



QUEENSLAND FARMERS' FEDERATION

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Submission

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Office of Resource Recovery, Department of Environment and Science
GPO Box 2454
BRISBANE QLD 4000

Via email: Chris.Hambling@des.qld.gov.au

Dear Mr Hambling

Re: Queensland's Draft Waste Management and Resource Recovery Strategy

The Queensland Farmers' Federation (QFF) is the united voice of intensive, semi-intensive and irrigated agriculture in Queensland. It is a federation that represents the interests of peak state and national agriculture industry organisations, which in turn collectively represent more than 13,000 farmers across the state. QFF engages in a broad range of economic, social, environmental and regional issues of strategic importance to the productivity, sustainability and growth of the agricultural sector. QFF's mission is to secure a strong and sustainable future for Queensland farmers by representing the common interests of our member organisations:

- CANEGROWERS
- Cotton Australia
- Growcom
- Nursery & Garden Industry Queensland (NGIQ)
- Queensland Chicken Growers Association (QCGA)
- Queensland Dairyfarmers' Organisation (QDO)
- Australian Cane Farmers Association (ACFA)
- Flowers Australia
- Pork Queensland Inc.
- Queensland United Egg Producers (QUEP)
- Queensland Chicken Meat Council (QCMC)
- Bundaberg Regional Irrigators Group (BRIG)
- Burdekin River Irrigation Area Irrigators Ltd (BRIA)
- Central Downs Irrigators Ltd (CDIL)
- Pioneer Valley Water Cooperative Ltd (PV Water)
- Theodore Water Pty Ltd.

QFF welcomes the opportunity to provide comment on Queensland's 'Draft Waste Management and Resource Recovery Strategy' and welcome the document's release. We provide this submission without prejudice to any additional submission from our members or individual farmers.

The united voice of intensive agriculture



Background

Queensland's agricultural sector is under increasing pressure to provide food to growing populations as well as 'feeding' new fibre, fuel and foliage markets. The sector is currently facing major challenges including climatic factors, soil degradation and increasing social scrutiny. Despite these challenges, the value of the sector is growing. It is also seeing diversification across commodities, a move to higher-value products and technological innovation to meet demand for bioproducts and biofuels.

Queensland's 24,200 farm businesses provide environmental services and land stewardship to around 84 per cent of the state's land area. Our farmers produce the highest quality food, fibre and foliage and account for approximately 24 per cent of Australia's overall production value. Over the past few years, the sector has been worth \$18.5 to \$20 billion annually to the Queensland economy, accounting for about 17 per cent of state's total exports, and employing over 300,000 Queenslanders across the whole food supply chain. The strength of the domestic marketplace and particularly the growing export markets is supported by the 'safe, clean and green' character of Queensland's primary produce.

Whilst Australia is an exporter of agricultural commodities (including beef, sugar, cotton, pulses), many of these markets have been established on premium 'Australian-branded' produce for quality assurance and traceability¹; particularly, high value-added protein foods, fresh fruit, vegetables, dairy products and increasingly niche products, such as guinea fowl.

Queensland's agricultural sector has an established history of managing its waste streams effectively, ranging from innovative value-add products on-farm to combat food waste, organics and nutrient recycling, and bioenergy production. The return of valuable nutrients back to soil as part of a holistic and effective resource management strategy is essential.

For example, Queensland's farmers divert their organics resources to composting, direct land application and energy generation. QFF extends its gratitude to the Department for the amendments made to the *Environmental Protection Regulation 2008* in November 2018 to explicitly permit on-farm composting of organic materials for use on-farm. The previous regulation did not support the principles of organic recycling and the sector's move to increase the circularity of its material flows and ultimately its sustainability by utilising a natural, renewable and beneficial resource.

Farmers do not deliberately over-produce to create waste – waste is a cost in any manufacturing or 'growing' system and represents an inefficient use of resources. Farm production systems are carefully controlled operations that have been primed to deliver products in line with contract requirements and consumer expectations. However, situations where unavoidable on-farm food/produce waste do occur.

Queensland farmers are leading the sector by driving supply chain innovation to find a market for these 'waste' products and, by doing so, creating significant value-add opportunities. These farmers are using produce normally rejected by consumer standards to create products that reimagine and work within the model of current consumer demand and will easily adapt to future digital (such as on-line grocery sales) and consumer trends including new ways of purchasing food.

Notable examples include 'waste carrots' repurposed into pre-cut bagged shredded carrot, circles and sticks. This solution took the previous 'ugly veg' problem and turned it into a successful value add opportunity. 'Banana seconds' have been transformed into a range of gluten free green banana flour products through the Natural Evolution range. This technology has also been successfully applied to other excess or unwanted fruit and vegetables. And the first range of cold pressed avocado products have been a novel solution for previously unwanted blemished and bruised avocados. These innovative

¹ Woodhead, A., Sun, X., Cotter, J., Maraseni, T. (2015). Review of Asian Consumers Attitudes Towards GM Food and Implications for Agricultural Technology Development in Australia. *Farm Policy Journal*. Vol. 12 No. 3.

examples are turning unwanted products into a convenient, dependable and ‘ready-to-use’ products that fulfil customer demand.

Many farmers and agricultural processors have a long history of using organic waste streams such as straw and trash by incorporating it into their soils to enhance soil carbon or for bioenergy production. However, there are new ‘biofuture’ opportunities arising for the sector to value add to resource streams and agricultural by-products to realise bio-economy efficiencies and maximise financial returns. Research and governments are driving changes to policy and funding arrangements to maximise these opportunities which strive to move organic residuals and agricultural by-products up the value chain.

