

Protocols for the Translocation of Macropods

Updated for "The Agile Project" Trinity Beach Cairns 2018

Project Manager Shai Ager



Photo of the Health Assessment Staging Area, taken during the 2013 translocation of Eastern Grey Kangaroos, from the Australian National University in Canberra to Hammer's Hill Wildlife Sanctuary in the Monaro Region of NSW.

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Version Control - Protocols for the Translocation of Macropods

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V0.1	Draft	James Fitzgerald	n/a	Updated for "The Agile Project"	13/01/18
V0.2	Draft	James Fitzgerald	Shai Ager (BSc Ecology)	Review by the Project Manager of "The Agile Project"	14/01/18
V1.0	Final	James Fitzgerald	Dr Rosemary Austen	Expert review of Translocation Protocols.	16/01/18
V1.1	Final	James Fitzgerald	Dr Howard Ralph	Expert Review of Translocation Protocols.	05/02/18

Use of Protocols

The protocols contained in this document are the intellectual property of James Fitzgerald Trustee - Two Thumbs Wildlife Trust. James Fitzgerald retains copyright of this document and the protocols contained within it. The protocols document was reviewed by Dr Rosemary Austen on 18 January 2018. Dr Austen and her partner Professor Steve Garlick have rehabilitated more than 5000, kangaroos, wallabies and wallaroos. The protocol document was also reviewed by Dr Howard Ralph on 5 February 2018. Dr Ralph has extensive veterinary experience working with wildlife both in Australia and overseas for over 30 years. He is involved in providing veterinary treatment and care for over 700 macropods each year. Dr Austen and her partner Steve have consulted Dr Ralph over many years, for advice and information on the pharmacological management, monitoring and transportation of macropods. Dr Ralph has emphasised the important aspects of both health and animal welfare issues involved before,

during and following a translocation. The Cairns based "The Agile Project" are authorised to use these protocols and documentation at no cost, to help save Agile Wallabies from the increasing threats of human development in the Trinity Beach area. Dr Howard Ralph's charity, Southern Cross Wildlife Care is run by volunteers. They have significant medical costs to help treat a large numbers injured and sick wildlife each year. I strongly recommend Southern Cross Wildlife Care, to anyone who would like to donate to a charitable organisation that is working on the front line to help save Australian Wildlife.

Protocols for the Translocation of Macropods

The protocols detailed in this document have been used to successfully translocate many 100s of macropods. For example over 300 Eastern Grey Kangaroos from 7kg to 87kg were successfully translocated away from the dangers of the Mount Panorama Car Racing Circuit at Bathurst between February and May 2017 using these protocols. It should be noted that Eastern Grey Kangaroos are the most difficult to translocate within the macropod species, due to their flighty and sensitive nature and will readily suffer from myopathy if not handled carefully. While the words contained in this document are mine, the credit for all that I have learnt during my time as a rescuer and rehabilitator of macropods needs to go to care, guidance and training provided to me over many years by Dr Howard Ralph and his wife Glenda Ralph, Dr Rosemary Austen and her partner Professor Steve Garlick. Also Lynda Staker has provided me with training and her detailed manuals "Macropod Husbandry, Healthcare and Medicinals volume 1 & 2, have been and continue to be a great source of information. Any errors or omissions in these protocols are purely my fault and not a reflection on those who have trained and guided me. It should be noted that the translocation of macropods is part of the day-to-day practice of wildlife rescuers and rehabilitators around Australia. It is this wealth of knowledge, which has enabled the development of best practice for transporting and translocating macropods.

I have divided the protocols into 4, to give greater focus on the main tasks and also because different people and skill sets participate in each of these protocols. Volunteers should fully understand the protocol that they are participating in and understand clearly who has responsibility for the welfare of the animals, all contact with animals should only take place after the person with animal welfare responsibility has requested it. Animal welfare is the highest priority at all times during an active translocation process and that is why guidance of project personnel during a translocation, is by the people who have responsibility for the welfare of the animals. The four protocols covering the entire macropod translocation process are: (1) Acquisition Protocol, (2) Sedation Management and Health Assessment Protocol, (3) Transportation Protocol and (4) Release Site Recovery Protocol.

James Fitzgerald - January 2018.

Before you begin

- Each night must begin with a briefing for all Project Team Members
- Talk through project objectives for the night. E.g. how many wallabies are to be translocated? How many vehicles will be used? Release site location? Etc.
- Talk through each person's roles and responsibilities for the night
- Talk through project risks, risks to wallabies (dart injuries, compromised airways etc.), risk to project team members, dart teams, stretcher crews, health assessment and recovery team etc. (all project team members must wear reflective vests and nobody is allowed onto the darting ground without getting the OK via CB radio from the Dart Team Leader) and risks to members of the public. Note* The dart ground is on private property and is off limits to members of the public. A Dart Team Public Liaison Officer will be positioned at all times to observe any members of the public that come towards the dart ground

and if necessary call a halt to darting via CB radio. Location risks will also be discussed (trip hazards, snakes etc.).

- Talk through the location of first aid box and ensure all team members know who is trained in advanced first aid.
- All project personnel should read and understand the protocols, roles and responsibilities for their position and all other positions on the project, before volunteering on the project.
- Copies of the Queensland Department of Environment and Science Licence and this document "Protocols for the Translocation of Macropods" will be provided to each of "The Agile Project" volunteers for them to read and ask any question they might have, prior to the translocation beginning. In addition, copies of the Department of Environment and Science Licence and the "Protocols for the Translocation of Macropods" will be available at the Health Assessment Staging Area, during the translocation process.

Acquisition Protocol

The Acquisition or darting of wallabies is lead by the Dart Team Leader. The Dart Team Leader has control over all project personnel on and around the perimeter of the Dart Ground. All project team members must contact via CB radio, the Dart Team Leader and ask permission before entering or leaving the dart ground. An important animal welfare consideration is temperature. Translocation must not take place outside of a temperature range of +8c to +26c. The weather is an important consideration in the decision to proceed with a translocation on any given day. Wind and rain will interfere with a dart's trajectory and low temperatures risk hypothermia and pneumonia, high temperatures risk heat exhaustion and myopathy. There are 13 main steps in the Acquisition Protocol. More detail on what is required of each person involved in the Acquisition Protocol can be found below in the 'Roles and Responsibilities section' below the 13 protocol steps. While the Dart Ground is on private property and off limits to

members of the public, the Dart Team Public Liaison Officer will be positioned to keep an eye on any members of the public that come close to the Dart Ground. If necessary the Dart Team Public Liaison Officer will be able to call a halt to darting via CB radio to the Dart Team Leader.

Acquisition Protocol Steps

Acq 1) Each day the Dart Team Leader, in consultation with the Stretcher Crew Supervisor and Sedation Management Team Leader, will determine if the weather conditions are suitable from both a darting and animal welfare perspective. The Dart Team Leader confirms that the required personnel understand their roles and responsibilities. The Dart Team Leader then decides if the translocation can proceed.

