GRIFFITH UNIVERSITY

Biosecurity Environmental Scan

Final report

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Executive Summary

Background

In 2024 the Queensland Biosecurity Strategy 2024–29 was launched to provide a medium-term framework for enhancing Queensland's biosecurity system. Understanding current, emerging, and potential biosecurity risks by drawing on robust evidence is a core element of biosecurity preparedness. As part of that Strategy, the Department of Primary Industries, Queensland, commissioned an environmental scan, or a future risk analysis. Rather than to calculate the magnitude of all risks and potential harms to the state's biosecurity, this report sought to identify:

- What are the key sociocultural factors that drive biosecurity risks in Queensland?
- What sustainable, cost-effective intelligence efforts can be deployed to ensure actions related to sociocultural drivers of biosecurity risks in Queensland are appropriately informed?

This report draws together data from qualitative interviews with biosecurity experts and reliable data indicators of current sociocultural risk drivers to answer these questions.

Key findings

Following inductive and deductive analysis, five thematic areas of sociocultural drivers were established: 1) population movement and growth; 2) community attitudes and behaviours; 3) economic and financial factors; 4) social networks and trusts; and 5) other factors. Based on Based on these findings, 12 recommendations are made by the research team. It should be noted that these have not been tested. It should be further noted that the recommendations are the view of the researchers and not representative of DPI's views or future work program, particularly where they have funding implications.

The researchers have not assigned responsibility for implementation of any recommendations and acknowledge that some may be best implemented by others outside of DPI/state government.

Population movement and growth

Population growth, both globally and within Australia, presents a complex set of challenges for biosecurity management. Overseas population increases drive trade in high-risk industries such as meat farming, elevating the likelihood of biosecurity threats entering through expanded import pathways. At the same time, growing and diversifying migrant populations within Australia contribute to demand for a broader range of non-traditional foods sourced internationally, further intensifying import volumes and associated risks. Increased international tourism amplifies the chances of pests and diseases being introduced through human movement. Domestically, population growth leads to a more diverse and expansive range of stakeholders—across communities, industries, and regions—who must be engaged in effective biosecurity risk governance. Together, these trends underscore the need for adaptive, inclusive, and globally informed biosecurity strategies. From this, we make a number of recommendations:

1) Expand Multilingual Access to Biosecurity Information

Ensure that critical biosecurity information, including guidelines, alerts, and educational materials, is translated into a wide array of languages reflective of Australia's diverse communities and key international stakeholders. Dissemination should occur across digital, print, and in-person channels to maximise accessibility and public engagement.

2) Foster Strategic Engagements with the High-risk Creator Industries

Explore and formalise engagement activities with creator industries (e.g., supply chain, tourism and agritourism businesses) to increase biosecurity training and awareness.

3) Utilise Demographic and Planning Data to Model Future Risk Areas

Develop spatial risk models that integrate Australian Bureau of Statistics (ABS) population forecasts and land release data to identify potential future biosecurity hotspots. These models should inform targeted surveillance, resource allocation, and urban planning decisions at national, state, and local levels.

4) Develop and Customise Urban Biosecurity Management Plans

Input into the design of scalable, generic urban biosecurity management frameworks that can be adapted to the specific environmental, demographic, and infrastructural contexts of rapidly growing Local Government Areas (LGAs). These plans should include

measures for early detection, stakeholder coordination, and emergency response protocols.

Community attitudes and behaviours

The rise of peri-urban livestock ownership introduces new pathways for the spread of biosecurity risks, as animals kept closer to densely populated areas can facilitate disease transmission. Additionally, consumer preferences that favour free-range egg products, while reflecting ethical and quality concerns, inadvertently increase the vulnerability to avian disease outbreaks due to the greater exposure of free-range flocks to wild birds and environmental factors. Together, these dynamics highlight the need for targeted biosecurity measures that address evolving agricultural practices and consumer trends to mitigate emerging risks. Considering this, we make the following recommendations:

1) **Partner with Relevant Groups to Monitor Consumer Trends and Promote Biosecurity Messaging**

   Collaborate with relevant agencies and organisations, such as Safe Foods Queensland and producers, to better understand and monitor consumer preferences for free-range products and, where appropriate, engage with industry stakeholders to share biosecurity information and messaging.

2) **Engage Conservation and Citizen Science Networks in Surveillance**

   Actively engage with community conservation groups and citizen scientists to raise awareness of biosecurity threats[1].

3) **Contribute to Improved Biosecurity Awareness Amongst Peri-Urban Landholders**

   Develop (or commission the development of) a tailored awareness campaign for peri-urban landholders, focusing on their specific biosecurity risks and legal obligations.

[1] One exemplar initiative is the Port of Brisbane's use of signage at a birdwatching site to enlist birders in monitoring invasive honeybee activity via observations of rainbow bee-eaters. This demonstrates the power of targeted outreach to communities with high ecological literacy and motivation.

Messaging should address both practical advice and the broader importance of individual contributions to regional and national biosecurity outcomes.

Economic and industrial factors

Economic and industrial growth fundamentally reshapes the landscape of biosecurity risk by significantly increasing the movement of goods and people across regions and borders. This expansion, driven by growing trade volumes and intensified transportation through supply chains, ports, and logistic hubs, creates multiple pathways for pests, diseases, and invasive species to enter and spread within vulnerable ecosystems. Alongside this, industrial growth frequently necessitates extensive land clearing, new construction projects, and substantial alterations to natural habitats. Such activities disrupt established ecosystems, reduce natural barriers that previously limited the movement of harmful organisms, and expose environments to new biosecurity threats that were once contained or less prevalent.

Moreover, as economies develop, the demand for resource-intensive activities such as intensive farming, mining, and extraction increases sharply. These industries often concentrate animals, plants, and materials in ways that can stress existing biosecurity systems, weakening their capacity to detect and respond to emerging threats effectively. Intensive farming practices can facilitate rapid disease transmission among livestock, while mining and resource extraction can alter landscapes, creating conditions favourable for invasive species to establish and spread. The cumulative effect of these pressures amplifies the vulnerability of ecosystems and agricultural industries to biosecurity risks, underscoring the urgent need for integrated, forward-looking biosecurity strategies. These strategies must not only keep pace with economic development but also proactively address the complex, interconnected challenges posed by industrial expansion, habitat disturbance, and increasing global connectivity. Considering this, we make the following recommendations:

1) **Work with and encourage industry peak bodies representing high risk sectors to develop biosecurity guidelines**

   Partner with industry peak bodies in high-risk sectors to encourage and co-develop practical biosecurity guidelines. Leveraging their established networks and credibility ensures clear, sector-specific standards, encourages widespread adoption, and fosters shared responsibility for stronger biosecurity outcomes.

2) **Standardise Biosecurity Practices Across Sectors Through NGO Collaboration**
   Work with and encourage non-government organisations (NGOs), industry associations, and community-based organisations to develop cross-sector biosecurity guidelines. This stakeholder-led collaborative approach would assist to address the current fragmentation of biosecurity regulations and practices, fostering consistency, clarity, and better compliance across both commercial and non-commercial landholders and producers.

Social networks and trust

Perceptions of illegitimacy and the low likelihood of detection in biosecurity regulations significantly undermine compliance with risk management practices, weakening overall biosecurity effectiveness. This challenge is compounded by inconsistent and complex legislative and regulatory frameworks that create confusion and barriers for stakeholders attempting to navigate biosecurity requirements. Additionally, reliance on outdated scientific knowledge and a limited understanding of emerging technology-driven risk prediction tools contribute to critical knowledge gaps and inaccuracies in risk assessment and management. Together, these factors hinder the ability of biosecurity systems to respond proactively and efficiently to threats, highlighting the urgent need for streamlined regulations, enhanced legitimacy, and investment in cutting-edge science and technology to strengthen biosecurity governance. Considering this, we make the following recommendation:

1) **Foster Community–Government Partnerships to Co-Design Biosecurity Solutions**
   Establish structured mechanisms for meaningful collaboration between government agencies and local communities in the co-design of biosecurity strategies. These partnerships should engage a diverse range of stakeholders—including producers, Traditional Owners, land care groups, and community leaders—to ensure that policies are locally informed, culturally appropriate, and context-specific. Co-designed approaches can improve community buy-in, enhance policy legitimacy, and increase the effectiveness of on-the-ground implementation.

Future monitoring and novel methodologies

To effectively address the evolving and complex nature of biosecurity threats, it is important that Biosecurity Queensland considers investing in new and innovative methodologies for

ongoing risk monitoring and horizon scanning. Traditional surveillance approaches, while essential, may be insufficient to detect emerging risks hidden within large volumes of diverse and rapidly changing data. By adopting structured expert elicitation techniques alongside advanced digital tools such as artificial intelligence, machine learning, natural language processing, and social media analytics, the department can enhance its capacity to identify weak signals, predict future threats, and respond proactively. Moreover, integrating participatory methods and community-generated data broadens spatial and temporal coverage, improves legitimacy, and fosters collaborative stewardship. Together, these novel approaches can provide for a more agile, comprehensive, and anticipatory biosecurity risk management framework that is essential for safeguarding Queensland's ecosystems, industries, and communities.

1) **Establish a Continuous Monitoring and Horizon Scanning System to Support Proactive Risk Analysis**

   DPI should consider the development and implementation of an integrated monitoring system that enables continuous risk assessment and forward-looking horizon scanning for emerging biosecurity threats. This system should draw on a range of data sources—both public and confidential (where possible)—to identify potential risks (or the escalation of known risks) before they materialise. A core component of the methodology should involve structured engagement with departmental subject matter experts (SMEs) across both operational and policy domains. By systematically eliciting insights from internal experts—through regular interviews, workshops, or expert panels—DPI can incorporate frontline observations, experiential knowledge, and discipline-specific foresight into its analytical framework. The Delphi-process is a widely used methodology for operationalising department-wide horizon-scanning and might be considered by DPI as an approach.

2) **Leverage Novel Digital Surveillance Techniques to Enhance Early Warning and Horizon Scanning**

   Invest in and integrate emerging digital methodologies—including artificial intelligence (AI), machine learning, natural language processing (NLP), and social media analytics—to strengthen early detection and horizon scanning capabilities for biosecurity threats. AI and NLP tools can process vast volumes of structured and unstructured data, such as trade flows, interception records, scientific literature, global news, and online forums, identifying weak signals and predictive patterns not easily

captured through traditional surveillance. In parallel, social media monitoring and participatory approaches—such as citizen science platforms and community risk reporting—can provide near real-time insights into emerging risks, public sentiment, and underreported incidents. These technologies, when combined and triangulated with expert validation, will significantly expand the department's situational awareness and responsiveness to dynamic and emerging biosecurity challenges.

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Chapter 1 Methodology

The focus of this research is to identify key socio-cultural drivers that drive biosecurity risks in Queensland. Two research questions underpinned the project:

- What are the key sociocultural factors that drive biosecurity risks in Queensland?

- What sustainable, cost-effective intelligence efforts can be deployed to ensure actions related to sociocultural drivers of biosecurity risks in Queensland are appropriately informed?

1.1 Methodology

In phase 1, reflecting the breadth of likely drivers and risks, a semi-structured interview strategy using open-ended prompts with biosecurity experts was used to collect data efficiently and provide adequate space to explore diverse perspectives.

1.2 Participants

The target participant pool for this research were professionals with specific expertise in biosecurity risk assessment, management, and research in Queensland. Experts were identified and recruited using two strategies. First, a criterion sampling strategy will be used whereby QDPI indicated key internal roles that hold expertise on biosecurity risk drivers. The research team (via QDPI) then reached out to these key experts with an email invitation to participate in the research. The email included the research project information sheet and consent from, which described the purpose, nature, risks and benefits of the research, and highlighted that participation was voluntary and participants' identities would not be reported.

Second, a snowball sampling strategy was used whereby interview participants were asked to forward an email invitation to others that have relevant expertise.

People who wished to participate in an interview were invited to contact a member of the research team by email (or telephone) to arrange a convenient time and preferred interview

mode (in-person or online). On contact, a written consent form was again provided to the potential participant, this was completed prior to the commencement of the interview. Consent was also established verbally at the start of the interview. With consent, interviews were recorded to assist with the generation and quality checking of the interview transcript. A copy of the interview transcript was made available for member-checking on request.

Participants were able to withdraw from the research by cancelling a scheduled interview, requesting to stop an interview, or requesting to withdraw interview data for up to two weeks after the interview. Themes from the interview data were identified following a comprehensive review of the transcripts by the research team.

Griffith University Ethics approval was obtained prior to commencing recruitment (GU 2025/129).

1.3. Document scan and analysis

In an effort to discover planning, development and infrastructure activities with potential biosecurity implications, our methodology involved a second desktop research phase - the systematic identification of all 77 Local Government Areas (LGAs) in Queensland, followed by a comprehensive review of each Council's official website.

For each LGA, relevant master plans, corporate, development and biosecurity plans were located and extracted. Each document was then carefully reviewed to identify activities or initiatives that could potentially have implications for biosecurity risk using the socio-cultural domains already identified through the Subject Matter Expert interviews. This approach ensured a thorough and consistent examination across all LGAs, enabling the compilation of a comprehensive list of biosecurity-relevant activities embedded within local government planning frameworks. A complementary process was implemented for state-level infrastructure plans, as well as regional plans (where available).

We note that the availability of information and the quality (or detail) in each document was highly variable – tending to be more details and useful in larger and more populous Local Government Areas. Although the analysis of each document was conducted through the lens of

our already-identified socio-cultural drivers, it is possible that other activities and initiatives are named but were not extracted for this report.

Chapter 2 Socio-cultural drivers

2.1 Introduction

For the purpose of this project, *socio-cultural drivers* are broadly defined as those factors that operate at the individual, community or wider population-level to influence behaviours and decisions that affect biosecurity practices. These socio-cultural drivers need not be mutually exclusive. For example, population growth and change can pose risks at both the macro (wider implications of population growth) and micro levels (localised population growth in high-risk areas, and growth of specific sub-categories of the population such as migrant communities).

Broadly speaking, the socio-cultural drivers of bio-security risk can be categorised as follows:

1. **Population Movement and Growth**, including temporary or itinerant populations. Queensland's population has expanded in recent years due to 'sea' and 'tree' change drivers resulting from the COVID-19 pandemic and economic growth opportunities created by infrastructure projects. The region also experiences seasonal influxes of tourists and workers such as fruit pickers. The dynamic nature of the population can both create biosecurity risks and inhibit risk management strategies.

2. **Community Attitudes and Behaviours**: community beliefs and established practices can shape how biosecurity measures are perceived and implemented. For instance, traditional farming practices may conflict with modern biosecurity protocols, affecting adoption rates among farmers. Further, different cultures may have varying perceptions of risk, which can influence how biosecurity risks are addressed. Community beliefs about animal welfare can drive behaviours which conflict with biosecurity risk management. Understanding these cultural attitudes can be essential for developing effective risk communication strategies

3. **Economic and Industrial Factors**: Economic status and access to resources can dictate the extent to which individuals or communities can invest in biosecurity measures. Resource-poor farmers may prioritize immediate needs over long-term biosecurity investments, increasing their vulnerability to biosecurity risks**.**

4. **Social Networks and Trust**: the influence of social networks in communities can affect how biosecurity messages are disseminated and understood. Trust in local authorities and institutions can enhance or hinder the adoption of biosecurity measures**.** Levels of trust may vary across communities, regions and industries.

2.2 Population Movement and Growth

2.2.1 Subject Matter Expert Analysis

Population growth is a global risk factor. However, the risks are likely to manifest most strongly depending on the source of growth, its location, and its rate of change. Equally, population growth underpins the rate and location of urban development and the likely vectors of risk. Four key drivers were identified from interviews with SME's (and in subsequent discussions):

1) **Growing overseas population increasing trade**

Population growth in nearby countries can create a stronger demand for international agricultural trade. The geographic proximity of these countries can pose significant risks for Queensland biosecurity. One example offered by our SME was the growing Indonesian population and its consequent growing demand for imported meat:

> The growth of the Indonesian population is a big driver [of biosecurity risk] [...] [Y]ou're talking 200 plus million people in a very small country, [and their] protein needs are high. [...] Their attempts to build their own livestock industry have been fantastic but [they are] still not able to feed 200 million people. So, they have to continue to import meat from other parts of Asia that...already have these diseases that we've been talking about. So that's the big, the big driver there in relation to need is that just the human need and the lack of biosecurity measures in place in Indonesia and Papua New Guinea. (I7)

2) **Growing domestic population.**

As immigration makes Queensland more diverse, residents have a wider range of cultural practices and foods. As this diversity increases, so too does the reliance on Southeast Asian trade routes:

> As we increase in population and a change in culture and reliance on particular foods and/or other things may actually increase risk. (I5)

3) **Changing land uses to accommodate population growth/changes in population spread.**

Population growth within Queensland has led to population booms in regional local government areas (e.g. Ipswich; Logan). As these areas becoming more urbanised, this poses new problems for managing risks:

> I think the risk of...trying to manage biosecurity responses in urban areas brings challenge. [...] If you can't get people to support your response, it becomes really challenging. [...] [I]n a rural area, where people are maybe more closely tied to the industry you're trying to protect or preserve, or there's just less people to deal with, or the land parcels are larger, that's kind of easier...to manage. [But] if you're dealing with something in a populated area, you've got all these individual landowners that you've got to negotiate with to get your controls implemented. [...] I think high population areas [are] sort of a double-fold risk[;]...the movement of people is inherently associated with the movement of biosecurity risk [...] but then [these areas] also give you that added challenge of trying to manage those risks. [...] (I1)

4) **Temporary visitors/tourism.**

Tourism poses significant biosecurity risks because it increases the movement of people, animals, plants, and goods across borders and ecosystems. Tourism is an important part of the Queensland economy and risk profiles will change with volume and country of origin, two main drivers:

a) Increased international travel and tourism amplify biosecurity risks, particularly in globally connected regions positioning for growth:

> More travel, more people coming in and out, obviously that's tourists and I think we will continue to position ourselves to be a tourist destination [...] but once again that just brings risk. (I5)

b) Rising cross-border human movement intensifies biosecurity vulnerabilities, necessitating stronger prevention and awareness measures:

> Overwhelmingly the risk is tied to the movement of people. I do think that [...] the response is around that near border incursion, it's around the movement of people, people doing the wrong thing. (I1)

> [A] lot of the incursions in the plant world, well for Queensland, will come through the Torres Strait - so that's a risk pathway, but through your urban centres as well because that's where you've got your trade and travel nodes and hubs. (I4)

2.2.2 Available data

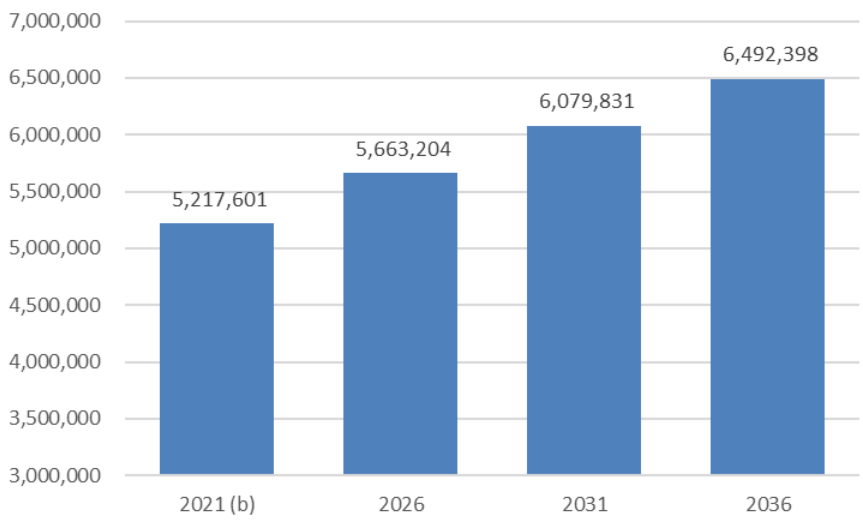
There are a number of publicly available data sources available online to provide predictions, such as the Australian Bureau of Statistics for population projections, Queensland Government Statisticians Office for residential land development, and local councils for plans and land development. Each are discussed below:

Australian Bureau of Statistics - Population projections

Beyond aggregate projections (those already produced for Queensland by the Australian Bureau of Statistics, see Figure 1), anticipating local-level population change is a challenging task. There are several sources of data which individually, and combined, may be used as data points in a risk-based analysis. Alternative permutations of these data will likely inform different needs and it will be necessary to identify, set, and test the various counting rules that may be used as the proxy indicators of population growth most relevant in biosecurity risk assessment.

Generally speaking, biosecurity risk (and the cost of mitigating biosecurity risk) increases as a function of population growth. In Queensland, the state-wide population in 2026 is projected to be 5,663,204 – 8.5% growth in the five years since 2021. By 2031 and 2036, the population is forecast to grow a further 7.4% (to 6,079,831) and 6.7% (6,492,398), respectively. By 2036, the Queensland population is projected to be (approximately) 14-15% higher than it is today.

Figure 1: Queensland population projection (2021-2036)



At finer geographical scales, projected population changes provide more useful insights for biosecurity planning and risk assessment. In Australia, the most detailed level at which population projections are available is the Australian Bureau of Statistics' Statistical Area Level

2 (SA2). These boundaries are defined based on regional characteristics and population size. SA2s typically contain between 3,000 and 25,000 people, with an average population of around 10,000. In remote and regional areas, SA2s usually have smaller populations than those in urban centres.

SA2s are designed to reflect meaningful areas by including entire gazetted suburbs or rural localities where possible. This improves usability for people unfamiliar with statistical geography and supports integration with other units in the Australian Statistical Geography Standard (ASGS). In regional towns or city fringe areas, SA2s are structured to encompass the urban centre, adjacent semi-urban development, and projected growth areas over the next 10–20 years.

In remote regions, small, gazetted localities are often combined into a single SA2 to represent a broader functional or socially cohesive area. In major cities, SA2s commonly align with individual suburbs. However, because suburb size varies, they are sometimes merged or divided based on five criteria:

- shared road networks
- shared community facilities
- Local Government Area boundaries
- historical or social connections
- socio-economic similarity

There are 537 SA2s in Queensland. Table 1 names the Queensland SA2s with the highest projected population growth between 2021 and 2026. In all cases, the projected population growth exceeds the state average by a factor of three or more – the highest being a growth of +188% growth in Moreton Bay's Upper Caboolture.

