



## **Submission to the Australian Government Productivity Commission: Inquiry into Australia's Opportunities in the Circular Economy**

The Hunter Joint Organisation is the statutory local government entity established by the NSW Government, through the *NSW Local Government Act 1993*, to support the Councils of the Hunter Region work together for better rural and regional outcomes, and to enhance the way local and state governments work together to plan and deliver important regional infrastructure and investment.

Member Councils of the Hunter JO include:

- Cessnock City Council
- Dungog Shire Council
- Lake Macquarie City Council
- Maitland City Council
- MidCoast Council
- Muswellbrook Shire Council
- City of Newcastle
- Port Stephens Council
- Singleton Council
- Upper Hunter Shire Council
- Central Coast Council

The core statutory functions established by the NSW Government for the Hunter JO include:

1. Strategic planning and priority setting – to establish strategic regional priorities for the Joint Organisation area and to establish strategies and plans for delivering those priorities.
2. Intergovernmental collaboration - to identify and take up opportunities for inter-governmental cooperation on matters relating to the Joint Organisation area.
3. Shared leadership and advocacy - to provide regional leadership for the Joint Organisation area and to be an advocate for strategic regional priorities.

Our response to the questions posed contained in the *Opportunities in the Circular Economy* paper is provided below and is informed by the circular economy project work undertaken by the Hunter JO and its partners to date. In particular, we would like to acknowledge the work of GHD Consulting on the Circular Economy Precincts and Futures Hub project, some of which has been extracted and used to inform this submission.

We are happy to have further conversations about the detail of this submission should it be useful to the commission.

Our best contacts are provided below:

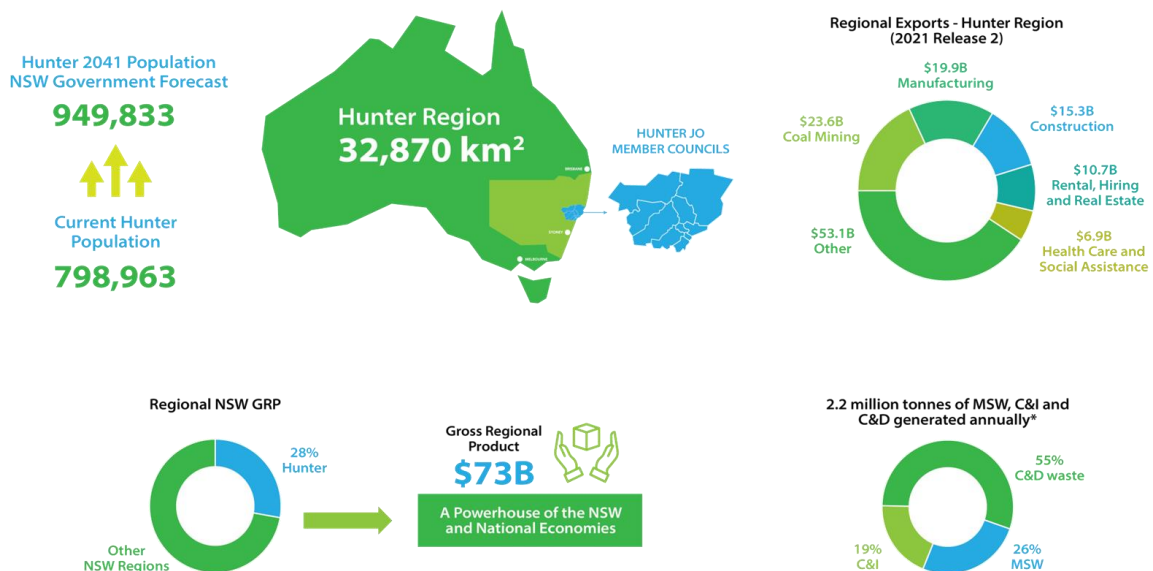
- Tim Askew - Director of Programs
  
- Eloise Lobsey – Program Lead, Circular Economy

## 1. What is the ‘circular economy’ in the Hunter Region context?

The Hunter and Central Coast Region is well-known for its significant coal deposits, natural water resources, electricity generation capacity, innovation in manufacturing and progressive business culture (Regional Development Australia, n.d.). Additionally, the region’s proximity to Sydney provides unique opportunities to support the growing populous centre through industry.

The Hunter and Central Coast Region is expected to host sustained population growth over the coming decades, reaching approximately 1.35 million residents by 2041, placing pressure on existing infrastructure, including roads, hospitals, and waste management facilities. Alongside this population growth, the region will need to establish employment opportunities for new residents to retain income and continue growing the already skilled workforce.

Additional pressure to explore green industry is mounting within the Hunter and Central Coast due to the regions history of coal mining and energy generation. More than 15,000 jobs within the region were recorded to be within the mining sector in the last financial year, and a total economic output from the mining sector accounting for more than 15% of the regions output. With mine closures already occurring in the region, and more plans underway, the Hunter and Central Coast has an opportunity to diversify the region’s economic and employment profile in a pivot towards industry with less environmental impacts.



**Figure 1: Snapshot of the Hunter Region’s economic evolution challenge and opportunity**

Community and business leaders in the region understand that by transitioning to circularity, communities reliant on mining activities for economic output, can shift away from their historic roles and exports. Through the circular economy regions can explore previously

untapped sources of value, such as recycling waste, reusing materials, and regenerating landscapes. Circular practices contribute to a more sustainable economy (Mining Review, 2023).