Acq 2) The Dart Team Leader will select a wallaby for darting based on observation of family / friendship mobs.

Acq 3) The Dart Team Leader will point out the target wallaby to the other members of the Dart Team.

Acq 4) The Dart Team Leader will ensure that the Dart Team Spotters are in positions where they can visually observe the target wallaby from a distance, without the need to move, to reduce the risk of frightening the wallaby after it is darted.

Acq 5) After ensuring all project personnel are still and quiet and that the target wallaby is not about to jump, dart the wallaby using a blow pipe.

Acq 6) The Dart Team Leader will inform the Dart Team Scribe of the following information: Sedation medication type, dose, time of darting, location of the dart on the wallaby and any other relevant observations.

Acq 7) The Dart Team Spotters will track the darted wallaby with their torches, while remaining still and as quiet as possible.

Acq 8) When the wallaby is down on the ground and safely sedated, the Dart Team Leader will call the Stretcher Crew via a CB radio, to come and collect the wallaby.

Acq 9) The Stretcher Crew will enter the Dart Ground and approach the wallaby to a distance of approximately 15 metres and wait at that location.

Acq 10) The Stretcher Crew Supervisor will approach the wallaby and check the wallaby's vital signs, ensure airway is clear and make sure that the wallaby is properly sedated, this might require a field "top up" of sedation medication. If required, the sedation dose and time administered is recorded on the wallaby's datasheet.

Acq 11) Once the Stretcher Crew Supervisor has confirmed that the wallaby is safely sedated, they will call the Stretcher Crew to come and pick up the wallaby.

Acq 12) The Stretcher Crew will carry the wallaby out of the Dart Ground to the Health Assessment Staging Area (While the wallaby is being carried on the stretcher, the Stretcher Crew Supervisor will ensure that the wallabys' airway is not restricted and visually monitor the wallabys' breathing and level of sedation).

Acq 13) Once the wallaby is delivered to the Health Assessment Staging Area, the health and wellbeing of the wallaby now becomes the responsibility of the Sedation Management Team Leader and the Acquisition Protocol has been completed.

Roles and responsibilities:

Dart Team Leader.

The Dart Team Leader has ultimate responsibility for ensuring that The Agile Project complies with the Licence issued by the Queensland Department of Environment and Science. This includes all Licence Conditions contained in the Licence. The Dart Team Leader must provide every project volunteer with a copy of the Licence before they start on the project. The Dart Team Leader will maintain all records for the project. This includes each Wallaby's datasheet and all photographs of any injuries. The Dart Team Leader will provide key stakeholders, Cairns Regional Council and the Department of Environment and Science; with a progress report each time the project successfully translocates 50 wallabies and a final report at the end of the project. The Dart Team Leader is the darter for the night. The Agile Project will be using blowpipe/s as the delivery method for small darts containing tranquiliser medication. Darting start time needs to be late afternoon, due to the cooler afternoon conditions and more importantly to ensure that the agile wallabies arrive at the release site after dark. Macropods wake up from sedation in a more calm and relaxed manner after dark. A wallaby's vision is better in the dark and it is normal for them to be awake after dark.

Each day the Dart Team Leader, in consultation with the Stretcher Crew Supervisor and Sedation Management Team Leader, will determine if the weather conditions (wind, rain and temperature) are suitable from both a darting and animal welfare perspective. Translocation must not take place outside of a temperature range of +8c and +26c. The Dart Team Leader confirms that the required personnel understand their roles and responsibilities. The Dart Team Leader then decides if the translocation can proceed. It is very important that the Dart Team Leader has full control of the dart ground at all times. All project team members must contact via CB radio the Dart Team Leader and ask permission before entering or leaving the dart ground. The Dart Team Leader must have full control of all people on the darting ground and around its perimeter. It is very

important that the Dart Team Leader can ensure that people are 100% still during the darting process and between the time the wallaby is darted and the time it takes for the wallaby to go down and become safely sedated. The Dart Team Leader must be available via CB radio at all times.

Equipment. The Dart Team Leader will have a head torch, blowpipe, and darts containing sedation medication. Weather report and a CB radio while on the Dart Ground.

Mandatory skills for role. The Dart Team Leader will be a member of a wildlife rescue group and have training and be experienced in the rescue and handling of macropods. They must have training and experience in the safe handling and administration of sedation medication and training and experience in the accurate delivery of a dart via the use of a blowpipe

Main Tasks - Dart Team Leader.

1) Each day the Dart Team Leader, in consultation with the Stretcher Crew Supervisor and Sedation Management Team Leader, will determine if the weather conditions (wind, rain and temperature) are suitable from both a darting and animal welfare perspective. Translocation must not take place outside of a temperature range of +8c and +26c. The temperature during both the darting process and later recovery at the release site must be considered. Temperature risks are greater at the release site. Cold temperatures during the period the wallaby is sleeping off the effects of sedation on the ground at the release site, risk hypothermia and pneumonia, while high temperatures at the release site when the wallaby is getting back up on its feet, risk heat exhaustion and myopathy. The Dart Team Leader confirms that the required personnel understand their roles and responsibilities. The Dart Team Leader then decides if the translocation can proceed.

- 2) The Dart Team Leader is responsible for the health and safety of all members of the project team that are on the Dart Ground or around the Dart Ground's perimeter. The Dart Team Leader will keep the number of project personal on the Dart Ground to a minimum required and will not commence darting until they have ensured that all project personnel are in a safe location.
- 3) It is the dart team leader's sole decision to start or end darting for the day, due to rain, wind, wallabies becoming agitated, disturbance from members of the public or any other reason.
- 4) The Dart Team Leader will as a courtesy, contact local Police and inform them of the days that The Agile Project (TAP) will be operational.
- 5) The Dart Team Leader will prep darts with sedation medication. Generally, darts are prepared with three different dose rates, to cater for different size classes of wallabies to be darted, younger wallabies, adult female and adult male.
- 6) The Dart Team Leader will select a wallaby for darting based on observation of family / friendship groups.
- 7) Ensure that the wallaby is relaxed and not about to hop prior to darting the wallaby.
- 8) Ensure that all Project Team Members on the Dart Ground are 100% still prior to a darting attempt.
- 9) Dart the wallaby, using a dart with the appropriate dose for the size of the wallaby.
- 10) Observe the wallaby from the time it is darted to the time it is on the ground and safely sedated.
- 11) Provide any observations to the Dart Team Scribe for recording on the wallaby's datasheet (e.g. location that the dart hit the wallaby, any adverse responses e.g. a small number of animals may become agitated or frightened by the impact of the dart, or injure themselves when they fall over due to sedation. This information is useful for the health assessment).
- 12) Once the wallaby is on the ground and safely sedated, call the stretcher crew via CB radio to pick up the wallaby. CB radio volume should be set to low.

