Tramp Ant Consultative Committee (TACC) Meeting 1
Teleconference, 16 September 2010

Attendance

Queensland
Neil O'Brien
Craig Jennings
Grant Telford

South Australia
Mark Ramsey

Victoria
Bronwen Williams

Northern Territory
Anne Walters

New South Wales
Royce Holtkamp

Tasmania
Lionel Hill

Department of Agriculture, Fisheries and Forestry
Michael Cole (Acting Chair)
Tim Coutts (DAFF Secretariat)
Rose Hockham

Department of the Environment, Water, Heritage and the Arts
Andrew Copp (DEWHA Secretariat)
Julie Quinn

Apologies
Peter Dinan (ACT)
Western Australia – No Nominated Representative for Teleconference will be Contacted Out-of-Session by Acting Chair
Lois Ransom (Chair)

AGENDA TOPICS

1. Welcome/Introductory Remarks

This is the Inaugural Teleconference of the Tramp Ant Consultative Committee (TACC), which is the restructured National Tramp Ant Committee (NTAC). The items being discussed at this inaugural teleconference are covering the remaining issues from NTAC; this starting point will allow the TACC to progress these items and move beyond, as the new governance arrangements are put in place for the TACC, but also the higher level committees that still remain to be finalised.

The chair outlined issues to be discussed at the Teleconference.

2. National Red Imported Fire Ant Eradication Program

Queensland provided a snapshot of what is to be taken to the High Level Working Group (HLWG) into the National Red Imported Fire Ant Eradication Program for 2010-11 and beyond. The HLWG meeting has been delayed because of the election.

The outcomes from the HLWG are going to have to be discussed at the Second TACC Teleconference that is to be held a few weeks after the HLWG meeting, which is being held on Tuesday 21 September 2010. Any outcomes are going to influence the operational aspects of the National Red Imported Fire Ant Eradication Program; but also the National Electric Ant Eradication Program.

2.1 Release of the Yarwun Restricted Area as a Pest Free Area

Queensland briefed TACC on the situation for Yarwun, currently a Restricted

Area, and outlined the purpose of the proposal to the jurisdictions. Jurisdictions asked several questions about what it meant to change the status of Yarwun from Restricted Area to Pest Free Area status.

Queensland made the point that the proposal and the analysis of the operational activity delivered was consistent with the national guidelines for declaring an area to be a Pest Free Area. These guidelines are provided as a report that was commissioned by the Department of Agriculture, Fisheries and Forestry (DAFF) Australia and Plant Health Australia (PHA), *Guidelines for the Establishment of Pest Free Areas for Australian Quarantine* (Jorgensen et al. 2003).

It was suggested that the level of treatment and scope of surveillance performed in this area was comprehensive and if the confidence provided by treatment and surveillance activity was not sufficient in Yarwun, then it was unlikely that no other area in South-East Queensland could be declared free from Red Imported Fire Ants. No other area within Queensland has ever received this level of surveillance to be sure that it is free from Red Imported Fire Ants; no other area is likely to receive quite the same level of surveillance to prove that the treatments are successful – this response provides the best opportunity to validate the effectiveness of the treatment, and the rigorousness of surveillance for Red Imported Fire Ants.

As the incursion at Yarwun has been demonstrated through genetic analysis to be a separate incursion of fire ant in Queensland, the declaration of Yarwun as a Pest Free Area also means that this incursion of Red Imported Fire Ant has been eradicated from Australia.

Jurisdictions were asked if they supported the establishment of Yarwun as a Red Imported Fire Ant Pest Free Area and declaration of eradication of this incursion of Red Imported Fire Ant from Australia, their support and comments are below:

Commonwealth – Supports the Proposal; there seems to be more than enough evidence that the protocols and processes are successful.

New South Wales – Supports the Proposal; for the same reasons as the Commonwealth's support.

South Australia – Supports the Proposal.

Victoria – nominated to defer their support for the Proposal until Monday; they will contact the TACC Secretariat on their decision Out-of-Session.

Tasmania – Supports the Proposal; with no objections to the protocols and processes used to change an area to Pest Free Area status.

Northern Territory – Supports the Proposal.

Queensland – Supports the Proposal.

There were no representatives participating from **Western Australia** or the **Australian Capital Territory**. The Acting Chair informed TACC that he will contact the Western Australian Representative Out-of-Session, asking if they are going to Support the Proposal.

The deferred responses that have been received from jurisdictions, who did

not attend or had their proxy represent them, have communicated their responses on the decision to declare Yarwun a Pest Free Area:

The **Australian Capital Territory** supports the proposal to declare Yarwun a Pest Free Area for Red Imported Fire Ants.

Victoria is supportive of the declaration of the Yarwun Pest Free Area for Red Imported Fire Ants.

Recommendations/Actions:

- The **Tramp Ant Consultative Committee** (**TACC**) **Agreed** to support the Proposal that Yarwun is now a Pest Free Area for Red Imported Fire Ants and this incursion of Red Imported Fire Ant has been eradicated from Australia. The Commonwealth is to pass this decision up to the High Level Working Group (HLWG) for Red Imported Fire Ants for their Endorsement of the TACC's decision. To reach a final agreement the Acting Chair is to contact Western Australia Out-of-Session to get their decision; Victoria is to contact the Secretariat Out-of-Session with their decision.

2.2 Nursery & Garden Industry Queensland's request for Reinstatement of Red Imported Fire Ant Property Freedom following Eradication

The Domestic Quarantine and Market Access Working Group (DQMAWG) referred the Nursery & Garden Industry Queensland's (NGIQ) request to the TACC for a decision on the technical merits of allowing the reinstatement of Red Imported Fire Ant Property Freedom for previously infested nurseries in the Red Imported Fire Ant Restricted Areas where it could be demonstrated that the properties were free from fire ant after a comprehensive survey of the property by fire ant detector dogs.

Queensland provided an overview of the situation, as outlined in the Agenda paper provided by NGIQ, through DQMAWG. Jurisdictions were given a chance to ask questions of Queensland about the request from NGIQ and what the change means for regulation and management of material leaving the Restricted Areas, in regard to the likelihood that Red Imported Fire Ants are not moved with the lifting of these restrictions.

The proposal is that after a period of at least twelve weeks has elapsed after the NRIFAEP treats the property a canine surveillance team will survey the nursery; and if no Red Imported Fire Ants are found during the survey then the nursery will be eligible to re-apply for either Property Freedom from Red Imported Fire Ant, or enter into an equivalent Interstate Certification Agreement (for example, ICA 40), to facilitate movement of high-risk product to States or Territories that accept those accreditations. If fire ants are found by the canine surveillance team on the property then the nursery will be re-treated, and wait another twelve weeks for the canine surveillance team to return and check the property again; this cycle continues until no Red Imported Fire Ants are detected on the property. Queensland made the point that even once the nursery has been given either Property Freedom, or are complying with ICA 40, they are still bound by the conditions of an Approved Risk Management Plan (ARMP) that further mitigates the risk of fire ant spread and is required under Queensland legislation for a nursery of this type

that is in a Restricted Area.

Jurisdictions were asked to support the proposal from NGIQ to allow a previously infested nursery to apply for Red Imported Fire Ant Property Freedom or an equivalent Interstate Certification Assurance arrangement following the confirmed eradication of Red Imported Fire Ants from the property; jurisdictional support and comments are below:

Commonwealth – Supports the Proposal; the canine surveillance teams appear to be effective, it seems to be a good way to get business compliant with the ICA. It doesn't rule out the fact that Red Imported Fire Ants still can be blown in from the Restricted Areas.

New South Wales – Supports the Proposal; further discussions are going to be held at DQMAWG on how the measures are to be implemented for interstate trade in Nursery Stock.

Victoria – Gave In-Principle Support for the Proposal; notified TACC that it would provide an answer on Monday Out-of-Session to the TACC Secretariat.

Tasmania – Supports the Proposal; noted that the protocol resembles the Western Australia ICA 29, it's an assurance scheme that ensure nurseries remain compliant. Queensland informed Tasmania that if a protocol such as Property Freedom reinstatement was not supported then it would more likely that if a nursery did detect fire ant there would be less incentive to report fire ants as the restrictions put in place are substantial and ongoing. Tasmania noted that NGIA is working on establishing biosecurity and hygiene protocols, which should be supported and encouraged.

South Australia – Supports the Proposal; Queensland informed jurisdiction that by giving Property Freedom, which is the same as their neighbours then surveillance becomes more sustainable for both the nursery and the Queensland Government. South Australia suggested that the treatments used need to be reviewed once NGIA has done its work on biosecurity and hygiene.

Northern Territory – Supports the Proposal; noted that this move will actually increase compliance among the nurseries in and around the Restricted Area.

Queensland – Supports the Proposal.

There were no representatives participating from **Western Australia** or the **Australian Capital Territory**. The Acting Chair informed TACC that he will contact the Western Australian Representative Out-of-Session, asking if they are going to Support the Proposal.

The deferred responses that have been received from jurisdictions, who did not attend or had their proxy represent them, have communicated their responses to the decision for the reinstatement of Red Imported Fire Ant Property Freedom for previously infested nurseries in the Red Imported Fire Ant Restricted Areas:

The **Australian Capital Territory** supports the proposal for the reinstatement of the Property Freedom for previously infected nurseries in the Red Imported Fire Ant Restricted Area.

Victoria supports the Nursery & Garden Association of Queensland's request

for the reinstatement of nursery Property Freedom for previously infected nurseries within, and near, the Red Imported Fire Ant Restricted Areas.

Recommendations/Actions:

- **TACC Agreed** to Support the Proposal that should a fire ant canine unit perform a survey on a property, where fire ant has previously been detected, at least 12 weeks after treatment, and should no fire ant be detected then the nursery owner would be eligible to apply for Property Freedom accreditation of an equivalent Interstate Certification Assurance Accreditation. The Commonwealth is to pass this decision to the Domestic Quarantine and Market Access Working Group (DQMAWG) to facilitate implementation of this decision. To reach a final agreement the Acting Chair is to contact Western Australia Out-of-Session to get their decision; Victoria is to contact the Secretariat Out-of-Session with their decision.

3. National Electric Ant Eradication Program (NEAEP)

The two new detections of Electric Ant at Bingil Bay and Yorkey's Knob were summarised by Queensland. The Acting Chair asked if this was a major review point for the Eradication program – does it trigger the review of the NEAEP. Both trace forward and trace back work is being done on the infestations; in addition the treatments being used for Electric Ants have been successful.

Two possible pathways have been identified for how the infestation emerged in these new locations: first, is through the movement of pots from the Smithfield infestation before the infestation was recognised as Electric Ants; the second, is through the movement of construction materials from the Smithfield Restricted Area to these new locations. Each pathway is being investigated, but it appears that the most likely pathway is probably the movement of the pots.

3.1 The Electric Ant Review for 2010

The National Electric Ant Eradication Program (NEAEP) is subject to a review to advice on required future response activities and potential funding beyond 2010-11. The chair proposed that the TACC review the Terms of Reference from the previous NEAEP Technical Review conducted through NTAC in 2007; the nominations for who should be included as part of the Technical Review were sought: **Attachment A** presents the Terms of Reference and provides details on who the previous nominees were and skill sets.

The TACC decided, after some discussion that the Technical Review should have the same scope and skill makeup as the previous Technical Review.

Recommendations/Actions

- **TACC Agreed** that the Terms of Reference from the previous NEAEP Technical Review be reiterated to the Higher Level Working Group (HLWG). The Biosecurity Queensland Control Centre (BQCC) will modify the NEAEP Terms of Reference for the needs of the 2010 Review.
- **TACC Agreed** that the Technical Review for the Electric Ant

Eradication Program should ideally be held in the second week of November 2010 – the week beginning on 8 November 2010; when Review Panel members are most likely to be available to conduct the review. This also allows time for BQCC to prepare papers for the new budget funding cycle, based on the outcomes of the review.

- **TACC Agreed** that the Nominated Representatives for the Technical Review Panel for the NEAEP in 2010 are to be: Michael Cole, Mark Ramsey (Chair of Panel), and Royce Holtkamp. **TACC** also **Agreed** that these nominees have the required skill set to conduct the Technical Review similar to the one conducted in 2007.
- **TACC Agreed** to take the proposed Technical Review Panel and Terms of Reference to the HLWG.

3.2 Electric Ant carry-over funding 2009-10 to 2010-11

The National Electric Ant Eradication Program (NEAEP) for 2009-10 has funds of $1.03 million that need to be carried over to 2010-11; this carry over is $0.25 million above the level of projected carry-over funding ($0.78 million) that was previously noted at the last NTAC meeting. The situation of carry-over funding doesn't mean that activities were not conducted. Queensland made the point that there was always going to be a carry-over of funding from 2009-10 to 2010-11; the amount that was mentioned at the last meeting of NTAC was an estimate based on the current levels of expenditure for this program.

The primary reason why there is a carry-over for 2009-10 – some $1.03 million remaining – is due to staff attrition in the program for 2009-10. This is primarily due to the temporary nature of the program.

The attrition of qualified operational staff is having an influence on the Electric Ant and the Red Imported Fire Ant Eradication Programs.

Recommendations/Actions:

- **TACC Agreed** that the High Level Working Group (HLWG) for Tramp Ants needs to Note the carry-over of the $1.03 million remaining for the National Electric Ant Eradication Program for 2009-10, is to be carried over to 2010-11.
- **TACC Agreed** that the HLWG should also be informed about the problem of staff attrition for both the National Electric Ant and the National Red Imported Fire Ant Eradication Programs. Advice should be sought from the HLWG on getting an agreement to provide greater stability for the operational employees in these programs over the long term.

3.3 Continuation of the Tramp Ant Scientific Advisory Panel (TASAP)

The Chair, s4p4(6) Personal information of the Tramp Ant Scientific Advisory Panel (TASAP) has retired, as have about half of the other TASAP members.

The chair suggested that this issue needs to be brought to the High Level Working Group (HLWG) for Tramp Ants attention so they can discuss

possible solutions to the continuation of the TASAP. TACC assumed that the TASAP would continue to the report to the TACC, but this would need to be discussed by the HLWG; see **Attachment B** for the TASAPs current Terms of Reference, which were agreed to back in 2007.

In response to the chair's enquiry on desirable skill sets that could be included within the membership of the TASAP, the Biosecurity Queensland Control Centre (BQCC) suggested that a critical component that is missing, that is needed on the TASAP is the role of the Biometrician, which would provide a greater background for the TASAP in the assessment of risk and the likelihood of proposed options.

Recommendations/Actions:

- **TACC Agreed** that members need to contact the TACC Secretariat with suggestions for what skill sets would be required for the TASAP; suggestions should include suggestions from jurisdictions as to who could fill these positions. This would help the TACC Secretariat organise the new TASAP, so it can be endorsed by the HLWG, and then the National Management Group (NMG). This information should be provided Out-of-Session to the Secretariat.

3.4 Interim Taskforce on Invertebrates Impacting on the Environment and Social Amenity

The National Biosecurity Committee (NBC) has wound up the Environmental Biosecurity Committee and distributed the work of this committee to other sectoral committees with the exception of invertebrates that impact on the environment and social amenity. The NBC is establishing an Interim Invertebrates Taskforce to provide recommendations on the national biosecurity policy gaps relating to invertebrates that could impact on Australia's natural environment and social amenity. The Taskforce is also responsible for developing options for governing and to progress the management of these invertebrates.

The Department of the Sustainability, Environment, Water, Population and Communities (DSEWPAC), on behalf of the NBC, informed TACC that a letter has been prepared and is to be sent out to jurisdictions from the National Biosecurity Committee (NBC), Chair Dr Conall O'Connell. The letter is asking for member nominations for the taskforce.

Recommendations/Actions:

- **TACC Noted** that the NBC Secretariat will send out a letter requesting member nominations for the Interim Taskforce on Invertebrates Impacting on the Environment and Social Amenity.

4. Other Business/Next Meeting

The process TACC has to follow to get decisions endorsed was clarified by the Chair, as: any decision firstly has to be Endorsed by the High Level Working Group (HLWG) for Tramp Ants, which then might send the decision to the National Management Group (NMG) for Tramp Ants. The items that are going to have to be considered by the HLWG in the near future are: the Electric Ant Technical Review Panel for 2010, and the role and responsibilities

of the TASAP given the restructure of NTAC into TACC.

The High Level Working Group (HLWG) is meeting later this month, the 21 September 2010, so members of TACC should take this opportunity to brief their members of HLWG about what has been discussed at TACC.

The second TACC meeting was proposed for the end of September 2010 or early October 2010, once the recommendations from the HLWG's discussions, on the National Red Imported Fire Ant Eradication Program, have been released to BQCC and the TACC. The TACC Secretariat will contact TACC members with the next proposed date for the Second TACC Teleconference.

Recommendations/Actions:

- **TACC Agreed** that the Second TACC Teleconference should be held after the High Level Working Group (HLWG) that is investigating options for the National Red Imported Fire Ant Eradication Program releases the recommendations to BQCC and the TACC. A Teleconference is to be held either late September 2010 or early October 2010, but this is going to be dependent on the availability of TACC members and Queensland.

Attachments

A. The original Electric Ant Review's Terms of Reference from 2007.
B. Tramp Ant Scientific Advisory Panel's Terms of Reference agreed to in 2007.

Attachment A

Terms of Reference for the Technical Review of the National Electric Ant Eradication Program as agreed to in 2007

Background

Electric Ants were discovered in Cairns in May 2006 and a response was initiated by the Queensland Government. The application went to NRMMC and PIMC for cost sharing, and the project was fully scoped and budgeted by April 2007. Four years of funding was Approved-in-principle but only two years of funding was provided subject to a review of the program.

Since the incitation of the response five rounds of treatment have been applied across the affected incursion areas and no ants have been detected since 25 October 2007. The review panel visited Smithfield and Kewarra Beach quarantine areas and found no Electric Ants present at either site. The panel found that the staff had a high level of motivation and morale, and the eradication program was adequately resourced.

Review

The review was undertaken to validate the continuation of the Electric Ant eradication program, the eradication program was agreed to under PIMC 12 and NRMMC 12. The review panel assessed the success of the Electric Ant eradication program using criteria from the International Plant Protection Convention (IPPC) and PLANTPLAN. The primary objectives of the review were:

i. Assess the Technical Feasibility of the Electric Ant eradication program;

ii. Assess the steps needed to be taken before a full exit review can proceed; and

iii. Determine what knowledge needs to be collected for future ant eradication programs.

The National Tramp Ant Committee (NTAC) established a review panel that comprised Mr Mark Ramsey (Chair), Dr Mike Cole, and Dr Ben Hoffmann. The panel conducted the review in Cairns on 27-29 November 2007.

The criteria the review team used were:

(a) Technical feasibility of eradication;

(b) Merits of ongoing investment;

(c) Science program performance;

(d) Operations program performance;

(e) Modifying current eradication plan;

(f) Strategies to eliminate last infestations; and

(g) Criteria for evaluating eradication success.

Attachment B

Tramp Ant Strategic Management Committee
Scientific Advisory Panel (SAP)

Purpose

The purpose of the Tramp Ant Scientific Advisory Panel (the SAP) is to provide technical advice to the Tramp ant strategic management committee (TASMC) particularly in relation to (the implementation of) the national tramp ant work program[1].

Constitution

The SAP is established under the direction of the TASMC as agreed at its meeting 12/13 December 2007.

Scope

The Scientific Advisory Panel is to provide technical advice on tramp ant issues as requested by the TASMC, including but not limited to:

- matters relating especially to eradication, as well as containment and management of tramp ants [2]
- the effectiveness of surveillance, treatment, habitat modelling and other technical elements
- the design, participation in and analysis of recommendations from scientific or technical reviews
- recommendations for research required to aid in decision making for the successful control[3] of tramp ants
- analysis of research and technical information to assist in decision making to support successful control of tramp ants
- issues that have an impact on either the budget or planned activities as addressed in operational guidelines or in other reports to the NTAC.

Membership

The TASMC will seek nominations for the SAP from jurisdictions and other bodies with technical expertise appropriate to the work of the SAP. The SAP will from time to time draw on additional expertise to complement its advice to TASMC. The SAP will comprise up to eight members.

Reporting

[1] The work 'program' refers to technical advice provided to the TASMC, including advice on national cost shared tramp ant activities, actions relating to the Tramp ant threat abatement plan and matters as requested by the TASMC

2 In addition, the Domestic Quarantine and Market Access Working Group (DQMAWG) members would be involved in national management of the RIFA and EA movement controls.

[3] The term 'control' is used here to include both eradication, containment and management.

The SAP will report directly to the TASMC on issues related to the scientific oversight of the national tramp ant work program.

Chair and Secretariat Assistance

The first meeting of the SAP will determine its chairing arrangements.

The Queensland Government in the first instance will provide support to the SAP by coordinating agendas and arranging their distribution.

Financial Support for the SAP

There is no fund established to directly resource the SAP.

Each SAP member will bear the full cost of attendance at meetings and of participation in teleconferences.

The agency hosting the SAP meeting will be responsible for organising the venue and meeting reasonable catering costs.

Meeting venue

It is the usual practice for face-to-face SAP meetings to move between jurisdictions as agreed.

TRAMP ANT CONSULTATIVE COMMITTEE	**MEETING NUMBER**: 2
	LOCATION: Oxley
	DATE: 7 & 8 December 2010
AGENDA PAPER	**ITEM**: **3.1**

OPERATIONAL PROGRESS REPORT FOR THE NRIFAEP AT 14 NOVEMBER 2010.

RECOMMENDATIONS

1. That the Tramp Ant Consultative Committee:

   (a) **NOTES** the progress of the National Red Imported Fire Ant Eradication Program (NRIFAEP) for the 2010-11 financial year at 14 November 2010.

   (b) **NOTES** that subsequent to 14 November 2010 a significant infestation of fire ants was detected on the boundary of the Restricted Area at Walloon and this infestation is expected to significantly increase the number of fire ant colonies detected for this financial year.

BACKGROUND

2. An Operational Progress Report for the NRIFAEP for the 2010-11 financial year to 14 November 2010 has been produced to provide the Tramp Ant Consultative Committee (TACC) with an update of program progress since the issue of the 1st Quarterly Situation Report for the NRIFAEP for the 2010-2011 financial year.

3. Quarterly Situation Reports and Annual Reports have been developed to provide a stronger engagement and more open and transparent reporting mechanism for NRIFAEP cost-sharing partners.

ISSUES

4. Subsequent to the finalisation of this progress report a significant infestation of fire ant was detected at Walloon.

5. The infestation of fire ant at Walloon is located just outside of the boundary of the current restricted area and was first detected by NRIFAEP staff conducting prophylactic treatment in the area on 15 November 2010.

6. The detection of fire ant infestation at this property is significant as more than 1500 mounds have now been detected within this cluster. The infestation is composed of polygyne (multiple queen colonies) and it appears that the infestation has rapidly expanded through natural budding and short distance dispersal.

7. The property is used for cattle grazing and is subject to flooding. Preliminary analysis of colony distribution patterns suggests some short distance movement of colonies within the property to areas of higher ground.

8. This infested site falls within the large prophylactic treatment buffer that has been created as part of the NRIFAEP's course of action for 2010-11.

9. It is also already included within the next extension of the Restricted Area. Until the new Restricted Area is declared, the NRIFAEP will issue directions to affected residents where infestation was found and have indentified high risk businesses to ensure compliance with fire ant movement controls.

10. This detection is expected to bring the number of colonies detected in 2010-11 to over 2000.

FINANCIAL IMPLICATIONS

11. Nil.

ATTACHMENTS

12. Operational Progress Report for the NRIFAEP for the 2010-11 financial year at 14 November 2010.

FOR NOTING

Prepared by Queensland for the Tramp Ant Consultative Committee

OPERATIONAL PROGRESS REPORT

National Red Imported Fire Ant Eradication Program

1 July 2010 to 14 November 2010

1 SUMMARY

1.1 Infestation

- The National Red Imported Fire Ant Eradication Program's (NRIFAEP) active and passive surveillance efforts have led to the detection of **543 red imported fire ant (RIFA) colonies[1] at 207 sites across 72 suburbs** to 14 November this financial year.

  Note: A colony is recorded and added to the colony count on each occasion where an apparent nest with ants is detected irrespective of evidence to suggest that the colony is a viable colony, or a colony previously detected on that site. Of the 543 colonies reported at 207 sites, **approximately 301 colonies (55%) on 150 sites (72%) were new colonies detected on sites not previously known to be infested**. The remainder of colonies and sites were detected as part of validation surveillance[2] conducted within 8 weeks after they were treated.

1.2 Delivery Targets

- At a meeting on 21 September 2010, senior officials agreed to recommend a national cost shared program of $15 million, noting an additional Queensland financial commitment of $3 million (subject to matching by the Commonwealth) and a revised program proposal. **NRIFAEP expenditure for 2010–11 at 14 November 2010 was $5.241M**. On a pro-rata basis the NRIFAEP is underspent, however expenditure is cyclical based on periods of high survey or treatment activity. The rate of expenditure will increase significantly from December 2010 with purchase of chemical bait, aircraft hire and remote sensing development costs. Twenty replacement field staff employed mid-November will also increase the rate of expenditure.

- Under the NRIFAEP's proposed course of action for the 2010–11 financial year the NRIFAEP is scheduled to complete up to 10 000 ha of structured surveillance this financial year plus up to 10 000 ha has been allocated to non-scheduled surveillance including responding to new detections, public reports and pre-disturbance inspections. **Almost 8500 ha of structured surveillance and approximately 2500 ha of non-scheduled surveillance has been delivered this financial year to 14 November 2010**.

- The NRIFAEP is scheduled to treat approximately 83 000 ha this season. **The total number of hectares treated this financial year to 14 November 2010 was 8522 ha. Treatment has occurred across almost 17 600 sites.**

[1] A colony is a group of red imported fire ants that are reliant on each other for reproduction and survival. A colony may have more than one nest mound. Additional mounds if present are generally located within 6m of the primary mound.

[2] Canine units now take responsibility for the majority of post-treatment validation inspections Evidence suggests that these detections are remnant ants associated with unviable colonies rather than treatment failure. To address this issue, the NRIFAEP has extended the period between treatment and validation from 8 to 12 weeks to ensure the death of all ants associated with a colony prior to re-visiting for post-treatment validation surveillance. This will provide a more realistic count of colonies detected within a financial year without a need for subjective assessment on whether a colony is viable as part of post treatment validation surveillance.

2 SURVEILLANCE

2.1 Structured and non-scheduled surveillance

- During 2010–11, to 14 November 2010, a total of 11 001 ha across 6964 sites have been inspected for RIFA as part of structured and non-scheduled surveillance activities (see Map 1 Appendix 1). Of this total, just over 2500 ha was delivered as non-scheduled surveillance.
- As a result of the delay in the start of the treatment program due to unsuitable weather conditions, a greater than expected number of hectares were surveyed this **financial year to 14 November 2010.**
- Figure 1 demonstrates surveillance output by quarter and type for the **2010–11 financial year to 14 November 2010**. In comparison, Figure 2 demonstrates surveillance output by quarter and type for the **2009–10 financial year**.

Figure 1 - Area surveyed by quarter and type for the financial year (2010–11) to 14 November 2010

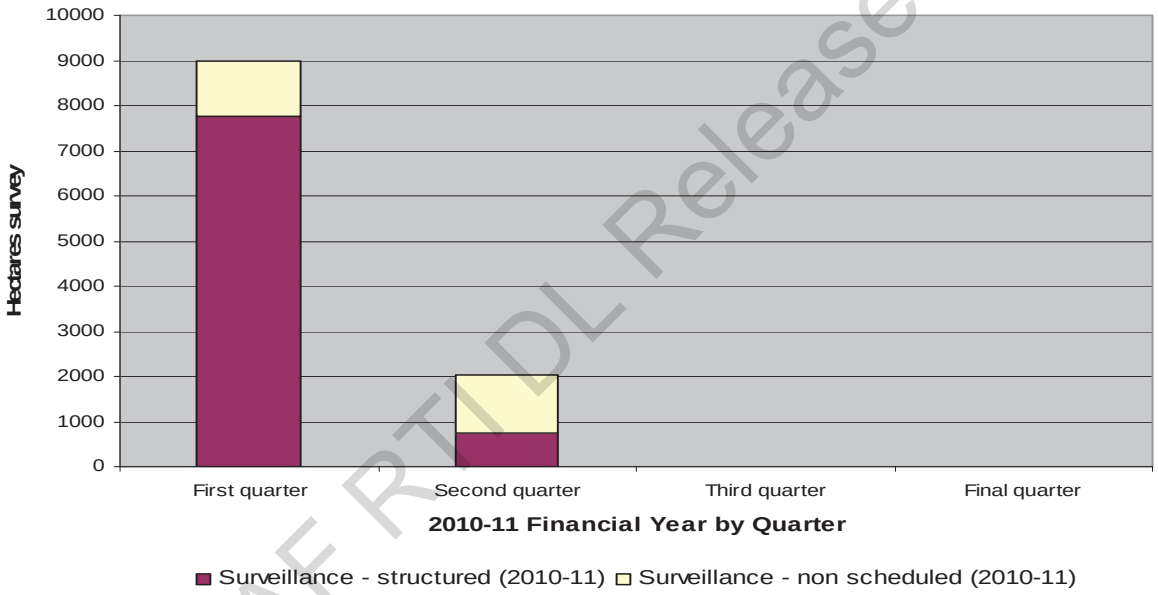
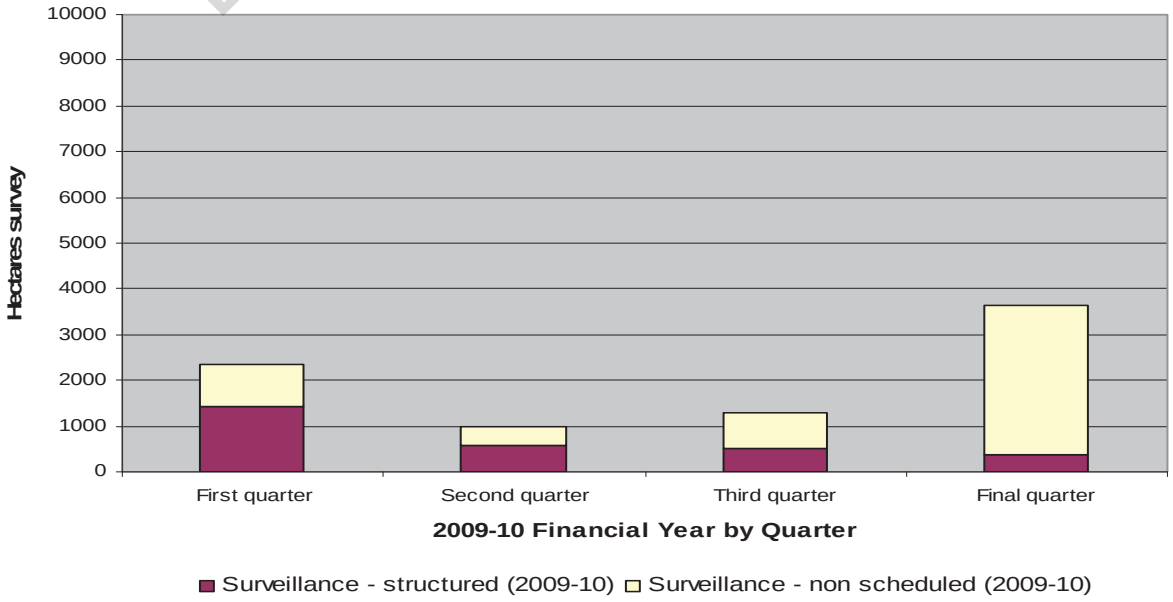


Figure 2 - Area surveyed by quarter and type for the previous financial year (2009–10)



3 DETECTIONS

3.1 Summary

- The NRIFAEP's active and passive surveillance efforts have led to the detection of 543[3] RIFA colonies at 207 sites across 72 suburbs this quarter (see Table 1 and Table 2). A map showing the location of 2010–11 financial year detections is included as Map 2 of Appendix 1.

Table 1 - Detection summary to 14 November 2010 for the 2010–11 financial year

Criteria	Number
Infested sites	**207 (150 new)**
Infested suburbs	**72**
Total number of recorded colonies	**543 (301 new)**
Number of colonies recorded outside of the Restricted Area	118 (32.2%)
Number of outlier sites	40 (28%)

Table 2 – Detections to 14 November 2010 for the 2010–11 financial year by suburb

SUBURB	Colonies in suburb	% of total	% of suburbs
ROCHEDALE	57	10.50%	1.39%
ROSEWOOD	39	7.18%	1.39%
BERRINBA & MUTDAPILLY	35	6.45%	2.78%
PURGA	30	5.52%	1.39%
GREENBANK	29	5.34%	1.39%
PEAK CROSSING	28	5.16%	1.39%
YAMANTO	19	3.50%	1.39%
MACKENZIE	18	3.31%	1.39%
WILLOWBANK & REDBANK PLAINS	17	3.13%	2.78%
SPRINGFIELD LAKES, DEEBING HEIGHTS	15	2.76%	2.78%
AMBERLEY	11	2.03%	1.39%
BORONIA HEIGHTS	10	1.84%	1.39%
RACEVIEW	9	1.66%	1.39%
WILLAWONG, NORTH BOOVAL, FOREST LAKE, HARRISVILLE	8	1.47%	5.56%
SOUTH RIPLEY & HERITAGE PARK	7	1.29%	2.78%
SPRINGFIELD CENTRAL, PARK RIDGE, ONE MILE	6	1.10%	4.17%
WHITE ROCK, THAGOONA, ACACIA RIDGE, PARK RIDGE	5	0.92%	5.56%
WULKURAKA, TALLEGALLA, CALAMVALE, HEATHWOOD, RIPLEY	4	0.74%	6.94%
CARINDALE, WASHPOOL, WALLOON, REGENTS PARK	3	0.55%	5.56%
WATERFORD, OXLEY, MOUNT MARROW, BELMONT, UNDERWOOD, FLINDERS VIEW, ASHWELL, SUNNYBANK HILLS, ALGESTER	2	0.37%	12.5%
NORTH IPSWICH, MOUNT COTTON, RUNCORN, SHELDON, BELLBIRD PARK, SPRING MOUNTAIN, LANEFIELD, LOGANHOLME, STRETTON, SUNNYBANK, LEICHHARDT, SWANBANK, BROWNS PLAINS, MANSFIELD, REDBANK, AUGUSTINE HEIGHTS, PARKINSON, PARK RIDGE SOUTH, WATERFORD WEST, HOLMVIEW, DOOLANDELLA, BROOKWATER, MOUNT MORT, ORMEAU, PINE MOUNTAIN	1	0.18%	34.72%

[3] A colony is recorded and added to the colony count on each occasion where an apparent nest with ants is detected irrespective of evidence to suggest that the colony is a viable colony. Canine units take responsibility for the majority of post-treatment validation inspections Evidence suggests that most post-treatment validation detections are remnant ants associated with unviable colonies rather than treatment failure.

4 TREATMENT

4.1 Destruction of known infestation

- During the financial year to 14 November 2010 all new fire ant detections were destroyed by direct nest injection using fipronil. Toxicant bait was applied to a distance of 20 m around the colony, and insect growth regulator bait applied out to 50 m around the colony.

4.2 Broadcast baiting

- In 2010–11 approximately 83 000 ha are scheduled to receive broadcast insect growth regulator bait treatment by air, all terrain vehicle and foot. Typically the commencement of treatment begins in September, however due to low ground temperatures and inclement weather prophylactic broadcast baiting was delayed this year.
- A total of 8522 hectares across 17 586 sites have been baited to 14 November 2010 **this financial year** (see Map 3 Appendix 1).
- Figure 3 shows treatment progress for the first quarter and second quarter to 14 November 2010 **this financial year.**
- In comparison, Figure 4 below shows treatment progress by quarter during **the 2009–10 financial year**.

Figure 3 - Hectares treated from 1 July 2010 to 14 November 2010

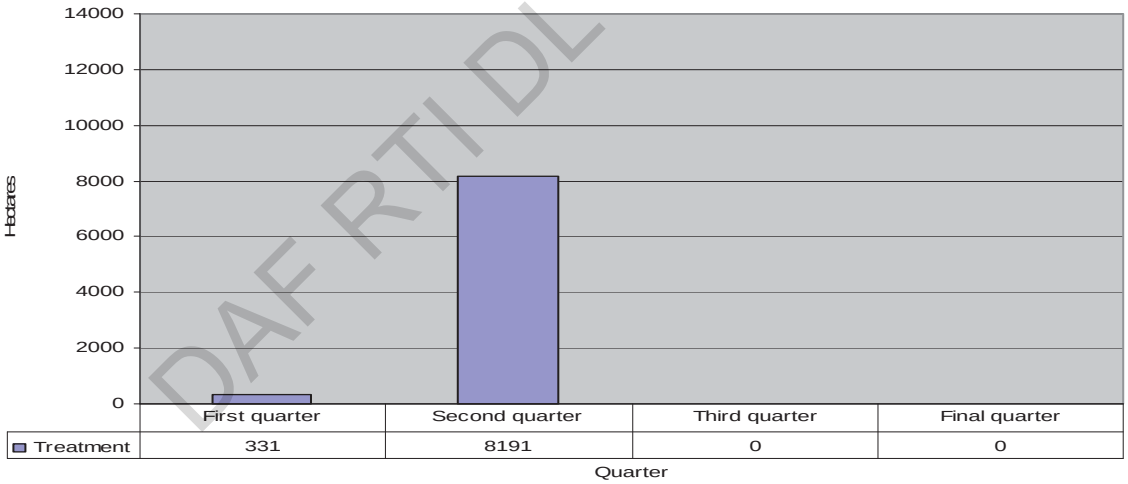
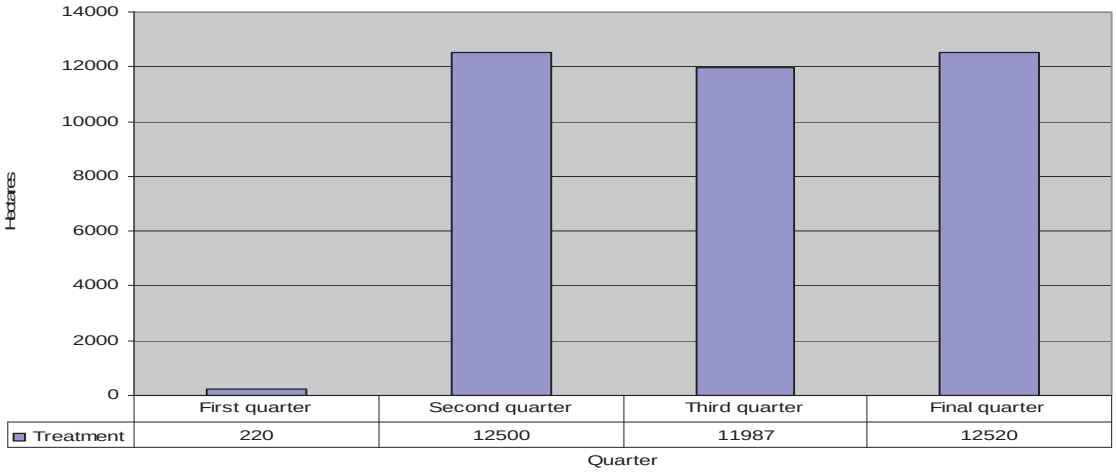


Figure 4 - Hectares treated by quarter for the financial year 2009–10



5 COMMUNITY ENGAGEMENT

5.1 Highlights this period (financial year to 14 November)

- An officer is now based full time in Ipswich delivering community engagement in Ipswich City and Scenic Rim Regional council areas and works closely with council staff in developing partnerships with Councillors. This builds on the work that has been conducted in that area for several years now, but from a local base.
- Recruitment of volunteers has continued with flow on effects from advertising conducted in July 2010. New volunteers are already busy working on displays and doing surveillances.
- Clontarf Task Force (volunteers) has conducted extensive surveillance and community engagement in the Clontarf detection area.
- Materials placed at doctor and vet surgeries have had some take up however few people reporting suspect ants have cited the materials as the reason for their call. It is possible that callers had already been aware of fire ants and cited original sources of information, but information in surgeries may have acted as a reminder or trigger to contact us. We will not continue with the placement of material in surgeries. We will particularly focus resources on individual engagement of vets in high risk areas and other animal-related services such as groomers.
- A liaison officer is working with organic certification agencies to investigate options for organic growers in bait treatment areas.
- Roadside variable messaging signboards have been ordered and will be used to alert the public to fire ants in hot spots of activity.
- Community Engagement worked with Science to translate materials for research and engage with Vietnamese market gardeners.
- Currently working with Operations to gather aerial treatment consents while at displays.
- Currently working with schools and Councils to ensure groundskeepers are aware of fire ants and know to comply with restrictions.

5.2 Looking ahead

- University of New England and the Department of Agriculture, Fisheries and Forestry project to assess the value of passive surveillance to an eradication program using fire ant data.
- Proposal drafted to reposition eradication in the public domain as a risk, seeking renewed compliance and passive surveillance.
- Routine postcard surveillance to roll out in January 2011 using an external mailing house to reduce manual handling and increase efficiency.
- Restricted Area release in the early new year will have some knock on effects for public interest and demand for training.
- Residents new to the Restricted Area will receive a revised mailout of information—down from package to postcard—to reduce cost and increase visibility of message.

5.3 Community Engagement activities (summary)

Activity	Total for period
Community Talk	12
Display - Interactive	35
Display - Sent out	2
Display - Static	4
Fire Ant Working Group Meeting	2
On-Site Training	54
School Ed	3
Total activities:	**112**

5.4 Community Engagement activities (details)

Community/Organisation Talks	No. of Attendees
Community Talk	**421**
Total Talks:	**12**

Displays	No. of Activities	No. of Attendees
Interactive	35	**17 055***
Sent out	2	**1200**
Static	4	**750**
Total activities:	**41**	**19 005**

* includes Ekka

Training	No. of Sessions	No. of Attendees
General Awareness	32	**728**
Approved Person	22	**468**
Total training sessions:	**54**	**1196**

School Education	No. of Sessions	No. of Attendees
School Talk	3	**250**
Total School Education:	**3**	**250**

5.5 Community Engagement activities (advertising)

Advertising
Fire Ant Volunteer Ranger recruitment campaign - newspaper and radio advertising 4th - 18th July 2010
Aerial baiting activity – Qld Times, 13 September 2010

5.6 Volunteer activity

Volunteer Activity	
Events: - Laidley Show - Gatton Show - Peaks to Point Family Fun Day - Mount Gravatt Show - Ekka - Ormeau Community Fair - Gold Coast Show - Neighbourhood Watch Family Fun Day - Red Cross Chelsea Flower Show - Beaudesert Show - Beenleigh Show - Soulful Spring Sounds - Smart Living Expo 2010 - Black Snake Creek Festival & Parade - ICC Mobile Nursery - Yamanto - Green Heart Fair - Mt Gravatt - Trees for Weeds Day - Ministerial visit to BQCC - Jacaranda Festival & Parade - ICC Mobile Nursery - Chuwar - Fernvale Markets - ICC Mobile Nursery - Brassall - St Peter's Catholic School Rochedale	Surveillance: - Bicentennial Apex Park in Clontarf - Murarrie Recreational Reserve Displays (Volunteers Only): - Mulgowie markets - Red Cross Chelsea Flower Show - Beaudesert Show - Trees for Weeds Day - ICC Mobile Nursery - Yamanto - ICC Mobile Nursery - Chuwar Recruitment Drive: - 10 potential volunteers attended the training and information session on Thursday 22nd July 2010 - Volunteer enquiries continue to filter through

5.7 Complaints and compliments

Complaints & Compliments	Status	Source	Total
Aerial treatment	Open	Direct call	**3**
Miscellaneous	Open	Direct call	**1**
Total Complaints & Compliments:			**4**

5.8 Public response

Activity	Total for period
Reports from public	**1199**
Sample kits despatched	**639**
Samples collected by staff	**721**
Total public samples submitted	**1213**
Web page visits - # of page views for landing page - #4538	**18 520**

5.9 Departmental Business Information Centre fire ant requests for information or action

Activity	Total for period
BIC Referral	**26**
Education and Training	**60**
General	**800**
Interstate	**38**
Other	**132**
Report	**356**
Restricted areas	**871**
Risk Management	**251**
Site Inspections	**1297**
Specimen kit	**476**
Month total:	**4307**

5.10 Targeted industry engagement

Industry types contacted	No. of Businesses contacted
Building/Construction, CE Contact, council, Government, Landscaping, Community group, Concreting, Environment, Earthmoving, Education, Government service, Hardware, Hotels, Library, Medical, Nursery, Pest control, Post Office, Retail, Produce agent, Produce grower, Services, Transport, Utilities, Waste management, Wholesale producer	**200**
Real Estate Agencies	**27**
Period Total:	**227**

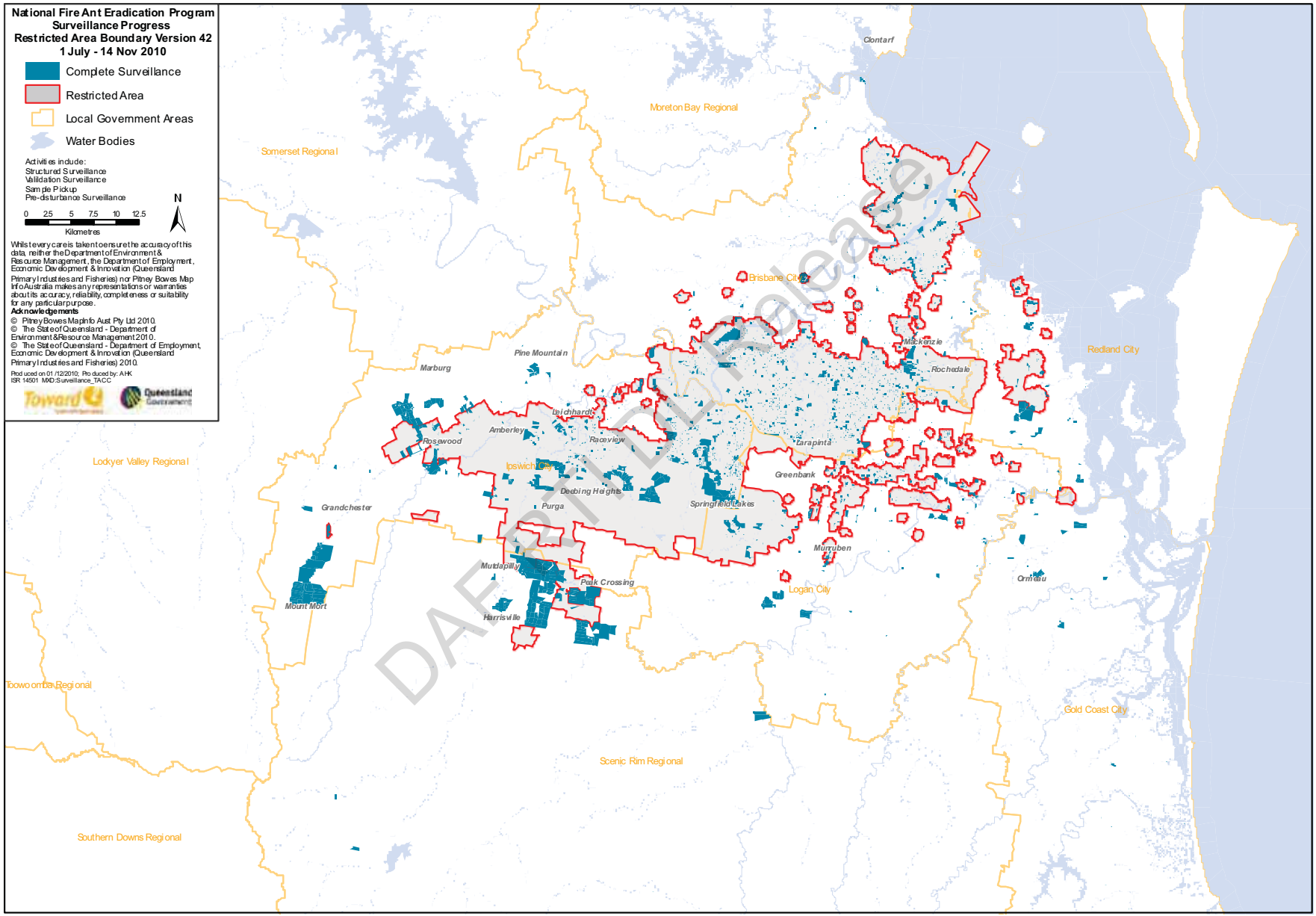
5.11 Media activity

Medium	No. of Media clips
Media Releases	**4**
Online	**50**
Print	**59**
Radio	**45**
Television	**3**
Total Media Clips:	**161**

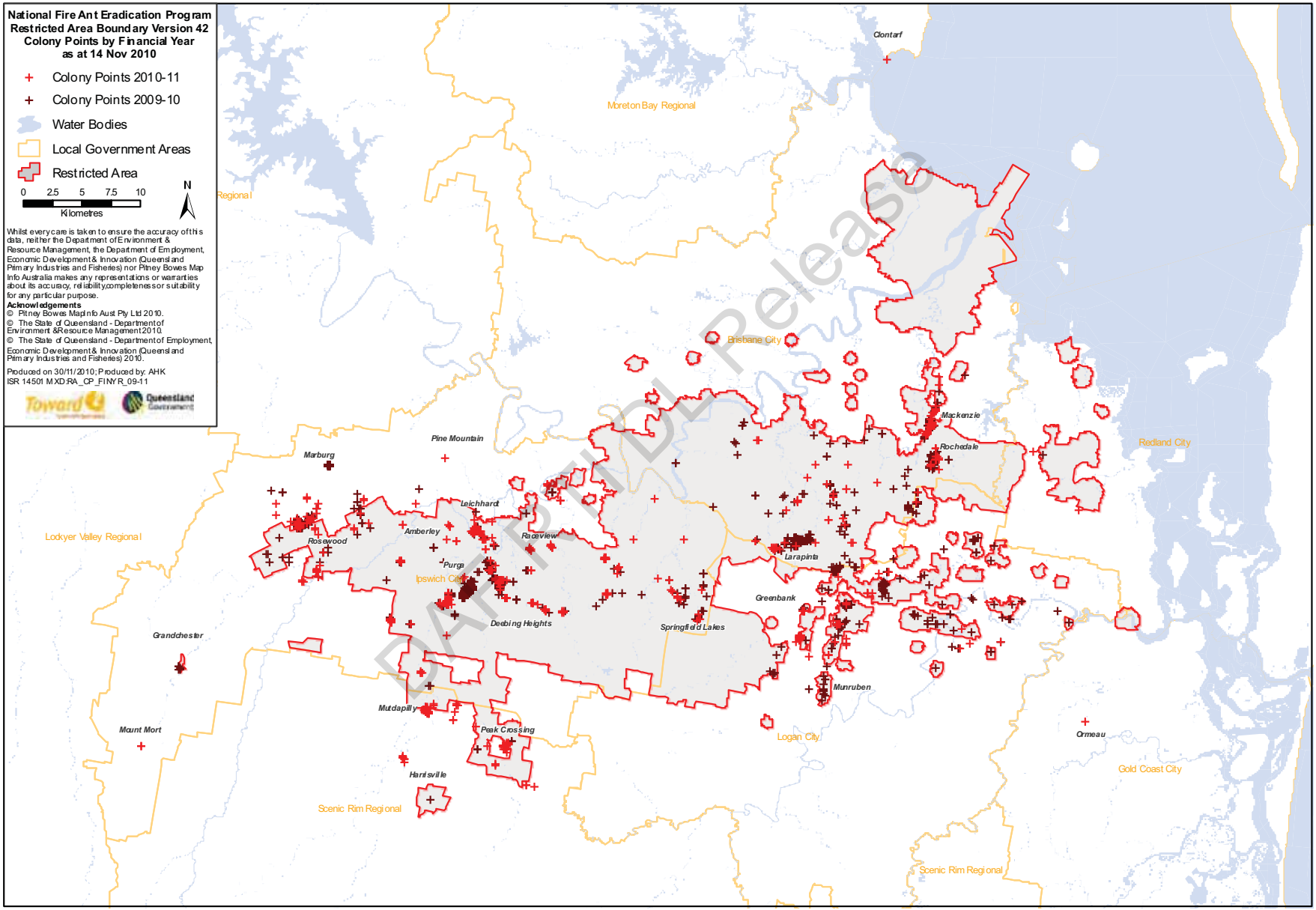
APPENDIX 1

Maps

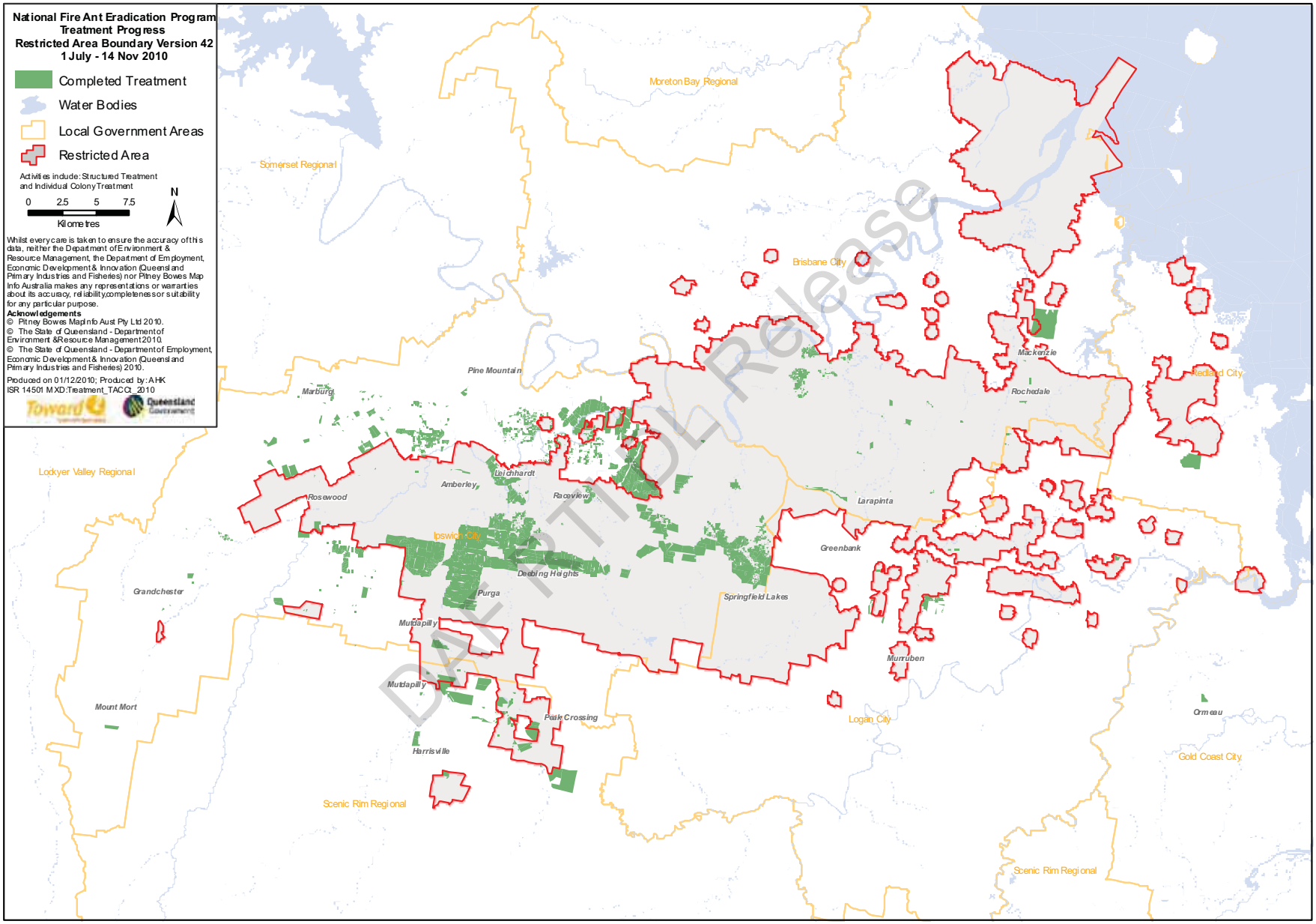
Map 1 - Surveillance progress for 1 July to 14 November 2010



Map 2 - Colony detections for 1 July to 14 November 2010



Map 3 - Treatment progress for 1 July to 14 November 2010



Tramp Ant Consultative Committee 2

Recommendations and Actions

Attendance / Apologies

Department of Agriculture, Fisheries and Forestry
Michael Cole (Acting Chair)
Tim Coutts (DAFF Joint-Secretariat)
New South Wales
Royce Holtkamp
Victoria
Gina Paroz
Tasmania
Lionel Hill
Northern Territory
Anne Walters
Queensland
Craig Jennings (Acting Representative)
Grant Telford (Observer)
Cara MacNicole (Observer)
Marion Lawie (Observer)
Ross Wylie (Observer)

Apologies
Department of Agriculture, Fisheries and Forestry
Lois Ransom (Chair)
Department of Sustainability, Environment, Water, Population and Communities
Andrew Copp (DSEWPaC Joint-Secretariat)
South Australia
Mark Ramsey
Western Australia
Shashi Sharma
Australian Capital Territory
Peter Dinan

Day 1

1 Welcome and Introductory Remarks

The Acting Chair welcomed Tramp Ant Consultative Committee (TACC) members to the second meeting for the TACC, and introduced new committee members and observers to members with a history of representation on prior Tramp Ant Committees for Red Imported Fire Ants (RIFA) and Electric Ants (EA).

Apologies were accepted by the Acting Chair.

