March 2021

Greenlife market analysis

Market commentary

ACIL ALLEN

Executive summary

The Greenlife industry is a multi-billion dollar industry, employing thousands of Australians and contributing to healthy people, homes, urban spaces and the natural environment.

This report is an informative resource targeted for a business and policy audience. This report provides an evidence base of key issues facing the industry and what can be done about it. The findings will inform future strategic planning for Hort Innovation and Greenlife Industry Australia.

Special thanks to Hort Innovation who funded this report, collaboration partners Greenlife Industry Australia and participants from industry, detailed in the Appendix.
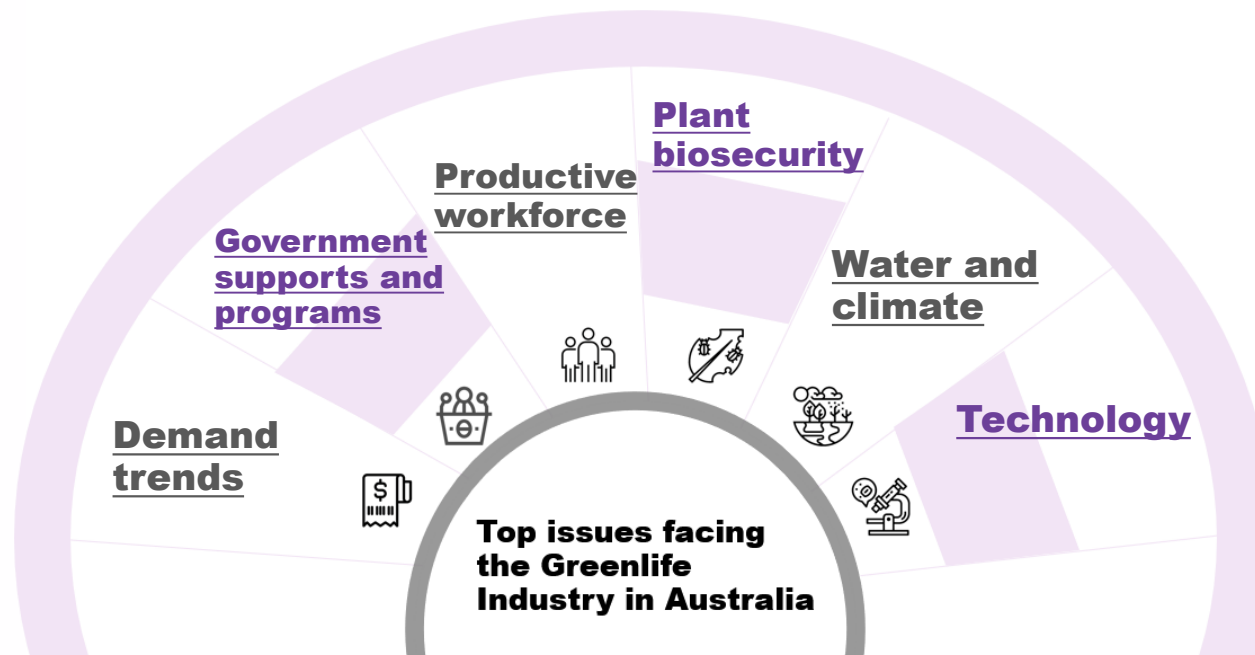
BUSINESS

Look here in the report:

Prioritisation tool

Greenlife market overview

Industry strategies and data gaps

DETAILS

Click on the titles to link to section:

Plant biosecurity

Productive workforce

Government supports and programs

Water and climate

Technology

Demand trends

Top issues facing the Greenlife Industry in Australia

POLICY

Look here in the report:

Policy aspirations

Greenlife market overview
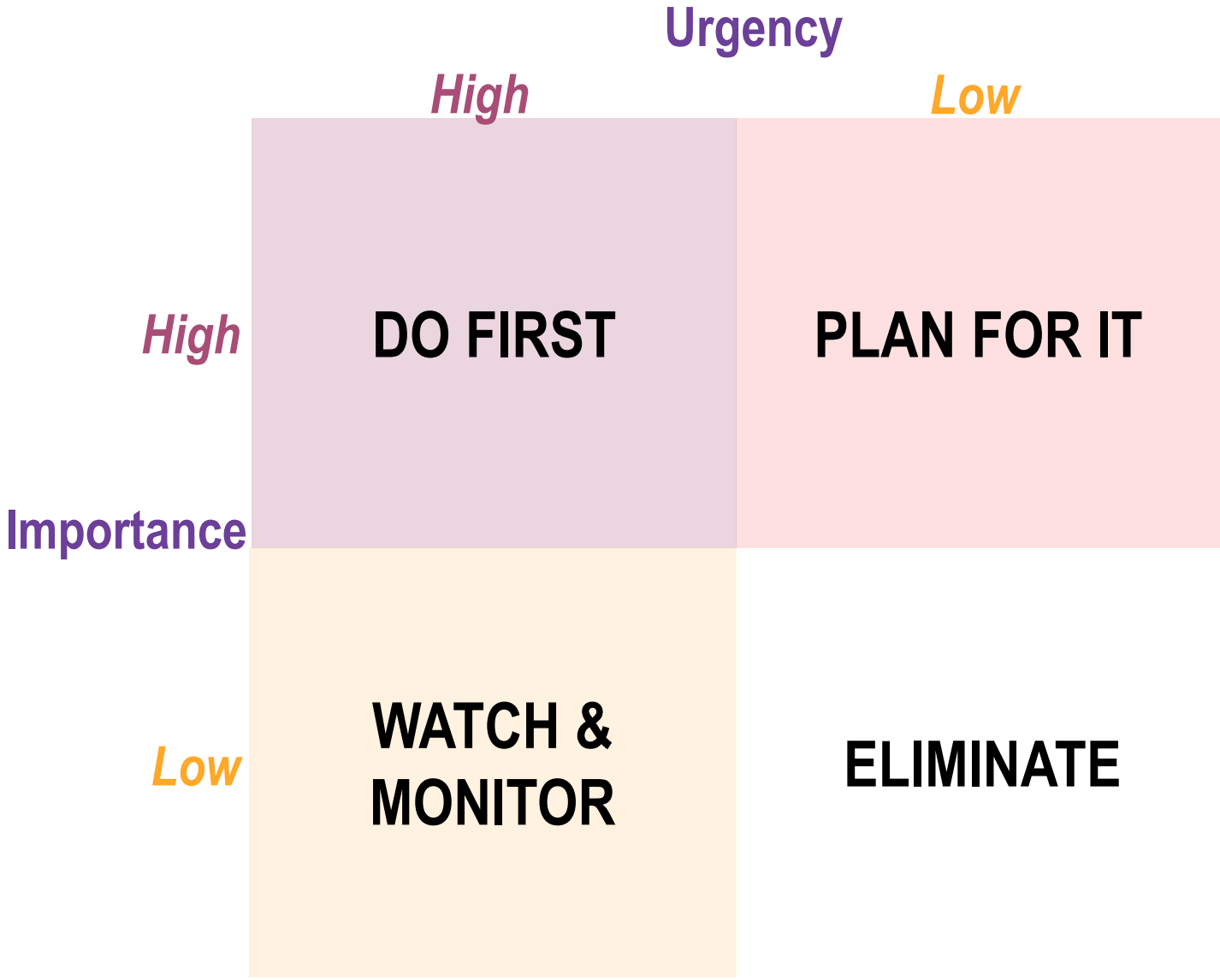
Industry strategies and data gaps

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A simple prioritisation tool for business
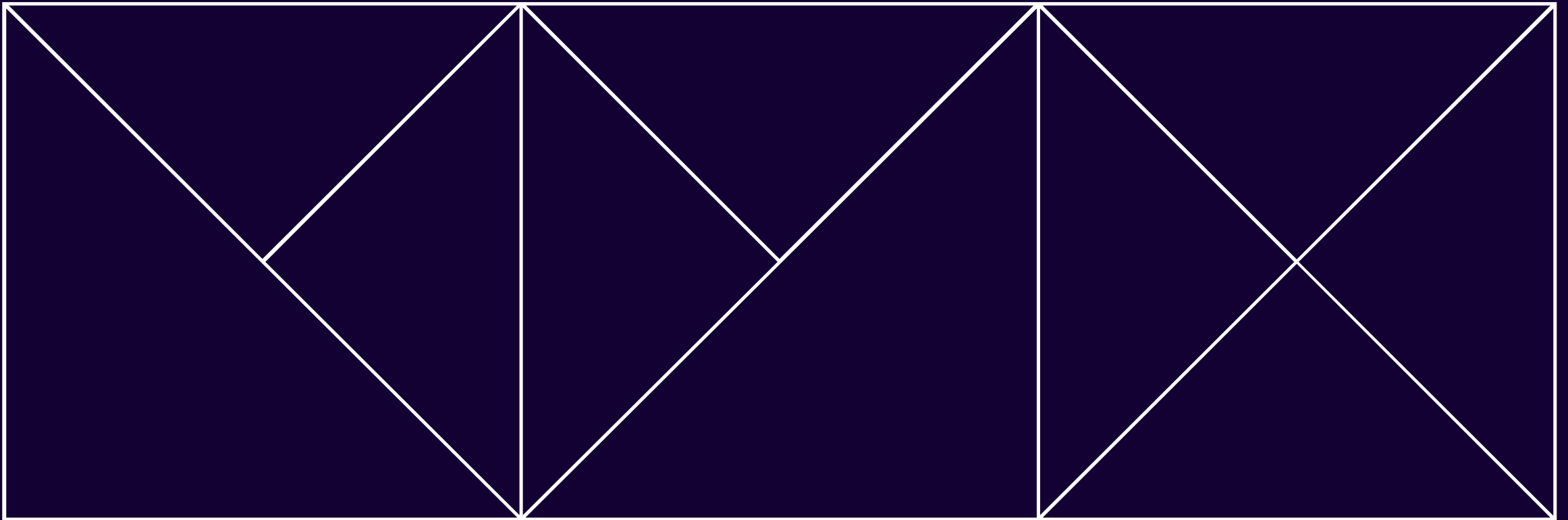
Nursery production businesses: how important are these issues to you?

	Details	Questions to think about
Demand trends	Slide 22-23	*How can I manage this volatile demand?* *Where are my opportunities across the demand channels?*
Government supports and programs	Slide 24-26	*Am I taking advantage of these supports and programs before they change?* *Do I know how to do this- how to find out information and support?*
Productive workforce	Slide 27-29	*Can I hire and keep the qualified employees I need? Where & how do I source this labour – locally & overseas?*
Plant biosecurity	Slide 30-33	*Is my business-as-usual approach sufficient for this risk?* *Are the approaches my supply-chain partners take sufficient?*
Water and climate	Slide 34-36	*Do I have water security?* *Am I resilient and adaptable to climate-related risks and extreme events?*
Technology	Slide 37	*Can I enable the best use of technology?* *Is it worth it to invest (how quick will the return on my investment be)?* *Can I access government funding support?*

Urgency

High   *Low*

Importance

	High	*Low*
High	**DO FIRST**	**PLAN FOR IT**
Low	**WATCH & MONITOR**	**ELIMINATE**

Aspirations for policy
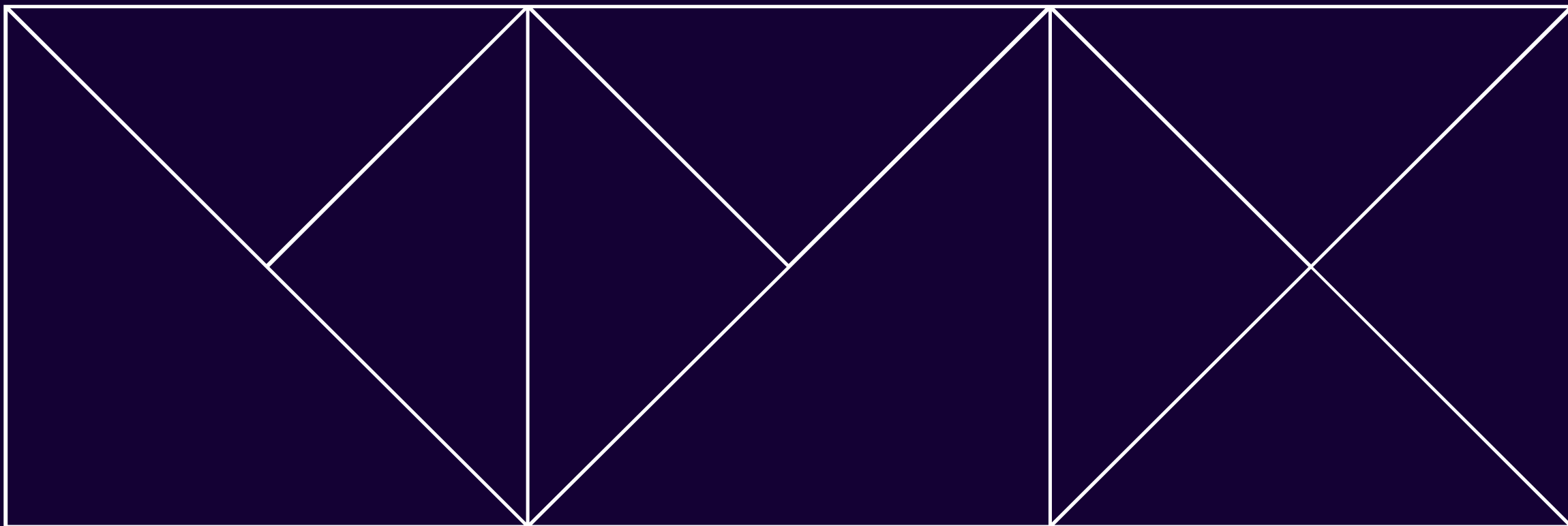
Top-ranked issues

– Recognizing that all these issues are important we wanted to know which issues are at the forefront of successfully growing nurseries production business and the Greenlife Industry as a whole.

– We invited industry participants from across the supply-chain to be involved in the review and development of this report and provided input on which are the major issues.

– The four top-ranked industry issues are:

   1. Demand trends: Expectations of future demand

   2. Productive workforce

   3. Water security

   4. Plant biosecurity

   These issues are addressed in the next four slides.