QFF acknowledges the support to date to document and map agricultural (wastes) resources through the Australian Government funded ‘Australian Biomass for Bioenergy Assessment (ABBA)’, which seeks to catalyse investment in the renewable energy sector by providing detailed information about biomass resources across Australia. This information aims to assist project developers make decisions for new bioenergy projects and provide linkages between potential biomass feedstocks - through the supply chain - to end users. The ABBA dataset for Queensland includes information on the location, volumes and availability of biomass, and publishes them on the Australian Renewable Energy Mapping Infrastructure (AREMI) platform². ABBA is managed by AgriFutures Australia with funding support from the Australian Renewable Energy Agency (ARENA).

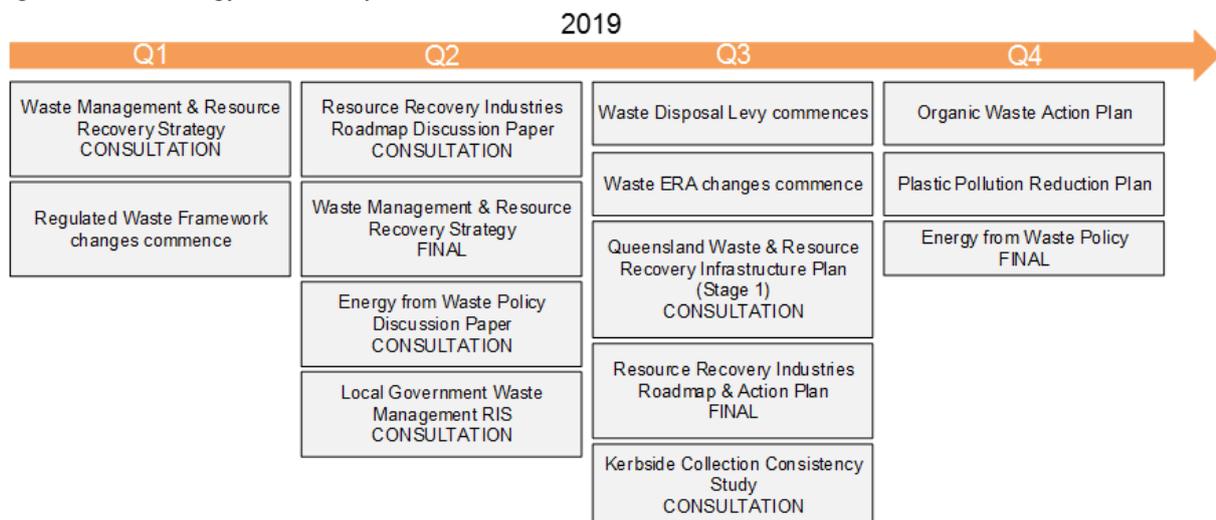
In Queensland, data has been mapped and made available on the sugar industry, forestry, intensive animal industries, cotton, crops and horticulture (see Department of Agriculture’s Web Based Agricultural Land Information (WALI) system)³.

QFF notes that the former Department of Science, Information Technology and Innovation who conducted this critical research work and is now part of the Department of Environment and Science do not appear to have a critical role in informing the Draft Waste Strategy. This is a significant omission.

QFF acknowledges that the Draft Strategy is one of several complementary and necessary measures that the Department will undertake this year, including the development of an Organic Waste Action Plan, Plastic Pollution Reduction Plan (PPRP), Energy from Waste Policy and Infrastructure Plan (Figure 1).

QFF is already actively engaged in the PPRP and anticipates its participation into the other actions and work (including the Energy from Waste Policy) streams given their relevance to the agricultural sector.

Figure 1: Work Strategy for 2019, Department of Environment and Science



² See www.nationalmap.gov.au/renewables

³ See <https://www.daf.qld.gov.au/environment/ag-land-audit/web-mapping-tool>

The operating costs for businesses within Queensland are increasing. The December Index reading for the Pulse Other Operating Costs such as electricity, rent and insurance is up marginally by 0.7 points to 67, indicating that Queensland businesses continue to face strong operating cost increases⁴.

Business confidence in both the Australian and Queensland economies has deteriorated since the last quarter. The Pulse Queensland Economic outlook Index⁴ has fallen by 5.1 points in the December quarter on a seasonally adjusted basis and 10.3 points from 12 months earlier. The decrease was predominantly the result of a substantially greater proportion of respondents anticipating weaker economic conditions over the next 12 months and the Index is at its lowest level since the December quarter 2015.

Alarming, almost half (47 per cent) of Queensland businesses reported declining profitability over the December quarter, while at the same time fewer businesses (19 per cent) reported better profitability. The December Profitability Index seasonally-adjusted reading of 39.4 continues to present grave revelations of business performance and sustainability across Queensland⁴.

Review - The Vision

QFF acknowledges the Queensland Government's proposal to roll-out ambitious stretch targets, particularly as the strategy does include a series of interim targets that are necessary to support the 2050 goals. However, much more work is required around the support strategies to ensure that the administrative and costs burdens are not prohibitive to continued businesses operations.

QFF positively acknowledges the inclusion of greenhouse gas (GHG) emission reduction targets as outlined in the Queensland Climate Transition Strategy into the Draft Waste Strategy. It is essential that these targets also link to the existing Land Restoration Fund program of work and other initiatives to deliver meaningful reductions in GHG emissions and deliver opportunities across the agricultural sector.

QFF acknowledges the recognition of aligning the Draft Waste Strategy to the Powering Queensland Plan to provide 50 per cent renewable energy by 2030. Queensland's agricultural sector is one of the largest providers of renewable energy (embedded and behind the meter) in Australia, and much of this generation is base load.