Table 1: Short-term SA2-level population change (% increase 2021-2026)

Area	Locality (SA2)	% Change (2021-2026)
Moreton Bay - North	Upper Caboolture	188.7
Brisbane - North	Brisbane Airport	159.5
Brisbane - North	Eagle Farm - Pinkenba	143.6
Sunshine Coast	Caloundra West - Baringa	70.5
Logan - Beaudesert	Flagstone (West) - New Beith	70.2
Logan - Beaudesert	Chambers Flat - Logan Reserve	69.3
Ipswich	Ripley	62.1
Moreton Bay - North	Morayfield	58.3

Sunshine Coast	Landsborough	56.3
Moreton Bay - North	Burpengary - East	52.8
Gold Coast	Coomera	52.4
Moreton Bay - North	Wamuran	50.9
Logan - Beaudesert	Yarrabilba	49.7
Logan - Beaudesert	Greenbank - North Maclean	46.6
Gold Coast	Pimpama - North	43.5
Moreton Bay - South	Mango Hill	40.3
Ipswich	Springfield Lakes	35.7
Logan - Beaudesert	Wolffdene - Bahrs Scrub	34.4
Brisbane Inner City	West End	34.2
Brisbane Inner City	Brisbane City	32.7

In terms of total overall population growth in the 15 years between 2021 and 2036, Table 2 provides an alternative viewpoint. While the data in Table 1 indicates the short-term growth projection and the likely need for more immediate consideration, Table 2 indicates trends over the longer term. For example:

- Moreton Bay's Upper Caboolture region has the largest short and long-term projected growth in population.

- Ipswich's Ripley, a new Greenfields development, has considerable short-term growth which is sustained to produce the second-highest population growth rate in Queensland between 2021 and 2036.

- New areas appear with long-term growth projections that are not flagged as growth areas in the short-term. This is the case for Ipswich's Rosewood and Cairns' Gordonvale – Trinity.

Table 2: Long term population growth (2021-2036)

Area	Locality (SA2)	% Change (2021-2036)
Moreton Bay - North	Upper Caboolture	583.2
Ipswich	Ripley	386.6
Brisbane - North	Eagle Farm - Pinkenba	338.4
Brisbane - North	Brisbane Airport	284.0
Moreton Bay - North	Morayfield	252.1
Logan - Beaudesert	Flagstone (West) - New Beith	251.3
Moreton Bay - North	Wamuran	240.9
Logan - Beaudesert	Chambers Flat - Logan Reserve	238.8
Sunshine Coast	Caloundra West - Baringa	233.1

Ipswich	Rosewood	182.3
Sunshine Coast	Landsborough	172.2
Logan - Beaudesert	Wolffdene - Bahrs Scrub	148.0
Gold Coast	Coomera	136.0
Townsville	Townsville - South	131.7
Moreton Bay - North	Burpengary - East	129.1
Brisbane Inner City	Brisbane City	114.4
Logan - Beaudesert	Greenbank - North Maclean	114.0
Ipswich	Springfield Lakes	112.1
Logan - Beaudesert	Yarrabilba	110.4
Cairns	Gordonvale - Trinity	96.6

Population growth in already highly populated areas may signal an important change in residential structure and density, but not (necessarily) a significant risk from a bio-security perspective. Therefore, it is possible to reframe Tables 1 and 2 (see Table 3, to consider only those SA2s with small (initial) populations in 2021 (sub-3000 residents). It is notable that:

- Brisbane's Inner North (Eagle Farm and the Airport) is expected to see considerable increases in population, although these areas are already within the urban metropolitan Brisbane region and growth likely signals a change in urban development planning.

- Above average long-term growth (+55.8%) is forecast for Mackay Harbour in Mackay.

- Average or near-average growth is expected in Cairns' Yarrabah (+16% by 2036) and Townsville's Palm Island (+12.7% by 2036).

- Though not exceeding the forecasted average across the state, there are several other areas with notable increases for their status as regional locations and townships. These are the Northern Peninsula (+9.4% by 2036), Arakun (+4.7%) and Kowanyama – Pormpuraaw (+3.6%).

Table 3: Small region/location population change

Area	**Locality (SA2)**	**Population (2021)**	**% Change (2021-2026)**	**% Change (2021-2036)**
Brisbane - North	Brisbane Airport	131	159.5	284.0
Moreton Bay - North	Moreton Island	314	0.0	-0.6
Mackay - Isaac - Whitsunday	Mackay Harbour	620	7.3	55.8
Queensland - Outback	Croydon - Etheridge	993	-2.8	-8.9
Queensland - Outback	Aurukun	1131	4.7	4.7

Queensland - Outback	Kowanyama - Pormpuraaw	1740	1.1	3.6
Central Queensland	Bouldercombe	1965	-2.0	-5.1
Brisbane - North	Eagle Farm - Pinkenba	2104	143.6	338.4
Townsville	Palm Island	2180	1.0	12.7
Queensland - Outback	Far Central West	2184	-2.2	-12.4
Brisbane - East	North Stradbroke Island	2191	1.6	2.2
Townsville	Magnetic Island	2486	-0.5	1.4
Cairns	Yarrabah	2598	4.7	16.2
Queensland - Outback	Far South West	2752	-3.1	-12.0
Queensland - Outback	Northern Peninsula	2886	3.5	9.4
Central Queensland	Mount Morgan	2960	0.6	1.6

Notwithstanding their potential utility for identifying *locations* of long-term interest to Biosecurity Queensland, population projections for regional locations will have limited utility in identifying emerging biosecurity risks due to several key factors. First, these projections often lack the spatial resolution necessary to capture micro-level population shifts that can influence local environmental interactions and risk pathways. Second, they typically rely on historical trends and assumptions that may not account for sudden or unexpected changes, such as climate-related migration or the development of new industries that alter land use. Third, regional projections may not reflect transient populations—such as seasonal workers or tourists—who can play a significant role in the introduction or spread of pests and diseases. Lastly, biosecurity risks are influenced not only by population size, but by behaviours, practices, and economic activities, which are often not captured in standard demographic projections.

Queensland Government Statisticians Office - Residential land development

Residential land release data from a given year may be a valuable data point for identifying potential locations and vectors of biosecurity risk. Such data will highlight areas undergoing new or intensified population growth/settlement - decisions that are taken by local councils and unlikely to feature into population forecasts in the short term. These developments often involve land clearing, construction, and increased movement of people, goods, and materials—all of which can disrupt ecosystems and create pathways for the introduction or spread of pests, weeds, and diseases. Additionally, new residential areas often border peri-urban or agricultural zones, increasing the likelihood of human-wildlife interactions and the movement of organisms

across previously uninhabited areas. As such, land release data offers a potential proactive lens for identifying emerging biosecurity hotspots linked to urban expansion.

Currently, the Queensland Government Statisticians Office (QGSO) provides a quarterly report quantifying metrics associated with land release (Broadhectare) and residential lot approvals. The latter is defined as the "number of residential lots approved for development based on permit approvals issued by council for *reconfiguring a lot* (RaL)" [emphasis in the original]. The smallest spatial resolution of these data is the Local Government Area, though it may be possible to request more spatially refined data if required for planning purposes.

The biosecurity interest in these data is its potential use as an indicator of unexpected residential population growth, as signalled by a higher-than-average rate of residential lot approval. We can achieve this for each LGA using a deviation of means calculation. This calculation subtracts the quarterly average residential lot approval rate in each LGA (calculated on all quarters between January 2005 and December 2024) from the actual quarterly lot approval number. The resulting data is a quarterly estimate that illustrates those time periods in which there was a higher-than-average number of approvals for the release of residential lots. Dividing this estimate by the average yields and approval ratio which can be compared between LGA's.

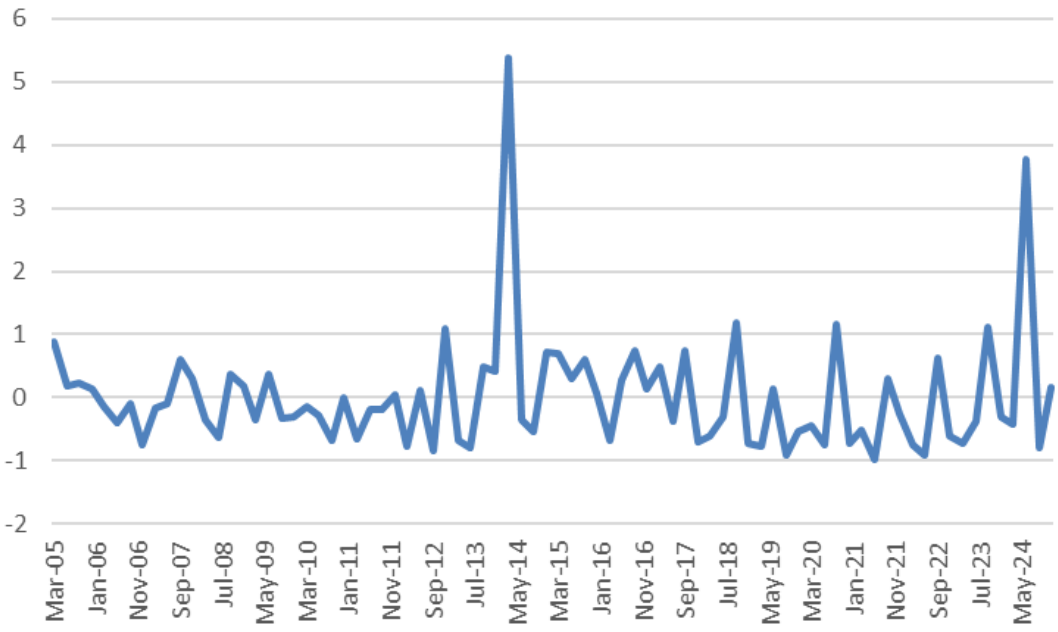
Consider the LGA of Ipswich as presented in Figure 2. The average number of residential lots released per quarter was 639 between January 2025 and December 2024. For most of the quarters within this time period, the lot release rate was marginally higher or lower than the average, but not excessively so. That said, there are two quarters where the residential lot approval rate spiked well above the LGA average. These were the March quarter of 2014 and, more recently, the June Quarter of 2024. Ipswich is an obvious case where the residential lot approval rate foretells of a likely increase in residential building and population growth.

Applying the same calculation yields nine LGAs where in 2024, the number of residential lots released in at least one (of four) quarter exceeded the LGA-average by more than 100%. These were:

- Douglas (S) - lot release in the June 2024 quarter was 5.4 times the average.
- Ipswich (C) - lot release in the June 2024 quarter was 3.8 times the average.
- Livingstone (S)- lot release in the December 2024 quarter was 3.6 times the average.
- Whitsunday (R) - lot release in the March 2024 quarter was 2.2 times the average.

- Scenic Rim (R) - lot release in the September 2024 quarter was 1.6 times the average.
- Sunshine Coast (R) - lot release in the September 2024 quarter was 1.5 times the average.
- Southern Downs (R) - lot release in the September 2024 quarter was 1.3 times the average.
- Rockhampton (R) - lot release in the September 2024 quarter was 1.3 times the average.
- Toowoomba (R) - lot release in the September 2024 quarter was 1.3 times the average.

Figure 2: Residential lot approval rate (Ipswich LGA)



Council plans and land development

Residential lot approval and land release data provide an indicative assessment of where peri-urban development may increase biosecurity risks and vectors. However, residential development is not, itself, a significant risk More specifically, qualitative analysis of LGA-level development plans may be used to augment population and development data to better understand locations and projections of greatest biosecurity interest.

Using a rather crude (and manual) strategy, we extracted a list of planned development activities from each of the 77 Local Government Areas in Queensland. A comprehensive list of sources is provided at Appendix A, while a list of major development and planning activities across all

Local Government Areas is provided in Appendix B. From this, we have identified ten development or planning activities that are likely to be of considerable interest in biosecurity risk analysis when considering human movement and population growth (see Table 4).

Table 4: Local government and local-region initiatives (selected 10)

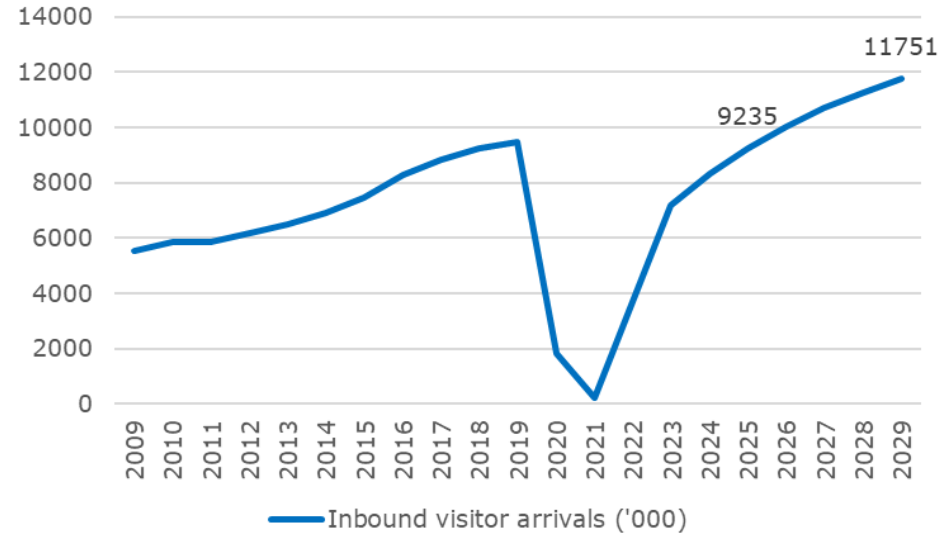
Council Name	Activity Name	Location	Link to Source	Explanation of Biosecurity Risk
Toowoomba Regional Council	Charlton Wellcamp Industrial and Logistics Hub	Wellcamp	Operational Plan 2024–25	Major freight and aviation node with high volume of goods and transient workers increases pest entry points.
Logan City Council	Greater Flagstone Residential Expansion	Greater Flagstone	Community infrastructure strategy 2019-2041	Rapid residential growth attracts construction workers and new residents, increasing importation of invasive plants/soil.
Whitsunday Regional Council	Airlie Beach Foreshore Redevelopment	Airlie Beach	Foreshore Masterplan	Boosts tourism and temporary population influx, increasing introduction of exotic pests via vehicles, gear, and food.
Cairns Regional Council	Cruise Terminal and Waterfront Expansion	Cairns CBD	https://www.cairns.qld.gov.au/__data/assets/pdf_file/0007/274759/CAIRNS_2050low.pdf	High international traffic increases exotic pests and disease risk through people and cargo.
Townsville City Council	Lansdown Eco-Industrial Precinct	Lansdown	Lansdown Eco-Industrial Precinct	Influx of industrial workers, transport activity and construction disrupts to biosecurity boundaries.
Gold Coast City Council	Coomera and Pimpama Urban Expansion	Northern Gold Coast	Planning Scheme - City Plan	One of the fastest-growing urban areas in Australia, with high population turnover and construction.
Isaac Regional Council	Galilee Basin Mining & Rail Development	Bowen Basin	Galilee Basin State Development Area | State Development, Infrastructure and Planning	Fly-in fly-out (FIFO) workers, machinery imports, and land disturbance create multiple biosecurity exposure points.
Noosa Shire Council	Tourism Infrastructure Upgrades	Noosa Heads	Time of change for Tourism Noosa | Noosa Shire Council	High-volume eco-tourism hub draws seasonal and international visitors, increasing risk of invasive species introduction.
Scenic Rim Regional Council	Bromelton Intermodal Transport Hub	Bromelton	Bromelton State Development Area | State Development, Infrastructure and Planning	Logistics hub facilitating large-scale goods movement from road to rail, posing plant and animal biosecurity risks.

Tourism Research Australia – International Visitors

Tourism Research Australia (TRA), a unit within the Australian Trade and Investment Commission, produces tourism forecasts using a combination of economic modelling, historical tourism data, and input from industry stakeholders. The forecasting process incorporates national and global economic conditions, exchange rates, aviation capacity, and consumer sentiment to estimate future trends in both domestic and international tourism. TRA uses econometric models to project key indicators such as visitor numbers, nights spent, and expenditure across different tourism segments and source markets. The forecasts are updated regularly to reflect changing conditions, providing governments and industry with evidence-based insights to support planning and investment decisions.

Generally speaking, tourism forecasts are provided for both international (overseas) visitors and domestic traveller from Queensland. International visitor projections are calculated at the national level, including by country of origin, while domestic traveller data forecast at the state and territory level using a metric described as “Domestic Visitor Nights” (or DVN). DVN refers to the total number of nights spent by Australian residents who travel within Australia and stay overnight away from home. This includes travel for purposes such as holidays, business, visiting friends or relatives, and other reasons. Each night that a domestic visitor spends away from home contributes one "visitor night" to the total. For example, if two people take a 3-night trip, that counts as 6 domestic visitor nights. It is a key metric used to measure the volume and economic contribution of domestic tourism. Generally speaking, DVN data that is disaggregated by jurisdiction, refers to the jurisdiction of the traveller's origin, rather than the expected location or destination.

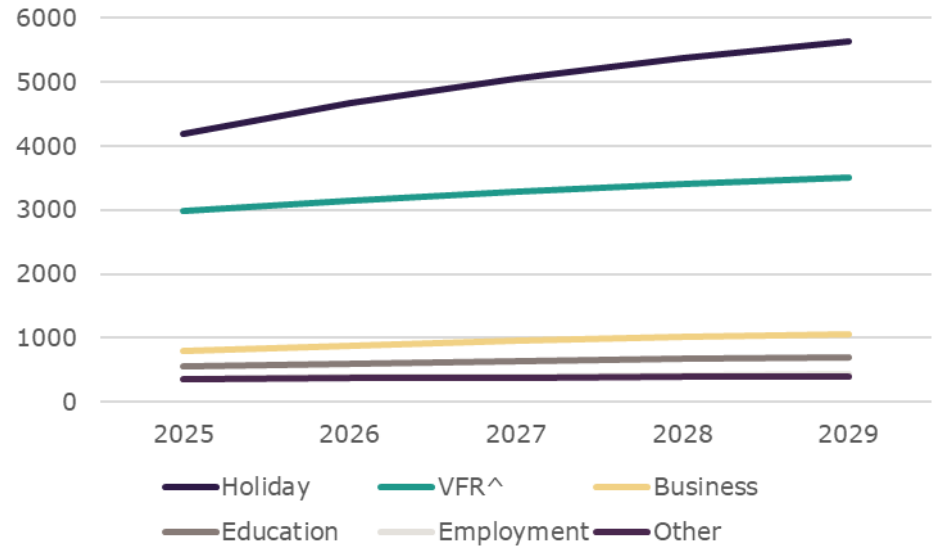
Figure 3: Inbound International Visitor Numbers, Australia (projected from 2025-2029)



Source: Tourism Research Australia (Table A1)

In terms of international visitors, Figures 3 and 4, together with Table X, show a projected increase of arrivals to Australia, with the largest growth in being holiday makers. In terms of countries of origin, there is expected to be a disproportionate increase in international visitors from Malaysia, China, Thailand, Hong Kong and Japan.

Figure 4: Inbound International Visitor Numbers, Australia by visit type (projected from 2025-2029)



Source: Tourism Research Australia (Table A2)

Figure 5: Inbound International Visitor Numbers, Australia by country of origin (projected from 2025-2029)

	Projected growth (2025-2026)	5-year growth (projected)
New Zealand	4.3	3.7
China (ex SARs, Taiwan)	15.9	13.6
Japan	10.9	8.8
Korea	4.5	4.2
Hong Kong	12.0	9.4
Taiwan	9.8	8.4
India	9.0	7.2
Singapore	5.8	4.6
Malaysia	23.1	13.6
Thailand	11.6	8.0
Indonesia	9.2	7.7
Philippines	9.6	7.3
Vietnam	9.4	7.8
Southeast Asia*	10.5	7.7
Other Asia	12.2	7.9
United States	7.8	6.9
Canada	6.7	5.7
United Kingdom	4.6	4.2
Germany	6.8	5.5
Italy	4.9	4.6
France	6.5	5.4
Ireland	5.4	4.8
Other Europe	5.9	5.1
Other Countries	9.9	8.1

Source: Tourism Research Australia (Table A3)

Tourism Research Australia – Mode of arrival

Tourism Research Australia's (TRA) published forecasts do not include projections specifically by mode of arrival, such as air, sea, or land transport. Their reports primarily focus on visitor numbers, expenditure, and nights spent, segmented by factors like purpose of travel, source markets, and destinations.

Tourism plans and strategies

Tourism forecasts, while useful for understanding broad national or state-level trends, are often too aggregated to inform specific, localised projections. They typically focus on overall visitor

numbers, expenditure, or visitor nights, without distinguishing between different types of tourism—such as ecotourism, cultural tourism, or agritourism—or accounting for unique regional factors. As a result, they offer limited guidance for targeted investment or risk assessment. A more practical approach may be to examine tourism plans and strategy documents developed by governments, regional tourism bodies, and industry groups. These documents often highlight emerging trends, niche market opportunities, and local priorities, providing more detailed insights into the kinds of tourism activities likely to grow in specific areas.

Ecotourism Plan for Queensland's Protected Areas 2023–2028

The *Ecotourism Plan for Queensland's Protected Areas 2023–2028* provides a strategic framework to promote sustainable tourism within Queensland's national parks and protected areas. Developed by the Department of Environment and Science, the plan aims to balance environmental conservation with the growth of ecotourism by facilitating low-impact, culturally respectful visitor experiences. Key objectives include partnering with First Nations peoples to deliver culturally appropriate tourism experiences, enhancing visitor infrastructure, and streamlining permitting processes for tourism operators. The plan also emphasizes the importance of reusing previously disturbed sites for new developments to minimize environmental impact. By aligning with broader tourism strategies like *Towards Tourism 2032*, the plan seeks to position Queensland as a leader in ecotourism while ensuring the protection and appreciation of its natural and cultural heritage.

