Report* should be included in the *Wildlife Management Report* if there were no animal injuries or euthanasia.
- 5.14. In tabulated form, the *Animal Injury and Euthanasia Report* should indicate, for each animal:
- (a) species;
 - (b) sex (if identified);
 - (c) unique identification name or code (as used in the *Wildlife Capture and Disposal Record*);
 - (d) age class (neonate, juvenile, sub-adult, adult);
 - (e) nature and details of incident or condition resulting in injury or euthanasia;
 - (f) initial management or intervention (e.g. taken to veterinarian – give details);
 - (g) final outcome;

- (h) method of euthanasia, by whom; or details of disposal;
- (i) current location of animal or details and method of disposal;
- (j) any other relevant information.

Reporting

5.15. The wildlife spotter/catcher should prepare and submit to the Animal Welfare Unit, Queensland PI&F and also DEHP the following documents within one (1) month of completion of each project:

- (a) Wildlife Protection and Management Plan;*
- (b) Wildlife Management Report.*

5.16. If a development or activity is subject to approval by a local government, then the wildlife spotter/catcher shall submit a copy of the WPMP and WMR to the appropriate local government authority within one (1) month of completion of the project.

Appendix 1: Recommended Equipment for Wildlife Spotter/Catchers

A wildlife spotter/catcher must have the following essential equipment at his/her disposal at all times:

- 4-wheel drive vehicle
- 2-way radios
- Cages of various sizes and construction
- Various traps for animal capture
- Calico bags of various sizes
- Various nets with extendable handles
- Leather and latex gloves
- Towels
- Blankets
- Spray marking paint
- Flagging tape
- Chain saw
- Extension ladder
- GPS unit
- Digital camera
- Complete set of field guide publications to enable identification of wildlife to species level
- Snake handling equipment
- Binoculars
- Torches
- Waders
- Range of containers to hold and transport aquatic fauna
- Scales
- 10 x lens and vernier calipers
- Full set of PPE

Appendix 2: Form for making an Animal Welfare Direction

ANIMAL WELFARE DIRECTION

This Animal Welfare or Animal Protection Direction is made at:

Location:

Date:

Exact location of development or activity site	
Registered owner of the site	
Responsible person to whom this direction is made	
Position of responsible person (eg site foreman, project manager etc)	
Circumstances in which animal welfare or protection is at risk (describe in detail)	
Specific activity or process that may risk animal welfare or protection	

Activity is to:	<input type="checkbox"/> cease immediately <input type="checkbox"/> continue, but only with mitigation measures in place <input type="checkbox"/> continue with caution and WSC present at all times
Risk mitigation measures required	
Period of time over which activity may occur	

.....
Signature of Responsible Person

.....
Signature of WSC

.....
Position

.....
Name (printed)

.....
Name (printed)

At completion:

Was the activity or process conducted in accordance with this Direction?

☐ Yes

☐ No Give details:.....

Did an adverse animal welfare or protection incident occur: ☐ Yes ☐ No

If yes, an adverse incident report must be completed.

Appendix 3: Wildlife Protection and Management Plan

Appendix 4: Fauna Survey Methods

The following methods are provided as guidelines when conducting fauna surveys prior to wildlife habitat disturbance:

- a) **Diurnal searches** – Intensive investigation of the ground layer (i.e. under logs, rocks, leaf litter) and low vegetation (i.e. under tree bark and tree stumps) and caves targeting amphibians, reptiles, bats and animal traces (i.e. scats, owl pellets, remains and tracks). Minimum effort: approximately 4 person hours per day conducted in the middle of the day.
- b) **Pitfall traps and/or pitfall/funnel trap combination** – This method targets amphibians, reptiles and small mammals, particularly those mammals not readily recorded using other trapping methods (for example: planigales and dunnarts). These traps should be cleared early morning and late afternoon. Minimum effort: Thirty (30) or more pitfall traps divided into four or eight lines comprising approximately four (4) pits (20L bucket) and a 15-20m drift fence. However, the number of traps per line is often best determined on individual site characteristics and may require 6-20 pits and/or funnels on a 50m drift fence. Trapping duration is a minimum of four (4) days and nights.
- c) **Spotlighting** – Nocturnal observations using both high powered spotlights and head torches. This method targets nocturnal flying, arboreal and terrestrial mammals, birds (owls and nightjars), reptiles (geckos) and amphibians. Call playback can also assist this method when targeting specific species (owls and amphibians). Minimum effort: approximately 3 person hours per day commencing in the early evening.
- d) **Elliott traps** – This method targets small arboreal and terrestrial mammals. These traps should be cleared each morning by 7:00am and reset late in the afternoon after 5:00pm. Trap placement will be influenced by vegetation diversity, the size and shape of the habitat area and by naturally occurring features such as logs, rock outcrops, tree bases and clumping vegetation. As a guide, all distinctly different broad vegetation communities should be surveyed. Minimum effort: 100 traps over four nights, arranged in 5-10 transects with 10 or 20 traps in each transect with trap placement at 5m apart. A variety of baits should be utilised such as rolled oats with peanut butter +/- honey, bacon, tinned fish. When conducting arboreal trapping with this method, a diluted honey and water mixture may be sprayed on the trunk and branches near the trap to act as an attractant to species such as sugar and squirrel gliders.
- e) **Cage traps** - This method targets medium to large arboreal and terrestrial mammals. These traps should be cleared each morning by 7:00am and reset late in the afternoon after 5:00pm. Trap placement will be influenced by vegetation diversity, the size and shape of the habitat area and by naturally occurring features such as logs, rock outcrops, tree bases and clumping vegetation. As a guide, all distinctly different broad vegetation communities should be surveyed. Minimum effort: 20 traps over four nights, arranged in 5 transects with trap placement at 5-20m apart. A variety of baits should be utilised such as rolled oats with peanut butter +/- honey, bacon, tinned fish.

- f) **Hair tubes** – This method is additional to the above methods which target mammal species. Hair tubes of different sizes should be baited with a variety of baits (i.e. rolled oats with peanut butter +/- honey, bacon, tinned fish) and left *in situ* for a minimum of two (2) weeks. Upon collection, hair samples should be identified by a suitably qualified person with demonstrated experience in identifying mammal species from hair samples.
- g) **Bird surveys** – Fixed or random transects are walked with five (5) minutes spent stationary at designated locations along the transects. Birds are recorded indicating the method of identification (i.e. call or visual observation) and the type and location of habitat. Minimum effort: 30-60 minutes commencing prior to and during dawn to early morning and prior to dusk.
- h) **Harp traps, mist nets and sonic bat detectors** - These methods target insectivorous bats. Trap and sonic detector (i.e. ANABAT) should be located within suitable habitat where insectivorous bats are likely to frequent (i.e. natural flyways between vegetation and narrow forest tracks). Calls recorded from a sonic detector (i.e. ANABAT) should be analysed by a suitably qualified person to ensure accurate species identification.

Appendix 5: Wildlife Management Report