Fire Infrastructure Study
(CWFH032)

Photo obtained from the CWHF website: www.cwfh.com

Central West Forestry Hub
Final Report - August 2025

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This report has been prepared by Amalgamotion Pty Ltd on behalf of, and for the Central West Forestry Hub (CWFH). While every effort has been made to ensure accuracy and completeness, readers are invited to consider the information alongside their own context and needs when operationalising these recommendations.

1. Executive Summary

The Central West Forestry Hub (CWFH) covers a geographically diverse and economically vital part of New South Wales, supporting a complex mix of native forests including National Parks, State Conservation Areas, State Forests and private property, as well as public and private softwood plantations, industrial processing infrastructure, and regional communities. The Wiradjuri people are the traditional custodians of virtually all of the lands within the Hub's boundary.

The timber manufacturing facilities within the CWFH supply building materials throughout NSW and are the closest to the Greater Sydney Area, which has the largest concentration of demand for these building products in NSW. The region contributes significantly to the state's forestry supply chain, including timber production for domestic construction markets.

The region also faces increasing bushfire risk, driven by climate variability, vegetation density, topography, workforce constraints, and the expanding bushland-urban interface. In this context, the CWFH commissioned this Fire Infrastructure Study to provide a comprehensive, regionally informed understanding of current bushfire preparedness and response capability, and to identify the infrastructure, technologies, and collaboration mechanisms necessary to strengthen resilience and protection of assets across the region.

The study was underpinned by the NSW Emergency Management Capability Development Framework (EMCDF), which defines fire and emergency management capability as the combination of five core interdependent elements: People, Resources, Governance, Systems, and Processes. Using this framework as a structured lens, the study involved stakeholder interviews, site visits, operational observations, and a desktop review of technologies and practices in comparable fire-prone forestry regions such as the Murray Region and Green Triangle. The result is a detailed capability assessment and roadmap for improvement grounded in both a regional context and industry best practice.

Across the five capability domains, the study identifies a combination of strengths, gaps, and opportunities. There is clear evidence of strong operational competence and mutual respect between key stakeholders, particularly between Forestry Corporation of NSW (FCNSW), NSW Rural Fire Service (NSW RFS), NSW National Parks and Wildlife (NPWS), large plantation operators and local governments. Many stakeholders noted the effectiveness of current arrangements during routine seasons and small-to-medium incidents. However, growing risk complexity, an aging workforce, regional skill shortages, and limited investment in infrastructure and technology threaten to outpace current capability, particularly in the event of multiple concurrent ignitions or major seasonal bushfire events. It is also acknowledged that absentee 'investment' plantations represent a very small percentage of the planted area, however, stakeholders identified that they are often poorly or unmanaged, and owners are not meaningfully engaged with industry or the CWFH, key industry stakeholders and members.

The People capability presents both a foundation and a vulnerability. The region's firefighting and forestry personnel are highly skilled and experienced, but workforce retention, succession

planning, and training gaps present escalating challenges. This is particularly relevant when considering the aging workforce with significant experience leaving the sector as long-term experienced foresters and other staff retire. There is an urgent need to strengthen pathways for new entrants, invest in technical and leadership development, build deeper relationships between agencies, industry, volunteers, and communities, and bolster existing practices and equipment with technology approaches and enhanced fire preparedness. Targeted recommendations include the expansion of Authorised Officer appointments, joint leadership training exercises, local relationship-building events, and embedding training budgets into any new equipment or infrastructure investments across all the key stakeholders.

Resource capability remains one of the most critical and underfunded areas across the CWFH Region. Stakeholders consistently identified urgent needs for upgrading and expanding the fleet of fire-capable plant and equipment, particularly for operating in rugged and difficult to access terrain. Key resource recommendations include investment in dedicated firefighting forwarders and retrofittable slip-on modules; heavy vegetation management equipment; static water storage and supply infrastructure; and expanded use of bulk water trailers, buoy walls, and high-volume pumps. Improvements to fire trail networks, access roads, and boundary fire breaks are also essential to assist with land and field management practices and ensure safe, rapid deployment of resources during critical incidents. The integration of early detection technologies, such as AI-enabled fire detection cameras, remote weather stations, and Remotely Piloted Aircraft Systems (RPAS), is recommended to enhance early fire detection, increase response speed and situational awareness across remote and inaccessible terrain.

A major weakness identified in the study is the absence of a dedicated governance mechanism for fire-related coordination across the Hub and key industry stakeholders. Unlike other forestry regions that have established fire collaboration bodies, such as the Murray Region Fire Collaboration (MRFC) and the Green Triangle Fire Alliance (GTFA), the CWFH lacks a central coordinating entity to lead planning, secure joint funding, or drive collaborative investment in mitigation, preparedness, and capability uplift. The establishment of a formal fire collaboration entity is a cornerstone recommendation of this report, proposed as a five-year funded initiative with a dedicated leadership role and membership drawn from FCNSW, NSW RFS, NPWS, major processors, local government, and key plantation owners. Complementary governance recommendations include securing formal key industry stakeholder membership on local Bush Fire Management Committees (BFMCs) to ensure forest industry risk, operational specific risk, and local perspectives and priorities, are better understood in regional planning processes.

The Systems and Processes capability domains reflect the need for better data sharing, live situational awareness, and structured planning at both strategic and operational levels. Stakeholders identified the value of a centralised Fire Readiness Dashboard to consolidate fire weather indicators, risk ratings, and resource availability across the region, allowing for daily preparedness checks and ultimately increased readiness. Improvements to plantation-specific fire management planning, including the application of fuel load mapping and predictive fire behaviour modelling, are also recommended. Engaging private landowners to lift land management standards and reduce residual risk was raised as a consistent concern and is identified as a process-level priority moving forward.

Throughout the study, numerous implementation challenges were acknowledged. These include workforce and funding constraints, careless and arson-related fire starts, water availability in drought conditions, the vulnerability of remote infrastructure to theft or vandalism, and inconsistencies in land management practices on adjacent properties. While these challenges are complex, the report outlines practical, scalable solutions that can be progressed through collaborative effort and strategic investment.

This study offers a forward-focused guide for increasing bushfire preparedness in one of NSW's most valuable forestry regions. It balances strategic insight with grounded operational recommendations, providing clear and collaborative next steps for the CWFH members and key industry stakeholders to consider. By investing in targeted infrastructure, supporting innovation in detection and suppression technologies, and establishing enduring governance mechanisms, the CWFH will be better positioned to protect its plantation and processing assets, against an ever-increasing fire threat.

The following table summarises the recommendations whilst providing suggested priorities for consideration. The priorities are based on stakeholder feedback and industry experience.

Priority	Ref #	Recommendation Summary	Initial Investment	Per Annum
1	19	Establish a dedicated entity to work parallel to provide collaborative leadership in fire preparedness, mitigation, and response across all forest estate in the CWFH region.	$164,521	$164,521
2	6	Conduct targeted audit on access roads, fire trails, tracks and boundary fire breaks.	$550,000	$N/A
3	5	Investment in the upgrade, replacement and extension of the fire observation tower network throughout the CWFH region.	$7,200,000	$N/A
4	17	Develop a strategic network of fire detection cameras with AI and triangulation capability.	$1,255,000	$780,000
5	20	Engage with NSWRFS and FCNSW to seek an extension of the NSW 'Forestry Support Brigades' trial into the CWFH region.	$N/A	$N/A
6	9	Dedicated Static Water Supply Infrastructure.	$936,600	$N/A

7	7	Dedicated plant and machinery to establish and maintain fire breaks and fire fuel loads.	$1,168,800	$N/A
8	8	Dedicated 32,000L Bulk Water Trailers with remote water storage capability to support firefighting operations.	$423,108	$N/A
9	10	Invest in dedicated forestry firefighting forwarder vehicles and firefighting forwarder modules for existing key industry stakeholder forwarders.	$4,800,000	$N/A
10	11	Improve Local Weather Data during fire response and mitigation activities using fixed Remote Area Weather Stations (RAWS) and Portable Automatic Weather Stations (PAWS).	$330,000	$N/A
11	21	Formal key industry stakeholder membership of Chifley, Lithgow, Canobolas and Southern Tablelands Bush Fire Management Committees (BFMCs).	$N/A	$N/A
12	23	Register all eligible CWFH Member and key industry stakeholder Plant and Machinery on the NSW Rural Fire Service Heavy Plant Register.	$N/A	$N/A
13	3	Plan and facilitate Pre, Mid, and Post fire season stakeholder engagement events 'on plantation' (Including Private Plantation Owners).	$35,000	$35,000
14	2	Strengthen Senior Leadership Through Joint Fire Management Exercises.	$100,000	$100,000
15	13	Analyse telecommunications and Public Safety Network (PSN) coverage and connectivity in high-risk forestry areas across the CWFH region.	$64,000	$N/A
16	22	Develop and operationalise a Common Operating Picture and Fire Readiness Dashboard for key industry stakeholders across the CWFH region.	$385,000	$150,000

