



NATIONAL

Varroa Mite Management

PROGRAM



National Varroa Mite (*Varroa destructor*) Response Plan

Version 4

Transition to Management

Detailed Summary

Prepared March 2024

Varroa Mite Response Arrangements

The National Management Group (NMG) for *Varroa destructor* met on 9 February 2024 and approved the National Response Plan incorporating the Transition to Management (T2M).

The NMG consists of Chief Executive Officers from government agencies responsible for agriculture and affected industry organisations. It is chaired by the Secretary of the Australian Government Department of Agriculture, Fisheries and Forestry. Plant Health Australia is a non-voting member.

NMG makes decisions on whether to support national eradication programs for pest or disease outbreaks under the Emergency Plant Pest Response Deed (EPPRD). NMG considers recommendations provided by the consultative committee before making decisions on whether a pest or disease is technically feasible to eradicate and cost beneficial to do so.

The Consultative Committee for Emergency Plant Pests (CCEPP) provides technical and scientific advice in response to exotic plant pest and disease incursions. It is chaired by Australia's Chief Plant Protection Officer and comprises the Chief Plant Health Managers from each state and territory, other specialists from government, Plant Health Australia, and representatives from affected industries.

The affected industries in this incident that are signatories to the EPPRD include the Australian Honey Bee Industry Council and pollination-reliant industries, including:

- Almond Board of Australia
- Apple and Pear Australia
- Australian Lychee Growers Association
- Australian Macadamia Society
- Australian Mango Industry Association
- Australian Melon Association
- AUSVEG
- Avocados Australia
- Canned Fruit Industry Council of Australia
- Cherry Growers of Australia
- Grain Producers Australia
- Passionfruit Australia
- Raspberries and Blackberries Australia
- Strawberries Australia
- Summerfruit Australia

The EPPRD is a formal, legally binding agreement between Plant Health Australia, the Australian, state and territory governments, and national plant industry bodies representing specific cropping sectors. The EPPRD covers the management and funding (cost-sharing) of nationally agreed responses to emergency plant pests.

Aim of the Response Plan

This Response Plan aims to provide an orderly transition from a program focussed on eradication of *Varroa destructor* (Varroa mite) to management outside of the Emergency Plant Pest Response Deed (EPPRD), minimising the ongoing effects of Varroa mite naturalisation on the European honey bee (EHB) industry and pollination-reliant industries with a major focus on business continuity.

Objectives of the Response Plan

Outlined below are the objectives of the Response Plan focussed on transition to management (T2M). Information is included regarding whether each activity under the objectives is cost-shared by all government and industry parties involved as part of the national funding arrangements, or whether NSW is funding the activity as part of their normal biosecurity commitments.

Objective 1. Completion of the activities planned under the earlier Response Plan Version 3 as part of an orderly wind up of operational activities undertaken within the Eradication Phase of the response. This objective is now complete.

- Finalise tracing and surveillance activities (cost-shareable)
- Finalise outstanding compliance activities (not cost-shareable)
- Final surveillance blitz (cost-shareable)
- Complete euthanasia and disposal (cost-shareable)
- Finalise wild European honey bee (WEHB) Program (cost-shareable)
- Establish legislated biosecurity zones and movement controls in NSW (not cost-shareable)

Objective 2. Building Industry Resilience

- Develop and deliver Varroa mite management capability program (cost-shareable)
- Deliver extension and engagement across Australia (cost-shareable)
- Update Code of Practice and Biosecurity Manual (cost-shareable)
- Facilitate commercial supply of Varroa mite control products (not cost-shareable)
- Support national Varroa mite related diagnostics (partially cost-shareable)

Objective 3. Slowing the spread of Varroa mite

- Regulate to slow the spread of Varroa mite (partially cost-shareable)
- Compliance and enforcement (not cost-shareable)
- Monitor the impacts of Varroa mite across Australia (cost-shareable)

Objective 4. Future-ready industries

- Establish an Australian COLOSS survey (cost-shareable)
- Enable a national Varroa mite data management system (cost-shareable)
- Investigate options for upskilling queen bee breeders (cost-shareable)
- Investigate of options that will enable pollination in a post-Varroa mite world (cost-shareable)

