



NATIONAL
Fire Ant
Eradication
PROGRAM

Annual Report 2021–22

This publication has been compiled by the National Red Imported Fire Ant Eradication Program, delivered by the Department of Agriculture and Fisheries (DAF) on behalf of cost-share partners.

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Funding acknowledgement

The National Red Imported Fire Ant Eradication Program is a national cost-shared program funded by all Australian state and territory governments and the Australian Government.

The Queensland Fire Ant Suppression Taskforce is funded by the Queensland Government.



Department of
Primary Industries



A photograph of a massive, ancient tree in a tropical forest. The tree's trunk is thick and textured, with several large, braided roots extending from the trunk down to the ground. The forest is dense with various types of trees and plants, including palm trees and ferns. Sunlight filters through the canopy, creating a dappled light effect on the forest floor.

Acknowledgement of Traditional Custodians

The National Red Imported Fire Ant Eradication Program acknowledges the Traditional Owners of the lands on which we work and strive to protect the natural environment for future generations. We recognise South East Queensland has been and always will be a place of cultural, social and historical significance to our First Nations Peoples and we respect their spiritual connection to these lands.

We pay our respects to Aboriginal and Torres Strait Islander Elders

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About the program

"We are the first country in the world to attempt eradication on this scale and without the program it's estimated fire ants would have now spread north to Bowen, west to Longreach and south to Canberra increasing the cost to industries, communities and governments."

Dr Wendy Craik

Our mission

To eradicate red imported fire ants from South East Queensland (SEQ).

Objectives of the Ten year Plan 2017-2027

Objective 1: Reduce infestation until fire ants are no longer present in South East Queensland (SEQ) and ensure areas remain free from fire ants through the implementation of eradication measures as outlined in the 10-year Eradication Plan.

Objective 2: Prevent the spread of fire ants to non-infested areas by using a combination of treatment, monitoring of compliance with movement restrictions pertaining to fire ant carriers and public education/engagement.

Objective 3: Provide evidence to demonstrate freedom from fire ant infestation in the SEQ region (following the process to declare proof of freedom described in the 10-year Eradication Plan).

Objective 4: Help prevent the establishment of new incursions of invasive ant species Australia-wide by building capability in and provision of invasive ant response and eradication expertise.

Our history

The National Red Imported Fire Ant Eradication Program (the program) was first launched in 2001 as an emergency response to fire ant incursions in SEQ at the Port of Brisbane and Richlands in Brisbane's west. The program has contained fire ant populations to SEQ and prevented their spread to other Australian states and territories.

Program scientists estimate that without the interventions undertaken by the program, SEQ infestations would have spread as far south as Canberra, north to Bowen and west to Longreach (see Figure 1). Predicted spread is based on modelling of the documented spread of fire ants in the U.S. which now covers 17 American states.

The program has successfully eradicated six fire ant incursions, mostly prior to the start of this Ten Year Plan:

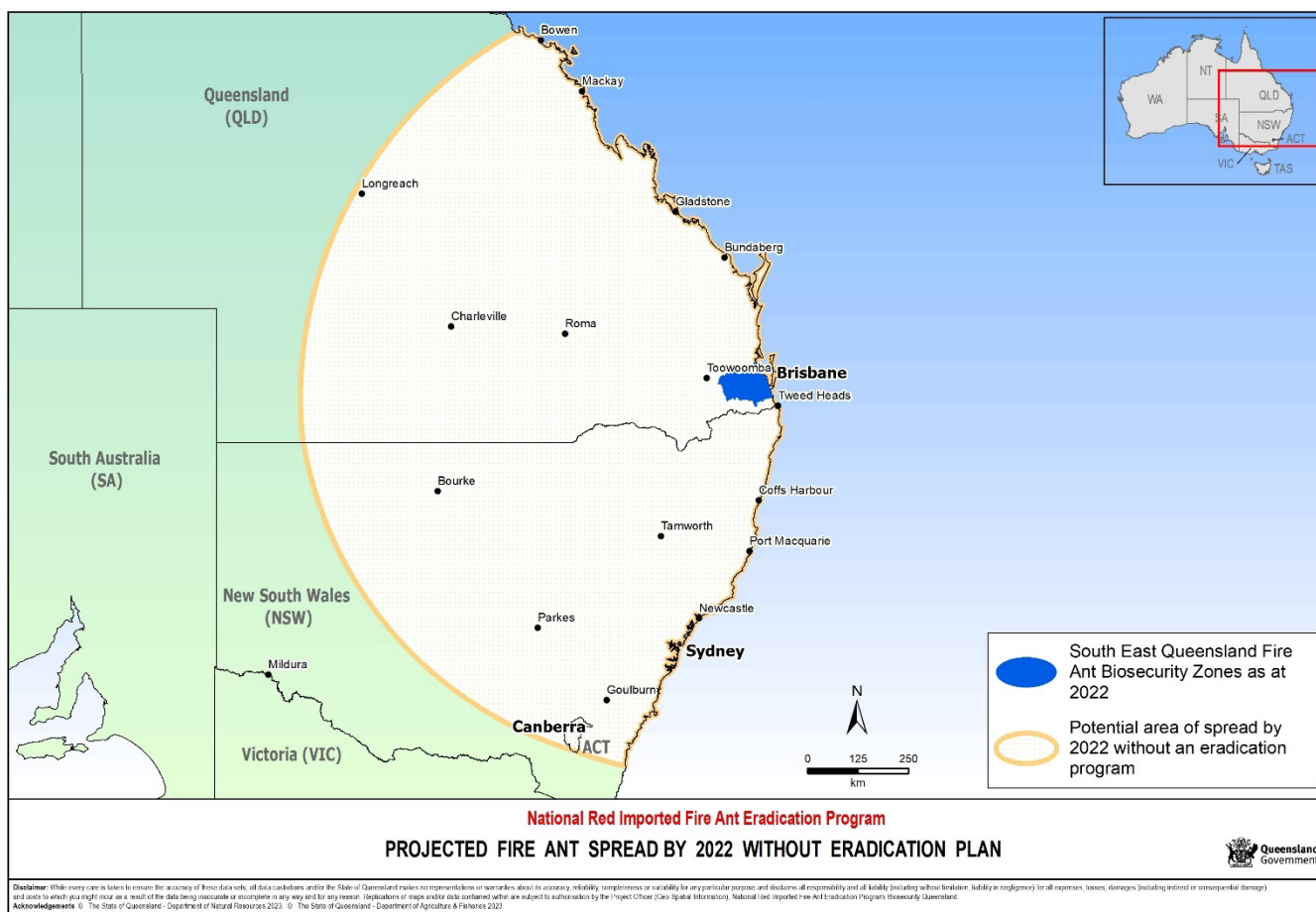
Location	Detected	Source	Eradication
• Port of Brisbane	2001	new incursion from U.S.	eradicated 2012
• Yarwun (Gladstone)	2006	new incursion from Argentina	eradicated 2010
• Port of Gladstone	2013	new incursion from U.S.	eradicated 2016
• Port Botany NSW	2014	new incursion from Argentina	eradicated 2016
• Brisbane Airport	2015	new incursion from U.S.	eradicated 2019

A new fire ant incursion from China found at Fremantle Western Australia in 2019 is nearing the 'declaration of freedom' stage. The program assisted the West Australian Government with treatment and surveillance expertise. In 2022, the program's odour detection dog teams assisted the West Australian Government with clearance surveillance. A new incursion from the U.S. detected at the Port of Brisbane in 2021 is currently receiving eradication treatment.

Since its inception and prior to the commencement of the Ten Year Eradication Plan, the program has eradicated four post-quarantine detections where fire ants were destroyed prior to establishment. These include Melbourne in 2001, Port of Brisbane in 2004, Lytton Qld in 2009 and Roma Qld in 2011. The Roma detection was intercepted on a shipment of goods enroute to Western Australia.

A further eight fire ant quarantine intercepts have occurred at Darwin in 2007, at Melbourne in 2006 and 2015, in South Australia in 2009 and 2017, at the Port of Brisbane in 2009 and 2014, at and in Western Australia in 2011. On all occasions, in the fire ants were eradicated at the point of entry.

• **Figure 1: Potential spread of fire ants without an eradication program up to June 2022**



Message from the Chair

International trade in commodities and manufactured goods between Australia and our trading partners provides us with economic and social benefits. However, the inward movement of these goods and commodities, particularly by sea, provides pathways for incursion of exotic pests such as the red imported fire ant. Regarded as a hitchhiker pest, fire ants most likely entered Australia in shipping containers of imported goods and their packaging.

Without the foresight of the Australian, state and territory governments in investing significant funding to confine fire ant infestation to SEQ and other incursions at our international ports and airports, fire ants are likely to spread throughout Australia. The threat of significant fire ant impacts on our environment, economy and social amenity is immediate and real.

Despite the good progress made over the first four years of the Ten Year Eradication Plan, it became evident in early 2021 that eradication could not be delivered within the time and budget of the Plan. The Steering Committee commissioned Dr Helen Scott-Orr, the former Australian Inspector-General of Biosecurity, Dr Monica Gruber from the Pacific Biosecurity program at Victoria University of Wellington and Mr Will Zacharin, formerly Executive Director of Biosecurity in South Australia, to assess whether fire ants were still eradicable, and investigate future options for funding and delivery.

The National Red Imported Fire Ant Eradication Program Strategic Review Report was presented to the Steering Committee in September 2021. The key finding of the review panel was that fire ants remain eradicable provided substantial changes to the response strategy are implemented at national, state, and local levels, including additional funding from the Australian Government, states and territories.

In December 2021, the Agriculture Senior Officials Committee (AGSOC) comprising department heads and CEOs of Australian / State / Territory and New Zealand Government primary industries, agreed in-principle to bring forward \$95 million of existing approved funding to fund a scaled-up eradication program for 2022–23, while work on a new, four-year eradication strategy - the *National Red Imported Fire Ant Response Strategy 2022–27*, was prepared for the consideration of Agriculture Ministers.

The program has experienced an extraordinary year. SEQ experienced massive rainfall and flood events from 22 February to 5 April 2022. Operations were disrupted and due to flooding in the western and eastern areas where eradication treatment was completed in 2020–21, application of the second treatment round to prevent reinfestation was curtailed and deferred to 2022–23. The program's field workforce was stood down due to road closures and saturated conditions preventing access to planned treatment and surveillance areas.

The COVID-19 pandemic again presented unique challenges. Queensland's COVID-19 Economic Recovery Plan created a tight labour market, which impacted the program's ability to secure and retain its field workforce. Competing for workers in an economic climate of low unemployment, along with wet weather and winter layoff affecting retention rates, has been challenging. Despite the challenges faced, the program achieved some remarkable goals through flexible management and innovative practices such as Remote Sensing Surveillance (RSS).

Technological improvements applied to RSS in 2021–22 resulted in substantial increases in areas surveyed. With the goal of mitigating fire ant colonisation near and beyond the operational boundary established in 2019–20, the program surveyed a total of 18,866 ha in operational boundary areas, achieving 85% more than the area surveyed in 2020–21. Ground crew validated 9,172 ha of RSS predictions and surveyed an additional 9,694 ha in these areas. During validation activities, field teams confirmed nests predicted by RSS in locations where infestation was previously unknown.

In 2021–22, the program's planned treatment activities focussed on destroying remnant fire ant infestations and preventing reinfestation in clearance areas where eradication treatment had been completed, as well as preventing infestation of areas to the south and west of biosecurity zones. In the treatment season, from September 2021 to June 2022, the program completed 309,355 ha of suppression and clearance treatment.