13) The health and wellbeing of each wallaby is the Dart Team Leader's responsibility, until that responsibility is handed over to the Stretcher Crew Supervisor. This health and wellbeing responsibility handover takes place when the Stretcher Crew picks up the wallaby.

14) The Dart Team Leader can call for help/assistance from the Stretcher Crew Supervisor and / or the Sedation Management Team Leader in any situation where a wallaby is injured or distressed.

15) After the stretcher crew has removed the wallaby from the Dart Ground, the targeting of the next wallaby can commence.

16) The manual handling of wallabies on the Dart Ground must only be undertaken by the Dart Team Leader or Stretcher Crew Supervisor or at their request.

17) It is very important to avoid well-intentioned interventions of darted wallabies by project personnel. Some people may feel compelled to help a wallaby that is wobbling on its feet after it has been darted, before the sedation medication has taken full effect. 99.9% of the time, it is the wrong thing to do. If you approach a wallaby during the induction phase before the sedation medication has brought the wallaby down to the ground and safely sedated, you will most likely trigger a flight / fight response and adrenaline will be released into the wallaby's body and counteract the effects of sedation medication, increase the time taken for the wallaby to go down and increase the risk of the wallaby hurting itself.

18) Reporting Requirements. Each time The Agile Project successfully translocates 50 wallabies, the Dart Team Leader will within 14 days, provide Key Stakeholders, Cairns Regional Council and Department of Environment and Science with a progress report and a Final Report 28 days after the completion of the translocation project. The reports will contain the following:

18a) Confirmation that The Agile Project has complied with Licence Conditions or details of any issues relating to Licence Conditions;

18b) Confirmation of the number of wallabies successfully translocated and details of any deaths or injuries caused by the translocation process;

- 18c) Confirmation that animal welfare requirements are being met or details of any issues;
- 18d) Copies of each wallaby's datasheet (50 datasheets) and photos of any injuries if applicable;
- 18e) Confirmation that medications are being safely handled and stored or details of any issues;
- 18f) Confirmation that the team is working well together or details of any issues from project team personnel;
- 18g) Details of any issues/problems caused by members of the public during the translocation;
- 18h) Details of The Agile Project expenditure and receipts. .

Dart Team Scribe.

The Dart Team Scribe will hold blank wallaby datasheets and a clipboard. The Dart Team Scribe will stay close to the Dart Team Leader but remain at the perimeter of the Dart Ground. The Dart Team Scribe role is to record the initial information for each wallaby on the wallaby's datasheet and then hand the datasheet over to the stretcher crew when they pick up the wallaby.

Equipment. The Dart Team scribe will have a safety vest, blue or black pens, blank datasheets, a clipboard and a head torch at all times while at the Dart Ground's perimeter.

Mandatory skills for role. The Dart Team Scribe will have the ability to write clearly and be quiet and still when required. It is preferred that they are also a member of a wildlife rescue group with training and experience in the rescue and handling of macropods. Training will be provided for this role as part of the project.

Main Tasks - Dart Team Scribe.

- 1) Stay close to the Dart Team Leader but remain at the perimeter of the Dart Ground. Obey any instructions given by the Dart Team Leader, particularly when to move and when not to move. Communication should be in a quiet manner.
- 2) It is very important to be 100% still when instructed by the Dart Team Leader (If a wallaby is frightened by any member of the project team moving or being too close, this can cause the wallaby to have adrenaline enter its system as part of a flight / fight response and adrenaline can counter the effects of sedation medication and increase the time taken for the wallaby to go down. This puts the wallaby at risk of hurting itself).
- 3) When each wallaby is darted, the Dart Team Scribe will record on the wallaby's new datasheet,
 - 3a) The time wallaby is darted,
 - 3b) Medication type and dose contained in the dart,
 - 3c) The location that the dart hit the wallaby
 - 3d) The time the wallaby went down to the ground and became safely sedated;
 - 3e) Record any observations by the Dart Team Leader
- 4) Pass on the wallaby's datasheet to the stretcher crew when they come out to pick up the wallaby (the datasheet must stay with the wallaby at all times during the translocation process).
- 5) The manual handling of wallabies on the Dart Ground is restricted to the Dart Team Leader or Stretcher Crew Supervisor or at their request.

The big risk to avoid. It is very important to avoid well-intentioned interventions of darted wallabies by project personnel. Some people may feel compelled to help a wallaby that is wobbling on its feet after it has been darted, before the sedation medication has taken full effect. 99.9% of the time, it is the wrong thing to do. If you approach a wallaby during the induction phase before the sedation medication has brought the wallaby down to the ground and safely sedated, you will most likely trigger a flight / fright response and adrenaline will be released into the wallaby's body and counter the effects of sedation medication, increase

the time taken for the wallaby to go down and increase the risk of the wallaby hurting itself.

Dart Team Spotter.

There are 2 Dart Team Spotters on the dart team. Each Dart Team Spotter carries a powerful torch and a CB Radio and is guided via CB radio by the Dart Team Leader. The Dart Team Leader will advise which wallaby is the target wallaby and advise the best location for each Dart Team Spotter (Generally, one Dart Team Spotter will be close to the Dart Team Leader and the other in the general direction that the wallaby is expected to move after being darted. This is to ensure that eye contact is maintained on the wallaby after it is darted, without the need for the spotters to move). Dart Team Spotters will move around the perimeter of the Dart Ground. As a general rule the Dart Team Spotters should try to maintain a distance of approximately 15 metres from the darted wallaby. It is best practice to spot the wallaby from a distance, so as to ensure that the wallaby does not become scared of the spotter and try to hop away during the period between darting and the wallaby going down on the ground and becoming safely sedated.

Equipment. The Dart Team Spotter will have a safety vest, a CB radio and a powerful torch at all times while at the perimeter of the Dart Ground.

Mandatory skills for role. The Dart Team Spotter will have the ability to point a torch and track the target wallaby and be quiet and still when required. It is preferred that they are also a member of a wildlife rescue group with training and experience in the rescue and handling of macropods. Training will be provided for this role as part of the project.

Main Tasks - Dart Team Spotter.

- 1) Receive instruction from the Dart Team Leader on which wallaby is the target wallaby. Follow all instruction from the Dart Team Leader, particularly when to move and when not to move. Communication should be in a quiet manner. CB radio volume should be set low.
- 2) It is very important to be 100% still when instructed by the Dart Team Leader (If a wallaby is frightened by any member of the project team who is moving or getting too close, this can trigger adrenaline enter the wallaby's system as part of a flight / fright response. This adrenaline can counter the effects of sedation medication and increase the time taken for the wallaby to go down. This puts the wallaby at risk of hurting itself.)
- 3) Use powerful torchlight to keep track of the target wallaby both during the darting process and between darting and the wallaby becoming safely sedated. Try not to shine the torch directly into the wallaby's eyes.
- 4) Keep track of the location of the target wallaby from the perimeter of the Dart Ground and try to be at least 15 metres away from the wallaby to avoid scaring the wallaby.
- 5) When the Dart Team Leader calls for the Stretcher Crew via the CB radio, use your powerful torch to guide the Stretcher Crew towards the darted wallaby on the ground.
- 6) Maintain visual on the sedated wallaby from a distance until the Stretcher Crew arrive and take control of the wallaby.
- 7) After Stretcher Crew takes control of the sedated wallaby, listen for instructions via the CB radio from Dart Team Leader as to which wallaby is the next target wallaby.
- 8) The manual handling of wallabies on the Dart Ground is restricted to the Dart Team Leader or Stretcher Crew Supervisor or at their request.

