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# Growing Landscape Carbon

## Online Brokerage Platform Final Project Report

January 2020



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## Executive summary

The *Growing Landscape Carbon: An Online Brokerage Platform for Integrating Trees in Rural Landscapes* project was funded under the Victorian Government Climate Change Innovation Grants program. The project commenced in July 2018, finishing on 31 January 2020. The aim of the project was to develop a prototype online platform to facilitate investment in tree growing on private land for economic and environmental benefits, and to facilitate increased carbon abatement through integrating trees in rural landscapes. This report summarises the completed activities from the project, achievements, lessons learned and evaluation.

The rationale for the project was that integrating trees within agricultural enterprises can contribute significantly to sequestering atmospheric carbon, help ameliorate some of the environmental impacts associated with land clearing for agricultural production, while also providing farmers with multiple on-farm benefits. On-farm benefits include the opportunity for income diversification, provision of shade and shelter for livestock, increased crop productivity, increased biodiversity, reduced soil loss and improved water quality. Previous policies and programs promoting tree planting on farms have struggled to redress the environmental problems associated with landscape scale tree loss. Limited financial resources and a lack of knowledge of the suitability of land for tree growing, and a lack of well-developed markets for the goods and services trees provide, have been key impediments for such initiatives. Rural landowners are generally not aware of the potential investors who may be interested in growing of trees on their land. Similarly, investors find it difficult to identify and make connections with landowners who are interested in growing trees.

The project achieved the primary goals of developing a prototype online platform and facilitating initial connections between rural landowners interested in growing trees and potential investors. The platform was presented in workshops and at conferences and was tested and revised based on feedback received. The project website provides information on the benefits of trees on farms, case study examples and links to potential investors. Usage of the platform and the website has been limited to date as the focus has been to establish 'proof of concept'. Website usage will be monitored, and information will be added as more resources become available.

Policy recommendations have been developed for Federal, Victorian and local governments to support tree growing on rural land. These include clear plans to support trees in the right places on rural land, wider public communication, accessible well-designed incentive schemes that reward long-term management of farm trees, technical support for tree growing, and funding research and extension activities. Governments can also support suitable investment vehicles to support tree planting at scale.

## *Key lessons learnt from the Growing Landscape Carbon project*

1. Engagement with stakeholders is essential to ensure the platform meets the diverse knowledge needs of the different user groups. The project engaged with key stakeholders who consistently supported and drove the requirements for the platform to facilitate landowner and investor connections.
2. Stakeholder feedback indicates that with the right combination of policy and market signals, and appropriate design of Federal and State policy incentives, trees on farms could become a viable and thriving opportunity. Significant systemic issues still to be resolved include reducing transaction costs for projects and reviewing Emission Reduction Fund (ERF) eligibility criteria, methodologies and regulatory requirements.
3. Technology development takes time. Although developing a prototype platform is relatively straightforward, multiple iterations of engagement are required to refine the platform to ensure that it works effectively and meets the needs of different types of users.
4. It is not easy to generate simple, but meaningful, tree growing benefit indices that are broadly applicable and yet provide useful information for decision making by investors. Future developments of the platform should consider alternative forms of information that may be more readily understood by platform users and better meets their needs.
5. Data identifying priority areas for investment, particularly for biodiversity and catchment benefits, are not readily available. It is necessary to identify and access alternative data sources to enhance the effectiveness of future developments of the platform.
6. The information needs and capacity to engage with technology varies between landowners. Some rural landowners are not that comfortable using on-line systems and will rely on support from intermediaries. Others are capable and want very detailed information to support their farm planning, while others simply want contact information for the different types of investors to initiate discussion. The platform must provide a range of different types of information in a readily usable format to maximise the potential for connecting landowners and investors.
7. Further developments of the platform should include measures to address concerns about data privacy and include mechanisms to ensure that landowners who register on the platform are legitimate owners or managers of the registered land.
8. Stakeholders indicated a need for more explicit information relating to investor priorities, including who are the different investors interested in growing trees on a land parcel, and the key operational requirements of the different investors, such as tree species, required area of planting, planting configuration etc. To be effective and encourage landowner use the platform needs to develop indices that provide more specific information at the level of detail needed for farm decision making.
9. Currently there is little incentive for farmers to register their interest in growing trees on the platform if they do not receive a direct and timely response from investors. Further developments should consider how to best facilitate investor engagement with the platform.
10. The ongoing use and development of the platform will depend on financial resources and organisational commitment to maintain the currency of information and to further develop the platform to meet the needs of different users.
11. A lot of shared knowledge and social learning occurred through bringing together a diverse group of stakeholders to participate in the Project Control Group, and in workshops and events associated with development of the platform. This knowledge network should be supported and developed.
12. The prototype platform is currently limited to privately owned land in selected regions of Gippsland and south west Victoria. The area covered by the platform can readily be expanded in future development if resources are made available.

# 1. Introduction

The *Growing Landscape Carbon: An Online Brokerage Platform for Integrating Trees in Rural Landscapes* project was funded under the Victorian Government Climate Change Innovation Grants program. The project commenced in July 2018, finishing on 31 January 2020. The aim of the project was to develop a prototype online platform to facilitate investment in tree growing on private land for economic and environmental benefits and to facilitate increased carbon abatement through integrating trees in rural landscapes.

