Reconnaissance of Forest and Timber Discovery Centres

Report for the Gottstein Trust
Jon Lambert, July 2023

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Introduction

The Forest and Timber Industry in Australia has had its image seriously damaged in recent years by a combination of events. These include persistent, and often unwarranted attacks by conservation groups, poor management practices, failed investment schemes, koala deaths and a general lack of profitability. In response, the Forest and Timber Industry has struggled to communicate its position or effectively promote its many positive qualities. These image issues have led to a disillusioned general public, and a very poor inflow of students into forestry-related education pathways.

There is a tremendous need to change the Forest and Timber Industry's image and promote its many wonderful aspects and opportunities. For example: Our forests are the primary supplier for one of Australia's most important economical drivers being the building industry, they also provide the most direct and cost-effective solution to absorbing carbon from the atmosphere. Furthermore, the timber they produce has the lowest embodied energy compared to any other traditional building material. When planted on farmland, trees also have the potential to improve farming systems, heal degraded landscapes and improve biodiversity. These messages and many others, need to be communicated to the general public before a change in image can be realised.

The Forest and Timber Industry in Victoria currently has very few locations where the general public can visit and learn about its many positive characteristics. There is also an absence of career pathway information for students. Career's counsellors currently have very few avenues to direct students who might be interested in the Forest and Timber Industry. This is particularly the case in comparison to careers in other competing areas such as the Agriculture Industry or the Defence Force, which also offer semi-outdoor careers.

Creating a Forest and Timber Discovery Center will provide an opportunity for the general public to learn about the many positive aspects of the Industry and the science behind the cycle of trees to timber. Such a Center will help to present a fresh, positive image for the Industry, which will assist the general public to be better informed and more balanced in their views. Furthermore, it can act as a conduit for students to connect to employment and education pathways in the sector.

Aim

This project aims to undertake a reconnaissance of key existing discovery centres in Australia, within the forest and timber sector. The purpose is to understand what is currently on offer and how they are used to connect with the general public and students. The project aims to collect ideas and identify gaps and learnings to assist with the design of a proposed center based in Gippsland, Victoria.

The Reconnaissance Project

A total of seven discovery centres within the forest and timber sector were visited across three states. These were as follows:

1. Pilliga Forest Discovery Centre, Baradine NSW
2. Karawatha Forest Discovery Centre, Brisbane, QLD
3. Toohey Forest Environmental Education Centre, Brisbane, QLD
4. Daintree (Rainforest) Discovery Centre, Daintree, QLD
5. Greenbushes Eco-cultural Discovery Centre, Greenbushes, WA
6. State Timber Museum, Manjimup, WA
7. Forest Discovery Centre, Dwellingup, WA

At each centre the various displays and communication techniques were assessed and an interview was conducted with centre managers where possible to discuss design, budgets, purpose, target audience and visitation numbers.

Three of the initially proposed discovery centres were no longer functional and therefore unable to be visited. These were the Toolangi Centre in Victoria, the Pemberton Visitor and Forest Discovery Centre in WA and the Redlands Bay Environmental Centre in Brisbane. One additional centre was added during the exploration being the Greenbushes Eco-cultural Discovery Centre in WA.

An overview of the Centres has been tabled in Appendix 1 and 2.

Picture. Communicating forest information

Overview of Each Centre

1. Pilliga Forest Discovery Centre, Baradine NSW

History

The Pilliga Forest Discovery Centre was built in March 2009 in response to the NSW State Government's decision to close a significant area of the Pilliga region for timber production. This change in the status of the forests culminated in many local forestry workers losing their jobs. The Centre was created to draw tourists to Baradine as an entrance and starting point for the Pilliga and Warrumbungle National Parks. This was an attempt to offset some of the economic impacts with the decline in the local timber industry.

Purpose

The purpose of the Pilliga Forest Discovery Centre is to introduce the trees, animals and history of the Pilliga forest to give tourists a taste to explore further.

Ownership

Designed, purposed built and run by NSW Department of Planning and Environment. Entry is free

Target Audience

Tourists. The Centre has hosted an average of 7,000 visitors per annum since opening.

Key Educational Elements

The key elements of the Pilliga Discovery Centre are its visual displays. The centre is extremely well presented on the inside and outside, using local timbers in round and sawn formats around the entrance and the display areas. There is a broad arrangement of displays for all age groups to introduce the trees, animals and history of the Pilliga.

Information Transfer Techniques

The Pilliga Discovery Centre uses a range of communication methods including:
- Written displays for both adults and children
- Audio communication
- Log, animal (taxidermy) and equipment displays
- Manual interactive displays
- Visual interactive displays

Overview and Lessons

While the Pilliga Discovery Centre offers an excellent arrangement of visual, audio and interactive displays for all age groups, it has very limited use of technology. One of the most popular communication tools at the Centre is a large map that can be illuminated to outline the history of fire in the region. This provides visitors with a genuine appreciation of the scale of fires in the area and the impact on the local environment.

The Centre provides a wonderful use of timber in both sawn and round form to provide excellent surroundings for the information within. It is relatively small and single level, but the building contains a small gift shop and, opposite the display area, is a large room where group education and meetings can take place. The Centre is located in the middle of the town of Baradine.

