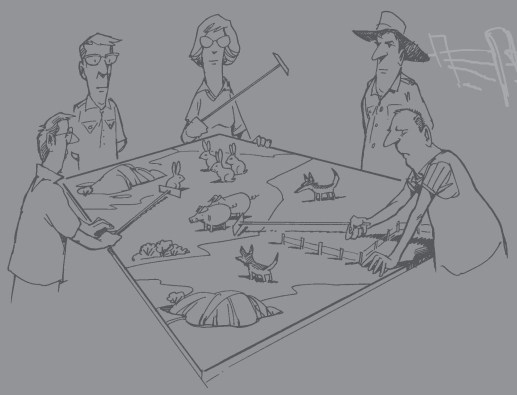

PESTPLAN

pestplan guide

A guide to setting priorities and developing a management plan for pest animals

Mike Braysher and Glen Saunders

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'A guide to setting priorities and developing a management plan for pest animals'

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Why PESTPLAN?

The series of pest animal guidelines produced by the Bureau of Rural Sciences (BRS) (see further reading) set the broad strategic approach and provided important information on pest animals and their management. However, they are not a detailed point-by-point guide for those who want to plan and undertake pest management at the local or regional level. PESTPLAN aims to fill that role serving as a tool to help groups plan how best to manage pest animal populations and the damage they cause.

Views about pest animals and their management change with time, advances in knowledge and from place to place. PESTPLAN recognises this and outlines a structured but flexible approach that can help make the most appropriate decisions about pest animal management.

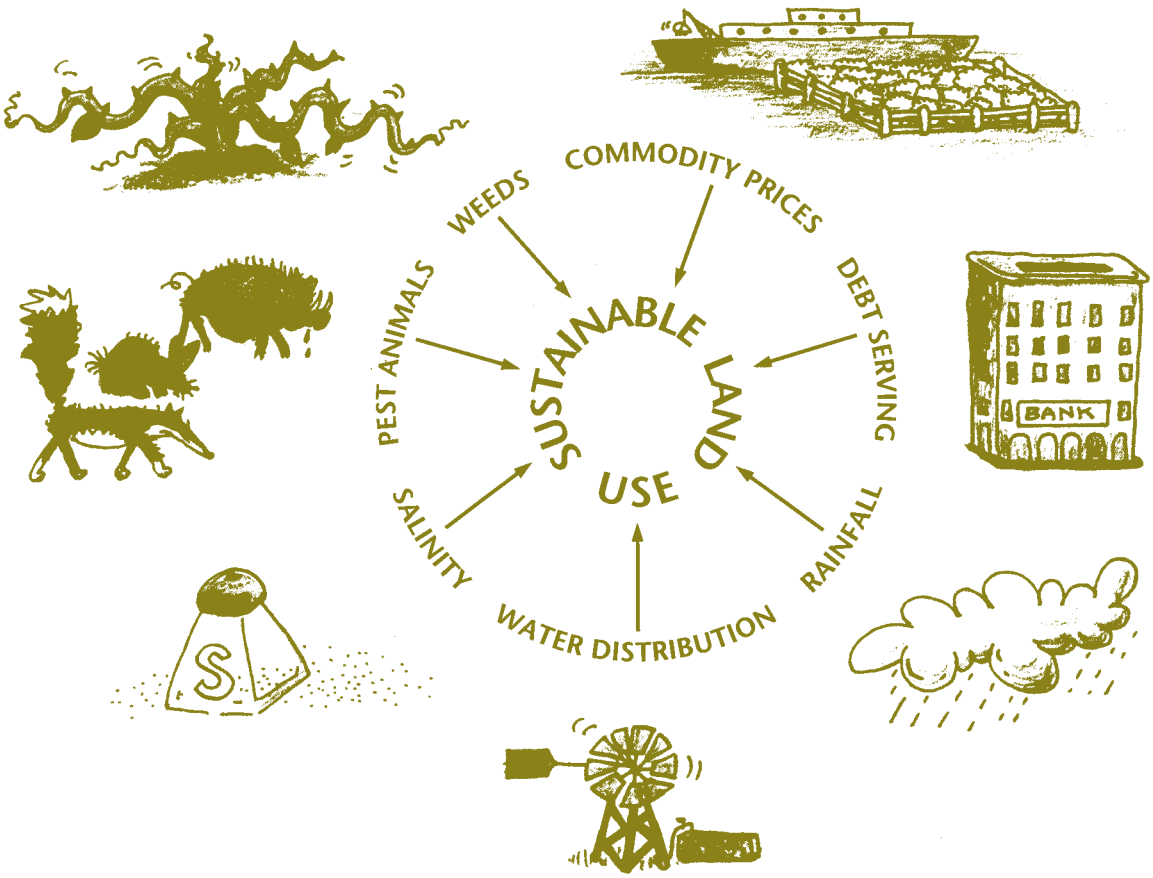
Importantly, PESTPLAN assumes that pest animal control is just one aspect of an integrated approach to the management of production and natural resource systems. It stresses the need to assess pest animal management as part of a regional or local management plan. It also recognises that pest animal management will not be practical in some areas because resources are scarce, the economic benefits are not justified or there are limitations to control techniques. Part of the process is to identify these potential areas of concern.

PESTPLAN can be applied in areas where either primary production or conservation is the major land use or where both uses overlap.

About PESTPLAN

PESTPLAN is a 3 Stage process:

- Stage 1 – planning
- Stage 2 – identifying and prioritising management areas
- Stage 3 – a four-step process to assist groups to develop and implement an effective management plan for the land management areas.



Who is PESTPLAN for?

PESTPLAN provides more than just planning, prioritisation and development tools. It also provides a process for implementation. PESTPLAN has been developed to assist those responsible for planning and undertaking pest animal management. This may include:

- Commonwealth, State and Territory agriculture, forestry, environment and water agencies;
- local pest management agencies (such as NSW Rural Lands Protection Boards or their equivalent);
- Landcare groups;
- local councils; and
- other regional and local community-based groups.

In practice, on-ground management of pest animals is most likely to occur at the regional or local level, and as such Landcare, catchment management and similar groups are the primary targets for PESTPLAN.

PESTPLAN is best managed through workshop groups of key stakeholders, but requires a core group to initiate and facilitate the process.