There have been significant changes made to the committee and also to Biosecurity since the last meeting of the National Tramp Ant Committee (NTAC), which was held late 2009. The TACC was formed after the NTAC ceased as a National Committee for Tramp Ants at the end of 2009. The new Terms of Reference were created to align with the National Environmental Biosecurity Response Agreement (NEBRA) Schedule for Consultative Committees. The Environmental Biosecurity Committee (EBC) was disbanded, about half-way through 2010, all Tramp Ant policy is being conducted through the National Biosecurity Committee (NBC). The TACCs responsibility is now to provide technical advice for the two cost shared programs: The National Red Imported Fire Ant Eradication program and the National Electric Ant Eradication program.

The Scientific Advisory Panel (SAP) is to be reformed with membership to include representatives with complementary skills to allow for analysis of a greater range of tramp ant related issues; the

Terms of Reference will need to be re-developed to better suit the TACC's needs for SAP's new role.

2 Business Arising from the Previous Minutes

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** the minutes from the inaugural Teleconference; the teleconferences outcomes were highlighted from the minutes for TACC members by the Acting Chair:
    - The Yarwun Pest Free Area has been declared; this is the first occasion where an area within Queensland that has had an established RIFA incursion has been demonstrated to be a Pest Free Area, in accordance with national standards. TACC was informed that further progress had been made in gathering evidence to support freedom from RIFA in other parts of the current Restricted Area, including the Port of Brisbane. The process used in determining area freedom in Yarwun will be used, but modified, to suit any new cases for area freedom based on their unique history of infestation, location and the surveillance techniques applied. The release of Yarwun as a Pest Free Area has meant significant cost savings for the program.
    - The Nursery Garden Industry Queensland (NGIQ) proposal for reconsideration of Property Freedom status for a previously infested nursery after clearance by a RIFA canine unit was agreed to at the TACC teleconference and sent to the Domestic Quarantine and Market Access Working Group (DQMAWG); so states can agree to changes in the interstate movement regulations. The current status of these changes to the interstate movement regulations for Nursery Stock is still proceeding through due process, and is yet to be enacted by all jurisdictions.
    - The Electric Ant review has been completed and was noted; the review's outcomes were to be reported as an agenda item at this meeting.
    - The carry-over of surplus electric ant funds is to be used to fund the National Electric Ant Eradication Program activities for 2010-11; this was agreed to at the Teleconference.
    - The reformation of the Scientific Advisory Panel (SAP) was brought up at the TACC 1 teleconference; but has not been progressed since the meeting. The SAP was discussed Out-of-Session (OOS) with the SAP being discussed as an agenda item at this meeting.
    - Jurisdictions agreed to the Minutes from the teleconference and supported one final amendment to the minutes; reflecting a change to the second Recommendation in the minutes, about approaching a named person to chair the SAP, this was not raised or agreed to during the meeting.
    - The Interim Invertebrate Taskforce is still in the process of being organised; the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) have the responsibility for establishing the group. Letters inviting

representatives from Jurisdictions to participate in the Taskforce have been sent out.

3 Red Imported Fire Ants

The National Red Imported Fire Ants Eradication Program had several agenda items, which were discussed over the two days. The first day covered the eradication program's progress to date, along with the Proposed Course of Action for the Eradication Program for 2010-11. TACC visited Purga and Marburg, which was part of a planned half day field trip. The second day started with an update covering the Scientific Research that had been conducted throughout 2009-10, this lead into what Scientific Research is to be carried out in 2010-11 and beyond.

3.1 Progress Report

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Agenda paper:

- The Tramp Ant Consultative Committee (TACC) **noted** the progress of the National Red Imported Fire Ant Eradication Program (NRIFAEP) for the 2010-11 financial year at 14 November 2010.
- The TACC **noted** that subsequent to 14 November 2010 a significant infestation of fire ants was detected across a small area on the boundary of the Restricted Area at Walloon. Due to the nature of the polygyne infestation a large number of colonies have been detected in this area and this will significantly increase the number of fire ant colonies detected for this financial year.

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The TACC **requested** that to allow a better comparison of the actual area that is subject to infestation that a map is produced that demonstrates the position of each RIFA colony that is detected with a buffer of 50 metres around that colony point which is reflective of the maximum foraging distance of ants around a nest and is consistent with the actual area baited as part of the colony destruction process. The total area that is subject to infestation using this protocol should be the area that is reported as infested.
- The TACC **noted** that funding for the NRIFAEP for the current financial year will only support control and containment activities. Queensland **informed** the TACC that it is likely that the number of RIFA colonies that will be detected in the known infested area will increase this financial year.

3.2 Proposed Course of Action for 2010-11

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Agenda paper:

- The Tramp Ant Consultative Committee (TACC) **noted** that the National Red Imported Fire Ant Proposed Course of Action for 2010-11 has been approved by the High Level Working Group (HLWG); the recommendations, as agreed by the HLWG, have been submitted to the National

Management Group (NMG) for decision.

- The TACC **noted** that the National Red Imported Fire Ant Eradication Program (NRIFAEP) is currently delivering the Proposed Course of Action; pending decision on the Proposed Course of Action by the National Management Group (NMG).

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The TACC **noted** that Queensland and the Commonwealth will enter a cost matching agreement for the remaining $6 million to reach the proposed $21 million required for the eradication program for 2010-11. The TACC was **informed**, by Queensland, their Department has received **in-principle** support from the Commonwealth for the proposed cost matching arrangement; this cost matching agreement is subject to endorsement by the National Management Group (NMG) and the usual budgetary processes.
- The TACC **agreed** and **noted** the following recommendations as presented in the Out-of-Session (OOS) National Management Group (NMG) Agenda paper 'Proposal for 2010-11 Red Imported Fire Ant (RIFA) Program':
    - The TACC **agreed** that the short term objective of the Red Imported Fire Ant program is for suppression and 'aggressive containment' with a continued long term objective of eradication, while the remote sensing technology is developed, bait efficacy research is conducted and further analysis is undertaken regarding the technical feasibility of eradication.
    - The TACC **agreed** that the focus of the national cost shared component of the program is on activities to prevent the spread of Red Imported Fire Ants beyond known containment lines, including treatment of infestations according to a risk management framework.
    - The TACC **noted** that Queensland has committed a further $3 million in 2010-11, to ensure public safety and amenity in areas not funded through the national program, and that the Secretary of the Department of Agriculture, Fisheries and Forestry has provided in-principle support for a matching Australian Government contribution; pending agreement of all parties to the response and normal budgetary processes.
    - The TACC **agreed** to a national cost shared program of $15 million in each of the 2010-11 and 2011-12 financial years, subject to jurisdictional budgetary considerations, with the cost sharing proportions outlined in Attachment A (in the National Management Group (NMG) Out-of-Session (OOS) Agenda paper) that is to be forwarded to ministers for approval.
    - The TACC **agreed** to the operational plan at Attachment B (in the NMG OOS Agenda paper.)
    - The TACC was asked to **note** that the operational plan may need to change should

new patterns of infestation emerge.

- The TACC **agreed** that priority should be given to the formulation of new strategies to mitigate risk of infestation in major development sites and along new road-works; implementing a new zoning approach to the restricted area; and exploring options for placing more responsibility for the management of Red Imported Fire Ants onto landholders.
- The TACC **noted** that Queensland was **requesting** further advice on the future of the Red Imported Fire Ant program no later than June 2011, based on the latest results from remote sensing trials, population and spread modelling, bait efficacy research and epidemiology analysis.

- The TACC **noted** that the focus of containment and control activities have been towards Logan and out West.
- The TACC **noted** that the National Cost Shared program component of $15 million for 2010-11, will be repeated in 2011-12; this means another year of similar activities that 'aggressively contain' RIFA. The 'aggressive containment' period of 18-24 months was a recommendation of the Independent Review, which allows Queensland to get everything in place so the program may resume RIFA eradication.
- The TACC **discussed** possible trigger points that would call for the Eradication program to be reviewed, including: if RIFA was detected in another State or Territory, or, if a significant problem arises with the Remote Sensing project.
- The TACC **agreed** there should be increased compliance monitoring and education activity. This would provide a foundation for ensuring landholders remain compliant with their obligations within the RIFA Restricted Area.
- The TACC **agreed** Jurisdictions need to investigate the level of general awareness their Jurisdictions have of RIFA and Tramp Ants in general.
- The TACC **provided strong support** for a Sentinel Site project proposal to be developed; based on the proposal Queensland will consider this for incorporation as an activity of the existing program to better monitor the presence of RIFA, but also for the other Tramp Ant species.
- The TACC **recommended** that jurisdictions consider employing community engagement activities for RIFA that could be incorporated into normal business. The community engagement activities should not be restricted to Queensland. The project should use existing citizen science and community engagement networks to inform the public about Tramp Ants.
- The TACC **requested** advice be sought from the National Management Group (NMG) Secretariat on the mandate of the High Level Working Group (HLWG); the TACC would like to know how long the HLWG will persist.

3.2a Postcard Surveillance Strategy

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Agenda paper:

- The Tramp Ant Consultative Committee (TACC) **noted** that a trial of the efficacy of the postcard surveillance tool has been performed by the National Red Imported Fire Ant Eradication Program (NRIFAEP).
- The TACC **noted** that on 500 properties where postcards were delivered, and where residents stated they had inspected and found no suspicious ants that inspection of those properties confirmed that no suspicious ants were present.
- The TACC **noted** that although postcards were returned at varying rates from different locations (6.2%-10.3%) with an average return rate of 7.4%; approximately 43.4% of persons who did not respond did check their yard after getting the card.
- The TACC **noted** that almost half of respondents did not know fire ants had been found in their suburb before they got the postcard, and approximately two-thirds of surveyed non-respondents did not know fire ants had been found in their suburb before they got the postcard.
- The TACC **agreed** to the implementation of routine postcard surveillance in 2010-11 and will assist in controlling and containing fire ants by alerting residents of fire ant characteristics, and confirming reporting obligations and mechanisms.

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The TACC **agreed** that access should be granted to other parts of the community to the GovDex website. The Commonwealth is to provide advice on new members for Queensland to add as the portal administrator.

3.3 Field Visit

The Marburg and Purga infestations provided a demonstration of the potential damage fire ants could do, if RIFA was to spread, if they are not reported and not regularly checked.

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Agenda paper:

- The Tramp Ant Consultative Committee (TACC) **noted** the potential for fire ants to spread within and from a property where fire ants had been present for a period of time and not subject to phytosanitary treatments.

Day 2

The second day concluded the Red Imported Fire Ant Agenda papers. Summarising the Science component of the RIFA Eradication program. Queensland then provided a progress update for the

Electric Ant Eradication Program for 2009-10, and progress the eradication programs progress for the first Quarter of 2010-11. The Electric Ant technical reviewer's summarised the Technical Review's Report; the report was released just prior to the meeting. The day concluded by discussing continuing the cost shared Eradication Programs for 2012 and beyond. A brief discussion was held to discuss when the next Tramp Ant Consultative Committee meeting or teleconference has to be held.

4 Red Imported Fire Ants – Continued

The second day of the meeting began with a science research update on activities conducted as part of the RIFA Eradication Program.

5 Science Update

The Acting Chair of the Tramp Ant Consultative Committee (TACC) provided a brief summary of what needed to be discussed and decided by the TACC for the Scientific Research as it relates to the cost shared Eradication Programs. The TACC needs to: reform and re-establish the Scientific Advisory Panel (SAP); a progress update for the pilot Remote Sensing project was provided by Queensland; the reformed SAP could be tasked with the development of future research projects.

The RFIA Science Update was not presented as listed in the Agenda. The Agenda papers were discussed in the following order: Remote Sensing, Genetics, the Broadcast Bait Efficiency trials, Persistent Infestations, Model update and Advion Trial (a specific bait trial).

5.1 Remote Sensing

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Agenda paper:

- The Tramp Ant Consultative Committee (TACC) **noted** the progress toward developing a remote sensing surveillance system for the National Red Imported Fire Ant Eradication Program (NRIFAEP).

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The TACC **noted** that the new mount will provide a new setup for the cameras being used by the project: the construction will be completed by June 2011. The TACC also **noted** that the new mount is to be tested, once the mount is checked it meets the requested specifications.
- The potential to hold a workshop with the developers of the remote sensing system was discussed and TACC members were asked to consider participants from their jurisdictions that may wish to attend. BQCC will **organise** a date for the workshop before 30 June 2011.

5.2 Genetics

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Agenda paper:

- The Tramp Ant Consultative Committee (TACC) **noted** the progress on genetic analysis of the Red Imported Fire Ant (RIFA) populations in Australia.

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The TACC **noted** that the fourth Genetic Analyser machine being used by Queensland for the Tramp Ant genetics analysis has broken down; no genetic analysis has been conducted since the analyser's break down.
- The TACC **noted** the RIFA populations do not appear to be in Harvey-Weinberg equilibrium, which is required for analysis of parentage using the Queller and Goodnight coefficent: the population is in fact in a Genetic Bottleneck. This situation is potentially due to the recent introduction of the pest and activities undertaken by the eradication program.
- BQCC will **investigate** alternate analysis techniques including those used for paternity and maternity testing in humans.
- The TACC **noted** Queensland intends on holding a Tramp Ant Genetics Workshop to identify better and alternate ways to analyses the RIFA genetic data. The TACC **requests** that Jurisdictions identify suitable representatives to attend the Tramp Ant Genetics Workshop; Queensland and the TACC Secretariat need to be informed about the nominated representatives. The workshop will be organised to occur before 30 June 2011.

5.3 Broadcast Bait Efficiency Trials

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Agenda paper:

- The Tramp Ant Consultative Committee (TACC) **agreed** that the broadcast baits used during the program are effective and appropriate for ongoing use in the National Red Imported Fire Ant Eradication Program (NRIFAEP).

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The TACC **noted** the efficacy of the broadcast baiting could not be tested to a satisfactory level at various sites for several reasons: the reasons why are covered in the Agenda paper.
- The TACC **noted** that Marburg was treated (second treatment) last week with the Insect Growth Regulator (IGR). The TACC **noted** the first treatment of the IGR was not done in ideal conditions; a good indication that the IGR treatments are working is the presence of grass growing on the larger mounds.

5.4 Model Development

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Agenda paper:

- The Tramp Ant Consultative Committee (TACC) **noted** progress toward developing a model to guide the National Red Imported Fire Ant Eradication Program (NRIFAEP) operational activities.

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The TACC **noted** the model is continuing to be developed with the incorporation into the model data from the genetics analysis work and the nest size clustering. The model will provide analysis of options for conducting surveillance and treatment.
- The TACC Chair **requested** that members identify experts, in their Jurisdictions, which could help conduct the review of the spread model.
- The TACC **noted** the models that are produced are mathematical depictions of the incursion; influenced by what surveillance and treatments have been conducted, and of course the RIFA biology that are included in the model. The model is open to interpretation.

5.5 Efficacy of Advion (Indoxacarb) Baiting

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Agenda paper:

- The Tramp Ant Consultative Committee (TACC) **noted** the results of efficacy trials for baits containing Indoxacarb and the plans for future use of the baits as an additional tool for the National Red Imported Fire Ant Eradication Program (NRIFAEP).

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The TACC **agreed** the efficacy of indoxacarb could be an issue that is considered by the reformed Scientific Advisory Panel (SAP).

5.6 Persistent Infestations

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Agenda paper:

- The Tramp Ant Consultative Committee (TACC) **noted** the results of investigations into persistent Red Imported Fire Ant (RIFA) infestations in market gardens and the suggested strategy for dealing with these infestations.

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The TACC **noted** that five sites, of 175 sites, throughout Brisbane could be considered persistent RIFA sites where: re-infestation has happened after around 12 months since the last treatment,

where the treatment processes do not appear to be fully effective. Multiple factors, such as regular disturbance may be responsible for these sites persistently remaining infested. An investigation into the cause of the persistent infestation is continuing.

- The TACC **agreed** that broadcast baiting and indoxacarb baiting should be used at the persistent sites.
- The TACC **noted** the information provided on Market Gardens (analysed separately to the other persistent sites.)
- The TACC **noted** all market gardens with persistent infestation sites will be case managed, regularly surveyed and treated (with nests direct nest injected and then baited); it appears each site has different factors that contribute to it remaining a persistently infested site.
- The TACC **agreed** that the gathering of all relevant information related to the persistent sites is vital to better manage RIFA; so any future persistent sites can be handled more effectively.

6 Electric Ants

The Electric Ant session centred on providing an update on the successes of the National Electric Ant Eradication Program for 2009-10, and enabled decisions to be made to progress the Electric Ant Response Plan, covered by the Technical Review of the Eradication Program. The Technical Review was undertaken a month earlier and was released to the Tramp Ant Consultative Committee (TACC) just before the meeting.

6.1 Progress Report

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Agenda paper:

- The Tramp Ant Consultative Committee (TACC) **noted** the progress of the National Electric Ant Eradication Program (NEAEP) at October 2010.
- The TACC **noted** the strategies to be implemented to address issues identified that prevent success of the National Electric Ant Eradication Program (NEAEP) at October 2010.
- The TACC **noted** that subsequent to October 2010 an additional detection has been made at Kewarra Beach and that this detection is not expected to significantly affect the program of work for 2010-11.

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The TACC **noted** that several Electric Ant infestation sites are coming to the end of the required surveillance period to declare Area Freedom from Electric Ants. No Electric Ants have been detected since the beginning of these surveys.
- The TACC **agreed** that Electric Ant Area Freedom Protocols can be written, for clearance through

the National Management Group (NMG). The Declaration of Area Freedom Protocols will be similar to the Declaration protocols used for Yarwun.

- The TACC **noted** the server change, from Microsoft Exchange 2000 to Exchange 2005, caused a loss in data integrity; the problem has now been fixed, but did cause a delayed release of the Annual Report for 2009-10.

6.2 Technical Review

Actions and Recommendations

The Recommendations recorded in the Tramp Ant Consultative Committee (TACC) Technical Review Report:

- The Tramp Ant Consultative Committee (TACC) **noted** that the Technical Review panel still considers the Eradication of Electric Ants remains technical feasible and continued investment is worthwhile and highly cost effective based on the potential for Electric Ants to cause very significant, but unquantified environmental and social impacts should the Electric Ants be allowed to spread without control.

- The TACC **noted** that it should consider the formation of a new Science Advisory Panel (SAP) to provide advice on tramp ants and possibly other invertebrate eradication programs. The reformed SAP should include a broader skill base to provide a broader level of advice to the program.

- The TACC **noted** the Review Panel recommended that Biosecurity Queensland develop a protocol on the criteria for declaring the eradication of Electric Ant successful; the protocol will have to be considered by TACC and the Domestic Quarantine and Market Access Working Group (DQMAWG).
  The key components of the protocol should include:
    - At least 2 rounds of grid based surveillance across the whole site using lures.
    - Allow at least 2 years after the last round of baiting to ensure that any residual ants can reach detectable levels.
    - Include the use of detector dogs across the sites.
    - At sites, including Smithfield and Bingil Bay, where the terrain and forest cover makes treatment and dog surveillance difficult, then extra time and/or surveillance should be allowed before the final round of surveillance.

- The TACC **noted** it has to consider the information requirements for the proposed exit review to be conducted before the eradication programs funding ends.

- The TACC **noted** the Review Panel recommended the TACC reconsider whether the information provided by the program meets the national requirements, has it been correctly interpreted,

appropriately recorded and is it available to all program partners.

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The TACC **agreed** the Science Advisory Panel (SAP) be reformed; the SAP should be more flexible, bring in people on an as need basis to review the Eradication Program's concerns as they arise.
- The TACC **agreed** the recently detected incursions do not trigger another program review; Bingil Bay is an issue, but there is little else of any great concern, or hasn't been detected.
- The TACC **noted** that biodiversity values still need agreement; the biodiversity values are under review.
- The TACC **agreed** that all information provided on the National Electric Ants Eradication Program is to be made available on GovDex. The presentation of the information on the web site should be similar to how RIFA is presented on the GovDex web site. The GovDex web site for Electric Ants should include: the publications, the scientific reports and the extension material.
- The TACC **agreed** that an exit strategy needs to be developed for the National Electric Ant Eradication Program. The exit strategy should cover: an outline of staff operational procedures, eradication and control protocols, and lessons learnt from implementing these procedures and protocols.
- The TACC **agreed** that the National Electric Ant Eradication Program should present Quarterly Reports written in a similar manner to the RIFA Quarterly Reports: streamlined.
- The TACC **noted** that the new Response Plan for the National Electric Ant Eradication Program will cover a four year period: from 2012 till 2015. Most of the infestation sites only require three years of eradication activities, before area freedom can be declared; difficult locations required an extra year is added to ensure eradication.
- The TACC **agreed** the communications program should be nationally focused and graded by the Jurisdictions distance from the incursion. Enabling Jurisdictions to conduct interstate surveillance with the knowledge the surveillance works. The background knowledge should be made available to all the Jurisdictional Departments involved with these programs to increase their general awareness about Tramp Ants.
- The TACC **endorsed** the Electric Ant Technical Review's Report.
- The TACC **noted** that the National Electric Ant Response Plan would be ready Mid-January 2011; Queensland **requested** TACC members who are available should provide their responses to the Response Plan before Australia Day 2011.
- The TACC **noted** that once the Response Plan is endorsed, an Agenda paper will then be provided to the National Management Group (NMG) early next year.

7 Tramp Ant Eradication Programs 2011-12 and Beyond

The discussion centred on the activities that are planned for the RIFA Eradication Program for 2011-12 covering the proposed operational activities for the Eradication program. The TACC also discussed new ways to the represent infestation status to enable TACC members to explain the eradication programs accomplishments to their Ministers.

Actions and Recommendations

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The Tramp Ant Consultative Committee (TACC) **noted** that the detection of outlier colonies is critical to the National Red Imported Fire Ant Eradication Program's success.
- The TACC **noted** the financial year of 2012-13 will continue the development of the Remote Sensing project; over the 18-24 months Queensland will be managing and containing RIFA around Brisbane, which is in-line with the Independent Review's recommendation.
- The TACC **noted** that further Area Freedom protocols and phytosanitary measures will be developed, so that they are in place to control the movement of RIFA. To capably deal with the current risks in an efficient and cost-effective way.
- The TACC **noted** the Cost: Benefit Analysis for the National Red Imported Fire Ant Eradication Program is still to be reviewed by the Australian Bureau of Agricultural Rural Economic Sciences (ABARES).
- The TACC **noted** that as of 14 November 2010, for the 2010-11 financial year, the total actual area infested with RIFA is 124 hectares, under the 50m buffer protocol; the total actual area infested for 2009-10 was 214 hectares.
- The TACC **agreed** maps showing the treated areas should include the 50 metre buffer; thus giving a better indication of the total area where RIFA is being treated – this will end up being in the vicinity 300-500 hectares. The TACC also **noted** the updated maps will be attached to the GovDex website: will be kept up-to-date.
- The TACC **agreed** the Program Summary (or Executive Summary) that is provided with the reports should be drafted in a manner that could be easily used, or modified, by jurisdictions for briefing their relevant Departmental Ministers.
- The TACC **agreed** that the new Govdex portal was a useful tool for information dissemination and that jurisdictional members should be given the opportunity of identifying other colleagues in their Jurisdictions that would benefit from joining the Tramp Ant GovDex website. Initially TACC members were advised to email Queensland; however, applications for future members will be submitted to the Commonwealth for consideration; then forwarded to Queensland for inclusion.
- The TACC **agreed** the TACC Joint-Secretariat (Department of Agriculture, Fisheries and Forestry)

be placed on the GovDex website as an Administrator. This should streamline the posting of important documents for TACCs review.

8 Next Meeting

8.1 Next Teleconference or Face-to-Face Meeting

Actions and Recommendations

Actions and Recommendations identified through the discussions held at the TACC meeting:

- The Tramp Ant Consultative Committee (TACC) **agreed** to either a Teleconference or an Out-of-Session Agenda paper is sent for the endorsement of the National Electric Ant Eradication Program Response Plan. The Response Plan should be ready before Australia Day; the week of 10-14 January 2011, so TACC members have time to comment on the review.

Tramp Ant Consultative Committee (TACC) Meeting 5

Teleconference – 5 September 2011; 2.00pm AEST.
Actions and Recommendations

Attendance

Department of Agriculture, Fisheries and Forestry (DAFF)
Michael Cole (Acting Chair)
Tim Coutts (Secretariat)
Tegan Honing-Wassenburg (NMG Secretariat representative)

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC)
Andrew Copp
Joanne Nathan

Queensland
Neil O'Brian
Georgie Lucas
Craig Jennings

New South Wales
Royce Holtkamp

Victoria
John Burley

Tasmania
Lionel Hill

Australian Capital Territory
Peter Dinan

Northern Territory
Andrew Tomkins

South Australia
Mark Ramsey

Welcome

Introduction

The acting chair of the Tramp Ant Consultative Committee (TACC) welcomed members to the fifth TACC meeting, a teleconference. An overview was provided by the chair covering why the teleconference was called, and the discussions to be held at this teleconference. A summary of what was discussed, includes:

- An assessment of the recently detected outliers, and whether these outliers alter the program's operational outcomes.
- Examine the proposed treatment options, proposed for 2011-12, for the Red Imported Fire Ant Eradication Program.
- Queensland provides an update on the Remote Sensing project, and the other research projects, with an update why these projects have been delayed.
- Discuss what is proposed for the Science Advisory Panel Forums.
- Receive an update on the Tramp Ant Threat Abatement Plan's review's progress.

The primary reason why the teleconference was called is that the National Management Group (NMG) requested an update on the National Red Imported Fire Eradication Program's progress; the NMG meeting was held on Tuesday 6 September 2011.

TACC members expressed concern over the short time to read and consider the Queensland NMG Agenda paper, due to delays Queensland had with getting the Agenda paper and attachments out to members; however, agreed to concentrate on the impact of outliers, remote sensing delays and

alterations in treatments of outliers, on the continuation for this financial year's cost shared response program. These topics aligned with the recommendations in the Queensland NMG Agenda paper that the NMG was being asked to consider.

1. The recently detected RIFA Outliers

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** that the recently detected outlier Red Imported Fire Ant (RIFA) colonies are of concern; but **agreed** that their presence doesn't present a threat to the program and operations can continue as planned for 2011-12.
- TACC **noted** that Western Australia and Victoria had reservations about the program, given that RIFA still hasn't been completely delimited, but **agreed** that consideration of eradication would be subject to consideration later, after results from remote sensing, and other information is considered before the NMG; who'll decide upon the next steps for the program beyond 2011.
- TACC **noted** that, with the detection of these outlier nests, it tended to reflect the scattered distribution of an invasion front that would be expected for a containment program, which is still in the process of delimiting the boundaries of the invasion.

2. The proposed Treatment Regime for 2011-12

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **agreed** that treatment regime 'Option 1' was the best treatment control for the control of Red Imported Fire Ants (RIFA), for the rest of this financial year.
- TACC **noted** that a critical part of the proposed treatment options was that treatment continues inside the restricted areas, eradicating newly discovered inliers to prevent reinfestation of those areas that have already been treated. The operational activities in the restricted areas are supported by strong community engagement operations. Colonies found in urban areas are incorporated into routine colony destruction operations.
- TACC **noted** that Queensland will create a new treatment regime for the next financial year's operations. The new treatment plan will be influenced by successes and failures experienced during the current treatment regime.

3. Remote Sensing project, and other projects

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) expressed **concern** with the delay with the delivery of the Remote Sensing data; this delay has been caused by problems with the integration of the electronics of the three cameras to allow them to consistently focus their optics.
- TACC **noted** that the Remote Sensing operations will begin in mid-September 2011; Queensland is hoping that at least 11,000ha and up to 20,000ha can be surveyed using the Remote Sensing instruments, depending on the prevailing weather conditions towards the end of September 2011, as part of the data collection trial. This is before ground temperatures become unsuitable for the detection and discerning nests; when nest and ground temperatures begin to equalise, limiting the efficacy of the Remote Sensing.
- TACC **noted** that the Remote Sensing shall be linked with other surveillance activities, conducted in concert, enhancing the Remote Sensing surveillance data.
- Although, TACC considered that although the shortened time available to conduct the trial was not ideal, it should still be possible to collect sufficient data to confirm the efficacy of the methodology, when linked with other surveillance data. However, the cameras have not arrived yet, and trials have not begun, so this situation may change.
- TACC **noted** that once data is collected, and a detailed analysis of that data is completed, then TACC would be reconvened to discuss the implications of the data collected, and the prospects

for implementing effective Remote Sensing surveillance.

- TACC **noted** that this advice would be provided to the Senior Biosecurity Officials group so a decision can be made on the viability for future programs of Remote Sensing surveillance in contributing to the control of Red Imported Fire Ants.

4. Science Advisory Panel Forums

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** that several projects related to the National Red Imported Fire Ant Eradication Program: Remote Sensing, Spread Modelling, Bait Efficacy, Epidemiology Analysis and Red Imported Fire Ant (RIFA) Biology; the Scientific Advisory Panel Forums will be held to review these projects, identifying targets, for research in the future.
- TACC **agreed** that TACC members should nominate experts from their jurisdictions to participate at these Scientific Advisory Panel Forums, which are proposed to begin in October 2011. Queensland informed TACC that these experts need not be part of government; these experts can be external to government, and also external to entomology. This in an opportunity to have the program's research being considered from another perspective.
- TACC **noted** that the results emerging from the Scientific Advisory Panel Forums will be provided to the Senior Biosecurity Officials group so they can make a decision on future Research and Development projects, as well as, decisions made about funding of operations for 2011-12 and beyond.

5. Review of the Tramp Ant Threat Abatement Plan

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** that the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) will provide the Tramp Ant Threat Abatement Plan (TAP) actions summary table, it will cover which actions: have been met, partly met or not met; DSEWPaC hopes to be able to provide this summary table to TACC soon.
- TACC **noted** that the last jurisdiction has submitted their comments concerning the Tramp Ant TAP to DSEWPaC; these comments are being incorporated into the reviewed Tramp Ant TAP.
- TACC **noted** that DSEWPaC shall write an Agenda paper that summarises the outcomes of the Review of the Tramp Ant TAP for the Threatened Species Environmental Committee; this committee is responsible for making decisions on the TAP reviews. DSEWPaC would hope to have the Agenda paper to the Threatened Species Environmental Committee, ideally, November 2011.

6. Next Steps

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) members are to **brief** their jurisdictions National Management Group (NMG) member: before the meeting on 6 September 2011.
- Queensland **informed** TACC members that if they require additional information then they should contact the program managers.
- The TACC chair **agreed** to quickly collate and compile the primary points from the TACC teleconference and distribute them to TACC members; to enable members to brief their jurisdictions NMG member on the outcomes of the TACC Teleconference before the meeting.
- The TACC chair is to work with Queensland Department of Employment, Economic Development, and Innovation (DEEDI) in developing Scientific Advisory Panels for population genetics and remote sensing, as well as, a RIFA science forum to consolidate technical views on various aspects of the program that TACC may use to help inform the NMG on next steps.

Tramp Ant Consultative Committee 6

Monday 28 November 2011; 2.00pm AESDT

Actions and Recommendations

Attendance

Department of Agriculture, Fisheries and Forestry	*Australian Capital Territory*
Michael Cole (Acting Chair)	Peter Dinan
Tim Coutts (Secretariat)	
Kerrie Boulton	*New South Wales*
Bill Crowe (called in)	Royce Holtkamp
Department of Sustainability, Environment, Water, Population and Communities	*South Australia*
Julie Quinn	Mark Ramsey
Andrew Copp	*Northern Territory*
	Andrew Tomkins
Queensland	
Craig Jennings	*Apologies*
Jason Haffenden	Tasmania
Heather Leeson	Western Australia
Ross Wylie	
Victoria	
John Burley	

Introduction

The sixth Tramp Ant Consultative Committee (TACC) Teleconference was called to discuss the recent detection, an interception, of Red Imported Fire Ants (RIFA) in Roma, Queensland. In addition the acting chair informed TACC that the following items needed discussion and decision:

- The Scientific Advisory Panel on Population Genetics, being held on Tuesday 29 and Wednesday 30 November 2011;
- The proposed Science Forum, and its Terms of Reference;
- An update on the progress of the Remote Sensing project; and
- Queensland informed TACC about the proposed re-zoning legislation for the Restricted Areas.

Roma Red Imported Fire Ant Significant Detection

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **agreed** that the Department of Agriculture, Fisheries and Forestry (DAFF) and the Department of Employment, Economic Development and Innovation (DEEDI) craft a consistent message for the mining industry's awareness of the

potentially threatening invasive species that might be imported into Australia along a previously unsearched pathway.

- The TACC **noted** the media produced for the mining industry, and other industries, should simplify the message found in the situation report; plus, jurisdictions need to coordinate the media they have planned so it is a consistent message.
- The TACC **noted** that DAFF Biosecurity will continue to investigate the pathway; exploring where and how RIFA entered the pathway.
- The TACC **requested** that DEEDI send jurisdictions the most up-to-date information about RIFA; for their own proposed media, which they are developing.
- The TACC **noted** that the Roma incursion does not indicate an issue with the National Red Imported Fire Ant Eradication Program.

Scientific Advisory Panel on Population Genetics

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** that it would appear that Red Imported Fire Ants (RIFA) is being controlled in Australia; RIFA is in a genetic bottle-neck. If eradication is maintained it is unlikely the populations will re-enter equilibrium.
- The TACC **noted** the Scientific Advisory Panel will examine the population genetic data that has been collected to date. Experts will be asked if there are any other ideas that could be trialled; or, if there are any other techniques that might used to better control or eradicate RIFA.
- The TACC **noted** that any beneficial information should be shared with other jurisdictions, which might be of use with other pests.

Proposed Science Forum and Remote Sensing project update

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** that a TACC face-to-face meeting is planned, and will most likely be held in conjunction with a Science Forum planned for late-January 2012.
- The TACC **noted** questions to be answered on the success of the Remote Sensing project, include: what is it likely to take to delimit RIFA? How many years will it take to delimit? What will it cost to delimit?
- TACC **noted** that DAFF and DEEDI will attempt to identify potential dates in late-January 2012 to hold the Science Forum, but also a TACC face-to-face meeting. The acting chair **encouraged** TACC members to make an effort to attend the TACC face-to-face meeting and if possible the Science Forum that will be held about the same time.

Re-Zoning of Restricted Areas

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** Queensland is developing a proposal that will change the movement controls imposed in the Red Imported Fire Ant (RIFA) Restricted Areas.
- The TACC **noted** the re-zoning will change how the Restricted Areas will be identified. The Restricted Areas will incorporate the entire suburb, not just sections of the suburb. The re-zoning will be graded by: the severity of the RIFA infestation in the area, the treatment phases for the area and the surveillance period for the area.
- The TACC **noted** that the proposal will give Queensland a way to clear Restricted Areas; removing suburbs from the Restricted Area, or changing the level of control – downgrading the level – as infestation is treated and the required surveillance is conducted and the area is cleared of infestation.
- The TACC **enquired** of Queensland if the same Restricted Area re-zoning system could be considered for the Electric Ant eradication program.
- The TACC Acting Chair **noted** that the lessons learnt from the RIFA eradication program, over the past 10 years, could be used for other urban responses.
- The TACC **noted** that an additional teleconference will be called sometime over the next two weeks. This teleconference will allow TACC to discuss the re-zoning proposal, which will be made available a week before hand, for TACC to review before the teleconference.

Tramp Ant Consultative Committee 6

Monday 28 November 2011; 2.00pm AESDT

Minutes

Attendance

Department of Agriculture, Fisheries and Forestry	*Australian Capital Territory*
Michael Cole (Acting Chair)	Peter Dinan
Tim Coutts (Secretariat)	
Kerrie Boulton	*New South Wales*
Bill Crowe (called in)	Royce Holtkamp
Department of Sustainability, Environment, Water, Population and Communities	*South Australia*
Julie Quinn	Mark Ramsey
Andrew Copp	*Northern Territory*
	Andrew Tomkins
Queensland	
Craig Jennings	*Apologies*
Jason Haffenden	Tasmania
Heather Leeson	Western Australia
Ross Wylie	
Victoria	
John Burley	

Introduction

The sixth Tramp Ant Consultative Committee (TACC) Teleconference was called to discuss the recent detection, an interception, of Red Imported Fire Ants (RIFA) in Roma, Queensland. In addition, the acting chair informed TACC the following items would also be discussed and decided:

- The Scientific Advisory Panel on Population Genetics, held on Tuesday 29 and Wednesday 30 November 2011;
- The proposed Science Forum for Remote Sensing, and the Forum's Terms of Reference;
- An update on the progress of the Remote Sensing project; and
- Queensland updating TACC about the proposed re-zoning legislation for the RIFA Restricted Areas.

Roma Red Imported Fire Ant Significant Detection

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **agreed** that the Department of Agriculture, Fisheries and Forestry (DAFF) and the Department of Employment, Economic Development and Innovation (DEEDI) craft a consistent message for the mining industry's awareness of the

potentially threatening invasive species that might be imported into Australia along a previously unsearched pathway.

- The TACC **noted** the media produced for the mining industry, and other industries, should simplify the message found in the situation report; plus, jurisdictions need to coordinate the media they have planned so it is a consistent message.
- The TACC **noted** that DAFF Biosecurity will continue to investigate the pathway; exploring where and how RIFA entered the pathway.
- The TACC **requested** that DEEDI send jurisdictions the most up-to-date information about RIFA; for their own proposed media, which they are developing.

Roma Situation Update

Queensland informed TACC about the Roma interception explained in the situation report, which is found on the GovDex website. By all indications, and the initial surveys, the ants didn't leave the container. The follow-up surveys carried out on the land outside the store where the container was stored have not detected any RIFA. The genetics data has been collected and has confirmed the intercepted ants are not similar to the Australian population.

The Roma environmental conditions around the delivery building are unsuitable for the establishment of Red Imported Fire Ant (RIFA). The environment consists of bitumen and concrete, with only a few patches of native vegetation near the store. Meat ants were detected, with a significant colony in the area. Queensland was confident that RIFA was unlikely to establish in the delivery area.

Queensland is continuing to set traps in the area, and when the prevailing weather conditions cool down then the RIFA detector dogs will search the area. The area immediately around the building has been baited to capture any stray ants, which may have survived but haven't been detected. The Australian Quarantine Inspection Service (AQIS) didn't use their dogs to inspect the container. The reason was the container's inventory marked it as new machinery, which does not require searching. The containers did not contain quarantine material, so a search was not triggered.

The Northern Territory asked TACC if the information provided on the Roma interception can be shared with other mining companies in the other states and territories. Queensland acknowledged this would be a good idea and has started working on a campaign, and have considered hiring an industry liaison officer to organise the campaign. Queensland explained why it felt that such a campaign should be broader, and extended beyond Queensland. Most of the mining companies have projects that are found in other states and territories, for example Chevron and Gorgon. Improving engagement with these mining companies would be beneficial to all, as AQIS isn't able to inspect everything that enters Australia. The representative from AQIS informed TACC that this particular pathway is hard to control without the assistance from the mining companies.

The Northern Territory asked if the situation report could be circulated to the mining companies working in the territory. The interception is an excellent real-life case study that can be used instead of a hypothetical case study that can be used to explain the need to search all shipments. After some discussion, it was decided that the Department of Agriculture, Fisheries and Forestry (DAFF) Communications and DEEDI Communications cooperate and review the words of the situation report: making the message as clear as possible for the mining companies. It is likely this would take a few weeks, at best, before something could be available for jurisdictions to present to the mining companies in their States and Territories.

South Australia supported the idea and would open discussions with the mining industry. Raising awareness, by making mining proactive rather than reactive, to the threats posed by these pests. It

should be part of a coordinated approach used to assess and to prevent the spread along this particular risk pathway. The TACC agreed there should, first, be a generic media release, useable by all jurisdictions, which would make the mining industry in the States or their Territories aware of this recent interception; second, up-to-date identification material should be made available, which should be useable by the importers to help identify and report the detection of any RIFA or any other pests that may crawl from a container. The TACC supported the course of action, but would like to have the material ready for distribution sooner rather than later.

The Northern Territory asked if the large Chinese mining companies, operating in Australia, will pick-up the media release. DAFF Biosecurity responded to suggest that if the materials are able to be displayed in Roma and are able to be provided to the companies making deliveries to the mining companies, then the materials will be picked up and used by the mining and freight companies. There will be a delay with the delivery of this material, since AQIS doesn't exist as a brand any longer: DAFF Biosecurity Import is the new identity. Any communications material will be aligned to this new identity.

The TACC, after some discussion, decided that a crafted media package should be developed for distribution to all companies importing new machinery along this identified pathway. Whether they are a mining company, or any other type of company, the message has to be simplified, and attached to other media materials.

The Acting Chair of TACC asked if the incursion response undertaken by DEEDI had contained this interception of RIFA. There was agreement from TACC that the actions taken so far had contained the interception, and that these actions mitigated the spread of RIFA. It was decided that this does not trigger a review of the eradication program, and isn't a cause for concern.

Is DAFF Biosecurity Imports investigating the movement of this type of air cargo along this pathway? DAFF Biosecurity Imports reported there has been a high volume of air cargo entering Roma along this pathway. It's mostly new equipment for the mining operations around Roma. This year the number of imports into Roma was 731, with only a single significant detection. There are several options available, which need consideration before any action is undertaken to manage the pathway: it's down to managing the pathway, as well as, even if it is possible with the resources that are available. DAFF Biosecurity Imports informed TACC that once the investigation is completed, the report will be made available to promote further discussion.

The Northern Territory was certain that there had been other RIFA interceptions at the border in the past? Have these RIFA interceptions been analysed, and identified from which countries they had arrived? There have been three recorded interceptions of RIFA at other ports. The states in the United States were these earlier RIFA interceptions travelled from are: Texas, Georgia and Michigan; and were mostly intercepted in pots. The RIFA interception made in the Northern Territory the ants were dead and hadn't spread as they hadn't left the container.

South Australia enquired if the exit ports are treated for RIFA. DAFF Biosecurity Import informed South Australia that no treatment regimes undertaken for invasive pests at the exit ports.

Once the ants have been detected and collected, then who does the diagnostic tests to identify the ant species? Are the ants sent to DEEDI? There are no procedures or protocols in place that say that diagnostic confirmations for ants should be sent to Queensland. South Australia continued, and asked why there isn't a single diagnostic point for all suspect ant specimens? Queensland has the technical expertise and the technicians in place to do this diagnostic identification far more effectively and efficiently than other States and Territories. States, other than Queensland, and Territories would be able to conduct a quick scan of the ants collected: confirming the ants are tramp ants or are not tramp ants. The ants should be sent to Queensland for a more detailed diagnostic analysis to confirm the species of ant detected.

The acting chair suggested as part of this exercise of generating a message for the mining companies and the other companies, which import machinery, using air freight that they need to check the containers. Queensland should send other jurisdictions the latest RIFA information, which would include the latest research, diagnostic information and pictures. This information should be coordinated with the release of the media, which is being developed to report the Roma interception.

South Australia asked DAFF Biosecurity Import if the container was treated prophylactically: first, before it left the exit port, or second, at a hub port, or at the end, when it arrived in Australia. No, the containers, or any similar containers were not treated prophylactically before or as they arrived. The reason for it not being treated was the material declared was considered clear and free of possible quarantine material – and the ISPM 15 package declaration was clear. All these packages never made it to the quarantine station; they had cleared customs, the material in the containers was identified in the manifest as new machinery, so contained no organic material, and wasn't searched. Imported new machinery is not known or associated with any possible pathway of quarantine risk material.

DAFF Biosecurity Imports informed TACC the checking of containers is a balancing act, between; the potential risk of the material imported, and the effort required to search every container that could contain material that could pose a threat.

The Northern Territory noted this is a priority, increasing the awareness among importers of the potential threats on this pathway. The Northern Territory wondered if it could supply the provided material to the importers on this pathway. The acting chair and the representative from DAFF Biosecurity Imports, suggested jurisdictions wait until a simplified message has been crafted by Queensland and DAFF Communications; then jurisdictions can then pass on the material to the importers in their jurisdictions. The idea is that the material should not be specific to RIFA, but cover any crawling pests detected emerging from containers. This would be the best place to start to encourage compliance.

DAFF Biosecurity Imports informed TACC that the largest mining companies actually go out their way to remain compliant with Quarantine regulations; reporting any suspect quarantine material and pests they detect. The price of good quarantine compliance is, apparently, a great incentive. The mining companies know that non-compliance is costly both financially and to reputation.

South Australia asked once the media package is ready it will be shared with jurisdictions. A meeting opportunity with the mining companies will slip away, if this particular case cannot be used as an example. It clearly explains the dangers of not checking containers of new equipment for pests. The acting chair informed jurisdictions they will need to provide an appropriate contact to Queensland to receive this information for implementation. The TACC Secretariat will contact the National Communications Network (NCN) about the viability of integrating the proposed RIFA media package.

Scientific Advisory Panel on Population Genetics

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** that it would appear that Red Imported Fire Ants (RIFA) is being controlled in Australia; RIFA is in a genetic bottle-neck. If eradication is maintained it is unlikely the populations will re-enter equilibrium.
- The TACC **noted** the Scientific Advisory Panel will examine the population genetic data that has been collected to date. Experts will be asked if there are any other ideas that could be trialled; or, if there are any other techniques that might used to better control or eradicate RIFA.

- The TACC **noted** that any beneficial information should be shared with other jurisdictions, which might be of use with other pests.

Queensland informed TACC the Scientific Advisory Panel (SAP) for Red Imported Fire Ant (RIFA) population genetics will be held over two days: Tuesday 29 and Wednesday 30 November 2011. The SAP will bring together RIFA experts from the United States of America (USA) and Taiwan, and as part of several panel discussions will cover how the RIFA population could be moved to a bottleneck, and away from equilibrium.

Queensland informed TACC the Terms of Reference (TOR) were included in the documents on the GovDex website. The aim of the SAP is to have experts review what has been done so far; checking the work that has been completed is on track and providing their interpretation of the genetic data, and what this data does mean for the RIFA incursion. The control measures already implemented have pushed the populations into a genetic bottleneck. Queensland is confident that RIFA is not likely to return to equilibrium in the near future. Queensland intends asking the SAP to consider if they have any ideas and alternative techniques, which haven't been thought of, that could be used and are available and should be an advantage to the eradication program.

The TACC asked if the Roma interception can be traced back to its Queensland origin colony. Queensland is undertaking this diagnostic analysis: isolating the genetic markers and comparing the genetic markers to the global populations.

Proposed Science Forum and Remote Sensing project update

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** that a TACC face-to-face meeting is planned, and will most likely be held in conjunction with a Science Forum planned for late-January 2012.
- The TACC **noted** questions to be answered on the success of the Remote Sensing project, include: what is it likely to take to delimit RIFA? How many years will it take to delimit? What will it cost to delimit?
- TACC **noted** that DAFF and DEEDI will attempt to identify potential dates in late-January 2012 to hold the Science Forum, but also a TACC face-to-face meeting. The acting chair **encouraged** TACC members to make an effort to attend the TACC face-to-face meeting and if possible the Science Forum that will be held about the same time.

Queensland in their overview covered their progress so far with the remote sensing project, informing TACC that 7000 hectares had been surveyed since remote sensing surveillance was possible; ground temperatures were low enough to prevent heat shadows, which create false positives. The data from these initial surveillance runs have been reviewed and the survey runs have helped to train the algorithms.

There have been some complications with the mapping software. The software is difficult to use. This has meant there isn't a layered map to display all the camera data on a single map.

The Remote Sensing equipment has been shipped to the United States to enable the trail to continue. The data is being collected in Florida, Pensacola; the window of opportunity to collect data is around 20 days, then the temperatures will exceed the limit of the technology.

Queensland informed TACC the data collected with the algorithms can detect the large nests easily, they can detect the nests from the aerial photographs: not using the thermal images. This is good news, although, the system requires refinement and the algorithm needs additional training.

Queensland and the TACC agreed that RIFA cannot said to be delimited, and that it is unlikely that the infestation will be delimited this year. A reason is the Remote Sensing equipment is not fully functioning and it is unlikely it will be running until later next year (2011-12): if everything goes to plan. Funding will be needed for the out-years, which does mean the National Management Group (NMG) and Ministerial Council may have to make a leap of faith the technology will work and RIFA can be delimited.

The acting chair mentioned that a Science Forums are planned for early next year; although, at this time the dates haven't yet been set. What is planned is that a face-to-face TACC be held after the Science Forum. The Science Forum was originally planned for December, but, because of the unavailability of certain organisations to attend the Forum, it has been postponed and rescheduled for early next year. Queensland said it hoped by early next year the Remote Sensing data will have been analysed and the results presented to TACC. The meetings can be held in concordance with the Ministerial Council meeting cycle, which would allow the program's out-year funding to be realigned with the normal funding cycle.

The acting chair asked TACC and Queensland if they knew what is it likely to take to delimit RIFA. This would be a question the NMG would ask. How many years will it take to delimit RIFA, with Remote Sensing? And, what would be the cost of delimiting RIFA? If these questions can be answered then the NMG would be more willing to make that leap of faith, and continue funding the program.

The Northern Territory asked if the experts attending the Science Forum will need to be eradication experts; having operational experience to participate at the forum. Queensland said it hoped only a few of the experts would probably need to attend that and would need to have some eradication or operational experience with RIFA or any other tramp ants.

The acting chair asked TACC what advice should be given to the NMG concerning the delimitation of RIFA. Control isn't a problem once RIFA has been detected; or not all RIFA nests have been detected. The aggressive control program has pushed RIFA from equilibrium into a bottleneck, which does mean the eradication program has been effective.

Re-Zoning of Restricted Areas

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** Queensland developing a proposal that will allow a change to the declaration of controls imposed in the Red Imported Fire Ant (RIFA) Restricted Areas.
- The TACC **noted** the re-zoning will change how the Restricted Areas will be identified. The Restricted Areas will incorporate the entire suburb, and just sections of the suburb. The re-zoning will be graded by: the severity of the RIFA infestation in the area, the treatment phases for the area and the surveillance period for the area.
- The TACC **noted** that the legislation will give Queensland a way to clear Restricted Areas; removing Restricted Areas from the map, or changing the level of control – downgrading the level – as nests are removed, and the required surveillance is conducted and clears the area.
- The TACC **enquired** of Queensland if the same Restricted Area re-zoning system could be considered for the Electric Ant eradication program.
- The TACC Acting Chair **noted** that the lessons learnt from the RIFA eradication program, over the past 10 years, could be used for other urban responses.

- The TACC **noted** that an additional teleconference will be called sometime over the next two weeks. This teleconference will allow TACC to discuss the re-zoning proposal, which will be made available a week before hand, for TACC to review before the teleconference.

Queensland informed TACC they are preparing a proposal for changing the declarative status of Restricted Areas. At the time, Queensland hoped the proposal would be submitted to TACC next week, and a teleconference held within two weeks of circulation. Queensland informed TACC the legislation for the change in status is being sent through the Queensland government legislative process, and will be cleared sometime next week for circulation to TACC.

South Australia wasn't clear about what was meant to change with the change in status of the Restricted Areas. Queensland explained it was a better way to declare a Restricted Area that isn't declared a Restricted Area. The change controls the movement of particular materials and the activities conducted in each of these areas. South Australia asked if the same legislation would influence the status of the Electric Ant Eradication program's Restricted Areas. Is the legislation being considered holistically, treating both programs consistently? The acting chair added this information can be used to manage and respond to invasive pests in other urban environments.

South Australia noted Gladstone had its Restricted Area status removed with the areas status changed. Queensland informed TACC the population was isolated and the declaration of this area as a pest free was a trial of the protocols. The re-zoning of the boundaries doesn't remove the Restricted Area status from the suburb. It changes the status of the movement controls imposed in the suburbs. The status will be based on the number of surveillance and treatment runs that conducted in each suburb.

Tramp Ant Consultative Committee 7

Tuesday 20 December 2011; 2.00pm AESDT

Teleconference

Actions and Recommendations

Attendance

Department of Agriculture, Fisheries and Forestry
Michael Cole (Acting Chair)
Tim Coutts (Secretariat)
Rose Hockham
Kate Mannion

Department of Sustainability, Environment, Water, Population and Communities
Andrew Copp

Queensland
Craig Jennings
Heather Leeson
Georgie Lucas
Ross Wylie
Anthony Wright

New South Wales
Royce Holtkamp

Australian Capital Territory
Peter Dinan

South Australia
Mark Ramsey

Victoria
John Burley

Western Australia
Oonagh Byrne
Marc Widmer

Apologies
Tasmania
Northern Territory

Introduction

The Acting Chair of the Tramp Ant Consultative Committee (TACC) explained the reasons why members were invited to this teleconference, which is being held so close to the end of the calendar year, are:

- Queensland's seeking TACC's endorsement of a proposed re-zoning proposal for the Red Imported Fire Ant (RIFA) Restricted Areas;
- An update on the Roma Red Imported Fire Ant (RIFA) Interception Incident; and
- An update of the outcomes that emerged from the Scientific Advisory Panel (SAP) Population Molecular Genetics workshop, which was held on the 29 and 30 November 2011, has shown by genetic analysis that the Brisbane incursion is in a genetic bottle-neck.

Re-zoning of the Red Imported Fire Ant (RIFA) Restricted Areas

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **endorsed** and **noted** the recommendations in the "Red Imported Fire Ant – Changes to Restricted Area Boundaries and Movement Controls" Agenda paper, they:
    - **Endorsed** the draft policy that bases the restricted area on suburb boundaries;
    - **Endorsed** the proposed changes to movement controls in the restricted area; and
    - **Noted** that over 750 properties meet the TACC endorsed protocol to remove their infested premise status.
- The TACC **noted** their role will be to review the overarching transition process for multiple suburbs, but will not be responsible for deciding which suburbs will transition. This will involve agreeing that High Risk (Red) Areas can transition to Control (Orange) Areas, vice versa, and so forth.
- The TACC **noted** Queensland will be providing periodic agenda papers, in the form of reports, to the TACC that will request their endorsement of the suburbs transitioning between the different areas and out of the restricted area altogether.
- The TACC **noted** that the protocol that covers when the infested site status can be removed from a site is to be updated by Queensland in the future and will be presented to TACC for endorsement.

The Roma Incident Update

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** the request from the Chair that members review the "Queensland Draft Mining Communications Strategy", returning any comments they may have, to either Queensland or to the TACC Chair.
- The TACC **noted** Queensland will provide a more up-to-date version of the "Queensland Draft Mining Communications Strategy" later this week.
- The TACC **noted** Queensland will be the lead for developing the "Draft Mining Communications Strategy."
- The TACC **agreed** the TACC Secretariat send out the National Communications Network (NCN) contact list to TACC members.

Science Forum and Next Tramp Ant Consultative Committee Meeting

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** that a Science Forum is planned for early next year. The Science Forum will discuss current progress against the proposed research activities. The focus of discussions will be progress against the agreed development milestones of the program's innovative technology.
- The TACC **noted** the next TACC meeting a face-to-face meeting, and not a teleconference. Queensland and the TACC Secretariat will work together, to identify a date to hold the Science Forum, and the proposed TACC face-to-face meeting.
- The TACC **noted** that the next TACC meeting for the Electric Ant Eradication program will need discussion so advice can be provided to the National Management Group (NMG). The NMG then either endorse or do not endorse the continued funding of the eradication program.

Tramp Ant Consultative Committee 7

Tuesday 20 December 2011; 2.00pm AESDT

Teleconference

Minutes

Attendance

Department of Agriculture, Fisheries and Forestry
Michael Cole (Acting Chair)
Tim Coutts (Secretariat)
Rose Hockham
Kate Mannion

Department of Sustainability, Environment, Water, Population and Communities
Andrew Copp

Queensland
Craig Jennings
Heather Leeson
Georgie Lucas
Ross Wylie
Antony Wrote

New South Wales
Royce Holtkamp

Australian Capital Territory
Peter Dinan

South Australia
Mark Ramsey

Victoria
John Burley

Western Australia
Oonagh Byrne
Mark Woodna

Apologies
Tasmania
Northern Territory

Introduction

The Acting Chair of the Tramp Ant Consultative Committee (TACC) informed the TACC of the reasons why the teleconference was called so close to the end of the calendar year, they are:

- Queensland is seeking TACC's endorsement of the proposed re-zoning for the Red Imported Fire Ant (RIFA) Restricted Areas;
- A situation report updating the Roma Interception; and
- An overview of the results from the Scientific Advisory Panel (SAP) on Red Imported Fire Ant (RIFA) Molecular Genetics Forum.

Re-zoning of the Red Imported Fire Ant (RIFA) Restricted Areas

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **endorsed** and **noted** the recommendations in the "Red Imported Fire Ant – Changes to Restricted Area Boundaries and Movement Controls" Agenda paper:
    - **Endorsed** the draft policy that bases the restricted area on suburb boundaries;
    - **Endorsed** the proposed changes to movement controls in the restricted area; and
    - **Noted** that over 750 properties meet the TACC endorsed protocol to remove their infested premise status.
- The TACC **noted** that their role will be to review the overall transition process, and will not be responsible for deciding which suburbs will transition; with High Risk (Red) Areas transitioning to Control (Orange) Areas, and vice versa.
- The TACC **noted** that Queensland will provide periodic agenda papers, reports, to TACC that will request the endorsement of suburb transitioning from:
    - A High Risk Area to a Control Area;
    - A Control Area to a High Risk Area; and
    - A Control Area to a Restricted Area.
- The TACC **noted** a supplementary proposal will be developed by Queensland in the future; the proposal will discuss the transitioning of Restricted Areas into areas Free from Red Imported Fire Ants (RIFA).

Potential Re-Zoning of the Red Imported Fire Ant Restricted Areas

The chair asked of Queensland if they would provide a summary of the proposed re-zoning of the Red Imported Fire Ant (RIFA) Restricted Areas. Queensland summarised the primary points from the proposal for TACC:

- The change to the Restricted Area and Movement Control Area will only apply in Queensland;
- The Restricted Area and the Movement Control Area encapsulate an entire suburb, and not part of a suburb. This will slightly increase in the area classified as infested;
- The change has an implication for how the communication strategy is transmitted to a broader portion of the community. It will now not only cover suburbs that have already been covered, but will also cover suburbs that weren't covered before;

- There are two restriction area levels – red, a Restricted Area; orange, a Movement Control Area. Two criteria are considered when determining if an area becomes a restricted area or a movement controlled area:
    - The proportion of monogyne colonies to polygyne colonies in the area; and
    - The distance between colonies in the suburb and in the nearby suburbs.

