Curing linear thinking with emergent reductionism:

The evolution of measurable, defensible and accountable biodiversity conservation outcomes in DEC

NSW PARKS SERVICE AUDIT

- An organisation needs to measure its performance so it can take action to maintain and improve good results or fix problems that cause unwanted results.

- The Service does not yet have an effective way to measure success. This does not mean that the Service is not efficient or effective, however it cannot reliably:
  - determine which reserves, and their contents, are at an acceptable standard and which are not;
  - assess how well it conserves our natural and cultural heritage
  - account for the time spent by staff on its core role of conservation and relate these costs to its accomplishments.

"In our opinion the [NSW Parks and Wildlife] Service has yet to:

- clarify what constitutes success in reserve management;
- develop an adequate information base to measure its success.

Consequently the Service cannot reliably determine how well it conserves and protects our natural and cultural heritage. This is a common situation for like agencies.

The above impact[s] on the Service's planning, research, resourcing and reporting on its stewardship of our heritage."

"Research is essential to conserve and protect and generally manage natural and cultural heritage. Some research by the Service is highly regarded. But this is not uniform, with variation in the quality and coverage of data across the Service. This is more evident at the local level where research is not always:

- targeted to Service priorities and actions
- designed to promote broad application of findings
- effectively collated, communicated and used sufficiently."

State Treasury & Finance

" …systematic analysis of the value for money of different activities would be useful in prioritising which activities to fund within available resources. Any future requests for additional funding for nature conservation would be enhanced by an analysis of the outcomes of existing funding and value for money".

"…on-going work on reviewing the DEC's expenditure. Such work will be necessary as background to any future submission for increased funding – to translate the obvious passion and dedication of the DEC staff into the evidence and objective business and objective cases required."

Why measure conservation achievements and management effectiveness?

- MEASURE AND TRACK - validate management strategies and actions, i.e. delivering the desired outcomes and meeting conservation targets;
- FOCUS management attention on delivering conservation outcomes, not solely on activity and inputs
- IMPROVE management standards and planning for biodiversity
- BETTER coordination, acquisition and application of knowledge
- IMPROVE communication
- DEFINE accountability for outcomes and budgets
- BUILD capacity to report quantitatively to Government and other stakeholders
- IMPROVE confidence of investors - enhance political and community support

Wandering the straight and narrow…

- Pure science vs. local practitioners;
- Budget provided with limited accountability for resource condition/state outcomes;
- Work groups in-equal and imbalanced in resourcing and expertise;
- Fragmented disciplinary effort;
- Limited formalised adaptive management cycles; &
- Fragmented information systems.

Solving the alignment puzzle…

The duel goals of conservation

- To facilitate natural changes in biodiversity
- To manage change to minimise loss of biodiversity and conserve/preserve elements