Picture 1. Main entrance displaying local timbers

Picture 2. Internal fit out using local round wood

Picture 3. Audio communication

Picture 4. Taxidermy displays

Picture 5. Interactive displays

2. Karawatha Forest Discovery Centre, Brisbane, QLD

History

The Karawatha Forest Discovery Centre was established in 2016 to create an innovative, inspiring and engaging place of discovery. Enhanced by its relaxed, natural setting in the bush, the Centre is located approximately 18 km south of Brisbane's CBD on the edge of the 900 hectare Karawatha Forest Park.

Purpose

The Karawatha Forest Discovery Centre aims to educate locals and visitors about the environmental significance of the natural area.

Ownership

Designed, purposed built and run by Brisbane City Council. Entry is free.

Target Audience

Targets locals and visitors, particularly families. The Centre hosts approximately 15,000 visitors per annum.

Key Educational Elements

The key elements of the Karawatha Forest Discovery Centre are its interactive and virtual reality displays. The Centre is extremely well presented with a high proportion of displays suitable for primary and pre-school students.

Information Transfer Techniques

The Karawatha Forest Discovery Centre uses a range of communication methods including:
- Creative visual thematic displays
- A range of interactive displays for children both visual and audio
- Virtual reality activities
- Live animal displays (frogs and stick insects)

Overview and Lessons

The Karawatha Forest Discovery Centre is extremely colourful, modern and interactive with a broad range of educational tools to communicate information about the local environment. While the Centre largely targets primary and pre school students, it provides an impressive range of displays that people of all ages can enjoy.

One of the highlights of the Centre is the night room where visitors discover the local nocturnal sights and sounds. Another popular highlight is the virtual reality eagle flight over the Karawatha Forest. The Centre also benefits from its bush setting that hosts a nature play space and 33 km of walking trails.

The Centre is located on one level with easy access for wheelchair and a small area where a class of students can congregate for group learning experiences.

Picture 1. Main entrance

Picture 2. Tree hollow exploration

Picture 3. Interactive butterfly display

Picture 4. Entrance and welcome

Picture 5. Interactive frog display and virtual pond

3. Toohey Forest Environmental Education Centre, QLD

History

The Toohey Forest Environmental Education Centre has been operating for approximately 23 years. Located at the EcoCentre within the Nathan Campus of the Griffith University, the Centre is set at the edge of the Toohey Forest. The Centre is an initiative of the Queensland Government's Education program, connecting school students with nature-based science.

Purpose

The Toohey Forest Environmental Education Centre aims to inspire science beyond the classroom.

Ownership

Part of the Griffith University, Queensland Government. Not open to the general public.

Target Audience

Targets secondary students from prep to Year 12, tertiary students and the local community through workshops. The Centre caters for approximately 9,000 students per year.

Key Educational Elements

The key elements of the Toohey Forest Environmental Education Centre are its creative and informative classroom learning areas.

Information Transfer Techniques

The Toohey Forest Environmental Education Centre uses a range of communication methods including:

- Field activities such as bird watching and flora identification
- Live animals including snakes, frogs, turtles, fish, lizards and stick insects
- Taxidermy displays
- Microscopes with large display for group learning
- Cabinet display of common waste items and their decomposition rates

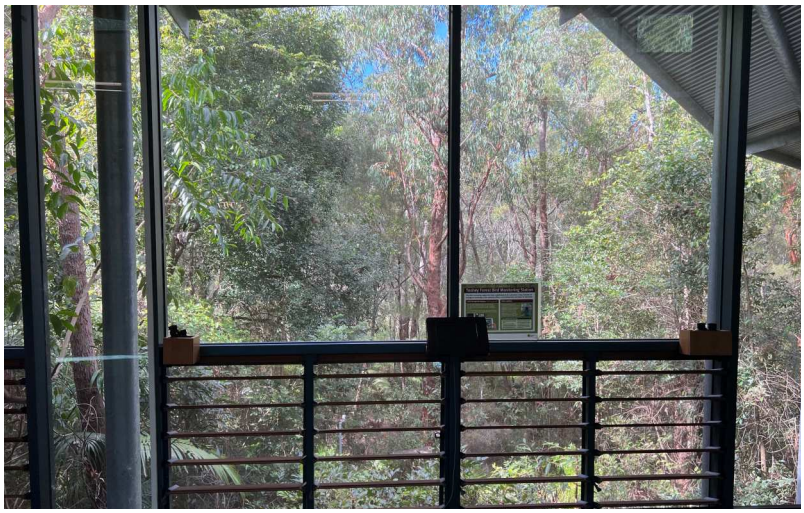
Overview and Lessons

Students are often captivated by live animal shows where they can see a range of animals up close. Group learning sessions using microscopes that project onto a large display are also popular. The Centre is located on the edge of the Toohey Forest where students enjoy nature-based field activities.

The Centre has created a wonderful learning environment with a large classroom surrounded by taxidermy, live animal enclosures, rock displays and a bird viewing window. Downstairs a covered open-air area has been cleverly converted into another learning area where students can see displays and read information about the importance of waste disposal and recycling.

