

# Welcome to the WAFA25 Conference | Fires of Change: 20 Years of Women Shaping Australia's Firefighting Future Quinn Cramer (WAFA)





# 20 Years of WAFA











































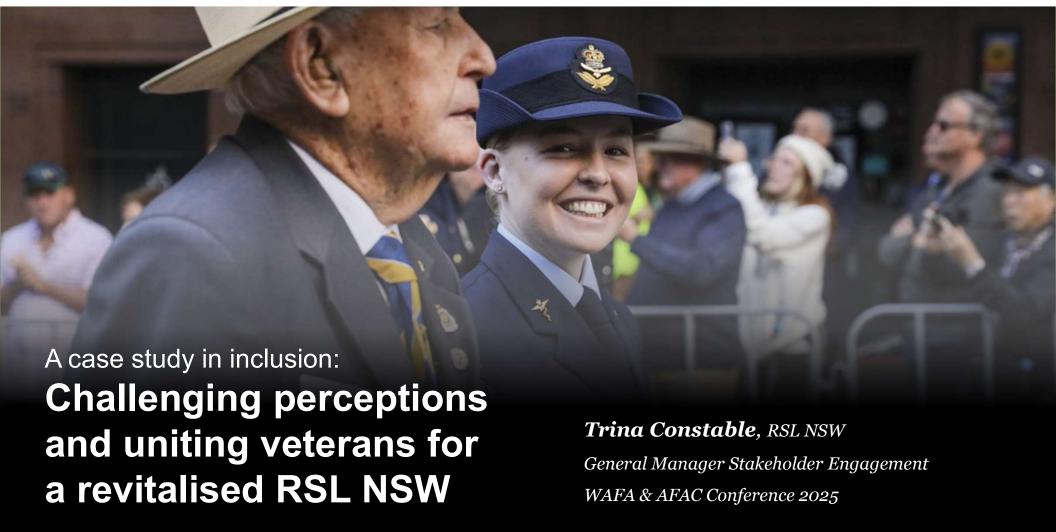














#### The challenge



A declining, ageing membership

#### The results



First membership increase in 40 years







#### **Context and challenge**



Membership **fell** from 120,000 (1982) to 21,000 (2021)



One-third of members older than Australian male life expectancy









Internal cultural education



Inclusivity training
for sub-Branch leaders



Peer-led workshops

on unconscious bias









# Reveille magazine: Driving cultural change



Relaunched in

2021



82%

of members said that it had improved



# RSL NSW Sport & Recreation Program: A vehicle for inclusion

Largest program of its kind in Australia







# A wake-up call to the nation: Save ANZAC Day



Campaign reach:

50.2 million



507

new members joined post-ANZAC Day 2022



# Changing the narrative: The Real RSL



First membership increase in 40 years



Average member age dropped by six years





#### **Integration across channels**



Consistent messaging and tone across all channels



Reveille + media + social + events + sports programs



Family-friendly, inclusive, renewal, forward-looking



# Working with Fire & Rescue NSW





#### A natural transition





#### **Progress through inclusion**





#### **Key lessons for emergency services**



Inclusion is not a program; it is a **posture** 



Representation must be intentional and ongoing



You can't **grow** if you don't let go



Programs must reflect the people you want to reach



There is no better time than **now** 







### Thank you

**Trina Constable**support@rslnsw.org.au
www.rslnsw.org.au









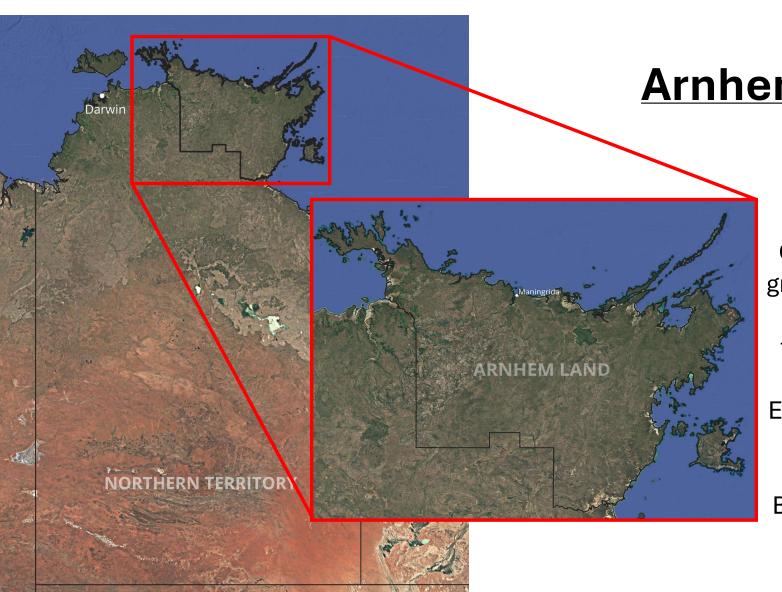
#### Indigenous Women Stepping Up:

Empowering the Next Generation in Arnhem Land Fire Management





Aboriginal people should be aware that this presentation contains images of deceased persons.



**Arnhem Land** 

Over 60,000 years of land stewardship.

Connection to country grounded in cultural law, kinship systems and traditional knowledge.

Emergence of Aboriginal ranger programs.

Balancing tradition with modern environment.



#### This logo was designed by the Caring for Country Team

**Bawinanga** is the name of the Aboriginal Organisation we work for. It's and Aboriginal Corporation which services the people who live in the Maningrida Homelands Region.

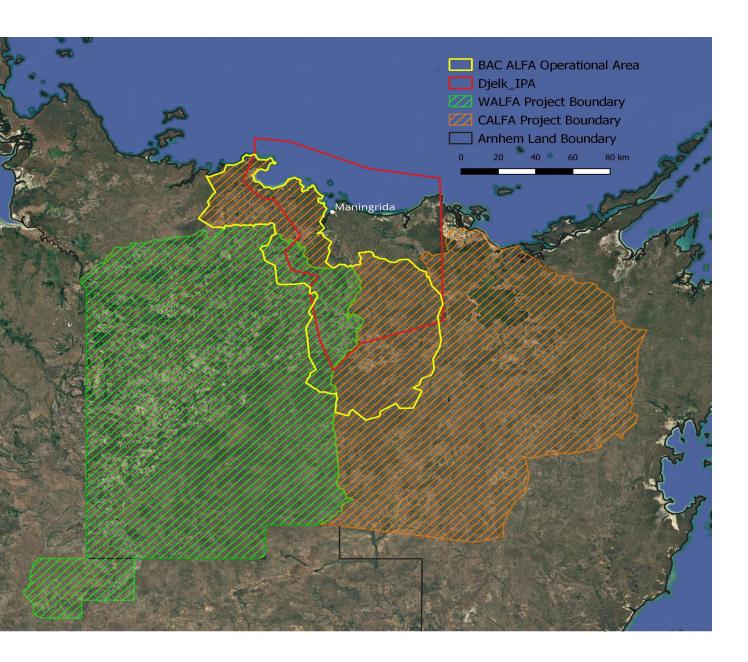
**Djelk** is a Gurrgoni word which means 'land' and 'caring for the land'. It's a strong Aboriginal word.

Caring for Country is the name of the project.

The **water lily** links the earth, the water and the air. It is a thing of beauty and a source of food. The stem and bulb are edible. The two stems of the water lily stand for the two laws: traditional law and non-Aboriginal (Balanda) law. The lily bulb and roots represent people within our district.

The **dilly bag** holds all important messages for all important people in our district. It carries the message of Caring for Country just as the dilly bag is used to carry the letter sticks for messages about ceremony.

The **fish trap** or net holds the key by bringing people together for decision making. It gathers us together like fish in a net.



#### **Djelk IPA**

Declared in 2009 ~6,700km2 Land and Sea

#### <u>Djelk ALFA</u> <u>Operational Area</u>

WALFA and CALFA were both registered with the Clean Energy Regulator in 2014 Mid 1990's landowners and NT-based scientists started talking about problems with fire.

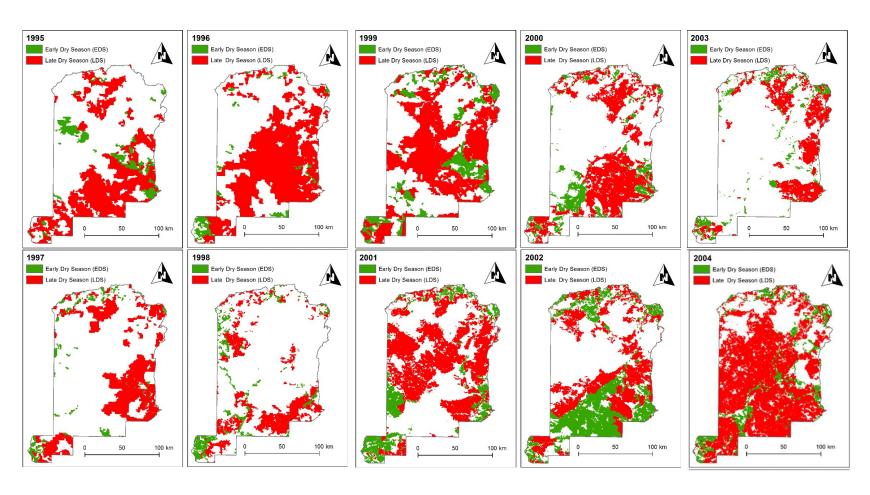
With leadership from elders, Landowners started Arnhem Land Fire Project.

Carbon laws helped financially support fire management by Aboriginal ranger groups.

#### **ALFA NT**

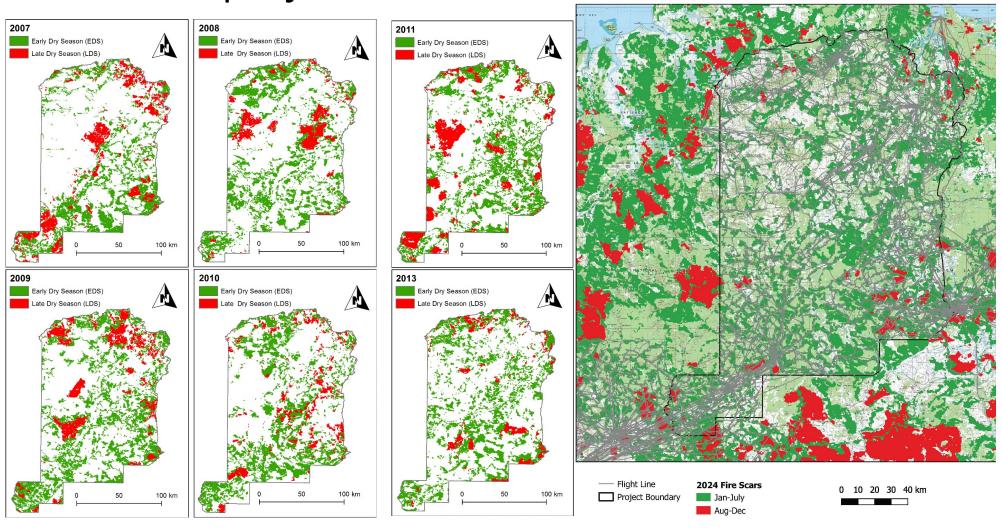


#### WALFA – baseline fire scars



## WALFA – project fire scars

## 2024 APB Flight Lines WALFA



Fire was always used practically, not without reason:

- Cooking
- Warmth
- Regrowth for animals
  - Navigation
  - Communication

No technology: used the landscape and weather to control extent of burn.