Current biomass feedstocks for heat and power generation in Australia are, without exception, by-products or residues (including manufactured fuels from residues). These come from a diverse range of industries around the country. Feedstocks include the following:

Sugar cane bagasse – the cane fibre left over from sugar extraction is known as bagasse and is used throughout the sugar industry as a source of fuel for heat or combined heat and power (co-generation). Projects have added new cogeneration facilities to several mills, both to upgrade old plant and to provide capacity for export of electricity to the grid.

Forestry wastes – during harvest of trees from plantations and native forests a considerable amount of residual woody material is generated. This is mainly the tops of the trees and large branches and it is generally burnt or left to rot. Several groups are looking at recovery of this material for power generation, most notably in Western Australia where there are two projects for large power plants (each approximately 30-40 MW electrical output⁵). These plants would utilise residues from softwood and hardwood plantations.

Wood processing wastes – saw mills and plants for engineered wood products and pulp and paper manufacture all generate residues. Some of these residues are used for heat (and occasionally power)

⁴ Suncorp Group CCIQ Pulse Survey of Business Conditions. December Quarter 2018.

⁵ <http://www.pacificenergy.com.au/>

generation on site. In other cases, the residues may be sold to third parties, for example kilns or coal-fired power stations that will use them for co-firing.

Urban green waste – There is limited use of green waste for heat and power. A notable example is the cogeneration plant at the Rocky Point Sugar Mill in southern Queensland, which uses green waste as part of its feed at times when bagasse is not available.

Urban wood waste – This material ranges from wooden packaging and broken pallets from industry through to construction and demolition wood waste. Limited quantities of this material are being used for co-firing in kilns and power stations. Small, dedicated power plants have been constructed in Melbourne and Sydney.

Agricultural wastes – Australia (particularly Queensland) has examples of agricultural residues used as fuel. These include: gasification of rice hulls for heat in NSW, and combustion of macadamia nut shells for electricity in NSW and Queensland.

While there is use of straw and crop stubble as fuel overseas, there are no examples of this in Australia to date.

The renewable energy certificate (REC) Registry is an internet-based registry system that supports the Commonwealth Government's RET scheme by facilitating the creation, transfer and surrender of RECs which are held by the Office of the Renewable Energy Regulator (ORER) as is the public register required under the *Renewable Energy (Electricity) Act 2000 (Cth)*.

The register holds details on both 'Accredited Power Stations' and 'Applications for Accredited Power Stations'. Accredited Power Stations are defined as facilities located in Australia and capable of measuring the electricity that they generate from an eligible fuel source and are approved to create RECs.

QFF strongly suggests that Queensland's Energy from Waste Policy must acknowledge Queensland's Bioeconomy opportunities and all relevant renewable energy sources as defined in the Renewable Energy (Electricity) Act 2000 (Cth).

Eligible Renewable Energy Sources are defined in Section 17 of the Act:

- (a) hydro;
- (b) wave;
- (c) tide;
- (d) ocean;
- (e) wind;
- (f) solar;
- (g) geothermal-aquifer;
- (h) hot dry rock;
- (i) energy crops;**
- (j) wood waste;**
- (k) agricultural waste;**
- (l) waste from processing of agricultural products;**
- (m) food waste;**
- (n) food processing waste;**
- (o) bagasse;
- (p) black liquor;
- (q) biomass-based components of municipal solid waste;
- (r) landfill gas;
- (s) sewage gas and biomass-based components of sewage;
- (t) any other energy source prescribed by the regulations.

Bioenergy Estimates

QFF notes that the Australian Bioenergy Roadmap⁶ acknowledged that bioenergy sources supplied 0.9 per cent of Australia's electricity generation in 2010. The Roadmap reports that bioenergy could potentially provide from 19.8 per cent to as much as 30.7 per cent of Australia's electricity requirements by 2050.

A number of factors could be considered to help bioenergy meet its potential. These include⁷:

- A secure demand for bioenergy products, which will underpin investment for feed supply and bioenergy processing.
- A regime that places costs on carbon emissions across each of the areas in which bioenergy can contribute (e.g. heat, power, transport fuels, chemicals).
- Further understanding of the environmental and social costs and benefits of using different types of bioenergy in Australia.
- Local feedstocks with technical characteristics and costs that are well understood.
- Mapping of potential feedstock volumes and thus actual supply (fuel and electricity) that Australia can expect from biomass.
- Mapping of current industry and technologies being utilised, to provide a baseline against which growth may be measured.
- 'Buy in' from market drivers such as oil majors and car manufacturers.
- Greater understanding that some new tree crops can be integrated into current agricultural production systems to maintain or increase agricultural production, produce biomass and provide benefits such as soil protection.
- Integration of bioenergy production with production of co-products such as foodstuffs, chemicals and biochar.

Many of the existing REC registered thermal units are sugar mills. There are 24 sugar mills in Australia (23 are in Queensland). Australian sugar milling is a diversified agricultural and regional manufacturing industry. Sugar mills utilise their waste streams with bagasse (waste cane fibre produced as a by-product) used to generate electricity and steam. The majority of the boilers in the industry are grate fired. All mills ensure that they have capacity to move between biomass and coal in some instances, which tends to keep them in the grate boiler technologies. The 23 Queensland sugar mills export additional electrical capacity to the grid.

Invicta, Pioneer and Victoria Mills have upgraded cogeneration facilities to increase their export capacity. Pioneer's cogeneration plant is the largest biomass generator in Australia. Surplus bagasse produced in our Burdekin mills during the crushing season is stockpiled on large, specially designed pads at Pioneer to enable the cogeneration facility to continue to operate outside of the crushing season.