Picture 1. Creative classroom displays

Picture 2. Bird viewing window



Picture 3. Downstairs education area

4. Daintree (Rainforest) Discovery Centre, Daintree, QLD

History

The Daintree Discovery Centre was established in 1988-89 to improve visitor access and provide information about the Heritage-listed Daintree Rainforest. Located on private land adjoining the Daintree National Park, the Centre provides a low-impact rainforest experience from ground to canopy top.

Purpose

To introduce people to the Daintree Rainforest in a low impact way, to enhance their experience and knowledge.

Ownership

The Centre is privately owned and operated. Entry fees apply ($39 per adult).

Target Audience

Targets tourists both national and international with around 60,000 visitors per annum.

Key Educational Elements

The key elements of the Daintree Discovery Centre are the canopy tower and aerial walkway, which take you into the rainforest canopy itself. To enhance the experience, signs and an audio guide are provided to explain what you see, smell and hear at marked points along the way.

Information Transfer Techniques

The Daintree Discovery Centre uses a range of communication methods including:
- Rainforest walks with audio information
- Live animals displays including snakes, frogs, fish, insects and lizards
- Information boards with themes, timelines and interactive displays
- Jurassic forest walkway with life-sized dinosaur models
- Discovery theatre stage hologram

Overview and Lessons

The Daintree Discovery Centre has created a space for all ages and interest levels with a mix of indoor and outdoor experiences. The Centre has catered well for international tourists with audio headsets providing information along the aerial walkway and treetop tower in several languages plus a kids version. The Centre prides itself on having information suited for “skaters, strollers and studiers” which is largely achieved using colourful display boards. While very professional, there were a limited number of interactive displays. The website suggests that student groups (by arrangement) have the opportunity to interact with various native animals. The Centre is split level and contains a cafe and gift shop.

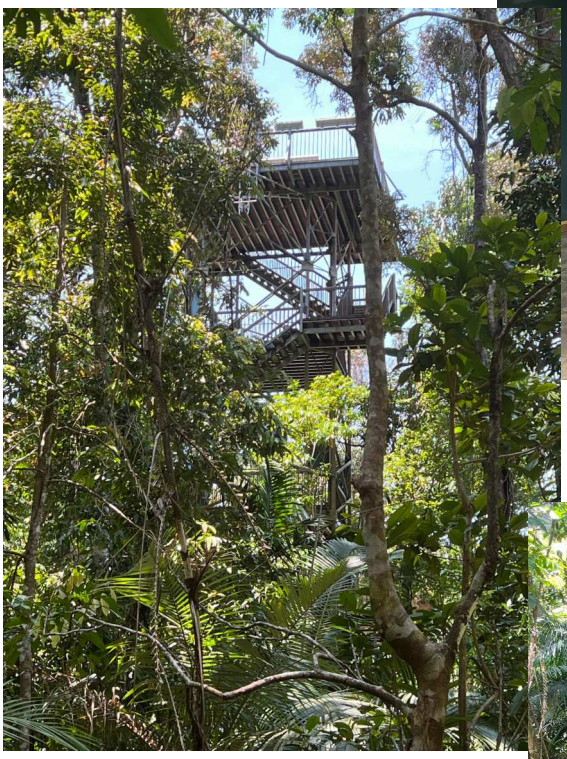
Recently added to the Daintree Discovery Centre is a theatre stage hologram which uses clever technology to take viewers on a guided (by hologram) 3D tour through the rainforest with an indigenous guide. Unfortunately this was yet to be open at the time of visitation.

The Centre has chopped and changed displays over the years looking for continued improvement and to ensure the visitor’s experience leads to a return visit or a positive testimony. One of the learnings has been the physical structures. The treetop tower was poorly built in its original design leading to significant modifications being required. The Centre itself has experienced many challenges being located in a remote area. This includes staff issues as well as being off-grid, creating power and internet challenges. The Centre is also regularly impacted by severe weather events, which have created physical damage and regularly cut the Centre off from tourist access.

Picture 1. Main entrance

Picture 2. Thematic displays

Picture 3. Treetop Tower



Picture 4. Jurassic walkway

5. Greenbushes Eco-cultural Discovery Centre, Greenbushes, WA

History

The Greenbushes Eco-cultural Discovery Centre was established in the old General Store (circa 1900) in the main street of the mining town of Greenbushes in 1998. The Centre was initiated by the local Ratepayers and Residents Association and has been conceived as a multi-media experience representing the town, its history, its people and places of natural beauty. The Centre is also connected to a range of heritage walking trails around the town.

Purpose

To tell the story of human involvement with the local environment.

Ownership

The Centre is a community owned facility run by volunteers and assisted by a range of partners including the Talison Lithium mine.

Target Audience

Targets tourists and students. Annually the Centre hosts around 2,000 visitors per annum. Entry fee applies ($5 per adult).

Key Educational Elements

The key elements of the Greenbushes Eco-cultural Discovery Centre are its interactive displays and unique activities set in themes of mining, timber milling, community and agriculture.