The Queensland government endorsed the Strategic Review panel's recommendation for increased suppression activities and initiated the Fire Ant Suppression Taskforce (FAST). The taskforce met for the first time in May 2022. It will continue to operate in collaboration with the program and focus on mobilising all levels of government, communities and businesses to increase fire ant suppression activities in Biosecurity Zone 2¹, prior to the program's eradication treatment moving into that zone. Everyone has a part to play in protecting our communities, environment, industry, and agricultural sector from the harm fire ants can cause.

The program aims for continuous improvement of treatment, diagnostic and surveillance techniques. The program is committed to sharing its expertise with other Australian states and territories and assisting with operational activities in response to fire ant and other exotic invasive ant incursions.

In 2021–22, the program's detection dog teams assisted the governments of Western Australia and the Northern Territory in post-treatment targeted surveillance to confirm absence of invasive ants and provide confidence that staged clearance processes were on track. Surveillance by detection dog teams also helped finalise validation of proof of freedom for the Port of Brisbane browsing ant incursion. The program's proven field surveillance methods, along with odour detection dogs and enhanced RSS will enable the program to achieve the best possible results and the most cost-effective budget for fire ant detection and eradication.

I would like to acknowledge the dedicated efforts of members of the Steering Committee, the Risk Management Sub-Committee and the Science Advisory Group. I thank the program's diligent management and administration staff and most of all, the tireless field workers who toil in arduous conditions to implement the program's containment, eradication and clearance goals. The staff should be congratulated on their success to date in containing fire ant infestation to SEQ.

I remain confident that the red imported fire ant can be eradicated with the cooperation and support of SEQ councils, businesses and residents in surveillance and treatment activities and the ongoing support of Australian governments. This cooperation and support is crucial to the program's successful containment and ultimate eradication of fire ants.

Wendy Craik AM

Steering Committee Chair

National Red Imported Fire Ant Eradication Program SEQ

¹ The area yet to be subjected to eradication treatment

Program outcomes

Program activities in 2021–22 were focused on ensuring that the Program’s progress was not reversed and ants were contained within the current infestation area. The top three priorities were:

1. destroying remnant infestations in the areas where eradication treatment has been completed (clearance areas)
2. protecting those areas from reinfestation
3. preventing the infestation of areas to the west and south of the current biosecurity zones.

The program’s treatment-related activity has four specific components: Stakeholder mobilisation; Containment; Eradication and Clearance. The outcomes for each component are described in the following pages and at Figure 2.

Stakeholder Mobilisation

Protecting Australia from fire ants involves everyone playing an active role in eradicating them. This involves the community and industry looking for, reporting and treating the pest, and ensuring their actions do not contribute to the spread of fire ants.

The program’s strategies to encourage stakeholder mobilisation in 2021–22 included: raising stakeholder awareness; building stakeholder support; and empowering stakeholder participation.

Building awareness

The program ramped up its advertising in 2021–22, running an ‘always on’ campaign during the course of the year. The campaign, which included new creative imagery, was designed to target stakeholders in a variety of geographic locations with different messaging at specific times.

The campaign encouraged community and industry stakeholders in SEQ to work with the program in the fight against fire ants by:

- looking for and reporting fire ants
- giving fire ant field teams access to their properties so they can treat for fire ants
- understanding and following the rules surrounding fire ant biosecurity zones and movement controls
- participating in self-treatment projects and treating their own properties.

Look for and report fire ants encouraged community and industry stakeholders in key areas to check their properties for fire ants and report any suspected nests. It also encouraged property owners, tenants and managers to allow our field staff to check their properties for signs of the pest throughout the year.

Let our fire ant teams in encouraged community and industry stakeholders in our planned treatment areas to give our authorised field officers access to their properties to conduct fire ant treatment.

Don’t spread fire ants, featuring creative imagery that captured the ants’ perspective, encouraged industry stakeholders in SEQ to educate themselves about the fire ant biosecurity zones and follow movement controls before transporting materials.

The Gold Coast self-treatment campaign encouraged community stakeholders in the suburbs of Arundel, Parkwood, Pacific Pines, Maudsland, Molendinar and Gaven to opt-in to proactively treat their backyards for fire ants with program-supplied bait.

A range of marketing channels were used during these campaigns to ensure the program could communicate effectively and influence behaviour change with the relevant target audiences. Channels included brochures, posters, radio, out-of-home (billboards, street furniture etc.), print, digital, social media advertising, electronic notifications, letters, third-party communication packs and news media engagement.

Connecting with local industry

Building relationships with industry and primary producers in SEQ was a key focus for the program in 2021–22. In an effort to get to complement the mass media advertising rolled out in the *Don't spread fire ants* campaign, the program used a range of communication and engagement methods to ensure the audience understood the important role they play in eradicating fire ants. This included speaking directly to residents by phone and conducting practical information sessions in rural communities.

Two of the key areas of focus for the program in 2021–22 were communicating further changes to the fire ant biosecurity zones, with the inclusion of Tarome and Coulson, and the importance of following the movement controls associated with the zones. The aim of this was not only to raise awareness of, but improve compliance with, the rules relating to movement of materials (e.g. soil, hay etc.) in which fire ants can live (Biosecurity Regulation 2016).

Self-treatment initiatives

Encouraging others to effectively deliver proactive and reactive fire ant treatment is integral to the delivery of the 10-year Eradication Plan. Self-treatment is expected to empower the community to keep their properties free of fire ants, reducing the risk of spread.

This treatment will not replace the program's rolling eradication treatment. Instead, it is complementary to it, aiding in the suppression and containment of fire ants until the program's eradication treatment can be applied.

In 2021–22, community self-treatment projects were completed in targeted areas of the Gold Coast, Brisbane's Calamvale ward and on Tamborine Mountain.

Each of these projects tested different methodologies to assess the most effective way to conduct proactive community fire ant treatment.

Gold Coast community suppression project

The objective of this project was to support the program's southern suppression treatment by building community interest in self-treatment options in the suburbs of Arundel, Parkwood, Pacific Pines, Maudsland, Molendinar and Gaven.

In October 2021 and February 2022, residents in the targeted suburbs were invited to receive a free fire ant treatment kit by placing a fire ant sticker on their letterbox. The program's field teams treated front lawns and grass verges and then left the treatment kits at the property, with the aim of reducing the cost and resourcing required for suppression treatment.

The goal of the project was to achieve 30% community participation. In round 1, 40.5% of households participated. In round 2, the result was 31%.

Calamvale ward responsive project

This project also looked at cutting responsive treatment costs by reducing the number of return visits to properties in areas that have high fire ant infestation.

The Calamvale Ward in Brisbane was selected as a small-scale pilot site to test this approach. The project had two different approaches:

1. On receiving a report of fire ants at a property in the Calamvale ward, a direct nest injection technician responded, treating the nest(s) and leaving behind a treatment kit so the resident could complete follow-up treatment.
2. Residents in the area were invited by the Calamvale Ward local councillor to proactively treat their properties for fire ants using a free treatment kit collect from the councillor's office or the Karawatha Forest Discovery Centre.

Over the duration of the project, 382 bait shakers were distributed by the program following treatment and a further 110 *Distance* bait shakers given to residents wanting to deliver proactive treatment. There are around 56,000 households in the Calamvale Ward.

A short phone survey was undertaken with 40 project participants with the following results:

- Did you need to contact the program again for follow up treatment? Yes (18%) No (82%)
- Would you recommend self-treatment of fire ants to your neighbours, friends and family? Yes (75%) No (25%)

Tamborine community treatment project

The third self-treatment project tested people's willingness to go to a local hub to collect a free treatment kit. Unlike the Tamborine Community Fire Ant Treatment Blitz in May 2021, this project involved little promotion and instead relied on signage, word-of-mouth, media coverage and residents who had previously participated.

Community partners were Tamborine Mountain Landcare Inc, Tamborine Mountain Chamber of Commerce and the Tamborine Mountain Visitors Information Centre.

While the goal of this project was to achieve a participation target of 30% of households, the actual number of participants was closer to 10%. Overall, the results of these projects show that there is some willingness in the community to participate self-treatment projects if it is easy—for example, the bait is delivered—and the project is well publicised.

Behavioural insights

The program continues to undertake behavioural research to better understand the motivation and drivers of residents, businesses, and key industry and community groups. The research provides us with an evidence-based understanding of target audience attitudes, beliefs and behaviours, allowing us to develop stakeholder-centred communications and engagement strategies which use informed interventions to drive behaviour change.

The data from 2021–22 research also measures program key performance indicators (KPIs) and assesses the effectiveness of the program's communication and engagement activities across SEQ.

Results from the research highlighted that awareness of fire ants (80%) and the program is high (71%), and residents in SEQ are willing to play their part in assisting with eradication activities.

Businesses continue to have a higher level of awareness (88%) and understanding of fire ants, compared to residents. They are also more familiar with the program and the work we are doing to eradicate the pest (79%). Table 1 below provides a summary of findings. The data was collected through phone interviews with 550 residents and 250 representatives of relevant businesses in fire ant areas in April 2022. The research survey will be undertaken at least once per year to continue to monitor stakeholder views and behaviours regarding fire ant management.

Table 1: Stakeholder research summary—April 2022

Topic	Residents	Businesses
Awareness	<ul style="list-style-type: none"> • Fully aware that fire ants are present in SEQ, (80%) 	<ul style="list-style-type: none"> • Fully aware that fire ants are present in SEQ (88%)

Topic	Residents	Businesses
	<ul style="list-style-type: none"> More than two thirds are fully aware that there is a treatment program to eradicate fire ants, (71%) 40% were fully aware they can engage a licensed pest manager to treat and 20% are fully aware they can self-treat by buying bait and applying it 	<ul style="list-style-type: none"> Fully aware that there is a treatment program to eradicate fire ants, (79%) 40% were fully aware they can engage a licensed pest manager to treat and 20% were fully aware they can self-treat by buying bait and applying it
Participation	<ul style="list-style-type: none"> 56% had checked their yard for fire ants in the last 12 months however, a greater percentage of people living in eradication areas checked their land for fire ants (Area 1 at 73% and Area 2 at 72%) Of those who had had treatment 77% were satisfied with treatment 	<ul style="list-style-type: none"> 32% had checked their workplace for fire ants in the last 12 months. This percentage was higher for those working in Area 1 (44%) and Area 2 (57%) Of those who received fire ant treatment on properties they own or manage, 74% were satisfied with the event
Attitudes	<ul style="list-style-type: none"> Keen to follow recommendations (94%) Believe everyone can help make a difference (90%) Two thirds (66%) see fire ants as a large problem in SEQ, 26% see it as a problem for their area and 10% see it as a problem for their household 	<ul style="list-style-type: none"> Keen to follow recommendations (92%) How they operate their business will make a difference to the spread of fire ants (50%) 21% of people think that fire ants are a problem in their area, however just 14% recognise the pest as a problem for their business. This differs from the 68% of people who see fire ants as a problem for South East Queensland
Advertising recall	<ul style="list-style-type: none"> 55% recalled information/advertising however, those with eradication treatment had a very high awareness (Area 1 at 76% and Area 2 at 78%) 	<ul style="list-style-type: none"> 62% recalled information/advertising with those with eradication treatment a much higher awareness (Area 1 at 81% and Area 2 at 93%)

Containment

The Steering Committee approved reductions to planned treatment due to the impacts of heavy rainfall and flooding on operational areas across SEQ from December 2021 to May 2022. Specifically, the Committee approved the reduction of the Eastern and Western Overlaps by 8,630 ha for the second treatment round (Round 2) and a reduction of the Southern Suppression treatment area by 21,900 ha to enable prioritisation of treatment of additional new detections and waste facilities.

