



FROM LIBRARIES TO KNOWLEDGE CENTRES: TRANSFORMING LIBRARY SERVICES FOR THE KNOWLEDGE AGE

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ABSTRACT : Over the last couple of decades pressure has intensified on libraries to redesign their services to accommodate changes in resources and opportunities provided by technology. It has been necessary for libraries to accommodate the increasing amount of resources available in electronic format while continuing to simultaneously manage and maintain large print collections that are still heavily used. Acquisition of electronic resources has taken place in the context of limited budgets, increasing prices and falling exchange rates.

The development of the knowledge economy is also affecting the way in which libraries deliver services due to the increasing utilisation of the internet, and the common perception that libraries are redundant as everything can be found on the web. Customers increasingly expect, and generally prefer, to access resources electronically whether from work or remotely from home and other sites.

This paper outlines the response of the library services of the Department of Primary Industries (Victoria) to these pressures through a key knowledge management project, the Libraries Redevelopment Project, which has sought to reposition library services within the Department and provide a new model for the delivery of library services.

Historical model of library services

In 1998 when I joined the library services unit of what was then called the Department of Natural Resources and Environment (DNRE) the department still operated library services in a very traditional manner. The library collections of the Department were primarily print based and were distributed across the state of Victoria in 17 staffed and a number of unstaffed libraries.

The Department of Natural Resources and Environment (DNRE) was a state government department that was responsible for the sustainable development of Victoria's natural resources. The Department delivered services to the citizens of Victoria through a network of 180 regional offices with the head office of the Department located in Victoria's capital city, Melbourne.

Most of the Department's libraries were co-located at research institutes operated by the DNRE such as the Victorian Institute of Animal Science which was based at Attwood and the Institute for Horticultural Development based at Knoxfield. Exceptions were the largest of the libraries, the Corporate Library, which was situated in the central business district of Melbourne, and the Minerals and Petroleum Reference Centre, which was attached to the Minerals and Petroleum Division of the DNRE.

With the exception of these two larger libraries, most of the library collections were managed by a sole practitioner, usually employed on a part-time basis. The collection at each site was listed, to a greater or lesser degree, in the Department's catalogue. The librarian at each site was responsible for managing the journals held at their site, including accessioning and claiming. Similarly the acquisition of books and other items for the collections was managed individually by each site. Collection management at each site varied, with some journal collections filed by the Dewey decimal

classification system and some alphabetically by title. The quality of cataloguing depended on the knowledge, ability and interest of the various library staff at each site. When not involved with collection management, library staff at each site were responsible for providing reference services and library training to customers at their site. Some effort was made to extend such services to staff at other departmental sites but this was done by necessity on a limited and mostly infrequent basis.

Advantages of this decentralised model of library service included the following points:

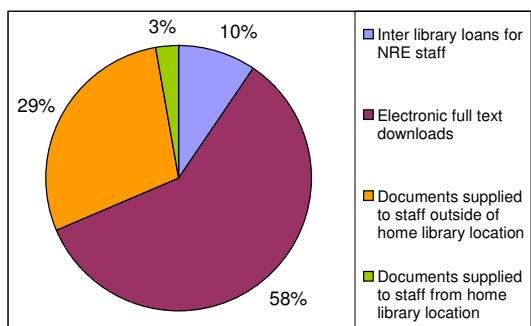
- at sites where libraries were located departmental officers generally felt that they received a personalised and accessible service
- items were located at the site at which they were most heavily used
- there was ownership of the various collections by staff at those sites, with some of the research institutes prepared to supplement the budget for acquisitions and equipment
- distribution of collections meant that all staff in the DNRE were within reasonable distance of a staffed and managed library collection
- library staff had a good personal knowledge of customers at their site
- library staff acquired considerable knowledge about the resources they managed

There were however a number of significant service delivery problems associated with this regionally based service model. These included:

- inequitable access to collections and service - for both internal and external customers

- inconsistent and variable document delivery from collections
- inefficient performance of collection management tasks such as cataloguing and journal accessioning
- inconsistent standards in technical processes, particularly with regard to cataloguing
- inefficient use of space and unnecessary duplication of material across collections
- inappropriate storage of items at many sites and lack of security of the collections, leading to a high rate of loss of items
- increasing time spent on transferring material among sites due to the interdependence of collections

The graph below shows how documents supplied to DNRE staff over a 12 month period were sourced. It shows the great popularity of full-text electronic journals, though in the period surveyed, 2000-2001, the Department's access to such journals was relatively limited. Note that the documents supplied to staff from their home library location, i.e. staff at a site who obtained a document from the library at that site, is probably under-reported, as much of this use of the collection was self-service and not easily accounted for. However the figure for documents supplied to staff from another library within the department, at almost 30%, shows the high degree to which staff were accessing material from libraries at other sites and the high level of interdependence of the collections.