Information Transfer Techniques

The Greenbushes Eco-cultural Discovery Centre uses a range of communication methods including:

- Themed interactive displays
- Recreated work environments
- Sound and light displays
- Historic equipment and artefacts
- Taxidermy

Lessons

The Greenbushes Eco-cultural Discovery Centre is certainly not of the calibre of some of the other discovery centres with respect to its general appearance and fit out. There is no cafeteria or gift shop and the backdrops and lighting are very simple. Nevertheless, what it lacks in polish it makes up for in creativity. In the forestry section, the Centre provides visitors, and particularly students, with a wonderful insight into the various jobs within the timber industry. Visitors can sit in the front cabin of a truck, complete with a lunch esky and thermos, and look through the front window and watch a video through the windscreen to get a virtual feel for driving a truck from a log landing to a sawmill. Similar concepts have been created for sawmill operation and being in a drying kiln. The Centre cleverly introduces visitors to the key roles in a forestry operation from the forest to the sawmill. It also provides excellent displays which introduce the key tree species in the native forest and the plantation industry. There is a healthy collection of historic forestry equipment scattered around the Centre and an excellent taxidermy display of the native wildlife in the local area.

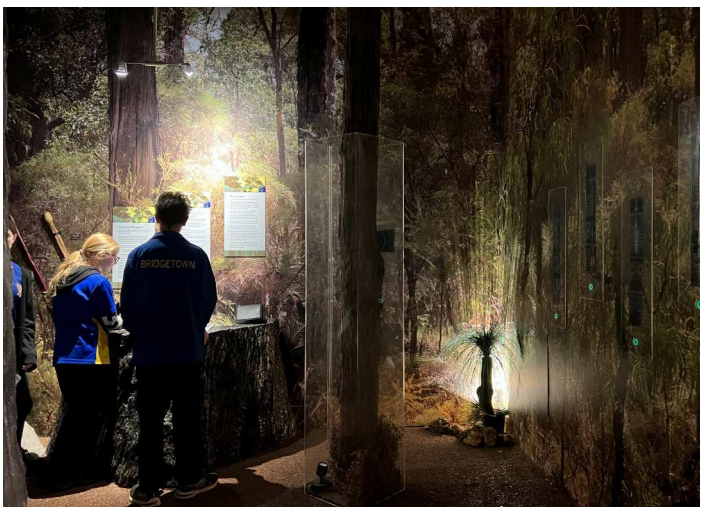
Greenbushes Eco-cultural Discovery Centre demonstrates that while there are limitations using a pre-existing single storey dwelling and having a modest budget, a creative design can be extremely effective in communicating information to visitors.

Picture 1. Former Greenbushes General Store and current Discovery Centre

Picture 2. Taxidermy

Picture 3. Virtual truck driver

Picture 4. Sound and light displays



Picture 5. Virtual saw milling

6. State Timber Museum, Manjimup, WA

History

Located in the timber town of Manjimup in the south west of Western Australia, the State Timber Museum was originally opened in 1977 and closed in 2014. It was considered for demolition but then refurbished in 2018 as part of an $11.2 million Manjimup Town Centre Revitalisation Project.

Purpose

The Museum exists to honour the impact the timber and forestry industry has had on the lives of Western Australians and the local area

Ownership

The Museum is part of the Heritage Park and Visitors Centre, owned by the Shire of Manjimup with management input from a range of community groups.

Target Audience

Tourists. Entry fee applies ($5 per adult). Tours are self-guided with entry via key pad password on payment of the entry fee at the nearby Visitor's Centre. Annual visitor numbers were not available.

Key Educational Elements

The key elements of the State Timber Museum are the display boards against the beautiful timber lining board walls, which provide the bulk of the museum's information.

Information Transfer Techniques

The State Timber Museum uses a narrow range of communication methods including:
- Themed display boards
- Upright logs with timber samples for key species
- Audio recordings of people talking about the industry
- Historic equipment and artefacts
- Video display

Lessons

The State Timber Museum provides education and history of the local forest and timber industry. The Museum has beautiful timber panelling throughout, which creates a very professional display area. It is relatively small, single level with the original building being designed to be the shape of two upright logs. In 2019 it won a Museums and Galleries National Award for a Permanent Exhibition or Gallery Fit Out. It also boasts a design that is dementia and autism friendly.