The proposed change to Restricted Areas and Movement Control Areas changes Queensland's biosecurity regulations: the Biological Bill. The Biological Bill is being submitted to the Queensland parliament and has to be endorsed to change the proposed Restricted Areas and add the Movement Control Areas. The Bill handles additional items related to biosecurity.

The Bill deals with the carriers; these are the potential vectors that could transport RIFA. The Bill defines the biosecurity term: what does it mean and how it should be used. The Bill has two carrier types, which doesn't reduce the number of restricted items monitored. If carriers are moved in or out of a Restricted Area, or, from a Restricted Area to a Movement Control area they still have to be inspected.

Questions and Clarification

New South Wales asked Queensland if shipping containers would be searched, especially any containers filled with soil. Businesses importing material into Australia have to produce Approved Risk Management Plans for any material that would be subject to quarantine inspection.

The production of Risk Management Plans covers-off an existing importer loophole that stipulates the requirement for the inspection of quarantined materials. Businesses are required to produce these Risk Management Plans and Queensland inspectors have to audit these plans. Queensland told TACC the Queensland Minister is keen to have this new system in place without delay. The new system is simpler and easier for the Biosecurity Queensland Control Centre (BQCC) to monitor and maintain. Advice will be submitted to the National Management Group (NMG) and the Domestic Quarantine and Market Access Working Group (DQMAWG), informing them of the changes to the regulations, and how these changes will influence domestic trade.

The Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) enquired about the level of consultation with the commercial operators on the implementation of the proposed Risk Management Plans. Consultation with the commercial operators has been a central component of this initiative. As it was explained to businesses, there would be no increased costs involved with the implementation of the Risk Management Plans. Most of the existing legislation does not need to change, and the burden on businesses does not significantly increase.

The Department of Agriculture, Fisheries and Forestry (DAFF) enquired about the Restricted Areas declaration of freedom from RIFA. Reviewing the proposal, green doesn't exist as part of this application, while red and orange are retained. Does this streamline the declaration of freedom process? The Restricted Area influenced by this proposal that warrants a change only includes the infestations detected after 2008. All infestations in the Restricted Areas detected in 2008 or earlier have now had six treatments so are Movement Control Areas. The Movement Control Areas are

now coming to the end of the minimum surveillance period, and will soon be able to be declared free from RIFA – unfortunately – at this time, there is no policy to be able to declare these previously infested areas free.

The Port of Brisbane and an area just north of the central Brisbane infestation will also have their movement control protocols removed. All these areas, at some point in the future, eventually will have to follow a procedure that will declare them free from RIFA. When a new infestation is discovered, the infestation is reviewed against a set of classification criteria which determine the status as a High Risk Area or as a Restricted Area: with the nominations submitted to TACC to endorse the properties as High Risk Restricted Areas red, or, Restricted Areas, orange, under movement controls. This isn't a full declaration of freedom: it's not required at this time, and the protocol to declare an area free is still under-development.

South Australia asked about the process of reclassifying the Movement Control Areas will be done once the surveillance period is completed. Queensland outlined the process: the area is automatically removed from the reclassification process once it reaches the end of the period it has been a Movement Control Area. The reclassification process hasn't yet been resolved and remains a work-in-progress. The procedure of transitioning from a Movement Control Area to Area Freedom still has to be developed. The transitioning process from Restricted Areas to Movement Control areas will require TACC to act as auditors; reviewing the suburbs submitted for transition by Queensland. If TACC is satisfied the criteria have been met, these areas can then transition from a High Risk Area to a Movement Control Area; and back again, if the area becomes reinfested. This is a check the program of work to eradicate RIFA has been successfully completed, and that work was completed to the required level.

Victoria asked if this change then means the TACC will manage the program, since this is just a consultative committee and only provides technical advice to the NMG. Queensland informed TACC it does not have to develop the transition protocols. The only part of the process TACC has responsibility for is the endorsement of the protocols, checking they are technically feasible. This would happen at each TACC meeting, or out-of-session. The report listing the suburbs would be circulated to TACC that these suburbs are able to transition. All TACC will have to do is review and endorse the suburbs that meet the transition criteria. This decision will be made based on members' experience and the evidence available.

Queensland explained these new protocols will provide greater level of flexibility when it comes to managing the movement of restricted material from High Risk Areas, where the highest risk activities are to be undertaken, and from Movement Control Areas. Isolating the areas where RIFA could be found is an important of detection. The new system provides an opportunity for residents in the suburb to take responsibility for the ownership of the problem. The changes to the Restricted Area protocols will drive the process of a more effective control of the internal movement of materials, which are likely to be harbor RIFA if moved. The domestic trade controls among the states and territories remain and do not change.

South Australia explained he was still uncertain what the TACCs role would be when it comes to the endorsement of the suburbs transitioning. Wouldn't the responsibility for endorsing these suburbs transitioning be the responsibility of a NMG sub-committee? The High Level Working Group for Red

Imported Fire Ant was not formed to perform such a function. Its role was to provide advice to the NMG on the best alternate options and scenarios for continuing to fund the eradication of RIFA. Whether this sub-committee remains in existence is unknown. By all indications it is unlikely the sub-committee will continue for too much longer, since the sub-committee was meant to be temporary.

DAFF asked about the protocol's implementation process: how will the transitioning of suburbs be handled, what is expected of TACC? When the protocols in place then the TACC will receive a list of those suburbs that are ready to transition; if TACC agrees, then these suburbs can transition to their new status. The chair said based on prior experience, TACC would most likely then provide this advice to the overarching committee, who would then endorse the change to the suburbs status.

Once a suburb passes or fails the protocol's criteria, then a submission is made to TACC, if TACC agrees then the suburb's status changes. Under the Domestic Quarantine legislation almost 700 properties are no longer considered infested. The noted report submitted to TACC would cover the extent of the infestation, treatment and surveillance undertaken in each suburb, and the reasons why the suburb can now transition.

New South Wales and Victoria agreed to the process proposed to transition suburbs from High Risk Areas to Movement Control Areas; concurred the process shouldn't be micro-managed by TACC. The protocols determine what Queensland is doing to achieve the program's objectives. TACC will be required to make a final assessment, before passing that advice onward to the NMG for endorsement of the transitioning suburbs. The changes to the re-zoning regulations don't loosen the restrictions on the interstate movement of restricted materials. There is utility in re-zoning by suburb, especially when it comes down to communicating with the residents in the communities.

The chair summarised the discussion, the TACC will have to take a leap of faith when endorsing the transitioning suburbs; based on the knowledge of how RIFA flies and colony clustering. All infestations detected will be treated, whenever and wherever these colonies are found. The Queensland report provided to TACC would be submitted to the NMG for their final endorsement of the transitioning suburbs. The next NMG meeting is planned for mid-February 2012.

South Australia wondered what TACC has to agree to? The TACC has the authority to advise the NMG about the transitioning of suburbs from one status level to another. TACC will also review any changes to the protocols, endorse the bulk report on a periodic basis and then to advise the NMG.

South Australia asked what exactly does that all mean for TACC. The change in Restricted Area makes it easier to explain to the public, and to the TACC, as to what stage the infested suburbs are at, when compared to nearby suburbs, which helps explain how the entire program is progressing. The new protocols will allow suburbs categorised as High Risk Areas to be isolated and treated as High Risk Areas, and Movement Control Areas can remain under surveillance.

The NMG might delegate the authority to endorse the transition of these suburbs to TACC. The transitioning suburbs would only need TACC's endorsement, and then the report would be submitted to the NMG for their information. The TACC's role would be to review the overall process, and does just not include the process of transitioning the nominated suburbs, reviewing

how this process is coordinated by Queensland. The process of selecting the transitioning suburbs would be handled by the program coordinators. TACC would receive the report card that summarises the transitioning suburbs, which would include the reasons why the suburbs are nominated to transition.

In the near future the TACC will be provided with advice on the protocols to remove Restricted Area status. Transitioning these suburbs to Area Freedom from RIFA; currently 19,000 hectares now or soon will qualify to transition from Movement Control to Area Freedom. Before the re-zoning, the lowest status level was a Restricted Area. No agreement to remove Movement Control Areas exists; this legislation will need to be developed.

South Australia had uncertainty and wasn't sure what TACC has to agree to, assuming it was transitioning the suburbs from one status level to another. Does TACC endorse, or does TACC recommend to the NMG to endorse the transitioning of the suburbs. The decision, after some discussion, is that TACC would agree to recommend to the NMG to endorse the transitioning suburbs. The reclassification of the Restricted Areas would be the first step to move infested areas to Area Freedom from RIFA.

The TACC Secretariat was uncertain if the ad hoc High Level Working Group was still in existence. The working group was only ever meant to be a temporary working group, which explored the available funding options, and future funding scenarios for the RIFA Eradication program. The Australian Capital Territory said the High Level Working Group hadn't met for at least a year, he was a member sitting on this working group, but wasn't sure if the group would meet again.

The Roma Incident Update

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** the Chair asked members to review the "Queensland Draft Mining Communications Strategy", returning any comments they may have to Queensland or to the TACC Chair.
- The TACC **noted** that Queensland will provide a more up-to-date version of the "Queensland Draft Mining Communications Strategy" later this week.
- The TACC **noted** that Queensland will be the lead for the development of the "Draft Mining Communications Strategy."
- The TACC **agreed** that the TACC Secretariat collect the National Communications Network (NCN) contact list of the jurisdictional representatives for TACC members.

The incident reported in Roma has been mitigated. At this time, a communications strategy is being developed for the mining industry. The strategy will seal the loopholes that exist for the importation of materials that are not searched or considered by quarantine officers as a risk at the border. The Mining Communications Strategy is being developed by the National Communications Network (NCN), a sub-committee of the National Biosecurity Committee (NBC).

The NCN along with Queensland is developing a message for the mining industry, and reviewing the following material:

- Queensland's overall communications strategy for their Mining industry;
- Consolidating the comments from the NCN representatives on the communication strategy;
- Developing common and consistent messages for use by all jurisdictions; and
- Reviewing the awareness materials that will be made available to jurisdictions.

Queensland informed TACC the diagnostic and the awareness materials can be made available on the GovDex website soon. These resources can be used by jurisdictions to circulate the message to their mining industry. The chair reinforcing this message, with the aim of the communications campaign not solely focused on tramp ants, but should include anything that crawls from a crate reported.

The chair informed TACC that DAFF Biosecurity (what was once the Australian Quarantine and Inspection Service [AQIS]) officers' are reviewing and reassessing this recently discovered high risk pathway: mining machinery from Texes and from other United State's states importing similar machinery.

The TACC Secretariat was recently was informed by DAFF Biosecurity and by DAFF Communications that they have been working together to develop an overarching mining industry communications biosecurity strategy, which will cover all potential pests that may enter through these pathways. This overarching biosecurity communications strategy for the mining industry will be endorsed by Ministerial Council.

The chair suggested TACC note the communication strategy as a watching brief. The strategy is still under development as a draft. The strategy is Queensland centric, but is interested in making the strategy holistic and available as a national strategy. Any National Strategy would need to be more inclusive of pest threats, of which RIFA would only be a part of the watching brief for the strategy. The chair asked jurisdictions submit their comments on the contents of the communications strategy to Queensland.

Queensland provided a summary of what happened and is happening in Roma: on-ground surveillance is on-going at the airport. Since the interception there have been no further RIFA detections.

Science Forum and Next Tramp Ant Consultative Committee Meeting

Actions and Recommendations

- The Tramp Ant Consultative Committee (TACC) **noted** that a Science Forum is planned to happen early next year. The Science Forum will discuss progress against the current research activities; and the current progress with the development of the program's innovative technology.

- The TACC **noted** that the next TACC meeting will be done face-to-face, and not via teleconference. Queensland and the TACC Secretariat will coordinate, identifying a date to hold the Science Forum, and also the TACC face-to-face meeting.
- The TACC **noted** that at the next TACC meeting the Electric Ant Eradication program will have to be discussed. TACC will need to provide its advice to the National Management Group (NMG) about continuing to fund the program and assess the program's progress against the milestones.

Queensland provided an overview of the Scientific Advisory Panel RIFA Population Genetics Forum discussions, held on the 29 and 30 November 2011 in Brisbane. One of the significant outcomes the panellists agreed was the RIFA population had entered a true genetics bottleneck. The panel endorsed the methods used by Queensland's genetics section to collect the population information. Agreeing the material tested does complies with international standards. The workshop confirmed the international partnerships. The international partners were very interested in the results from this genetics testing of Australia's RIFA populations. Essentially, the panel's conclusion was that nothing had been missed with the testing the genetic make-up of the RIFA population.

The experts were enthusiastic to look at the data from a RIFA population under pressure. After reviewing the data the experts agreed the population was gradually sliding towards eradication. The term 'eradiation vortex' was coined by the leading international experts to describe this slide towards eradication. It was suggested the genetic analysis techniques used on this pest population could be used in other pest sectors. Genetic analysis would be an effective method of determining the success of eradication for other invasive pest programs.

South Australia asked if RIFA in Queensland was a single introduction. The RIFA population might have already been in a genetic bottleneck. If so, then why is there so much genetic diversity now? The three incursions consisted of at least a single queen, but it was more likely multiple queens. What is clear from the genetics research, so far, is the genetic diversity of the Australian RIFA populations has decreased when compared with the original parent population. The three RIFA populations are distinct. Inbreeding is greatest within the populations, creating the genetic bottleneck.

Another Science Forum is being planned for early next year, 2012. It will gather together expertise to discuss the eradication program's research and development projects, primarily Remote Sensing surveillance. The forum will discuss how the Remote Sensing project can be used to delimit the RIFA infestation. What is planned also is a TACC face-to-face meeting to discuss out-year funding for the tramp ant eradication programs. The date proposed for the SAP Forum and the TACC meeting is sometime towards the end of January 2012.

The Remote Sensing flights conducted in the United States have now finished. The data collected from the flights in Queensland and in the United States have been combined and being analysed. It is hoped when the Science Forum is held the initial results from the Remote Sensing analysis can be reviewed by attendees to the SAP Forum.

Electric Ant Eradication program

The chair noted the Electric Ant Eradication program has not yet provided an Annual Report for 2010-11. Without the Annual Report for 2010-11 the TACC cannot approve the programs progress, and the NMG cannot approve next year's funding.

This eradication program is at a critical crossroads, as with all eradication programs. Without the NMG's approval for next year's funding, then the program will simply not be funded. Funding for each year of the agreed-in-principle four years of funding has to be approved by the NMG.

A new Electric Ant detection has been made at Trinity Beach. This new infestation is near the pre-existing Trinity Beach infestation. Back-tracing was done, and it would appear the Electric Ant's were probably transported to this location through the movement of garden landscaping material.

REMOVAL OF INFESTED SITE STATUS

1. PURPOSE

This protocol defines the objectives and practices for removing infested site (IS) status from sites that have previously been declared as infested with electric ant or *Wasmannia auropunctata* (Roger).

2. BACKGROUND

When electric ant are detected on a site it is considered to be infested. Treatment and surveillance regimes are then implemented immediately to address the infestation.

There may be substantial restrictions and financial impacts on both residents and businesses living or working in infested sites. These impacts may extend to the surrounding uninfested areas as movement controls are implemented. Such restrictions are necessary to ensure that electric ant are not inadvertently transported to new locations. However these restrictions should not remain once the appropriate measures have been taken to address the infestation and there is a high level of confidence that electric ant no longer exists there.

This protocol details conditions where removal of the infested site status is appropriate. This protocol addresses the need for the National Electric Ant Eradication Program (NEAEP) to effectively manage the current area of infestation within the greater Cairns region and surrounding areas.

3. PROTOCOL

1. Following detection of electric ant measures to delimit and destroy the infestation will be undertaken. Measures will include up to six rounds of broadcast baiting in a radius of at least 50 metres around the delimited infestation using appropriate chemicals. Measures are dependent on infestation type, and are further described in the *NEAEP Standard Operating Procedure: Treatment*.
2. Surveillance will be undertaken a minimum of nine months after detection and last treatment. Where operationally possible this surveillance will be performed by an odour detection dog. However, if this is not possible, on-ground grid based luring (5 x 5 metre) using appropriate food lures will be undertaken. Surveillance will be conducted across all dimensions using traps placed in tree canopies, house/building gutters, inside buildings, and in-ground pitfall traps. If infestation is detected at this time, further measures to destroy the infestation will be undertaken in accordance with step (1) of this protocol. The treatment and surveillance cycle will continue until no further electric ants are detected.
3. Another pass of surveillance will be undertaken a minimum of nine months after step (2) is successfully completed. Again, where operationally possible this surveillance will be undertaken by an odour detection dog or grid based luring (as defined in step 2). If infestation is detected at this time, further measures will be undertaken in accordance with step (1) of this protocol and the surveillance will begin anew. The treatment and surveillance cycle will continue until two passes of surveillance are undertaken without detection of electric ant.
4. Where an odour detection dog has not been used for either surveillance pass, a third and final pass of surveillance must be undertaken at least six months after the previous round of surveillance.
5. After the treatment and surveillance process is completed and no electric ant are detected, IS status will be removed from the site. Further treatment and surveillance may be completed on the site dependant on other program operations being conducted within the area where the site is located.

4. RESPONSIBILITIES AND ACCOUNTABILITIES

The Biosecurity Queensland Control Centre (BQCC) provides national and state leadership for the NEAEP and delivers all strategy, policy, science and operations associated with the program.

5. RELATED DOCUMENTS

1. National Electric Ant (*Wasmannia auropunctata*) Eradication Program Standard Operating Procedures: Treatment, June 2010–July 2011.

6. VERSION CONTROL

Version	Date	Comments
1	February 2012	This protocol establishes the method by which the infested site status is removed from sites infested with electric ant.

7. SIGN-OFF

Approved

Position: Director (Biosecurity Queensland Control Centre)

Name: Neil O'Brien

Date: 15 February 2012

Endorsed

Tramp Ant Consultative Committee (TACC) 08

Date: 15 March 2012

REMOVAL OF INFESTED SITE STATUS

1. PURPOSE

This protocol defines the objectives and practices for removing infested site (IS) (formally known as infested premise or IP) status from sites that have previously been declared as infested with red imported fire ant or *Solenopsis invicta* Buren (fire ant).

This replaces the protocol 'Declaration of property freedom from red imported fire ant infestation' endorsed by the Tramp Ant Consultative Committee (TACC) on 29 November 2004.

2. BACKGROUND

When fire ant are detected on a site it is considered to be infested. Treatment and surveillance regimes are then implemented immediately to address the infestation. A protocol to remove this infested status was developed in 2004. Since this time advances have been made in treatment efficacy and research into fire ant behaviour resulting in greater confidence in the treatment and surveillance techniques.

There may be substantial restrictions and financial impacts on both residents and businesses living or working in infested sites. These impacts may extend to the surrounding uninfested areas as movement controls are implemented. Such restrictions are necessary to ensure that fire ant are not inadvertently transported to new locations. However these restrictions should not remain once the appropriate measures have been taken to address the infestation and there is a high level of confidence that fire ant no longer exists there.

This protocol details conditions where removal of the infested site status is appropriate. This protocol addresses the need for the National Red Imported Fire Ant Program (the program) to effectively manage the current area of infestation within the South East Queensland restricted area.

3. PROTOCOL

1. Following detection of fire ant, delineation surveillance will be employed to determine the extent of the infestation. Both single mound infestations and multiple site infestations will be destroyed in accordance with treatment procedures, as defined in documents *Mechanical Treatment Procedures* and *Technical Treatment Procedures*. Measures may include direct nest injection (DNI) and/or broadcast baiting in a radius at least 50 metres around all fire ant mounds using appropriate chemicals, and are dependent on infestation size.
2. Surveillance will then be undertaken a minimum of 12 weeks after detection and last treatment. This surveillance will preferably be performed by an odour detection dog for a radius of up to 100 metres around the known infested area. If infestation is detected at this time, further measures to destroy the infestation will be undertaken in accordance with step (1) of this protocol. The treatment and surveillance cycle will continue until no further fire ants are detected.
3. Another pass of surveillance will be undertaken a minimum of 12 weeks after step (2) is successfully completed. Again, surveillance will preferably be performed by an odour detection dog, however grid based lures can be used as an alternative where necessary. If infestation is detected at this time, further measures will be undertaken in accordance with step (1) of this protocol and the surveillance will begin anew. The treatment and surveillance cycle will continue until two passes of surveillance are undertaken without detection of fire ant.

4. After a second pass of surveillance, with no fire ant are detected during either pass, IS status will be removed from the site. Further treatment and surveillance of site may be completed on the site dependant on other program operations being conducted within the suburb where the site is located.

4. RESPONSIBILITIES AND ACCOUNTABILITIES

The Biosecurity Queensland Control Centre (BQCC) provides national and state leadership for the program and delivers all strategy, policy, science and operations associated with the program.

5. RELATED DOCUMENTS

1. FA-O-S-002: Mechanical Treatment Procedures
2. FO-O-S-003: Technical Treatment Procedures

6. VERSION CONTROL

Version	Date	Comments
1	February 2012	This protocol establishes the method by which the infested site status is removed from sites infested with fire ant.

7. SIGN-OFF

Approved

Position: Director (Biosecurity Queensland Control Centre)

Name: Neil O'Brien

Date: 15 February 2012

Endorsed

Tramp Ant Consultative Committee (TACC) 08

Date: 15 March 2012

Tramp Ant Consultative Committee (TACC) 8 Teleconference

Monday 27 February 2012

Actions and Recommendations

2.00pm AESDT

Department of Agriculture, Fisheries and Forestry
Michael Cole (Chair)
Tim Coutts (Secretariat)

Department of Sustainability, Environment, Water, Population and Communities
Julie Quinn
Andrew Copp

Queensland
Craig Jennings
Heather Leeson
Ross Wylie
Neil O'Brien

New South Wales
Royce Holtkamp

Victoria
John Burley

Australian Capital Territory
Peter Dinan

Western Australia
John van Shagen
Oonagh Byrne
Marc Widmer

Tasmania
Lionel Hill

South Australia
Mark Ramsey

Northern Territory
Cameron Hokanson

Introduction

The Chair welcomed the Tramp Ant Consultative Committee (TACC) to the teleconference, the eighth TACC meeting. The chair briefly summarised the aim of the teleconference and the critical items up for discussion and decision:

1. An update of the Red Imported Fire Ant (RIFA) Eradication program's progress, covering: the recent Scientific Advisory Panels, Research and Development and the eradication program's operations, since the last meeting.
2. An update of the Electric Ant Eradication program's progress, from the information in the Bi-Annual Quarterly Report.
3. The advice TACC will provide to the National Management Group (NMG) on RIFA and Electric Ant Eradication program's progress and the proposed Forward Plans.
4. A discussion, and a decision, about the proposed protocols to remove Infested Sites (IS) status for RIFA and Electric Ant.

Red Imported Fire Ant Eradication Program

Actions and Recommendations:

- The Tramp Ant Consultative Committee (TACC) **noted** the Red Imported Fire Ant (RIFA) Quarterly Report for the first quarter of 2012. Agreeing that there was nothing unusual in the report that would require consideration of the eradication program.
- The TACC **noted** and **agreed** the Scientific Advisory Panel's (SAP's) reports from the Molecular Genetics and the Remote Sensing Technical Forums, held late last year and early this year.
- The TACC **agreed** the proposed RIFA Forward Plan for 2012-15, and the Milestones proposed to monitor the Forward Plan's eradication results, over three years.
- The TACC **agreed** that most of recommendations, without change, in the National Management Group (NMG) Agenda paper. Except for Recommendation (e).
- The TACC **agreed** that Recommendation (e) required modification; the addition of an extra line, to explain the actual breakdown of the cost shared funding, and the funding being provided by the Queensland government. Underlining the assumption the Forward Plan's eradication operations were costed to $21 million, and not to $15 million.
- The TACC **noted** the cost breakdown of conducting the eradication operations as outlined in the Forward Plan to $21 million, with: $15 million nationally cost shared, and the remaining $6 million supplied by Queensland.
- The TACC **noted** that Queensland is supplying an additional $6 million to bring the eradication program's total funding to $21 million, which is required for all the operations proposed in the Forward Plan for 2012-13. Queensland indicated a commitment could not be given for this additional funding may not be forthcoming, and at this time, is only **agreed-in-principle** and will only be confirmed after the Queensland Election has concluded.
- The TACC **noted** and **agreed** if the $6 million isn't forthcoming then the proposed three year Forward Plan for 2012-2015 would need review, and even TACC's reconsideration of the Forward Plan, if the only funding the eradication program receives is the $15 million cost shared funding:
    - The Forward Plan would need restructuring to reflect available funding.
    - The Forward Plan was written assuming funding of $21 million would be available in 2012-13.
- The TACC **noted** Queensland is under considerable time pressure to developing the Agenda paper and the Forward Plan for the approval of the NMG, for the eventually endorsement of Ministerial Council. The process has been compounded with the Queensland Election, and government entering Caretaker – **noting** – a decision shall be required of the incoming Queensland Government, and from the Australian Government, within three weeks of entering office for the eradication program to continue.

Electric Ant Eradication Program

Actions and Recommendations:

- The Tramp Ant Consultative Committee (TACC) **agreed** the Electric Ant Eradication program is proceeding according to the milestones set out in last year's Response Plan.

- The TACC **agreed** that nothing significant had been detected, or that there is anything of concern to warrant a review of the eradication program, and the program should continue.
- The TACC **noted** the Eradication program's review points as reasonable, which if breached, would mean the Electric Ant Eradication program is reviewed: assessing the technical feasibility of the program.
- The TACC Chair **noted** that any detection of Electric Ants in the future would continue to require review. The review deciding if the detections constitute a significant concern about the technical feasibility of continuing the eradication program; these detections would continue to be assessed on a case by case basis.

Protocols for the Removal of Infested Site (IS) Status

Actions and Recommendations:

- The Tramp Ant Consultative Committee (TACC) **agreed** members be given the opportunity to review the proposed removal of Infested Site (IS) status protocols Out-of-Session (OOS). TACC members would need to provide either the agreement to or disagreement with the proposed protocols for RIFA and Electric Ant by Thursday 15 March 2012 to the TACC Secretariat.
- The TACC **agreed** the protocols be considered by the Domestic Quarantine and Market Access Working Group (DQMAWG) for review and comparative assessment against the State and Territory restricted movement legislation and regulations.

Other Business

Actions and Recommendations:

- The Tramp Ant Consultative Committee (TACC) **noted** a date hasn't yet been set for the next National Management Group (NMG) meeting for Tramp Ants. The meeting will make decisions on the Forward Plan for RIFA for 2012-13, and agree to continue funding Electric Ant for another year.
- The TACC **noted** the National Commutations Network (NCN) has met and discussed the use of the Queensland RIFA Mining Communications Strategy – and **agreed** – jurisdictions can use Queensland's Communications Strategy in their consultation with the Mining industry and other industry sectors.
- The chair asked TACC to **note** their jurisdictional NCN representatives would have the knowledge of the status of the various communications strategies are to date.
- The chair **recommended** that TACC members contact their NCN representative for a detailed summary of the discussions held at the NCN meeting on the National Biosecurity Communications Strategy's progress; if TACC members are interested in the progress that has been.

Tramp Ant Consultative Committee (TACC) 8 Teleconference

Monday 27 February 2012

Minutes

2.00pm AESDT

Department of Agriculture, Fisheries and Forestry
Michael Cole (Chair)
Tim Coutts (Secretariat)

Department of Sustainability, Environment, Water, Population and Communities
Julie Quinn
Andrew Copp

Queensland
Craig Jennings
Heather Leeson
Ross Wylie
Neil O'Brian

New South Wales
Royce Holtkamp

Victoria
John Burley

Australian Capital Territory
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Marc Widmer

Tasmania
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Introduction

The Chair welcomed the Tramp Ant Consultative Committee (TACC) to the teleconference, the eighth TACC meeting. The chair briefly summarised the aim of the teleconference and the critical items up for discussion and decision:

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Red Imported Fire Ant Eradication Program

Actions and Recommendations:

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- The TACC **agreed** that most of recommendations, without change, in the National Management Group (NMG) Agenda paper. Except for Recommendation (e).
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- The TACC **noted** the cost breakdown of conducting the eradication operations as outlined in the Forward Plan to $21 million, with: $15 million nationally cost shared, and the remaining $6 million supplied by Queensland.
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    - The Forward Plan would need restructuring to reflect available funding.
    - The Forward Plan was written assuming funding of $21 million would be available in 2012-13.
- The TACC **noted** Queensland is under considerable time pressure to developing the Agenda paper and the Forward Plan for the approval of the NMG, for the eventually endorsement of Ministerial Council. The process has been compounded with the Queensland Election, and government entering Caretaker – **noting** – a decision shall be required of the incoming Queensland Government, and from the Australian Government, within three weeks of entering office for the eradication program to continue.

Eradication program update

The chair asked Queensland for an update of the Eradication program's progress, which was reported in the first quarter of 2012 Quarterly Report. Queensland did not expand too much on the details found in the Quarterly Report.

The treatment scheduled had been planned in last year's Response plan and completed. Only a few infested sites have been detected, these additional sites were always anticipated, and the discovery

of more sites after routine surveillance of the area was conducted has found no new nests. Some treatments were delayed, this was due to wet weather, but when the weather permits these treatments will resume.

The Remote Sensing Surveillance data collected so far is now being analysed. Initial analysis of the surveillance data indicates Red Imported Fire Ants (RIFA) can be detected. The Remote Sensing Surveillance false positive rate is currently unknown for the search algorithm. Manual analysis of the data has shown there is a likelihood of 80% detection of RIFA nests, and has a false positive rate of 9%. The Research and Development data that has been collected is being analysed, and is being collated with the program's data that was collected over the last 10 years. The analysis results will feed into the evolving future program work plan.

TACC asked if the RIFA infestation had spread as a result of last year's flooding of Brisbane. Surveillance conducted after the floods last year has not identified any nests spread as a result of the flooding. The RIFA nests detected have shown no correlation with the areas flooded, when compared to those areas that did not flood.

There have not been any significant outliers detected outside the central infestation area this year. There have been a total of 105 new infestations detected so far for 2012, but this isn't unusual.

The TACC noted the Red Imported Fire Ant Eradication program Quarterly report. TACC expressed no concerns with the activities outcomes reported over the past six months.

Queensland summarised the results that emerged from the Science Forums for Molecular Genetics and Remote Sensing that were held late last year, November 2011, and early this year, February 2012.

TACC noted the most interesting result from the Molecular Genetics Forum was the international researchers were enthusiastic about the current program since it is having such an impact on the genetic diversity of RIFA in Australia. The international researchers agreed it was a long-term process, which if continued would eventually cause the RIFA populations to collapse.

TACC noted the results from the Remote Sensing Science Forum. Queensland was confident the surveillance package developed will eventually succeed at delimiting RIFA in 3 years. Queensland is confident after the initial trails RIFA nests can be detected at the required level to be able to delimit. The likelihood of detecting RIFA is higher for suitable habitat, such as areas of high disturbance. Queensland explained the trials have been completed, and the surveillance boundary identified, and about this time this year Remote Sensing can begin. The first round of Remote Sensing will be completed by December 2012. Once this first round of Remote Sensing Surveillance data has been analysed, then the TACC can review. Once reviewed by TACC the high level working group can review, and then finally it can be reviewed by the NMG. The chair explained that if Remote Sensing can demonstrate to the NMG RIFA that it can be delimited using Remote Sensing Surveillance technology, then this year is the year to prove delimitation is possible. Queensland explained that to realistically delimit RIFA three years of Remote Sensing Surveillance is required, with this year being the first year. This is on the proviso the technology is successful at detection beyond the field trials.

Queensland informed TACC they analysed all detections, especially when a nest is not detected by the Remote Sensing Surveillance technology.

Queensland summarised the proposed Forward Plan that will be submitted to the National Management Group (NMG) for endorsement. Referencing the RIFA delimitation map, Queensland explained what will happen to delimit RIFA over the next three years. At the end of the three years the 10km boundary will have been surveyed using the Remote Sensing Surveillance technology. Community Engagement activities will roughly extend out to 30km. If a RIFA nest is detected by the public, then the area covered by the Community Engagement campaign should include the area where RIFA could possibly be found.

Every year for the three years, 150,000ha of Remote Sensing Surveillance are proposed to be completed. All other *ad hoc* detections would be surveyed in addition to this and other routine surveillance activities. Queensland said they expect most of the detections would be made between the green and red lines on the delimitation map (0-5km), and rare for RIFA detections between the blue to green line (5-10km). It is likely that any detection made beyond the infestation front is an isolated RIFA population and is unlikely able to reproduce. The nest likely consists of a single alate (male or female), which limits the colony's mating potential.

Queensland explained when a heavy infestation of RIFA is detected then the infestation receives multiple treatments. This is part of the new proactive treatment strategy, based on the experience gained from over ten years of running the program. The treatment strategy focuses on treating disturbed ground, with each area identified receiving a minimum of two treatments.

TACC was informed of the new Community Engagement campaign, which was due to begin soon. The campaign is promoting the retired RIFA odour detection canine Aaka. Aaka will be the program's new mascot, promoting the reporting of suspect ants, with the campaigns focused towards school children.

The new Biosecurity Bill establishes new for the RIFA Restricted Area designations: Restricted Area and Movement Control Area. The Bill has been delayed because of the Queensland election. Once the Government reforms, the Bill will then proceed for endorsement and then the new Restricted Area designations can be formally implemented. The election has created a lag in the implementation of this strategy; the outcomes of the reform will be reviewed once it has been implemented.

South Australia asked about the size of the area treated within the green line of the delimitation map. Only disturbed areas, approximately 6,800ha, would be treated. The disturbed areas will be proactively prophylacticly treated. A round of prophylactic treatment for the entire 10km zone would cost $800,000 approximately. The cheaper option, by far, is conducting surveillance and treating any RIFA nests that are detected, and then, any prophylactic treatment is only applied to those areas where RIFA nests are detected. The problem is that not all incipient nests (less than 6 months old) can be detected. Some of these nests will probably not be detected in the first round of surveillance; these incipient nests would probably only be detected during the second and third rounds of surveillance.

The Agenda paper presented outlined four milestones with review points. The milestones and review points were discussed at the Remote Sensing Science Forum three weeks earlier. The first milestone is the RIFA infestation is delimited by 2015; Queensland was confident this milestone can be reached using Remote Sensing. The second milestone is the analysis of the false positives and

false negatives rates, and notification of TACC if the rate of false positives increases significantly; this would be a cause of concern for TACC. The third milestone, an infestation is detected beyond the 30km Community Engagement line on the delimitation map; this would trigger an immediate review of the program. The fourth milestone, if a large breeding population is found beyond the 10km Remote Sensing Surveillance line; this would be of great concern for TACC and Queensland, it has meant RIFA has spread beyond its current known boundary and there might be an unidentified, undetected RIFA population well beyond the boundary.

Queensland reported the treatment being used has been effective at controlling RIFA. The nursery property freedom protocols for the suburbs with RIFA infestations have been removed. The treatment strategy for the next three years involves searching all suitable habitats for possible infested sites. It is hoped that over the next three years there would be a reduction of the number of infested sites detected as a result of the proactive treatment. Management of compliance with industry and within communities is continuing, complicating factors have appeared as a result of trying to achieve compliance.

The genetic analysis of the RIFA populations has not identified an unknown large RIFA infestation. No large independent population has been detected by the genetic analysis. It would appear all the RIFA populations that have been tested are closely related.

The TACC agreed to the proposed Forward Plan for 2012-2015 and its Milestones.

Victoria asked if this was the best chance of achieving the desired outcomes, stating this would be a question asked by the NMG. Why hasn't the program delimited RIFA? And isn't the program supposed to transition from containment back to eradication? Queensland responded, stating the program didn't have a tool that could accomplish delimitation until recently. It appears Remote Sensing Surveillance is effective at detecting RIFA. Effectively using this technology will give the program the best chance of detecting and eventually eradicating RIFA from south-east Queensland. It is expected the current round of surveillance will have collected all its data by the end of September 2012. The surveillance results will be analysed from October to November 2012. The report on the Remote Sensing program's first round of data collection will have been analysed and ready for review by TACC by December 2012.

The Eradication program has been in 'Aggressive Containment' since 2010, this period was an opportunity for Queensland to refine the program's Research and Development programs. The program is constantly being refined. Refinements are made every year, to accommodate and handle new data, new knowledge and new detections. Queensland made the point that even with a perfect Remote Sensing program in place it would take three years before it could confidently be said RIFA has been delimited.

TACC agreed the decisions and outcomes from the SAP Forums and the TACC should be consolidated in the NMG Agenda paper. TACC also agreed to most of the recommendations; although, there was discussion concerning the effect Queensland's caretaker period will have on progressing next year's funding, which is proposed in the Forward Plan for 2012-13.

Queensland informed TACC that it was entering caretaker period today; the Queensland election had been called the day of the teleconference. TACC asked Queensland if there would be a problem

with modifying Recommendation d. Queensland directed TACC to the table summarising funding, provided late, summarising the committed activities for the nationally cost-shared funding in the first column, $15 million, and Queensland's additional contribution in the second column, $6 million. Queensland explained that the Forward Plan for 2012-13, and beyond, up until 2015, was designed upon receiving $21 million. TACC agreed to this before Queensland entered caretaker period. The Forward Plans always anticipate a range of contingencies that may happen.

TACC agreed the recommendation requesting additional funding probably requires a more detailed explanation of the financial break-down of the Forward Plan for 2012-13. Queensland explained business at the Department of Employment, Economic Development, and Innovation (DEEDI) even though in caretaker, will continue as usual.

The Commonwealth commented to say the Forward Plan had been written with the assumption the program was going to receive $21 million in funding. What happens if the Eradication program only receives $15 million and the Queensland government doesn't contribute the additional $6 million? The chair noted the plan will require review if only the $15 million cost-shared funding is agreed. South Australia asked in order for Queensland to acquire the $15 million cost-shared funding will it require Ministerial Council endorsement. Queensland and the Commonwealth confirmed the NMG's recommendation for continued funding, for 2012-13, will then require Ministerial Council endorsement. This can only happen after the election.

South Australia asked if the program was transitioning from containment back to eradication. Queensland said the program was in fact in 'Aggressive Containment' and had not transitioned to a management program. 'Aggressive Containment' is a suppression program. The suppression program was recognised for 18-24 months creating the time to advance the Research and Development projects; primarily the implementation of the new Remote Sensing Surveillance to delimit RIFA. At the end of this 18-24 month period the program would be reconsidered by Ministerial Council. Ministerial Council would then decide if the program should continue receiving funding as an eradication program.

The TACC Secretariat was uncertain if an NMG meeting would be held during Queensland's caretaker period. Understandably, a decision on the future of the RIFA program's funding would be subject to time pressure so close to the end of the funding cycle. Queensland informed TACC the incoming Queensland government will be required to make a decision on the RIFA program's additional funding contribution, the $6 million, within the first three weeks of forming government.

TACC agreed any alterations that are suggested should be made to the NMG Agenda paper before being cleared by TACC. The Agenda paper will then be submitted to the NMG for endorsement.

Electric Ant Eradication Program

Actions and Recommendations:

- The Tramp Ant Consultative Committee (TACC) **agreed** the Electric Ant Eradication program is proceeding according to the milestones set out in last year's Response Plan.
- The TACC **agreed** that nothing significant had been detected, or that there is anything of concern to warrant a review of the eradication program, and the program should continue.

- The TACC **noted** the Eradication program's review points as reasonable, which if breached, would mean the Electric Ant Eradication program is reviewed: assessing the technical feasibility of the program.
- The TACC Chair **noted** that any detection of Electric Ants in the future would continue to require review. The review deciding if the detections constitute a significant concern about the technical feasibility of continuing the eradication program; these detections would continue to be assessed on a case by case basis.

Eradication program update

The Electric Ant Eradication program is proceeding as it was agreed in the Response Plan. Queensland provided an overview of the eradication activities undertaken since the renewed funding was endorsed by Ministerial Council for the program. The amount of footpath surveillance conducted last financial year has increased. The program has remained compliant and has not triggered a need for a review. All infested Cairns suburbs have received a full treatment regime. Owing to the success of the treatment regime, a few new infestations have been detected as a result.

The Community Engagement campaign has been very successful. The number of ant samples received from the public has increased. For 2011-12, there have been only four new Electric Ant detections. The most significant of these detections was the second detection at Trinity Beach, found 500 metres from the first infestation at this location. It appears the remnant infestations have been successfully controlled in the remnant bushland areas around Cairns.

Queensland informed TACC that it felt the program has achieved what it had set out to achieve within the program's set timeframe and budget from the last financial year. The number of new infestations detected is in-line with what has been predicted, if the program is to end by June 2015.

South Australia asked how confident is Queensland the remnant infestations around Smithfield are under control? The surveillance teams are using GPS tracking to track where they've surveyed, making it easier to identify the areas that have not been surveyed. An Electric Ant odour detector canine is being used to survey these difficult to access areas. No Electric Ant nests have been detected by the canine in these areas. The remnant areas have had a full round of treatment applied, these areas are to receive another three rounds of treatment before monitoring of the sites commences.

The Commonwealth asked about the implementation of the Electric Ant compliance program, are households and businesses complying? The Queensland Householder survey has shown Cairns householders and businesses are aware of tramp ants, and most know to report and to collect any suspect ant they find. The community engagement material, delivered to households, suggests residents check pot plants, which is a well documented pathway for the spread of Electric Ant. Queensland Biosecuirty Officers' attend community events, setting up stalls, to inform residents in the Electric Ant Restricted Areas of the threat. This fixes the message in residents' minds to report and if possible collect a sample for submission to Queensland Biosecurity to test.

South Australia asked about the extent of the Karanda detection investigation. The investigation discovered no other Electric Ant nests. Trace forward and trace back have provided a lead, the lead is being investigated. The investigation will determine if the business is guilty of a compliance

violation, and then, the compliance investigation team will determine if the business should be prosecuted. Footpath surveillance is underway in the suburb to detect nests that were not picked up by the initial survey.

The TACC agreed it would recommend the Electric Ant program continue as had been previously agreed-in-principle by the NMG and Ministerial Council. The TACC noted none of the review points had been triggered, the program does not need review, with detections being dealt with on a case-by-case basis.

South Australia asked about the reformation of the Scientific Advisory Panel (SAP)? The formation of the SAP is determined by the National Management Group (NMG). The SAP will be formed on an issue-by-issue basis. Jurisdictions nominate experts for the SAP, the issue requiring debate determines the technical expertise required to review the research. Queensland informed TACC they work with overseas scientists on all their tramp ant research, information is shared.

South Australia asked if the Electric Ant program is working in isolation. Queensland said the Electric Ant program is not working in isolation, the activities being implemented by the Electric Ant program and any results from these activities contribute to other programs and related research.

Queensland informed TACC that a Financial Audit of the RIFA and the Electric Ant Eradication programs is scheduled. Funding of around $60,000 to $70,000 has been set aside to fund the Audit. The Audit will be submitted to the NMG for review and comment on the recommendations.

Protocols for the Removal of Infested Site (IS) Status

Actions and Recommendations:

- The Tramp Ant Consultative Committee (TACC) **agreed** members be given the opportunity to review the proposed removal of Infested Site (IS) status protocols Out-of-Session (OOS). TACC members would need to provide either the agreement to or disagreement with the proposed protocols for RIFA and Electric Ant by Friday 2 March 2012 to the TACC Secretariat.
- The TACC **agreed** the protocols be considered by the Domestic Quarantine and Market Access Working Group (DQMAWG) for review and comparative assessment against the State and Territory restricted movement legislation and regulations.

Queensland provided an overview of the Protocols to Remove Infested Sites (IS) for Red Imported Fire Ant (RIFA) and Electric Ant. The proposals are aimed at making the management of the Restricted Areas easier, decreasing the amount of treatment done at each site, creating cost savings. Each nest detected is Direct Nest Injected (DNI) and baited to the 50 metre buffer. Follow-up surveillance is conducted 12 weeks after the site has been treated, and then a second round of surveillance is conducted 12 weeks after the first. If no other infestations are detected in the area then the IS status for that site is removed.

The Electric Ant IS protocol is similar to RIFA IS protocol, although, both protocols have not yet been formalised. The surveillance conducted 12 weeks after baiting, has the odour detector canines run over the area out to 100 metres and lures are set and then checked. If any Electric Ants are, or a nest is, detected then the entire cycle restarts. A second survey is undertaken 12 weeks after the

first survey; if no Electric Ants, or nests, are detected then the Restricted Area status is then removed. On average it should take about 9 months from the detection of a nest to the removal of Restricted Area status.

The TACC Secretariat informed TACC they would contact the Domestic Quarantine Market Access Working Group (DQMAWG) about the changes to the intrastate Restricted Area movement control protocols for Electric Ant and Red Imported Fire Ant. Essentially, the movement controls for Electric Ant are similar to the movement controls for the interstate control of RIFA.

The intension is to have both sets of protocols endorsed by TACC, who will then recommend the protocols to DQMAWG for review and endorsement. The Restricted Areas and the Movement Control Areas proposed are based on the latest surveillance data. The areas directly surrounding the detected infestation are surveyed every 12 weeks for RIFA. Like Electric Ant the odour detection canines are run out to 100 metres to detect any nests that may have been missed. TACC agreed to the IS protocols, but insisted on having a more detailed review of the IS protocols out-of-session. The chair asked TACC to submit any comments and changes to the IS protocols to Queensland, who will then make the changes before recirculating them to TACC for clearance. Once cleared by TACC, the TACC Secretariat will then submit the IS protocols to DQMAWG for review.

South Australia agreed if this is a way the Restricted Areas can be removed then this should be done. The chair suggested there should be a quick turnaround and that all comments and changes be submitted by the 2 March 2012. Queensland is writing the DQMAWG Agenda paper, and said they are unsure when the Agenda paper would be ready for submission. The TACC Secretariat was not sure if the Agenda paper would be considered in-session or out-of-session by DQMAWG. The chair suggested additional information be added to the Agenda paper to add context and explain the story.

The earlier protocols that were agreed to by TACC were to release nurseries in or near RIFA Restricted Areas to resume trading, but not for the release of properties. These protocols provide a general framework for the release of nurseries that prevents the spread of RIFA.

The TACC requested the RIFA Restricted Area map updated, to provide greater context. The improved map will allow each jurisdiction to report on the Eradication program's progress with more confidence to their Minister. There will not be individual protocols for each Restricted Area, but a general protocol with rules that will help determine when an area is ready to transition.

South Australia asked how the Restricted Areas fit together; the current map does not show this very well. Queensland will update the map to show how the Restricted Areas will fit together, aligning it with what the TACC want on the map.

Other Business

Actions and Recommendations:

- The Tramp Ant Consultative Committee (TACC) **noted** a date hasn't yet been set for the next National Management Group (NMG) meeting for Tramp Ants. The meeting will make decisions

on the Forward Plan for RIFA for 2012-13, and agree to continue funding Electric Ant for another year.

- The TACC **noted** the National Commutations Network (NCN) has met and discussed the use of the Queensland RIFA Mining Communications Strategy – and **agreed** – jurisdictions can use Queensland's Communications Strategy in their consultation with the Mining industry and other industry sectors.
- The chair asked TACC to **note** that their jurisdictional NCN representatives would have more extensive knowledge of where the various communication strategies are to date.
- The chair **recommended** that TACC members contact their NCN representative if they want a detailed summary of the discussions held at the NCN meeting regarding progress on the National Biosecurity Communications Strategy.

The TACC Secretariat was unsure when the next NMG meeting would be held. The secretariat would ask the chair, Lois Ransom, if she knew the date of the next NMG meeting.

Western Australia asked if anybody had knowledge of when the National Communications Network (NCN) will finish reviewing the Mining Communications Strategy. DAFF Communications said the NCN hasn't finished their review and comment of the strategy just yet. As soon as the strategy has been cleared then DAFF Communications will supply the completed strategy to the TACC Secretariat. The TACC Secretariat will then circulate the cleared Mining Communications Strategy to TACC members for use in their jurisdictions.

Tramp Ant Consultative Committee Meeting 9

Brisbane, Fire Ant Control Centre

Wednesday 24 October 2012

Actions and Outcomes

Attendance

Department of Agriculture, Fisheries and Forestry Chris Adriaansen (Chair) Tim Coutts (Secretariat) *Department of Sustainability, Environment, Water, Populations and Communities* Andrew Copp *Queensland* Neil O'Brien Craig Jennings Heather Leeson Ross Wylie *New South Wales* Royce Holtkamp	*Victoria* John Burley *South Australia* Mark Ramsey *Northern Territory* Anne Walters *Western Australia (Teleconference)* Oonagh Byrne Mark Witham *Apologies* Peter Dinan (ACT) Lionel Hill (TAS)

Welcome

The chair welcomed and thanked all Tramp Ant Consultative Committee (TACC) members for attending this face-to-face meeting in Brisbane. The chair informed the committee that since the restructure of the Office of the Chief Plant Protection Officer (OCPPO) most of Lois's and Michael's responsibilities have been shared between the new Australian Chief Plant Protection Officer (ACPPO), and his position as director. The focus of this full TACC meeting is the early outcomes from the Remote Sensing project's full year of surveillance, and the development of advice to NMG on a range of issues relating to both Red Imported Fire Ant (RIFA) and Electric Ant (EA).

The chair informed TACC that both the National Management Group (NMG) and the National Biosecurity Committee (NBC) are interested in receiving advice about the program's progress. The chair informed TACC the actions and outcomes would be consolidated, and will help form the NMG Agenda paper that will advise on the RIFA and Electric Ant Eradication programs progress. The Remote Sensing program will be examined in far greater detail at the next Scientific Advisory Panel (SAP) meeting scheduled for December 2012.

Previous Actions and Outcomes

Actions and Outcomes:

- The Tramp Ant Consultative Committee (TACC) noted there were no actions from the last teleconference.
- The TACC reviewed and noted their contact details. The TACC agreed they would provide the secretariat with an update of their contact details, if any of their details are incorrect.
- The TACC noted that NMG, PISC and SCoPI had previously endorsed the 2012-13 program based on total funding of $21 million. Given the recent changes to Queensland's funding the TACC noted the program will need to review the 2012-13 work program based on total funding available of $16.933 million (including proposed carryover of unspent 2011-12 funds).
- The TACC noted the program had been focussed for the past two years on Delimitation and Aggressive Containment in line with the nationally-agreed direction, but the program has recently increased its focus on Eradication. The TACC also noted that research conducted during this Aggressive Containment phase of this program has now been completed and is now being validated.
- The TACC noted that for 2012-13 the focus for the program will be the ongoing development of the remote sensing technology, to enhance and improve the surveillance technology. This is targeted at achieving the objective of delimitation.

Remote Sensing Project

Actions and Outcomes

- The Tramp Ant Consultative Committee agreed Queensland should focus its attention on improving the Remote Sensing program, and how the program can be used to enhance and to improve the other activities.
- The TACC agreed the program should focus on providing confidence that it can detect and delimit RIFA using the Remote Sensing technology.
- The TACC agreed to hold a joint meeting with Scientific Advisory Panel (SAP) in December 2012; the SAP will review the project's progress and the outcomes emerging from the first year of Remote Sensing surveillance.

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- The Tramp Ant Consultative Committee (TACC) noted that when the program began, 11 years ago, there was not a good understanding of Red Imported Fire Ant (RIFA) in Australia; over the course of the 11 years Queensland has gained a good understanding of RIFA: its preferred habitat, biology and ecology.
- The TACC noted the United States (US) only controls Red Imported Fire Ant (RIFA), but Australia eradicates RIFA. Queensland noted they can kill fire ants.
- The TACC noted there have been three incursions of Red Imported Fire Ant into Queensland: Gladstone (eradicated, has been declared a Pest Free Area [PFA]), Port of Brisbane (eradicated, and will soon be declared a Pest Free Area [PFA] under the new protocols), and west Brisbane (not eradicated, this is the hardest of the three infestations to eradicate). The TACC also noted the west Brisbane RIFA infestation is not large, only around 425 hectares.

- The TACC noted Red Imported Fire Ant mounds are not found under heavy canopy. Low levels of infestation are found only in shaded habitats on the margins of heavy canopy when there is a high density infestation adjacent.
- The TACC noted Remote Sensing had been considered twice earlier by Queensland: 2002 and 2004, both times it was discarded and other avenues pursued, primarily owing to technological issues that could not be resolved at those times.
- The TACC noted that the current approach to Remote Sensing appeared to be working and can create savings, for example:
    - Detecting 8 mounds in 2 240 hectares using remote sensing took 2 days;
    - Using two dedicated teams of 12 field officers conducting targeted structured surveillance would have taken 34 days; and
    - Most of the mounds would have been detected under normal structured surveillance within 150 days.
- The TACC noted the models showed that surveillance had to improve over large areas and the detection rate had to increase to at least 30% or higher in these areas to eventually be able to detect Red Imported Fire Ant (RIFA) with the required degree of confidence.
- The TACC noted that Sydney University are reviewing and continually refining the search Algorithm used to analyse the data. The Algorithm is in its fifth iteration.
- The TACC noted Queensland and the Australia Government have limited Intellectual Property (IP) rights to the technology. The IP only extends to the process of assembling all the technology as a device, and not to the individual pieces of technology that make-up the whole device.
- The TACC noted that by the end of September 2012 Queensland had conducted 51 000 hectares of surveillance with the device. The TACC also noted that there have been delays because of limits to the period when useful images can be captured, and this is a true Research and Development project, trial and error.
- The TACC noted that to produce the high enough pixel resolution to detect the RIFA mounds the helicopters has to fly at 500 feet, and at 45 knots, which is virtually hovering for helicopters.
- The TACC noted the 10 km buffer will be scanned three times in three years; the surveillance intensity is: 5 km buffer, 1 pass per annum for 3 years; and 10 km buffer, 1 pass per annum for 2 years.
- The TACC noted contingency exists in the forward plan to conduct additional surveillance if necessary.
- The TACC noted that a second Remote Sensing unit should arrive by the end of October 2012. The second unit will be operational for the next round of Remote Sensing surveillance, which will significantly increase surveillance capacity.
- The TACC noted the efficacy of the Remote Sensing's detection rate is at least 30% detection on any mound; this detection rate increases significantly after each pass to well over 60%.
- The TACC noted that not the whole area within the 10 km buffer zone will be remotely surveyed 100%. The Remote Sensing will focus on the most suitable habitat in the 10 km buffer; this will be surveyed three times. Queensland informed TACC the area surveyed can potentially be cut back to save money, if necessary, while it remained focused on the areas with the most suitable habitat for RIFA.
- The TACC noted there have been a few colonies detected just beyond the 10 km buffer. Queensland informed TACC that each mound is assessed to determine whether the colony is a

substantive threat (for example: a reproductive colony vs an isolated colony). Each colony is treated whether it is reproductive or isolated.

- The TACC noted 70% of all infestations are discovered on disturbed land. Queensland informed TACC of a hot-spot in west Brisbane that receives 100% surveillance to monitor this population.
- The TACC noted the Remote Sensing flights are influenced by several externalities, covered in the Proposed Aerial Operations Weather Guide and Rating System sheet, which include:
    - Clouds: ideally the helicopter flights happen when there are no clouds in the sky. The cloud type and the amount and level of the clouds in the sky have been rated from 1 (excellent) through to 7 (no fly – rain), and the presence of clouds influences the quality of data produced by the six remote sensing cameras. The helicopters initially flew only when there were No Clouds (1), but will now fly when there is up to Scattered Clouds (4), this increases the number of days, through May-September (5 months) for Remote Sensing surveillance.
    - Rain: when it rains the temperature differential between the mounds and the environment are lost: the cameras will not detect the mounds.
    - Wind: when the wind is slight, even a few knots, then the helicopters cannot fly. The helicopters are virtually hovering, any wind creates turbulence, which can knock vehicle off course and is unable to maintain the flight line: the pictures become useless as they may not align.
    - Time of day: the Algorithm used was affected by the amount of shadow at the beginning of the day and at the end of the day, this meant the helicopters could only fly in the middle of the day when the sun was directly overhead. The Algorithm has advanced since and now the shadows and the influence these shadows have on mound temperature are compensated for by the program, which has meant the helicopter can fly for most of the day – depending on prevailing weather conditions.
- The Tramp Ant Consultative Committee (TACC) noted the comparison of costs between Remote Sensing and Aerial Baiting:
    - $28.33 per hectare is the cost of Remote Sensing, to Analysis. Queensland has estimated it will cost between $60-$80 per hectare once Analysis has been completed (this still excludes field staff validation);
    - $65 per hectare to Aerial Bait; and
    - 24 field staff conducting surveillance operations can only cover 5400 hectares per month. Remote Sensing surveillance covered over 50 000 hectares in five months – May-September.
- The TACC noted Remote Sensing surveillance will have surveyed and analysed all land types in Brisbane by December 2012. The TACC also noted that 7000 hectares of the first round of surveillance has now been validated, the imaging has been excellent.
- The TACC noted that Queensland has retained 9 nest sites for science purposes: to test the Remote Sensors and train the Algorithm.
- The TACC noted that as the Algorithm developed, the total number of points detected per hectare to be checked has gradually become less and less. This reducing process has been delayed, principally, because there is a lack of data points detected, owing to a lack of mounds. As the system is trained this surveillance will become quicker, the number of false positives will be reduced as the program "learns" after each run.