Figure 1 Top-ranked issues for industry
(click on word to be taken to slide)

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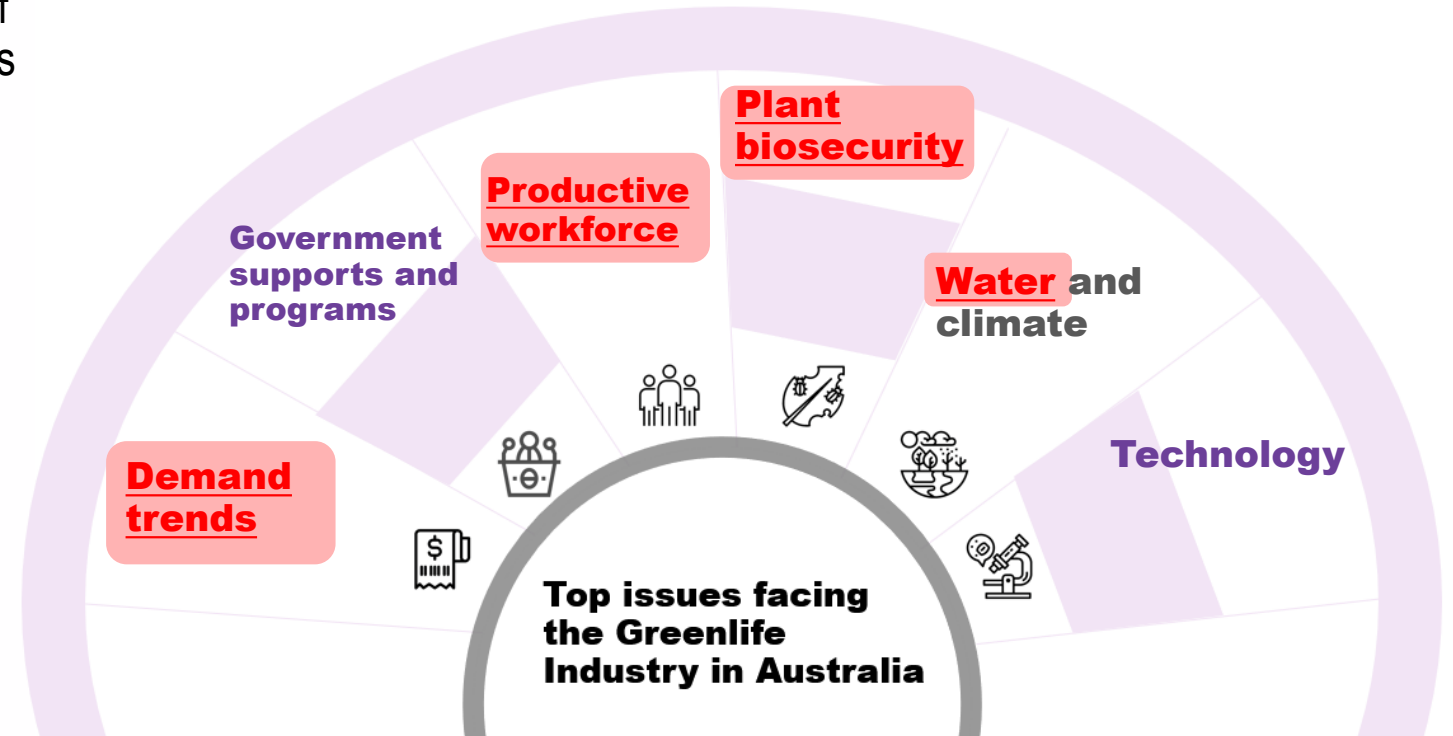
1. Sustain strong demand – Capitalise on and sustain the recent demand surge

Current snapshot

Expected demand in the short-term remains high especially from household, community and green infrastructure consumer segments.

Effective marketing campaigns can help sustain interest in greenlife

A dip in demand – uncertain how large - after the 'COVID high' is expected.
1 in 5 nursery business experienced a fall in sales due to COVID related disruption.

Supply-side constraints around skilled labour, water security and technology need to be resolved if demand is to be fully met.

Aspirational direction

P **Political**
Enable greenlife businesses to operate at full capacity under lockdown/restriction through policies such as security and surety of input suppliers and sale channels.

E **Economic**
Meet growing demand with continuous access to high quality supply and skilled labour.

S **Social**
Production nurseries maintain high levels of trust and a social licence to operate.

T **Technological**
Production nurseries have access to the technology they need to meet demand supported by government investment.

L **Legislative**
Relevant workplace and consumer protection legislation continues to be upheld.

E **Environmental**
In meeting demand, high standards of environmental and sustainable practices are also met.

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2. Productive workforce – Attracting, developing and retaining

Current snapshot

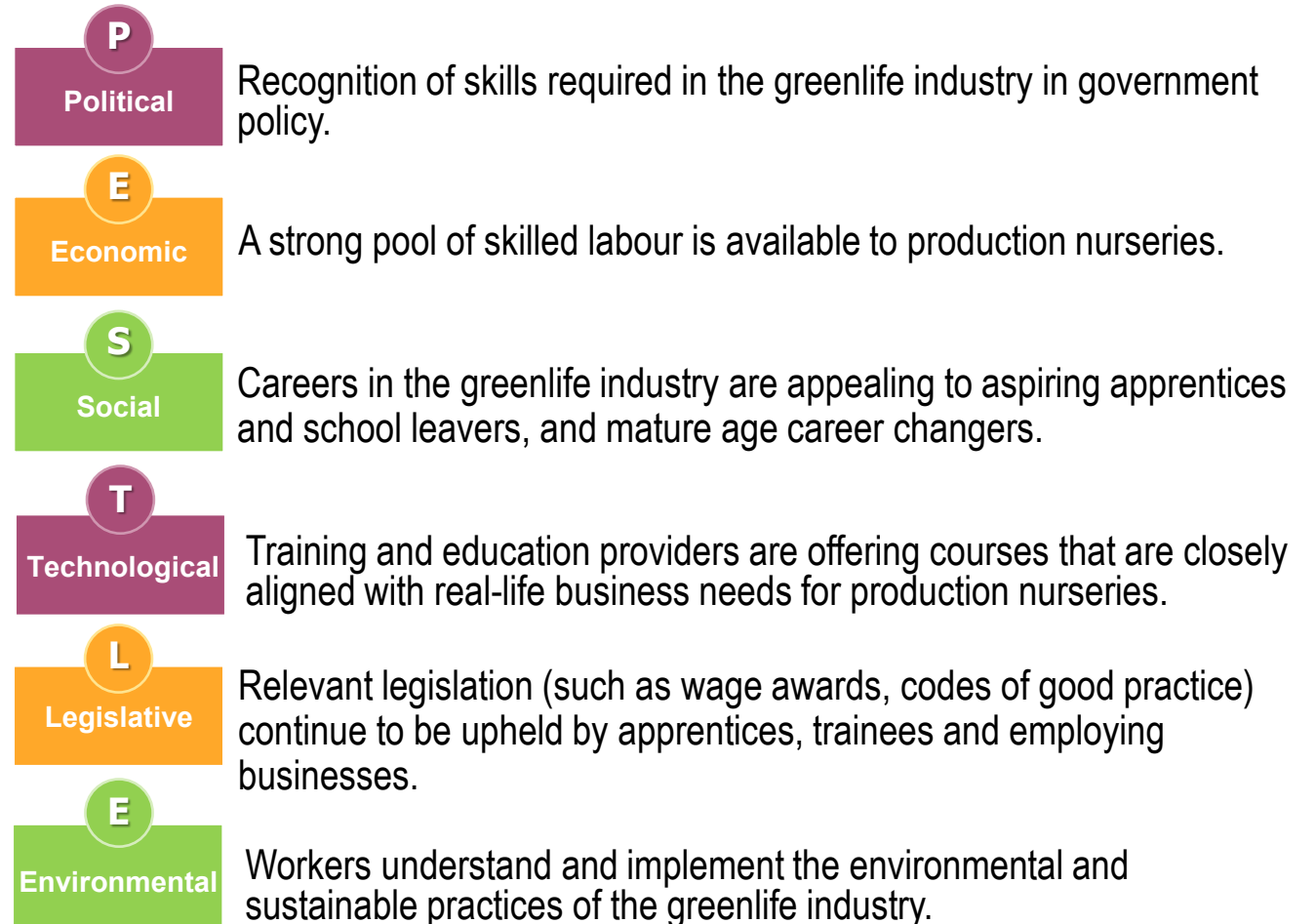*Skilled labour is vital to drive business longevity and development.*

Training and education pathways can be more closely aligned with business needs.

The industry offers diverse & dynamic careers for life – this can be strongly promoted

Currently around a quarter of employees in production nurseries have a tertiary qualification.
Without a clear career progression agenda and a long-term industry-focused training and education pathway, this issue will remain a threat to the development of businesses and industry.

Aspirational direction

P Political — Recognition of skills required in the greenlife industry in government policy.

E Economic — A strong pool of skilled labour is available to production nurseries.

S Social — Careers in the greenlife industry are appealing to aspiring apprentices and school leavers, and mature age career changers.

T Technological — Training and education providers are offering courses that are closely aligned with real-life business needs for production nurseries.

L Legislative — Relevant legislation (such as wage awards, codes of good practice) continue to be upheld by apprentices, trainees and employing businesses.

E Environmental — Workers understand and implement the environmental and sustainable practices of the greenlife industry.

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3. Water security– Ensure for business and industry

Current snapshot

Water access and use is a critical input for production nurseries and enables consumers to get the full benefit of greenlife products.

Water security reduces the risk for business and drives growth and development.

Drought, uncertain water restrictions and policy across Australia is a threat and barrier to the growth and development of the industry.

Aspirational direction

P
Political
Support is needed for water security for nursery production at all levels of government and the water utilities.

E
Economic
Certainty of water access and usage for nursery production under water scarcity.

S
Social
People value the water used to create greenlife and they know how to benefit from their greenlife investment through educational resources.

T
Technological
Suitable technology needs to be available to growers to ensure efficient water access and usage

L
Legislative
Enable ease of water use and equitable access for nursery production businesses.

E
Environmental
Nursery products contribute to a sustainable and resilient environment no matter how scarce water is.

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4. Plant biosecurity – Maintain and continue high standards

Current snapshot

Continuous high standards of prevention and management measures during normal and crisis periods mean the industry thrives and provides additional benefits for Australia with improved food security and a protected environment.

Incursions cause significant, sudden but lasting damage to the industry.

Detection, eradication and management is a continuous and costly effort – shown by recent cases of citrus canker, brown marmorated stink bugs, fall armyworm and serpentine leafminer.

Aspirational direction

P
Political
Improvement in government's plant biosecurity capacity and capability and harmonisation of approaches across states/territories.

E
Economic
Production nurseries need to prevent and manage biosecurity risks to continue trading at full capacity.

S
Social
Travellers need to recognise the importance of plant biosecurity.

T
Technological
Production nurseries have and can access the technology they need to implement their plant biosecurity plans.
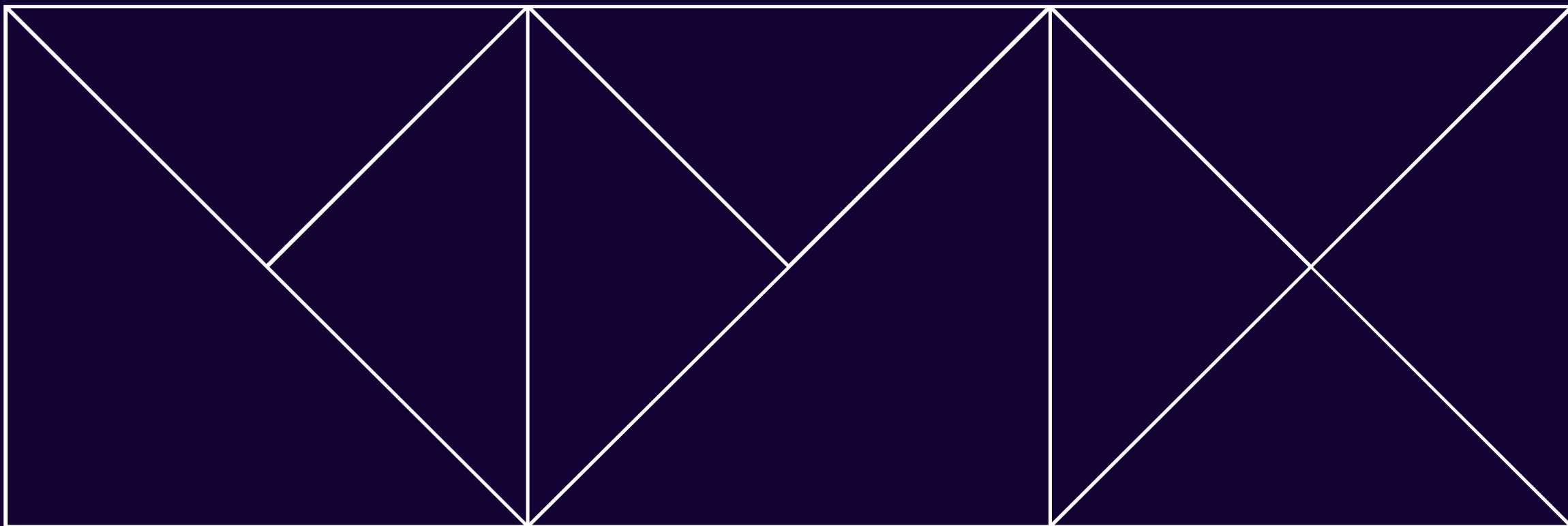
L
Legislative
Plant Biosecurity Acts need to reflect the contemporary market experience.

E
Environmental
Australia's natural environment is protected from incursions as the risk exposure increases.

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Industry strategies and data gaps

Industry strategies

The main outcomes and strategies of Greenlife Industry Australia (GIA) and Hort Innovation for the greenlife industry are below. Throughout this report, we will be comparing how these programs assist with the major issues currently impacting the industry's development (excluding the funding imperative from GIA as this is an internal objective).