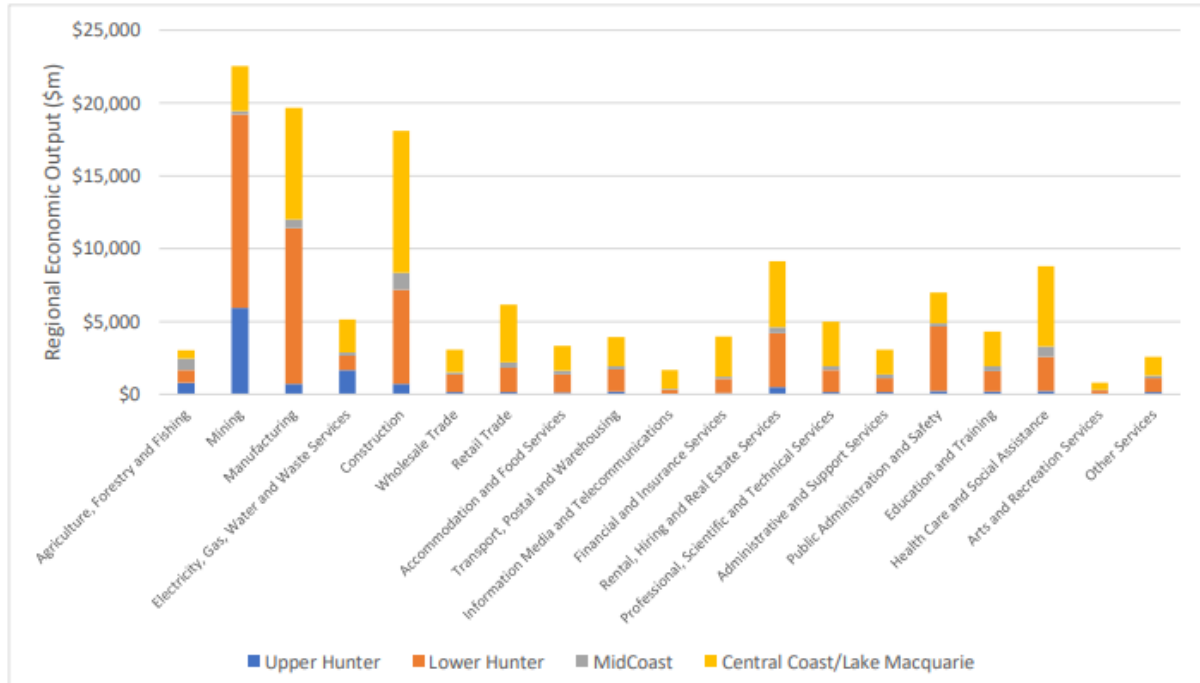


Figure 2: Total Regional Economic Output by Industry (\$m) – Hunter & Central Coast Region & Sub-Regions 2021/22

Investment into circularity in the region could provide the localisation of supply chains to build resilience, new opportunities for skilled labour to reskill from the mining sector, diversifying the economic portfolio of the region, generating employment opportunities to support the growing population and transition, and improving the overall waste recovery efforts in the region.

## 2. What can the circular economy achieve for the Hunter and Australia?

With continued population growth forecast for the region, particularly within the Lower Hunter sub-region, there are several key challenges faced by local government, and the State Government, to support the region through continued growth. These include the following critical activities for achieving and maintaining liveable communities in regional Australian areas (Australian Local Government Agency, 2019):

**Infrastructure development:** increasing populations put pressure on existing infrastructure, such as roads, utilities, public transport, and waste management facilities.



**Economic opportunities:** growing populations can bring increased economic activity, leveraging this economic activity to further develop localised stimulus can be difficult in a regional/rural context.

**Employment opportunities:** population growth requires employment opportunities across a diverse range of sectors to create sustainable population and economic opportunities.

**Environmental Impacts:** additional households and economic activity can put additional pressure on the environment, as waste generation is a factor of population growth, in addition to urbanisation and per capita income (Hunter Joint Organisation, 2017-2021).

Therefore, it is important to consider how the region can mitigate this strain to protect the natural environment. Additionally, within the region there is significant reliance on mining and coal, demonstrated by the high value of the industry and number of jobs generated from mining activities. Reliance on the mining sector can cause a number of challenges for regional communities leaving the region vulnerable to economic shifts, such as new technologies/alternative energy sources, changing consumer preferences and legislative/policy changes. This vulnerability is already coming to light in the Hunter and Central Coast Region, evidenced by the closure (and planned closures) of coal mines and coal fired power stations, particularly within the Upper Hunter.

With State and Federal government policies promoting a shift to Net Zero by 2050, there is significant pressure to transition to renewable energy and improving waste recovery activities across all levels of government. With the Hunter and Central Coast Region being a significant mining region for the State, there is likely to be a considerable shift in the economic landscape of the region between the current state and 2050. Already this shift is occurring, and without coal mining in the Hunter and Central Coast Region, new industries are needed to ensure the longevity and security of the Hunter and Central Coast Region from a climate, employment, and economic perspective.

Recent national and international economic and political conditions have brought attention to the vulnerability of supply chains, especially in regional areas such as the Hunter and Central Coast. The Ukraine war, for instance, caused disruptions to the international wheat supply chain, exposing its vulnerability. The global oil supply was also severely impacted, resulting in a surge in energy prices. These macro-economic factors make the Hunter and Central Coast Region susceptible. This has prompted a shift towards localisation, reducing environmental impacts, and building resilience.

Investment into circularity in the region could provide the localisation of supply chains to build resilience, new opportunities for skilled labour to reskill from the mining sector, diversifying the economic portfolio of the region, generating employment opportunities to support the growing population and transition, and improving the overall waste recovery efforts in the region.

## 2.1 How can resource productivity help with the region's economic evolution?



The Hunter region is well placed to embrace the opportunities provided by the application of circular economy principles to its economy. It has a strong diverse economic base, access to domestic and international markets (via port, rail and air freight), diverse skills base ripe for redeployment to emerging industries, and good access to large population centres (for material inputs).

CE has been identified as a potential opportunity to support the Hunter and Central Coast Region to generate new economic opportunities, employment opportunities and environmental benefits in the transition to Net Zero. According to the NSW Circular Economy Policy Statement, CE will “generate jobs, increase the robustness of the economy, increase the accessibility of goods, maximise the value of resources, and reduce waste.” (NSW Government, 2019). There are a number of benefits associated with CE at the State and National level, there are also considerable benefits at the regional level, particularly in the face of energy transition. It is likely that the Region could experience several employment impacts as a result of transitioning to a circular economy, as follows (Schröder, 2020):

**Job creation:** CE activities will increase the demand for labour in some sectors (e.g. product repair, materials reprocessing and recycling) and generating new employment opportunities for knowledge intense sectors such as advanced manufacturing and professional services.

**Job substitution:** some jobs will substitute away from linear economic models, such as the mining sector, to the circular model in sectors leveraging similar skills.

**Job transformation and redefinition:** Many existing jobs across multiple sectors are likely to be transformed or redefined as a result of the circular economy transition, requiring new skills, and retraining of the workforce.

Circularity can also support the rehabilitation of mine sites (Curtin University, 2022) by converting mining waste into useful by-products to high-value materials (fly ash to building materials, for example) and utilising the outputs of circularity for mine site rehabilitation (compost, for example).

By transitioning to circularity, communities reliant on mining activities for economic output, can shift away from their historic roles and exports. Instead, regional areas, can explore previously untapped sources of value, such as recycling waste, reusing materials, and regenerating landscapes. Circular practices contribute to a more sustainable economy (Mining Review, 2023).

There are several considerable benefits of implementing CE, particularly in regions with similar vulnerabilities to those evident in the Hunter and Central Coast Region.