    - Queensland informed TACC that the mound structure is critical for their detection. The honeycomb structure of the mounds heats slightly faster than the surrounding environment.
    - Queensland can detect mounds down to 10 cm in size.
    - If a mound is not detected in the first year, because it is just below 10 cm in size, the mound would then be detected in the second year, if not before, especially, if the mound is part of a cluster.
- The TACC inquired about the difference between Monogyne and Polygyne spread, which type is more invasive. Queensland informed TACC that Monogynes travel further, up to 5 km; but, Polygynes are less likely to travel such distances, and colonies bud to produce clusters:
    - Monogyne outliers are less important, especially when they are only a single alate (male or female);
    - Polygynes if they do travel any distance are likely to cluster, and if undetected and spread, can cluster in the extreme – the best example being Purga (18 000 colonies).
- The TACC noted that local colonies found in clusters are a high priority, compared to local isolated colonies that are not reproductive.
- The TACC noted Queensland conducts Remote Sensing surveillance during winter, this allows the RIFA colonies to build their mounds, plus they move far less, so are more likely to be detected; and a stronger heat signature can be detected even from the smaller mounds.
- The TACC noted the program was no longer Aggressively Containing RIFA and has returned to Eradication. The TACC also noted the next three years would focus on delimiting the west Brisbane infestation.
- Queensland informed TACC that if the infestation cannot be delimited then Queensland would not be able to eradicate the infestation, proven by the modelling. Queensland explained they can effectively eradicate RIFA provided that delimitation occurs.
- The TACC acknowledged that until the RIFA infestation is delimited then the decision whether the program should continue as an eradication program will remain unresolved.
- The TACC noted that as data from the buffer zone is analysed, and scattered mounds are detected, the number of infestations will increase. Queensland informed TACC the increase is expected, but this increase is good, and the delimitation surveillance has been effective at delimiting.
- The TACC noted the buffer zone is appropriate to accommodate the possibility of new infestations. The TACC also noted that Queensland will re-assess where it places its resources to best target those resources to increase the buffer, if necessary:
    - Queensland assesses each risk in relation to the buffer, comparing the new infestation to the earlier infestations, indentifying the relationship it has to the earlier infestations and it is not from an unknown genetic parent population.
    - Queensland informed TACC that only the most suitable habitat is targeted as a priority; with the less suitable habitat in the 10 km buffer zone still surveyed, but these areas are secondary priorities.
- The TACC noted that 18 000 industry people have been trained to identify and report RIFA, and other pests. This training meant industry officers were able to detect the Gladstone infestation, and report the Roma interception, of RIFA.

- The TACC noted Queensland developed the in-house Manual Analysis Tool to check the points the Algorithm believed are mounds, the tool is training the program so it learns what is and is not a mound. The TACC also noted the Algorithm identifies around 36 000 points per day as it analyses the data.
- The TACC noted that it takes a week between a "yes" during Manual Analysis and a surveillance team visiting the site.
    - The Manual Analysis team can cover on average 260 hectares per day, checking around 6.2 points per hectare; the survey team coordinators then use GPS to identify the location of the mounds from the surveillance data. An effort is made to plan the survey teams' routes so they can tackle clusters of mounds in the same area.
    - Termite mounds no-longer show-up as check points in the Manual Analysis.
    - The Fire Ant Control Centre (FACC) has wireless, one of the first sections to receive this upgrade. The wireless will allow, once the system has been tested, for field staff to download their route in the morning, they conduct their surveillance and treatment operations, and upon return to the FACC the field data is uploaded, and the route for the next day's work is downloaded.
    - There have been problems with the Personal Digital Assistants (PDAs) receiving some of the maps, which is one reason why the above process has not yet been fully implemented. This is being resolved.
- The TACC noted the field survey teams are covering about 5 hectares per day, using the analysed Remote Sensing data; this is expected to improve as the entire process becomes more efficient and effective:
    - From May to September the temperature is cool enough to fly the cameras and detect the mounds in the surrounding environment.
    - For the remaining 7 to 8 months, when conditions become too hot to fly, the field staff will survey the areas where the mounds have been detected, after they have been Manually Analysed.
    - Queensland informed TACC that due to recent changes and the reduction in staff, morale is low, and this has influenced the number of hectares surveyed each day.
    - Queensland directed TACC to the case study in the Agenda paper, which describes the process used to all the mounds at a recently detected infestation site, even though some mounds were not initially picked up by the Algorithm, the reasons why were clear.
- The TACC noted the Remote Sensing project is a three year project, and the data provided will be reviewed at the conclusion of the project.

Review of Annual Report for 2011-12 and Carry-over Funding

Actions and Outcomes

- The Tramp Ant Consultative Committee (TACC) endorsed the National Red Imported Fire Ant (RIFA) Eradication Program Annual Report for 2011-12. TACC agreed the objectives and milestones that were set for the Eradication Program in 2011-12 had been met, and that the program had:
    - Suppressed Red Imported Fire Ant in south-west Brisbane; and
    - Researched and began the implementation of the Remote Sensing surveillance.

- The TACC endorsed Queensland's request for carry-over of the $807,901 of unspent funds from 2011-12 and that these funds are applied to the proposed 2012-13 RIFA work program.

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- The TACC noted the total area of infestation for 2011-12 was 426 hectares, compared 2010-11 that had a total area of 561 hectares of infestation, which was a reduction.
- The TACC noted the carry-over of $807,901 of unspent funds from 2011-12 is smaller than the 2010-11 carry-over or that of previous years.
- The TACC noted surveillance for the first quarter of 2012-13 is on track.
- The TACC noted the two zone restricted area protocol, which was approved by TACC last year, will be implemented from November 2012 through to December 2012. The TACC also noted that businesses in the areas affected by the change have said they appreciate this reduction in red tape.
- The TACC noted that the Modelling and the Bait efficacy programs have been completed and have proven to be a benefit to the Eradication program.
- The TACC noted Queensland has investigated the influence the 2011 floods had on the spread of RIFA, and determined that RIFA had not spread as a result of the floods.
- The TACC noted Queensland hosted a Molecular Genetics Scientific Advisory Panel (SAP) and the Remote Sensing Science Forum late last year and early this year; the science forums were highly successful and insightful.
- The TACC noted the 2012-13 funding has been approved by Standing Council on Primary Industries (SCoPI).
- The TACC noted the $807,901 underspend resulted from being unable to conduct treatment over 2011-12:
    - This resulted because of wet weather that prevented treatment from being undertaken when scheduled;
    - Staff attrition, around twenty staff left and have not being replaced; and
- The TACC noted the Program will do additional treatment and Remote Sensing surveillance with the underspent funds in 2012-13.
- The TACC noted the Restricted Area (RA) will expand as a result of the recent detections and the change in the boundaries due to the new protocols. Using the criteria from the new protocols, the Forest Hill detection will not be zoned but due to its proximity to other recent detections, it will be under movement control. The Summerholm detection will also be under movement control.
- The TACC noted the regulatory amendments will apply suburb wide and property wide.
- The TACC noted pathway analysis is being conducted to examine if RIFA is being spread by human assistance or is happening through point spread.

2012-13 Work Plan

Actions and Outcomes

- The Tramp Ant Consultative Committee (TACC) endorsed the 2012-13 Red Imported Fire Ant Work Program as proposed; noting that the $16.933 million total budget for the program is comprised of $15 million national cost-shared allocation, $807,901 of unspent carry-over funds from 2011-12, and $1.125 million in additional Queensland Government funding.

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- The TACC noted the Queensland Government would not be delivering the additional $6 million, as had been anticipated at the earlier TACC teleconference.
- The TACC noted the Queensland Government is supplying the additional $1.125 million for controlling RIFA on Social Amenity and Public Assists.
- The TACC noted the $15 million national cost-shared funding was endorsed by SCoPI in March 2012. The TACC also noted the endorsement was for a three year program for $21 million for each year of the program.
- The TACC noted that 7000 hectares of disturbed land will receive prophylactic treatment, even though there is no known infestation found on that land. Queensland explained that 70% of all detections are made on disturbed land.
- The TACC noted the Work Plan's focus is to eradicate as many RIFA at less cost whilst continuing delimitation.
- The TACC noted high-density infestation sites – are case managed – receive multiple rounds of treatment to eradicate RIFA from these sites, and are routinely re-surveyed.
- The TACC noted Queensland defined disturbed land as any area where 1 metre square of earth had been turned: this covers virtually all commercial development, such as road works and so forth.
- The TACC enquired if Queensland had investigated a user pays levy for developers that are developing new sites. The levy would pay to treat the site, even if the site is not infested.
    - There is a link to disturbed areas, therefore, it should be paid for by the developers that create the risk;
    - The pattern of infesting disturbed land occurs when RIFA is at a low-level of infestation; and
    - This was considered on the Agenda in March 2010.
- The TACC noted that prophylactic treatment on habitat that is not infested does prevent new infestations in these areas.
- The TACC noted the Queensland University of Technology is undertaking an Epidemiological analysis of RIFA.
- The TACC noted the Australian Bureau of Agricultural and Rural Economics and Sciences (ABARES) are still working on the RIFA Benefit-Cost Analysis (BCA).
    - ABARES is modelling four scenarios and a walk-away scenario; the analysis is being assessed against the Plant Health Australia (PHA) framework; and the technical working group has only met once.
- The TACC noted the Fire Ant Control Centre (FACC) is reducing its staff from 172 to 126.1 FTE, with staff reduction structured so it preserves the critical skill sets.
- The TACC noted Queensland is anticipating there might be zero carry-over for 2012-13.
- The TACC noted that risk management and security will be maintained; as 6 field staff are also qualified inspectors, and 14 field staff have some risk management training, so businesses in areas under movement control restrictions and in Restricted Areas can still be managed.
- The TACC noted the 24 hour call centre is being closed, with all after-hours calls now being directed to the Director of the FACC, under strict criteria.
- The TACC noted Queensland is streamlining the Quarterly Report processes for RIFA.

- The TACC noted Queensland will receive its first expenditure report next month, November 2012. Queensland noted that even though this first quarter was costed to the original $21 million, the finance directorate will manage these costs, and align the indicative budget of $16.933 million in the three following quarters.
- The TACC noted Queensland's reduced component of $1.125 million does not compromise the endorsed national cost-shared activities.
- The TACC enquired of the FACC if it knew the Queensland Government will continue to provide ongoing funding of $1.125 million. Queensland was uncertain at this point in time about the level of ongoing funding the Queensland work program will receive in the future.

Formulation of Advice to the National Management Group (NMG)

Actions and Outcomes

- The Tramp Ant Consultative Committee (TACC) requested the RIFA Eradication program prepare, for consideration by TACC at the December 2012 meeting, preliminary advice on the potential structure and resourcing of the program for 2013-14 and beyond, based on the possible wider application of remote sensing surveillance in 2013-14 and beyond.
- The TACC agreed to endorse the Annual Report for 2011-12, and that the milestones had been met.
- The TACC agreed to support the carry-over of the $807,901 in unspent funds from the 2011-12 to the 2012-13 Financial Years.
- The TACC agreed to endorse the Work Program for 2012-13.

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- The TACC noted the creators of the surplus were beyond the Queensland's control.
- The TACC requests the NMG discusses the application of the 2011-12 carry-over funding of $807,901 to the 2012-13 Work Program.
- The TACC requests the Fire Ant Control Centre (FACC) prepare, for consideration by TACC at the December 2012 meeting, preliminary advice on the potential structure and resourcing of the program for 2013-14 and beyond based on the possible wider application of remote surveillance, should this be proven successful.
- The TACC wanted it noted that it understands the increase in significant detections should be viewed as a reflection of the program's success, as they would result from the successful application of remote sensing.
- The TACC noted the eradication program's current funding arrangements will be reviewed post the December 2012 meetings of the SAP, TACC and then the NMG. Future funding is only ever agreed-in-principle and is assessed year by year by the TACC and the NMG before it is endorsed.
- The TACC noted treatments are directly complemented by the direct nest injections, which is used to eradicate individual mounds.
- The TACC noted that another Pest Free Area (PFA), the Port of Brisbane, will soon be ready to be declared pest free:
    - Yarwun was declared a PFA in 2010, there have not been any detections of RIFA since the site was declared pest free; and
    - The Port of Brisbane will be declared pest free this year, once the new protocols have been implemented. The port has had to have a different level of confidence compared

to Yarwun, first owing to its proximity to west Brisbane infestation, and last because of the size of the original infestation. A media release will be organised closer to the day when it will be declared pest free, yet not known.

- The TACC noted an NMG Agenda paper will be formulated early next week, with the hope of having the Agenda paper ready for circulation and review by TACC members next Wednesday, 31 October 2012.
- The TACC noted the NMG is planning to hold their next meeting on the week beginning Monday 5 November 2012.

Electric Ant Annual Report for 2011-12

Actions and Outcomes

- The Tramp Ant Consultative Committee (TACC) endorsed the Electric Ant Eradication Program Annual Report for 2011-12; and noted none of the agreed triggers for review had occurred during the year.
- The TACC endorsed the request for carry-over of $162,000 of unspent funds from 2011-12 to 2012-13, and that these funds be applied to the proposed Electric Ant work plan.

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- The TACC noted the movement pathway for Electric Ant, identified by Queensland, is through pot plant sharing. To address this Queensland has instigated a strong Community Engagement campaign in Cairns and beyond to prevent the accidental spread of Electric Ant.
- The TACC noted the second pass for footpath surveillance will conclude at the end of this Financial Year, 2012-13.
- The TACC noted that in order for the program to achieve eradication by 2015, all Electric Ant infestations have to be found by the end of this year Financial Year, 2012-13.
- The TACC noted three treatments are enough to eradicate Electric Ant.
- The TACC noted CSIRO and JCU recently reported the detection of Electric Ant at Ravenshoe. This detection was in fact a false positive, and was because of contamination from a sample that was taken from an overseas population. No Electric Ant was discovered at Ravenshoe, this was confirmed by Queensland.

Status of Yellow Crazy Ant in Queensland

Actions and Outcomes

- The Tramp Ant Consultative Committee (TACC) noted the Yellow Crazy Ant program had received Caring for our Country funding for eradication. A decision was made that Yellow Crazy Ant was not eradicable, so funding was ceased.
- The TACC noted that all activity has ceased, and that the Fire Ant Control Centre (FACC) is not handling the management of this ant.
- The TACC noted local landholders are now responsible for reporting and managing this ant. It is a scheduled pest, and has to be reported and dealt with, or the landholder will be fined, to prevent it spreading.
- The TACC noted the Invasive Plant Animal program, run out of the Sustainable Resource Management (SRM) Division, are responsible for the national management of the ant.

Other Business

Actions and Outcomes

- The Tramp Ant Consultative Committee (TACC) noted the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) have hired a consultant to assess the effectiveness of tramp ant projects to reduce impacts on biodiversity. The project covers six projects that have received Caring for our Country funds and includes the red imported fire ant and electric ant programs. The report is due by the end of December 2012.
- Queensland informed TACC the funding for both the national cost-shared eradication programs, RIFA and Electric Ant, will be done through a Caring for our Country funding Deed. Queensland expressed its dissatisfaction with this situation to the TACC, explaining the MERI process involved extra administration when reporting against milestones.

Next Meeting

Actions and Outcomes

- The Tramp Ant Consultative Committee (TACC) agreed that the second Remote Sensing Scientific Advisory Panel (SAP) forum and the next TACC meeting be scheduled for Thursday 13 December 2012.

Tramp Ant Consultative Committee Meeting 10

Brisbane, Fire Ant Control Centre

Friday 14 December 2012

Actions and Outcomes

Department of Agriculture, Fisheries and Forestry	*Victoria*
Chris Adriaansen (Chair)	John Burley
Tim Coutts (Secretariat)	
Tess Williamson	*South Australia*
	Mark Ramsey
Department of Sustainability, Environment, Water, Populations and Communities	*Northern Territory*
Andrew Copp	Anne Walters
Queensland	*Apologies*
Neil O'Brien	Peter Dinan (ACT)
Craig Jennings	Lionel Hill (TAS)
Ross Wylie	John van Schagen (WA)
Georgie Lucas	
New South Wales	
Royce Holtkamp	

Background

The focus of this TACC meeting was to develop advice to the National Management Group (NMG) on a range of issues relating to the Red Imported Fire Ant (RIFA) eradication program. The principal question posed by NMG to be covered in that advice is whether remote sensing surveillance could successfully delimit the RIFA infestation by June 2015 with an acceptable degree of confidence. TACC will present its advice to NMG by March 2013. Key points from the Scientific Advisory Panel (SAP) meeting (held 13 December 2012) on remote sensing, delimitation, limitations, additional evidence and further development will assist in developing this advice.

It was noted that not all jurisdictions were participating in this TACC meeting, or had engaged in the discussions preceding it.

Previous Actions and Outcomes (TACC 9)

- TACC agreed Queensland should focus its attention on improving the remote sensing project, and on how it can enhance and improve other activities.
- TACC agreed the program should focus on providing confidence that it can detect and delimit RIFA using the remote sensing technology.
- TACC agreed to hold a joint meeting with SAP in December 2012. SAP reviewed the program's progress and the outcomes from the first year of the remote sensing surveillance project.
- TACC endorsed the RIFA eradication program annual report for 2011-12. TACC agreed the objectives and milestones of the eradication program in 2011-12 had been met, and that the program had:
    - contained and suppressed RIFA in south-east Queensland
    - researched and begun the implementation of the remote sensing surveillance project.
- TACC endorsed Queensland's request for carry-over of the $807 901 of unspent funds from 2011-12 and application of these funds to the proposed 2012-13 RIFA work program.
- TACC endorsed the work program for 2012-13.
- TACC requested Queensland to prepare, for consideration by TACC at the December 2012 meeting, preliminary advice on the potential structure and resourcing of the program for 2013-14 and beyond, based on the possible wider application of remote sensing surveillance.

Review of Remote Sensing for Delimitation of Infestation

- TACC noted the four stage process involved in completing remote surveillance for RIFA:
    1. Image capture using low-level helicopter-mounted cameras
    2. Automated image analysis using a machine algorithm
    3. Manual image analysis of the points of interest identified through algorithm analysis to locate possible RIFA nests requiring on-ground investigation.
    4. Ground surveillance to investigate suspect RIFA nests identified on analysed images.
- TACC noted that, based on rates of work evidenced in 2012, it will be possible to complete the image capture stage across the planned delimitation area with the agreed frequency within the time available.
- TACC identified some limitations and issues that may influence the efficiency and effectiveness of the remote sensing project:
    - Large amounts of data are being generated by image capture and analysis. The efficiency with which data can be stored and analysed is being limited by the current lack of security in Program investment.
    - The current version of the algorithm used for automated image analysis is resulting in 170+ points of interest per hectare which need to be checked through manual image analysis. The rate of manual analysis is limited by and dependent on the number of available staff and by the number of points of interest per hectare identified by the automated algorithm analysis, and this is currently proving to be a rate-limiting step.
    - Ground surveillance to investigate suspect RIFA nests from analysed images is currently occurring at the rate of 5 ha/person/day. At this rate, it will not be possible

to complete the surveillance process to delimit the infestation with the required degree of confidence by June 2015.

- TACC noted, however, a number of planned improvements which are aimed at addressing these limitations and issues, including:
    - A new version of the machine algorithm will be applied from early January 2013 which (according to early indications) will reduce the number of points of interest from 170+ per hectare to approximately 14 per hectare. This will reduce the time required for manual analysis of images, effectively removing this as a rate-limiting step.
    - Revised procedures for deployment and operation of field staff is aimed at increasing work rate from 5 ha to 10 ha/person/day. This, combined with a reduction in the "false positive" points of interest requiring investigation, is aimed at enabling this final stage to eliminate the current backlog and keep pace with the other stages of the project.
- TACC requested that further information be provided to it by the Program at the end of January 2013 so that the effectiveness of these strategies to address the limitations identified can be evaluated, and that there be ongoing reporting from the Program at each critical stage of the remote sensing project.
- TACC considered the outcomes of the 2012 trials and the confidence of detection which might be achieved from the remote surveillance process.
    - TACC noted that, based on the evidence provided through analysis of the remote surveillance trial work completed in 2012, image analysis (both stages) resulted in detection of 78.6% of RIFA nests present.
    - Importantly, TACC also noted that, with application of the current parameters of ground surveillance to investigate each nest and the surrounding area, all remaining nests were detected.
    - Consequently, evidence from 2012 trials indicates that the four stage remote surveillance process resulted in detection of 100% of infested sites.
- TACC agreed that, notwithstanding the current backlog in remote surveillance completion and the efforts planned to overcome this, the Program should resume image capture as planned in May 2013.

Cost Effectiveness Analysis

- TACC noted and considered the information contained in the summary of the ABARES draft report on Cost Effectiveness of RIFA response options.
- TACC noted that this Cost Effectiveness Analysis (or any similar Benefit Cost Analysis)) needs to recognise the significant community and environmental benefits resultant from control of RIFA, and include an analysis of national, non-primary industry impacts if RIFA spreads beyond south-east Queensland.
- TACC agreed to request further development of the Analysis to take into account the full benefits of environmental and community factors, and to include as appropriate the actual cost and other results evident from the remote sensing trials completed in 2012.

- TACC noted that, after further revision of this Analysis to include these factors as appropriate, it may be able to further consider the funding level, resource application and outcome periods covered by the Analysis, and provide further advice accordingly.

Program Progress and Reporting

- TACC noted the concurrent contingency planning process being applied to RIFA through the National Biosecurity Committee, focussed on future options if it was considered at any stage that eradication was no longer feasible or warranted.
- TACC agreed that the focus on containment and delimitation for this three year period has not compromised the potential for future eradication of RIFA. The level of infestation is very low with effective infestation reduction and containment strategies in place, with the prime residual risk arising from a small number of polygyne populations.
- TACC noted that community engagement is occurring in parallel with remote surveillance to supplement the overall confidence in delimitation.
- TACC considered the trigger points for review of the Program as listed in the 2012-13 Operational Plan, and agreed that these remained appropriate at this stage. TACC will reconsider these trigger points as part of its consideration of the 2013-14 Program work plan.
- TACC noted that a number of recent isolated infestations detected in the Lockyer Valley, and agreed that any further detection of RIFA beyond the buffer zone in the west will need to be carefully considered in view of the current agreed review trigger points.
- TACC requested that the Program update the current map to provide a RIFA density analysis per sub-population to better demonstrate the infestation and eradication pattern over time across the affected area.
- TACC noted that the quarterly report will provide information on achievement of milestones.
- TACC noted the Port of Brisbane was being declared free from RIFA as of Friday 14 December 2012 by Queensland.
- The Program agreed to circulate the recently-endorsed financial audit of the Red Imported Fire Ant and the Electric Ant eradication programs to TACC members.

Development of Advice and Report by TACC

- TACC agreed to develop an NMG paper, supplemented by a 5-8 page TACC report, reviewing the progress of the remote sensing project and significant issues within the current RIFA program.
- TACC noted that further consideration of the implications of alternative approaches within the RIFA program is required, and that further information will be provided by the Program to enable TACC to finalise its advice.
- TACC agreed to include in its advice to NMG an appropriate comment on the impact on the efficiency and effectiveness of the Program resulting from the lack of funding security.
- TACC agreed on the following timelines and tasks:

    - The secretariat will circulate the key points and outcomes from the meeting to TACC by Friday 21 December 2012 for response and comment by mid-January 2013.
    - The NMG paper will be written by the end of January 2013 and the supplementary report will be written by the end of February 2013 for submission to the March NMG.
- TACC members will consider the need to hold a teleconference by mid-February 2013 to finalise and/or endorse the NMG paper and report before the NMG meeting in March 2013. This may also be an opportunity for TACC to consider the 2013-14 Program work plan.

Other Business

- Victoria noted that TACC members are meeting their own costs to attend these meetings, and asked for referral of this issue to NMG by the chair.
    - The chair explained that each jurisdiction is sending a representative as part of managing and monitoring their investment in the Program.
    - Queensland noted that investment in travel and accommodation for TACC members would reduce funding available for other aspects of the program.

Current Knowledge

Reproduction and flight

Social form

The social form of a colony can be analysed to determine if a colony contains a single queen or multiple queens–factors which present different risks to the Program. For example, it's less likely that a single queen colony (monogyne colonies) would be moved by humans, as the possibility of picking up the queen is low. However alates from these colonies will fly to mate, and the newly inseminated queen will establish a new nest away from the parental nest.

Multiple queen colonies (polygyne colonies) have a higher risk of human assisted spread (there is more chance of picking up one of the queens) but generally do not fly away from the parent colony following mating. This type of colony mainly spreads by budding.

Nuptial flight range

For monogyne colonies genetic analysis (which is ongoing) has indicated that in Australia the majority of flights are less than 250 metres in length. In the USA, 99% of nuptial flights are reported to be less than 2 km[1]. Fire ants are not strong flyers. Reports from studies on energy availability and flight capacity of female alates state that alates that fly further than 5 km do not have enough energy remaining to successfully found a new colony. However, National Red Imported Fire Ant Eradication Program (the Program) has identified one long distance mating flight (9.8 km) through relatedness testing from Grandchester to Mulgowie in 2010–11. This finding indicates that there is a risk of flights over 5 km.

All long distance movements are examined to determine if spread was by human assisted movement or nuptial flight. In most cases, there is no definitive finding whether new infestation is spread by flight or human assisted movement.

Viability of mounds (determining reproductive area)

An analysis by the Program of over 3000 colonies within a four year period showed that only 14% of colonies have both males and female alates.

Therefore, a colony that is greater than 2 km away from the nearest colony would most likely not be viable as it would not encounter alates of the alternate sex.

The Program has identified that the reproductive area of the South East Queensland infestation only includes areas where multiple colonies are found.

[1] Red Imported Fire Ant: Burning Questions.

Habitat Preference

Habitat model

It has been found that fire ants prefer open, sunny areas rather than forested, shady sites. An automated predictive model, the fire ant habitat model[2], has been developed to identify areas that may be more suitable for fire ant infestation. Unsuitable habitat would be unlikely to harbour fire ant infestation and pose less risk to the Program's operations.

Disturbed land

Colonies are now seen to be regularly associated with disturbed land (market gardens, new housing or industrial developments, and road works). An analysis of 520 infested sites detected in 2009 and 2010 found that 410 (79%) of infested sites had direct association with land that was either continually disturbed (cultivation) or had been disturbed in the recent past (residential development, infrastructure development)[3].

In 2012, further analysis was undertaken and it was found that between 2009 and 2011 of the 521 sites investigated, 411 of these were associated with soil disturbance. Of these approximately 70% were associated with large scale land clearing for development[4].

Further research is being undertaken by Queensland University of Technology on the characterisation of land disturbance and associated fire ant infestation using LandSat imagery. It is anticipated that this project will result in an algorithm that will automatically scan LandSat imagery and identify changes in land use over time. This can be run at regular intervals to detect new large scale land disturbance which can be targeted for treatment or surveillance.

Land use

Over the life of the Program it has been identified certain land use activities increase the likelihood of infestation by fire ants. This has been observed for market gardens, landfills, dumps and mine sites which display a high risk of recurrent infestation. Given the increased effectiveness of multiple applications, three treatments per year are considered optimal for these sites.

Reducing risk of human assisted movement

The Program's treatment activities have reduced the fire ant population to such low levels that there has been limited risk of human assisted movement. However movement controls have also been applied. Combination of effective treatment and controlling the movement of material that is likely to harbour fire ants has kept fire ants contained within South East Queensland.

Interstate

The interstate movement of fire ants is controlled through Interstate Plant Quarantine (IPQ) regulations. Each State and Territory enforces their own entry requirements for restricted materials from Queensland. However the quarantine boundary is drawn at 5km from the outermost fire ant infestation.

Restricted area

Under the Program, the use of a restricted area has been an effective tool for addressing the risks within Queensland associated with the human assisted movement of fire ants.

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[2] Modelling areas of suitable habitat for colonisation by *Solenopsis invicta* in south east Queensland.
[3] Red Imported Fire Ant: Burning Questions
[4] Assessment of fire ant sites: Targeting treatment according to risk

As a result of the need to better manage the changed risk profile the structure of the fire ant restricted area has recently been altered. The restricted area has now been to split into two zones, a high risk restricted area (red zone) and a low risk restricted area (orange zone). These zones are aligned to suburb boundaries. Different movement controls apply in each zone with more stringent movement controls in the red zone.

When all treatment and surveillance activities are completed suburbs will be moved from the red zone, to the orange zone, then from the restricted area all together. This will serve to shrink the restricted area in line with operational activities.

Finding fire ants

Remote Sensing Surveillance

Remote sensing surveillance is the cheapest method and only viable option for conducting large amounts of surveillance. Current efficacy and capacity information is provided below:

- The detection sensitivity of remote sensing surveillance is 75% for all mounds
- The detection sensitivity of remote sensing surveillance for site with multiple mounds is much higher with 100% of test sites detected in 2012-13.
- Data capture capacity per camera - approximately 750 ha per day
- Data capture season - May through to September (approximately 100 days)
- Two cameras - 150 000 ha of data capture in a season
- Manual identification process can currently keep pace with data capture
- Field staff will be able to clear points of interest at a rate of 10 ha per person per day (once a number of operational issues are addressed)

Effectiveness of remote sensing surveillance in urban areas is largely unknown. More testing will be required in this area to ensure that the required confidence level can be reached.

Passive surveillance (engagement of industry and the public)

Over recent years it has been found that 70% of all infested sites are reported by the public. This is a direct result of the Program's community engagement activities that results in ant samples received from throughout Queensland (but are concentrated in South East Queensland). Yarwun (Gladstone) was reported by a member of the public. This means that if effective communication strategies continue, most infestation is likely to be eventually reported.

Odour detection dogs

The odour detection dogs have been found to be over 95% effective at finding all infestation whether visible above ground or not. The dogs can cover around 3 ha per dog per day.

Field staff surveillance

Trials have shown that field staff can detect around 80% of visible mounds when conducting surveillance in accordance with standard operating procedures. Field staff operate at a rate of effort of 1 ha per person per day.

Killing fire ants

Broadcast baits

The efficacy of bait used for destroying fire ant infestation is paramount to the success of the Program.

Broadcast baiting is currently used around areas where there is a likelihood that fire ants have reproduced and spread by nuptial flight. Buffers are based on the level of infestation with a minimum 500 m. This type of baiting uses a corn-grit impregnated with either an insect growth regulator (S-methoprene or pyriproxyfen), or a metabolic inhibitor (hydramethylnon), or a toxicant bait (indoxacarb) and has, on average, an 80% efficacy rate with one application, which increases with multiple applications. The Program currently allows at least a 4 week gap between treatments. This bait is dependent on factors such as temperature and the foraging capacity of the ant[5].

Research and literature reviews have provided information into the effectiveness of the baits used by the Program. Monitoring fire ant populations at 70 sites revealed the following:

- For sites that only received bait treatments It was found that an average of 3.3–4.3 treatment rounds in 8.5–11.0 months was required before the fire ant population reduced to zero. For sites that received both broadcast baiting and direct nest injections an average of 4.0–4.8 treatment rounds in 8.3–10.0 months were required before the RIFA population reduced to zero. The differences between these two groups of sites are not statistically significant.

Reviews of the published literature also indicate that the fire ant baits are highly effective. In summary:

- Pyriproxyfen - In field trials with one application, efficacy rates ranged between 86.9% and 100% (average 95% over five studies). The times taken to reach maximum efficacy ranged from 2–9 months, but in a few studies efficacy rates of 95–100% were achieved in 2–6 months.
- Methoprene - In field trials conducted in the USA on methoprene (0.5% active ingredient), with one application, efficacy rates ranged between 66% and 98% (average 83% over several studies). The times taken to reach maximum efficacy ranged from 4 to 8 months (98% efficacy was achieved over 8 months).

Direct nest injection

Direct nest injection with a 50m bait buffer is currently used for all fire ant mounds and is the only treatment applied to isolated mounds that are not deemed to have a high likelihood of reproducing. Under the current treatment protocol the direct nest injection process is 100% effective at destroying colonies and is not subject to foraging activity and associated temperature considerations.

Eradication Principles

Eradication of fire ants will require:

(1) Delimitation – the area of infestation needs to be delimited

(2) Treatment – all infestation needs to be destroyed to prevent further spread

(3) Containment – movement controls and containment strategies need to be used to limit opportunities for human assisted spread of infestation

(4) Proof of pest freedom – surveillance needs to occur to confirm that infestation has been destroyed

[5] Assessing broadcast bait efficacy on monitoring sites infested with *Solenopsis invicta* in Brisbane from 2001 to 2006

Based on the current knowledge discussed above the following approaches are suggested to achieve eradication.

1 Delimitation

Detection rates and costs support remote sensing surveillance as a suitable tool to determine the extent of the fire ant infested area[6]. Given the longest known nuptial flight range it can be assumed that the outer limits of infestation could be up to 10km from reproductive areas.

The area most likely to have additional infestation is from 500m from the known infestation area (beyond the standard limits of broadcast baiting) to 5km out. To reach a suitable confidence level (>95%) this area would require at least 1 pass per year for 3 years. Given the higher risk of infestation occurring in this area it is recommended that all area is surveyed whether it is identified as suitable habitat (by the habitat model) or not.

It is less likely that infestation will exist from 5 km to 10km from known infestation, but the possibility still exists. To reach a suitable confidence level (>90%) this area would generally require 1 pass of remote sensing surveillance per year for 2 years. It is extremely unlikely, but not impossible for infestation–albeit small and probably unviable–to exist beyond the 10km delimitation line. However, with community engagement activities proving successful in reporting 70% of all infestation, this activity could be relied upon in the outlying areas.

Current operational and remote sensing surveillance buffer boundaries are:

- The initial remote sensing surveillance buffer currently in use was developed using up to date knowledge regarding the behaviour of fire ant. These boundaries are as follows:
- 500 m to 5 km from known infestations detected since 2009. This area is approximately 122 000 ha (57 454.88 ha of ‘suitable habitat’).
- 5–10 km from known infestations detected since 2009. This area is approximately 135 000 ha (63 780.81 ha of ‘suitable’ habitat).
- The area inside the remote sensing surveillance buffers—the known infested area—is approximately 150 000 ha in size.

Once the initial delimitation is completed remote sensing surveillance boundaries can be redrawn around reproductive areas and the same principles applied for delimitation.

2 Treatment

Program learning can be applied to target treatment activities rather than relying on the broad application of baits across all areas. It is suggested that treatment could be targeted in the following manner:

- Infested property treatment—all detected mounds should be destroyed using direct nest treatment. This immediately prevents the risk of spread (through nuptial flights or human assisted) and eliminates the chance of people getting stung. For isolated mounds where the risk of reproduction is low the protocol for property freedom should be followed (i.e. direct nest injection with 50 m buffer for bait application).
- Bait treatment should be applied around reproductive areas–where there is high density infestation that has likely reproduced and spread. A buffer of at least 500 m, with 3 applications of bait treatment each year for 2 years recommended.
- Proactively treating areas of disturbed land would ensure 70% of possible infestation was destroyed prior to establishment and reproduction. Given the risk, areas of disturbed land should be treated up to 5 km from reproductive areas of infestation. As this is proactive treatment only two treatment applications per year are

[6] Remote Sensing Surveillance for Red Imported Fire Ant, December 2012

suggested. Proactive treatment of disturbed land out to 5km would protect the areas that are being delimited and the surveillance that occurs during treatment would provide further evidence of delimitation.

- Other high risk areas such as landfills, dumps and mine sites should also be treated with the same frequency as areas of disturbed land.

In addition strong community engagement would be required to ensure that other infestations are reported by the public.

3 Containment (movement controls)

Delimitation will not be successful if the infestation is not contained within the known infested areas. Apart from treating known or likely areas of infestation, containment is achieved through industry and community compliance with movement controls which complement the other components of the fire ant eradication Program. This element of the Program seeks to foster social responsibility within the community to achieve compliance with movement controls and encourage the early reporting of suspect ants.

The fire ant Program relies on a broad industry and community understanding of the threat that fire ants pose to South East Queensland and an appreciation of the strategies that are implemented to eradicate these pests.

Engagement of the community, industry and government is undertaken to encourage participation and reporting of ants. Participation includes compliance with movement controls and the shared responsibility concept where those individuals and businesses whose activities represent a threat to the spread of fire ants employ risk mitigation strategies.

In addition, Inspectors are required to approve movement of bulk soil, which is considered a high risk activity, and audit Approved Risk Management Plans.

To reduce the size of the restricted area an operational strategy to clear infestation (based on level of infestation, land use, distance to other infestation) will be need to be developed for each individual suburb. This will help to restore confidence in the success of the Program.

It is recommended that current Program containment strategies continue.

4 Surveillance to confirm an area is free from fire ant

To confirm that all fire ant infestation has been detected and destroyed, at least 2 passes of surveillance (9 months apart) are recommended to be conducted within the known infested area. This could be conducted by using a combination of methods, including remote sensing, field staff and odour detection dog.

NATIONAL RED IMPORTED FIRE ANT ERADICATION PROGRAM COSTS

(USED FOR PLANNING PURPOSES - CURRENT @ FEBRUARY 2013)

1. AVAILABLE CHEMICAL DISTRIBUTION AND TREATMENT OPTIONS

Table A - Broadcast bait distribution methods

Tool	Typical use situation	Swath per sweep (m)	Work rate per day per unit (optimal operating conditions)	Indicative cost ($/ha)#	Treatment window (available working days)
Hand operated bait spreader	Residential areas and properties less than 1 hectare	2	2.5 ha	$285	110 - 120
Backpack blower	Heavily vegetated areas not suitable for aerial treatment.	6	Limited application.	N/A. Costs vary significantly based on the size and type of target area for treatment.	110 - 120
All terrain vehicle	Rural residential, parklands and properties between 1 to 5 hectares	8	10 ha	$150	110 - 120
Blower truck	Creeks, roadways, highways, train line corridors or riverbanks.	20	Limited application.	N/A. Costs vary significantly based on the size and type of target area for treatment.	110 - 120
Argo amphibious vehicle	Swamp areas.	8	Limited application.	N/A. Costs vary significantly based on the size and type of target area for treatment.	110 - 120
Aerial	Large properties greater than 5 hectares	14	700 to 1400 ha	$65	110 - 120
# Indicative cost includes staff, vehicle and bait cost only.					

2. AVAILABLE DETECTION OPTIONS

Table B - Surveillance methods

Active methods					
Technique	*Delivery*	*Typical use situation*	*Estimated sensitivity* *(per nest)*	*Indicative work rate per day per unit* *(optimal operating conditions)*	*Indicative cost*
Visual surveillance	Field teams	Detection	80%	10 ha per team (10 persons)	$370 / ha
Traps and Lures	Field teams	Detection and verification	*N/A*	*N/A*	*N/A*
Odour detection	Canine unit	Detection and verification	near 100%	Up to 9 ha (one handler with three dogs)	$120 / ha [A]
Remote sensing – High resolution visual, spectral and thermal	Helicopter	Detection and verification	*~ 80%*	>750 ha data capture per day (per aircraft)	*$72.25/ha* [B]

Passive methods					
Technique	*Delivery*	*Typical use situation*	*Estimated sensitivity* *(per nest)*	*Indicative work rate per day per unit* *(optimal operating conditions)*	*Indicative cost*
Community engagement	Various	Detection	*95.9%/ 52.2%* [E]	Coverage is measured out to 30 km from the known infested area (However, ant samples are submitted from throughout Queensland with the Yarwun incursion detected as a result of community engagement) 34% of respondents indicated that they check their yard for fire ant on a weekly basis and 22.5% of respondents indicated that they checked their yard on a monthly basis.	*$0.895 m per year* *(2,826 km^2)*

[A] this indicative cost is based on a contract to supply dogs and only includes supply cost, handler labour, vehicle and kennelling cost.

[B] Includes data capture, algorithm and manual analysis, and field operations.

[E] surveys conducted within SE Qld in 2008 indicate that 95.9% of respondents are aware of RIFA and 52.2% had checked for fire ants within the previous 12 months.

N/A – figures not available or applicable at time of issue.

3. CONTAINMENT

Table C - Containment methods

Active methods					
Technique	*Delivery*	*Typical use situation*	*Estimated sensitivity* *(per nest)*	*Indicative work rate per day per unit* *(optimal operating conditions)*	*Indicative cost*
Application of Restricted Area	Inspectors	Control of items that may harbour fire ants	NA	All businesses (currently 3,500) in the restricted area that deal with high risk items are managed under a risk management plan that is regularly audited by a Program inspector. Investigation of potential breaches of the regulation.	$626,000 for 280,000 ha restricted area

Department of **Employment, Economic Development and Innovation**

Red Imported Fire Ant: Burning Questions

A review of the scientific literature on key issues for the eradication of the Red Imported Fire Ant (RIFA), *Solenopsis invicta* Buren in Queensland

Compiled by: Biosecurity Queensland Control Centre—Scientific Services

Key contributors (listed alphabetically):
Rebecca Davidson
Lynne Griffin
Craig Jennings
Melinda McNaught
Philippa Nelson
Ross Wylie

Version 1

Contents

Summary

The purpose of this literature review is to provide an analysis and summary of current scientific knowledge on Red Imported Fire Ant (RIFA) as it relates to each of 20 key operational questions that have been raised by management and staff engaged in an eradication program for the pest in Queensland.

These questions pertain to the ability of the pest to disperse and establish new colonies, our ability to find them, their nesting and foraging behaviour, rate of spread, response to disturbance and treatment, and efficacy of the chemical pesticides being used in the Queensland program.

The scientific literature sourced spans several countries where RIFA is endemic or introduced, but the majority of the research is from the USA where it has been long established and from South America where it is native. It is important to note that not all overseas results can be directly extrapolated to the Australian situation where conditions may differ. Occasional mention is made in this report of other invasive ant genera if appropriate to the question.

The information contained within is based on scientific literature where occasionally there are dissenting points of view. In these cases the provided conclusions are based on experience with the Australian populations. Finally, RIFA and its interaction with the environment constitute a biological system and as such the following points need to be considered when making comparisons to observations from the eradication program.

- There is always a range (e.g. with flight distances, development times, response to chemicals) in observations that will be based on local biotic and abiotic factors.
- Such variability requires multiple replications of an experiment to produce a high level of confidence in a result, particularly when there are no experimental 'controls'.
- 'Eradicating' a pest is vastly more challenging than 'managing' a pest.
- New technology will potentially reveal different answers to what has been previously reported.
- Based on current knowledge and technology some questions (i.e. aging a colony) can not be answered at present.

In summarising this information, we aim to provide management with the necessary background on RIFA to help inform decisions on procedures and policies as eradication efforts continue.

Following is a list of questions and a brief summary of what is contained in published literature plus, where possible, comment on the situation or results from Australia (in italics).

How far do RIFA alates fly?

99% of RIFA alates fly for less than 2 km and few more than 5 km unaided by wind. However, with wind assistance they could be carried for 16 km or more. The potential for long distance dispersal by wind is reduced by the behaviour of alates, which will not fly when wind speed is greater than 5-8 km per hour. The estimated average flight time is 45 minutes.

Current investigations into the relatedness of RIFA colonies using microsatellites will provide an accurate picture of the dispersal characteristics of RIFA in Australia. Initial analysis has found higher than expected levels of inbreeding in the Australian populations and this result is delaying interpretation of the data.

What abiotic factors influence the timing of monogyne flights?

Nuptial flights can occur at any time of the year but are more likely in spring and early/mid summer. Conditions favouring nuptial flight are a wind speed below 5–8 km per hour, air temperatures between 23℃ and 33℃, soil surface temperatures above 18℃, relative humidity of greater than 80% and 0.2–8.6 mm of rain in the preceding 24 hours. Alates which fly in the spring may have a better chance of colony founding than those that fly in autumn.

Little work has been conducted on factors influencing flights in the Australian environment. In Brisbane, flights have been recorded in all seasons but synchronised flights have been observed on only two occasions viz. in the summer (January and February) after good rain. The low density of the population in Australia has limited these observations.

How many alates participate in a monogyne nuptial flight?

The number of alates that participate in nuptial flights in any one event depends on the time of year the flight is taking place. In the peak flight season (spring/summer) an average of 600–700 alates, and sometimes more than 1000 alates, take flight from each nest. Winter flights are usually much lower in intensity with only a few dozen alates leaving each mound. Each mature colony can participate in several nuptial flights during each flight season.

What is the survival rate of a monogyne foundress queen?

In areas heavily infested with RIFA, the main predators of inseminated RIFA alates appear to be RIFA workers from competing colonies. In less heavily infested areas, the main predators appear to be other species of ants. Overall, mortality of founding queens due to predation both during and after mating flights probably exceeds 99%.

The above results are based on observations and experiments on the RIFA population in the USA. A similar predation rate could be expected within the infested areas of Australia, where although the density of the RIFA population is generally much lower than that seen in the USA, the Australian ant fauna is much more diverse and aggressive (Andersen 1997). Outside of the infested area the rate of spread of RIFA may have been suppressed due to higher predation by the local ant fauna when compared to that observed in America.

Do polygyne alates participate in nuptial flights?

Polygyne queens are thought to typically mate in their natal nests, dispersing only short distances before seeking adoption by another colony (dependent founding). 'Budding' of the colony also occurs whereby an inseminated queen takes a number of workers with her to help found a new colony. Nuptial flights do occur although the number of male alates in swarms may be low. Low-altitude post-mating flights of queens have been observed which may be for the purpose of selecting a suitable landing site.

Are RIFA queens attracted to disturbed land when searching for landing sites?

Numerous studies have indicated that the preferred habitat for RIFA is recently cleared and disturbed land such as newly cultivated fields or vegetated land cleared for development. This characteristic may be derived from their native habitats where RIFA are opportunistic in invading recently flooded or grossly disturbed lands from which other predatory ants have been displaced. It is therefore likely that RIFA alates preferentially select disturbed land when searching for a landing site.

This pattern has also been observed in Australia and has become more obvious since 2008 when baiting has been reduced and there is greater survival of colonies. Colonies are now seen to be regularly associated with disturbed land (market garden, new development, road works). An

analysis of 520 infested sites detected in 2009 and 2010 found that 410 or 79% of infestation had direct association with land that was either continually disturbed (cultivation) or had been disturbed in the recent past (residential development, infrastructure development).

How long before incipient colonies are visible?

Incipient colonies generally become visible around 3–5 months after founding, and this is when they are around 3–7 cm in size. At this stage the only visible sign of the mound is a disturbance in the earth, rather than a distinct mound. Development times for mounds are likely to be variable and be dependant upon type of soil, rainfall, availability of resources and other biotic factors of the site where an alate lands.

What factors influence RIFA foraging activity?

RIFA foraging activity is influenced by temperature. In the USA, optimum foraging temperatures are between 22–36℃. RIFA activity is impeded below 15℃ and reduced above 40℃. RIFA are prepared to forage both day and night, though it is often unclear whether night activity is true 'foraging' or monopolisation of food previously found. Monogyne workers travel further than polygyne workers when foraging. RIFA are also active throughout the year in suitable climates, though foraging during winter is reduced and supplemented by the colony's internal reserves. This suggests that foragers may not effectively uptake bait treatment applied in the winter months compared with the warmer months.

Observations of RIFA foraging at eight sites around Brisbane recorded continual foraging year round. In summer, RIFA were most active during early mornings and afternoons, avoiding or reducing their numbers during the heat of the day. In autumn and winter, RIFA began foraging around mid-morning, after temperatures increased. Observations recorded in spring on polygyne nests at Prior's Pocket showed continual presence of RIFA at lures over three 24 hr periods, with reduced abundance during the middle of the day and overnight.

How do RIFA respond to disturbance and can this affect treatment?

RIFA is a territorial insect which goes into defence mode in response to disturbance caused by animals, humans or environmental factors. If the disturbance is minor and/or non-persistent, alerted workers will quickly revert back to nest repair and foraging. Bait uptake and treatment efficacy should not be affected by, for example, prodding the nest to determine activity level or sampling for genetics. If the disturbance is major, there is an equal possibility that the ants will relocate or reconstruct the original nest. Ants may not feed or forage effectively during the relocation process but should be detected during the surveillance that would occur post-treatment..

In Brisbane, in situations where there is constant disturbance there appears to be a reduction in the efficacy of bait treatments. This is highlighted in market gardens but was also deemed to be the cause of apparent treatment failure at a development site where despite continual baiting RIFA colonies were detected over a period of three years.

Is relocation a common response by RIFA to application of bait treatments?

Both monogyne and polygyne colonies can have multiple linked mounds and movement between these mounds is a common occurrence even in the absence of disturbance. Colony relocation is a common response to pesticide treatment and survival of such satellites will depend on whether or not the queen has been killed (however, note that some orphaned colonies may adopt a newly mated queen). Absence of worker brood or a shift towards male reproductives may indicate queen death but long-term monitoring may be the final arbiter. When using direct nest injection, treatment of all mounds, active or inactive, is essential to maximise colony kill.

In Brisbane, mound relocation or 'satelliting' is a common response to direct nest injection and has also been observed for broadcast bait treatments. The habit of having multiple linked mounds has been observed in Brisbane and movement between them has been a complicating factor in trials conducted on bait efficacy. Genetic analysis of mounds/colonies in the trials is being undertaken as it is essential in fully interpreting the results of pesticide trials.

Is flooding an effective dispersal mechanism for RIFA?

All reports indicate that RIFA are well-adapted to cope with flooding events and that flooding may promote dispersal. However none of the reports indicate the distance that may be travelled by ant rafts. It is likely that fast flowing, turbulent waters, such as in flash flooding, will break up the ant rafts and reduce the likelihood of colony re-establishment. Slow-rising and slow-flowing water may allow rafts to remain intact but distances travelled before the rafts encounter vegetation or high ground may not be great.

The pattern of infestation observed at Purga (part of the Brisbane infestation located in an area that is regularly flooded) suggests that water dispersal is localised but that the multiple flood events have gradually spread the infestation down the nearby waterway. However, to date there is no evidence of long distance dispersal from the site with no polygyne colonies found downstream despite operational activities including surveillance and ground based treatment occurring many kilometres downstream between 2008 and 2010.

Ants are more likely to raft with slow-rising waters, and are more likely to remain within the mound during flash flooding. Greater survival with slow inundation with water corresponds with observations from the laboratory where extraction of colonies requires slow flooding if the colony is to survive. While there is still the possibility of long distance dispersal with flooding (e.g. rafts, or ants on or inside a floating log), there is presently no obvious association with waterways or associated flood plains in Brisbane, as compared to the clear association that has been observed with disturbance associated with development (both residential and infrastructure).

Can a colony that is orphaned by a toxicant bait treatment survive?

It is possible that despite an original queen being killed by a toxicant treatment, a colony may continue to survive through the adoption of a newly mated queen. While 100% kill from a single treatment is possible with any of the treatments used in the RIFA eradication program, where multiple nests are involved, this is probably a rare event given the range of variables that may apply. These variables include rainfall, ground moisture or UV which can all affect bait efficacy, as well as insufficient bait coverage associated with topography or application method. Further variables include non-foraging by workers, as well as competition with other ant species.

In Brisbane, in treated areas that were receiving multiple bait treatments per year, adoption of a newly mated queen would have been highly unlikely due to the very low RIFA population density. In later years of the program when fewer rounds of treatment are being applied, this is becoming more likely.

How stable are RIFA populations and what is their rate of spread?

Populations of RIFA in the USA form a mosaic pattern of monogyne colonies interspersed with polygyne colonies. These populations seem stable over time and it does not appear that the polygyne populations are displacing monogyne populations. Because polygyne colonies reproduce by budding new colonies from established ones, rates of spread by natural means are relatively slow, with no more than 35 m/yr recorded. This is low compared with monogyne colonies that can spread up to 16 km with wind assistance during a single nuptial flight.

Observations on rate of spread in Brisbane have been limited. However, the detection of an infested site at Purga provides some insight. The site of the infestation was fully surveyed in

September 2005 without detection. In 2010, an area of infestation with a north-south spread over 1.3 km, covering approximately 70 ha was detected. The population is predominately polygyne and there was no obvious continual introduction of infestation. Assuming the site became infested just after September 2005, then the rate of spread would be 260 m per year. Frequent flooding on this site may have increased the rate of spread. Further analysis of infested sites in Brisbane will provide a clearer indication of local spread.

What factors characterise an effective toxicant for RIFA?

An effective bait toxicant should provide delayed toxicity (<15% mortality after 1 day), be effective over a ten-fold dosage range, be formulated easily with carriers and be environmentally acceptable. It should be non-repellent at the concentration used in the bait. Hydramethylnon meets all these criteria but indoxacarb exceeds the recommended mortality rate at 24 hrs after treatment. However, toxicity symptoms after treatment with indoxacarb are delayed in most ants for at least 8 hrs, and mortality rates of colonies treated with indoxacarb indicate that this is sufficient time to permit thorough toxicant distribution throughout a RIFA colony.

What are the effects of hydramethylnon?

The range of efficacies of broadcast hydramethylnon in field trials was between 78 and 99%. Time taken to achieve these efficacies varied from 2–21 weeks post treatment. These findings suggest that the effects of hydramethylnon on RIFA colonies are not always consistent, even if application rates and chemical concentrations are the same. This may be due to a range of factors that affect bait stability and uptake such as rainfall events and over-exposure to sunlight (hydramethylnon has a half life of 1 hour in water and 12 hours in sunlight). On average, an efficacy rate of 80–90% could be expected within a period of 6–8 weeks. Individual mound treatment with hydramethylnon is generally less effective than broadcast application.

What are the effects of indoxacarb?

Reported field efficacy of broadcast indoxacarb bait ranged from 95–100%. The time taken to achieve the highest efficacy in field trials varied from 8–21 days.

Overall, indoxacarb achieved fairly consistent efficacies of between 82 and 100% in both field and laboratory trials, with the majority of studies recording >90% efficacy within one week after treatment. Again, as with hydramethylnon, individual mound treatment with indoxacarb seems generally less effective than broadcast application with only 68% mortality recorded.

In trials in Brisbane with indoxacarb broadcast bait, a preliminary efficacy rate of 83.3% was achieved in two weeks with a single application and 96.5% in two months with two applications.

What are the observable effects of treatment with insect growth regulator (IGR) baits?

RIFA colonies treated with baits containing IGRs, exhibit six main observable effects:
1) absence of worker brood; 2) excessive reproductive brood; 3) dealation of reproductive females; 4) atrophied ovaries; 5) intermediate castes and deformities; 6) presence of other invertebrates in nests.

Similar effects have been noted in Brisbane and in addition, white striping or striation has been noted on the head and thorax of affected alates and worker pupae.

How are IGRs circulated throughout a colony and are the effects on RIFA queens reversible?

The available literature suggests that in order for IGRs to work effectively, the chemical must be maintained within the colony at levels high enough to cause brood production to cease and for

periods long enough to allow the colony to age and die. Critical to maintaining this level are worker ants that function as repletes, storing the active ingredient and distributing it to other castes, particularly to the pupae and queen.

Laboratory studies confirm the ability of queen ants to recover from some IGR treatments if there are inadequate amounts of IGR circulating throughout a colony (i.e. damage to the ovaries is reversible). This would allow a return to worker brood production and the subsequent recovery of the colony. However, such effect has not been conclusively demonstrated for pyriproxyfen and methoprene on RIFA queens and the literature is sparse.

Implications for the program are that the use of a toxicant in combination with an IGR may be counterproductive in that the toxicant may remove a significant proportion of the workers that store and circulate the IGR, thereby reducing levels of the compound in the colony. The possibility that an IGR may not cause permanent sterility is just one of a number of factors that may affect efficacy of a bait treatment and reinforces the need for multiple treatments of whatever product is used.

What are the effects of methoprene?

In field trials conducted in the USA on methoprene (0.5% active ingredient), with one application, efficacy rates ranged between 66% and 98% (average 83% over several studies). The times taken to reach maximum efficacy ranged from 4–8 months (the 98% efficacy was achieved over eight months). Most of the trials had similar if not the same concentration of active ingredients, bait matrix and application rates, yet still showed a large variation in results demonstrating that there are many factors that may influence the success of a treatment. These include factors such as temperature, rainfall, humidity, cloud cover, topography and disturbance. Interpretation of results is sometimes confused by RIFA invasion from outside the trial plots.

What are the effects of pyriproxyfen?

In field trials with one application of pyriproxyfen, efficacy rates ranged between 86.9% and 100% (average 95% over five studies). The times taken to reach maximum efficacy ranged from 2–9 months, but in a few studies efficacy rates of 95–100% were achieved in 2–6 months. Pyriproxyfen is relatively stable in sunlight with a half-life of 3–16 days.

From these limited studies on the IGRs methoprene and pyriproxyfen, pyriproxyfen appears to be more efficacious, faster working and more stable than methoprene. However, methoprene has the advantage of being able to be used closer to water bodies and sensitive areas than pyriproxyfen.

Nuptial Flights

How far do RIFA alates fly?

The flight range and behaviour of RIFA alates is of key importance to the eradication program in Brisbane, particularly in determining the width of treatment buffers and sometimes the timing of bait applications. The standard treatment zone that has been employed throughout most of the program is the area encompassed within a 2 km radius circle around a new RIFA find. This is based on research in the USA showing that 99% of alates fly less than one mile from the origin of their flight (Markin *et al.* 1971). The study by Markin *et al.* (1971) was purportedly on the black imported fire ant *Solenopsis richteri* but could equally have been on RIFA since the two were not distinguished as different species until 1972 (Taber 2000). In any event, the two imported fire ants have similar biology, nests, colony populations, foraging behaviours, diets, feeding behaviours and development, and are known to form hybrids (Taber 2000).

Markin *et al.* (1971) carried out their studies in Louisiana and Mississippi. They found that males normally emerged from the nests before females. Females were captured in the air up to a height of 800 ft (243 m) and males up to a height of 1000 ft (303 m); most were found at between 60–150 m. Males formed a layer covering the entire area over which the flight was taking place. Following the descent of newly mated queens, 95% if them were found to be inseminated. A total of 99% of queens were believed to have flown less than one mile (1.6 km) from the origin of their flight. Chartered fishing boats working out of Gulfport Harbour picked up fire ant alates at a maximum distance of 6 miles (9.6 km) from the nearest point of land. However, alates were found on un-infested Cat and Ship Islands located 7 and 10 miles (11–16 km) respectively from land.