Specifically, the plan aims to achieve the following for Queensland:

1. **Developing New Ecotourism Experiences -** Targeted across a range of protected areas statewide, including national parks, marine parks, and Indigenous-managed lands to showcase diverse ecosystems.

2. **Enhancing Existing Facilities -** Key upgrades planned for popular visitor sites such as Daintree National Park, Great Barrier Reef Marine Park gateways, and Lamington National Park.

3. **Streamlining Permitting Processes -** Applies broadly across all Queensland protected areas to make it easier for operators to establish and grow ecotourism ventures.

4. **Partnering with First Nations Peoples -** Focused on collaboration with Aboriginal and Torres Strait Islander communities in regions such as Cape York, Torres Strait Islands, and southwest Queensland.

5. **Building Industry Capacity -** Training and support programs available statewide, especially aimed at remote and regional ecotourism operators.

6. **Promoting Sustainable Practices -** Encouraged across all protected areas with pilot projects in high-use parks like Fraser Island and Noosa National Park.

7. **Fostering Collaboration -** Partnerships encouraged between government, Traditional Owners, tourism businesses, and local communities across all regions.

8. **Investing in Infrastructure -** Infrastructure funding prioritized for sites with high visitor potential and ecological significance, such as Whitsunday Islands and Carnarvon Gorge.

9. **Marketing and Promotion -** Campaigns targeted both domestic and international tourists with highlights on iconic destinations like the Great Barrier Reef and Lamington National Park.

10. **Monitoring and Evaluation -** Ongoing across the state's protected area network to ensure ecotourism development aligns with conservation objectives and community values.

Complementing this, the Queensland Government announced the *Activate Ecotourism Infrastructure* initiative, allocating $9.2 million in co-funding to support six ecotourism initiatives across the state (Queensland Government, 2023)[2]. These projects are expected to attract nearly 200,000 additional visitors annually, generating approximately $64 million each year for Queensland's visitor economy. The initiatives are anticipated to create 573 jobs, including 338 construction and 235 operational positions. This investment is part of the government's broader strategy to accelerate tourism recovery post-pandemic and is aligned with the *Toward Tourism 2032* roadmap, which aims to expand Queensland's visitor economy to $44 billion.

The six co-funded ecotourism projects are:

1. Refurbishment of the Turtle Sands Nature Retreat at Mon Repos

[2] **Queensland Government** (2023) *Six Queensland ecotourism projects to share in $9.2 million state government funding*, Ministerial Media Statements, 18 July. Available at: https://statements.qld.gov.au/statements/97692 (Accessed: 30 June 2025).

2. Development of a luxury walkers' camp at Binna Burra, adjacent to Lamington National Park

3. Establishment of an outdoor tourism hub in the Pioneer Valley near Mackay

4. Construction of Jarramali Indigenous Rock Art stays on Cape York

5. Upgrade of the Carnarvon Gorge Holiday Park, including new ecotourism accommodation and a renewable-powered restaurant

6. Development of nature-based luxury glamping pods and eco-lodgings with conference, events, and beach club facilities on South Stradbroke Island

These projects are designed to enhance Queensland's ecotourism offerings, promote sustainable tourism practices, and support local economies through job creation and increased visitor spending.

BNE2032 Olympics visitor projections

While several financial projections have been made regarding the economic impact of major events like Brisbane 2032—for example, estimates suggest the Games could generate up to $8.1 billion in economic and social benefits for Queensland and potentially inject over $20 billion into the state's tourism economy (Queensland Government (2021)[3] —there are no detailed forecasts on actual visitor numbers. Specifically, projections that break down the likely daily attendance or the countries of origin for visitors have not been publicly released. This lack of granular data limits the ability to plan for visitor management and tailor marketing strategies based on expected international source markets.

[3] **Queensland Government** (2021) *Brisbane 2032 Olympic and Paralympic Games: Economic Impact Analysis Summary Report*, prepared by KPMG. Available at: https://www.premiers.qld.gov.au/publications/categories/reports/assets/2032-qld-games-economic-analysis-summary-report-final.pdf (Accessed: 30 June 2025).

2.3 Community Attitudes and Behaviours

Community beliefs and established practices can shape how biosecurity measures are perceived and implemented. For instance, traditional farming practices may conflict with modern biosecurity protocols, affecting adoption rates among farmers. Further, different cultures may have varying perceptions of risk, which can influence how biosecurity risks are addressed. Community beliefs about animal welfare can drive behaviours which conflict with biosecurity risk management. Understanding these cultural attitudes can be essential for developing effective risk communication strategies.

2.3.1 Subject Matter Expert Analysis

Community knowledge and awareness

Low community knowledge and awareness can be a biosecurity risk because people may unknowingly spread pests or diseases, ignore early warning signs, or fail to follow prevention measures. This weakens surveillance, delays response efforts, and increases the chance of harmful organisms establishing and spreading in the environment or agricultural systems.

SMEs were especially concerned about biosecurity risks in newly developing peri-urban zones. They summarised peri-urban producers are follows:

> You've got to get people to understand what their potential threats are for themselves, but also the rest of the country. Often those people – the people who don't understand if they bring something back and they plant something grandma's grown in whatever country she's come from—who knows where that will lead to. (I8)

> [O]nce you start to realize that [peri-urban producers are] a major Achilles heel because most of them will have one or two cows or one or two sheep or whatever [...] but put them all together there's lots.... (I8)

> [People need awareness about] what their obligations are, you know their general biosecurity obligation. [I]f they do have livestock or animals, what they need to be...looking out for [their animals] and then reporting and then also [learning] the ways that they can mitigate their risks/ [...] [They need to have] biosecurity plans in place and following that, not just write it down and keep it in a drawer. (I2)

As the SME's comments reveal, the main concerns about peri-urban producers are not only their lack of awareness, but also the potential collective impact these producers could have on traditional producers. These three concerns were summarised as follows:

1) Unintentional release of biosecurity threats.

Many SMEs noted that the increase in "peri-urban" producers, or backyard farmers, posed new biosecurity risks. These individuals might not have the same level of animal husbandry or awareness of biosecurity risks, and might unintentionally introduce pests or disease into livestock:

> Our primary entry levels for some of these diseases will be our peri-urban people because they're more likely to do silly things unknowingly, such as feed, you know, the illegally imported salami brought home from their recent holiday to Indonesia or Eastern Europe or something like that and chuck it out the back fence and the, you know, poddy sheep or the bobby calf or something like that picks it up and eats it, so that's one of our really strong risk areas of introduction of disease. (I3)

2) Low community knowledge.

Similarly, SMEs expressed concern that there was a disconnect between consumers and what constituted good biosecurity practice. This could lead to more consumer demand or pressure for food that eschewed good biosecurity practices, this is expanded upon more in the next section:

> [A] disjoint between consumers and just their general understanding of where food comes from. Let alone then that next leap around equality, the biosecurity and the risks that go associated with, you know, like an organic production system, for instance. (I6)

3) Shared responsibility and obligation.

Finally, SMEs expressed concern over peri-urban producers, in particular, being aware of how their animals' welfare impacted the larger agricultural sector. Poor animal husbandry in one area could lead to disease introduction to a broader geographic area:

> If you own animals, you need to step up and take those responsibilities that come with it. Now animal welfare is a big one on that and everybody gets that, that's a deep held position, you're nice to your animals, but the same applies to when it comes to your animals being sick, whether you own one or two in your backyard or 10,000, you've got your responsibility, so you need to do something about it. Don't expect the government to be the first person on your doorstep to say oh it looks like you've got a poor cow lying down in your backyard. (I3)

<u>Consumer demand and preferences</u>

Many SMEs noted that consumer demands ultimately shaped the market. This could become a biosecurity risk when it drives local production towards practices that are *in*secure, or promotes the import of exotic plants, animals, or food products that may carry pests or diseases. This was especially exemplified in the increasing consumer demand for organic, free-range eggs. Several

SMEs used this example to explain how consumer demands and preferences had actually led to *less* biosecurity among large scale producers:

> There's a cultural piece there in Australia where people have a sense that free range hens are happier than caged hens and therefore there's been a consumer shift away from caged eggs to free range. What's been totally lost in that space and there's been no public airing of it, and this is something we need to be talking about more is the biosecurity risk that that presents, because you've got migratory birds that come in from Asia every year that will carry low pathogenesis Avian Influenza that circulates in the wild birds all the time, but because they're wild birds you don't see the amplification, you don't have the high density populations that you have in farms, so you don't see it mutating and amplified the way - once it gets into farms. So, the driver there is around consumer preference and the migratory birds coming in and out every year. (I7)

> In the pig and poultry industry your worm burdens and a lot of your bacterial diseases come from a lifecycle of being exposed to the environment, whether that's wild birds or soil borne worms, etcetera, etcetera. So, to short circuit that, forty, fifty years ago you put them in houses, you put them in sheds. All of a sudden you go from having about 10% mortalities in your herds and flocks down to having about a half a percent mortality in your herds and flocks. The difference in disease control alone is astronomical. [...] We're now heading back to this concept of the free range... and those sorts of systems are increasingly popular over the past ten, twelve, fifteen years. The flipside of that is we are also seeing that commensurate increase in the numbers of those animals being infected with those old school diseases we had from fifty to sixty years ago. We are now seeing these things pop-up in our slaughterhouses, infection with worms that haven't turned up for thirty to forty years. The Avian Influenza outbreaks in Victoria, two times in the last six months now, which is extremely rare, originated in free-range flocks because...they've got contact with wild birds and wild birds have the natural strains of Avian Influenza. We've managed to head back in another direction [and now] unfortunately ten-percent of your flock [is] dying of diseases that we once upon a time nearly thought we had eradicated. (I3)

2.3.2 Available data

See section 2.4.2 on population-level surveys.

2.4 Economic and Industrial Factors

Economic status and access to resources can dictate the extent to which individuals or communities can invest in biosecurity measures. Resource-poor farmers may prioritize immediate needs over long-term biosecurity investments, increasing their vulnerability to biosecurity risks**.**

2.4.1 Subject Matter Expert Analysis

Industrial and economic activities

Markets constantly changing because of consumer demands, supply availability, innovation, external market influences (such as changing tariffs), external factors influencing supply chain (e.g. climate change), seven drivers were identified by the subject matter experts:

1) Increased importation/exportation into countries that are in close proximity to Australia, brings increased risk of diseases into Queensland:

> The bigger risk is that the trade in animals, particularly pigs across into Papua New Guinea is happening and the spread of that disease into Papua New Guinea is almost inevitable. And Papua New Guinea is only 5 kilometers from the northern most island in the Torres Strait. (I7)

> Biosecurity wise I think our proximity to Papua New Guinea as a pathway in [is a threat]. [...] We have trade, well free flow of people between Papua New Guinea and the Cape or parts of the Torres Strait and that's not a problem [...] but with [that free flow] comes a risk, especially for flying insects [and] movement of animals,. It's just an alert heightened risk, especially in the biosecurity zones in the north. (I5)

2) Increased shipping with cargo, brings increased amounts of ballast water, increasing the potential for contaminated ballast water or non-native marine life into Queensland waterways:

> It's difficult to inspect a cargo ship because they sort of manage risk in other ways, like how long is it going to be in port, what was the location of origin? Has it discharged? Ballast water far enough out to sea, those sorts of things. But when we do get something like an exotic mussel establishing because it's arrived in Australia and it's then living in an open system, it's very difficult. (I1)

3) Movement of farming equipment across domestic borders and bringing in farming equipment from overseas.

4) Lack of coordination and/or awareness between actors in supply chain. Changes of practices or business models at one end of the supply chain might have an effect on other actors in the supply chain. However, actors in the supply chain are often not aware of the broader impacts of their changes onto other actors in the chain:

> For us in terms of the trade, it's actually international markets, so getting trade access for biosecurity reasons and other reasons, whilst it's about biosecurity, it's biosecurity plus a suite of other measures from ESG credentials etc. [...] How we actually integrate biosecurity matters into a sustainability framework is really important, so we actually have a holistic system. The retail sector, if you look at things like cotton, and the statements that are being made by large organizations who say "get cotton." Some of their sustainability requirements and what they're signing up to with international obligations, it's science-based targets, be it the Agriculture Financial Institute, who are a group of environmental NGOs, and how they're putting pressure on the finance sector, [or] the finance sector itself in terms of what it funds. So, government, non-government, corporate, large entities, and then when you get right down to small businesses as well. It's a whole [system], that can actually create a biosecurity risk. (I5)

5) Some sectors are highly heterogenous, encompassing a wide range of commodity groups with varying levels of maturity, policy development and engagement, complicating the formation of unified policy positions and coordinated responses to biosecurity threats. At the same time producers might have varying goal orientations, some prioritise short-term economic returns over long-term biosecurity outcomes, especially those nearing industry exit, while others are more long-term focused:

> One of the challenges with the plant biosecurity space is we've got a very diverse stakeholder group. [...] In plant biosecurity in Queensland, [stakeholders] can be anything from bananas...to mangoes to macadamias to avocados to tomatoes to cucumbers and you know almonds, the whole gamut and each of those issues have different levels of maturity. (I4)

> The bee industry, they've got [a] really diverse base from recreational beekeepers to large commercial beekeepers, often not having clear policy positions, [and] a lot of division in between the industry in and of itself. (I4)

> Producers are self-interested too. They're going to produce to maximise their profit in the short term. Some of them will be looking for longer term businesses, but others are looking to exit the industry once they retire or something like that. They're just looking at short-term gain. They've got obligations under the Biosecurity Act, but they don't have that same level of investment and care about the impact of those decisions and what that [obligation] means. (I6)

6) Difficulty attracting skilled people to remote areas (e.g. vets):

> It's really hard to find vets to work in regional Australia. Most of the vets that are going through school at the moment... are looking to work with small animals, with domestic cats and dogs. [...] There's plenty of jobs out there for them in that space. [...] The other problem [is] we have with vets, is these are people that are highly qualified, seven years at university, and we pay them chicken feed. (I7)

7) More land for production. The associated intensification and geographic expansion of agricultural activities introduce new biosecurity vulnerabilities. These include the potential introduction of pests and diseases to previously unaffected regions, increased movement of people and products, and challenges in surveillance and containment:

> Sometimes land use decisions can actually create a risk for biosecurity. If we actually do develop areas that aren't traditionally cropping areas, for example, you may end up creating a higher level of risk, especially if you go into another expansion area. [...] We're trying to develop a primary industry sector that's going to be a $30 billion industry by 2030. So that will require something like a six-percent year-on-year increase, so with that comes an opportunity but we have to manage any biosecurity risks that go with an expansion or an intensification role. (I5)

8) Most of Australia's international imports come into Queensland ports (e.g. Brisbane and Gladstone) from Asia and the US. These imports are set to grow, necessitating the use of smaller ports to cope with demand. This adds pressure on resources.

Producer support and management (individual)

Support for producers in this complex environment also matters:

1) Mental health (producers); rural and regional (remote) producers operate under high levels of psychological stress, often exacerbated by limited access to mental health services. These pressures can affect decision-making, resilience, and capacity to manage biosecurity risks effectively. While producers are often portrayed as resilient, persistent stress can undermine their ability to maintain biosecurity practices, especially in long-term or continuing situations:

> The sector actually suffers badly from [poor] mental health just because the services don't exist in rural areas. [That] puts enormous pressure on people in rural and regional areas which can flow into how they operate. [T]hey're [a] pretty resilient bunch, but at the same time they have significant challenges. All of those play into a farming system, and the way that they may manage biosecurity or not manage biosecurity. (I5)

> We've done a lot of work with our intensive livestock holders in the pig industry in the last few years. If we ever get one of these serious diseases we'll have to destroy a lot of animals. It's the way we get rid of disease, you get rid of the animal, [and] you don't have anywhere for the disease to go. We regularly have our industry stakeholders say we won't be able to achieve the destruction part of an emergency response. [Those stakeholders tell us,] "We can't expect our people, our employees, or indeed ourselves to be intimately involved with keeping those animals alive and healthy one day and turning up and shooting them the next." (I3)

2) Cost of production. Many producers operate small, family-run businesses where decision-making is guided by tradition ("how granddad did it") and constrained by multiple competing roles and responsibilities. Financial stress, particularly during periods of drought or market downturns, often forces producers to prioritise immediate economic survival over long-term biosecurity or land management practices. In such contexts, biosecurity might become a secondary concern. Even among some larger, more commercial producers, decisions are deeply entwined with emotional investment in the land and animals, which may drive practices based more on personal values than on regulatory compliance. These intersecting pressures complicate efforts to achieve consistent, system-wide biosecurity engagement and highlight the need for policy approaches that account for cultural, emotional, and economic dimensions of farming life:

> Cost. Cost [is driving short-term risks]. Information overload, significant competing priorities, financial issues. In some cases, culture, and what I mean by that is in some cases that's how granddad did it, that's how dad did it, that's how I'll do it. [...] A lot of producers, a lot of the agribusinesses in Queensland are still quite small businesses, so they have to be producer, business managers, bookkeepers, workers, parents, sons, daughters - so the pressure's on them. [T]hey're not all corporat[ions] where you understand regulation. (I5)

> Biosecurity is one of [the decisions producers make], but at the end of the day if you got to pay the bank balance. [The bank balance] makes you make decisions that may not be the best decisions in tough times. It's all pretty good when the prices are good and there's no drought, but when times are tough, that's when something has to fall off, [and] biosecurity can be one of those [things]. (I5)

> Money, animal welfare, people - even your big producers - it's an integration with their value they place on the land that they own and manage as well. You'll hear that a lot from even a professional cattleman. [This] is their business, it is their livelihood and they've got, in some scenarios, got millions of dollars invested in it, but they still [see it] as a lifestyle because they enjoy managing cattle, they enjoy breeding and they enjoy seeing the calves being born and grow up. Yes, the ultimate point is at some time [the cattle are] going to be put on a truck and turned into a T-bone, but there's an awful long period of that time of that animal's life where [producers] get great pleasure and personal satisfaction out of managing those animals. (I3)

3) Lack of investors. Major institutional investors, such as superannuation funds and venture capital firms, often prioritise quick financial returns and are hesitant to invest in agriculture due to its inherent volatility, biological risk, and extended timeframes for profitability. This misalignment restricts the sector's access to capital needed for innovation, infrastructure development, and proactive risk management, including biosecurity measures.

> What we haven't got is the major funders, what I mean the major superannuation funds probably don't recognize agricultural assets, a lot of the investment businesses or investment brokers look for quick returns, agriculture doesn't give you a quick return, it's a longer term investment and a lot of the venture capitalists are looking for go in, get a return in a couple of years and walk away. But agriculture is not that. [Agriculture] needs patient investment and if we get patient investment, foreign or otherwise, working with producers, we may actually have a different business model that may facilitate a change. (I5).

Unregulated biosecurity pathways (human activity)

1) Unregulated human-mediated practices in feed production, sourcing, and movement present biosecurity vulnerabilities across multiple sectors. High-risk feeding practices, such as swill feeding (the use of meat-based products in livestock diets), are internationally recognised pathways for the introduction of exotic diseases like African swine fever and foot-and-mouth disease:

   Swill feeding in livestock production [*swill feeding is the feeding of meat or vertebrate products...meat, bones, eggs, milk to pigs and also to poultry as well]*. That's been a key pathway to introduce exotic diseases, like foot and mouth disease and African swine fever, overseas. So those sorts of practices are a big concern. (I2)

2) The use of imported produced livestock feed products further exacerbates risk, particularly when such feed is not subject to stringent biosecurity screening;

   Bringing in food from overseas and then feeding it to pigs and poultry as well. So that's probably the biggest one for us. (I2)

3) Similarly, contaminated feed inputs such as hay containing weed seeds can facilitate the spread of invasive plant species.

2.4.2 Available data

There are several publicly available data sources available online to provide predictions, such as the Queensland Treasury economic outlook reports, private sector economic forecasts, state infrastructure and development plans, local government infrastructure plans, and the consumer sentiment and purchasing preferences. Each are discussed below.

Queensland Treasury Economic Outlook Reports[4]

Queensland Treasury publishes regular Economic Outlook reports that detail forecasts for Gross State Product (GSP), employment, and key industry performance. These documents also include insights into regional disparities in growth, with Southeast Queensland typically forecast to outperform projections? due to infrastructure and population growth (Queensland Treasury, 2024).

Specifically, Queensland Treasury forecasts Gross State Product (GSP) growth of 3% in both 2023–24 and 2024–25, driven by a strong recovery in exports and continued government investment in infrastructure (Queensland Treasury, 2024a, p. 15). The key macroeconomic projections include:

[4] Queensland Treasury. (2024a). *Budget 2024–25: Service Delivery Statements – Department of Agriculture and Fisheries*. https://budget.qld.gov.au;

Queensland Government. (2024a). *$100 Million Disaster Resilience and Mitigation Infrastructure Program*. Infrastructure Magazine.

Queensland Parliament. (2024). *Budget 2024–25 Capital Statement – Queensland Reconstruction Authority*. https://www.parliament.qld.gov.au;

Queensland Government. (2024b). *Budget Overview – Agriculture and Biosecurity*. Queensland Farmers' Federation

Queensland Government. (2024c). *CopperString and Bruce Highway Projects – Budget Summary*. Courier Mail

Queensland Government. (2024d). *Investment in Renewable Energy for Central QLD*. Queensland Government Statements

Queensland Government. (2024e). *SEQ Infrastructure Fact Sheet*. Australian Government Infrastructure Investment

- **Employment** - forecast to grow by 2.75% in 2023–24, before easing to 1.5% in 2024–25 and 1% in 2025–26, while **unemployment** is expected to gradually rise from 3.7% in 2022–23 to 4.5% in 2024–25 and 4.75% in 2025–26, reflecting softening labour demand (Queensland Treasury, 2024a, p. 16).
- **Brisbane CPI inflation** - is forecast to decline from 7.3% in 2022–23 to 4.0% in 2023–24 and 2.0% in 2024–25, aided by targeted cost-of-living relief measures (Queensland Treasury, 2024a, p. 17).
- **Population growth** is expected to peak at 2.5% in 2023–24, driven by net overseas migration, before easing to 1.5% by 2025–26 (Queensland Treasury, 2024a, p. 15).

