



# CONSULTANTS EXPRESSION OF INTEREST



## BIOENERGY & CARBON

Assessment of the volumes of wood biomass residues and their potential uses and markets

Promote the benefits of forestry in reducing climate change, by delivering bioenergy, carbon storage, and biomass for future sustainable growth.

## **EXPRESSION OF INTEREST**

### **Assessment of the volumes of wood biomass residues and their potential uses and markets**

#### **Key EOI Information**

The South & Central Queensland Regional Forestry Hub is seeking Expressions of Interest (EOI) from individuals and organisations with the necessary expertise to assist Hub members in assessing the current and future volumes of:

- a. biomass residues from local forestry and wood processing activities;
- b. chemically treated wood residues from local wood processing (both softwoods and hardwoods) (e.g., sawmills and primary processing value adding) and timber truss and frame fabrication, including treated wood recovered from other processes and waste collection sites.

Prospects for using the above-mentioned wood biomass must also be identified and investigated in light of the wide array of value-added uses.

The project is expected to be completed using a combination of desk research and in-person/remote stakeholder consultation.

The objectives described in Section 3 may be delivered as a single project or separate projects conducted by multiple consultants.

If you believe that your expertise satisfies the requirements outlined in this document, please complete and submit an Expression of Interest (EOI).

**Closing date for the EOI submission:** 5.00pm 1 April 2022

**Email your EOI to:** [k.fullarton@seqfh.com.au](mailto:k.fullarton@seqfh.com.au)

Contact person: Kerry Fullarton, Hub Manager

South & Central Queensland Regional Forestry Hub

Phone: 0498 018 144

Once submitted, your EOI will be considered by the Hub Committee. If the proposal is deemed acceptable for consideration, a Hub representative will contact you to discuss your proposal.

## 1. Introduction

### South & Central Queensland Regional Forestry Hub

In September 2018, the Australian Government launched the National Forest Industries Plan: Growing a Better Australia – A Billion Trees for Jobs and Growth. The Plan outlines the Commonwealth Government’s strategy to drive growth in the renewable timber and wood fibre industry. It provides the vision and certainty needed for Australia’s forestry industry and supports the sustainable forest industries as long-term growth engines for regional Australia.

The plan ambitiously aims to deliver a billion new trees over the next decade (including 400,000 new hectares of plantations nationally) to meet a projected fourfold increase in global demand for timber and wood fibre products by 2050. This translates to planting the right trees, at the right scale, in the right places.

The Commonwealth Government supported the Plan in the 2018-2019 Federal Budget with a \$20 million commitment over four years to help implement actions identified in the Plan. The Hub was setup as part of the Commonwealth’s commitment which, pursuant to the Plan, includes nine forestry hubs across Australia.

The South & Central Queensland regional forestry hub will determine the opportunities and barriers for the forestry and wood products sector and detail the finding of its assessment and growth pathways in reports to the Commonwealth Government and stakeholders.

The steering committee is representative of industry and includes key stakeholders in the region. In order to drive the Commonwealth’s key objective of planting one billion trees in the next decade under the plan, the Hub has identified a number of key priorities in consultation with both industry, community, and government stakeholders.

The Hub’s priorities include five priorities:



#### **Skills & Training**

We will support forestry training and education and promote further uptake of forestry-related courses. In addition, we will support sustainability and contribute to growing a skilled and safe workforce to meet industry’s future needs.



#### **Manufacturing Competitiveness**

Our goal is to maximise manufacturing processes and products through innovation, science, and technology, and add value through improved supply chain logistics.



### Plantation Investment Models

Our focus is to grow the forestry sector to deliver strong financial outcomes and design and test new models of investment for plantation forest.



### Native Forest Management

We want to ensure ecological and sustainable forest management of native vegetation on private and state property for increasing timber supply.



### Bioenergy & Carbon

We aim to promote the benefits of forestry in reducing climate change, by delivering bioenergy, carbon storage, and biomass for future sustainable growth.

