GUIDELINE FOR PROJECT SELECTION

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PURPOSE

- This Guideline is to be used by senior agency staff conducting invasive plant management projects based on the PII Project Process.
- The Guideline explains what to consider when developing an invasive plant management strategy and prioritising projects.
- The Guideline is based on Stage 1 Project Selection (Programme Design, Development and Prioritisation) of the Invasive Plant Management Training Course.

1. GENERAL

- There are several tools to help in the process of developing an invasive plant management strategy, but final project selection will be the responsibility of each implementing agency. Each agency will have its own set of priorities, strengths and weaknesses and should develop its own set of guidelines that reflect these values.
- Senior management should be involved in developing these guidelines. As they represent organisational objectives and strategy and the outcome of this process will affect resource allocation, it is important that senior people are involved.
- It is preferable that a manager who will be involved in the management of invasive plants is assigned at the start of the Project Selection Stage, before the project has been selected. This will allow the manager to contribute their expertise to the selection process and will build a greater sense of ownership for the project manager.

2. THE PROCESS

- Developing an invasive plant management strategy is a five-step process;
    1. Develop an inventory of the plants that have been introduced to your country, or are in trading partner countries,
    2. Evaluate invasiveness and/or impact, or risk of it, for each species using weed risk assessment tools,
    3. Determine the distribution of the highest scoring invasive plants
    4. Determine whether eradication is a realistic expectation,
    5. If eradication is not achievable, determine whether to investigate control options, or whether to take no action at all.
- If eradication is possible, this becomes a species-led project.
- If a treatment option is available, the project should focus on important sites (e.g. a protected area) and each agency will decide on its own priority sites using its own values. This becomes a site-led long-term control project.
- If a treatment option is NOT available, but the invasive plant is a serious threat, a decision will have to be made about whether to investigate (often through trial work) potential treatments, or to not take any action.
- At the end of the process, you will have decided to place invasive plants in priority lists; 1) priorities for eradication, 2) priorities for long-term control options in important sites, 3) priorities for further investigation. Another list will contain those plants that will have no further action taken.

- These priority lists form the basis of an invasive plant management strategy. Agencies can then decide on the priority projects that they wish to develop further based on the resources available to them.
- The next Stage in the PII Project Process is the Feasibility Study Stage. The feasibility of successfully managing an invasive plant can only be determined after a thorough investigation of technical, social and economic criteria. A final decision on the feasibility of an invasive plant project is based on 3 questions: Can it be done? What will it take? Does the benefit outweigh the cost?
- The decision on which projects in the invasive plant strategy to take to the Feasibility Study Stage will be based on the guidelines of each agency, but project selection can be considered under;
    - Potential benefits,
    - Potential achievability.
- **Benefits** are measures of the positive outcomes of the project. These are often described as "the reasons why you are undertaking the project". The types of benefits of invasive plant management projects include:
    - Biodiversity,
    - Economic,
    - Social and cultural,
    - Policy, regional or international plans and agreements.
    - If the work of the implementing agency is driven by national, regional or international agreements (e.g., a National Biodiversity Strategy and Action Plan (NBSAP)), consider how well each project fulfils any such commitment.
    - Invasive plant management projects are often undertaken as part of a wider conservation management plan. If you wish to favour projects that are part of a wider plan (rather than stand-alone projects) consider how much the project contributes to the wider conservation management plan.
- **Achievability.** This is a measure of the likelihood of the project being a success, i.e. achieving its objectives.
    - While implementing agencies are free to use any achievability criteria appropriate to their circumstance, the decision should be based on accurate information.
    - Achievability is closely associated with risk. Another way of describing a highly achievable, easy project is that it has a low risk, or conversely a high risk project is one whose achievability is in doubt. Projects vary greatly in complexity and risk.
- Ideally, you are looking to select a project that has significant benefits and high achievability.
- Agencies that have little experience of invasive plant management projects are encouraged to do the easier projects first and work towards the most difficult and rewarding projects. This is a Principle of the PII Project Process.

2.1 INTRODUCED PLANT INVENTORY

- Not all introduced plants become naturalised in a country and not all plants that become naturalised become invasive. But it is important to know what plants are in your country as some may be 'sleepers', plants that are not yet recognised as invasive but different circumstances (e.g. arrival of a pollinator or polliniser, climatic event) could change that.