Notable points of the Transition to Management plan

The Transition to Management (or T2M) plan:

- will be delivered over a 24-month period with the great majority of activities delivered during the first 12 months.
- no longer aims to eradicate Varroa mite from Australia but accepts that – given global precedents – the spread of Varroa mite across Australia is to be expected. As such the delivery of the plan aims to slow this spread to allow beekeepers, pollination dependent industries and the community sufficient time to prepare.
- is nationally aligned in delivering on ground support to beekeeper and pollination dependent industries across the nation.
- focuses on upskilling for the beekeeping sector. All CCEPP members agreed that the most efficient way of preparing for the spread of Varroa mite and expected impact is to channel delivery efforts toward beekeepers.
- focuses on delivery of training and extension services with over 70% of the plan budget allocated to this.
- builds the capability for ongoing Varroa mite management through activities including support to national Varroa mite related diagnostics, upskilling of queen bee breeders and systems to systematically monitor national hive health.
- recognises the need to deliver outcomes which deliver benefit beyond the life of this plan and enables industries to manage Varroa mite in the long term.

Objective 1. Completion of the activities planned under Response Plan Version 3

All activities associated with eradication were completed by March 2024.

- Tracing and surveillance for recently identified infested premises (IPs) within the NSW management zone is complete.
- The NSW Department of Primary Industries (DPI) Compliance team will continue investigating complaints and progressing prosecutions relating to offences identified under the Eradication Phase of the Response.
- Surveillance associated with Eradication Phase of the Response has been completed (December 2023) using existing field teams in order to provide a solid baseline of the current known spread of Varroa mite and associated viruses in NSW.
- Opt-in hive euthanasia for beekeepers who were in previous eradication emergency zones has been completed.
- The WEHB team have systematically decommissioned and demobilised all the feeder stations that were deployed in former eradication emergency zones. The team has also completed decommissioning the 280 swarm catch boxes. A small team of WEHB officers were maintained until March 2024 to complete monitoring of Varroa mite impacts on WEHB and assess the residual nature of fipronil in hives.
- NSW has declared internal zoning to assist in slowing the spread of Varroa mite from highly infested areas (Management Zones) to less infested areas (Suppression Zones). The Management Zones (amber zones) contain the highest infestation levels and are situated in the Hunter/Central Coast and parts of north-west Sydney, and around the Kempsey region. The remainder of the state is designated a Suppression Zone (green zone) and contains a lower level of Varroa mite infestation. These zones will be deregulated within 12 months of their creation and following consultation with stakeholders advice around zone and movement control deregulation will be provided to the CCEPP prior to implementation.

Objective 2. Building Industry Resilience

Activity 1. Develop and deliver Varroa mite management capability program.

The Varroa mite management capability program will upskill the national beekeeping industry to monitor, detect, report, and manage Varroa mite, to understand and meet their responsibilities, and assist them to introduce new practices to their businesses to manage Varroa mite.

For the pollination-reliant industries, the focus is on understanding the implications for their industry and identifying future changes to operations, work which will be led by the National Pollination Industry Coordinator (PIC). This will be different for each industry. Material from this program may be used by the PIC to support extension and engagement for pollination-dependent industries. Material will be made available for national utilisation.

Tailored resources for the beekeeping industry sector will be developed as a priority in consultation with industry, and delivered nationally to provide access to reliable, current, and consistent information and training programs relevant to the Australian context. This includes the development of educational resources, delivery of a coordinated webinar series and training online and face-to-face nationally.

The proposed program, coordinated and delivered nationally, is comprised of two parts:

- Developing resources and training programs,
- Delivery of education and training.

Resources for beekeepers

Course and material development Lead: NSW DPI Intensive Livestock Systems (ILS) and NSW DPI Tocal College (Tocal). Together these two areas of NSW DPI have the expertise and experience to develop resources and contextualised training, and insights from hands on experience with Varroa mite.

Resources and training materials will be developed through a co-design process with industry and key stakeholders from each state and territory, so the topics and content meet identified industry needs. The development will include a review process by identified subject matter experts looking at technical accuracy, relevance, national context and clarity. All materials developed as part of the T2M (T2M) plan will be freely available for use post the T2M period.