### 3. What progress is being made in the Hunter Region and Australia?

The Hunter is recognised as one of the leading regions in Australia in developing and implementing circular economy and waste management initiatives. This effort is being led by the Councils of the region (through the Hunter JO) alongside a coalition of key local stakeholders, who are committed to transitioning the Hunter region toward a circular economy, as a key component of our transition to net zero and to evolve the Hunter and NSW economies beyond their current dependence on coal exports.

The transition to a circular economy is widely recognised as a key foundation on which the investment and innovation needed to create the new industries and jobs that will underpin this economic evolution will be built. At a more immediate level, this transition to a circular economy is also seen as the primary opportunity through which to address a multitude of waste and recycling challenges currently facing the region. If not addressed, some of the region’s domestic landfills will be full this decade, which will present communities across the region with significant and costly issues for the disposal of waste.

### 3.1 Our Circular Economy Program

The Hunter JO, through its Member Councils, have made a strong commitment to developing the circular economy in our region. We believe the circular economy will play an important role in our region’s economic evolution, as the coal economy becomes more constrained, and offers us an opportunity to improve economic and resource recovery outcomes while decarbonising our economy. For this reason, the Hunter JO has been auspicing a [Circular Economy Program](#) since 2018, whereby local government is supporting cross sector collaboration around the circular economy in our region.

As part of this program we have completed a range of projects funded mostly through NSW Environmental Protection Agency (EPA) grants. These have included strategic projects such as a *Regional Material Flow Analysis (MFA)*, *Ecosystem Mapping*, *Circular Economy Roadmap*, *Circular Economy Engagement/Event program*, as well as supply chain focussed efforts such as *Circular Textiles Report* and our *Circular Plastics Pilot*. Below is an illustration of this program to date.

### Our circularity journey

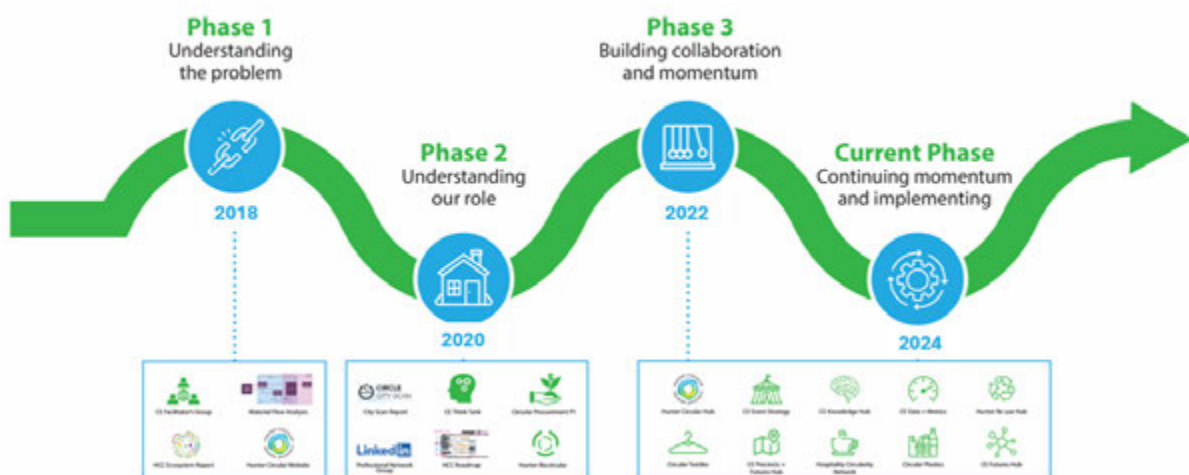


Figure 4: Timeline of Hunter JO’s Circular Economy Program and associated projects





Our organisation has established various committees, including the Circular Economy Sub-Committee and the Circular Economy Facilitators Group, which actively engage stakeholders from diverse sectors to collaborate on innovative solutions.

We have also developed a website, [Hunter Circular](#), which is the main resource for the region outlining our roadmap for success, our key partners, our work underway and completed, our circular economy ecosystem, our events and a useful resource library.

This body of work has been helping us understand the circular economy problem, and through this understand our role in helping facilitate our region to capitalise on the opportunities these challenges present to our evolving economy.



### 3.2 Groups and networks in the region actively collaborating around the circular economy

There are many groups established around the region that are helping drive and coordinate circular economy efforts across organisational boundaries. These networks are essential to driving a coordinated and efficient circular economy transformation of the region, by:

- promoting circular economy literacy within organisations;
- sharing best practice information and insights;
- identifying synergies between organisations and projects to solve circular economy challenges.

Some examples of active networks operating in the region are provided below:

Group/Network	Description	Backbone organisation(s)
Hunter and Central Coast Circular Economy Facilitator's Group	Coalition of circular economy experts and practitioners in the region, exchanging information and identifying collaboration potential/projects.	<a href="#">Hunter JO</a> <a href="#">NSW Government's Sustainability Advantage</a>
Hunter Innovation Festival – Circular Economy Action Group	Representatives from key organisations around the region focussed on identifying and delivering collaborative efforts to help drive the region's circular economy.	<a href="#">Hunter IF</a>
Hunter Hospitality Circularity Network	Network of hospitality SMEs in the region supporting circular economy best practice sharing and collaboration between businesses.	<a href="#">Hunter JO</a> <a href="#">GoCircular</a>

Critical to the continued existence and impact of these networks, is the support of a backbone organisation. Backbone organisations provided the resourcing required to organise and facilitate networks and help drive collective action, without which these networks fall over.

**Offer:** The Hunter JO is well placed to connect The Productivity Commission with established community of practice in the Hunter and Central Coast region, should this be useful.

### 3.3 Other notable circular economy efforts in the region

There is much circular economy innovation occurring in the region at an organisational level, from large scale corporate efforts to SMEs and circular economy start-ups. A picture of our CE Ecosystem can be obtained using our [Circular Economy Ecosystem Directory](#), as well as [case study catalogue](#).