## 2. Project Justification

Queensland is home to 41% of Australia's forests. The Smart State has the most forested land area in the country, with 52.5 million hectares of native forests and 233,000 hectares of plantations. The majority of Queensland's timber comes from mature softwood plantations dominated by exotic pine and hoop pine (*Araucaria*). The processing sector employs 90 percent of Queensland's forest industry workforce. The softwood processing industry meets 87 percent of Queensland's current softwood demand and nearly quadruples the timber resource's value. The industry, which stretches from Ravenshoe in Far North Queensland to the outskirts of Brisbane, provides significant economic, social, and environmental benefits<sup>1</sup>.

**The Queensland timber industry recognises that biomass residues from local forestry and wood processing operations represents a substantial resource that is presently underutilised. For example, forest harvesting residues have historically been disposed of, while unmarketable and small-diameter trees, tops, and limbs that could be used to create renewable bioenergy and bioproducts.**

National agencies such as the Australia Renewable Energy Agency (ARENA) and Bioenergy Australia, as well as industry leaders and researchers affiliated with the Queensland Department of Primary Industries and the Queensland-based National Centre for Timber Durability and Design, all support a shift towards sustainable biomass utilisation and the promotion of a circular bioeconomy.

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<sup>1</sup> Timber Queensland

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Australian Biomass for Bioenergy Assessment (ABBA) Project<sup>2</sup> collected, calculated and mapped, on a state-by-state basis, data on the location and potential volumes of biomass from a wide range of industries for inclusion on the National Map platform. Biomass sources that have been captured so far are listed below:

- Forestry - harvest and wood-processing residues
- Agriculture - broadacre cropping residues
- Agriculture - livestock manure residues
- Horticulture - intensive cropping residues
- Solid Organic Waste - Municipal Solid Waste (MSW); Construction & Demolition (C&D); Commercial and Industrial (C&I)
- National layers including winery and piggery residues.

Over the years, several research studies have been conducted to determine how our industry's wood treatment practices have changed and ascertain the suitability of, and methods for, the full range of softwoods and hardwoods treated timber including the recycling of H2F blue timber<sup>3</sup>. This study needs to review and assess the relevance of previous work to the needs of the industry in the hub region – and include (as appropriate based on their current use):

- Water-borne preservatives (Copper Chrome Arsenate, also referred to as CCA, Copper Quaternary or ACQ, Copper azole or CuAz – currently with a wide variety of applications, both indoors and outdoors, for residential, commercial, and industrial uses
- Oil-borne preservatives (creosote and pigment emulsified creosote (PEC) – mainly used for heavy duty construction and in the marine environment.
- Light Organic Solvent Preservatives (LOSP) - used only for products to be installed out of ground – as included in the AS/NZS 1604 (Tributyl tin naphthenate or TBTN, Copper naphthenate or CuN, Tebuconazole/propiconazole or teb/prop, and the synthetic pyrethroids
- Glue line additives (synthetic pyrethroids, imidacloprid and zinc borate added to the glue for EWP/reconstituted wood-based panels manufacturing process)<sup>4</sup>

### Findings from earlier studies

According to earlier research<sup>5</sup>, around 7% of the total timber processed in the frame and truss manufacturing sector ended up as offcuts or waste. This equates to around 42,500 tonnes of wood waste each year nationally.

Timber wall frames are treated with synthetic pyrethroids (bifenthrin and permethrin) to resist borers and termites. This is known as H2F blue pine and can be easily distinguished by the addition of a blue dye.