Men traditionally managed fire. Women participated passively, linked to food gathering.

### <u>History of Women in</u>



### Opportunities for Women in Fire



EDS burning = safer, family-friendly.

Structured training builds confidence.

Role models & mentors are critical.

Women excel in mapping, planning, logistics.

Shift from separate to integrated programs.

Increase of female rangers since 2021.

Flexible schedules & supportive workplace culture.

Cultural safety through female Indigenous supervisor.

Gender-specific camps support learning.

Emphasis on safety, planning, cultural protocol.

# Building a Strong Women's Fire Team



## Enhancing Women Rangers' Experience



ALFA's female Bush Fire Project Officer.

Builds trust, comfort, and engagement.

Practical, patient, culturally safe approach.

Role modelling challenges gender stereotypes.

### Pathways and Cultural Leadership

Indigenous Women Coordinators = critical.

Supportive mentoring & clear pathways.

Cultural + technical leadership development.

External programs build skills & confidence.



### **Challenges and Opportunities**

Cultural views: fire = men's work.



Limited funding/staffing capacity.

Physical demands + ill-fitting equipment.

More women in fire roles than ever before.

Participation in decisionmaking increasing.

Inclusive training & planning.

Strong support from male

### **Conclusion**

Meaningful shift in women's fire roles.

Cultural + contemporary skills = stronger workforce.

Female trainers and mentors vital.

Integration enriches fire management & cultural leadership.









#### Indigenous Women Stepping Up:

Empowering the Next Generation in Arnhem Land Fire Management



## THANKYOU!

**QUESTIONS?** 

#### Joyce Bohme- Djelk Rangers

<u>Email</u>: rangerwomens.supervisor@bawinanga.org.au www.bawinanga.com/what-we-do/bawinanga-rangers

#### Steph King - ALFA NT

Email: stephanie.rouse@alfant.com.au www.alfant.com.au





### **Tradition to Transformation**

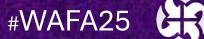
Building Gender Diversity in Senior Duty Officer Teams

Presented by:

Fiona Dunstan AFSM
Deputy Chief Fire Officer, FFMVic
Director, Bushfire and Emergency Management, DEECA



#### **Mirring** - Country







Mirring – Country

DEECA's

Aboriginal Cultural Identity
by artist Tom Day
of the Gunditjmara, Yorta Yorta and
Wemba Wemba tribes.



#### Introduction

## #WAFA25 afac25 powered by INTERSCHUTZ



- FFMVic who are we?
- Our gender equality journey
- D&I Outcomes Framework
- Senior Duty Officer Rosters
- Barriers to success
- Setting a bold target
- Listening to our people
- Options for change
- Principles and Weightings
- Co-design using Mentimeter
- The feedback
- Amending the target
- The progress so far
- Lessons learned
- Looking ahead
- Call to Action: Let's Talk
- Questions



#### Who are we?

#WAFA25



Forest Fire Management Victoria (FFMVic) consists of around 2,600 specialist staff drawn from the Department of Energy, Environment and Climate Action (DEECA), Parks Victoria and Melbourne Water.

FFMVic works alongside the Country Fire Authority (CFA), Fire Rescue Victoria (FRV), other emergency services and communities across Victoria to deliver the best local approaches to public land management in Victoria.

- Risk-based bushfire management and planning
- Fire prevention and preparedness
- Fuel management programs (including planned burning)
- Emergency response and recovery





### Our Gender Equality Journey







- We are committed to:
  - keeping communities safe year-round
  - developing an inclusive environment
  - confronting all forms of discrimination
  - ensuring staff **feel safe**
  - comfortable coming to work as **themselves**
  - ensuring our workforce represents the community that we serve



#### **D&I Outcomes Framework**

#WAFA25





Recruitment

**Retention** 

Progression

- Girls on Fire
- Women in Aviation
- Regional Attraction Plans
- Staff Led Networks
- Graduate Programs

- Recruitment Reform
- Manual Licences
- Group Interviews
- PFF Job-Share Pilot
- Project Inspire
- Unconscious Bias
- Medical & TBA Review / Procure
- Colourblindness in FFMVic
- Leadership Shadow

- Roster Reform
- Sponsorship of Diverse Talent
- Women-only events
- Shadow for a Day
- Deployment Tracker
- Mentoring discussions



**Measurement and reporting** 



#### **Beyond the Sheep Dip**

#WAFA23





- Inclusion Safety Program
- Tackling unconscious bias
- Longitudinal approach to training (as opposed to the old 'sheep dip')







#### **D&I Outcomes Framework**

#WAFA25





Recruitment

**Retention** 

Progression

- Girls on Fire
- Women in Aviation
- Regional Attraction Plans
- Staff Led Networks
- Graduate Programs

- Recruitment Reform
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**Measurement and reporting** 



#### **Senior Duty Officer Rosters**





- Roster Reform
- Sponsorship of Diverse Talent
- Women-only events
- Shadow for a Day
- · Deployment Tracker
- · Mentoring discussions

- State Agency Commanders (SACs)
- Regional Agency Commanders (RACs)
- District Duty Officers (DDOs)

- Well-remunerated
- Guaranteed (not cancelled)
- Leadership (looks great on a CV)





#### **Barriers to women**

#WAFA25



(and many men...)





## Barriers to women (and many men...)

#WAFA25



SLIPDORT - NETWORK

• 24 hour shift



**T(0** Criteria appear individually with clicks.

Circle shrinks as each new criteria is listed.

Travis W Lee (DEECA), 2025-05-27T20:45:53.262



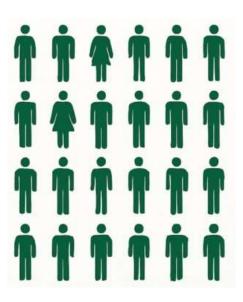
## Barriers to women (and many men...)

#WAFA25



• 24 hour shift

• 7 days stint



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Travis W Lee (DEECA), 2025-05-27T20:45:53.262



## Barriers to women (and many men...)

#WAFA25



- 24 hour shift
- 7 days stint
- Operational experience / accreditation



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Travis W Lee (DEECA), 2025-05-27T20:45:53.262



## Barriers to women (and many men...)

#WAFA25





- 7 days stint
- Operational experience / accreditation
- Incident Control experience/ accreditation

#### **Additional constraints**

- Nomination process inconsistent (tap on the shoulder...)
- Few places available (short rotation cycles)
- Tenure (these roles are often long-held)
- Some people sit on multiple rosters





**T(0** Criteria appear individually with clicks.

Circle shrinks as each new criteria is listed.

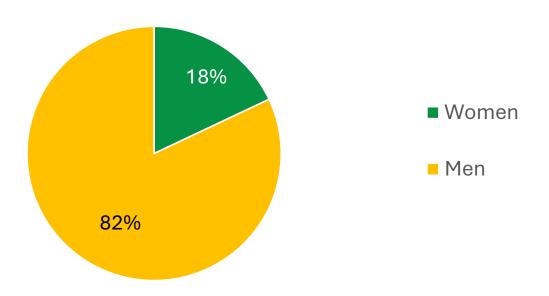
Travis W Lee (DEECA), 2025-05-27T20:45:53.262



#### **Setting a bold target**



#### Senior Duty Officer Rosters (23/24)



"30% women across all Senior Duty Officer rosters by 2024-25"



#### Listening to our people





Extensive engagement

Dedicated focus group

Lived experience





#### **Options for driving change**



- Review & update role statements
- Lateral entry pathways (identify the gap and train to that)
- Review pre-requisites (i.e. remove IC1 and Ops 1). Co-roster instead?
- Annual nominations process for rosters
- Increased flexibility around prerequisite training
- Increased number of prerequisite training events (i.e. IC 1, Ops 1)
- Coaching provisions (i.e. coachee co-rostered with dedicated coach)
- An individual cannot be on multiple Duty Officer rosters (opens up spaces)
- Coupling Duty Officer role expectations with specific BAU roles (remove the voluntary aspect)
- Increase rotation cycle shift from 1:3 to 1:6 or 1:8 (opens up places)
- Reduce shift length from 7 days to 4/3 split



#### **The Principles**



- 1. A zero-harm approach
- 2. Positive framing of targets
- 3. Support through change
- 4. Strong and universal leadership
- 5. We will listen
- 7. Regional variation is to be acknowledged
- 8. Acknowledge & celebrate the progress already made





#### **Weighted Criteria**

	Criteria	Statement (focus group to gauge their level of agreement)	Weighting (100%)
1	Zero Harm	This option is unlikely to cause harm to any individual	20%
2	Speed	This option can be implemented quickly (i.e. actionable in 23/24)	15%
3	Complexity	This option is easy to implement	15%
4	Problem Shift	This option will not create a resource pressure elsewhere	15%
5	Doctrine	This option is supported by doctrine	15%
6	Tested	This option is already tested and in play in some regions / districts	10%
7	Fiscal	This option is low cost	5%
8	Reach	This option will benefit everyone (not just women)	5%



Strongly disagree

#### Mentimeter



TO WHAT DEGREE DO YOU AGREE WITH THE FOLLOWING STATEMENT?