Specific industries and regions are noted as likely to most benefit from economic growth. These include:

- **Exports** are expected to be a major driver of growth in 2023–24 and 2024–25, particularly from the resources sector (coal, LNG, metals) and agriculture (especially beef), due to improved global demand (Queensland Treasury, 2024a, p. 19).
- **Public infrastructure investment** is expected to grow, particularly through projects in transport, energy, and health, underpinning employment and regional growth (Queensland Treasury, 2024a, p. 17).
- **Household consumption** is projected to grow modestly—2% in 2024–25 and 2.5% in 2025–26—as real incomes recover from cost-of-living pressures and inflation subsides (Queensland Treasury, 2024a, p. 17).
- **Southeast Queensland** is set to benefit disproportionately from major infrastructure commitments (e.g. Brisbane 2032 Olympics, Cross River Rail), contributing to strong employment and economic activity in the region (Queensland Treasury, 2024b).
- **Resource-rich regions** such as Central and North Queensland are expected to benefit from the rebound in global commodity exports, particularly coal, gas, and beef (Queensland Treasury, 2024a, p. 19).
- **Housing and construction activity**—concentrated in growth corridors around Brisbane, the Sunshine Coast, and Gold Coast—is also expected to remain relatively strong, supported by population growth and public housing initiatives (Queensland Treasury, 2024a, p. 17).

In terms of actual budget appropriations and initiatives, Queensland Treasury notes the following which are likely to pose implications for biosecurity:

- **$100 Million Disaster Resilience and Mitigation Infrastructure Program**
  Jointly funded with the Commonwealth, this program supports local infrastructure projects that reduce the impacts of natural disasters, which are known to worsen biosecurity risks such as pest dispersal and livestock disease (Queensland Government, 2024a).
- **$1.281 Billion for Disaster Recovery and Resilience (Reconstruction Authority) Queensland**
  Focused on flood recovery and infrastructure renewal, this program supports community resilience and indirectly protects agricultural and natural systems from the biosecurity consequences of ecosystem disturbance (Queensland Parliament, 2024).
- **$715 Million Investment in Agriculture, Forestry, and Fisheries**
  This funding includes targeted measures for pest and disease control, agricultural research, and safeguarding Queensland's biosecurity system (Queensland Government, 2024b).
- **CopperString 2032 – $1.4 Billion Transmission Infrastructure**
  The CopperString project connects Mount Isa to the national electricity market, enabling development in remote areas. This may lead to land use change and ecological disruption, both of which are linked to biosecurity risks (Queensland Government, 2024c).
- **Bruce Highway Upgrades – $9 Billion (shared across years)**
  Ongoing improvements to this major transport corridor reduce freight delays and help facilitate emergency biosecurity responses, especially in outbreaks affecting livestock movement (Queensland Government, 2024c).
- **Renewable Energy Infrastructure in Central Queensland – $266.3 Million**
  Wind and solar project development can bring environmental change and increased access to remote regions, necessitating monitoring for invasive species impacts (Queensland Government, 2024d).
- **Works for Queensland – $124.5 Million for Local Infrastructure Projects**
  This program helps regional councils upgrade basic services, including waste and environmental health facilities that may directly influence pest control and land management (Queensland Government, 2024a).

- **Southeast Queensland Growth Infrastructure – $2.2 Billion**
  Targeted at water, transport, and housing projects in Brisbane and surrounding LGAs, this funding improves regional service capacity, indirectly enhancing response to disease outbreaks in dense population corridors (Queensland Government, 2024e).

Private Sector Economic Forecasts

Major consulting firms such as Deloitte Access Economics, PwC, and KPMG release independent Queensland economic outlooks. For example, Deloitte (2023) generates an economic outlook analysis for Queensland that combines quantitative economic modelling with qualitative insights to forecast industry growth and regional development. It draws on a wide range of data sources, including government statistics, industry surveys, and proprietary analytics tools, to build detailed sectoral profiles and economic projections. Using methods such as input-output and computable general equilibrium (CGE) models, Deloitte simulates the impacts of policy changes, investments, and market trends, incorporating scenario analysis to explore different futures. The report also integrates stakeholder engagement—consulting industry experts and policymakers—to ensure assumptions reflect real-world conditions. For Queensland, Deloitte (2023) notes the following as key market indicators:

- **Skilled Migration and Workforce Development Programs**
  To support emerging industries, Queensland is emphasising skilled migration and workforce training. The influx of workers into regional areas can strain local biosecurity systems if not managed properly.

- **Infrastructure Upgrades in Regional Areas**
  Investments in transportation and utilities infrastructure aim to support economic growth in regional Queensland. Construction activities can disturb local ecosystems, necessitating biosecurity assessments.

- **Digital Connectivity Enhancements**
  Improving digital infrastructure facilitates the growth of digital services. While this has minimal direct biosecurity impact, the associated physical infrastructure projects may require biosecurity evaluations.

- **Tourism Development Initiatives**

  Efforts to boost tourism, including infrastructure and service enhancements, can increase human movement across regions, potentially introducing biosecurity risks related to pests and diseases.

Price Waterhouse Cooper (PwC 2023) also provides economic outlook data highlighting urban infrastructure and technology-based industries in Southeast Queensland as key growth drivers. It is worth noting that while the methodologies of these outlooks are comprehensive, their forecasts (by design) often complement the Queensland and Commonwealth Treasury reports and offer industry-specific insights tied to global economic trends.

State infrastructure and development plans

State infrastructure plans are valuable tools for identifying activities that may introduce or exacerbate biosecurity risks because they provide a comprehensive, forward-looking overview of major development and land-use changes across regions. These plans outline infrastructure priorities such as new transport corridors, ports, industrial zones, residential developments, and water or energy projects—each of which can alter natural ecosystems, increase human movement, or facilitate the introduction of invasive species, pests, and diseases. By systematically mapping where and how infrastructure is planned, these documents allow for early detection of locations where environmental disturbance is likely, enabling proactive biosecurity risk assessment and management. For example, the construction of new roads or freight networks into previously undeveloped areas can create vectors for weed dispersal or animal disease transmission, particularly when construction materials and machinery are moved across regions. Similarly, industrial expansions or population-driven infrastructure (like water treatment plants or waste facilities) can strain existing biosecurity controls or introduce new hazards if not carefully managed.

Because state-level infrastructure strategies are typically aligned with economic and demographic growth forecasts, they also serve as early indicators of increased agricultural, tourism, or logistics activity—sectors with historically high biosecurity sensitivity. Moreover, by coordinating infrastructure planning across government departments, these documents consolidate multiple risk pathways into a single planning framework, making them useful not only for engineers and urban planners but also for biosecurity professionals. They support strategic foresight, allowing biosecurity agencies to prepare for future challenges by integrating risk mitigation measures during early planning and procurement phases. In this

way, state infrastructure plans are not only roadmaps for development but also critical intelligence resources for safeguarding environmental, agricultural, and community health from biosecurity threats associated with a rapidly changing built environment.

A comprehensive list of state or regional-level infrastructure activities can be found in Appendix C. Below are 10 examples that have been selected for their significant potential to compromise biosecurity. Each represents a type of development that involves substantial environmental disturbance, facilitates increased human and material movement, or alters ecosystems in ways that make them more vulnerable to invasive species, pests, and diseases. These activities were chosen not only because of the scale or intensity of the development, but also because of their potential to introduce biosecurity threats into ecologically sensitive or economically important areas. Together, they illustrate the types of infrastructure and land-use changes that warrant close scrutiny and early intervention to ensure that biosecurity risks are identified and managed during the planning and implementation stages.

- **Expansion of Agricultural Areas in Bundaberg and North Burnett**
  Large-scale clearing and land conversion disturb native habitats, facilitating invasive species establishment and spread through machinery, soil movement, and crop imports (Wide Bay Burnett Regional Plan)
- **Development of Renewable Energy Projects in Central Queensland Renewable Energy Zone**
  Construction in previously undisturbed landscapes increases risk of introducing invasive seeds, insects, and pathogens via equipment and material movement (Central and Western Queensland Infrastructure Plan)
- **Upgrades to Transportation Corridors on Bruce Highway near Innisfail**
  Roads and highways act as major pathways for pests, weeds, and diseases, spreading them over long distances with increased human and freight movement (Far North Queensland Infrastructure Plan)
- **Water Resource Development Projects in Fitzroy River catchment, Rookwood Weir**
  Alteration of natural water flows creates habitats favourable to invasive aquatic species, disrupting native biodiversity and ecosystem services (Central and Western Queensland Infrastructure Plan)

- **Expansion of Urban Footprint in Maroochydore to Caloundra corridor**
  Urban growth fragments habitats and introduces novel environments that invasive species can exploit, while increasing human-mediated introductions (Sunshine Coast Infrastructure Coordination Plan)
- **Expansion of Aquaculture Facilities near Innisfail**
  Aquaculture can introduce non-native aquatic species and diseases into natural waterways, threatening wild fish populations and ecosystem health (Far North Queensland Infrastructure Plan)
- **Waste Management Facility Upgrades near Maryborough and Kingaroy**
  Waste sites can attract pests and facilitate spread of invasive plants and pathogens if not properly managed, becoming biosecurity hotspots (Wide Bay Burnett Infrastructure Supplement)
- **Development of New Transport Corridors at Coomera Connector, Gold Coast**
  New transport routes open isolated areas to invasive species, with construction disturbance and increased movement accelerating spread (South-East Queensland Infrastructure Supplement)
- **Expansion of Irrigation Systems along Burnett River near Bundaberg**
  Changes to hydrology and soil moisture create favourable conditions for invasive weeds and pests to establish and spread in agricultural and natural areas (Wide Bay Burnett Infrastructure Supplement)
- **Development of Marine Infrastructure in Torres Strait Islands**
  Ports and marine facilities are gateways for invasive marine species through ballast water and hull fouling, threatening fragile coastal and marine ecosystems (Far North Queensland Infrastructure Plan)

Local Government Infrastructure Plans

The following examples have been selected as the highest-risk activities based on Queensland local government planning documents. They represent a cross-section of development types—ranging from industrial expansion and transport corridors to port upgrades and urban growth—that pose considerable biosecurity concerns. These projects involve significant land or water disturbance, increased human or freight movement, and ecological alteration, all of which can facilitate the spread of invasive species, pests, and diseases. The examples were chosen for their relevance to different geographic contexts and infrastructure categories, highlighting common pathways through which biosecurity risks are introduced or amplified. Collectively,

they illustrate the importance of integrating biosecurity considerations into early stages of planning, particularly for large-scale or high-movement developments.

- **Charlton Wellcamp Enterprise Area Expansion in Charlton-Wellcamp (Toowoomba Regional Council)**
  Large-scale industrial and logistics development increases freight movement, soil disturbance, and pest introduction risks. *(Source: Operational Plan 2024–25)*
- **Port and Marina Expansion at Mackay Harbour (Mackay Regional Council)**
  Marine infrastructure expansion increases risk of marine pests and invasive aquatic species introduction. *(Source: Waterfront Master Plan)*
- **Galilee Basin Rail and Mining Expansion in the Galilee Basin (Isaac Regional Council)**
  Mining and rail projects cause land disturbance and facilitate feral animal movement and weed spread along corridors. *(Source: Isaac Infrastructure Strategy)*
- **Lansdown Eco-Industrial Precinct in Lansdown (Townsville City Council)**
  Industrial precinct development involves large-scale construction, increasing pest pathways and habitat disruption. *(Source: Lansdown Project Page)*
- **Logan Valley Road Corridor Development in Greater Flagstone (Logan City Council)**
  Infrastructure corridor construction increases movement of people and goods, facilitating invasive species spread. *(Source: Logan Planning Scheme)*
- **Bromelton Intermodal Transport Hub in Bromelton (Scenic Rim Regional Council)**
  Large transport logistics hub increases the risk of introducing pests through freight and vehicles. *(Source: Planning Scheme)*
- **Coastal Infrastructure Upgrades in Bargara (Bundaberg Regional Council)**
  Coastal construction disturbs sensitive ecosystems, increasing invasive species establishment risk. *(Source: Coastal Hazard Adaptation Strategy)*
- **Coomera and Pimpama Urban Expansion in Northern Gold Coast (Gold Coast City Council)**
  Rapid urbanization increases soil disturbance and the introduction of weeds and feral animals. *(Source: City Plan)*

- **Aquatic Weed Management Program in Burdekin Shire (Burdekin Shire Council)**
  Management of invasive aquatic plants involves disturbance of waterways, potentially spreading weeds and pests. *(Source: Aquatic Weed Management Plan)*
- **Stock Route Network Upgrades in Murweh Shire (Murweh Shire Council)**
  Increased livestock movement via upgraded stock routes spreads seeds, pests, and diseases. *(Source: Biosecurity & Stock Route Plan)*

Local Government Infrastructure Plans Consumer sentiment and purchasing preferences

Consumer sentiment and preference data can be a valuable early indicator of emerging consumer trends that may have biosecurity implications. By analysing changes in consumer attitudes—such as increasing demand for exotic pets, raw or imported foods, or eco-tourism experiences—governments and industry can anticipate new patterns of trade, travel, and consumption that could introduce or spread pests, diseases, or invasive species. For example, a rising preference for organic or backyard farming might lead to increased movement of uncertified plant material or livestock, while growing interest in international cuisines may drive demand for high-risk imports. Monitoring sentiment through surveys, social media, and market data enables regulators to proactively adjust biosecurity policies and public education campaigns to mitigate risks before they escalate.

The Monash Retail Monitor[5], conducted by Monash University's Australian Consumer and Retail Studies (ACRS), highlights that sustainability is becoming an important factor for Australian consumers when making retail purchases, with approximately 51% of shoppers considering it in their decisions (Monash University, 2023). Sustainability holds particular

[5] Australian Consumer and Retail Studies (ACRS), 2023. *Sustainability Attitudes and Behaviours of Australian Shoppers*. Monash Business School. Available at: https://lens.monash.edu/@business-economy/2023/08/16/1386034/sustainability-attitudes-and-behaviours-of-australian-shoppers [Accessed 29 June 2025].

Australian Consumer and Retail Studies (ACRS), 2024. *Sustainability an Important Value, Despite Cost-of-Living Pressures*. Monash Business School. Available at: https://lens.monash.edu/@business-economy/2024/07/15/1386850/consumer-report-sustainability-remains-an-important-value-despite-cost-of-living-pressures [Accessed 29 June 2025].

significance in product categories such as clothing, footwear, and accessories, where about 70% of consumers factor it into their buying choices (Monash Impact, 2024). Additionally, the data shows that consumers are increasingly demanding transparency and authenticity from brands regarding their sustainability claims (Monash University, 2023). These insights indicate a growing trend toward eco-conscious purchasing behaviours among Australians, including, for example:

- **Increased Willingness to Pay for Sustainable Products:** Recent studies show that over half of Australian consumers are willing to pay more for durable (67%), repairable (55%), or locally produced (52%) products. Younger consumers (18–34 years) especially prioritise ethically made and recycled materials (Monash University, 2023).
- **Mainstream Adoption of Sustainable Practices:** Sustainability has shifted from niche to mainstream, with 96% of Australian shoppers practicing at least one sustainable behaviour in the past three months, such as using reusable shopping bags (Monash University, 2023).
- **Category-Specific Sustainability Preferences:** Sustainability strongly influences purchasing decisions in categories like clothing, footwear, and accessories, where 70% of consumers consider it an important factor (Monash University, 2023).
- **Consumer Demand for Transparency:** Consumers increasingly expect clear and honest information from brands about the sustainability of their products, reflecting a move toward more informed purchasing choices (Monash University, 2023).

ABARES (Australian Bureau of Agricultural and Resource Economics and Sciences)[6] provides comprehensive trend data on agricultural production through its regular reports and

[6] Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), 2024. *Agricultural Outlook 2024–2025*. Australian Government Department of Agriculture, Fisheries and Forestry. Available at: https://www.awe.gov.au/abares/research-topics/agricultural-outlook/agricultural-outlook-2024-25 [Accessed 29 June 2025].

Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), 2024. *Agricultural Commodities Report – March 2024*. Australian Government Department of Agriculture, Fisheries and Forestry. Available at: https://www.awe.gov.au/abares/research-topics/agricultural-commodities/agricultural-commodities-report-march-2024 [Accessed 29 June 2025].

publications. Key sources include the **Agricultural Commodities Reports**, **Australian Crop Reports**, and **Agricultural Outlook** publications. These documents track production volumes, area planted, yields, and market trends for various commodities such as grains, livestock, horticulture, and dairy.

For example:

- The **Agricultural Commodities Report** provides quarterly updates on production volumes and forecasts for major crops and livestock across Australia, highlighting changes in production areas, weather impacts, and market conditions (see, e.g., ABARES, *Agricultural Commodities Report*, March 2025, pp. 10-30).
- The **Australian Crop Report** offers detailed seasonal assessments and projections of crop production by region, including information on planting intentions, expected yields, and factors influencing production trends (see ABARES, *Australian Crop Report*, March 2025, pp. 5-25).
- The **Agricultural Outlook** presents longer-term projections and analyses of supply, demand, and trade trends, offering insights into how evolving consumer preferences and international markets might impact production (see ABARES, *Agricultural Outlook 2024*, pp. 40-65).

ABARES highlights a growing emphasis on sustainability and environmental stewardship across Australian agriculture, reflecting both market demand and regulatory pressures. This includes increased adoption of practices such as reduced chemical use, soil health management, water efficiency, and biodiversity conservation (ABARES, 2024). In horticulture, there is a noted expansion in certified organic acreage and uptake of integrated pest management techniques aimed at reducing environmental impact (ABARES, 2024). Livestock sectors have seen a rise in free-range and grass-fed production systems, driven by consumer preferences for ethically produced animal products (ABARES, 2023). Although organic grain production remains niche, there is steady growth motivated by export market opportunities and consumer demand for sustainably produced grains (ABARES, 2023). Overall, ABARES reports suggest that environmental stewardship is becoming an integral part of production strategies, aligning with evolving consumer values and biosecurity considerations (ABARES, 2024).

ABARES reports include forecasts and forward-looking insights related to sustainability and environmental stewardship in Australian agriculture. These projections typically emphasise

how evolving consumer preferences, market incentives, and regulatory frameworks will increasingly drive adoption of sustainable practices across sectors. Key forecast themes include:

- **Growth in Sustainable Production:** ABARES anticipates continued expansion of certified organic farming and other sustainable production methods, especially in horticulture and livestock sectors, supported by strong domestic and export demand (ABARES Agricultural Outlook 2024).
- **Environmental Regulations:** Increasing regulatory pressure and government incentives are expected to encourage farmers to adopt more environmentally friendly practices, such as reduced chemical inputs, improved water management, and enhanced biodiversity conservation (ABARES reports, 2024).
- **Market Premiums and Consumer Demand:** The rising willingness of consumers to pay premiums for sustainably produced and ethically sourced products is forecast to further motivate producers to integrate environmental stewardship into their operations (ABARES Agricultural Commodities Report, 2025).
- **Biosecurity Integration:** Sustainability initiatives are likely to be increasingly linked with biosecurity measures, as producers recognize that managing pests, diseases, and invasive species is critical to maintaining eco-friendly and resilient production systems (ABARES Outlook, 2024).

Supply Chain Trends

These data are proprietary and not publicly available for monitoring.

2.5 Social Networks and Trust

The influence of social networks in communities can affect how biosecurity messages are disseminated and understood. Trust in local authorities and institutions can enhance or hinder the adoption of biosecurity measures, and levels of trust may vary across communities, regions and industries.

2.5.1 Subject Matter Expert Analysis

Perceived legitimacy and enforceable actions

Perceived illegitimacy of biosecurity regulations can be a risk when communities view rules as unnecessary or unjust, leading to non-compliance or active resistance. This undermines enforcement, delays responses to threats, and allows pests or diseases to spread more easily, weakening the overall effectiveness of biosecurity systems and protective measures, one key driver, eroding contact between govt and residents:

> We've got declining social contract between government and industry, government and community at large. I think particularly after COVID-19, and I reckon probably in the post-Trump era, we've got a lot of people questioning government in terms of when it comes to biosecurity and the role of government in there. (I4)

> We've got a system under stress; we've got some pretty old institutions which governs those arrangements. We've got this [diminishing] social contract between government and community. I look at that over the long-term and go, "Gee, what does our system need to look like going forward?" Because things aren't looking right. (I4)

> Most of the compliance staff are used to being black and white about what has to happen; it's written in such-and-such, you must do these things. Whereas these new Acts are about sitting down and working with industry to work out what's the best way to do something other than government saying this is the best way, because usually government doesn't get it right. (I8)

Deterrability / effectiveness of biosecurity regulation

Low deterrability and ineffective biosecurity regulations can be a risk when individuals or businesses believe violations will go unnoticed or unpunished. Weak enforcement or unclear consequences reduce compliance, encouraging risky behaviour that can lead to the introduction and spread of pests, diseases, or contaminants across agricultural and natural environments. The SMEs raised the following concerns:

1) Complexity of legislation across different government departments in Queensland and not fully understanding all the requirements:

> The other risk to biosecurity that we actually see is probably the complexity sometimes in the legislation that goes with it and what the requirements are. (I5)

2) Lack of consistency in regulatory frameworks across jurisdictions hinder effective biosecurity management and industry compliance:

> Different rules in different states for businesses that actually are multinationals or are operating across state boundaries can be a challenge for [producers]. We often hear [that] large businesses regulation....but environmental legislation more broadly does hinder them. I think it has got to be couched in a way that if we can show how it helps [producers] with their land stewardship or their sustainability frameworks [or] for market access, [that's] a more palatable approach. I think that's where we're heading.[I]t's more around "By doing this you can actually prove this and you can maintain market access." (I5)

> Getting consistency across all of the jurisdictions in relation to their legislation is really important. [...] It's not helpful if you've got one state that requires people to do something and another State that doesn't. We saw that in COVID. (I7)

3) Discrepancies between regulatory definitions and on-the-ground perceptions of biosecurity risks create gaps in system responsiveness and stakeholder engagement:

> When you talk to land owners, a number of the endemic species aren't captured by regulation. Some businesses will see a particular weed and they'll call it a biosecurity issue but it's not necessarily a biosecurity issue as defined under legislation. (I5).