The materials will be presented using an agreed and consistent design and available via a national platform, so they are widely accessible and available for use throughout Australia. Existing networks and associations will be used to disseminate the information and raise awareness of resources and training opportunities.

The online and face-to-face training is non-accredited (not mapped to nationally recognised units of competency) and will be available for use in training for all training providers beyond the 24-month T2M period.

Delivery of education and training for beekeepers

National delivery will be coordinated by a National Varroa mite Training & Education Coordinator sitting in NSW DPI. This position will coordinate the development of resources and delivery of training nationally including the management of approved trainers. Rollout of training will need to be supported by relevant state and industry bodies to achieve the development and delivery outcomes within the timeframe, including in some cases the delegation of coordination of specific training events. It will be supported by a part-time administration position (training and education support officer).

A combination of online and face-to-face training will enable the greatest reach and provide flexibility for industry. The online training will be openly available to all interested people. The face-to-face training will be nationally coordinated and delivered in each state by selected trainers who have completed the “Train the Trainer” program. These will be supported by the delivery of a webinar series on identified priority topics and a suite of resources.

A national expression of interest or tender process will be used to source potential trainers for each state for the face-to-face training products. The tender process will be overseen by the National Varroa mite Training & Education Coordinator with candidates selected based on agreed essential skills and experience. This will be open to appropriate personnel from the public and private sectors. Selected applicants will complete the “Train the Trainer” program delivered by Tocal College, NSW DPI technical specialists and Bee Biosecurity Officers beyond the National Bee Biosecurity Program. The ‘Train the Trainer’ program will be delivered in NSW and at two other priority locations (based on location of successful applicants).

The ‘Train the Trainer’ program is critical to ensuring the trainers are well prepared for their role, understand the content, introduced to the key elements of being an effective trainer and equipped to address questions appropriately. It is fundamental to achieving national quality and consistency in delivery and achieving upskilling outcomes for industry. It will also mean there is a national pool of trained and experienced people to continue the capability uplift of the key industries beyond the 24 - month T2M period.

The National Varroa mite Training & Education Coordinator will prioritise and coordinate the training with the support of national and state agencies and industry bodies and beekeeper associations. These networks are crucial to the engagement with and delivery of the training. The number of face-to-face training events per state and the locations will be based on agreed priority target industries and be proportional to the volume of target industry in each state.

The training will be delivered at various locations in each state based on location of target audience. The half-day courses are intended to be incorporated into existing industry events, meetings or field days and adapted accordingly. Based on uptake, delivery methods can be adjusted as needed.

Ideally a team of regional/mobile trainers will support the national delivery framework. Two trainers are required for each training event due to the proposed number of participants per course.

Allocation	Number of trainers (Full Time Equivalents)
NSW/ACT	15
Vic	8
Qld	8
SA (covers NT)	8
Tas	4
WA	5
Total	48

Activity 2. Deliver extension and engagement across Australia.

Extension and engagement will be delivered nationally in direct support of beekeepers as they transition to managing Varroa mite. This will include supporting industry-based surveillance and reporting of Varroa mite as well as general engagement around Varroa mite management.

The **National Varroa mite Coordinator (AHBIC)** will oversee the program. The coordinator will report progress to a National Varroa mite T2M Coordination Group.

Varroa Development Officers (VDOs) will deliver engagement across all areas of Varroa mite management to commercial and recreational beekeepers to extend best management practice guidelines. The great majority of Australia is likely to remain varroa-free for the next 12 months so much of the work delivered by VDOs will be proactive. Preparing beekeepers will be instrumental in reducing Varroa mite impact and slowing spread of this pest. VDO activities will include.

- Establishment, coordination and maintenance of the voluntary Varroa mite monitoring program in collaboration with volunteer beekeepers, beekeeping clubs and societies.
- Assistance through face-to-face skills development and resolving problems.

This will involve attendance at bee club meetings to promote Varroa mite monitoring and management practices. They will also focus on engaging with beekeepers around hive health monitoring.