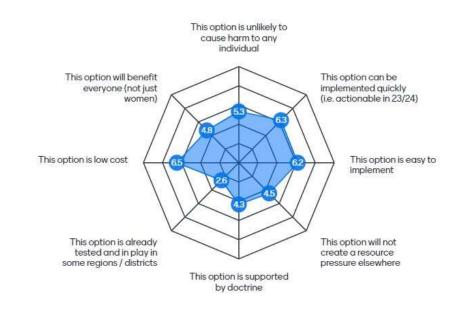
### Review & update DDO role statement







Strongly agree





#### What ranked low?



- Review pre-requisites (i.e. remove IC1 and Ops 1). Co-roster instead?
- Coupling Duty Officer role expectations with specific BAU roles (remove the voluntary aspect)



#### What ranked high?



- Increased flexibility around prerequisite training
- Increased number of prerequisite training events (i.e. IC 1, Ops 1)
- Coaching provisions (i.e. coachee co-rostered with dedicated coach)

- Reduce shift length from 7 days to 4/3
- Increase rotation cycle shift from 1:3 to 1:6 or 1:8 (opens up places)



#### **Amending the Target**



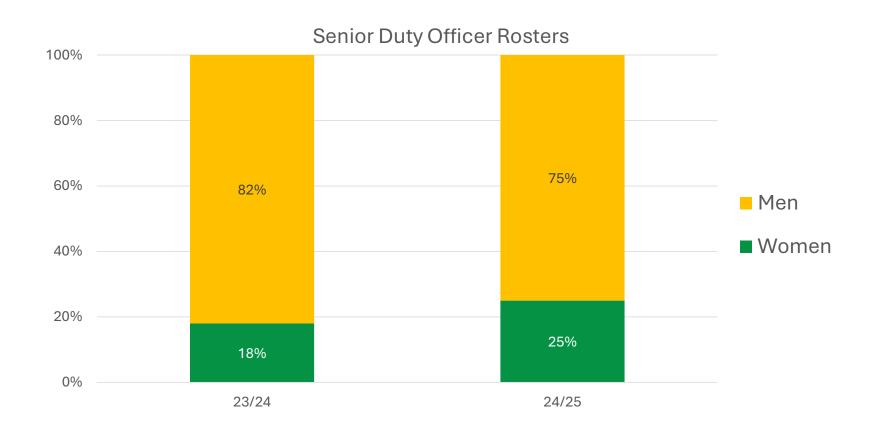
30% women across all Senior Duty Officer rosters by 2024-25

30-50% women across all Senior Duty Officer rosters by 2026-27



#### The progress so far







#### **Lessons learned**



- Engagement trumps assumption.
- Equity ≠ lowering standards.
- Measurement is vital. Transparency builds trust.
- This is not a finite game. This is continuous improvement.



#### **FFMVic - Looking ahead**





- Continue to support pipeline into Senior Duty Officer roles
- Improve data tracking and monitoring
- Apply insights to other roles
- Share with sector *like here today at AFAC*





#### Come talk to us!

## 

**People lens:** Wed 27th – now - Room 6 (WAFA)

Fiona Dunstan AFSM – FFMVic

Roster Reform: What inclusive leadership looks like

\*\*

Design lens: Thurs 28th - 11:40am - Room 6 (WAFA)

Kelly Edwards – FFMVic

Project Inspire: What physical inclusion looks like

Strategic lens: Thurs 28th - 12:10pm - Room 1&2

Emma Welsby & Chris Hardman AFSM — FFMVic

Beyond the Cupcakes: Why structural change matters







## Questions? We would love to hear from you.

ffmvic.diversity.inclusion@deeca.vic.gov.au

#### **Presenter**

Fiona Dunstan AFSM
Deputy Chief Fire Officer, FFMVic
Director, Bushfire and Emergency Management, DEECA





# Fire Rescue Victoria's Women's Support Unit

**Presenters: Paula Treacy and Sarah Hammond** 

#### Welcome

**Acknowledgement of Country** 

We acknowledge the Traditional Custodians of Country throughout Australia and recognise their continuing connection to land, waters and culture.

We pay our respects to their Elders past, present and emerging.



#### Welcome and introductions



Paula Treacy
Acting Commander, Women's Support Unit

Joined Fire Rescue Victoria (CFA) in 2003



Sarah Hammond Senior Station Officer, FS42 Newport

Joined Fire Rescue Victoria (MFB) in 2007

#### WOMEN'S SUPPORT UNIT

#### History

- Formed in 2020
- Aligns with Gender Equality Act (2020) Vic and FRV's commitment to inclusion

#### **Purpose**

To increase gender diversity in Fire Rescue Victoria through:

- 1. Recruitment
- 2. Retention
- 3. Promotion





#### RECRUITMENT

**Signal support group** 

**Women in Firefighting workshops** 

**Information sessions** 



#### RECRUITMENT

**Career days** 

**Strategic partnerships** 

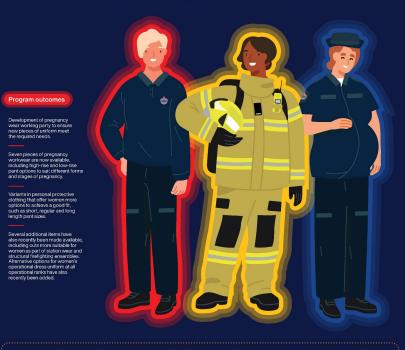




#### **Uniform Inclusivity**



Aiming to provide uniform and personal protective clothing that meets the diverse needs of our workforce.



#### Available pregnancy wear items





#### **RETENTION**

**Health and wellbeing** 

**Infrastructure** 

#### **RETENTION**

**Career support** 

**Cultural change and education** 

**Online coffee catchups** 





#### **PROMOTION**

**Annual Operational Women's forum** 

**Mentoring program** 

**Targeted professional development opportunities** 

#### **ACHIEVEMENTS**

Recruitment

Retention

**Awards** 



#### **CONCLUSION**

Recruitment, Retention and Promotion of women in firefighting is both a challenge and an opportunity.

FRV's Women's Support Unit offers a replicable framework of policies and programs for other agencies seeking to build inclusive, resilient workforces.

By investing in the wellbeing, development, and leadership of women, FRV is not only strengthening its own organisation but contributing to a more equitable emergency services sector.



## Questions?







## Investigating challenges and health concerns of female firefighters: A Review

#### Authors:

Ms.W.D. Ruwandi Fernando Prof. Marianella Chamorro-Koc A/Professor Ajay Pandey Dr. Daniel Cook





#### **Overview**

- Introduction
- Significance
- Methodology
- FindingsSystematic reviewLiterature review
- Current research go-forward





#### Introduction: Understanding firefighting profession and gender disparities

#### **Firefighting**



Physically demanding high-risk

#### **Gender disparities**



Historically male-dominated
Underrepresentation
9% of U.S & 2% in Australia



PPE: male body structure based

(Source: NFPA, 2022; Fire Recruitment Australia, 2022; McQuerry et al., 2023)

Introduction	Significance	Methodology	Findings	Go-forward





#### Introduction: health concerns and safety risks

#### **Elevated health concerns**



Miscarriages



Pregnancy complications



Menstruation

#### Health & safety risks



**Heat risk** 



Cancer risk

Introduction	Significance	Methodology	Findings	Go-forward





#### Significance

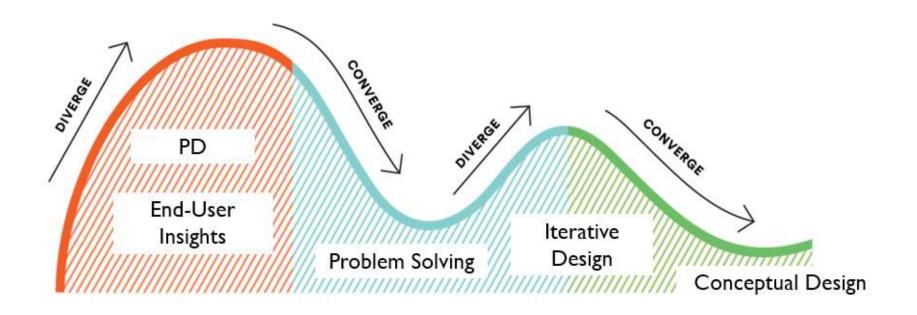
Acknowledges
Understudied
Needs
gender-related
heat risks

Supports inclusive design HCD

Improves relevance of technology
Design for Safety



#### Human-Centered Design approach



Introduction	Significance	Methodology	Findings	Go-forward
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#### Methodology

#### Literature Review (LR)

Reviewed studies on reproductive health, PPE, and workplace conditions to identify gender-specific heat risk factors.

#### Systematic Review (SR)

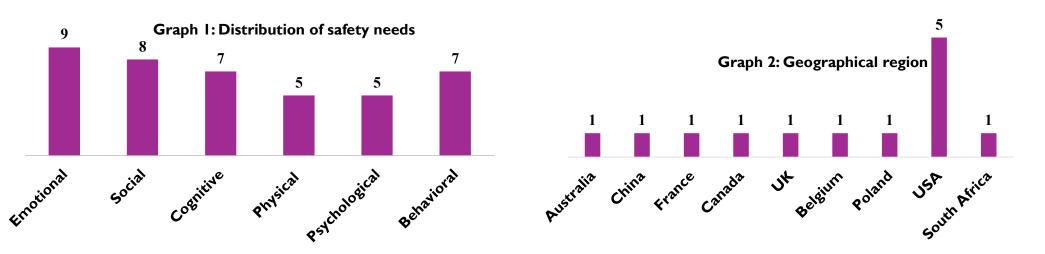
Conducted a SR capturing safety needs and experiences in general for firefighter trainees

How SR???





#### Findings: Systematic Review findings



#### Highlights

Under-exploration of safety needs contribute to trainee fatalities | Ist time exploration of safety experiences in the context of training | Only I study involves participatory design



#### Findings: Identified general challenges



## Gender inequality gender-based discrimination workplace harassment exclusion from certain roles

(Source: Hulett et al., 2008; Krause et al., 2023)



#### **Inadequate options for PPE**

Poor fit, comfort increases injury risk Disregarding female anatomy

(Source: Fahy et al., 2022; McQuerry et al., 2023)

Introduction Significance Methodology Findings (	Go-forward
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#### Findings: Identified health concerns – Hormonal and reproduction related



# Miscarriages Continuous exposure to heat stress, toxins Unaware pregnancy Limited reproductive health assessment

(Source: Jung et al., 2021)



## **Pregnancy Complications**Heavy PPE adds physical strain

#### **Elevated temperatures**

Risks: hypertension, early labor

(Source: Richardson et al., 2019, 2020)



#### **Menstruation**

Facilities often lack menstrual support Menstrual needs impact readiness, comfort

(Source: Höök et al., 2021)

Introduction Significance Methodology Findings Go-forward





#### Findings: Heat Risk

#### Global Problem



NFPA reported fatal injuries hike in 2022



Overexertion / Heat stress (51%)

(Sources: Campbell & Petrillo, 2023)

Australia [473 firefighters F&R NSW lived experiences]

Hottest: Structural fires (68%) followed by Bushfires (51%)

> Hottest area of body: Head (58%) Upper back (40%)

(Sources: Fullagar et al., 2021)

Introduction Significance Methodology Findings Go-forward





#### Findings: Existing technologies for heat risk monitoring

## Environmental sensing Ambient T | RH | WGBT | Radiant Heat



I: LSI Heat Shield Heat Stress Monitors

2: QUESTemp QT-32 Portable Heat Stress Monitors

3: FLIR IR sensor system

## Physiological sensing CBT | Skin T | HR & HRV | Sweat rate



I: sensor-based safety helmet (Sharma et al., 2022)

2: Skin Patch (Chevron)