How to use PESTPLAN

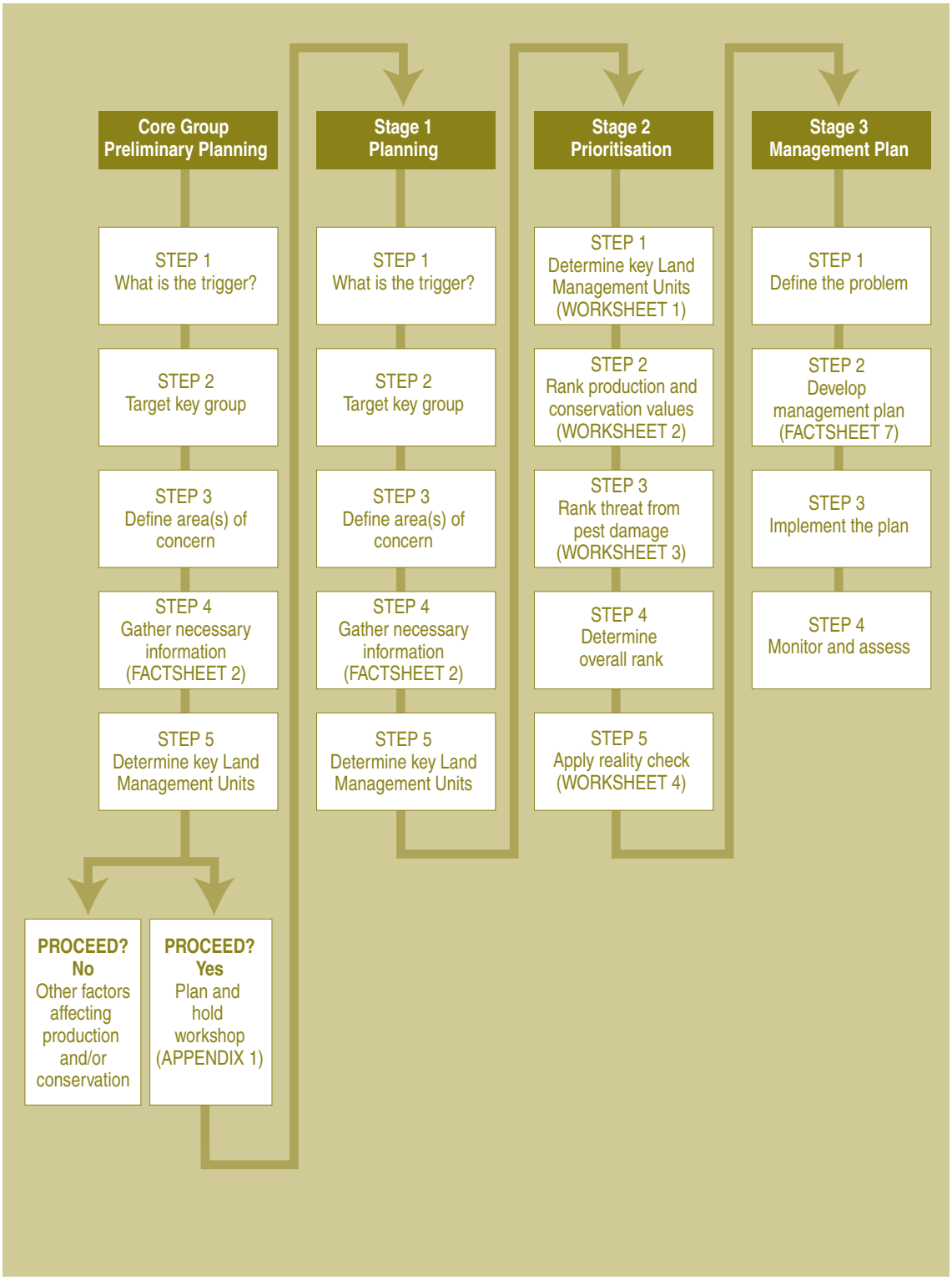
Recognising that different people will have different requirements of PESTPLAN, there are two documents aimed at different users:

- The PESTPLAN process – this main document is for **pest animal management coordinators** and **workshop facilitators** and provides a detailed description of the framework including tips for facilitating the process with groups.
- The 'Toolkit' document for workshop participants which includes:

  FACTSHEETS – containing a range of background information which will assist workshop participants and pest managers in progressing through the PESTPLAN process and completing the WORKSHEETS. FACTSHEET 1 is a summary of the PESTPLAN process.

  WORKSHEETS – WORKSHEET 1 can be photocopied and used as the recording sheet for working through WORKSHEETS 2–4.

A flow chart for implementing the model



PESTPLAN the process

Introduction

PESTPLAN provides a process for groups to tackle pest management planning based on a clear understanding of the pest problem, what can be realistically achieved and how to implement it at the local level. However, obtaining the information and knowledge required to make the decisions involved in PESTPLAN requires a coordinated approach from all key stakeholders. A core group, usually involving key agency and/or community participants, is required to initiate and facilitate the process. The core group is not necessarily the group identified in Stage 1 (Step 2) of PESTPLAN.

It is recommended that Stages 1 and 2 of PESTPLAN be run in a workshop forum involving all key stakeholders. Before this however, the core group should undertake a preliminary assessment of at least Stage 1 to ensure that there is a valid reason for implementing PESTPLAN, that there is likelihood of 'success' and to assist in identifying likely participants, problems and barriers.

NOTE: PESTPLAN is merely a tool to assist managers. It helps by asking a structured series of questions and issues to be considered about pests and the problems that they cause. It is based on the assumption that pests are but one of several factors that need to be considered by managers to achieve the desired natural resource management outcomes for an area.

The workshop forum is critical to the success of PESTPLAN, so workshop preparation is important. Using an impartial facilitator (i.e. someone separate from the core group) is recommended, and can be critical to the success of the workshop. The core group should also determine appropriate venues, timing and participation as part of the 'pre-workshop' preliminary planning.

Stage 3 may also be run in a workshop forum, but is more suited to post-workshop group sessions.

Following are notes for core group participants and facilitators to assist groups through the whole PESTPLAN process. Included are tips on how to organise the workshops, the preparation required and tips on how to handle the process. FACTSHEET 1 provides a summary of the PESTPLAN process and can be used as a workshop handout.

Preliminary assessment and workshop planning

A core group is required to drive PESTPLAN. This group should make a preliminary assessment of the suitability of the process for their 'area' e.g. does it suit the local land and production systems, land managers? etc. The group will also be responsible for organising and delivering the workshop for Stages 1 and 2.

Preliminary assessment is essential

Developing and implementing an effective pest management plan can be complex, time consuming and expensive. Initial assessment and preparation is important to be certain that pest control is justified before involving a wider group. Some potential problems from moving too quickly without such an assessment include:

- Building false expectations that something effective can be done about pests. Later detailed assessment might, for example, show that this is not practical due to factors such as limited funds, unsuitable techniques for the situation and/or concerns from key groups. There is then the problem in dealing with the expectations generated by the initial contact.
- Many of those that you might wish to invite to a meeting to discuss pests have little spare time or are 'workshopped out'. They will be even more frustrated and less likely to cooperate if they make the time to come to a meeting that is poorly prepared and doesn't lead anywhere.

Initially, a core planning group comprising key individuals and representatives of those people most affected by any proposed actions should meet to discuss the problem. Use PESTPLAN (especially Stage 1), to raise issues and potential problems and solutions. Ideally, this group should be limited to around 6 members. After each Step in Stage 1 ask 'Should we proceed to the next Step?'

Plan and hold a workshop of key players (workshop group) only if the core group is confident that it understands the problem, the associated issues and that there is sufficient commitment by key stakeholders to plan and implement an effective pest management plan.

Workshop preparation

Running a successful workshop doesn't happen by chance. Significant attention to detail and planning is required. Although this step is not part of the PESTPLAN model, it is an action that is central to the success of PESTPLAN. It is vitally important to 'get it right', otherwise the workshop will be unsuccessful. Using an independent, professional facilitator is highly recommended. Tips for organising a good PESTPLAN workshop are contained in Appendix 2.

HINT: All stakeholders need to be identified and invited. It is important to get a spread of opinions on pest and land management involved in the workshop. Workshop locations need to be selected with the attendees in mind e.g. appropriate for the situation and the people attending. Workshops need to be well organised, well run and well timed.

Preparation of workshop material is also crucial. For example, it often helps to remove property boundaries and boundaries of national parks etc., from the maps for the first part of the workshop. Participants can then discuss and plan the management program by focussing on problems and the solutions, rather than apportioning blame for the problem – 'They are your pests coming onto my land.' Land boundaries can be added near the end when costs and actions are being decided.

Facilitating the workshop

Tips for facilitating a PESTPLAN workshop are included in the following sections (Stages 1 – 3) and Appendix 2 which also contains more technical information for workshop facilitators relating to the types of consultation models that may be appropriate for a range of PESTPLAN workshops.

NOTE: When the core group decides to hold a larger planning meeting or workshop, it is important that the workshop group also undertakes Stage 1 of PESTPLAN. If the workshop group is presented with the core groups' Stage 1 decisions, they may feel that the decisions have been made without their views being considered. This may in turn result in there being little or no ownership of any resulting plans. The core group only undertakes Stage 1 to ensure that there is a valid reason for implementing PESTPLAN, that there is likelihood of 'success' and to assist in identifying likely participants, problems and barriers.