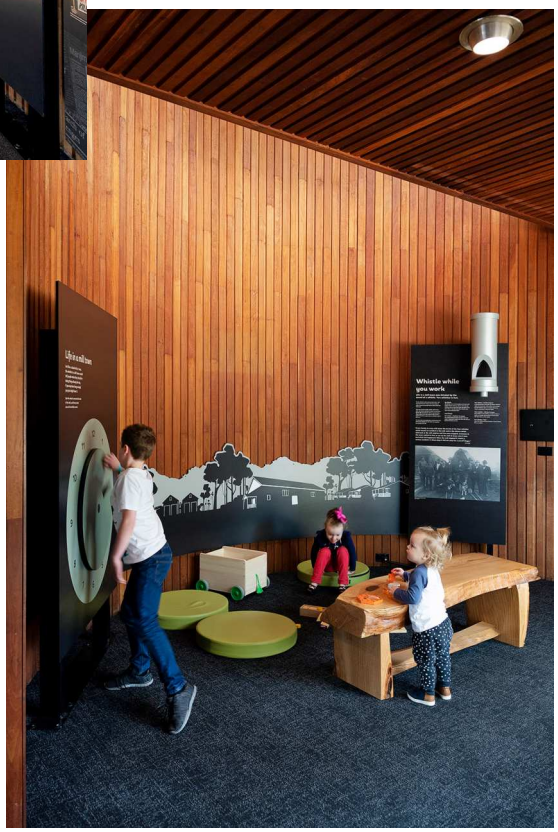
The State Timber Museum lacks creativity in its exhibits and relies too much on written information and pictures on display boards. There is very little interactive opportunity on offer for students or children. Nevertheless it is officially a museum rather than a discovery centre, and therefore it achieves its purpose to preserve and honour the history of the local timber and forest industry. In the coming years its importance will increase given the closing of the local native forest timber industry.

Picture 1. State Timber Museum building

Picture 2. Displays board

Picture 3. Displays and fit out

Picture 4. Kids corner



Picture 5. Log cutting patterns

7. Forest Discovery Centre, Dwellingup, WA

History

The Forest Discovery Centre has been operating since 1995. The unique leaf-shaped building was formally a State Government timber art and craft training centre that was handed to the local community after it was abruptly closed. The Centre is located on 17 hectares of native jarrrah forest one kilometre from the centre of Dwellingup, which is a small timber community hosting two sawmills.

Purpose

The Forest Discovery Centre exists to provide forest learning for school students and tourists.

Ownership

Local Government site run as a not-for-profit entity by a local board. Entry fee is via a gold coin donation.

Target Audience

Targets school students and tourists. Averages approximately 6,000 visitors per annum (includes the craft and gallery divisions).

Key Educational Elements

The key elements of the Forest Discovery Centre are its interactive displays and external walkways and tree-top tower.

Information Transfer Techniques

The Forest Discovery Centre uses a range of communication methods including:
- Interpretive field trails with displays and infrastructure
- Taxidermy displays and saw milling artefacts
- Activities and games for students
- Timber samples and cross-cut logs with dates on the growth rings
- Display boards, models and video presentation

Lessons

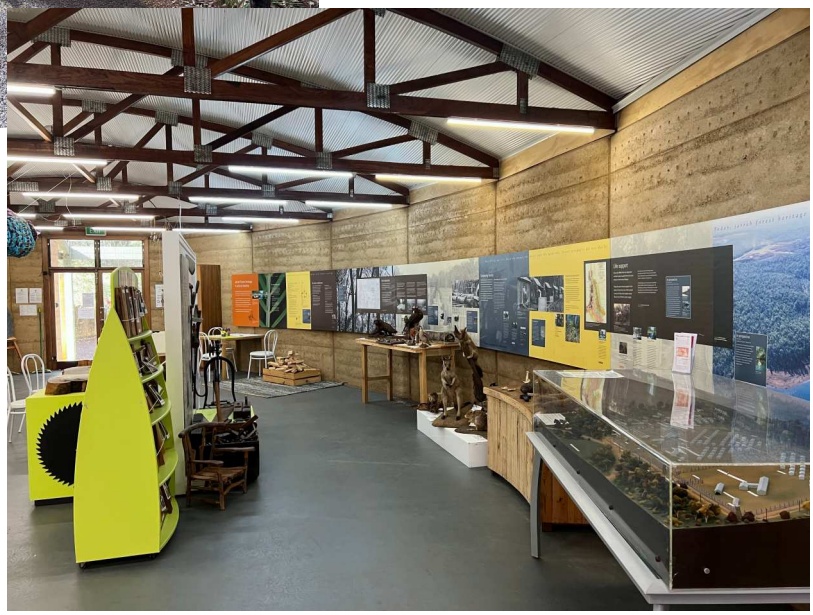
The Forest Discovery Centre provides an excellent local facility for tourists and students to learn about forests, timber production and endemic wildlife. The Centre is relatively small and single story but provides a range of displays and interactive activities for visitors of all ages. Outdoors, the interpretive forest walks and tree-top tower provide an adventure for visitors in the setting of a beautiful local jarrah forest.

While the Centre provides a wonderful opportunity for visitors to learn about the local forests, it has not been financially viable in its own right. Dwellingup is not on a main tourist route and the local area is set to be significantly impacted by the recently announced closure of the native forest timber industry. The Centre has attempted to diversify and increase income streams by showcasing art and crafts, leather and photography, however this has at times been a distraction from its original purpose.

While blessed with a donated building and beautiful forest site, the Centre has many challenges ahead with an ageing outfit and uncertain income streams. One of the major sources of funding for the Centre is Alcoa, who controversially has a license to clear 2,824 hectares of local jarrah forest for bauxite mining through to 2024.