3. BodyTrak

Introduction Significance Methodology Findings Go-forward

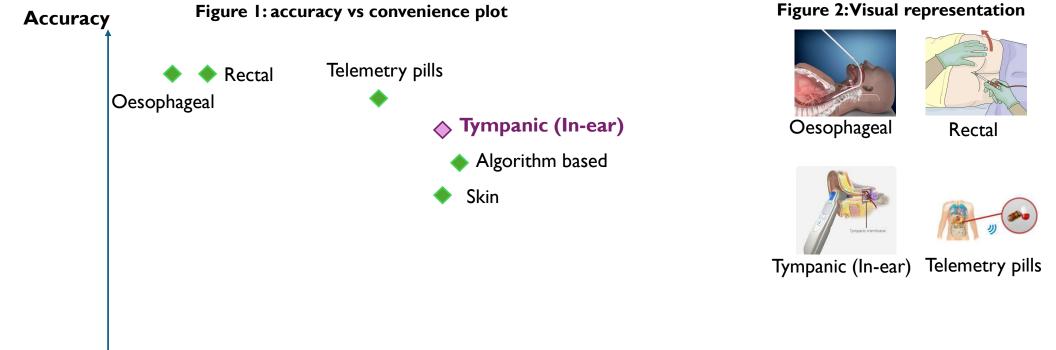


(Source: Dolson et al., 2022; Agostinelli et al., 2023)

Go-forward

**Findings** 

#### Findings: Comparison of CBT measuring techs (Accuracy vs Convenience)



Introduction

Convenience

Significance

Methodology





#### Findings: Design and safety for firefighters



Technology Engineers



OHS Experts

#### Designers









Policy makers



Training Coordinators

#### **HCD** in Design for Safety

- Offer proactive safety for highrisk professions
- Enhance Safety
- Support building confidence and resilience

End-User (Firefighter)

Introduction	Significance	Methodology	Findings	Go-forward
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#### Go-forward

Exploring how wearable sensor technologies can monitor heat risk in firefighter trainees during training

Conduct experimental work

Exploring safety needs and experiences in the context of heat risk

Conduct Focus group discussions

Introduction Significance Methodology Findings Go-forw
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### Thank You!

#### **Contact Details**

Name: W.D. Ruwandi Fernando

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Queensland University of Technology

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wannakuwattage.fernando@hdr.qut.edu.au



#### Systematic Review (SR): Study I

#### Systematic Review: Study I

#### Why SR???

- ✓ Ensures comprehensive, unbiased coverage
- ✓ Provides reliable, evidencebased conclusions

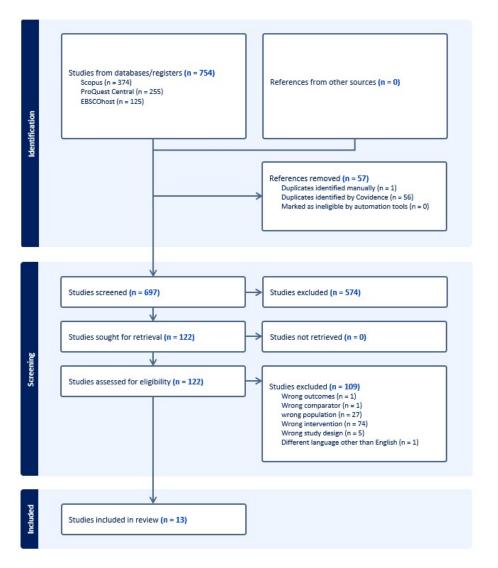
#### How SR???



#### What RQ???

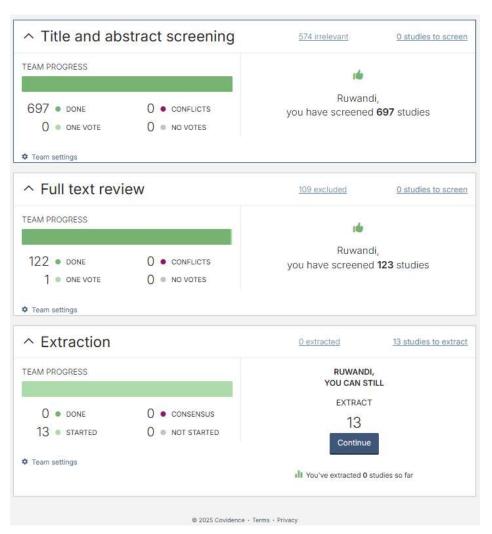
"What are the safety needs and experiences of firefighter trainees for training?" (RQI)

#### **PRISMA** Diagram



#### Systematic Review: Study I

#### **Covidence Outlook**



## **Quality Assessment Strategy (QAS)**

Systematic Review : Study I

#### Why QAS ???

Robust evaluation of the evidence supporting the research question (RQ)

#### **Tool used**

## **CERQual**

### Parameters involved in QAS

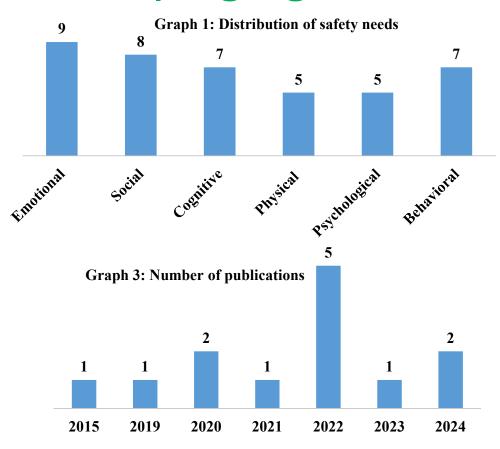
Methodological Limitations | Coherence | Relevance | Adequacy of Data

### **Novelty Introduced**

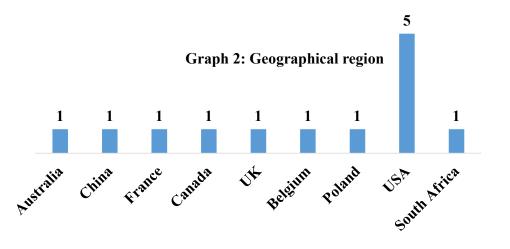
Confidence Level	Numerical value
High	10-12
Moderate	7-9
Low	4-6
Very Low	0-3

Numerical-based confidence level analysis

## **Results | Highlights**



#### Systematic Review: Study I







## **PROGRESS WITH PURPOSE**



## FEAR, FAILURE AND THE FIRE INSIDE



## Lesson #1: Through courage, grit and determination, we can overcome fear.





## Lesson #2: Get comfortable with being uncomfortable.





## Lesson #3: Find your tribe.





## Lesson #4: How you deal with difficult situations will set a pattern.





## Lesson #5: Never lose an opportunity to pay it forwards or give back.











## Lesson #6: Back Yourself!







## Lesson #7: It is okay to be ambitious *like a* mother.





## Lesson #8: Listen more and look deeper.







@pntwemlow | @womeninpower\_aus



Penelope Twemlow | WomeninPower\_Aus



Penelope Twemlow



www.penelopetwemlow.com | www.womeninpower.org



# Managing menstruation while deployed operationally: experiences from the Australian emergency management sector

Associate Professor Melissa Parsons

Department of Geography and Planning University of New England, Armidale, NSW

August 2025, WAFA & AFAC Conference, Perth Human Research Ethics Committee approval HE22-193



The University of New England respects and acknowledges that its people, courses and facilities are built on Anaiwan land, and surrounded by a sense of belonging, both ancient and contemporary, of the world's oldest living culture.

Warwick Keen "Always was, always will be" 2008 Gifted by the artist to UNE in 2008



## Menstruation intersects with employment



Image: Vector Stock 19596952

- On any given day approximately 800 million people worldwide are menstruating
- Menstrual health includes the freedom to participate in all civil, cultural, economic and political spheres of life – including employment - free from menstrual related exclusion, restriction, discrimination or coercion<sup>1</sup>

1. Hennegen et al. (2020) Sexual and Reproductive Health Matters. 29:1-8.



## Extreme workplaces

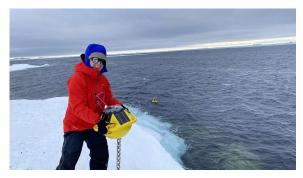


Image: Australian Antarctic Division



Image: US Antarctic Program



Image: Mustasinur Rahman Alvi, Getty Images



Image: Shutterstock



Image: Cpl. Meghan Gonzales/DVIDS



Image: Mineral Resources



## Emergency and disaster sites can be extreme















## Study aim and survey

#### **Aim**

 Examine the attitudes, experiences and practices of managing menstruation by emergency service personnel in Australia while deployed operationally in extreme settings

#### The survey responses

- 287 responses
- 97.9% female, 2.1% non-binary
- Age 17-70 (mean = 40 years)
- 68% menstruating
- 77% rural fire services
- 67% volunteers, 24% staff
- <1 to 50 years experience (mean=13 years)
- 65% had >10 deployments



## Study aim and survey

#### **Aim**

 Examine the attitudes, experiences and practices of managing menstruation by emergency service personnel in Australia while deployed operationally in extreme settings

#### The survey responses

- 287 responses
- 97.9% female, 2.1% non-binary
- Age 17-70 (mean = 40 years)
- 68% menstruating
- 77% rural fire services
- 67% volunteers, 24% staff
- <1 to 50 years experience (mean=13 years)
- 65% had >10 deployments

#### >40 operational duties reported

- Firefighting
- Air or land search and rescue
- Flood or surf rescue
- HAZMAT incident response
- Road accident rescue
- Communications
- Incident command
- Evacuation centre operations
- Animal welfare and rescue







- Period characteristics and menstrual symptoms
- Period stigmatisation

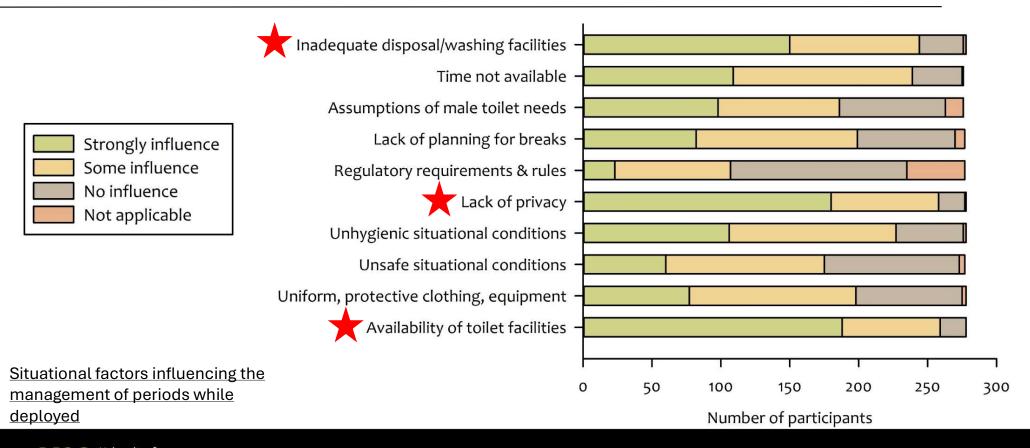


## Period management

- 77% of participants found it somewhat or extremely difficult to manage their period while deployed operationally, 23% found it easy
- 40% of participants had said no to a deployment or shift because of their menstrual cycle
- 7% reported health issues (TSS, UTIs) associated with menstruation management or toileting during deployment
- 60% of participants adjusted their use of menstrual products to accommodate deployment
- 21% of participants used menstrual suppression to support operational readiness