## Greenlife Industry Australia 2020 - 2023

| Imperative	Activities	KPIs	Measure
Advocacy 1	• Advocate to governments and influencers to obtain positive outcomes for the greenlife industry • Collect and analyse the data required to formulate industry strategy and policy positions • Form alliances with other industry groups	• National industry policies established on key issues • Alliances formed with 5 national bodies • Annual reports published by GIA detailing outcomes for the industry	• Board approved policies developed • Alliances established • Board approved reports published
Promotion 2	• Promote the size, importance and benefits of the greenlife industry • Engage and interact with Association members to develop a national communications matrix • Facilitate the use of a common language between growers and all other parts of the value chain	• 3% cumulative annual growth rate • National communication strategy • Common language/ messages, developed in consultation with Association members	• Industry statistics survey • Board approved strategy developed • Common language agreed by GIA and Association Member Boards
Sustainability 3	• Develop an industry sustainability framework • Set ambitious waste reduction and emissions targets • Transition to the Australian Plant Production Standard (APPS) incorporating environment, plant protection and biosecurity and best management practices	• Industry sustainability framework established and adopted • Australian Plant Production Standard covers 80% of volume of production • Industry support the development of a grower register	• Board approved framework developed and rolled out • APPS certified businesses' production as a % of total production • Grower register established
Careers 4	• Develop tools and materials that help Association members to promote greenlife careers • Work with the Federal programs and higher education sectors to ensure qualifications meet industry needs • Offer professional development programs to industry participants	• 90% (78% currently) of greenlife businesses employ qualified horticulturists • Career path strategy for the greenlife industry developed • Highly regarded education and training programs	• Industry statistics survey • Board approved strategy • Programs in place
Funding 5	• Provide excellent service, value and benefits to members • Recruit to GIA or develop strong alliances with other greenlife bodies • Seek additional revenue	• GIA remains financially viable • Membership and sponsorship revenue increase annually • All Associations are members	• Profit and loss statement • Board approved member engagement and partnership strategy • Association membership

Hort Innovation Nursery 2017 - 2021

Outcomes	Strategies	Outcomes	Strategies
Increased demand and sales of green life products by four per cent per annum plus CPI	• Develop an annual marketing program • Identify and monitor effectiveness of marketing program and allocation of spend between business to business, and business to consumer • Continue to support the 202020 Vision program • Enhance the 202020 Vision brand beyond 2020 • Identify and promote the benefits of green-life products and services	**Improved productivity, profitability and professionalism through the creation and adoption of innovation and industry BMPs**	• Monitor overseas innovation and trends • Identify and fill R&D production gaps where research would provide a collective benefit to the industry • Review and update the industry best management practice (BMP) modules to promote and expand these programs, including accreditation • Develop and conduct extension activities to drive adoption of BMP practices • Promote, survey and monitor growers' uptake of BMP and levy funded outcomes • Create and maintain a library of projects that is open, easily accessible and catalogued for grower access • Develop and implement an effective communication program • Monitor the effectiveness of communication activities
Increased marketing effectiveness and efficiency and better decision making based on increased Industry knowledge	• Obtain a better understanding of the customer, their requirements and reasons for buying or not buying green-life products and/or services • Obtain better industry intelligence, including value of industry, and people employed • Disseminate industry information and insights to growers and key stakeholders		
Improved industry protection from exotic, emerging and endemic pests and diseases	• Maintain and test surveillance systems and emergency disease management preparedness • Increase the awareness of the requirement of biosecurity to industry and stakeholders • Review importation requirements and barriers to adoption of new genetics • Work with state governments to develop a more workable system for plant movements between states • Maintain access to chemicals through Minor Use Permits	**Better career development**	• Promote the industry as a professional career choice • Identify future skill sets needed in the industry • Collaborate with institutions about industry training and development needs • Implement a young leader and development program • Use future innovators/young leaders to promote and adopt R&D and marketing outcomes within the industry

Industry strategies and issues

Shaded boxes indicate that the industry strategy addresses this issue in some way through their activities
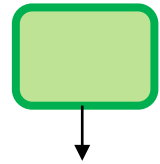
Refers to alignment with GIA's Strategy
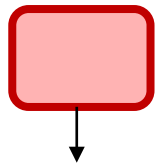
Refers to alignment with Hort Innovation's Strategy

– The key issues impacting the industry's growth and development are mapped against the main outcomes and strategies of GIA and Hort Innovation.

– All the issues are addressed in some way through the GIA and Hort's activities.

– Within each issue are various barriers and drivers, known and emerging in which industry participants across the supply chain, GIA and Hort all have a role to play.

Figure 2 Key issues against industry strategies

Demand trends
GIA addresses this issue through advocacy and promotion work to government and with other industry bodies and investment in career development for the industry. Hort targets increased demand and sales as a strategic outcome, more effective marketing and promotion, and collaboration activities to improve career development in the industry.

| GIA | Advocacy | Promotion | Sustainability | Careers | Increased demand | Marketing effectiveness & efficiency and better decision-making | Better career development | Protection (Biosecurity) | Improved Productivity, Profitability and Professionalism | Hort |

Government supports and programs
GIA addresses this issue through advocacy and championing the industry to government and investment in career development for the industry. Hort invests in promotion and collaboration activities with training institutions to improve career and leadership development in the industry.

| GIA | Advocacy | Promotion | Sustainability | Careers | Increased demand | Marketing effectiveness & efficiency and better decision-making | Better career development | Protection (Biosecurity) | Improved Productivity, Profitability and Professionalism | Hort |

Productive workforce
GIA addresses this issue through investment in career development for the industry by working with other organisations like Skills Impact, the educational sector and offering development programs. Hort invests in promotion and collaboration activities with training institutions to improve career and leadership development in the industry and updates the industry's best management practices to improve productivity, profitability and professionalism

| GIA | Advocacy | Promotion | Sustainability | Careers | Increased demand | Marketing effectiveness & efficiency and better decision-making | Better career development | Protection (Biosecurity) | Improved Productivity, Profitability and Professionalism | Hort |

Plant biosecurity
GIA addresses this issue through offering the BioSecure HACCP accreditation and resources. Hort invests in management preparedness R&D and raising awareness of the importance of biosecurity with stakeholders and working with state governments on their systems of moving plants across states.

| GIA | Advocacy | Promotion | Sustainability | Careers | Increased demand | Marketing effectiveness & efficiency and better decision-making | Better career development | Protection (Biosecurity) | Improved Productivity, Profitability and Professionalism | Hort |

Water and climate
GIA addresses this issue through development of an industry sustainability framework. Hort updates the industry's best management practices to improve productivity, profitability and professionalism and invests in extension activities to drive adoption of these practices.

| GIA | Advocacy | Promotion | Sustainability | Careers | Increased demand | Marketing effectiveness & efficiency and better decision-making | Better career development | Protection (Biosecurity) | Improved Productivity, Profitability and Professionalism | Hort |

Technology
GIA addresses this issue through advocacy activities to government to support technology innovation and adoption in the industry. Hort invests in early stage and up to commercialisation-ready technology research, development, extension and adoption programs.

| GIA | Advocacy | Promotion | Sustainability | Careers | Increased demand | Marketing effectiveness & efficiency and better decision-making | Better career development | Protection (Biosecurity) | Improved Productivity, Profitability and Professionalism | Hort |

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Summary: data / information gaps

– Across the six issues we have identified at least 35 data / information gaps.

– We have a fair visibility in some areas like Hort's Nursery Fund, the supply chain and government supports and programs and filling in these gaps will help to create a more complete picture.

– In the other areas there are a lot of unknowns and the potential for information to be out of date quickly.

– Greater data and information can facilitate better co-operation and co-ordination across the supply chain (e.g. better cost and risk sharing arrangements)

– Data delivers benefits where there is uncertainty and also allows the relative merit of different actions to be measured.

Table 1 Data / information gaps

Greenlife supply chain
Quantitative data on Exports, Consumers of Landscape and Retail
The diversity of stores within the Retail market
Fresh food market trade volumes
Detailed data on value-add activities
Variation in supply-chains depending on product type
Baseline unit costs of production
Complementary supply-chains into the Greenlife supply-chain

Demand trends
Quantitative data on government and commercial Greenlife spending trends
Quantitative data on food production

Government supports and programs
Wage and job impact on the Greenlife industry specifically
Relative impacts compared to other similar industries
Interest and opportunity for industry to take advantage of these programs and programs like these

Productive workforce
Features of and access to the current labour pool
How much more is the Industry willing to pay for labour?
The number and type of labour positions the Greenlife Industry requires to keep supplying at current volumes and what increase is needed to meet expected future demand
The 'preferred providers' of courses well aligned with the Greenlife Industry's needs
Collaboration between the Greenlife Industry and Training and Education providers creating fit-for-purpose courses
Trade-offs and pay-offs on labour vs business investment

Plant biosecurity
Value of biosecurity ($ terms) across the supply chain
Itemised business cost metrics to allow for a comparison of the value of biosecurity practices
Trends in biosecurity measures on production sites
Supply-chain traceability and grower monitoring register

Water and climate
The costs and benefits of different levels of water restrictions to production nursery businesses
Consistency of water restriction implementation across agencies in different states and territories
Projected impact / risk metrics for nursery sites across Australia for negative climate events
Detailed data on the Greenlife industry's potential role in climate change intervention and response efforts (greening, cooling, carbon sinks)
Industry participant figures on level of preparedness and management in case of natural disasters
Industry involvement with other agents on bushfire recovery and preparedness opportunities

Technology
Trends in uptake of new technologies across supply chain participants in industry
Enabling best use of technology in the Industry
The alignment / gaps with emerging technology and tech the industry wants
Data on 'transformative' vs 'incremental' technology
Activities of large technology providers like Powerplants and Transplant Systems e alignment / gaps with emerging technology and tech the industry wants

Hort Innovation Nursery Fund
What's next for the Nursery Fund?
Build strong, clear pathways between R&D and policy formation

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Greenlife market overview
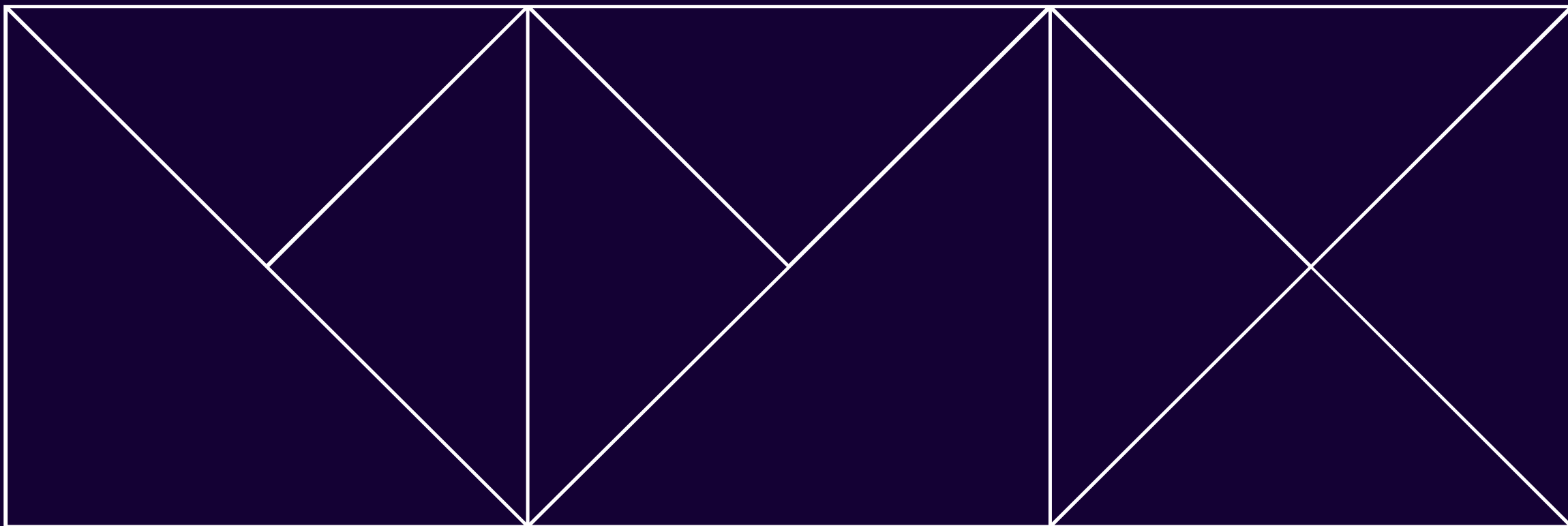
Greenlife industry statistics overview

$3.3 billion
sales value*

>1,600
businesses

>23,000
employees

~26% increase in sales
On average for 4 out of 5 businesses due to COVID-19 related disruption

*sales value includes re-sales to other production businesses. With this excluded the sales value is $2.6 billion. ACIL Allen, Down to Earth Research, GIA in Hort Innovation funded projects: NY17008, NY16004
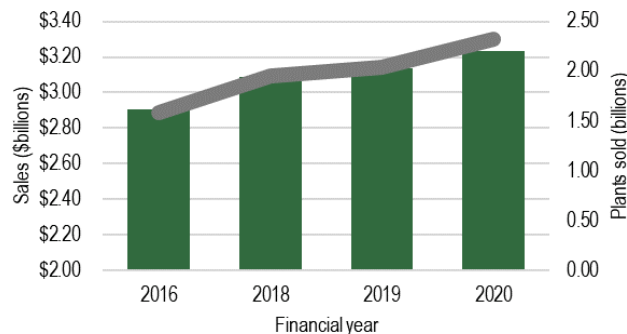
Fig 3 National Greenlife Sales