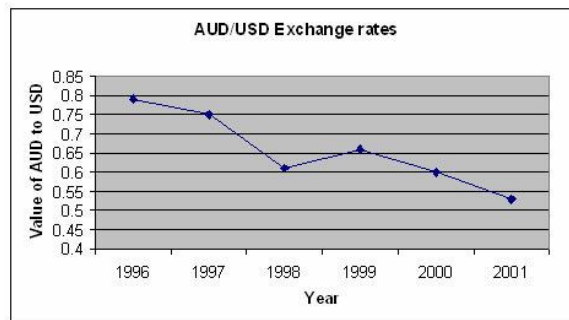


(Source: *Libraries Redevelopment Business Case February 2002*)

Rising cost of journals

This interdependence of library collections was increasing, as financial pressures during the late 90s and the early years of this century led to a large number of journal cancellations. Duplicate subscriptions, that is journals that were subscribed to by more than one site, were targeted in these cancellations.

Graphs showing the rising cost of journal subscriptions are familiar to librarians around the world. To put these increases within an Australian context it needs to be remembered that as Australia is estimated to only produce about 3% of the world's information resources, 97% of information resources have to be purchased from overseas. The costs of journal subscriptions in Australia was further affected by the weakness of the Australian dollar as demonstrated below.



Source: *Australian Bureau of Statistics (included in Libraries Redevelopment Business Case February 2002)*

As the above graph demonstrates, by the end of the year 2000 the Australian dollar had fallen to AUD55 : 100USD. Exposure to USD for the purchase of journals in 2000 for DNRE was 71% of total journal subscriptions.

The response of library services within the DNRE to these pressures was consistent with the response from other Australian libraries. These included:

- introduction of user pays for costs associated with inter-library loans
- the formation of consortia to increase negotiating and purchasing clout with regard to the purchase of electronic journals. This included the formation of a consortium with sister state government departments in New South Wales, Queensland and Western Australia for the purchase of ScienceDirect. Another consortium of Victorian government department libraries arranged the purchase of the Emerald full-text management journals.
- bundling subscriptions to hard copy journal titles with access to full-text in order to increase access to journals not subscribed to
- publicly tendered subscription lists to reduce the impact of price volatility while increasing certainty and quality of supply
- reducing duplication in journal subscriptions across departmental sites.

Other drivers for change in service delivery

In addition to the inherent problems with service delivery due to a regionally based service model and to the financial problems outlined above, there existed a number of other drivers for change due to the evolving nature of the knowledge economy.

First there was the impact of the Internet and the increasing tendency of customers to first look on the Internet for information rather than to utilise more traditional resources, such as the library catalogue or bibliographic databases. The perception that anything could be found on the Internet, and often for free, was challenging library services around the world to justify their existence.

There was also the increasing demand by customers for access to full-text electronic resources. This demand was being driven partly by the increasing ease with which customers can locate relevant bibliographic data at their desktop, and to the increasing use of systems which alert the customer to new publications. The purchase of electronic resources, however, was a huge strain on limited budgetary resources, while also increasing the work load of librarians in their role of facilitators who were required to locate the owner of the full-text resource, negotiate often complex license agreements, and pay for the cost of access.

Technology was also presenting opportunities in online service delivery. It was becoming feasible to create a virtual library available on the individual's desktop independent of the customer's location and accessible at any time of day.

There was also the need to align library services with the developing knowledge management philosophy that was picking up steam in Australia. The Department had produced its first discussion paper on the implementation of a Knowledge & Information Sharing strategy in 2000 and this was followed in 2001 with implementation of a Knowledge Management strategy. This strategy incorporated library services within the Department's knowledge management framework.

There was a recognised need to make technical processes within library services such as cataloguing, acquisitions and serials management, more efficient. This need could be seen as a requirement to improve the quality and reduce the cost of technical processes. It could also be seen as an opportunity to more fully utilise the professional skills and capabilities of library staff, particularly within the framework of knowledge management with its emphasis on positioning the Department as a knowledge sharing organisation.