To give a snapshot of what this activity looks like at different organisation scales, the following examples are provided:

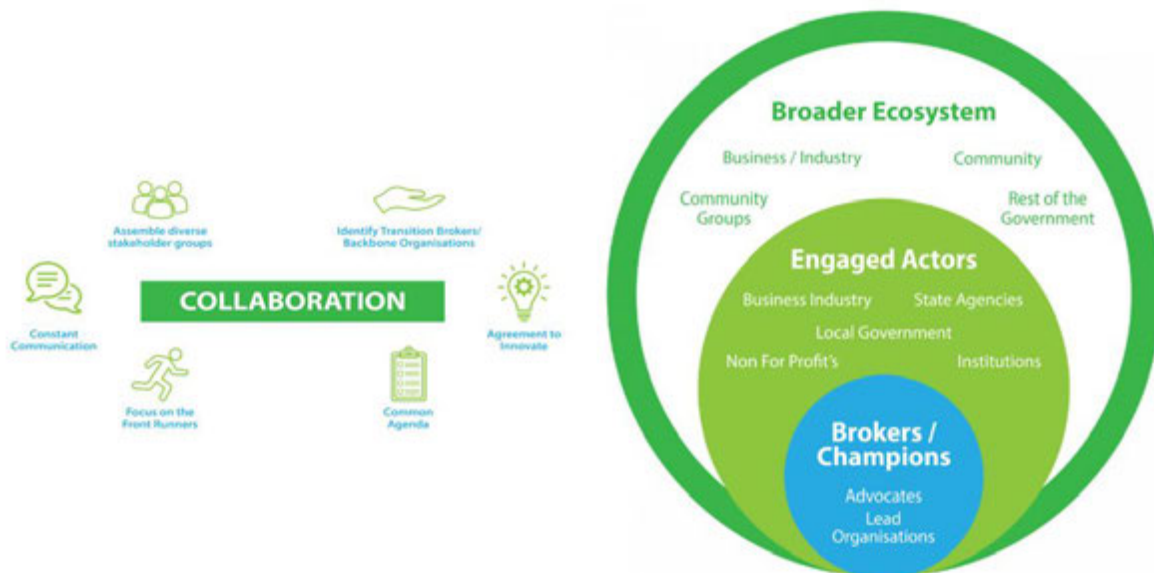
Scale	Organisation	Sector	CE Innovation
<b>SME</b>			
	<a href="#">GoCircular</a>	Circular Economy Advisory	Circular strategic advice and consultation
	<a href="#">Circular Economy Living Lab</a>	Economic Development	Living lab to support CE innovation in the region.
	<a href="#">Resourceful Living</a>	Remanufacturer	Reprocessing post-consumer plastics into household products and building materials.
	<a href="#">Eco Surfaces</a>	Remanufacturer	Remanufacturing recycled glass into construction products (e.g. benchtops).
<b>Large Corporations/Institutions</b>			
	<a href="#">MCi Carbon</a>	Low carbon manufacturer	Capturing CO2 from existing industrial processes as an input to create carbon negative construction products.
	<a href="#">Port of Newcastle Clean Energy Precinct</a>	Energy production	Physical precinct located at the Port of Newcastle for the production, storage and export of clean energy products and technologies.
	<a href="#">Central Coast Industry Connect</a>	Manufacturing collaboration NFP	Federal budget of \$17.2 M for the establishment of a Food Manufacturing and Innovation Hub with circular outcomes.
	<a href="#">Hunter Energy Hub</a>	Energy production and manufacturing	Energy and manufacturing hub located on the old power station site at Liddel that utilises CE principles..



Business and industry around the region are attempting to innovate to take up circularity challenges and opportunities in their products or supply chains, however, much of this effort is being frustrated by existing regulation, and lack of demand pull for end markets (see section 4 below for further explanation and examples). They are also many organisations struggling to prioritise the cross-organisational collaboration required to action circular economy innovation opportunities identified.

### 3.4 Key learnings from our program work

Through our experience gained in running this program for 6 years, we believe there is a strong need for government to help support the establishment of circular economy enabling conditions in an economy, and have been using [Professor Jaqueline Cramer's system of network governance](#) to help bring this about.



**Figure 5: Our collaboration approach using network governance and collective impact principles**

To overcome the persistent barriers to a circular economy (described in detail in section 4 below) and bring about the systems level change required, concerted enabling programs and efforts are required. From our experience in this space, there is a significant latent need for collaboration resourcing particularly for backbone organisations to help bring together disparate efforts to solve supply chain material inefficiencies. Through our modest program of work we have identified an overwhelming number of opportunities to bring actors together and achieve circular outcomes, however, most of these are unable to be actioned due to a lack of bandwidth in the organisations we are talking to, and within our own program's capacity.

We have looked to Europe to understand how circular economy efforts are being progressed, including having a staff member invited to participate in the World Circular Economy Forum (2023) in Finland. From this research it became clear that much of the European circular economy movement is underpinned by European Union (EU) funding utilised to fund enabling/transition broker organisations and circular economy hubs. This has informed our

recent piece of work – Circular Economy Precincts and Futures Hub project which is described further below.

### 3.5 Critical next steps

#### Circular Economy Precincts and Futures Hub Project

To explore what our region requires to capitalise on our competitive advantages around the circular economy at an industrial scale, we undertook a piece of work (with GHD Consulting and various stakeholders) called the *Circular Economy Precincts and Futures Hub project*.

The objective of the project was to investigate alternative industries to support the transition of the Hunter and Central Coast Region from a coal-focused economy, by adopting circular practices and principles in the region, leveraging value from waste. The project concept-tested four potential precincts in the region, looking at sites, access to resources, potential technologies, and market features.

This link provides access to a summary of the [Circular Economy Precincts and Futures Hub project](#).