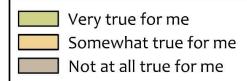


## Situational factors influencing period management





### Sources of information



I talked to my medical practitioner I sought education materials -I talked to my family/friends I talked to my male supervisor I talked to my female supervisor -I talked to male colleagues -I talked to female colleagues -It was covered in training I figured it out myself -50 150 100 200 250 300 Number of participants

Sources of information for learning about or getting advice on managing periods while deployed operationally





Toileting and toilet facilities



Choice and use of menstrual products



Planning and preparation



Avoidance of deployment



Adaptive unease



Toileting and toilet facilities

 Toileting facilities are crucial to period management (privacy within the limitations of field locations, changing products, disposing products, personal menstrual hygiene, scheduled breaks)

...To change a tampon if there wasn't enough tree cover or privacy I would ask fellow crew mates to stand watch at the work bay doors of the truck and change the tampon there, and then bury the tampon or wrap in a plastic bag until I could dispose of it on return to the station or staging area. That could be very embarrassing but we were all adults and also as an older woman it wasn't so bad. My daughter found it extremely embarrassing but does the same thing.





Choice and use of menstrual products

 Choice and use of menstrual products to accommodate deployment (comfort, absorbency, avoiding leakage, adjustment of product use for deployment, menstrual suppression).

I use disposables when firefighting, whereas normally at home and in the ICC I use period undies, which I prefer. It is not really feasible to take your entire pants off to change on the fireground!





 Preparation for menstruation during deployment (planning, purchasing and carrying preferred or additional product supplies, supplies for used product disposal, supplies for symptom management).

The Standard Operating procedures for a Brigade is to be fully self-sufficient for 12 hours before relief or assistance might arrive - by default for general hygiene outside of normal toileting I make sure I have my worst case flow and pain covered for double that...

After bleeding all over a [apparatus] I went to my GP and got a pill that stopped my periods. Being a [specialised role] there is nowhere to change products, no water to wash and I'm frequently the only woman. I would carry wipes and products in my pack but on heavy days I just couldn't change often enough.





 Avoidance of deployment (because of situational longevity, period characteristics, menstrual symptoms, lack of facilities, fear of leakage, fear of menstrual status discovery)

As a volunteer firefighter I often have to plan my volunteering around my period. This leaves me at a disadvantage when trying to gain field experience and maintain parity with male field officers.





Adaptive unease

 Adaptive unease may accompany menstruation management (finding privacy privately, carrying used products in pockets or backpacks, taking health risks, littering, complying with situational safety awareness)

When I have leaks, I have to wear my pants for the rest of the day, and sometimes for the rest of the deployment if I am only able to bring one set due to luggage restrictions when we are flown to a fire. I just hope that no one notices the stains as the pants are pretty dirty anyway.



## Menstrual symptoms and deployment – thematic analysis

- 99.7% experienced at least one menstrual symptom cramps, back pain, fatigue, bowel issues, sore breasts most common
- 64% some impact on duties, 24% no impact, 12% a great deal of impact



Active continuation despite discomfort



Masking or minimising symptoms



Adjusting product use and modifying routines





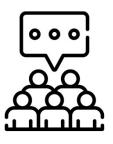
Toileting needs



Menstrual hygiene as standard kit



First responder identity and competency



Understanding and normalising menstruation in deployment





Toileting needs

 Toileting needs (privacy, bodily functions, menstrual product disposal, menstrual hygiene, rights and equity)

We just need to be able to discretely manage menstruation and a lot of time in logistics that isn't even a thought.

I believe that having access to bathroom facilities and access to toilet breaks on deployment or while on a call-out is a right that all male and female volunteers should have. This is a major issue that needs to be addressed.





Menstrual hygiene as standard kit

 Menstrual hygiene supplies as standard kit (counteracting menstrual characteristics, normalising menstruation in deployment practice, supporting operational readiness)

At my brigade there had been no consideration for the female or menstruating members. Since I joined, I have fought for certain things on all appliances to ensure our ability to turn out at any time of the month.





First responder identity and competency

 First-responder identities (getting on with the job while also attending to menstruation, competencies, fears of embedding stereotypes).

Women are more than capable of getting the job done, whether they are menstruating or not.

I take the approach that it's not going to hold me back, but I do have to prepare for it...I know that if I am in a prolonged situation with respite not certain, that I may, at worst case scenario bleed through my uniform. If that were to happen, well too bad for those who may be offended. My focus is on preservation of life not someone's sensibilities.....





Understanding and normalising menstruation in deployment

 Understanding and normalising menstruation in deployment practice (talking, training, mentoring, advice, reducing stigma and taboos, supportive colleagues and cultures)

I think managing your period while being deployed should be covered as part of basic training. This should be attended by both men and women.... I would be happy to talk about it. Share my experiences, if it helps.



## Conclusions - First responder identity









First responders who also menstruate



#### Conclusions - Bloodwork



Image: Vector Stock 19596952

1. Sang et al. (2021) Int.J.Env.Res.Pub.Health, 18(4)

#### Bloodwork<sup>1</sup>

- Managing the messy, painful, leaky body
- Planning access to facilities
- Avoiding feelings of shame and stigmatization
- Managing workload in relation to menstruation

#### Bloodwork in deployment

- Pain management
- Avoiding leakage and discovery
- · Finding facilities or privacy
- Suppressing periods
- Buying additional products
- Forgoing opportunity
- Adjusting mood
- Explaining themselves to others
- Caring for others
- Lobbying for change



## Conclusions - Toilets and toileting



Image: Australian Hiker

- Toilets and toileting practices and logistics are critical to managing menstruation during deployment
- Toilets as sites used to maintain hegemonic masculine norms and control access to male occupational domains OR
- A need for better toileting logistics for all

## Acknowledgements and further information

#### Abstract

Managing menstruation while deployed operationally: experiences from the Australian emergency management sector

Associate Professor

SUBMITTED 3 July 2023 ACCEPTED

Introduction

Menstruation is a regular occurrence in the lives of girls women and people who menstruate. Part of a monthly cycle, menstruation is the shedding of the functional laver of the endometrium (the mucus membrane lining the uterus). The functional layer prepares the uterus for implantation by a blastocyst (cluster of dividing cells made by a fertilised egg) and shedding of the functional layer indicates that conception has not occurred (Norwitz et al. 2007). The endometrial sex steroids (hormones). The proliferative phase (from day 1 to 14 of a 28-day cycle) grows the endomet The secretory phase starts at ovulation and prepares the endometrium for implantation by increasing its vascular supply and stimulating mucous secretions (Dhanalakshmi et al. n.d.). Gradual withdrawal of sex steroids causes shrinking and breakdown of the endometrium, leading to the onset of the menstrual phase where the functional layer of the endometrium (consisting of blood and endometrial tissue) sheds and is expelled out of the body through the vagina. This is called menses (also known as a period) and forms day 0-5 of the next endometrial cycle (Dhanalakshmi et al. n.d.). On average, 80 ml of blood is expelled during menses, with about 50% expelled during the first 24 et al. n.d.). While the physiology of menstruation is largely known, the construction of social meanings of menstruation are less resolved and vary among cultures, genders and individuals.

 Sincere thanks to the participants from Australian emergency service agencies who generously shared with me their experiences of managing their periods while deployed operationally

- Publication (open access)
  - Parsons, M. (2024) Managing menstruation while deployed operationally: experiences from the Australian emergency management sector. Australian Journal of Emergency Management, 39(3): 16-33. www.doi.org/10.47389/39.3.16



# Fit for the Future

# Global Perspectives on Building Inclusive Fire Services

Leanne Allen Culture on Fire



# Research Methodology Context

- Indigenous feminist research methodology
- Key principles:
  - relationships
  - different ways of knowing
  - non-neutral knowledge





1974

## **Judy Livers**

Arlington Fire Department, Virginia, USA

"They suddenly decided they needed a physical test – but only for her "





1977

## **Brenda Berkman**

New York City Fire Department, USA

"The most difficult test the department had ever administered"





1999

## **Tawney Meiorin**

British Columbia Wildland Fire Service, Canada

"Fired for failing a new test despite 3 years of proven performance"



## **The Pattern Revealed**

The common thread? Women being asked to prove themselves in ways their male counterparts never had to.

This was systemic, indirect discrimination, dressed up as neutral policy.

Three Women. Three Decades. One Pattern.





## **Legal Foundation - Two Competing Principles**

#### **Historical Context**

Freedom of Contract	Human Rights Protection
Employers hire who they want	Anti-discrimination laws (post-1948)
Physical standards as hiring tools	Protected characteristics (gender, race, age)

# Key Takeaway Did PES emerge as new form of gatekeeping after direct discrimination became illegal

Adams, E. (2016)



## **Legal Framework**

#### **Direct Discrimination**

- Explicit different treatment based on protected characteristics
- Now illegal in most jurisdictions

#### Indirect/Adverse Effects Discrimination

- Neutral policy with disproportionate impact on protected groups
- This is where PES challenges occur

## **Key Takeaway**

Employers must balance duty of care with non-discrimination requirements.



