natural resource planning

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Preliminary notes:

An ecologically responsibe *modus operandi* for woodchip exports from Triabunna

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1. Introduction

The purpose of this document is to introduce Triabunna Investments to NRP's Ecologically Responsible Management (ERM) accreditation system. The ERM has been developed over more than fifteen years of work in this area, beginning with the development of approaches for dealing with the Tasmanian RFA in the mid '90s. It is designed to provide a one-stop-shop for landholders seeking to comply with government laws, regulations, strategies, initiatives and plans. It also aims to deliver certification to any relevant standards required by markets, including the Forest Stewardship Council (FSC).

ERM accreditation is based on integrating:

- Forest management plannig criteria developed and successfully applied for FSC certification of the 'Lagoon of Islands' property in Tasmania's Central Highlands. This was the first full forest management certificate to be issued for a native forest operation in Australia, and is seen among environmental stakeholders as setting the benchmark for management in native forests.
- Ecosystem management priority analysis using the 'Regional Ecosystem Model' (REM) developed by NRP with funding from the Commonwealth's Caring for Our Country Program. It integrates, at a landscape scale, everything we know about natural values and landscape function to identify both the relative importance and urgency of taking action in a particular place the type of management intervention needed to address biodiversity conservation needs.

The ERM is designed to support any Tasmanian landholder, or traders and processors, to credibly and verifiably assert to markets that products are derived from properties with management plans delivering best practice nature conservation outcomes. The ERM takes a 'continual improvement' approach that allows any landholder to participate, regardless of how degraded their property might be or their history of conversion. It also involves a 'reasonableness' test – which provides for flexibility in the delivery of priorities so that property-specific circumstances can be accounted for.

We are proposing that Triabunna Investments adopt ERM system to develop a 'Triabunna Standard'. The Standard would use a set of company policies and criteria to:

- Require FSC certification for both forest management, through an ERM accredited property management plan, and chain of custody for both FSC Certified wood and Controlled Wood
- Work with landholders to identify exactly where to draw that line in identifying necessary actions to be carried out in each planning period in order to maintain eligibility status for supplying the Triabunna mill.

It is expected this approach would allow Triabunna Investments to ensure ongoing woodchip operations drive delivery of appropriate nature conservation outcomes on the ground. This would apply to wilderness values, mainly on public land, as well as to biodiversity values, mainly on private land.

It is important to note that the lists of actions generated through the property management planning process are all derived from existing commitments of governments and requirements of certification systems and based on best available science. The ERM approach can support those seeking to transition from industrial logging of native forests by identifying where regrowth logging can take place with negligible impacts on conservation values. By being based on whole of property management plans, the program will also seek to address biodiversity conservation needs in the landscape, irrespective of whether these have arisen from forest operations or other facets of property management history.

2. Basis for delivery

The basis for Triabunna to export woodchips in accordance with the stated purpose would be through the development, maintenance and operation of a Standard that meets FSC requirements and community and scientific expectations for ecologically responsible management. Delivery would be through the ERM accreditation program of NRP and incorporate the Regional Ecosystem Model that was developed with funding from the Australian Government.

3. Key operational concepts

Triabunna will require suppliers of woodchips for export to have in place a property-scale or block-scale[1] management plan which is accredited under Natural Resource Planning's Ecologically Responsible Management accreditation program and includes:

- Provisions to meet either FSC Certification or Controlled Wood status,according to the certification standard to which a forest manager is eligible[2], in recognition of existing market acceptance of credibility of FSC certifcation; and
- Management zonings and actions which address the requirements of the ERM program's Conservation-Production matrix and address 'High' priority issues identified under the Regional Ecosystem Model as important for protecting areas of Biological Significance and for ensuring Landscape Ecological Function[3].

4. The ERM program for Triabunna

The ERM program and its accompanying Regional Ecosystem Model have been developed for addressing property management planning and are also currently being utilised by large Tasmanian timber interests (Gunns and Norske-Skog) to underpin their assessment and management of high conservation values. It is proposed that NRP will modify the current approaches to management planning and ecosystem assessment to address the specific needs of a Standard that will fit with the stated purpose of meeting owners' expectations for exports from Triabunna.

Key elements of the ERM program which NRP would propose to manage are outlined below.

4.1 Coordination of stakeholder engagement in the development, ongoing maintenance and application of a Tribunna Standard.