VDOs will build capability through hands on engagement with beekeepers, may directly support the Training and Education program as trainers, and will work alongside existing BBOs and other apiary staff in a complementary manner.

The number of VDOs in each state has been allocated based on the size of the beekeeping industry in each jurisdiction with up to 32 VDOs and 5 Extension & Engagement Coordinators located across the country.

Allocation	Coordinator	VDOs
NSW/ACT	1	8
Vic	1	6
Qld	1	6
SA (covers NT)*	1	6
Tas	0	2
WA	1	4
Total	5	32

*The Northern Territory and South Australia will decide the location of VDOs in the two jurisdictions. The Extension and Engagement Coordinator will work with the VDOs across the two jurisdictions.

The extension and engagement program has been scheduled to occur over 12 months in line with the provisions of the T2M plan under the EPPRD. In acknowledgement of anticipated delays associated with recruitment of VDOs the plan has an allowed duration of 24 months.

A role will be created for a **National Pollination Industry Coordinator (PIC)**. This role will gather relevant information from pollination dependent industries on their concerns and knowledge gaps and future needs related to living with Varroa mite within their industry. They will coordinate the development of content specific to the needs of pollination-dependent industries and will work with existing Industry Development Officer (IDO) networks (or equivalent) across the country to support dissemination and delivery of resources and information to growers. IDOs already have strong familiarity with the needs of their respective industry as well as the most suitable platform for delivery of this kind of material, it is expected that delivery models and topics will differ between industries. To maximise engagement with industries the PIC will act as an information conduit for the pollination-dependent industries and will provide a key point of contact where IDOs may be able to clarify information or raise concerns on industry needs.

Once appointed, the PIC contact details will be circulated to the pollination-dependent peak industry bodies supporting the Varroa mite Response so that all industries can contact the PIC. The PIC will then workshop the best communication platforms with the various industries to ensure industry needs are met and regular ongoing communication is fostered, and that this is reported to the Coordination Group.

The delivery of information for plant industries can also be supported by the VDOs where they may be able to provide a beekeeping perspective to the engagement with plant industries, highlighting suitable measures for growers to consider aligned to pollination security. This role will be recruited in the first half of 2024.

Activity 3. Update Code of Practice and Biosecurity Manual

The Australian Honey Bee Industry Biosecurity Code of Practice

(https://planthealthaustralia.com.au/wp-content/uploads/2022/05/Bee-Biosecurity-Program-Code-of-Practice-May-2022-for-web_final.pdf) is a set of best practice biosecurity guidelines written by beekeepers for beekeepers. The Code provides a framework for Australian beekeepers to use best practice biosecurity measures. It is based on the principles of good biosecurity and describes the outcomes a beekeeper needs to achieve for good pest and disease prevention and control. The Code covers areas such as pest and disease inspections and management, weak hive management, neglected

hives, training, and record keeping. The Code is the industries' guiding document and is legislated to varying degrees nationwide.

Currently the Code does not include managing Varroa mite as, until now, it was considered an exotic pest. The Code needs to be updated to reflect the best practice management for Varroa mite.

An initial update should be finalised in 2024. This may be further refined over time. These changes will need to be made in consultation with industry and state and territory governments and any changes or additions agreed to by the industry and state and territory governments to maintain document integrity.

The Biosecurity for Beekeepers Biosecurity On-Line Training (BOLT) eLearning course is a fundamental element of the Code and in some jurisdictions is a compliance requirement for beekeepers. As the Code is revised to include the knowledge and practices for Varroa mite management gathered through the activities of the T2M program, the BOLT course will also require review and updating. The BOLT course update will be delivered by Plant Health Australia. As finalisation of the Code approaches Plant Health Australia will provide a project outline with a clear budget for the required updates, course material development, and consultation process based on the understanding of the changes outlined in the Code. The project outline will be provided to CCEPP for support.

The Biosecurity Manual for Beekeepers (https://www.planthealthaustralia.com.au/wp-content/uploads/2022/05/Honey-bee-Biosecurity-Manual- May-22_for-web.pdf) is designed to provide information to anyone who keeps honey bees in Australia. Currently this manual is focused on Varroa mite as an exotic pest. It needs to be updated to recognise the current status of Varroa mite in Australia and to include key findings from the response. The update needs to ensure any recommendations align with best management practice guides and regulations.