The big risk to avoid. It is very important to avoid well-intentioned interventions of darted wallabies by project personnel. Some people may feel compelled to help a wallaby that is wobbling on its feet after it has been darted, before the

sedation medication has taken full effect. 99.9% of the time, it is the wrong thing to do. If you approach a wallaby during the induction phase before the sedation medication has brought the wallaby down to the ground and safely sedated, you will most likely trigger a flight / fright response and adrenaline will be released into the wallaby's body and counter the effects of sedation medication, increase the time taken for the wallaby to go down and increase the risk of the wallaby hurting itself.

Dart Team Public Liaison Officer.

While the Dart Ground is on private property and off limits to members of the public, the Dart Team Public Liaison Officer will keep an eye on any members of the public that come close to the Dart Ground and call off darting if necessary via CB radio to the Dart Team Leader. The Dart Team Public Liaison Officer will place a warning sign "Danger Wildlife Darting in Progress" for the public to see and understand that The Agile Project (TAP) is operational at that time.

Equipment. The Dart Team Public Liaison Officer will have a safety vest, a mobile phone, a CB radio, a torch, a warning sign "Danger Wildlife Darting in Progress", blue or black pens and a note pad.

Mandatory skills for role. The Dart Team Public Liaison Officer will have good people skills and communication skills. It is preferred that they are also a member of a wildlife rescue group with training and experience in the rescue and handling of macropods. Training will be provided for this role as part of the project.

Main Tasks - Dart Team Public Liaison Officer.

1) Keep an eye on any members of the public that come close to the Dart Ground and call off darting if necessary via CB radio to the Dart Team Leader

- 2) Be polite and friendly and have a good understanding of the reasons why The Agile Project (TAP) is necessary and encourage support for the project.
- 3) If people want to know more about the project, provide them with information about The Agile Project's (TAP's) Facebook page or write down their email address in your note pad, so that information can be provided at a later date.
- 4) It would be best to always stay out of the Dart Ground but if you need to enter, ask permission from the Dart Team Leader via CB radio.

Stretcher Crew.

There are 2 members of a Stretcher Crew and a Stretcher Crew Supervisor. The Stretcher Crew is called by the Dart Team Leader via CB radio, when the wallaby is safely sedated and ready to be picked up. The Stretcher Crew are located outside the Dart Ground at the Health Assessment Staging Area. The main role of the Stretcher Crew is to carry each wallaby on a stretcher from where it has been safely sedated on the Dart Ground to the Health Assessment Staging Area. The Stretcher Crew Supervisor takes over the responsibility for the health and wellbeing of the wallaby from the Dart Team Leader when the wallaby is picked up. The Stretcher Crew Supervisor is the first to approach the wallaby; the other 2 members of the stretcher crew will wait approximately 15 metres away from the wallaby until called in by the Stretcher Crew Supervisor to pick up the wallaby.

Equipment. The Stretcher Crew will all have a safety vests, head torches, a stretcher, towels and blankets, joey pouches, a clipboard to pick up datasheets. The Stretcher Crew Supervisor will have a CB radio at all times.

Mandatory skills for role. The Stretcher Crew will be able to carefully carry a wallaby onto a stretcher and be quiet and still when required. It is preferred that they are also a member of a wildlife rescue group with training and experience in the rescue and handling of macropods. Training will be provided for this role as part of the project. The Stretcher Crew Supervisor will be a veterinary surgeon or

a wildlife rescuer with training and experience in sedation management of macropods, monitoring vital signs in macropods and experience in the resuscitation of macropods. The Stretcher Crew Supervisor is called in any situation where a wallaby is injured or distressed and must know how to handle situations calmly when things go wrong.

Main Tasks - Stretcher Crew.

- 1) Receive instruction from the Dart Team Leader on when a wallaby is ready to be picked up from the Dart Ground.
- 2) It is very important to be 100% still when instructed by the Dart Team Leader (If a wallaby is frightened by any member of the project team who is moving or getting too close, this can trigger adrenaline enter the wallaby's system as part of a flight / fright response. This adrenaline can counter the effects of sedation medication and increase the time taken for the wallaby to go down. This puts the wallaby at risk of hurting itself.)
- 3) The Stretcher Crew must move onto the Dart Ground together and head towards the darted wallaby as indicated by the Dart Team Spotter's torch. At approximately 15 metres from wallaby, the Stretcher Crew should stop and only the Stretcher Crew Supervisor should then approach the wallaby.
- 4) The Stretcher Crew Supervisor must check the wallabys' vital signs, ensure airway is clear and make sure that the wallaby is properly sedated; this might require a field "top up" of sedation medication.
- 5) When required, the dose of any field "top up" of sedation medication must be entered onto the wallaby's datasheet, along with the time that the field "top up" of sedation medication was administered.
- 6) The Stretcher Crew Supervisor will remove the dart from the wallaby and when they return to the Health Assessment Staging Area, hand the dart to the Sedation Management Team Leader.
- 7) Once the Stretcher Crew Supervisor has confirmed that the wallaby is sufficiently sedated, the Stretcher Crew Supervisor will call the Stretcher Crew to collect the wallaby.

8) With the guidance of the Stretcher Crew Supervisor, the stretcher crew will then gently move the wallaby onto the stretcher. The stretcher should be covered with a blanket and a towel placed over the wallaby's eyes. Make sure gravity is your friend and not your enemy, do not prop wallaby's head up, keep the wallaby's head low to allow any saliva to drain and for gravity to help keep the tongue away from blocking the airway. The chin of the wallaby needs to be away from its chest to keep the airway wide open (see photos below).

9) Extra care needs to be taken with female wallabies with joeys in pouch. Small joeys will reliably stay in their mothers pouch during transport. A towel should be placed between the mother wallaby's knees, to ensure the joey in the pouch is not constricted (sedation can over relax the mother's leg muscles). Large joeys might be tempted to leave the pouch if they become frightened. A large joey, with its head out of the pouch can be encourage to move deeper into the pouch with slow careful movements. Females with large joeys should be noted on their datasheets and the Stretcher Crew should inform the Sedation Management Team Leader about the large joey, when they deliver the female wallaby to the Health Assessment Staging Area.