Containment activities focussed on mitigating the spread of fire ants through strategies aimed at reducing the relative density and vigour of fire ant infestation; restricting the movement of fire ant carriers such as soil within, between and beyond the fire ant biosecurity zones; preventing the establishment of fire ants near (within 5 km) and beyond the operational boundary; and responsive treatment for detections of importance and polygyne² colonies.

Surveillance in containment areas focussed on identifying whether fire ants had established outside of the current SEQ infestation.

Planned treatment in the containment area

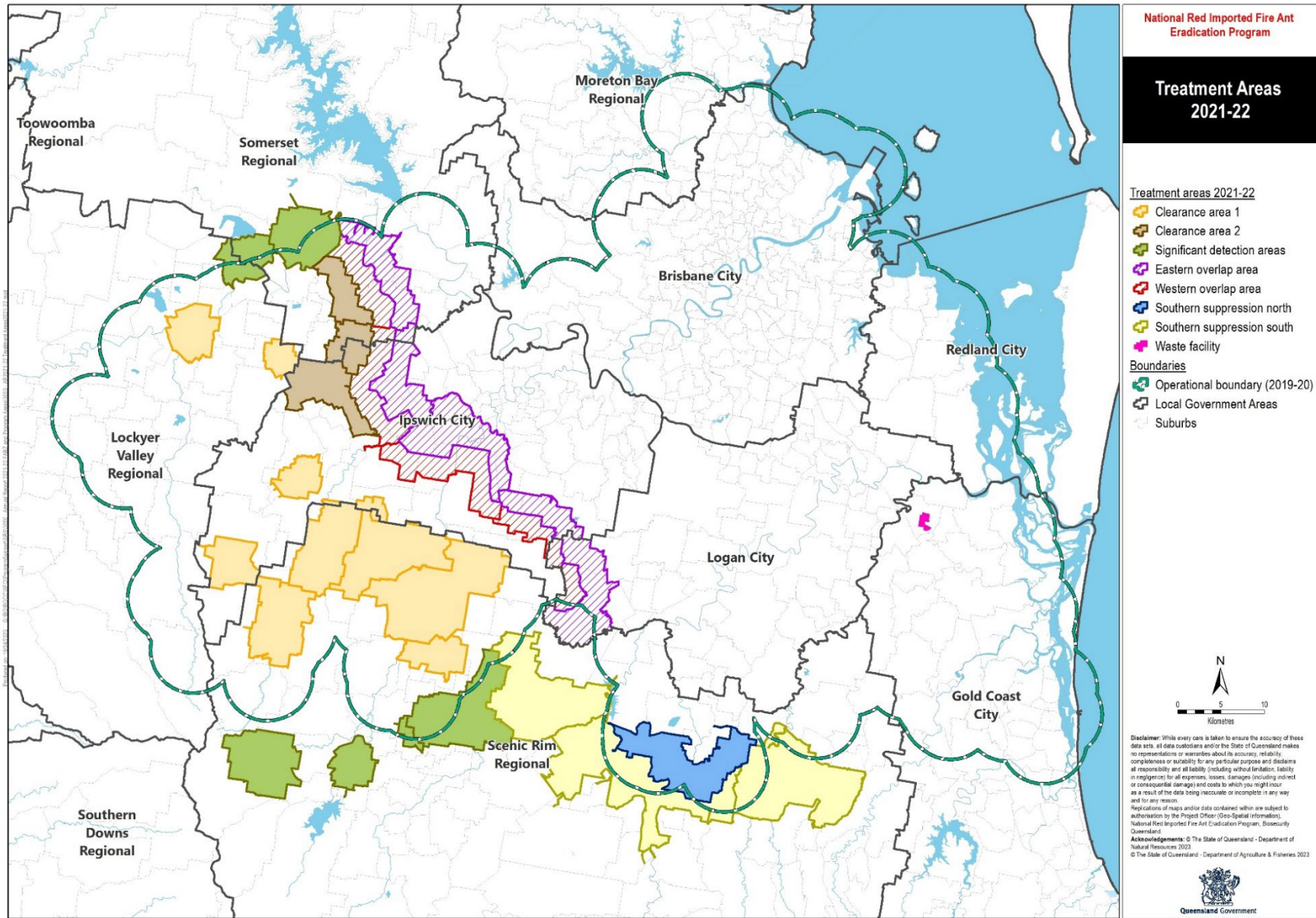
To prevent reinfestation of areas previously subjected to eradication treatment, the program delivered two rounds of suppression treatment to the Eastern and Western Overlap areas comprising a 4 km wide buffer along the eastern side of Area 2. Two rounds of treatment were applied to approximately 61,273 ha of land, achieving 92% of the adjusted target.

Southern Suppression areas received up to two rounds of planned treatment to an approximately 3 km buffer inside the operational boundary north of known detections and 2 km outside the operational boundary to the south of known detections. The program completed 63,448 ha of southern suppression area treatment, achieving 99% of the adjusted target.

Some planned second round treatment was deferred to 2022–23 due to flooding and waterlogged terrain.

² Polygyne or multiple queen colonies tend to contain workers from many queens and as such have varying levels of relatedness to each other.

Figure 2: Treatment areas 2021–22



Responsive treatment

Responsive treatment is prioritised according to level of risk – to the program’s eradication objective and to community safety. Responding to new detections that present a risk to the program’s objectives, such as those outside the operational area, up to five kilometres inside the operational boundary, and in clearance and eradication areas already treated, are prioritised for IGR³ bait and direct nest injection⁴ treatment. For community safety, infestations presenting a high risk such as those in schools, parks and sporting grounds are given the highest priority along with fire ant detections outside or near the program’s operational boundary.

Detections of importance

Detections of importance comprise the following detection types:

- Significant – a new detection found outside the program’s operations area
- Boundary – a new detection found up to 5 km inside the program’s operations area boundary
- Clearance area – a new detection in an area in which all eradication treatment has been applied and which is undergoing surveillance and residual ant search and destroy activities.

Detections of importance pose a heightened risk to the achievement of the program's objectives and overall success. The program took immediate action to destroy nests found outside the operational boundary, up to five kilometres inside the operational boundary and within areas that were undergoing clearance and proof of freedom activities. A total of 475 detections of importance were confirmed in 2021–22.

All significant detections were reported to cost-share partners and the Queensland Minister for Agricultural Industry Development and Fisheries. Residents and businesses located near significant detections were alerted by direct notifications, roadside signage, and targeted social media campaigns. Nine significant detections outside the operational boundary in two SEQ local government areas (Scenic Rim - 8 and Moreton Bay - 1) were immediately destroyed and treatment and surveillance undertaken of terrain within a 2 km radius of infestations.

Genetic analysis conducted by program scientists confirmed all detections of importance were of the monogyne (single queen) social form, related to the existing SEQ population and not new fire ant incursions entering Australia. Significant detections in the Scenic Rim at Biddaddaba, Josephville, Woolooman and Wonglepong in the proximity of known infestations were most likely from natural spread. The infestation at Rothwell in the Moreton Bay region most likely resulted from human-assisted movement related to transported soil. Genetic analysis found it to be strongly related to a previously reported nest approximately 9 km away.

The high number of detections (261) in the boundary area presents a significant risk to the program's containment objectives. Nests in boundary and clearance areas were treated with an insecticide applied by direct nest injection or the prescribed baiting regime for eradication, determined by the level of risk. Terrain treated ranged from 100 m to 500 m from individual nests to 2 km beyond an infestation. All boundary detections inside the southern portion of the operational boundary were prioritised for urgent treatment to prevent potential spread towards the NSW border.

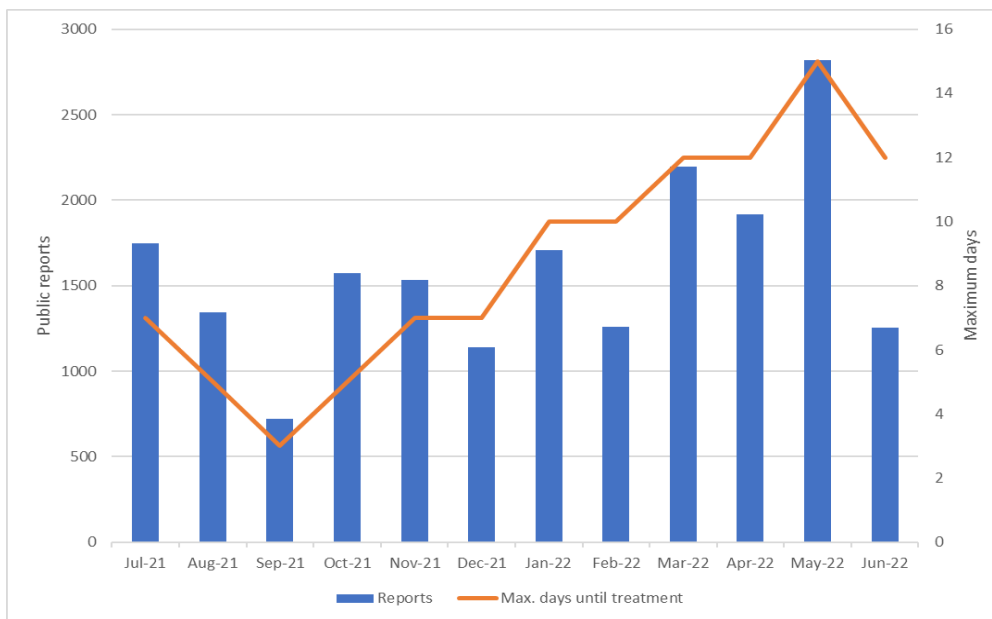
Community reports

The community continues to be a vital information source for the program by reporting possible fire ant sightings in their backyards and neighbourhoods in these locations. This year there were 19,226 reports of suspect fire ants in 2021–22. This compares with 15,416 in the previous year and 10,417 in 2019–20. The average maximum days to treatment was almost nine days, up from just over six days in 2020–21. The significant wet weather events experienced in SEQ in 2021–22 restricted the program's ability to provide a timely response to public reports of fire ant detections.