## The Meiorin Test - Game-Changing Legal Standard

## **Supreme Court of Canada Requirements (1999)**

- 1. Rational Connection: Standard relates to job performance
- 2. Good Faith: Adopted for legitimate purpose
- **3. Reasonable Necessity**: Accommodation of subgroup impossible without undue hardship to employer

Key Takeaway
One-size-fits-all standards are no longer legally defensible





## Measuring Adverse Impact - The 80/20 Rule

#### **How to Identify Problems**

- For example: if 70% of men pass a test
- At least 56% of women should pass (80% of male rate)
- Consistently lower female pass rates = adverse impact

## Legal Burden

- 1. Employer must prove standard is necessary
- 2. Must show no less discriminatory alternatives exist

## **Key Takeaway**

Employers are responsible for monitoring and addressing adverse impact



## Who Carries the Burden of Equity?

### **Legal Reality**

- Employer responsibility: Monitor, identify adverse impact, accommodate
- Transparency required: Open about PES development process
- Change standards or accommodate: When adverse impact identified

#### **Current Reality**

- Burden falls on applicants: Least power in the dynamic
- Expected to: Reapply, train harder, "bounce back"
- May not know: Legal rights or challenge options
- "Resilience" filter: Reframes exclusion as personal failure

#### **Key Takeaway**

When standards disproportionately exclude women without justification—it's the test failing the women, not women failing the test



## **Physiological Reality Check**

## The Data (on *average*)

- Women have 40-60% of male upper-body strength
- Women have 70-75% of male lower-body strength
- Women excel in flexibility and endurance (rarely measured)
- Performance ≠ Pure Physiology

#### The Problem: "Procrustean Bed"

- Rigid models built around male norms
- One speed, one lift, one movement pattern
- Ignoring differences actually increases inequality

## **Key Takeaway**

"Neutral" standards create unequal burden for women



## **Modern Firefighting- Beyond Muscle**

#### **Today's Fire Service Requires**

- Incident command and strategic thinking
- Community engagement skills
- Risk assessment abilities
- Cultural competence
- Leadership under pressure

#### **The Question**

### At what recruitment stage are we applying PES?

- If it's first = Physical ability is most important
- Before judgment, leadership, communication assessment

# Key Takeaway Are we filtering for muscle over merit



### **Accommodation Success Stories**

#### **Evidence from Academic Research:**

- Targeted training programs
  - Build role specific skills and eliminate performance gaps
- Test familiarization and coaching
  - Rehearsal, test and job-specific technique boost success rates
- Organizational Supports
  - Facilities, flexible timelines, and staged testing reduce barriers

#### **Key Takeaway:**

Accommodation eliminates adverse impact without lowering standards



## **Implementation Framework**

- 1. Assess and Audit
- 2. Stakeholder engagement and Redesign
- 3. Accommodation and Support Development
- 4. Implementation and Monitoring

#### **Success Indicators**

- Elimination of adverse impact
- Increased diversity without safety compromise
- Legal compliance and defensibility

### **Key Takeaway:**

- Proactive management prevents legal challenges and builds stronger services
- Good PES are scientifically valid, legally defensible, and operationally relevant





#### References

Adams, E. (2016). Human Rights at Work: Physical Standards for Employment. Canadian Human Rights Commission.

Australian Human Rights Commission Act 1986.

British Columbia (Public Service Employee Relations Commission) v. BCGSEU [1999] 3 S.C.R. 3 (Meiorin Case).

Cox, R., & Messing, K. (2006). Legal and Biological Perspectives on Employment Testing for Physical Abilities: A Post-Meiorin Review. Windsor Yearbook of Access to Justice, 24, 23.

Equal Employment Opportunity Commission (EEOC), Uniform Guidelines on Employee Selection Procedures (1978).

Hatfield, M. (2005). The Employer's Duty to Accommodate: A Review of Canadian Human Rights Law. Ontario Human Rights Commission.

Jamnik, V. (2010). Applying the Meiorin Decision Requirements to the Fitness Test for Correctional Officers. Canadian Society for Exercise Physiology.

Messing, K., & Stevenson, J. (1996). Women in Procrustean Beds: Strength Testing and the Workplace. Gender, Work and Organization, 3(3), 156–166.

New Zealand Human Rights Act 1993.

Petersen, S.R., Anderson, G.S., Tipton, M.J., Docherty, D., Graham, T.E., Sharkey, B.J., & Taylor, N.A.S. (2016). Towards Best Practice in the Development of Bona Fide Occupational Requirements for Physically Demanding Occupations. Applied Physiology Nutrition and Metabolism, 41, S47–S62. https://doi.org/10.1139/apnm-2016-0003

Roberts, D., Gebhardt, D.L., Gaskill, S.E., Roy, T.C., & Sharp, M.A. (2016). Current considerations related to physiological differences between the sexes and physical employment standards. Applied Physiology, Nutrition, and Metabolism, 41(S1), S108–S120. https://doi.org/10.1139/apnm-2015-0540

Title VII of the Civil Rights Act of 1964, 42 U.S.C. §2000e-2.

## **Project Inspire:**

Safe, Functional and Better Fitting Personal Protective Clothing (PPC)





# **Project Inspire**

## **Topics for today:**

- Project Inspire: Background
- FFMVic PPC/E Survey Findings
- Research and Trials of International PPC/E
- The Future



## **Project Inspire: Background**

#### **Forest Fire Management Victoria:**

Forest Fire Management Victoria (FFMVic) is Victoria's dedicated team of frontline forest firefighters working to reduce the risk and impact of bushfires on Victoria's parks, forests and other public land

FFMVic is made up of permanent and seasonal firefighters who work year-round to protect communities and the environment from bushfires and assist in other emergencies as required.

This team comprises more than 1,000 skilled staff from the Department of Energy, Environment and Climate Action (DEECA), Parks Victoria and Melbourne Water.

Our core purpose is to protect people, property and the environment.



## **Background: Project Inspire**

Project Inspire was born though a critical need to address ill-fitting PPC/E for FFMVic firefighters.

Our leaders have taken a direct and bold approach to identify the issues and problems with current personal protective clothing (PPC), with a focus on the environment and conditions our firefighters work within.

Addressing the challenges of gender-inclusive PPC for wildland or bush firefighting requires a comprehensive approach that ensures safety, fit, functionality and comfort for all firefighters, regardless of gender.



## FFMVic Survey Findings: setting the baseline

# OT)

#### My PPC fits me well

6%	•	Strongly disagree	16%
25%	•	Disagree	53%
26%		Neutral	14%
40%		Agree	15%

220 Respondents described PPC as Heavy and Hot.

21% of Female respondents said they do not have female specific issued PPC and PPC does not fit well due to the lack of proper female sizing. 53% said it hinders their work in some way.



#### What do you wear on the fireground

14%	•	Overalls	5%
65%	•	Two-piece	83%
21%	•	Interchange	12%

Respondents' **preference for the two piece** is the ability to choose a **different size for the top & bottom**, **the ability to take off the jacket** (when not on the Fireline), and **better female fit** (compared to overalls).



#### Responses 292

<ul><li>Female</li></ul>	81
--------------------------	----

206

Non-hinary	2

Prefer not to say



Male

The pants/shirts that nearly all other wildland fire agencies wear is much more appropriate for our work and fire response.



The current PPE is the biggest risk to us firefighters aside from dangerous trees.



The current PPE/PPC is modeled on PPE/PPC for structural firefighters, and is unsuitable for wildland firefighting.



## **FFMVic Survey Findings**

#### Deployment PPC

44% have been deployed, 25% were allocated different PPC/E.

Respondents said deployment PPC was more **comfortable**, **cooler**, and **lighter** in weight when compared with FFMVic PPC.

#### Lightweight Jacket



Respondents said they liked that it was **not too hot** & **heavy** to wear.



They did not like the fit, saying it is **too baggy** and the **sleeves are too tight**.

Current boots are horrible, it's an absolute priority to supply staff with a better arrangement of firefighting boots. Lots of injuries are caused due to the current boots not fitting well.

#### PPE - Goggles

65% answered that they had experienced eye irritation/eye problems whilst on the fireground.

**55%** were only wearing goggles for part of shift because they are **uncomfortable**, **restrict sight**, **allow smoke in** and **fog up**.

#### **Boots**

**77 comments** have been received that relate specifically to boots.

Respondents said boots are **poor quality**, **heavy**, **uncomfortable**, and **unsuitable for the terrain**.

The boots are inadequate and are not suited to the work we do. We need to look at a more fit for purpose boot design that's lightweight and more supportive in rocky terrain.

#### PPE - Helmet



Respondents said they like the helmet because it is **lightweight to wear**.



They did not like its **lack of breathability** and find the adjustable band uncomfortable.

#### **PPE - Gloves**



Respondents said the gloves provide **good protection**.



They did not like that they are **bulky** to wear, hindering dexterity and are **too big**.

The current fire boots are very heavy and can result in an elevated level of fatigue throughout the day. They also don't fit well which results in hot spots after long days of firefighting.

## Research: wildland firefighting PPC

Organisation	Overalls/ Jacket	Pants	Fabric	Weight	Stand	Sizing Options	Boots
FFMVic	Â.		Karvin RSS 245 65% FR Viscose 35% Nomex	*LW Jacket 190gsm	AS/NZ	W: Pants and jacket size 6-24 Unisex pants 72R to 122R and 117S to 127S Unisex jacket 72 to 122 Unisex coveralls 72 to 117R, 82 to 132S and 79 to 99L	- Oliver - Magnum (women's specific) - Haix, Fire Eagle
NPWS NSW			Jacket: Nomex Nomex IIIA, 205gsm with a Ripstop pattern Pants: Karvin RSS 245 *Introduction of flame resistant fabric undershirt: 50% Lenzing FR 50% Nomex IIA.	Jacket: 205gsm Pants: 170- 260gsm	AS/NZ	W: Jacket 6-24 Pants S6-24, R6-24, L6-24 M: Jacket 77-132 Pants S82-132, R72-117, L74-104	Aust Stan 4821:2014 (Type 1 or Type 2). They do not need to be steel capped.
CFA			Woven material: Nomex	240- 280gsm	AS/NZ	W: 6-26 M: Reg67R to 132R, Stout 87s to 132S, Long 74L to 94L	- Oliver 230mm
SA CFS			72% Meta-Aramid / Para-Aramid / Antistatic (93/5/2), 28% Wool / Lenzing (50/50)		AS/NZ	W: Jacket 6-24 Pants 6-24 Short /Reg length M: Jacket 67-132 Pants 67-132 Short /Reg length	- Oliver - Magnum
US Forestry			Shirt: Aramid fibre blend. 93 percent meta- aramid fibre, 5 percent para-aramid fibre, and 2 percent conductive fibre (Nomex) Pants: 93 percent meta-aramid, 5 percent para-aramid, and 2 percent carbon fibres (Nomex IIIA)	Shirt: 160gsm Pants: 190gsm	NFPA 1977	Male and Female sizing in pants – optional lengths Shirt sizing XS – XXXL with longer length option. *NFPA – National Fire Protection Association	Boot Allowance Meet NFPA standards
Ontario			Shirt: NOMEX IIIA fabric Pants: NOMEX IIIA fabric *trialing RIPGUARD	Shirt: 215gsm Pants: 215gsm	CGSB & NFPA	Male and Female sizing in pants - optional lengths Shirt sizing: XS - XXXL	Boot allowance \$500 32

## Research: Consultation with our partners

#### Stakeholders engaged with:

- Victoria Police
- Country Fire Authority
- New South Wales National Parks and Wildlife Service
- US Forest Service
- Ministry of Resources Ontario Canada
- British Columbia Wildfire Service

#### **RMIT University:**

'Recent development in equipment, protective materials and garment systems for wildland firefighting'













## **Research: RMIT Findings:**





#### **Total PPC/E Ensemble Weight:**

Overalls 3.8kgs
Jacket / Trouser 4.2kgs
Light Jacket & Trouser 3.5-3.6kgs

Boots constitute 40-50% of the total ensemble weight.