4.2 Harmonisation of the requirements of FSC certification and the Triabunna Standard to avoid duplication in planning, management and audit requirements.

4.3 Act as the 'Group Manager' for private forest owners to become to become certified as part of an FSC group certification scheme so that relatively small owners can access efficiencies and economies of scale needed to address FSC requirements (and incindentally ensure consistency of management across the landscape).

4.4 Develop property-scale or block-scale management plans for both private and public suppliers to Triabunna that address the requirements of the Standard. This may include accrediting other organisations to prepare such plans, overseen by NRP, where appropriate.

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[1] For smaller properties, it is expected that a management plan will address the entire property irrespective of the mix of forestry and other landuses. This is in recognition of the combined nature of threats to biodiversity conservation on private land from a range of landuse practices whose management in isolation will compromise biodiversity conservation objectives.

[2] The primary eligibility distinction will be on the basis of past history of conversion of native forest to plantations. Forest managers who exceed the FSC specified thresholds for achieving full certification will need to be accredited under the relevant controlled wood standard (mostly standard 30-010).

[3] The Conservation-Production matrix and the ERM program are outlined in Attachment 1.

4.5 Maintain public documentation of the Triabunna Standard and public reporting of key performance indicators on the operation of the Standard to enable both stakeholders and customers to have ready access to credible information on the conservation benefits arising through management under the ERM program.

4.6 Ensure auditing of management plans under the Standard are carried out through (at least) two mechanisms"

- Where feasible, integrating coupe-level auditing of forest operations with existing procedures and responsibilities of the Forest Practices Authority (currently a stratified sample of 15% of all Forest Practices Plans). This will require establishment of a working relationship with the Authority.
- A separate audit of the implementation of the management plan by the owner to ensure identified management actions are carried out and effective.

4.7 Ensure that the operation of the Standard can be readily subject to scrutiny by the owners and operators of the Triabunna woodchip mill on terms and timeframes which it identifies. This would include the right to suspend management plans and deliveries to the mill in cases of non-compliance.

4.8 Allocate funds from an Ecosystem Services Fund, collected by the operators of Triabunna as a levy on all purchases of woodchips, to facilitate very high priority management actions for which there may be significant barriers to participating landowners to implement but which are nonetheless important to meet broader biodiversity conservation objectives. It is envisaged that the mill owners would seek to:

- Leverage additional funds from other private sources and both levels of government, especially the Commonwealth's new biodiversity fund; and
- Offset costs to participating landowners, for example through rate relief for protecting high conservation values.

4.9 To identify and pursue commercial and administrative opportunities to generate financial returns for landowners where management actions undertaken voluntarily or required by the Triabunna Standard, fall in the gap between duty of care and full commercial utilisation (as defined by the Forest Practices system).

Attachement 1

The Conservation-Production matrix for forest zoning and management[4]

The Conservation-Production matrix is designed to assist in planning property management so that it delivers on FSC requirements and a broad range of aspects of management. These include responsible management of forestry operations and contributing to the Comprehensive, Adequate and Representative (CAR) reserve system through management of such things as representative examples of ecosystems, threatened species and ecosystems and areas of important ecological function.

In many real examples of planning for both conservation and commercial outcomes, conservation objectives have been delivered largely on the land of least commercial interest. This results in a 'reservation bias' in favour of high levels of reservation of elements of biodiversity that occur on the 'worthless lands' and lower levels of the often different elements of biodiversity found on the areas of higher productivity and greater commercial interest.

The Conservation-Production matrix provides a set of criteria and methods to ensure as far as possible, and demonstrate, a distibution of management regimes across a property that provide a representative mix of areas for both wood production and nature conservation. The matrix is also designed to contribute to complementing the reserve system by providing conservation management for those conservation values most in need of additional protection.

A set of guidelines which broadly define the matrix of conditions needed to be consistent with this approach is shown in the Table below. These guidelines are used to delineate the various units of management on a property and to measure the balance of commercial and environmental outcomes proposed.

The guidelines are based on a 'multiple coarse filter – multiple fine filter' approach to conservation planning. The coarse filter-fine filter approach was first described by Noss (1987[5]). Coarse filter elements refer to systems of classification which are applied across the entire landscape (e.g. vegetation types) and are intended to act as surrogate classes for the full range of biodiversity. The fine filter refers to conservation values which are assessed separately at specific sites within the area being considered (e.g. threatened species sites).