Only 20% of native vegetation remains on private land in Victoria. Previous policies and programs promoting tree planting on farms have struggled to redress the environmental problems associated with landscape scale tree loss. Integrating trees within agricultural enterprises can contribute significantly to sequestering atmospheric carbon, while also providing farmers with multiple on-farm co-benefits, including income diversification, providing shade and shelter for livestock, increased crop productivity, increased biodiversity, reduced soil loss and improve water quality. More trees on farms can act as carbon sinks while also helping ameliorate environmental impacts associated with agricultural production and provide additional on-farm benefits. However, although some landowners are aware of the benefits of integrating trees within productive farming enterprises, others are not, or are sceptical of these benefits.

Costs associated with tree establishment and management, as well as uncertainty about species selection, and uncertainty about potential investors and future markets are major barriers for landowners wishing to integrate trees within agricultural enterprises. With this uncertainty, the need to commit land to trees for a long period can be an overwhelming impediment. Some of these barriers to tree establishment can be lessened through collaboration with private and public investors such as Catchment Management Authorities (CMAs), Greening Australia, forest industries, farm forestry initiatives, carbon brokers and Landcare groups. Private and public investors have the expertise and funds to invest in trees for timber, carbon, biodiversity and/or catchment benefits but can have difficulty making connections with private landowners that may be willing to integrate trees on their land.

Achieving multiple local and wider environmental, social and economic benefits from integrating trees within rural landscapes requires cooperation between landowners and public and private investors wanting to fund different forms of revegetation. The platform developed is intended to facilitate the connections between investors in trees and landowners who would consider growing trees on their land to enable partnerships for tree planting for meet both conservation and/or profit objectives.

The *Growing Landscape Carbon* project complements the *Next Generation Forest Plantation Investment* project (NGFPI) (see: <https://blogs.unimelb.edu.au/nextgenplantations/>). The aim of the NGFPI project was to assist the forest sector to achieve ‘Sufficient trees in rural landscapes to deliver on-farm and wider environmental benefits and profitable, resilient, publicly-supported high-value regional industries.’

The prototype platform has been iteratively revised in response to extensive stakeholder consultation and feedback that took place throughout the project. The final version is available via the platform gateway: *Trees on Farms: Connecting landowners with investors to grow timber, carbon or biodiversity* at <https://growcarbon.science.unimelb.edu.au/>.

The prototype platform is currently hosted by the University of Melbourne using the National eResearch Collaboration Tools and Resources (NeCTAR) national research cloud-based

infrastructure. The prototype platform is currently limited to privately owned land in selected regions of Gippsland and south west Victoria. However, the area covered can readily be expanded in future development of the platform if more resources are made available.

This report outlines the activities undertaken to develop and refine the prototype platform, including the development of the *Trees on Farms* landing page as a gateway to the online platform, and the stakeholder and community consultation activities undertaken throughout the project. The report critically evaluates the prototype platform - which areas work, which areas need further development, including the challenge of reconciling the different knowledge needs of multiple diverse user groups. The report then considers directions for further development, how the platform could be used in the context of potentially multiple landowners but relatively few investors, the role of policy settings in determining how the platform can be used to facilitate carbon abatement, as well as the role of the platform in helping raise awareness of the multiple opportunities for integrating trees in the rural landscape.

## 2. Project outline

### 2.1 Project Funding and management

Funding for the Growing Landscape Carbon project was provided through a Victorian Government Virtual Centre for Climate Change Innovations Grant funded by the Victorian Department of Environment, Land, Water and Planning (DELWP). The project was managed by the University of Melbourne in collaboration with the Carbon Markets Institute, Greening Australia, Corangamite Catchment Management Authority, Midway Ltd and the DELWP.

### 2.2 Project Control Group

The Project Control Group (PCG) comprising University of Melbourne researchers and key stakeholders (Table 1) was established in July 2018. The role of the PCG was to provide advice and input into the research direction and to assist the research team. The PCG was also responsible for confirming achievements of the project milestones and deliverables.

Table 1: Project Control Group members and their affiliations

Organisation or affiliation	Representative
Independent Chairperson	Janine Haddow
University of Melbourne	Rod Keenan Richard Sinnott
Department of Environment, Land, Water and Planning (DEWLP)	Liam Costello Peter Merritt
Carbon Market Institute	Janet Hallows
Corangamite Catchment Management Authority	Chris Pitfield
Midway Ltd.	Tony Price Glen Samsa
Greening Australia	Peter Stephen James McGregor
Department of Economic Development, Jobs, Transport and Resources (DEDJTR)	Deb Hall
Associated consultants	
Alexandra and Associates	Jason Alexandra Rowan Reid
Lynea Advisory	Lyndall Bull

The Project Control Group met six times during the project period (1 July 2018 – 31 January 2020) (Table 2). Meetings were scheduled to align with the project deliverables in accordance with the funding guidelines.

*Table 2: Project Control Group meeting dates*

<b>Meeting</b>	<b>Date</b>
1.	28 August 2018
2.	14 November 2018
3.	14 February 2019
4.	25 June 2019
5.	10 October 2019
6.	5 December 2019 (held in conjunction with final Stakeholder Workshop)

### 3. Completed project activities and achievements

Project activities were undertaken and completed according to the project work plan established by the PCG (Table 3). Details of key activities undertaken within the project work plan are outlined below.

