The Business of Applied Science

A Framework for Providing Science Services to DoC and FPC

Discussion Paper by CALMScience Division

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1. Background

At a meeting of CALM's Corporate Executive held Friday 24th March, the Executive Director requested that *Provider Directors;* identify to whom they deliver services, what services can be delivered, and the most appropriate structure to deliver services. He also asked that "impurities" (in relation to purchaser-provider models) be identified. This discussion paper is the response of the CALM**Science** Division. As required by the ED, it is a framework for operating in a purchaser-provider environment. If Corporate Executive accepts the general concepts outlined here, then we can move to the next stage, which is to flesh out the detail.

2. Overview of Current Situation

The CALM**Science** Division engages in applied science. The activities of the Division are driven by the needs of CALM's Primary Programs, issues identified by the Division and the Department as a whole, and by public and political expectations.

The purpose (mission) of the CALM**Science** Division, as stated in the 1999-2004 Divisional Strategic Plan is:

*" In consultation with CALM's Regions, Districts and Primary Programs, and in collaboration with other relevant agencies, the CALM**Science** Division will provide up-to-date and scientifically sound information to uphold effective conservation and land management in Western Australia."*

How this mission is to be accomplished under the existing CALM arrangements is defined by a nested hierarchy of planning documents. These documents can be accessed via the CALM**Science** web site.

Divisional Strategic Plan: This provides an overview of the mission, broad objectives and strategies of the Division. It also describes the Divisional structure, the aim of the key science themes (Groups), and the objectives, strategies and indicators of success for each of the outcome-based projects that sit within, and support each key theme. This plan was constructed following formal and informal consultations with Primary Program and Regional Services staff to identify their needs, to prioritise these needs and to agree on outcomes and budgets. The activity within each key science theme (Group) broadly aligns with a Primary Program output (see Table 1 below). This plan has a life of 5 years.

It is important to note that the Division retains a degree of flexibility to respond to new and emerging issues that are not foreshadowed in the strategic planning process. This should not be lost in the move to a tighter purchaser-provider model. The effective operation of the Division depends on a mutual willingness to cooperate across Divisional/administrative boundaries, an element that should also be retained under the new system.

Operations Plan: This details the aims, significance, benefits, methods, milestones, outputs and outcomes of each of the project teams assembled to support the key science themes. It also details the people who will implement these plans. This plan is formally reviewed every three years, including an evaluation of the extent to which aims were achieved.

Individual Science Project Plans: There are about 150 individual Science Project Plans that provide a high level of detail about individual projects. These plans, and there outputs, are managed using a computer based project management system developed in-house known as WASPP. The main purpose of these plans is to ensure that the science is sound, to track the progress of individual scientists and individual projects, and to track expenditure at the project level. SPPs require detailed descriptions of aims, methodology, including statistical analysis, milestones, outputs, end users, tech. transfer/adoption methods and detailed information about resources (people and money) needed to implement the plan. SPPs, which are prepared by scientists, must be endorsed by the supervisor, by a biometrician and by an end user before they are approved by the Director, CALM**Science**.

Services Provided

The Division provides science, information and technology to underpin credible conservation and land management (applied science). In addition to helping CALM do what it needs to do, (achieve its mission), the activities and achievements of the Division promotes CALM locally, nationally and internationally. Broadly, the Division provides the following services and products:

- Solutions to management problems (e.g., Western Shield, silvicultural systems).
- Early intelligence on conservation and land management issues/problems (e.g., weeds, pests and diseases, carbon sequestration, ESFM)
- Applied innovations (new and/or better ways of doing things) (e.g., plantation site selection, felid specific toxins, tree breeding).
- Decision support systems (e.g., CAR reserve system, RFA, Fire Behaviour Tables).
- Technology transfer and publicity via publications (scientific, popular, management plans, recovery plans, etc.), conferences, workshops, seminars, talks, field days, media.
- Expert advice (policy, strategic, local problem solving).
- Training (e.g., dieback, fire, field ecology (botany and zoology), silviculture).
- Core services (e.g., State herbarium; collections management, taxonomy, identifications).
- Accessible electronic databases and information systems (e.g., DESCAT, WABIOTA, Florabase)
- Attracts funding to CALM (e.g., NHT, WWF, corporate sponsorship)
- Consultancy management (e.g., RFA, Yardie Creek)
- Community involvement (volunteers, regional herbaria program, Landscope Expeditions, IFMS)

The breadth of activities for which the Division provides these services and products is reflected in the Project Management Structure in Figure 1 below. These projects were identified as affordable high priority for the Department in 1998 following formal and informal consultations with CALM operations staff (Primary Programs and Regional Services staff). The intention is to formally review these priorities at three-yearly intervals. As discussed above, the Division retains some flexibility (nominally 15% of staff time) to respond to new and emerging and day-to-day issues that can not be captured in the planning process.