Exercises in conservation planning have traditionally used only a single coarse filter, or sought to compare the degree to which different coarse filters are efficient as surrogates. Research in Tasmania has established that both biotic (e.g. vegetation) and environmental domain (combinations of rainfall, geology, altitude) coarse filters differ in their effectiveness as surrogates and that application of elements of both is needed for efficient conservation

[4] The matrix was independently reviewed (JB Kirkpatrick and K Michaels) as part of FSC certification for 'Lagoon of Islands' in the Tasmanian Central Highlands and was spefically endorsed as an appropriate tool for forest planning and management.

[5] Noss, R.F. (1987). From plant communities to landscapes in conservation inventories: a look at the Nature Conservancy (USA). Biological Conservation, 41:11-37.

(Kirkpatrick and Brown 1994[6]). The approach has also recently been extended successfully to planning the conservation managemen of freshwater ecosystems (Knight and Brown 2004[7]).

The approach outlined below uses a multiple coarse filter comprising vegetation types and land units of mapped land systems, the latter providing an environmental domain classification to help ensure areas protected as representative examples have a greater certainty of contributing to biodiversity conservation.

The matrix also includes criteria to ensure areas of High and Very High 'Level of Concern' are addressed in management. The are derived from the Regional Ecosystem Model which will be applied to all participating properties. The REM identifies areas based on their Biological Signficance and their Landscape Ecological Function. High concern on either needs to be either addressed or considered in the management plan.

The Conservation-Production matrix

1. Properties will be zoned to ensure that provision is made for both Nature Conservation and Commercial Forestry Areas. Nature Conservation areas may include provision for commercial stock grazing and other activities, subject to monitoring and implementation of changes to management when appropriate.

2. A property should aim to include at least 15% of each major natural vegetation type (Tasveg mapping units) within its Nature Conservation Areas. The criterion is targetted at the main landscape scale vegetation communities rather than incidental small occurrences, unless of communities of conservation significance.

3. A property should aim to include in Nature Conservation Areas the owner's 'fair share' of vegetation types needed to meet any shortfalls on CAR reserve targets, calculated on a bioregional basis. The term 'fair share' means that if a vegetation type would require 30% of its unreserved extent to be protected to meet its reservation target, then the aim should be to include at least 30% of that vegetation type on the property in Nature Conservation Areas.

4. The 'fair share' principle is intended to be applied on a flexible basis, taking account of the availability of external funding programs to secure and manage nature conservation values, the commercial cost to the owner of inclusion in Nature Conservation Areas and the specific management requirements for the vegetation type on the property.

5. For relatively extensive and well-reserved vegetation types, inclusion of less than 15% in Nature Conservation Areas may be appropriate if more than the 'fair share' of more

[6] Kirkpatrick J.B. & Brown, M.J. (1994). A comparison of direct & environmental domain approaches to planning reservation for forest higher plant communities & species in Tasmania. Conservation Biology, 8:217-224.

[7] Knight, R.I. & Brown, M.J. (2004). The Tasmanian Conservation of Freshwater Ecosystems Values Project: Assessing, ranking & grouping the conservation value of river segments. pp344-349 in Rutherford, I.D., Wiszniewski, I., Askey-Doran, M. & Glazik, R. (Eds.). Proceedings of the 4th Australian Stream Management Conference: linking rivers to landscapes. Department of Primary Industries, Water & Environment, Hobart.

important vegetetation types (as measured by conservation status, reservation levels and bioregional extent) is protected and the total area protected is at least equal to that which would be protected using the 15% criterion alone.

6. Nature Conservation Areas should include at least 15% of each land unit in each land system occurring on the property, to ensure adequate examples of all major variants of the combination of physical and ecological environment are protected.

7. Where possible, the 15% of land units should include the catenary sequence of units to the maximum extent that it is expressed on the property (e.g. from the lowest to highest point on the property, if contiguous).

8. Measures to protect other features of high conservation value (e.g. threatened species) in either Nature Conservation or Commercial Forestry Areas will be determined on a case-by-case basis, taking account of principles and application elsewhere. The basis of such decisions will be documented in the management plan.

9. Where the landuse on adjoining properties does not include commercial forestry, an unlogged buffer of 100m should be included in Nature Conservation Areas. This is primarily a precautionary measure to protect neighbours interests but will also provide additional nature conservation benefits.