Table 3: Project timeline of activities and deliverables completed

Activity	Date completed
Project Control Group established	August 2018
Project Plan finalised	August 2018
Initial stakeholder development workshop	18 October 2018
Indices of Investment Potential developed	June 2019
Stakeholder Engagement Strategy developed	1 January 2019
Development of initial prototype platform	July 2018 – March 2019
Stakeholder consultation and communication activities	March – September 2019
Platform Landing Page developed	July - August 2019
Platform publicly available online via the Landing page	August 2019
Platform and Landing page revised	March – December 2019
Carbon Market Institute Stakeholder Consultation report	December 2019
Final Stakeholder workshop	5 December 2019

#### 3.1 Platform technical development: revised version

The prototype platform was iteratively revised and modified following feedback from multiple stakeholder consultation activities (see *Section 3.5: Stakeholder and community consultation activities*). The current version of the prototype platform hosted by the University of Melbourne can be viewed at <https://growl-dev.eresearch.unimelb.edu.au/>. Further information about this development is available in the Milestone Two Update Report and the Milestone Four Update Report.

#### 3.2 Indices of Investment Potential

Investment potential indices were developed to provide information to users of the online platform (landowners and investors) about the potential for a specified land parcel to grow trees for different purposes. Uncertainty about the suitability of land to grow trees of different species and different purposes can be a barrier to investment in trees in rural landscapes. Four indices of investment potential were initially developed: a timber investment index (softwood and hardwood), biodiversity index, catchment index and carbon index (see Table 4 as well as Appendix 2: *Forest Investment Index Report* for more information about the development of the indices). The catchment index was subsequently excluded from the prototype platform due to issues with accessing appropriate baseline data.

Table 4: Description of the four Investment Potential Indices (from Growing Landscape Carbon: Forest Investment Index report, see Appendix 2)

Investment Potential Index	Description
Timber investment	The timber investment index combines elements of land availability and suitability by excluding locations with existing woody vegetation and where timber production is incompatible with current land uses. Land remaining after this screening procedure was ranked for investment suitability using approximate net harvest returns. Plantation growth rates were based on estimates developed by CSIRO for three different wood-production scenarios: hardwood sawlog, softwood sawlog, and hardwood pulp.
Biodiversity	The biodiversity index is based on estimates of the number of native species (flora and fauna) that would re-establish on land parcels after 50 years following revegetation with previously existing native flora species.
Catchment	The catchment index is based on an analysis undertaken by the Wimmera CMA for the whole of Victoria, which identified conditions that maximise the complementary benefits of large-scale bio-sequestration activities, including biodiversity conservation, carbon sequestration and which minimize potential adverse impacts of bio-sequestration on agriculture.
Carbon	The carbon index is based on the Maximum Potential Biomass dataset (MaxBio, Department of Climate Change and Energy Efficiency, 2004). The MaxBio dataset is an estimate of the maximum above-ground biomass that potentially would exist if native vegetation is present under current climatic conditions.

Calculation of the current investment potential indices was based on publicly available information, rather than reflecting specific investor needs or priorities. For example, in the absence of explicit investor-stated priorities and key operational information such as required tree species, the timber index values were estimated primarily by proximity to timber processors and average annual rainfall, both of which are publicly available data. As a result, the investment potential indices included in the current version provide only an approximate estimate of the investment potential for a specific land parcel. It is anticipated that the estimated indices could be refined in future development of the platform to include priority maps provided by potential investors. For example, land parcels near timber processing facilities and with adequate rainfall could potentially attract interest from timber plantation investors, whereas parcels far from timber processors and near remnant native vegetation may be suitable for habitat restoration for biodiversity.

Figure 1 provides an example of how the investment potential scores for a specific land parcel are displayed on the platform. On the current version of the platform investment potential scores are summarised as low (pale green), medium (mid green) or high (dark green) to demonstrate potential for growth. Information about the investment potential scores provided to users of the platform is available at <https://growcarbon.science.unimelb.edu.au/investment-potential-scores/>.

More technical information about the current prototype platform is available in the *Online Brokerage Platform Milestone Four Update Report*.

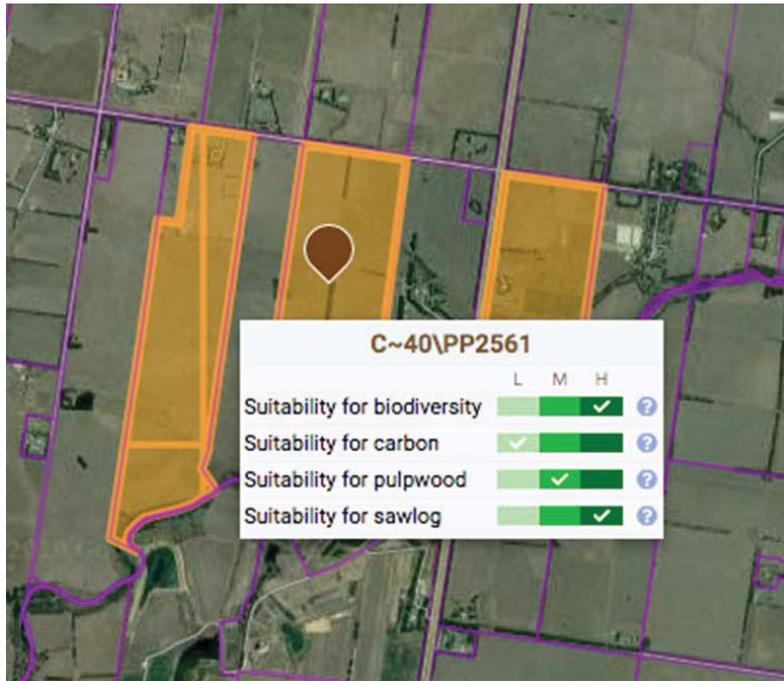


Figure 1: Example of the Investment Potential Scores details provided for a given registered property - noting that land parcels need not be adjacent. Links (question marks on right of each score) to the user guide explain the scores that are given