10) With the guidance of the Stretcher Crew Supervisor, the Stretcher Crew will then pick up the stretcher and carry the wallaby off the Dart Ground to the Health Assessment Staging Area.

11) While the wallaby is being carried on the stretcher, the Stretcher Crew Supervisor will ensure that the wallaby's airway is not restricted and visually monitor the wallabies breathing and level of sedation.

12) If the wallaby stirs, lifting its head or kicking its legs or otherwise indicates that it is not properly sedated while being carried on the stretcher. The Stretcher Crew Supervisor will instruct the Stretcher Crew to lay the stretcher down on the ground, so that the wallaby can be restrained if required and given a field "top up" of sedation medication.

13) The dose and time of administration of a field "top up" of sedation medication must be recorded on the wallaby's datasheet.

14) If the wallaby's breathing become shallow, the Stretcher Crew Supervisor will instruct the Stretcher Crew to lay the stretcher down on the ground, so that the wallaby's breathing can be more accurately monitored and any required intervention can be administered, from mild stimulation to worst case CPR. This is unlikely but it is very important that the person performing the role of Stretcher Crew Supervisor has the required skill set to deal with worst-case situations. Any problems encountered should be recorded on the wallaby's datasheet.

15) Once the wallaby is out of the Dart Ground and arrives at the Health Assessment Staging Area, the Stretcher Crew should help weigh the wallaby and ensure the weight is recorded on the wallaby's datasheet.

16) The Stretcher Crew seek advice from the Data Collection Team Leader on the placement of the wallaby. Then gently place the wallaby on a blanket at the Health Assessment Staging Area.

17) The health and wellbeing of the wallaby now becomes the responsibility of the Sedation Management Team Leader.

18) The manual handling of wallabies on the Dart Ground is restricted to the Dart Team Leader or Stretcher Crew Supervisor or at their request.

The big risk to avoid. It is very important to avoid well-intentioned interventions of darted wallabies by project personnel. Some people may feel compelled to help a wallaby that is wobbling on its feet after it has been darted, before the sedation medication has taken full effect. 99.9% of the time, it is the wrong thing to do. If you approach a wallaby during the induction phase before the sedation medication has brought the wallaby down to the ground and safely sedated, you will most likely trigger a flight / fright response and adrenaline will be released into the wallaby's body and counter the effects of sedation medication, increase the time taken for the wallaby to go down and increase the risk of the wallaby hurting itself.



**Danger - the kangaroo in the above photo has its chin too close to its chest
and this will restrict its airway!!**



Danger - the kangaroo in the above photo has a pillow raising its head up and this will cause saliva to run back into its airway and might also cause the tongue to go down and restrict the airway!!



Correct - the kangaroo's chin is away from its head, opening up the airway and the kangaroo's head is down on the blanket, this will allow any saliva to drain out of the mouth and gravity will encourage the tongue towards the mouth opening and away from sliding back towards the airway (the kangaroo just needs a towel over its eyes and good to go).

Sedation Management and Health Assessment Protocol

The sedation management and health assessment process is lead by the Sedation Management Team Leader. The Sedation Management Team Leader has control over all project personnel in the Health Assessment Staging Area. There are 10 protocol steps in the Sedation Management and Health Assessment Protocol. More detail on what is required of each person involved in the Sedation Management and Health Assessment Protocol can be found below in the 'Roles and Responsibilities section'. The Health Assessment Staging Area is in a building next to the Dart Ground. The Stretcher Crew are based in the Health Assessment Staging Area and other members of the project team are allowed in the Health Assessment Staging Area but care should be taken to talk quietly and move carefully. All physical contact with the sedated wallabies in the Health Assessment Staging Area will be with the approval and guidance of the Sedation Management Team Leader. Contact with sedated wallabies should be limited to essential tasks required for sedation management, health assessment and data collection.

Important Note: If a critical issue develops, the Sedation Management Team Leader may ask to clear the Health Assessment Staging Area of non-essential personnel.

Sedation Management and Health Assessment Protocol Steps

Sed 1) The Stretcher Crew carry the wallaby on a stretcher to the Health Assessment Staging Area.

Sed 2) The Sedation Management Team Leader checks that the wallaby is safely sedated. If required, the Sedation Management Team Leader will administer a dose of sedation medication. Dose and time must recorded on the wallaby's datasheet.

Sed 3) The Stretcher Crew weigh the wallaby on the stretcher. Health Assessment Scribe records the wallaby's weight on the datasheet.

Sed 4) The Data Collection Team Leader advises the Stretcher Crew of the location to place the wallaby. The Stretcher Crew carefully place the wallaby on a blanket.

Sed 5) The Data Collection Team Leader allocates the wallaby a number and places a large laminated number next to the wallaby and Health Assessment Scribe records the number on the wallaby's datasheet.

Sed 6) The Sedation Management Team Leader check the wallaby for any health issues or injuries and takes appropriate action. All issues and actions will be recorded on the wallaby's datasheet. All injuries must be photographed.

Sed 7) The Sedation Management Team Leader ensures that the wallaby is safely sedated and microchips the wallaby. The microchip number is recorded on the wallabys' datasheet.

Sed 8) The Sedation Management Team Leader confirms that the wallaby is safely sedated for data collection. The Data Collection Team Leader collects the wallaby's measurements and the Heath Assessment Scribe records the measurements on the wallaby's datasheet.

Sed 9) The Data Collection Team Leader determines the wallaby's body score and the Heath Assessment Scribe records the body score on the wallaby's datasheet

Sed 10) The Sedation Management Team Leader ensures that all wallabies are kept safely sedated until the required number of wallabies are darted for the night.

All dose amounts of sedation medication and the time the dose was administered, must be recorded on the wallaby's datasheet.



Photo of sedation management work area.

Roles and responsibilities:

Sedation Management Team Leader. The Sedation Management Team Leader has ultimate responsibility for the welfare of the wallabies. Under animal cruelty laws, it is an offence to fail to provide for the welfare of an animal under your control. A sedated animal is an animal under your control. The Sedation Management Team Leader has the ultimate responsibility and control over the wallabies during the translocation process. To translocate wallabies when it is either too cold or too hot could result in the death of the wallaby. Translocation

must not take place outside of a temperature range of +8c and +26c. The temperature during both the darting process and later recovery at the release site must be considered. Temperature risks are greater at the release site. Cold temperatures during the period the wallaby is sleeping off the effects of sedation on the ground at the release site, risk hypothermia and pneumonia, while high temperatures at the release site when the wallaby is getting back up on its feet, risk heat exhaustion and myopathy. The Sedation Management Team Leader is the person who will be managing the sedation of the wallabies, while they are in the Health Assessment Staging Area and up until the wallabies are safely delivered to the release site. The Sedation Management Team Leader will maintain control over all medications in the Health Assessment Staging Area. The Agile Project will be using the following medications, Zoletil and Xylazine for the sedation of wallabies, Bo-Se (Vitamin E & Selenium) as a preventative for stress induced myopathy and Ivermectin to kill any internal or external parasites. The Sedation Management Team Leader will setup two separate work areas on a table in the Health Assessment Staging Area. The first work area will contain the sedation medications, needles, syringes and alcohol swabs. The second work area will contain the Bo-Se (Vitamin E & Selenium) and the Ivermectin. The separate work areas are setup to avoid any mix-up with medications. The Sedation Management Team Leader must be available at all times via CB radio.