Research of the physiological burden placed by PPC/E on firefighters found that carrying 1kg on the feet (boots) is equivalent to carrying approximately 8.7 kg on the back.

The overall effect of PPC and hot conditions can lead to cognitive impairment, discomfort, fatigue, reduced manual performance and injury.

#### **Differences Between Performance Standards:**

AS/NZS 4824:2021 Protective clothing for firefighters -

Laboratory test methods and performance requirements for wildland firefighting clothing

NFPA 1977:2022 (National Fire Protection Association)

## **Comparison of FFMVic/US Forestry/Canadian PPC**Materials:

FFMVic PPC has the lowest aramid content in both trousers and shirts when compared with USA/Canada, which will impact material strength and possibly other attributes, such as garment durability.

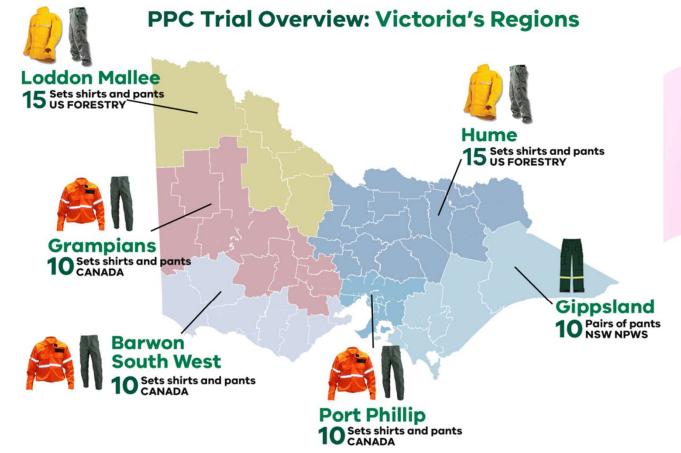
#### **Ergonomics:**

Shirt bellows are also included in the USA specification which will provide improved fit and range of movement.

#### **Closure Systems:**

FFMVic snap closure easier functionality however, tendency to rip or pull out over time.

## **Trials of International PPC**



#### Feedback from participants:

- Targeted surveys
- Face to face focus groups
- In the field information gathering
- Dedicated email address

## **PPC trial comments – Shirt and Pants**

'Cooler and lighter compared the greens'

Ontario, Canada

'We look professional – this will help attract professionals to the job we do'

Ontario, Canada

'Do we have to go back to the greens? Love to stay in this PPC its so much better'

Ontario, Canada

'Felt like I had more energy for the whole shift on the saw. I could move so much easier, the gear is much lighter to work in'

Ontario, Canada

'Tested the radiant heat protection– felt safe and it worked well'

US Forestry

'Quick drying and they don't stick to your body'

**US** Forestry

"Expected to really feel the radiant heat as the gear is lighter – but it held up well. Also took a few steps back if needed'

Ontario, Canada

'Functionality so much better – I can step over logs with out hitching up my pants – or ripping out the crutch.

Ontario, Canada

'Movement in and out of vehicles was so much easier. The pants did not rip or tear and held up well in rye grass.'

Ontario, Canada

169

## Results from PPC trial:

	Ca	anada Ont	ario PPC		US Forestry PPC			
	Strongly Agree	Agree	Disagree	Strongly Disagree	Strongly Agree	Agree	Disagree	Strongly Disagree
Safer	38%	45.5%	16%	0	18.75%	43.75%	37.5%	0
More appropriate to the environ I work in	62.5%	29%	8%	0	37.5%	37.5%	25%	0
More suited to the tasks I undertake	<mark>62.5%</mark>	29%	8%	0	43.75%	31%	25%	0
Better fitting	50%	33%	16%	0	25%	50%	18.75%	6.25%
More appropriately sized	<mark>54%</mark>	29%	12.5%	4%	<mark>6%</mark>	50%	37.5%	6.25%
Lighter in weight to wear	83%	12.5%	4%	0	62.5%	37.5%	0	0



## **Trial Boots**

Chainsaw x 10 pairs	Work x 22 pairs			
HAIX Protector Forest 2.1 & Ultra 2.0 GTX	HAIX Missoula 2.1	Danner Wildland Tactical	Kenetrek Wildland Fire	Steel Blue Torquay  & Argyle Zip EH  (Argyle is a women's specific fit)
Trial pairs: 10 Region: Hume, Gippsland, Loddon Mallee & Port Phillip Participants: 4 F, 6 M Safety certification: CE 0193 EN ISO 20345:2011 (complies to European safety standards)	Trial pairs: 22 Region: Gippsland & Loddon Mallee Participants: 8 F, 14 M Safety certification: NFPA 1977, ASTM F2892 - 2018 (complies to USA safety standards)	Trial pairs: 26 Region: Gippsland & Loddon Mallee Participants: 9 F, 17 M Safety certification: NFPA 1977, ASTM F2892 – 2018 (complies to USA safety standards)	<ul> <li>Trial pairs: 11</li> <li>Region: Barwon South West</li> <li>Participants: 4 F, 7 M</li> <li>Safety certification: NFPA 1977, ASTM F2892 - 2018 (complies to USA safety standards)</li> </ul>	Trial pairs: 22 Region: Barwon South West & Port Phillip Participants: 4 F, 7 M Safety certification: Electrical hazard AS/NZ 2210.3 (complies to Australian, EU & USA E.H safety standards)

## **Boot survey: Comments**

'These boots are great.

However, not having a steel
cap toe is a bit annoying to
have to always carry a second
set of boots for chainsaw
work.'

Danner Wildland Fire Boot

'These boots prove their value as soon as you take them into the bush. They lock to your foot and add stability when in challenging terrain. They limit the 'sloppy feel' which is common with our standard issue boots.'

HAIX Missoula Fire Boot

'These are by far the best boot I have worn for work in the 9 years I have been here.'

Danner Wildland Fire Boot

'If these boots could be fire rated, that would be ideal for fallers to wear them on the fire line, especially for long walks and arduous terrain.

Fit was good, sizing chart gave good advice about fit, and sizing, which I found true to description.

Overall, I find the boot significantly better and fit for purpose for our industry, just need a fire rating, as I could have used these at the Grampians fire while doing hazardous tree work - would of been prefect.'

HAIX Protector Chainsaw Boot

'These boots have been good, although it has been hard to find appropriate days to wear them when I don't need to operate a chainsaw.'

HAIX Missoula Fire Boot

'Not being able to use them with a chainsaw if a real disadvantage, If they were chainsaw rated, they would be the perfect boot.'

Danner Wildland Fire Boot

## **Boots: Survey and Results**

	Danner				HAIX			Kennetrek				
	Strongly agree	Agree	Disagree	Strongly Disagree	Strongly agree	Agree	Disagree	Strongly Disagree	Strongly agree	Agree	Disagree	Strongly Disagree
Safer	36%	43%	21%	-	23%	15.5%	38.5%	23%	44%	28%	28%	-
More fit-for-	44%	16%	33%	7%	23%	15.5%	38.5%	23%	57%	-	43%	-
purpose												
More	57%	29%	14%	-	15.5%	46%	15.5%	23%	57%	-	43%	-
comfortable												
Better fitted	57%	29%	14%	-	30%	24.5%	30%	15.5%	57%	14%	29%	-
Better quality	65%	28%	7%	-	31%	46%	15.5%	7.5%	85%	-	15%	-







#### **Outcome:**

The preferred option from the trial boots is the **Danner boot**.

The comments received and conversations undertaken with trial participants has confirmed the Danner boot is comfortable to wear, is supportive in difficult terrain and did not need any time to break in.

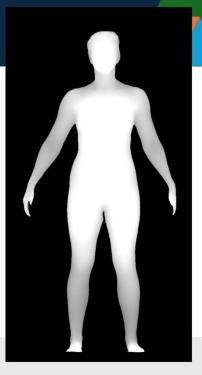
There were no issues with hot spots, rubbing or blistering from wearing this boot.

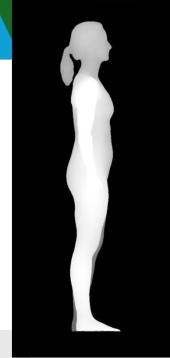
## The Future: 3D Body Scanning - Data capture

rightBiceps
leftBiceps
rightForearm
leftForearm
rightWrist
leftWrist
underBust
narrowWaist
neckBase
neck
bust
topHip
navelGirth
head
trouserWaistline
highTrouserWaistline
leftThigh
rightThigh
hip
maximumHip
leftCalf

rightCalf leftLowerKnee rightLowerKnee shoulder backShoulderWidth backNeckToWaist frontNeckToWaist backNeckToHip bustPointWidth acrossBackWidth acrossFrontWidth backNeckToRightKnee backNeckToLeftKnee frontShoulderWidth leftPantInseam rightPantInseam leftTibia rightTibia height leftOutleg rightOutleg leftHighOutleg rightHighOutleg bellyOutleg longestNeckToWrist narrowWaistToGround backNeckToGround shoulderToWaist waistToTopHip waistToMaximumHip

waistToKnee shoulderToBust minimumLegGirth shoulderLength outerArmLength longestFootLength widestFootWidth





#### Data Capture:

- Data across the entire body, including head, feet and hands.
- Over 400 measurement points are generated from each scan session – including point-to point or circumference measurements.
- In under a minute, a scan provides body sizing and biometric data.

## The Future: 3D Body Scanning – Females are not small men



Body	Average	Minimum	Maximum	Australian Sizing	NFPA 1977 range	Canadian General
measurement				Range cm	cm	Standards Board cm
(cm)						
Chest	105	90	135	85 - 130 <mark>0</mark>	99-150	76 - 150
circumference				-		
Waist	91.8	74	105	70 - 120	58 -94 <mark>2</mark>	60 - 96 <mark>3</mark>
Over or outer arm	61	58	70	56 -64 <mark>0</mark>	-	-
Inseam	74	70	87	77 – 81.5 <mark>0</mark>	71 – 91.5 <mark>②</mark>	70 - 92
Height	169	158	186	-	-	145 -195
Hip	112	97.5	133	86-136	96.5 - 147	-
Wrist	18	15	21	-	30.5 - 37 <mark>2</mark>	-
Thigh	73	56	76	-	63.5 -81 <mark>2</mark>	-
Neck	45	40	50	34 - 43 <mark>1</mark>	37.5 - 50	-
	I	1	I			

1 Outside Australian Sizing Range

②Outside NFPA range (women's sizing for female lower body only – not for the shirt).

3Outside CGSB

#### We need to do better for our female firefighters:

- Address design issues, prioritise fit for safety, comfort and mobility.
- Include female firefighters in working groups to gain specific feedback on fit and address concerns
- Female specific patterns for PPC to cater for differing bust, waist, hip, thigh, neck and wrist sizes.
- Ensure women's patterns and sizing are part of the tendering process.
- No unisex fit options to be accepted.