Invicta, Isis and Rocky Point Mills all provide over 30MW generating capacity. Subject to the boiler design and mill operations, approximately 15 per cent of the original energy in the bagasse is being converted into electricity and exported to the grid. Whilst the mill is not crushing approximately 20 per cent of the original energy in the bagasse is converted into electricity and exported to the grid.

The RET provides an incentive for increasing energy efficiency at sugar mills. By storing and managing bagasse out of season, and increasing boiler efficiencies, mills have increased electricity generation, supplying their neighbouring communities. However, the efficiency of most mills could be improved by finding a homogenous feedstock for all-year energy production.

Sugar mills can play an integral role in a low carbon economy into the future, and currently represent an under-utilised energy resource for bioenergy. The sugarcane plant is one of the world's most efficient converters of solar energy into chemical feedstock, making it suitable to derive a range of products from

⁶ Australian Bioenergy Roadmap - <http://www.cleanenergycouncil.org.au/bioenergy/>

⁷ Bioenergy Australia. (2010) Overview of Bioenergy in Australia. Australian Government RIRDC. <http://www.agrifutures.com.au/wp-content/uploads/publications/10-078.pdf>

such as electricity and ethanol; and into the future, other biofuels and biochemicals. Sugar milling companies have the capacity to significantly expand their production of renewable electricity and biofuel, with no expansion to the existing industry footprint. These expansions can have payback periods in excess of 10-years and, as such, require the right policy settings to provide the necessary investor confidence.

Sugar mills have been generating renewable energy from waste sugarcane fibre for approximately 100 years in Australia, meeting their own electricity needs and exporting excess electricity to local networks. This capacity has been expanded since the Commonwealth Government's Mandatory Renewable Energy Target (MRET) was introduced in 2001, so that all sugar mills can export surplus electricity into regional distribution networks during the crushing season (June to November). There are some cogeneration projects that now generate for 50 weeks of the year and are base-load generators in terms of reliability.

In 2014, sugar mills in Queensland produced almost 1,000 GWh of electricity. This expanded cogeneration capacity increases regional energy security and reduces the Queensland Government cost of Community Service Obligations. With the right policy settings, the potential contribution to renewable energy (and firming of that energy) could be substantially expanded.

QFF calls on the Queensland Government to ensure that the Waste Strategy and Energy from Waste Policy supports the agricultural and agri-processing sectors to grow, diversify and make additional use of agricultural by-products. This requires the Queensland Government to remove existing constrainers such as excessive regulation, duplicative regulation (such as in the case of Anaerobic Digestions being included into ERA53) and provide funding opportunities from levy funds beyond simply the local government and waste management sectors.

However, there are risks to Queensland's bioeconomy and Queensland-based renewable generation, in particular the potential removal of the RET. The July 2018 report by the Australian Competition and Consumer Commission into electricity prices recommended that the SRES be abolished in 2021 rather than 2030 to reduce electricity costs.

Additionally, the LRET's 33,000 GWh target is expected to be met before the 2020 deadline, the scheme will continue to require high-energy users to meet their obligations under the policy until 2030. As more renewable energy is produced beyond the 33,000 GWh target, the number of LGCs generated will continue to increase, leading to an oversupply in the market that will significantly reduce their value. Futures markets indicate that LGC prices will fall significantly over the next ten years, with some analysts predicting that their value will fall to zero by the time the RET expires in 2030⁸.

Removal of the RET will immediately impact the sugar mills. It would:

- Cause most mills to halt out of season generation
- Result in a loss of more than AU\$35 million annually from industry revenue
- Cost at least \$13.2 million to remove efficiency investment at several mills
- Cost a further \$3.6 million annually in managing additional bagasse disposal and loss in crush rate.

And it would place at risk:

- \$300 million investment over past five years in energy efficiency and generation projects
- Potentially \$1 billion investment at existing mill sites
- Approximately \$2 billion in potential new sugarcane areas
- Australia's ability to perform competitively in the global sugar market, which is becoming increasingly difficult as Australia is the only country not to offer any protection or subsidy to the agricultural industry.

⁸ Clean Energy Council. <https://www.cleanenergycouncil.org.au/advocacy-initiatives/renewable-energy-target>

It is essential that the Department's Energy from Waste Policy aligns with the BioFutures Road Map and Powering Queensland Plan and supports a number of mechanisms to ensure the future of Queensland's biomass renewable energy producers.

Targets

While QFF is broadly supportive of improved recycling targets and those specified from 2025 to 2050, the categories are very broad. Simply providing reference to C&I and C&D provides no clarity for individual sectors.

QFF understands that the assumptions behind the waste strategy targets, are contained within the QTC 'Key Performance Indicators' report which outlines some of the background data and benchmarking with other jurisdictions⁹.

The role of the Action Plans will be critical in providing the required transparency in these targets. QFF cannot support additional regulatory obligations on the sector, particularly as the Department has little visibility or understanding of the sector and its operations.

Strategic Priority 1

QFF supports the Queensland Government's proposal to audit and assess the quality of existing landfill infrastructure to inform infrastructure needs assessments, planning and rationalisation of redundant facilities.

However, suitable alternative infrastructure must be built and operation before the removal of existing landfills. Already various regional areas have a deficit in transfer facilities to the detriment of the local population and local businesses. Local Government must be adequately resourced to manage these infrastructure requirements where local private infrastructure does not exist.

Strategic Priority 2

The agricultural sector is critical to the Queensland economy, providing food, fibre, foliage and increasingly, fuel. The sector is instrumental in managing the challenges associated with population growth, food security, climate change and natural resource management.