In summary there was a need to make the library service, and the library staff, more relevant and efficient in the environment that was developing due to technological and strategic changes.

Libraries Redevelopment Project

With so many different pressures on service delivery, the need to redevelop library services more broadly was gradually articulated. The Libraries Redevelopment Project was first funded in the year 2000 and the first discussion paper from the Project was released in the following year.

This was followed in 2002 by the release of the Libraries Redevelopment Business Case that argued for a radical new model for the delivery of library services within the Department.

The new model for service delivery articulated in this paper incorporated the following ideas:

- electronic rather than print
- centralisation of the print collection
- desktop delivery of resources and services better utilising available technology

- tools of trade collections at regional sites
- transformation of library staff into Knowledge Resource Managers.

To implement this service delivery model the Libraries Redevelopment Project identified three main objectives:

- redevelopment of the library intranet site with a focus on desktop delivery of library services
- centralising the majority of the print collections to a state-of-the-art storage facility, the Knowledge Resource Centre
- transforming the professional library staff into knowledge resource managers who would spend less time on operational tasks, such as photocopying and document delivery, and more on value-added tasks that utilise their information and knowledge management skills.

Following release of the business case, a Libraries Redevelopment Project Reference Group was formed and first met in February 2002. The reference group was a forum for library staff and customers to provide input to the Project team on the proposed service model and the issues relating to its implementation. Library staff elected a representative to the Reference Group. Other divisions within the Department nominated representatives to the Reference Group.

In April 2002 the Libraries Redevelopment Project Board was convened. This Board was constituted to oversee the implementation of the Project. The Project Manager reported on the progress of the project to the Board at its meetings.

In late 2002 the Department of Natural Resources and Environment was abolished and replaced by the Department of Primary Industries (DPI) and the Department of Sustainability and Environment (DSE). The library services unit and all library staff were transferred to the Department of Primary Industries and became part of the Knowledge and Information Branch within that Department. The Project continued under the auspices of the Department of Primary Industries but with representatives from the Department of Sustainability and Environment sitting on both the Project Board and the Reference Group.

The Virtual Library

The first of the Project's objectives to be delivered was the redesigned library intranet site which was launched in May 2003 as the Virtual Library.

The Virtual Library aims to enhance delivery of library services to the customer's desktop. It incorporates traditional library resources such as the library catalogue and bibliographic databases which include:

- CAB Abstracts (OVID) – including back files to 1910
- Agricola (OVID)
- Current Contents (OVID)
- Analytical Abstracts (OVID)
- Aquatic Sciences and Fisheries (CSA)
- Agriculture and Natural Resources Index (Informat)
- Engineering and Technology (Informat)

It also provides access to a range of electronic full-text resources. The purchase of additional electronic full-text resources was an important part of implementing the new service delivery model which was achieved by redirecting funds formerly committed to the purchase of print subscriptions. Electronic full-text resources added to the Virtual Library over the last few years include:

- ScienceDirect
- Blackwell Synergy
- Proquest Agriculture, Biology and Science full-text journal collections
- Emerald full-text management journals
- CSIRO full-text electronic journals collection

Subject gateways

A particular feature of the Virtual Library were the subject gateways developed by library staff. There are currently 55 gateways grouped under the following main subject areas:

- General topics
- Animal science
- Biosecurity and risk management
- Business and community management
- Economics and finance
- Environmental health and chemistry
- Environmental management
- Knowledge, information, technology and communications
- Marine, freshwater and coasts
- Minerals and petroleum
- Natural resources sciences
- People and the organisation
- Planning and heritage
- Plant science
- Statistical methods and experimental design

Maintenance of these gateways is a key activity of the professional library staff in their new role of knowledge resource managers. Each gateway provides links and information about resources relevant to the subject including:

- full-text electronic resources
- other publications (i.e. journals for which full-text access is not available and significant print publications)
- bibliographic databases
- library catalogues of other institutions and organisations relevant to the subject area
- links to people and organisations relevant to the subject area
- web resources
- tips for searching the library catalogue, including relevant subject headings and Dewey decimal classification numbers

Knowledge Resource Centre

The big white building that can be seen in the photograph is the repository building that houses the centralised library collection. Behind the repository is a further building that houses another work area for library staff.