The workshop facilitator should take the workshop group through Stages 1 and 2 using the following as a guide. FACTSHEET 1 contains a short version of PESTPLAN which could be used as a simplified explanation of the process for workshop participants. Given the likely composition of the workshop group, the facilitator may need to take the group through some 'ice-breaker' exercises before commencing with Stage 1.

Not an expert on pests?

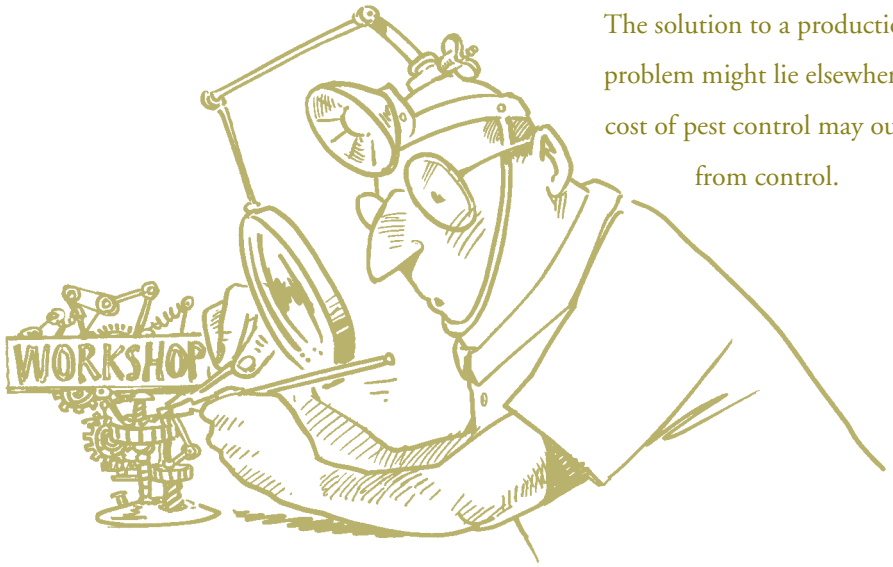
The PESTPLAN process does rely on a reasonably sound knowledge and experience in pest animal control. Workshop facilitators and core group members may not hold this expertise. PESTPLAN provides additional support material in the technical notes to help explain some of the pest animal damage/control issues that may arise. Also, the BRS guides on managing pest animals and relevant State government information are extremely useful (see FACTSHEET 8). Remember, a pest animal expert group may be recruited to the key group in Stage 1 (Step 2).

Stage 1: Planning

Whilst this may be viewed as simply an exercise in gathering information and resources, it is an essential part of the PESTPLAN process. It provides much of the baseline information for decision making in the latter Stages. It also helps define the problem, who should be involved and whether there is sufficient support to proceed to Stages 2 and 3.

Step 1 – What is the trigger for action?

Effective management of pests is difficult to achieve unless there is a strong community or political will to take action. There is often a perception that if pests are present, they must be a problem and therefore action must be taken. This is not always the case with the identified pests sometimes causing little or no damage. The solution to a production or conservation problem might lie elsewhere. Alternatively, the cost of pest control may outweigh the benefits from control.



WORKSHOP PREPARATION

HINT: Consider the issues that initiate the desire to undertake pest animal management. For example, is there strong community or political pressure for action on pests and an expectation that pest animals should or need to be controlled? In considering this question, it helps to clearly identify and if possible, quantify the production and/or conservation values that are under threat from pests. For example, is there good evidence about the level of damage and the need for action?

Proceed to next Step?

Step 2 – Identify and target a key group

A key group is required to drive the process. There may be general concern or even strong community and/or political will about pest animals and the need for action. However, there is likely to be little progress unless a responsible and accountable group has the commitment, dedication and expertise to undertake and coordinate the initial assessment and follow-up action.

HINT: The key individuals targeted in this Stage will be required to take responsibility for assessing pest animals in the management area. It is not sufficient to name agencies. Individuals need to be identified to drive the process and ensure that plans are implemented. The group may be under the umbrella of the relevant Rural Lands Protection Board,[1] local council, Landcare group, catchment management committee or a bushfire group. The key group, either alone or in conjunction with other key agencies or participants will be involved in all Stages of PESTPLAN.

Proceed to next Step?

Step 3 – Identify and describe the area(s) of concern

It is important to determine the geographical or social boundaries in which the PESTPLAN process will apply. PESTPLAN can be used at a State, region, catchment, or local level. For example, it can be used at the State level to identify areas most affected by pest animals. Once these are identified and roughly assessed, it can be applied more specifically for planning actions in key areas. Less detailed information is needed to assess areas on a broad scale than at the local level.

HINT: Think beyond your local 'patch'. Pest problems usually cross broad geographic areas. Having a broad understanding of the ecology of pest animals in question can also help. For example, it is difficult to manage feral camel damage in a localised situation when the animals may range over many hundreds of kilometres.

Proceed to next Step?

[1] Where Rural Lands Protection Board (a NSW agency) is used in the text it is meant to also refer to similar or equivalent agencies that exist in other States and Territories. For example, the Animal and Plant Control Boards of South Australia or the Zone Control Authorities of Western Australia.

Step 4 – Gather the necessary information

Considerable information is usually required to adequately assess the production and conservation issues for a system, and then to undertake the rankings and to develop an effective pest management plan. It is unlikely that managing pest animal damage alone will achieve the desired result (e.g. X% increase in lamb marking or the restoration of native wildlife communities). So collection of information relating to other factors that affect the production or conservation system may also be required.

Fortunately, much of this information already exists for many regions, in the form of catchment management plans, government policies, nature park management plans, species recovery plans, property management plans etc.

FACTSHEET 2 details a checklist that groups can use to assist them gather the necessary information to apply the process contained in PESTPLAN.

HINT: The core group should collect and interpret the information before the workshop group is brought together. Without some preliminary 'massaging' of the information, the workshop group may not be able to complete the tasks due to a lack of essential information or understanding. In the initial assessment of an area (by the core group), detailed maps and a range of other information may not be required. However, more detailed information will be required for the workshop group if it is decided to go on to Stages 2 and 3.

Proceed to next Step?

Step 5 – Review the information to determine the key Land Management Units within the area for further action

Land Management Units (LMUs) are simply smaller (more easily managed) areas of land across a district or region. They may have similar pest problems, land use, land, soil or vegetation types. The size of the LMUs will vary with the nature of the problem and with the pest. For example, LMUs for a mobile pest animal (e.g. wild dogs) in the rangelands will need to be much larger than a LMU for rabbit or mouse management in higher rainfall areas.

If LMUs are very large compared to the home range of the target pest animal (e.g. fox management across an entire Board area), it may be appropriate to use a staged approach for implementation which may be based on social 'units'/groups – e.g. landcare or bushfire groups. These LMUs are reviewed in depth and prioritised in Stage 2. At this point however, the LMUs provide a preliminary assessment only to determine likely priority areas.

HINT: The boundaries of the LMUs should be determined by the distribution, movements and impacts of the pest animal rather than by different land tenure (national parks, State forest, private property) boundaries. Tenure boundaries should be removed from the map when planning management strategies and can be added later when deciding who does what and who pays. If preliminary LMUs have been determined by the core group, it is important that these are not presented as a final decision to the workshop group. It is important to ensure all key players feel included and feel they have contributed to this step. One way to check this is to discuss the intended approach with some key community representatives and then to go through the preliminary process and conclusions with participants at the start of the workshop.

Proceed to next Stage?