The Australian Standards (AS/NZS-1604) for H2F treatment specify the various pyrethroid concentrations and treatment depths in the timber. Because the treatment is water-based and the concentration of each chemical is

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<sup>2</sup> <https://www.dpi.nsw.gov.au/forestry/science/forest-carbon/abba>

<sup>3</sup> <https://www.fwpa.com.au/images/marketaccess/Final-Report-Opportunities-for-Post-consumer-H2F-treated-off-cuts-PNA251-1112.pdf>

<sup>4</sup> Timber Treatment | Timber Preservers Association of Australia (tpaa.com.au)

<sup>5</sup> [http://www.forestworks.com.au/wp-content/uploads/2016/08/CaseStudy\\_FrameAndTrussIWG.pdf](http://www.forestworks.com.au/wp-content/uploads/2016/08/CaseStudy_FrameAndTrussIWG.pdf)

extremely low in the treated wood, H2F blue pine is more environmentally friendly than many other wood treatments.<sup>6</sup>

Several methods exist for recycling wood wastes treated with synthetic pyrethroids. Mulch, particleboard manufacturing, bioenergy generation, and animal bedding are just a few of the major markets.

### **Recycling into mulch**

For example, synthetic pyrethroids were originally developed as agricultural pesticides and are widely registered and used in agricultural, veterinary and household products such as fly spray. As a result, and given that gardeners frequently add pyrethroids to their potting mix, the H2F blue pine waste may be an attractive resource for recycling into landscape mulch and bulking agent for composting.

However, regulations state that the same chemical that is acceptable for use in an orchard when sprayed by a farmer must be disposed of carefully when applied to timber, effectively prohibiting its use as mulch or compost.

One Sydney-based facility, Direct Pallets at Ingleburn, has been granted permission to reprocess small volumes of H2F offcuts pine into landscape and animal bedding products.

### **Recycling into particleboard**

The use of H2F blue pine is not restricted in particleboard manufacture. For example, a Borg company named reDirect Recycling<sup>7</sup> and based in New South Wales recycles wood waste from local applications such as timber roof trusses, wall frames and floor systems into new particleboard. Other waste inputs recycled by reDirect Recycling include offcuts of particleboard (raw and melamine coated), glulam, LVL, plywood or formwork (all made from dark-coloured phenol formaldehyde) and OSB (made from isocyanate resin).

Similarly, D&R Henderson has been sourcing timber offcuts from fabricators in New South Wales and Victoria to its particleboard facility in Benalla, Victoria, for many years, including bluepine H2F offcuts.<sup>8</sup>

### **Combustion for energy generation**

Wood waste containing permethrin or bifenthrin can be burned to produce energy. In fact, according to a previous FWPA study<sup>9</sup>, all preservative treated wood wastes can be safely combusted with proper management of the flue gases, particles, and resulting ash and its disposal.

For maximum performance, unmixed preservative treated timber fuel is preferable. For example, combusting wood that contains both copper and chlorinated pesticides, such as permethrin and tebuconazole, results in dioxin formation in the ash, which can be problematic.

The same study sets out a tolerable limit for bifenthrin or permethrin in treated wood for co-firing to generate energy/heat. This threshold is 10 parts per million (or mg/kg) and would allow for co-firing with 5% treated

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<sup>6</sup> <https://www.timbertradernews.com/2021/04/22/h2f-treated-framing-disposing-of-a-myth/>

<sup>7</sup> <https://www.redirectrecycling.com.au/wood-recycling/frames-and-trusses/>

<sup>8</sup> <https://ftmanews.com/fabricators-waste-recycling-state-of-play/>

<sup>9</sup> [https://www.fwpa.com.au/images/marketaccess/Final\\_report\\_-\\_Review\\_of\\_PN09\\_1074.pdf](https://www.fwpa.com.au/images/marketaccess/Final_report_-_Review_of_PN09_1074.pdf)

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wood waste. However, it suggests that the combustion of higher proportions of wood treated with these preservatives as a more targeted means of disposal for treated wood waste (rather than incidental inclusions) should be possible.

## 3. Project Scope

The scope of this project is to conduct:

### a. Residues from forestry and wood processing operations

- Assessment of existing and prospective volumes and types of biomass residues generated by forestry and wood processing operations in all local government areas (LGAs) covered by the Hub, including:
  - unutilised residues from native and plantation forest operations such as thinning, pruning, maintenance, harvesting;
  - unutilised residues from timber processing (primary and secondary) operations;
  - reclaimed timber from constructions and demolition works as well as from urban forestry and domestic wood products waste.
- Identification of potential commercial uses for the identified volumes and types of biomass residues.