### 3.3 Stakeholder Engagement Strategy

The Stakeholder Engagement Strategy (Appendix 3) was ratified by the Project Control Group in January 2019. The PCG identified a wide range of stakeholders as having potential to influence the development and success of the platform. The aim of engagement with key stakeholders was to identify ways the platform could complement and/or utilise existing platforms and data, identify appropriate directions for socialisation to ensure that the platform met the needs and success criteria of its intended users, and to identify how the platform could be applied to maximise its effectiveness for facilitating the integration of trees on private land. In the Strategy key stakeholders were identified and mapped according to their influence and potential interest in the platform. Four key stakeholder groups were identified: Catchment Management Authorities; timber processors; carbon investors; and private landholders. Each of the key stakeholder groups were distinguished by having different goals and objectives, and consequently different knowledge needs.

### 3.4 Platform website

The *Trees on Farms: Connecting landowners with investors to grow timber, carbon or biodiversity* home page (<https://growcarbon.science.unimelb.edu.au/>) provides a gateway to the online platform. The aim of the landing page is to provide information about the platform in an accessible format to encourage use by people with minimal computer skills and without expert assistance. The home page also provides information on the benefits of growing trees on farms and links to case studies, related information and links to relevant investor organisations and contact details. This site is currently hosted by the University of Melbourne and in line with University design protocols has limited functionality and customisation capability.

The platform is described on the website as: *A platform for landowners in Victoria to identify the potential biodiversity, carbon and timber benefits from growing trees on their land, and to connect with organisations with funds to invest in these trees (Figure 2).*

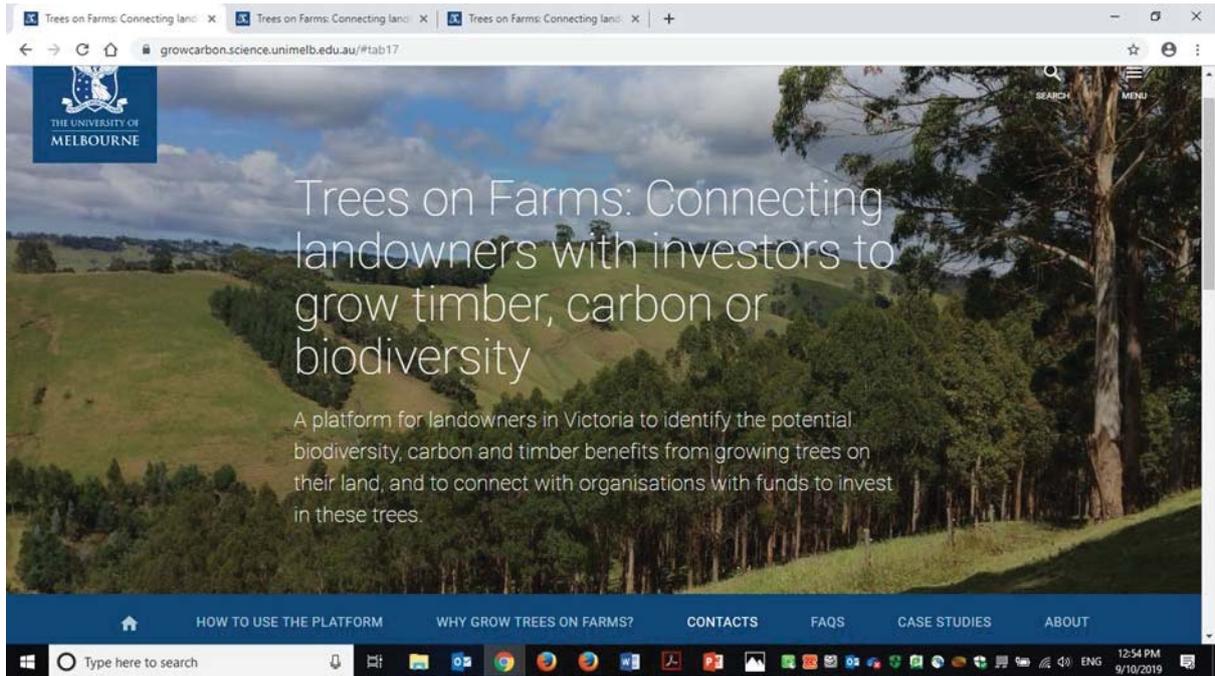


Figure 2 Screenshot of the Growing Landscape Carbon: Online brokerage platform landing page (accessed 9 October 2019) <https://growcarbon.science.unimelb.edu.au/>

The secondary aim of the site is to provide a resource for landowners wanting more information about the potential economic and environmental co-benefits of establishing trees on farms. Research undertaken as part of the related *Next Generation Forest Plantation Investment* project indicated the need for a 'one stop' resource to provide landowners who may be interested in integrating trees on their farms with information about the multiple co-benefits of growing trees. Information on the site is not exhaustive. It describes the co-benefits and provides multiple links to selected external sites providing further information about the benefits of integrating trees on farms.