Activity 4. Facilitating commercial supply of Varroa mite control products

NSW DPI will continue to take the lead working with AHBIC, manufacturers, suppliers, the Australian Pesticides and Veterinary Medicines Authority (APVMA) and other jurisdictions to support the development of the commercial supply chain for Varroa mite control products. Activities include:

- Identifying Varroa mite control products that would be desirable to have available for beekeepers in Australia.
- Contacting manufacturers to gauge interest in registering their products in Australia.
- Working with the APVMA to support pathways to registration for Varroa mite products in NSW and ACT and other jurisdictions as the Varroa mite spreads.
- Coordinating the inclusion of chemical suppliers who are interested in importing and selling the products, once available for use, on APVMA permits.
- Report changes in registrations and permit conditions etc to update resources and training.

This work has already commenced with new chemical permits coming online. Australian suppliers continue to be added to existing permits for both conventional and organic chemistry. Coordinating inclusion of chemical suppliers is important to ensure commercial supply is consistently available on a widespread basis as soon as possible to support management of Varroa mite.

Activity 5. Supporting national Varroa mite related diagnostics

Diagnostic capability and capacity within NSW have been well established over the course of the emergency response to Varroa mite. However more work is required to bolster this capacity on a national scale to support ongoing surveillance and management needs.

NSW DPI has been leading the diagnostic confirmation of Varroa mite over the past 18 months and working to upskill a number of entomologists and technical specialists to ensure a broad capacity for diagnostics. The next step is to ensure capacity and capability are enhanced throughout Australia as a preparedness measure for when Varroa mite is detected in other jurisdictions.

This capacity building will be delivered via online webinars to share lessons learnt, protocols used and suitable mass screening options that have been refined by the NSW DPI laboratory teams. Additional face-to-face workshops could be considered as part of a Subcommittee on Plant Health Diagnostics (SPHD) workshop or in conjunction with an entomology conference to be hosted in the next 12 months.

The sharing of this knowledge is important to enable interstate diagnostic labs to benefit from the experience of the NSW diagnostics laboratory.

A budget to support sample processing nationally is also sought as a means of encouraging beekeepers to submit samples at no cost and thereby boost monitoring and reporting across the country.

The damage caused by Varroa mite is greatly exacerbated by the presence of certain viruses. Many of these viruses are likely to meet the definition of an Emergency Plant Pest under the EPPRD. Previous virus surveys in Australia have been limited in scope but have not detected viruses of concern such as deformed wing virus (DWV). At present, the suite of viruses present across Australia in honey bee populations (both Varroa mite infested as well as those uninfested) remains poorly understood.

NSW, as part of bee and mite sampling, have routinely sampled for viruses in bees and mites around the incursion zone within NSW. This testing has identified a range of viruses not previously known to be present in Australia. It is important to determine the origin and distribution of these viruses as this information will shed light on the introduction of Varroa mite into Australia. Sample collection for this work has been completed with analysis continuing into 2024.

A collection of honey bee samples from across Australia will be screened for important viruses of honey bees to provide statistically relevant baseline data against which changes in virus distribution can be compared as Varroa mite populations change. The presence of viruses designated as EPPs will be a key focus of this work.

It is worth noting that ongoing or periodic monitoring for exotic viruses will be required if a Varroa mite-virus complex is identified, further complicating management needs, although this is beyond the scope of the T2M. If other current work is identified in this space, the program will seek to collaborate more widely to improve the scientific knowledge.

Objective 3. Slowing the Spread of Varroa mite

Activity 1. Regulating to slow the spread of Varroa mite

Movement of bees, apiary equipment and bee products will be considered within NSW (where the current risk exists) and across jurisdictional borders.