Purchasers of Services

The project management structure (Figure 1) approximately aligns with the Department's Primary Program structure and key output areas of these Programs, the exception being Parks and Visitor Services. Table 1 below summarises the 'purchasers' of products and services provided by the key science themes, or Groups. The main purchasers, measured according to level of expenditure reported against the Primary Programs, are Nature Conservation (Management Program 1) and Forest Resources (Management Program 2).

Historically, Parks and Visitor Services (Management Program 3) has not been a significant purchaser of CALM**Science** services, although it utilises corporate knowledge to design interpretive material, consultancies for visitor impact studies etc.

The Division also carries out functions that are of benefit to the Department as a whole, such as high level expert advice, representation on state, national and international bodies, community involvement activities, publications and extensions, and training.

The Division has operated within a flexible 'purchaser-provider' framework, with service level agreements being struck each year with the Forest Resources Program (FRP). The agreements specify topics or issues to be investigated by the Forest and Tree Crops Group of CALM**Science** Division, anticipated outcomes and the budgets allocated by the FRP to address these issues. Agreements have been reached with Nature Conservation and other programs by formal and informal consultations and occasionally, exchange of letters for some projects.

Table 1: Approximate budgetary relationship between primary programs (purchasers) and Key Science Themes (providers) of the CALMScience Division. A breakdown of project areas within the themes is shown in Figure 1. Further details are provided in the Operations Plan and Science Project Plans (available on the CALMScience web page).

Key Science Themes	Nature Conservation	Forest Resources		Parks and Visitor Services
		Plantations/ Tree crops	Native Forests	
Biodiversity Conservation	$4.9M			
Biological Information	$1.4M			
Forests and Tree Crops R&D	$0.4M	$1.1M	$1.2M	