### b. Chemically treated wood residues

- Assessment of existing and prospective volumes and types of chemically treated wood residues generated by local wood processing (both softwoods and hardwoods) (e.g., sawmills and other processing including timber frame and truss fabrication operations) and recovered from waste collection sites in all local government areas (LGAs) covered by the Hub; and
- Identification of potential commercial uses for the identified volumes and types of chemically treated wood residues.

The objectives outlined above can be delivered as a single project or as separate projects.

## 4. Methodology

The project(s) should identify, analyse and produce reports on the following key components:

### a. Residues from forestry and wood processing operations

- Location, volume, type and quality of biomass residues from forestry and wood processing operations.

The outcome will be an up-to-date inventory, which will include a review of available publications and databases and consultation with relevant stakeholders from prescribed local government areas (LGAs).

Possibility of volume consolidation and transportation to prospective processing sites/areas should also be explored as part of this activity.

Note: This will be a stop-and-go process, determining if there is an economically sized opportunity to continue the investigation.

- Potential commercial uses for the volumes identified in the prior stage (i.e., conversion into wood pellets for domestic or commercial use, animal bedding or other uses in animal farms, briquetting, wood plastic composites or other applications such as biochemicals and biofuels). Subsequently, the top three value

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adding opportunities – based on their financial, environmental and employment potential - will be selected and described in more detail (i.e., estimated cost, requirements, applicable standards, main users/markets).

- Federal and state government policies and support programs for bioenergy and circular economy, required standards and guidelines that support the utilisation of forest biomass residues.
- Other impediments or challenges to the top three value adding opportunities, including financial, regulatory, supply chain and institutional barriers.

#### **b. Chemically treated wood residues**

- Location, volume and type of the full range (hardwoods and softwoods) chemically treated wood residues from wood processing (e.g., sawmills and value adding manufacturing including timber frame and truss fabrication operations), including volumes recovered from waste collection sites.

The outcome will be an up-to-date inventory, which will include a review of available publications and databases and consultation with relevant stakeholders from prescribed local government areas (LGAs). Possibility of volume consolidation and transportation to prospective processing sites/areas should also be explored as part of this activity.

- Potential commercial uses for the volumes identified in the prior stage (i.e., combustion for energy generation and/or recycling into various products as permitted).
- Relevant Federal and state government policies and support programs for bioenergy and the circular economy, required standards and guidelines that support the utilisation of chemically treated wood residues.

The above study should include specific outcomes on the following:

- Full range of Australian approved for use chemically treated timber and wood products (including H2F waste offcuts and the other softwood and hardwood chemically treated timber) in Queensland to be localised and quantified.
- Evaluation of recycling methods and/or energy recovery opportunities in key industry locations to establish re-use arrangements of H2F and the other products (as above).
- Consultation with local environmental regulators and recyclers in Queensland to clarify their understanding of toxicity of H2F and the other treated timber and barriers to recycling of H2F/the other chemically treated timber waste.
- Development of industry guides and the promotion / dissemination of these guides to suppliers of H2F and other chemically treated timber and engineered timber products to help them evaluate the end-of-life recyclability, or recovery for energy, of the offcuts produced from the use of their products when considering the choice of preservative solutions.