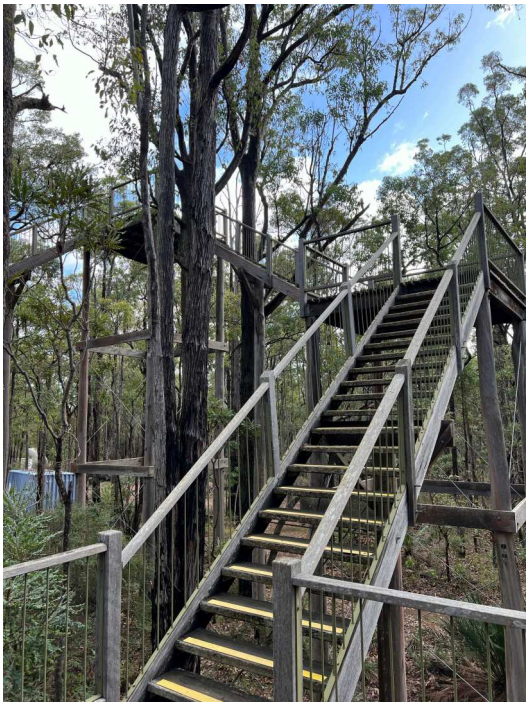
Picture 1. Main entrance

Picture 2. Display area



Picture 3. Growth rings

Picture 4. Tree-top tower



Picture 5. Taxidermy

Discussion

The project to undertake a Reconnaissance of Forest and Timber Discovery Centres across Australia has highlighted a diverse range of models and target audiences. The Centres ranged from large private owned, purpose-built, for-profit tourist businesses, to community-run, not-for-profit outfits renting local buildings. A small number of Centres had invested wisely in creative and innovative communication displays which provided enhanced learning for target audiences of various age groups. The majority of Centres relied too heavily on communicating via two dimensional information on display boards (see Appendix 2).

A number of the Centres were located within the forests that they were communicating information about. This provided an advantage for visitors who were able to participate in nature-based learning in addition to the indoor experience of the Centre.

All of the Centres were motivated to educate visitors about their local forest area. While some Centres focused more on the natural beauty of forests and their inhabitants, others were keen to highlight the history and importance of timber production from the local forests. None of the Centres communicated a negative message about the Timber Industry.

Financial viability was a key challenge for many of the non-government Centres. These Centres relied on regular income from entry fees and school bookings. In some cases, sales via cafes and gift shops were also an important income stream for financial viability. The Dwellingup Forest Discovery Centre had further diversified its income by leasing some of its facility to a local gallery. A number of the government-funded Centres, though not seeking to be financially viable in their own right, played an important role in improving the profitability of local tourism businesses in their region.

A number of the Centres were primarily connected to tourism such as the Pilliga Forest Discovery Centre, the State Timber Museum and the Daintree Discovery Centre. The Toohey Forest Environmental Education Centre was perhaps the only Centre explicitly focused on education with no real connection to tourism. The Karawatha Forest and Daintree Discovery Centres were perhaps the stand outs, successfully catering for both the education and tourist sectors.

Technology was not used particularly well in the Centres overall. Some of the reasons for this were related to the high setup costs, a general lack of design innovation, or the concern for maintaining the technology when breakdowns occur. The Daintree Discovery Centre noted that there was a need for good technology to remain at the forefront as a tourist attraction, but that this came with a high cost given that experts in suitable technology had to be brought in from afar. The Greenbushes Eco-cultural Discovery Centre provided proof that creativity with simple technology, even on a modest budget, can be very effective in communication.

Themes were more obvious in some Centres than others. The State Timber Museum in Manjimup and the Pilliga Forest Discovery Centre in Baradine were the most successful in creating a strong timber theme. These Centres were fitted out with both sawn and round timber, combined with a scattering of sawmilling artefacts, to create a timber industry feel for visitors. The Karawatha Forest Discovery Centre successfully created an urban forest experience with clever use of technology displays and taxonomy combined with sound and light. The Greenbushes Eco-cultural Discovery Centre cleverly provided visitors with an insight into the day-to-day life of people working in the Forest and Timber Industry. The Toohey Forest Environmental Education Centre had successfully created a “forest learning” theme. The Centres at Pilliga, Daintree, Greenbushes and Manjimup all contained displays with information about the management and use of the local forests by traditional custodians.

Several of the Centres noted their decision to invest in experts to design the layout and displays for their exhibits. While there was great variation both within and between Centres, those that had invested in professional assistance stood out with respect to technology, creativity and having a broad range of communication techniques.

Very few of the centres were able to provide specific financial details. One of the exceptions was the Pilliga Forest Discovery Centre in Baradine. This was built by the NSW Government at a cost of $1.3 million in 2008 and the fit out of exhibits were completed for a further $375,000. The Karawatha Forest Discovery Centre was built by the Brisbane City Council in 2015 at a total cost of $4.5 million. However, this price included various other infrastructure items including a picnic area, an amenities building, carpark, playground and pathways. At the other end of the scale was the Greenbushes Eco-cultural Discovery Centre. Developed by a committee of volunteers and relying on grants and a free lease on a former General Store, the entire Centre and heritage trails were developed over several years at a total cost of between $300,000 to $400,000.

Discovery centre running costs were even more difficult to find out. The Forest Discovery Centre in Dwellingup noted a budget of approximately $100,000 per annum to cover its wages and operational costs. However, this left very few funds for capital repairs and upgrades. The Centre also relied on a number of volunteers. The rest of the Centres were unable to provide specific running costs as it was either confidential or part of mixed government funding arrangements.