The site features seven core pages (see Table 5) providing information about the platform, directions for how to use the platform, the co-benefits of growing trees on farms, contact details and links to potential investors and relevant organisations, answers to frequently asked questions, and case study examples.

Table 5: Details of the pages featured in the banner on the Growing Landscape Carbon platform landing page

Page Header	Page description
Home	Describes the platform, an explanation that this platform is a prototype, contact details to provide feedback about the platform and an active link to the 'How to use the platform' page.
How to use the platform	Providing step by step instructions for how to use the platform, with active links to the online platform
Why grow trees on farms?	Information about the co-benefits of growing trees on farms: On-farm benefits; Earning income from trees; Carbon benefits; Earning income from carbon; Improving biodiversity: and Catchment benefits.
Contacts	Timber companies; Carbon brokers; Timber brokers and independent advice; Catchment Management Authorities; Environmental Non-government Organisations; Other useful sites and contacts.
FAQs	Answers to frequently asked questions
Case studies	Family Forestry Improves Triple Bottom Line – The Yan Yan Gurt Creek Story; Jigsaw Farms: Carbon capture and biodiversity strategies do not have to be at the expense of on-farm production; Trees Benefit Sale Dairy Farm; and Formosa: Shelterbelts increased pasture production by 30%.
About	Information about the Growing Landscape Carbon Project.

Additional pages accessed via a drop-down menu on the landing page include:

- Investment Potential Scores – explanation of what is represented
- Calculating Investment Potential Scores – how the indices were calculated
- Glossary of terms
- Potential investor contacts: South West Victoria
- Potential investor contacts: Gippsland
- Next Generation Forest Plantation Investment Research Project – outlining this related project, with an active link to the project website

### 3.5 Stakeholder and community consultation activities

A comprehensive and multi-staged program of stakeholder and community consultation was undertaken to develop and validate the platform (Table 6). The stakeholder and community consultation activities identified stakeholder needs and how the platform might complement and/or utilise existing natural resource and investment platforms and data (stakeholder development workshop). The consultation activities were also used to obtain stakeholder feedback to validate the functionality and usability of the online platform and landing page (stakeholder consultation workshops and presentations, individual one-on-one consultations); for direct communication activities to targeted stakeholder groups (targeted communication) and to present the final prototype platform and review project outcomes (final stakeholder workshop). The platform user interface and website were modified and refined in response to feedback from the consultation activities to ensure the platform met the needs and key success criteria of intended users.

The *Online Brokerage Platform Milestone Four Update Report* provides a more detailed report of the outcomes of the stakeholder and community consultation activities. See also the *Final Stakeholder Workshop Report* (Appendix 4).

Table 6: Stakeholder engagement activities undertaken as part of the Growing Landscape Carbon project

Date	Event	Location	Objectives	Attendees
18 October 2018	Stakeholder Development Workshop (see Appendix 1)	Carlton	<ul style="list-style-type: none"> <li>Identify key stakeholder needs</li> <li>Input to design of platform to meet stakeholder needs</li> <li>Identify the main technical considerations for design of platform</li> <li>Identify key information needs for landowners, investors and other stakeholders</li> <li>Identify relevant information sources and related tools and techniques</li> <li>Define relevant stakeholders and appropriate communication strategies.</li> </ul>	Key stakeholders including landowners, timber industry, catchment management, carbon investors, policy makers and other stakeholders
25 March 2019	Stakeholder consultation workshop	Colac	<ul style="list-style-type: none"> <li>Presentation of platform to regional stakeholders</li> <li>Elicit feedback for further development of the platform</li> </ul>	Landowners, investors (CMA, timber industry)
29 March 2019	Stakeholder consultation workshop	Traralgon	<ul style="list-style-type: none"> <li>Presentation of platform to regional stakeholder</li> <li>Elicit feedback for further development of the platform</li> </ul>	Landowners, investors (CMA, timber industry)
26 April 2019	Presentation to Gippsland Agroforestry Network (GAN)	Lardner, Gippsland	<ul style="list-style-type: none"> <li>Stakeholder presentation and feedback on platform</li> </ul>	Members of Gippsland Agroforestry Network
July - August 2019	Individual one-on-one consultation with landowners		<ul style="list-style-type: none"> <li>Test ease of use and effectiveness of landing page - identify issues and modify as required</li> <li>Test user experience of prototype platform – feedback and recommendations</li> </ul>	Landowners and land managers
6 -7 August 2019	Targeted communication: Carbon Farming Conference and Expo	Albury	Wider communication and dissemination of platform to targeted user groups	Conference attendees
18 – 20 September 2019	Targeted communication: From the Ground Up: Regenerative Agriculture conference	Colac	Wider communication and dissemination of platform to targeted user groups	Conference attendees
November 2019	One-on-one interviews supply-side stakeholders (see Appendix 4)		<ul style="list-style-type: none"> <li>Identify barriers and solutions to carbon abatement projects</li> <li>Role of supply side in increasing tree plantings</li> <li>Feedback on platform from a supply-side perspective</li> </ul>	Selected carbon project developers and forest industry representatives
5 December 2019	Final stakeholder workshop	Carlton	<ul style="list-style-type: none"> <li>Present the prototype platform to stakeholders</li> <li>Review the outcomes of the project</li> <li>To discuss options for the future direction and development of the platform</li> </ul>	Key stakeholder groups

## 4. Evaluation of the prototype platform

The prototype platform was developed as a 'proof of concept'. Evaluation of the prototype platform against criteria outlined in the project plan (Table 7) indicates the prototype demonstrates the potential for the platform to facilitate carbon abatement by communicating tree growing potential and providing a mechanism for connecting landowners and potential tree investors. The prototype demonstrates the potential for the platform to facilitate effective tree growing partnerships between landowners, investors and other interested parties. The platform provides a means for landowners to identify the potential for their land to grow trees for different purposes and provides a medium to signal their interest in growing trees to potential investors. For investors, the platform provides a means to identify landowners interested in growing trees for different purposes (Figure 3).