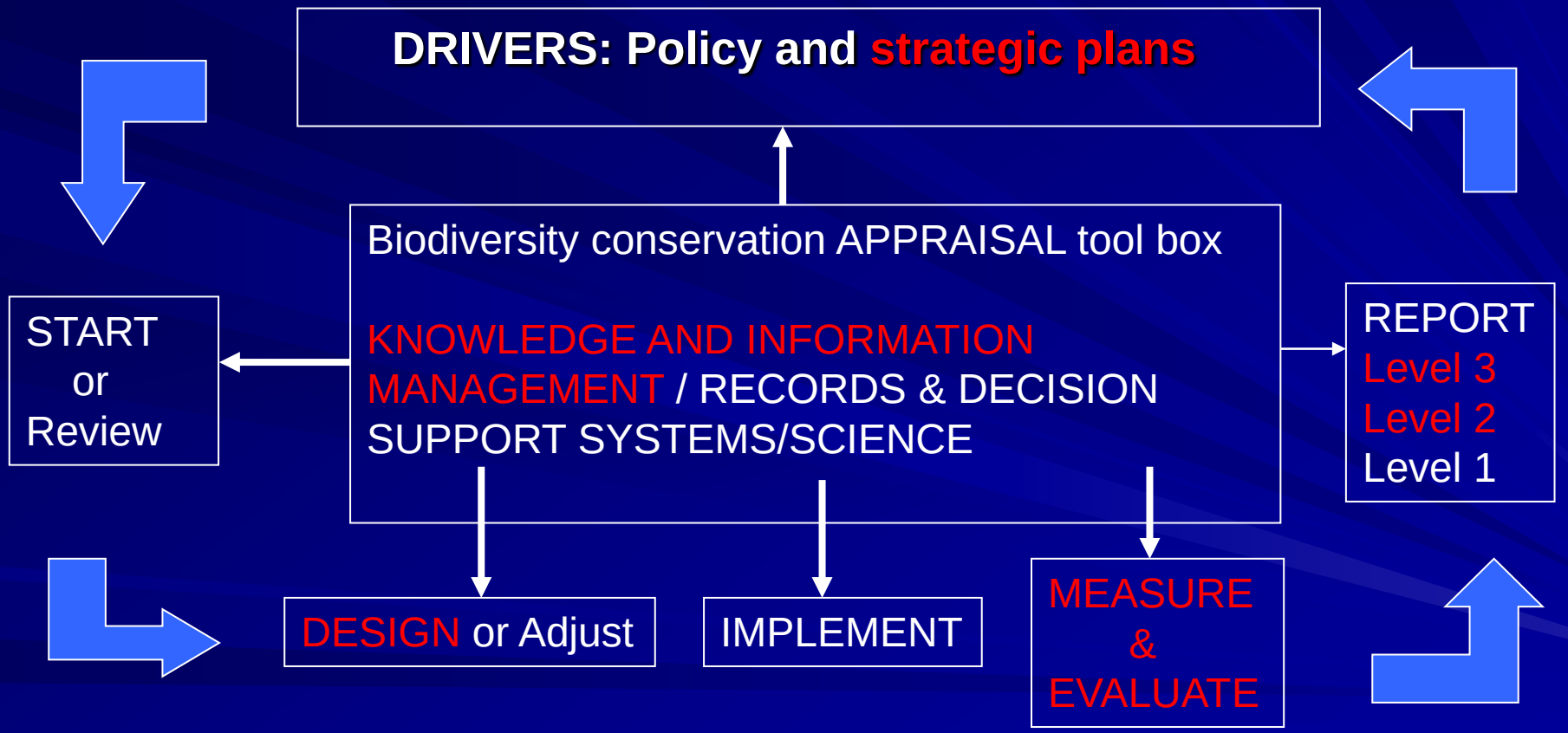
- Are we achieving desired state(s) and condition of species, ecosystems and landscapes?
- What difference are we making in alleviating adverse pressures, or threatening processes?

Why and Where…

- Project performance monitoring (activity monitoring)

How…

The defenestration of the strategy of hope: Biodiversity Conservation Appraisal System



A NEED FOR “NEW EYES”:

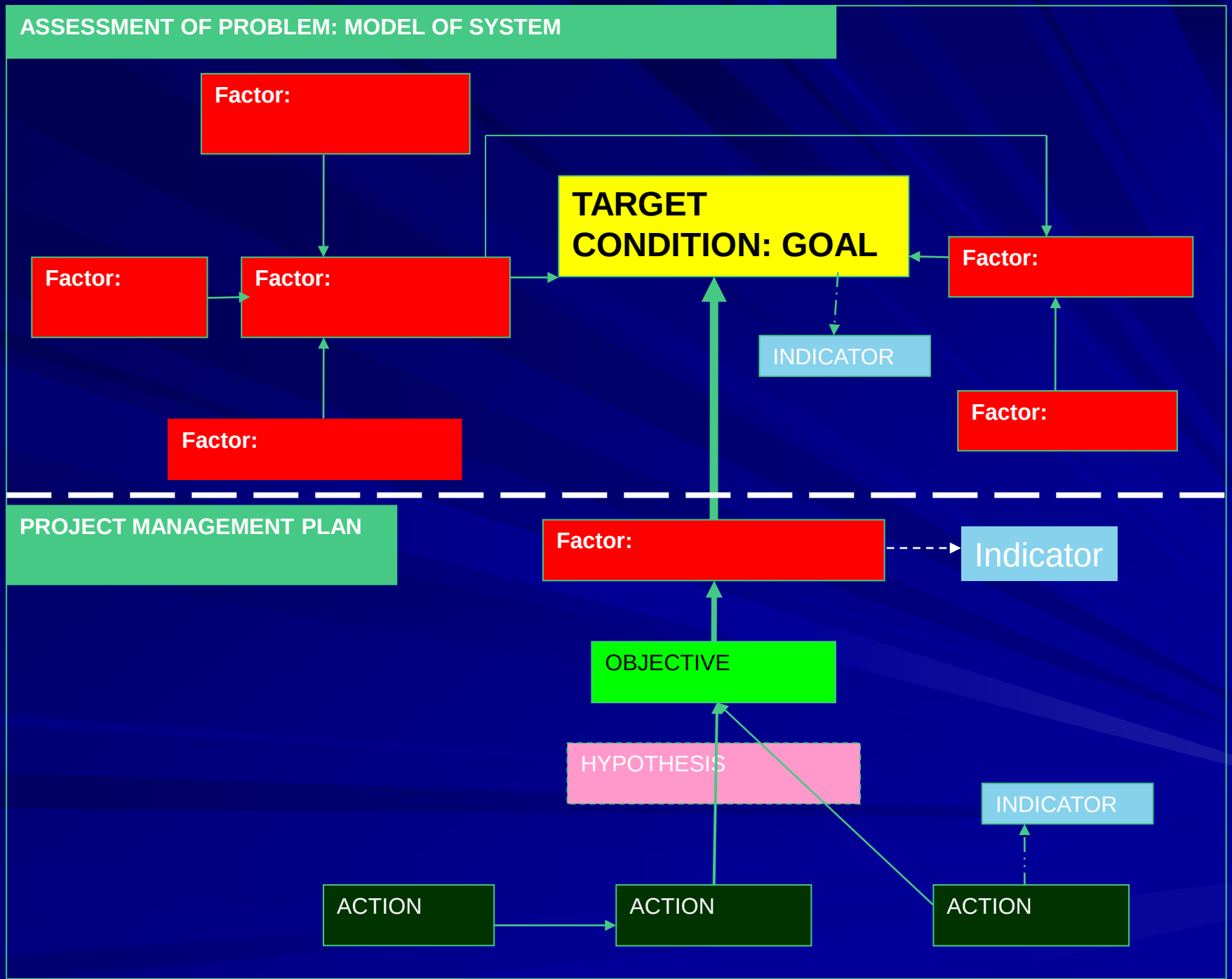
“Adaptive management is a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. Its most effective form, "active" adaptive management, employs management programs that are designed to experimentally compare selected policies or practices, by evaluating alternative hypotheses about the system being managed”.