10. Where the Regional Ecosystem Model identifies areas of Very High Level of Concern on the property, the management plan must identify actions which are aimed to address the management needs to the extent that it is feasible to do so. The management response will be assessed using the Reasonableness criteria to be developed for the Triabunna Standard.

11. Where the Regional Ecosystem Model identifies areas of High Level of Concern on the property, the management plan must have considered the Issues involved and either documented actions to be implemented or identified barriers to addressing the Issue. The management response will be assessed using the Reasonableness criteria to be developed for the Triabunna Standard.

Attachement 2

Summary of the Regional Ecosystem Model

Natural Resource Planning was funded under the Australian Government's Caring for Our Country Open Grants program to develop a Regional Ecosystem Model (REM) for Tasmania. The REM provides a comprehensive assessment of natural resources, their significance and priority for management, using the scientific principles of landscape ecology.

Landscape ecology is the study of spatial variation in landscapes at a range of scales. It includes the biophysical and societal causes and consequences of landscape heterogeneity, integrating a broad range of natural sciences to examine:

- The spatial pattern and structure of landscapes;
- Relationships between patterns and processes (i.e. landsape dynamics);
- The role of human activity in landscape patterns, processes and change; and
- The effects of scale and disturbance.

Using landscape ecology principles to address nature conservation issues, management and planning requires holistic and comprehensive consideration of all major ecological factors at work in the environment.

NRP's Regional Ecosystem Models has had a number of applications:

- Initial development and testing for assessing property management priorities across the Tasmanian South East and Northern Midlands bioregions (1.2 Mha), including management planning for eight properties with an area of around 30,000ha;
- Developing management plans for a further four properties on Bruny Island as part of a project aimed at linking farm management and biodiversity conservation;
- Development of coverage for the Kingborough City Council area as a tool to assist in local government planning, particularly in areas under pressure from urban development;
- Development of coverage for the NRM South Mountain to Marine project area to help prioritise areas for community-based natural resource management activities;
- Use in the Southern Midlands local goverment area as a tool to assist assessing and prioritising applications for on-ground works to deliver NRM outcomes;
- Development of coverage for all freehold land owned by Gunns Limited in Tasmania as a tool for assessing high conservation values;
- Development of coverage for all freehold and joint venture land of Norske-Skog in Tasmania to assess a range of conservation issues, including impacts of converion on landscape function and benefits from ecosystem restoration actions.

The key elements of the REM that are relevant to the passessment of biodiversity conservation values are as follows:

- A systematic classification of natural resource management 'Issues' in Tasmania, based on an extensive review of existing government policy/strategy documents and scientific literature. The classification organises Issues into each of three 'Asset Classes' - land and soils, freshwater , and biodiversity - to provide a comprehensive classification of of all major factors relevant to assessing conservation significance, ecological processes and management priorities in the State (see Figure 1).

- The REM provides methods for assinging relative significance of each Issue in each Asset Class. It assesses the relationships between issues that are expressed in the real environment through a myriad of potential combinations. This is achieved through a set of heirarchical decision matrices which systematically and transparently integrate Issues to enable their combined significance and management priority to be determined. The contribution of constituent Issues is clearly identified so that management actions can be targeted. Figure 2 shows the Issues in the Biodivesity Asset class, including the way in which Issues are combined to produce integrated outputs at a range of heirarchical levels.

- A spatial data model that stores all base and derived data of the REM in a single GIS layer for each of the three Asset Classes (i.e. one each for land and soils, freshwater and biodiversity). The data model for each of the three spatial layers facilitates generation of the full range of REM outputs and allows for continual updating as new data becomes available (e.g. field mapping), including storage of data from multiple sources. The data model ensures that coverage of the REM for a project area is complete at all times, with variation in accuracy and confidence of the input data transparently accessible.

The REM for biodiversity is constructed around two major foci:

- Biological Significance - represents the constituent elements of biodiversity (e.g. vegetation communities, priority species) and their relative importance for protection and management; and
- Landscape Ecological Function - an indicator of the ability of the landscape to maintain the elements of biodiversity it contains. based on assessment at regional scale (e.g. broad clearing patterns), mid-scale (landscape configuration) and local scale (e.g. within patch condition) conditions and patterns.