## The Future: next steps

#### Systems approach to PPC/E:

- ✓ Introduce new PPC/E that will match the operational demands in how FFMVic responds to bushfires - as much of our response to firefighting is completed on foot, constructing hand trails and completing hazardous tree work.
- ✓ Constant checking back with stakeholders on requirements, fit for purpose and influencing industry on future offerings.
- ✓ It will keep our firefighters safe, allowing them better functionality in very difficult terrain and hot conditions.
- ✓ The PPC/E will be fit for person, allowing for different body shapes and be inclusive of all of our people.
- ✓ The lighter materials will help alleviate heat stress or illness, ongoing issues with fatigue and increase comfort during extended operations.



#### The Future: Persona/s







#### Firefighter Persona's:

- Each firefighter will be allocated to their matched persona/s and receive the functionally appropriate gear.
- Will ensure fit for purpose of equipment in the role they are undertaking.
- Allow for equity in allocation across the State.
- Introduce new data and tracking component in existing FFMVic systems to track replacement rates and feedback from users.

#### **The Future: Actions**



- Roadshow of preferred pants to all operational staff to check appropriate sizing and understand the need for modifications or tailoring.
- Shirt focus group: to ensure correct design and best fit, with operational staff input.
- Introduce a system and layering approach for safety, comfort and warmth.
- Education and training materials developed to understand correct fit and best sizing decisions. This will also include correct PPC laundering processes.
- Tools introduced via existing systems to track persona PPC allocation by accreditation. A new ticketing system trialled to capture user feedback and ideas for innovation
- Working with manufactures to ensure correct sizing models are established.
   Use of 3D scanning to capture as much data as possible to match the work force to influence sizing definitions.

## **Questions??**



#### **Further information on the project:**

#### **Contact Details:**

Kelly.Edwards@deeca.vic.gov.au

# Advancing Gender Equality and Sustainability

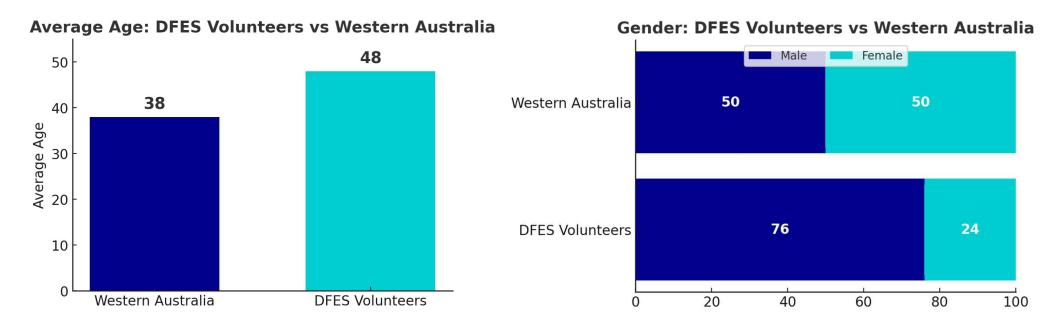


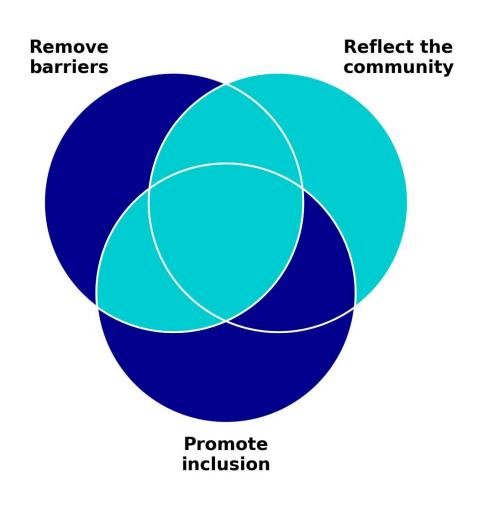
## **Jenny's Story**

(Picture – Not Jenny)

Source - Redwingeurope.com

## The Shared Challenge





## Volunteer Sustainability Strategy 2023 – 2026 A Vital Future

Inclusion = Sustainability



## **Youth in Emergency Services**

Building the next generation

- Hands on training
- Leadership skills
- Volunteer pathways

## Women in Volunteer Emergency Services

#### Driving reform

- Flexible pathways
- Pregnancy policy
- Leadership development



## **Representation Matters**

Creating safe spaces for all

- Culturally and Linguistically Diverse
- People with Disabilities
- LGBTQIA+



## **Inclusive Leadership**

#### Action for lasting change

- Allyship training
- Mentoring
- Strategic leadership
- Partnerships



## Data Driven Accountability

Listening, learning and leading

- Volunteer Data Dashboard
- Surveys
- Evidence based action



## Who is Missing from Your Team?



#### Contact details:

volunteering@dfes.wa.gov.au Phone (08) 9395 9410







PRIORITIZING VULNERABLE AREAS FOR MAXIMUM

**IMPACT** 

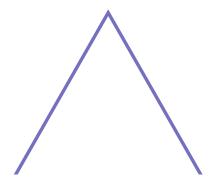
Selena Silva Global Risk Reduction Specialist

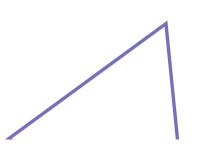




We begin by respectfully acknowledging that we are meeting on Whadjuk Noongar boodja — the traditional lands of the Whadjuk people of the Noongar nation.

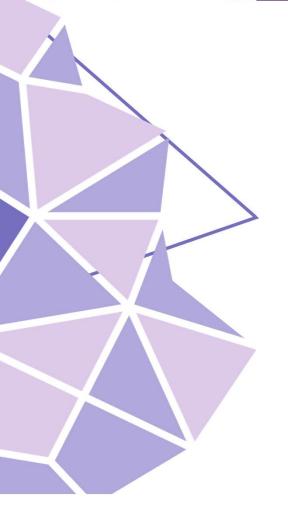
We honor their enduring cultural and spiritual connection to this land, and pay our respects to their Elders past, present, and emerging.











Right

**RESOURCES** 

Right

**PLACE** 

Right

TIME





#### **GOALS**

Targeted CRR = Strategic allocation of resources where risk is highest. Limited resources are universal; vulnerabilities differ by region.

#### Learning Goals:

- 1. Define targeted CRR.
- 2. Identify methods to prioritize vulnerable areas anywhere.
- 3. Share adaptable intervention strategies.
- 4. Explore universal impact measurements.







#### **INTRODUCTION**

Thanks to my generous partners.

My opinions are my own and not of theirs, nor of the agencies I work for/contract with.







#### **CRR FOUNDATION**

5 E's: Education, Engineering, Enforcement, Emergency Response, Economic Incentives

CRR Process Flow: Risk Identification → Prioritization → Targeted Action

NFPA 1300: Standard on CR Assessment and CRR Plan Development







## **Defining Vulnerable**

#### **AREAS GLOBALLY**

- Geographic hazards: wildfire, flood, earthquake, drought.
- Infrastructure resilience: housing, road access, water supply.
- Socioeconomic indicators: poverty, literacy, unemployment.
- Demographics: children, elderly, newcomers.





#### **IDENTIFICATION**

Pinpoints actual risks: CRR efforts can be too broad or misaligned without factual identification of hazards, demographics, and vulnerabilities.

Reveals patterns and causes: Fire and EMS data reveals where incidents occur. Builds community understanding. Community input ensures interventions reflect real needs, not assumed needs.

#### **PRIORITIZATION**

Focuses resources where they matter: We work too hard to miss the mark.

Prevents copy X paste: there is no "one size fits all".

Drives measurable impact: This distinguishes real risk reduction and performative

outreach.

Promotes equity: brings disproportionately affected communities into the

forefront and reduces gaps.





#### TARGETED APPROACHES ACROSS BORDERS

## QUANTITATIV

#### THE NUMBERS

Incident counts tell us what happened.

We can trend this data to monitor
frequency of events over time.

## QUALITATIVE

#### "WHY" BEHIND THE NUMBERS

Reveals how people feel, perceive, and respond to risks and safety.

This helps builds cultural and contextual understanding.

ONGOING MEASUREMENT BUILDS
SUSTAINABILITY





#### **MEASURING IMPACT**

## **RURAL EAST**

COMMONITY BASED FIRE
MANAGEMENT & INDIGENOUS
FIRE STEWARDSHIP

## **METRO HIGH**

RISES
GIS MAPPING PRIORITIZES
SPRINKLER INSPECTIONS

BLANKET PROGRAMS WASTE RESOURCES
CRR TAKES MULTIPLIES LIMITED RESOURCES
FOR MAXIMUM IMPACT





#### **TAILORING**

Adapt language and approach for maximum impact.
Respect local community leadership.
Seek permission before using the stories of a community.

Involve leaders and elders in the CRR process.
Shared ownership increases adoption, sustainability, and pride in the risk reduction program.

**INTERVENTIONS** 

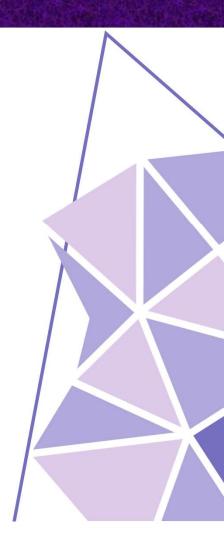




## **Global Challenges**

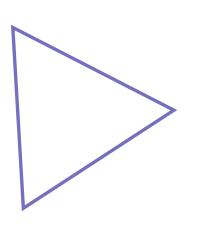
AND SHARED SOLUTIONS

- Challenges: funding, political delays, engagement barriers.
- Solutions: consistency, adaptable models, partnerships, stakeholder engagement.
- Leverage networks for knowledge sharing









## SMALL, BUT MIGHTY

Start small.

Target well.

Scale what works.

#### **INSPIRE AND LEARN**

Share successes nationally.







#### **CLOSING**

Every community is unique. But no community is alone.



**Empowering Change: Western Australia's first female Level 3 Incident Controller** 

I would like to Acknowledge the Whadjuk people of the Noongar Nation as the Traditional Owners of the land we are meeting on today. I pay my respects to their Elders past, present and emerging.































#### Women in Fire Statistics

Where are we now?	2019	2024	2025	2024 to 2025	Tracki since 2019
· Fire management positions held by women	17%	26%	26%		
· Front-line fire fighter positions held by women	5%	10%	8%		
· Fire duty officer roles held by women	4%	26%	21%		
<ul> <li>Women above a level 4 classification in permanent fire management positions in districts and regions</li> </ul>	0%	24%	22%		
· Women in permanent AWU leadership positions	0%	7%	1%		



# Thank You