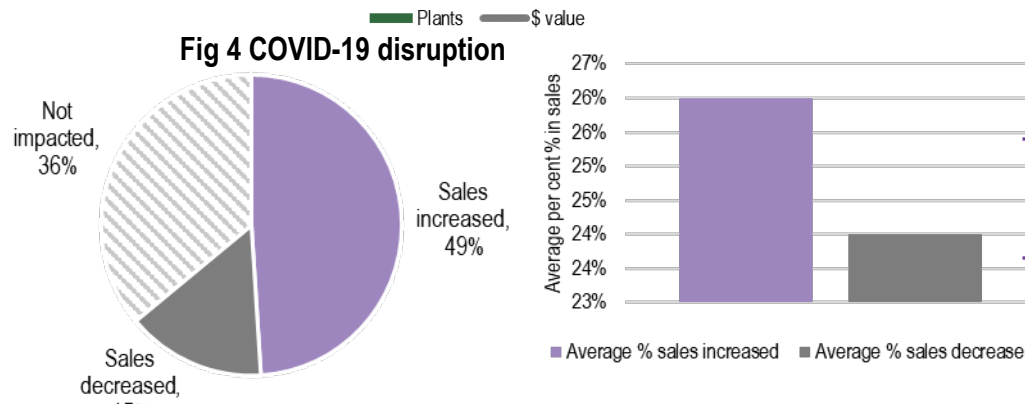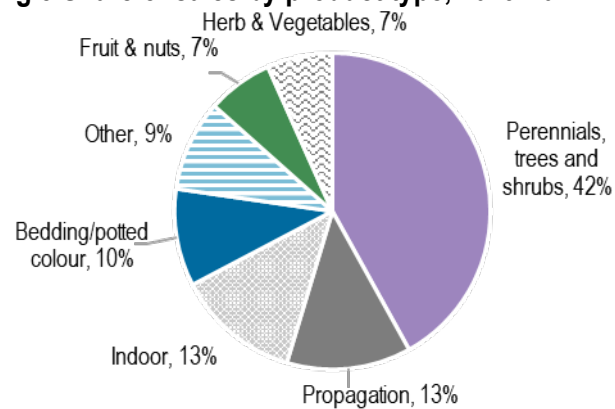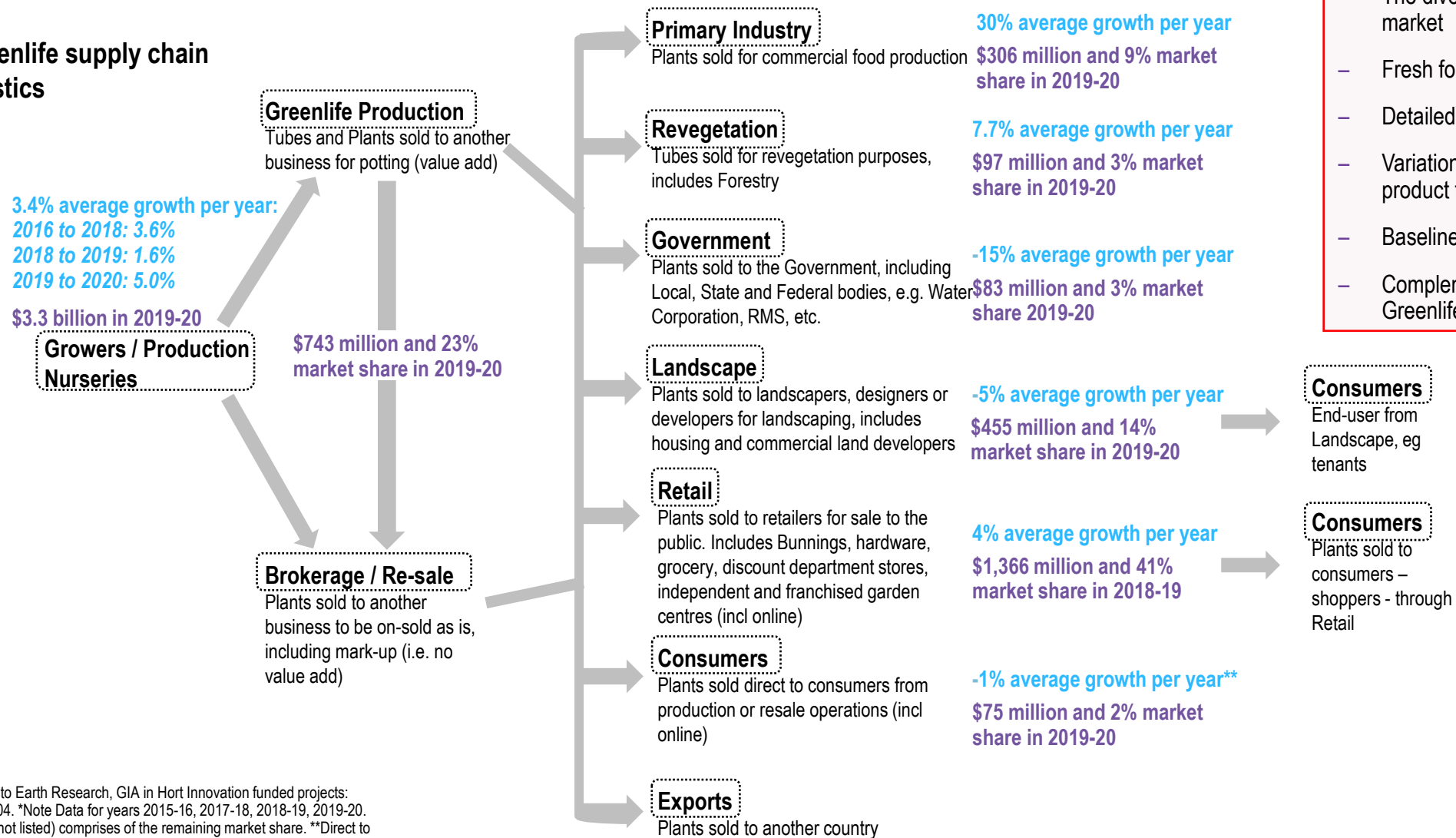**Fig 4 COVID-19 disruption**

Fig 5 Share of sales by product type, 2019-20

- Since 2015-16, the greenlife industry has broken through the $3 billion value and $2 billion product volume in sales (including re-sales to other production nurseries)

- Retail is the largest market segment with over $1.3 billion in sales, with growth at around 4 per cent per year.

- Primary industry is the highest growing customer group, averaging 30 per cent per year and a little over $300 million in sales.

- Both government and landscape sales have fallen since 2015-16.

- Sales into retail, wholesale and landscape make up over three-quarters of the buying market.

- Over 40 per cent of greenlife products sold fall into the perennials, trees and shrubs category, followed by propagation, indoor and bedding/potted colour, each with between 10 - 13 per cent market share in 2019-20.

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Greenlife supply chain

Fig 6 Greenlife supply chain and statistics

Greenlife Production
Tubes and Plants sold to another business for potting (value add)

3.4% average growth per year:
2016 to 2018: 3.6%
2018 to 2019: 1.6%
2019 to 2020: 5.0%

$3.3 billion in 2019-20

Growers / Production Nurseries

$743 million and 23% market share in 2019-20

Brokerage / Re-sale
Plants sold to another business to be on-sold as is, including mark-up (i.e. no value add)

Primary Industry
Plants sold for commercial food production

30% average growth per year
$306 million and 9% market share in 2019-20

Revegetation
Tubes sold for revegetation purposes, includes Forestry

7.7% average growth per year
$97 million and 3% market share in 2019-20

Government
Plants sold to the Government, including Local, State and Federal bodies, e.g. Water Corporation, RMS, etc.

-15% average growth per year
$83 million and 3% market share 2019-20

Landscape
Plants sold to landscapers, designers or developers for landscaping, includes housing and commercial land developers

-5% average growth per year
$455 million and 14% market share in 2019-20

Retail
Plants sold to retailers for sale to the public. Includes Bunnings, hardware, grocery, discount department stores, independent and franchised garden centres (incl online)

4% average growth per year
$1,366 million and 41% market share in 2018-19

Consumers
Plants sold direct to consumers from production or resale operations (incl online)

-1% average growth per year**
$75 million and 2% market share in 2019-20

Exports
Plants sold to another country

Consumers
End-user from Landscape, eg tenants

Consumers
Plants sold to consumers – shoppers - through Retail

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Data / Information gaps

- Exports, Consumers of Landscape and Retail

- The diversity of stores within the Retail market

- Fresh food market trade volumes

- Detailed data on value-add activities

- Variation in supply-chains depending on product type

- Baseline unit costs of production

- Complementary supply-chains into the Greenlife supply-chain

Hort Innovation Nursery Fund (1 of 2)

Hort Innovation has invested over $13 million in research, development and marketing in the greenlife industry since 2016 across nearly 50 projects. A visualisation of their investments in the PESTLE* framework are shown overleaf.
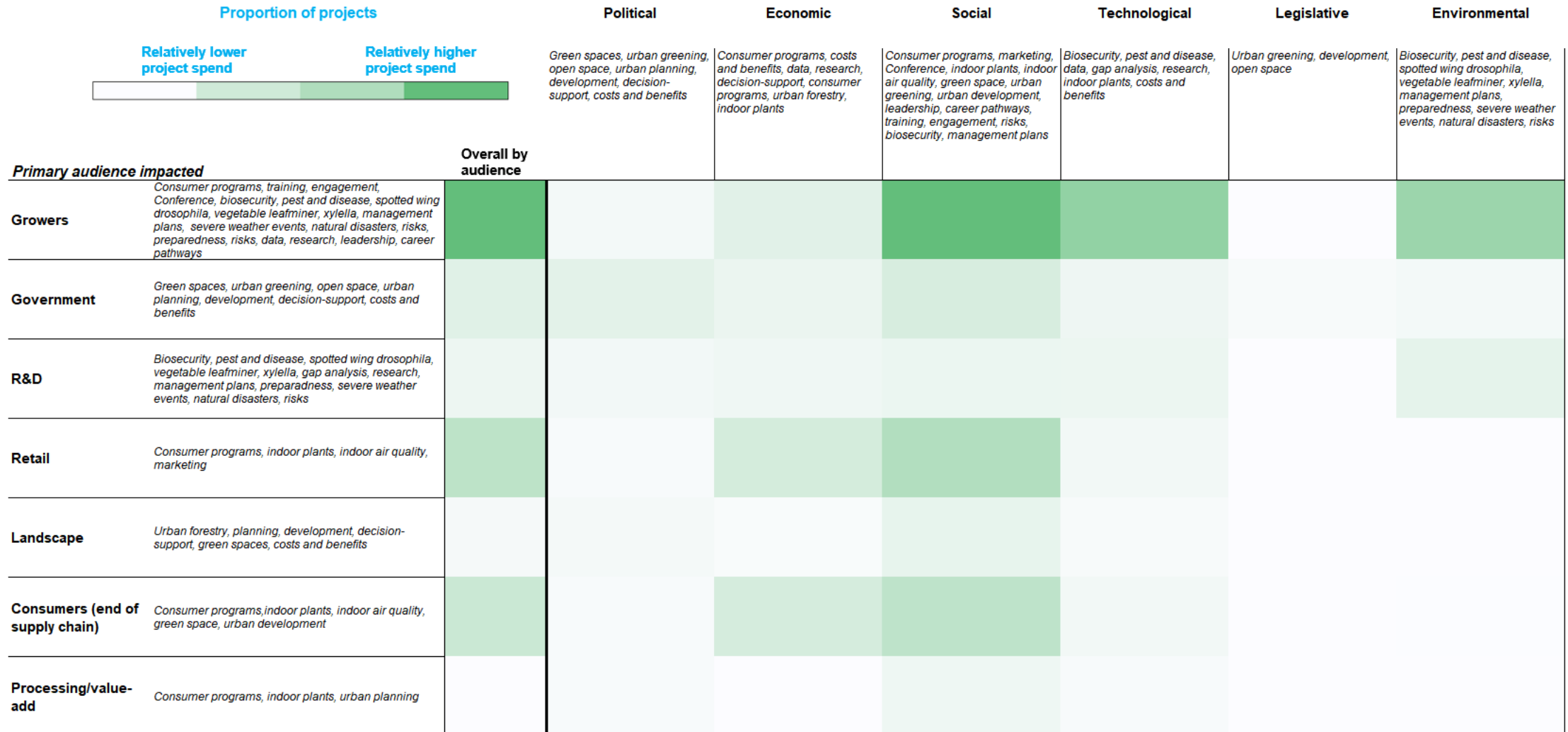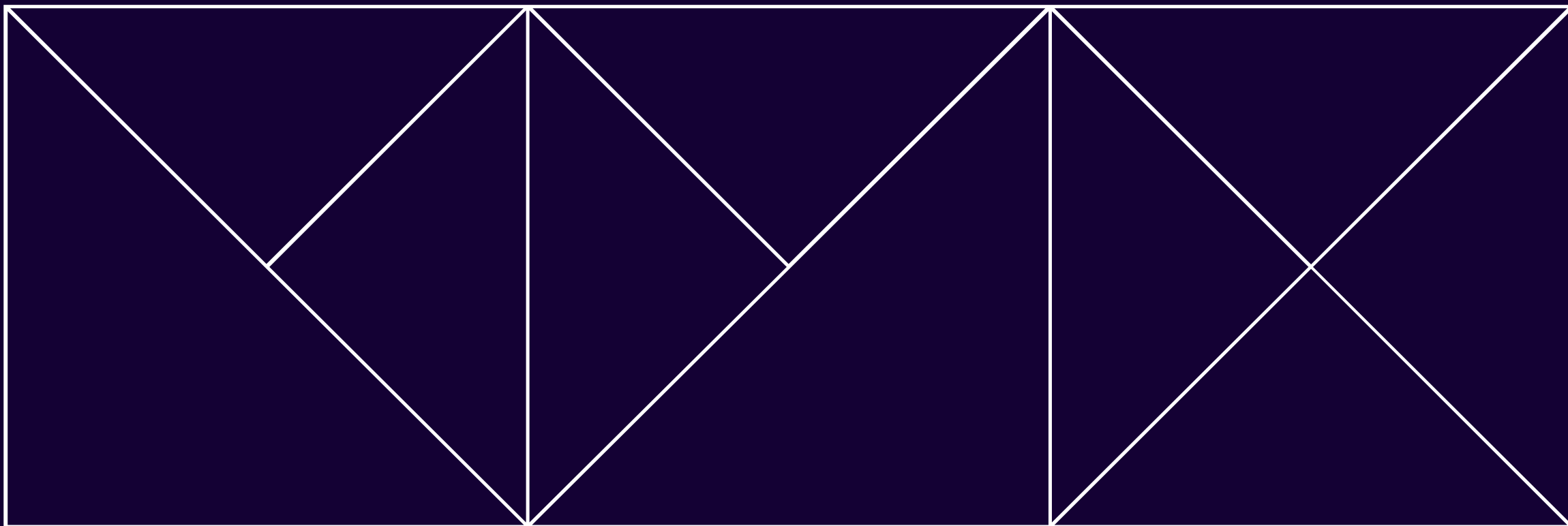
– The majority of projects concern the social factors within the greenlife industry, with consumer-focused programs and marketing, building the indoor plant and well-being campaign, urban greening in urban planning, management plans for businesses and career and leadership programs.

– Projects fitting under the economic and technological theme are the next most common, including costs and benefits projects, data and decision support projects, biosecurity / pest and disease, indoor plants and research and gap analysis about technology in the industry.

– As expected, growers are the most common target audience/beneficiary, followed by government and retail groups.

– The framework also shows areas where the fund has not been targeted:

  – Issues around Legislation have received less attention.

  – Environmental issues outside of the R&D and grower audience haven't been explored as much.

  – In terms of target audience/beneficiary, further downstream supply chain participants including processing/value-add entities and consumers are less targeted.

  – Growers are targeted but there are few long-term extension/adoption programs.