Possible outcomes

Deciding not to proceed

The information or the assessment undertaken in Stage 1 (by either the core group or the workshop group) may indicate for the moment that it is not necessary or useful to proceed. For example, the process may show that effort and available resources might be better directed towards weeds, soil acidification, salinity or some other factor that is causing a decline in production rather than pest animals. Alternatively, if pest control is seen to be useful, but there are not enough resources, the planning and documentation from the workshop can help obtain funds. More and more, funding agencies require applicants to demonstrate that they have fully assessed the problem, consulted key players and can show how the pest control program fits into the broader program for managing regional production and conservation resources.

Deciding to proceed

The core group may decide there is sufficient support and evidence to proceed with organising a workshop (see Workshop preparation, on page 11). If the workshop group reaches a consensus at the end of Stage 1 and commits to proceeding with PESTPLAN, the workshop proceeds to Stage 2.

STAGE 2: Determining pest management priorities[2]

While it might be highly desirable, there are insufficient financial and other resources to simultaneously and effectively manage the damage due to pests across the whole area where they occur in a State or a Territory.

For example, in 1996 it cost between $800 and $2,000 per square kilometre to rip rabbit warrens in Central Australia. Given the average gross margin for cattle production in Central Australia was about $500 per square kilometre, it would not have been economical to control rabbits under these circumstances.

Managers need to decide where they direct their resources to get the most cost-effective return. To make best use of resources it is usually necessary to break up areas into smaller management units and rank the units on their priority for managing pest damage. The following five-step process helps managers to determine these priority areas.

Step 1 – Determine local Land Management Units

A management unit is an area for which an individual pest animal management plan will be developed and implemented. Ideally the unit will have clearly defined boundaries that managers can work to. These may be physical boundaries such as water bodies, fences or vegetation units. If possible use boundaries which define the distribution of the pests or which limit appropriate management actions. An example for rabbits is habitat that consists of dense grassland. This habitat is unsuitable for rabbits because the grass is too rank and rabbits are open to attack from predators such as foxes and feral cats. An island is a prime if atypical example of a management unit. More generally on the mainland, boundaries are a combination of physical and political boundaries, the latter being those of a Landcare group, catchment management group, bushfire council, local government or a Rural Lands Protection Board.

Often pest animal management has been based on inappropriate management units. For example fox or feral pig control has been carried out on individual properties or parts of nature reserves with little coordination between neighbours. It was of limited success due mainly to reinvasion by foxes and/or feral pigs from surrounding areas. So understanding the ecology of the pest animals in question is a key requirement in determining management units.

Clearly, the scale of the management units will differ for each area and the pest or range of pests that need to be managed. For example, the management unit may be relatively small for a pest such as a rabbit that has a relatively small

[2] Much of this part draws on the New Zealand Department of Conservation publications *Department of Conservation National Possum Control Plan 1993-2002: A Strategy for the Sustained Protection of Native Plant and Animal Communities*, and the *Department of Conservation National Feral Goat Control Plan 1995-2004: A Strategy for the Sustained Protection of Native Plant and Animal Communities*, and the Carp Coordination Control Group publication *Ranking Areas for Action: A Guide for Carp Management Groups* by Mike Braysher and Jim Barrett.

home range and limited powers of dispersal through inhospitable habitat compared to that for foxes and feral pigs.

The size of the management unit can also be influenced by the timeframe over which control is required. For example, protecting a revegetation site from rabbit grazing for 12 to 18 months until the plants are mature would be a much smaller operation than ensuring the survival of an endangered species that was under constant threat of predation in a large nature reserve. In the case of the reserve, it is likely that control of dispersing foxes in a buffer zone between the reserve and neighbouring farmland, as well as action in the reserve itself, would be necessary. This would require coordinated management involving several land managers and greatly increase the size of the pest management unit.

Essentially, management units need to be large enough to ensure that the central area under threat from the pest is protected, but not so large that the resources and effort required to achieve the outcome are prohibitive. The management unit chosen should be ecologically sensible as well as meeting the needs of the community.

This step involves reviewing the Land Management Units (LMUs) determined in Stage 1 (Step 5). LMUs may be water bodies, mountain ranges, fenced areas or vegetation units. Boundaries which define the distribution of the pests or which represent practical limits for certain management actions are ideal. Record the LMUs on WORKSHEET 1.

HINT: While it is best if managers can work to boundaries that restrict the movement of pests, this may not be practical. In such cases jurisdictional boundaries, for example, the border of a Landcare group, may have to be used in combination with physical boundaries.

Step 2 – Rank Land Management Units for production and conservation values

Management outcomes

Before management units can be ranked, the desired outcomes from management need to be determined. That is: '*what is the desired result from managing the damage due to pest animals?*' Usually, there will be a number of outcomes; the following are some that may apply to pest management:

- Increased lamb marking percentage or significant increase in crop yield.
- Maintaining or improving conservation values such as the recovery of specific native plants and animals, restoration of natural habitat, protection of sub-alpine swamps.
- Meeting public expectations, for example, an acceptable amount of visible feral pig rooting in areas regularly visited by the community.
- Addressing community concerns about pests. This may be to develop in targeted key groups an awareness and understanding of pest animal damage and the need for action.

The ranking process

The ranking process may be less complicated and require only minor consultation with other stakeholders where the unit falls mainly within an area managed by one land manager or agency. An example is a single property or a large national park. For more complicated situations a facilitated meeting of key interest groups may be necessary to consider factors such as the level of community support and motivation, existing management and its effectiveness, level of community conflict, political obstacles and the availability and practicability of solutions. The consultative approach can help develop agreement to and ownership of an integrated pest management plan and greatly assist its later implementation. APPENDIX 1 outlines some participation models that can help groups negotiate and develop agreed plans.

The ranking process may stop here. For example, the initial assessment may show that pest animal control is not appropriate at the time and that available resources should be spent on another problem area such as re-vegetation to treat dry land salinity or to combat soil acidity. Not all areas need to be ranked at once. Some areas where the pest animal does not occur or where they are uncommon and are not considered to be an immediate problem may be excluded from the ranking process. However, it may be necessary to put in place steps to prevent pest animal invasion to these areas.

Score management units for production or land management values.

Each management unit should be assessed according to the quality of the resource(s) or primary product(s) they contain. Using the issues in WORKSHEET 2 as a guide, score from 6 (very high) to 1 (low), for every management unit. Not all issues necessarily have an equal importance, and in fact a very low score does not preclude pest control but might suggest that it may not be cost-effective.

Once the questions in WORKSHEET 2 have been considered an overall score is then assigned to the local management unit based on the production or land management values using the following:

Very high – score 6;

High – score 5;

Medium to high – score 4;

Medium – score 3;

Medium to low – score 2; or

Low – score 1.

The initial assessment of priority will be a best guess. The score for a management unit may be changed by agreement if the group thinks that the rankings developed through the process do not reflect the real situation. *Remember, the guidelines are only a tool to help you!* Also, issues will change with time. Hence, the priority for management will need to be regularly reviewed to see if it is still correct. The minimum assessment period is annually, where pest animal management is being conducted, or just before on-ground pest management is considered for a unit.

Score management units for their conservation value

WORKSHEET 2 also includes issues by which to assess conservation values. Management groups may develop their own scores to suit their particular local management unit and needs. Where little difference exists between management units, a half-point system may help distinguish between management units.

Using WORKSHEET 2, score the management unit for the conservation value of its plants and animals. A unit is scored from 6 (high) to 1 (little or no value) depending on its significance as habitat for native plants and animals. Record the results on WORKSHEET 1.

HINT: If the scores for production or conservation values for the LMUs all tend to fall into the lower categories, consider allocating half points or developing sub-categories to give a more even spread of scores. If the group is not satisfied with the final scores, they can modify them until there is general agreement. Remember, the scoring process is only a guide.