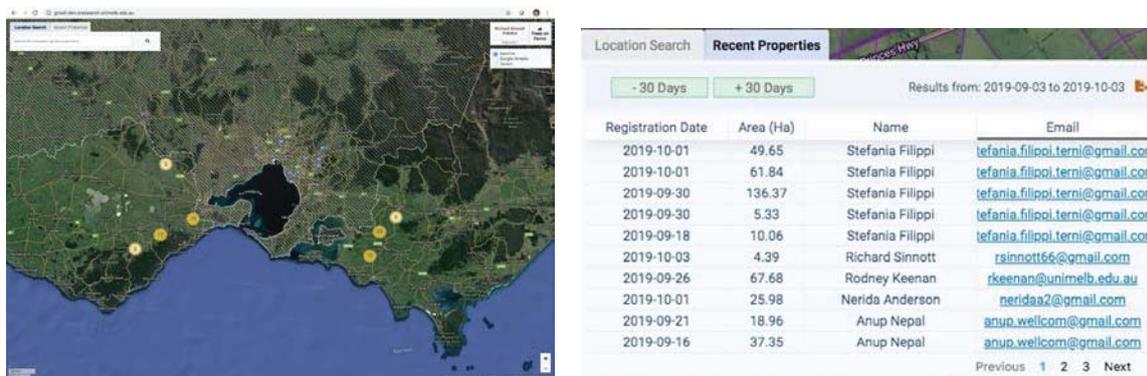


Figure 3 Investors perspective of the platform showing all registered properties (left) and their contact details (right). Note: the registered properties are all test users

The platform connects landowners with those with financial resources for tree growing by providing information about potential investors in their region. The investment potential indices provide an indication of the potential for a specific land parcel to grow trees for carbon, timber and biodiversity outcomes. Recommendations for new or revised policies to facilitate new investment in farm tree planting were identified through the course of the project. Landowners have accessed material from the platform during the consultation activities.

The timeframe for the project was relatively short (18 months). Use of the platform to date has been limited and no specific agreements have been developed between landowners and tree investors in response to using the platform. However, the relationships established through workshops and related activities has built stronger connections between the timber industry and tree growers in pilot regions.

Table 7 Summarised evaluation of the platform against criteria outlined in the project funding description

Desired outcome	Platform evaluation	Limitations
<b>Outcome 1.1</b> Increased Victorian carbon stocks through integrated tree growing in rural landscapes	The prototype demonstrates the potential for the online platform to facilitate carbon abatement by communicating abatement potential and providing a platform for connecting landowners and potential investors.	The prototype platform is a 'proof of concept'. While the prototype does establish this proof, additional funding and support is required to develop the platform further to encourage widespread implementation, adoption and long-term sustainability and to tackle broader issues, e.g. privacy and commercial considerations
<b>Outcome 1.2</b> Greater landowner access to financial capital for investment in tree growing	The platform provides land owners with access to financial capital by providing information about potential investors in their region.	Direct contact between land owners and investors is limited by the provision of only generalised information about specific investor needs.
<b>Outcome 1.3</b> Increased information on revenue potential and other benefits from tree growing delivered for carbon, timber and other quantifiable values	The investment potential indices provide an indication of the potential for a specific land parcel to grow trees for carbon, timber and biodiversity outcomes.	As an estimation of potential, the current investment indices do not provide specific information on revenue potential. This information could be provided by working closely with potential investors to refine the investment indices.
<b>Outcome 2.1</b> Greater investment in regional tree planting	The project engaged with key stakeholders identified in the Engagement Strategy. Feedback with stakeholder groups consistently supported the need for the platform to facilitate landowner and investor connections.	Successful connections between potential partners was limited by the 'proof of concept' objectives of the prototype platform. The capacity to connect partners will be greatly enhanced through further development of the platform.
<b>Outcome 2.2</b> Improved understanding of productivity potential for various tree growing scenarios	The investment potential indices provide an indication of the productivity potential for integrating trees on farm land.	Feedback from the stakeholder engagement indicates further refinement of the indices would enhance the utility of the indices.
<b>Outcome 2.3</b> Greater policy integration to leverage multiple tree growing values.	Recommendations for new or revised policies to facilitate collaboration to facilitate new investment in regional tree planting were discussed at the final stakeholder workshop (see Section 5.5)	
<b>Outcome 3.1</b> Improved connectivity between local land owner, investor and industry stakeholders	The prototype demonstrates the capacity of the platform to improve connectivity between landowner, investor and industry stakeholders	It is difficult to quantify the level of interaction between partners within the prototype platform. Further developments would focus on improving connectivity between stakeholder groups following enhancements to the platform, e.g. privacy, integration with land registry data and commercial demands
<b>Outcome 3.2</b> Increased capacity of agricultural groups in agroforestry; strong interest by stakeholders in using the platform	Landowners have accessed material from the platform during the consultation activities.	Stakeholder consultation identified areas needing to be strengthened in further development to encourage greater interest for using the platform by all stakeholder groups.