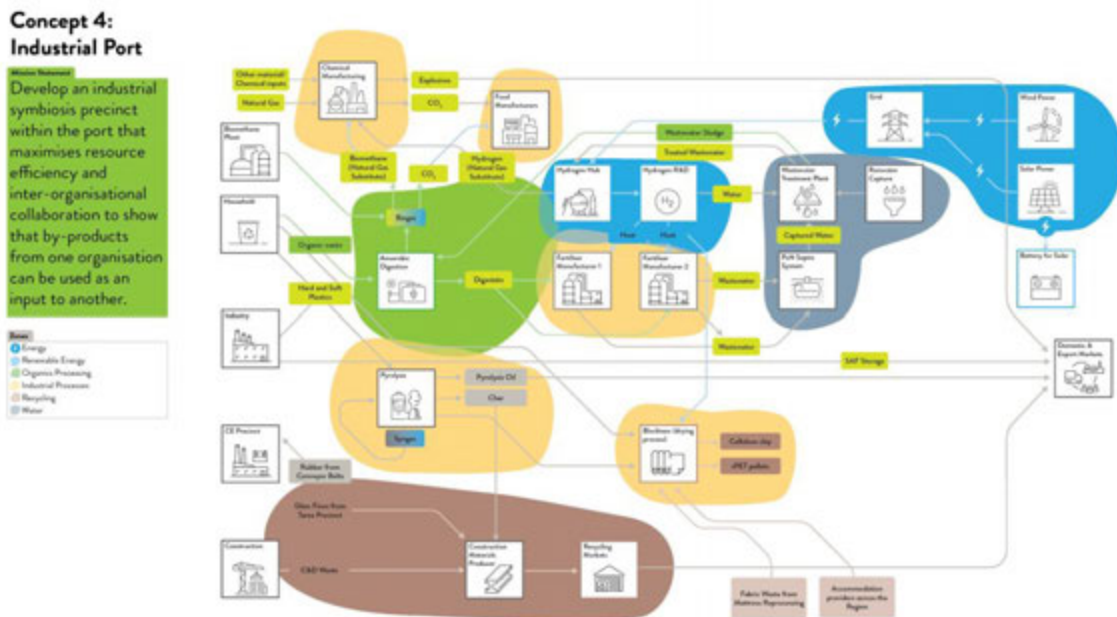
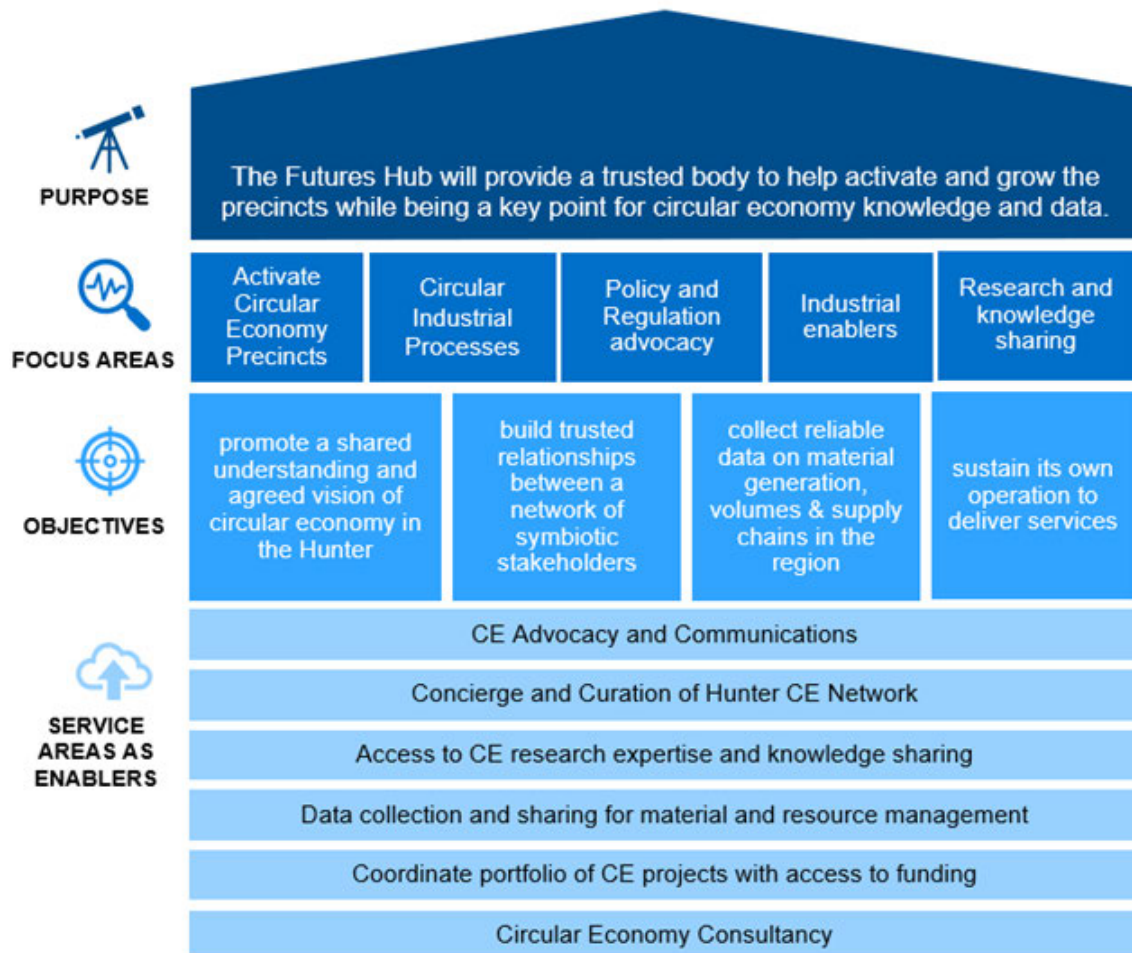


Figure 6: Example of a Precinct concept model produced as part of the project.

The project also sought to understand what (if any) enabling organisation or other form of support would be required in order to stand up circular economy precincts, and an integrated circular economy network at an industrial scale for our region.

The Futures Hub Concept Plan was developed as a result of project findings including stakeholder engagement both within and outside of the region. It provides a potential framework for the Futures Hub to act as an enabler and transition broker of CE outcomes in the

Hunter and Central Coast Region. The purpose of the Futures Hub is to provide a trusted body, to help activate and grow the precincts while being a key point for circular economy knowledge and data.



**Figure 7: Futures Hub concept model**

The Futures Hub is intended to lead the Hunter CE initiative and connect circular business practices throughout the region. The Futures Hub is intended to service community, local governments, industry, investors, and industrial project developers by enabling CE through policy advocacy to reduce barriers to entry, empowering through the demonstration of practical elements of CE, championing CE in the Hunter through knowledge sharing and advocacy and connecting and matchmaking stakeholders to promote a network of interconnected partners.

The Futures Hub will provide a placed based solution for enabling CE in our region, testing a model that can replicated across the nation. A national network of similar, connected CE hubs would provide a driving force for Australia’s circular economy transformation

## 4. What hurdles and barriers exist?

There are many barriers and hurdles frustrating efforts to move us toward circular outcomes in the economy. These range from problematic and complex product design issues, a lack of compulsory product stewardships schemes and emphasis on extender producer responsibility, limited understanding the whole product value chain, difficulties in the aggregation and separation of waste materials, and lack of re processing options and end markets for secondary materials. This level of challenge is understandable given that what we're trying to achieve is a complete redesign of our economic system to ensure the efficient utilisation of resources across the economy, and therefore requires the deployment of systems thinking to help overcome.

Generally speaking, there are 4 significant barriers to the achieving of a circular economy; commercial barriers regulatory barriers, data and information barriers and infrastructure and logistical barriers.