Step 3 – Rank each Land Management Unit for the threat from pest animals

This is probably the most difficult Step in the whole process, mainly because for most vertebrate pests there is little good documented information on the damage that they cause to production and conservation values. Generally damage due to pests is inferred from observations and limited studies. Therefore, many of the threats listed in this next Step are based on assumptions and they may need to be changed as knowledge improves.

In some areas, pest animals may be of little or no threat to production or conservation values. In other areas, pest animals may be a severe threat, or the susceptibility to or potential for pest animal damage may be great. The level of threat does not necessarily relate directly to the prevailing density of the pest animal. For example, even at low densities an individual rogue feral pig may be a severe threat to a high-value crop such as a melon patch.

WORKSHEET 3 suggests a system for scoring the LMUs according to the threat from the pest animal - from 6 (high) to 1 (low). WORKSHEET 1 can also be used to record this information.

HINT: This may be difficult since there is little good information on the level of damage that pest animals cause. At this stage the group should make their best guess based on their knowledge and experience. The information in the BRS pest animal guidelines may also help (see FACTSHEET 8).

Step 4 – Determine the overall rank

The overall score of each LMU is determined by adding the scores for production and conservation values to that for the threat from the pest(s). For example, for a management unit with a production score of 4, a conservation score of 2 and a score for vulnerability to pest damage of 3, the overall score would be 4 + 2 + 3 = 9.

HINT: The workshop should now review the scores for each unit to determine whether they are consistent with the views of the workshop participants. If not modify them as appropriate.

Step 5 – Apply reality check and decide which Land Management Units go to the next Stage

Just because a management unit has high production and/or conservation value, and the pest animals are a significant threat, doesn't mean that pest animal control is either necessary or possible. For example, the impact on non-target wildlife or other aspects of the system from the use of pest animal management techniques may not be acceptable. An example is the potential loss of non-target fauna such as tiger quolls from aerial poisoning for pest predators.

Following the allocation of an overall score a reality check can help determine whether pest animal control is likely to be desirable and effective. The questions and factors in WORKSHEET 4 should be considered. The list is not meant to be exhaustive, nor are the factors in any particular order. Consultation with individuals, agencies and local stakeholders with knowledge of the species and the area may identify other issues and help answer the questions.

Possible outcomes

Deciding not to proceed

Ranking LMUs may make it clear that it is not worthwhile going any further with pest animal management at this time e.g. low scores or inability to decide on ranking. Instead, it may be useful to look at other factors affecting the production system by referring to the appropriate catchment or property management plan. It may be more appropriate to focus resources on another issue such as salinity control or restoring vegetation. The need for pest animal management can be revisited later if more appropriate techniques are developed or more resources become available. If pest control is considered appropriate, but there is not enough resources, the planning and documentation from the workshop can help obtain additional funds.

If the decision not to proceed is based on not being able to meet one or more of the feasibility and practicability criteria in the reality check (WORKSHEET 4) despite being an otherwise sound project, it may be worthwhile undertaking activities which will change the relevant answer in the checklist (WORKSHEET 1) from a 'no' to a 'yes' - for example, overcoming the concerns of a key blocking group through a targeted communication campaign.

Deciding to proceed

Sufficient support from the workshop group and the ranking process may see one or more LMUs proceed to the next Stage – developing a pest animal management plan. At this point the workshop group, core group and facilitator should reach a consensus on how to proceed. Stage 3 can be undertaken in the same workshop environment, but this may require the workshop to run over more than one day, and may not be the most productive means to achieve the desired outcomes. It may be more appropriate for key participants to elect to work on particular LMUs, and then agree to meet in post-workshop groups to develop the plans. A means of reporting back to all interested workshop participants needs to be decided on before the workshop group disbands.

STAGE 3: Developing and implementing local pest management plans

HINT: Much of the information and assessments undertaken in Stages 1 and 2 will help with the processes described in Stage 3.

HINT: This Stage may be undertaken as part of the initial workshop (Stages 1 and 2), or in separate post-workshop groups. If the latter course is taken, a means of reporting back findings to all workshop participants needs to be determined. Members of the core group or the key group identified in Stage 1 may be required to facilitate this Stage (with one or more post-workshop groups). See APPENDIX 1 for more information.

Once priorities for management have been determined, this section can be used to plan and implement an effective program to manage the damage due to the pest or pests. Consult the references provided in *'further reading'* (FACTSHEET 8) for more information on this process.

Developing and implementing an effective plan for managing pests within the Management Unit involves the following Steps (see Figure 3):

- defining the problem;
- developing the plan;
- implementing the plan; and
- monitoring and evaluating the outcomes.

Pests are just one of many factors that influence production outcomes and the protection of desired conservation values for an area. Consequently, the pest animal management plan needs to be integrated with other local management plans such as catchment management plans, threatened species action plans, reserve management plans and property management plans. Usually an integrated package of pest control techniques needs to be used with progress toward the desired outcome being systematically monitored and evaluated against stated objectives.

An outline of a management plan for a hypothetical LMU appears in FACTSHEET 7.

Step 1– Define the management problem

The problem should be stated in terms of the desired outcomes derived from implementing pest control.

Firstly, determine the nature of the problem. This includes deciding whether the problem is real or perceived. An example of a perceived problem may be damage to the survival of native fish due to European carp. Catch rates of most native fish in the Murray Darling Basin have declined significantly in the past thirty years.

Many have blamed the loss on European Carp. However, a closer look at the issue shows that there have been many changes to the system including high salinity, nutrient enrichment leading to algal blooms, barriers to fish movement and reduced flooding of native fish breeding grounds. The changes have made the system less suitable for native fish and more suitable for carp. In this case it may be more useful to consider carp as a perceived problem, and a symptom rather than a cause of the decline in native fish.

All major interest groups concerned should be involved in defining and determining the nature and dimensions of the pest animal problem, especially if management is required on adjoining land. Consequently, it is important that land managers, other managers and key interest groups meet and openly discuss the problem, and to plan and implement an effective pest control strategy. Community based groups such as Rural Lands Protection Boards or their equivalent, local government, Landcare and Catchment management groups can help, especially if there is an effective coordinator/facilitator in the group.

Clarifying and quantifying the problem

Once it is determined that the problem is real, the next Step is to define the problem in terms of the degree or extent of harmful impact on production and conservation values due to the pest or pests. This task is not always straight-forward. The BRS national pest animal guidelines (see FACTSHEET 8) and relevant State government information provide guidance on assessing the abundance and impact of individual pest species. In many cases the level of damage may need to be roughly estimated based on the best available information. Initially, estimates of pest density might be the only useful guide to the likely level of pest damage.

Setting objectives

Pest animal management should, where practicable, be based on clear, measurable, and if possible, time-limited objectives that are aimed at reducing the level of pest animal damage to an acceptable level. An example of an objective for feral pig damage to lamb production may be to increase lamb-marking rates by 20% after one year of feral pig control. Because the level of damage is often not known or poorly understood the level of damage is assumed to be related to pest density. In these cases the objective of control is stated in terms of reduced pest density. For example, reduction in the number of rabbits seen on a spotlight transect by 90% within one year.

In reality, this pest density objective is only an indicator of the real outcome, a reduction in rabbit damage. The extent to which the reduction in rabbit numbers approaches the 90% target at any given time is a Performance Indicator.

Step 2 – Develop the management plan

Incomplete knowledge - dealing with risk

Reliable information is limited about the amount of damage that pests cause and the likely benefits from a given level of pest control. As a result, there is a considerable level of risk decisions that managers have to make about pest management.

When in doubt and the resource under threat is highly valuable, it is usually advisable to adopt a precautionary approach especially in adopting actions that might have irreversible consequences such as loss of a rare species or community. Ideally, this should incorporate a comprehensive benefit/risk analysis which involves identifying undesirable outcomes and the mechanisms that cause them and then estimating the probability that they will occur and their consequences. It may also include assessing the risk of not doing something about the potential hazard and the risk in following a particular course of action. Most farmers and graziers are experienced in dealing with imperfect knowledge and risk. For example a grain grower will assess the risks and benefits from planting one of a potential variety of crops depending on seasonal conditions and likely market trends.