Equipment. The Sedation Management Team Leader will have medications, Zoletil, Xylazine, Bo-Se (Vitamin E & Selenium) and Ivermectin, needles, syringes, microchip implanter, microchips, alcohol swabs, trays and clean cloth sheets to protect the sterile use of medications. A hard case clipped to belt (containing 4 pre-prepared syringes of sedation medication). Sharps container and bin. A large wall clock (for recording the time of administration of medications on wallaby datasheets) and a CB radio.

Mandatory skills for role. The Sedation Management Team Leader will be a veterinary surgeon or a wildlife rescuer with training in sedation management of

macropods and prior proven experience in the sedation management of 100s of macropods. Previous experience in monitoring vital signs in macropods and previous experience in the resuscitation of macropods. The Sedation Management Team Leader is backup to both the Dart Team Leader and Stretcher Crew Supervisor in any situation where a wallaby is injured or distressed and must know how to handle situations calmly when things go wrong.

Main Tasks - Sedation Management Team Leader.

- 1) The Sedation Management Team Leader has ultimate responsibility for the welfare of the wallabies. Under animal cruelty laws, it is an offence to fail to provide for the welfare of an animal under your control. A sedated animal is an animal under your control. If required, the Sedation Management Team Leader can call a halt to the translocation due to animal welfare issues, by contacting the Dart Team Leader.
- 2) The Sedation Management Team Leader is responsible for the health and safety of all members of the project team that are in the Health Assessment Staging Area. The Sedation Management Team Leader will keep the physical contact with the sedated wallabies by all project personnel, to the minimum required for sedation management, health assessment and data collection.
- 3) The Sedation Management Team Leader highest priority is to ensure the continued safe sedation of wallabies during the translocation. The Sedation Management Team Leader should be the only person administering sedation medication, with the exception of the original darting by the Dart Team Leader and any required field "top ups" by the Stretcher Crew Supervisor on the Dart Ground.
- 4) The Sedation Management Team Leader will have approximately 8 prepared syringes of sedation medication available during an active translocation. 4 prepared syringes should be in a hard case clipped to belt. This is to make sure that no time is wasted drawing up sedation medication, when it is required.
- 5) The Sedation Management Team Leader will ensure that all doses of sedation medication are recorded on the wallaby's datasheet, with the time administered.

6) When each wallaby is delivered to the Health Assessment Staging Area, quickly determine if the wallaby is safely sedated. If OK, the stretcher crew can weigh the wallaby on the stretcher. If required, administer additional sedation medication and make sure the wallaby is safely sedated before the wallaby is weighed.

7) After the Stretcher Crew place the wallaby down on the blanket, the Sedation Management Team Leader checks the head and neck placement of each wallaby to ensure that airway is good and any saliva can drain.

8) Collect used darts from Stretcher Crew Supervisor, for return to Dart Team Leader.

9) Carefully examine each wallaby for any health issues or injuries. If any health issues or injuries require treatment, in consultation with a veterinarian determine if it is minor and can be treated on site (e.g. cleaning and long acting antibiotic) or if the wallaby needs to be taken to a veterinary surgery for treatment and into the care of a wildlife rehabilitator. Details of health issues, injuries and any treatments must be recorded on the wallabys' datasheet. Photos must be taken of injuries. Note: A veterinarian will be on site or on call at all times during the translocation process.

10) The Sedation Management Team Leader will check female wallaby's with large joeys and make sure the joey is OK. Female wallaby's relax their pouch muscles as a signal to their joeys that it is safe to come out of the pouch. Sometimes the sedation medication can cause the pouch muscles to relax and it might be necessary to use paper tape to keep the joey feeling secure and wanting to stay in the pouch.

11) The Sedation Management Team Leader must carefully monitor the vital signs of all wallabies in the Health Assessment Staging Area and administer sedation medication as required to keep all wallabies safely sedated. Each time a wallaby is give a dose of sedation medication, advise the Health Assessment Scribe of dose amount and time for recording on the wallaby's datasheet. It is important to use the information available on the datasheets to see each wallaby's pattern of sedation administration. Early signs off recovery are a slight

leg movement or an eye twitch response, when a finger gently touches the wallaby about 1cm away from the eye. Careful monitoring is required to ensure that no wallaby is allowed to transition from being sedated to peacefully sleeping.

Careful sedation management ensures that no wallaby will suddenly wake up.

12) Advise the Data Collection Team Leader of when each wallaby is ready for data collection to take place.

13) Carefully insert a microchip under the skin between the shoulder blades using the microchip implanter. The microchip sticker (containing the microchip number) must be given to the Health Assessment Scribe and stuck to the wallabies datasheet

14) Administer each wallaby a single dose of Bo-Se (Vitamin E & Selenium) at a dose rate of 0.05ml per kg and advise Health Assessment Scribe for recording on the wallaby's datasheet.

15) For each wallaby, pour on Ivermectin at a dose rate of 1ml per 10kg and advise Health Assessment Scribe for recording on the wallaby's datasheet.

Note: The Dart Team Leader will also be qualified to insert microchips, administer Bo-Se & Invermectin and will often assist in completing these tasks after darting has been completed.

Stretcher Crew.

There are 2 members of a Stretcher Crew and a Stretcher Crew Supervisor. The Stretcher Crew carry each wallaby from the Dart Ground to the Health Assessment Staging Area. After arriving at the Health Assessment Staging Area, they check with the Sedation Management Team Leader that the wallaby is safely sedated and then help weigh the wallaby on the stretcher. The Data Collection Team Leader will advise on the exact location for the wallaby to be placed and the Stretcher Crew will then place the wallaby down on a blanket in the Health Assessment Staging Area. The Stretcher Crew will hand the wallaby's datasheet to the Health Assessment Scribe.

Equipment. The Stretcher Crew will all have a safety vests, head torches, a stretcher, towels and blankets, joey pouches, a clipboard to pick up datasheets. The Stretcher Crew Supervisor will have a CB radio at all times.

Mandatory skills for role. The Stretcher Crew will be able to carefully carry a wallaby onto a stretcher and be quiet and still when required. It is preferred that they are also a member of a wildlife rescue group with training and experience in the rescue and handling of macropods. Training will be provided for this role as part of the project.

Main Tasks - Stretcher Crew.