The Circular Economy is a widely-coined term for a system that does not produce any waste or contaminants, instead materials flow (such as biological nutrients) and recirculate in the biosphere¹⁰. A circular economy approach in agriculture centres on the production of agriculture commodities using the minimum amount of external resources, closing nutrient loops, and reducing wastes and contaminant releases to the environment¹¹.

Resources can be circulated through many pathways by employing technologies and creating new value chains. The circular economy should be viewed differently to simply extending the 'linear chain' through the utilisation of wastes and agricultural by-products which are not returned to agricultural production (for example, in the production of biofuels or other bioproducts)⁸. Making the clear distinction that the bioeconomy uses renewable biological resources (agricultural wastes) to produce food, energy or materials rather than closing the resource loops in agricultural production systems.

⁹ https://www.qld.gov.au/data/assets/pdf_file/0022/94063/qld-waste-strat-key-perform-indicators.pdf

¹⁰ ISWA (2015). Circular Economy: Carbon, Nutrients and Soil. International Solid Waste Association, Vienna, Austria.

¹¹ Ward, S., Holden, N., White, E., Oldfield, T. (2016). The Circular Economy Applied to the Agriculture (Livestock Production) Sector – Discussion Paper. Presented at the Workshop in the Sustainability of the EU's Livestock Production Systems. Hosted by the European Commission, DG Agriculture and Rural Development. 14-15 September 2016.

Queensland's Biofutures Road Map and Action Plan provides aspirations to leverage the strategic advantages provided by the agricultural and other sectors to secure a share of the global bioproducts and services market, which is expected to be worth US\$1.1 trillion by 2022. This Biofutures agenda is broad ranging from biopolymer and biochemical production, through to biofuels and bioenergy production. Under this government-led policy resources are not circularised, instead they are valorised to maximise financial returns.

The Queensland Government's vision is for *"a \$1 billion sustainable and export-oriented industrial biotechnology and bioproducts sector, attracting significant international investment and creating regional, high-value and knowledge-intensive jobs"*, taking advantage of Queensland's proximity to substantial Asian markets.

Determining which policy position to adopt (closed loop agricultural and nutrient cycles versus bioeconomy utilisation) is a trade-off which is unique for every waste stream, nutrient and technology application. All factors must be considered and analysis of whole of life impacts is essential. For example, new business ventures are utilising sugar cane trash as a commercial product, bagged and supplied to the gardening sector as a mulch. Whilst the collection and value-add process of sugarcane trash provides direct financial value to the farmer for a 'product' which, at face value, is a waste product, the loss of the nutrients (carbon) contained in the trash from the soil is a loss from the agricultural cycle. It is necessary to consider whether more value can be extracted from the unwanted (or unvalued) resource streams (protein or energy for example), and whether doing this interferes with nutrient and carbon cycles.

Strategic Policy 3

QFF notes the increasingly complex and difficult market conditions both domestically and internationally for commodities. QFF has seen a reduction or cessation in some cases, in the number of recycling services offered to agricultural customers, particularly for agriculture plastics.

The development of markets for organic products through to plastics is essential. QFF believes that Queensland requires a market development agency similar to Sustainability Victoria (SV), Green Industries South Australia (GISA) or the Waste Resources Action Programme (WRAP) in the UK.

Sectors such as agriculture and recycling require industry development and support, not just regulation. This agency must have an independent Board separate from the Department, and its goal is to implement a circular economy in Queensland.

For Organics, QFF believes that there should be a specific **'Circular Economy for Organics Stakeholder Group (CEOSG)'** the purpose of which is to bring together a Circular Economy for Organics; linking together stakeholders who are not traditionally connected in the commercial environment. CEOSG would bring stakeholder investment together to accelerate growth of recycled organics markets and improve compost product and manufacturing standards.

Including, but not limited to the education and communication on waste producer responsibilities (source separation), compost benefits and proper use through support of scientific research, and specific regulation, aligned with developing and expanding quality compost/organics markets. A critical part of its role would be dedicated to the progress, growth and promotion of the composting/organic industry as part of a growing and sustainable (resource efficient) bioresource economy in Queensland. It would need to have ownership of standards for RO for all stakeholders.

CEOSG must have specific accountabilities including:

- Development of specific program objectives to meet the objectives of the Waste Strategy and relevant legislation (WRR and EP Act and subordinate legislation).

- Facilitate the establishment of sustainable markets for RO.
- Risk management based standards interfacing with end of waste codes and providing end user friendly advice regarding risk and efficacy of products as well as recommended utilisation.
- Build relationships - proactively develop internal and external relationships acting as an advocate and generating momentum for achieving the program objectives
- Work with government departments (including but not limited to DES, DNRME, DAF, DSDMIP) and local governments to design and deliver grant schemes (waste levy) to meet waste strategy objectives as well as specific programme objectives.
- Encourage and develops cross-functional and inter-departmental working based on results to be achieved.
- Develop meaningful relationships between research, industry and end-user bodies. Particularly between RO manufacturers and agricultural and other end users.
- Work with academics and businesses to develop new collaborative projects.
- Advocacy for environmental stewardship by landowners.
- Author/oversee program documentation and assessment processes appropriate for the program objectives and target audience (for example, case studies, reports, guidelines, tools).
- Manage market queries about opportunities from compost-use and respond appropriately, reporting key themes and issues.
- Identification of new opportunities and dissemination of new science.
- Understand and sell the benefits of complex technical propositions to businesses including primary producers and extension officers.
- Work in association with suitably qualified individuals to design, develop and deliver training, seminars and events for professional audiences.
- Manage business engagement records and program files.