### 4.1 Commercial Barriers

- **High Initial Investment Costs:** Circular business models such as remanufacturing, recycling, and product-as-a-service require significant capital for new technologies, infrastructure, and workforce training. SMEs face difficulties in financing these transitions, which limits widespread adoption
- **Market Structures Favor Linear Models:** The linear economy's current dominance, where resources are extracted, processed, used, and discarded, leads to established business models that are optimized for short-term profitability rather than long-term resource efficiency. These models suffer from disproportionate value creation across the entire supply chain, rather than a shared value, leading to the potential for a single organisation taking all the value creation resulting in too much risk for the other players and therefore perpetuating the linear model.
- **Limited Supply Chains for Recycled Materials:** The absence of robust supply chains for secondary raw materials means industries often find it more cost-effective to use virgin materials, hampering demand for recycled content. There is also limited independent mapping of industry supply chains and assessment of circular economy value creation potential. This leads to lack of motivation to move toward a circular economy.
- **Perceived Risks of Innovation:** Businesses may be reluctant to adopt circular practices due to uncertainty about their economic viability or lack of proven business cases. Scaling circular solutions can be viewed as a risk in established industries. This can be due to the lack of end market customers, processes that rely on new or unfamiliar technologies, regulatory risks or even lack of secure supply of input materials. The waste management industry is an important part of the circle economy value chain and the lack of market competition in NSW stifles innovation and options and makes local government price takers for the services they require.

### Hunter JO experience

The Hunter Joint Organisation and its member councils have been working to foster a circular economy in the region, but this effort faces a classic "chicken and egg" dilemma. Businesses





need commercial certainty—stable contracts for offtake or waste input agreements—to develop successful circular models. At the same time, local governments require a high level of confidence in the viability of these circular technologies before committing to long-term partnerships. This mutual dependency creates a cycle where each party waits for assurance from the other, which can hinder progress and lead to less-than-optimal circular outcomes for material streams. This dynamic is a frequent frustration for emerging circular economy initiatives in the region.

As an example of the commercial and other barriers facing new players in the waste industry and circular economy can be seen in the organics processing industry. In the Hunter Region garden organics processing is well served by existing composting companies. However, when Food Organics and Garden Organics (FOGO) collection is mandated for households and certain businesses in NSW, there will be significant pressure on those existing composting companies to meet the processing requirements and quantities of material stream that differs in its contamination profile (with the addition of somewhat contaminated urban food organics waste into the stream). Moreover, the technologies employed by these composting companies still emit significant quantities of CO<sub>2</sub> and other greenhouse gases that must be captured and controlled in the future to minimise councils (and other industries) emissions profiles (and to utilise this resource as an input into other processes). Technologies employed throughout Europe and other countries utilise a mixture of anaerobic digestion, biochar and other innovative systems to completely circularise the processing of organics, where materials are used at their highest and best use.

From our observations and discussions to date, sovereign manufacturing capability is restricted by risk locally – they seem to stall as one element of the ‘circular economy’ or supply chain is too risky and therefore the whole project cannot proceed or be funded and only foreign investment with ‘deep’ pockets seem to prevail. This does not meet our sovereign manufacturing aspirations

Our observations and discussions to date reveal that there is an opportunity for the circular economy to foster sovereign manufacturing capability, but it is constrained by a range of risk factors, such as limited access to funding, high upfront costs, and the uncertainties of building new supply chain infrastructure. Projects often stall because a single high-risk element within the circular economy or supply chain makes the entire venture unfeasible, preventing it from securing necessary funding. As a result, only foreign investors with significant capital can typically take on these projects, sidelining local initiatives. This dynamic undermines our aspirations for the circular economy and the associated benefits of sovereign manufacturing, as it keeps us reliant on external funding and limits our ability to build resilient, locally-driven circular economy solutions that would otherwise support our national interests.

Another financial barrier that is common to economies beyond circular ones, is the lack of international competitiveness, usually on price. We have been told by organisations that imported products with a high carbon intensity are directly competing with locally made low carbon products with strong circular economy principles. This is an unfair trading position when looked at from the perspective of a circular or net zero economy.

## 4.2 Policy and Regulatory Barriers

The time, cost, and regulatory challenges surrounding development and environmental approvals in NSW present substantial obstacles for new entrants and innovators. While these regulations are essential for safeguarding our environment, the current framework is outdated, having been designed for a linear economy rather than a circular one. To better support innovation, creating policy with structured 'sandpit' opportunities and strengthening business support within the government could foster a collaborative approach toward developing real solutions to wicked problems. This would help address market entry barriers and achieve 'overall better off' environmental outcomes while balancing protections for established players. Some of the main regulatory barriers include:

- **Inefficiencies in Waste Management Regulations:**

*Downstream:* The way waste is defined, and the operation of the resource and recovery orders system, needs changing. To allow the creation of efficient circular supply chains the reuse of waste as a resource needs to have a pathway that is similar to other products in the market. Once a process is defined and regulated then it can be consistently applied to ensure ongoing operations can remain viable. At the moment there seems no 'end to waste' with some waste streams being classified as waste no matter what happens to the material. A circular economy cannot exist in this paradigm, and it only encourages landfilling. With Sydney about to run out of landfill space in 5 years a solution in this space is critical.

*Upstream:* Waste management regulations are often focused on end-of-life disposal rather than upstream solutions that incentivise reuse, repair, and remanufacturing. This focus limits the scope for material recovery and circular product design.

- **Absence of Incentives for Circularity:**

Regulatory frameworks often do not reward businesses that prioritise resource efficiency or reduce waste. While some sectors have made progress with Extended Producer Responsibility (EPR) schemes, these initiatives are not universally applied across industries.

- **Lengthy and costly approvals pathway:**

Currently, the approval pathway in NSW is long and expensive taking around 5 years to reach a conclusion. The current urgency to reach net zero through emissions reduction and circular economy outcomes needs reduced timeframes to achieve targets set by government. There is a significant lack of expertise within government approval pathways to facilitate this change. Other issues include the need for a SEARs for pre-approval of a process. This is valid for 2 years but the process takes 5 yrs to complete at the moment and therefore SEARs updates are required at an expense to the process. This alongside the average EIS cost of \$200,000 adds to the overall cost burden of innovation.

- **Fragmented Regulatory Frameworks:** Australia's current waste and recycling policies are inconsistent across states and territories. Regulatory fragmentation creates uncertainty for businesses and deters investment in national circular solutions. The lack of standardised definitions, targets, and reporting requirements impedes coordination.





Across all of these regulatory issues and barriers there is no assessment of the benefits a process will have in reducing carbon emissions or achieving net zero targets.