- 1) Once the wallaby is out of the Dart Ground and arrives at the Health Assessment Staging Area, check with the Sedation Management Team Leader that the wallaby is safely sedated and then help weigh the wallaby on the stretcher and ensure the weight is recorded on the wallaby's datasheet.
- 2) The Stretcher Crew will seek advice from the Data Collection Team Leader as to where the wallaby is to be placed and then gently place the wallaby on a blanket at the Health Assessment Staging Area.
- 3) The Stretcher Crew hand over the wallaby's datasheet to the Health Assessment Scribe.

Data Collection Team Leader.

The Data Collection Team Leader will determine the placement of wallabies within the Health Assessment Staging Area and allocate each wallaby with a number. The number will be placed next to the wallaby and the number will be recorded on the wallaby's datasheet. After receiving advice from the Sedation Management Team Leader that the wallaby is safely sedated, the Data Collection Team Leader will collect measurements of each wallaby and the Health Assessment Scribe will record this information on the wallabys' datasheet.

Equipment. Weighing scale, Large Laminated Numbers, Measuring Tape.

Mandatory skills for role. The Data Collection Team Leader will have experience in the collection of wallaby measurements. It is preferred that they are also a member of a wildlife rescue group with training and experience in the rescue and handling of macropods. Training will be provided for this role as part of the project.

Main Tasks - Data Collection Team Leader.

- 1) Advise Stretcher Crew on the placement of wallabies within the Health Assessment Staging Area.
- 2) Allocate each wallaby with a number
- 3) Place a large laminated number next to the wallaby and ensure the number is recorded on the wallaby's datasheet.
- 4) For each wallaby, check with the Sedation Management Team Leader that the wallaby is safely sedated and then commence taking measurements of the wallaby.
- 5) Measure the head length, total body length, tail length and foot length and inform Health Assessment Scribe for recording on the wallaby's datasheet.
- 6) Determine the wallabies body score by checking fat reserve at base of tail, using the 1 to 5 scale, where 1 = emaciated and 5 = fat and inform Health Assessment Scribe for recording on the wallaby's datasheet.

Health Assessment Scribe.

The Health Assessment Scribe assists both the Sedation Management Team Leader and the Data Collection Team Leader in the recording of important data on each wallaby's datasheet. The correct recording of data is very important for the project and for the health and safety of the wallabies. Having all sedation medication dose amounts and time of administration correctly recorded on each wallaby's datasheet is very important. This information is used by the Sedation

Management Team Leader to help determine whether a wallaby is showing any resistance to sedation medication or is more susceptible to the sedation medication and make required adjustments to dose rates for each individual wallaby. The Health Assessment Scribe performs their role within the Health Assessment Staging Area.

Equipment. Lots of blue or black pens, wallaby datasheets and clipboards.

Mandatory skills for role. The Health Assessment Scribe will be able to write clearly, so that all information on each wallaby's datasheet is legible. It is preferred that they are also a member of a wildlife rescue group with training and experience in the rescue and handling of macropods. Training will be provided for this role as part of the project.

Main Tasks - Health Assessment Scribe.

- 1) Record the weight of each wallaby on the wallaby's datasheet.
- 2) Record on each wallaby's datasheet, the sedation dose amount and time administered, every time the Sedation Team Leader administers sedation medication.
- 3) Record the details of any health issue or injury identified by the Sedation Management Team Leader and record any treatment administered.
- 4) Record the wallaby's measurements taken by the Data Collection Team Leader on the wallaby's datasheet.
- 5) Record the wallaby's body score as determined by the Data Collection Team Leader on the wallaby's datasheet.
- 6) Record the wallaby's microchip number, when it is implanted by the Sedation Management Team Leader.
- 7) Record the dose of Bo-Se (Vitamin E & Selenium) administered by the Sedation Management Team Leader on the wallaby's datasheet.
- 8) Record the amount of pour on Ivermectin applied to each wallaby by the Sedation Management Team Leader on the wallaby's datasheet.



Hard case containing prepared syringes of sedation medication (clipped to belt of the Sedation Management Team Leader).

Transportation Protocol

The transportation process is lead by the Dart Team Leader. The Sedation Management Team Leader will prepare each wallaby with a "travel dose" of sedation medication. Then the Stretcher Crew will load each wallaby carefully into the transport van under the guidance of the Dart Team Leader. The floor of the transport van needs to be covered in blankets to provide comfort. Great care needs to be taken to ensure that the wallaby's are positioned within the transport van to ensure their airways are not restricted and their heads are low. Make sure gravity is your friend and not your enemy, do not prop wallaby's head up, keep the wallaby's head low to allow any saliva to drain and for gravity to help keep the tongue away from blocking the airway. The chin of the wallaby needs to be away

from its chest to keep the airway wide open. A towel should be placed over the wallaby's eyes. When positioning the wallabies within the transport van, it is important to ensure that each and every wallaby's feet are not aimed towards another wallaby's face. While the "travel dose" will keep each and every wallaby safely sedated for the entire trip to the release site, it is still important to position the wallabies so as to prevent the risk of one wallaby kicking any other wallaby in the face. The Transportation Protocol Steps are self-explanatory and so there is no need for a 'Roles and Responsibilities' section.

Important Note: All project personnel that are going to assist in the transportation of the wallabies to the release site, should look at the 3 photos below and clearly understand how to correctly place a wallaby's head and neck.



Danger - the kangaroo in the above photo has its chin too close to its chest and this will restrict its airway!!



Danger - the kangaroo in the above photo has a pillow raising its head up and this will cause saliva to run back into its airway and might also cause the tongue to go down and restrict the airway!!



Correct - the kangaroo's chin is away from its head, opening up the airway and the kangaroo's head is down on the blanket, this will allow any saliva to drain out of the mouth and gravity will encourage the tongue towards the mouth opening and away from sliding back towards the airway (the kangaroo just needs a towel over its eyes and good to go).

Transportation Protocol Steps

Tran 1) After darting has completed for the night, the Dart Team Leader will perform an audit of each wallaby's datasheet and ensure all tasks have been completed and correctly recorded. If something is missing they will organise to have the task completed. Once everything is completed the Dart Team Leader will draw a large tick on the datasheet.

Tran 2) After the wallaby's datasheet has been ticked off by the Dart Team Leader, the Sedation Management Team Leader will administer a "travel dose" of sedation medication and then draw a second tick on the wallaby's datasheet.

Tran 3) The Stretcher Crew will sticky tape the wallaby's laminated number onto the wallaby's fur (this is to ensure that we continue to know the wallaby's number during transport and at the release site).

Tran 4) Wallabies that have a double tick on their datasheet are then carefully loaded into the transport van by the Stretcher Crew.

Tran 5) The Sedation Management Team Leader will prepare syringes of sedation medication for the drive to the release site. This is to ensure that sedation medication is ready, just in case any wallaby stirs during the drive to the release site.