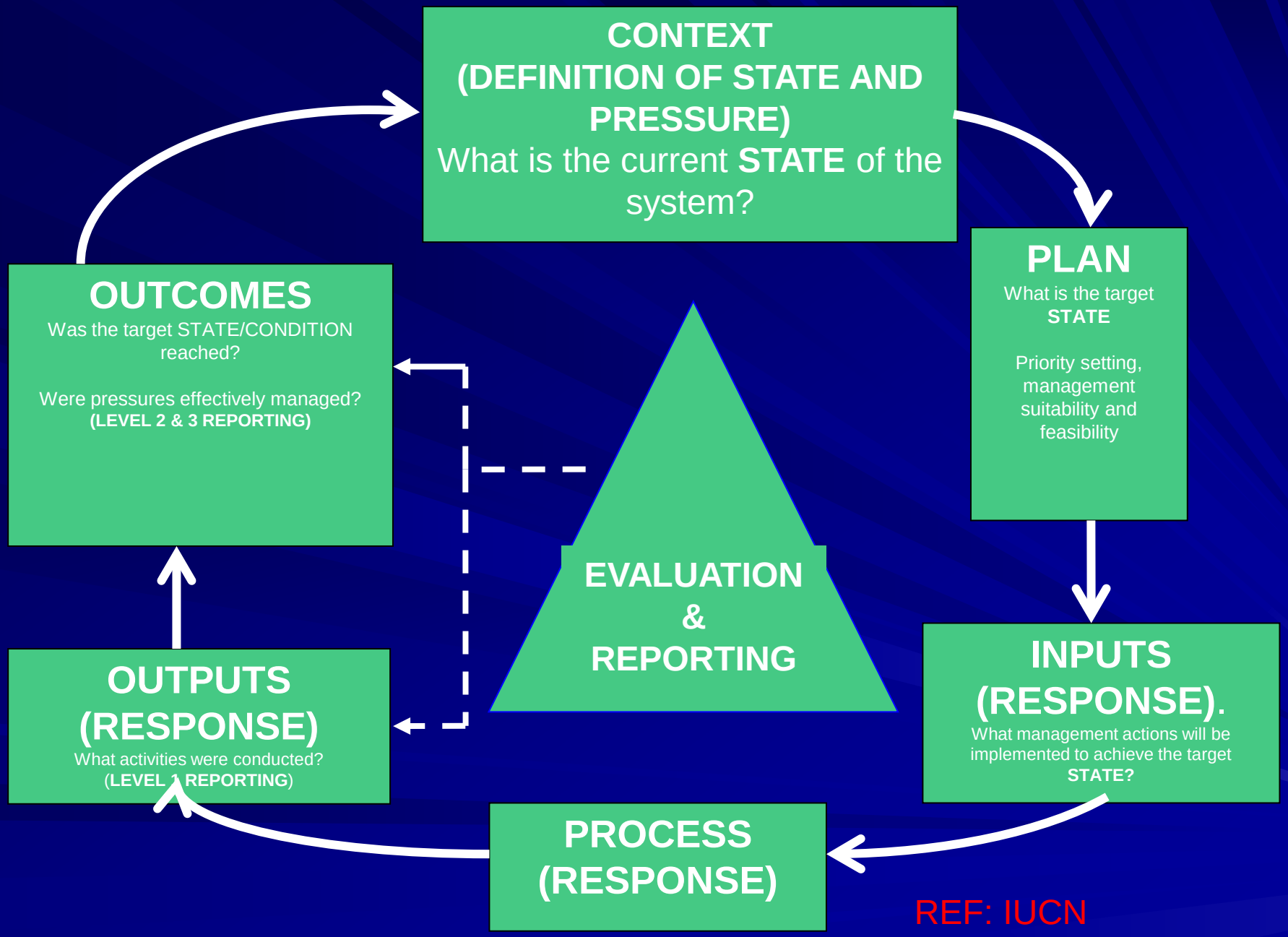
British Columbia Ministry of Forests (2004

ACTIVE ADAPTIVE MANAGEMENT

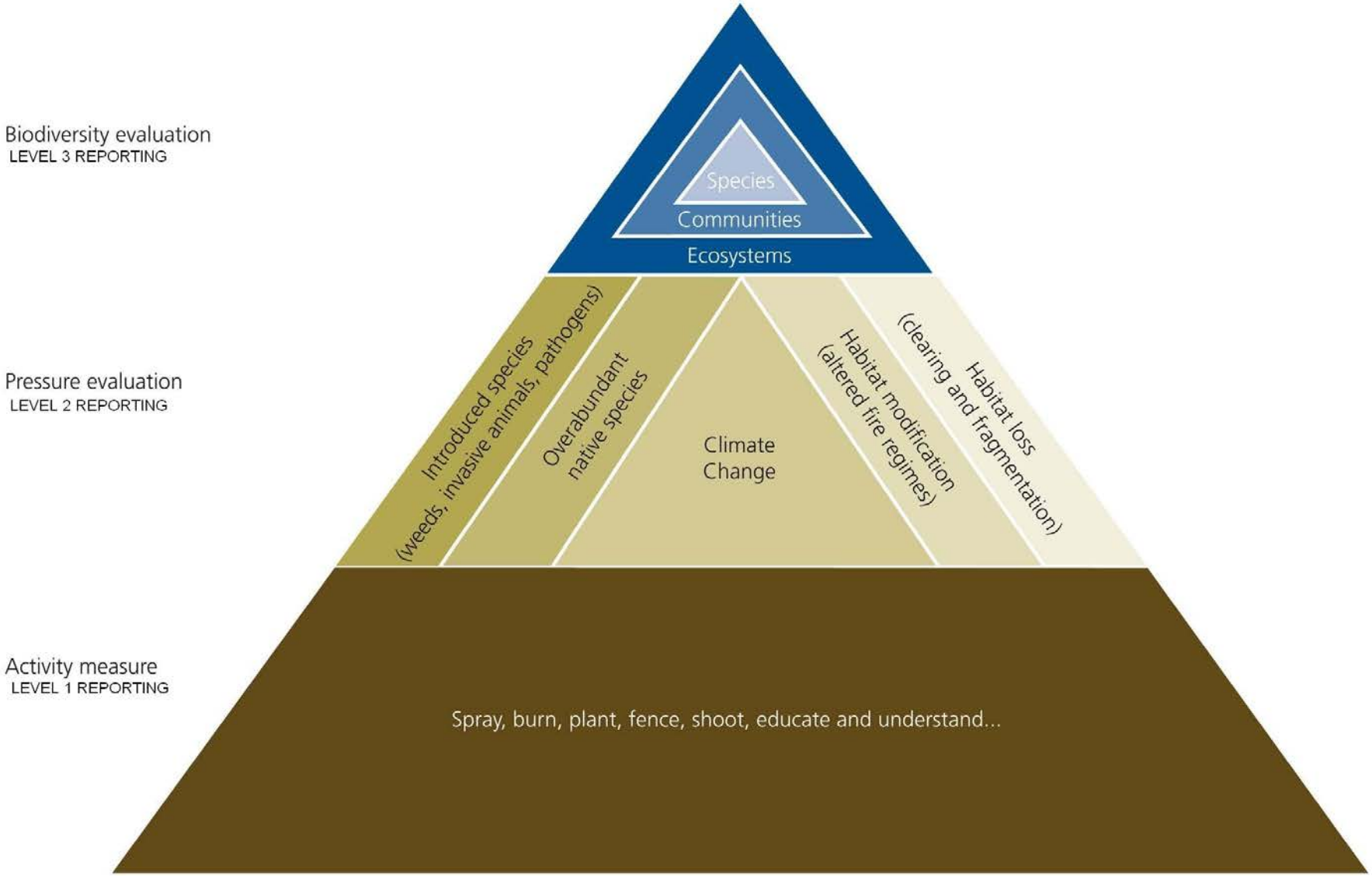
- Explicit about targets and outcomes;
- Clear on responsibility/accountability;
- Build corporate knowledge, as opposed to individual knowledge only;
- Monitored experience - Able to demonstrate impacts/performance;
- Must have appropriate experimental design.