Female alates, upon leaving the parental colony and embarking upon a mating flight, essentially represent a limited 'packet' of nutrients and energy, and must fly, mate, construct a claustral chamber, and feed and care for her brood to found a colony. An energetics study by Vogt *et al.* (2000) estimated that the flight capability of RIFA females is limited to <5 km in the absence of wind and they fly for an average of 45 minutes.

Morrill (1974b) noted that colonies sometimes had more than one mound, and flight could occur from either or both mounds.

Conclusions

99% of RIFA alates fly for less than 2 km and few more than 5 km unaided by wind. However, with wind assistance they could be carried for 16 km or more. The estimated average flight time is 45 minutes.

Current investigations into the relatedness of RIFA colonies using microsatellites will provide an accurate picture of the dispersal characteristics of RIFA in Australia. Initial analysis has found higher than expected levels of inbreeding in the Australian populations and this result is delaying interpretation of the data.

What abiotic factors influence the timing of monogyne flights?

The characteristics of abiotic conditions required for the majority of nuptial flights have mostly been studied in the southern states of the USA. Time of year, temperature, precipitation, humidity and wind speed are the main causes of nuptial flight events (see Appendix 1). Interestingly, a study of a RIFA population in Taiwan (Xu *et al.* 2009) revealed similar results to the USA studies; however, they observed nuptial flights taking place in 60% relative humidity compared to reports from the USA of over 80% relative humidity (Rhoades & Davis 1967; Markin *et al.* 1971)

In general the abiotic conditions required for nuptial flight are:

- Occurrence at any time of year, although are more likely from early spring onwards
- A wind speed below 5–8 km per hour
- Air temperatures between 23°C and 33°C (Rhoades & Davis 1967; Markin *et al.* 1971; Morrill 1974b; Bass & Hays 1979; Xu *et al.* 2009)
- Soil surface temperatures above 18°C
- Relative humidity of greater than 80%
- A minimum of rain in the preceding 24 hours.

The intensity of flights is usually proportional to the abundance of alates in the colony (Markin *et al.* 1971).

Ants which fly in the spring may have a better chance of survival than those that fly in autumn when conditions may be drier, as newly mated alates have difficulty in establishing colonies during periods of low temperature or during times of low rainfall (Rhoades & Davis 1967; Markin *et al.* 1971). In addition, flights occurring in spring allows the new colony the whole summer in which to become established (Markin *et al.* 1971).

Although flights can take place at any time of the year, they tend to occur in spring and early/mid summer when air temperatures are between 23°C and 33°C. They have been observed flying at temperatures as low as 15°C (Xu *et al.* 2009).

It appears that even during the colder seasons, if the temperatures are high enough, a nuptial flight may take place on the second or third day following a rain event (Morrill 1974b). The general consensus is that 0.2–8.6 mm of rain must fall otherwise the ground will be either too dry or too wet for claustral chamber formation (Morrill 1974b; Bass & Hays 1979). Whitcomb *et al.* (1973) also states that large flights tend to occur during periods of high humidity following rainfall after weeks of drought early in the summer.

Conclusions

Nuptial flights can occur at any time of the year but are more likely in spring and early/ mid summer. Conditions favouring nuptial flight are a wind speed below 5-8 km per hour, air temperatures between 23°C and 33°C, soil surface temperatures above 18°C, relative humidity of greater than 80% and 0.2–8.6 mm of rain in the preceding 24 hours. Alates which fly in the spring may have a better chance of colony founding than those that fly in autumn.

Little work has been conducted on factors influencing flights in the Australian environment. In Brisbane, flights have been recorded in all seasons but synchronised flights have been observed on only two occasions viz. in the summer (January and February) after good rain. The low density of the population in Australia has limited these observations.

How many alates participate in a monogyne nuptial flight?

Morrill (1974b) and Tschinkel (2006 p. 141) reported that most monogyne flights were composed of under 1000 alates and some flights from mounds regularly consisted of less than 10 alates. Markin *et al.* (1971) estimated that in the height of summer, there were more than 1000 alates taking flight from a single colony, although this was an unusual event as most flights consisted of between 100 and 500 alates. In Florida, colonies average 690 alates per flight during June (peak flight season). The number of alates from four different habitats was about 462 000 per hectare (Morrill 1974b).

Winter flights were much lower in intensity (Markin *et al.* 1971) with only a few dozen alates leaving each mound. After winter, alates flew in a number of small mating flights when conditions were suitable.

There is apparently no correlation between mound density and the number of alates produced (Morrill 1974b), and each mature colony can participate in several nuptial flights during each flight season (Tschinkel 2006).

Conclusions

The number of alates that participate in nuptial flights in any one event depends on the time of year the flight is taking place. In the peak flight season (spring/summer) an average of 600-700 alates, sometimes more than 1000 alates, take flight from each nest. Winter flights are usually much lower in intensity with only a few dozen alates leaving each mound. Each mature colony can participate in several nuptial flights during each flight season.

What is the survival rate of a monogyne foundress queen?

Founding RIFA queens are heavily predated upon by various insect species. Queen predation occurs most predominately during the nuptial flight, upon landing after insemination, and during establishment of the claustral chamber before the first brood have hatched.

Whitcomb *et al.* (1973) observed five different species of dragonfly feeding on RIFA alates on the wing at different altitudes within the nuptial flight swarm, and have identified at least two species of birds feeding on alates in flight. A further bird species was identified feeding on alates returning toward the ground. Markin *et al.* (1971) reports predation by two species of dragonflies and large numbers of swallows. Glancey (1981) also reports on predation by dragonflies. Whitcomb *et al.* (1973) estimates that on the wing, at least three quarters of queens survive the nuptial flight.

Whitcomb *et al.* (1973) found that the rate of predation was high during the period after the de-alate founding queens had landed before they started constructing the claustral chamber. Both Markin *et al.* (1971) and Whitcomb *et al.* (1973) assert that the main predator of founding queens in heavily infested areas are RIFA workers of other RIFA colonies. Whitcomb *et al.* (1973) has observed workers dismembering queens from competing colonies and taking them into already established mounds.

In some parts of the USA, in less heavily infested areas, the most important predator of RIFA founding queens is the predacious ant *Conomyrma insana* (Markin *et al.* 1971; Whitcomb *et al.* 1973). Nickerson *et al.* (1975) found that 97% of inseminated RIFA queens that landed on a nest of these ants were killed, and none of the 3% of survivors were able to successfully dig a claustral chamber or found a new colony within areas occupied by *C. insana*.

Whitcomb *et al.* (1973) observed at least nine other species of ants, and various spiders, earwigs and beetles, attacking RIFA queens during the landing period, and report that of 100 queens observed, only five queens succeeded in digging a claustral chamber.

Once burrowed, the RIFA queen is also susceptible to predation by RIFA workers, who tunnel to the newly constructed chamber and destroy both queens and brood (Whitcomb *et al.* 1973). Nichols and Sites (1991) discovered a total of 17 species of ants predating on burrowed queens, 83% of which were from the same ant subfamily as RIFA.

Other reported predators of burrowed queens are earwigs, beetles and the eastern bobwhite quail (Whitcomb *et al.* 1973).

With all these factors in mind, Whitcomb *et al.* (1973) believe that mortality due to predation at all stages of the nuptial flight and colony founding probably exceeds 99%.

Conclusions

In areas heavily infested with RIFA, the main predators of inseminated RIFA alates appear to be RIFA workers from competing colonies. In less heavily infested areas, the main predators appear to be other species of ants. Overall, mortality of founding queens due to predation during and after mating flights probably exceeds 99%.

The above results are based on observations and experiments on the RIFA population in the USA. A similar predation rate could be expected within the infested areas of Australia, where although the density of the RIFA population is generally much lower than that seen in USA, the Australian ant fauna is much more diverse and aggressive.(Andersen 1997). Outside of the infested area the rate of spread of RIFA may have been suppressed due to higher predation by the local ant fauna when compared to that observed in America.

Do polygyne alates participate in nuptial flights?

Polygyne queens are thought to typically mate in their natal nests, dispersing only short distances before seeking adoption by another colony (dependent founding). 'Budding' of the colony also occurs whereby an inseminated queen takes a number of workers with her to help found a new colony. However, unusual flying behaviour of swarms of alates in Georgia USA was investigated by Goodisman *et al.* (2000) and was determined to be polygyne alates that have mated on the wing.

The authors captured large numbers of alates flying at low altitudes in dense swarms. These alates were flying at head level, but also frequently flew up out of sight, or touched down briefly on the ground. The participants of these flights were almost all heavy polygyne females (there were only three males collected in approximately 600 alates) and which appeared to have flown only a few hundred meters.

The authors postulate that the behaviour of these queens indicate that these low swarms constitutes a type of searching pattern that may either represent a post mating dispersal mechanism or nest site selection. Either way, it appears that the mated alates are trying to locate suitable polygyne nests which they will attempt to enter.

Conclusions

Polygyne queens are thought to typically mate in their natal nests, dispersing only short distances before seeking adoption by another colony (dependent founding). 'Budding' of the colony also occurs whereby an inseminated queen takes a number of workers with her to help found a new colony. Nuptial flights do occur although the number of male alates in swarms may be low. Low-altitude post-mating flights of queens have been observed which may be for the purpose of selecting a suitable landing site.

Are RIFA queens attracted to disturbed land when searching for landing sites?

RIFA queens appear to deliberately select landing sites (Markin *et al.* 1971; Tschinkel 2006; King & Tschinkel 2008), searching for visual soil clues, flying until they have found a likely spot (Tschinkel 2006) or have run out of allocated energy. Generally, their preferred landing spot is disturbed soil (Tschinkel 2006).

In the south-eastern USA, Markin *et al.* (1971) found that the highest concentrations of both queens and the resulting new mounds were on areas that were cleared of heavy vegetation, such

as newly cultivated fields or dirt roads. Also in the USA, studies on the RIFA populations in northern Florida (Tschinkel 1988) prove that extreme disturbance, especially of the soil, strongly favour the establishment of RIFA colonies. Tschinkel (1988) found that when soil disturbance is great enough to bring in early succession weeds, such as along paved roadsides or recently cleared land, RIFA are very abundant. On the other hand, in moderately disturbed habitats, RIFA are present but not as abundant (Tschinkel 1988).

Stiles and Jones (1998) surveyed five disturbed habitat types in South Carolina, USA and found the highest density of RIFA mounds in narrow disturbed habitats (e.g. roads through forests). In all habitats, mounds were located significantly closer to road or forest edges than in open areas.

Summerlin *et al.* (1977) showed that the dominance of RIFA in a habitat increased dramatically following specific reduction of the native ant community with poison bait.

King and Tschinkel (2008) in their comparison of RIFA in disturbed and undisturbed habitats, also demonstated that RIFA survived better and reached higher abundance in disturbed plots. They concluded that human activity such as land clearance is the primary force that drives RIFA invasions, and that RIFA are the 'passengers' rather than the 'drivers' of the resulting ecological changes.

In Brazil, seasonal flooding or gross disturbance of the land prevents the occurrence of some specialised species of ants that prey on other ant species (Tschinkel 1988), thereby providing an opportunity for RIFA to invade these areas. From this, Tschinkel (1988) hypothesised that this is why RIFA have developed their dependence on ecologically disturbed land.

There is also a strong association between RIFA and weedy plant species in disturbed areas (Tschinkel 1987, 1988), suggesting that recently cleared land is the preferred habitat for nest building after nuptial flights.

Conclusions

Numerous studies have indicated that the preferred habitat for RIFA is recently cleared and disturbed land such as newly cultivated fields or vegetated land cleared for development. This characteristic may be derived from their native habitats where RIFA are opportunistic in invading recently flooded or grossly disturbed lands where other predatory ants have been displaced. It is therefore likely that RIFA alates deliberately select disturbed land when searching for a landing site.

This pattern has also been observed in Australia and has become more obvious since 2008 when baiting has been reduced and there is greater survival of colonies. Colonies are now seen to be regularly associated with disturbed land (market garden, new development, road works). An analysis of 520 infested sites detected in 2009 and 2010 found that 410 or 79% of infestation had direct association with land that was either continually disturbed (cultivation) or had been disturbed in the recent past (residential development, infrastructure development).

Incipient Colonies

How long before incipient colonies are visible?

Callcott and Collins (1992) found that plots that had been cleared of RIFA mounds (a 98.9% reduction) were gradually reinfested over the next 13 months. Reinfestation began to appear 4 months after clearing with colonies that had worker numbers of 100–10 000 and contained brood. At 4 months post treatment they detected colonies that had greater than 10 000 workers plus brood. However these colonies were believed to be the result of mature colonies outside the treated area relocating over time through the authors' 'buffer zone' in the outer edges of a plot, or perhaps more likely large broodless colonies (greater than 10 000 worker but no brood) having adopted a newly mated queen.

Markin and Collins (1973) excavated over 1000 incipient mounds in southern Mississippi. The following is a summary of their findings of the time taken for a fully functioning (producing reproductives) colony to develop. The authors assume from these developmental times that mounds would be readily visible between 3 and 5 months after founding.

- At 30 days, the opening from the nest to the surface was very small, 2–3 mm in diameter, and marked with a small, inconspicuous crater of dirt. Little additional excavation was done until the next brood of minim workers was produced.
- At 60 days, the opening was still small, but it was usually surrounded by a distinct crater of dirt 2–3 cm in diameter (there was either high mortality or interconnecting of the new colonies by this time).
- At 90 days, the surface mound was usually 3–7 cm in diameter and 5–7 cm in height.
- At 5 months, the mound was 7–12 cm in diameter and 5–7 cm high (fully distinct foraging territories were developed by this age).
- At 7 months, mounds were 5–20 cm in diameter and 10–12 cm in height, with vertical tunnels extending downward 69–90 cm several horizontal tunnels usually left the mound 2.7–5 cm below the ground surface and radiated out under the surrounding territory.

The worker population did not increase during winter; however, the mound itself usually continued to grow as the workers added to it and repaired damaged caused by the winter rain.

Tschinkel (2006) also believes that colonies are detectable within 3–5 months after founding by a queen.

Conclusions

Incipient colonies generally become visible around 3–5 months after founding, and this is when they are around 3–7 cm in size. At this stage the only visible sign of the mound is a disturbance in the earth, rather than a distinct mound. Development times for mounds are likely to be variable and be dependant upon type of soil, rainfall, availability of resources and other biotic factors of the site where an alate lands.

Foraging Activity

What factors influence RIFA foraging activity?

Temperature

Based on observations of RIFA in the USA, RIFA activity is influenced by soil temperature, humidity and ambient light (Markin *et al.* 1974; Porter & Tschinkel 1987; Martin 1996; Vogt *et al.* 2003; Wuellner & Saunders 2003). Optimal foraging temperatures range from 22–36℃ in northern Florida (Porter & Tschinkel 1987), 29℃ in Oklahoma (Vogt *et al.* 2003), and 20–30℃ in Texas (Wuellner & Saunders 2003).

Both low and high temperatures appear to reduce RIFA foraging activity. Laboratory trials on RIFA colonies report the lower critical thermal limit—temperatures where ants can no longer function effectively to escape extreme conditions—as 3.6℃ (Cokendolpher & Phillips 1990). In field observations in Texas, RIFA workers were not observed foraging below 10℃ (Markin *et al.* 1974; Wuellner & Saunders 2003) or 15℃ (Porter & Tschinkel 1987).

RIFA upper critical thermal limit has been recorded as 40.7℃ (Cokendolpher & Phillips 1990). In Texas, RIFA activity reduces when temperatures rise above 40℃ (Porter & Tschinkel 1987). This study also reported limited foraging activity above 50℃, attributing this observation to the occurrence of sub-surface foraging tunnels, which would allow workers to continue surface activity while reducing their exposure time to extremely high temperatures (Porter & Tschinkel 1987).

Humidity

RIFA are susceptible to dehydration, so changes in relative humidity affect RIFA activity. If humidity is high, foraging may still occur despite high temperatures (Hölldobler & Wilson 1990). The combined influence of temperature and humidity appear to provide a 'temperature/humidity envelope' that together creates optimal conditions for foraging (Hölldobler & Wilson 1990).

Despite the 'danger' of high temperatures combined with low humidity, RIFA may still continue to be active. In Texas, dead RIFA workers were observed at baits, suggesting that recruitment to lure stations continued despite temperatures being high enough to cause death (Claborn & Philips 1986). However, such observations may only be relevant to foraging behaviour at large immobile food sources and may not apply to scouting behaviour.

Ambient light

In areas where mounds are covered in full or part shade, levels of foraging activity are lower than that observed in more open areas (Porter & Tschinkel 1987; Martin 1996; Vogt *et al.* 2003); however, shade can provide a means for mounds to remain active in the heat of the day, especially during summer (Martin 1996).

Daily and seasonal activity

RIFA have been observed foraging during the day and night. Because of the variation in methods used to sample RIFA over 24hr periods, it is difficult to assess whether RIFA were actively foraging for food during the night, or whether they were maintaining a foraging presence at baits that were discovered during the day. Nevertheless, continual foraging by RIFA has been recorded in multiple studies.

In North Carolina, ants foraged on soybean plants during the day and night in summer, with maximum activity between 10:00 and 12:00 (Kidd & Apperson 1984). In Mississippi, RIFA foraged

throughout the day and night in the warmer months, with the highest abundance recorded during the night and the lowest abundance recorded between 12:00 and 15:00 (Vogt *et al.* 2004). In Texas during summer, RIFA foraged predominantly at night, with maximum activity occurring between 22:00 and 1:00 (Phillips *et al.* 1986; Claborn *et al.* 1988; Stein *et al.* 1990). In Brisbane, observations recorded in spring on polygyne nests at Prior's Pocket showed continual presence of RIFA at lures over three 24 hr periods, with reduced abundance during the middle of the day and overnight (McNaught & Lobry de Bruyn, in preparation).

During the year, RIFA are less active once temperatures fall in the cooler months, with a distinct drop in activity in late autumn (Markin *et al.* 1974; Porter & Tschinkel 1987; Vogt *et al.* 2003). Foraging activity probably occurs year long in southern Florida and southern Texas, while in northern Florida the temperatures are too cold for foraging for 15% of the year (Porter & Tschinkel 1987). In Oklahoma, foraging ceases from mid December to mid March and it is not until June that conditions allow for maximal foraging activity (Vogt *et al.* 2003).

Other observations of RIFA foraging at eight sites around Brisbane recorded continual foraging year round (Plowman *et al.* 2006). In summer, RIFA were most active during early mornings and afternoons, avoiding or reducing their numbers during the heat of the day (Plowman *et al.* 2006). In autumn and winter, RIFA began foraging around mid-morning, after temperatures increased (Plowman *et al.* 2006).

Despite the ability of RIFA to forage year round in suitable conditions, lower temperatures reduce the food needs of a colony, as the colony starts to supplement their intake with reserves stored within the colony (Tschinkel 2006). As brood production ceases at around 24°C (Porter 1988), and effective foraging ceases around 15°C in Texas (Porter & Tschinkel 1987), any foraging activity observed during winter may not equate with 'efficient' food uptake.

Monogyne vs polygyne foraging behaviour

Unfortunately, much RIFA literature fails to mention which reproductive form (monogyne or polygyne) the research was completed on, so it is not always possible to conclude that particular observations are intrinsic to one form or the other. Of the studies that specified which form they studied, there does appear to be differences in foraging behaviour and activity between monogyne and polygyne RIFA.

In Texas, the majority of polygyne workers were observed foraging at lure stations within around 4 m of their colony (Weeks *et al.* 2004). This is in contrast to monogyne colonies that secure and defend a foraging territory around the nest, which ranged from 12 to 197 m^2 in Florida (Adams 2003). Because monogyne colonies defend their territories and compete with neighbouring nests for food, but polygyne colonies do not, the potential for polygyne colonies to discover and monopolise available food resources is much higher than monogyne colonies.

Conclusions

RIFA foraging activity is influenced by temperature. In the USA, optimum foraging temperatures are between 22–36°C. RIFA activity is impeded below 15°C and reduced above 40°C. RIFA are prepared to forage both day and night, though it is often unclear whether night activity is true 'foraging' or monopolisation of food previously found. Monogyne workers travel further than polygyne workers when foraging. RIFA are also active throughout the year in suitable climates, though foraging during winter is reduced and supplemented by the colony's internal reserves. This suggests that foragers may not effectively uptake bait treatment applied in the winter months compared with the warmer months.

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Mound Disturbance

How do RIFA respond to disturbance and can this affect treatment?

The literature contains contradictory reports regarding the effects of nest disturbance on the behaviour of RIFA. Some suggest that the ants are supersensitive to disturbance and will relocate the queen and even abandon the nest at the slightest hint of danger while others indicate a tolerance to even major disturbance such as ground cultivation. Determining the nature and circumstances of this response has important implications for the efficacy of the treatment regime currently employed against RIFA in Queensland. If the ants are sensitive to minor disturbance, such as kicking or probing the nest, then they may relocate prior to treatment and in the process of moving not forage for the applied bait.

Some of the evidence for super sensitivity comes from the pesticide industry; registration labels on fire ant baits generally suggest that the mound not be disturbed prior to bait application (Hu 2009). Sorensen and Trostle (1986, cited in Taber 2000) in discussing the use of drenches state 'when using these drenches against a nest, one should sneak up on the mound without causing the ground to vibrate with heavy footfalls. Otherwise the queen might be hustled into the safety of the depths'. Studies from the USA (Green 1967; Wilson *et al.* 1981) suggest ploughing or dragging of fields as a cultural control method for RIFA as they noted ant movement away from fields treated in this manner.

A major shortcoming of these early studies is that they had no reliable method of identifying individual colonies; a new mound may therefore be a relocated colony or a satellite mound from a nearby existing colony which is expanding its territory (Colby *et al.* 2008). In regard to major disturbance such as ploughing, Colby *et al.* (2008) used microsatellite genotyping of colonies to detect changes in number and location of colonies. They found that the majority of colonies (79%) on ploughed plots remained after disturbance with 46% of those colonies rebuilding mounds on the site of their original mounds. Mound rebuilding began almost immediately after ploughing.

Hu and Ding (2009) investigated the question of mound disturbance prior to bait application, as opposed to label recommendations, and effects on bait removal and treatment efficacy. They disturbed mounds with a shovel and immediately applied hydramethylnon and methoprene bait. They found that disturbance did not reduce foraging activity of RIFA, except for about a 10-minute delay in foraging, and there was no significant difference in the amount of baits foraged between disturbed and undisturbed colonies.

Conclusions

RIFA is a territorial insect which goes into defence mode in response to disturbance caused by animals, humans or environmental factors. If the disturbance is minor and/or non-persistent, alerted workers will quickly revert back to nest repair and foraging. Bait uptake and treatment efficacy should not be affected by, for example, prodding the nest to determine activity level or sampling for genetics. If the disturbance is major, there is an equal possibility that the ants will relocate or reconstruct the original nest. Ants may not feed or forage effectively during the relocation process but should be detected during the post-treatment validation stage.

In Brisbane, in situations where there is constant disturbance there appears to be a reduction in the efficacy of bait treatments. This is highlighted in market gardens but was also deemed to be the cause of apparent treatment failure at a development site where despite continual baiting RIFA colonies were detected over a period of three years.

Is relocation a common response by RIFA to application of bait treatments?

Byron and Hays (1986), in mapping the tunnel systems of a 16-colony neighbourhood of RIFA found that more than three quarters of the mounds were connected to one or more other mounds through underground tunnels. Workers from connected active mounds responded to each other with tolerance, so the authors presumed (but did not confirm) that they were probably from polygyne colonies. In contrast, colonies whose workers were aggressive to each other were never connected by tunnels and were probably separate monogyne colonies with individual territories and tunnel systems. Active mounds of both types were usually connected to inactive mounds as well, probably as a result of underground migration from one mound to another, as occurs within a territory one to several times a year.

Hays *et al*. (1982) observed frequent movement of RIFA colonies to either new locations or to old abandoned mounds. They found that only a few colonies remained in the same location for an entire year. Green (1952) states that one colony was observed to construct three mounds in a 24-hour period.

Banks *et al*. (1966) mention that one problem with early attempts at control using persistent soil pesticides such as the chlorinated hydrocarbons was the tendency of fire ant colonies to fission (split) during treatment. This increases the number of mounds and suggests that the colonies were of the polygyne type (Taber 2000). Drees and Vinson (1990) in trials with a chlorpyrifos mound drench on both monogyne and polygyne colonies, found new mounds within the treated areas and speculated that some of these could be small queen right colony fragments that escaped the treated mound.

Barr and Drees (1995) noted the presence of 'satellite' mounds, defined as small freshly-produced ant mounds within a foot (0.3m) of the treated mound, in response to RIFA nest injection with acrolein (a fumigant). They consider satellite mound formation to be different to mound 'shattering', which occurs when treatment causes an ant colony to not only move, but split into more than one smaller colony. Oi and Oi (2006), citing Williams and Lofgren (1983) and Barr and Drees (1995), add the words 'before they become inactive' after 'splitting into several nests'.

Williams and Lofgren (1983) evaluated ten pesticides for individual mound treatments. In every treatment some of the colonies moved from their individual mounds including mounds treated only with water. 80% of the colonies treated with chlorpyrifos moved compared with 20% for hydramethylnon bait (the range for the 10 chemicals was 11% to 93%). This high rate of colony movement is not unusual, since RIFA colonies will often relocate their mound for no apparent reason (Hays *et al*. 1982). According to Williams and Lofgren (1983) this problem is one of the major causes of differences in results reported by various researchers with the same chemical. A related factor involves the ability to determine whether or not the queen may have been killed. If so, these satellite colonies will die; if not, the queen will be cared for by the workers and the colony will rebuild itself.

In terms of distances moved by a colony in response to treatment, Lemke and Kissam (1987) observed relocation of up to 5 m, Showler *et al*. (1990) observed colonies that moved up to 6 m. Green (1962, 1967) stated that colonies may move up to 30 m under stressful conditions, which were defined as food scarcity, population pressure, physical mound disturbance or wet soil conditions.

In Brisbane, in the early stages of the eradication program, a common response of RIFA to direct nest injection with chlorpyrifos was splitting or satelliting of mounds (C. Jennings, pers.comm.). In 2010 at the suburbs Browns Plains and Greenbank, following baiting with indoxacarb, there have

been several instances of new mounds appearing in the plots within a few weeks of treatment, or inactive mounds suddenly becoming active again; some relocated mounds/colonies eventually died but others persisted.

Genetic analyses to determine whether such mounds are a relocated colony or a new colony are pending.

Conclusions

Both monogyne and polygyne colonies can have multiple linked mounds and movement between these mounds is a common occurrence even in the absence of disturbance. Colony relocation is a common response to pesticide treatment and survival of such satellites will depend on whether or not the queen has been killed (however, note that some orphaned colonies may adopt a newly mated queen). Absence of worker brood or a shift towards male reproductives may indicate queen death but long-term monitoring may be the final arbiter. Genetic analysis of mounds/colonies is essential in interpreting the results of pesticide trials. When using direct nest injection, treatment of all mounds, active or inactive, is essential to maximise colony kill.

In Brisbane, mound relocation or 'satelliting' is a common response to direct nest injection and has also been observed for broadcast bait treatments.

Is flooding an effective dispersal mechanism for RIFA?

Tschinkel (2006) described RIFA response to flooding as follows,

> Having evolved on the flood plain of a major river system that is under water for months at a time, (the Pantanal of Paraguay and Brazil), they cope with these workaday floods in a remarkable way. As the water rises in their nest chambers, the entire colony moves upward, finally setting sail from the top of the mound, a couple of hundred thousand ants holding hands to form a floating mat. Workers, brood, sexuals, the queen, all together pull up anchor to drift for weeks, living off food stored in worker crops and eventually cannibalizing their brood like seafarers cast adrift on the South Pacific. Finally the flood subsides or they drift ashore, whereupon they dig a new nest and move in. Crisis over.

Hölldobler and Wilson (1990) made a brief mention of this 'rafting' response of RIFA and noted that this floating mass of ants will often 'latch on' to grass stalks or other vegetation and hold there until the water subsides, whereupon they make a new nest.

In South America, Lennartz (1973, cited in Buren *et al.* 1974) suggests that, '…dispersal via the well-known phenomena of massing together and floating downstream during flooding could easily account for the far south and far north populations of RIFA along the Paraguay and Guapore rivers, respectively'. However, Buren *et al.* (1974) questioned that if the species is 'at home' and fairly abundant in the flood plain of the Paraguay River, why, apparently, is it absent from the flood plain of the Parana River which joins the Paraguay near where RIFA has been captured in Argentina?

It is interesting to note that areas of regular and continual flooding do not support large populations of fire ant (Tschinkel 2006).

Wojcik (1983) stated that the two natural modes of dispersal of RIFA are mating flights and floating on water, but that mating flights are the primary mode.

In studies on the competition between fire ants and Argentine ants (*Linepithema humile*) in their native range, LeBrun *et al.* (2007) described the strategies used by each species to cope with

inundation. Argentine ants retreat into trees and other emergent vegetation, housing brood and queens inside dead limbs, under loose bark, or in dense clumps of leaves. RIFA, in contrast occupies the apical portions of its nest mounds and will float en masse to higher ground if mounds become completely submerged. The ability of these species to respond rapidly to disturbances such as flooding events may predispose them for success in the human-modified environments of their introduced range.

Morrill (1974a) investigated dispersal of RIFA by water. He found male and female alates floating on a lake surface after a mating flight and saw female dealates constructing brood chambers on a narrow strip of sand on the shore (some of these he believed had drifted to the shore). Wave action caused by a storm resulted in many of the ants breaking through the water surface and presumably drowning. He also collected alates from a log jam but there was high mortality of these in the laboratory due he thought, to fungal attack. Newly mated queens held in conditions similar to those found in water-soaked logs all died. He also found clumps of ants floating in a lake after heavy rain and 2 out of 11 clumps collected contained mated queens. A floating clump with brood was observed in a flooded river. He concluded that rivers may carry mated females or during floods, entire colonies downstream.

According to Vinson and Sorensen (1986), RIFA can survive long periods of submersion under water reviving once the water is removed. Green (1967) comments that,

> In general, the mounds do not deteriorate badly from rain and weathering. This is apparently due to a bonding or waterproofing substance the ants use with the soil as the mounds are constructed. The surfaces of galleries have a waxy feeling to the touch, and the mounds will withstand complete inundation with little apparent ill effects.

In Brisbane in early 2007, an analysis was made of all colony points recorded during the NRIFAEP to that date. One of the factors examined was distance from a waterway. It was a basic analysis that divided colonies into two categories >50 m from a waterway and <50 m from a waterway. Of 3434 colony points known at the time, 55 or 1.6% were within 50 m of a waterway. It was concluded from this data that flooding was playing a minimal role in the long distance dispersal of RIFA in South East Queensland, but was most likely a local dispersal agent.

Following flooding over a site with a high-density polygyne RIFA infestation at Purga, Brisbane in October 2010, masses of RIFA with brood were observed in clumps of grass and other vegetation just above the waterline and at the bases of trees, again above the waterline. This agrees with the comments of Hölldobler (1990) about ant rafts clinging to vegetation. Large numbers of ants were found in debris along the margins of the flood but no cohesive groups were observed. However, within the flood zone, ants with brood and sexuals were commonly found associated with larger-diameter woody debris, either scattered or piled in heaps against trees. They were also common in tree stumps and logs which may have been only partly submerged and on small elevated hillocks dotted through the flood zone. As the water subsided, live workers and brood were found in many nests that had been submerged for at least 24 hours, suggesting that they had been caught in flash flooding before they had time to evacuate. A mound count was conducted post-flooding in two 0.28 ha science plots in which 89 mounds and 57 mounds respectively had been recorded in September 2010. An estimated 66% of the first plot and 10% of the second plot would have been submerged during the flooding. Mound counts post-flooding were 188 and 110 respectively, a doubling of previous counts, indicating considerable colony migration, ‘splitting’ and local movement in response to flood. Counts in a third science plot which was not flooded showed that the number of mounds remained much the same. Surveys along the path of the flood showed a high incidence of mounds just above the high-water mark and concentrations of infestation were found in oxbows in Purga Creek over a distance of about 2 km.

This site was surveyed in 2005 without infestation being detected. In 2010 it is estimated that there were 18 000 mounds across an area of approximately 70 hectares. The infestation is contiguous with the exception of a small pocket to the north. Based on rainfall records it is likely that the site is

flooded regularly and the density and pattern of infestation across the area is likely to have been affected by this. Certainly the north south spread appears to be along the observed flow of flood water.

Conclusions

All reports indicate that RIFA are well-adapted to cope with flooding events and that flooding may promote dispersal. However, none of the reports indicate the distance that may be travelled by ant rafts. It is likely that fast flowing, turbulent waters, such as in flash flooding, will break up the ant rafts greatly reducing the likelihood of colony re-establishment. Slow-rising and slow-flowing water may allow rafts to remain intact but distances travelled before the rafts encounter vegetation or high ground may not be great.

The pattern of infestation observed at Purga (part of the Brisbane infestation) suggests that water dispersal is localised but that the multiple flood events have gradually spread the infestation down the nearby waterway. However, to date there is no evidence of long distance dispersal from the site with no polygyne colonies found downstream despite operational activities including surveillance and ground based treatment occurring many kilometres downstream between 2008 and 2010.

Ants are more likely to raft with slow-rising waters, and are more likely to remain within the mound during flash flooding. Greater survival with slow inundation with water corresponds with observations from the laboratory where extraction of colonies requires slow flooding if the colony is to survive. While there is still the possibility of long distance dispersal with flooding (e.g. rafts, or ants on or inside a floating log), there is presently no obvious association with waterways in Brisbane, as compared to the clear association that has been observed with disturbance associated with development (both residential and infrastructure).

Orphaned colonies

Can a colony that is orphaned by a toxicant bait treatment survive?

Usually when a colony loses its queen, whether because of a chemical treatment, old age or some other cause, the colony dies (Tschinkel 2006). In some cases, if the colony contains female alates (virgin) at the time of orphaning, one or more of these females will shed their wings and begin laying unfertilised eggs. Unfertilised eggs can only develop into males, but these broods of males give the colony a last chance at reproductive success during upcoming mating flights (Tschinkel 2006).

Another situation in which an orphaned colony may survive is if the colony adopts a newly-mated queen (Vander Meer & Alonso 2002; Tschinkel 2006). This can occur when alates overwinter in the nest and begin mating flights on the first warm days of spring. These alates lack both the behaviours and the metabolic resources to found their own colonies independently. Instead, they randomly seek out mature fire ant mounds and attempt to gain entry. Most are killed by the workers, but if the colony happens to be orphaned, the chance of gaining entry is substantial (possibly as high as one in six) (Tschinkel 2006). Once accepted, the adopted queen exploits the host colony's labour to rear her own offspring so that the colony gradually comes to consist of her own daughters. When this process is complete, the means by which the queen founded her colony can no longer be determined.

Monogyne fire ant workers are territorial and aggressive towards members of other fire ant colonies, while polygyne workers are not aggressive towards non nest-mates. Workers from both monogyne and polygyne fire ant colonies execute newly mated queens after mating flights. However, Vander Meer and Alonso (2002) found that queen-less monogyne and polygyne worker groups were not aggressive towards newly mated queens. They postulate that fire ant queens produce a recognition primer pheromone that increases the sensitivity of workers to differences in nest-mate recognition cues. This pheromone prevents the adoption of newly mated queens and when absent allows queen-less workers to adopt a new queen readily.

Conclusions

It is possible that despite an original queen being killed by a toxicant treatment, a colony may continue to survive through the adoption of a newly mated queen. While 100% kill from a single treatment is possible with any of the treatments used in the fire ant eradication program, where multiple nests are involved, this is probably a rare event given the range of variables that may apply. These variables include rainfall, ground moisture or UV which can all affect bait efficacy, as well as insufficient bait coverage associated with topography or application method. Further variables include non-foraging by workers, as well as competition with other ant species.

Population Dynamics

How stable are RIFA populations and what is their rate of spread?

RIFA reproductive forms

RIFA are unusual among the world's invasive ant species for having two different reproductive forms: monogyne (single queen) and polygyne (multiple queen) colonies. In their native range, RIFA colonies are mostly monogyne, with occasional polygyne colonies that tend to contain several closely-related queens (Ross *et al.* 1996). In the USA, monogyne RIFA colonies were detected in the 1930s, and it wasn't until the 1970s that polygyne colonies—often containing many unrelated queens—were officially recognised (Ross *et al.* 1996).

Both reproductive forms display different physical, behavioural, reproductive, and genetic traits. While genetic typing can easily distinguish between the two forms, researchers most often use these physical and behavioural differences to identify each form in the field. Monogyne colonies tend to contain fewer numbers of larger workers, who are aggressive towards workers from neighbouring colonies. Monogyne colonies establish and defend a foraging territory, competing with neighbouring colonies for food and nest sites, as well as performing raids on surrounding nests, taking their brood and workers and killing their queen (Adams & Tschinkel 1995). As such, monogyne population densities tend to be much lower compared to polygyne populations.

Conversely, polygyne colonies tend to contain large numbers of smaller workers and queens, who do not show aggression towards workers and queens from neighbouring nests. Polygyne colonies do not compete with one another for food (Vinson 1997) but tend to share or partition their resources among neighbouring colonies (Weeks *et al.* 2004). As such, polygyne populations can reach considerably high densities in favourable habitats.

RIFA population stability

Because of this intrinsic ability for polygyne RIFA colonies to reach much higher densities compared with monogyne colonies (Macom & Porter 1996), polygyne colonies have the potential to outcompete any nearby monogyne colonies as well as other ant species. However, long-term studies in the USA suggest that populations of each reproductive form are stable over time and rarely switch from one to the other (Greenberg *et al.* 1992; Porter 1993; Fritz & Vander Meer 2003). A three-year study in Florida found that 94% of sites classified as monogyne remained monogyne sites, and 97% of sites classified as polygyne remained polygyne 1–3 years later (Porter 1993). The remaining sites that recorded a switch were explained by either the ants being initially incorrectly classified, or because they had changed from being a mixture of both forms to recording only one form or the other (Porter 1993).

Similarly in Texas, a nine-year study of a field containing both reproductive forms found that both forms were still present after nine years, though the polygyne colonies had increased their distribution and density with a subsequent decrease in monogyne distribution and density (Greenberg *et al.* 1992).

A survey of six collection sites in Florida, previously recognised as predominantly polygyne, recorded between 4 and 57% of their nests as monogyne, showing that areas containing polygyne colonies can be interdispersed with monogyne colonies, and that these monogyne colonies can persist without being displaced (Fritz & Vander Meer 2003).

Rate of spread of polygyne colonies

Because polygyne colonies rely on budding new colonies from established colonies, rate of spread is slow, and is much lower than monogyne colonies that spread via nuptial flight. Over a three-year period in Texas, the average spread of polygyne colonies in a field was between 18 and 35 m/year

(Porter *et al.* 1988). Over a nine-year period in Texas, polygyne nests moved around 9 m/year along a monitored transect (Greenberg *et al.* 1992).

A note on classifying reproductive forms

Despite detailed genetic research on RIFA, most studies use a combination of physical and behavioural characteristics to classify reproductive form. Methods range from queen and worker size, worker aggression, and colony density. As such, studies do report the possibility that colonies could have been misclassified during the course of their research, though the occurrence of this is likely to be low.

Conclusions

Populations of RIFA in the USA form a mosaic pattern of monogyne colonies interspersed with polygyne colonies. These populations seem stable over time and it does not appear that the polygyne populations are displacing monogyne populations. Because polygyne colonies reproduce by budding new colonies from established ones, rates of spread by natural means are relatively slow, with no more than 35 m/yr recorded. This is low compared with monogyne colonies that can spread up to 16 km with wind assistance during a single nuptial flight.

Chemical Treatments—Toxicants

What factors characterise an effective toxicant for RIFA?

Stringer *et al*. (1964) outlined the requirements for an effective bait toxicant:

1. provides a delayed toxicity (<15% mortality after day 1 and >85% mortality after day 14)
2. is effective over a ten-fold dosage range
3. can be formulated easily with carriers, and
4. is environmentally acceptable.

The toxicant should be non-repellent at the concentration used in the bait; otherwise the workers will not remove the bait (Klotz & Williams 1996).

The delayed action is to allow the spread of the toxicant throughout the nest. If it acts too rapidly, foragers will die before they are able to pass the toxicant to members of the colony. If foragers are affected by the toxicant, they may refuse to feed their nest mates. Furthermore, if new foragers see the old foragers dying, they may avoid the bait and may move the colony (Klotz & Williams 1996). The requirement for the bait to be efficacious over an extended dosage range is because it will be diluted through trophallaxis. The bait will pass through several workers and enough residual toxins must remain to kill the foragers, brood and queen (Klotz & Williams 1996).

Barr and Best (1999b) in discussing the erratic results of a spinosad bait rate and formulation study, surmise that when a foraging ant encounters a bait particle, she will consume some oil before returning with the particle to the colony. In the time it takes to return, the ant will begin to exhibit toxicity symptoms. This is recognised by the colony and the returning worker is not allowed back in, thus keeping the active ingredient out as well.

Oi and Oi (2006) examined the speed of efficacy and delayed toxicity characteristics of fast-acting fire ant baits. Both spinosad and indoxacarb baits exceeded the 15% mortality criterion by recording >55% mortality after 24 hrs. However, the onset of mortality for these two baits differed. Death from spinosad occurred within 4 hrs and reached 99% by 48 hrs. Indoxacarb had no appreciable mortality (1.5%) for the first 8 hsr and attained 100% mortality by 48 hrs. Delayed toxicity symptoms for the indoxacarb treatment were observed in only 4% of the ants at 8hr in contrast to 28% at 12hr. Because abnormal behaviour plus moribundity/death account for the ants' functional ability to distribute toxicant, the very low (<5%) disruption in normal fire ant behaviour for 8 hrs may be sufficient time to permit thorough toxicant distribution throughout a RIFA colony.

Conclusions

An effective bait toxicant should provide delayed toxicity (<15% mortality after 1 day), be effective over a ten-fold dosage range, can be formulated easily with carriers and be environmentally acceptable. It should be non-repellent at the concentration used in the bait. Hydramethylnon meets all these criteria but indoxacarb exceeds the recommended mortality rate at 24 hrs after treatment. However, toxicity symptoms after treatment with indoxacarb are delayed in most ants for at least 8 hrs, which may be sufficient time to permit thorough toxicant distribution throughout a RIFA colony.

What are the effects of hydramethylnon?

Mode of Action

Hydramethylnon is among a group of pesticides known as trifluoromethyl aminohydrazones or 'metabolic inhibitors'. In insects, hydramethylnon has been found to inhibit mitochondrial electron transport, which causes a decrease in physical activity, as well as a decrease in respiration, inducing lethargy within 24 hours, and mortality in 72–96 hours (Bacey 2000).

A slow-acting poison is desirable when controlling social insects, such as ants or termites, because they live long enough to share it with the colony (Stringer *et al.* 1964).

Environmental Fate

Hydramethylnon degrades rapidly in sunlight (photolysis) and therefore the timing of bait applications may influence its efficacy (Vander Meer *et al.* 1982). Under field conditions hydramethylnon is very unstable when exposed to sunlight. Vander Meer (1982) found that in daylight hydramethylnon has a half-life of 12 hours. Label directions for Amdro® fire ant bait state that applications should be made in late afternoon when ants are actively foraging, to avoid long-term exposure to sunlight and chemical degradation (BASF™ 2004).

Hydramethylnon also has a high tendency to photo-degrade in water and on soil, which suggests that it has a low potential for bio-accumulation in the environment (Bacey 2000). In sunlight, the half-life of hydramethylnon is 5 days in soil and 1 hour in water (Bacey 2000). Applications of hydramethylnon bait Amdro® should not occur 24 hours prior to irrigation or rainfall, as this may reduce the effectiveness of treatment (BASF™ 2004).

In field applications some microbial degradation may occur. When ants carry the bait down to the nest, if it is not eaten immediately microbial degradation can occur. *Phanerochaete chrysosporium*, a common white rot fungus, has been found to breakdown hydramethylnon with a half-life of 14–25 days (Bacey 2000).

Efficacy Rates

1. Hu and Song (2007):
   - Field efficacy with hydramethylnon (0.73%) at an application rate of 1.7 kg/ha
   - Trials took place at a frequently mowed turf setting at the Auburn University of Alabama.
   - By day 7 after treatment, approximately 40% of mounds were deactivated.
   - 30 days after treatment showed a >95% mound deactivation.

2. Oi and Oi (2006):
   - Laboratory efficacy with hydramethylnon (0.73%)
   - Colonies were given 59 ml of bait (4 tablespoons) as per label recommendations for individual nest treatments.
   - 16.5% of colonies that were not starved prior to treatment died within 7 days.
   - In all colonies; regardless of starvation; a maximum of 60% of the colonies died after 9 days.

   - Field efficacy with hydramethylnon (0.73%)
   - Treatments consisted of applications of bait to each nest following label recommendations of 59 or 89 ml distributed around the base of each mound.
   - Over the 20 day trial, the highest reduction in active nests was approximately 78% which was recorded 14 days after treatment.

3. Apperson *et al.* (1984):
   - Field efficacy with hydramethylnon (0.88%)
   - Trials occurred in North Carolina in a 9 ha pasture. Treatment plots were 0.8 ha in size.
   - Broadcast treatment was applied at 1.7 kg/ha. Highest efficacy was 82.4% recorded at 42 days post treatment.
   - Individual mound treatment was applied around the base of each nest at the rate of 5 tablespoons or 25 g per mound. Highest efficacy recorded was 67.6 % at 42 days post treatment.

4. Furman and Gold (2006a):
   - Field efficacy with hydramethylnon (0.73%)
   - Field trials were conducted on 5 ha of pastureland in Texas
   - 0.13 ha plots were each broadcast with 227 g of Amdro® which was applied at the label rate of 1.7kg/ha.
   - 86.7% colony mortality was achieved over the 49 day duration of the experiment.

5. Barr (2003):
   - Field efficacy with hydramethylnon (0.73 %) applied at the rate of 1.1 kg/ha.
   - Autumn trials were conducted at Yoakum airport, Texas and the best control was 85.9% achieved at 14 weeks post treatment.
   - Summer trials were conducted at Palestine airport, Texas and the best was 95.2% efficacy at 2 weeks post treatment.

- Barr *et al.* (2002):
   - Field efficacy with hydramethylnon (0.73%)
   - Field trials were located at the Wharton airport in Texas. Treatment was broadcast at the label rate of 1.7 kg/ha.
   - Maximum efficacy of 98.3 % was recorded in week 6 and again in week 12, following treatment.

6. Valles and Pereira (2003):
   - Laboratory efficacy with hydramethylnon (0.73%)
   - Mean cumulative mortality peaked at no greater than 50% by day 21, in colonies uninfected with microspiridium.

   - Field efficacy with hydramethylnon (0.73%):
   - The trial was conducted on pastureland in Gainsville, Florida. Plot size was 500 m2 and treatment was broadcast at the rate of 1.83 kg/ ha.
   - Colonies uninfected with microspiridium were reduced by approximately 77.8% during the trial period of 8 weeks.

7. Barr (2002):
   - Field efficacy with hydramethylnon (0.73%)
   - Treatments were conducted at Palestine airport, Texas, and applications were broadcast at a rate of 1.7 kg/ha.
   - Maximum efficacy was recorded at 2 weeks post treatment, with a 95.7% reduction observed in active mounds.

8. Barr and Best (2002):
   - Field efficacy of hydramethylnon (0.73%)
   - Treatments were conducted at Palestine airport, Texas, and applications were broadcast at a rate of 1.7 kg/ha.
   - Efficacy reached a 90.4 % reduction in active mounds by 21 weeks post treatment.

Conclusions

The range of efficacies of broadcast hydramethylnon in field trials was between 78 and 99%. Time taken to achieve these efficacies varied from 2–21 weeks post treatment. These findings suggest that the effects of hydramethylnon on RIFA colonies are not always consistent, even if application rates and chemical concentrations are the same. This may be due to a range of factors that affect bait stability and uptake such as rainfall events and over-exposure to sunlight (hydramethylnon has a half life of 1 hour in water and 12 hours in sunlight). On average, an efficacy rate of 80–90% could be expected within a period of 6–8 weeks. Individual mound treatment with hydramethylnon is generally less effective than broadcast application.

What are the effects of indoxacarb?

Mode of action

Indoxacarb is a non-systemic insecticide from the chemical class known as oxadiazines. It is a synthetic organophosphate replacement generally used to control sucking insects. Indoxacarb affects insects from direct exposure and through ingestion of treated substances (Moncada 2003).

The actual toxin is a metabolite of indoxacarb (JT333). The worker ants carry the bait back to the nest and the indoxacarb is not metabolically activated until the soybean oil is ingested and regurgitated by the larvae in the nest (Moncada 2003).

Indoxacarb kills by binding to a site on sodium channels and blocking the flow of sodium ions into nerve cells. The result is impaired nerve function, feeding cessation, paralysis, and death (Moncada 2003).

Environmental Fate

Indoxacarb has a low water solubility of 0.2 mg/L and a relatively low probability of leaching into groundwater (Moncada 2003). Indoxacarb does not persist significantly in aquatic systems however is highly toxic to fish and aquatic invertebrates (Moncada 2003). Therefore, label requirements of Advion® direct users to avoid application of the bait directly into water, to areas where surface water is present, to intertidal areas or when weather conditions could favour runoff (DuPont™ 2004-05).

Indoxacarb undergoes microbial degradation in soil. The reported field dissipation half-life of this process varies from 16 to 114 days. Label directions for the use of Advion® state that applications should not occur in areas that are wet with dew, irrigation or rainfall. Irrigation or rainfall within 2 to 3 hours of application may also reduce the effectiveness of the bait (DuPont™ 2004-05).

Efficacy Rates

1. Hu and Song (2007):
   - Field efficacy with indoxacarb (0.04%) at an application rate of 1.7 kg/ha
   - Trials took place at a frequently mowed turf setting at the Auburn University of Alabama.
   - By day 7 after treatment, 90% of mounds were deactivated.
   - By day 14 after treatment, >95% of mounds were inactive. This level of efficacy was maintained for the remainder of the 90 day trial.

2. Oi and Oi (2006):
   - Laboratory efficacy with indoxacarb (0.045%)
   - Colonies were given 59 ml of bait (4 tablespoons) as per label recommendations for individual nest treatments.
   - In colonies that were not starved prior to treatment, reductions in brood and adults were >95% at 5 days post treatment.
   - In all colonies; regardless of starvation; 87% of colonies died within 3 days and 100% were dead within 6 days.

   - Field efficacy with indoxacarb (0.045%)
   - Field trials occurred at a parking lot in Gainsville, Florida.
   - Treatments consisted of applications of bait to each nest following label recommendations of 59 to 89 ml of bait distributed around the base of each mound.
   - Over the 20 day trial, the highest reduction in active nests was approximately 68%, which was recorded 8 and 11 days post treatment.

3. Furman and Gold (2006a):
   - Field efficacy with indoxacarb (0.045%)
   - Field trials were conducted on 5 ha of pastureland in Texas
   - 0.13 ha plots were each broadcast with 227 g of Advion® which was applied at the label rate of 1.7kg/ ha.
   - Lethal time until 90% mortality was 6.2 days.
   - 21 days post treatment achieved 99% colony death.

4. Furman and Gold (2006b):
   - Laboratory efficacy when treated with 1 g of Advion (0.045%)
   - Colonies were starved for 2 days prior to treatment.
   - Lethal time until 90% mortality was 7.8 days.

5. Furman and Gold (2006c):
   - Laboratory efficacy when treated with 1g of Advion (0.045%)
   - Colonies were starved for 2 days prior to treatment.
   - Approximately 82% worker mortality after 7 days.

6. Barr (2003):
   - Field efficacy with indoxacarb (0.05%) applied at the rate of 1.1 kg/ha.
   - Autumn trials were conducted at Yoakum airport, Texas. The best control achieved was 96.2% at 10 weeks post treatment.
   - Summer trials were conducted at Palestine airport, Texas. The best control achieved was 100% at 2 weeks post treatment.

Conclusions

Field efficacy of indoxacarb ranged from 68 to 100%. The time taken to achieve the highest efficacy in field trials varied from 8 to 21 days.

Overall, indoxacarb achieved fairly consistent efficacies of between 82 and 100% in both field and laboratory trials, with the majority of studies recording >90% efficacy within one week after treatment. Again, as with hydramethylnon, individual mound treatment with indoxacarb seems generally less effective than broadcast application.

In trials in Brisbane with indoxacarb broadcast bait, an efficacy rate of 83.3% was achieved in 2 weeks with a single application and 96.5% in two months with two applications.

Chemical Treatments—Insect Growth Regulators (IGRs)

What are the observable effects of treatment with IGR baits?

Fire ant colonies treated with baits containing IGRs, exhibit six main observable effects:

- **Absence of worker brood**—A sudden decrease in egg production ensues soon after treatment is applied. Research on insect growth regulators shows normal brood-producing colonies cease doing so after treatment and brood that were present, do not survive to adulthood and die within weeks of treatment (Troisi & Riddiford 1974) as a result of cannibalism and/or incomplete cuticle formation.
- **Excessive reproductive brood**—There is a shift from worker production to alates indicating an effect on egg fertilisation (Troisi & Riddiford 1974).
- **Dealation of reproductive females**—Application of methoprene will induce dealation and ovary development even in the presence of a queen.
- **Atrophied ovaries**—Dissection of affected RIFA queens reveals ovaries reduced in size and lacking oocytes and nurse cells (Glancey *et al.* 1982).
- **Intermediate castes and deformities**—Robeau and Vinson (1976) found that juvenile hormone analogues stimulated production of major workers, intercastes, and alate females in fire ant colonies.
- **Presence of other invertebrates in nests**—Although not a critical factor in the determination of colony viability, it is noteworthy that affected colonies can house a number of other invertebrates not normally present in a healthy colony.

Conclusions

RIFA colonies treated with baits containing IGRs, exhibit six main observable effects:
1) absence of worker brood; 2) excessive reproductive brood; 3) dealation of reproductive females; 4) atrophied ovaries; 5) intermediate castes and deformities; 6) presence of other invertebrates in nests.

Similar effects have been noted in Brisbane and in addition, white striping or striation has been noted on the head and thorax of affected alates and worker pupae.

How are IGRs circulated throughout a colony and are the effects on RIFA queens reversible?

Insect growth regulators (IGRs) have been used in broadcast applications for fire ant control in South East Queensland since 2001. The current IGRs used to eradicate RIFA in Brisbane are 0.5% pyriproxyfen and methoprene (5 g/kg). IGRs, also termed juvenile hormone analogs (JHAs) generally affect the reproduction and metamorphosis of insects. IGR affected larvae develop deformities which result in incomplete metamorphosis and often death (Banks *et al.* 1983). Some IGRs also produce metamorphic deformities in reproductive juveniles, such as malformed wings and lack of ovaries in females (Bigley & Vinson 1979).

Queen ants often significantly reduce or completely cease egg-laying following treatment with an IGR, and may also shift from producing worker brood to sexual forms (Banks *et al.* 1983). IGRs are generally non-lethal to adult workers ants and queens. Colony death therefore occurs due to a lack of worker ant replacement, coupled with natural mortality (worker ant lifespan is approximately 3 months) (Banks *et al.* 1983).

Two significant points of interest were indentified in the literature concerning IGRs. Firstly, how are IGRs circulated throughout a colony? And secondly, are the effects of IGRs on queen RIFA reversible?

A review of the relevant literature has shown that the effects of some IGRs on adult queen ants may not induce permanent sterility. Recovery of fertility in the queens may be linked to the levels of active ingredient present in a colony. Previous studies have also indicated that large RIFA workers may act as a storage caste. In that capacity, the large workers may be critical to long-term circulation of IGRs throughout a colony.

RIFA repletes and long-term circulation of IGRs within colonies

Glancey *et al.* (1973) found that major workers of RIFA act as a storage caste (repletes) for the colony. Dyed oil was shown to remain in the crops of workers for up to 18 months (not the same workers but circulating in the colony). This may demonstrate the ability of RIFA to store the active ingredient of an oil-based IGR for extended periods. Colony composition plays a very important role in long-term effect of IGR since Banks and Schwarz (1980, in Banks *et al.* 1983) have found that the larger workers in the colony (repletes) store the oil solutions of IGR in the gastral crop and recirculate them via trophallaxis through the communal stomach of the colony. All studies indicate that death of IFA colonies as a result of IGR ingestion requires that the chemical be retained and redistributed over several months.

In laboratory colonies, active methoprene remained stable in the crops of large workers for several months and was distributed throughout the colony via trophallaxis (Morrill *et al.*1978 and Banks & Schwarz, 1980; cited in Aubuchon *et al.* 2006). Banks (1986) also demonstrated that IGRs were retained for extended periods of time by some workers and slowly released into the colony food supply. This may indicate that the longevity of stored substances is theoretically proportional to the number of repletes and their capacity for storage at the time of treatment (Banks 1986).

In the Banks (1986) study, treated queens were removed at 12 weeks post treatment and put with untreated workers. These queens subsequently resumed worker brood production. Queens that remained with treated workers did not produce worker brood 20–24 weeks post treatment (Banks 1986). This may have demonstrated that treated workers actively fed methoprene to the queen, thereby maintaining her inability to produce worker brood.

An earlier study by Banks (1983) stated that the death of RIFA colonies as a result of IGR ingestion required that the chemical be retained and redistributed over several months within the colony. Bigley & Vinson (1979) stated that adult RIFA were the most active in metabolising methoprene and were also the dispersal agent of the chemical around the colony. These two studies may illustrate the important role of adult worker ants in distributing an IGR within a RIFA colony, and it could therefore be inferred that the removal of adult workers with a toxicant, may adversely affect the mode of action of an IGR.