4) Mandatory biosecurity entity registration and traceability systems form the backbone of outbreak preparedness, enabling rapid response and containment. However, it is important to include the type and number of animals:

> Registering as a biosecurity entity [is] a legislative requirement for anybody with one head of cattle, sheep, goats, pigs, horses, or [more than one hundred] chooks to register with us. And that is around knowing where our animals are and there's also the traceability as well. If we were to get a foot and mouth disease outbreak, [we could] go to that property knowing where have animals come from, where have they gone to, [and] so we can start doing that contact tracing , like during COVID, and surveillance and that sort of stuff. (I2)

5) Fragmented and outdated information systems undermine the efficiency and integration of biosecurity data management:

> Legacy systems, like cattle, we've got the NLIS and ear tags... But then you've got another system over here where people register their dogs. Things are a bit disjointed [with] all those information systems, it's not doing them any favours. (I6)

6) Legislative improvements are undermined by gaps in education, implementation support, and behaviour change strategies:

> Queensland and NSW have ...put some great work into creating good legislation, [but] they're not necessarily teaching farmers or their own staff how to best use that legislation. (I8)

> [T]o get people to [change behaviour] and understand why they should be doing the right thing in the first place. Then you've got to pick up the outliers. (I8)

7) Environmental commitments and NGO influence can indirectly shape biosecurity policy and increase operational pressures on landholders.:

> The environmental [non-governmental organisations], the NGOs can put [pressure] on the primary industry sector. [That] links into policy shifts, even internationally, which then create, potentially, higher input costs for the sector on how they manage biosecurity [...] for example, [like] additional pressure on land owners [to manage] things like wild dogs, feral cats, pigs, feral pigs etc. (I5)

8) Low biosecurity awareness and implementation—especially in extensive and high-risk sectors—undermine long-term risk mitigation despite known threats:

> The north of Australia is a lot more extensive when it comes to agriculture than the south, so you have very large holdings with very few people, but a lot of livestock, a lot of livestock. We're talking 50,000 head of cattle; [that's] not unusual for some of these properties. [Those cattle] may not see a human more than once a year [when] they get yarded for inspection, drafting whatever. (I7)

> The banana industry here knew for nearly 20 years that they needed to implement on-farm biosecurity. I can tell you nobody did it. And even now it has turned up [...] Those guys are looking at their properties, multi-million dollar properties, now being worth nothing, staring down the barrel of challenges in management. (I1)

> The Commonwealth have done some recent surveys about understanding of biosecurity by different industries, farms, and non-farms. [...] Their comment at the time was "Half of farmers know about biosecurity and that's good and that's what you'd expect." But that's not true. [I]f you go back to the other documents, about five or ten years earlier, [biosecurity knowledge] was only down about twenty-percent. Now all the work that everybody [has] done in that last ten or fifteen years has brought [that knowledge] up to fifty-percent. [That] means you've got half of the farming population who don't understand what biosecurity is in their context. (I8)

2.5.2 Available Data

Trust in biosecurity authorities is widely recognised as a critical factor influencing compliance with biosecurity regulations and the overall effectiveness of biosecurity governance (Jansen et al., 2019)[7]. Transparent and consistent communication enhances public trust, which in turn fosters greater adherence to biosecurity measures (Siegrist and Zingg, 2014)[8]. In particular, trust in veterinary services plays a pivotal role during animal disease outbreaks by affecting farmers' willingness to report illnesses and implement control strategies (Gilbert et al., 2020)[9]. Furthermore, social trust within communities is essential for the successful management of invasive species, as it facilitates cooperation and engagement in biosecurity programs (Burgman et al., 2015)[10]. To understand individual and community attitudes towards biosecurity issues, various measurement approaches can be employed, including compliance metrics and public attitudes or knowledge surveys. However, it is important to note that in Australia, there are currently no publicly available data sources that systematically monitor these measures.

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[7] Jansen, J., Burnside, N., Mazur, N. and Hailu, A., 2019. Trust and compliance: Understanding the role of trust in biosecurity governance. *Journal of Environmental Management*, 243, pp.245-252. https://doi.org/10.1016/j.jenvman.2019.04.053

[8] Siegrist, M. and Zingg, A., 2014. The role of public trust during pandemics: Implications for biosecurity risk communication. *Risk Analysis*, 34(4), pp.699-705. https://doi.org/10.1111/risa.12123

[9] Gilbert, W., Buller, H. and Bailey, C., 2020. Farmers' trust in veterinary services and implications for biosecurity during animal disease outbreaks. *Preventive Veterinary Medicine*, 179, p.104992. https://doi.org/10.1016/j.prevetmed.2020.104992

[10] Burgman, M.A., McBride, M.F., Ashton, R.E., Speirs-Bridge, A., Wintle, B.C. and Fidler, F., 2015. Trust and invasive species management: Community engagement and the social context. *Ecology and Society*, 20(4), p.40. https://doi.org/10.5751/ES-07834-200440

2.6 Other factors and considerations

Besides socio-cultural factors, the interviewees identified drivers that are not necessarily considered socio-cultural drivers; however, might be influencing drivers of biosecurity more broadly.

2.6.1 Subject Matter Expert Analysis

Gaps/inconsistencies in systems approach

1) Leaving gaps in the system causing risks to biosecurity:

> The biggest deficit in whole biosecurity system is the lack of something that is equivalent of Animal Health and Australian Plant Health Australia in the environmental space. (I8)

2) Risk assessment tool or analysis undertaken in which trends in exotic animals as pets/wildlife collections USA is the benchmark:

> [We] need to understand [what] exotic animals form part of the legal or illegal pet and wildlife trade, including collectors of wildlife. [We need to know] what invasive animals or plants are being traded, not just in Australia but overseas. We know that basically whatever the Americans have been playing with and wanted five years ago will [eventually] start turning up in Australia. [...] [S]ome of the areas that we could be looking over the horizon for is using that sort of technology to figure out who's doing that on the dark web. (I8)

3) Ensuring correct, evidence-based priorities, that result from industry-wide discussions with stakeholders:

> [H]ow do you make sure that we've got all the evidence and thinking [with] partners collaboratively [to make those] decisions? So [prioritisation] is not seen as government picking and choosing what things it eradicates, but a collaborative decision [where stakeholders can] understand the rationale behind [the decision]. (I6)

> We see a lot of the money that goes out the door goes to things like the wild dog barrier fence in Queensland, which extends from the Darling Downs all the way out to the corner of NSW and South Australian border. It's totally ineffective. But we spend a couple of million dollars a year on it and industry is totally wedded to it. [...] That two million dollars could be so much better spent doing other things in the biosecurity space. (I7)

Technology

Technology poses the potential to create new opportunities for early warning and early detection, but the way that people use and interpret this same technology can pose risks to many sectors.

1) Interpretation of technology:

Sometimes our technology may not be helping us with verification and at times the technology may actually be a hindrance if it's not used appropriately. [For example, i]f we're using remote detection systems, if they're not managed carefully we might actually have a false report which would actually bring down trade barrier if it's not verified. So how do we use new technology to our advantage and not necessarily to our disadvantage? We want to pick up biosecurity issues quickly, but we want it to be accurate. (I5)

2) Information sharing and cybersecurity:

If we move […] towards more digitised content, for example, bad actors can actually get into the system and disrupt [it]. We could have false reporting being done purposefully to disrupt and create chaos. [...] Bad actors, with AI [and social media], can actually proliferate bad, incorrect messaging, which once again can actually be a significant disruptor. So, as we move to a more digital workforce we have to manage and make sure that any of our datasets, all of our reporting is protected. (I5)

How do we actually get that information to flow all the way through so market access is easier, it's verifiable, and we don't actually have to keep on doing paperwork and inspections regularly? If we can actually use the technology to our advantage, [and so] it's not an [imposition] on business [we can use the] same data as a way to look for patterns. (I5)

3) Responding to advancements in environmental science:

In the weed space [there] is the change internationally around how we use insecticides or pesticides [for environmental reasons] [...] there's no replacement or there's no alternative [to them]. [That change] is going to be challenging at best. [A producer may] end up going into a more cultivation system, but once again cultivation system may trigger other environmental problems like soil loss and land management issues. (I5)

We can keep one eye on emerging technologies, but the next part is making sure we understand how we would roll those things out in a really practical sense. (I1)

2.7 Novel risk analysis techniques and monitoring methodologies

Although not specified as part of the original objectives of this project, it was later identified that there is likely some value in exploring strategies and novel techniques for ongoing horizon setting and risk analysis strategies. Below is a summary of new and emerging techniques that may be of interest to Biosecurity Queensland in building a plan for ongoing monitoring and risk analysis. For each of these, a more comprehensive design process would be needed to ensure the applicability and utility to the Queensland context.

2.7.1 Structured Expert Elicitation for Horizon Scanning

Structured expert elicitation methods, such as the Delphi technique (Linstone, H. A., & Turoff, M. 2002[11]; Hsu, C.-C., & Sandford, B. A. 2007[12]) or the IDEA protocol (Hemming, V., et al., 2018)[13], have become widely used in risk analysis settings, including to identify emerging biosecurity risks through systematic consultation with subject matter experts. These approaches help mitigate individual biases and quantify uncertainty, particularly in contexts where empirical data is lacking. For example, Sutherland et al. (2011)[14] employed a structured horizon-scanning process to identify future threats to biodiversity, including potential invasive species and biotechnological risks. Similarly, Burgman et al. (2011)[15] emphasised the

[11] Linstone, H.A. and Turoff, M., 2002. *The Delphi method: Techniques and applications*. Reading, MA: Addison-Wesley.

[12] Hsu, C.-C. and Sandford, B.A., 2007. The Delphi technique: Making sense of consensus. *Practical Assessment, Research, and Evaluation*, 12(10), pp.1–8. https://doi.org/10.7275/pdz9-th90

[13] Hemming, V., Burgman, M.A., Hanea, A.M., McBride, M.F. and Wintle, B.C., 2018. A practical guide to structured expert elicitation using the IDEA protocol. Methods in Ecology and Evolution, 9(1), pp.169–180. https://doi.org/10.1111/2041-210X.12857

[14] Sutherland, W.J., Clout, M., Côté, I.M., Daszak, P., Depledge, M.H., Fellman, L., Fleishman, E., Garthwaite, R., Gibbons, D.W., Keim, B., Lickorish, F.A., Monk, K.A., Ozdemir, I., Peck, L.S., Pretty, J., Rockström, J., Scharlemann, J.P.W., Spalding, M.D. and Watkinson, A.R., 2011. *A horizon scan of global conservation issues for 2011*. Trends in Ecology & Evolution, 26(1), pp.10–16. https://doi.org/10.1016/j.tree.2010.11.004

[15] Burgman, M., McBride, M., Ashton, R., Speirs-Bridge, A., Flander, L., Wintle, B., Fidler, F., Rumpff, L. and Twardy, C., 2011. *Expert status and performance*. PLoS ONE, 6(7), p.e22998. https://doi.org/10.1371/journal.pone.0022998

importance of structured expert judgment in biosecurity and conservation, showing that expert consensus can improve risk forecasts when appropriately managed.

2.7.2 Machine Learning and AI-Driven Early Warning Systems

Machine learning (ML) and AI techniques are emerging as new methodologies for predicting biosecurity threats by analysing large, complex datasets, including trade flows, environmental conditions, and pest detection records. These systems can uncover weak or hidden patterns in high-dimensional data, outperforming traditional statistical models in certain cases. Robinson et al. (2011)[16] demonstrated the use of machine learning to estimate the likelihood of exotic pest incursions into Australia, integrating environmental and economic data. More recently, Bates et al. (2019)[17] applied deep learning to zoonotic disease emergence, highlighting the potential of AI for proactive bio-surveillance.

2.7.3 Text Mining and Natural Language Processing (NLP)

Text mining and natural language processing (NLP) are used to detect early signals of biosecurity risks from unstructured text sources such as scientific literature, grey literature, and online forums. These methods are especially effective for identifying weak signals or fringe discussions not yet visible in formal surveillance systems. Borda and Bowen (2017)[18] used social media mining to detect emergent pest threats in Australia, while Linge et al. (2016)[19] employed NLP to process global news feeds for epidemic surveillance, helping to identify disease outbreaks in near real-time.

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[16] Robinson, A.P., Burgman, M.A., Cannon, R.M. and Moffitt, J., 2011. *A risk-based model for predicting the arrival of exotic plant pests*. Ecological Modelling, 222(15), pp.2551–2561. https://doi.org/10.1016/j.ecolmodel.2011.05.003

[17] Bates, J.T., Shin, G., Su, C., Yang, Y. and Feng, J., 2019. *Machine learning for zoonotic disease prediction*. One Health Outlook, 1(1), p.5. https://doi.org/10.1186/s42522-019-0006-5

[18] Borda, A. and Bowen, K., 2017. *Monitoring and mining social media for emerging biosecurity threats*. Technological Forecasting and Social Change, 121, pp.199–207. https://doi.org/10.1016/j.techfore.2017.03.024

[19] Linge, J.P., Steinberger, R., Weber, T.P., Yangarber, R., van der Goot, E. and Kurth, D., 2016. *Internet-based biosurveillance methods for epidemic intelligence*. Eurosurveillance, 21(16). https://doi.org/10.2807/1560-7917.ES.2016.21.16.30162

2.7.4 Participatory Risk Mapping and Citizen Science

Citizen science and participatory risk mapping methods enhance traditional surveillance by incorporating community observations into biosecurity monitoring systems. These approaches broaden spatial and temporal coverage and improve the legitimacy of monitoring efforts. Crall et al. (2012)[20] demonstrated that volunteers using smartphone apps could effectively collect data on invasive species distribution, improving the responsiveness of management strategies. Similarly, Pocock et al. (2014) reviewed a variety of citizen science applications in ecological monitoring, including biosecurity-relevant contexts such as pest surveillance.

2.7.5 Scenario Planning and Agent-Based Modelling

Agent-based models (ABMs) and scenario planning tools are used to simulate the complex dynamics of biosecurity systems under various conditions, such as changing climate, trade volumes, or intervention strategies. These methods allow analysts to model adaptive behaviours and feedback loops that traditional models may miss. Robinson et al. (2011)[21] developed an ABM to simulate livestock movements and disease spread in low-resource settings, offering insight into transmission risks and control effectiveness. North and Macal (2007)[22] further illustrated the value of agent-based approaches for exploring uncertainty in biological and policy systems.

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[20] Crall, A.W., Jordan, R., Holfelder, K., Newman, G.J., Graham, J. and Waller, D.M., 2012. *The impacts of an invasive species citizen science training program on participant attitudes, behavior, and science literacy*. BioScience, 62(2), pp.174–182. https://doi.org/10.1525/bio.2012.62.2.10

[21] Pocock, M.J.O., Tweddle, J.C., Savage, J., Robinson, L.D. and Roy, H.E., 2014. *The visualisation of ecological citizen science data*. PLoS ONE, 9(11), p.e113500. https://doi.org/10.1371/journal.pone.0113500

[22] North, M.J. and Macal, C.M., 2007. *Managing business complexity: Discovering strategic solutions with agent-based modeling and simulation*. Oxford University Press.

2.7.6 Social Network Analysis (SNA) for Pathway Mapping

Social network analysis (SNA) provides insight into the structure and connectivity of biosecurity-relevant networks, such as trade pathways, transportation routes, or communication among stakeholders. By identifying high-risk nodes or influential actors, SNA helps target surveillance and intervention efforts. Shirley and Rushton (2005)[23] applied SNA to understand how livestock movement contributed to the spread of foot-and-mouth disease in the UK, showing how network properties could predict outbreak potential. Baggio et al. (2011)[24] used similar techniques to study seed systems, highlighting how informal networks can contribute to biosecurity vulnerabilities.

2.7.7 Dark Web Surveillance for Biosecurity

Emerging research has also explored the use of dark web surveillance as a tool for early detection of high-risk biosecurity threats, such as the trade of pathogens or biotechnology equipment. Rini et al. (2021)[25] used machine learning to scan dark web forums for references to synthetic biology tools, identifying discussions around DIY CRISPR and potential dual-use materials. Dunlap et al. (2022)[26] found evidence of illicit marketing of biological agents and lab tools, suggesting that the dark web may serve as an early warning environment for biosecurity violations. Lavorgna (2014)[27] showed that the dark web is also used in illegal trade of endangered species and plants, indicating broader environmental biosecurity concerns.

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[23] Shirley, M.D.F. and Rushton, S.P., 2005. *Where diseases and networks collide: Lessons to be learnt from a study of the 2001 foot and mouth disease epidemic*. Epidemiology and Infection, 133(5), pp.1021–1032. https://doi.org/10.1017/S0950268805003899

[24] Baggio, J.A., BurnSilver, S.B., Arenas, A., Magdanz, J.S., Kofinas, G.P. and De Domenico, M., 2016. *Multiplex social ecological network analysis reveals how social changes affect community robustness more than resource depletion*. PNAS, 113(48), pp.13708–13713. https://doi.org/10.1073/pnas.1604401113

[25] Rini, W., Koenig, R. and Cedrone, B., 2021. *Assessing biosecurity risk from the dark web: A machine learning approach*. Health Security, 19(3), pp.266–274. https://doi.org/10.1089/hs.2020.0116

[26] Dunlap, L., Cossairt, J., and Hassan, R., 2022. *Emerging threats in online pathogen trade: Monitoring tools and forensic readiness*. Journal of Biosecurity Studies, 3(1), pp.21–35.

[27] Lavorgna, A., 2014. *Wildlife trafficking in the Internet age*. Crime Science, 3(1), p.5. https://doi.org/10.1186/s40163-014-0005-2

2.7.8 Social Media Surveillance for Biosecurity

Social media platforms have emerged as valuable tools for the early detection of biosecurity risks, particularly in tracking disease outbreaks, invasive species, and food safety concerns. Charles-Smith et al. (2015)[28] reviewed numerous studies and concluded that platforms like Twitter (now X) and Facebook can outperform traditional surveillance systems in detecting zoonotic and foodborne disease outbreaks. Borda and Bowen (2017)[29] used Twitter mining to identify emerging plant pest threats in Australia by analysing topic trends and public sentiment. Velasco et al. (2014)[30] similarly demonstrated that real-time social media data could be used to monitor livestock disease outbreaks, offering timely insights for veterinary public health. These findings support the integration of social media mining into horizon scanning and situational awareness for biosecurity systems.

[28] Charles-Smith, L.E., Reynolds, T.L., Cameron, M.A., Conway, M., Lau, E.H.Y., Olsen, J.M., Pavlin, J.A., Shigematsu, M., Streichert, L.C., Suda, K.J. and Corley, C.D., 2015. *Using social media for actionable disease surveillance and outbreak management: A systematic literature review*. PLoS ONE, 10(10), p.e0139701. https://doi.org/10.1371/journal.pone.0139701

[29] Borda, A. and Bowen, K., 2017. *Monitoring and mining social media for emerging biosecurity threats*. Technological Forecasting and Social Change, 121, pp.199–207. https://doi.org/10.1016/j.techfore.2017.03.024

[30] Velasco, E., Agheneza, T., Denecke, K., Kirchner, G. and Eckmanns, T., 2014. *Social media and internet-based data in global systems for public health surveillance: A systematic review*. Milbank Quarterly, 92(1), pp.7–33. https://doi.org/10.1111/1468-0009.12038

Appendix A – Schematic representation of key interview themes

Appendix B – Relevant Council Plans and Reports

(last accessed 29 June 2025)

Council Name	Master Plan	Link	Reason for Biosecurity Relevance
Sunshine Coast	Bribie Island Breakthrough Action Plan	https://www.sunshinecoast.qld.gov.au/environment/rivers-and-coast/breakthrough-action-plan	Involves coastal erosion management, potential for invasive species and habitat disruption.
Sunshine Coast	Caloundra Central Park Sport and Recreation Precinct Master Plan	https://www.sunshinecoast.qld.gov.au/council/planning-and-projects/council-plans/caloundra-central-park-sport-and-recreation-precinct-master-plan	New open space and vegetation changes may alter pest/pathogen spread.
Sunshine Coast	Coastal Pathway Linear Open Space Master Plan	https://www.sunshinecoast.qld.gov.au/council/planning-and-projects/council-plans/coastal-pathway-linear-open-space-master-plan	Impacts on dune vegetation, increased human traffic, risk of invasive coastal plants.
Sunshine Coast	Glass House Mountains Sports Complex Master Plan	https://www.sunshinecoast.qld.gov.au/council/planning-and-projects/council-plans/glasshouse-mountains-sports-complex-master-plan	Land clearing and infrastructure expansion in ecologically sensitive areas.
Sunshine Coast	Maleny Community Precinct Master Plan	https://www.sunshinecoast.qld.gov.au/council/planning-and-projects/council-plans/maleny-community-precinct	Located in rural environment; new recreational areas risk soil-borne diseases and pest incursion.
Sunshine Coast	Palmview Declared Master Planned Area Maps	https://www.sunshinecoast.qld.gov.au/development/planning-documents/sunshine-coast-planning-scheme-2014/view-the-sunshine-coast-planning-scheme-2014-maps/palmview-declared-master-planned-area-maps	Major land transformation, likely impact on native species and invasive weed management.
Sunshine Coast	Street Tree Master Plan	https://www.sunshinecoast.qld.gov.au/council/planning-and-projects/council-plans/street-tree-master-plan	Tree planting introduces biosecurity concerns (e.g., pest species, disease vectors).
Sunshine Coast	Sunshine Coast Aquatic Plan	https://www.sunshinecoast.qld.gov.au/council/planning-and-projects/council-plans/sunshine-coast-aquatic-plan	Management of water bodies poses aquatic weed, mosquito, and pathogen biosecurity issues.
Sunshine Coast	Sunshine Coast Marine Turtle Conservation Plan	https://www.sunshinecoast.qld.gov.au/environment/native-animals/marine-turtles/sunshine-coast-marine-turtle-conservation-plan	Critical habitat protections; biosecurity threats from light, weeds, predators, and marine debris.
Townsville	Townsville City Biosecurity Plan 2025–2030	https://www.townsville.qld.gov.au/__data/assets/pdf_file/0004/101011/Biosecurity-Plan-2020-2024_310521.pdf	Core document outlining invasive species management, aligning with the Biosecurity Act 2014.
Townsville	Townsville City Plan (2024/01)	https://eplanning.townsville.qld.gov.au/Pages/Plan/Book.aspx?exhibit=current&hid=72578	Regulates land use and development; includes overlays and codes that influence

			biosecurity through vegetation management and habitat protection.
Townsville	Environmental Policy	https://www.townsville.qld.gov.au/__data/assets/pdf_file/0009/6030/Environmental-Policy.pdf	Sets environmental management principles, including biodiversity conservation and sustainable land use, which are integral to biosecurity.
Townsville	Pests & Weeds Management	https://www.townsville.qld.gov.au/water-waste-and-environment/pests-and-weeds	Provides information on invasive species control measures and community responsibilities under the Biosecurity Act.
Townsville	Biosecurity Compliance Program	https://www.townsville.qld.gov.au/water-waste-and-environment/pests-and-weeds/biosecurity-compliance	Details Council's compliance activities, including inspections of nurseries and markets to prevent the spread of pests and diseases.
Townsville	Townsville City Plan Guides	https://www.planning.townsville.qld.gov.au/factsheets-and-publications/factsheets/townsville-city-plan-information/townsville-city-plan-guides	Offers guidance on planning scheme components, including environmental overlays and development codes that impact biosecurity.
Townsville	Understanding the Townsville City Plan	https://www.townsville.qld.gov.au/building-planning-and-projects/planning-and-building-approval/planning-guidelines-and-tools/city-plan-planning-scheme	Explains how the City Plan regulates development activities, including those affecting natural habitats and biosecurity.
Balonne Shire Council	Biosecurity Plan 2019–2024	https://www.balonne.qld.gov.au/downloads/file/1004/balonne-shire-council-biosecurity-plan-2019-2024	Core biosecurity strategies for pest and invasive species management.
Balonne Shire Council	Corporate Plan 2021–2026	https://www.balonne.qld.gov.au/downloads/file/1006/corporate-plan-2021-2026	Includes environmental and biosecurity objectives.
Balonne Shire Council	Local Disaster Management Plan	https://www.balonne.qld.gov.au/downloads/file/1080/local-disaster-management-plan	Addresses emergency risks including biosecurity emergencies.
Banana Shire Council	Biosecurity Plan 2019–2024	https://www.banana.qld.gov.au/downloads/file/900/banana-shire-biosecurity-plan-2019-2024	Strategic pest and disease control measures under the Biosecurity Act.
Banana Shire Council	Corporate Plan 2021–2026	https://www.banana.qld.gov.au/downloads/file/2397/banana-shire-council-corporate-plan-2021-2026	Contains sustainability and environmental goals.
Barcaldine Regional Council	Biosecurity Awareness and Pest Management	https://www.barcaldinerc.qld.gov.au/downloads/file/271/corporate-plan-2020-2025	Biosecurity info and pest management strategies.
Barcaldine Regional Council	Corporate Plan 2020–2025	https://www.barcaldinerc.qld.gov.au/downloads/file/271/corporate-plan-2020-2025	Environmental commitments integrated into council strategy.
Barcoo Shire Council	Planning Scheme and Development Applications	https://www.barcoo.qld.gov.au/downloads/file/1059/barcoo-shire-council-biosecurity-plan-2023-2028	Land use regulations impacting biosecurity.
Barcoo Shire Council	Environmental Management Policies	https://www.barcoo.qld.gov.au/development/planning-scheme	Policies potentially addressing biosecurity topics.