- An inventory can be developed by reviewing existing literature (surveys/reports/quarantine reports, etc.), conducting surveillance of modified areas (roads, refuse dumping areas, botanical gardens, urban gardens, farms, plantations), using local knowledge and considering potential invasive plants (in neighbouring, or trading partner, countries).

2.2 WEED RISK ASSESSMENT (WRA)

- Many introduced plants provide significant benefits to humans and the purpose of putting plants through a weed risk assessment (WRA) process is to identify those that are high-risk species (possible invasive plants). A WRA is a pro-active tool to identify plants that pose the highest risk of causing ecological or economic harm. An assessment of the invasiveness risk means that informed decisions can be made about how to manage those plants identified as high-risk.
- A WRA tool can be used for decision-making at two stages: (1) Pre-border: to assess plant species proposed for introduction and inform a decision as to whether to accept or reject the plant; (2) Post-border: to assess already introduced plant species and evaluate their likelihood to become invasive and to prioritise any management action.
- Many WRAs have been developed around the world. Most use a series of questions about the characteristics of the plant, its geographic origin, its behaviour in other places and what is known about it in the country of concern to obtain a score for each species, or to put it in an invasiveness category. A high scoring plant generally poses a high risk of becoming an invasive plant.
- Ideally, high-risk plants should be kept out of a country (Prevention), but once they arrive, other management decisions have to be made – Eradication, Control (Containment, Control to a specified density (usually zero), Biocontrol), Further investigation is required or No further action is required.
- Many researchers have concluded that the most important criterion to use in a WRA is whether or not the plant is invasive anywhere else. If it is invasive in another country with similar climate and ecological areas, it will probably be invasive in your country.
- The score provided by a WRA contributes to the decision on whether to accept/reject a proposed introduction. The score can also contribute to a categorisation system for plants already introduced, which classifies each species according to risk type, in a more informative manner than the basic scores.
- This all contributes to determining an idea of what plants are the most urgent priorities for action and can help to develop an invasive plant management programme based on the most urgent priorities.
- WRAs are usually completed by plant specialists with good access to scientific information and other scientists. If an agency has to complete its own WRA, it should consult widely and build wide acceptance of the criteria and weightings before commencing the scoring process. Acceptance of the outcome will be made easier with a collaborative approach.

2.2.1 THE PIER WEED RISK ASSESSMENT SYSTEM

- A common weed risk assessment used in the Pacific is the one developed by Pacific Islands Ecosystems at Risk (PIER) in Hawai`i for Pacific Islands. This WRA uses 49 questions (see PIER WRA blank form or PIER website for updates) to obtain a score for each species. A high-scoring plant poses a high risk of becoming an invasive pest in Hawai`i and other Pacific Islands. The higher the score the bigger the threat. Any plant scoring higher than 6 is potentially invasive.
- The score provided by the PIER WRA contributes to the decision on whether to accept/reject a proposed introduction. The PIER WRA is a pre-border one, but recent research has shown that there is a strong relationship between pre- and post-border WRAs.

- The PIER WRA scores are generated from information available at the time. The score is an indicator and may change in the future as some plants that are now 'sleepers' are recognised as invasive.

2.2.2 THE PACIFIC WEED RISK ASSESSMENT SYSTEM

- The Pacific WRA goes beyond a single score to classify plants into categories more readily applied by planners and managers when prioritising and designing their programmes. It uses criteria to place plants in one of six invasiveness categories determined by a subset of key questions about species characteristics and their behaviour in your islands and elsewhere.
- The six categories are:
    1. **Transformer:** Already a habitat modifier in your islands (includes hybridising with endemics)
    2. **Likely transformer**: Established and reproducing in your islands and known as a habitat modifier elsewhere
    3. **Naturalised** Established and reproducing in your islands with not enough evidence to predict future behaviour, or not known as a habitat transformer elsewhere, but risk factors have been identified
    4. **Integrator**: Naturalised in your islands but growing with native vegetation without causing major habitat change (mainly small weeds)
    5. **Potential invader**: Not naturalised in your islands but a potential invader (based on behaviour elsewhere)
    6. **Probably harmless**: In your islands only cultivated (not naturalised) and not known as an invader elsewhere

2.2.3 SOME PRINCIPLES FOR WEED RISK ASSESSMENT AND WEED MANAGEMENT

- For pre-border WRA, there is a two-step process:
    1. Answer as many questions as possible for the species being evaluated.
    2. Use the threshold score to decide whether to reject the application, permit the introduction or suspend a decision until further information can be obtained.
- For post-border WRA (of species already introduced):
    1. Answer as many questions as possible for the species being evaluated.
    2. Run the categorisation queries.
    3. Use the category, supported by subsets of the scores, to decide if and how to manage each species.