- Build confidence in delivery (internal/external)
- Communicate business


ASSESSMENT OF PROBLEM: MODEL OF SYSTEM
Factor:
Factor:
Factor:
TARGET CONDITION: GOAL
Factor:
INDICATOR
Factor:
Factor:
PROJECT MANAGEMENT PLAN
Factor:
Indicator
OBJECTIVE
HYPOTHESIS
INDICATOR
ACTION
ACTION
ACTION


CONTEXT
(DEFINITION OF STATE AND PRESSURE)
What is the current STATE of the system?
PLAN
What is the target STATE
Priority setting, management suitability and feasibility
INPUTS (RESPONSE).
What management actions will be implemented to achieve the target STATE?
PROCESS (RESPONSE)
OUTPUTS (RESPONSE)
What activities were conducted?
(LEVEL 1 REPORTING)
OUTCOMES
Was the target STATE/CONDITION reached?
Were pressures effectively managed?
(LEVEL 2 & 3 REPORTING)
EVALUATION & REPORTING

REF: IUCN



Adapted from *State of the Parks* 2007, Parks Victoria).

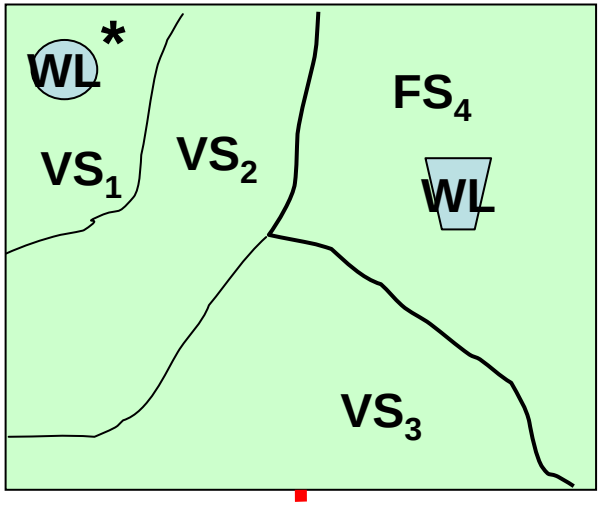
Measuring and reporting on biodiversity conservation achievements