## 5. Directions for further development

### 5.1 Meeting stakeholder needs

The different stakeholders involved in the project have different criteria for evaluating project outcomes. While the platform provides a means for landowners and investors to connect, the stakeholder consultation activities highlight the significant challenges for matching the information requirements of diverse stakeholder groups, each with different knowledge needs. In the final project workshop, four types of users were identified as having different requirements (Table 8):

- Private landowners
- Industry and commercial investors (including carbon brokers)
- Government policy makers and programs
- Catchment managers and biodiversity conservation organisations.

While the underlying goal of the platform is to link landowners with investors, a consistent theme in the group discussions was the role of the platform in facilitating a two-way exchange of information: provision of information to landowners about the options and opportunities for tree growing, as well providing feedback to investors about the level and range of interest in growing trees amongst private landowners.

*Table 8: The platform requirements of the four key user groups identified in the stakeholder consultation activities (from Appendix 4: Final Workshop Report)*

User group	Platform requirements
Private landowners	Who are the interested investors, what are their requirements – land area, land type, where, business model options, financial returns, etc. Information about the availability of expertise and contractors that is reliable, accurate, and reflects market demand. Investor requirements for integrating trees on private land
Investors	Who are the landowners that are interested, what are their requirements - available land area, configuration, financial needs, time commitment Provision of information to landowners about investor requirements for integrating trees on private land
Catchment managers and biodiversity conservation organisations	Identifying who is interested (both landowners and investors), what are they interested in, what are their specific requirements Define roles of the different investors within this user group, as brokers, propagator Provide an indicator of the nature and degree of interest amongst landowners about growing trees Provide a system or means for matching opportunities for landowners with the objectives of the organisation
Government/Public policy	The platform needs to be credible and cost effective, capable of successfully facilitating the integration of trees in the rural landscape Provide information about different programs and opportunities for tree growing – signal who is eligible for funding Useful for understanding and targeting stakeholders

## 5.2 *Investment potential indices*

The investment potential indices are a key component of the platform used to inform landowners and investors of the potential for specific land parcels to grow trees for different purposes. The indices incorporated in the prototype platform demonstrate the potential for the platform to convey worthwhile and useful geospatial information about tree growing potential. However, the development of the current indices was limited by the availability of State-wide data at a sufficiently fine spatial resolution necessary for estimating index values. Consequently, the indices provide only a very generalised indicator of land potential for tree growing. These indices need to be refined and updated as new information becomes available.

Feedback from the consultation activities indicates landowners would like more specific information about the potential for their land to grow trees for different purposes, including species and configuration options, information about which investors are interested in growing trees on a specific land parcel, the associated investor requirements (e.g. species, size, road access etc), as well as an indication of potential financial returns. Feedback from landowners and other stakeholders suggests the current information provision is 'one-sided', requiring landowners to register an interest in growing trees without a reciprocal exchange of information from potential investors. The platform does not deal with the actual contractual aspects of investing in land for growing trees but rather, is aimed at facilitating initial contact between potential investors and land owners with an interest in growing trees. Market exchanges between potential investors and landowners could be facilitated by future extensions of the platform should additional funding be made available for this purpose.

The provision of property-specific and current investment information is probably outside the scope of a platform such as this. However, providing more targeted information to match the knowledge needs of landowners would strengthen the utility of the platform and the likely level of landowner engagement and use. Incorporating priority maps provided by potential investors for timber, biodiversity or catchment benefits, complemented by investor-stated requirements regarding tree species and other operational considerations, would greatly enhance the utility of the indices to provide meaningful and useful information to landowners wanting to integrate trees on their land.

## 5.3 *Multiple landowners and relatively few investors – reducing transaction costs*

A key challenge identified in the project was how the platform could be used in the context of potentially multiple landowners but relatively few investors. This challenge is exacerbated when the land parcels that landowners are willing to establish to trees do not conform to the needs of the investor, for example meeting minimal area or accessibility requirements, or where the desired planting configuration may increase establishment or management costs. In some circumstances there may be opportunities to address investor concerns about area through collaboration amongst landowners, such as the formation of landowner groups that collectively can meet minimum land and accessibility requirements of investors. However, the platform in its current form is not designed to facilitate such collaborative arrangements involving multiple landowners, and therefore would require extensions to provide this functionality.

Dealing with multiple landowners each with different needs, objectives and goals requires individual negotiation of any contract or tree-growing partnership arrangements, increasing the transaction costs for investors. Further developments of the platform could help reduce transaction costs for both the landowner and investor by providing more specific and targeted information that meets individual investor needs and landowner needs. More specific information could for example include advice on aspects affecting the commercial viability of a planting, such as area to be planted, access, growth period, or management requirements. Developing an online brokerage capability to help facilitate the aggregation of smaller landholdings could further reduce transaction costs for both landowners and investors, although this facility would need to be balanced with privacy considerations.

## 5.4 *Raising awareness*

The online platform has the potential to play an important role in helping raise awareness of opportunities for integrating trees in the rural landscape. Further developments of the platform could highlight the role trees can play in helping meet a range of individual, local, national and global economic, environmental and social objectives. Raising awareness could include demonstrating outcomes of successful case studies or highlighting the experiences of early adopters. Uncertainty is a significant barrier to establishing trees within productive agricultural enterprises. Raising awareness and promoting a range of positive outcomes can help overcome concerns and uncertainty about the potential for trees to achieve diverse social, environmental and economic outcomes, while also helping establish important social norms contributing to land use decision making.