2.3 EXTENT OF INFESTATION

- Knowing how widespread and how big an area is covered by an invasive plant can help decide on the priority for action.
- If an invasive plant is newly-arrived and in a small area and a treatment method exists, eradication should be achievable.
- If an invasive plant is on only one island in a country but in too big an area for eradication to be successful, biosecurity (Prevention) becomes very important.
- If an invasive plant is widespread, the only action, apart from choosing to take no action, may be to use a control option to protect important sites.

- A simple exercise of marking known infestations on a map of your country will help with this decision.
- If possible, a GIS map with GPS coordinates and the actual area of infestation should be developed.

2.4 ERADICATION ACHIEVABILITY

- Eradication is the preferred management option, but the feasibility of successfully eradicating an invasive plant can only be determined after a thorough investigation of technical, social and economic criteria (see Feasibility Study Template – Feasibility Study Stage). A final decision on the feasibility of an invasive plant eradication project is based on 3 questions: Can it be done? What will it take? Does the benefit outweigh the cost?
- However, deciding on which invasive plant species should be the priority for further investigation can be helped by;
    - determining whether or not there is an existing successful treatment method,
    - using a time invasiveness curve,
    - estimating the cost over the duration of an eradication project.
- If there is not a successful treatment method already available, the project cannot proceed until further investigation is completed.
- It is necessary to look at the economic cost of eradication to decide if the costs and benefits balance each other. Some of the costs will vary between agencies, but the cost/hectare to be calculated for the first year and subsequent years (mature, juvenile, seedbank) includes;
    - Stakeholder consultation
    - Labour – both field work and project management work
    - Materials – herbicides, hand tools
    - Equipment – including safety
    - Transport
    - Surveillance (search effort) and Outcome Monitoring
    - Administration – including reporting costs
    - Awareness materials and actions
- A simple example table to help with costing is below.
- Note: The decision on which invasive plant species should be the priority for further investigation can be helped by tools such as the Weed Eradication Feasibility Analysis Model (Cacho and Pheloung, 2007) which provides the estimated cost and duration of an eradication project. The model combines population dynamics and search theory to calculate the probability that a weed invasion will be eradicated based on the amount of time invested in searching for it (search effort). The values for some of the parameters in the model may not be easy to find, but experienced weed managers may be able to come up with educated guesses and then undertake sensitivity analysis.