It was clear that private Centres relied on multiple income streams, such as cafes, merchandise and specialised tours, to ensure that they were financially viable and risk averse. Those that weren't financially viable in their own right generally had a larger objective, such that the cost of the Centre was justified by its impact on the broader tourism in the region.

Visitor numbers (see Appendix 1) obviously played a significant role in the development and physical size of the Centres visited. The largest by visitor number and area was the Daintree Discovery Centre which hosts approximately 60,000 visitors per annum. This includes a broad range of international tourists, given its location in a very popular tourist region, and its close proximity to an international airport. Entry fees for adults were $39. The lowest visitor numbers were found at Greenbushes Eco-cultural Discovery Centre. Located in a mining town almost three hours drive from Perth, and significantly inland from the coastal tourist mecca of Margaret River, the Greenbushes Eco-cultural Discovery Centre hosts 2,000 visitors per year. Consequently, it seeks an entry fee of just $5 per adult. Despite efforts to advertise and promote the Centre more broadly, Greenbushes has not been able to increase visitor numbers, suggesting there is a threshold for each Centre depending on its location, quality and relevance to visitors. Centres on main tourist routes tended to enjoy moderate to high levels of visitation and used high exposure marketing avenues such as Tourist Information Centres, tourist websites, airport displays and accommodation promotion. In contrast, Centres located in remote areas without tourist attractions nearby struggled with visitor numbers and therefore income. This in turn, led to a high dependence on volunteers and a limited ability to develop, maintain and improve facilities.

Centres that targeted specific audiences also achieved moderate to high visitation numbers. A good example of this is the nature-based learning environment established at the Toohey Forest Environmental Education Centre in Brisbane. The management team at the Toohey Centre caters for approximately 9,000 students per annum, including regular visits from school groups as far away as Cairns (1,700 kilometres north). In a similar way, the Karawatha Forest Discovery Centre on the outskirts of Brisbane, hosts approximately 15,000 visitors per annum including thousands of families. This is not surprising given the excellent indoor and outdoor facilities and the diverse learning environment catering for children of all ages.

Most Centres had a clear purpose and monitored their visitor numbers and, in some cases, their demographics to measure success. However, there was no formal impact assessment being undertaken by any of the Centres. The Pilliga Forest Discovery Centre in Baradine had anecdotally concluded that the Centre was leading to more people exploring the nearby forest region; Or people were visiting for longer periods and exploring further after visiting the Centre. The Daintree Discovery Centre was of the view that it was anecdotally fulfilling one of its objectives of providing a low-impact, genuine rainforest experience. This was informing visitors of the significance and importance of rainforests, and hence, their need for conservation.

While it is likely that the complexity and cost of undertaking impact assessments was a key reason for their absence, it is also possible that they were considered unnecessary given that studies from around the world[1] collectively show that:

(i) There is significant evidence that interactive science exhibitions increase visitors' knowledge and understanding of science.
(ii) There is significant evidence that Science & Discovery Centres provide memorable learning experiences which can have a lasting impact on attitudes and behaviour.
(iii) There is evidence that Science & Discovery Centres have wide-ranging personal and social impacts and promote inter-generational learning.
(iv) There is evidence that Science & Discovery Centres promote trust and understanding between the public and the scientific community.
(v) There is evidence for the economic impact of Science & Discovery Centres.
(vi) Evidence suggests that Science & Discovery Centres are one of the top five stimuli that influence a career choice in science[2].

One of the key reasons for these impacts is the hands-on, free-choice learning environment (interactions with science outside of formal education) that Discovery Centres provide. These impacts are also due to Discovery Centres tapping into many of the human senses, such as through sight, smell, sound and touch.

General Conclusions

The Reconnaissance of Forest and Timber Discovery Centres across Australia has highlighted a broad range of models for communicating information about the forest environment and the timber industry.

A blend of indoor and outdoor nature-based learning was particularly successful for many Centres. Technology and creativity in communication techniques were the key to the most successful and popular displays. Buildings were predominantly purpose-built although several Centres had refurbished existing buildings.

The connection to tourism and education sectors was significant for most of the Centres, however very few of them provided a genuine balance for each. While most private Centres were opportunistic in seeking additional income streams from cafes and merchandise, some were forced to diversify their income to maintain financial viability. Government-funded Centres were predominantly developed with a broader objective to assist regional tourism and environmental education.

Very few Centres had specific information about set up and running costs. However, purpose-built Centres appeared to cost between $1.3 million and $4.5 million to establish. The only known exhibit setup cost was $375,000 for the Pilliga Forest Discovery Centre. Running costs were largely unknown apart from the Dwellingup Forest Discovery Centre that noted a $100,000 per year operating cost.

Centres that enjoyed the highest level of success were those built near major cities or along tourist routes and designed with a clear purpose for a specific audience. In contrast, Centres in remote areas and/or those unable to target a specific audience, struggled to attract high visitation numbers. While a proportion of volunteer labour was relevant to most Centres, a heavy dependance on volunteers seemed to align with those Centres struggling with long term viability.