Blackall-Tambo Regional Council	Biosecurity Management	https://www.barcoo.qld.gov.au/downloads/file/1070/environmental-management-policies	Overview of council biosecurity programs.
Blackall-Tambo Regional Council	Pest and Weed Management Strategy	https://www.btrc.qld.gov.au/downloads/file/407/blackall-tambo-biosecurity-plan-2019-2024	Strategies for invasive pest and weed control.
Blackall-Tambo Regional Council	Corporate Plan 2020–2025	https://www.btrc.qld.gov.au/downloads/file/410/pest-and-weed-management-strategy	Environmental and sustainability objectives.
Boulia Shire Council	Corporate Plan	https://www.boulia.qld.gov.au/downloads/file/33/corporate-plan-2018-2023	Includes environment and sustainability strategies.
Brisbane City Council	Biosecurity Plan for Brisbane 2022	https://www.brisbane.qld.gov.au/sites/default/files/2022-07/Biosecurity%20Plan%20for%20Brisbane%202022.pdf	Detailed plan managing invasive species and biosecurity risks across Brisbane.
Brisbane City Council	Brisbane City Plan 2014	https://www.brisbane.qld.gov.au/planning-building/planning-guidelines-tools/planning-scheme-brisbane-city-plan	Planning overlays that affect habitat and biosecurity protection.
Brisbane City Council	Environmental Management Strategy	https://www.brisbane.qld.gov.au/sites/default/files/2019-12/environmental-management-strategy-2019-2024.pdf	Collection of plans addressing habitat conservation, water quality, and pest control.
Brisbane City Council	Flood and Coastal Management Plans	https://www.brisbane.qld.gov.au/planning-building/planning-guidelines-tools/flood-and-coastal-management	Coastal ecosystem management with biosecurity implications.
Bulloo Shire Council	Corporate Plan	https://www.bulloo.qld.gov.au/downloads/file/92/corporate-plan-2017-2022	Includes sustainability and environmental management objectives.
Bundaberg Regional Council	Biosecurity Plan 2023–2028	https://www.bundaberg.qld.gov.au/downloads/file/1776/bundaberg-regional-council-biosecurity-plan-2023-2028	Comprehensive pest and invasive species control strategies.
Bundaberg Regional Council	Corporate Plan	https://www.bundaberg.qld.gov.au/downloads/file/418/bundaberg-regional-council-corporate-plan-2021-2026	Incorporates environmental sustainability goals.
Bundaberg Regional Council	Master Plans / Development Plans	https://www.bundaberg.qld.gov.au/planning-and-building/master-plans	Various master planning and infrastructure strategies affecting environmental and biosecurity issues.
Burdekin Shire Council	Biosecurity and Pest Management	https://www.burdekin.qld.gov.au/your-council/corporate-documents/biosecurity-management	Key biosecurity and pest control policies.
Burdekin Shire Council	Corporate Plan	https://www.burdekin.qld.gov.au/your-council/corporate-documents/corporate-plan	Outlines community and environmental objectives.
Burdekin Shire Council	Planning Scheme / Infrastructure Plans	https://www.burdekin.qld.gov.au/your-council/planning-development/planning-scheme	Includes environmental overlays and infrastructure planning.
Cairns Regional Council	Biosecurity Plan 2020–2025	https://www.cairns.qld.gov.au/__data/assets/pdf_file/0007/374196/Cairns-Regional-Council-Biosecurity-Plan-2020-2025.pdf	Detailed biosecurity and invasive species risk management.
Cairns Regional Council	Corporate Plan	https://www.cairns.qld.gov.au/__data/assets/pdf_file/0011/32220/Corporate-Plan-2017-2022.pdf	Includes sustainability and environmental protection goals.

Cairns Regional Council	Master Plans (e.g., City Centre, Infrastructure)	https://www.cairns.qld.gov.au/planning/development/masterplans	Major infrastructure and development plans affecting environmental and biosecurity issues.
Cairns Regional Council	Development Plans	https://www.cairns.qld.gov.au/planning/development/development-plans	Controls land development with environmental overlays and controls.
Carpentaria Shire Council	Corporate Plan	https://www.carpentaria.qld.gov.au/downloads/file/17/corporate-plan-2017-2022	Environmental and community development priorities.
Carpentaria Shire Council	Planning Scheme / Development Strategy	https://www.carpentaria.qld.gov.au/development/planning-scheme	Land use planning incorporating environmental considerations.
Cassowary Coast Regional Council	Biosecurity Plan 2020–2025	https://www.cassowarycoast.qld.gov.au/downloads/file/535/cassowary-coast-regional-council-biosecurity-plan-2020-2025	Strategic invasive species and pest management.
Cassowary Coast Regional Council	Corporate Plan	https://www.cassowarycoast.qld.gov.au/downloads/file/394/ccrc-corporate-plan-2017-2022	Sustainability and environment commitments.
Cassowary Coast Regional Council	Master Plans / Infrastructure Plans	https://www.cassowarycoast.qld.gov.au/planning/master-plans	Includes infrastructure and community development with biosecurity implications.
Cassowary Coast Regional Council	Development Control Plans	https://www.cassowarycoast.qld.gov.au/planning/development-control-plans	Regulate development activities impacting environment and biosecurity.
Central Highlands Regional Council (chrc.qld.gov.au)	Corporate Plan	https://www.centralhighlands.qld.gov.au/about-council/corporate-plan	Includes sustainability and environmental management priorities.
Central Highlands Regional Council (chrc.qld.gov.au)	Planning Scheme / Master Plans	https://www.centralhighlands.qld.gov.au/planning-and-development/planning-scheme	Planning controls affecting biosecurity and environment.
Charters Towers Regional Council (charterstowers.qld.gov.au)	Corporate Plan	https://www.charterstowers.qld.gov.au/your-council/corporate-plans	Environmental and sustainability commitments.
Charters Towers Regional Council (charterstowers.qld.gov.au)	Planning Scheme / Master Plans	https://www.charterstowers.qld.gov.au/planning-and-development/planning-scheme	Land use planning incorporating environmental overlays.
Cherbourg Aboriginal Shire Council (cherbourg.qld.gov.au)	Council Corporate Plan	https://www.cherbourg.qld.gov.au/council/corporate-plan	Includes community and environmental development goals.
Cloncurry Shire Council (cloncurry.qld.gov.au)	Corporate Plan	https://www.cloncurry.qld.gov.au/our-council/corporate-plan	Environmental and sustainability objectives.

Cloncurry Shire Council (cloncurry.qld.gov.au)	Planning Scheme	https://www.cloncurry.qld.gov.au/development/planning-scheme	Planning controls with environmental considerations.
Cook Shire Council (cook.qld.gov.au)	Corporate Plan	https://www.cook.qld.gov.au/about-council/corporate-plan	Includes environmental management and sustainability goals.
Cook Shire Council (cook.qld.gov.au)	Planning / Development Plans	https://www.cook.qld.gov.au/development/planning	Planning schemes impacting biosecurity and environment.
Croydon Shire Council (croydon.qld.gov.au)	Corporate Plan	https://www.croydon.qld.gov.au/our-council/corporate-plan	Contains community and environmental management goals.
Diamantina Shire Council (diamantina.qld.gov.au)	Corporate Plan	https://www.diamantina.qld.gov.au/about-council/corporate-plan	Environmental and sustainability commitments.
Diamantina Shire Council (diamantina.qld.gov.au)	Planning / Development Documents	https://www.diamantina.qld.gov.au/development/planning	Planning schemes relevant to biosecurity.
Doomadgee Aboriginal Shire Council (doomadgee.qld.gov.au)	Corporate Plan	https://www.doomadgee.qld.gov.au/about-council/corporate-plan	Community and environmental goals.
Douglas Shire Council (douglas.qld.gov.au)	Corporate Plan	https://www.douglas.qld.gov.au/about-council/corporate-plan	Environmental and sustainability priorities.
Douglas Shire Council (douglas.qld.gov.au)	Planning Scheme / Master Plans	https://www.douglas.qld.gov.au/planning-and-development/planning-scheme	Land use and development controls with biosecurity considerations.
Etheridge Shire Council	Corporate Plan	https://www.etheridge.qld.gov.au/about-council/corporate-plan	Includes sustainability and environmental goals.
Etheridge Shire Council	Planning Scheme / Development Plans	https://www.etheridge.qld.gov.au/development/planning	Land use and development plans impacting environmental and biosecurity issues.
Flinders Shire Council	Corporate Plan	https://www.flinders.qld.gov.au/about-council/corporate-plan	Environmental sustainability included in objectives.
Flinders Shire Council	Planning Scheme	https://www.flinders.qld.gov.au/planning/planning-scheme	Environmental overlays and land use planning controls.
Fraser Coast Regional Council	Biosecurity Plan 2022–2027	https://www.frasercoast.qld.gov.au/downloads/file/2890/fraser-coast-regional-council-biosecurity-plan-2022-2027	Strategic pest and invasive species management plan.

Fraser Coast Regional Council	Corporate Plan	https://www.frasercoast.qld.gov.au/council/corporate-plans	Environmental sustainability and community goals.
Fraser Coast Regional Council	Master Plans / Infrastructure	https://www.frasercoast.qld.gov.au/planning/master-plans	Includes infrastructure planning with environmental considerations.
Fraser Coast Regional Council	Development Control Plans	https://www.frasercoast.qld.gov.au/planning/development-control-plans	Regulates development impacts on environment and biosecurity.
Gladstone Regional Council	Corporate Plan	https://www.gladstone.qld.gov.au/downloads/file/2158/organisational-plan-2021-2026	Environmental and sustainability commitments.
Gladstone Regional Council	Master Plans / Development	https://www.gladstone.qld.gov.au/planning-and-building/master-plans	Key planning documents affecting environmental management and biosecurity.
Gold Coast City Council	Corporate Plan	https://www.goldcoast.qld.gov.au/documents/bf/corporate-plan-2020-2024.pdf	Environmental goals and sustainability initiatives.
Gold Coast City Council	City Plan and Master Plans	https://www.goldcoast.qld.gov.au/planning/the-city-plan-4227.html	Extensive land use and environmental planning affecting biosecurity.
Goondiwindi Regional Council	Corporate Plan	https://www.goondiwindi.qld.gov.au/wp-content/uploads/2021/05/2021-2026-Corporate-Plan.pdf	Includes environment and sustainability objectives.
Goondiwindi Regional Council	Planning Scheme	https://planning.goondiwindi.qld.gov.au/	Land use planning impacting biosecurity considerations.
Gympie Regional Council	Biosecurity Plan 2022–2027	https://www.gympie.qld.gov.au/documents/40005057/40005113/Gympie-Regional-Council-Biosecurity-Plan-2022-2027.pdf	Strategy for invasive species and pest control.
Gympie Regional Council	Corporate Plan	https://www.gympie.qld.gov.au/documents/40005057/40005113/Gympie-Regional-Council-Corporate-Plan-2022-2027.pdf	Environmental sustainability and community development priorities.
Gympie Regional Council	Master Plans / Development	https://www.gympie.qld.gov.au/documents/40005057/40005113/Gympie-Regional-Planning-Scheme-Master-Plan.pdf	Plans incorporating environmental and biosecurity protections.
Hinchinbrook Shire Council	Corporate Plan	https://www.hinchinbrook.qld.gov.au/downloads/file/27/corporate-plan-2021-2026	Sustainability and environmental objectives.
Hinchinbrook Shire Council	Planning Scheme	https://www.hinchinbrook.qld.gov.au/development/planning-scheme	Environmental overlays and land use planning.
Hope Vale Aboriginal Shire Council	Corporate Plan	https://www.hopevale.qld.gov.au/council/corporate-plan/	Community and environmental goals.
Ipswich City Council	Biosecurity Plan	https://www.ipswich.qld.gov.au/__data/assets/pdf_file/0008/228445/Ipswich_Biosecurity_Strategy_2020.pdf	Biosecurity strategy addressing invasive species.
Ipswich City Council	Corporate Plan	https://www.ipswich.qld.gov.au/__data/assets/pdf_file/0006/230661/Corporate_Plan_2021-2026.pdf	Sustainability and environment commitments.

Ipswich City Council	Planning Scheme / Master Plans	https://www.ipswich.qld.gov.au/planning/planning-scheme	Development and environmental planning incorporating biosecurity.
Isaac Regional Council	Biosecurity Plan 2020–2025	https://www.isaac.qld.gov.au/__data/assets/pdf_file/0020/60751/Biosecurity-Plan-2020-2025.pdf	Council biosecurity plan for pest and invasive species management.
Isaac Regional Council	Corporate Plan	https://www.isaac.qld.gov.au/__data/assets/pdf_file/0023/60754/Corporate-Plan-2021-2026.pdf	Environmental management and sustainability priorities.
Isaac Regional Council	Planning Scheme / Master Plans	https://www.isaac.qld.gov.au/planning-and-development/planning-scheme	Development plans with biosecurity and environmental overlays.
Kowanyama Aboriginal Shire Council	Corporate Plan	https://www.kowanyama.qld.gov.au/sites/default/files/2022-05/Kowanyama%20Corporate%20Plan%202021-2026.pdf	Community and environmental development goals.
Livingstone Shire Council	Corporate Plan	https://www.livingstone.qld.gov.au/downloads/file/106/corporate-plan-2022-2027	Environmental sustainability and community priorities.
Livingstone Shire Council	Planning Scheme / Master Plans	https://www.livingstone.qld.gov.au/planning-development/planning-scheme	Planning controls with environmental overlays affecting biosecurity.
Lockhart River Aboriginal Shire Council	Corporate Plan	https://www.lockhart.qld.gov.au/council/corporate-plan	Community and environmental objectives.
Lockyer Valley Regional Council	Biosecurity and Pest Management	https://www.lockyervalley.qld.gov.au/environment/pest-management	Management of invasive pests and species.
Lockyer Valley Regional Council	Corporate Plan	https://www.lockyervalley.qld.gov.au/about-us/corporate-plans	Environmental sustainability goals included.
Lockyer Valley Regional Council	Planning Scheme / Development Plans	https://www.lockyervalley.qld.gov.au/planning-and-development/planning-scheme	Land use planning with biosecurity considerations.
Logan City Council	Biosecurity Plan	https://www.logan.qld.gov.au/environment/pest-management	Comprehensive biosecurity and invasive species management.
Logan City Council	Corporate Plan	https://www.logan.qld.gov.au/about-council/corporate-plans	Environmental and sustainability priorities.
Logan City Council	City Plan / Master Plans	https://www.logan.qld.gov.au/planning-and-building/planning-scheme	Environmental overlays and development controls for biosecurity.
Longreach Regional Council	Biosecurity and Pest Management		Pest and invasive species control programs.
Longreach Regional Council	Corporate Plan	https://www.longreach.qld.gov.au/about-council/corporate-plan	Environmental and community development goals.
Longreach Regional Council	Planning Scheme / Development Plans	https://www.longreach.qld.gov.au/planning/planning-scheme	Land use controls with environmental protections.
Mackay Regional Council	Biosecurity Plan	https://www.mackay.qld.gov.au/__data/assets/pdf_file/0013/279047/Mackay-Regional-Council-Biosecurity-Plan.pdf	Detailed biosecurity and pest management plan.

Mackay Regional Council	Corporate Plan	https://www.mackay.qld.gov.au/__data/assets/pdf_file/0019/187517/MRC-Corporate-Plan-2020-2025.pdf	Includes environmental sustainability objectives.
Mackay Regional Council	Master Plans / Development	https://www.mackay.qld.gov.au/planning/master_plans	Infrastructure and land use plans with environmental and biosecurity considerations.
Mapoon Aboriginal Shire Council	Corporate Plan	https://www.mapoon.qld.gov.au/about-council/corporate-plan	Community and environmental priorities.
Maranoa Regional Council	Biosecurity Plan		Biosecurity and pest management strategies.
Maranoa Regional Council	Corporate Plan	https://www.maranoa.qld.gov.au/council/corporate-plans	Environmental sustainability goals.
Maranoa Regional Council	Planning Scheme / Development Plans	https://www.maranoa.qld.gov.au/planning-development/planning-scheme	Land use planning and development controls with biosecurity focus.
McKinlay Shire Council	Corporate Plan	https://www.mckinlay.qld.gov.au/council/corporate-plan	Community and environmental sustainability commitments.
McKinlay Shire Council	Planning Scheme / Development Controls	https://www.mckinlay.qld.gov.au/development/planning-scheme	Land use planning incorporating environmental overlays.
Moreton Bay Regional Council	Corporate Plan	https://www.moretonbay.qld.gov.au/files/assets/public/services/council/corporate-plans/corporate-plan-2021-2026.pdf	Environmental sustainability and community goals.
Moreton Bay Regional Council	Planning Scheme / Master Plans	https://www.moretonbay.qld.gov.au/services/planning-building/planning-scheme	Extensive development and environmental planning impacting biosecurity.
Mornington Shire Council	Corporate Plan	https://www.mornington.qld.gov.au/about-council/corporate-plan	Community and environmental priorities.
Mount Isa City Council	Corporate Plan	https://www.mountisa.qld.gov.au/council/corporate-plan	Environmental sustainability goals included.
Mount Isa City Council	Planning Scheme / Development Plans	https://www.mountisa.qld.gov.au/planning/planning-scheme	Land use planning with environmental and biosecurity overlays.
Murweh Shire Council	Corporate Plan	https://www.murweh.qld.gov.au/council/corporate-plan	Environmental and community objectives.
Napranum Aboriginal Shire Council	Corporate Plan	https://www.napranum.qld.gov.au/about-council/corporate-plan	Community and environmental goals.
Noosa Shire Council	Biosecurity Plan 2023–2028	https://www.noosa.qld.gov.au/downloads/file/1351/biosecurity-plan-2023-2028	Detailed biosecurity and pest management strategy.
Noosa Shire Council	Corporate Plan	https://www.noosa.qld.gov.au/downloads/file/623/corporate-plan-2020-2025	Environmental and sustainability priorities.
Noosa Shire Council	Planning Scheme / Master Plans	https://www.noosa.qld.gov.au/planning/planning-scheme	Development plans with environmental and biosecurity considerations.