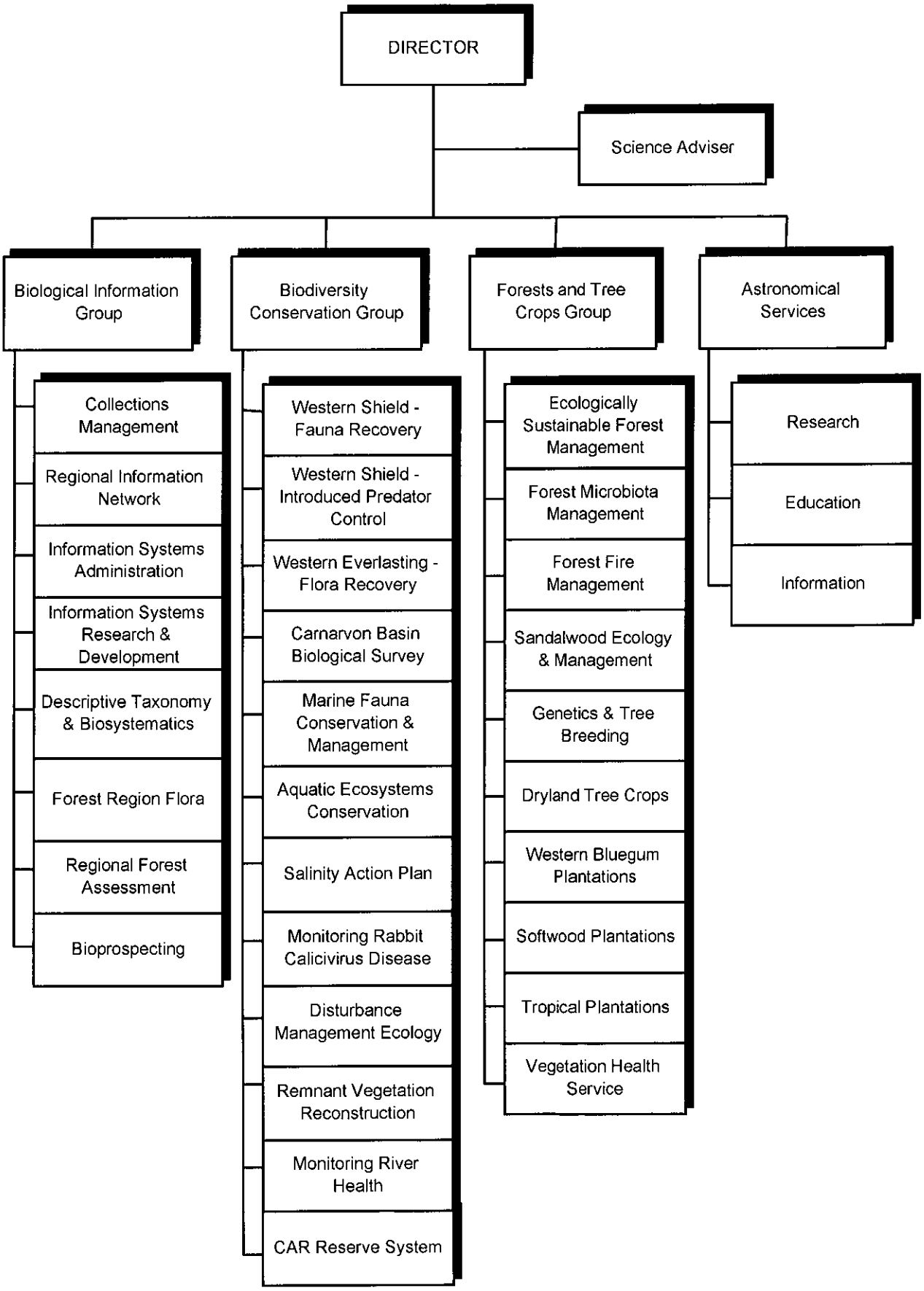
Delivery Capacity

The 1998 review of CALM**Science** priorities and functions revealed that the requirements or requests by CALM operations (Primary Programs and Regional Services) out-stripped the Division's capacity to supply by about two-fold. That is, the purchasers were unable or unwilling to allocate funds to address all of their science and information needs, so priorities were set to match available funds. The Division's capacity to deliver has been further eroded by a substantial reduction in external funds, particularly NHT funds, and increases in salaries, vehicle charges, etc. In addition to internal demands, 'external' processes such as RFA, Ferguson Committee, Ministerial Condition 17, place extra demands on the Division, but are not accompanied by commensurate funding. For example, to both retain activity in areas deemed as high priority by CALM, as well as implement the recommendations made by the external processes, the Division would require an additional $4.25M. Clearly, this additional funding will not eventuate, so priorities will be set (by a consultative process) commensurate with existing resources.

Organisation of CALMScience Staff

The Division's structure is outcome-based rather than activity, or discipline based (Figure 1). That is, teams of people with relevant skills are assembled to deliver pre-determined outcomes. While the administrative structure of the Division is stable, the project team structures are dynamic, changing with the changing needs of the Department. The current organisation of staff is shown in Appendix 1.

CALM**Science** Division Project Management Structure



3. Provision of Science Services to DoC and FPC

Services Provided

Following the formation of the two new agencies, I anticipate that, in broad terms, the Division's functions and areas of responsibility described above are unlikely to change significantly in the short to medium term. However, the Division will need to make some adjustments to the way in which it carries out these functions. These are discussed below. At the project level (Figure 1), I anticipate significant changes in some areas (particularly Forests and Tree Crops), but not in others. Due to budget pressures, the Division will position itself to provide those services that we can uniquely provide and manage the out sourcing of other services. This is discussed below (Delivery Capacity). The Division will maintain core functions, such as the State herbarium.

The precise requirements of the Sustainable Forest Management Program (DoC) and of the Forest Products Commission (FPC) are yet to be identified, but are likely to be similar to those services already provided by the Division to the Forest Resources Program. This will need to be negotiated. The purchaser-provider model presented here recognises that, with the exception of commercial tree breeding activities, research staff involved with tree crops research will be retained by DoC and provide a service to FPC via a service agreement (as recommended by the relevant implementation working group).

Who are the Purchasers?

Internal (DoC):

- Nature Conservation Program
- Sustainable Forest Management Program
- Regional Services (Calm*fire* especially)
- Parks and Visitor Services Program
- CEO (representing DoC)

The 'CEO' as a purchaser represents products and services generated/provided by the Division for which a 'purchaser' entity is less definable. These include publicity, community education/information, community involvement projects, representing the Department and/or the State at various levels and on a range of technical committees, boards etc. These activities cost real money via salary time, overheads and operating budget (e.g., travel).