17	14	Procure fire agency radios to improve operational communications and connectivity across the CWFH region.	$700,000	$72,000
18	18	Trial and evaluate a Remotely Piloted Aircraft Systems (RPAS) capability for Fire Detection, Surveillance and Rapid Situational Awareness.	$930,209 for two years	$N/A
19	12	Trial and evaluate the deployment of experimental EnviroDrop Units.	$50,000	$N/A
20	24	Develop and maintain plantation specific fire risk and long-term management plans, through managed service arrangement leveraging state of the art AI backed platform and to develop fire risk analysis and mitigation strategies.	$250,000	$N/A
21	15	Construct a Dedicated Aerial Firefighting Base at Bathurst Airport.	$2,500,000	$N/A
22	16	Procure a dedicated multi-Mission Bell 412 Helicopter for Regional Firefighting and Support Operations.	$4,000,000	Dependent on negotiated annual operate and maintain contract
23	4	Integrate Training and Procedures into All New Equipment and Technology procurements and implementation.	Approx 15% of any capability equipment investment	$N/A
24	1	Establish additional Field Officer positions in Forestry Corporation NSW, with each new position holding Authorised Officer delegations.	$164,521	$164,521
		Total:	**$26,006,759**	**$1,466,042**

2. Area of Operations

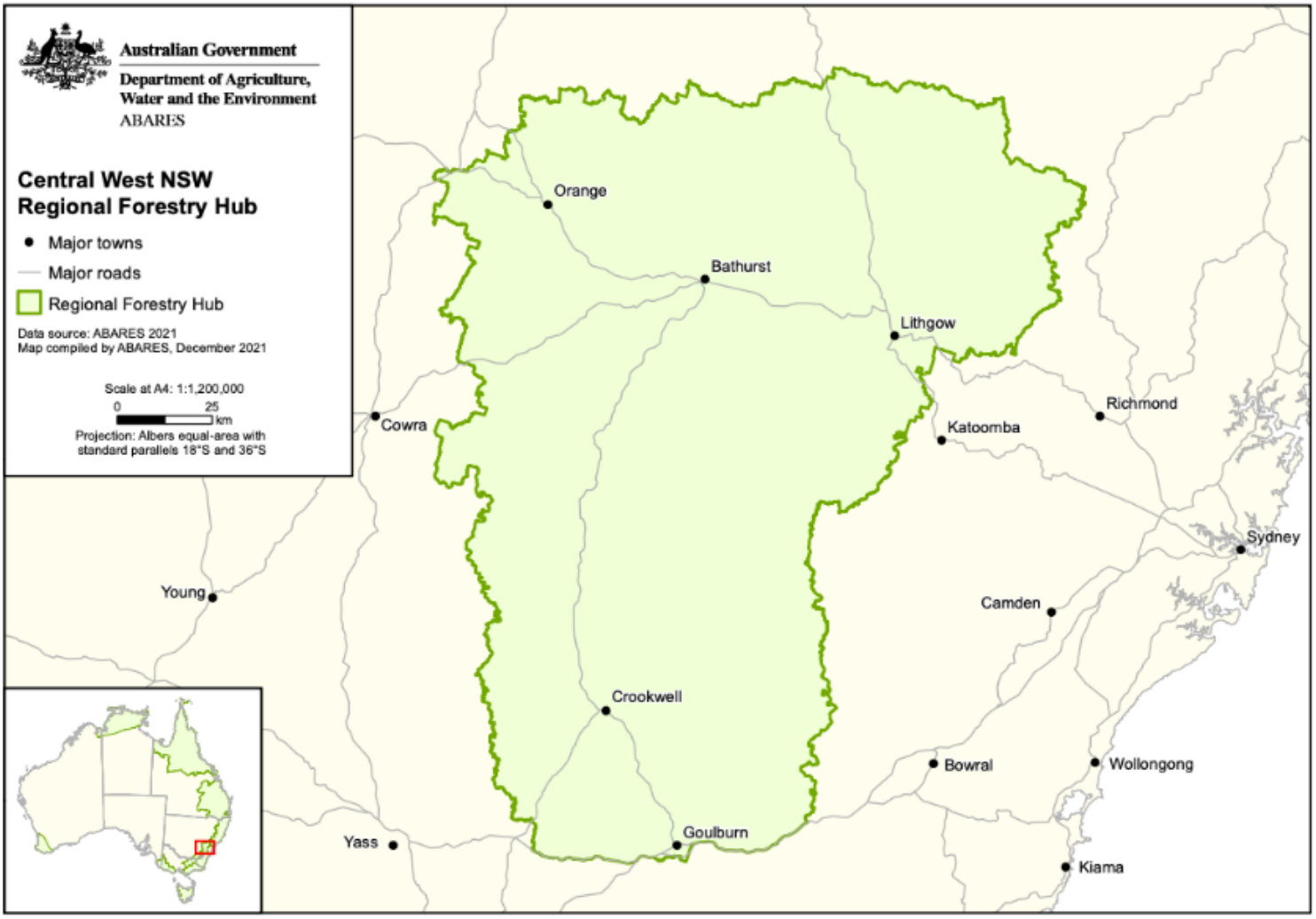
The Central West Forestry Hub operates across a diverse and productive region of Central West New South Wales, encompassing the local government areas of Oberon, Bathurst, Blayney, Cabonne, Cowra, Orange, Lithgow, Upper Lachlan, and Goulburn Mulwaree. This area plays a critical role in the state's forestry industry, offering a blend of established plantation infrastructure, and proximity to both regional and metropolitan markets. The timber manufacturing facilities within the CWFH region supply building materials throughout NSW and are closest to the Greater Sydney Area which has the largest concentration of demand for these building products in NSW.

The landscape varies from the elevated plateaus of the Great Dividing Range in the east through to the rolling hills and broad agricultural valleys further west. Elevations exceed 1,100 metres in parts of Oberon and Lithgow, gradually falling below 500 metres in the western reaches of Cowra and Cabonne. This variation in topography influences both the types of vegetation that can be supported and the way in which bushfires behave, adding complexity to fire management and emergency planning efforts. The presence of major river systems such as the Macquarie and Lachlan further shapes the region's land use and ecological patterns.

The climate of the Central West region is temperate, marked by cool to cold winters, often bringing snow in the highlands, and warm to hot summers that increase evaporation and fuel curing, particularly in the drier western zones. Rainfall varies significantly across the region, with the eastern highlands typically receiving over 900mm annually, supporting softwood plantations such as *Pinus radiata*. Throughout the Hub region, including as rainfall decreases toward the western parts of the Hub's footprint, opportunities exist for plantation expansion on marginal or underutilised farmland where conditions remain favourable.

This geographic and climatic mix contributes to a moderate to high bushfire risk environment across the region. Extensive forest cover, both native and plantation, creates substantial fuel loads, while steep terrain in certain areas accelerates fire spread and complicates suppression. Seasonal drying during spring and summer, particularly under El Niño conditions, can result in dangerous fire weather. The bushland-urban interface is another point of concern, with many forestry assets located near townships such as Bathurst, Orange, and Lithgow, where protecting life, property, and industry infrastructure requires careful planning and coordinated risk reduction.

Together, these environmental and operational factors define the Central West Forestry Hub's area of operations as both highly valuable and inherently complex, requiring informed, collaborative management to ensure the long-term sustainability and resilience of the region's forestry sector, a key resource supplying Sydney's building industry.



CWFH Map obtained from the CWHF website: www.cwfh.com

3. Scope

The CWFH sought research, investigation and a report on the following:

1) A review of the existing bushfire risks and mitigation strategies for the region including discussions with local plantation managers and owners, and fire response agencies in the region.

2) A desktop review of fire management technologies successfully deployed in other plantation regions with a similar fire risk profile to the Central West.

3) An analysis to identify where plantation fire risk reduction and fire management could be enhanced in the Central West through the addition and/or upgrading of infrastructure and the introduction of new technologies.

4) Recommendations on the most appropriate technologies that should be employed in the Central West including:

   a. A priority list of the recommended infrastructure and technologies including the evidence supporting the priority list.

   b. A high-level cost estimate of each recommended piece of infrastructure or technology.

   c. Details of any impediments to implementing and/or utilising the recommended infrastructure or technology.

   d. Further research and studies that should be undertaken to further and continually improve fire management for the Central West plantations.

4. Capability Framework

The NSW Emergency Management Capability Development Framework (EMCDF) provides the strategic foundation for enhancing the preparedness, response, and recovery capabilities of New South Wales (NSW) to manage major to catastrophic emergencies. Developed and adopted in 2020, the Framework offers a comprehensive and coordinated approach to identifying, building, and sustaining capability across government, industry, and the community sector. It recognises that emergency events are becoming increasingly complex, and the systems designed to manage them must evolve accordingly.