The role of maps

Maps are a useful aid to developing an effective plan. They can vary from simple hand drawn charts through to topographic maps, land system or land unit maps, aerial photographs, to sophisticated, interactive, computerised, geographic information systems. The choice depends on resources, scale of the treatment and the extent of the problem.

For example, when planning fox control, the map may record tracks, trails, fencelines, property boundaries, natural boundaries, distribution of foxes and other pests such as rabbit infestations and important native species and communities. These maps can be used to target control programs, monitor bait take and assess progress.

Identify control options

Eradication is rarely feasible or economically sensible (see FACTSHEET 4). The most appropriate option or options if several pests are of concern will depend on local circumstances, including the resource under threat, the nature of the land, available techniques, the availability of financial and other resources and the attitude of neighbours.

Options for addressing pest animal damage include the following:

- local eradication
- strategic management including:
  - one-off control
  - sustained management
  - targeted management
- no control.

Depending on the dynamics of the situation and restrictions on the use of certain control techniques, a land manager may choose only one or a combination of techniques. For example, because of the risk of killing domestic pets, 1080 poisoning of rabbits is rarely possible near towns and an alternative poison such as pindone, that has an antidote, may need to be used in locations where pets are at risk.

Each situation needs to be assessed individually and the appropriate management technique or a combination of techniques identified. The options for addressing pest animal damage are covered in depth in FACTSHEET 3.

When determining the appropriate management option, the following factors need to be considered:

- the level of current and future resources, especially if long-term maintenance pest control is required;
- the degree of population reduction required; and
- the availability and practicality of control techniques.

Once the management option is chosen, the technique or combination of techniques to achieve the desired management option needs to be defined. Each has its own cost and level of effectiveness. The level of reduction sought will be determined mainly by the value of the production resource or the conservation value being affected and the cost of control. Managers may wish to use all practical techniques such as poisoning, ripping, follow-up fumigation and erection of a rabbit-proof fence to prevent reinvasion to protect a high-value crop such as vegetables or an endangered plant community from rabbits. The value of the species may justify the high cost of control. Reviewing the available techniques and options against the feasibility, acceptability and desirability criteria listed in WORKSHEET 4 can help determine the most appropriate option and techniques for each situation.

FACTSHEET 6 gives an example of how milestones and dates can be recorded, making it easier for all interested parties to keep track of their progress.

HINT: While the pest animal plan should have been developed as a sub-set of higher level plans, it is important to ensure that the proposed actions are not in conflict with actions proposed elsewhere. These include Regional and Catchment Management Plans, Property Management Plans and Threatened Species Recovery Plans.

Step 3 – Implement the plan

At this point, the resources and actions required to implement the plan need to be identified and the timetable of works determined and agreed. In other words what resources are needed and who does what by when. Coordination with adjacent land managers also may be necessary (and in most situations highly desirable). Hopefully, the early consultation with key stakeholders when defining the problem and developing the plan would have developed group understanding and ownership of the problem and the solution and greatly assist in the cooperative implementation of the plan.

HINT: Keeping everyone on track is important. Land managers are practical people and usually find this Step in the process the most enjoyable. Their enthusiasm for this Step needs to be managed so that energies continue to be focussed on the pest management plan and not re-directed to other practical activities that may not assist in achieving the plan's objectives.

MONITORING IS CRITICAL

Step 4 – Monitor and assess performance

Operational monitoring, performance monitoring and evaluation are often forgotten but essential aspects of a pest management program. Both forms of monitoring provide information that can be used to improve the effectiveness of the control strategy, or if necessary, modify the objectives. FACTSHEET 6 provides a simple example of assessing progress towards milestones.

Operational monitoring aims to assess the efficiency of the control operation. What was done, where and at what cost? In other words, can management be made more cost-effective.

Performance monitoring aims to assess the effectiveness of the control strategy. Did the management strategy meet the objectives of the program? For example, did lamb-marking percentage increase by 20% following one year of feral pig control? If the objective was not met, the management strategy may need to be modified or maybe the initial pest problem needs to be reassessed to determine whether factors other than feral pig predation were the major cause of poor lamb-marking percentage. Examples of other factors include other predators of lambs, poor ewe nutrition, poor cover for new-born lambs or ram infertility.

Monitoring is not simple and can require considerable effort, which is the reason that it is often not done or poorly done. While monitoring programs should ideally compare treatment sites (e.g. poisoned site) with non-treatment sites (e.g. non-poisoned site) and measure accurately the damage, this is not always practical. The publications listed in FACTSHEET 8 provide guidance on assessing the performance of control programs. Where knowledge about a pest and the damage that it causes is poorly known, adopting an adaptive management or learning by doing approach to pest control can help (see FACTSHEET 5).

HINT: When developing and implementing a monitoring strategy:

- **Be very clear about what needs to be monitored and why.**
- **Keep it as simple as possible and compatible with other regular management practices.**
- **Make the process quick and easy.**
- **Provide regular feedback to key persons and groups using an appropriate format so they can see that the monitoring has a practical purpose which will encourage them to continue with it.**
- **Display or disseminate the results in a public place.**