REPORTING

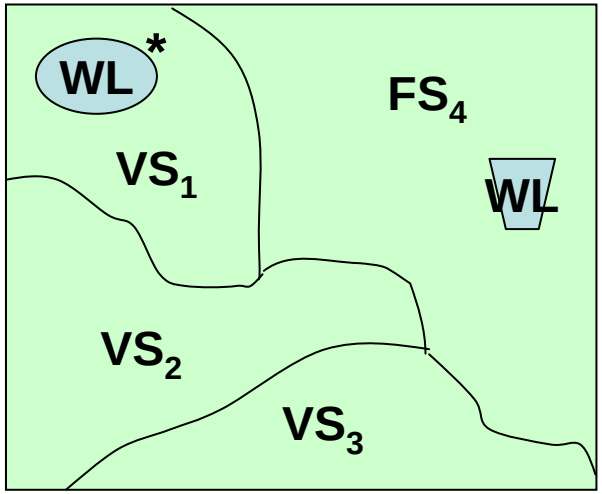
- Level 1 – Progress on management ACTIVITIES, e.g. SoS;
  - What activities were undertaken?
  - What were the outputs?

- Level 2 – Progress toward alleviating PRESSURES;
  - Were pressures effectively managed;
  - What was DEC's impact?

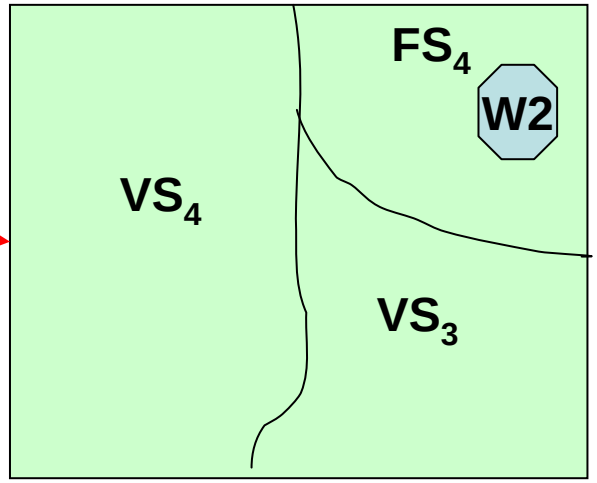
- Level 3 – Progress toward achievement of desired biodiversity state/CONDITION
  - Was the target condition/state reached?
  - What was DEC's impact?



Management Response to reduce P



$P_{1, 2, 3...?}$ not managed



Biodiversity

WL= wetland

VS_1= Veg. Type 1

VS_2 =Veg. Type 2

VS_3=Veg. Type 3

FS_4= Fire regime type

W2 =frequently burnt

* = populations of drf

P=PRESSUE = fire, grazing, climate, salinity etc

INDICATORS

"In many conservation projects, managers and scientists have a difficult time determining what they should be monitoring. In most instances, people attempt to measure a long list of indicators, which involves an extremely large and unfocused data gathering exercise" (Salafsky et al. 2004)