The EMCDF was established in recognition of the need for a more holistic, strategic, and risk-informed approach to capability development in the NSW emergency management sector, the aims of which are aligned to the fire management and risk challenges concerning that of the CWFH. It aims include:

- Identify and prioritise the capabilities required to manage emergencies of increasing complexity and severity.
- Guide the development of capability in a scalable, flexible, and evidence-based manner across the Prevention, Preparedness, Response, and Recovery (PPRR) continuum.
- Enable a better link to risk, lessons management, and continuous improvement processes to enhance operational readiness and system-wide resilience.

CWFH stakeholders consistently reinforced their considerations of improvements being necessary across several key themes concerning forestry fire management practices. This included, information sharing, stakeholder collaboration, prevention, and mitigation practices through to early detection and rapid response to fires.

The Framework defines capability as the “collective ability and power to deliver and sustain an effect within a specific context and timeframe.” It identifies five interdependent elements of capability which, when effectively combined, deliver capability outcomes:

People

- The knowledge, skills, experience, relationships, and culture that enable effective emergency management.
- Includes personnel across government, non-government organisations, communities, and volunteers.
- Emphasises leadership development, technical expertise, collaboration, and supportive organisational culture.

Resources

- The physical assets required to support - operational functions, including vehicles, infrastructure, equipment, communications technology, consumables, and PPE.
- Encompasses both the availability and lifecycle management of these assets.

Governance

- The legal, structural, financial, and policy settings that define roles, responsibilities, and authorising environments.

Systems

- The technological and organisational systems that support planning, operations, intelligence, communication, and logistics.
- Includes data management, incident management platforms, workforce and resource systems, and decision-making support tools.

Processes

- The formal and informal procedures that underpin management operations, including risk management, planning cycles, exercises, continuous improvement, and knowledge management.
- Focuses on how work is conducted, across organisations and operating levels.

These elements are the core building blocks of capability and are intended to be analysed both individually and collectively to determine gaps, strengths, and investment priorities. For the CWFH, the EMCDF provides an ideal structure for assessing and advancing capability maturity across members and key industry stakeholders in the Central West.

This Fire Infrastructure Study Report adopts the EMCDF as a baseline structure. It systematically assesses the future development needs of the CWFH members and key industry stakeholders across each of the five capability elements, identifies opportunities for improvement, and provides targeted recommendations to build a more resilient, coordinated, and capable fire prevention, response and recovery capability.

5. Capability Development and Investment Opportunities

This section outlines the key capability findings and recommendations identified during the Fire Infrastructure Study. Drawing upon research, stakeholder interviews, and operational observations, the study assessed performance across five core capability areas: People, Resources, Governance, Systems, and Processes. These capabilities are drawn directly from the NSW Emergency Management Capability Development Framework (2020), providing a consistent and risk-informed lens through which to evaluate bushfire preparedness and management capabilities across the Central West NSW plantation estates.

Through a review of current bushfire risks, existing mitigation strategies, and the effectiveness of fire management technologies, both locally and in comparable regions, the study aims to identify opportunities for improvement.

Each sub-section that follows provides a summary of observations and key findings, supported by practical, prioritised recommendations. These recommendations are designed to strengthen operational readiness, improve coordination, and ensure more effective management of bushfire risk and mitigation strategies by identifying and recommending the optimal infrastructure, programs, and technologies required to reduce bushfire risk, improve detection and suppression, and support long-term sustainability.

5.1 Capability: People

The *People* capability element represents the foundation of any management system. It refers to the individuals and teams, including organisational leaders, subject matter experts, public servants, staff, operators, volunteers, and community members, who collectively deliver bushfire management functions. These skills, knowledge, relationships, and leadership capacity determine the quality and effectiveness of an industry's response in times of crisis.

For the CWFH region, the capability of its people is critical to its industry's leadership, bushfire management planning, and operational firefighting effectiveness in the event of a fire threatening plantation assets.

Stakeholder interviews identified several key points including:

- The ability to respond quickly to fire incidents is critical in containing fires and preventing fire spread, leading to catastrophic events. Fire crew readiness, resource availability and speed of detection/mobilisation are all key contributors to successful firefighting and containment outcomes.

- The effectiveness and readiness of FCNSW trained staff and seasonal contracted firefighters utilising slip-on tanks mounted on light vehicles, at strategic locations ready for fast initial attacks. Several private fire units are operated by one or more plantation owners.

- High levels of mutual respect exist between the state firefighting authorities including, NSW RFS, NPWS, Fire and Rescue NSW (FRNSW) and FCNSW for their organisational and operational firefighting capabilities.

- Maintaining a skilled and adequately trained workforce is a challenge in the region; both forestry and key industry participants reported challenges in recruiting and retaining a capable workforce, with many experienced workers nearing retirement. There is a need for ongoing training programs and the establishment of education pathways to build expertise in forestry and plantation firefighting.

- Opportunities exist for improved communication and information sharing between Industry stakeholders through both formal and informal mechanisms.

- Challenges exist in ensuring sufficiently trained resources are available with the right equipment, in the right place, and at the right time.

- The importance of budgeting for related training in the event of implementing new equipment and operational capabilities.

The following recommendations reflect stakeholder insights and capability assessment.

Recommendations:

Ref #	Recommendation Summary
1	**Establish additional Field Officer positions in Forestry Corporation NSW, with each new position holding Authorised Officer delegations.** **Purpose:** Increase capacity of Field Officers and Authorised Officers to broaden reach and effectiveness concerning community-based fire ignitions and removal of abandoned vehicles that pose a fire risk throughout the CFWH region. **Context/Background:** Numerous stakeholders raised concerns with the increasing frequency and risks associated with community-based fire ignitions including, careless and reckless use of fire, unattended and non-extinguished campfires, as well as stolen vehicles being abandoned and set on fire, generating direct risk to plantations throughout the region, especially during the Bushfire Danger Period. **Recommended approach:** • Create additional Field Officer roles and/or appoint additional Authorised Officers within FCNSW to work throughout the Hub's region with a focus on fire management and regulatory compliance matters. • Undertake recruitment followed by onboarding and basic training. **Potential Supplier/s:** FCNSW Recruitment. **Cost:** $164,521 per annum, per new Field Officer (Additional officers assumed at Grade 7/8 per role per annum including 33% oncosts).

2	**Strengthen Senior Leadership through Joint Fire Management Exercises.** **Purpose:** Strengthen strategic coordination and trust between the forestry and fire agencies by facilitating regular, multi-agency leadership exercises focused on regional bushfire preparedness and response operations. **Context/Background:** The study highlighted the importance of strong relationships between senior managers in fire agencies, plantation companies, and local government. While technical capability and field resources are critical, major bushfire events often hinge on the ability of leaders to make coordinated decisions under pressure, share information effectively, and mobilise support across jurisdictional boundaries. Current engagement between agency and industry leaders tends to occur informally or in reactive settings. There is a clear opportunity to establish a program of structured, scenario-based leadership exercises that simulate real-world complexities, foster inter-agency familiarity, and reinforce shared protocols and communication pathways. These exercises will also support succession planning by exposing emerging leaders to incident-level decision-making in a safe, facilitated environment. **Recommended approach:** • Design and deliver at least one major regional joint leadership exercise per year, with smaller tabletop or wargaming sessions delivered as needed. • Include leaders and decision-makers from: o Forestry Corporation of NSW (regional and bushfire ops). o NSW Rural Fire Service Districts (staff and local volunteers). o Key Industry Stakeholders including, private plantation owners and major processors and/or Mills. • Focus on: o Strategic coordination under Australasian Inter-service Incident Management System (AIIMS). o Communications and intelligence sharing. o Decision-making under uncertainty (e.g., resource competition, concurrent incidents). o Policy, governance, equipment or coordination arrangements scenario stress-testing. • Rotate hosting locations across key RFS Districts or specific plantations and include locally relevant threats or assets in the scenario design.