### Hunter JO experience

Industry (both manufacturing and health industries) in our region has spoken about the success of Safework NSW to work with and assist industry to achieve safe work practice. The collaborative approach has delivered good outcomes whereas the previous adversarial approaches stifled solutions. A local example involves the manufacturing industry where regulation stopped a pilot stage process from progressing to production that would have significantly reduced greenhouse gas emissions. The pilot implementation was hampered by definitions of waste with the feedstock (a waste) was still being classified a waste even after it was converted and moved into other products. This alongside a lack of opportunity to sandbox the innovation with the regulator, killed the otherwise successful pilot. Therefore, the more environmentally better solution is blocked through the precautionary principle while the status quo of a high emissions process remains, leaving the community protected against a possible harm while experiencing a greater harm through high carbon emissions and associated climate impacts.

### 4.3 Information Barriers

Whenever a new and innovative system is being introduced, data and information flows are critical. Being able to share and collaborate helps build the essential knowledge 'infrastructure' needed to help solve for a circular economy. Some of the key data and information barriers include:

- **Lack of Transparency and Data on Material Flows:** The circular economy depends on comprehensive data about material use, resource flows, and environmental impacts. There is a lack of reliable, transparent data on the lifecycle of products, which restricts informed decision-making by businesses and consumers. There is difficulty in sharing data as there is distrust as to how it is to be used. There is a significant lack of research into the supply chains of products in a circular economy which restricts the identification of barriers and solutions. The circular economy relies on value creation being shared across the economy and this is difficult without the right data, life cycle assessments and information flows.
- **Consumer Awareness and Behavioural Change:** Despite growing environmental awareness, many consumers remain unfamiliar with circular economy principles, such as purchasing refurbished products or engaging in sustainable consumption practices. Without clear consumer demand, businesses have little incentive to change.
- **Knowledge Gaps in Circular Innovation:** Knowledge transfer between research institutions, businesses, and government is insufficient, hindering the widespread adoption of innovative circular practices and technologies.



## Hunter JO experience

One of the projects the Hunter Joint Organisation is currently working on CE Data Project, has always suffered from poor or inconsistent data sources, lack of certainty on data sharing (privacy / commercial in confidence issues) and a lack of expertise in data hosting and management. These issues have contributed to data hosting that benefits mostly local councils only. We lack the funding, expertise and systems necessary to provide the data systems required to help underpin and derisk the development of a circular economy. A centralised hub for knowledge sharing is also lacking.

### 4.4 Infrastructure and Logistical Barriers

There is a significant gap in the understanding of our linear supply chains and how they could look and operate if they were designed with circular economy principles. As discussed above we lack the understanding of the potential value creation of CE, regulatory barriers and knowledge barriers. All of the issues and barriers would be identified through independent analysis of the supply chain of products. The lack of analysis would also show the infrastructure and logistical barriers to achieving a circular economy. This includes:

- **Inadequate Recycling and Waste Processing Infrastructure:** Australia's infrastructure for sorting, processing, and recovering materials is not yet equipped to handle the volume or complexity of materials required for a circular economy. This is particularly true in rural and remote areas, where logistical challenges and high transportation costs further hinder resource recovery. The current system is also fragile due to population increase, minimal competition, contamination and climate resilience shocks like storms, floods and bushfires.
- **Geographic and Sectoral Disparities:** Regional and remote areas often lack the economies of scale necessary to implement cost-effective circular solutions. Circular economy hubs and precincts could address these disparities, but they require substantial investment and coordinated policy support.
- **Existing infrastructure has a high emissions profile:** Current processes like landfilling, inefficient recycling and even composting have a high emissions profile.

## Hunter JO experience

Our local councils lack the resources and scale to be able to tackle these problems alone. They lack the autonomy and resources to help solve our own issues, often constrained by policy at other levels of government.

## 5. Where are the priority opportunities for Australia?

### 5.1 Understand product value chains

A critical role for government is to provide the independent analysis of the product value chains. The analysis would assess the value chain with circular economy principles so that the barriers and opportunities are understood. This would include an analysis of the full potential of a

circular system for that product with an expert panel of academics, industry players and government. A strong understanding of the technologies available in the product value chain is also a strong advantage to solving some of the financial barriers faced in delivering a circular economy. Once product value chains are analysed for barriers and opportunities, government could provide funding for developing business cases or feasibility studies into the best circular outcomes. This may include developing product as a service options.

### **5.2 Circular economy market incentives (product stewardship schemes)**

The federal government could create new or improve existing product stewardship schemes with a circular economy outcome requirement. Compulsory product stewardships schemes or extended producer responsibility schemes would provide the funding and the independent analysis of their respective value chains to create circular and net zero outcomes for each product line. This could lead to other circular economy principles being achieved like manufacturers designing out waste in the first place or ensuring any waste is utilised at highest and best use or eventually creating a nature positive outcome.

At a national scale, this would help move the products from linear to circular models based on an independent body. At a local level, this analysis can be used to create confidence needed to work toward circular solutions and help fund the post consumption downstream processors (ie. repairers, recyclers, remanufacturers etc.). Having this funding to solve the circular economy (CE) issues will help the downstream processors while those products with CE principles can more easily compete with the higher carbon emission intensive / non-CE products. Europe are implementing policies or incentives that can level the playing field for locally made low-carbon products through tariffs placed on carbon intensive imports. This would make imported products with high carbon intensity less competitive against local products that adhere to circular economy and low-carbon principles. Introducing circular economy standards for consumer goods through national standards could require, for example, manufacturers to design consumer goods (e.g., electronics, furniture) for durability, repairability, and recyclability. Establish a clear labelling system to inform consumers about product lifespans and recyclability would be an added advantage. By aligning these product trade and economic policies with our circular and net-zero goals, we can create a fairer market for sustainable products and encourage greater investment in local, low-carbon manufacturing.

### **5.3 Place based circular economy hubs**

The creation of place based circular economy hubs setup across the country would support local government and local business to find circular solutions through the curation and concierge service of those hubs. This national network of hubs can be coordinated through the existing group (CEMAG) in the department of climate change, energy, the environment and water. Understanding a product value chain in the context of circular economy principles is critical in understanding the overall value to be created and where on the 'circular' value chain there are discrepancies in sharing the overall value created.



#### **5.4 Circular economy venture and finance funds**

The government could create circular economy venture funds or a special circular economy fund within the clean energy finance corporation to help de-risk and underwrite business trying to participate in the circular economy. This would provide the certainty needed to help kick start businesses wanting to move into the circular economy space and provide CEFC finance to existing businesses needing to fund new technologies or circular economy expansions.