IGRs need to circulate at high enough levels within a colony in order for pupae to be negatively affected, as they pass through periods of development that are particularly sensitive to juvenile hormone analogues (Wendel & Vinson 1978). The principle targets of the IGR, the queen and the pupae, must receive sufficient amounts of the active ingredient in order to ensure the continuation of negative effects on the colony. To facilitate this result, the active ingredient in an IGR must remain viable and active in the worker's crop at high enough levels and for long enough periods to ensure sufficient amounts are passed throughout the colony to the target castes (Bigley & Vinson 1979). This would infer the need for regular re-dosing of colonies with an IGR application, as eventually, levels within the colony would start to decrease over time and the treatment would become less efficacious.

Effect of IGRs on adult queens

Staal (1986) stated that treatment of adult insects previously unexposed to IGRs does not produce sterility by itself. When exposed to juvenoid insects, during critical development (early in the last nymphal instar), IGRs cause physical deformities as well as permanent sterility in the resulting young adults (Staal 1986). This indicates that RIFA alates affected by IGRs during larval development may be sterile as adults; however, queens will not be affected in the same manner, and may not become permanently sterile.

A study by Edwards and Clarke (1978) on the effects of methoprene on Pharaoh ants, *Monomorium pharaonis,* noted that queens which fed on the substance displayed atrophied ovaries, and were most probably sterile. Rupes (1978) stated that oviposition in female *M. pharaonis* treated with 0.5% methoprene, appeared to be influenced reversibly. When levels of IGR decreased, females were again able to lay eggs. This may have been demonstrated by the regeneration of several colonies (Rupes *et al.* 1978).

Lim and Lee (2005) treated *M. pharaonis* colonies with Bioprene®, a commercial bait containing s-methoprene 0.3%, and stated that queens were not capable of laying eggs for as long as the baits were the only food source. This implies that egg production may have re-commenced following removal of the IGR bait.

Troisi and Riddiford (1974) stated that sterility in RIFA queens, subjected to juvenile hormone analogues, was not permanent. Queens subjected to 100 ppm *ad lib* as well as an initial 1 mg dose of the juvenile hormone mimic, ZR 512, showed rapidly decreasing brood sizes, followed by a return to viable larvae 3 weeks after the hormone treatment was discontinued (Troisi & Riddiford 1974). After a further 2 weeks, broods were of normal size and were produced weekly. This experiment was repeated on another colony which produced very similar results with respect to the re-commencement of regular brood production several weeks following the cessation of treatment (Troisi & Riddiford 1974).

Pyriproxyfen appears to exert a similar effect, as methoprene, on queen RIFAs, as shown in the study by Glancey *et al.* (1990). Observations within six weeks of RIFA queens ingesting pyriproxyfen showed that the ovarian tissue was significantly damaged and most eggs within them had been reabsorbed.

Hsieh and Su (2000) (abstract only) described the recovery of queen pharaoh ant ovaries at 8 weeks post treatment, in small laboratory colonies treated with 1 and 2% pyriproxyfen and fenoxycarb.

Glancey and Banks (1988) also demonstrated ovarian recovery in RIFA following treatment with 2.0% fenoxycarb. In this study, laboratory colonies were treated with fenoxycarb and queens were examined weekly for six weeks. Treated queens began to display damaged ovaries at 2 weeks post treatment. The condition of the ovaries continues to decline through to eight weeks after treatment and causes very similar morphological effects to those produced by methoprene in pharaoh queen ant ovaries (Glancey & Banks 1988).

In certain colonies, RIFA queens were removed six weeks post treatment and allowed to recover in untreated colonies. The ovaries of these queens returned to almost normal pre-treatment condition and egg-laying capability (300 eggs/ day), after four weeks (Glancey & Banks 1988). The results of this study show that in the RIFA queen, the condition of the ovaries can be reversed by the removal of the queen from the juvenile hormone overload. This was demonstrated by the recovery of the egg-laying ability of the queen following removal from treated colonies (Glancey & Banks 1988).

Morphological effects produced by fenoxycarb and methoprene, on the ovaries of queen pharaoh ants and RIFA, have been shown to be similar. It may also follow that queen ant recovery from

these effects would also be similar between these two IGR treatments, however to date this assumption cannot be supported by available literature.

Banks and Lofgren (1991) concluded that the damage to the queen's ovaries, and subsequent fertility, appeared to be reversible if the IGR was eliminated by metabolism or excretion. Queens collected from field colonies six weeks post treatment with pyriproxyfen also showed damaged ovaries; however queens collected 24 weeks after treatment had normal ovaries and a full complement of eggs within. It was hypothesized, that the queens had been able to recover their egg-laying capability and that a second application of pyriproxyfen may be required in order to maintain sufficient levels of IGR within colonies (Banks & Lofgren 1991). However, it is also possible that in this particular study, re-invasion of the field plots occurred after the 6 month monitoring interval, and that the unaffected queens that were collected from treated areas were in fact untreated, new-founding colonies. This may, or may not, explain the presence of normal ovaries in the queens.

More studies of this nature are required, therefore, to ascertain whether a RIFA queen can re-commence viable egg production following treatment with pyriproxyfen or methoprene; particularly in field situations and without the possibility of re-infestation of treatment plots.

Conclusions

The available literature suggests that in order for IGRs to work effectively, the chemical must be maintained within the colony at levels high enough to cause brood production to cease and for periods long enough to allow the colony to age and die. Critical to maintaining this level are worker ants that function as repletes, storing the active ingredient and distributing it to other castes, particularly to the pupae and queen.

Laboratory studies confirm the ability of queen ants to recover from some IGR treatments if there are inadequate amounts of IGR circulating throughout a colony (i.e. damage to the ovaries is reversible). This would allow a return to worker brood production and the subsequent recovery of the colony. However, such effect has not been conclusively demonstrated for pyriproxyfen and methoprene on RIFA queens and the literature is sparse.

Implications for the program are that the use of a toxicant in combination with an IGR may be counterproductive in that the toxicant may remove a significant proportion of the workers that store and circulate the IGR, thereby reducing levels of the compound in the colony. The possibility that an IGR may not cause permanent sterility is just one of a number of factors that may affect efficacy of a bait treatment and reinforces the need for multiple treatments of whatever product is used.

What are the effects of methoprene?

Mode of Action

Methoprene is a juvenile hormone analogue (synthetic) which mimics the action of an insect's naturally occurring juvenile hormone and works in tandem with a moulting hormone to control metamorphosis (Sullivan 2000). It is used in programs to control insect pests such as midges, mosquitoes and ants.

Methoprene is considered a biochemical pesticide because rather than controlling target pests through direct toxicity, it interferes with an insect's life cycle and prevents it from reaching maturity or reproducing (Environmental Protection Agency 2001).

The bait used in the NRIFAEP is Sumitomo's Engage Ant Bait, containing the active ingredient methoprene (0.5%), and has a conditional application rate of 1.6–2 kg of bait per hectare.

Environmental fate

According to Csondes (2004), when methoprene is applied it is relatively immobile, tending to reside in the top few centimetres of the soil. As a result methoprene is unlikely to leach, and thus should not persist in soil or contaminate ground water (Environmental Protection Agency 2001).

Biodegradation of methoprene has been reported to be relatively fast in a variety of soils and environmental conditions. In aerobic sandy loam, radio-labelled methoprene was reported to have a half-life of approximately 10 days after it was applied at a surface treatment rate of 1 kg/ha. Methoprene showed rapid photo degradation on inert surfaces, such as soil, forming methoxycitronellal (Toxnet 2003 in Csondes 2004).

Schooley *et al.* (1975a in Csondes2004) studied the dissipation of methoprene in pond water and sewage at dose rates of 0.001 and 0.01 mg/L, respectively. Methoprene showed a half-life of approximately 30 hours at 0.001mg/L and 40 hours at 0.01 mg/L in pond water, and a 60–70 hour half-life in sewage.

Label directions state that produce which has had direct contact with the bait must be washed after harvesting and prior to marketing, cannot be broadcast onto fallen fruit which may be harvested, and cannot be applied in pasture area where non-mammalian livestock are or may be fed.

Application rate is at 1.6 kg/hectare.

Methoprene has been shown to be practically non-toxic to terrestrial animals.

Efficacy Rates

1. Oi *et al.* (2004):
   - Field trial on a tropical fish farm in Florida
   - One treatment broadcast of 0.5% S-methoprene (Extinguish) at a rate of 10.4 kg per 0.4 hectares
   - A reduction in nests of 57 and 66% at 15 and 22 weeks, respectively, after treatment
   - They also found a 70 and 67 % reduction in population indices at 15 and 22 weeks, respectively
   - Re-infestation was evident by week 39.

*Note: This high application rate was used as it conformed to the label rate but only spread onto the areas around the fish ponds, and hence increased the rate per acre.

2. Drees and Barr (1998) (trial III):
   - Field trial in Texas
   - 0.5% in corn grit matrix at a rate of 0.68 kg per 0.4 hectares
   - One treatment
   - Reduction of 74.6% in 6 months
   - After 18 months, mound count increased to 52% of pre-treatment counts
   - June 3.30pm to 8.30 pm
   - Corn grit only, not pre-gel defatted corn cob grit

3. Drees and Barr (1998) (trial IV):
   - Field trial in Texas
   - June 26 1993, in the evening
   - 0.5% methoprene on a corn cob grit defatted plus soybean oil
   - Application rate was 1.7 kg per hectare (1.5 lbs. per acre) and one treatment was applied
   - Achieved 72% reduction in 2 months, and 98% reduction in 8 months
   - After 12 months, mound count increased to 30% of pre-treatment counts.

4. Aubuchon *et al*. (2006):
    - Broadcast Extinguish (0.5% methoprene) at a rate of 1.121 g per hectare on agricultural fields.
    - Because RIFA move brood through the mound to optimize developmental temperatures, mounds were counted and rated only when ambient air temperature was between 22 and 30_C to ensure data accuracy.
    - Site 1 was treated on 19 June 1999 between 4 and 6 p.m. under partially cloudy conditions, with temperatures ranging from 25 to 27℃
    - Site 2 was treated on 22 June 1999 between 9 and 10:30 a.m. under sunny conditions, with an initial air temperature at 32℃.
    - Site 1 was a monogyne colony and in a high density area, and therefore bait may have not been picked up along territorial edges, thus reducing the efficacy of the bait.
    - one treatment
    - Site 1 at 16 weeks there was a reduction in mound abundance by 85%.
    - Site 2 only had a mean mound decrease of 29% by week 8 but at 16 weeks, was 20% greater than pre-treatment levels. This study hypothesises that an alate flight observed at approx. week 12 resulted in a high number of incipient mounds by week 16. This may be the case, as Tschinkel (2006) states that mounds are visible at 3-5 months, and Callcott and Collins (1992) found reinfestation of a cleared plot began to be visible after 4 months.

5. Moore (1999):
    - Field trial in Texas
    - April 20 1999
    - Pre-treatment counts at 5.67 mounds per acre (low density?)
    - Extinguish (0.5% methoprene active ingredient)
    - One treatment
    - Application rate of 1.125 kg per hectare (1 lbs. per acre)
    - 94% reduction in mounds after 5.5 months.
    - Under the same conditions, Moore trialled Distance (0.5% pyriproxyfen) and found eradication (100% efficacy) in 5.5 months.

6. Marsden (2003):
    - Laboratory trial on polygyne RIFA colonies
    - Active ingredient 0.5% methoprene
    - Colonies were baited three times at 16 weeks intervals.
    - Effects were not seen until week three (after the first application) and between weeks 4 and 6 (after the second application), although in both cases the amount of bait ingested was greater in the first and third application than in the second.
    - At the end of each 16 week baiting period a recovery in production of worker pupae occurred.

*Note: Only a small amount of bait was used in relation to the amount a fire ant colony would be exposed to in the field, therefore would not have caused death of the colonies, instead giving an indication of the effects that may happen.

Conclusions

In field trials conducted in the USA on methoprene (0.5% active ingredient), with one application, efficacy rates ranged between 66% and 98% (average 83% over several studies). The times taken to reach maximum efficacy ranged from 4 to 8 months (98% efficacy was achieved over 8 months). Most of the trials had similar if not the same concentration of active ingredients, bait matrix and application rates, yet still showed a large variation in results demonstrating that there are many factors that may influence the success of a treatment. These include factors such as temperature, rainfall, humidity, cloud cover, topography and disturbance. Interpretation of results is sometimes confused by RIFA invasion from outside the trial plots.

What are the effects of pyriproxyfen?

Mode of action

Pyriproxyfen is a synthetic juvenile hormone analogue (JHA) which mimics the action of an insect's naturally occurring juvenile hormone and works in tandem with a moulting hormone to control metamorphosis (Sullivan 2000), It is a highly stable fenoxycarb derivative in which part of the aliphatic chain has been replaced by pyridyl oxyethylene.

Pyriproxyfen works by replicating the action of the naturally occurring juvenile hormone on a number of physiological processes. It functions as an insecticide by overloading the hormonal system of the target insect, preventing the insect from moulting and therefore becoming an adult. Ultimately it will affect egg production, shifting to an increase in sexuals production and a reduction in worker brood (possibly due to a low level of toxicity in the active ingredient (Glancey *et al.* 1990), and may result in the eventual death of the larva (Sullivan 2000).

The bait used in the NRIFAEP is Sumitomo's Distance Fire Ant Bait, containing the active ingredient pyriproxyfen (0.5%), and has a conditional application rate of 1.6–2 kg of bait per hectare.

Environmental Fate

Pyriproxyfen has a half life of 10 days and a field dissipation half-life (in sunlight) of 3.5–16.5 days. It is moderately volatile, and does not readily adsorb onto soil surfaces.

Pyriproxyfen does not decompose in water, adsorbing onto suspended organic matter and remaining biologically active for up to two months after initial application. It has a half life in water of 3.72–6.23 days, depending on temperature and sunlight exposure.

Label directions for the use of Distance Fire Ant Bait (0.5% pyriproxyfen) state that applications should not be used within 80 metres of streams, rivers or waterways if applied via aircraft or 8 metres if applied via ground equipment, and warns of a resistance to the insecticide through normal genetic variability in the population.

Efficacy Rates

1. Hwang (2009):
   - Field trial in Taiwan
   - Exteem (sic) Ant Bait (0.5% pyriproxyfen) applied at a rate of 2 kg per hectare
   - 4 applications 3 months apart
   - 92.3% reduction in mounds after 6 months
   - 100% reduction in active mounds after 8 months
   - Monitoring for 2 years proved eradication.

*Note: monitoring after 3 months and only one application reduced the mound populations by 3.3%.

2. Banks and Lofgren (1991):
   - One application in a field in Florida
   - Pregel defatted corn grits were used
   - Test 1:
   - Conducted in spring/summer
   - 0.5% pyriproxyfen (brand unknown) at 2.1 kg per hectare
   - 97.1% reduction in population index after 3.25 months
   - Test 2:
   - Conducted in late summer/autumn
   - 0.5% pyriproxyfen (brand unknown) at 2.24 kg per hectare
   - 86.9% reduction in population index after 3.25 months

- Queens collected 6 months after the initial baiting had normal ovaries and a full complement of eggs within the ovarioles.
- Authors hypothesise that retreatment might maintain a sufficient titer of IGR to prevent recovery of egg-laying capability by the queens.

3. Drees and Barr (1997):
   - Field study in Texas
   - 0.5% pyriproxyfen V-71639 (from Valent USA)
   - One application, rate unknown
   - Application (mid-summer) 11 July 1995 10 am –1.09 pm and 4.01 pm – 7.30 pm). Maximum temperature at 4.50 pm: 39.1℃
   - 95% reduction of mounds in 2 months
   - After 6 months the reduction had decreased to 85%.

4. Barr and Best (1999a):
   - Field study in Texas
   - One application
   - Distance 0.5% pyriproxyfen applied at a rate of 1.125–1.7 kg per hectare (1.5 lbs per acre)
   - Application (late spring) 14 May 1999: 26.7 – 29.4℃, partly cloudy with a moderate breeze and moist soil.
   - Reduction of mounds by 95.8% after 8.75 months.

5. Moore (1999):
   - Field study in Texas
   - One application
   - Application (mid-spring) 20 April 1999
   - Distance 0.5% pyriproxyfen with an application rate of 1.125 kg per hectare
   - 100% reduction in mounds after 5.5 months.

Conclusions

In field trials with one application, efficacy rates ranged between 86.9% and 100% (average 95% over five studies). The times taken to reach maximum efficacy ranged from 2–9 months, but in a few studies efficacy rates of 95–100% were achieved in 2–6 months.

From these limited studies on the IGRs methoprene and pyriproxyfen, pyriproxyfen appears to be more efficacious, faster working and more stable than methoprene. However, methoprene has the advantage of being able to be used closer to water bodies and sensitive areas than pyriproxyfen.

Appendix 1—Summary of abiotic conditions observed for RIFA nuptial flights

Characteristic	What	Author
Ambient air temperature	23℃ and 32℃.	(Rhoades & Davis 1967)
	23–29℃.	(Bass & Hays 1979)
	24 and 33℃.	(Markin *et al.* 1971)
Humidity	Usually greater than 80%.	(Markin *et al.* 1971) (Rhoades & Davis 1967)
	Can occur between 60–80%.	(Xu *et al.* 2009)
Wind speed	Less than 8 km per hour.	(Markin *et al.* 1971)
Soil surface temperatures	Above 18℃.	(Rhoades & Davis 1967)
Soil (4 inches deep) temperature	18–26℃.	(Rhoades & Davis 1967)
Activity was low	When the soil was very wet or very dry.	(Rhoades & Davis 1967)
Time of year	Between June and July, although flights occurred throughout the year.	(Bass & Hays 1979)
	Seen in all four seasons, but most likely before June (end of spring).	(Xu *et al.* 2009)
	Season: any time of year but most likely in spring and early summer.	(Markin *et al.* 1971)
	Flight occurred over the entire year. During the cooler seasons, if the temperature were high enough on the second or third day following a rain event, flights still occurred, however with diminished intensity.	(Morrill 1974b)
	Flights occurred most often between the middle of spring to the end of summer (USA April through to August).	(Morrill 1974b)
Time of day	Generally from 9.00 to 15.00; most flights took place at noon.	(Xu *et al.* 2009)
Precipitation	After 1.5–8.6 mm of rainfall.	(Bass & Hays 1979)
	A rain, following a dry period, always triggered a 2 or 3 day nuptial flight.	(Xu *et al.* 2009)
	Flight rates were highest on the days following rain, and decreased on the following day.	(Xu *et al.* 2009)
	Approximately 0.2 mm of rainfall was necessary to initiate pre-flight activity.	(Morrill 1974b)
	Flights tended to occur following a rainstorm preceded by a period of dry weather.	(Markin *et al.* 1971)
Soil humidity	Soil humidity significantly affects their distribution as colonies are often established near water bodies.	(Xu *et al.* 2009)

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Queensland Government

NATIONAL RED IMPORTED FIRE ANT ERADICATION PROGRAM

Annual Report 2012–13

Summary

In 2012–13, the National Red Imported Fire Ant Eradication Program (the Program) focused on delimiting the extent of the red imported fire ant (fire ant) infestation while continuing to contain and suppress fire ants in South East Queensland.

Delimitation will be achieved primarily using remote sensing technology. During 2012–13, over 85 500 hectares of remote sensing imagery was captured. This includes the May–September 2012 and the May–June 2013 periods. The target for the period of 100 000 hectares was not met due to delays in the operation of the second camera and unseasonably wet weather in the May–June 2013 period. Of the 50 000 hectares of imagery captured in 2012, over 39 800 hectares has been finalised following verification surveillance in the field. Field verification of imagery captured in May–June 2013 will be conducted in 2013-14.

To assist with the delimitation efforts, three community engagement campaigns commenced in 2012–13 targeting nearly a million people within 30 km of the core infested area. While the results from these campaigns have not yet been finalised, interim results are encouraging.

Containment and suppression is achieved by treating all detected infestation and high risk areas, and through the implementation of movement controls to prevent human-assisted spread. By 30 June 2013, the Program had delivered over 20 000 hectares of treatment. Treatment included areas of high risk to the Program, such as market gardens and waste facilities, as well as immediate treatment of any new infestation.

784 hectares of new infestation were found to be infested during 2012–13. This is a moderate increase to the amount of new infestation detected in previous years. However, it has been acknowledged by the Tramp Ant Consultative Committee (TACC) that the delimiting activities of remote sensing surveillance and the associated wide-ranging community engagement programs is expected to initially result in an increase in the number of fire ant infestations being detected.

Movement restrictions apply to people who live and work in the Fire Ant Restricted Area. In December 2012, amendments were made to the *Plant Protection Regulation 2002* to align the restricted area with suburb boundaries and to split the area into two risk-based zones. Movement restrictions currently apply to 282 000 hectares.

As there has also been a shift in the responsibility for risk management from the Program to businesses dealing with restricted items in the restricted area, the number of site inspections conducted by the Program decreased significantly as monitoring (site inspections) for fire ants is now undertaken by businesses after attending training. This allows more resources to be applied to monitoring compliance with movement controls and auditing Approved Risk Management Plans. During 2012–13 there were over 1000 audits and inspections conducted.

Key operational statistics are detailed below:

Table 1 – Key statistics for the National Red Imported Fire Ant Eradication Program

Parameter	2012–13 financial year (4th Qtr)	Total 2012–13 financial year	Total 2011–12 financial year
Total area of new infestation*	359.22 ha	784 ha	426 ha
Infested sites	376	751	443
Colonies detected	759	1548	879
Significant detections	2 (Jimboomba and Barellan Point)	6	7
Area flown for remote sensing surveillance	34 148 ha (May to 30 June 2013)	85 716 ha (incl. May–Sep 2012 and May–Jun 2013)	9025 ha (USA and Australia)
Field surveillance	22 524 ha	49 047 ha	16 117 ha
Area treated	17 918 ha (plus 133 ha DNI)	20 073 ha	73 252 ha

*** point of infestation plus 50 m buffer and excluding any overlap from previous infestation**

Key program activities

As outlined in the 2012–13 Work Program, the Program is based on three essential components, with the primary focus on delimitation:

1. Delimitation (surveillance)
2. Treatment of all detected infestation and in high risk areas
3. Containment (movement controls)

These essential components are supported by community engagement, specialist scientific and technical services, policy and planning, information services, business support, and program management and governance.

Surveillance

Delimitation surveillance using remote sensing technology

The surveillance focus for 2012–13 was to delimit the extent of the fire ant infestation. Delimitation is primarily achieved through the use of remote sensing technology which has been developed to allow surveillance over large areas at significantly reduced cost and time when compared to conventional ground-based surveillance techniques.

Over 85 500 hectares of remote sensing surveillance imagery was captured in 2012-13 (Appendix 4). This is 14 500 short of the target for the period of 100 000 hectares. A delay in the receipt and subsequent operation of the second remote sensing camera, along with unseasonal wet weather, served to limit the number of hectares flown.

Almost 50 000 hectares of this imagery was captured in 2012, however processing delays caused a backlog potentially hindering the surveillance efforts in May and June 2013. The option of delaying remote sensing flights in this period to prevent a potentially larger backlog was considered by TACC but it was decided that imagery capture should continue as planned. TACC agreed that a risk based approach should be applied to the field verification of POIs. As a result, field verification was conducted on all POIs in the 0.5 km–5 km zone, and beyond this only on POIs in areas that were assessed as having a higher risk of infestation.

With an additional $1.0 million in funding from the Queensland Government, contract staff were employed to assist with clearing this backlog. With the exception of a small number of properties that cannot easily be accessed, follow-up field surveillance of targeted POIs was completed with over 39 800 hectares being finalised.

Field verification on the remaining imagery captured in May–June 2013 will be conducted in 2013-14.

The algorithm used to identify potential fire ant mounds continues to be refined by the University of Sydney in collaboration with the Program. At present, with adjustments being made to the current algorithm, an average of 21 potential targets per hectare is being generated. This is a significant decrease from the previous algorithm which originally identified approximately 180 potential fire ant mounds per hectare. This considerable reduction in false positives presents a far more manageable workload and reduces the reliance on both manual analysis and field surveillance. However, this reduction in false positives also resulted in a reduction in the detection rate by the algorithm from 75 percent to 60 percent of fire ant mounds.

To increase detection levels, if an infestation is detected, field surveillance is conducted to 500 m out from the detection which results in a detection rate close to 100%. This is a very positive result which allows a more effective application of available resources.

Post treatment validation surveillance

In 2011–12, a revised protocol for clearing infestation was approved by TACC. In 2012–13, the detector dogs completed 665 hectares of validation surveillance on 1663 sites. 144 hectares of infestation were cleared after receiving all required treatment and surveillance activities in line with this protocol. Almost 1400 hectares of infestation have been cleared since February 2012.

Passive surveillance – Community Engagement

To compliment the surveillance undertaken by the Program, the community is encouraged to remain involved in reporting suspect ants (passive surveillance). Community engagement has focussed on the area from known infestation out to the 30 km zone (see Community Engagement below).

Treatment

Over 20 000 hectares were treated during the past financial year (Appendix 2). This exceeds the target for the year by 6000 hectares. Additional treatment was applied in the Lockyer Valley due to the risk of further spread in this important agricultural area.

784 hectares (including the 50 meter radius buffer but excluding any overlap from previous infestations) of new infestation were found to be infested during 2012–13 (Appendix 1). Treatment of these infestations was undertaken as they were detected in accordance with the approved protocol. This is a moderate increase to the amount of new infestation detected in previous years. However, it has been acknowledged by the TACC that the delimiting activities of remote sensing surveillance and the associated wide-ranging community engagement program is expected to initially result in an increase in the number of fire ant infestations being detected.

A combined total of almost 18 500 hectares of treatment were conducted on areas identified as disturbed land (including waste disposal sites) and high density infestation (including market gardens).

Market gardens – intensive case management

In 2012–13, almost 750 hectares of market gardens were monitored—with appropriate treatment and surveillance conducted. There have been three main types of land use found to be infested; approximately half of the detected sites are active market gardens, the other half are either old market gardens that are currently being developed or have recently been developed. Two management strategies have been devised to eradicate fire ant infestation on these infested sites.

Containment (movement controls)

Movement restrictions currently apply to 282 000 hectares.

Legislative amendments in December 2012 resulted in changes to the Fire Ant Restricted Area including the division of the area into two zones, a high risk zone and a low risk zone, with associated movement controls commensurate to the risk in each zone (Appendix 6). Entire suburbs are now included or excluded from the restricted area making movement restrictions far easier to communicate and be understood by affected land owners and businesses.

There has also been a shift in the responsibility for risk management from the Program to businesses dealing with restricted items in the restricted area. Monitoring (site inspections) for fire ants is now undertaken by businesses after attending approved training.

As a result there has been a major decrease in the number of site inspections conducted by the Program's inspectors and an increase in the number of fire ant training sessions. The number of inspections conducted by the Program has dropped significantly with approximately 130 inspections in the third and fourth quarters compared with almost 2680 in the first and second quarters.

These changes have allowed the Program's inspectors to focus on implementing and monitoring movement controls and auditing approved risk management plans (ARMPs). In 2012–13 there were over 1000 audits and inspections conducted for compliance with movement controls and ARMPs.

The community and industry continues to work collaboratively with the Program to educate people in the risk of moving and dealing with fire ant restricted items. During the year over 3700 people from industry and councils participated in almost 140 training sessions. A fire ant e-learning package based on these sessions is being developed by a utility company for their own internal use at no cost to the Program.

The Domestic Quarantine and Market Access Working Group endorsed a submission by the Program to reduce the interstate plant quarantine (IPQ) area boundary in line with the Program's nationally endorsed protocol for removing infested site status. By reducing the number of businesses dealing with restricted items in or near an infested area, this also reduces the number of businesses that are impacted by interstate market access restrictions. The IPQ reduction occurred in the fourth quarter 2012–13.

Community Engagement

Three extensive communication campaigns were initiated in 2012–13 between April and the end of June, targeting nearly a million people within the fire ant 30 km delimitation zone. These campaigns included notifications regarding remote sensing surveillance, a 'Check your yard' campaign to assist delimitation and a survey of residents on large properties outside the Program's operational areas including in the Lockyer Valley.

In excess of 269 000 remote sensing surveillance notifications have been distributed with approximately 5.3% returned providing property information as requested. The standard marketing response rate for unaddressed mail is usually 1 to 1.5%.

Over 700 000 residents received a 'check your yard' notification. Initial community response to the engagement campaigns has been very positive with the number of suspected fire ant reports greatly increasing.

The attached map (Appendix 5) shows the areas in which these community engagement activities have been carried out. These activities, along with the remote sensing surveillance flights which are also depicted (Appendix 4), show the area of coverage that the Program has achieved in 2012–13. Appendix 1 shows the areas of new infestation for the corresponding period. No new infestation falls outside the areas of activity.

Given the importance of the Lockyer Valley region, community engagement and education activities with the public, businesses and schools in the area have targeted over 27 500 local residents in the last year. Engagement activities have included displays at events, training sessions, direct mail, aerial surveillance notifications and information distributed through local businesses and schools. Furthermore, the Program's electronic road sign has been placed in prominent locations in the area.

During 2012–13 the 'Aka the fire ant tracker' interactive school education road-show was presented at almost 100 schools (over 11 000 attendees) and at 20 public venues with over 3200 attendees. Feedback received from the sessions has been consistently positive.

There has also been strong audience reach – over four million, through media articles and on-line activities.

These activities have served to reignite awareness in the eradication effort. There has been a marked increase in phone enquiries and an increase in public reporting of suspect ants since these campaigns began.

Scientific, Technical and Other Support Services

A scenario plan (using futuring philosophy) was completed in March 2013 based on different success rates for remote sensing detection. The plan will help determine

the sequence of steps needed to eradicate fire ants. Three different scenarios were explored namely: *The 'no control' futures scenario*, *The long-term control futures scenario* and *The success scenario in 2050*. It was concluded that without a successful eradication or aggressive containment program, major impacts will be felt across the whole of the Australian economy and society.

Genetics research by the Program has shown that there is lower genetic diversity in the remaining fire ant population in Australia compared with other invaded countries and that genetic diversity is decreasing over time. There is also evidence of inbreeding and population fragmentation which does not occur elsewhere. This has been attributed to the eradication pressure created by the Program's treatment program. A recommendation from the Science Advisory Panel was to demonstrate how this reduction in genetic diversity might affect the ability of the ant to survive in the long term. One indicator of reduced fitness is the production of sterile males in a colony which wastes valuable resources (food and labour). If too many sterile males are produced a colony will eventually collapse. Current research is focussed on demonstrating that there is an increasing incidence of male sterility in the Queensland population which may eventually tip it towards extinction.

Information Services continued to support and maintain all information systems used by the Program. The Fire Ant Information System redevelopment project continued during the 2012–13 financial year with a major refocus occurring in December 2012. The Program has partnered with a local software development vendor to assist with the redevelopment which has seen a significant improvement in the project deliverables. Information Services also continued to support remote sensing activities by upgrading the storage capacity located onsite for remote sensing imagery and continuously streamlining the remote sensing process.

Program Management and Governance

Three reviews of the Program were undertaken in 2012–13 including a financial audit, a technical review of remote sensing surveillance operations and an efficiency audit of program operations in March 2013. In addition, to ensure that the remote sensing surveillance process is as efficient as possible, a business process review was conducted by external consultants. The recommendations of this review are currently being implemented. This includes the development of capability within the Program's information management system to record operational activities associated with remote sensing surveillance.

As recommended by the November 2011 Technical Panel, the effects over time of large-scale site disturbance and of fire ant treatment on native populations of ants have been examined. Results indicate that bait treatments did not have a significant impact on native ant species.

Work has commenced to explore how the fire ant partnerships approach and community engagement strategy is integrated into the 'shared responsibility' approach for fire ant management. This work will be incorporated into an assessment of the current funding model with a view to broadening the funding base.

Budget

The total available budget for 2012–13 was 17.993 million (Appendix 7). This comprised $15 million in national cost-shared funding, $1.125 million additional contribution from Queensland and $0.808 million carryover from 2011–12. An additional $1 million was also made available by Queensland to ensure the remote sensing surveillance backlog from the previous season was addressed.

Initial planning for the Program for 2012–13 was based on a $21 million budget. However, the amount of available funding was reduced in October 2012 which resulted in modifications to the work program for the remainder of the financial year. By October 2012, the Program had downsized from 172 full time equivalents (FTE) to 126 FTE. Queensland provided the required retrenchment benefits of $0.663 million.

The Program was underspent by $337,540 in 2012–13. On 1 August 2013, the National Management Group (NMG) approved the carryover of these unspent funds from 2012–13 and for these funds to be applied to 2013–14 fire ant operations being conducted under the agreed response plan.

A five year 2013–18 Response Plan and associated budget was noted by the NMG in March 2013. The 2013–14 national cost-share budget of $15 million was subsequently endorsed by NMG in April 2013, with Queensland committing to providing a further $3 million to assist in eradication efforts. This was noted at the Standing Council on Primary Industries in May 2013. The Program will be reviewed again in early 2014 before a decision is made on funding for future years.

2012–13 Fire Ant Operation Plan and Reporting Schedule

2012–13 operational focus – delimit the extent of infestation using a number of tools including remote sensing technology and community surveillance; conduct preventative treatment of identified high risk areas and the destruction of all new infestation as it is found.

MILESTONES / REVIEW POINTS		
To ensure the program remains on track, TACC has endorsed the following milestones/review points for the program:		
Milestone (i)	Surveillance - the extent of infestation is delimited by June 2015. The following will be used as triggers to assess this milestone: • the rate of false positive/negatives reduces the effectiveness of remote sensing; • infestation is detected beyond the 30 km boundary (blue line in attachment 5 of the approved plan); • large reproductive areas of infestation are found beyond the outer boundary scheduled for remote surveillance (purple line, 10 km, in attachment 5 of the approved plan); • a dramatic and ongoing decline in community support.	• on track—no milestone breached • on track—no milestone breached • on track—no milestone breached • on track—no milestone breached • on track—no milestone breached
Milestone (ii)	Treatment - treatment results in property freedom for all identified infested sites allowing suburb based restricted areas to be removed.	• on track—no milestone breached
Milestone (iii)	Treatment - treatment strategies (including the proactive treatment strategy for areas of major disturbance) results in a reduction of the number of infested sites being detected within the current known infested area within three years.	• on track—no milestone breached
Milestone (iv)	Compliance - community and industry continue to comply with movement controls thereby preventing human assisted spread beyond the restricted area.	• on track—no milestone breached

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
TREATMENT Total 14 600 ha treatment planned in 2012–13 *(Total budget $726,000, including 30 tonnes of bait ($627,800) and $98,200 aircraft charter)*					
Infested property treatment	Treatment of all newly infested sites (planning based on 500–600 ha of infestation being detected in 2012–13) Direct nest injection with 50 m buffer (bait) for all known infestation. • N° colonies detected • N° infested sites • N° total hectares new infestation	Jason Haffenden	• 759 colonies detected on 376 sites equating to 359.22 ha of new infestation (includes the 50 m radius buffer). All new detections were destroyed by direct nest injection (DNI) – a total 610 ha of treatment of new infestation was conducted (which includes treatment of an entire site where efficient to do so, rather than just the 50 m buffer).	• 1548 colonies detected on 751 sites equating to 784 ha of new infestation (includes the 50 m radius buffer) • 1497 ha of treatment of new infestation was conducted (which includes treatment of an entire site where efficient to do so, rather than just the 50 m buffer).	• 879 colonies detected on 443 sites = 426 ha of infestation
Targeted treatment of disturbed areas	Treatment of sites with disturbed land (planning based on 7000 ha being treated once)—these sites are at high risk of being infested • N° hectares treated	Jason Haffenden	• Figures are included in the 'targeted treatment of high risk area'.	• Figures are included in the 'targeted treatment of high risk area'.	
	41 waste facilities identified for treatment (see Appendix 8) (planning based on 645 ha being treated)	Jason Haffenden	• 36 waste facilities received treatment of all least one application. Waste facilities within high risk areas received 2 rounds of treatment.	• 33 waste facilities received treatment • Three sites (Riverview, Carbrook and Redland Bay) did not received treatment due to weather and an assessment that aerial application was not suitable due to proximity of inhabited dwellings. • 5 sites were not treated following an assessment by inspectors i.e. vacant land, offices/headquarters of waste facilities	
Targeted treatment of high risk areas	Treatment of high risk areas (Planning based on 7000 ha being treated) • Areas considered to be a risk to the program due to a number of factors. These may be: level of infestation, location of area, or social form of infestation. • These areas are under intensive management and will receive up to 3 rounds of treatment and additional passes of surveillance to ensure all	Jason Haffenden	• 17 308 ha of treatment on 6413 sites	• 18 444 ha of treatment on 12 782 sites • 133 ha on 967 sites received surveillance due to weather resulting from an outstanding Year 12 treatment job during 1st and 2nd quarters.	• Operational activities during 2011–12 cleared infestation from two areas: Walloon and Marburg • There were 719 sites equating to 1680 ha surveyed for the case managed sites project

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
	infestation is eliminated.				
	Management of market gardens. Market gardens are traditionally an area of high risk and sometimes have persistent infestation • Over 650 sites have been identified as either current or previous market gardens • These sites are being surveyed to determine presence or absence of infestation • A strategy to manage sites that are infested has been implemented.	Philippa Nelson	• No market garden surveillance was conducted this quarter as all sites identified for surveillance had previously been surveyed. • Infestation detected on 25 sites (area of infestation = ~15 ha). • During the quarter infestation was found on 8 sites that had previously been indentified as infested. These sites have undergone further bait treatments. • Of those sites infested this quarter, 9 are active market gardens, 1 is a school, 14 are on residential developments, and 1 is on an industrial site.	• Surveillance has been conducted on 442 sites (471 ha) • Number of infested sites detected = 54 • Area of infestation = ~44 ha • Number of sites still infested during follow up inspections = 16 • Of those still infested 11 were active market gardens, 3 were residential developments, 1 was an industrial site and 1 was a school. **Project totals (2011–12, 2012–13):** • Surveillance has been conducted on 613 sites (749 ha). • Area of infestation = ~56 ha. • No of active market garden sites infested = 25 • No of residential development sites infested = 34 • No of 'other' sites infested = 6	• Surveillance was conducted on 171 sites (277 ha) • ~13 ha of infestation were detected on 20 sites.
Total area treated	Total area treated	Jason Haffenden	• 17 918 ha (includes all sites in 50 m radius buffer)	• 20 073 ha (includes all sites in 50 m radius buffer) on 16 306 sites	• 73 525 ha
SURVEILLANCE Total 105 300 ha of surveillance is planned in 2012–13, comprised of: • 100 000 ha remote sensing surveillance • Total 3200 ha of criteria driven field surveillance • Total 2100 ha of dog surveillance					
Remote sensing surveillance *$2,366,502 (excludes staff)*	Delineation surveillance - up to 100 000 ha of data capture in a 10 km buffer around the current infested area – priority will be around the western edge of known infestation. (based on an average of 750 ha data capture/day)		• Data capture commenced May 2013.	• A total 51 568 ha of data captured in May–September 2012. • 34 148 ha has been flown in May and June 2013 with 15 531 ha of imagery available to the program	New strategy – no 2011–12 actual
	The area from 500 m to 5 km from known outlying infestations (will complete 1 pass annually for 3 years) – 57 454.88 ha of 'suitable' habitat will be flown (526 cells of 1 km x 1km) • N° hectares data capture *(Note: there is a total 119 185.41 ha (1091 cells) in the 500m-5km zone. 57 454.88 ha (526 cells) is considered to be most suitable habitat for fire ants and 61 730.53 ha (565 cells) is mostly 'not suitable' habitat. In 2012–13, only the most suitable habitat will be targeted for data capture.)*	Jason Haffenden	• 33 493 ha were flown for image capture in this quarter with 15 088 ha of imagery made available to the program. A substantial component the approximate 18 000 ha difference in imagery has been delayed in being made available due to technical issues. Resolution has been implemented with outstanding imagery due to be delivered by end July 2013.	• 16 715 ha of 'suitable' habitat in the 500 m–5 km zone was captured in 2012 (May –September) • 33 493 ha has been captured in 2013 (15 088 ha of imagery available due to technical issues) • Total of 50 208 ha	New strategy – no 2011–12 actual
	Area from 5–10 km from known outlying infestations detected since 2009 (will complete 1 pass annually for 2 years) – 63 780.81 ha (584 cells) of 'suitable' habitat will be flown • N° hectares data capture *(Note: there is a total 127 475.4 ha (1167 cells) in the 5–10 km zone.* *63 780.81 ha (584 cells) is considered to be most suitable habitat for fire ants and 63 694.58 ha (583 cells) is mostly 'not suitable' habitat. In 2012-13, only the most suitable habitat will be targeted for data capture.)*	Jason Haffenden	• 327 ha were flown for image capture this quarter with 115 ha of imagery made available to the program. As above there has been a delay in the delivery of remaining imagery due to technical issues. The focus of image capture has been in the 500 m–5 km buffer as endorsed at the TACC meeting in April 2013.	• 31 578 ha of 'suitable' habitat in the 5–10 km zone was captured in 2012 (May –September) • 327 ha has been captured in 2013 (115 ha of imagery available due to technical issues) • Total of 31 905 ha	New strategy – no 2011–12 actual
	Areas inside these buffers (ie the known infested area) will also be targeted for remote sensing as required	Jason Haffenden	• 328 ha of imagery has been provided to the program this quarter. This imagery is collected over areas of known infestation and is used to refine the algorithm and may require multiple flights	• 3274 ha captured in 2012 (May –September) • 328 ha has been captured in 2013 • 3602 ha	New strategy – no 2011–12 actual

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
			over the same area.		
	Algorithm and manual analysis to detect points of interest (plan to analyse up to 100 000 ha) • N° hectares algorithm analysis • N° hectares manual analysis	Jason Haffenden	• Various versions of the algorithm were used during this period. • Manual analysis finalised the review of imagery collected in 2012 and commenced on imager collected in 2013. • This quarter a total of 5 237 146 potential targets were reviewed. From this process 198 782 points of interest were detected. - 2012 potential targets 2 461 756 resulting in 110 103 points of interest - 2013 potential targets 1 224 165 resulting in 88 679 points of interest	• 2012 potential targets reviewed 5237146 resulting in 198 782 POI • 2013 potential targets reviewed 1 224 165 resulting in 88 679 • Total potential targets reviewed 6 461 311 resulting in 258 434 points of interest	New strategy – no 2011–12 actual
	Using points of interest, conduct field operations to detect infestation (capacity – N° ha based on N° points of interest) • N° hectares of field surveillance	Jason Haffenden	• Field staff conducted surveillance of a total of 54 945* points of interest. • 2 points were suspect • this surveillance covered an area of 20 660 ha *8657 points of interest have been processed on sites where 100% ground surveillance was completed in the 2nd and 3rd quarters and has been added to the above 4th quarter figures.	• 92 354 points of interest across 39 880 ha The focus to prioritise image capture and field activities to the 500 m–5 km buffer in 2013 has resulted 6259 POIs (179 sites) remaining and were not visited due to access difficulties to the site. A process is underway to finalise these points of interest. The remaining points of interest that fall outside of this buffer have been retained and will be completed as a second priority as resources permit. 88 679 Points of interest identified on 2013 imagery have not yet been tasked for field visit	New strategy – no 2011–12 actual
Field surveillance	Criteria driven surveillance conducted, as required, to delimit infestation from public reports in the 10 km buffer around the current infested area (capacity is 3200 ha – based on 1.25 ha/person/day) • total N° hectares surveyed	Jason Haffenden	• Total 1856 ha criteria driven field surveillance has been conducted on 2537 sites for all job types.	• Total 9158 ha criteria driven field surveillance has been conducted on 13 029 sites for all job types.	
	• site inspections	Jason Haffenden	• 45 sites, 11 ha Changes to the restricted area in December 2012 removed the requirement for site inspections. Site inspections however were undertaken during the transition period.	• 2820 sites, 1099 ha	• 6126 sites • 2159 ha
	• public call outs - sample collections	Jason Haffenden	• 398 sites, 140 ha	• 1189 sites, 410 ha	• 1151 sites equating to 277 ha
	• post-treatment validation surveillance (first pass is conducted by teams, second pass is conducted by dog team or teams using lures)	Jason Haffenden	• Field staff conducted 440 ha of first pass validation surveillance on 652 sites. • Dog teams conducted 285 ha of second pass validation surveillance on 311 sites.	• Field staff conducted 1962 ha of first pass validation surveillance on 3984 sites. • Dog teams conducted 665 ha second pass validation surveillance on 1663 sites. * 99 ha of effort was incorrectly attributed in the 2nd quarter report this was identified as part of QA of data entry and has been corrected in the system.	• 1896 sites • 1075 ha This data is for all validation surveillance conducted during the year as visual surveillance 1 and visual surveillance 2 were not program requirements at that stage.
	• surveillance of areas with high density infestation, includes market gardens	Jason Haffenden	• 258 sites, 32 ha (including surveillance of case managed and market garden sites)	• 854 sites, 930 ha (incl. surveillance of case managed and market garden sites)	• 514 sites • 725 ha This activity was undertaken during May and June 2012
	• other surveillance activities ** Observation surveillance jobs are made as interim surveillance jobs to determine if colony points are still active prior to the first pass of surveillance occurring as per the protocol (Validation Surveillance 1). This does not occur on all sites generally those where development or other activities are planned.*	Jason Haffenden	• IPQ 297 sites (582 ha). • Structured surveillance of 95 sites (38 ha). • Delineation surveillance 372 sites (309 ha). • Observation surveillance 14 sites (3 ha). • Compliance 19 sites (9 ha).	• IPQ 1095 sites (2007 ha). • Structured surveillance 605 sites (979 ha). • Delineation surveillance 517 sites (786 ha). • Observation surveillance 216 sites (257 ha). • Compliance 34 sites (19 ha). * 55 ha of effort was incorrectly attributed in the 2nd quarter report this was identified as part of QA of data entry and has been corrected in the system.	• IPQ 2334 sites 1245 ha • Structured surveillance 5313 sites 7405 ha • Delineation surveillance 1851 sites 2320 ha • Observation surveillance 73 sites 198 ha • Compliance 3 sites 2 ha

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
	Total area surveyed by field staff	Jason Haffenden	• 22 524 ha (1856 ha criteria driven field surveillance and 20668 ha remote sensing field staff surveillance).	• 49 047 ha (9158 ha criteria driven field surveillance and 39 889 ha remote sensing field staff surveillance) (Appendix 3).	• 16 117 ha.
Dog surveillance *$416,563*	Criteria driven odour detection dog surveillance conducted, as required: • N° hectares post treatment validation surveillance • N° site inspections	Cara McNicol	• 285 ha validation surveillance was conducted on 651 sites. • Nil site inspections were conducted by the dog teams. • The dog teams have also conducted 7 ha of dog maintenance/transition training and structured dog surveillance on 11 sites.	• 665 ha validation surveillance was conducted on 1663 sites. • The dog teams have also conducted 44 ha of dog maintenance/transition training and structured dog surveillance on 52 sites.	• Validation surveillance 1603 sites (786 ha). • Structured surveillance 35 sites (232 ha).
GENERAL OPERATIONS					
Restricted area	Update restricted area at least every 6 months		The restricted area is unchanged from the 2nd quarter.	The fire ant restricted area was updated in December 2012.	
Sites that have been cleared of infestation	Sites meeting TACC's approved protocol are removed from infested site (IS) status. • N° of colony points (CPs) and area of infestation	Jason Haffenden	• 224 CPs totalling 55 ha of infestation were cleared Reporting parameters were adjusted during the previous quarter to better reflect infestation that has been cleared based on area of infestation rather than on sites that are no longer considered infested. Colony points and area of infestation cleared are now reported on and replace sites and site hectares.	• This financial year, 376 CPs totalling 144 ha of infestation have been cleared. • • Since February 2012 a total of 3969 CPs totalling 1367 ha of infestation have been cleared.	• 1290 ha of previous infestation were cleared in 2011–12.
PROGRAM COMPLIANCE					
CSC *$251,636*	Provide customer service in the areas of: • public sample collections (pick up and kits) • Site inspection requests • Treatment/surveillance requests	Jason Haffenden	• 750 public reports received • 313 supplied with a sample collection kit • 437 were tasked to field team. • 59 compliance inspections • 2223 bookings made for other operational activities	• 3256 public reports - 1904 supplied with sample collection kits - 1352 sample collection requests tasked to staff • 4265 site inspection requests • 5577 operational booking requests	• 2375 reports from the public • 2882 sample kits dispatched • 1314 samples collected by staff
	N° phone calls to DAFF Customer Service Centre	Jason Haffenden	• 1969 calls managed	• 8855 phone calls to DAFF Customer Service Centre This is approximately 70% of the calls compared to last year which is most likely attributable to the regulation amendment removing this requirement resulting in less than half the site inspections completed compared to the previous year.	• 12 760 phone calls to DAFF Customer Service Centre
Mapping *$255,320*	Provide daily support and maintenance to spatial users and systems • N° of support/and spatial products produced	Allison Hoskin-Kain	• 126 spatial products/support produced	• 475 spatial products/support produced	• 446 spatial products or requests for assistance
Compliance *$590,649*	Risk management and security activities to contain fire ants to South East Queensland, including:		Fire ants remain contained to South East Queensland.	Fire ants remain contained to South East Queensland.	
	• Revised Approved Risk Management Plan framework is introduced	Heather Leeson	The project is finalised.	Revised ARMP implemented in mid December 2012.	
	• N° ARMPs reviewed and updated	Noel Greiner	• 33 reviewed and updated • 13 cancelled	• 98 reviewed and updated • 253 cancelled (this is higher than usual due to implementation of amended regulation and a cleanse of the data as a result of returned correspondence).	• 67 ARMPs reviewed
	• N° new ARMPs approved	Noel Greiner	• 110 approved	• 304 new ARMPs	• 210 new ARMPs approved
	• Total N° of ARMPs	Noel Greiner	• 3690		
	Total number of audits and inspections for compliance with movement controls & ARMPs	Noel Greiner	• 48 audits/inspections were conducted for compliance with movement controls and ARMPs	• 843 audits/inspections conducted Amended regulation was introduced in December 2012. The initial focus since implementation has been extension with clients to explain changes and where required update of existing ARMP and approval of new risk management plans	
	• N° of ongoing investigations • N° of new investigations • N° of finalised investigations	Noel Greiner	• 1 ongoing • 1 new • 0 finalised	• 6 new investigations • 9 finalised – 2 advisory letters sent (7 no further action taken)	• 10 investigations conducted • 5 investigations finalised and previously reported

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
	• No of current investigations		• 2 currently being investigated		• 5 breaches carried over
	• N° audits of ARMPs	Noel Greiner	• 62 ARMP audits	• 270 ARMP audits	• 224 spot audits
	• N° IPQ inspections	Noel Greiner	• 239 commercial • 14 for private residents	• 964 commercial • 50 private residential	
	• N° of ongoing tracings • N° of new tracings • N° of finalised tracings • No of current tracings	Noel Greiner	• 3 ongoing, 3 finalised • 5 new • 5 currently being investigated	• 19 new tracings • 17 finalised – 8 believed to be by natural flight, 9 inconclusive, • 5 ongoing	• 34 tracing activities commenced • 2 tracings inconclusive with risk items introduced from other sites within close proximity of infestation • 29 no human assisted movement suspected • 3 carried over.
	Total number of inspector's approvals and directions to manage risk • inspector's approvals – to allow business to continue to trade • inspector's directions – to ensure businesses are dealing with risk adequately	Noel Greiner	• 40 inspector's approvals – managing risk on infested sites, allowing movement of soil off site where the company has not implemented an ARMP or had staff trained to conduct onsite monitoring • 2 inspector's directions – managing risk on infested sites.	• 326 inspector's approvals • 52 inspector's directions	• 347 inspector's approvals • 77 inspector's directions
Program planning *$583,701*	Provide operational planning for treatment and surveillance activities • N° jobs created • N° jobs data entered	Ross Dorward	• Quarterly data is unable to be provided however the yearly data is provided	• 52 277 sites were data entered during Year 12 • 9015 jobs were created during Year 12	• 101 574 sites data entered • 11 156 job created
COMMUNITY ENGAGEMENT					
Community and industry engagement *$870,209, excl. 'Aka'*	All engagement and communication activities will be used to promote community and industry participation with the delimitation program and compliance with movement controls	Anthony Wright	All material and engagement activities conducted in 2012–13 met the requirement.	All material and engagement activities conducted in 2012–13 met the requirement New collateral developed including: • 'What you need to know' brochures which include movement control information • ID poster • 'Do you have an ARMP' corefute developed for movement controls campaign • Factsheet and general information template • Training manual and; • Several Aka education program materials.	
	Foster passive surveillance • public continues to report 70% of all fire ant infested sites	Anthony Wright	• 69% of all suspect samples (720 of the 1044 samples) were from public reports, of which 239 were fire ants	• 70% of all suspect samples (2418 of the 3038 samples) were from public reports, of which 427 were fire ant.	• 69% of infested sites
	Volunteers • N° active volunteers • N° activities delivered/attended by volunteers	Anthony Wright	• 63 people registered as fire ant volunteer rangers. • Eight volunteers assisted in 5 events contributing 52 hours • Three volunteers worked an average of 6 hours per day for 37 days in the office, contributing 222 hours	• 63 people registered as fire ant volunteer rangers. • Volunteers assisted in 19 events contributing 308 hours • Volunteers assisted in the office contributing 332 hours.	• There are 64 people registered as fire ant volunteer rangers. • Volunteers assisted in 34 events, contributing 466 hours.
	Engagement of communities in high risk and peri-urban areas within the 30 km delimitation zone. • Total N° engagement activities • Total N° people engaged	Anthony Wright	• The program has attended 79 activities and engaged 14 058 people • Three major marketing and communication campaigns were initiated targeting 975 951 residences. • 5–30 km delimitation zone – survey. Survey notification card sent to residences and 404 participated in the focus group survey. • Check your yard request sent to 700 975 residences with the restricted area and populated areas in Brisbane and Gold Coast. • Aerial property information form (PIF) sent to 269 083 residences within the RSS flight zone.	• The program has attended 325 activities and engaged 133 682 people. • Three campaigns targeting 975 951 residences.	• 257 engagement activities • 54 393 people engaged

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
	• N° CE activities within Brisbane City Council area • Total N° people engaged Includes: • Community Briefings • Industry briefings • Displays • Event attendance	Anthony Wright	50 CE activities in total engaging 514 192 people in total • 5 events (shows/festivals/expos) – 5612 people engaged • 23 training sessions – 690 students • 19 community/industry presentations – 2021 attendees • 5–30 surveys - sent 581 notifications. 19 surveys were completed • aerial PIF – sent 171 730 forms • Check your yard – sent 333 539 requests VMS – Durack x 2, Jindalee	Total 138 CE activities engaging 543 660 people • 17 events – 28 718 people engaged • 85 training sessions – 2568 students • 31 presentations –3305 attendees • 2 static displays – 3200 people • 3 campaigns targeting 505 869 residences VMS locations - Calamvale / Heathwood / Willawong / Mackenzie / Eight Mile Plains / Carindale / Durack x 2 / Jindalee	Total :114 CE activities engaging 27 091 people • 16 events – 22 263 people engaged • 64 training sessions – 1547 students • 27 presentations – 731 attendees • 7 static displays – 2550 people
	• N° CE activities within Lockyer Valley Regional Council area • Total N° people engaged	Anthony Wright	5 CE activities in total engaging 9832 people in total • 2 training sessions – 30 students • 5–30 surveys - sent 1598 notifications. 72 surveys were completed • aerial PIF – sent 5384 forms • Check your yard – sent 2748 requests VMS – Gatton	Total 26 CE activities engaging 30 749 people • 5 events – 4085 people engaged • 11 training sessions – 279 students • 1 presentations –24 attendees • 2 library displays – 250 people • 1 postcard mail-out – 4409 residences and businesses • 2 businesses distributing 6400 id cards • 3 campaigns targeting 9802 residences VMS locations – Plainland x2 / Summerholm / Gatton x2 / Forest Hill 5500 brochures distributed to Laidley postal area.	Total:24 CE activities engaging 6583 people • 11 events – 1700 people engaged • 3 training sessions – 60 students • 6 presentations – 1422 attendees • 2 postcard mail-outs – 2861 residences and businesses • 2 static displays 540 people
	• N° CE activities within Ipswich City Council area • Total N° people engaged	Anthony Wright	17 CE activities in total engaging 82 946 people • 1 training sessions – 31 students • 12 community/industry presentations – 1487 attendees • 1 static displays – 2614 people • 5–30 surveys – did not send notifications, however 3 surveys were completed online • aerial PIF – sent 12 818 forms • Check your yard – sent 65 993 VMS – Springfield / Ipswich x 2 / Deebing Heights	Total 49 CE activities engaging 103 394 people • 4 events – 1300 people engaged • 14 training sessions – 230 students • 22 presentations – 5905 attendees • 5 static displays – 15 100 people • 1 postcard mail-out - 2045 residences and businesses • 3 campaigns targeting 78 814 residences VMS locations – Yamanto / Blackstone / Leichhardt / Ipswich x4 / Walloon x2 / Flinders View / Deebing Heights x2 / Rosewood / Springfield x2 / Haigslea	Total: 36 CE activities engaging 5299 people • 12 events – 4060 people engaged • 5 training sessions – 63 students • 14 presentations – 647 attendees • 2 postcard mail-outs – 379 residences and businesses • 3 static displays – 150 people
	• N° CE activities within Somerset Regional Council area • Total N° people engaged	Anthony Wright	6 CE activities in total engaging 2940 people • 1 event (shows/festivals/expos) – 10 people engaged • 2 community/industry presentations – 164 attendees • 5–30 surveys – sent 1285 notifications. 101 surveys were completed • aerial PIF – sent 928 forms • Check your yard – sent 452 requests VMS – Minden	Total 10 CE activities engaging 3279 people • 2 library displays – 250 people • 2 training sessions – 89 students • 1 event (shows/festivals/expos) – 10 people engaged • 2 community/industry presentations – 164 attendees • 3 campaigns targeting 2766 residences VMS – Wanora / Fernvale / Minden	Total: 3 CE activities engaging 165 people • 2 presentations – 85 attendees • 1 static displays – 80 people
	• N° CE activities within Scenic Rim Regional Council area • Total N° people engaged	Anthony Wright	3 CE activities in total engaging 5945 people • 5–30 surveys – sent 1147 notifications. 59 surveys were completed. • aerial PIF – sent 3590 forms. • Check your yard – sent 1149 requests.	Total 9 CE activities engaging 8589 people • 1 event – 2500 people engaged • 3 training session – 23 students • 2 presentations – 121 attendees • 3 campaigns targeting 5945 residences VMS – Mutdapilly	Total: 12 CE activities engaging 2423 people • 2 events – 550 people engaged • 2 training sessions – 31 students • 5 presentations – 120 attendees • 2 postcard mail-outs – 1622 residences and businesses • 1 static displays – 100 people
	• N° CE activities within Redland Regional Council area • Total N° people engaged	Anthony Wright	6 CE activities in total engaging 96 138 people in total • 1 event (shows/festivals/expos) – 120 people engaged	Total 11 CE activity engaging 96 281 people • 1 event (shows/festivals/expos) – 120 people engaged • 4 training sessions 103 students	Total: 13 CE activities • 3792 people engaged • 6 events – 3552 people engaged