– These gaps do not necessarily mean investment is warranted in these areas. The Strategic Investment Plan details Hort Innovation's decision on the best use of the funds in the interests of levy payers. The investments in the Fund promoted demand for greenlife – such as the 202020 Vision/Greener Spaces Better Places campaign and Plant Life Balance Campaign – and in protection - biosecurity / pest and disease research, gap analysis, technologies and management and risk preparedness and planning.

Fig 7 Hort Innovation Nursery Fund in the PESTLE framework

Proportion of projects

Relatively lower project spend — Relatively higher project spend

		Overall by audience	Political	Economic	Social	Technological	Legislative	Environmental
			Green spaces, urban greening, open space, urban planning, development, decision-support, costs and benefits	Consumer programs, costs and benefits, data, research, decision-support, consumer programs, urban forestry, indoor plants	Consumer programs, marketing, Conference, indoor plants, indoor air quality, green space, urban greening, urban development, leadership, career pathways, training, engagement, risks, biosecurity, management plans	Biosecurity, pest and disease, data, gap analysis, research, indoor plants, costs and benefits	Urban greening, development, open space	Biosecurity, pest and disease, spotted wing drosophila, vegetable leafminer, xylella, management plans, preparedness, severe weather events, natural disasters, risks

Primary audience impacted

Audience	Description
Growers	Consumer programs, training, engagement, Conference, biosecurity, pest and disease, spotted wing drosophila, vegetable leafminer, xylella, management plans, severe weather events, natural disasters, risks, preparedness, risks, data, research, leadership, career pathways
Government	Green spaces, urban greening, open space, urban planning, development, decision-support, costs and benefits
R&D	Biosecurity, pest and disease, spotted wing drosophila, vegetable leafminer, xylella, gap analysis, research, management plans, preparedness, severe weather events, natural disasters, risks
Retail	Consumer programs, indoor plants, indoor air quality, marketing
Landscape	Urban forestry, planning, development, decision-support, green spaces, costs and benefits
Consumers (end of supply chain)	Consumer programs, indoor plants, indoor air quality, green space, urban development
Processing/value-add	Consumer programs, indoor plants, urban planning

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Key issues for industry

Demand trends (1 of 2)

Demand

- Generally, there are positive impacts from increasing demand in household and community spaces.
- Between March and September 2020 during the COVID-19 pandemic, consumers generally spent more time gardening, likely due to longer periods of time spent at home under lockdown and travel restrictions.
- The trend in DIY shopping exhibits an interesting convergence: in March 2020, more people stopped shopping at DIY stores, then the trend flipped in June, where consumers started shopping more at DIY stores. By the end of September, the percentage of people shopping more at DIY stores equalled those that are shopping less – in effect 'cancelling out' each other.
- Local councils operate an important role in the 'streetscaping' their suburbs but there are inconsistencies in the approaches taken across different local councils in Australia.
- Urban greening and green infrastructure interest from government and commercial developers, and strongly supported through the Hort Innovation Nursery Fund, offers opportunity for growers.

Meeting demand

- Attracting, developing and retaining suitable labour has been a challenge for many growers in recent years, becoming an even more heightened challenge now given the expectations for increasing demand. This is explored in more detailed in the Productive Workforce chapter here (slide 27-29).
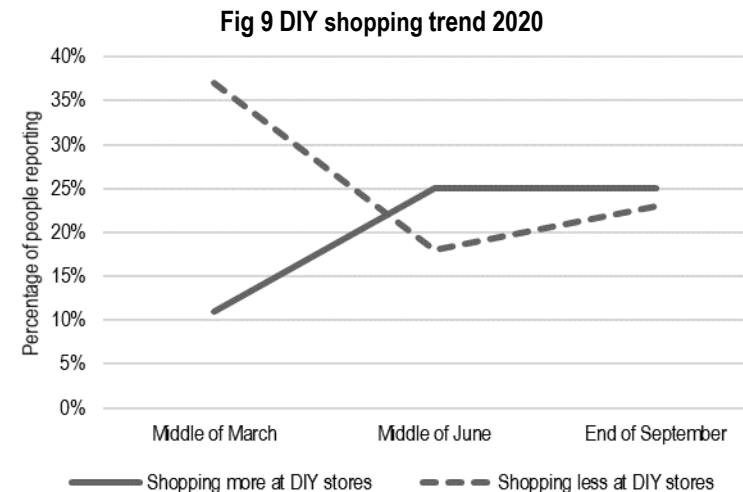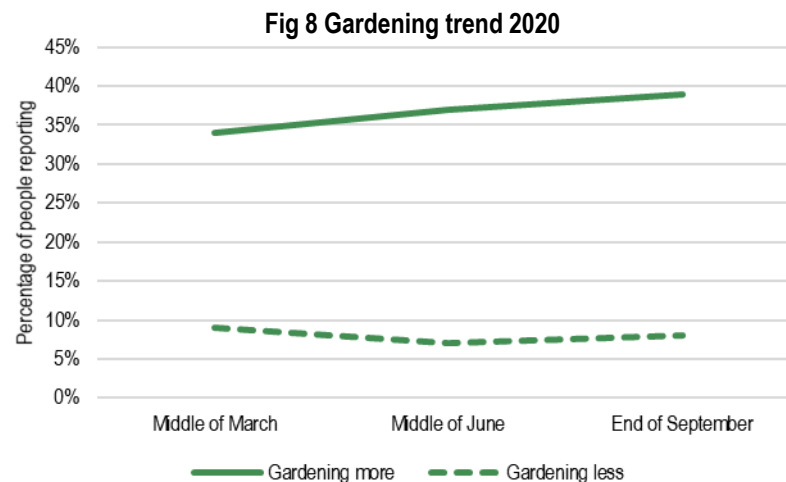
Fig 8 Gardening trend 2020

Fig 9 DIY shopping trend 2020

GIA addresses this issue through advocacy and promotion work to government and with other industry bodies and investment in career development for the industry. Hort targets increased demand and sales as a strategic outcome, more effective marketing and promotion, and collaboration activities to improve career development in the industry.

GIA	Advocacy	Promotion	Sustainability	Careers	Increased demand	Marketing effectiveness & efficiency and better decision-making	Better career development	Protection (Biosecurity)	Improved Productivity, Profitability and Professionalism	Hort

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Demand trends (2 of 2)

Table 2 Demand-side trends

Where?	Direction of short-term trend	Detail
In household spaces	⬆ (green)	Some evidence (quantitative from Fiftyfive5 and anecdotal) that more disposable income is being spent on gardening and indoor plants due to the greater amounts of time being at home for both homeowners and tenants.
In community spaces (including community gardens)	⬆ (green)	In recent years there has been increasing activity in greening community spaces with both edibles and non-edibles. Since the pandemic began, the benefits around mental health spurred interest further.
Public spaces	➖ (grey)	Investing in greenlife in public spaces is a priority for many local councils, however greater resources are being directed at the economic recovery and community resilience. Overall, there are inconsistencies in the approaches taken across different local councils in Australia.
In government and commercial spaces	➖ (grey)	Anecdotal evidence there is less expenditure on greenlife in some government and commercial customer groups, however urban greening and green infrastructure interest offers opportunity for growers.
Sales to large and corporate retailers	⬆ (green)	Sales to large and corporate retailers is trending up at a bit over half of sales into the retail segment (NY17008 survey). The decisions and preferences of the consumers have a large influence on the upstream parts of the supply-chain.
Dwelling builds	⬆ (green)	According to ABS data, dwelling commencement and approvals peaked in 2018, but the sector remains strong despite the COVID-19 pandemic Government stimulus measures and re-bounding demand (house prices fall, spurring increased local demand). The majority of commencements in June 2020 were split evenly between NSW and Victoria at around 30 per cent each. Almost 50 per cent of dwelling approvals not yet commenced in June 2020 are in NSW, suggesting greenlife demand associated with new builds could be greatest in NSW.

Table 3 Supply-side trends

Where?	Direction of short-term trend	Detail
Product types being produced	⬆ (green)	An increase in both substitutable and complementary products produced. This can be confusing for consumers. .
Consolidation	➖ (grey)	The intention to sell the business or land within 5 years has increased from around 3.5 per cent in 2015-16 to over 6.5 per cent out of total survey respondents. Winding down – contracting and not closing – has also slightly increased.
Technology	⬆ (green)	Increasing use various emerging technologies such as digital systems, robotics and other kinds labour-replacing technology.
Productive Workforce	⬇ (red)	Some growers in the industry find it difficult to hire and retain suitable labour. This is explored more in the Productive Workforce chapter here.

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Government supports and programs (1 of 3)

The Government responded to the COVID-19 pandemic crises with a suite of new stimulus measures including (detailed in the Appendix):

- **JobKeeper:** government subsidise businesses to retain employees,
- **JobMaker:** government subsidise businesses to onboard new employees,
- **JobTrainer:** government subsidise education and training providers:
- **Tax and insolvency relief**: government lower insolvency thresholds and reduce tax obligation
- **HomeBuilder:** government subsidise new home buyers

Lockdowns and reduced mobility means less cash for businesses and less opportunities for employment. These stimulus measures are designed to 'bridge' the gap until a new stable point is achieved as society learns to live with the virus in a less restricted way

Figures 10 & 11 summarise the impact of the pandemic on jobs and wages between March 2020 and January 2021:

- All states experienced a fall in jobs and wages, with NSW, WA and Victoria the top 3 most affected jurisdictions.
- The top 3 most negatively affected industries in terms of wages were mining (-23%) , information media and telecommunications (-12%) and accommodation and food Services (-12%).
- The impact on the agriculture and forestry sector was relatively low, ranking 14th out of the 19 industries, with around 7 and 3 per cent decline in jobs and wages, respectively.

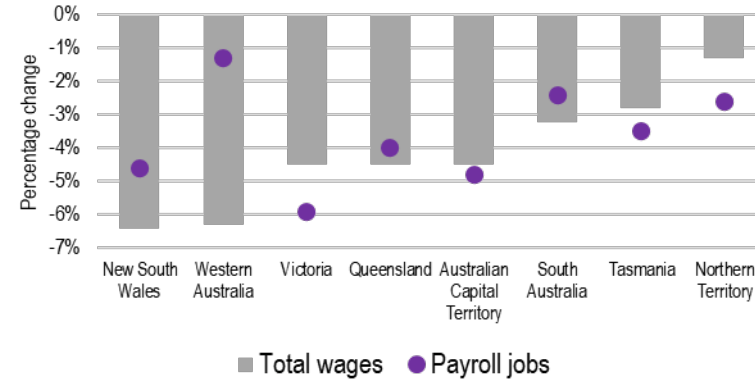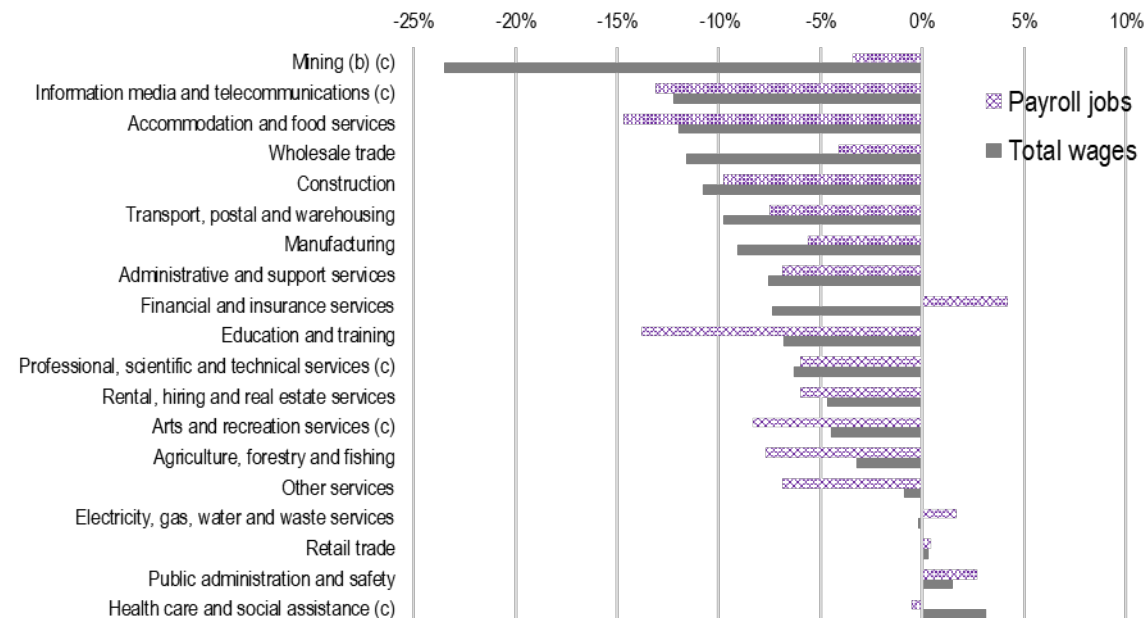**Fig 10 Wages and Jobs change by state across all industries** (March 2020 – January 2021)

Fig 11 Wages and Jobs change by industry (March 2020 and January 2021)

Government supports and programs (2 of 3)

The greenlife industry is one of the most diverse industries within the agriculture sector, offering thousands of products and associated uses. The industry is a multi-billion industry in existing markets and attracts millions to hundreds of millions of dollars of value from different avenues, a few current ones highlighted below.

– Project Phoenix, also known as the Native Seed Strategy, involves the development of a strategic program to build and secure native seed and plant supply for landscape restoration, recovery and resilience in bushfire impacted areas.

– Large-scale tree planting has traditionally been a government activity – and while the Queensland Government has extended this in their Land Restoration Fund – private sector interest is also growing, such as pharmaceutical multi-national AstraZeneca's program for 25 million tree planting.

– Sustain Australia is seeking half a billion dollars to develop a National Edible Gardening Fund.