	Potential Supplier/s: Fire and emergency management consultancies or contractors. **Cost:** $80,000 to $100,000 per annum pending the number and scope of exercises. (Covers scenario development, conduct, venue, documentation and post exercise debrief and report).
3	**Plan and facilitate Pre, Mid, and Post fire season stakeholder engagement events 'on plantation' (Including Private Plantation Owners).** **Purpose:** Foster stronger relationships between industry personnel, fire agencies, volunteers, and private plantation owners, by hosting informal, inclusive engagement events 'on plantation'. These events will encourage greater understanding of local bushfire risk, promote the importance of fire mitigation measures, and strengthen the shared responsibility model required for effective prevention and response. **Context/Background:** Stakeholders highlighted the value of informal, non-operational events as effective mechanisms for relationship building, trust development, and broad-based community engagement. These events play a crucial role in connecting staff, volunteers, and landowners in ways that formal forums often cannot. While some private plantation operators and larger industry players are actively engaged in risk mitigation planning, a consistent theme raised during consultations was the disengagement or passive involvement of smaller plantation owners, many of whom may not reside in the region or fully understand their obligations under the Rural Fires Act or Plantation Codes of practice. The NSW RFS *Canobolas Zone Gum Tree Meetings* were cited by stakeholders as a highly effective model, bringing together plantation owners, fire authorities, and local stakeholders in a casual setting 'on plantation' to share updates, discuss issues, and reinforce fire season preparedness. These meetings are successful because they are local, low-pressure, and build trust through repeated contact. By replicating this model across the CWFH region, engagement can be expanded to reach less-connected stakeholders. This not only strengthens relationships but also improves understanding of critical fire mitigation responsibilities, including fire trail access, fuel load reduction, water availability, and communication expectations. **Recommended approach:** Establish a schedule of pre, mid, and post fire season informal engagement events across the CWFH region that will be held 'on plantation'. These events should prioritise inclusivity, accessibility, and relevance for both engaged industry players and hard-to-reach stakeholders such as small-scale or absentee plantation owners. To ensure consistency and impact:

	• Rotate events geographically across the CWFH region. • Schedule events to align with operational calendars i.e. pre-season briefings in spring, mid-season check-ins in summer, and post-season lessons/experiences and preparedness in autumn. • Host events on active plantation sites where good fire management is in action to ground discussion in real, visible fire risk contexts. Walk-arounds and informal demonstrations (e.g. maintained boundary fire breaks, fire trail maintenance, water supply points) can add value. • Actively invite small landholders, new plantation owners, rural land neighbours, and fire agency personnel. • Promote events via direct mail, local radio, social media, and council newsletters to ensure wider reach, especially for absentee owners. • Capture feedback and interest in follow-up actions using a simple RSVP and post-event survey mechanism. **Potential Supplier/s:** Private fire and emergency consultancies could be engaged to plan and facilitate these events. **Cost:** Estimated $35,000 p/a for planning, coordination, implementation and follow up by a third-party contractor/consultant.
4	**Integrate training and procedures into all new equipment and technology procurements and implementation.** **Purpose:** Ensure that any new firefighting equipment, technology, or infrastructure introduced across the CWFH region is supported by appropriate operational procedures and end-user training, so that capability gains are realised safely and effectively from day one. **Context/Background:** Stakeholders consistently noted that introducing new tools or technologies, such as firefighting forwarders, remote area weather stations, drones, or bulk water trailers often leads to underperformance or even operational risk when staff are not properly trained in their use. In some cases, new resources have been delivered to the field without adequate induction, leading to misuse, damage, or poor integration into fire response operations. To prevent this, it is essential that all future capital investments across the Hub explicitly include an implementation package covering Standard Operating Procedures (SOPs), user guides, hands-on training, and refresher sessions. These

	elements should not be considered optional add-ons but essential components of capability development and risk mitigation
	
	Recommended approach:
	• Require that all infrastructure or equipment proposals include a defined "operationalisation component" during procurement and deployment planning.
	
	• This should include:
	  ○ Development of site-specific SOPs, checklists, and quick reference guides.
	  ○ Face-to-face training or practical demonstrations for operators and first responders.
	  ○ Identification of a lead trainer or "equipment champion" to provide local continuity.
	  ○ Follow-up training or refresher sessions after the first fire season.
	
	• Apply a general rule of allocating 10–15% of the total capital budget of any major asset procurement towards training and integration activities.
	
	• Where assets are shared (e.g., firefighting forwarders used by multiple contractors), ensure a shared or region-wide training approach is delivered consistently.
	
	Potential Supplier/s: Equipment manufacturers/suppliers. Registered training organisations.
	
	Cost: Whilst in many instances, training and integration would be routine for key agencies and organisations, it is important to ensure that the implementation of such is captured in funding considerations. As a guide, training and integration typically require 10-15% of the total capital project value. Across all the relevant recommendations, this could equate to approx. $1,000,000.

5.2 Capability: Resources

Resources encompass the physical assets required to support management and operational functions. This includes infrastructure associated with utilities, road/trail, networks, communications equipment, data platforms, transport fleets, and consumables, as well as their supply chains and lifecycle management. The availability, mobility, reliability, and scalability of these resources can dramatically impact operational outcomes.

For the CWFH, resource capability directly impacts the forestry industry's ability to manage bushfire risks, implement mitigation strategies, and effectively respond to fires.

Key resources, infrastructure and technology identified by stakeholders included:

- Access tracks and fire trail networks.
- Heavy firefighting vehicles, dozers and water carts for firefighting.
- Machinery, mulchers and tractors to maintain access tracks, fire trails and fuel load management.
- Secure depots, water infrastructure including fixed and mobile water sources.
- Fire Detection Systems include Fire towers and observation cameras.
- Surveillance drones.
- Telecommunications equipment.
- Weather monitoring equipment.
- Operational management and information systems.

The availability of larger fire fighting vehicles, heavy plant and machinery, aerial support, including helicopters and drones, was noted as a significant advantage in high-risk seasons. As such stakeholders maintain contractual relationships with key services such as helicopter and dozer support. Similarly, forestry industry participants look to the NSW RFS for firefighting support in the event of emergencies.

Stakeholders expressed the need for more and better-maintained firefighting equipment. This includes larger and more powerful plant and machinery, dozers, water tankers as well as specialised vehicles that can be used for firefighting. Investment in infrastructure such as water supplies, fire towers and cameras were also highlighted as essential for effective fire management.

Stakeholders noted that in high-risk seasons, any delay in identifying and mobilising rapid attack crews can have a significant impact on the spread of fire and subsequently the responding crews' ability to contain it. The evaluation and integration of advanced technologies such as cameras, infrared cameras and drones for early detection was strongly supported by stakeholders. These technologies enhance the ability to detect fires quickly, particularly during nighttime and in remote areas with the application of AI detection and near infrared cameras.

Ref #	Resource Recommendations
5	**Investment in the upgrade, replacement and extension of the fire observation tower network throughout the CWFH region.**

	Purpose: Upgrade and increase fire observation capability throughout the CWFH region to support the criticality of early fire detection and response arrangements. **Context/Background:** Stakeholders repeatedly expressed the criticality of an effective fire observation tower network for the CWFH region. It was also recognised that the existing tower network infrastructure varied in terms of structural and safety compliance, operational standard and effectiveness, as well as areas lacking in fire observation tower coverage. **Recommended approach:** • Upgrade, replacement and additional towers are as follows: o Canobolas: Upgrade, $700,000 o Shooters Hill: Replacement, $1,300,000 o Bindo: Replacement, $1,300,000 o Burraga/Isabella: Replacement, $1,300,000 o Pennsylvania: Replacement, $1,300,000 o Mullion: New Tower, $1,300,000 **Potential Supplier/s:** Various contractors. **Cost:** $7,200,000
6	**Conduct targeted audit on access roads, fire trails, tracks and boundary fire breaks.** **Purpose:** Conduct an audit of the CWFH region's access roads and fire trails to understand and prioritise new and enhanced civil works requirements to meet the NSW RFS NSW Fire Trail Standards and/or FCNSW Forest Practice Code as appropriate. **Context/Background:** Stakeholders emphasised the critical need for maintaining access track, trails and fire breaks. Poor maintenance of access routes, including overgrown vegetation and fallen trees, significantly hinders firefighting efforts. Boundary fire breaks, improve the likelihood of fire containment if well designed and effectively maintained. Stakeholders reinforced the need for regular clearing and upkeep of tracks, trails and breaks using mechanical and chemical treatments wherever possible to keep routes clear and accessible for rapid attack operations in the event of a fire. It is recommended that the CWFH conduct a comprehensive assessment of the region's access roads, fire trails, tracks and boundary fire break network to determine a prioritised list of upgrade projects for further investment. **Recommended approach:** • Undertake an audit of existing CWFH access and fire trail network.

	• Engage local Bush Fire Management Committees to identify gaps in the Fire Access and Fire Trail Plans for the CWFH region. • Develop a prioritised view of network upgrade requirements • Engage with Forestry Corporation NSW and private plantation/landowners to ensure a landscape approach to investment options across the CWFH region. **Potential Supplier/s:** Soil Conservation Service (SoilCon) or similar fire and emergency consultancy. **Cost:** Approx. $550k to undertake a coordinated and comprehensive audit of access roads, fire trails, tracks and boundary fire breaks. (Incorporates estimated expenses associated with six-eight weeks of detailed field surveys and analyses, engineering and environmental assessments where necessary, stakeholder engagement, and report production).

7	**Dedicated plant and machinery to establish and maintain fire breaks and fire fuel loads.**
	
	Purpose: Enhance weed and vegetation management capability and capacity with the deployment of dedicated machinery, including tractors and mulchers to establish and maintain fire breaks and fire fuel loads.
	