³ Insect growth regulator

⁴ Injection of a liquid pesticide which kills on contact

Figure 3: Public reports and maximum number of days to treatment 2021–22



Human-assisted spread mitigation

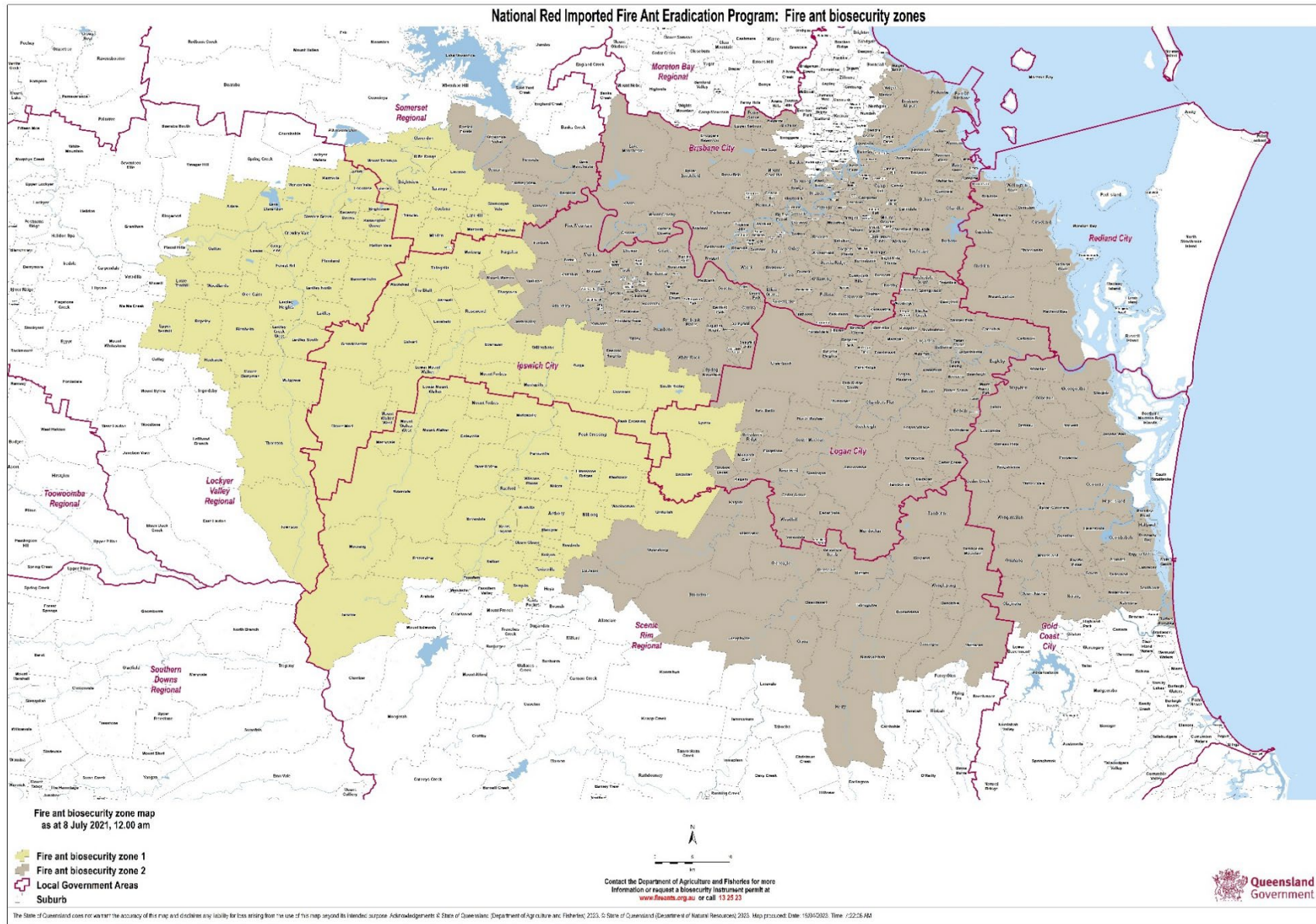
The Biosecurity Act outlines compliance requirements for the management of fire ant carrier materials including the storage, treatment and movement within and across fire ant biosecurity zones. Human-assisted movement poses a significant risk to containment when fire ants are transported in carriers like soil, hay, mulch, manure, quarry products, turf and potted plants.

Industries are audited for compliance based on the level of risk they pose by moving carriers and increasing the potential for fire ants to spread. Businesses targeted for compliance audit include landscaping services, hay producing, poultry farming, waste facilities, civil construction, earthmoving, development, building and quarrying. The program has developed a data base of approximately 7,000 high-risk businesses to inform compliance activities.

Compliance Officers completed 663 compliance audits across 13 industry sectors in 2021–22. Of the businesses audited, most (592) were compliant with 12% (71) non-complaint.

Two penalty infringement notices (PINs) were issued—one for soil movement outside of fire ant Biosecurity Zone 2 and one for obstruction of authorised property entry. Of the 14 Biosecurity Orders issued, 12 were for operators in the hay production industry. The compliance of hay producers and sellers continues to be of concern, with 38% of businesses audited initially being non-compliant. The program promotes voluntary compliance through stakeholder education and targets industries most likely to transfer fire ants through compliance audits. The remaining non-compliant businesses were issued with Advisory Notices.

Figure 4: Fire ant biosecurity zones at 30 June 2022



Assistance with new fire ant incursions

In 2021–22 the program's odour detection dogs were deployed to undertake post-treatment clearance surveillance of fire ants in Fremantle WA and browsing ant incursions in Greater Darwin in the Northern Territory and at the Port of Brisbane.

Odour detection dogs are the most accurate and precise surveillance tool employed by the program, capable of confirming the presence or absence of ants in clearly defined, discrete areas. These highly trained, talented team members can determine the location of colonies and underground nests before they become visible to the human eye and they can detect ants with an accuracy rate of up to 99%.

The program's dog teams are used in surveillance of high-risk sites to determine whether treatment has been effective and assess whether the program is on track to achieve eradication. The success rate of detection dogs reduces labour costs and their success rate of detection limits the use of chemical treatments for control and quarantine efficiency.

Surveillance in the containment area

The winter surveillance season commenced in late June 2021 and concluded in September 2021. In the Containment area, the program undertook sentinel surveillance⁵ to detect any spread outside and within close proximity to the current operations area / biosecurity zones, targeted surveillance to verify that detections of importance exhibit no further spread and responsive surveillance to delineate the extent of the infestation to contain the spread in areas which have yet to undergo planned eradication treatment. The extent of planned and actual surveillance in the Containment area is shown in the table below.

Table 2: Planned surveillance 2021–22

Surveillance type	Planned ha	Actual ha	Percentage completed
Sentinel	1,300	1,188	91%
Targeted	4,200	4,803	114%
Responsive	8,500	24,287	286%
Total	14,000	30,278	

An additional 15,787 ha of unplanned responsive surveillance was completed, exceeding the notional allocation of 8,500 ha. The majority of responsive treatment arises from public reports.

Approximately 10,000 ha of responsive remote sensing surveillance around new significant detections was planned and a corresponding 1,000 ha was allocated for ground verification by field teams.

No more gaps

Gaps are properties or parts of properties that remained untreated after treatment of the wider area. Each gap increases the risk of fire ants persisting in the overall area and over time the spread of fire ants from gaps will compromise nearby areas that have received eradication treatment. While an improvement on previous years, gaps remained an issue in 2021–22, accounting for between one and two percent of the specific treatment area as detailed in Table 3 below.

⁵ 'Sentinel surveillance' is a term used to describe the monitoring of areas of land for the presence or absence of fire ants over a period of time.

Table 3: Treatment gaps – locations and causes

Treatment gap category	Explanation	Area 1*	Area 1 southern boundary@
Refusal or safety and access issues	Landowners refused to allow treatment Safety issues caused by dogs, very steep slopes, extremely long grass Access prevented by issues such as locked gates	165	221
Cropping	Unable to treat crops due to APVMA permit conditions	1,031	939
Poultry	APVMA permit conditions to prevent poultry access to bait	14	2
Unsuitable habitat	Land that was impassable and not suitable terrain for fire ant nest establishment.	103	69
Not visited	Rain or low temperatures prevent effective treatment as planned and/or insufficient staff to complete within time available.	14	13
Other	Slivers remaining from incomplete aerial treatment. Sites reserved for science experiments	95	34
	Total	1,422	1,278
	Percentage of total planned area	1%	2%

* Clearance treatment

@ Includes both Boundary and Significant detections

The program achieved between 97% and 99% treatment coverage in 2021–22. Included in the table above were 103 refusals of treatment equating to 1,260 ha of untreated gaps. The program's compliance officers persuaded 63 landholders to allow treatment when faced with compliance action and penalty infringement notices for obstructing the program's authorised officers. Police-enforced entry was required for 39 properties. Gaps totalling 111 ha remain, with treatment for one property deferred to 2022–23.

A 'no more gaps' team was established to focus on working with landholders on solutions to closing gaps in eradication treatment areas. The program is working with agricultural stakeholders to eliminate gaps in farming regions where Australian Pesticides and Veterinary Medicines Authority (APVMA) permits require that where cropping land is treated, crops must be washed following harvest. For many crops, washing is not economic or practical. In 2021, program scientists found the low concentrations of chemically active components and low application rates of *Distance* and *Engage* fire ant bait would be unlikely to exceed scheduled maximum residue levels in crops. Field trials on brassicas and leafy crops to support less restrictive permit changes were conducted in the six months to December 2021. Residue testing and data analysis to inform preparation of a submission to the APVMA is being progressed. Work supporting permit changes to ease restrictions for treatment of crops is planned to continue in 2022–23.

Review of the biosecurity zones

Two reviews of the fire ant biosecurity zones were progressed in 2021–22. The biosecurity zones give effect to the fire ant-specific provisions in the Biosecurity Regulation, specifically controls on the movement and storage of fire ant carriers. The decision to include or exclude a suburb from the zones is informed by a set of criteria relating to the level of fire ant infestation and the risk of future infestation.

Following a review and amendment to the zones in the previous financial year, which came into effect in June 2021, significant infestations were detected in the suburbs of Coulson and Tarome, which were outside of the newly amended zones. Consequently, a further review was undertaken which resulted in those suburbs being added to the biosecurity zones, with effect from 8 July 2021 (see Figure 4).

A further review of the zones commenced in March 2022. This review resulted in the addition of 60 new suburbs to the zones. The new zones came into effect on 1 September 2022. The table below shows the number of suburbs added to each local government area.

Table 4: Suburbs added to biosecurity zones

LGA	No.	LGA	No.
Brisbane	28	Somerset	2
Moreton Bay	19	Lockyer Valley	1
Scenic Rim	10		

Eradication

As a consequence of resource constraints, the program planned to focus eradication treatment in 2021–22 on destroying known and newly discovered remnant infestations within Area 1, the Western Boundary area and Area 2, as part of Clearance activities. The program had identified 216 detections of importance in the previous year, of which 73 were located within the program's previous eradication areas—Area 1 and the Western Boundary.

Port of Brisbane incursion

The program commenced an eradication campaign for an incursion at the Port of Brisbane, on behalf of the Australian Government in March 2021. During 2021–22 the program undertook direct nest injection of a contact insecticide to each nest, delivered four rounds of IGR over an area within a 500 metre radius of each nest, undertook delimitation surveillance over an area within a 2 km radius of each nest and at identified high risk trace premises. It is anticipated that the campaign will be completed with the submission of a proof of freedom plan in December 2023.

Clearance

Clearance treatment

The summer treatment season commenced in September 2021 and finished on 30 June 2022. Despite losing about two-thirds of aerial treatment days and one-third of ground treatment days due to torrential rain and flooding, the program achieved treatment of 98% of the targeted 313,950 ha adjusted for this contingency and exceeded the notional target for treating new detections by 14% (Table 5).

The excessive amount of lost time caused by weather events resulted in postponement of the final round of treatment of some Area 1 and significant detections and these were prioritised for treatment early in 2022–23.

Table 5: Planned clearance treatment

Treatment area	Planned ha	Adjusted	Actual	% of Adjusted
Area 1	99,690	96,770	92,803	96 ¹
Significant detections	51,660	51,660	50,764	98
Contingency for new detections (A1 / SD / A2)	44,000	34,525	39,370	114 ¹
Overlaps	75,400	66,770	61,273	92 ²
Southern suppression and Waste Facilities	86,125	64,225	63,448	99 ²
Self-treatment	5,000	5,000	1,697	34

¹ Adjusted contingency for new detections was exceeded by 14% due to more new detections treated than expected.

² The Steering Committee approved the reduction of Overlaps by 8,630 ha for Round 2 and the Southern Suppression by 21,900 ha to prioritise treatment of additional new detections and waste facilities.