#### **5.5 Circular economy funding**

Currently most funding by State and Federal government is contestable grant funding on a project-by-project basis. This is creating an ad hoc and disjointed approach to achieving circular economy outcomes. While some of the outcomes have been good, they could be significantly improved by a coordinated and strategic capacity building (ongoing) fund provided to strategic, place based and trusted bodies to achieve nationally set targets and outcomes. Stable and ongoing funding is important, and most States now have levies on landfilling waste. The Hunter JO has previously proposed the 100% hypothecation of waste levies in NSW toward funding circular economy outcomes in NSW. Our estimates are that only 3% of waste levies are redirected toward Hunter Region local government's to solve waste issues and deliver circular economy outcomes. A national discussion of this issue of funding is required, so that all types of government funding (capacity 'grants', venture capital and business finance) are supported by the federal government to help state and local government deliver funding for circular economy outcomes. The government could continue and increase long-term funding for research into circular economy technologies, including advanced recycling, bio-based materials, and digital tools for tracking material flows. Collaboration between government, universities, and the private sector will be critical in fostering innovation.

#### **5.6 Circular economy regulatory framework**

The circular economy cannot happen without removing some of the regulatory barriers and replacing them with circular economy guardrails. Without the circular economy achieving net zero outcomes is at risk. Therefore, creating structured and regulated 'sandbox' opportunities and strengthening business support from government could foster a collaborative approach toward developing real solutions to circular economy problems. Many other industries have created these innovation pathways to solve problems and create innovations, like the Australia Energy Regulator and the pharmaceuticals industry, and the circular economy needs the same. A 'sandbox' regulatory environment alongside a clear approval's pathway would provide the necessary certainty for business to invest further in this area. The sandbox would also include 'better off overall' net zero principles, so that EPAs can bring exemplary environmental protection processes into that sandbox to sit alongside real-world scenarios in order to workshop solutions that align with the sandbox principles. This would de-risk the process for both parties. This solution will likely be best placed at a state government level; however, a national regulation summit could be convened to develop consistent national standards for the circular economy regulatory environment. This could allow solutions to cross borders more easily and elevate the nation towards a circular economy rather than have state competing for scarce resources and solutions. When the circular economy is more established, additional

interstate competition can recommence to drive the circular economy to the next level. The state government approval pathways should also include as much certainty as possible for all participants. This would include developing a streamlined and shorter approval pathway (e.g. 2 years) and/ or allowing for SEARs to have longer validity beyond 2 years (currently a NSW issue). Developing the skills within government approval agencies to understand the process being proposed is also critical. Any assessment processes need to include an impact on achieving a reduction in emissions and/or achieving our net zero targets, as there is no value placed in current pathways on carbon reduction benefits.

### **5.7 Circular procurement**

Government procurement can be a powerful driver of circularity. Mandating that a percentage of public contracts use domestically produced recycled or remanufactured materials would stimulate demand for circular products and services. Additionally, establishing “better off overall” tests in procurement would ensure that circular products offer economic and environmental benefits. Much of this work has already commenced at federal and state government levels. Local government needs these other levels of government to help de-risk circular procurement by providing the performance and environmental product data, testing and certification of products with good circular outcomes. Once government is providing the demand pull in the economy, business and other organisations can be assured their production and supply will be needed and the circular value chain will commence and the economy become more circular.

### **5.8 Urban and Regional Resource Recovery Precincts**

In urban areas, CE precincts could focus on advanced recycling, repair, and refurbishment, particularly for e-waste and consumer goods. These hubs can generate employment in skilled trades and contribute to urban regeneration. At the local level, councils can champion community-based circular economy projects, such as repair cafés, tool libraries, and localized waste recovery initiatives. They are also well-positioned to implement circular procurement policies for municipal projects and encourage community engagement in circular activities.

## **6. Hunter Region priority opportunities**

Building on the strengths of our region and overlaid with Federal and State government priorities, the following priority opportunities can be identified:

### **6.1 Servicing the material needs of Australia’s net zero transition**

The Hunter will play an important role in the nation’s energy transition. Circular economy businesses can help to provide efficiency in meeting the material needs (and supply chains) of the green energy transition. The region is ideally located to provide inputs and supporting services to energy hubs and infrastructure, given the significant innovation located (or planned to be located) here already – for example the Hunter REZ, the Port of Newcastle’s Clean Energy Precinct, and the Hunter Energy Hub at old Liddell power station site.





For example, currently in the ~ 90% of the NSW's wind turbine components move through the Port of Newcastle. This, combined with the region's established energy and transport infrastructure place the Hunter as an ideal location for repair, refurbishment and reprocessing services for energy infrastructure components and inputs. This could lead to critical materials being circularised in the local economy and potentially sourcing new materials (ie. could we 'mine' imported critical minerals from solar panel and wind turbine 'waste' by reprocessing locally).

### **6.2 Valorisation of secondary materials for domestic and international markets**

Taking advantage of the proximity to large population centres and associated waste streams, the Hunter is well placed to capture, reprocess and valorise commodities ready as inputs for sovereign manufacturing processes, as well as exported via the Port of Newcastle /Airport to international markets. Circular economy precincts can assist by harnessing industrial symbiotic relationships and providing processing efficiencies.

The benefits are obvious on many levels including the development of local small, medium and large Australian circular organisations to achieve the localisation of production and onshoring of production (sovereign manufacturing), material and operational efficiency (resource productivity), leading to more local jobs and net zero outcomes.

### **6.3 Serving as a regional circular economy hub exemplar**

By leveraging the momentum already created in the region around the circular economy, the Hunter could be used as a testbed and local transition broker for the government to pilot programs that support material efficiency transition of our economy. This would bolster current efforts to a level of resourcing required to play the transition broker role that is currently missing from the CE movement in Australia. The circular economy futures hub, described in section 3.5 above, can provide the coordination, transition broker role needed for a successful circular economy. Once initial core funding is provided for the hub, the services could become self-funding over time as the circular economy value is created locally. Once proven up, this model can be rolled out across the country to help solve other region specific or place-based issues of the circular economy.

The hub can help facilitate solutions (as per section 5 above) through its knowledge and ecosystem networks. The Hunter already has many solution-focussed networks as mentioned in section 3 above that could be leveraged for greater impact - like University of Newcastle departments; NIER, TRaCE and Trailblazer programs, TAFE Net Zero Centre of Excellence and the Circular Economy Living Lab in Lake Macquarie. The hub could help facilitate and coordinate with those providers.

More information on the proposal for the CE Precincts and Futures Hub concept for the Hunter can be found in [this video](#).

Circular Australia's report, *Activating place-based circular economy in Australia* - Circular Precincts, further supports developing circular economy precincts and hubs to develop a circular economy.