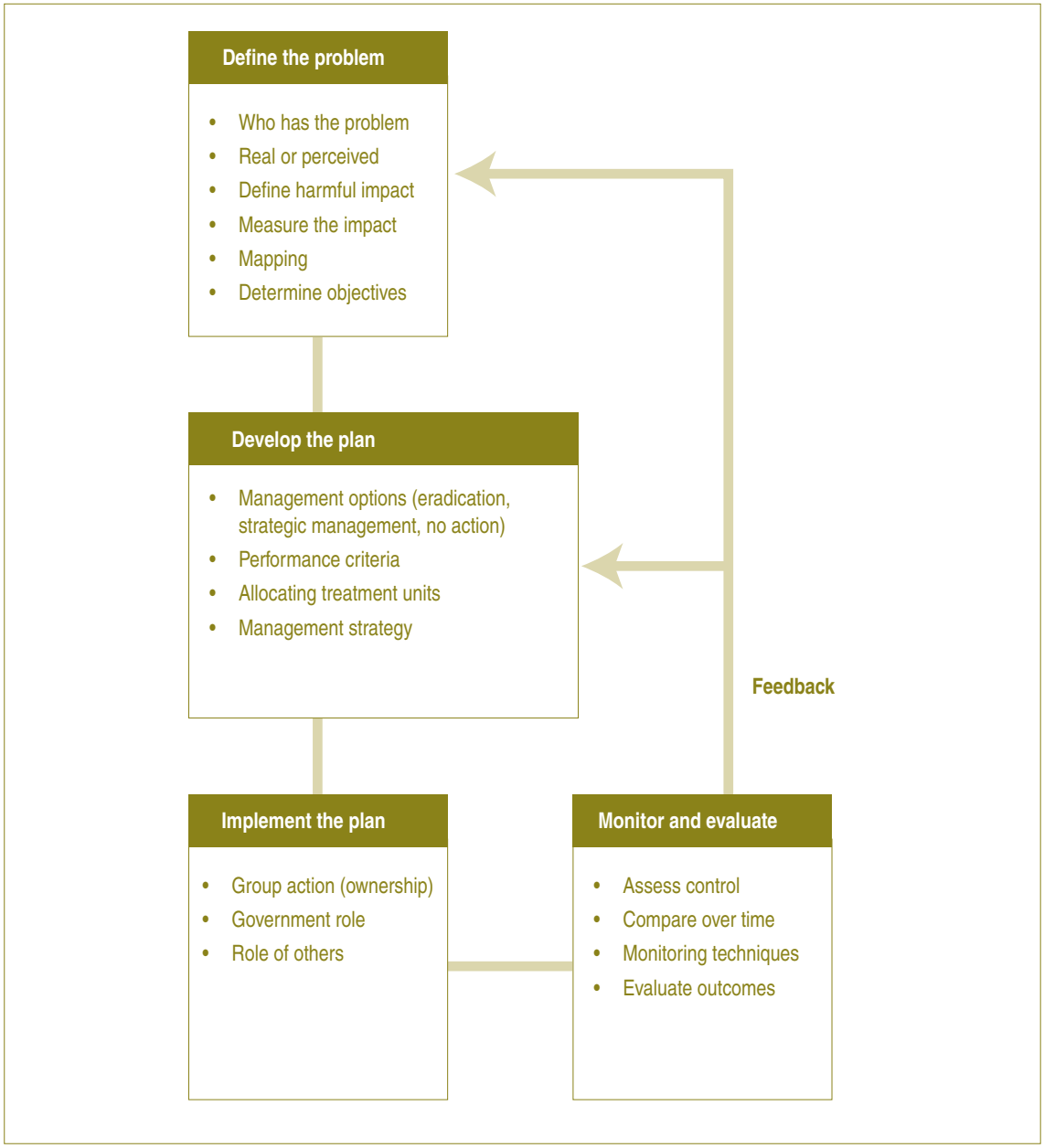
Possible outcomes

Possible outcomes from Stage 3

Further action at the completion of Stage 3 will depend on how many LMUs were considered in Stage 3, and what arrangements were made to report back to the workshop group (if Stage 3 was undertaken in post-workshop groups).

If multiple LMUs were considered in Stage 3, the pest management plans should be collated before presenting back to the workshop group. This reporting process may be fulfilled by a written report distributed to all workshop participants, but a follow-up gathering of all workshop participants may be more useful (and allow a more relaxed and informal reporting of key activities).

The process for developing and implementing a pest control plan for the Local Management Unit



Appendix 1

Guide to running a PESTPLAN workshop and workshop models

The level of formality for the workshop depends on the degree to which participants know and are at ease with each other. In some cases, it might be necessary only to have a small group that meets around the kitchen table. For more complex situations, a formal meeting room might be necessary.

Participants

- Ensure that key groups and the individuals most concerned with pest animals and their management are invited, **including those with important specialist knowledge** (particularly in relation to managing individual pest species).
- Personally contact groups or individuals that are crucial to the discussion.
- It is important that all groups are represented, even if they are considered on the fringe of the issues to be discussed. Any group that can support or raise barriers to pest animal management needs to be included in the process from the beginning. Consider a range of interest groups as stakeholders e.g. animal welfare, conservation, indigenous land managers, animal harvesting industry.
- Include those with radical views. It is better to have them as part of the discussion than to receive public, and sometimes misinformed criticism once a pest control program has commenced.

Venue

- Choose a venue and site that is most appropriate for all key participants. For example, holding the workshop in the office or premises of one key group may discourage or intimidate others.
- Ensure that there is space for group work e.g. side rooms or outside work areas.
- Avoid rooms with pillars or other visual obstruction, or other factors that might disturb the free-flow of discussion.

Timing

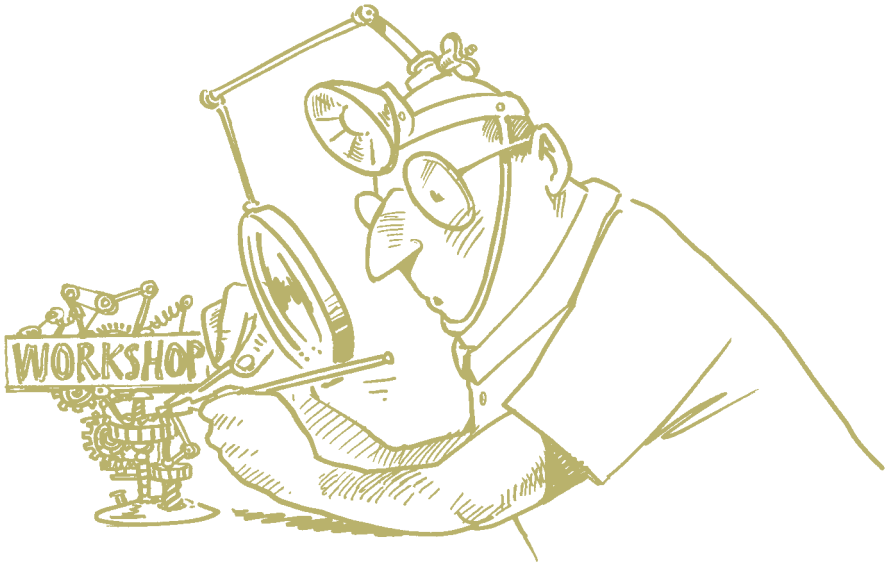
- Where practical, conduct the assessment making use of existing gatherings such as the regular meeting of a Landcare group, Catchment Management Group or Bush Fire Committee. Avoid the months when land managers in the area are traditionally busy e.g. shearing, harvest etc.
- Try and keep the length of the workshop as short as practical. It might be necessary to run the workshop over more than one day, depending on the complexity of the task. If participants do not have sufficient time to complete the tasks at the workshop, participants may decide to elect a sub-group to finish the tasks and report back to all the participants. Make sure a person is nominated to ensure this process is completed.

Facilitator and recorder

- If the scale of the problem and resources warrant, consider using a professional facilitator for formal workshops, especially if there is likely to be considerable disagreement between the participants. Facilitators have the skills to help achieve consensus and a successful outcome. Often they can help to involve all participants by asking the right question of the right person at the right time. They also free up all participants to concentrate on the discussion without having to control the workshop.
- A person needs to be made responsible for recording key outcomes from the workshop. Whilst some of the information will be recorded on record sheets provided, there will be other information that will not. This information may be essential in later Stages of the process, or in approaching funding bodies etc. in the future. If the key points are electronically recorded, it is often easy to run off copies for open sessions or group work.

Process

- Provide refreshments as the participants arrive so that they have something to do while waiting for the late-arrivals. Display material and relevant videos can also help.
- Consider a pre-workshop BBQ or one on the first night. This helps break down barriers and aids discussion.



WORKSHOP PREPARATION

Other

- Preparation of workshop material is crucial. Gather key background information before the workshop (see FACTSHEET 2), including identifying (as far as practical) the key issues and constraints associated with the problem to be discussed at the workshop.
- Factor in time for icebreaker exercises and refreshment breaks.
- Group size will determine if tasks need to be dealt with in smaller discussion groups.

Workshop models

Problem specification workshop process

The first step in the process is a meeting of specialists to assess the relevant scientific and technical information and determine legal and other constraints to management.

Next a facilitated workshop is held, involving key stakeholders, to determine the problem and identify solutions. Workshops generally last for two days. However, there is no formal modelling process.

Techniques such as historical profiles are used to identify key elements of the problem and how these might change in the short- to mid- term.

Pin boarding, decision tree and mind mapping exercises are used to examine opportunities for improving management and to identify likely constraints.

Participants then conduct a needs analysis of the key issues and develop action plans for obtaining necessary additional information, reducing constraints and mechanisms and approaches for managing the problem.

Feedback to the participants is essential, both immediately after the workshop and then regularly as the management strategy is developed and the program implemented. A monthly low key newsletter containing a mixture of hard information and interesting snippets about the pest species, the management program, participants and their achievements is one method for ongoing feedback that works well.