Remote sensing surveillance

Remote sensing surveillance (RSS) is used to complement other surveillance methods used by the program and potentially offers a more cost-effective surveillance method. RSS uses helicopters mounted with purpose-built cameras that include a thermal infrared band and self-learning algorithms to detect fire ant nests. Program scientists have developed simulation programs to help in analysis of the accuracy and reliability of the RSS package and the integration of RSS into standard clearance surveillance activities.

RSS allocates confidence scores to predictions based on the level of identifying features such as discernible fire ant mounds, sub-optimal physical presentation and previous disturbance. Ground teams relied on RSS generated predictions to guide their surveillance activities for the first time in 2021–22 and validated approximately 800 nests predicted by remote sensing surveillance.

The RSS season ran from May to mid-October in 2021 as planned with the aim of capturing imagery from areas bordering planned treatment areas extending through to the containment boundary. Remote sensing surveillance technology captured imagery from 47,058 ha from July until mid-October, including 30,940 ha over operational boundary areas.

A total of 3,958 ha was surveyed by field team in the Area 2 Clearance Zones. This was less than the planned 4,500 ha due to new detections resulting in the creation of new treatment areas and surveillance ceasing within those infested clearance zones.

RSS analytical training was provided to approximately 120 field staff in June 2022. Training was conducted on program android tablets. Feedback from the training was overwhelmingly positive. Staff found the training informative and appreciated being updated on the progression of remote sensing surveillance.

Progress against key performance indicators (KPIs)

Progress against program KPIs is summarised in Table 6. Progress is reported quarterly, however for some KPIs, progress is reported on a yearly and/or two yearly basis.

Table 6: Progress against KPIs

Stakeholder mobilisation			
Objectives	KPI	KPI target	Progress
1 Stakeholders within, and adjacent to, the fire ant biosecurity zones are aware of the presence of fire ants, risks, controls and options to manage them	a. Percentage of stakeholders aware of the presence of fire ants in South East Queensland	95% of stakeholders report awareness in surveys by June 2022	The performance indicator research project report providing stakeholder behavioural insights was received in May 2022. Of those surveyed, 97% reported awareness of fire ants which exceeds the target.
	b. Percentage of stakeholders aware of the risks posed by fire ants	95% of stakeholders report awareness in surveys by June 2022	The 2022 research project report showed 98% of survey respondents were aware of the risk which exceeds the target.
	c. Percentage of stakeholders aware of fire ant biosecurity zones	85% of stakeholders report awareness of the risk of fire ants in surveys by June 2022	The 2022 research project report showed 86% of survey respondents were aware of the risk which exceeds the target.
	d. Percentage of stakeholders aware of fire ant self-management options	50% of stakeholders report awareness in surveys by June 2022	The 2022 research project report showed 38% of those surveyed were aware of self-management options which does not meet the target.
2 Stakeholders within the fire ant biosecurity zones support the program and its activities to eradicate fire ants	a. Percentage of stakeholders opposing NRIFAEP operations	Less than 1% opposition annually	The program visited 44,521 properties to undertake treatment in the 2021–22 treatment season. During this period there were 103 refusals to treatment equating to 0.23% of properties, which meets the target of less than 1% stakeholder opposition.
	b. Percentage stakeholder disclosing to be satisfied with NRIFAEP operations	80% satisfaction disclosed in surveys by 2022	The 2022 research project report showed 97% of those surveyed said they were satisfied which exceeds the target.

Stakeholder mobilisation			
Objectives	KPI	KPI target	Progress
			(Caution is recommended in interpreting differences in this measure over time due to the small number of respondents.)
3	Stakeholders within the fire ant biosecurity zone actively participate in fire ant self-management actions (i.e. checking yards, reporting fire ants and/or treating fire ants)	Percentage of stakeholders participating in fire ant self-treatment actions	90% of stakeholders participate in fire ant self-treatment actions by June 2022
			The 2022 research project report showed 56% of those surveyed participated in fire ant self-treatment actions such as checking yards, reporting and/or treating fire ants, which does not meet the target.

Containment			
Objectives	KPI	KPI target	Progress
4	To mitigate the spread and establishment of fire ants by reducing the relative density and vigour of the fire ant infestation	a. Percentage of stakeholders who treat fire ants themselves (i.e. self-management)	10% increase annually in stakeholders surveyed disclosing that they treat fire ants themselves
		b. Percentage of fire ant infestations that are polygyne ⁶	Less than 1% of fire ant infestations are polygyne
		c. Relative spread of fire ants within containment area as measured through population genetics	Maintain at four or increase the number of genetically distinct fire ant populations
			The 2022 research project report showed 7% of stakeholders in the containment area treated fire ants themselves which does not meet target.
			The target of less than 1% of fire ant infestations identified as polygyne was achieved in Quarter 4, with 0.9% of sites assessed as being polygyne. Of the 1,384 samples tested for social form in Q4, 12 (0.9%) were polygyne. These samples were collected from 8 separate sites. In 2021–22, of the 5,315 unique sites tested, 63 were polygyne (1.2%), down 0.1% from the previous year. Of all 6,743 samples tested in 2021–22, 103 (1.5%) were polygyne, which does not meet the target. In the previous year, 91 (1.4%) of the 6586 samples tested were polygyne.
			The number of distinct populations for 2021–22 will not be known until the annual genetic analysis report is finalised in February 2023.

⁶ Polygyne colonies have a higher potential of being spread by human-assisted movement.

Containment				
Objectives	KPI	KPI target	Progress	
		(i.e., family clusters) within South East Queensland	The number of distinct population clusters for 2020–21 was reduced to three, down from five genetically distinct fire ant sub-populations identified in 2019–20. This indicates mergers of two populations as an event of interbreeding rather than eradication of individual clusters and is therefore not a positive outcome.	
5	To mitigate spread of fire ants by restricting the movement of fire ant carriers (materials) within, between and beyond the fire ant biosecurity zone	a. Percentage of high-risk stakeholders aware of fire ant movement controls	95% of high-risk stakeholders are aware of movement restrictions/ requirements by June 2022	The 2022 research project report showed 91% of those surveyed were aware of movement controls which does not meet the target.
		b. Percentage of high-risk stakeholders checked for compliance with human-assisted fire ant movement controls	The top 25% riskiest stakeholders checked for compliance at least once annually	In 2021–22, 840 businesses were audited, representing 49% of the 1,698 riskiest stakeholders (based on the annual target of 25% of 6,792), which does not meet the target. This was because of a shortfall in availability of compliance officers.
		c. Number of significant detections linked to human-assisted movement	Zero significant detections linked to human-assisted movement	No detections were conclusively linked to human assisted movement during the quarter, although this was likely to have been the source of some detections.
6	To mitigate the establishment of fire ants near (within 5 km) and beyond the 2019–20 Operational Boundary.	a. Total area that is surveyed for fire ants near and beyond the operational boundary	Area surveyed in a surveillance season is increased by 66% from 2019–2020 levels (5 710 ha) by June 2022	Surveillance completed by ground crew in 2020–21 totalled 10,178 ha, 7.4% in excess of target or 78% above the 2019–20 level. RSS was not conducted in 2020–21. In 2021–22, the program completed surveillance of 18,866 ha, comprising 9,694 surveyed by ground crew and 9,172 ha of RSS predictions validated by ground crew, achieving 99% in excess of target, or 230% above the 2019–20 level. RSS flights covered 30,940 ha over operational boundary areas in 2021–22.
		b. Percentage of stakeholders living near and beyond the Operational Boundary who look for and/or treat fire ants themselves	50% stakeholder participation by June 2022	The 2022 research project report showed 55% of those surveyed looked for and/or treated fire ants themselves which exceeds the target.

Containment				
Objectives	KPI	KPI target	Progress	
	c. Presence/absence of fire ants following prescribed treatment regime at a site detection of fire ants near and beyond the 2019–20 Operational Boundary	Zero fire ants that are likely to be from original nests remaining alive 12 months after prescribed treatment regime	The prescribed treatment regime continued for all detections that were confirmed near and beyond the operational boundary. No fire ants were confirmed to be survivors from original nests.	
7	To mitigate the re-establishment of fire ants in eradication and clearance areas from adjoining (within 2 km from; buffer areas) fire ant infested areas	a. Percentage stakeholders living in buffer areas who look for and/or treat fire ants themselves	75% stakeholder participation by June 2022	The 2022 research project report showed 68% of those surveyed in buffer areas looked for and/or treated fire ants which does not meet the target.
		b. Percentage of buffer area receiving the prescribed treatment regime for fire ant containment (i.e., 2x insecticide treatment)	Prescribed treatment regime applied to 99% of planned area	A total of 61,273 ha of overlap/buffer treatment was completed. This is 92% of the planned progress to 30 June 2022 which does not meet the target.
		c. Presence/absence of fire ants following application of prescribed treatment regime for fire ant containment at a site detection of fire ants within a buffer area	Zero fire ants remaining from original nests 12 months after prescribed treatment regime completed	58 fire ant detections were confirmed in the eastern overlap area during Quarter 4. Five of the 58 detections were on previously infested properties where original nests were not injected with a liquid insecticide by direct nest injection. A toxicant bait was applied. Genetic tracing was not undertaken on the five nests due to cost, so it is not clear whether they are remnants of previous nests. The eastern overlap area received one round of baiting with an IGR during 2021–22 to protect the buffer area from re-infestation. Further rounds are planned for 2022–23. Infestation is expected to persist until six rounds of IGR bait have been applied.
8	Assist with other (outside of SEQ) fire ant detection and eradication activities in Australia as requested	The reported level of stakeholder satisfaction of the program's response to requests for assistance with new fire ant incursions	100% satisfaction reported by stakeholders	Program surveillance dog teams completed approximately 81.4 kilometres of surveillance activities from 5 to 14 April 2022 at Fremantle WA where fire ants were detected in November 2019. In May 2022 surveillance dog teams completed 88.6 km of tracking in the Greater Darwin area in post-treatment

Containment			
Objectives	KPI	KPI target	Progress
			<p>surveillance for browsing ant eradication. All sites were found to be free of browsing ants.</p> <p>On 8 June 2022 surveillance dog teams helped finalise validation to provide proof of freedom for the Port of Brisbane 2019 browsing ant incursion.</p>

Eradication			
Objectives	KPI	KPI target	Progress
<p>9</p> <p>To effectively eradicate fire ants from targeted areas within South East Queensland</p>	<p>a. Percentage of stakeholders who support NRIFAEP activities within eradication area</p>	<p>Less than 1% stakeholder opposition annually</p>	<p>Although treatment of Area 3 included in the 2021–22 planned eradication area was postponed to 2022–23, the program treated infestations on 44,521 properties across treatment areas between September 2021 and June 2022. During this period 103 landholders opposed treatment (0.23%), suggesting a high level of support.</p>
	<p>b. Total area receiving prescribed treatment regime for fire ant eradication (i.e., all planned insecticide treatment rounds)</p>	<p>Prescribed treatment regime applied to 99% of planned area</p>	<p>The target was achieved in the previous treatment season completed in June 2021. No eradication treatment occurred in 2021–22, due to the decision to postpone treatment in Area 3 and focus on residual infestation in previous eradication areas.</p>
	<p>c. Number of fire ant nest infestations in monitoring (positive control) sites following completion of prescribed treatment regime</p>	<p>Zero fire ants present in monitoring sites within three months of completion of prescribed treatment regime</p>	<p>Prior to the commencement of broadscale eradication treatments in Area 2 in September 2020, multiple monitoring sites were established to evaluate the effectiveness of treatment regimes. Fire ant nests on these sites have been monitored continuously since then.</p> <p>By 30 June 2022 surveillance of all 480 original monitoring nests found zero remnant fire ants and no live nests.</p> <p>A final round of full-site surveillance for each of these monitoring sites was completed by the end of the 2022 surveillance season. No further live nests were detected at any of the sites surveyed.</p>