**The project(s) should be completed using a combination of desk research and in-person/remote stakeholder consultation. All project components described under Methodology could be delivered as part of a single consulting project or as separate projects by various consultants.**



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LGAs covered by the Hub include:

- Banana Shire Council
- Bundaberg Regional Council
- Central Highlands Regional Council
- Cherbourg Aboriginal Shire Council
- Fraser Coast Regional Council
- Gladstone Regional Council
- Goondiwindi Regional Council
- Gympie Regional Council
- Livingstone Shire Council
- Lockyer Valley Regional Council
- Maranoa Regional Council
- Moreton Bay Regional Council
- Noosa Shire Council
- North Burnett Regional Council
- Rockhampton Regional Council
- Scenic Rim Regional Council
- Somerset Regional Council
- South Burnett Regional Council
- Southern Downs Regional Council
- Sunshine Coast Regional Council
- Toowoomba Regional Council
- Western Downs Regional Council
- Woorabinda Aboriginal Shire Council

Consultation with businesses, state and municipal governments, and other relevant stakeholders, as well as local communities, is required for the project. Stakeholder interviews and/or consultation workshops must be done at least once during the report development process.

Key stakeholders to be consulted during the project include, but are not limited to:

**a. Residues from forestry and wood processing operations**

- Forest growers
- Processors
- Recycling and waste management operators

**b. Chemically treated wood residues**

- Frame & Truss fabricators
- Timber preservation sector
- Municipal waste collection and disposal services/landfill/waste management

The following groups of stakeholders should also be considered:

- Local, State and Commonwealth government and agencies as appropriate
- Transport and freight providers
- Other groups as per the priority issues for the region, for example, relevant supply chain actors,

## **5. Project Deliverables**

Key deliverables include the completion of the following at the satisfaction of the Hub Committee:

- Detailed project plan, including stakeholder identification and consultation methodology, is completed by applicant
- Draft reports are completed and presented to the Hub Committee at different stages of the project life (as agreed)
- A final report is completed and presented to the Hub Committee before the project completion.

## **6. Project Timeline**

The project is scheduled to begin 1 May 2022 and conclude 1 July 2022.

## **7. Selection Criteria**

The Hub will select the successful applicant for the report based on evaluation of all submitted proposals against the following criteria.

### **CRITERIA 1: Capabilities and expertise in producing technical reports related to the project scope**

To address this selection criterion, the expression of interest should describe the following:

- An overview of the applicant's organisation and business operations;
- Applicant's experience, skills and capabilities relating to the project's scoping requirements as outlined in Section 3 above;
- Examples (list) of any publicly available reports that the applicant has produced related to the project scope;
- An overview of the proposed project team;
- A brief description of professional experience for each project team member, highlighting their experience and capabilities in relation to the project requirements;
- A key point of contact for the Hub who will act as the Project Manager for the project.

### **CRITERIA 2: Total cost and cost structure (against the identified deliverables)**

To address this selection criterion, the expression of interest should provide the following:

- Total cost that will be charged, inclusive and exclusive of GST, for completing the project;

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- Breakdown of cost structure against key project deliverables.

The Hub may additionally request candidates to engage in interviews and/or to present their plans formally as part of the selection process.

## **Attachment 1: EXPRESSION OF INTEREST FORM**

### **Assessment of the volumes of biomass residues from local forestry and wood processing activities and their potential uses and markets**

#### **PART A: Applicant Details**

Lead Organisation Name	
Address	
Primary Contact Name	
Position Title	
Telephone	
Email	

#### **Part B: Selection Criteria**

##### **CRITERIA 1: Capabilities and expertise in producing technical reports related to the project scope**

To address this selection criterion, the expression of interest should describe the following:

- An overview of the applicant's organisation and business operations;
- Applicant's experience, skills and capabilities relating to the project's scoping requirements as outlined in Section 3 above;
- Examples (list) of any publicly available reports that the applicant has produced related to the project scope;
- An overview of the proposed project team;
- A brief description of professional experience for each project team member, highlighting their experience and capabilities in relation to the project requirements;
- A key point of contact for the Hub who will act as the Project Manager for the project.

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**CRITERIA 2: Total cost and cost structure (against the identified deliverables)**

To address this selection criterion, the expression of interest should provide the following:

- Total cost that will be charged, inclusive and exclusive of GST, for completing the project;
- Breakdown of cost structure against key project deliverables.