GEOSG would also ultimately need to be self-funding and sustainable. QFF proposes that government provide seed funding over five years, increasing stakeholder funding over that time from local government, the waste management industry, recycling organics industry, end user groups, grants and revenue generation through training, education and standards management programs.

QFF proposes a provisional ‘Science Collection Project’ to meet the objectives of Queensland’s Waste Strategy’ which would also provide a ‘snap-shot’ of critical base line data to assist the agricultural sector in its education and awareness; and also support an Organic Waste Action Plan, as well as providing research outcomes against Queensland’s obligations under the Draft PFAS National Environmental Management Plan 2.0 and building the knowledge underpinning the Land Restoration Fund (see Attachment 1).

The timing of this research is critical and must be conducted this financial year in order to inform the programs discussed.

Specific Issues

Illegal Dumping

The Draft Waste Strategy does not adequately address the issue of illegal dumping. QFF has made repeated submissions¹² to the Department regarding the environmental, social and economic risk of illegal dumping and its growing prevalence in regional Queensland, particularly its growing impacts on agricultural landowners. The negative outcomes associated with illegal dumping will significantly escalate on the introduction of the Waste Levy from 1 July 2019.

¹² For example, see <https://www.qff.org.au/wp-content/uploads/2017/04/20180919-Submission-to-ITDEC-re-the-QLD-Waste-Levy-Bill-WEB.pdf> and <https://www.qff.org.au/wp-content/uploads/2017/04/20180629-Submission-to-DES-re-Transforming-Queensland%E2%80%99s-Recycling-and-Waste-Industry-Directions-Paper-WEB.pdf>

In the UK where the landfill tax is £88.95/tonne (approx. \$160), the National Farmers Union has classed illegal dumping as one of the major elements of rural crime. A similar outcome in Queensland is not acceptable and government must ensure that this does not happen. Illegal dumping on private land causes a range of problems for landowners, including having to pay for clean-up costs. It can cause health risks, environmental impacts including those to the aesthetic environment. The social costs and distress associated with illegally dumped wastes, particularly on the impacted landowners, are not easy to assess, and many landowners are already struggling. These impacts are somehow unforeseen by many decision makers or properly costed.

The Waste Strategy must include a specific Action Plan and adequate funding for resources to manage this issue. Funding must include resourcing of compliance tools including but not limited to additional officers, remote cameras and waste transport monitoring to accompany the introduction of the levy, as was previous the case.

In 2012, a littering and illegal dumping taskforce was established prior to the commencement of the levy. As such, ***QFF again requests further resourcing for the management and enforcement of illegal dumping at both local government and state (Department of Environment and Science) levels. And must commence with the development of a state-wide, robust reporting and data capture system for illegal dumping incidents.*** For example, the UK's Flycapture system is a database for recording incidents of illegal dumping across Britain on public land. This will assist the department in the identification of 'black spots' and characteristics and allow the scale and distribution of resources to address the issues/risk.

QFF acknowledges the UK's Landowner Partnership Project which allows landowners to provide data of incidents on their own land to build up a complete picture of the illegal dumping problem on private land. Based on the information this provides, the government can decide what resources and solutions are needed to tackle the problem. The data is also used to assist the landowner to understand how they are personally affected by illegal dumping and put measures in place to reduce the impact on them/their land. QFF also requests an amendment to the definition of exempt wastes, so that the clean-up costs associated with illegal dumping, borne by a private landowner do not include the levy.

QFF also acknowledges the levy-exempt waste categories and criteria which are available on approval by the department under section 28 of the Act, for example, 'litter and illegally dumped waste which is collected as part of a community activity (such as Clean Up Australia Day)'. ***QFF specifically requests an exemption from the levy for illegally dumped waste for private land owners.***

QFF has already requested an amendment to the definition of exempt wastes, so that the clean-up costs associated with illegal dumping, borne by a private landowner do not include the levy. The definition of 'exempt waste' under Section 26 Definitions for Chapter should therefore be amended to:
(f) waste collected by or for the State or a local government or an impacted landowner to remediate the results of a person having done something that may be an offence under section 103 or 104.

Landfill Levy Implications

The imminent commencement of the levy has led to Councils withdrawing from the scheme to accept, store and consolidate agricultural plastics, namely trickle tape¹³. QFF anticipates that further Councils will be unwilling to act as a point of consolidation required in regional areas for recyclable agricultural wastes. The Waste Strategy must address these concerns and propose actions to facilitate the collection and recovery of recyclable materials.

¹³ For example, on 5 March 2019, Whitsunday Regional Council asked that their name be removed from QFFs website "as they no longer have the ability to store trickle tape as they are cleaning up and getting ready for the levy coming in"

Continued Concern About Applications for Stabilised Waste

In order to effectively progress, all sectors require certainty. There are still a number of critical outstanding policy decisions required. QFF has previously noted its concern in numerous submissions and discussions with both the Department and the Minister regarding the permitted spreading of stabilised wastes to Queensland's agricultural land and the potential environmental and financial risks associated with this activity¹⁴.

Revocation of Municipal Waste Organics Orders (MWOO) and Exemptions (NSW), 26 October 2018.

On Friday 26 October 2018, the NSW Government revoked the MWOO orders and exemptions via gazettal of the NSW regulation. The NSW EPA advised that they are taking a 'precautionary approach' to this matter due to the mixed waste input into 'compost like products' and the potential long-term effects of the use of this type of product.

This action has a directly impacted four operators and approximately 27 councils in NSW that were taking approximately 500,000 tonnes per annum to Advanced Waste Technology (AWT) facilities, creating 270,000 tonnes of MWOO for direct agricultural applications and mine rehabilitation purposes. All these applications have now been suspended with around 24 hours' notice to industry.