External

- Forest Products Commission
- Other State agencies
- CRCs (aligned with DoC's mission)
- Federal agencies (aligned with DoC's mission)
- Corporate sector (via partnerships, sponsorships etc aligned with DoC's mission)

Table 2: Broad, program level services provided by the Science Division (Department of Conservation) and the likely primary purchasers of these services. The matrix does not show services provided to external agencies (other than FPC) or for 'Corporate good' products and services. Each program is supported by a number of science projects.

Science Division (provider)	Nature Conservation	Sustainable Forest Management	Parks and Visitor Services	Forest Products Commission
Forests and Tree Crops Theme				
- Sustainable Forest Management Systems		X		X
- Forest Monitoring		X		X
- Trees for conservation and commerce	X			X
- Commercial plantations technology				X
Biodiversity Conservation Theme				
- Threatened fauna recovery	X			
- Threatened flora recovery	X			
- Disturbance management ecology	X	X	X	X
- Aquatic ecosystems management	X			
- CAR reserve system	X			
Biodiversity Information Theme				
- Biological databases	X			
- State collections (herbarium)	X	X		
- Taxonomy and biosystematics	X			
- Corporate Information Systems	X	X	X	

A Purchaser-Provider Model

Figure 2 below represents a simplified model of the role of the Science Division (of DoC) as both a purchaser and provider. The model identifies products (outputs) of the Division that are likely to be purchased to facilitate delivery of Departmental outcomes (provider supply pathway). The Division would only act as a service provider to external agencies where it was in the interests of the State to do so.

The model shows the relationship between the Division and purchasers via the 'purchaser demand pathway'. This represents ongoing consultation to determine purchaser needs, culminating in service provider agreements. It is important that the process is a means to an end, and not an end in its own right, so I envisage a service agreement between the Division and each purchaser shown in Figure 2. The agreements need to be tight enough so that both parties are clear about what is to be delivered, by whom, when and at what cost, but flexible enough for both purchasers and providers to respond to new and emerging issues, and to service those areas for which a clear purchaser entity is not obvious (as discussed above).

The CALM**Science** Operations Plan describes in some detail, what can be delivered, and, with some renovation, could form the basis of a service agreement. There are a number of service agreements in existence in other agencies that could be used as templates, or guides to preparing service agreements relevant to the activities of the Science Division. An example of the headings that could be used in a service agreement is at Appendix 2.