Fig 12 Examples of large-scale programs

Project Phoenix – – – → **$5 million**

Carbon sequestration
- AstraZeneca tree planting – – → **25 million trees**
- Qld Land Restoration Fund – – → **$500 million**

Sustain Australia – – – → **$500 million**
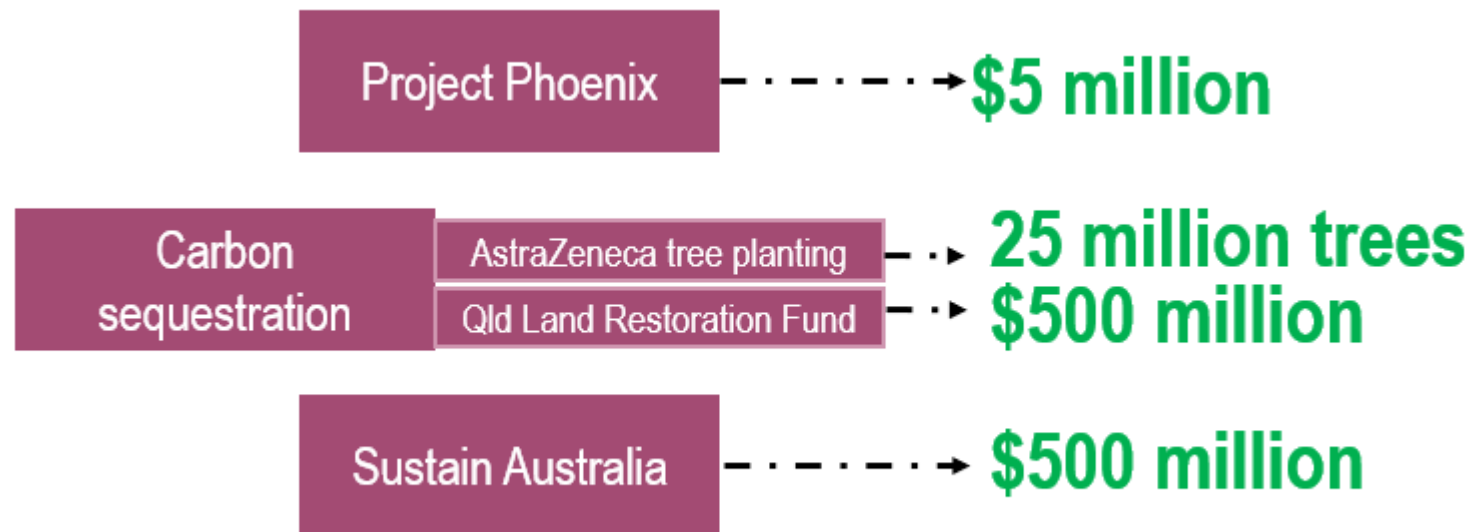
Government supports and programs (3 of 3)

There is not a reliable timeline of how events will unfold

The cash value of government stimulus measures is reduced from January 2021 and a vaccine rollout began in February 2021.

We have an idea about the future week or two about most other government policies and economic events before they will change.

The government is committed to improving the conditions for communities and business

The government intends to have a positive impact in keeping the community safe and healthy and enabling businesses to operate.

However, there will always be some trade-offs as a consequence of their policies which will leave some people and businesses worse-off. The greenlife industry

being recognised as an 'essential service' was a positive achievement – businesses can still operate even when strong lockdown measures are enacted.

A lot of lessons were learnt in 2020 which we can apply over the next few years

The pandemic forced us to deal with elevated levels of uncertainty - managing evolving lock-down restrictions, stricter controls on travel, doing 'more with less' and

shifting consumer behaviour – and these lessons will be applied again in 2021 and beyond for the next several years.

GIA addresses this issue through advocacy and championing the industry to government and investment in career development for the industry. Hort invests in promotion and collaboration activities with training institutions to improve career and leadership development in the industry.

| GIA | Advocacy | Promotion | Sustainability | Careers | Increased demand | Marketing effectiveness & efficiency and better decision-making | Better career development | Protection (Biosecurity) | Improved Productivity, Profitability and Professionalism | Hort |

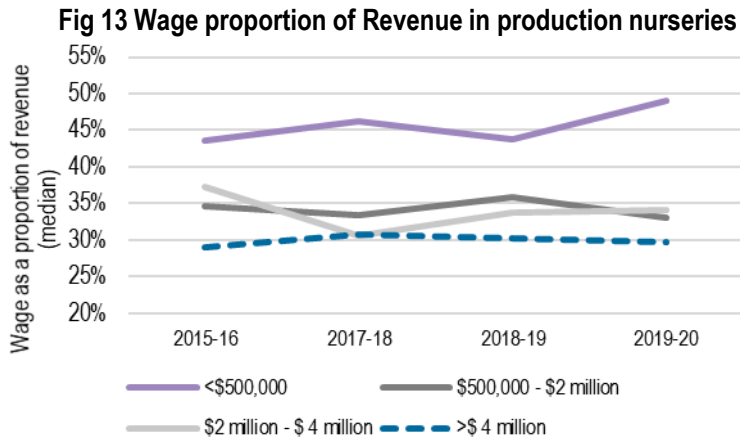ACIL ALLEN

Productive workforce (1 of 3)

30 – 50 %

wages % of revenue
Higher for smaller sized businesses

~13,500

full-time employees (70%) are working in larger (>$4M) or medium sized ($500k - $2M) businesses

Fig 13 Wage proportion of Revenue in production nurseries

Legend:
- <$500,000
- $500,000 - $2 million
- $2 million - $4 million
- >$4 million

Fig 14 Full time employee distribution across the greenlife industry, 2019-20
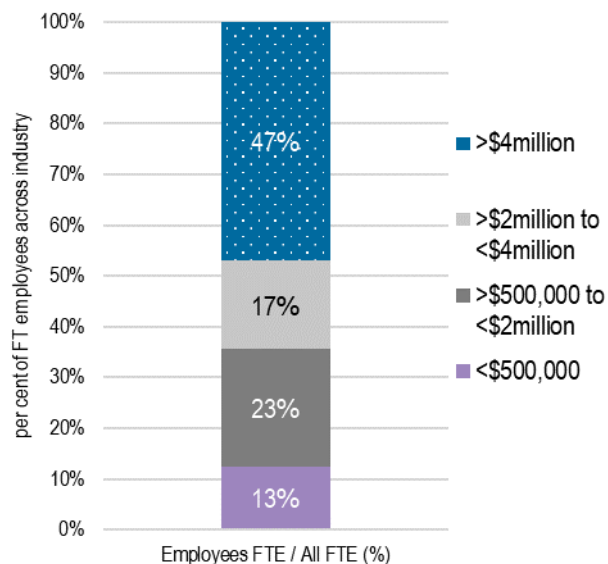
Fig 15 Full time employee vs total employees in production nurseries, 2019-20

Legend:
- Per cent of FT employees out of total
- Number of FT employees (median)

Labour costs for production nurseries is a major area of interest, being one of the most often cited statistic collected from the industry surveys:

- Businesses with more than $2 million in sales have a higher proportion of full-time employees within their business – they still employ casuals and part-time employees, but most of their employees work full-time.
- Businesses earning less than $500,000 per year have the lowest proportion of full-time employees, with approximately 30-40 per cent of the workforce being casuals or part-time employees.

The nature of the labour is diverse and complex across greenlife businesses

The nature of the labour employed and various contracting arrangements means at a peer to peer level, direct comparisons of labour costs between businesses is difficult. One business may sub-contract a transport provider while another doesn't because it is more suitable for their needs. A more labour-intensive business could justify that arrangement because a high-margin product requires more labour than others. A business with low labour costs may actually benefit from employing more people to add value.

The most cost-effective arrangements depend on the needs and intentions of the business and this may change as conditions change, considering factors such as:

- How do each of my employees add value to the bottom-line?
- Could a different mix improve this productivity?
- What stage of business do I want to be in?
- How does this change my employee mix?
- What are realistic labour cost-saving measures that could developed?

Productive workforce (2 of 3)

24%

Employees in the Greenlife Industry have a tertiary qualification

~192,400

Apprentices and trainees employed in May 2020
~33% are between 15-20 years old

~3,780

Registered Training Organisations operating across ~6,700 locations in Australia

Long-term issue

Attracting and retaining labour with relevant qualifications and skillsets in the Industry is a common issue across production nurseries in Australia revealing longstanding problems that require long-term solutions. As shown in the figure below, the trend from 2014 shows the split of apprenticeships and trainees in all trades across different age groups narrowed by 2020. In other words, in 2020, there was a similar number people above 25 years registered as an apprentice or trainee as they were between 20 -24 years and 15 – 19 years.
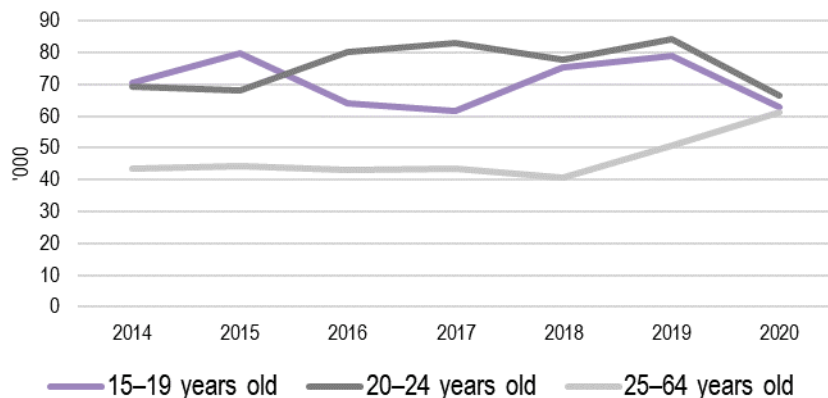
Training and Education mismatch

Growers in the Industry have experienced a mismatch between what courses education and training institutions provide and what skills and competencies are required for the business.

Difficulty retaining workers

The Greenlife industry offers a progressive career pathway through the business like many other agricultural businesses, however anecdotally many growers experience a labour 'drain,' where workers shift to other horticulture and landscape sectors before advancing to higher level management positions in the business.

Fig 16 Number of apprentices and trainees by age group in all trades

Legend: — 15–19 years old — 20–24 years old — 25–64 years old

Promotion strategies: positive developments but the Greenlife roles are not on the National Skills List – the closest is 'Landscape Gardener'

Both Greenlife Industry Australia and Hort Innovation include career promotion and development in their Strategic Plans. Currently, the Federal Government is offering an extra boost through the JobTrainer program (see Appendix for more details).

- Greenlife Industry Australia is currently working on a Nursery Careers Pathway strategy and represents the industry's interests across several committees within Skills Impact – a non-for-profit operating national to benchmark learning and skills standards.
- The Hort Innovation Nursery Fund has invested in three major projects developing a career roadmap for the industry, promoting careers and engaging leaders in the industry on this issue.
- In Partnership with the National Skills Commission, the JobTrainer Fund is subsidising over 300,000 training places (the number of places filled as at March 2021 is unknown). Some courses that relate to the greenlife industry are eligible such as Certificate III in Nursery Operations.

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Productive workforce (3 of 3)

As well as improving labour productivity, future productivity can be improved through business investment in infrastructure and technology. Notably, businesses within the relatively smaller turnover ranges that employ a relatively lower share of total full-time employees across the industry (<$2M), are investing more in infrastructure as a proportion of their revenue at between approximately 5 and 8 per cent in 2019-20.
Comparatively, investment in technology is low at around 1 per cent of revenue.

Balance between investment and labour
The commercial decision about the optimal balance of investment and labour spend depends on:
– Expected returns to investment
– Opportunity cost
– Stage of the business – expanding, steady, winding down, etc
– Other practical constraints such as access to suitable land, etc
– Future expectations of demand

Some future expectations
– There are expectations of continued strong demand for greenlife in the wholesale and retail customer segments and there has been an increase in demand from the primary industry segment.
– The Hort Innovation Nursery Fund has invested strongly in motivating demand for urban green spaces and indoor plants and large-scale Federal Government programs are targeting the revegetation sector.

Fig 17 Investment spend per turnover size in production nurseries, 2019-20
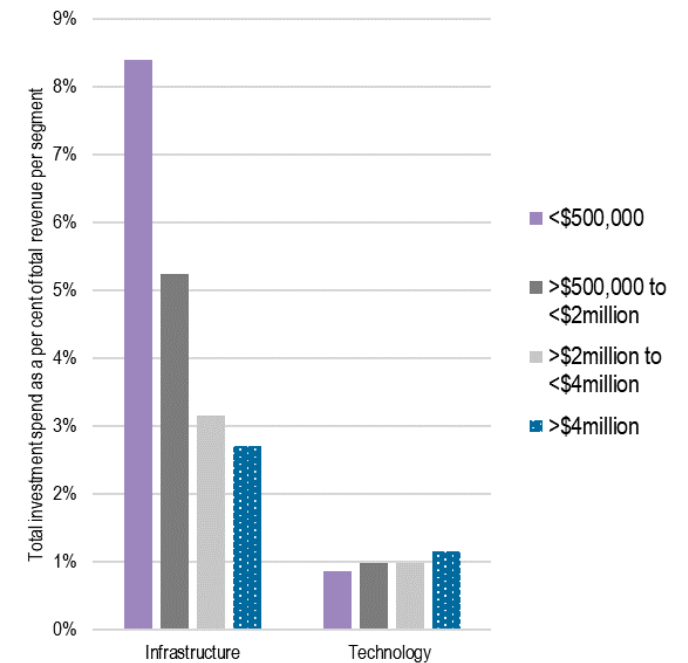
Legend:
- <$500,000
- >$500,000 to <$2million
- >$2million to <$4million
- >$4million

GIA addresses this issue through investment in career development for the industry by working with other organisations like Skills Impact, the educational sector and offering development programs. Hort invests in promotion and collaboration activities with training institutions to improve career and leadership development in the industry and updates the industry's best management practices to improve productivity, profitability and professionalism

GIA — Advocacy — Promotion — Sustainability — Careers — Increased demand — Marketing effectiveness & efficiency and better decision-making — Better career development — Protection (Biosecurity) — Improved Productivity, Profitability and Professionalism — Hort

ACIL ALLEN, Down to Earth Research, GIA in Hort Innovation funded projects: NY17008.

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Plant biosecurity (1 of 4)

High standards of plant biosecurity ➡️ **Profit protection**

Plant biosecurity in the greenlife industry is not a new concern, nor will it ever stop being one.