QFF notes that this action has national impact given the presence of AWT in other states, most notable in Queensland, the Cairns Bedminster facility (mechanical-biological treatment - MBT) which currently produces stabilised municipal solid waste (with biosolid amendment) for direct agricultural application, mostly to broadacre farming.

The consistent advice of the NSW Government since early 2000 has been that there was a deficiency of AWT processing capacity, and these representations led industry and local government to include AWT infrastructure and systems in their planning and contract discussions. There are several existing long-term contracts that include AWT infrastructure, contracts that represent millions of dollars spent throughout the lengthy planning and development process as well as various local council tenders that included AWT which now face uncertainty from schizophrenic policy outcomes.

To revoke the exemption order without publishing the findings of the EPA's internal research and to do so with only 24 hours' notice to stakeholders diminishes the level of confidence investors have in the NSW waste management sector, and most critically the organics manufacturing sector. If Queensland pursued a similar course of action to NSW, there may be impacts to other resource recovery services and outputs, such as food organics and garden organics (FOGO) and biosolids, all of which represent significant investment opportunities and, most critically for agriculture, a sustainable source of nutrients for our degraded soils. Land degradation is a global issue and costs the Australian economy around \$1.5 billion per annum.

While QFF has raised concerns over the risks associated with the application of bio stabilised waste to agricultural land, we by no way condone the action by NSW Government. Reactive and volatile policy change without evidence and stakeholder consultation undermines investor confidence and will not furnish the opportunities Queensland desperately needs to build a circular economy.

Outcomes for Queensland

Queensland's agricultural sector needs a vibrant and healthy organic manufacturing sector, capable of supplying quality soil and potting mixes through to contaminant-free compost and mulching materials for tree crops. While many farms produce their own organic products, the quantities are insufficient to meet all of agriculture's needs and many primary producers (in the nursery and cut flower industries for example) do not necessarily have the physical land footprint, appropriate location or infrastructure

¹⁴ See <https://www.qff.org.au/wp-content/uploads/2017/04/20180919-Submission-to-ITDEC-re-the-QLD-Waste-Levy-Bill-WEB.pdf> and <https://www.qff.org.au/wp-content/uploads/2017/04/20180629-Submission-to-DES-re-Transforming-Queensland%E2%80%99s-Recycling-and-Waste-Industry-Directions-Paper-WEB.pdf> as examples.

capacity or want to manufacture their own materials. We are also mindful of the Queensland Government's Biofutures agenda which seeks to value-add to many organic 'waste' streams.

There is growing awareness by all stakeholders of emerging contaminants in all waste and resource streams including FOGO and biosolids. Queensland's draft Biosolids End of Waste Code was so highly prescriptive with its monitoring levels of PFOS and PFAS that no Queensland-based laboratory can currently test to the prescribed contaminant levels. QFF recognises and welcomes the revision of the current Biosolids End of Waste Code and acknowledges the ongoing uncertainty with the current consultation process on the PFAS National Environmental Management Plan (NEMP) 2.0 which includes new additions including a PFAS Management Framework for a Wastewater Utility.

QFF supports a precautionary principle but we also strongly support science-based decision-making. We are aware of the increasing stakeholder awareness of the so-called 'emerging contaminants' including nano-plastics. Farmers as custodians of the land and most aim to pass their land on to future generations in a better state. They want to be confident that the beneficial soil ameliorants they are using do not pose any negative environmental or health impacts and will not jeopardize markets for their produce. This is particularly relevant given the growing focus on provenance and the National Traceability Project and Traceability Action Plans for primary produce and processed foods.

QFF is aware that on 7 December 2018, the Department awarded a \$220,000 contract to Arcadis to critically review specific aspects of Queensland's compost industry including their management practices and report any findings, conclusions and recommendations arising from the review¹⁵. This project will provide expert advice on best practice environmental management for composting operations and the suitability of different waste streams in the manufacture of compost and soil conditioners. It will also provide expert advice in relation to potential adverse consequences from waste suitability determinations and any regulatory change to address these.

It is paramount that the science and outcomes from the Arcadis review are made accessible to all stakeholders, including but not limited to manufacturers through to end-users so that we can respond to, or resolve any issues that may arise from the review. ***Stakeholders must also be engaged in meaningful consultation in all policy and regulatory amendments which may arise from the evidence base.***

Despite QFF's limited resources, we have provided substantial in-kind support for the development of the Applied Network for Recycled Organics and Waste Management (ANROWM) at Griffith University which seeks to identify emerging contaminants as well as potential management processes and technologies to manage those emerging contaminants identified. Through this collaboration, we have also been involved with various co-operative research centre (CRC) activities. ***QFF acknowledges the deficit of credible and valid scientific data concerning many of these emerging contaminants and their end of life outcomes in the environment*** and, in the absence of data, the growing stakeholder concern.

QFF is calling on the Queensland Government to immediately make a clear policy concerning the permitted end-uses for stabilised non-source segregated municipal solid waste (that does not include application to agricultural land). This is critical, given the introduction of the landfill levy from 1 July 2019 has already raised interest in new MBT/BMT capacity as the future levy gate fees will support that technology (but not more advanced technology systems). The waste management and local government sectors need clarity now about the permitted end-use of bio-stabilised waste; and the quality organics industry needs security that their end markets will not be further undermined by poor quality products marketed under the inadequate Australian Standard for composting (AS 4454).