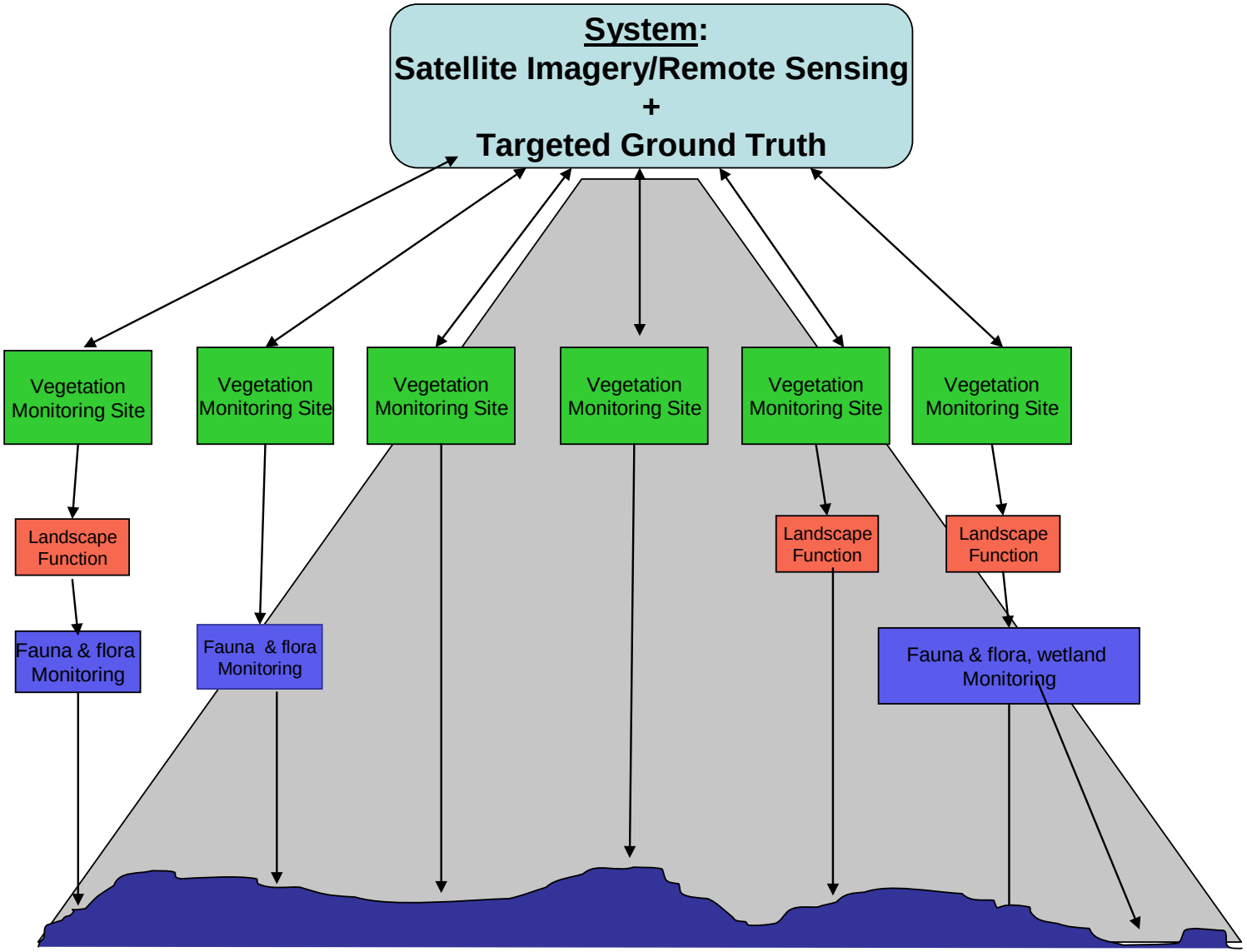
BIOINDICATORS

Can’t measure biodiversity in its entirety

RULES

1. Need monitoring question and objectives linked to management
2. Need a bunch of sensitive indicators to detect change – spatial/time – and meaningful
3. Need assumptions/limitations of indicators
4. Need indicators that can be measured – cost effectively – and protocols/standards
5. Need to analyse data; and report

Evaluating condition across scales



Roles

REGIONAL SERVICES:

- Assist in data collection;
- Provide observational information – arrival of new species; changes in abundance of species; effects of responses; pressure impacts
- Some reporting

SCIENCE/NATURE CONSERVATION:

- Coordinate/undertake data collection and analysis and reporting
- Maintain standards
- Arrange peer review
- Update/amend systems

Expected outcomes are:

- shift in management approach from one that is largely input and activity-driven to one that is outcome-driven and fosters building institutional knowledge and technical capacity;
- integration of effort (activities and function) across Divisions;
- cost-effective management and research at a regional scale that will maximize outcomes;
- better informed decision making from the Corporate level downwards so activities and budgets are better aligned to agreed targets;
- explicit priorities, targets and budget information that will strengthen a Departmental and State business case for biodiversity conservation;

Challenges

A cultural change is required:

- Corporate long term support and will
- Build technical capacity and understanding
- Uptake of improved standards
- An information management system that works!

SUMMARY

- Work is progressing towards:
  - developing a strategic framework, inc. identification of priorities, and business model;
  - framework for measuring and reporting on biodiversity conservation achievements and management effectiveness;
  - and an integrated information management system
- Delivery model needs to be supplemented with a central function to assist and/or lead delivery (especially for low capacity/remote regions); along lines of fire model; and better integration of research.
- Biodiversity is at three levels and management effectiveness framework needs to reflect these levels and the state-pressure-response
- Technical capacity needed and interdisciplinary teams

The end