The industry's risk profile is changing

From the citrus canker incursion and response in 2018 heightened awareness of and measures against the brown marmorated stink bugs in shipping containers, to the recent detection of the serpentine leafminer in NSW and the fall armyworm in parts of northern Australia highlights that investment in biosecurity measures is a vital investment in the viability and prosperity of Greenlife industry itself.
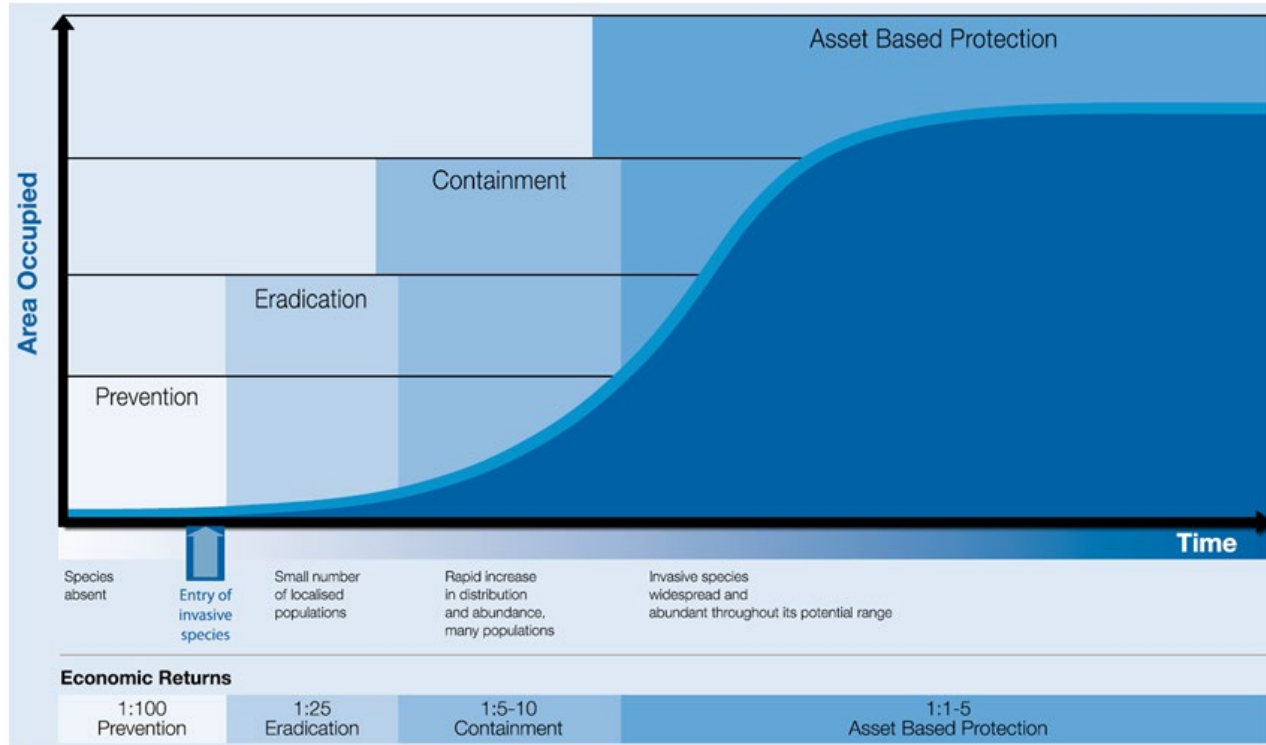
The major sources of risk are:

– The diversity of the industry with over 30,000 species/cultivars in cultivation and the natural complexity of host-pest relationships.

– Highly connected national supply chains and logistics across Australia.

– Multiple supply chains servicing ornamental, landscape, fruit, vegetable, forestry and regeneration greenlife clients.

– More travel and trade: 50 per cent increase in containers, 27 per cent increase in air cargo and 93per cent increase in passengers by 2025 (DAWE).

– State government biosecurity and market access protocols risk tolerances reducing.

– Reduced capacity and capability in plant biosecurity agencies in Australia.

– Management in production nurseries capable of identifying risk and skill levels within a predominantly permanent workforce.

– Low recognition and value placed on the importance of biosecurity across participants in the supply chain.

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Plant biosecurity (2 of 4)

Fig 18 Biosecurity continuum

Government performance

In recent years the investment and service delivery from government agencies has been arguably declining as noted in the Nairn Review 1996, The Beale Review 2008 and State Biosecurity Reviews with anecdotal commentary on issues such as:

- *There has been downward trend government investment in plant biosecurity over the last 25 years, and at the same time an increase in the portfolio in which the budget is allocated. Biosecurity includes animals, plants and product integrity (pesticides and veterinary medicine control of use), a sub-component of plant biosecurity. Broadly defined invasive species and environmental biosecurity are also managed within the same agency in most jurisdictions*
- *This means the budget is spread more thinly over a range of issues and the budget allocation is not proportional to the complexity of the issues – animal biosecurity takes up approximately two-thirds of the budget.*
- *"In August 2015, the Victorian Auditor-General reported a reduction in the Victorian Government's ability to detect, respond and prepare for an emergency response outbreak." (Source: IGAB Draft Report December 2016)*

As shown in the figure above the biosecurity continuum broadly occurs in four phases. Quickly acting in eradication stage will supress the size of the area occupied and yield the highest economic returns for effort. If the incursion spreads, the area occupied and the time it takes to manage rises steeply.
- The capacity and capability of biosecurity officers across all four stages have fallen.
- The Regulator doesn't accept self-assessed crop monitoring or site surveillance data records.
- An inspector must make an on-site assessment. Industry representatives note that growers need to give 72 hours' notice to get a plant health inspector on-site in some jurisdictions.

- *You are not guaranteed a plant health inspector – a pig inspector turned up to a grower's production nursery*
- *The last remaining plant health officer in Sydney Basin was terminated. Shortly after, the pest, serpentine leaf miner was detected in NSW*

Industry performance: adoption of best practice into business as usual

The industry currently offers best management practice and dedicated plant protection/biosecurity programs (BioSecure HACCP program) built from a long-standing plant production standard – the Australian Plant Production Standard (APPS) as below. A robust plant protection program is by default, a good plant biosecurity program. Biosecurity is more than just quarantining and market access.
Self-monitoring is common but uptake of the more formal and systemised approach is less common among growers.

The industry can be better off by:

Working with government

Representatives at Greenlife Industry Australia are currently working with government on a structured program that places a high value on plant health and the financial implications for growers. One of the objectives of the program is to ensure growers are not financially worse off for undertaking measures to have high level of plant health. Further work is underway to secure the recognition by governments of on-farm monitoring and surveillance data captured to validate pest presence/absence to allow businesses to maintain continuity or return to trading in the event of a pest incursion and response.
The industry can engage in open and transparent partnership with government, as evidenced by the co-operation in the examples above.
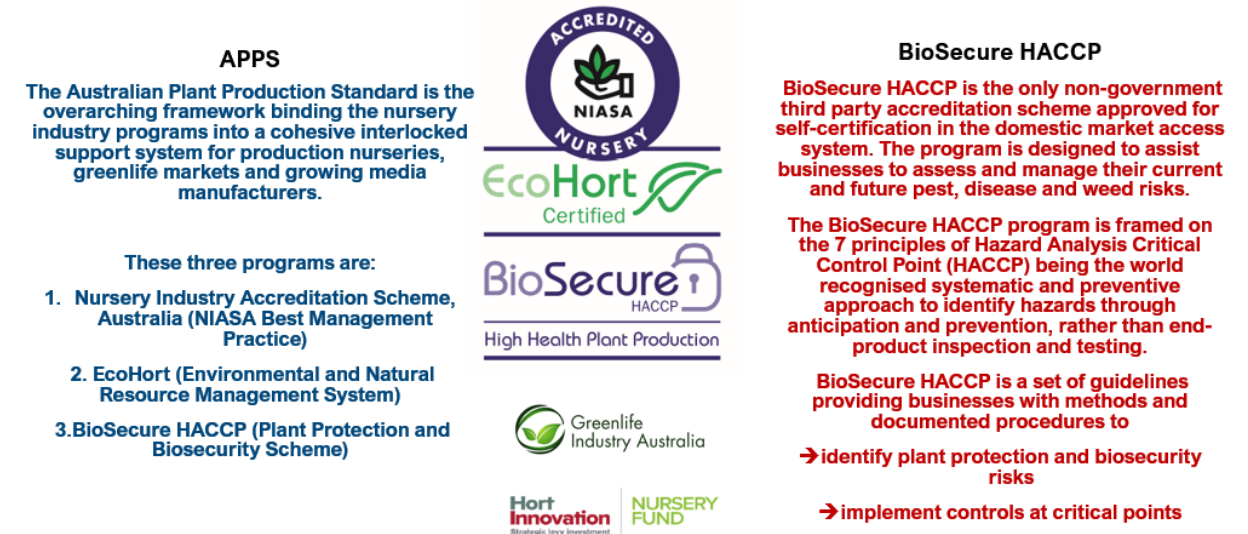
Working across the supply-chain to incentivise action based on a highly valued plant health objectives

Management by growers is essential but only one part of the supply-chain. Businesses across the supply chain can value plant health more highly with the shared responsibility and continuity of supply therefore cost sharing is managed across both upstream and downstream components of the supply-chain.

Fig 19 Australian Plant Production Standard and BioSecure HACCP

The entire data recording resources collection is currently being digitised for use on smartphones/tablets in the field, rolling out in 2021. This will enable people to interrogate the information and use in every day business decisions.

APPS

The Australian Plant Production Standard is the overarching framework binding the nursery industry programs into a cohesive interlocked support system for production nurseries, greenlife markets and growing media manufacturers.

These three programs are:

1. **Nursery Industry Accreditation Scheme, Australia (NIASA Best Management Practice)**

2. **EcoHort (Environmental and Natural Resource Management System)**

3. **BioSecure HACCP (Plant Protection and Biosecurity Scheme)**

BioSecure HACCP

BioSecure HACCP is the only non-government third party accreditation scheme approved for self-certification in the domestic market access system. The program is designed to assist businesses to assess and manage their current and future pest, disease and weed risks.

The BioSecure HACCP program is framed on the 7 principles of Hazard Analysis Critical Control Point (HACCP) being the world recognised systematic and preventive approach to identify hazards through anticipation and prevention, rather than end-product inspection and testing.

BioSecure HACCP is a set of guidelines providing businesses with methods and documented procedures to

→ identify plant protection and biosecurity risks

→ implement controls at critical points

GIA addresses this issue through offering the BioSecure HACCP accreditation and resources. Hort invests in management preparedness R&D and raising awareness of the importance of biosecurity with stakeholders and working with state governments on their systems of moving plants across states.

Plant biosecurity (4 of 4)

Table 4 Plant biosecurity risk and actions summary

Rank (most important =1)	Risk	What actions are growers and GIA taking to minimise this risk?	What actions would you like to see further upstream or downstream in the supply-chain to help minimise the risk?
1	**More travel and trade: 50% increase in containers, 27% increase in air cargo and 93% increase in passengers by 2025 (DAWE)**	• Monitoring the COVID-19 pandemic impacts on passenger travel • Lobbying Government on imports – particularly around plant material (cut flowers) and general cargo • Working closely with State Agencies	• Lobbying of government to better police the risk, increased vigilance on plant pests and diseases • Lobby government to reduce restrictions on low risk seeds & tissue culture imported • Better protocols implemented at origin to minimise the impact from imported goods
2	**Reduced capacity and capability in plant biosecurity agencies in Australia**	• Working closely with State Agencies • Building Industry capacity	• Overall more professional well skilled industry to compensate government performance • Increased budget allocation to Government biosecurity resources
3	**Highly connected national supply chains and logistics across Australia serving multiple supply chains servicing ornamental, landscape, fruit, vegetable, forestry and regeneration Greenlife clients**	• Using quality and consistent suppliers • Working with other state specific commodity groups. • On-going communication of issues to growers	• Improving industries traceability capability
4	**The diversity of the industry with over 30,000 species/cultivars in cultivation and the natural complexity of host-pest relationships**	• On-going communication of issues to growers	• More streamlined communication between national and state agencies • Lobby government for more funding and more industry consultation
5	**State government biosecurity and market access protocols risk tolerances reducing**	• Working closely with State Agencies • Engagement with Government agencies through EPPRD and Plant Health Australia	• A need for better and greater harmonization of protocols of plant movements across the country • Lobby government on economic impact of overly conservative policies
6	**Management in production nurseries capable of identifying risk and skill levels within a predominantly permanent workforce**	• Communications program across the Industry to highlight the importance of plant health and biosecurity.	• Overall more professional well skilled industry to compensate government performance

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55 % full

Australia's total water capacity as at 3 March 2021

Equivalent to 44,600 GL

Water in the supply-chain

Water use is a critical part of the greenlife industry across the entire supply-chain starting from a production input for the growers, maintaining the production as it goes to market and to the enjoyment and success for the end consumers - tighter water restrictions can lead to higher rates of plant failure.

Restrictions and Policy

- There are approximately 80 water agencies and over 20 types of water restrictions in name across Australia. A descriptive summary of the restrictions by state is shown in the figure to the right:
  - The majority of states and territories are under some kind of permanent restriction
  - Tasmania has the lowest level of restriction
  - NSW and QLD have the most variation in restrictions
  - WA's major market is Perth which has had strict 'roster' system Permanent Water Efficiency Measures for over ten years.

- Water restrictions typically operate on a 'trigger' basis. This means when the accessible storage levels of a primary dam reaches a certain point, such as 30 - 40 per cent, then more severe restrictions are 'triggered' and enforced for businesses and households.

Fig 20 Proportion of state under the different levels of water restriction descriptions (February 2021)

	NSW	ACT	QLD	VIC	SA	TAS	WA	NT
Extreme	7%	0%	0%	0%	0%	0%	0%	0%
Very High	0%	0%	8%	0%	0%	0%	0%	0%
High	3%	0%	17%	0%	0%	0%	0%	0%
Medium	3%	0%	0%	6%	0%	20%	33%	0%
Permanent restrictions	27%	100%	8%	94%	0%	0%	33%	50%
Water Wise	10%	0%	8%	0%	100%	0%	0%	0%
Low	20%	0%	8%	0%	0%	20%	0%	0%
No restrictions	30%	0%	50%	0%	0%	60%	33%	50%

### Community education – 'Which Plant Where'?

Selecting the right plants for the right urban space with an eye on the future

The Hort Innovation Nursery Fund has invested in multiple research projects over the years building the knowledge base on the suitability of plant species under current and future environmental conditions and climate scenarios (NY16005, NY17000, NY18002, NY18003, NY18009).

A current ongoing project is 'Which Plant Where?' (GC15002) in partnership with Macquarie University, Western Sydney University, NSW Office of Environment and Heritage. This 5-year project investigates which plant species will thrive the best in different locations across Australia under different environmental stressors that can be expected in the future. The team has held numerous educational workshops across Australia, presenting the findings and exploring the opportunities for greenlife to thrive anywhere in Australia.