The Knowledge Resource Centre was the second of the objectives of the Libraries Redevelopment Project to be delivered when it began operation in late 2004. The Centre is a state-of-the-art library facility that has been designed to ensure the long term storage and preservation of library materials.

The Centre consists of 3 buildings. The front building, which was an existing departmental library, has been remodelled to provide:

- a public reading room which can be used by departmental staff or members of the public to view items from the collection
- a meeting room for use by departmental staff
- a display area for viewing recently received books and journal issues
- a reference desk which is staffed during business hours
- a staff office and work area



The repository building showing the multi-media area and air conditioning system

The high-density climate-controlled repository building is designed to ensure the long-term preservation of library materials due to the sophisticated environmental systems installed. These are designed to maintain the temperature at 18°C +/- 2°C and a relative humidity of 50% +/- 5%. These specifications meet international standards for the preservation of print material. The

heavy duty air conditioning system has 4 levels of filtration to remove contaminants from the air, such as dust, fungi, and insects. The repository is also a secure building that minimises the possibility of loss or theft of items from the collection. An efficient warehouse shelving system is used, rather than a standard library classification system, in order to maximise space usage and the quick retrieval of items from the collection.

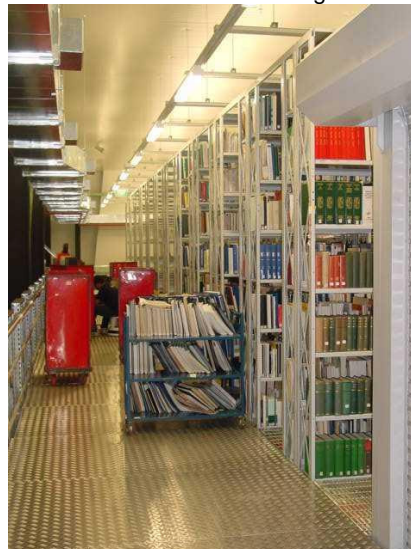
While there are a number of facilities similar to the Knowledge Resource Centre in the United States of America, such as the Cornell University Annex and the Yale University Library Shelving Facility, the Centre was only the second such library facility to be built in Australia. The first Australian high-density storage library facility to be built was the CARM centre at La Trobe University. Also located in Melbourne, this is a storage facility for a number of Australian university libraries and the State Library of Victoria. While there are some similarities between the Knowledge Resource Centre and the CARM Centre, a difference is that the latter houses only material that has been identified as being of low use. The Knowledge Resource Centre, in contrast, houses the bulk of the library collections of the Department of Primary Industries and Department of Sustainability and Environment. Such storage facilities for print collections are becoming more common however with the State Library of Victoria in the process of building a new high-density repository in conjunction with the University of Ballarat. A large centralised repository is also under construction in Hong Kong as a consortium project.

Relocation of collections

The various distributed collections of the Departments were gradually relocated to the Knowledge Resource Centre over 3 ½ months at the end of 2004. (Note that while the Knowledge Resource Centre is managed by the Department of Primary Industries, it also houses collections from the Department of Sustainability and Environment and provides services to both departments under shared access arrangements). While the Centre had its official opening only in May 2005, service delivery commenced within a week of the Centre becoming operational in September 2004. As soon as the first collection to be relocated was on the shelves, document delivery commenced - there was no honeymoon period!

The relocation of the collections to the Knowledge Resource Centre was undertaken by a specialist library removalist firm. Journals were integrated by the removalists into a single collection filed alphabetically by title during the relocation. The integration was undertaken using a shelf list prepared by library staff from the catalogue. Journal issues identified as duplicates were also transferred to the Centre. Staff at the Knowledge Resource Centre are currently in the process of auditing this material to ensure that it is material already held in the collection. Material is also being assessed to ensure that the copy in best condition is retained. Preference is being given to the retention of unbound journal issues, as these are generally easier to

copy and scan providing a better quality of reproduction. Material that is identified as surplus to our requirements will be offered to other libraries and organisations.



Books and other collections were filed as separate collections, in the order that they were received. However, new books and items returned by patrons from loan are filed in a new collection, called the managed collection, which is shelved separately. Items in this collection receive a shelf number in addition to a Dewey decimal classification number. The shelf number gives all items in the managed collection a fixed location. This allows shelves to be fully stacked without the need to leave empty shelves scattered throughout the collection to accommodate future growth.