Immediately following NMG agreement that Varroa mite was no longer eradicable, NSW moved to introduce biosecurity zones aimed at preventing the movement of heavily infested colonies from known areas of heavy infestation to the remainder of NSW. NSW gave a commitment that these zones would be kept in place for no longer than 12 months. Since then, NSW has sought to remove Varroa mite from the Prohibited Matter provisions of the NSW Biosecurity Act, acknowledging that it is a pest that is considered established and that needs to be proactively managed by beekeepers as a critical step in transition to management. Varroa mite will remain notifiable in NSW.

NSW is currently progressing work that will maintain minimal regulation aimed at continuing to slow the spread of Varroa mite within NSW. It is likely that this will focus on requirements for the management of Varroa mite and clear conditions for movement of hives within the state in a way that minimises the numbers of mites in those hives. These requirements are subject to regular and frequent review.

Jurisdictions (through the Subcommittee on Market Access, Risk and Trade) will consider options for consistent movement conditions for bees, hives, queens and other risk vectors of Varroa mite across borders. Measures will need to be technically justified, least trade restrictive, practical and appropriately address the risks to support business continuity and pollination security.

Activity 2. Compliance and enforcement

Within NSW, in early 2024 an operation will focus on commercial and recreational beekeepers who have not reported surveillance to NSW DPI. Beekeepers will be audited to determine if they have complied with monitoring and reporting requirements and conditions of registration for beekeepers.

Targeted compliance audits may also be conducted on high risk operators, subject to the requirements of Part 15, Division 3 of the *NSW Biosecurity Act (2015)*. These audits are separate and, may be in addition to, any verification activity conducted on the beekeeper. Targeted compliance audits will assess compliance with the Control Order in effect, the capability and capacity of the beekeeper to comply with the Order, offending or suspected offending against the Order (or more generally against the Act) and identify measures for the beekeeper to adopt to improve compliance.

The response investigations team will continue to monitor for signs of illegal hive movements or other activities that contradict the Order. This team will support the dedicated investigations officers within NSW DPI Compliance unit, who are responsible for investigating serious non-compliance and taking enforcement action (including but not limited to penalty notices or prosecutions). NSW DPI Compliance and the investigations team will continue to work with industry and the public information unit to ensure beekeepers are fully aware of their responsibilities.

Compliance activities conducted by QLD, VIC and SA will be focused on interstate movement of risk items, limited to ensuring the conditions relating to permitted movement are completed. Compliance activities will include direct contact with beekeepers not completing required actions, provision of support, government mandated testing of hives and formal compliance actions (as a last resort).

It is worth noting that these activities assume that Varroa mite is not yet present in any other Australian jurisdiction with the exception of NSW. Activities may change should Varroa mite be detected in other jurisdictions before February 2025.

Activity 3. Monitoring the impacts of Varroa across Australia

Beekeepers will be engaged on a voluntary basis across Australia to contribute to our understanding of how Varroa mite will impact the industry as it moves across the country. Varroa Development Officers will run programs in each jurisdiction assessing hive health and collating the data into a national data portal. This data will be used to refine Varroa mite best management practice guidelines to reflect the variable climate and topography throughout Australia.

It is important to understand how Varroa mite impacts beekeeping across Australia's variable climate and topography to be able to refine best management practice guidelines and thereby bolster industry resilience. Monitoring Varroa mite and its impacts also provides a means of measuring the success of the T2M program especially around slowing the spread. Monitoring provides critical information to regulators to support decisions around inter and intrastate regulation aimed at slowing the spread.

This activity will be achieved through voluntary engagement with the beekeeping sector and unlike during the Eradication Phase, beekeepers will not be subject to compulsory surveillance actions.

The VDOs will work with beekeeping clubs and volunteers to establish a nation-wide program of regular testing and reporting for hive health, including the presence and levels of Varroa mite. This will complement the annual COLOSS survey (see Objective 4: Activity 1) but is more wholistic and detailed in the data collected. Technology solutions may form part of this program.

The data will regularly be collated and uploaded to a central portal enabling analysis and interpretation of that data to inform and refine Best Practice Management guidelines across Australia. This data will also enable evaluation of the success of the program and provide critical information to regulators looking at interstate and intrastate movement controls.