	Context/Background: Poor fire break fire fuel load management was identified by stakeholders as a key issue across the CWFH region. Weeds and vegetation encroaching on access routes, boundary fire breaks, and key assets require establishment and ongoing maintenance to limit fire spread and support firefighting operations. Additional capability and capacity in the form of new manually operated and/or remote-controlled machinery such as mulching and slashing equipment is required to undertake this work.
	
	The specific ownership, location, and assignment of operational and maintenance responsibilities for dedicated plant and equipment could be distributed across key industry agencies and stakeholders. It is suggested this be coordinated, managed and overseen by the Industry Stakeholder entity proposed in Recommendation 19 of this report.
	
	Recommended approach:
	• Invest in the following equipment or equivalent capability
	  ○ 2 x Remote controlled track carriers - mulcher - $291,500 each
	  (e.g. FAE RCU75 Remote controlled track carrier)
	  ○ 1 x Cabbed tracked carrier - mulcher - $792,000
	  (e.g. FAE PT475 Cabbed track carrier)
	  ○ 1 x Tractor with slashing arm - $385k
	  (e.g. FAE BOMFORD B81.81 8.1 Reach arm flail mower attached to 140hp agricultural tractor)

	Potential Supplier/s: FAE Australia. **Cost:** $1,168,800 (Does not include training, servicing/maintenance, or operational costs).
8	**Dedicated 32,000L Bulk Water Trailers with remote water storage capability to support firefighting operations.** **Purpose:** Ensure firefighting operations are supported with adequate mobile water sources for ground and aerial operations, particularly during prescribed burns, land management burns and fire response operations. **Context/Background:** Bulk water trailers were identified by stakeholders as being crucial for delivering large volumes of water to remote areas, especially in areas lacking a local supply. Firefighting operations are often unsuccessful without ready access to large volumes of water to support ground and aerial operations. Increasing natural or existing non-natural water supplies through pre-planned temporary and long term fixed and mobile solutions to provides a significant strategic and tactical advantage. Note that water tankers may not be suited to reach the fire front directly and may require buoy walls, portable high-volume pumps or other infrastructure/equipment to support firefighting operations. The specific ownership, location, and assignment of operational and maintenance responsibilities for bulk water trailers and remote water storage could be distributed across key industry agencies and stakeholders. It is suggested this be coordinated, managed and overseen by the Industry Stakeholder entity proposed in Recommendation 19 of this report. **Recommended approach:** • Invest in the following equipment or equivalent capabilities: o Four x 32,000L Bulk Water Trailers based in Oberon, Bathurst, Orange and Cowra - $95,700 each. (e.g. Trailer Stonestar 32,000L bulk water trailer) o Four x 24,000L Buoy Walls assigned to Bulk Water Trailers - $7,221.50 each. (e.g. Mako FAT BUOY 24,000L Collar Buoy Wall) o Four x High Volume Transfer Portable Pumps assigned to Bulk Water Trailers - $1050 each. (e.g. Honda QP310) • Liaise and negotiate with CWFH members and key industry stakeholders regarding specific depot locations and prime mover operators.

	Potential Supplier/s: Trailer Stonestar Pty Ltd and Mako Fire Pty Ltd. **Cost:** $423,108 (Does not include training, operational and transport costs).
9	**Dedicated Static Water Supply Infrastructure** **Purpose:** Ensure firefighting operations are supported through the development of a strategic network of dedicated static water supply points to enhance water availability for firefighting across the region. **Context/Background:** Firefighting operations are enhanced through ready access to large volumes of water to support ground and aerial operations. Stakeholders have identified the investment in static water supply throughout the CWFH region would be key to supporting firefighting and fire management operations. The specific ownership, location, and assignment of operational and maintenance responsibilities for static water supply infrastructure could be distributed across key industry agencies and stakeholders. It is suggested this be coordinated, managed and overseen by the Industry Stakeholder entity proposed in Recommendation 19 of this report. **Recommended approach:** • Invest in twenty-one 100,000L Colourbond water tanks and install at strategic locations. o 21 x 100,000L RT100 Kingspan Rhino Water Tanks - each $44,600 ($14,350 per tank and installation + $250 delivery + $5,000 site works + $25,000 for security fencing) • Install tanks at the following locations. o Pennsylvania x 2 o Mt David x 1 o Gurnang x 3 o Vulcan x 3 o Jenolan x 1 o Sunny Corner x 3 o Mullion x 2 o Canobolas x 2 o Oberon Village x 2 and o Burraga Village x 2 Note: Strategically located throughout the CWFH region, with consideration given to travel, and proximity to populated areas. Many are proposed to be co-located with existing and recommended

	weather station and/or fire tower infrastructure in addition to those forests impacted by the 2019/2020 bushfires. **Potential Supplier/s:** Kingspan Rhino Water Tanks. **Cost:** $936,600
10	**Invest in dedicated forestry firefighting forwarder vehicles and firefighting forwarder modules for existing key industry stakeholder forwarders.** **Purpose:** Enhance firefighting capability with dedicated firefighting forwarder vehicles that can access rough terrain. Supplement existing forestry forwarder vehicles with slip on firefighting modules. **Context/Background:** Firefighting modules compatible with forestry forwarders represent a practical solution for suppressing fires in remote or heavily forested terrain where traditional bulk water tankers cannot operate effectively. Forwarders are designed to traverse rough, steep, and inaccessible terrain, making them uniquely suited to initial attack and asset protection in plantation and native forest settings. Forwarders are already commonly used in forestry operations across the Central West Forestry Hub (CWFH) region. Retrofitting these with purpose-built slip-on firefighting modules can rapidly expand the region's fire suppression capability with minimal additional training or logistics burden. These slip-ons typically include a water tank, pump, and hose reel setup capable of supporting direct attack operations or mop-up tasks. Experience from other forestry hubs, including the Murray Region Forestry Hub (MRFH), has shown the effectiveness of this model, but also highlighted the need for dedicated units that are always available during high fire danger periods. Dedicated firefighting forwarders remove operational dependencies, ensuring firefighting capability is not compromised by harvesting schedules or equipment availability. The addition of firefighting forwarders complements other mobile heavy plant assets (e.g., bulldozers, graders, loaders), providing an integrated fleet capable of rapid deployment and effective fire suppression. A region-wide deployment model developed in collaboration with industry and agency stakeholders will ensure optimal coverage, resource sharing, and rapid initial attack during peak fire periods. A multi-use approach is recommended, whereby these units can be sed for weed spraying / chemical treatments outside of the fire season. The specific ownership, location, and assignment of operational and maintenance responsibilities for dedicated firefighting forwarder vehicles and modules could be distributed across key industry agencies and stakeholders including, harvesting and

	transport contractors. It is suggested this be coordinated, managed and overseen by the Industry Stakeholder entity proposed in Recommendation 19 of this report. **Recommended approach:** • Procure three dedicated firefighting forwarders (Komatsu 895 Firefighter) to establish a core capability. Assign to harvest/haul contractors already using forwarders as part of their existing operations for operation and transport using existing floats - $1,600,000 each. • Dedicated firefighting forwarders can be located in Oberon, Orange and Cowra and relocated as required per risk. • Use existing float equipment. • Support the rollout with training, maintenance protocols, and deployment procedures to ensure safe, effective integration into regional response arrangements. • Explore co-investment opportunities with industry stakeholders, State Government and Federal Government grant programs, resilience and infrastructure funding streams e.g. Disaster Ready Fund (DRF) and similar. Note: Firefighting forwarders should only be operated on firegrounds by Basic Firefighter qualified operators. **Potential Supplier/s:** Komatsu Australia **Cost:** $4,800,000 ($4,800,000 for three dedicated firefighting forwarders. Does not include training, operational and transport costs).
11	**Improve local weather data during fire response and mitigation activities using fixed Remote Area Weather Stations (RAWS) and Portable Automatic Weather Stations (PAWS).** **Purpose:** Increased understanding of local weather conditions can increase the accuracy of fire behavior modelling and subsequent bushfire risk management planning and expected fire behavior are important when determining an appropriate level of response to new ignitions. **Context/Background:** Remote Area Weather Stations are used by fire agencies and land managers throughout Australia with data available through an online portal. Data can also be fed into the Bureau of Meteorology to give more accurate weather models and predictions useful for firefighting and understanding 'live' risk. The CWFH region is poorly serviced by Automatic Weather Stations (AWS), and investment in PAWS for

	'as needed' deployment and RAWS at strategic locations that address spatial, and elevation requirements will considerably enhance fire protection and prevention in plantations across the CWFH region.
	
	It is suggested that primary responsibility for RAWS and PAWS be FCNSW, details and variations could be coordinated, managed and overseen by the Industry Stakeholder entity proposed in Recommendation 19 of this report.
	
	Recommended approach:
	• Invest in four Remote Area Weather Stations (RAWS).
	  o 4 x Weather Stations - $75,000 each including fencing and site preparation.
	