Tran 6) All available project personnel will assist in the packing up of all project equipment and supplies in the Health Assessment Staging Area. Only the Sedation Management Team Leader will pack up the medications. The Dart Team Leader will pack up all their gear and ensures that nothing is left behind.

Tran 6) The Health Assessment Scribe will compile all the wallabys' datasheets onto one clipboard and give it to the Sedation Management Team Leader.

Tran 7) Now drive to the release site. Generally a minimum of 3 project personnel will drive to the release site. The Sedation Management Team Leader will always be in the transport van to ensure the continued safe sedation of all the wallabies. Normally with the correct "travel dose" there is no need for any additional sedation medication during transport.

Tran 8) During the drive to the release site, each wallaby's breathing will be visually monitored to ensure no signs of shallow breathing and no signs of stirring.

Tran 9) There will be at least one predetermined stopping point during the drive to the release site. The location should enable the van to park safely off the road. The Sedation Management Team Leader will get out of the van and open the doors of the van and check each wallaby is ok, by ensuring they are still safely sedated, all heads and necks are still in the correct position.

Tran 10) If at anytime during the drive to the release site, a wallaby needs additional sedation medication, the dose and time must be recorded on the wallabies datasheet (this is where the laminated number sticky taped to the wallaby's fur comes in handy).

Trans 11) After arriving at the release site, one member of the team will quickly install rechargeable LED lights above the locations that the wallabies will be placed on the ground inside the pre-release enclosure. These LED lights provide a glow similar to moonlight and enable the observation of the wallabies during their recovery from sedation, without the need for a torch. Torch light can disturb/frighten a wallaby during recovery from sedation.

Trans 12) Obviously, you would not dart wallabies if it was raining, but you might have unexpected rain at the release site. If it is raining, you will need to use tarpaulins to protect the wallabies from rain during their recovery from sedation.

Tran 13) Carefully unload the wallabies from the van and place the wallabies at the predetermined locations on the ground at the release site. The wallabies will be on blankets and have their heads covered.

Trans 14) Extra care should be taken when the wallabies are placed on the ground to ensure each wallaby's head is low to allow any saliva to drain and

gravity encourages the tongue towards the mouth opening to prevent the tongue from restricting the airway. The chin needs to be away from the chest to ensure the airway is not restricted. This will enable the wallabies to safely sleep off the effects of the sedation medication.

Trans 15) Make sure you remove the sticky tape and the laminated number from each wallaby.

Equipment. Blue or black pens, clipboard with the wallabys' datasheets, head torches and LED lights, blankets and towels. Tarpaulins to protect from unexpected rain.



Transporting kangaroos, heads low and covered. Note: Towel between mother kangaroo's knees to prevent constriction of her joey.

Release Site Recovery Protocol

The most important thing during the recovery period, it to not disturb the wallabies. We want to maximise the amount of time that the wallabies sleep off the medication. This will ensure that when they do get up, they are reasonably steady on their feet. All macropods have to balance on the very powerful springs (the tendons in their back legs) and the more they sleep off the medication the better. Recovery from sedation is better at night, light either from sunlight or a torch, can disturb them and cause them to try and get to their feet too early. Wallabies wake up from sedation in a more calm and relaxed manner after dark. A wallaby's vision is better in the dark and it is normal for them to be awake after dark. Observers should be at least 25 metres away from the wallabies, make little to no noise and wear camouflage clothing, to make it difficult for the wallabies to visually detect the observer/s. The release site will have a pre-release enclosure. Wallabies will be place on the ground within the pre-release enclosure. The pre-release enclosure is temporary; it enables family and social groups to find each other after they wake up from sedation. The pre-release enclosure must have water readily available for the wallabies at all times. After family and social groups have been re-established and the wallabies are familiar with their new home, the pre-release enclosure is opened. The Release Site Recovery Protocol Steps are self-explanatory and so there is no need for a 'Roles and Responsibilities' section.



Use of camouflage & binoculars at the release site for the Bathurst Kangaroo Project 2017.

Release Site Recovery Protocol Steps

Rec 1) Do not disturb the wallabies, little to any noise.

Rec 2) Do not disturb the wallabies, little to any movement

Rec 3) Observers should be at least 25 metres away from the wallabies. The use of binoculars is recommended to enable observation from a distance.

Rec 4) Do maximise the time the wallabies sleep off the medication. We absolutely do not want to scare them during recovery and have them try and get to their feet when are still impaired by the sedation medication. If they get a fright, they will try to get to their feet too early and will not be able to balance on those

powerful springs (the tendons in their back legs). If this happens they are at risk of hurting themselves.

Rec 5) Do wear camouflage clothing, so that when the wallabies start to lift their heads and look around, it is very difficult for them to detect your presence. Often wallabies that are recovering from sedation will lift their heads first and then if they are not disturbed, will lie there for a while and eat grass. This helps maximise the time before they try and get up on those powerful springs.

Rec 6) If any wallaby needs help during recovery, the Dart Team Leader or the Sedation Management Team Leader will determine what action is required.

Rec 7) Do not intervene in the recovery process, wallabies can be a bit unsteady when they first get to their feet but do not try and help them. 99.9% of the time, it is the wrong thing to do. If you approach a wallaby that is recovering from sedation, you will most likely trigger a flight / fright response and adrenaline will be released into the wallaby's body. You might end up with a wallaby that tries to move quickly away from you while it is unsteady on its feet and it risks hurting itself.

Rec 8) The 1 in 1000 time when it is OK to intervene are,

Rec 8a) if a fox or other predator starts to head towards the wallabies location. Generally, a fox etc. will be 100% alert and you can draw attention to yourself by moving your arms or standing up and that should be enough.

Rec 8b) if a wallaby was still a bit unsteady and it headed towards a hazard, for example a thorny bush, then you might have to move carefully in a wide arc, while trying not to be detected and position yourself between the hazard and the wallaby. Then move your arms a little bit to make sure the wallaby sees you. That should stop it from moving any closer to the hazard (better to choose areas at the release site that don't have hazards).

Rec 8c) if a wallaby hurts itself, then it might need to be caught and taken to a veterinary surgeon.

Rec 9) Once you have observed all of the wallabies up on their feet for at least 1 hour and are confident that they are all OK, you can leave the release site. Often project personnel camp at the release site and many people like seeing the wallabies in their new home.

Rec 10) Before you are ready to leave the release site, collect all the blankets and towels that were laid out for the wallabies. These will need to be cleaned. Collect all the LED lights, as they will need to be recharged. Then go home, you and all the team have done a great job.

Equipment. Binoculars, camouflage clothing, camp chairs, esky, food & drinks, clip board with the wallabies datasheets, head torches and LED lights, blankets and towels. Tarpaulins to protect from unexpected rain. Pre-release enclosure with watering points readily available to the wallabies.



Morning after release. See LED light up above the kangaroos. The LED light enabled them to be observed during their night time recovery. The use of a torch can disturb a kangaroo or a wallaby that is recovering from sedation.