Outputs from the REM are classified into two classes of priority:

- Level of Concern (Immediate) - an estimate of the relative priority for immediate management action to address current risk to, or state of, the natural resource; and
- Level of Concern (Potential) - an estimate of the relative priority to protect and manage the natural resource from risks which may arise in the future.

The table below shows an example of a decision matrix incorporating a number of Issues to generate classes for Level of Concern. It combines the Issues of vegetation Conservation

Status, Bioregional Extent and Reservation to produce an overall Level of Concern. In this example both Potential and Immediate Level of Concern have been determined to be identical as protection and maintenance of important vegetation has both short term imperatives and longer term benefits. A similar consideration applies to threatened species.

	Concern – Immediate & Potential Reservation level (% extent in bioreigon)			
Status and bioreg. extent	<10%	10-30%	30-60%	>60%
Threatened				
Any	VH	VH	H	H
Bioregional extent				
<2,000ha	VH	VH	H	M
2,000-5,500ha	VH	VH	H	M
5,500-15,000ha	VH	H	M	L
15,000-55,000ha	H	M	M	L
>55,000ha	M	M	L	L

For other Issues, Level of Concern Immediate and Potential are divergent, with the divergence reflecting relative management needs. The table below shows an example of a divergent classification, in this case for Riparian Vegetation.

% or riparian zone under native vegetation (classes from CFEV)	**Concern – Immediate**	**Concern – Potential**	**Opportunity**
0	VH	L	H
0-20%	H	VH	H
20-80%	M	H	VH
>80%	L	M	VH

In the REM, absence of riparian vegetation is a Very High Immediate Level of Concern, due to its important role in landscape ecological function, while a high proportion is of Low Immediate Concern. Absence of riparian vegetation is of Low Potential Concern, as there is nothing left to protect, but areas with lower proportions are of high concern as these need to be protected to maintain landscape ecological function while some loss from the highest percentage class is deemed to have less impact and therefore is of lower Potential Concern.

The REM classification system is designed to allow all three Asset Classes to be assessed on the same basis. The management management prioritisation system of the REM is the same as that used for the Conservation of Freshwater Ecosystems Values project, providing a consistent frame of reference for consideration of all NRM issues. However, the REM can also be applied to just one Asset Class, for example biodiversity, to address particular management requirements.

The suitability of Level of Concern Immediate or Potential varies according to the Issues being addressed and their management context. The two can be used in combination to assess the relative loss of biodiversity values from management actions (e.g. clearing) or the gains from actions which restore important biodiversity factors (e.g. riparian vegetation). Level of Concern Potential can be used to prioritise management of biodiversity assets which are to be retained, and modelling can be used to project the impact of long term changes in management (e.g. increasing tree hollows).

A key issue in application of the REM is capturing sufficient data so that landscape-level factors can be accurately assessed. Much of this data exists in existing Statewide and regional data sets (e.g. vegetation mapping) which is updated with more accurate local scale data where appropriate.