	• Install RAWS at the following locations.
	  o Mullion Creek at elevation: 990m
	  o Pennsylvania at elevation: 940m
	  o Shooters Hill at elevation: 1350m
	  o Sunny Corner at elevation: 1260m
	
	• Invest in two Portable Automatic Weather Stations (PAWS) to be based with the FCNSW Bushfire Team in Bathurst and deployed across the CWFH area as required.
	  o 2 x Portable Automatic Weather Stations (PAWS) - $15,000 each
	
	Potential Supplier/s: Earth Science Australia.
	
	Cost: $330,000

12	**Trial and evaluate the deployment of experimental EnviroDrop Units.** **Purpose:** To improve real-time weather monitoring in remote and inaccessible areas across the CWFH region. **Context/Background:** Accessing real-time, accurate weather data from critical remote locations is often not possible for ground crews and incident managers. This lack of data where it counts most can hinder the ability to accurately predict fire behaviour, respond to rapidly changing conditions, and effectively plan containment strategies, thereby increasing risk to plantation assets. EnviroDrop is a compact experimental weather-sensing unit designed for aerial deployment by drone or helicopter into locations that are otherwise unsafe or impossible to access. It collects and transmits critical weather data in real time to support faster and smarter decision-making in dynamic bushfire conditions. The specific ownership, location, and assignment of operational and maintenance responsibilities for dedicated plant and equipment could be distributed across key

	industry agencies and stakeholders. It is suggested this be coordinated, managed and overseen by the Industry Stakeholder entity proposed in Recommendation 19 of this report. It is suggested that primary responsibility for the implementation of this program be FCNSW, details and variations could be coordinated, managed and overseen by the Industry Stakeholder entity proposed in Recommendation 19 of this report. **Recommended approach:** • Procure 6 EnviroDrop units for an experimental deployment across the forestry hub's plantations - $8,333 each • Deploy the weather-sensing units via drone or helicopter into strategically chosen locations that are difficult or hazardous to access. • Utilise the real-time telemetry from the units to feed live, hyper-local weather data directly into operational tools and forecasts. • Use the collected data to support strategic planning, operational decision-making, and post-incident reviews. **Potential Supplier/s:** FiSci **Cost:** $50,000
13	**Analyse telecommunications and Public Safety Network (PSN) coverage and connectivity in high-risk forestry areas across the CWFH region.** **Purpose:** Ensure that reliable communication systems are available in forestry areas to support crew safety, situational awareness, and emergency response during bushfire events. Improved connectivity is essential for coordinating multi-agency operations, receiving warnings, and accessing digital tools such as weather data, mapping, and fire intelligence platforms. **Context/Background:** Stakeholders identified limited mobile phone and radio coverage in remote plantation areas as a significant operational risk, particularly during fast-moving or remote bushfires. Reliable communications are critical for coordinating suppression activities, dispatching resources, and ensuring crew safety. NSW Telco Authority is currently delivering upgrades through the Public Safety Network (PSN) and the Mobile Black Spot Program, creating a timely opportunity to advocate for connectivity improvements in strategic forestry locations across the CWFH.

	Coverage challenges vary by company or fire agency and may affect: • Mobile coverage for general operations and app-based tools. • UHF/VHF radio dead zones between contractors and agency responders. • Access to PSN for FCNSW or RFS crews operating in non-serviced regions. • Satellite fallback options for isolated crews during catastrophic events. **Recommended approach:** • Undertake desktop and field-based drive testing, to determine mobile phone and PSN coverage and identify coverage and connectivity 'blackspots' across the CWFH region - $36,000 • Analyse the coverage evaluation results and develop a submission to the NSW Telco Authority**,** requesting consideration of upgrades and solutions to address identified coverage and connectivity blackspot areas - $28,000 **Potential Supplier/s:** Public safety/critical communications consultancies or contractors. **Cost:** $64,000
14	**Procure fire agency radios to improve operational communications and connectivity across the CWFH region.** **Purpose:** Providing radio communication solutions to key stakeholders to improve and support crew safety, situational awareness, and emergency response during bushfire management activities and fire responses. **Context/Background:** Stakeholders identified limited ability of non-core firefighting agencies to communicate with one another during bushfire management activities and bushfire response. Based on the experience of the MRFH, and our feedback from key industry stakeholders, it is expected that up to 100 dedicated PSN compatible and VHF fireground radios be assigned to key industry stakeholders. Importantly, it is suggested that FCNSW would facilitate the procurement and allocation of PSN radios with the Telco Authority of NSW. **Recommended approach:** • Procurement of PSN capable Radios with FCNSW profile: o 100 Radios - $5,000 each for radio and installation. • Procurement of VHF Radio Handsets with NSW RFS 'fireground' profile: o 100 Radios - $2,000 each for radio and installation. • Radios should be provided to key industry stakeholders and installed into vehicles, plant, machinery, depots and offices as appropriate.

	Potential Supplier/s: Motorola, Simmico or Tait. **Cost:** Up to 100 radios $700,000 plus $72,000 p/a for licensing and related costs
15	**Construct a dedicated aerial firefighting base at Bathurst Airport.** **Purpose:** Establish a purpose-built aerial firefighting base at Bathurst Airport to house and support a dedicated Bell 412 helicopter and provide operational infrastructure for fixed-wing firebombers (including SEATs), with facilities for aircrew, refuelling, and retardant loading. **Context/Background:** Aviation assets play a critical role in the CWFH region's bushfire response capability. The recommendation to base a dedicated Bell 412 in Bathurst requires appropriate infrastructure to ensure safe, rapid, and sustained aerial operations. Currently, Bathurst Airport lacks a dedicated firefighting base with the necessary facilities to house a dedicated aerial asset, or support helicopter and fixed-wing aerial suppression operations at scale. The opportunity has been identified to establish a multi-use airbase that: • Ensures rapid turnarounds for helicopter and Single Engine Air Tractor (SEAT) operations. • Provides safe refuelling and retardant loading facilities. • Accommodates on-site crew and ground support operations during campaign fires. • Reduces reliance on temporary or shared-use facilities during peak periods. Locating the base at Bathurst Airport is strategically aligned with the risk profile of surrounding plantation assets and enables strong regional coverage across the CWFH region. Importantly, the design and operational performance specifications of the facility would need to be aligned to the NSW strategic aviation framework. **Recommended Approach:** • Design and construct a permanent aerial firefighting operations base at Bathurst Airport including: o Hangar space for one Bell 412 helicopter. o Apron hardstand suitable for helicopter and SEATs. o Retardant and water loading infrastructure. o On-site fuel storage and refuelling point. o Basic crew amenities (office space, showers, kitchenette, sleeping quarters). o Secure equipment storage and ground support area. • Incorporate the base into NSW RFS aviation coordination and dispatch systems.

	• Explore year-round dual-use potential (e.g., for training, emergency support, or commercial co-location during the off-season). **Potential Supplier/s:** Bathurst Regional Council (Airport operator) **Cost Estimate:** $2,500,000
16	**Procure a dedicated multi-mission Bell 412 Helicopter for regional firefighting and support operations.** **Purpose:** Enhance the region's aerial firefighting, rapid response, and specialist support capability by acquiring a multi-role Bell 412 helicopter, permanently based in Bathurst, with integrated firebombing and utility features. **Context/Background:** The CWFH region faces increasing bushfire risk due to climate change, fuel accumulation, and proximity of plantation assets to rural communities and critical infrastructure. It is acknowledged that FCNSW coordinate and manage a limited aircraft capability. Additionally, aircraft can also be requested through the NSW State Air Desk, however, the request is subject to availability and the priority for aircraft to be deployed to protect life and property over that of forests and plantations. Fast, reliable aerial response is essential to first attack success, fireground coordination, and support of ground crews during extended operations. An opportunity has been identified for a dedicated multi-mission aircraft that can perform both fire suppression and specialist emergency roles, including aerial ignition, crew insertion/extraction, winching, and logistics support. The Bell 412 is a proven platform used extensively in Australia and internationally for both firebombing and multi-role utility operations. Locating the aircraft in Bathurst offers strategic advantages in terms of coverage, infrastructure, and proximity to high-risk areas across the CWFH region. The specific ownership and assignment of operational and maintenance responsibilities, for a dedicated multi-mission Bell 412 Helicopter, to be determined in consultation with the Industry Stakeholder entity proposed in Recommendation 19 of this report. This could include consideration of existing examples of government ownership and/or contracting arrangements as used by key agencies such as the NSW RFS, NPWS, and FCNSW. **Recommended Approach:** • Procure a Bell 412 helicopter outfitted with: o Belly tank (internal or fixed external tank). o Long-line bucket and short-line bucket capability. o Winch system for rescue or insertion operations.