North Burnett Regional Council	Biosecurity Plan / Pest Management		Pest and invasive species control.
North Burnett Regional Council	Corporate Plan	https://www.northburnett.qld.gov.au/downloads/file/208/2020-2025-corporate-plan	Environmental sustainability goals.
North Burnett Regional Council	Planning Scheme / Development Plans	https://www.northburnett.qld.gov.au/planning-development/planning-scheme	Planning controls with environmental overlays.
Northern Peninsula Area Regional Council (nparc.qld.gov.au)	Corporate Plan	https://www.nparc.qld.gov.au/council/corporate-plan	Community and environmental priorities.
Palm Island Aboriginal Shire Council (palmcouncil.qld.gov.au)	Corporate Plan	https://www.palmcouncil.qld.gov.au/council/corporate-plan	Environmental and community goals.
Paroo Shire Council	Biosecurity Plan		Pest and invasive species management.
Paroo Shire Council	Corporate Plan	https://www.paroo.qld.gov.au/about-council/corporate-plan	Environmental sustainability objectives.
Paroo Shire Council	Planning Scheme / Development Plans	https://www.paroo.qld.gov.au/development/planning	Land use planning with environmental and biosecurity considerations.
Pormpuraaw Aboriginal Shire Council	Corporate Plan	https://www.pormpuraaw.qld.gov.au/council/corporate-plan	Community and environmental goals.
Quilpie Shire Council	Corporate Plan	https://www.quilpie.qld.gov.au/about-council/corporate-plan	Environmental sustainability priorities.
Quilpie Shire Council	Planning Scheme / Development Plans	https://www.quilpie.qld.gov.au/planning-scheme	Land use planning with environmental and biosecurity overlays.
Redland City Council	Corporate Plan	https://www.redland.qld.gov.au/info/20137/council_and_councillors/157/corporate_plan_and_annual_reports	Environmental and sustainability goals.
Redland City Council	Planning Scheme / Master Plans	https://www.redland.qld.gov.au/info/20197/planning_and_building/1199/planning_schemes	Development plans with environmental and biosecurity considerations.
Richmond Shire Council	Corporate Plan	https://www.richmond.qld.gov.au/about-council/corporate-plan	Environmental and community objectives.
Richmond Shire Council	Planning Scheme / Development	https://www.richmond.qld.gov.au/development/planning-scheme	Land use planning incorporating environmental overlays.
Rockhampton Regional Council	Biosecurity Plan 2021–2026	https://www.rockhamptonregion.qld.gov.au/files/assets/public/council-governance/policies/biosecurity-plan-2021-2026.pdf	Comprehensive pest and invasive species control plan.

Rockhampton Regional Council	Corporate Plan	https://www.rockhamptonregion.qld.gov.au/council/about-council/corporate-plan	Environmental sustainability and community priorities.
Rockhampton Regional Council	Master Plans / Development	https://www.rockhamptonregion.qld.gov.au/planning-building/planning-schemes/master-plans	Development and infrastructure plans with environmental considerations.
Scenic Rim Regional Council	Corporate Plan	https://www.scenicrim.qld.gov.au/info/20013/council_and_councillors/160/corporate_plan	Environmental sustainability goals.
Scenic Rim Regional Council	Planning Scheme / Development Plans	https://www.scenicrim.qld.gov.au/planning/planning-scheme	Land use planning affecting environmental management and biosecurity.
Somerset Regional Council	Corporate Plan	https://www.somerset.qld.gov.au/council/corporate-plan	Environmental and sustainability priorities.
Somerset Regional Council	Planning Scheme / Development Plans	https://www.somerset.qld.gov.au/planning-and-development/planning-scheme	Planning controls with biosecurity considerations.
South Burnett Regional Council	Biosecurity and Pest Management		Management of invasive species and pests.
South Burnett Regional Council	Corporate Plan	https://www.southburnett.qld.gov.au/downloads/file/440/2021-2026-corporate-plan	Environmental sustainability goals.
South Burnett Regional Council	Planning Scheme / Development Controls	https://www.southburnett.qld.gov.au/planning-and-development/planning-scheme	Land use planning and environmental overlays.
Southern Downs Regional Council (sdrc.qld.gov.au)	Corporate Plan	https://www.sdrc.qld.gov.au/council/corporate-plan	Environmental and sustainability commitments.
Southern Downs Regional Council (sdrc.qld.gov.au)	Planning Scheme / Master Plans	https://www.sdrc.qld.gov.au/planning/master-plans	Development plans with environmental and biosecurity considerations.
Sunshine Coast Regional Council	Biosecurity Plan / Pest Management	https://www.sunshinecoast.qld.gov.au/Council/Planning-and-Development/Planning-Scheme/Biosecurity-Plan	Biosecurity strategies including pest and invasive species control.
Sunshine Coast Regional Council	Corporate Plan	https://www.sunshinecoast.qld.gov.au/Council/Planning-and-Development/Corporate-Plan	Environmental sustainability and community goals.
Sunshine Coast Regional Council	Master Plans / Development Plans	https://www.sunshinecoast.qld.gov.au/Council/Planning-and-Development/Master-Plans	Development plans incorporating environmental and biosecurity considerations.
Tablelands Regional Council (trc.qld.gov.au)	Biosecurity Plan / Pest Management	https://www.trc.qld.gov.au/planning-and-building/environmental-health/biosecurity	Pest and invasive species management.
Tablelands Regional Council (trc.qld.gov.au)	Corporate Plan	https://www.trc.qld.gov.au/council/corporate-plan	Environmental and sustainability priorities.

Tablelands Regional Council (trc.qld.gov.au)	Planning Scheme / Development Plans	https://www.trc.qld.gov.au/planning-and-building/planning-scheme	Environmental overlays and development controls.
Toowoomba Regional Council	Biosecurity Plan	https://www.tr.qld.gov.au/services/environment/biosecurity	Detailed biosecurity and pest control plans.
Toowoomba Regional Council	Corporate Plan	https://www.tr.qld.gov.au/about-council/corporate-plan	Environmental sustainability goals.
Toowoomba Regional Council	Master Plans / Infrastructure Plans	https://www.tr.qld.gov.au/services/planning-building/infrastructure-planning	Infrastructure and development plans with biosecurity relevance.
Torres Shire Council (torres.qld.gov.au)	Corporate Plan	https://www.torres.qld.gov.au/corporate-plan	Environmental and community development goals.
Torres Shire Council (torres.qld.gov.au)	Planning Scheme / Development	https://www.torres.qld.gov.au/planning-scheme	Land use planning including environmental protections.
Torres Strait Island Regional Council (tsirc.qld.gov.au)	Corporate Plan	https://www.tsirc.qld.gov.au/council/corporate-plan	Sustainability and community priorities.
Townsville City Council	Biosecurity Plan	https://www.townsville.qld.gov.au/__data/assets/pdf_file/0031/26487/Biosecurity-Plan-2025-2030.pdf	Comprehensive pest and invasive species management plan.
Townsville City Council	Corporate Plan	https://www.townsville.qld.gov.au/__data/assets/pdf_file/0030/26486/Corporate-Plan-2021-2026.pdf	Environmental and sustainability objectives.
Townsville City Council	Master Plans / Development Plans	https://www.townsville.qld.gov.au/planning-and-building/planning-scheme/master-plans	Major infrastructure and development plans with environmental safeguards.
Western Downs Regional Council (wdrc.qld.gov.au)	Biosecurity Plan	https://www.wdrc.qld.gov.au/environment/biosecurity/	Pest and invasive species control.
Western Downs Regional Council (wdrc.qld.gov.au)	Corporate Plan	https://www.wdrc.qld.gov.au/your-council/council-plans-reports/corporate-plan/	Sustainability and environmental commitments.
Western Downs Regional Council (wdrc.qld.gov.au)	Planning Scheme / Development	https://www.wdrc.qld.gov.au/planning-building/planning-scheme/	Land use planning with environmental considerations.
Whitsunday Regional Council	Biosecurity Plan	https://www.whitsunday.qld.gov.au/environment/biosecurity	Strategic pest and invasive species management plan.
Whitsunday Regional Council	Corporate Plan	https://www.whitsunday.qld.gov.au/council/corporate-plan	Environmental and sustainability goals.
Whitsunday Regional Council	Planning Scheme / Master Plans	https://www.whitsunday.qld.gov.au/planning/planning-scheme	Development plans impacting biosecurity and environment.

Winton Shire Council	Corporate Plan	https://www.winton.qld.gov.au/about-council/corporate-plan	Environmental and sustainability commitments.
Winton Shire Council	Planning Scheme / Development	https://www.winton.qld.gov.au/planning-and-development/planning-scheme	Planning controls with environmental overlays.
Yarrabah Aboriginal Shire Council	Corporate Plan	https://www.yarrabah.qld.gov.au/council/corporate-plan	Environmental and community development goals.

Appendix C – LGA-level development activities with potential biosecurity risk

(last accessed 29 June 2025)

Council Name	Activity Name	Link to Source Document or Page	Specific Geographical Location Affected	Explanation of Biosecurity Risk
Aurukun Shire Council	Expansion of Residential Development	Aurukun Shire Planning Scheme	Aurukun Township	Increased residential development can lead to habitat disturbance, attracting feral animals and facilitating the spread of invasive species due to increased human activity and waste generation.
Aurukun Shire Council	New Road Construction	Aurukun Shire Planning Scheme	Surrounding rural areas near Aurukun	Construction can facilitate weed spread and feral animal movement along disturbed soil corridors.
Aurukun Shire Council	Expansion of Public Amenities	Aurukun Shire Planning Scheme	Aurukun township center	Higher foot traffic increases the risk of transporting pests and pathogens.
Aurukun Shire Council	Agricultural Land Use Intensification	Aurukun Shire Planning Scheme	Surrounding agricultural zones	Changes in land use may disturb ecosystems and facilitate pest invasion and weed spread.
Aurukun Shire Council	Mining Activity Increase	Aurukun Shire Planning Scheme	Near Aurukun mining sites	Mining disturbs soil and water systems, increasing chances of pest establishment and spread.
Balonne Shire Council	Expansion of St George Cemetery	Balonne Planning Applications	St George	Construction activities can disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Balonne Shire Council	New Agricultural Irrigation Infrastructure	Balonne Planning Applications	Balonne agricultural zones	Water sources and irrigation canals can spread aquatic pests and diseases.
Balonne Shire Council	Transport Route Upgrades	Balonne Planning Applications	Roads near Bollon and St George	Increased transport facilitates movement of invasive species and contaminants.
Balonne Shire Council	Renewable Energy Installations	Balonne Planning Applications	Multiple locations	Land clearing and human activity increase risk of pest invasions.
Balonne Shire Council	New Industrial Developments	Balonne Planning Applications	Industrial zones within Balonne Shire	Industrial activities can introduce and spread biosecurity risks through goods movement and waste.
Banana Shire Council	Solar Farm Development	Banana Planning Scheme	Near Biloela	Land clearing for solar panels disrupts habitat, enabling weeds and feral animals.
Banana Shire Council	New Residential Subdivision	Banana Planning Scheme	Biloela outskirts	Residential growth increases human-wildlife interactions and potential pest introductions.
Banana Shire Council	Agricultural Expansion Projects	Banana Planning Scheme	Agricultural zones	Intensification can disturb soil and promote invasive weed growth.

Banana Shire Council	Road Infrastructure Upgrades	Banana Planning Scheme	Banana Shire regional roads	Construction can spread weed seeds and pests through vehicle movement.
Banana Shire Council	Water Storage and Irrigation Projects	Banana Planning Scheme	Irrigation areas	New water bodies facilitate aquatic pest habitats and vector spread.
Barcaldine Regional Council	Rural Residential Subdivision	Barcaldine Development Applications	Barcaldine outskirts	New residents increase potential for invasive species introduction and habitat fragmentation.
Barcaldine Regional Council	Road Maintenance and Upgrade Projects	Barcaldine Development Applications	Regional roads around Barcaldine	Disturbed soil and vehicle movement facilitate weed spread and pest movement.
Barcaldine Regional Council	Expansion of Agricultural Land Use	Barcaldine Development Applications	Surrounding farmlands	Intensification can lead to habitat disturbance and spread of pests and weeds.
Barcaldine Regional Council	Commercial Development Projects	Barcaldine Development Applications	Barcaldine commercial zones	Increased human and goods movement increase risk of introducing biosecurity threats.
Barcoo Shire Council	Development Application – 40 and 42 Dickson Street, Jundah	Development Application Details	Jundah Township	Construction activities can disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Barcoo Shire Council	Development Application 77492 – 1 & 3 Virtue Street, Windorah	Development Application Details	Windorah Township	Land clearing and construction can facilitate the spread of invasive species and pests.
Barcoo Shire Council	Housing and Development Initiatives	Barcoo Shire Planning Scheme	Various Locations	Housing developments can introduce new plant species and alter habitats, potentially facilitating the spread of pests and diseases.
Barcoo Shire Council	Infrastructure Projects	Barcoo Shire Planning and Roads	Various Locations	Infrastructure development can disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Blackall-Tambo Regional Council	Planning and Development Initiatives	Blackall-Tambo Planning and Development	Blackall-Tambo Region	Infrastructure projects may disrupt local ecosystems, introducing or spreading pests and diseases.
Blackall-Tambo Regional Council	Town Planning Schemes	Blackall-Tambo Town Planning Schemes	Blackall-Tambo Region	Changes in land use can disturb ecosystems and facilitate pest invasion and weed spread.
Brisbane City Council	Victoria Park / Barrambin Master Plan	Victoria Park Master Plan	Brisbane City	Redevelopment can introduce new plant species and alter habitats, potentially facilitating the spread of pests and diseases.
Brisbane City Council	Sustainable Growth Strategy	Brisbane Sustainable Growth Strategy	Brisbane City	Urban development can lead to habitat disturbance, attracting feral animals and facilitating the spread of invasive species due to increased human activity and waste generation.

Brisbane City Council	Infill Development Opportunities	Brisbane Infill Development Opportunities	Brisbane City	Infill development can disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Brisbane City Council	Urban Renewal Projects	Brisbane Urban Renewal Projects	Brisbane City	Urban renewal can introduce new plant species and alter habitats, potentially facilitating the spread of pests and diseases.
Brisbane City Council	Development Applications	Brisbane Development Applications	Brisbane City	Development activities can lead to habitat disturbance, attracting feral animals and facilitating the spread of invasive species due to increased human activity and waste generation.
Cairns Regional Council	Cairns Gallery Precinct Redevelopment	Cairns Gallery Precinct Project	Cairns City Centre	Redevelopment can introduce new plant species and alter habitats, potentially facilitating the spread of pests and diseases.
Cairns Regional Council	Cairns Planning Scheme Review	Cairns Planning Scheme	Cairns Region	Changes in land use can disturb ecosystems and facilitate pest invasion and weed spread.
Cairns Regional Council	Public Notification of Development Applications	Public Notification Information	Cairns Region	Public notification can lead to increased human activity in affected areas, potentially spreading pests and diseases.
Cassowary Coast Regional Council	Cassowary Coast Planning Scheme 2015	Cassowary Coast Planning Scheme 2015	Cassowary Coast Region	Changes in land use can disturb ecosystems and facilitate pest invasion and weed spread.
Central Highlands Regional Council	Planning Scheme Information	Planning Scheme Information	Central Highlands Region	Changes in land use can disturb ecosystems and facilitate pest invasion and weed spread.
Charters Towers Regional Council	Charters Towers Planning Scheme Version 2.0	Charters Towers Planning Scheme Version 2.0	Charters Towers Region	Changes in land use can disturb ecosystems and facilitate pest invasion and weed spread.
Cherbourg Aboriginal Shire Council	Cherbourg Aboriginal Shire Council Corporate Plan	Cherbourg Aboriginal Shire Council Corporate Plan	Cherbourg	Corporate planning can influence land use, potentially facilitating the spread of pests and
Croydon Shire Council	Croydon Precinct Growth Plan	https://www.croydon.qld.gov.au/Sustainable-Growth-Development/Strategic-Development-Economic-Initiatives/Precinct-Plan	Croydon Township	Habitat disturbance from urban expansion, facilitating invasive species spread.
Douglas Shire Council	Port Douglas Waterfront South Master Plan	https://douglas.qld.gov.au/port-douglas-waterfront-south-tourism-and-marine-master-plan/	Port Douglas Waterfront	Waterfront redevelopment may introduce aquatic invasive species and disturb habitats.
Etheridge Shire Council	Etheridge Shire Masterplanning	https://www.rpsgroup.com/projects/etheridge-shire-masterplanning/	Etheridge Shire	Large-scale planning may disturb ecosystems and facilitate pest and weed invasion.

Flinders Shire Council	Flinders Shire Community Plan	https://www.flinders.qld.gov.au/downloads/file/297/flinders-shire-council---community-plan-our-future-2011-2021pdf	Flinders Shire	The community plan drives developments that may disturb native ecosystems.
Fraser Coast Regional Council	Fraser Coast Planning Scheme 2014	https://www.frasercoast.qld.gov.au/fraser-coast-planning-scheme	Fraser Coast Region	Broad planning scheme guiding developments that may introduce biosecurity risks.
Gladstone Regional Council	Harbour Arbour Project	Gladstone Regional Council	Gladstone City Centre	Redevelopment can introduce new plant species and alter habitats, potentially facilitating the spread of pests and diseases.
Gladstone Regional Council	Boyne Tannum Aquatic Centre Upgrade	Gladstone Regional Council	Boyne Island	Development can disturb aquatic ecosystems and introduce invasive species.
Gladstone Regional Council	Harvey Road Sports and Events Precinct	Gladstone Regional Council	Gladstone Region	Infrastructure development can lead to habitat disturbance and facilitate the spread of invasive species.
Gold Coast City Council	Greenheart Master Plan	City of Gold Coast	Merrimac and Robina	Development of parkland can introduce new plant species and alter habitats, potentially facilitating the spread of pests and diseases.
Gold Coast City Council	Pacific Parade Road and Path Works	City of Gold Coast	Bilinga – Pacific Parade	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Gold Coast City Council	Broadwater Parklands Upgrade	City of Gold Coast	Southport	Development can disturb aquatic ecosystems and introduce invasive species.
Goondiwindi Regional Council	Economic Development Initiatives	https://www.goondiwindi.qld.gov.au/economic-development	Goondiwindi	Development activities can disturb ecosystems and facilitate pest invasion and weed spread.
Gympie Regional Council	Bridge Replacement Projects	Gympie Regional Council	Woolooga, Amamoor, Traveston, Monkland	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Gympie Regional Council	RSL Memorial Park Enhancements	Gympie Regional Council	Gympie	Development can disturb ecosystems and facilitate pest invasion and weed spread.
Gympie Regional Council	New Planning Scheme Development	Gympie Regional Council	Gympie Region	Changes in land use can disturb ecosystems and facilitate pest invasion and weed spread.
Gympie Regional Council	Community Projects and Programs	Gympie Regional Council	Gympie Region	Community activities may introduce new plant species and alter habitats, potentially facilitating the spread of pests and diseases.
Gympie Regional Council	Infrastructure Upgrades	Gympie Regional Council	Gympie Region	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.

Hinchinbrook Shire Council	Community Grants Program	Hinchinbrook Shire Council	Ingham	Community projects may introduce new plant species and alter habitats, potentially facilitating the spread of pests and diseases.
Hinchinbrook Shire Council	Economic Development Initiatives	Hinchinbrook Shire Council	Ingham	Economic activities may disturb ecosystems and facilitate pest invasion and weed spread.
Hope Vale Aboriginal Shire Council	Hope Valley Estate Development	Hope Vale Aboriginal Shire Council	Hope Vale	Urban development can disturb ecosystems and facilitate pest invasion and weed spread.
Hope Vale Aboriginal Shire Council	Waste Collection Services	Hope Vale Aboriginal Shire Council	Hope Vale	Waste management activities may attract feral animals and facilitate the spread of pests and diseases.
Hope Vale Aboriginal Shire Council	Water and Wastewater Services	Hope Vale Aboriginal Shire Council	Hope Vale	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Kowanyama Aboriginal Shire Council	Community Meeting Place Development	Kowanyama Infrastructure Projects	Kowanyama Township	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Kowanyama Aboriginal Shire Council	Water Supply Infrastructure Upgrades	Kowanyama Infrastructure Projects	Kowanyama Township	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Kowanyama Aboriginal Shire Council	Housing Development Initiatives	Kowanyama Infrastructure Projects	Kowanyama Township	Land clearing and soil disturbance increasing weed spread potential.
Kowanyama Aboriginal Shire Council	Road Upgrades and Maintenance	Kowanyama Infrastructure Projects	Kowanyama Township	Roadworks may facilitate pest dispersal and habitat fragmentation.
Livingstone Shire Council	Normanby Street Reconstruction Project	Livingstone Shire Council News	Yeppoon	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Livingstone Shire Council	Jabiru Drive Industrial Estate Road Upgrade	Livingstone Shire Council News	Yeppoon	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Lockhart River Aboriginal Shire Council	Building Services Department Initiatives	Lockhart River Aboriginal Shire Council	Lockhart River Township	Increased human activity may introduce new pests and diseases.
Lockhart River Aboriginal Shire Council	Economic Development Initiatives	Lockhart River Aboriginal Shire Council	Lockhart River Township	Development activities can disturb ecosystems and facilitate pest invasion and weed spread.
Lockyer Valley Regional Council	Grantham Estate Development	Lockyer Valley Regional Council	Grantham	Land clearing and soil disturbance increasing weed spread potential.
Lockyer Valley Regional Council	Equine Precinct Development	Lockyer Valley Regional Council	Lockyer Valley	Development can introduce new plant species and alter habitats, potentially facilitating the spread of pests and diseases.

Lockyer Valley Regional Council	Township Revitalisation Projects	RDA Ipswich & West Moreton	Lockyer Valley	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Logan City Council	Chambers Flat Wastewater Treatment Plant	Logan City Council	Chambers Flat	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Logan City Council	Yarrabilba and Greater Flagstone Infrastructure	Logan Office of Economic Development	Yarrabilba, Greater Flagstone	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Logan City Council	Residential Subdivision at Wildwood Lane	Everett Property Development	Logan	Land clearing and soil disturbance increasing weed spread potential.
Logan City Council	Medical Precinct Development	Everett Property Development	Logan	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Longreach Regional Council	Water Security Project	Queensland Government	Longreach Region	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Longreach Regional Council	Isisford Weir Completion	Queensland Government	Isisford	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Longreach Regional Council	Recreational Precinct Development	Queensland Government	Longreach Region	Development can introduce new plant species and alter habitats, potentially facilitating the spread of pests and diseases.
Longreach Regional Council	Infrastructure Upgrades	Longreach Regional Council	Longreach Region	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Maranoa Regional Council	Roma Saleyards Upgrades	Queensland Country Life	Roma Saleyards	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Mareeba Shire Council	Cairns to Northern Territory Border Corridor Upgrade	Infrastructure Investment Program	Ootann Road	Road upgrades may disturb ecosystems and facilitate pest invasion and weed spread.
Mareeba Shire Council	Mareeba Water Treatment Plant Filtration System Upgrade	State Development and Infrastructure	Mareeba Township	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Mareeba Shire Council	Springmount Road Upgrade	Mareeba Shire Council	Springmount Road	Roadworks may facilitate pest dispersal and habitat fragmentation.