QFF cannot emphasize the risks adequately. Many of the new AWT facilities are being considered for SEQ in the first instance, and many councils have already participated in overseas site tours with a view to purchase MBT technology. Due to the continuous throughput of MBT technology and the threshold

¹⁵ <https://www.hpw.qld.gov.au/qtenders/contract/view.do?CSRFNONCE=1AF581DCEA17B5D43703C433791217A1&tenderId=24824>

capacities, its viability is dependent on continuous access to disposal or end-uses. ***The agricultural land in SEQ is some of the best quality and most productive in the world***, providing valuable exports due to its proximity to infrastructure (Port of Brisbane, Wellcamp Airport, future Inland Rail) as well as food security for local populations.

QFF does not support the application of stabilised, non-source segregated municipal solid wastes to agricultural land. However, we do note the adequacy of stabilised municipal solid waste products for various engineering and rehabilitation applications through to landfill-capacity management opportunities.

Concluding Comments

Queensland's agricultural sector is vulnerable to global climate change impacts due to its geographical location, geological attributes through to its reliance on climate-sensitive receptors. There are already signs of productivity fatigue and environmental stress throughout Queensland's agricultural sector. There are both continuing (growing populations, export markets) and new pressures (biofuels and bioproducts) on Queensland agriculture to produce more whilst safeguarding the natural ecosystems and resource base (including soils). Much of the additional production must come from the intensification of land and water consumption currently under productive use. This is becoming more challenging against an increasingly changeable climate.

Framing an energy-water-climate change 'nexus' for Queensland's agricultural sector allows for the identification of critical inter-linkages between natural resource management and factors such as agricultural productivity; and provides an opportunity to identify the implications from uncoordinated decision making or government programs¹⁶. Domestic policy settings are critical determinants of agricultural productivity as they shape farmers' incentives and capacity to innovate and improve productivity. The imperative of a strong, sustainable and resilient agricultural sector is essential to provide social and economic value to Queensland's rural areas and provide food security. As such, there must be state/economy-wide agricultural policy settings which create conditions conducive to innovation to ensure an efficient and effective agricultural sector¹⁵.

The adoption of best practice management approaches for land and other resources (water, energy, soil, nutrients) is an integral component of sustainable agriculture. The high inputs into the intensive agricultural sector (irrigation water, energy, soil nutrients, fertilisers etc.) and natural capital impacts (soil degradation, fresh water use) make reduction, where possible, a priority if we are to protect agri-food supply systems and sustainably manage increasing demand for fibre, foliage, fuels and other elements of the bioeconomy.

Queensland's agricultural sector is subject to competing policy and economic drivers. A circular economy approach must minimise upstream inputs (energy, water and fertiliser) and downstream residues and wastes (such as food wastes and manures) and ensure that nutrients are returned to land.

A focus on the provision of evidence and modelling data in making innovative and adaptive decisions is critical for agricultural businesses. These models have important implications in policy planning and development towards minimizing the impact of climate change on farming practices through to biosecurity risks. Government departments and funding should facilitate knowledge and information access, so that agricultural businesses and their advisors can frame climate change adaptation actions and policies which focus on driving productivity, seizing opportunities and at the same time manage risks, particularly those associated with declining natural resources, rising input costs and increasing regulation.

¹⁶ Davis, G. Sustaining Queensland's Agricultural Sector: Challenges and Opportunities from the Bioeconomy and the Circular Economy. In publication. Sustaining Our Environment for A Better Future: Challenges and Opportunities. Ed. Albanaser Omran. Springer.

This will require consistent and holistic cross-government agency and multidisciplinary policy to address the competing demands on natural resources (including water and soils); while maintaining productive farming systems. It is assumed that a 'circular economy' approach for agriculture offers benefits to Queensland's agricultural sector from an economic, social and environmental perspective – but this adoption could be at the expense of economic and value-add opportunities offered through the bioeconomy¹⁵. Whilst a purely bioeconomy approach, which may maximise on-farm returns by valorisation of by-products, risks diverting critical and, in some cases, limited nutrients from the biosphere.

Rural communities across Queensland are naturally resilient. Many of the landholders and rural communities have substantial experience of extreme weather events, climate variations and utilisation of their on-farm resources, but these challenges are escalating and more innovative and coordinated adaptation is required than ever before. This includes the provision of data and science so that farmers and other land-owners can make informed decisions relating to the destination of their products and by-products, as well as sustainable land management practices.

If you have any queries about this submission, please do not hesitate to contact Dr Georgina Davis at georgina@qff.org.au.

Yours sincerely

Travis Tobin
Chief Executive Officer

Attachment 1 – Provisional Science Collection Project for Queensland Waste Strategy

Based on analysis of 200 soil samples from farmers based across QFF member organisations:

Parameter	Method	Price	# of Samples	Total Price (\$)
pH and Electrical Conductivity	1:5 Water or CaCl ₂	\$5	200	1,000
Total C and N	LECO TCN Analyzer	\$25	200	5,000
Heavy metals (e.g., Cd, Cu, Mn, Zn, Cu, Sn, Ni, Cr, Co, Pb, As and Ag)	Acid Digestion followed by ICP	\$35	200	7,000
PFAS/PFOS/TOP*	Ultra-fast LC-MS/MS	\$ 120	50	6,000
Technical Staff (Environmental Biochemistry Research Laboratory, Griffith)				2,000
Postage of samples/collection of samples (based on \$11.55 to \$14.55 for postage) and packaging				3,300
Development of five (5) case studies of findings (hosted by QFF)				2,500
				\$26,800

* TOP is for Total Oxidisable Precursor Assay (TOP assay or TOPA) as a standardised pre-treatment of water samples or sample extracts (soil and water). TOPA can provide an indication of the presence of chemical compounds that are likely to transform into PFAS compounds (precursors).