## 5.5 *Policies to support more trees in rural landscapes*

Throughout the project, in discussion with rural landowners, tree investment organisations, the Project Control Group and workshop participants, the following policy options to support more tree growing in rural landscapes were identified at different governmental levels.

### 5.5.1 *Federal Government*

- Carbon payments can provide short-term cash flow and increase investment in trees. Eliminating restrictions on carbon payments plantation forestry (such as the >600 mm rainfall exclusion), simplifying methodologies, and reducing transaction costs and uncertainty for tree investors to receive carbon payments through the Federal Government Emissions Reduction Fund and other carbon payment programs would likely mean greater uptake of these programs for farm trees.
- Develop coordinated long-term national and state plans for trees in rural landscapes with state, territory and local governments. Define desired public good environmental outcomes and communicate information on synergies between agriculture and commercial tree-growing options.
- Develop a planning framework for regional tree investment in conjunction with the agriculture community, timber industry and other stakeholders.
- Use spatial information on land suitability to better integrate tree growing with agriculture, and to specify the required infrastructure for tree growing.
- Develop incentives linked to regional plans. Design grants or loan programs to target specific locations for afforestation, tree species and other desired project attributes. Work with State Governments to align incentives. Consider underwriting market or biophysical risks to provide assurances to investors and landowners.
- Ensure taxation policies for investors in commercial trees are consistent with those for other agricultural land uses.
- Increase research and development in commercial trees on farms for different regions and support education and training to build professional capacity in the industry, farm advisors and rural landowners.
- Provide technical and financial support for commercial farm tree information—inventories, timber prices, harvest projections and other planning tools to provide a clear picture of the current plantation industry and market status in each state and territory.

### 5.5.2 *Victorian Government*

- Work with tree investors to promote the benefits of trees on rural land for the agricultural operation, for climate change, biodiversity and catchment benefits and for the circular economy, including use of wood in construction, packaging and paper products and the need for more trees to create a new cycle of sustainability.
- Support CMAs and government agencies to develop information for tree-planting—including suitable locations and integrating commercial tree-growing with catchment management and farm productivity objectives.
- Develop incentives linked to regional plans to ensure increased tree investments without distorting the market or delaying investments. Design long-term grants or loan programs to target specific locations for afforestation, tree species and other project attributes. Work with the Federal Government to align carbon-related incentives. Ensure incentives are promoted and accessible to rural landowners and investors.
- Develop investment vehicles for public and private investment in trees in rural landscapes at sufficient scale to make a difference. These could include payments for environmental services for trees in rural landscapes.
- Provide support for collaborative business models between industry and landowners, including development of standard legal agreements, offtake agreements and other relevant administrative documents. Provide support services for preparing and submitting planning applications.
- Ensure coordinated planning for plantations across local governments. Provide information on the potential benefits of commercial trees. Relevant local governments need trained staff, information and resources to implement state policies and plans. Provide guidance on planning scheme arrangements that support integration of commercial trees with agriculture.
- Increase research and development in commercial tree plantations on farms for different regions and support education and training to build professional capacity in industry and local governments, and for farm advisors and rural landowners.
- Provide information and planning tools for trees on farms, carbon calculators, risk management and information for rural landowners. Provide technical and financial support for commercial farm tree inventories in Victoria, and information on timber prices, harvest projections and other planning tools.

### 5.5.3 *Local Government*

Local governments play a critical role in planning, regulating and approving tree-growing on private land. Local governments also provide and maintain local infrastructure such as roads and bridges that is critical to the success of commercial planted forest. If convinced of the local economic and environmental benefits, local governments can also be strong champions and supporters of investment in trees on rural land. Actions for local governments include:

- Providing clear right to harvest information for commercial planted trees.
- Ensure that appropriately located commercial or environmental tree growing is incorporated into planning schemes.

## 6. Key directions for further development

- Privacy and publicly sharing of information were identified as a significant concern for both landowners and investors. Further developments of the platform should consider measures to address concerns about data privacy and include mechanisms to ensure that landowners who register on the platform are legitimate owners or managers of the registered land. Access to official land registry information to check that owners of land parcels are legitimate owners is non-trivial due to Governmental structures and monies required
- Balancing the needs and demands of landowners and investors is key to encouraging use of the platform. On the prototype platform connections occur when a landowner registers their interest and an investor assesses that the landowner interests aligns with their needs. A lack of direct and timely feedback from investors about the suitability of a property to grow trees can be a disincentive for landowners. Further developments of the platform should consider how to address the uneven flow of information and encourage greater investor interaction with landowners. Refining the Investment Potential Indices to include investor priority maps could help reduce the uneven information flow (see *Section 3.2*)
- The ongoing use and development of the platform will depend on financial resources and organisational commitment to maintain the currency of information and to further develop the platform to meet the needs of different users.

## 7. Appendices

*Appendix 1: Online Brokerage Platform Development Workshop Report*

*Appendix 2: Growing Landscape Carbon Forest Index Report*

*Appendix 3: Stakeholder Engagement Strategy*

*Appendix 4: Final Workshop Report, includes Carbon Market Institute Stakeholder Consultation Report*