	○ Sling load capacity for logistics and equipment movement. ○ Compatibility with standard air attack systems and tracking. • Establish the aircraft at a dedicated base in Bathurst, with necessary support infrastructure including fuel, hangarage, maintenance access, and operational support. • Integrate the aircraft into regional dispatch arrangements, with primary tasking for initial attack and firebombing, and secondary capacity for rescue, logistics, and reconnaissance. • Explore potential for year-round utilisation under a dual-contract model (e.g., firefighting and emergency support or commercial offset). **Potential Supplier/s:** Bell Aviation Australia or Specialist aerial firefighting providers via contract (e.g. Kestrel Aviation, McDermott Aviation, Coulson Aviation, Aerotech). **Cost:** Up to $4,000,000 plus, negotiated operate and maintain contract. (Does not include annual operational and/or maintenance costs).
17	**Develop a strategic network of fire detection cameras with AI and triangulation capability.** **Purpose:** Provide enhanced fire detection and situational awareness capability across the region through the deployment of technology agnostic, networked AI supported cameras. **Context/Background:** Fire towers can benefit from the addition of AI supported cameras with triangulation capability, reducing risk to operators and increasing situational awareness for users and decision makers 24/7. This can be achieved by retrofitting existing fire towers or incorporating camera technology into any new fire tower sites. Alternatively, new 'camera only' sites should be considered as an option and do not require the full fire tower infrastructure to support the physical camera. FCNSW is currently operating a trial of two cameras with basic capabilities which could be enhanced. Camera feed can be made readily available to key industry stakeholders and fire agencies alike 24/7. It is recommended that a camera technology agnostic solution is adopted to enable data sharing across an easily accessible camera network with future proofing against service provider insolvency. **Recommended approach:**

	• Invest in seven camera solutions to equip all existing and proposed fire towers with AI supported cameras with triangulation capability.
	  ○ 7 x AI supported cameras with triangulation capability - $70,000 each plus $65,000 each p/a.
	
	• Install AI supported cameras with triangulation capability at each of the following locations with fire towers:
	  ○ Shooters Hill
	  ○ Bindo
	  ○ Burraga/Isabella
	  ○ Pennsylvania
	  ○ Canobolas
	  ○ Mullion
	  ○ Sunny Corner
	
	• Invest in five camera solutions to equip all existing and proposed fire towers with AI supported cameras with triangulation capability.
	  ○ 5 x AI supported cameras with triangulation capability - $70,000 each plus $65,000 each p/a.
	  ○ 5 x Camera towers with security fencing - $95,000 each
	
	• Install AI supported cameras with triangulation capability at each of the following locations:
	  ○ North Sunny Corner
	  ○ Mt Homer
	  ○ Mt Ryan
	  ○ Mt Lambie
	  ○ Vittoria
	
	Potential Supplier/s: Pano and/or Watchtowers Networks Pty Ltd
	
	Cost: $1,255,000 ($840,000 cameras, $475,000 towers) first year and $780,000 per annum thereafter.

18	**Trial and evaluate a Remotely Piloted Aircraft Systems (RPAS) capability for fire detection, surveillance and rapid situational awareness.** **Purpose:** Enhance early fire detection, live fireground intelligence, and post-incident analysis by establishing a deployable RPAS capability within the Central West Forestry Hub, including procurement of specialist drones for observation and mapping. **Context/Background:** RPAS technology offers a cost-effective, safe, and highly versatile solution for bushfire preparedness, detection, and response. Drones can provide real-time video, thermal imaging, aerial mapping, and hotspot identification

	in environments where crewed aircraft are unavailable or unsafe to deploy. They are particularly valuable during periods of elevated fire danger or lightning storms, where rapid situational awareness is critical to first attack success. Stakeholders highlighted the lack of a coordinated, deployable drone capability in the region as a current gap. While some agencies and companies operate RPAS independently, a shared, regionally managed solution would support better operational coordination, allow earlier detection in remote areas, and enhance decision-making during active incidents. Australian UAV Service (Surf Life Saving NSW) currently provide RPAS service to fire agencies and other government departments in NSW such as NSW Department of Primary Industrie and NSW Rural Fire Service. A fully managed service from Australian UAV Service provides complete back-end support across all key components of an RPAS program, enabling Forestry Corp staff to focus on flying while we oversee all other supporting functions. **Recommended Approach:** • Engaging a two-year contracted managed service for RPAS capability through Australian UAV Services including drone in a box service capability. **Potential Supplier/s:** Australian UAV Service (Surf Life Saving NSW) **Cost Estimate:** $930,209 for two years

5.3 Capability: Governance

Governance refers to the enabling environment within which management operates, including legislation, policy frameworks, funding mechanisms, authorising environments, and organisational arrangements. Effective governance provides clarity of roles and responsibilities, fosters accountability, and enables consistent decision-making under pressure.

Stakeholder interviews identified the following:

- The value of a well-structured industry working group with dedicated leadership as demonstrated by the success of both the Murray Region Forestry Collaboration and Green Triangle Fire Alliance organisations.
- The need for advocacy, engagement and co-ordination across the CWFH region's approach to risk management and investment in advanced fire preparedness.
- The criticality of managing local stakeholder relationships over the long term, particularly local government and state agency decision makers.
- The strength of industry-focused working groups to prioritise activities and deliver results through member participation.

- The value of recognising , establishing and integrating key industry stakeholder personnel and resources into 'Forest Industry Brigades' to support fire management and fire fighting throughout the CWFH area, as exampled in South Australia and Victoria.
- That a trial of 'Forestry Support Brigades' had commenced in south-east NSW between NSW RFS, FCNSW and industry stakeholders, including members of the Murray Region Forestry Hub (MRFH).

Ref #	Governance Recommendations
19	**Establish a dedicated entity to work parallel to provide collaborative leadership in fire preparedness, mitigation, and response across all forest estate in the CWFH region.** **Purpose:** Establish a dedicated entity to focus on industry collaboration and alignment on firefighting projects that enhance and advance fire preparedness across the CWFH. **Context/Background:** The Green Triangle Fire Alliance (GTFA) and Murray Region Fire Collaboration (MRFC) serve as good examples for collaboratively driving, guiding and funding projects that enhance and advance fire preparedness across private and public forestry estate. GTFA and MRFC operate as collaborative entities that work to coordinate resources and projects aimed at preventing or mitigating bushfire risk and increasing preparedness through investment and industry/stakeholder engagement across a forestry hub region. **Recommended approach:** • Establish a dedicated entity to focus on industry collaboration and alignment on firefighting projects that enhance and advance fire preparedness across the CWFH. • Seek leadership for the dedicated entity from the Department of Primary Industries. • Membership of the dedicated entity should include members of the CWFH, local key stakeholders and government land management and fire agencies. • Once established, the dedicated entity should employ a dedicated secretariat to support the administration and coordination of member business activities, including grant applications and funding proposals. **Potential Supplier/s:** Key industry stakeholders and fire agencies. **Cost:** $164,521 (One x staff member at a level akin to that of a government Grade 7/8 $164,521 per annum including 33% on cost)

20	**Engage with NSWRFS and FCNSW to seek an extension of the NSW 'Forestry Support Brigades' trial into the CWFH region.** **Purpose:** To trial the identification, establishment and integration of key stakeholder personnel and resources into 'Forestry Support Brigades' to support fire management and firefighting operations across the region. **Context/Background:** Stakeholders identified the successful integration and utilization of 'Forest Industry Brigades' in other jurisdictions including Victoria and South Australia. It was also identified that a trial of industry type brigades was being undertaken in south-east NSW between NSW RFS, FCNSW and key industry stakeholders, including members of the MRFH. **Recommended approach:** That the NSWRFS and FCNSW be approached to seek an extension of the 'Forestry Support Brigades' trial, as is currently being implemented in south-east NSW, into the CWFH region. **Potential Supplier/s:** NSWRFS, FCNSW and key industry stakeholders. **Cost:** Nil. (Does not include costs associated with operationalising the trial)
21	**Formal key industry stakeholder membership of Chifley, Lithgow, Canobolas and Southern Tablelands Bush Fire Management Committees (BFMCs).** **Purpose:** To build existing relationships and enhance representation of the forestry industry holistically across the region. **Context/Background:** BFMCs have legislative responsibility for bushfire risk and response planning in local areas statewide. BFMC membership comprises fire agency and public land manager representatives from a diverse group of government agencies relative to the local area. In the Central West, some larger plantation owners reported that they held an observer role on some BFMCs. Formal membership for key industry stakeholders will provide a voice to represent industry, whilst providing an avenue for communication between industry and the BFMC for matters relating to fire risk and response matters. Membership should be representative of key industry stakeholders across the CWFH region. It is suggested this be coordinated, managed and overseen by the Industry Stakeholder entity proposed in Recommendation 19 of this report. **Recommended approach:** • Membership should be sought for the following BFMCs: o Chifley BFMC (Bathurst and Oberon LGAs).