2.5 PRIORITISATION

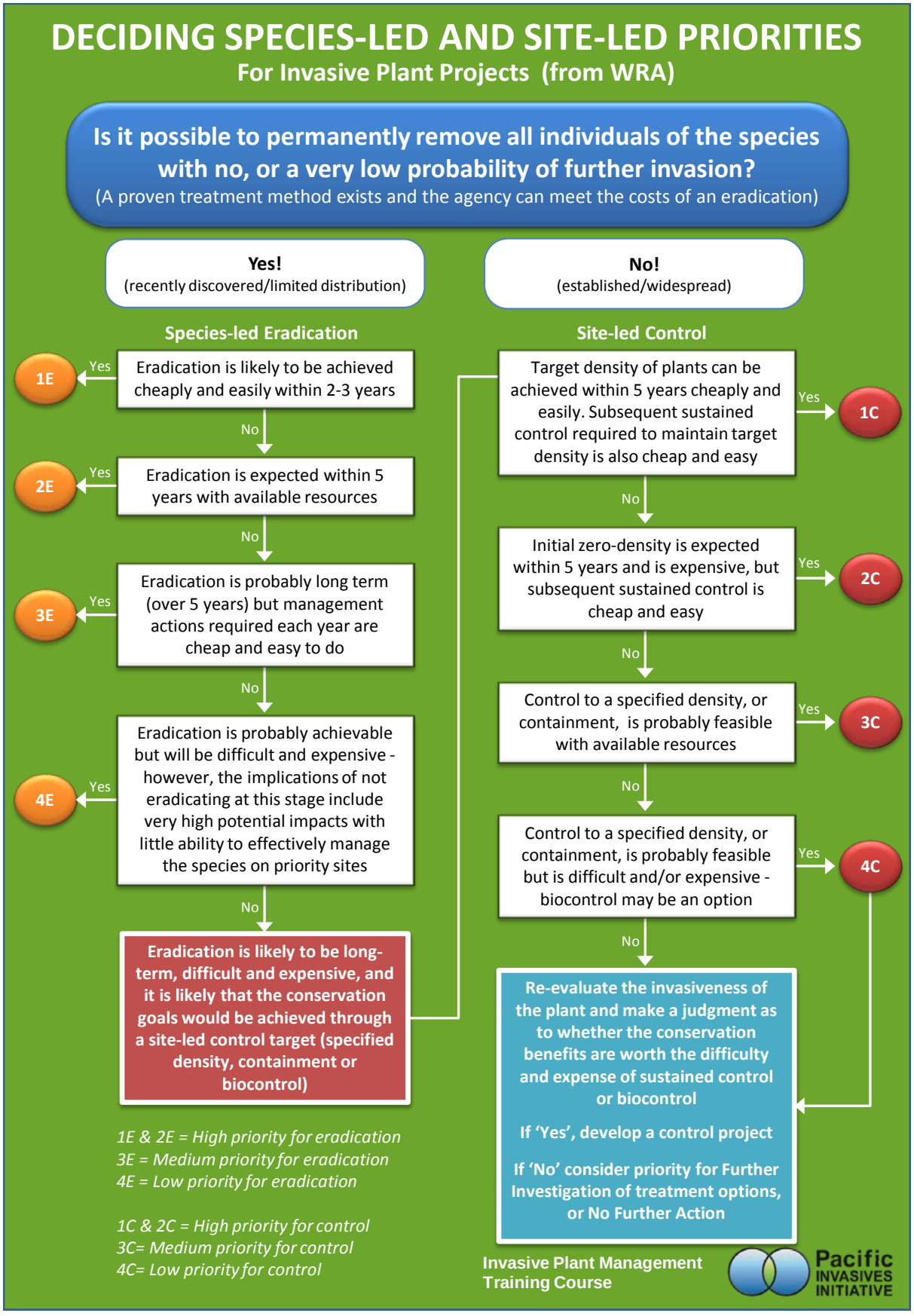
- A Decision Tree (see below) can be used to produce a priority list of potential eradication projects for an invasive plant management strategy and to take to the Feasibility Study Stage.

- If a successful eradication is not likely to be achievable (too large an infestation, no treatment method, too expensive, will take too long), other options must be explored.
- Invasive plants can be considered for a long-term control project – provided a successful treatment method exists. This means deciding on the control options; containment to a nominated site, control to a specified density (often zero, but can be higher) at an important site, or biological control.
- Important sites can be determined by each agency using the values that are important to that agency.
- A priority list of potential long-term control projects to take to the Feasibility Study Stage can now be prepared for an invasive plant management strategy.
- Invasive plants for which a known successful treatment method does not exist can be considered for further investigation as part of an invasive plant management strategy.
- The decision to take no action on invasive plants should be recorded in an invasive plant management strategy.
- An invasive plant management strategy that is based on invasive plants that have been selected for eradication, or long-term control, or further investigation, or no further action can now be prepared and action prioritised using the values that are important to each agency.
- The invasive plant management strategy can feed in to the NBSAP/NISAP review team for each country.

3. A SIMPLE EXAMPLE TABLE TO HELP WITH COSTING

Plant Name	Method	Site details	Items	Year 1	year 1 comment	Year 2	Year 2 comment	Year 3	Year 3 comment
Rattan palm - Calamus casius	Uproot, dry and burn	Located at 3 sites on 1 island only: - Vailima Forest Reserve (4 hectres) - Togitogiga Forest Plantation(3 hectres) - Papaseea (2.5 hectres)	**Stakeholder consultation**						
			Labour Both field work and project management work	1,727.20	50 days casual workers @19.20 per day 14 days permanent staff @91.60 per day				
			Materials Herbicides, hand tools	253.00	Round up 5ltrs $193 Yam spade $60				
			Equipment Including safety	2,330.00	Gloves 10.00x10 $100 Overall 223.00x10 $2230				
			Transport	199.20					
			Surveillance (search effort) and Outcome Monitoring						
			Administration Including reporting costs						
			Awareness materials and actions						
			Meals	500.00					
			Total costs	**5,009.40**					

4. DECISION TREE



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