Operationally, this will take the form of engaging with beekeepers on a voluntary basis to help them undertake surveillance activities within their apiaries. This will facilitate the collection of surveillance data from managed commercial and recreational hives and provide the opportunity to upskill beekeepers to undertake monitoring in the future.

Work will also be undertaken with beekeeping clubs and other stakeholder groups to raise awareness of Varroa mite surveillance and establish beekeeper-managed sentinel apiaries. Through this engagement the focus will be on establishing ongoing surveillance sites across the east coast of Australia, which will provide data beyond the completion of the T2M phase.

Objective 4. Future-ready industries

Activity 1. Establish an Australian COLOSS survey

Establishing an Australian COLOSS style survey will help us understand the effects of Varroa mite and how well beekeeper cohorts (e.g. recreational, commercial) are managing it. This, in turn, will guide research priorities, treatment recommendations, practice changes and inform the pollination-dependent industries of pollination hive supply.

COLOSS is a global initiative conducting standardised colony loss surveys in 30 countries. Participating countries each carry out an annual survey of a nationally representative sample of beekeepers. This makes it possible to compare colony loss rates between countries and to use the international data collected to better understand the risk factors for colony loss.

Each country uses the annually updated core mandatory survey questions, selects from the optional questions such as Varroa mite management options, and may include additional locally relevant questions.

This activity would be initiated, defined, and where practical, implemented within the T2M and with an agreed pathway for further development or implementation post-T2M. Support for this system beyond the T2M program will be provided through alternative funding mechanisms, the activity here is to establish the initiative in Australia.

Data analysis and support will be provided by NSW DPI. VDOs will drive adoption with the contracted project overseen by the National Varroa mite Coordinator.

Activity 2. Enabling a national Varroa mite data management system

It is critical to map the spread of Varroa mite across Australia over 3-5 years. Visualising the spread of Varroa mite and assessing its impacts across the varied Australian climatic zones will be best achieved by centralising the collation and analysis of relevant data. This will require an analysis of existing systems of data management platforms to assess suitability in a Varroa mite context.

Once a system is agreed, NMG approval will be sought to move ahead and establish data standards to govern the format of information being collected for analysis.

If approved, this data set will enable ongoing refinement of best management practices to suit specific circumstances across the country and thereby improve industry resilience on a regional level. It is this national focus and feedback of Australian data to improve best management practices that distinguished this system or portal from the proposed COLOSS program, which is part of an international survey assessing colony loss. A national platform is needed given the highly mobile nature of the beekeeping industry and consistent data reporting across state borders will encourage uptake by industry.

Activity 3. Investigating options for upskilling queen bee breeders

Identifying and quantifying Australia's queen bee production sector capacity and capability to produce queens at scale with improved Varroa mite tolerance is critical to minimising the effect of the mite on the honey bee industry and the pollination-reliant industries. Central to an Integrated Pest Management (IPM) approach is improving Australia's genetic stock to select for Varroa mite resistance.

Australia's queen production sector is established, but the capacity and capability of the sector to coordinate, identify and select genetic traits for Varroa mite tolerance is not clear. The sector analysis will draw on expert advice to assess the capacity and capability of the sector, determine the need for genetic importation and provide a clear set of recommendations for the industry to adopt. The report will comment on the risks of genetic imports weighed against the potential benefits. The sector analysis will be coordinated by AHBIC and delivered by a contractor, with close engagement with the Queen Breeders Association. Results will consider queen bee breeders in all jurisdictions and be extended nation-wide.

The Australian Queen Bee Sector report will bring all the queen bee breeder and producer groups together to workshop a strategic plan to ensure a collective and coordinated approach to improving genetic gain.

Three workshops will address the need for advanced training in queen bee breeding, particularly for selecting Varroa mite resistance traits. Three comprehensive workshops across key breeding regions will equip experienced queen producers and breeders with the latest knowledge, techniques, and resources to refine their selection practices for Varroa mite-resistant queens.

Each workshop, facilitated by leading experts, will combine advanced topics like Varroa mite resistance genetics, selection methods, and drone rearing, with sessions on grafting, nuc management, queen marking, and brood testing. Case studies and discussion forums will encourage knowledge sharing and problem-solving.