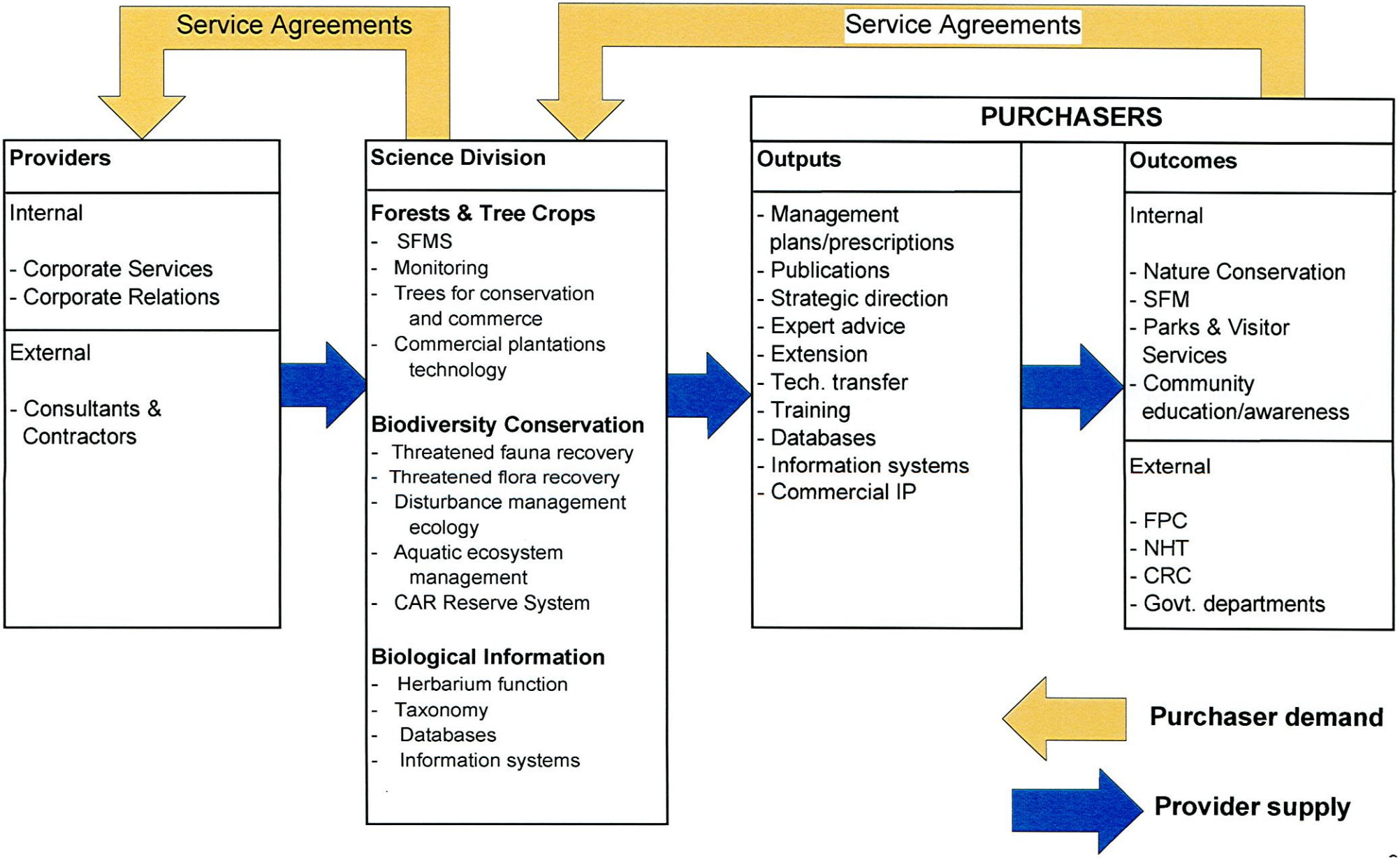
Structuring to Deliver Science Services

The current structure of the CALM**Science** Division has been described above. However, there are alternative ways of acquiring/delivering science, including dismantling the Division and housing the various elements within the primary (output) programs, or doing away with the function altogether and purchasing it from external providers. There are advantages and disadvantages of each model. It is my view that the strong in-house scientific and technical capacity of CALM (DoC), which is facilitated by the Divisional structure, is one of the great strengths of the organisation.

Further, it is opportune to consider consolidating all research and development (science) activities undertaken throughout the Department into one administrative and management structure. Similarly, it is opportune to assess whether or not some of the activities carried out within the Division constitute science. If not, then the benefits of retaining these activities within the Division could be questioned. These decisions will require consideration beyond this paper.

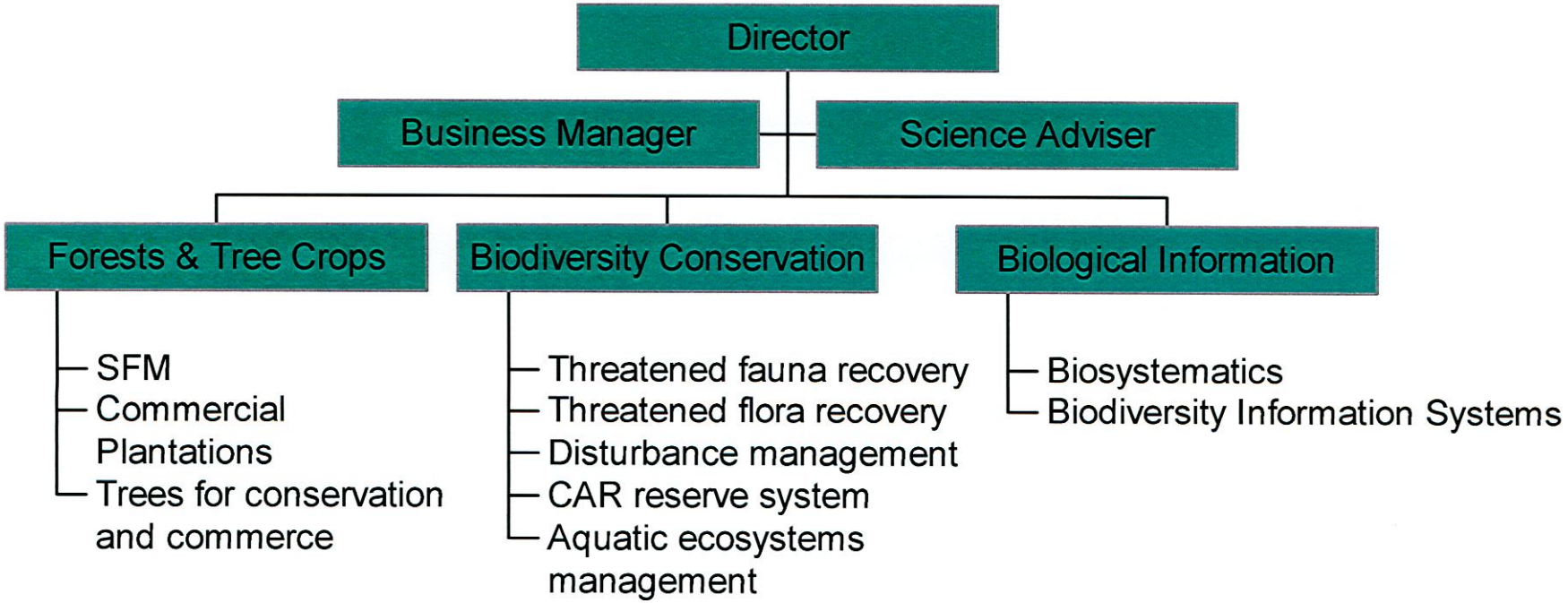
The existing Divisional structure has served the Department well. However, as we move to a 'purer' purchaser-provider system, the structure could be modified, as shown in Figure 3 below. The proposed new structure (which needs more work!) retains the first order branching according to key science themes, but collapses the project teams down to fewer outcome-based programs, each with a program leader. As with the original structure, each program would be supported by a number of science projects. The new structure also provides for a business manager.