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
			• 1 community/industry presentation – 100 attendees • 1 static display – 100 people • 5–30 surveys – didn't send notifications, however 1 survey was completed online • aerial PIF – sent 54 057 forms. • Check your yard – sent 41 760 requests.	• 2 presentations – 140 attendees • 1 static display – 100 people • 3 campaigns targeting 95 818 •	• 4 training sessions – 84 students • 2 presentations – 56 attendees • 1 static displays – 100 people
	• No. CE Activities within Logan Regional Council • Total N° people engaged	Anthony Wright	8 CE activities in total engaging 124 433 people in total • 1 event (shows/festivals/expos) – 800 people engaged • 2 training sessions – 17 students • 2 community/industry presentations – 145 attendees • 5–30 surveys – did not send notifications. However 15 surveys were completed online. • aerial PIF – sent 19 465 forms. • Check your yard – sent 103 991 requests. VMS – Slacks Creek / Park Ridge / Regents Park / Munruben / Marsden	Total 52 CE activities engaging 144 130 people • 3 events – 1100 people engaged • 10 training sessions – 240 students • 17 presentations – 2305 attendees • 1 static display – 2500 people • 1 postcard mail-out – 10 514 residences and businesses • 3 campaigns targeting 123 471 residences VMS locations - Mount Cotton / Logan Reserve x2 / Greenbank x2 / Waterford x2 / Park Ridge x2 / Marsden x2 / Waterford x3 / Regents Park x2 / Forestdale / Slacks Creek / Munruben • Advisement of local government representatives • 11 local businesses distributed 1400 id • 3 schools and 2 kindergartens distributed 2600 id cards	Total: 28 CE activities engaging 8130 people • 7 events – 3176 people engaged • 6 training sessions – 89 students • 7 presentations – 294 attendees • 7 static displays – 2350 people • 1 postcard mail-out – 2221 residences and businesses
	• No. CE Activities within Moreton Bay Regional Council area • Total N° people engaged	Anthony Wright	3 CE activities in total engaging 91 268 people in total • 1 training session – 40 students • 5–30 surveys – sent 1,282 notifications. 54 surveys were completed. • Check your yard – sent 89,892 requests.	Total 6 CE activities engaging 91 610 people • 1 event – 300 people engaged • 3 training sessions – 82 students • 2 campaigns targeting 91 228	Total: 1 CE activity engaging 20 people • 1 training session – 20 students
	• No. CE Activities within Gold Coast City Council area • Total N° people engaged	Anthony Wright	6 CE activities in total engaging 62 639 people in total • 4 training sessions – 77 students • aerial PIF – sent 1111 forms. • Check your yard – sent 61 451 requests.	Total 9 CE activities engaging 62 763 people • 1 event - 80 people engaged • 6 training session – 121 students • 2 campaigns targeting 62 562 residences	Total: 19 CE activities engaging 596 people • 2 events – 180 people engaged • 16 training sessions – 345 students • 1 presentation – 71 attendees
	• No. CE Activities within council areas beyond fire ant operational zones • Total N° people engaged	Anthony Wright	• 5–30 survey – 80 surveys were completed online.	Total 4 CE activities engaging 296 people • 1 training session – 7 students • 1 presentation – 29 attendees • 1 library displays – 180 people • 1 campaign targeted 80 residences	Total 7 CE activities engaging 294 people • 4 training sessions – 69 students • 1 presentation – 75 attendees • 2 static displays – 150 people
	Training events for industry • N° training events held • N° industry personnel trained	Anthony Wright	• 33 training sessions (includes above listed training held within specific council areas) • 885 trainees	• 139 training sessions 3742 trainees	• 105 training sessions • 2308 students (Training figures are broken down into council regions as above)
	Engaging retail outlets, real estate agents, veterinarians and doctors surgeries to channel information to the public • N° of businesses engaged	Anthony Wright	• 118 businesses engaged to distribute awareness materials	• 915 businesses engaged to distribute awareness materials The above figure is not a true reflection of this activity. We cannot effectively report on the actual number of businesses contacted to distribute materials on our behalf using the current CCS.	• 3107 businesses engaged to distribute awareness materials.
$97,081	*'Aka the fire ant tracker'* - an interactive school education road-show will be rolled out in 2012–13 • Will focus on increasing fire ant knowledge among children and encouraging passive surveillance and electronic reporting of passive surveillance activities • The education package meets the Australian Curriculum standards in Science and Sustainability and has been approved by Queensland Education The road show will visit up to 3 schools (educating approximately 800 students) each week, educating an estimated 15 000 children in 2012–13	Anthony Wright	• 28 school education sessions were held with 3609 students	• 98 school education sessions with 11 114 students. • 21 general public appearances with 3202 attendees • Total audience reach for the year 14 316 target was 15 000 NB that these figures do not reflect the running total from previous quarters due to issues with data capturing issues.	N/A

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
	N° of engagement opportunities provided by field staff	Anthony Wright	12 795 site visits including delivery of information slips and door-to-door conversations	38 684 site visits	
	N° targeted free media activities and drafting of media statements	Anthony Wright	Audience reach – 866 152 through media articles and on-line activities • 21 published articles • 1 television report • views of the fire ant homepage on website* - 12 703 home page - 6386 maps - 5796 identification Social media activity • 9 Facebook/Twitter post related to 3 campaigns - 4 likes, 1 shares - 10 likes, 2 shares, 1 comment - 1 like, - 119 likes, 15 shares, 33 comments - 1 like, 1 comment - 21 likes, 2 comments - 30 likes, 32 shares, 11 comments - 41 likes, 33 shares, 4 comments - 86 likes, 18 share, 5 comments • 2 Facebook advertisements - 93 likes, 3 shares, 10 comments - 103 likes, 2 shares, 9 comments	Audience reach – 4 162 860 through media articles and on-line activities • 91 published articles • 24 radio stories • 8 television report • 10 online • 44 763 views of fire ant homepage on website* Social media activity • 16 Facebook/Twitter	Total 42 617 media articles and on-line activities • 6 media releases • 81 published articles • 39 radio stories • 4 television reports • 27 online • 42 426 website • 27 Facebook/Twitter 7
	Postcards Outlier Flyer	Anthony Wright		• 4 mail campaigns • 20 146 residents and businesses NB that these figures do not reflect the running total from previous quarters due to issues with data capturing issues.	• 7 mail campaigns • 7083 residents • (Postcard campaigns are broken down into council • regions as above)
	Analyse current CE strategies and activities to determine their effectiveness and identify opportunities to streamline/rationalise CE activities to enhance return on investment and maintain/increase the level of public reporting	Anthony Wright	The preliminary review was conducted in the 3rd quarter.	Preliminary review has been completed[1].	
	Develop strategies and work with industry and Councils to increase compliance with movement controls	Anthony Wright	Campaign targeting industry through waste facilities • 31 sites engaged • 42 corflute signs put on display with the message 'Do you have a current ARMP' • 35 000 brochures distributed during the campaign period • All sites stated the need for fire ant signage and many wanted to keep the ARMP signs.	• 25 meetings with Council/industry representatives. • More than 336 attendees • 35 000 brochures distributed through 31 waste facilities over a 6 week period.	
	Develop and implement engagement/communication strategy to promote changes to the fire ant restricted area	Anthony Wright	Train the Trainer programs now in place with: • Roadtek • Energex • Queensland Rail Energex e-learning package status - final prepared for review and publishing. Online training program to be progressed in 2013–14.	Notification of RA changes provided to 3912 stakeholders Train the trainer program implemented with three organisations. Online training packages to be finalised.	

[1] Key Findings:
- Predominant Community Engagement activity is outbound. Greater content generation through online mediums would increase audience reach significantly at a minimal cost.
- Data capture of activities against audience reach is not being recorded effectively i.e. VMS units.
- The program has opportunity to leverage greater audience reach through industry contacts.
- Reporting processes do not capture social media reach or media value of articles and news reports.
- Event attendance is a highly effective 'direct engagement' activity, however it is costly.
- A new strategic approach is required 2013–14 and beyond to capture efficiencies maximum audience reach.

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
	Conduct remote sensing and treatment notification in accordance with CASA requirements • N° postcards/notices delivered to households	Anthony Wright	Aerial survey notifications including property information forms sent to 269 083 residences across 162 suburbs. Advertising of upcoming flights placed in Courier Mail and relevant local papers along with media and social media alerts.	278 256 residents notified of remote sensing	
	Conduct 2013 Queensland Householders Survey to assess community attitudes to fire ant program	Anthony Wright	Survey completed, report due in November 2013.	Survey completed, report due in November 2013.	Results of 2012 survey: • 91.6% of Queenslanders have high general awareness of fire ants • 44.9% of residents aware of fire ants had checked yard in last 12 months
SCIENCE, TECHNICAL AND SPECIALIST SERVICES					
Scientific support for operations *$707,476 total*	Diagnostic of suspect ant samples	Ross Wylie	• 1044 samples were diagnosed of which 555 were fire ant • 69% of all suspect samples (720 of the 1044 samples) were from public reports, of which 239 were fire ants • 680 bulk samples from direct nest injection of fire ant mounds were prepared for genetic analysis	• 3038 ant samples diagnosed of which 1032 were fire ant • 70% of all suspect samples (2418 of the 3038 samples) were from public reports, of which 427 were fire ant. • 1560 bulk samples from direct nest injection of fire ant mounds were prepared for genetic analysis.	• 3315 diagnostic samples, including 519 lure samples from compliance monitoring, were processed in the year; 1092 of these were confirmed as positive.
	Fire ant colony maintenance	Ross Wylie	Ongoing – 24 colonies are being maintained at present	The number of fire ant colonies maintained at the Oxley facility for use in Community Engagement activities and for production of scent dollies for the odour detection dogs averaged 21 over the year.	Not reported on in 2011–12
	Support for Community Engagement activities	Ross Wylie	• 73 jars of fire ants provided	• 330 jars of fire ants provided	Not reported on in 2011–12
	Support for the operational component of the odour detection dog project – preparing scent for training, validation and quality assurance	Ross Wylie	• 560 scent dollies were provided to the odour detection dog section	• 2401 scent dollies and 147 vials of live ants were provided to the odour detection dog section	Not reported on in 2011–12
	Risk assessment and mitigation strategies for compliance/movement of high risk materials • N° of assessments/strategies	Ross Wylie	• Risk assessment and mitigation strategies were prepared for four businesses to allow the safe movement of high risk materials	• Risk assessment and mitigation strategies were prepared for 11 businesses to allow the safe movement of high risk materials.	Not reported on in 2011–12
Genetics analysis *$311,000 in total for genetics*	genetic analysis of fire ant colonies to determine social form, population assignment and relatedness • N° samples/colonies analysed for social form • Results of social form analysis	Jane Oakey	• Gp9 analysis performed on 763 samples • Of these 14 were polygyne, located at Purga, Darra, Yamanto, Willowbank and Ripley	• GP9 analysis performed on 2011 samples to determine social form • Of these, 68 were polygyne colonies from 10 locations – Purga, Darra, Yamanto, Willowbank, Ripley, Deebing Heights, Springfield Central, Redbank Plains, Greenbank and Ebbw Vale.	• GP9 analysis performed on 1398 samples to determine social form. • Of these, 1378 samples were monogyne and 20 were polygyne colonies. The polygyne colonies were from 4 locations – Springfield Lakes, Augustine Heights, Willowbank, and Yamanto.
	• N° samples/colonies analysed for microsatellite data and relatedness testing • Results of analysis	Jane Oakey	• Microsatellite analysis performed on 869 samples • No new populations of S. invicta found.	• Microsatellite analysis performed on 1991 samples for population assignment and colony relatedness. • No new populations of *S. invicta* found.	• Microsatellite analysis performed on 1966 samples. • 2188 individuals were tested for parentage.
Genetics research	Relate the observed decrease in genetic diversity of fire ants in Queensland, caused by the eradicative pressure of the program, with biological fitness of the ant • This research was recommended by the November 2011 Technical Panel.	Jane Oakey	• 190 male alates were tested for ploidy. • This research is ongoing.	• 520 male alates were tested for ploidy. • Preliminary results indicate that the number of diploid males has increased over the last 3 years, suggesting a decrease in the biological fitness of the ants. • A presumptive site has been identified as the sex determination region, if proven this will serve as the site for which to study biological fitness. • Work continues in confirmation of the sex determination region. There is increasing evidence for the identification of analogues of both CSD and Fem genes, which would indicate gender determination is similar to the well-documented honey bee system. Once this is proven it will allow us to determine how many alleles are present at that site which is a measure of the biological fitness of the ant. Allelic information can then be modelled to determine the	• 372 tests on male alates for diploidy.

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
				critical number of alleles below which the species tips towards extinction. This research is ongoing.	
Remote sensing analysis	Conduct full analysis of remote sensing surveillance: • determine RST detection rates at low densities of fire ant infestation, including false positive and false negative rates • institute quality assurance standards for screener performance and data integrity • research relationship between mound dimensions, mound/ground temperature differences and climate/site variables and detection ability of RST	Craig Jennings Ross Wylie	• Provided a range of new training examples and all imagery captured from 2013 season. • USyd exploring new algorithm developments including cluster detection and manual analysis simulation. • Refinement of detection parameters to reduce potential targets whilst retaining detection rate.		Refinements in remote sensing development reported on in 2011–12. Data not yet available for analysis of the detection rates using the algorithm and manual analysis.
$300,000	Refinement of algorithm applied to remote sensing imagery to determine points for manual identification	University of Sydney	• Version 1.5 detects around 99% of mounds (using clustering mechanisms) with an overall average points per hectare of 45. A new version is expected by mid-August.	• Version 1.5 detects around 99% of mounds (using clustering mechanisms) with an overall average points per hectare of 45. A new version is expected by mid-August.	
$121,386	Second camera developed and operational from May 2013	Ross Wylie	• Delivered in 3rd quarter.	• Second camera delivered in February 2013.	• Purchase order placed for second camera
General R&D, including gaps in scientific knowledge	Examine the effects over time of large-scale site disturbance and of program bait applications on native populations of ants in relation to the degree of native ant predation/competition with fire ants • This was a recommendation of the November 2011 Technical Panel	Ross Wylie	• Manuscript has been completed. The analysis of long-term monitoring data from 60 sites around Brisbane showed that the bait treatments used in the eradication program against fire ants was not greatly impacting native ant assemblages on treated sites. Nine of the 10 native ant genera analysed either increased their abundance over time or showed no significant trend. A single genus *Pheidole* significantly reduced its abundance over time and appeared to be affected by the bait treatment in the same manner as *S. invicta.* Key competitors of fire ants such as *Iridomyrmex* and *Rhytidoponera*, which are also disturbance specialists, were not greatly affected by the bait and were capable of coexisting and competing with fire ants. These results have important implications for any reinvasion of treated sites in that native ants remain to contest with *S. invicta* for food and nest sites.		• Interrogation of FAIS and commencement of data analysis.
	Analysis of eradication activities	Ross Wylie	• Analysis of long-term monitoring conducted on 60 sites around Brisbane during the period 2001 to 2006 demonstrated the efficacy of the baits used in the eradication program (multiple broad-scale bait treatments with combinations of insect growth regulators pyriproxyfen and methoprene, and the toxicant hydramethylnon). For *S. invicta* the same pattern was evident at every site; presence in pitfalls reduced over time to zero and no further *S. invicta* workers were collected for the remainder of the monitoring period (average monitoring period was 3 years and the average time before *S. invicta* numbers dropped to zero in the traps was 11.4 months).	Completed in the 4th quarter.	• Analysis commenced to demonstrate impact of program bait regime on fire ants in Brisbane.
$75,000	Modelling to determine level of confidence in delimiting fire ant infestation using remote sensing • this work will estimate the probability of finding nests given a nest density, helicopter flight pattern and information on detectability.	BQ Intelligence Unit	• This modelling has guided the program work plan for 2013–14 and beyond approved by NMG.		NA
	Develop scenario plan (using futuring philosophy) based on different success rates for remote sensing detection • which will determine the sequence of steps	BQ Intelligence Unit	• Completed in the 3rd quarter.	• Completed in the 3rd quarter. Final version of scenario plan completed in March 2013. Three different scenarios were explored viz. *The 'no control' futures*	NA

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
	needed to achieve eradication of fire ants			*scenario, The long-term control futures scenario and The success scenario in 2050*. Critical control point failures and the economic impact across Australia were identified for each scenario. It was concluded that without a successful eradication or aggressive containment program, major impacts will be felt across the whole of the Australian economy and society.	
	Develop a conceptual model of the whole fire ant program. This will provide a communication tool to describe where various activities fit into the plan for fire ant eradication	BQ Intelligence Unit	• Project concluded in 2nd quarter.	Project concluded in the 4th quarter.	NA
$174,000	Spread modelling research and epidemiology • An examination of invasion dynamics employing a new quantitative method. This will be used to determine if spread rates are constant or increasing and for predicting 'at risk' areas and levels of risk. • Research on the characterisation of land disturbance and associated fire ant infestation using Landsat imagery.	Queensland University of Technology	• Results of data analysed gave predictions that RIFA invaded around 1996 or earlier and expansion rates suggested significant human mediated migrations. This was most probably linked to soil movement during the extensive urban and residential developments that occurred in Brisbane in the 1990s. The two centres of expansion were the Port of Brisbane and the Inala-Forest Lakes area in the western suburbs. Recommendations included routine surveillance of disturbed soil in residential and urban developments and regulation of soil movements. As well, surveillance and treatment strategies should operate along the contours of predicted invasion fronts and gradually shift in steps to smaller concentric contours until the centre of the expansion has been eradicated. • Fine tuning of the disturbance algorithm continued with the inclusion of a 'bare earth' model. • The Habitat Model used by the Program to guide surveillance has been updated to include all new finds over the past several years. This work will be completed by the end of September 2013. • An algorithm to characterise land disturbance and associated fire ant infestation was completed and tested in March 2013. Further fine tuning of the algorithm is required to capture the higher levels of the disturbance scale which are of most interest. A' bare earth' model will be incorporated into the algorithm to improve its performance.		• Research commenced in 2011–12 examining linkages between fire ant occurrence and various types of land use, habitat and different levels of disturbance. A strong association was found (up to 70% of sites) between the location of fire ant colonies and disturbance of land within the previous 3 years. The main land use categories identified were residential development, industrial or commercial development, utility (new roads) and farmland (cultivation).
$25,000	Text analysis/sentiment analysis –undertake an analysis of change in community attitude over time to fire ants and its management. Other aspects (spread, impact) could also be analysed by used text-based information on the web. This complements existing communication and science activities	Queensland University of Technology	• A final report was delivered in March 2013 • The topics examined in sentiment analysis were health, animals, agriculture, lifestyle, wildlife, industrial, economic and treatment • 3592 media reports from 4 countries, including Australia, where fire ants occur were analysed • Results show a significantly higher level of negative sentiment towards fire ants in countries where the ant is out of control (California, Southern USA and Taiwan) compared to Australia where the ant is subject to an active eradication programs and populations of the ant are kept low.	• Final report delivered in March 2013	NA.
$0 – in kind support only	Finalise research project into the value of community engagement in biosecurity surveillance.	ACERA		• Completed in the 2nd quarter	• Data provided for analysis by ACERA.
	Analysis of literature to identify direct fire ant impacts on the agriculture and produce within the Lockyer Valley region.	Craig Jennings	• Continuing	• Continuing	No project.
$0 – in kind support only	Benefit: cost analysis and modelling of eradication versus control	ABARES		• NMG agreed to ABARES revising the benefit:cost analysis to reflect the levels of actual investment in surveillance and treatment covered by the revised response plan so that a more accurate understanding of the probability of eradication and the timeframe to achieve this outcome is available.	• Data provided to ABARES for analysis.

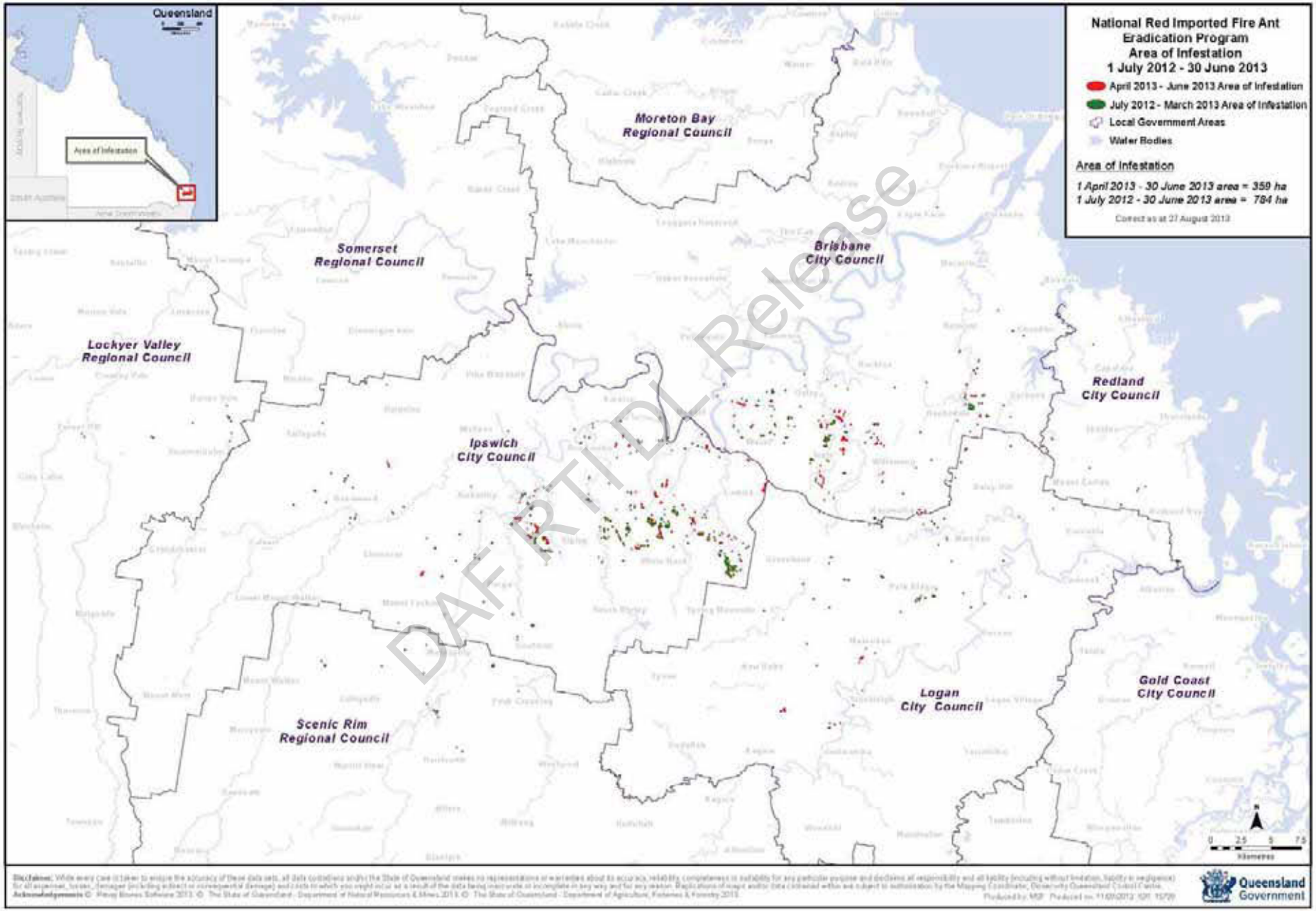
Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
POLICY AND PLANNING					
Policy support for program *$333,000 in total*	General policy and planning activities to support program: • prepare operational and work plans • quarterly reporting • detection reports and incident reports as required	Heather Leeson	• Work on the 2013–14 work program finalised. • 3rd quarterly report finalised. • Preparations for the 4th quarterly report / 2012–13 annual report underway. • Detection reports for Barellan Point and Jimboomba.	• 4 quarterly reports have been compiled for 2012–13. • The fourth report includes information for the final quarter and the 2012–13 financial year. • 6 detection reports submitted to TACC	• 4 Quarterly reports were compiled for 2011–12. • The fourth report included information for the final quarter and the 2011–12 financial year.
	Work with Biosecurity Queensland to develop a new Queensland Biosecurity Act, ensuring legislation & regulations incorporate all aspects of fire ant eradication and management	Heather Leeson	• Review of the drafting instructions for the Biosecurity Act and Regulations continues to assess the implications for the fire ant and electric ant programs.	• Ongoing - the Program continues to ensure eradication requirements are incorporated into the new Queensland Biosecurity legislation. Restricted items guidelines were developed in the first quarter.	• The Program worked with the Strategy and Legislation team to incorporate the Program's requirements.
	Prepare for several reviews/audits of the fire ant program:	N O'Brien C Jennings H Leeson	• All reviews/audit completed in 4th quarter.	• All reviews/audits completed.	
	• Technical review of remote sensing	C Jennings	• Completed.	• Completed in the 3rd quarter	
	• Prepare for at least 3 TACC meetings	H Leeson	• No meeting held in the 4th quarter.		
	• Prepare for at least 2 NMG meetings	H Leeson	• NMG OOS noted the Contingency Plan.		
	• Efficiency audit	N O'Brien	• Not yet endorsed by NMG. Expected to occur in early 2013–14.	• Completed in 3rd quarter, however, still awaiting NMG endorsement/approval of the report and recommendations.	
	• NBC working group - Development of contingency plan in the event eradication is not feasible (including development of alternative management and policy options)	N O'Brien C Jennings	• No NBC this quarter.	• Completed in the 3rd quarter	
Implementing two zoned restricted area	• Declare new restricted area based on suburb boundaries and two zones	Heather Leeson	• Completed in 2nd quarter	• Completed in 2nd quarter	• Preparations for the new restricted area—ongoing.
	• Assisting in the development and implementation of compliance procedures	Heather Leeson	• A full review of the RMP and guidelines has been re-scheduled to take place early in the 1st quarter 2013–14 following over 6 months of use. Re-scheduling occurred to ensure all members of the working group can be present. • However a preliminary review was undertaken in the 4th quarter with no obvious issues arising. •	• Project finalised in the 2nd quarter.	• Planning began for the changes to the fire ant restricted area. The drafting of the amendments to the legislation began.
	• Implementing policy that outlines how suburbs move into and out of the new restricted area.	Heather Leeson	• Completed in the 2nd quarter.	• Completed in the 2nd quarter	• The policy was endorsed by TACC in late December 2011. • In June 2012, the Minister (DAFF Qld) endorsed legislative changes to the Plant Protection Regulation 2002.
	• Reducing regulatory burden/cost to program of fire ant certification strategy/policy	Heather Leeson	• The reduction in the Interstate Plant Quarantine (IPQ) boundary occurred in the 4th quarter. • A map was provided to the Domestic Quarantine and Market Access Working Group (DQMAWG) which automatically removed the areas out of the IPQ. This reduced the regulatory burden for those businesses dealing with restricted items and trading them interstate.	• Fire ant restricted area implemented on 17 December 2012.	• Development of the policy to change the fire ant restricted area. Changes to incorporate a reduction in regulatory burden/cost for people living and working inside the restricted area.
Developing concept paper on shared responsibility and partnership approaches	Development of a concept paper showing how the fire ant partnership approaches and community engagement strategy is integrated to the 'shared responsibility' approach of fire ant management.	Heather Leeson	• Scoping commenced – will be incorporated into the broadening the funding base paper.	• Not yet commenced - will be incorporated into the broadening the funding base paper.	• Cataloguing all aspects of the Program's approaches to shared responsibility in managing the fire ant threat.
	Development of an issues paper for 'risk creators pay' – a discussion paper focussing on ways to get commercial enterprises who create suitable habitat for fire ants to fund activities to mitigate the risk of fire ant spread	Heather Leeson	• Scoping commenced – will be incorporated into the broadening the funding base paper.	• Not yet commenced - will be incorporated into the broadening the funding base paper.	

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
Developing policy options paper for broadening the funding base	NMG in March 2013, then confirmed by SCOPI in May, agreed that the program develop a policy options paper for broadening the funding base – this paper to be presented to SCOPI in December 2013	Heather Leeson	• Research is ongoing. Preliminary paper required for NMG in August 2013. • To be presented at the SCoPI meeting in December 2013.	• Commenced.	
Other activities	General activities undertaken to support program	Heather Leeson	General activities include: • Development of policies/protocols: - GPS tracking - quarantine activities discussion paper - entry for RSS discussion paper - entry for RSS policy - suburbs in the RA assessment discussion paper • Development of procedures: - removal of colony points and suburbs from the restricted area - initial discussions and background work – will be finalised in the 4th quarter. • Case management - areas for targeted treatment - market garden project – a completion report is expected to be finalised in the 4th quarter • Development of the Policy and Planning section plan for 2013–14 • Prepare correspondence items: - 2 for Minister - 1 for Director-General - 1 for CBO - 6 for committees - 8 parliamentary brief - 0 ministerial - 0 QON - 5 other.	General activities include: • Development of policies /protocols /discussion papers: - tramp ant odour detection dog policy (completed) - tramp ant odour detection dog retirement protocol (completed) - fire ant protocol for the removal of infested site status (completed) - fire ant waste facilities discussion paper and policy (both completed) - approved person discussion paper (completed) - GPS tracking policy (commenced) - quarantine activities discussion paper (commenced) - entry for RSS discussion paper (completed) - entry for RSS policy (commenced) - suburbs in the RA assessment discussion paper (commenced) • Development of procedures: - above ground luring procedure (completed) - removal of colony points and suburbs from the RA (commenced) - removal of colony points and suburbs from the restricted area (commenced) • Case management - areas for targeted treatment - market garden project. • Prepare correspondence items: - 8 for Minister - 6 for Director-General - 1 for CBO - 23 for committees - 8 parliamentary briefs - 3 ministerials - 1 QON - 35 other.	
INFORMATION SERVICES					
IS support for program	Provide daily support/ maintenance to existing systems and databases • N° of support/maintenance requests dealt with	Tim Pluples	In addition to all other projects, 13 support and maintenance tasks were completed during this period.	General activities include: • Version 45 boundary release • Decommissioning of the Restricted Area Search Engine or RASE • Support and maintenance for the Fire Ant Information System, Client Contact System, eMap and Remote Sensing.	
$146,000	Remote sensing - finalisation and continual support of infrastructure, processes and systems underpinning remote sensing	Tim Pluples	The remote sensing IT improvements project commenced with the following scope: • Conduct a business process review of the remote sensing process and identify areas of improvement. • Provisioning 100 terabytes of additional storage for remote sensing imagery. • Upgrades to server infrastructure to support the large image processing requirements. • Upgrades to the local network to improve the image transfer speed. • Developing the "Remote Sensing" module inside the Fire Ant Management System (FAMS) to record all operational activities of remote sensing based upon the results of the business process review.	Support for remote sensing continues to be the highest priority for Information Services. Planning has been undertaken for the 2013–14 operations and the impact of a second camera on storage and processing capacity. Viable solutions have been investigated and were developed and implemented during the 4th quarter. The business process review and all server infrastructure upgrades have been completed. The software development component is ongoing and is expected to be finalised during the 1st quarter of 2013–14.	
$17,127	Sample submission register - Implementing	Tim Pluples	Not applicable – the sample submission register is now	Version 1.1 of the sample submission register was successfully	• Project commenced in 2011–12

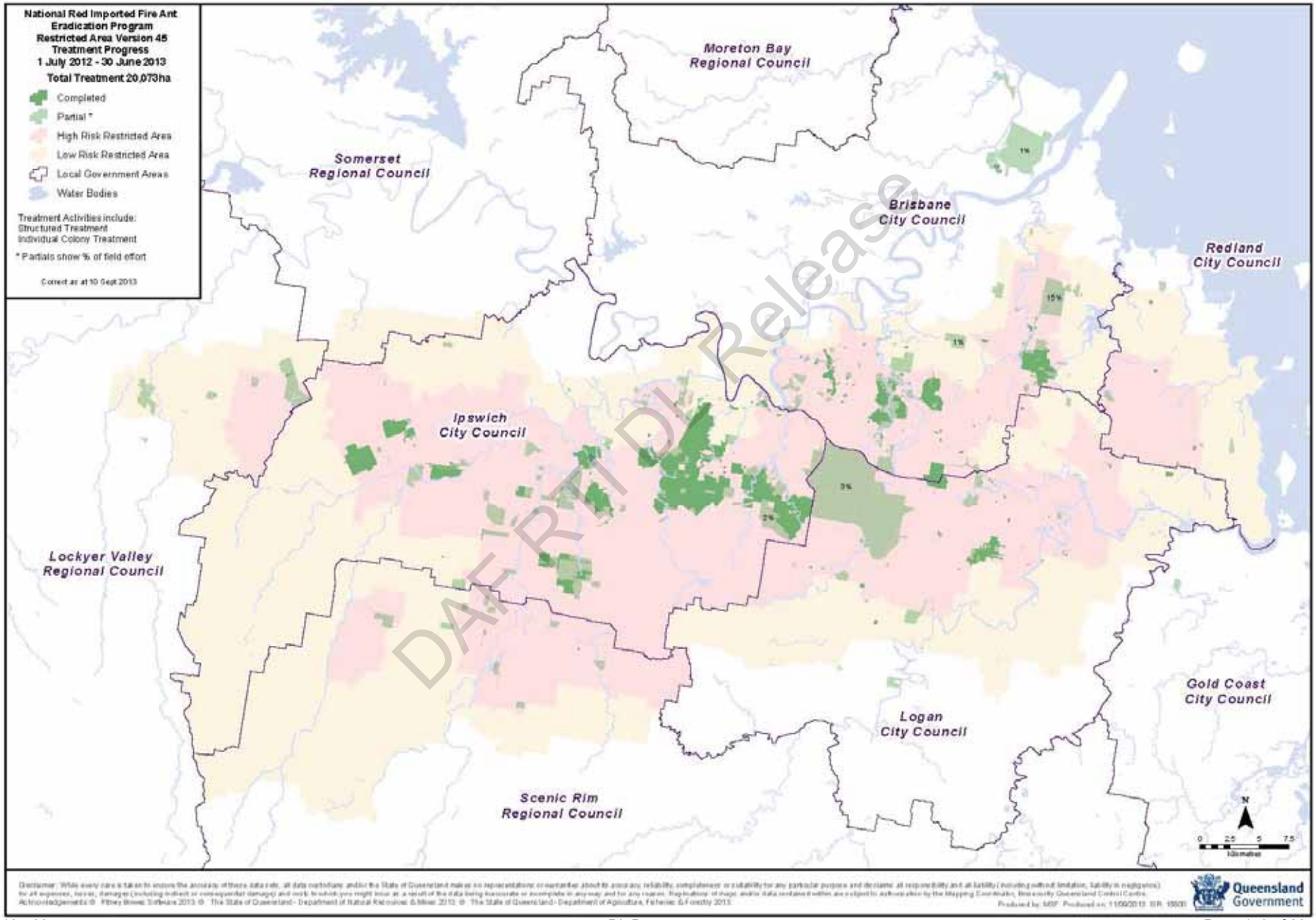
Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
	additional functionality to the sample submission register that will continue to improve business processes and generate efficiencies when dealing with the sample collection, diagnosis and actions relating to suspect fire ant mounds.		being treated as part of normal support and maintenance tasks.	implemented. A review was conducted to assess the efficiencies gained with the implementation of SSR. This finalises the development project of SSR and will now be supported and maintained as per existing processes.	
IS Projects *$153,644*	Finalisation of migration of all fire ant applications and databases from Microsoft SQL Server 2005 to the SQL Server 2008 to ensure the system architecture is supported by the vendor – project to be completed by end November 2012.	Tim Pluples	This project was finished during the 4th quarter with the last remaining databases migrated to the new servers. The SQL Server 2008 migration project has now been successfully completed on time and under budget.	The project was suspended from July 2012 until January 2013. It recommenced on the 14 January 2013 as the corporate infrastructure was made available. All development work was completed during the 3rd quarter and a production release and closure of the project will be finalised in the 4th quarter.	• Project commenced in 2011–12
$761,149	Fire ant information system redevelopment – finalise stage 3 and commence stages 4–6 of the major redevelopment of the main fire ant information system database and all supporting databases - project to be completed by end August 2013.	Tim Pluples	The project finished stage 4 two weeks ahead of schedule saving approximately $36K from the project budget. Stage 5 commenced immediately which is focused around developing the "Jobs" module to record all operational activities undertaken by the fire ant program. This is the largest and most complex stage due to its functionality and data size (approximately 20 million records). This quarter also saw the first production release of the Fire Ant Management System (FAMS) which included the Staff Management module. More production releases are expected in the first and second quarters of 2013–14.	Stages 3 and 4 were completed and Stage 5 commenced during the 2012–13 financial year. The first production release of the new Fire Ant Management System (FAMS) was completed in May 2013 which focused on the Staff Management module. Additional production releases are scheduled for the first quarter of 2013–14.	• Project commenced in 2011–12
BUSINESS MANAGEMENT					
Business management and support for program *$1,831,439*	General administration and support of program as required: administrative, vehicle, asset, site, stores, HR, WHS	Harry Koch	Ongoing	Completed	
Administration	Maintain fleet of : • 34 vehicles • 7 All Terrain Vehicles • 3 trailers • 3 trucks • 2 forklifts.	Harry Koch	Ongoing	Completed	
	Maintain a bait management plan - ~30 tonnes of bait required in 2012–13 • rotate bait stock to ensure all bait used by date • conduct yearly chemical assay testing of bait	Harry Koch	32.563 tonnes used in 4th quarter	35.563 tonnes used in 2012–13	
	Investigate an alternative site - Oxley site costs approx. $800,000 a year to lease/maintain. A more cost effective site will be explored.	Harry Koch	Requirements for an alternate site or sites have been developed. Corporate Accommodation & Facilities and the Dept of Public Works have been engaged to source potential locations	Alternate sites have been inspected and are being evaluated for suitability	
	GPS tracking of field treatment/ surveillance and vehicles to improve governance of operations • dogs, aerial surveillance/treatment, ATV operations are already GPS tracked • GPS tracking of all field operations will be implemented • GPS tracking of all vehicles will be implemented	Cara McNicol	A draft policy was submitted to the working group for feedback during the 3rd quarter. The policy has not progressed.	A draft project plan has been established. The workforce was briefed about the GPS tracking project. A working group has been established to oversee the project development, address issues and progressive workforce input. A field team has conducted a field trial and a log of the issues has been document.	• Commenced in 2011–12
Human Resources *$173,843*	Manage downsizing of program • 172 FTE employed from 1 July 2012 to 31 October 2012 • 126.1 FTE employed from 1 November 2012	Alison Stewart		• Downsize completed 31 October 2012.	• 191 FTE at 1 July 2011; • 172 FTE at 1 July 2012
	Foster safe and productive workplace culture	Alison Stewart	• WHS Committee meeting held 8 May 2013.	• Performance Plans completed April 2013.	

Activity	Planned for 2012–13 ($16.9M program)	Project leader	4th Quarter	Total completed for 2012–13	Actual 2011–12 ($22.3M program)
	• WHS committee meeting every quarter • WHS incidents managed • Inappropriate workplace behaviour dealt with in a timely manner • Manage attrition, absenteeism and workplace performance		• 24 WHS incident reported (includes 3 work cover claims) Case Management • 3 new complaints, • 3 complaints resolved • 2 staff exits – resignations (other employment) • Nil staff on attendance improvement plans • 1 x staff on performance improvement plan • Nil staff on manual pays • Total 255.08 days of unplanned leave (includes 4.95 days unpaid leave) • New Trained Safety Advisor (TSA) certified on 28 June 2013. • External WHS audit by Noel Arnold & Assoc. Audit was on BQCC WHS procedures	• HSR election completed 26 March 2013. • 102 WHS incidents reported (includes 17 work cover claims) • 10 complaints received and 9 resolved • 3 new employees • 56 staff exits - 1 contract ceased, - 1 detached to another Govt Dept, - 7 redundancies, - 40 retrenchments, - 1 medical retirement, - 4 resignations (personal reasons) - 2 resignations (other employment) • 16 staff on attendance improvement plans • 1 staff on performance improvement plan • Total 1212.37 days unplanned leave (includes 157.41 days unpaid leave)	
Financial *$15.808M*	National cost shared program is managed within budget: • $15M National cost shared • $0.808M carryover from 2011–12	Harry Koch	Ongoing wet weather has delayed delivery of some operational targets, which delayed expenditure on aerial treatment activities. Subject to good weather, expenditure increased this quarter. Majority spent in this quarter.	$15.433M spent in 2012–13	$22.377M budget – Expenditure was $21.569M, leaving a carryover of $0.808M
$1.125M	$1.125M in additional Queensland funding is used to protect Queensland's public amenity and assets	Harry Koch	Spent in this quarter.	100% spent in 2012–13	
$1.0M	$1.0M in additional Queensland funding to support remote sensing surveillance activities	Harry Koch	Activities related to remote sensing surveillance, as well as a public awareness campaign undertaken Spent in this quarter.	100% spent in 2013–13	
$0.775M	$0.775M additional Queensland funding for retrenchment benefits	Harry Koch	Completed in the 2nd quarter.	$0.663M spent in 2012–13	

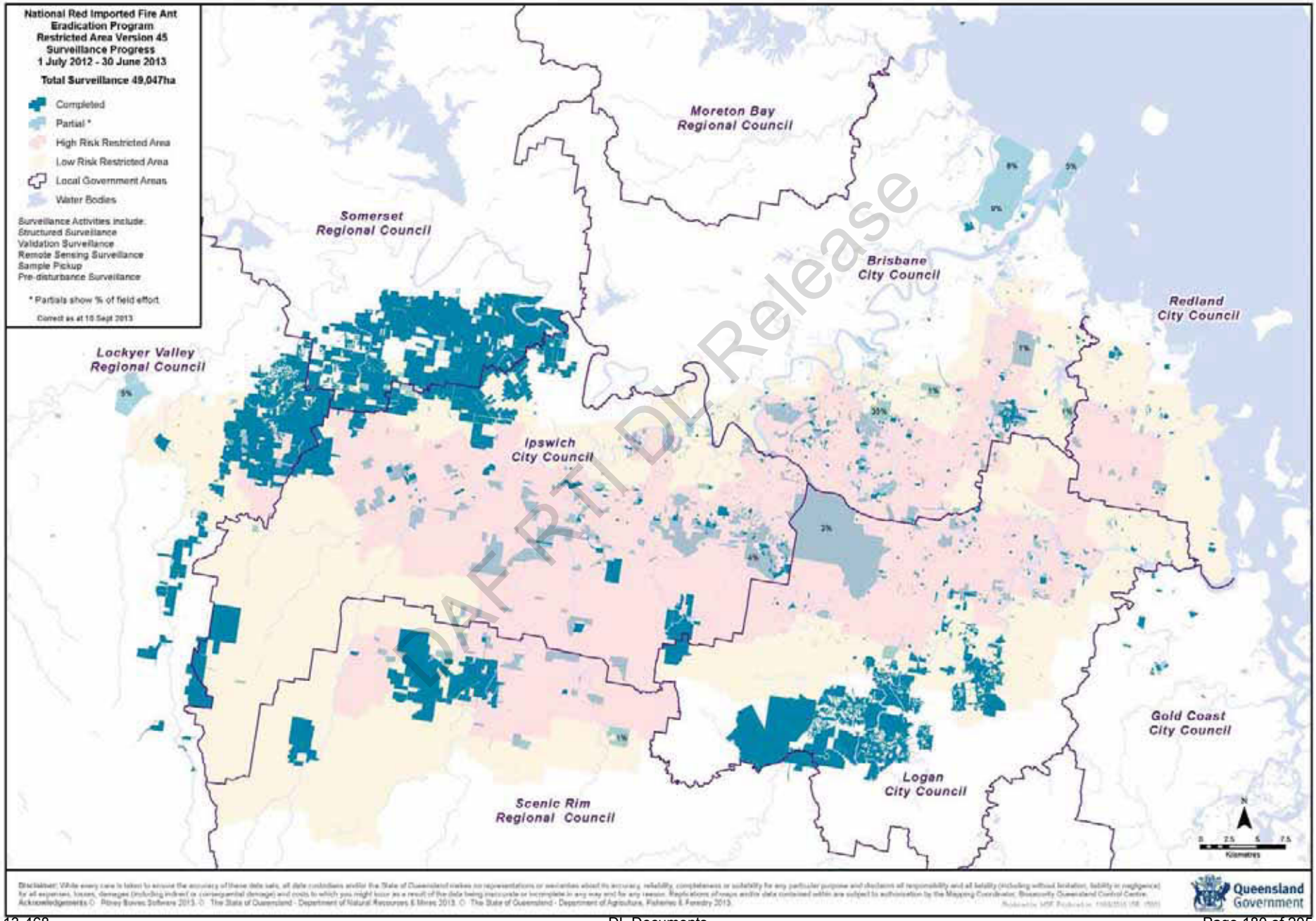
Appendix 1 Area of infestation



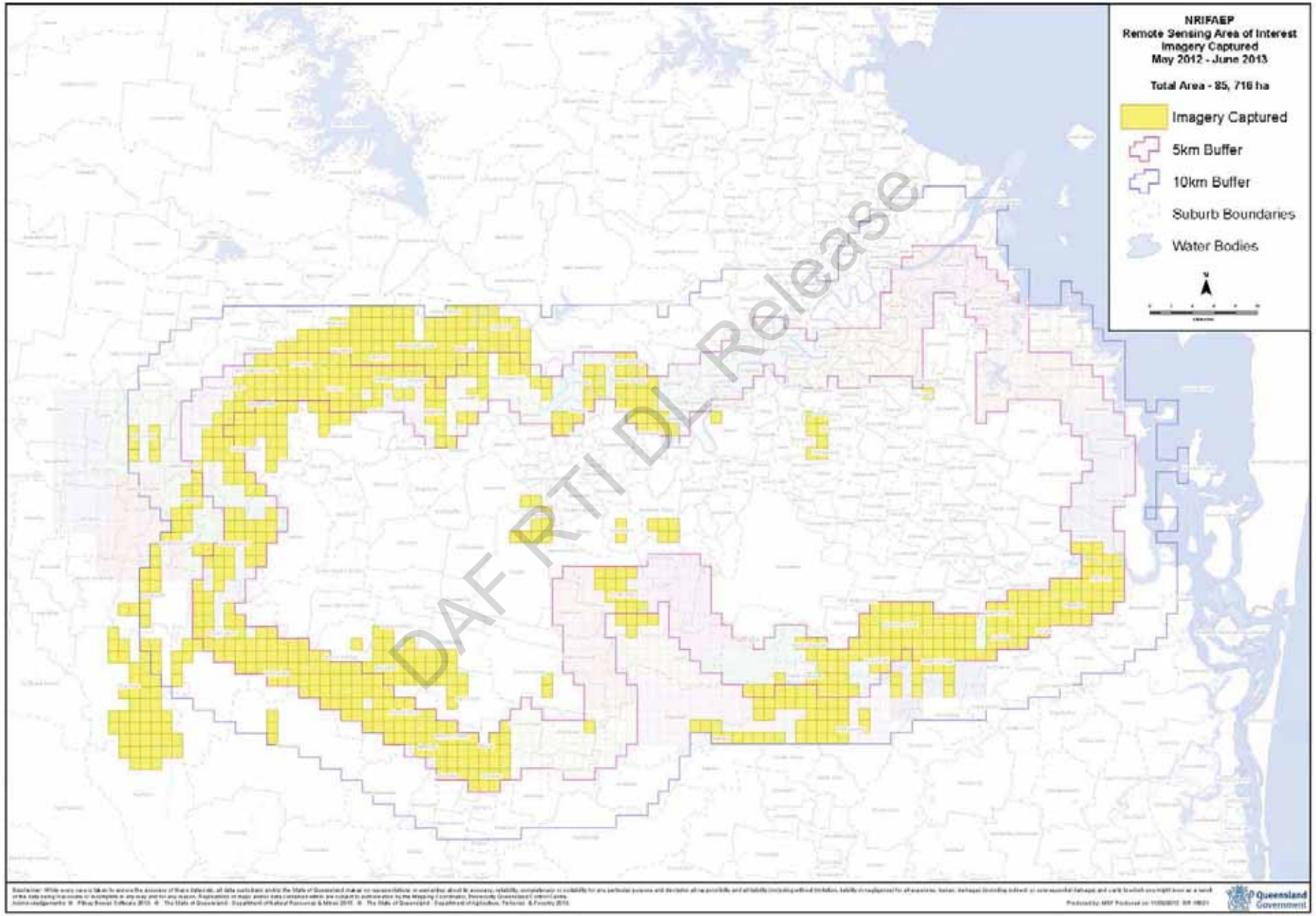
Appendix 2 Treatment



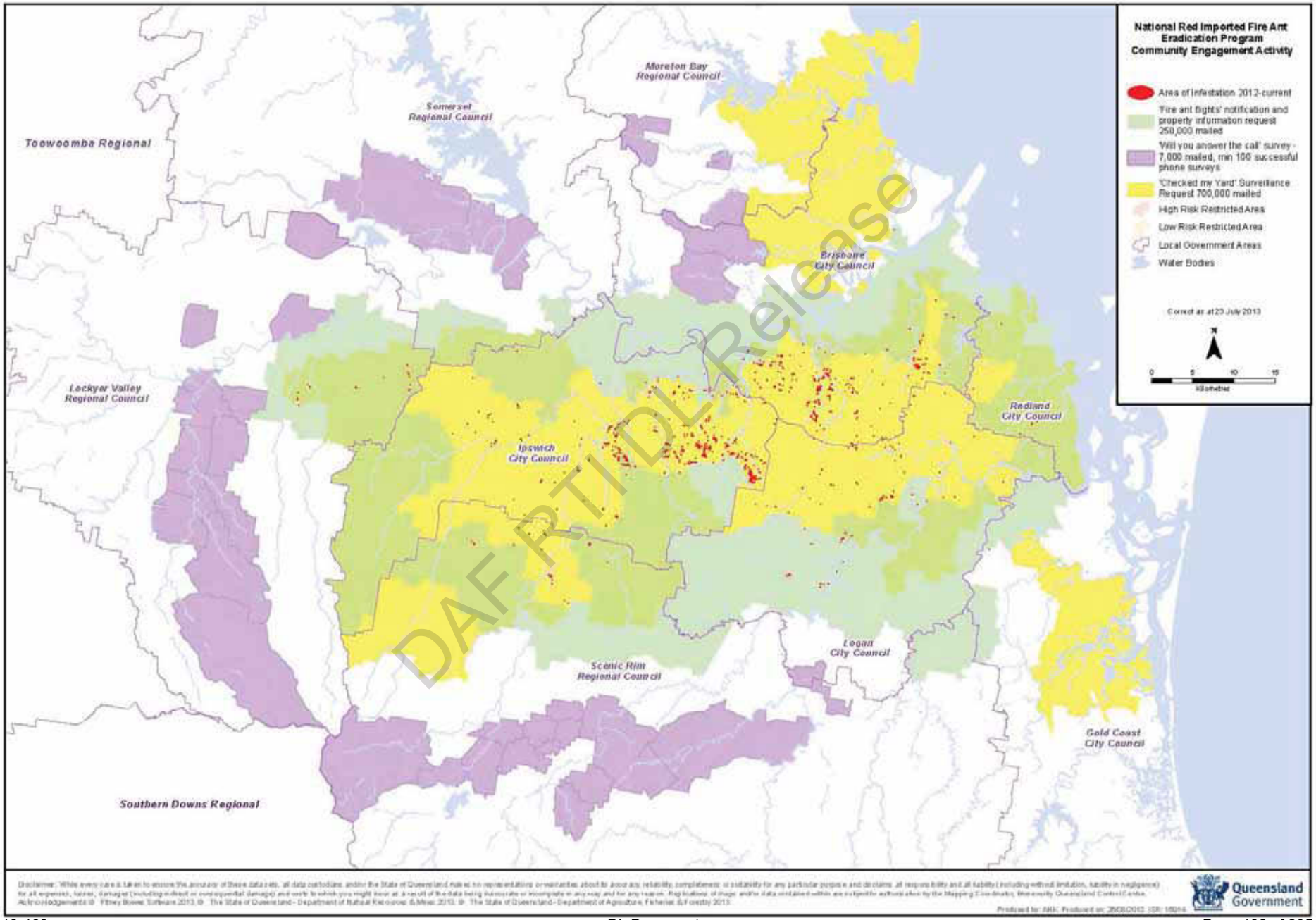
Appendix 3 Surveillance



Appendix 4 Remote sensing surveillance - imagery capture



Appendix 5 Communications and marketing campaigns



Appendix 6 Restricted area (Version 45)

HIGH RISK SUBURBS

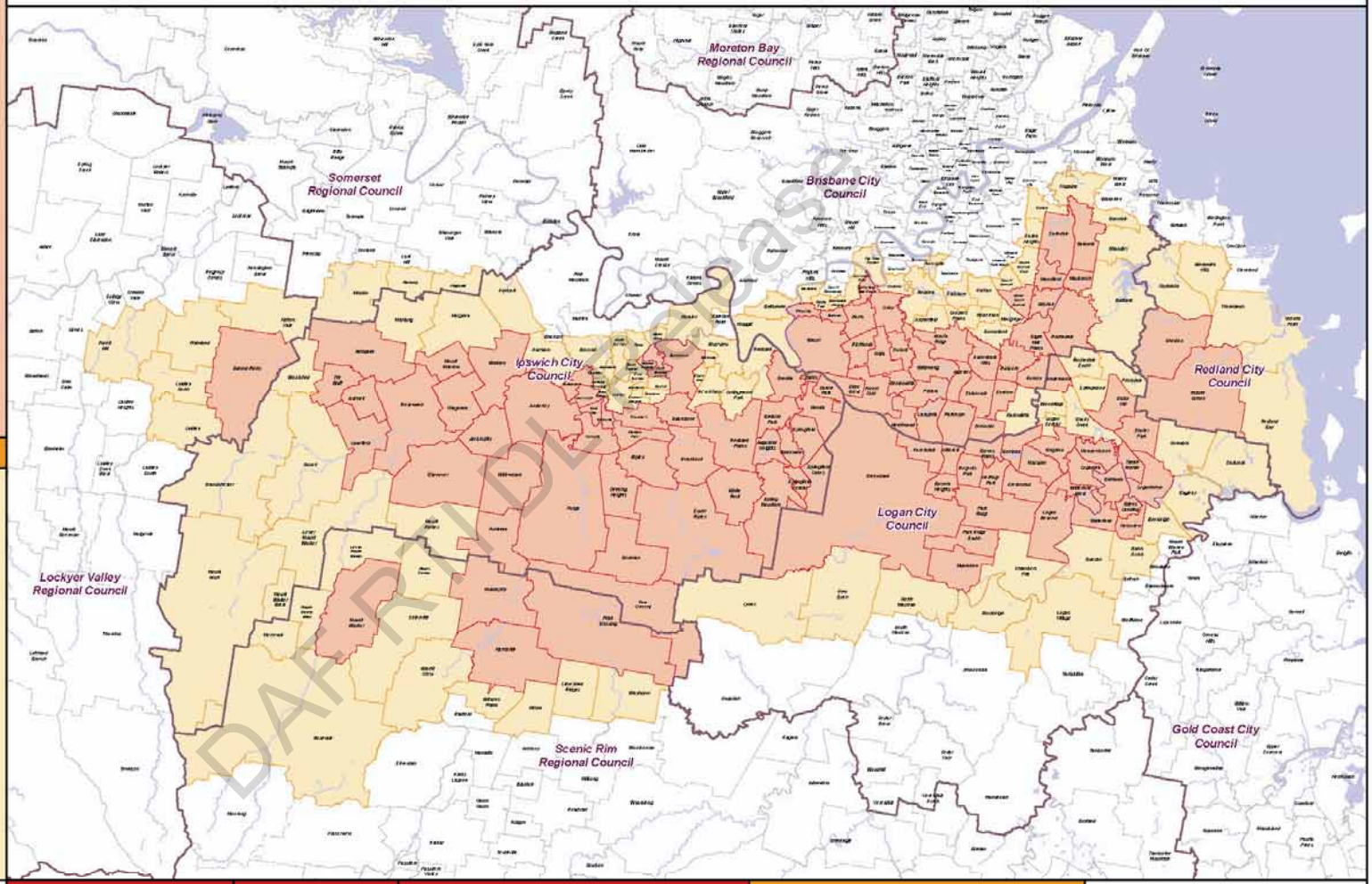
Acacia Ridge, Algester, Amberley, Ashwell, Augustine Heights, Bellbird Park, Belmont, Berrinba, Bethania, Blackstone, Boronia Heights, Brookwater, Browns Plains, Bundamba, Calamvale, Camira, Carindale, Carole Park, Churchill, Crestmead, Daisy Hill, Darra, Deebing Heights, Doolandella, Drewvale, Durack, Ebenezer, Edens Landing, Eight Mile Plains, Ellen Grove, Flinders View, Forest Lake, Forestdale, Gailes, Goodna, Goolman, Greenbank, Harrisville, Heathwood, Heritage Park, Hillcrest, Holmview, Inala, Jeebropilly, Kingston, Kuraby, Lanefield, Langlipta, Leichhardt, Logan Reserve, Loganholme, Loganlea, Mackenzie, Mansfield, Marsden, Meadowbrook, Moores Pocket, Mount Cotton, Mount Marrow, Mount Walker, Munruben, Mutdapilly, North Booval, One Mile, Oxley, Pallara, Park Ridge, Park Ridge South, Parkinson, Peak Crossing, Purga, Raceview, Redbank Plains, Regents Park, Richlands, Ripley, Riverhills, Rochedale, Rosewood, Runcorn, Seventeen Mile Rocks, Shailer Park, Sheldon, South Ripley, Spring Mountain, Springfield, Springfield Central, Springfield Lakes, Stretton, Summerholm, Sumner, Sunnybank Hills, Swanbank, Tallegalla, Tarsh Marsh, Thagoona, The Bluff, Underwood, Upper Mount Gravatt, Wacol, Walloon, Waterford, Waterford West, White Rock, Willawong, Willowbank, Wisham, Wulkuraka, Yamanto

LOW RISK SUBURBS

Alexandra Hills, Archerfield, Bahrs Scrub, Basin Pocket, Beenleigh, Bellbowrie, Booval, Brassall, Buccan, Burbank, Calvert, Capalaba, Carbrook, Carina, Carina Heights, Chambers Flat, Chandler, Coalfalls, Coleyville, Collingwood Park, Coopers Plains, Corinda, Cornubia, Dinmore, Eagleby, East Ipswich, Eastern Heights, Ebbw Vale, Fig Tree Pocket, Forest Hill, Grandchester, Gumdale, Haigslea, Hatton Vale, Ipswich, Ironbark, Jamboree Heights, Karalee, Karawatha, Karrabin, Laidley, Laidley North, Limestone Ridges, Logan Central, Logan Village, Lower Mount Walker, Lyons, Magregor, Marburg, Merrymale, Middle Park, Milora, Minden, Moggill, Mount Forbes, Mount Gravatt, Mount Gravatt East, Mount Mort, Mount Walker West, Nathan, New Beith, New Chum, Newtown, North Ipswich, North Maclean, North Tivoli, Plainland, Priestdale, Redbank, Redland Bay, Riverview, Robertson, Rochedale South, Rocklea, Rosevale, Sadliers Crossing, Salisbury, Silkstone, Sinnamon Park, Slacks Creek, Springwood, Stockleigh, Sunnybank, Thornlands, Tingalpa, Tivoli, Victoria Point, Warrill View, Washpool, West Ipswich, Westlake, Wilsons Plains, Woodend, Woodridge, Woolshed, Yeerongpilly

RED IMPORTED FIRE ANT RESTRICTED AREA

IS YOUR SUBURB IN THIS LIST?