This system for filing books is one of the reasons why the collection is a closed access collection. If patrons want to browse the collection by classification number, they need to do so using the catalogue rather than by physically browsing the shelves. The other reasons for the collection being closed access are to retain the integrity of the environment, as well as occupational health and safety considerations.

So how do our customers, scattered throughout the state of Victoria, use the collection?

Document delivery

Departmental staff can access items held at the Knowledge Resource Centre by requesting items for loan or copy using a request form located on the Virtual Library. All requests are required to be made electronically.

Most items are sent to customers by DX mail. This is an overnight courier service used extensively by the state government for the transfer of documents between regional offices. We state that if customers submit their request before 2 pm, they should receive the item the next business day.

If a document is required more urgently, we undertake to deliver via electronic means if the item required is a journal article or book chapter that can be scanned and then emailed. We currently restrict email delivery to this

subset of requests due to concern that routine scanning and emailing of articles would adversely affect the Department's computer network.

Other services provided by the Knowledge Resource Centre

Though document delivery is a core focus of the Centre, a number of other services are also provided.

A reference desk is staffed during business hours from Monday to Friday. Enquiries are received at the reference desk by telephone, email, and from walk-in customers, including departmental officers and members of the public. The desk provides a single reliable contact point for all services provided by the Knowledge Resource Centre, as well as for other services provided through the Knowledge and Information Branch.

The Centre provides ISBNs and ISSNs for all departmental publications produced for external distribution. ISBNs are purchased from the Australian ISBN agency, and ISSNs are obtained from the National Library of Australia. In addition the Centre manages the legal deposit requirements for the Departments, ensuring that copies of all departmental publications are lodged with the National Library of Australia, State Library of Victoria, and Victorian Parliamentary Library. Copies are also kept in the departmental publications archive which is located at the Centre. A digital archive of departmental publications in electronic format is also maintained and can be accessed via the library catalogue, which is available on the Internet at <http://www.dpi.vic.gov.au/library>

The Centre is also the central contact point for copyright enquiries relating to departmental publications. Requests from external customers to reproduce published material to which DPI or DSE hold copyright are received by the reference desk and forwarded to the appropriate business unit for authorisation.

All serials managed by library services are received and accessioned at the Centre before forwarding to the relevant tools of trade collection if appropriate. The Centre also manages the acquisition of books, videos, CD-ROMs and other library materials on behalf of the knowledge resource managers for addition to the tools of trade collections, and on behalf of individual departmental officers seeking to purchase publications with departmental or project funds to assist them in their work. All publications purchased by the Centre are catalogued before forwarding to the relevant collection or customer.

The Centre processes all inter-library loan requests made on behalf of departmental officers. A user pays systems for inter-library loans has been in place since 2000.

Concerns with the new model for service delivery

The new model for delivery of library services was a radical departure from the previous model of maintaining a highly distributed library collection across many sites. There was considerable resistance from both customers and library staff to the concept in its initial stages.

Concerns with the proposed model centred primarily around the following areas:

- delays in access to material - customers were concerned that delays in the supply of material would affect productivity
- inability to browse the collection - concern that the inability to physically browse the collection would affect discovery of appropriate material through serendipity
- loss of knowledge of the collection - library staff were particularly concerned with loss of their specialised knowledge of material held within the collection which could be used to answer reference enquiries or direct customers to appropriate material
- loss of knowledge about customers – library staff were concerned that not knowing what items customers were ordering would reduce their knowledge of customers and consequently their effectiveness in providing customer service.

A number of processes and strategies were used to investigate and minimise these concerns.

Proof of concept

To test the proposed model for service delivery one of the regional library collections, from Horsham in north-west Victoria, 4 hours drive from Melbourne, was transferred to Melbourne in early 2003. The supply of items from this collection to staff in north-west Victoria was closely monitored. Preliminary and final reports on the proof of concept contained analyses of document delivery supply which confirmed the validity of delivery to remote customers from a centralised collection.

Tools of trade collections

Each regional site has retained a small reference collection, referred to as a tools of trade collection. These collections include:

- the most recent issues of indexed journals
- all issues of magazines not indexed by bibliographic databases (mostly trade literature and newsletters)
- printed indexes and abstract journals
- regularly used reference material
- publications produced by local authors, (such as theses, project reports etc.).