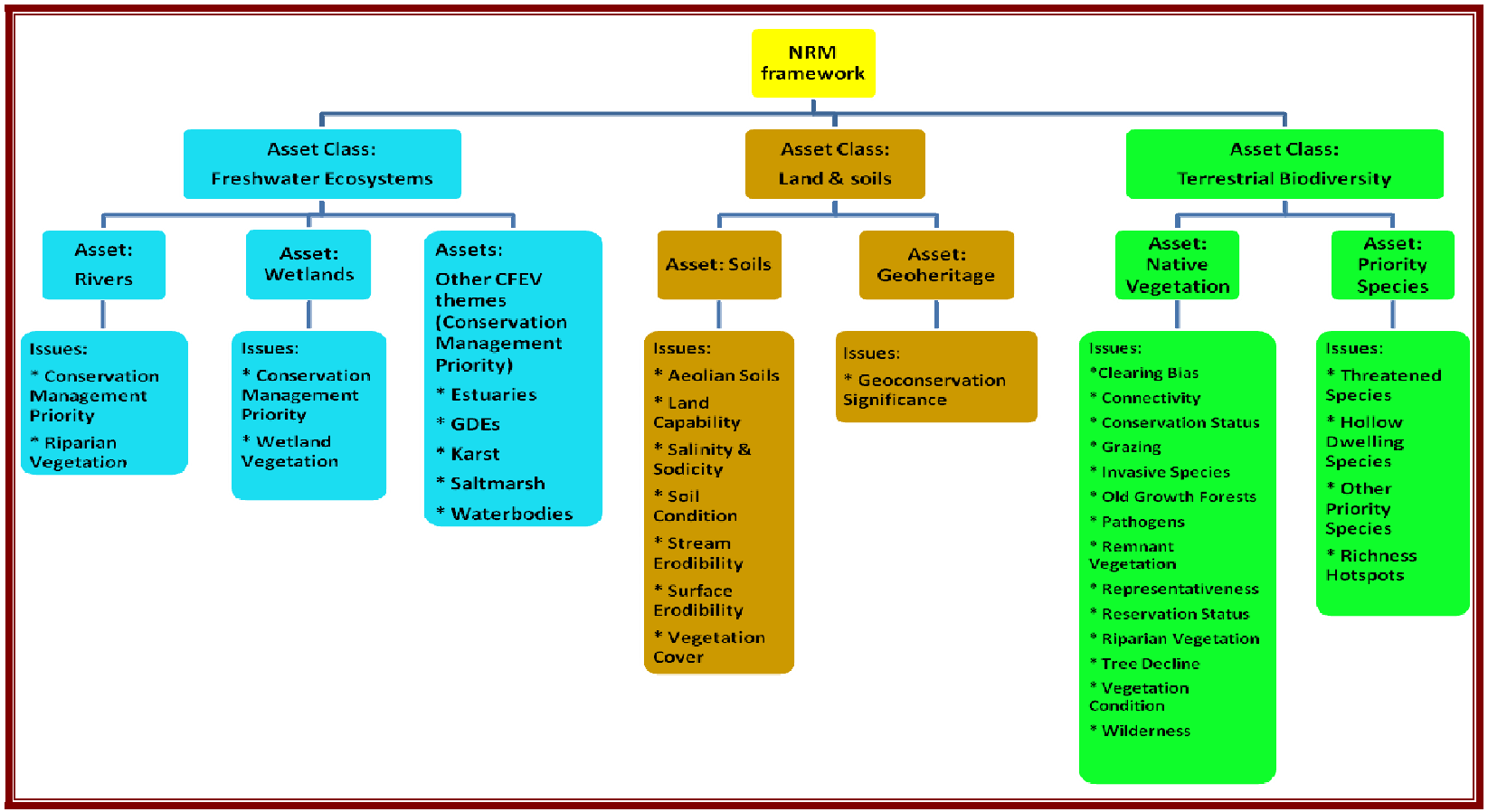
The REM is currently set up to deliver outputs in three formats:

- Regional Scale - Regional scale data sets are derived primarily from desktop data and have a spatial resolution which is suited to regional planning and assessment but may be limited for use at finer scales. These data sets can be used to identify potential areas for attention to management.
- Mid-scale - The mid-scale data model captures both desktop and other more detailed data to a network of points distributed across the landscape at a scale of 0.1ha (approximately 30m separation). This model samples the landscape at relatively high resolution but requires little spatial processing work. It is particularly suited to large and dispersed estates where both fine and regional scale overviews are required.
- Property Scale - The property scale data model uses polygons at a high level of detail to map features at fine resolution at a property or local scales. This model is particularly suited to developing property management priorities, action plans and management plans. However, this scale requires greater processing of spatial data per unit area.

Access and use of the REM is licensed by NRP to clients for approved purposes, in accordance with the commercialisation provisions of the Australian Government's funding for its development. NRP wishes to establish ongoing partnerships with licensed users of the REM.