Contact the Department of Agriculture, Fisheries and Forestry for further information

Log on to
www.daff.qld.gov.au/fireants
or call 13 25 23

Queensland Government

Restricted items	
Soil*(refer below)	Mulch
Manure	Bark
Hay	Pot plants
Potting media	Turf
Sleepers/logs	Gravels
Poultry litter	

*Soil will require an inspector's approval before being moved **outside** the restricted area. Log on to www.daff.qld.gov.au/fireants for details.

Requirements for	High Risk Area (red zone)	Low Risk Area (orange zone)
Commercial operators	Movement of restricted items requires an Approved Risk Management Plan which must be followed to move these items off a property within the high risk area. Log on to www.daff.qld.gov.au/fireants for details.	Movement of restricted items is allowed within the restricted area. Movement **outside** of the restricted area requires an Approved Risk Management Plan which must be followed. Log on to www.daff.qld.gov.au/fireants for details.
Residents	Residents living in the high risk area have several options when moving restricted items off their property. Log on to www.daff.qld.gov.au/fireants for details.	Residents living in the low risk area have no formal requirements. Please check your yard for fire ants and call 13 25 23 if you think you have found suspect ants.

National Red Imported Fire Ant Eradication Program
Restricted Area Version 45
Effective Date: 17 December 2012

High Risk Restricted Area
Low Risk Restricted Area
Suburb Boundaries
Local Government Boundaries
Water Bodies

Produced by: MSF/AHK - Produced on: 15/11/2012 - Project: NFAEP MXD: Ra3_R004.mxd - ISR 15439

Appendix 7 Financial Report 2012–13

2012–13 FIRE ANT PROGRAM FINANCIAL REPORT

for the period ending 30 June 2013

Percentage of year : 100.00%

WORK UNITS	National Cost Sharing								Qld Supplementary Component								All Fund Sources	
	2012–13 Budget			Budget	2012–13 Actual Expenses			Actual	2012–13 Budget			Budget	2012–13 Actual Expenses			Actual	2012–13 Budget	2012–13 Actual Expenses
	Labour $'000	Non-Labour $'000	TOTAL $'000	FTE	Labour $'000	Non-Labour $'000	TOTAL $'000	FTE	Labour $'000	Non-Labour $'000	TOTAL $'000	FTE	Labour $'000	Non-Labour $'000	TOTAL $'000	FTE	TOTAL $'000	TOTAL $'000
Management	***271***	***206***	***477***	***2.0***	***261***	***139***	***400***	***2.0***									**477**	***400***
Policy and Planning	***347***	***12***	***359***	***3.0***	***351***	***9***	***360***	***3.0***									**359**	***360***
Resources and Administration	900	530	1,430	11.1	905	514	1,419	10.3									1,430	1,419
Site Lease and Bldg Deprec.		392	392			390	390										392	390
Sub-Total Resources & Admin	***900***	***922***	***1,822***	***11.1***	***905***	***903***	***1,809***	***10.3***									**1,822**	***1,809***
Community Engagement	***624***	***265***	***890***	***6.8***	***623***	***212***	***835***	***5.8***	***84***	***11***	***95***	***1.0***	***84***	***11***	***95***	***1.0***	**985**	***930***
Information Systems	200	181	381	2.0	201	138	339	2.0									381	339
FA Information System Redevel	368	363	731	5.0	369	322	691	2.0									731	691
Sub-Total Information Systems	***568***	***544***	***1,112***	***7.0***	***570***	***460***	***1,030***	***4.0***									**1,112**	***1,030***
Scientific Services	638	52	690	6.8	640	43	683	6.8									690	683
Remote Sensing Development	107	329	436	1.0	109	329	437	1.0									436	437
Genetics	189	130	319	1.4	191	127	318	1.4									319	318
QUT Epidemiological Study		174	174			174	174										174	174
Intelligence Unit	75	26	101	1.6	77	25	102										101	102
Sub-Total Scientific Services	***1,009***	***710***	***1,719***	***10.8***	***1,017***	***698***	***1,715***	***9.2***									**1,719**	***1,715***
Field Operations	3,569	534	4,103	54.0	3,633	545	4,178	53.9	737	132	869	12.0	737	132	869	12.0	4,972	5,047
Odour Detection Dogs	128	126	253	1.0	131	134	265	1.0	77	51	128	1.0	77	51	128	1.0	382	393
Chemical Treatments		712	712			697	697			32	32			33	33		744	730
Aerial Applications		262	262			362	362										262	362
Remote Sensing Operations	59	2,417	2,476		61	2,047	2,107	2.0									2,476	2,107
Sub-Total Operations	***3,755***	***4,050***	***7,805***	***55.0***	***3,825***	***3,784***	***7,609***	***56.9***	***815***	***215***	***1030***	***13.0***	***814***	***216***	***1030***	***13.0***	**8,835**	***8,639***
Risk Management & Security	653	30	683	7.0	646	24	670	7.0									683	670
Program Support	731	51	782	8.0	741	46	787	9.0									782	787
Spatial Services	205	17	222	2.0	209	10	219	2.0									222	219
Sub-Total Program Compliance	***1,589***	***98***	***1,687***	***17.0***	***1,596***	***81***	***1,676***	***18.0***									**1,687**	***1,676***
TOTAL FIRE ANT PROGRAM	***9,063***	***6,807***	***15,871***	***112.7***	***9,148***	***6,285***	***15,434***	***109.2***	***899***	***226***	***1,125***	***14***	***898***	***227***	***1,125***	***14.0***	**16,996**	***16,559***
									Retrenchment Benefits				470		470			
									Total Qld Supplementary Expense				**1,368**	**227**	**1,595**			
									DGs Additional Funding				**6**	**1,026**	**1,031**			

Notes:

1. National cost shared budget includes $0.808M carryover from 2011-12.
2. Qld supplementary expenses includes payment of $0.470M in retrenchment benefits

Appendix 8 Waste facilities treated

Waste facility	Address	Total hectares treated	Number of treatment rounds
Alex Fraser Group Pty Ltd	Beaufighter Avenue, Archerfield	5.05	1
Alex Fraser Group Pty Ltd	Nudgee Road, Nudgee	2.55	1
Alex Fraser Group Pty Ltd	Sugarmill Road, Eagle Farm	6.10	1
Bemcove	Watson Road, Acacia Ridge	36.40	1
Brisbane City Council	Sherbrooke Road, Willawong	99.00	2
Brisbane City Council	Pine Mountain Road Carina Heights	24.50	1
Brisbane City Council / Thiess Environmental Services	Tilley Road, Chandler	20.50	1
Brisbane Quarries & Construction	Mt Cotton Road, Sheldon	3.75	1
Carbrook Holdings	Beenleigh – Redland Bay Rd, Carbrook	0	0
Enviro Green Pty Ltd	Christensen Road, Stapylton	6.90	1
Enviro Waste Management Aust	Ipswich Road, Oxley	0.80	1
Ipswich City Council	Riverview Road, Riverview	0	0
Ipswich City Council	Austin Road, Redbank Plains	95.10	3
Ipswich Waste Services	Whitwood Road, New Chum	32.40	3
JJ Richards on behalf of Lockyer Valley Regional Council	Glen Cairn Road Laidley Heights	9.45	1
Lantrak	Memorial Drive, Swanbank	160.90	3
Logan City Council	Browns Plain Road, Heritage Park	54.20	1
Logan City Council	Kingston Road, Kingston	12.25	1
Logan City Council	Olson Road , North Maclean	5.60	1
Logan City Shire Council	Pub Lane, Greenbank	9.20	1
Logan Waste Services	Mt Cotton /Kenneth Rd, Carbrook	30.80	1
Murarrie Road Landfill	Murarrie Road, Tingalpa	5.60	1
Nu Grow	Swanbank Road, Swanbank	46.60	3
Pinkenba Recycling	Eagle Farm Rd, Pinkenba	0.45	1
Queensland Rifle Association	Old Cleveland Road, Belmont	75.20	1
Redland City Council	Giles Road, Redland Bay	0	0
Redland City Council	German Church Road, Redland Bay	19.35	0
Redland Shire Council	Old Cleveland Road, Birkdale	21.10	1
Remondis Australia	Gardner Road, Rochedale	137.90	2
Remondis Australia	Blackheath Road, Swanbank	629.00	3
Transpacific Resource Recycling	Bowhill Road, Willawong	88.25	3
Transpacific Waste Management	Chum Road, New Chum	202.10	3
Trustee for Pine Mountain Road Unit Trust	Pine Mountain Road Mt Gravatt East	16.25	1
Veolia Environmental Services	Off Redbank Plains Road, Redbank Plains	134.20	3
Veolia Ti-Tree Bioenergy Landfill	Champions Way, Willowbank	510.85	3
Wood Mulching Industries	Cumner Road, Swanbank	197.60	3
	Total area treated	**2699.90**	

Tramp Ant Consultative Committee (TACC)

FINAL MINUTES

Teleconference Number: 16 **Date:** Wednesday 4 December 2013

Location: M.2.02 **Time: 2.30-3.30 pm (AEDT)**

Participants		
Name	**Organisation**	**Party**
Susie Collins (Chair) Enrico Perotti Tim Coutts (Secretariat) Tegan Honing-Wassenburg (NMG Secretariat) John Wilson (Communications) Tom Aldred	Department of Agriculture	C'wlth
Julie Quinn	Department of Environment	C'wlth
Anne Walters	Department of Primary Industry and Fisheries	NT
Mike Ashton Ross Wylie Craig Jennings Heather Leeson	Department of Agriculture, Fisheries and Forestry	QLD
Royce Holtkamp	Trade and Investment, NSW – Primary Industries	NSW
Mark Ramsey	Department of Primary Industries and Regions	SA
Marc Widmer Oonagh Byrne	Department of Agriculture and Food	WA
Will de Milliano	Department of Environment and Primary Industries	VIC
Lionel Hill	Department of Primary Industries, Parks, Water and Environment	TAS
Alison McInnes	Environment and Sustainable Development Directorate	ACT
Apologies		
John Burley	Department of Environment and Primary Industries	VIC
John van Schagen	Department of Agriculture and Food	WA

Purpose:

- The teleconference was convened to:
  - Consider the confirmed detection of Red Imported Fire Ant on a property in Yarwun, Gladstone.
  - Discuss the Draft Red Imported Fire Ant NMG Agenda Paper, with the aim of seeking TACC's endorsement of the paper.

1. Opening

Meeting opened at 2.31 pm.

The Chair welcomed the teleconference participants, reminded all of the confidentiality requirements, and advised that the teleconference would be recorded. No conflicts of interest were declared.

The Chair confirmed that all participants had received the following papers:

- Agenda
- Draft Red Imported Fire Ant NMG Agenda Paper
- Significant Detection Report for Yarwun 2.

2. Situation Update for Red Imported Fire Ant and Electric Ant

Queensland provided an overview of the available information on the new RIFA incursion in Yarwun, Gladstone.

2.1 QLD Report Red Imported Fire Ant

Queensland summarised the Significant Detection Report.

1. On 28 November 2013, the National Red Imported Fire Ant Eradication Program (the Program) received a photo of a possible fire ant from the Manager of a port terminal in Yarwun, near Gladstone.
2. The infested site within the terminal only receives bulk sulphuric acid which is moved to a Rio Tinto site in trucks. There is negligible risk of the trucks providing a movement pathway for RIFA as the trucks only carry bulk acid and are confined to travelling on hard surfaces.
3. The Biosecurity Queensland Control Centre (BQCC) Science Manager visited the site on 1 December 2013, and confirmed the ants on the property were RIFA.
4. Preliminary surveillance of the site only detected a small number of fire ant mounds around an office building. There are two established mounds in the garden and small colonies dispersed in the lawn area but without any established mounds. There are also some small colonies in water and electrical junction boxes. The affected business advised that the ants have been there for about six months.
    - The area will be baited with insect growth regulator on 5 December 2013. Following standard protocols the baiting will be followed by direct nest injection (DNI) into each mound after a few days to give the ants time to carry the baits into the nests. The contact insecticide Fipronil is used for the DNI process.
    - Two field teams, each made up of a team leader and an assistant team leader from BQCC and 10 local contractors will do the initial surveillance of suitable habitat, concentrating on the west and south sides of the terminal and on a 1-1.5 km zone around the terminal.
    - The initial estimate for conducting 21 days of surveillance and treatment is approximately $170 000.
    - Queensland has observed remnants of a possible single alate. If the mounds have been around for 6 months or so, it is possible that alates have been produced but may not have flown. The treatments will cause the alates to drop their wings after about two days.
5. The port terminal was constructed in 2009-10 and the infested site occupies about 2 ha of a reclaimed 123 ha site made from dredged sand and gravel. The site has virtually no vegetation except for the garden bed and lawn surrounding the office building.
6. A notice of infestation was served on the business, restricting the movement of high risk items from the site.
7. A company based in south east Queensland constructed the site and a landscaping company was employed to develop the garden. Tracing infestations will be done on:

- equipment used by the site construction company
- where the landscaping company sourced the soil and other materials for the garden.

8. This terminal is 4.2 km north of the 2006 incursion of fire ants at the Rio Tinto and Orica sites which was declared to be eradicated in 2010. After the new incursion was detected, BQCC visited the Rio Tinto and Orica sites and contacted the environmental managers there who have had no reports of and seen no evidence of RIFA since eradication was declared.
9. Preliminary genetic results on one of the four samples taken from the new incursion site provide a high level of confidence that this new incursion is unrelated to either the previous incursion at Yarwun or the incursions at the Port of Brisbane and western Brisbane. Testing has also been carried out on allele frequencies. Results indicate very different allele frequencies to the previous Yarwun incursion and to the Brisbane populations. Queensland will repeat these tests with the three remaining samples.
10. Queensland has only advised TACC of the incursion and not formally advised jurisdictions yet through the Subcommittee on Domestic Quarantine and Market Access.
11. Queensland has released a media release and held a press conference in Gladstone yesterday. On 3 December 2013, the Mayor of Gladstone, local, state and federal members' received advice about the RIFA infestation.
12. Queensland advised that given the amount of construction and earth movement occurring around Gladstone harbour owing to significant development activity, it would be extremely difficult to implement movement restrictions on soil in the broader Yarwun/Gladstone area.
13. Queensland will have the results of the genetic tests back in a week and will concentrate on surveillance of the infested site next week. The company staff would be briefed on Thursday 12 December 2013 to advise them of restrictions in place and the risks of RIFA. Surveillance of suitable habitat in the 1-1.5 km zone around the infested property will take 2-3 weeks.
14. Queensland will provide an updated detection report to TACC after the initial surveillance and further genetic tests are completed.
15. Queensland will draft talking points for the new incursion of RIFA and will progress these progress through the National Communication Network (NCN)[1].

The Chair asked for comments and discussion.

16. TACC agreed that given the strong evidence that this is a new incursion of RIFA there will be no implications on the success or failure of the program and it is not a breach of the 30 km trigger which relates to spread from the Brisbane restricted area.
17. TACC agreed that it was technically feasible to eradicate the new incursion; however, Queensland noted that the response was in the preliminary stages and results were needed from further surveillance and tracing activities.
18. The Chair noted concerns that this was the sixth post border detection managed by QLD since 2001 and that there is a potential issue around management of the risk pathway and breaches of the border.

3. Draft National Management Group Red Imported Fire Ant Agenda Paper

The Chair asked for comments and discussion on the draft paper that had been circulated.

19. Discussions were held regarding one of the five review triggers set for 2013–18, that is, the new area of infestation being greater than 600 ha in a financial year. Queensland advised that rather than only considering the level of new infestation over the year a more relevant performance indicator for the program is the current area of active infestation as this takes into account areas being added by new infestations and areas subtracted as infestations are cleared.

[1] Speaking Points were circulated with the initial Media Release on the Yarwun detection to jurisdictions' NCN representatives on Thursday, 5 December 2013.

20. TACC agreed that Queensland develop a response plan and associated budget under NEBRA to deal specifically with the new incursion in Yarwun for TACC's endorsement and NMG's agreement.
21. South Australia suggested that the advice regarding the revised B: CA should be clearer and state that given the findings of the last three B: CAs that funds would be better directed to the Program's eradication activities.
22. The Chair stated that the NMG agenda paper will be revised to include the above and circulated to TACC members for response by COB Monday, 9 December 2013.

4. Other business

Western Australia provided an update on the activities related to the Browsing Ant incursion. The Commonwealth has asked the Western Australia to implement the response plan. Western Australia is waiting on Perth Airport to finalise the draft notice for affected tenants. This should be distributed later today (4 December 2013). Baits will be laid before Christmas with spraying occurring after Christmas. WA has checked the nests and has not seen any new queens and only just started to observe alate males.

TACC noted that although the response to browsing ant is not being managed by them, they will be updated on the progress of the response as necessary.

5. Actions arising

Action 1. TACC members to provide comments on the draft National Management Group (NMG) Agenda paper by 11 am (AEST) (Thursday, 5 December 2013). After this deadline the TACC Secretariat will re-draft and re-circulate the updated NMG Agenda paper for review and comment.	
Action 2. Queensland to provide a progress report on the Yarwun incursion upon completion of the genetic analyses of all four samples. This report is to include the results of the tracing investigations and the progress of treatment and surveillance activities.	
Action 3. Queensland to prepare an interim Response Plan for the Yarwun incursion under NEBRA once genetic analysis is complete.	
Action 4. Early in 2014 the TACC is to consider the relevance of the 600 hectare trigger and establish a trigger that better reflects the progress of the program, for instance the area of active infestation which takes into account new infestation as well as areas that have been cleared.	
Action 5. Speaking points on the Yarwun detection to be developed by Queensland and distributed to National Communications Network representatives.	

6. Next meeting

Another meeting will be advised.

7. Meeting closed 3.58 pm

Tramp Ant Consultative Committee (TACC) Teleconference #16
2:30 pm AEST, Wednesday 4 December 2013

Actions Arising

Action 1.	TACC members to provide comments on the draft National Management Group (NMG) Agenda paper by 11 am (AEST) (Thursday, 5 December 2013). After this deadline the TACC Secretariat will re-draft and re-circulate the updated NMG Agenda paper for review and comment.	
Action 2.	Queensland to provide a progress report on the Yarwun incursion upon completion of the genetic analyses of all four samples. This report is to include the results of the tracing investigations and the progress of treatment and surveillance activities.	
Action 3.	Queensland to prepare an interim Response Plan for the Yarwun incursion under NEBRA once genetic analysis is complete.	
Action 4.	Early in 2014 the TACC is to consider the relevance of the 600 hectare trigger and establish a trigger that better reflects the progress of the program, for instance the area of active infestation which takes into account new infestation as well as areas that have been cleared.	
Action 5.	Speaking points on the Yarwun detection to be developed by Queensland and distributed to National Communications Network representatives.	

National Red Imported Fire Ant Eradication Program

Quarterly Report – 2nd Quarter 2013–14

Version 1.1

Executive Summary

The National Red Imported Fire Ant Eradication Program (the Program) continues to be on track to meet the four main performance indicators of surveillance, treatment, compliance and budget set out in the nationally agreed *Red Imported Fire Ant Eradication Program Response Plan 2013–18*. To date, remote sensing surveillance activities have resulted in over 100 000 hectares of imagery being captured with 21 585 hectares finalised through field surveillance.

The Program continues to remove the infested status from a number of hectares (26 hectares for this quarter) following the completion of treatment and surveillance activities. The total area of infestation at the end of the quarter was 2187[1] hectares.

Preventative treatment has been conducted on 6469 hectares, while treatment of new infestation has occurred on 194 hectares during the quarter. Fire ants have been contained to South East Queensland during the quarter with no reports of long distance human-assisted movement. Expenditure remains within the allocated budget.

With the detection of fire ants in Yarwun, Gladstone two review triggers have been activated:

- infestation is detected beyond the 30 km boundary
- reproductive areas of infestation are found beyond the area scheduled for RSS.

This detection was immediately reported to the Tramp Ant Consultative Committee (TACC). Genetic testing has confirmed that the Yarwun infestation is a new incursion of fire ant in Australia and it is therefore not related to the previous Yarwun infestation nor is it related to the infestation in South East Queensland. This infestation in Yarwun is therefore deemed a new infestation rather than an incursion through long distance spread.

A determination on technical feasibility of eradication of the Yarwun (2013) incursion will be made by the TACC following completion of delimitation. This will inform a decision on whether the Yarwun incursion represents a threat to Program objectives.

[1] This figure includes all active colonies plus the surrounding 50 metres found since 1 July 2008

Summary of Activities

Governance

The National Red Imported Fire Ant Eradication Program (the Program) operates under the nationally agreed *Red Imported Fire Ant Eradication Program Response Plan 2013–18* (the response plan). The aim of the response plan is to delimit, contain and recommence eradication of red imported fire ants (fire ants) in South East Queensland.

- Under the response plan, the Program is assessed through four main performance indicators:

  Surveillance – On track

  The extent of infestation is delimited by June 2015 (subject to review by the Tramp Ant Consultative Committee (TACC) in February 2015). Delimitation is primarily achieved through the use of remote sensing technology.

  In the second quarter 2013–14 (October–December), 13 700 hectares of remote sensing surveillance (RSS) was finalised having gone through all four stages of RSS including field surveillance. At the end of the image capture period, 1500 hectares of imagery was captured. .

  Treatment – On track

  Treatment results in property freedom for all identified infested sites allowing suburb-based restricted areas to be removed.

  During the quarter, infested status was removed from 26 hectares following completion of all required treatment and surveillance in accordance with the accepted protocol.

  The total area of infestation at 31 December 2013 is 2187 hectares. The area of new infestation for the quarter is 65 hectares.

  Compliance – On track

  Containment is being achieved through community and industry compliance with movement controls thereby preventing human-assisted spread beyond the restricted area.

  69 audits of movement controls were conducted during the quarter with all non-compliance rectified.

  Fire ants were detected outside the restricted areas during the quarter in Yarwun, Gladstone. However, genetics results on the samples show that it is a new incursion into Australia. A separate response to this incursion is being undertaken.

  There were no reports of long distance human-assisted spread during the quarter.

  Budget – On track

  Annual program expenditure is within 5% of the allocated budget.

  At 31 December 2013, the Program's year-to-date expenditure is underspent by $0.496 million or 5.5% percent of the projected year to date budget (Appendix 1). This is due predominantly to less bait being used than initially projected and delays in receiving some invoices.

- Five review triggers have been identified in the response plan that may indicate a threat to Program objectives:

  - The effectiveness of RSS is compromised.
  - The new area of infestation is more than 600 ha in a given financial year.
  - Infestation is detected beyond the 30 km boundary.
  - Reproductive areas of infestation are found beyond the area scheduled for RSS.
  - A dramatic and ongoing decline in community support is evident.

  One fire ant detection (Yarwun) was reported to the TACC as a significant detection as it was a reproductive infestation beyond the 30 km RSS delimitation zone. This detection was reported by the public. Genetic testing has confirmed that the Yarwun infestation is a new incursion of fire ant in Australia and it is therefore not related to the previous Yarwun infestation nor is it related to the infestation in South East Queensland.

  A determination on technical feasibility of eradication of the Yarwun (2013) incursion will be made by the TACC following completion of delimitation. This will inform a decision on whether the Yarwun incursion represents a threat to Program objectives.

  None of the other three triggers have been activated this quarter.

- A table detailing the key statistics of the Program is attached as Appendix 2.

The primary components of the response plan can be broadly grouped into three essential components – surveillance, treatment, and containment. Additional components of the response plan include community engagement activities, scientific support, and continued support functions such as information technology, administration, and program policy and management.

Surveillance

Remote sensing surveillance

- **Response plan** – 100 000 hectares of RSS targeted on a risk-based approach within the 10 km buffer around the core infested area.

- Results for the quarter for the four RSS steps are as follows:

  - 1500 hectares of image capture (a total of 104 500 hectares for the season May–September[1] 2013) (Appendix 3).
  - Over 31 000 hectares of the total imagery captured has been analysed this quarter (algorithm and manual analysis) (a total of 102 700 hectares have been analysed for the season May–September 2013).
  - Processing issues encountered by the external contractor has resulted in delays in the provision of imagery with 1800 hectares outstanding.
  - Analysis of the imagery (algorithm and manual) has identified 342 500 possible fire ant mounds that require follow-up field surveillance.
  - 67 600 of these possible mounds have received follow-up field surveillance with an estimated 13 700 hectares finalised having completed all four stages of RSS.
  - 222 600 possible mounds are still to be checked. This has increased following the processing of outstanding imagery.

- Three infested sites (with a total of six colonies) were detected through RSS within the delimitation buffer during the quarter.

[1] In 2013–14 weather conditions remained favourable for image capture during October 2013.

- Development of the remote sensing algorithm during the second quarter focused on improving detection rates in the absence of significant new infestation (usually used for training purposes). Alternative approaches have been identified to train the algorithm. It is expected that this will significantly reduce the number of points detected by the algorithm, thereby reducing resources required for manual analysis and subsequent field follow-up.

- The analysis process (algorithm and manual analysis) produced an average of 2.3 possible fire ant mounds per hectare for follow-up field surveillance. Although this is slightly higher than the previous quarter the count remains far lower than the previous version of the algorithm and the improvements described above are expected to reduce this rate even further.

Targeted field surveillance

- **Response plan** – targeted field surveillance will occur in high risk zones and areas of new detections.

- 1457 hectares of targeted field surveillance occurred during the quarter. Targeted surveillance includes post-treatment validation surveillance, delineation surveillance of new infestations, and compliance surveillance.

Community engagement

- **Response plan** – engagement of the community across all zones out to 30 km to promote surveillance, reporting of suspected fire ant infestation, and compliance with movement controls.

- In the quarter, 43% of infestations were reported by the community.

Treatment

- **Response plan** – 32 000 hectares of treatment of small isolated infestations, areas with high density infestation, and areas that are at a high risk of becoming infested.

- Apart from new infestations, treatment is conducted between September and May. Proactive treatment of high density infestations and high risk areas commenced in October this year.

- 6469 hectares of preventative treatment was conducted in the quarter.

- 194 hectares of treatment of new infestation and surrounds has been conducted in the quarter (Appendix 4).

- A trigger for review of the Program is that the area of new infestation is more than 600 hectares in a given financial year. However, it has previously been acknowledged by the TACC that detections will most likely increase in the short term due to the increase in the level of surveillance and the extensive community engagement campaigns being conducted to support this activity. With the introduction of an agreed protocol to clear infestation, the total area of infestation is considered a more accurate reflection of the achievements of the Program. This figure will increase with the area of new detections and decrease as areas of infestation are cleared. Once the Program returns to eradication mode the total area of infestation should begin to decrease.

- The area of new infestation for the quarter was 65 hectares (Appendix 5). At 30 September 2013, the total area of infestation was 2148 hectares. With the addition of the area of new infestation for the quarter less the area cleared during this period of 26 hectares, the total area of infestation at the end of the quarter is 2187 hectares.

Containment

- **Response plan** – Application of agreed protocols and strategies to contain fire ants through movement controls including community engagement, risk management strategies focussed on the high risk restricted area, audits of Approved Risk Management Plans (ARMPs), and inspector's approvals for movement of risk materials.

- Currently there are 315 287 hectares under movement restrictions (RIFA Restricted Area – Version 46). 215 suburbs are now included in the restricted areas compared to 205 suburbs in the previous version.

- Risk management strategies conducted during the quarter include:

  - One tracing activity to ascertain the origin of infestation – with multiple polygyne colonies. The origin of the infestation to date is inconclusive, however investigations are continuing.
  - 50 spot audits on businesses operating within the restricted areas. 47 were compliant with movement controls with the remaining three having minor issues that were immediately rectified. One of the businesses was found to be operating without an ARMP. An ARMP is now in place for this business.
  - 19 audits of ARMPs with all but three found to be compliant with their plan. The most serious non-compliance was one business no longer worked under an ARMP as the former owners had taken all the records. The non-compliance has been rectified for all three businesses.
  - 44 inspector's approvals issued for the movement of restricted items.
  - 189 plant quarantine inspections of businesses transporting restricted items interstate.

- Community engagement continues to play an essential role in communicating movement controls which assists in containing the fire ant infestation. This occurs through updating key industry stakeholders on program activities and changes to the restricted areas, and by providing training to businesses as a component of their ARMPs.

These actions also assist with delimitation by communicating to the public the importance of checking for fire ants and reporting any suspicious ants.

Community Engagement

The focus of community engagement activities this year is aimed at public reporting, increased knowledge of fire ants to improve public reporting, industry training and promotion of updated risk management plans, as well as improved communication with relevant industry bodies and encouraging in-kind support from industry and business.

- In 2013, awareness of fire ants in the greater Brisbane region remains very high at 95%[1].

[1] 2013 Queensland Regional Householder Survey

- During the quarter, the overall engagement from the campaign activities has been successful including:

  - The Program continues to develop material to assist with communication with key stakeholders and training activities. A short film of the Program was finalised during the quarter which focuses on the new RSS technology and its application in the field. The film was used to open the Minister's briefing for local government Mayors, as well as briefings for state members and other local government representatives. The film has also been uploaded to YouTube and has been used to open the Lockyer Valley's weekly "Movies in the Park".
  - Following the Minister's local government briefing at Oxley, council briefings were provided to all staff of the Scenic Rim Regional Council, Toowoomba Regional Council and Lockyer Valley Regional Councils. All relevant councils are working with the Program to assist our public awareness and education objectives as well as compliance requirements.
  - The Program continues to receive assistance from businesses to publicise fire ants. Transport and Main Roads supported the Program's recent release of the Restricted Areas by publishing fire ant messages on 46 freeway emergency signs for a two week campaign. A number of local businesses in risk areas distributed 37 000 fire ant identification cards to members of the community.
  - The Program's first online fire ant training package prepared by Energex staff and hosted on their system has gone live with over 200 staff trained. This training package demonstrates the collaborative relationship between industry on the frontline and the Program.

Scientific Support

Science provides diagnostic and genetic analysis of ant samples, assessment of operational treatment and surveillance activities, and research and development.

- Research is being undertaken to demonstrate whether there is an increasing incidence of male sterility (if too many sterile males are produced a colony will collapse) in the Queensland population which may eventually tip it towards extinction. It has been decided to conduct two different research approaches, one looking at percentages of sterile males in the population over time and the other searching for the gene where the sex of the ant is determined from which further analyses can be undertaken. Work to date indicates increasing male sterility but the sex locus is yet to be found.

- Submissions have been made to the Australian Pesticides and Veterinary Medicines Authority for alternative chemicals that can be used as a substitute for chlorpyrifos for treatment of turf, domestic pot plants and as a barrier treatment. Bifenthrin has now been approved for use in pot plants and as a barrier treatment for turf. Approval is pending for the use by nurseries of suSCon ® Green (a controlled release granular formulation of chlorpyrifos) in nursery stock.

- A collaborative project with the Queensland University of Technology to identify areas that have been recently disturbed using Landsat imagery was due for completion in September 2013. The report, due to be delivered last quarter, has now been extended because of the need for further testing of the model. The intention of this project is to allow targeted treatment of disturbed areas, a preferred habitat for fire ants, to eliminate infestation before it can spread.

Continued support functions

Essential support functions include information technology, operational mapping, planning and scheduling, administration, and Program policy and management. Activities during the quarter include:

- As requested by the National Management Group, interim advice on options for securing financial contributions for the Program outside the current national cost-sharing arrangements was prepared. This advice included an assessment of the private beneficiaries and risk creators for the Program, their capacity to contribute and potential funding mechanisms.

- A discussion paper on this issue was considered by the Primary Industries Standing Council (PISC) in November 2013. The paper was not endorsed by all jurisdictions at PISC4 OOS 09 and as a result was not provided to the Standing Committee on Primary Industries in December as scheduled. Issues raised in the discussion paper requiring national resolution are to be considered by the National Biosecurity Committee in late February 2014.

- A new declaration of the Fire Ant Restricted Areas (Version 46) became effective on 31 October 2013. A total of 215 suburbs are included in the restricted areas (205 in the previous restricted areas – Version 45)—116 suburbs are included in the high risk restricted area while 99 suburbs are included in the low risk restricted area.

- A number of Program policies continue to be developed, including:

  - power of entry for surveillance (resulting from a recommendation from the Deloitte efficiency audit conducted early in 2012)
  - risk management
  - remote sensing surveillance
  - waste facilities.

- A major redevelopment of the Fire Ant Information System (FAIS) and all supporting databases was commenced in 2011–12 to help mitigate the critical risk of system failure. The project has amalgamated several supported databases and systems into one tightly integrated Fire Ant Management System (FAMS).

  - Stage 6 of the FAMS development project has been completed on time and within budget. Some of the modules within Stage 6 include the power of entry module which supports the change in policy for accessing properties where land owners cannot be contacted to gain consent; bookings; GPS tracking; job processing; and job tracking. Stage 6 production release is due in the next quarter.
  - Preparations are underway for the Information and Communications Technology (ICT) roadmap review process. This review will investigate future support and maintenance of the Program's information systems—with the intention of reducing costs.

A summary of the *Red Imported Fire Ant Eradication Program Response Plan 2013–2018* is attached (Appendix 6).

Appendix 1 – Financial Report 2013–14

For period ending 31 December 2013

WORK UNITS	Notes	2013–14 Initial Budget			Initial Budget	2013–14 Revised Budget			Revised	2013–14 Actual Expenses			Actual
		Labour $'000	Non-Labour $'000	TOTAL $'000	FTE	Labour $'000	Non-Labour $'000	TOTAL $'000	FTE	Labour $'000	Non-Labour $'000	TOTAL $'000	FTE
FAE Management		214	220	434	2.0	415	36	451	2.0	126	23	149	2.0
Policy and Planning		468	10	478	4.0	449	10	458	4.0	244	5	248	4.00
Resources and Administration		807	661	1,467	9.75	783	682	1,465	9.8	395	266	661	7.00
Community Engagement		681	224	905	6.9	656	264	920	6.9	342	97	439	6.80
Information Services		541	741	1,283	5.0	512	705	1,218	5.0	280	140	420	4.00
Scientific Services		806	236	1,042	8.0	777	236	1,013	8.0	381	80	461	8.20
Field Operations		4,106	1,257	5,363	66.0	3,944	1,257	5,201	66.0	1,963	305	2,268	62.89
Program Compliance		1,498	115	1,613	19.0	1,441	115	1,556	19.0	714	78	791	18.00
Sub-Total		**9,122**	**3,463**	**12,585**	**120.7**	**8,977**	**3,305**	**12,282**	**120.7**	**4,445**	**993**	**5,438**	**112.89**
Site Lease Charges			399	399			399	399			204	204	
Odour Detection Dogs		175	166	341	2.0	165	291	456	2.0	93	80	174	2.00
Chemical Treatments			1,364	1,364			1,364	1,364			261	261	
Aerial Applications			480	480			480	480			140	140	
Remote Sensing		240	2,928	3,168	3.0	234	3,123	3,357	3.0	120	2,195	2,315	3.00
Sub-Total		**415**	**5,337**	**5,752**	**5.0**	**399**	**5,657**	**6,056**	**5.0**	**213**	**2,881**	**3,094**	**5.00**
TOTAL COST-SHARING + QLD SUPPLEMENTARY FUNDING		**9,537**	**8,801**	**18,338**	**125.7**	**9,376**	**8,962**	**18,338**	**125.7**	**4,658**	**3,874**	**8,532**	**117.89**

Notes:

The 2013–14 budget includes a $337.6K carryover from 2012–13.

Revenue Update:

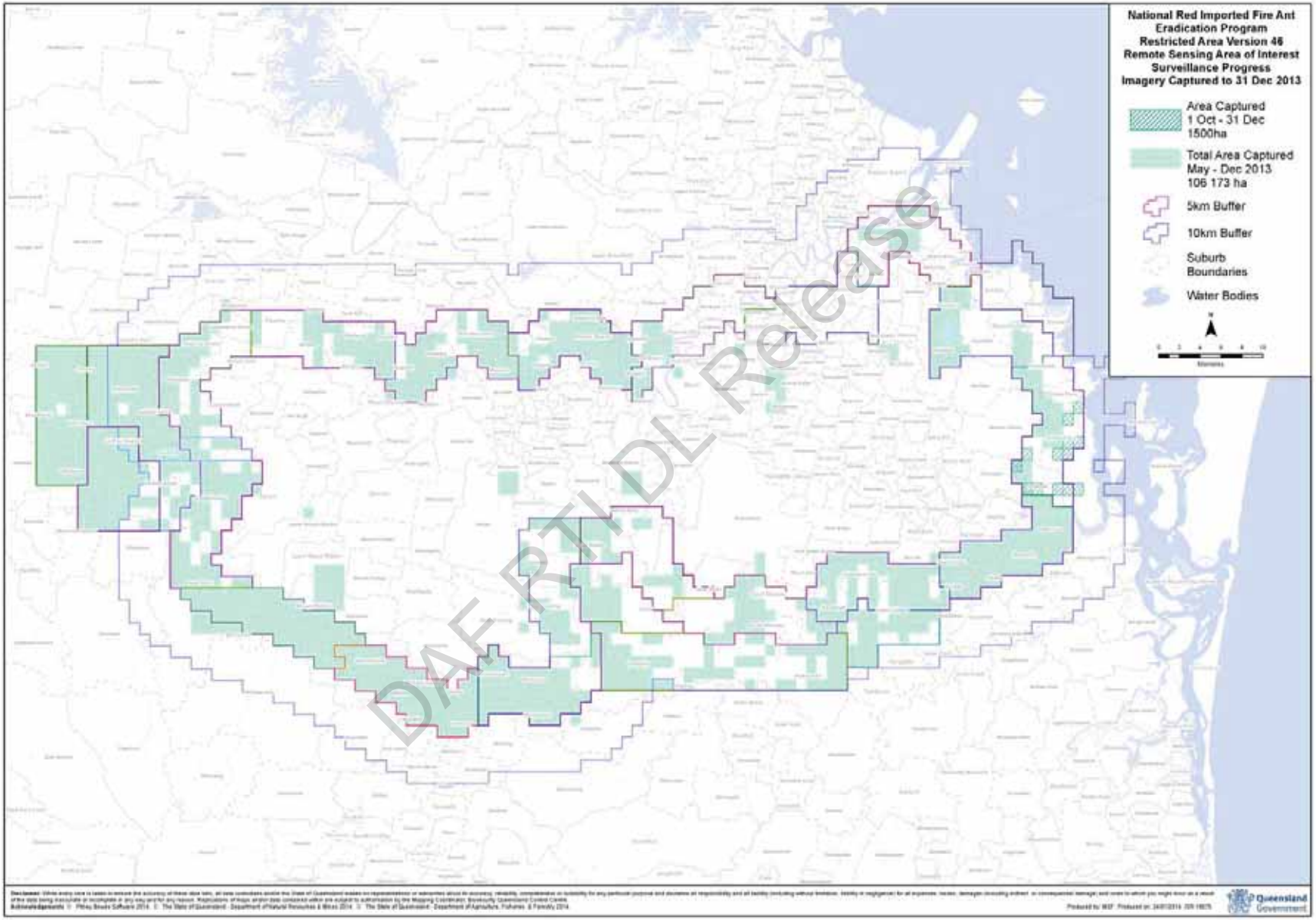
July–Dec 13 invoices were raised in 13 November 2013.

Appendix 2 – Key statistics for the Program

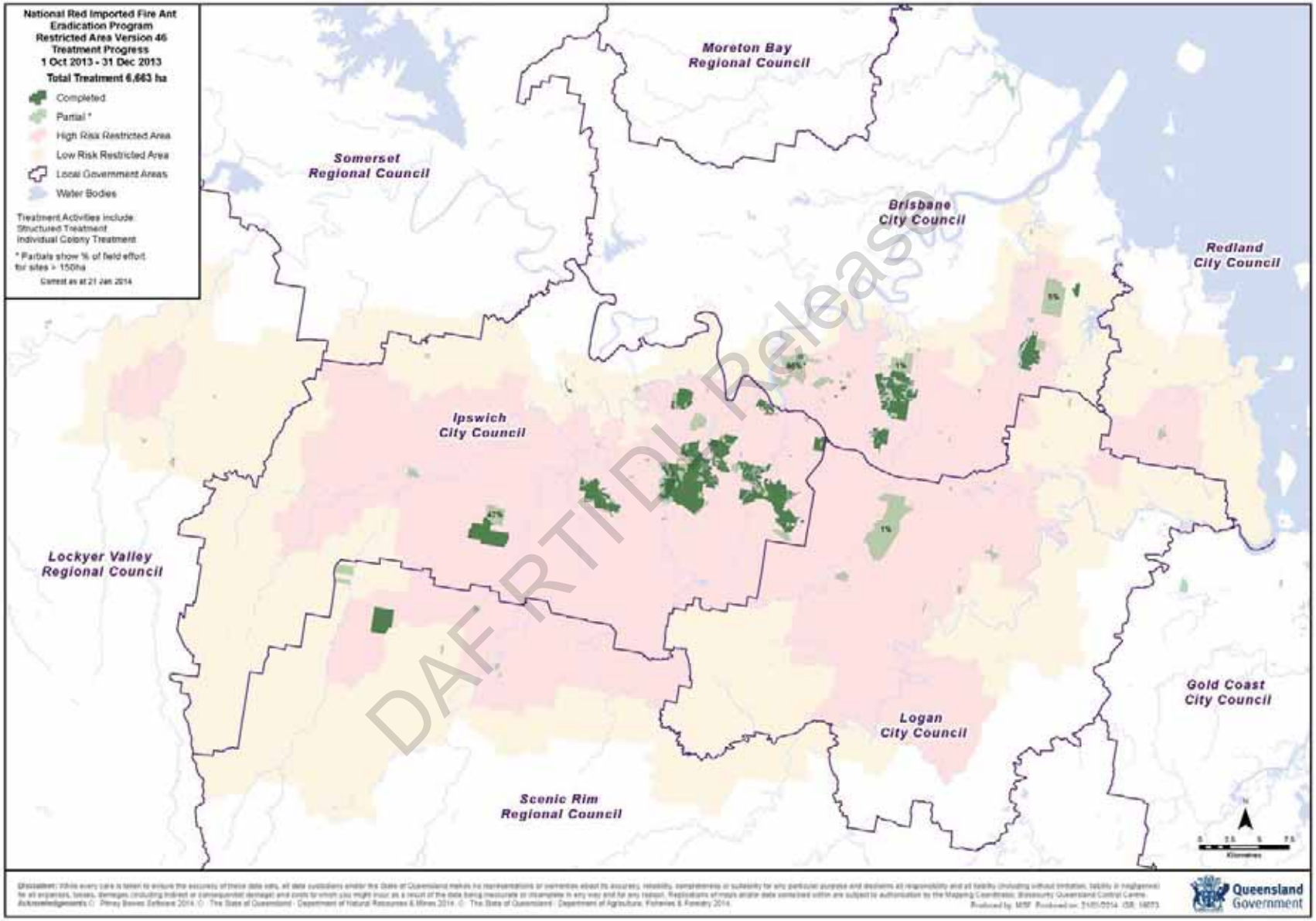
2013-14 Financial Year	Scheduled activities	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total 2013–14
Total area of infestation[1]		2148 ha	2187 ha			2187 ha
New infestation		217 ha	65 ha			282 ha
Cleared infestation		49 ha	26 ha			75 ha
Significant detections		2 detections	1 detection[2]			3 detections
RSS – imagery captured	100 000 ha	68 500 ha[3]	1500 ha			70 000 ha
RSS – imagery analysed	100 000 ha	56 100 ha	31 000 ha			87 100 ha
RSS – finalised[4]	100 000 ha	7 885 ha	13 700 ha			21 585 ha
Targeted field surveillance		2828 ha	1457 ha			4285 ha
Treatment[5]	32 000 ha	912 ha	6663 ha			7575 ha
Total size of restricted areas		281 947 ha	315 287 ha			-
Total suburbs in the restricted areas		205	215			-
Number of high risk suburbs		109	116			-
Number of low risk suburbs		96	99			-
Suburbs removed from the restricted areas		-	-			-
Audits of movement controls		79 audits	69 audits			148 audits
Inspector's approvals (IAs)		57 IAs	44 IAs			101 IAs

[1] The total area of infestation includes all active colonies plus the surrounding 50 metres found since 1 July 2008. The total area of infestation on 30 September 2013 was 2148 ha.
[2] Yarwun detection - reported to the TACC on 2 December 2013. On 3 December 2013, TACC was provided a Significant Detection Report as the detection involved a reproductive infestation beyond the 30 km RSS delimitation zone. Genetic analysis subsequently confirmed this to be a new incursion that is unrelated to the 2006 Yarwun incursion or the 2001 south east Queensland incursions.
[3] A total 104 500 ha of imagery has been captured for the season with approximately 1800 ha currently unavailable for analysis
[4] No further work is to be conducted around this imagery – all stages of RSS are complete
[5] The preventative treatment season runs from September through until May. This figure includes preventative treatment and treatment for new infestation.

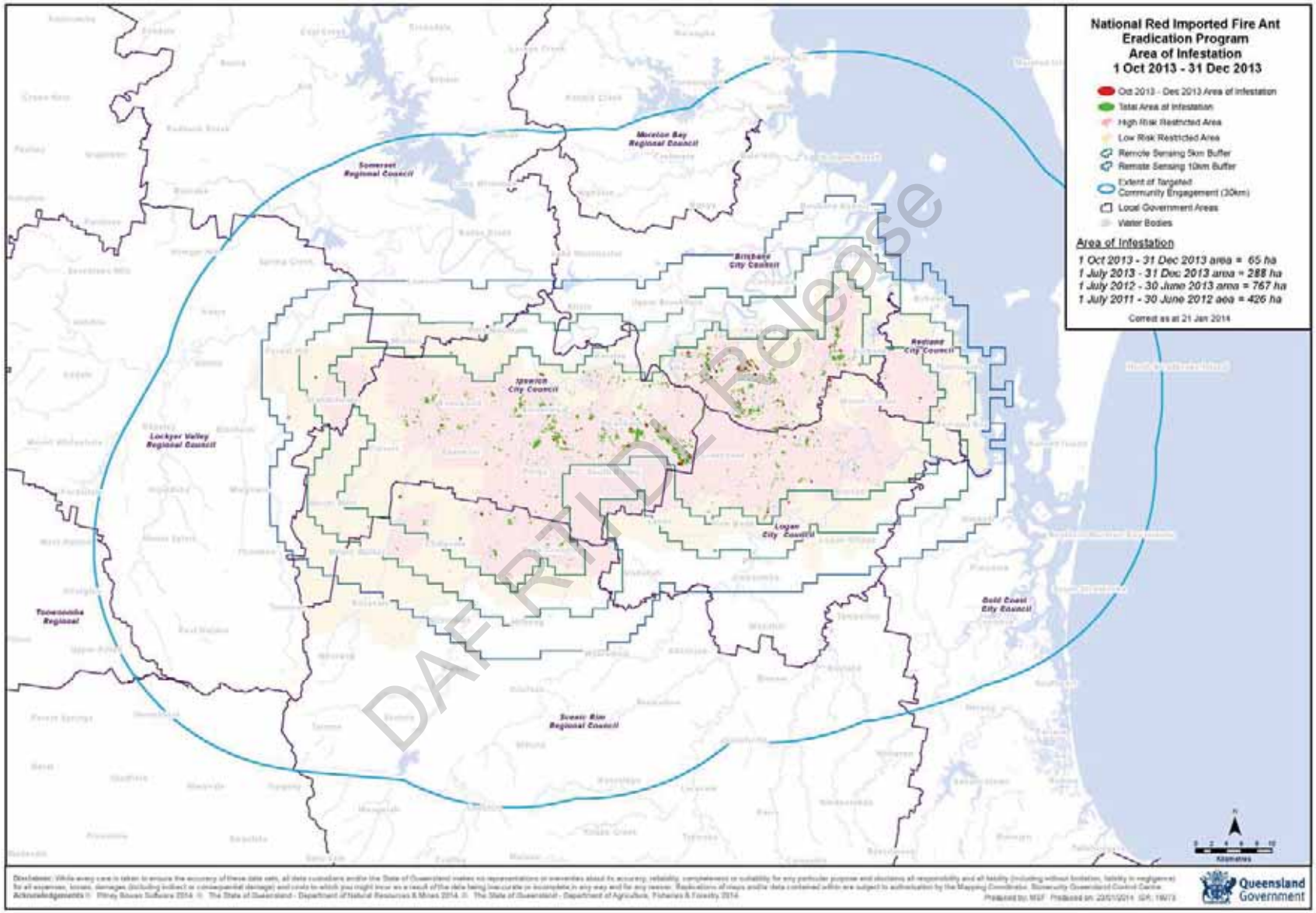
Appendix 3 – RSS imagery captured for May–September 2013



Appendix 4 – Treatment progress for 1 October–31 December 2013



Appendix 5 – Area of infestation 1 October–31 December 2013



Appendix 6 – Summary of the 2013–18 RIFA Eradication Program Response Plan

Program Components	Approaches/options	2012-13 - Year 1[1]	2013-14 - Year 2	2014-15 - Year 3	2015-16 - Year 4[2]	2016-17 - Year 5	2017-18 - Year 6[3]
		Delimitation, Containment & Suppression			Eradication		
1. Delimitation							
Core infested area • ≈150 000 hectares (Feb 2013)	• Community engagement (CE). CE results in passive surveillance, RIFA reporting & compliance with containment measures. • Targeted field surveillance • 100% surveillance • Remote Sensing Surveillance (RSS)	• CE • Targeted field surveillance	• CE • Targeted field surveillance incl. RSS (high risk zones & new detections) where feasible	• CE • Targeted field surveillance incl. RSS (high risk zones & new detections) where feasible • ***Delimitation complete***	• CE • RSS targeted according to risk profile from outcomes of previous RSS & other risks • Targeted field & dogs surveillance	• CE • RSS targeted according to risk profile from outcomes of previous RSS & other risks • Targeted field & dogs surveillance	• CE • 100% around any remaining breeding populations • Targeted field & dogs surveillance
5 km zone • 500 m – 5 km from core infested area • ≈122 000 hectares in 2012–13 (Feb 2013) • 57 455 hectares of 'suitable' habitat (Feb 2013)	• Community engagement = passive surveillance (CE) • 100% RSS coverage • RSS suitable habitat only	• CE • Remote sensing surveillance (RSS) of suitable habitat only	• CE • RSS targeted according to risk profile from outcomes of previous RSS & other risks	• CE • RSS of suitable habitat only (filter out false positives previously identified) • ***Delimitation complete***	• CE • RSS targeted according to risk profile from outcomes of previous RSS & other risks • Additional targeted RSS to address risk that residual infestation has spread from known infested area	• CE • RSS targeted according to risk profile from outcomes of previous RSS & other risks	• CE • All RIFA free areas as demonstrated from preceding surveillance declared pest free • Surveillance continues on remaining risk areas to build towards pest free status.
10 km zone • 5–10 km from core infested area • ≈135 000 hectares (Feb 2013); • 63 780 hectares of 'suitable' habitat (Feb 2013)[4]	• Community engagement = passive surveillance (CE) • 100% RSS coverage • RSS suitable habitat only • Targeted RSS based on risk	• CE • Limited RSS	• CE • RSS targeted according to risk profile from outcomes of previous RSS & other risks	• CE • RSS targeted according to risk profile from outcomes of previous RSS & other risks • ***Delimitation complete***	• CE • RSS targeted according to risk profile from outcomes of previous RSS & other risks	• CE • RSS targeted according to risk profile from outcomes of previous RSS & other risks	• CE • All RIFA free areas declared pest free
30km zone • 10–30 km from core infested area (as defined in February 2013)	• Community engagement = passive surveillance (CE) • 100% RSS around any detections[5]	• CE	• CE	• CE • ***Delimitation complete***	• CE	• CE	• CE
2. Treatment[6]							
• Small, isolated infested sites	• Direct nest injection with 50 m buffer (bait) as per protocol	• Direct nest injection • 1 buffer treatment as per protocol	• Direct nest injection • 1 buffer treatment as per protocol	• Direct nest injection • 1 buffer treatment as per protocol	• Direct nest injection • 1 buffer treatment as per protocol	• Direct nest injection • 1 buffer treatment as per protocol	• Direct nest injection • 1 buffer treatment as per protocol
• Treatment around areas that have high density infestation	• Up to 3 treatments per year with broadcast baiting at least 500 m out	• 1-2 treatments	• 2 treatments per year	• 2 treatments per year	• 2 treatments per year	• 2 treatments per year	• 2 treatments per year
• Targeted treatment of disturbed land in known infested area (out to 5 km around infestation) & all risk linked landfills & dump sites	• Nil treatment • 1 treatment per year • 2 treatments per year	• 1 treatment	• 1-2 treatments per year	• 1-2 treatments per year	• 1-2 treatments per year	• Based on risk assessment to determine level of treatment if any.	• Based on risk assessment to determine level of treatment if any.
3. Containment (movement controls)							
• Remove suburbs from restricted area as infested sites are treated	• Protocol endorsed by TACC	• As per protocol	• As per protocol	• As per protocol	• As per protocol	• As per protocol	• As per protocol
• Community engagement to ensure compliance & shared responsibility	• Community engagement strategy endorsed by TACC	• As per strategy	• As per strategy	• As per strategy	• As per strategy	• As per strategy	• As per strategy
• Risk management strategies to be focused on high risk restricted area	• Protocol endorsed by TACC	• As per protocol	• As per protocol	• As per protocol	• As per protocol	• As per protocol	• As per protocol
• Audits of Approved Risk Management Plans	• Protocol endorsed by TACC	• As per protocol	• As per protocol	• As per protocol	• As per protocol	• As per protocol	• As per protocol
• Inspector's approval for soil movement	• Protocol endorsed by TACC	• As per protocol	• As per protocol	• As per protocol	• As per protocol	• As per protocol	• As per protocol

Note: Remote sensing surveillance (RSS) involves four steps – (i) Image capture; (ii) Image analysis by algorithm; (iii) Manual analysis of composite images; and (iv) Field investigation of points of interest

[1] Actual activity levels for 2012-13, based on a budget of $16.125M
[2] Areas will change as zone boundaries are redefined due to demonstrated evidence of absence and presence of infestation in various parts of zones
[3] Yr 7-8 (2018-20) would be a continuation of the Eradication Phase, with Yrs 9-10 (2020-2022) being Proof of Freedom Phase
[4] RSS buffers will continue be modified each year to reflect actual infestation patterns
[5] If any infestation is detected in the 30km zone, RSS will occur around the detection
[6] Preventative treatment across the entire core area (150 000 ha) would cost approximately $18M for one treatment or $54M for three treatments. This was not considered as a viable option.

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