Eradication				
Objectives	KPI	KPI target	Progress	
	d. Percentage of eradication area within which fire ants are detected following prescribed treatment regime completion	Residual fire ant infestations are detected in less than 1% of the eradication area	Eradication Area 2 consists of 8,582 sites (or properties). From June 2021 to June 2022, 20.2% of the total number of sites in Area 2 have been surveyed with 2.4% confirmed to have fire ants. One round of broadscale baiting was applied to these sites during 2021–22. To address the persistent infestation this area is scheduled to receive between one and three additional rounds of broadscale treatment during 2022–23.	
10	To progressively decrease the fire ant infestation in South East Queensland through targeted eradication	Increase in the operational area that has effectively completed a prescribed treatment regime for fire ant eradication	33% of the 2021–22 operational area by June 2022	The total area that has received eradication treatment as a proportion of the total operational area is 33%. This two-year target was achieved in the previous treatment season completed in June 2021. Total area of the Western Boundary, Eastern Area 1 and Area 2 where eradication treatment was conducted is 211,581 ha which is 33% of the total area of the operational boundary (645,105 ha).
11	To reduce the cost of fire ant eradication treatment, monitoring and surveillance activities while meeting KPIs	a. Average per hectare cost of the program’s prescribed treatment regime to effectively eradicate fire ants	Average per hectare cost of applying prescribed treatment regime for fire ant eradication is reduced by 33% from 2019–20 costs by June 2022	Combined cost for treatment and surveillance was \$133 per hectare in 2019–20; \$168 per hectare in 2020–21 and \$131 per hectare in 2021–22. The target of \$90 per hectare (33% less than in 2019–20) could not be met. The increased cost per hectare in 2020–21 can be attributed to significant expenditure on Advion® bait and aerial services. In 2021–22 the program achieved consistent per hectare costs across quarters resulting in cost for the year being \$2 less than in 2019–20, which reflected increased area covered by the use of remote sensing surveillance (RSS).
		b. Average per hectare cost of the program’s fire ant monitoring and surveillance regimes to effectively eradicate fire ants	Average per hectare cost of monitoring and surveillance regime is reduced by 33% from 2019–20 costs by June 2022	The cost of surveillance and monitoring activities has been combined with treatment costs at 11a. above.

Clearance			
Objective	KPI	KPI target	Progress
12	To detect and destroy any residual fire ant infestations and gather evidence to support the demonstration of freedom from fire ants in clearance areas	a. Searches of locations deemed to be at highest risk of residual fire ants	<p>The top 10% riskiest locations have been searched by June 2022</p> <p>Surveillance of 5,893 ha, comprising 2,893 ha surveyed by ground crew and 2,910 ha of RSS predictions validated by ground crew, achieved 15% in excess of the target of 5,125 ha (area of top 10% riskiest locations) by 30 June 2022.</p> <p>RSS flights covered over 10,419 ha in clearance areas deemed to be at risk of residual infestations in 2021–22.</p>
		b. Total area searched for the presence/absence of fire ants	<p>Every clearance zone has at least 5% of the area surveyed by June 2022</p> <p>Of the 101 Clearance Zones in the Western Boundary, Area 1 and Area 2, all 101 have received a minimum 5% of the area surveyed, achieving 100% of the target.</p> <p>65 clearance zones had received remote sensing surveillance over at least 5% of the area.</p>
		c. Presence/absence of fire ants in areas searched	<p>Zero fire ant detections at locations other than the top 20% riskiest locations</p> <p>This target was not met, due to 38 of the 58 detections made in the clearance area being outside the top 20% riskiest locations.</p> <p>The detections were assessed as a risk to the program and have been included in planned treatment for 2022–23.</p>
		d. Presence/absence of fire ants following application of prescribed treatment regime for fire ant clearance at a site detection of importance	<p>Zero fire ants remaining from original nests 12 months after prescribed treatment regime completed</p> <p>Three rounds of broadscale treatment were applied in the clearance area during 2021–22.</p> <p>To mitigate the risk of re-infestation in the clearance area, between one and three rounds of treatment will be applied during 2022–23.</p>

Innovation

Drones

Drones or Remotely Piloted Aircraft (RPA) are used across a wide range of agricultural functions, including application of pesticides, to reduce operational costs and reduce carbon footprint. The low cost of drones, their lightweight design, real-time mapping, data collection capability and remote piloting capacity have considerable potential to contribute to the program's surveillance and treatment objectives. In early 2022, the program commenced research into the use of drones. The goal of the drone research project is to investigate and implement the use of RPA fitted with multispectral cameras and other remotely operated platforms to complement the program's current treatment and surveillance methods.

Work during the 2022 surveillance season will clarify the best uses for drone technology and inform development of operational procedures with the aim of introducing RPA to deliver surveillance and treatment in the 2022–23 treatment season.

Monitoring the efficacy of broadscale bait treatment project

As the program prepared to move into the new Area 2 eradication area in 2020–21, a more intensive methodology for broadscale eradication treatment was developed as part of an adaptive management approach. After extensive surveillance to locate live fire ant nests, treatment trials including a monitoring strategy were conducted from September 2020 to June 2022 on 323 nests in the northern section, 66 nests in the central section and 91 nests in the southern sections of Area 2.

Under this approach, four bait rounds were applied in a single treatment season (September 2020–June 2021) and in some sections of Area 2, a fast-acting bait (Advion®) was included in the treatment sequence to investigate if this could further accelerate eradication. Methodology included four IGR treatment rounds on 323 nests, three IGR treatment rounds and late Advion® in round four on 66 nests and three IGR treatment rounds and early Advion® treatment in round two on 91 nests.

All monitoring nests were visited on a four-week/monthly schedule from September 2020 to June 2022 and assessed for the level of fire ant activity. In conjunction with this monitoring of treatment efficacy, pitfall trapping at six-week intervals occurred to monitor the potential impacts of broadscale baiting on non-target ant species. No live nests remained in the central and southern areas after the 2020–21 treatment season. In the northern section some nests that had received four rounds of IGR bait were still showing signs of activity. As such, the program applied a further two rounds of IGR bait over the entire northern section in the following 2021–22 treatment season.

By 31 March 2022, complete clearance of all 480 original monitoring nests was achieved with no live fire ants observed and no further activity detected during monthly monitoring through to 30 June 2022. These results indicate confidence that when the standard prescribed treatments are applied (six consecutive rounds of IGR baits within two years) they will be successful in achieving localised eradication. The results have also indicated some potential for the inclusion of Advion® bait in treatment regimes to contribute to successful eradication.

Nest monitoring and full site surveillance aimed at early detection of any new nests continued to 30 June 2022. No new live nests were found and all nests in Area 2 monitoring sites were dead. The program will conclude nest monitoring activities on completion of full site winter surveillance, in August 2022. A broadscale treatment trial including Advion® is planned to commence in western operational areas in 2022–23.

DeadAnt trial

Program scientists commenced field evaluations of a newly registered fire ant treatment following promising findings of a pilot trial. The product *DeadAnt*, an ant-sand treatment containing 0.25 g/kg fipronil is not restricted to licensed pest management technicians. Registered for non-specialist use, it is most likely to be suitable for cost-

effective spot treatment of individual nests and may be able to provide longer-term residual control in small areas such as residential yards. Composed of sand grains coated with fipronil, *DeadAnt* is a persistent contact insecticide; does not require ingestion to be effective and is likely to be more effective than standard fire ant baits when applied in wet weather. If *DeadAnt*'s performance is deemed to be effective, it is expected to be a safe, easy to use and cost-effective treatment for the program, residents and landholders available at retail outlets.

Program governance

The program is governed by the National Steering Committee which works with the Queensland Department of Agriculture and Fisheries to deliver the program on behalf of cost-share partners. The Steering Committee, led by an independent Chair, is comprised of representatives of the Australian Government and all Australian state and territory governments.

Robust governance arrangements, designed to ensure transparency and monitor progress towards the program's objectives, include independent efficiency and effectiveness reviews, financial audits and performance monitoring. The National Steering Committee provides strategic and operational oversight to the program and reports progress on the program's activities to Australian and state and territory Agriculture Ministers through the Agriculture Senior Officials Committee (AGSOC).

Our Steering Committee

The Steering Committee was established by the Agriculture Ministers' Forum in July 2017 to provide strategic oversight of the program. The Steering Committee's independent Chair is appointed by the National Biosecurity Committee.

The Steering Committee, supported by its sub-committees, the National Exotic Invasive Ant Scientific Advisory Group (SAG) and Risk Management Sub-Committee (RMSC), provides independent leadership and guidance and monitors progress to help the program achieves its objectives. The Steering Committee meets at least quarterly, the RMSC meets twice a year and the SAG meets when directed by the Steering Committee but with the aim of one face to face meeting per year. Membership of committees comprises representatives of Australian and state and territory governments (the cost share partners) who have expertise relevant to the program's operations.

The Committee met 12 times in 2021–22, for both scheduled quarterly meetings and unscheduled meetings as required.

The Steering Committee engages with critical stakeholders at the national level to provide program updates, respond to queries and receive advice and feedback; and with industry, environmental and community groups to further the program's reach. The committee approved the program's 2022–23 Work Plan, including key performance indicators, in May 2021.

Steering Committee members

Dr Wendy Craik AM **Independent Chair**

Wendy is recognised as one of Australia's leading independent public policy advisors, particularly on issues related to natural resource and invasive species management. Her wide-ranging experience includes her roles as Board member of the Reserve Bank of Australia, Chair of the Climate Change Authority, Chair of the Australian Rural Leadership Foundation, Deputy Chancellor for the University of South Australia, Chair of the New South Wales Marine Estate Management Authority and Member Advisory Board for the Centre for Strategy and Governance. Wendy was appointed a Member of the Order of Australia (AM) in 2007 for her service to the natural resource sector and for her contributions to policies affecting rural and regional Australia.

Josephine Laduzko
Australian Government

Appointed to the Steering Committee in 2017, Josephine is also a member of the Risk Management Sub-Committee. Josephine is Head of Biosecurity Response and Reform with the Australian Government Department of Agriculture, Fisheries and Forestry and works closely with the National Biosecurity Committee.

Scott Charlton
New South Wales

Scott Charlton is the Director of Invasive Species Biosecurity with the New South Wales Department of Primary Industries. Appointed to the Steering Committee in 2020, Scott is Director of Invasive Species Biosecurity with the New South Wales Department of Primary Industries. Scott oversaw the successful eradication of red imported fire ants at Port Botany in 2016 and the eradication of yellow crazy ants from the NSW north coast in 2019.

Dr Nigel Ainsworth
Victoria

Appointed to the Steering Committee in 2020, Nigel is Deputy Director Invasive Species Science with the Victorian Government and is a member of the National Environment and Invasives Committee and the National Established Weeds Priorities advisory group. Previously Nigel contributed to reviews of the National Environmental Biosecurity Response Agreement (NEBRA) and the national eradication program for electric ants.

Dr John Robertson
Queensland

Appointed to the Steering Committee in 2017, John is also a member of the Risk Management Sub-Committee. John is General Manager of the Invasive Plants and Animals Program, Biosecurity Queensland and has a background in overseeing large operational programs in the primary industries and natural resources sectors.

John Van Schagen
Western Australia

Appointed to the Steering Committee in 2018, John is Technical Area Manager, Invertebrate Pests with the WA Department of Primary Industries & Regional Development. As well as the current 2021 African black sugar ant incursion, John has had responsibility for response to a number of other tramp ant incursions.