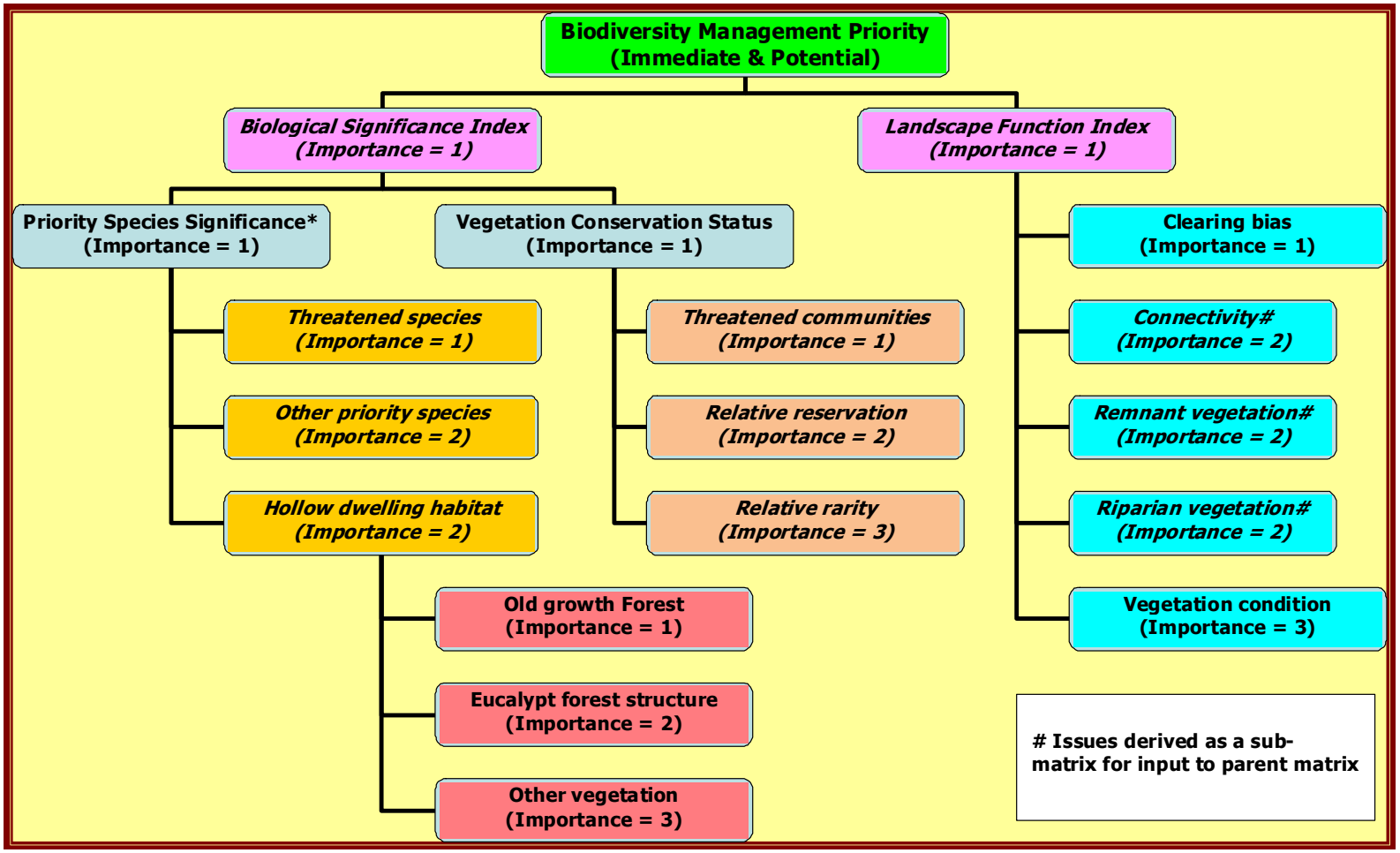
NRP will maintain and develop the REM on an independent and scientific basis, modifying it when new information comes to light (e.g. threatened species listings and delistings), maintaining the supporting documentation and automated update procedures, and keeping partners informed of changes and updates. In return, partners are asked to provide updated, non-commerically sensitive information for the REM so that its content can be continually improved and its applicability and utility expanded over time.

Figure 1. Classification of NRM Asset Classes, Asset and Issues



Source: Knight, R.I. & Cullen, P.J. (2009). A review of strategies for planning and management of the natural resources of biodiversity, freshwater, land and soils in the Tasmanian midlands. Natural Resource Planning, Hobart, Tasmania. http://www.naturalresourceplanning.com.au/landscape-ecology-project/
Note: Not all Issues from the strategy review are carried forward into the Regional Ecosystem Model. Some Issues have been excluded based on confounding, logical consistency and methodological difficulties in their application.

Figure 2. Assets and Issues in the Biodiversity Asset Class



Source: Knight, R.I. & Cullen, P.J. (2010). Specifications for a Regional Ecosystem Model of natural resources in the Tasmanian midlands. Natural Resource Planning, Hobart, Tasmania. http://www.naturalresourceplanning.com.au/landscape-ecology-project/