	○ Lithgow BFMC (Lithgow LGA) ○ Canobolas BFMC (Blayney, Cowra, Orange and Cabonne LGAs) ○ Southern Tablelands BFMC (Upper Lachlan, Goulburn Mulwaree and Yass LGAs) **Potential Supplier/s:** N/A. **Cost:** Nil. (Does not include operational costs i.e. time to attend BFMC meetings).

5.4 Capability: Systems

Systems are the technological and organisational platforms that support operations. These include incident management systems (IMS), data dashboards, communications platforms, asset tracking systems, workforce and document management tools, and information-sharing mechanisms.

Stakeholders identified that improvement opportunities exist including:

- Greater visibility of resource availability and utilisation across the region
- Seasonal and daily fire risk notification
- Collaboration on program prioritisation and completing applications for regional grant funding

Ref #	Systems Recommendations
22	**Develop and operationalise a Common Operating Picture and Fire Readiness Dashboard for key industry stakeholders across the CWFH region.** **Purpose:** To enable a live, shared operational view of bushfire risk and readiness across the CWFH region, including timely and accurate information regarding fire weather indicators, resource status, and area risk. Additionally, this solution would provide enhanced bushfire preparedness and operational coordination by establishing a centralised spatial display and information system for the CWFH region, underpinned by agreed information sharing protocols. **Context/Background:** Stakeholders highlighted the need for improved situational awareness and communication of daily and seasonal readiness. A web-based dashboard would integrate data from BOM, NSW RFS, plantation owners, and contracted assets (e.g. aircraft, depots, personnel), allowing plantation managers and fire partners to visualise preparedness in near-real-time. This tool could support pre-season briefings, daily readiness checks, and incident preparedness. Additionally, FCNSW, NSW RFS, plantation companies, private landowners, and local councils all maintain individual spatial datasets and operational information relevant to bushfire planning and response. These include fire trails, asset protection zones,

	static water supply locations, plantation boundaries, fuel load monitoring, infrastructure, and risk overlays. While some collaboration already occurs through incident mapping and planning tools (e.g. Collector, Avenza, ArcGIS Online), there is no central, shared GIS platform or protocol that ensures all parties can access, update, or rely on a single source of truth for planning, preparedness, and operational use. The lack of standardisation in formats, platforms, and data custodianship may have led to duplication, inconsistent situational awareness, and delays in asset verification, particularly during fast-moving or cross-boundary incidents. It is suggested that this project, including ownership and maintenance responsibilities for the Common Operating Picture and Fire Readiness Dashboard, be coordinated, managed and overseen by the Industry Stakeholder entity proposed in Recommendation 19 of this report. **Recommended approach:** • Engage a public safety grade digital solutions provider to design, build and host the Common Operating Picture and Fire Readiness Dashboard. • The solution would incorporate shared forest industry and fire management spatial datasets, accessible to relevant stakeholders under appropriate data security and access controls. Key considerations include: o Leverage existing systems and data (e.g., FCNSW ArcGIS Online environment). o Including key data layers such as fire trails, APZs, IPZs, plantation boundaries, water supply, infrastructure, mobile coverage, fire history, fuel loads, and asset vulnerability. o Including live data feeds such as current and forecast weather, AFDRS four day outlook, FCNSW fire readiness levels and fire activity. o Support desktop and mobile-enabled access for in-field operations. o Data sharing protocols and standards. **Potential Supplier/s:** Fireant Pty Ltd **Cost:** $385,000 Plus $50,000 to $150,000 for annual maintenance and support depending on service level agreement specifications.
23	**Register all eligible CWFH Member and key industry stakeholder Plant and Machinery on the NSW Rural Fire Service Heavy Plant Register.** **Purpose:** Improve regional firefighting surge capacity, coordination, and safety by ensuring that all eligible heavy plant and machinery owned or operated by CWFH members and key stakeholders are registered on the NSW RFS Heavy Plant Register.

	Context/Background: Heavy plant such as dozers, graders, excavators, and forwarders are essential tools in bushfire suppression, used for containment line construction, access restoration, and hazard mitigation. The NSW RFS Heavy Plant Register provides a formal mechanism for identifying, vetting, and activating plant assets and operators for deployment during bushfire operations. It also enables proper insurance coverage, radio communications, and integration into Incident Management Teams.
	
	While many CWFH members and key industry stakeholders possess relevant machinery, much of this equipment is not currently registered with the NSW RFS, limiting its accessibility and utilisation during emergency operations. This results in missed opportunities to deploy familiar, locally available resources during high-consequence incidents.
	
	Registering these assets ensures a more resilient and agile regional response, and provides clarity on contact details, operator competence, and machinery specifications.
	
	It is suggested that the identification and registration of heavy plant and machinery across key industry stakeholders be encouraged and promoted by the Industry Stakeholder entity proposed in Recommendation 19 of this report.
	
	Recommended Approach:
	• Conduct an internal audit across all CWFH members and key industry stakeholders to identify:
	  ○ Available plant and machinery suitable for bushfire support.
	  ○ Operator credentials and availability during peak season.
	
	• Work with local NSW RFS District Offices to:
	  ○ Facilitate registration of eligible assets on the RFS Heavy Plant Register.
	  ○ Ensure compliance with equipment standards, operator training (PUAFIR008), and communications capability (e.g. VHF/PSN).
	
	• Include private contractors regularly used by members and key industry stakeholders who may not yet be registered.
	
	• Encourage adoption of standard Heavy Plant ID stickers and in-cab packs for operational deployment.
	
	• Maintain a shared CWFH internal register for year-round planning and mutual support visibility.
	
	Potential Supplier/s:
	• NSW RFS District Offices and Plant Coordination Officers
	• FCNSW Plant Supervisors
	• Forestry contractors and plant hire companies

	• Training providers for operator accreditation (e.g., PUAFIR008 Operate Heavy Plant in a Fire Environment) **Cost Estimate:** Nil. (Does not include training upgrades or minor equipment purchases associated with compliance).

5.5 Capability: Processes

Processes are the documented (and sometimes undocumented) procedures, workflows, and decision-making models that guide management and operational practices. They include planning cycles, risk assessment methods, continuous improvement systems, stakeholder engagement routines, and protocols for activation, coordination, and recovery transition.

For the CWFH, well-designed and well-practiced processes are essential to ensure consistency, accountability, and effectiveness, particularly under high-stress conditions.

Stakeholders highlighted concerns over poor management practices and lack of preparedness among private/adjacent landowners that create significant residual risk across the region.

Ref #	Processes Recommendations

24	**Develop and maintain plantation specific fire risk and long-term management plans, through managed service arrangement leveraging state of the art AI backed platform and to develop fire risk analysis and mitigation strategies.**
	
	Purpose: To understand and document plantation specific risks, and subsequent treatments. Apply fuel load mapping and fire risk and spread modelling using an AI backed platform to develop fire risk analysis and mitigation strategies.
	
	Context/Background: Poorly maintained land can build up vegetation and fuel loads that prevent access and increase intensity of fires when they occur. Proactive land management practices supported by fuel load surveying and AI backed fuel load and fire behavior modelling, can assist in understanding fire risks.
	
	It is suggested that this project, including ownership and maintenance responsibilities for this recommendation, be coordinated, managed and overseen by the Industry Stakeholder entity proposed in Recommendation 19 of this report.
	
	Recommended Approach:
	• Provide supplier with Estate location, boundary and plantation age data.
	• Engage supplier to:
	  ○ Undertake fire predictions and analysis using their 'Mitigate' module.
	  ○ Undertake ground truthing where required.
	  ○ Generate 5 year fire mitigation plan.
	• Implement and maintain mitigation plan.

	Potential Supplier/s: Fi-Sci in collaboration with landowners/forestry specialists **Cost:** $250,000 based on the CWFH region for approx. 90,000ha.

6. Conclusions

The CWFH region is a critical contributor to NSW's Forest and timber sector and, by extension, the state's economy, environment, and regional resilience. As the threat of bushfire intensifies under a changing climate and evolving land use pressures, the need for well-planned, well-resourced, and collaborative bushfire management strategies has never been more urgent.

This report has brought together diverse insights from across industry, emergency services, local government, and plantation owners to provide a practical and forward-looking assessment of the fire infrastructure and capability needs of the region. While there are many strengths already in place, including experienced personnel, strong agency relationships, and targeted infrastructure, critical gaps remain in resourcing, training, communications, and broader stakeholder engagement that must be addressed to build long-term preparedness.

Crucially, the report highlights the importance of shared responsibility. Bushfire preparedness in plantation landscapes cannot be achieved by any one agency or organisation alone. It depends on strong partnerships between government, industry, communities, and individual landholders, including those who may be less connected to day-to-day operations, such as absentee investors. The findings and recommendations of this study provide a foundation for collective action. By working together to implement these priorities, supported by strong leadership, clear governance, and sustainable investment, the CWFH region will develop increased preparedness.