Rae Burrows
Tasmania

Appointed to the Steering Committee in 2020, Rae is General Manager Biosecurity Tasmania, a member of the National Management Group for exotic plant pest and animal disease eradication and represents Tasmania on the National Biosecurity Committee. Rae is also Chair of the Tasmanian Dairy Industry Authority.

Marcelle O'Brien also attended several meetings during the year, representing Tasmania. Marcelle is Principal Policy Advisor, Invasive Species Branch, within Biosecurity Tasmania and a member of the National Environment and Invasives Committee Terrestrial Invertebrates Working Group

Dr Anne Walters
Northern Territory

Appointed to the Steering Committee in 2020, Anne is the Chief Plant Health Officer Northern Territory within the Biosecurity and Animal Welfare Branch and is responsible for eradication programs such as the NT browsing ant incursion. Anne was formerly Strategic Advisor to the CEO of the NT Parks and Wildlife Commission.

Scientific Advisory Group

The Scientific Advisory Group (SAG) provides specialist scientific advice to the steering committee. In 2021–22 this included matters such as the scientific basis of the tools, techniques, products and strategies used by the program. Matters SAG reviewed this year included Area 2 monitoring methodology of bait treatment efficacy; the CSIRO report and recommendations relating to scientific principles, the shift to a monogyne population; the scientific rationale for how surveillance and treatment activities are conducted; progress of clearance and proof of freedom activities; and strategy for southern containment area treatment options.

The SAG comprised the following members:

Bill Magee	Director	Magee Consultancy Services Pty Ltd
David Oi	Research Entomologist	USDA-ARS Centre for Medical, Agricultural & Veterinary Entomology
Lori Lach	Associate Professor	College of Science and Engineering, James Cook University
Marc Widmer	Senior Technical Officer	Biosecurity and Regulation, Dept of Primary Industries and Regional Development WA
Ben Hoffmann	Principal Research Scientist	Health and Biosecurity, CSIRO
Ross Wylie	Science Leader	NRIFAEP, Dept of Agriculture and Fisheries Qld
Gary Morton	Principal Project Officer	National Electric Ant Eradication Program, Biosecurity Queensland
Michael Bode	Professor, Faculty of Science	School of Mathematical Sciences, Qld University of Technology

The SAG met twice during 2021–22, both were online meetings.

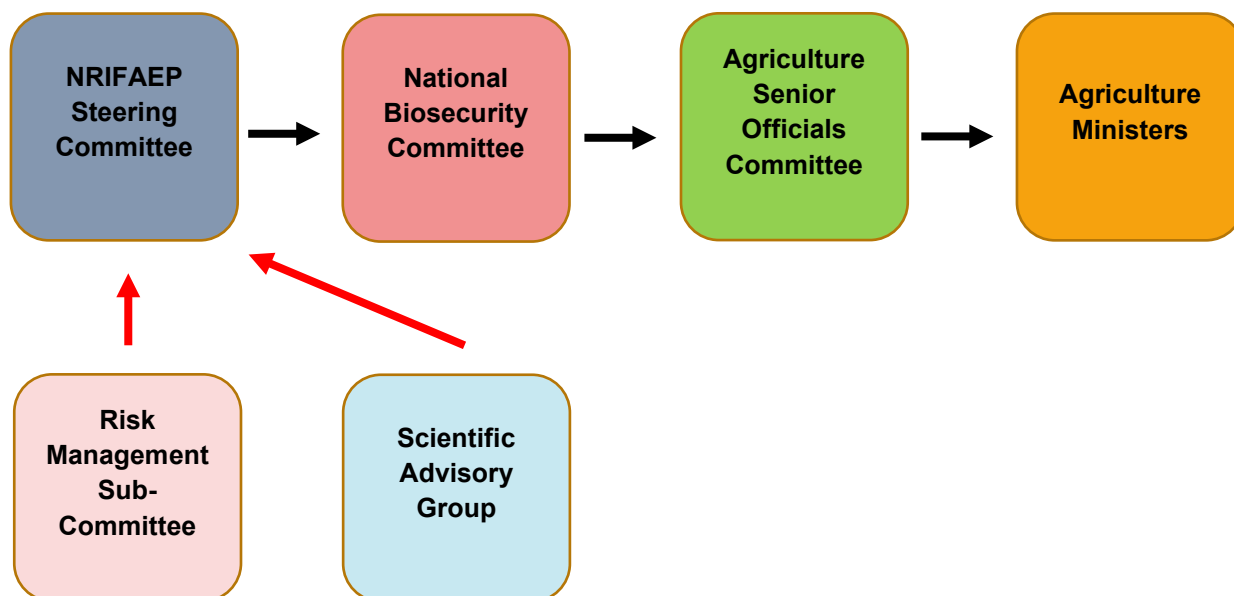
Risk Management Sub-Committee (RMSC)

The management of risk is essential to ensuring the program's success and continuous improvement in risk mitigation practices. The RMSC is made up of the Steering Committee Chair and selected committee members as well as two independent external risk specialists, one of whom chairs the sub-committee.

Alan Millis	Chair and external expert	
Irene Sitton	External expert	
Wendy Craik	Chair, Steering Committee	
John Robertson	General Manager	Invasive Plants and Animals, Biosecurity Queensland
Jo Laduzko	Assistant Secretary	Biosecurity Response and Reform Branch, Commonwealth Dept of Agriculture, Fisheries and Forestry
Scott Charlton	Director	Invasive Species Biosecurity, Dept of Primary Industries NSW

The RMSC met twice during 2021–22.

Governance of the 10-year eradication program



The independent strategic review of the program

Since 2017, the program has suppressed fire ants and slowed any known spread out of SEQ by deploying effective eradication treatments in the western eradication area. In January 2021, despite substantial progress, it became evident to the Steering Committee that eradication could not be achieved within the budget and time frame of the 10-year eradication plan (2017–2027).

The Committee subsequently commissioned a strategic review of the program. Building on previous evaluations and audits since 2001, the independent review panel examined:

1. the program's effectiveness in achieving the objectives of the 10-year eradication plan
2. the feasibility and likely achievability of meeting current strategy objectives, in particular the eradication of fire ants
3. alternative strategies for achieving the strategic objectives, particularly the eradication of fire ants.

The independent panel (Chair - Dr Helen Scott-Orr, Members - Dr Monica Gruber and Mr Will Zacharin) commissioned by the Steering Committee to review the national program submitted the *2021 Strategic Review Report* to the Steering Committee on 3 September 2021. The report contained 27 recommendations to the Steering Committee relating to governance, strategy and operational models. The review found that although the current program was successfully slowing the spread of fire ants within SEQ, and eradication was technically still feasible, changes in program scope, strategy, budget and governance, along with the development and adoption of new technologies was required. The alternative presented was for Australia to learn to live with fire ants, with jurisdictions individually responsible for slowing the spread which would ultimately encompass most of Australia. Given the major impacts of fire ants on everyday life and Australia's environment, agriculture and economy, the Steering Committee supported an option to pursue stronger containment, more aggressive suppression and eventual eradication, suggesting a more rapid and larger scale-up of effort across a broader operational area to ensure successful containment and eventual eradication.

The Strategic Review outlined that in the long-term, eradication may still be feasible if increased suppression within SEQ's urban areas is undertaken prior to eradication treatment. The review considered that it is no longer feasible for the nationally funded program to be solely responsible for the control and eradication of fire ants, and a broader approach with simultaneous mobilisation of partners across the entire operational area is needed. Due to the large

and diverse geographic area of infestation in both rural and urban environments, and specific methods needed, the program will be supplemented by the Queensland Government. The Strategic Review recommended that fiscal and operational responsibility for suppression and compliance activities rest with the Queensland Government rather than with the national program and cost-sharing partners.

The Fire Ant Suppression Taskforce (FAST)

The Queensland Government has approved funding of \$32.1 million over four years from 2022–26 for the Fire Ant Suppression Taskforce (FAST). This is in addition to the \$5 million funding approved to establish the FAST in late 2021–22.

The FAST aims to mobilise government (local, State and federal), community and businesses to increase fire ant suppression activities to control and reduce fire ant density in support of eradication efforts. This approach will be a coordinated and collaborative effort between the FAST and the program to minimise the risk of the spread of fire ants into areas in the later stages of eradication treatment and protect the overall investment of the program.

The taskforce is chaired by the Director-General of the Department of Agriculture and Fisheries and met in February and April 2022. Membership of FAST includes the Deputy Director-General of Biosecurity Queensland as the deputy chair, the chair of the program Steering Committee, senior representatives of the Department of the Premier and Cabinet, Queensland Treasury, five SEQ local governments, the Local Government Association of Queensland, the SEQ Council of Mayors, the Port of Brisbane Corporation and Nursery and Garden Industry Queensland. The Director of FAST provides the Secretariat.

At the first meeting, it was agreed that FAST will be focused on working collaboratively with the SEQ community, with the approach to be tailored for each category of land manager. The FAST will promote community suppression treatment projects where property owners and tenants, including residential households, all levels of government and large landholders, manage the treatment of fire ants on their own properties.

The FAST has a Queensland Land Management Agencies sub-committee to oversee the management of fire ants across all state government owned and managed land assets. The sub-committee comprises representatives from 14 Queensland Government agencies and met for the first time on 24 May 2022. All agreed to the collaborative approach and to work with the Department of Agriculture and Fisheries to identify:

- priority areas to treat for each agency
- limitations and challenges to each agency being able to treat owned or managed assets
- resources the agencies have available for fire ant management
- other ways the agencies can work together to enable self-management, such as introducing fire ant management requirements in the development application process.

Our people

Our diverse team of ground crews, scientists and behind-the-scenes staff work hard with the community to rid Australia of fire ants.

Our team

People are at the heart of our business. The program's workforce vision aligns to the *DAF Workforce strategy and action plan 2021–2025* where our people are to be empowered and engaged to innovate and collaborate, demonstrating strong leadership, adaptability, agility and foresight. Creating an environment where our staff are capable and connected people who are high-performing, safe, healthy, and supported to deliver services and achieve their potential within the department and the community. Our specialist team includes staff with expertise in the following:

People and culture	Biological and other sciences
Learning and development	Technical support
Finance and procurement	Treatment and surveillance, aerial operations
Logistics, warehouse and supply chains	Customer engagement and client liaison
Policy and strategy	Geographical information systems
Communication, marketing and engagement	Planning
System and information technology	Data and business services.

We use platforms such as our staff newsletter, online group discussion boards (agile walls) and management team visits to our depots to support information sharing and cross-team discussion. We engage employees through interactive forums and team meetings which encourage two-way conversations and problem resolution. Our management updates give employees the chance to comment and ask questions about the business.

Staff are required to create a personal development plan with their manager to build their capacity and capability for future roles.

Permanent staff numbers remained constant throughout the year and in line with Covid-19 Queensland Government policy not to increase the permanent workforce. Short-term contractors were engaged to meet business needs, particularly during treatment season when extra field staff are needed to complete treatment.

Table 7: Staff numbers 2021–22

Position	Q1	Q2	Q3	Q4
Permanent	90	79	79	85
Temporary	39	33	32	23
Contractor—office	29	29	27	19
Contractor—field	247	230	246	223
Total	405	371	384	350

Workplace health and safety

The Workplace Health and Safety team is committed to creating workplaces where staff can thrive and perform at their best. This is being achieved through good work design, safe work environments and providing resources and tools for staff to do their jobs safely. The program has a shared vision and leadership commitment to health, safety and wellbeing with activities such as:

- WH&S maintaining open dialogue with Health and Safety Representatives and Team Leaders from all depots
- more specific training programs along with refresher courses and toolbox talks on various hazards and risks
- increasing awareness and identification of hazards when entering properties to ensure team safety
- introducing driver awareness and education during employee induction.