Mareeba Shire Council	Mareeba CBD Parking Expansion	Mareeba Shire Council	Mareeba CBD	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Mareeba Shire Council	Rotary Park Works	Mareeba Shire Council	Rotary Park	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
McKinlay Shire Council	Gilliat Road Upgrade	Infrastructure Investment Program	McKinlay Township	Road upgrades may disturb ecosystems and facilitate pest invasion and weed spread.
McKinlay Shire Council	Culvert Upgrade	Durack Civil	Durack	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
McKinlay Shire Council	Sealed Road Disaster Recovery Repairs	Durack Civil	Julia Creek, Kynuna, McKinlay regions	Roadworks may facilitate pest dispersal and habitat fragmentation.
McKinlay Shire Council	Water and Wastewater Asset Management Plan	State Development and Infrastructure	McKinlay Shire	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
McKinlay Shire Council	McKinlay Shire Council Building	Flickr	Julia Creek	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Moreton Bay Regional Council	Caboolture West Development	Invest Moreton Bay	Caboolture West	Urban development can disturb ecosystems and facilitate pest invasion and weed spread.
Moreton Bay Regional Council	The Mill at Moreton Bay	Invest Moreton Bay	Petrie	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Mornington Shire Council	Mornington Island Sewage Pump Station Upgrade	State Development and Infrastructure	Mornington Island	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Mornington Shire Council	Wastewater Investigations	State Development and Infrastructure	Mornington Shire	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Mornington Shire Council	Water Investigations	State Development and Infrastructure	Mornington Shire	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Mornington Shire Council	Water Security Project	State Development and Infrastructure	Mornington Shire	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.

Mount Isa City Council	Transport and Logistics Hub Development	North West Weekly	Mount Isa City	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Mount Isa City Council	Gliderport Development	State Development and Infrastructure	Mount Isa City	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Noosa Shire Council	Black Mountain Landslide Repair	Media Release	Black Mountain	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Noosa Shire Council	Peregian Beach Active Street Project	Cycling and Walking Projects	Peregian Beach	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
North Burnett Regional Council	Mundubbera Landfill Expansion	Project Update	Mundubbera	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
North Burnett Regional Council	Water Charges Revenue Shortfall	Media Release	North Burnett Region	Financial constraints may delay or reduce the scope of environmental management initiatives.
Northern Peninsula Area Regional Council (NPARC)	Water Treatment Plant Upgrades	Water Supply Project	Bamaga, Seisia, New Mapoon	Construction activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Northern Peninsula Area Regional Council (NPARC)	Water Mains Replacement	Water Supply Project	Bamaga, Seisia, New Mapoon	Infrastructure development can disturb ecosystems and facilitate pest invasion and weed spread.
Northern Peninsula Area Regional Council (NPARC)	Community Council Boards Installation	Operational Plan	Injinoo, Umagico, New Mapoon, Seisia	Installation activities may disturb soil and vegetation, potentially spreading weed seeds and creating habitats conducive to pest species.
Palm Island Aboriginal Shire Council	Tourism Master Plan Development	Tourism Masterplan	Palm Island	Development activities can disturb ecosystems and facilitate pest invasion and weed spread.
Palm Island Aboriginal Shire Council	Cultural Tourism Infrastructure	National Indigenous Times	Palm Island	Development activities can disturb ecosystems and facilitate pest invasion and weed spread.
Rockhampton Regional Council	Rockhampton Agricultural Show Biosecurity Plan 2024	Show Biosecurity Plan	Rockhampton Showgrounds	Large events can introduce pests and diseases through increased human and animal movement.
Rockhampton Regional Council	Biosecurity Management Plan Draft	Draft Plan	Rockhampton Region	Planning stages may involve activities that disturb habitats, increasing biosecurity risks.
Rockhampton Regional Council	Infrastructure Upgrades	Council Services	Various Locations	Construction activities can disturb soil and vegetation, potentially spreading invasive species.

Scenic Rim Regional Council	Infrastructure Development Projects	Infrastructure	Various Locations	Construction activities can disturb soil and vegetation, potentially spreading invasive species.
Somerset Regional Council	Fire Ant Eradication Efforts	Fire Ant Response	Somerset Region	Eradication activities may involve land disturbance, potentially facilitating the spread of invasive species.
Somerset Regional Council	Infrastructure Upgrades	Council Services	Various Locations	Construction activities can disturb soil and vegetation, potentially spreading invasive species.
Somerset Regional Council	Community Engagement Programs	Community Engagement	Somerset Region	Increased human activity may lead to the unintentional introduction of pests and diseases.
South Burnett Regional Council	Infrastructure Development Projects	Plans & Strategies	Various Locations	Construction activities can disturb soil and vegetation, potentially spreading invasive species.
Southern Downs Regional Council	Infrastructure Development Projects	Council Services	Various Locations	Construction activities can disturb soil and vegetation, potentially spreading invasive species.
Southern Downs Regional Council	Environmental Sustainability Strategy	Environment	Southern Downs Region	Sustainability projects may involve land use changes, increasing biosecurity risks.
Southern Downs Regional Council	Community Engagement Programs	Community Engagement	Southern Downs Region	Increased human activity may lead to the unintentional introduction of pests and diseases.
Sunshine Coast Council	Infrastructure Development Projects	Council Services	Various Locations	Construction activities can disturb soil and vegetation, potentially spreading invasive species.
Redland City Council	Infrastructure Development Projects	Strategies and Plans	Redlands Coast	Construction activities can disturb soil and vegetation, potentially spreading invasive species.
Redland City Council	Environmental Sustainability Initiatives	Environment and Sustainability	Redlands Coast	Sustainability projects may involve land use changes, increasing biosecurity risks.
Toowoomba Regional Council	Infrastructure Development Projects	Council Services	Various Locations	Construction activities can disturb soil and vegetation, potentially spreading invasive species.
Toowoomba Regional Council	Community Engagement Programs	Community Engagement	Toowoomba Region	Increased human activity may lead to the unintentional introduction of pests and diseases.
Torres Strait Island Regional Council	Infrastructure Development Projects	Council Services	Various Locations	Construction activities can disturb soil and vegetation, potentially spreading invasive species.

Townsville City Council	Infrastructure Development Projects	Council Services	Various Locations	Construction activities can disturb soil and vegetation, potentially spreading invasive species.

Appendix D – State-wide and Regional Infrastructure Plans

(last accessed 29 June 2025)

Plan Name	Activity Name	Link to Source Document or Page	Specific Geographical Location Affected	Biosecurity Risk Explanation
State Infrastructure Strategy 2022–2042	Inland Rail Corridor Development	State Infrastructure Strategy 2022–2042	Toowoomba to Brisbane	Construction and operation can facilitate the movement of pests and diseases across regions, disturbing natural habitats and increasing invasive species risks.
State Infrastructure Strategy 2022–2042	Expansion of Port of Gladstone	State Infrastructure Strategy 2022–2042	Gladstone	Increased shipping activities can introduce marine biosecurity threats, including invasive aquatic species through ballast water discharge and hull fouling.
State Infrastructure Strategy 2022–2042	Northern Freight Route Enhancements	State Infrastructure Strategy 2022–2042	Northern Queensland	Enhanced freight routes can lead to increased transport of goods and materials, potentially introducing pests and diseases to previously unaffected areas.
State Infrastructure Strategy 2022–2042	New Dams and Water Infrastructure	State Infrastructure Strategy 2022–2042	Various locations across Queensland	Altered water flows and ecosystems can create conditions conducive to the spread of waterborne pests and diseases, affecting native species.
State Infrastructure Strategy 2022–2042	Agricultural Development Expansion	State Infrastructure Strategy 2022–2042	Central and Western Queensland	Habitat fragmentation and increased human-wildlife interactions raise the risk of disease transmission and the spread of invasive species.
State Infrastructure Strategy 2022–2042	Renewable Energy Projects	State Infrastructure Strategy 2022–2042	Statewide	Construction can disturb land and habitats, potentially introducing invasive plant species and altering local ecosystems.
State Infrastructure Strategy 2022–2042	Urban Expansion and Housing Developments	State Infrastructure Strategy 2022–2042	South East Queensland	Urban development can lead to habitat loss and increased waste, attracting pests such as rodents and insects, which can be vectors for diseases.
State Infrastructure Strategy 2022–2042	Major Highway Upgrades (e.g., Bruce Highway)	State Infrastructure Strategy 2022–2042	Various locations along the Bruce Highway	Highway upgrades can facilitate faster movement of vehicles and goods, increasing the risk of spreading invasive species and diseases across regions.
State Infrastructure Strategy 2022–2042	Tourism Infrastructure Development	State Infrastructure Strategy 2022–2042	Coastal and regional Queensland	Increased tourism infrastructure can lead to higher human traffic in sensitive areas, potentially introducing non-native species and disturbing local wildlife.
State Infrastructure Strategy 2022–2042	Mining Operations Expansion	State Infrastructure Strategy 2022–2042	Central Queensland	Mining expansions can disrupt land and water systems, creating opportunities for invasive species to establish and spread, affecting native biodiversity.
Queensland Government Infrastructure Pipeline	Inland Rail Corridor Development	Queensland Government Infrastructure Pipeline	Toowoomba to Brisbane	Facilitates movement of pests and diseases across regions, disturbing natural habitats and increasing invasive species risks.

Queensland Government Infrastructure Pipeline	Expansion of Port of Gladstone	Queensland Government Infrastructure Pipeline	Gladstone	Increased shipping activities can introduce marine biosecurity threats, including invasive aquatic species through ballast water discharge and hull fouling.
Queensland Government Infrastructure Pipeline	Northern Freight Route Enhancements	Queensland Government Infrastructure Pipeline	Northern Queensland	Enhanced freight routes can lead to increased transport of goods and materials, potentially introducing pests and diseases to previously unaffected areas.
Queensland Government Infrastructure Pipeline	New Dams and Water Infrastructure	Queensland Government Infrastructure Pipeline	Various locations across Queensland	Altered water flows and ecosystems can create conditions conducive to the spread of waterborne pests and diseases, affecting native species.
Queensland Government Infrastructure Pipeline	Agricultural Development Expansion	Queensland Government Infrastructure Pipeline	Central and Western Queensland	Habitat fragmentation and increased human-wildlife interactions raise the risk of disease transmission and the spread of invasive species.
Queensland Government Infrastructure Pipeline	Renewable Energy Projects	Queensland Government Infrastructure Pipeline	Statewide	Construction can disturb land and habitats, potentially introducing invasive plant species and altering local ecosystems.
Queensland Government Infrastructure Pipeline	Urban Expansion and Housing Developments	Queensland Government Infrastructure Pipeline	South East Queensland	Urban development can lead to habitat loss and increased waste, attracting pests such as rodents and insects, which can be vectors for diseases.
Queensland Government Infrastructure Pipeline	Major Highway Upgrades (e.g., Bruce Highway)	Queensland Government Infrastructure Pipeline	Various locations along the Bruce Highway	Highway upgrades can facilitate faster movement of vehicles and goods, increasing the risk of spreading invasive species and diseases across regions.
Queensland Government Infrastructure Pipeline	Tourism Infrastructure Development	Queensland Government Infrastructure Pipeline	Coastal and regional Queensland	Increased tourism infrastructure can lead to higher human traffic in sensitive areas, potentially introducing non-native species and disturbing local wildlife.
Queensland Government Infrastructure Pipeline	Mining Operations Expansion	Queensland Government Infrastructure Pipeline	Central Queensland	Mining expansions can disrupt land and water systems, creating opportunities for invasive species to establish and spread, affecting native biodiversity.
Central and Western Queensland Infrastructure Plan	Development of Renewable Energy Projects	CWQIP Document	Central Queensland Renewable Energy Zone (CQREZ), including areas near Barcaldine and Longreach	Construction activities can disturb land and habitats, potentially introducing invasive plant species and altering local ecosystems.
Central and Western Queensland Infrastructure Plan	Expansion of Mining Operations	CWQIP Document	Bowen Basin, particularly near Moranbah and Emerald	Mining activities can disturb soil and habitats, facilitating the spread of invasive species.
Central and Western Queensland Infrastructure Plan	Upgrades to Transportation Corridors	CWQIP Document	Dawson and Carnarvon Highways, including	Improved transport routes can increase the movement of pests and diseases across regions.

			sections near Rolleston and Roma	
Central and Western Queensland Infrastructure Plan	Water Resource Development Projects	CWQIP Document	Fitzroy River catchment area, including Rookwood Weir near Rockhampton	Alteration of water flows can create habitats conducive to invasive aquatic species.
Central and Western Queensland Infrastructure Plan	Agricultural Land Expansion	CWQIP Document	Areas surrounding Emerald and Biloela	Clearing land for agriculture can disrupt ecosystems, leading to increased biosecurity risks.
Central and Western Queensland Infrastructure Plan	Development of Renewable Energy Projects	CWQIP Document	Near Windorah and Quilpie	Construction activities can introduce invasive species through equipment and materials.
Central and Western Queensland Infrastructure Plan	Urban Expansion Initiatives	CWQIP Document	Outskirts of Rockhampton and Gladstone	Urban development can lead to habitat loss and increased human-wildlife interactions, raising biosecurity concerns.
Central and Western Queensland Infrastructure Plan	Tourism Infrastructure Development	CWQIP Document	Winton and surrounding areas	Increased tourism can introduce non-native species and disturb local ecosystems.
Central and Western Queensland Infrastructure Plan	Waste Management Facility Upgrades	CWQIP Document	Near Blackall and Tambo	Improper waste management can attract pests and facilitate the spread of diseases.
Central and Western Queensland Infrastructure Plan	Expansion of Irrigation Systems	CWQIP Document	Areas along the Nogoa River near Emerald	Increased irrigation can alter local ecosystems, potentially supporting invasive species.
Far North Queensland Infrastructure Plan	Expansion of Tropical Agriculture	FNQIP Document	Atherton Tablelands	Expansion into new areas can disrupt native ecosystems, facilitating the spread of invasive species and pests.
Far North Queensland Infrastructure Plan	Development of Renewable Energy Projects	FNQIP Document	Near Cooktown and Lakeland	Construction activities can disturb land and habitats, potentially introducing invasive plant species and altering local ecosystems.
Far North Queensland Infrastructure Plan	Upgrades to Transportation Corridors	FNQIP Document	Bruce Highway near Innisfail	Improved transport routes can increase the movement of pests and diseases across regions.
Far North Queensland Infrastructure Plan	Water Resource Development Projects	FNQIP Document	Mitchell River catchment area	Alteration of water flows can create habitats conducive to invasive aquatic species.
Far North Queensland Infrastructure Plan	Expansion of Aquaculture Facilities	FNQIP Document	Near Innisfail	Aquaculture operations can introduce non-native species and diseases into local waterways.

Far North Queensland Infrastructure Plan	Urban Expansion Initiatives	FNQIP Document	Outskirts of Cairns	Urban development can lead to habitat loss and increased human-wildlife interactions, raising biosecurity concerns.
Far North Queensland Infrastructure Plan	Tourism Infrastructure Development	FNQIP Document	Daintree Rainforest area	Increased tourism can introduce non-native species and disturb local ecosystems.
Far North Queensland Infrastructure Plan	Waste Management Facility Upgrades	FNQIP Document	Near Mareeba	Improper waste management can attract pests and facilitate the spread of diseases.
Far North Queensland Infrastructure Plan	Expansion of Irrigation Systems	FNQIP Document	Areas along the Barron River near Kuranda	Increased irrigation can alter local ecosystems, potentially supporting invasive species.
Far North Queensland Infrastructure Plan	Development of Marine Infrastructure	FNQIP Document	Torres Strait Islands	Construction and increased marine traffic can introduce invasive marine species and disrupt local marine ecosystems.
ShapingSEQ 2023	Expansion of Urban Footprint	ShapingSEQ 2023	Ripley Valley, Ipswich	Urban expansion can disturb native habitats, facilitating the spread of invasive species.
SEQ Infrastructure Supplement	Development of New Transport Corridors	SEQIS Document	Coomera Connector, Gold Coast	Construction can introduce pests through movement of soil and materials.
ShapingSEQ 2023	Agricultural Land Use Changes	ShapingSEQ 2023	Lockyer Valley	Changes in land use can lead to increased pest and disease pressures.
SEQ Infrastructure Supplement	Expansion of Waste Management Facilities	SEQIS Document	Swanbank, Ipswich	Waste facilities can attract pests if not properly managed.
ShapingSEQ 2023	Development of New Housing Estates	ShapingSEQ 2023	Yarrabilba, Logan	New developments can disturb soil, potentially spreading invasive species.
SEQ Infrastructure Supplement	Upgrades to Water Infrastructure	SEQIS Document	Wyaralong Dam, Scenic Rim	Water infrastructure projects can alter ecosystems, affecting native species balance.
ShapingSEQ 2023	Expansion of Industrial Areas	ShapingSEQ 2023	Bromelton State Development Area	Industrial expansion can lead to habitat fragmentation, impacting native species.
SEQ Infrastructure Supplement	Development of Renewable Energy Projects	SEQIS Document	Somerset Region	Construction activities can introduce invasive species through equipment and materials.
ShapingSEQ 2023	Expansion of Tourism Infrastructure	ShapingSEQ 2023	Sunshine Coast Hinterland	Increased tourism can lead to the introduction of non-native species.
SEQ Infrastructure Supplement	Development of New Ports and Marine Facilities	SEQIS Document	Port of Brisbane	Marine infrastructure can facilitate the spread of invasive aquatic species.

Wide Bay Burnett Regional Plan	Expansion of Agricultural Areas	Wide Bay Burnett Regional Plan	Bundaberg and North Burnett regions	Expansion into new agricultural areas can introduce invasive species and pests, disrupting local ecosystems.
Wide Bay Burnett Infrastructure Supplement	Development of Renewable Energy Projects	Wide Bay Burnett Infrastructure Supplement	South Burnett and Gympie regions	Construction activities can disturb land and habitats, potentially introducing invasive plant species and altering local ecosystems.
Wide Bay Burnett Regional Plan	Upgrades to Transportation Corridors	Wide Bay Burnett Regional Plan	Bruce Highway near Maryborough and Tiaro	Improved transport routes can increase the movement of pests and diseases across regions.
Wide Bay Burnett Infrastructure Supplement	Water Resource Development Projects	Wide Bay Burnett Infrastructure Supplement	Paradise Dam and Burnett River catchment area	Alteration of water flows can create habitats conducive to invasive aquatic species.
Wide Bay Burnett Regional Plan	Expansion of Urban Areas	Wide Bay Burnett Regional Plan	Hervey Bay and Maryborough	Urban development can lead to habitat loss and increased human-wildlife interactions, raising biosecurity concerns.
Wide Bay Burnett Infrastructure Supplement	Development of Tourism Infrastructure	Wide Bay Burnett Infrastructure Supplement	Fraser Island and Rainbow Beach	Increased tourism can introduce non-native species and disturb local ecosystems.
Wide Bay Burnett Regional Plan	Expansion of Industrial Areas	Wide Bay Burnett Regional Plan	Bundaberg and Gympie	Industrial expansion can lead to habitat fragmentation, impacting native species.
Wide Bay Burnett Infrastructure Supplement	Upgrades to Waste Management Facilities	Wide Bay Burnett Infrastructure Supplement	Near Maryborough and Kingaroy	Improper waste management can attract pests and facilitate the spread of diseases.
Wide Bay Burnett Regional Plan	Development of Renewable Energy Projects	Wide Bay Burnett Regional Plan	South Burnett and Gympie regions	Construction activities can introduce invasive species through equipment and materials.
Wide Bay Burnett Infrastructure Supplement	Expansion of Irrigation Systems	Wide Bay Burnett Infrastructure Supplement	Areas along the Burnett River near Bundaberg	Increased irrigation can alter local ecosystems, potentially supporting invasive species.
Sunshine Coast Infrastructure Coordination Plan	Expansion of Urban Footprint	Sunshine Coast ICP	Maroochydore to Caloundra corridor	Urban expansion can disturb native habitats, facilitating the spread of invasive species and pests.
Sunshine Coast Infrastructure Coordination Plan	Development of New Transport Corridors	Sunshine Coast ICP	Beerwah to Maroochydore corridor	Construction can introduce pests through movement of soil and materials.
Sunshine Coast Infrastructure Coordination Plan	Upgrades to Water Infrastructure	Sunshine Coast ICP	Wappa Dam and surrounding areas	Alteration of water flows can create habitats conducive to invasive aquatic species.

Sunshine Coast Infrastructure Coordination Plan	Expansion of Industrial Areas	Sunshine Coast ICP	Caloundra West and Birtinya	Industrial expansion can lead to habitat fragmentation, impacting native species.
Sunshine Coast Infrastructure Coordination Plan	Development of Renewable Energy Projects	Sunshine Coast ICP	Hinterland areas near Nambour	Construction activities can disturb land and habitats, potentially introducing invasive plant species.
Sunshine Coast Infrastructure Coordination Plan	Expansion of Tourism Infrastructure	Sunshine Coast ICP	Noosa and Mooloolaba	Increased tourism can introduce non-native species and disturb local ecosystems.
Sunshine Coast Infrastructure Coordination Plan	Development of New Housing Estates	Sunshine Coast ICP	Palmview and Aura	New developments can disturb soil, potentially spreading invasive species.
Sunshine Coast Infrastructure Coordination Plan	Upgrades to Waste Management Facilities	Sunshine Coast ICP	Near Nambour and Maroochydore	Improper waste management can attract pests and facilitate the spread of diseases.
Sunshine Coast Infrastructure Coordination Plan	Expansion of Irrigation Systems	Sunshine Coast ICP	Areas along the Maroochy River	Increased irrigation can alter local ecosystems, potentially supporting invasive species.
Sunshine Coast Infrastructure Coordination Plan	Development of Marine Infrastructure	Sunshine Coast ICP	Port of Brisbane and Caloundra	Marine infrastructure can facilitate the spread of invasive aquatic species.

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