Forest and Timber Discovery Centres in Australia can play a significant role in communicating environmental, historical and cultural information. They also provide visitors with a hands-on, free choice learning experience of the forest, its inhabitants and the timber it produces. While there were no formal impact assessments undertaken at the Centres visited, international studies provide solid evidence of the value of science and discovery centres around the world.

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[1] The Impact of Science & Discovery Centres (2008), Ecsite European Network of Science Centres and Museums

[2] The role of science and discovery centres in the public understanding of science (2013). Short and Weis. School Science Review.

Conclusions for a Gippsland Forest & Timber Discovery Centre

While this project has provided an excellent opportunity to assess current Forest and Timber Discovery Centres around Australia, it has not provided a specific blueprint for a proposed Centre in Gippsland. This is because every Centre is unique in its location, vision and purpose.

Nevertheless, this exploration exercise has provided valuable learnings:

1. Any proposed Discovery Centre needs to be designed, financed and managed to ensure it has a long-term future. Therefore, unless it is government owned, a for-profit model must be created to ensure longevity.
2. For-profit Centres can develop financially viability through three primary avenues being tourism income, education income, and/or by providing indirect financial benefits to sponsoring businesses.
3. While it is important to acknowledge the past, Discovery Centres differ from museums by providing fresh, enticing, intriguing and relevant information that looks to the future.
4. Discovery Centre exhibits should use a range of technology and target a variety of age groups, intentionally using stimulation of multiple senses and providing plenty of hands-on, free-learning arrangements.
5. Discovery Centres connected to nature-based and industry tour opportunities provide higher learning and broader audience attraction. Therefore, having a connection to demonstration forests and timber processors will be valuable for the proposed Centre.
6. Addressing key issues such as: (i) Avenues for harmony between timber production and flora and fauna; and (ii) Methods to combine timber production and agriculture; and (iii) Timber production and carbon, will be fundamental to the proposed Discovery Centre's ability to present a new image and assist the general public (urban and rural) to be better informed and more balanced in their views.

There is an opportunity in Yarram, Gippsland to open a new chapter in forest and timber education. While further due diligence needs to be completed, this project has provided an important platform to commence the process of laying out a vision, purpose, themes and a viable financial model for a new Forest and Timber Discovery Centre.

Appendix 1 - Discovery Centre Table of Ownership, Purpose and Visitor Numbers

Discovery Centre	Location	State	Ownership	Building	Purpose	Annual Visitor Numbers
Piliga Forest Discovery Centre	Bradine	NSW	National Parks NSW	Purpose Built	To introduce the trees, animals and history of the Pilliga forest to give tourists a taste to explore further	7,000
Karawatha Forest Discovery Centre	Brisbane	QLD	Brisbane City Council	Purpose Built	To inform locals and visitors about the environmental significance of the natural area	15,000
Toohey Forest Environmental Education Centre	Brisbane	QLD	QLD Education	Utilising Existing	Inspiring science beyond the classroom	9,000
Daintree Forest Discovery Centre	Daintree	QLD	Private for profit	Purpose Built	To introduce people to the Daintree Rainforest in a low impact way, to enhance their experience and knowledge	60,000
Greenbushes Eco-cultural Discovery Centre	Greenbushes	WA	Not-for-profit	Utilising Existing	To tell the story of human involvement in the local environment	2,000
State Timber Museum	Manjimup	WA	WA Government	Purpose Built	To honour the impact the timber and forest industry has had on the lives of West Australians and the local area	Not available
Forest Discovery Centre	Dwellingup	WA	Not-for-profit	Repurposed	To provide forest learning for students and tourists	6,000

Appendix 2 - Discovery Centre Overview of Information Transfer Techniques and Technology

Discovery Centre	Information Transfer Techniques	What Has Worked	What Has Not Worked	Technology Impact
Piliga Forest Discovery Centre	Predominantly 2D displays & audio. Some interactive	Illuminating fire history timeline	High level of information not particularly suited for children	Low level technology used
Karawatha Forest Discovery Centre	Interactive displays significant including some live animals	Frog habitat, eagle virtual reality & stick insects	Nothing	High impact - most popular amongst youth
Toohey Forest Environmental Education Centre	Scientific opportunties via microscopes, binoculars, displays and live presentations	Live animals, outdoor activities (field work)	Anything outside of school ciriculums	Moderate - large projecting microscopes popular
Daintree Forest Discovery Centre	Live forest walks/tower, audio and visual displays, live animals	Most things have worked - caters broadly	Some of the infrastructure, staffing, location	High impact - use of hologram, electronic displays and self-guide audio with multiple languages
Greenbushes Eco-cultural Discovery Centre	3D displays. Video used cleverly for virtual experiences	Introducting students to forestry careers	Staffing challenges - volunteer based	Low level technology used
State Timber Museum	Predomiantly 2D displays, audio and some video	Setup is very fitting for a forestry museum	Not suitable for young people - to dependent on information boards	No technology used
Forest Discovery Centre	Audio and visual. Interactive activities. Video displays	Interactive activities & games	Financial model has not worked well	Low level technology used