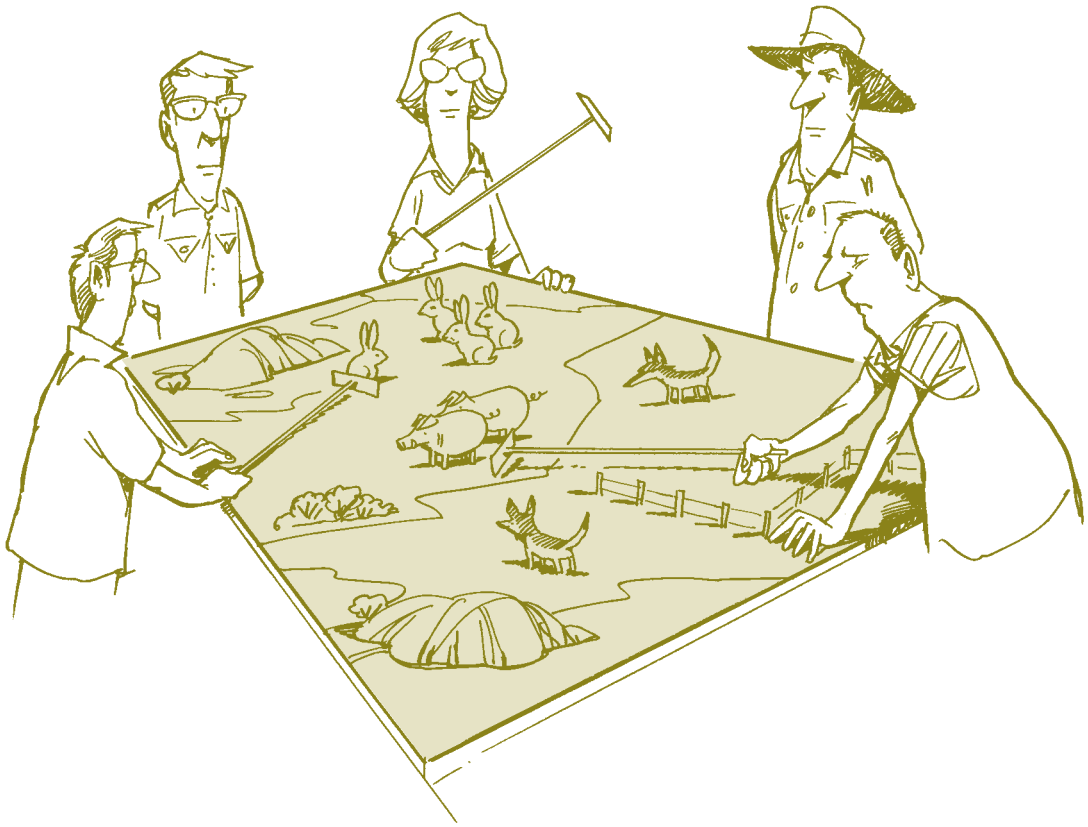
Adaptive Experimental Assessment and Management (AEAM)

For more complex situations, an AEAM process may be necessary. AEAM assumes that we do not have and are unlikely to obtain (at least in the short term) all the information necessary to manage a system, including how best to manage the damage to threatened species from pest animals.

To address this information deficiency, the AEAM process first brings together a core group to outline the elements of the problem. These should be biologists, managers and others who have a good knowledge of the production or conservation issue threatened by pest animals, and the range of other factors that are influencing production and conservation of biodiversity. This group should, as far as practical, assess the available and relevant scientific and technical information and determine the legal and other constraints that any management action must take into account. This may include restrictions on management techniques due to their likely impact on non-target animals or to legal constraints.

Next, a facilitated workshop is held involving all the key players, to tease out the dimensions of the problem and to identify management options. Participants should include relevant researchers, government and non-government land managers and other likely key players such as the local Landcare group or local government.

Then a group endorsed by the workshop roughly models the system, based on the information presented at the workshop and from elsewhere, and suggests how the problem might be managed. If more than one option is identified and it is not possible to distinguish between the options, then all options are presented back to the reconvened full workshop.



If one option is selected then that is the one adopted. If the workshop cannot distinguish between alternatives, several options may need to be tested. This may require on-ground testing or experimental assessment of the options.

Progress toward meeting the objective(s) is monitored against quantified, and if at all practical, time-limited performance criteria.

Critical to the process is the development and implementation of an effective communication and information transfer strategy for the life of the management program. This should include a mechanism for providing regular updates on progress, such as through a low-key newsletter. Without the cooperation and continued support of others in the district, unforeseen events such as the unintentional poisoning of non-target organisms, for example tiger quolls or domestic dogs, could scuttle the program.

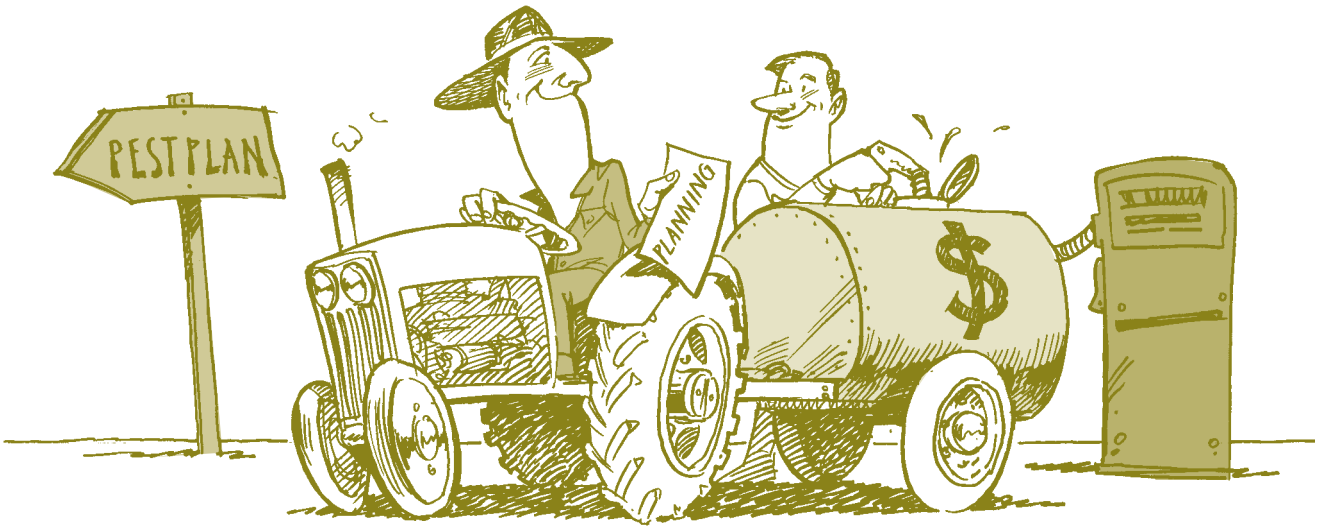
The full AEAM process can be expensive and time consuming. It may be an appropriate process for developing some key strategies, but not for all.

Encouraging participation

Developing understanding of the concepts, and trust, credibility and co-operation between the stakeholders is essential to successfully planning and implementing an effective strategy. However, there may be poor communication between the stakeholders at many levels. This could be due to several factors:

- Different levels of knowledge, understanding and perspectives concerning the issue.
- Inherent suspicion of government by some land managers and others. For example, some land managers believe that, unlike themselves, government officers are not in there for the long haul; they see them turn over every year or so.
- Different needs and desires from management. These may be social, economic and/or political and be influenced by the philosophies of stakeholders on issues such as conservation, development and lifestyle.
- Communication difficulties, such as the use of scientific/technological jargon and concepts. There may also be problems due to the style of communication. Government officers often want to meet with community groups and quickly get down to the issues, whereas farmers may take time to size up the person that they are dealing with before they will openly discuss the issue. Forcing the issue without going through this process will often result in key points and issues being buried or withheld.

Experienced extension officers and facilitators, using appropriate techniques such as the Participatory Problem Solving Model, can often help overcome these problems.



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