Figure 2. PURCHASER-PROVIDER MODEL
SCIENCE DIVISION



SERVICE DELIVERY STRUCTURE

SCIENCE DIVISION



Delivery Capacity

The demand for science services exceeds our capacity to supply, which is ultimately regulated by the amount purchasers are willing to spend.

Our capacity to meet demand with existing budgets is declining because of rising salaries and overheads and falling revenue especially from external sources. Currently, about 95% of the Division's CF allocation is consumed by salaries for permanent employees, and overheads. With significant increases in WPA and EBA (5.25% WPA over next 12 months) I estimate our entire CF allocation will be consumed by salaries and overheads within 18 months, leaving us with no (CF) operating budgets. Budget adjustments to fully compensate for rising costs are unlikely in the current climate.

This scenario is compounded by a declining trend in our ability to access to external funds (e.g., NHT) and sponsorship dollars. For example, NHT funding to the Division has dropped by about 80% over the last 12 months or so due to changes in priorities by the Federal Minister.

To maintain delivery of high quality science and technology services to the department(s), the Division will need to change its *modus operandi* somewhat. I anticipate the following strategies will be adopted over the next 12-18 months.

1. The Division will gradually consolidate to providing those priority services that we can uniquely provide, or in which we have a significant competitive advantage. In general terms, these are services such as:

- Long term (strategic) applied R&D.
- Monitoring
- Landscape-scale applied research
- Bio-region-scale biological survey
- "Public good" applied R & D

The Division will move away from short term, taxon specific, and basic research. Post-graduate programs or consultants could do this more effectively.

This will provide the opportunity to reduce the staff numbers and turn salary savings to operating budgets to do the R&D outlined above and to fund and manage the out-sourcing of other work. Clearly, without budget increases down the track, this is a stopgap measure. Other benefits of this approach are that it will foster closer links with other research agencies such as the universities, CSIRO and CRCs, and in controversial areas, out-sourced work would be seen to be 'independent'.

2. Forming partnerships: The Division will need to amplify its capacity by actively seeking partnerships and strategic alliances with other research institutes and with community-based groups.

3. The staff age-class frequency distribution is highly skewed to the older age classes. The loss of the mature cohort over the next 5-10 years will help with salary savings, but will see an alarming loss of experience and corporate experience, wisdom and intellect. It will also create a void within the middle and senior levels of management. Given the budgetary constraints, this can only be addressed by mentoring/training young people to take on more senior roles, and when the opportunity arises, recruit on the basis of skill and competency.

APPENDIX 1

Appendix 2

An example of a Service Agreement Template

1. Objectives/Intent of agreement
2. Outcomes sought by purchaser and agreed to by provider
3. The Agreement
    - Operating Principles
    - Roles and Responsibilities
    - Operational Delivery
    - Timelines/Milestones
    - Duration of the agreement
    - Initiation of agreement
    - Changing the agreement
    - Termination of agreement
    - Commercial basis
    - Communication between parties
    - Resolution of disputes
    - Management Review, Reporting and Control

Specific projects (Science Project Plans) could be listed and detailed costings could be attached to the agreement.