The workshops, strategically located in key breeding regions, will maximize accessibility and impact. By focusing on experienced producers and breeders, the project aims to increase adoption of advanced selection techniques, improve the knowledge of selecting for Varroa mite-resistant queens, strengthen collaboration within the sector, and enhance understanding of the challenges and opportunities in breeding for Varroa mite tolerance.

Activity 4. Investigation of options that will enable pollination in a post-Varroa mite world

Enabling pollination particularly after the naturalisation of Varroa mite across Australia is key to ensuring ongoing productivity and profitability in the horticultural sector. This project will review current research in this space and provide recommendations for further work to support future ready industries.

A project will be contracted to review current R&D and present options in support of greater pollination efficiency in a post-Varroa mite Australia. Options may include improving pollination efficiency using EHB, supplementing EHB pollination with alternative pollinators (e.g. flies, native bees, bumble bees), mechanical pollination, and improvements to plant breeding.

Bumblebees (*Bombus terrestris*) are known commercial pollinators which are not susceptible to Varroa and are widely used internationally. It is likely that provision of pollination by European honey bees will become more difficult as Varroa spreads. Under these circumstances there is merit in exploring whether the use of alternative pollinators, including bumblebees provides net benefit.

Bumblebees differ from other pollinators as there is a legislative barrier preventing work with live bumble bees required to progress their consideration.

Transition to Management Support functions

Public information and communications activities

The NSW based Public Information team will organise and promote events alongside effective stakeholder engagement nationally. Events will include beekeeping club meetings, webinars, promotion of training and workshop events and dissemination of Varroa mite content nationally across each jurisdiction.

Two Resilience Officers will work particularly closely on the delivery outcomes in this area to continue to support varroa impacted beekeepers through the transition.

They will work closely with AHBIC and the Varroa mite T2M Coordination Group to engage with industry nationally to ensure industry needs and concerns are understood and being addressed through the content being delivered. This work will include the continuation of the highly successful All Beekeeper webinar series, hosted by AHBIC and delivered by NSW DPI as well as collaboration on specific campaigns about compliance, or collateral distribution.

Public Information will also be responsible for the development and delivery of communication collateral such as fact sheets, video explainers and campaign material to the other jurisdictional partners, coordinated through the National Biosecurity Communications and Engagement Network (NBCEN).

The Public Information team will also assist the delivery of 20 face-to-face training sessions nationally over 12 months at industry field days, conferences, or standalone events, in collaboration with the Pollination Industry Coordinator and Industry Development Officer networks.

Effective, timely and relevant communication led by the Public Information team will underpin the delivery of these activities, including seasonal/monthly updates for beekeepers and industry, up-to-date web content, and proactive and reactive media as needed.

Technical Coordination support

The Technical Coordination team is responsible for ongoing data management, data analysis and reporting required for the Varroa mite Program.

Key tasks include curation of data, managing and updating the NSW DPI heatmap on a weekly basis, nationally consistent reporting standards and data project leadership for 2024. These will support activities listed under Objective 1 and Objective 3.

Logistics support

The logistics team support the movement of people and equipment to facilitate field work, training and workshops and event management.

Finance support

The finance team are responsible for financial management and acquittal of all expenses related to the Program, supporting Objectives 1, 2 and 3 as required. They will continue to work with the Rural Assistance Authority (RAA) until all outstanding Owner Reimbursement Cost (ORC) claims have been processed.

The finance team will also report to cost-share partners through CCEPP and NMG in accordance with requirements.

Transition to Management governance

A National Varroa mite T2M Coordination Group consisting of representatives from the NSW DPI Response team, nominated jurisdictions, Varroa mite coordinators from other states, representatives from AHBIC and at least 2 pollination-dependent industries will meet at least monthly throughout the T2M phase of the response to guide the response team. It is anticipated that weekly meetings may be required initially.

The Coordination Group will be responsible for monitoring and evaluating delivery of the plan's activities and taking remedial action in response to poor performance or where objectives are not being delivered cost-effectively in accordance to the plan's budget.

Transition to Management Response roles, accountability and organisation chart

Accountability Structure – cost shareable roles ONLY