Table 8: Workplace health and safety incidents 2021–22

Category	Q1	Q2	Q3	Q4	Total
Hazards	19	7	29	24	79
Near miss	6	0	6	2	14
Property damage	11	12	19	15	57

Category	Q1	Q2	Q3	Q4	Total
Totals	36	19	54	41	150

Program funding

Program cost sharing apportionments are calculated in accordance with the cost sharing formula in the National Environmental Biosecurity Response Agreement. Each funding party's share is based on its proportion of Australia's population and an Australian government contribution of 50 per cent of the total cost.

Table 9: National Fire Ant Eradication Program cost sharing contributions

Jurisdiction	% of total funding	2021–22 contribution	Jurisdiction	% of total funding	2021–22 contribution
Australian Govt.	50.00	\$36,284,238	Western Australia	5.30	\$4,649,899
New South Wales	16.01	\$11,920,729	Tasmania	0.59	\$489,463
Victoria	12.92	\$9,300,383	Northern Territory	0.46	\$438,829
Queensland	10.28	\$137	Australian Capital Territory	0.86	\$300,200
South Australia	3.56	\$1,508,072			

Finance

During 2021–22, the program spent \$58.62 million of a \$64.89 million budget, an underspend of \$6.26 million. The underspend can be attributed to a reduced level of treatment (42,925 ha) which was mainly a result of wet weather. The program total budget of \$64.9 million comprised the agreed funding including additional bring forwards approved by cost share partners and an additional \$31,000 from the sale of old assets. Funding brought forward allowed for increased funding capacity while agreement was sought to funding changes required for future years.

Income

The timing of funding has changed from the original 10-year Eradication Plan approval. The Australian and Queensland Governments have brought forward funding in the years 2018–19 to 2019–20 to fund treatment of the Western Boundary. In August 2021, a strategic review of the program prepared for the Steering Committee found that although the spread of fire ants had been significantly slowed, the program would not be able to eradicate or contain fire ants within the scope and budget of the Ten-Year Plan. Funding partners were requested to bring forward funding from later financial years to 2021–22. This allowed for increased funding capacity while agreement was sought to funding changes required for future years.

Expenditure

Most program areas operated below the annual budget. The overall variance includes material underspends in Operations (\$5.05 million). The operations underspend is due to a below-target level of treatment (42,925 ha), mainly the result of wet weather. This is reflected in underspends in bait (\$2.9 million) and field contractor expense (\$1.3 million). Aircraft hire expenses are slightly overspent due to the impact of a price increase backdated to September 2021.

Other areas in the program which had underspends include Self-Management Treatment (\$1.17 million), Information Services (\$613,000), Science (\$475,000), Strategy, Policy, and Performance (\$282,000), Business Support (\$275,000), Planning and Quality Management (\$183,000) and Directorate (\$153,000).

Table 10: Program expenditure area 2021–22

Notes	Program Area	Budget \$	Actual \$	Variance \$
1	Program logistics and business support	4,138,114	3,862,979	-275,136
2	Remote Sensing Surveillance (R&D)	3,842,267	3,979,217	136,950
3	Systems and technology innovation	2,756,251	2,143,259	-612,992
4	Community and stakeholder engagement	2,431,988	2,399,291	-32,697
5	Science services and eradication assessment	2,963,197	2,488,487	-474,710
6	Planning and quality assurance	2,786,626	2,603,111	-183,515
7	Operations	43,069,151	38,022,541	-5 046,610
8	Directorate	1,462,522	1,334,126	-128,396
9	Self-management	1,500,857	328,892	-1,171,964
10	Strategic policy and performance	928,130	646,176	-281,954
	SEQ program balance	-986,993	820,898	1,807,891
	Total	64,892,110	58,628,977	-6,263,133

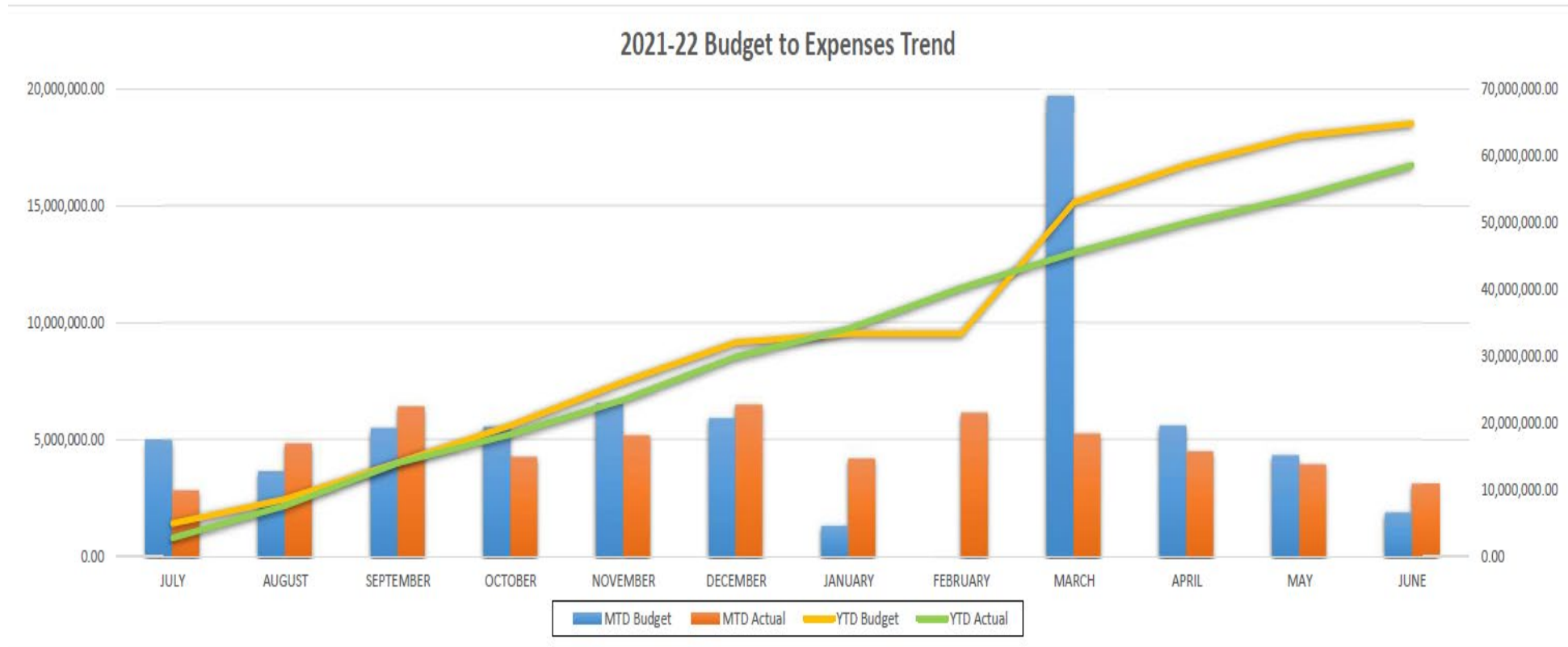
Notes: Expenditure to Budget

1. Favourable variance mainly due to underspend on property facilities and building expenses \$151,000, delay in recruitment of office contractors \$83,000, training expense \$48,000, PPE expense \$68,000 and offset by overspend in employee expense due to unbudgeted Business Service Manager position and saving from unfilled WH&S Officer position \$37,000.
2. Unfavourable variance mainly due to overspend on remote sensing expenses \$168,000 and aircraft hire \$68,000, as May and June 2022 was not budgeted, and unbudgeted contractor expense \$69,000. The overspend is offset by underspend from unused data storage budget \$44,000, unspent budget on gate review expense \$75,000, lower than expected expense for RSS field worker \$34,000 and delayed replacement for RSS computer \$6,000.
3. Favourable variance is due to saving in ICT discretionary services expense caused by shortage of System Developer \$834,000 and contractor expense savings \$31,000. This underspend is offset by higher than budgeted application charges for Fire Ants Management System within October to June period \$235,000 and overspend in employee expenses \$30,000.
4. Favourable variance due to underspend in contractor expense \$99,000, cancellation of Hackathon event \$14,000, underspend in signage expense \$20,000 and SEQ Awareness Marketing expense \$30,000. This underspend is offset by overspend in campaign expense \$96,000, design and printing costs \$11,000, employee expenses \$27,000 and unbudgeted training expense \$8,000.
5. Favourable variance due to unused bait research project budget \$50,000 and drone research project budget \$50,000, underspend on lab consumables \$23,000, savings on depreciation expense caused by delay on genetic analyser purchased \$35,000 and savings from salary expense due to vacant positions across the science team \$324,000. The underspend is offset by unbudgeted lab equipment purchase \$12,000.
6. Favourable variance mainly represents \$139,000 underspend in contractor expenses due to less contractors engaged, \$53,000 in ESRI; GIS; SISP annual license subscription and further \$17,000 underspend across various operating activities such as repairs and maintenance, office supplies and computer purchases. The underspend is partially offset by \$35,000 overspend in employee expenses due to an agency contractor temporarily appointed to the program.

7. The favourable variance consists of underspend in bait expense \$2.9 million due to saving strategy to reduce aerial baiting to 1.8 kg/ha and underspend in field contractor expense \$1.28 million which reflected that total treatment was below treatment plan target. Other underspends were savings in employee expense \$452,000 due to vacant positions across Operations team, with some positions replaced by contractors, savings in motor vehicle related expenses \$10,000, office contractor expense \$224,000 and unused budget for new odour detection dog purchase \$30,000. The underspend is partially offset by overspend due to internal charges for Remote Sensing Surveillance field staff being less than the budgeted \$34,000 and aircraft hire expense due to cost increase in September 2021 \$44,000.
8. Favourable variance mainly due to unspent budgeted financial audit caused by procurement delay \$150,000, underspend on travel, accommodation and catering cost for Risk Management Sub Committee and Science Advisory Group chair (SAG) \$22,000 and waiver on SAG Chair cost \$20,000. This underspend is offset by employee related expense due to backfilling of vacant positions due to leave, backpay for SO level in July \$31,000, unbudgeted payment for contractor expense (senior management change officer) \$49,000, unbudgeted hiring fee for Ramp Up project manager \$25,000 and HR case review consultant payment \$10,000.
9. Favourable variance mainly due to early cessation of self-treatment plan. This caused underspend in contractor expense \$222,000, bait expense \$730,000, delay on campaign expense charges from corporate communication \$138,000 and cancelation of self-management online training and SMS messaging \$70,000. This underspend is partially offset by unbudgeted expense on bait postage \$27,000.
10. Favourable variance mainly due to underspend in contractor expense \$65,000 resulting from unfilled Principal Policy Officer (AO7) and Policy Officer (AO4) contractor positions, savings in employee expense due to vacant position of Manager policy and Senior Policy Officer \$126,000, unspent training expenses \$26,000 and a savings on Professional (Technical) consultancy \$50,000.

Expenditure to budget trend

Figure 5: Expenditure to budget trend 2021–22



The overall variance includes underspends in Operations (\$5.05 million), Self-Management Treatment (\$1.17 million), Information Services (\$613,000), Science (\$475,000), Strategy, Policy, and Performance (\$282,000), Business Support (\$275,000), Planning and Quality Management (\$183,000) and Directorate (\$153,000)