The collection policy for the tools of trade collections was developed with the assistance of the Libraries Redevelopment Project Control Board. There was significant consultation with customers at each site regarding the selection of items to be retained as part of the regional tools of trade collection.

Communication strategy

As would be expected many different tools were used during the Project to communicate and inform customers about the redevelopment of library services. A Project Newsletter was produced quarterly during the life of the project. This was complemented in the months immediately preceding the relocation of collections by a second newsletter providing answers to FAQs regarding the relocation of the collections and the operation of the Knowledge Resource Centre. Articles in other

departmental newsletters were used to reach as broad an audience as possible. Registered library users were targeted by email as well as receiving information leaflets with loans and photocopies. Many library staff gave presentations at regional sites and to work groups explaining the changes and benefits that would arise from the new service delivery model.

It is important to note this key role that library staff at each site had in informing customers and disseminating information about the Project.

Service delivery

The single most effective answer to concerns about the operation of the Knowledge Resource Centre has been in actual service delivery. Feedback has been consistently positive about the speed with which requests are processed and with which items are dispatched. An example of some of the feedback received from customers include the following:

- "I have been most impressed with and am most grateful for the very rapid and professional service I have been receiving from the Centre in terms of paper requests and ILLs."
- "many thanks for your prompt assistance, even with some incomplete request forms as well !
- "Thanks for the very prompt response. Much appreciated !"
- "Just wanted to say thanks - I've put quite a few requests in this week and got lots of articles back already. That's great service! I particularly like it when you can get them as PDFs!"

Electronic browsing

Browsing of the collection remains a bone of contention to some extent. However it needs to be recognised that with such a distributed collection the resources that any individual customer was previously able to physically browse at one site were a relatively small part of the overall collection. We encourage customers to browse the entire collection electronically using the catalogue. For this reason we continue to assign Dewey decimal classification numbers to items, though they are not strictly necessary for shelving.

New issues of journals are distributed, after accessioning, to regional sites so that customers at those sites can browse issues. It is intended that these issues will be retained at regional sites for 3 years before being returned to the Centre for long-term storage and access. However much effort is also being made to increase knowledge and use of electronic current awareness services such as Current Contents. We are also continuing to extend the ability of customers to browse journals electronically by the purchase of full-text backsets and by increasing retrospectivity of bibliographic databases, as demonstrated by the recent purchase of the CAB Abstracts backsets.

Transforming library staff into Knowledge Resource Managers

The final objective of the Libraries Redevelopment Program was to transform the regional library staff, who no longer have large print collections to manage, into a

new breed of librarian - a Knowledge Resource Manager.

In this role regional library staff are expected to spend significantly less time on collection management tasks and technical tasks, (such as document delivery, cataloguing, acquisitions, inter-library loans etc.), which are now undertaken by the Knowledge Resource Centre, and more time on proactive service delivery and the development of value added information products. There is also an expectation that regional staff will extend their roles within their region, rather than working predominantly at one site, and provide greater support to project teams within the Department with regard to information and knowledge management.

Specific tasks for which the Knowledge Resource Managers will now have more time and opportunity to work on include:

- tailored current awareness services
- assistance to patrons with bibliographic searching
- tailored training in information services and systems
- reference and research services (including literature searches)
- maintenance and improvement of the Virtual Library
- maintenance and management of the tools of trade collections.

Other tasks, however, are more closely aligned with knowledge management practices and processes such as:

- promotion and training in use of knowledge management tools, including: PeopleConnect (a staff contact and skills directory), electronic document management systems, and online collaboration tools
- environmental scanning
- support to Communities of Practice.

The development of the Knowledge Resource Manager is not only designed to expand and extend customer service delivery but is also an opportunity to better utilise the professional skills and abilities of our professional library staff. This transformation is not yet complete but is well underway. There has been extensive retraining of library staff to help them adapt to their refocused roles.

Conclusion

The Libraries Redevelopment Project has significantly reshaped library services within the Department of Primary Industries. The new model of service delivery that has been implemented means that library services are better able to manage electronic resources and develop opportunities provided by technology for the desktop delivery of services, while continuing to manage efficiently and effectively the departmental print collection. It has also enabled technical processes to be streamlined and improved while better utilising the professional skills and abilities of the professional library staff. Library services are now strategically and operationally aligned within the Department's knowledge management framework so that staff are confident that we can meet the challenge of providing effective delivery of library services in the knowledge age.