Water and climate (2 of 3)

Fig 21 Chance of above median rainfall (top) and temperature (second) from March to May 2021

Issued: 11 February 2021
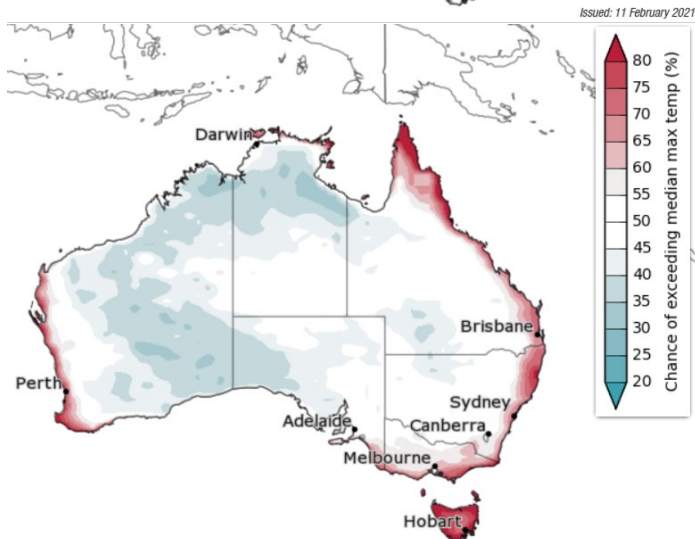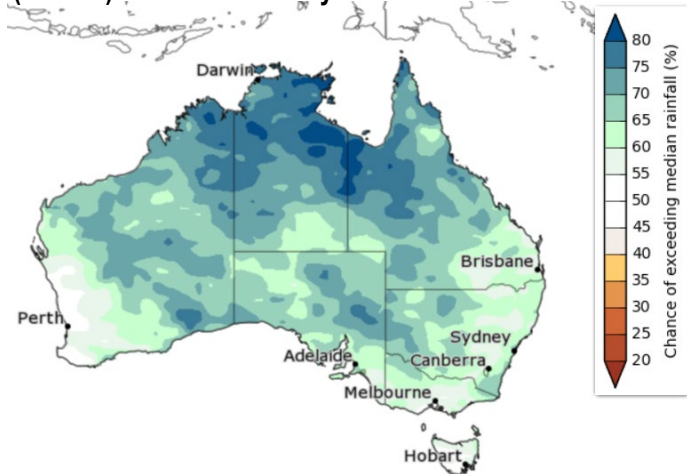
Issued: 11 February 2021

As at March, the 2020-21 summer season is largely wet and cold on the east coast, hot and dry with bushfires on the west and southern coast. The follows a hot, dry and catastrophic bushfire season last summer 2019-20, particularly for the east coast.
The Bureau of Meteorology (BoM) provides 3-monthly probability forecasts across Australia.

- BoM generally predicts hotter and rainier weather across Australia for the autumn season in 2021, with more rain in Northern Territory and Queensland in particular, and hotter temperatures in Tasmania.

Rainfall and temperature are two key environmental factors in the climate change story. The regularity and strength of extreme weather events such as cyclones, floods and other storms are another part.
In light of this, proposed actions generally fall into 3 groups; resilience, adaptation and mitigation:

Resilience
Example: Climate Future Plots revegetated with specific genetic diversity

Adaptation
Example: shifting geographic locations, changed systems and practices

Mitigation
Global and National effort on sources of energy, transport, carbon sinks

Water and climate (3 of 3)

Fig 22 Fire Danger seasons across Australia

Catastrophic bushfires during the 2019-20 summer season burned over 17 million hectares of land in Australia, over one billion animals, over 3,000 properties and 33 deaths.

Bushfire threat and preparedness

– Bushfires pose an immediate threat to production nurseries sites and access roads. Each state's fire authority has a process of developing a bushfire management plant with individuals and businesses to reduce the risk to acceptable levels.
– The Hort Innovation Nursery Fund invested in a project in 2019 assessing the potential for natural disasters and severe weather events to impact upon the Australian production nursery industry and helping to develop strategies and resources for better preparedness, speedier recovery and stronger resilience (Industry Natural Disaster Risk Mitigation and Recovery Plan NY18008).

Bushfire recovery management

Revegetation and plant selection as a result of and in preparation for bushfires has greater community and government attention since this recent natural disaster. Detailed further in under Government Supports, is the recently announced large-scale Federal funded program, Project Phoenix; a national strategy to regenerate the landscapes after a bushfire.

The Country Fire Authority provides guides and tools to help people select plants suitable for high bushfire risk areas:
– Plant Selection Key: online tool to select plants based on information about plant characteristics and flammability
– Landscaping for bushfires guide: a practical guide about landscaping to minimise the effects of direct flame contact and radiant heat on a house during a bushfire.

GIA addresses this issue through development of an industry sustainability framework. Hort updates the industry's best management practices to improve productivity, profitability and professionalism and invests in extension activities to drive adoption of these practices.

GIA	Advocacy	Promotion	Sustainability	Careers	Increased demand	Marketing effectiveness & efficiency and better decision-making	Better career development	Protection (Biosecurity)	Improved Productivity, Profitability and Professionalism	Hort

BUREAU OF METEROLOGY, HTTPS://WWW.APH.GOV.AU/ABOUT_PARLIAMENT/PARLIAMENTARY_DEPARTMENTS/PARLIAMENTARY_LIBRARY/PUBS/RP/RP1920/QUICK_GUIDES/AUSTRALIANBUSHFIRES, HTTPS://WWW.CFA.VIC.GOV.AU/PLAN-PREPARE/PLANT-SELECTION-KEY, HTTPS://CDN.CFA.VIC.GOV.AU/DOCUMENTS/20143/72271/LANDSCAPING_FOR_BUSHFIRE.PDF/1C6084E1-159E-A820-B0B3-6DC077E661C0

Technology (1 of 1)

Technology solutions in the greenlife industry are occurring at pace in 2 main areas:

– Robotics / Automation
– Biological / Genetics

The Department of Industry, Science, Energy and Resources has been funding the program, Early Stage Venture Capital Limited Partnerships. Out of the program, at least 2 horticulture start-ups have been funded:

– NextGen plants: plant design at the genetic level
– Ageriss: Digital Farmbot Assistant, crop and pasture monitoring bot, crop intelligence
– Another innovation that has been in the making for many years, funded by a similar Federal government initiative – Accelerating Commercialisation grant - automated tissue culture production to be cost-competitive with low-cost import options.

TC Lowes production aims to be cost competitive with imports and double current production volumes

Tissue Culture Innovation

Greg Lowe at Lowes TC Group, a plant micro-propagation company, is developing a system to automate tissue culture production to produce low-cost tissue culture locally.

The technology around liquid media temporary immersion system bioreactor utilises has existed for fifty years but has not been successfully automated. Greg's new, patented materials handling process enables high volumes of plant transfer out of the bioreactor.

"We realized what we could do with the automation is improve the materials handling process. Every time we touch the bioreactor, we are moving 150 or 400 plants, so we are not touching them one at a time. We touch them in mass, and we produce them in mass," Greg says. Lowes TC automated propagation involves a simple materials handling process using conveyors and pick and place tools. It does though have the potential to be fully automated with robots.
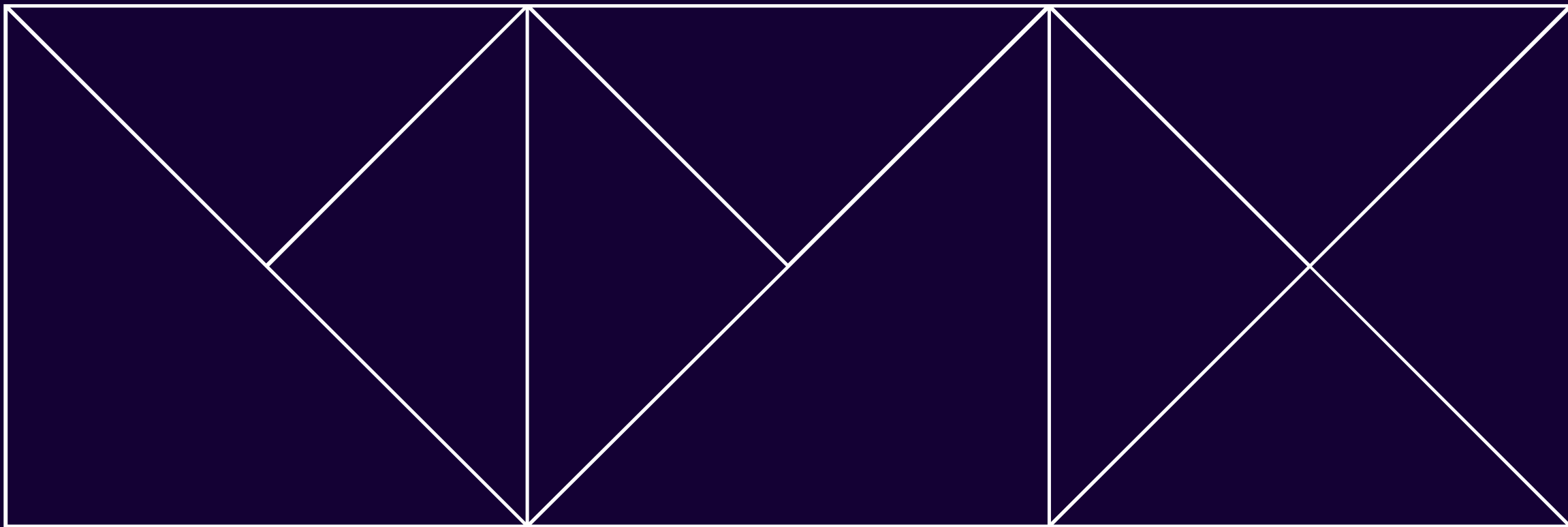
Currently in Australia, TC production costs more than 50 cents per plant, while other countries can produce at a cost of between 5 – 10 cents thanks to low wages, plus freight. This technology will drastically upscale production – much higher than the current estimate of 200 plants per hour.

Viewed February 2021: HTTPS://WWW.LOWESTC.COM.AU/

GIA addresses this issue through advocacy activities to government to support technology innovation and adoption in the industry. Hort invests in early stage and up to commercialisation-ready technology research, development, extension and adoption programs.

| GIA | Advocacy | Promotion | Sustainability | Careers | Increased demand | Marketing effectiveness & efficiency and better decision-making | Better career development | Protection (Biosecurity) | Improved Productivity, Profitability and Professionalism | Hort |

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Appendix

Government supports

	Description
JobKeeper	From 28 September 2020 to 3 January 2021, the payment rate is ***$1,200*** per fortnight for all eligible employees and from 4 January 2021 to 28 March 2021, the payment rate will be ***$1,000*** per fortnight for all eligible employees.
JobMaker	– $200 per week for each eligible employee aged 16 to 29 – $100 per week for each eligible employee aged 30 to 35. For the employer to be eligible, new employees must: – be aged 16 to 35 years – be in receipt of income support payments (such as JobSeeker Payment, Youth Allowance (Other), or Parenting Payment) for at least one of the three months before they were hired. Employers will register with us and make claims quarterly, with claims commencing in February 2021. Eligible employers will have access to a JobMaker Hiring Credit for each new job they create over the 12 months from 7 October 2020.
JobTrainer and Apprenticeship wage subsidies	*JobTrainer Fund*: up to 320,000 new training places will be delivered through the fund as a mix of national accredited qualifications and short courses, including part qualifications and skillsets The JobTrainer Fund will deliver training courses in areas of genuine skills needs, based on the agreement between participating states and territories and the National Skills Commission. *Supporting Apprentices and Trainees wage subsidy* will ensure apprentices and trainees already in work remain engaged and are in a position to support the economic recovery. From July 2020 to 31 March 2021, the subsidy will be available to support small and medium businesses with **fewer than 200 employees**, including those using a Group Training Organisation, who retain an Australian Apprentice engaged as at 1 July 2020. Eligible employers can apply for a **wage subsidy of 50 per cent** of the apprentice's or trainee's wage paid during the 9 months from 1 July 2020 to 31 March 2021, up to a **cap of $7,000 per quarter**. *Boosting Apprenticeship Commencements Wage Subsidy* to boost the number of new apprenticeships and traineeships. This will support up to 100,000 new apprentices and trainees by paying a **50 per cent wage subsidy** for commencing apprentices and trainees at businesses of all sizes, in all industries, and in all locations. Businesses will receive the 50 per cent wage subsidy, up to **a cap of $7,000 per quarter**, for commencing apprentices and trainees, including those employed by Group Training Organisations, until 30 September 2021
Temporary relief for financially distressed businesses	A new, quicker and lower-cost process will be introduced to allow small businesses to restructure their debts, while they stay in control of their company. In 'normal' times they would be considered insolvent but the thresholds have relaxed. For small businesses that unfortunately cannot survive, there will be a new, quicker and lower-cost simplified liquidation process. Both new processes will commence on 1 January 2021. They will be available to incorporated businesses with liabilities of less than $1 million.
Temporary full expensing and Temporary loss carry-back	The Government is introducing temporary full expensing of eligible depreciable assets for businesses **with turnover up to $5 billion** from 7:30pm (AEDT) on 6 October 2020 until 30 June 2022. Companies with turnover up to $5 billion will also be able to temporarily, up to June 2022, **offset tax losses against previous profits and tax paid in or after 2018-19.** Temporary full expensing creates a strong incentive for businesses to bring forward investment to access the tax benefit before it expires. Temporary loss carry-back further assists companies that would experience a loss to take advantage of the temporary full expensing measure.
HomeBuilder	HomeBuilder provides eligible owner-occupiers, including first home buyers, with a tax free **grant of $25,000** to build a new home or to rebuild. Expanded First Home Loan Deposit Scheme: An **additional 10,000 places** will be provided in an extension to our First Home Loan Deposit Scheme in 2020-21 to support first home buyers to build a new home or purchase a newly built home. The Government is also implementing reforms to reduce the time taken for consumers to apply for credit and simplify the application process

Methodology

How this report was developed

ACIL Allen firstly undertook a desktop review of available information from a variety of sources in the public domain and resources shared through industry channels.

Survey information and data from the Hort Innovation funded projects NY16004 (2015-16) and NY17008 (2017-18 to 2019-20) '*Nursery and Gardens Industry Statistics*' projects were used in generating outputs for this report.

Greenlife Industry Australia and Down To Earth Research were active partners in these projects.

The PESTLE (Political, Economic, Social, Technological, Legislative and Environmental) technique was used as diagnostic and framing tool to identify issues and express the implications of the issues across these themes.

Special thanks to the generous volunteers who gave their time and knowledge to develop and review the report in collaboration with ACIL Allen (listed alphabetically):

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