



# Product Document

Team TA30

Next Gen Innovators



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## 1. Overview: A life saving initiative

### 1.1 Problem Overview

With the increasing frequency and intensity of bushfires in Australia, especially in Victoria, children are among the most vulnerable, yet current educational methods often fail to engage them or provide practical skills. There is a pressing need for interactive, age-appropriate tools that empower children to prepare for and respond to bushfire emergencies.

### 1.2 Mission of Bushfire Brigade

Bushfire Brigade is a digital platform designed to meet the critical need for bushfire safety education among children aged 8-12 in Victoria, especially those in high-risk areas. It bridges the educational gap with engaging, age-appropriate content that teaches children through real-life events, like the 1983 Ash Wednesday fires. The platform not only improves theoretical understanding but builds children's confidence to act responsibly during emergencies. Its goal is to promote long-term safety and resilience, helping families and communities better prepare for increasing bushfire threats.

### 1.3 Target Audience and Relevance

Bushfire Brigade is designed for children aged 8-12 living in bushfire-prone areas of Victoria, as well as their guardians, parents, and teachers. Children in this age group often have misconceptions about bushfire responses (Towers, 2015), while parents and teachers struggle to find age-appropriate resources. This platform offers interactive, engaging content that enhances children's understanding and preparedness, while also supporting parents and teachers in delivering comprehensive bushfire education.

Various design artefacts have been developed for the 2 target audiences in order to better understand their lifestyles, motivations, pain points and needs, and can be accessed by clicking the links in the table below.

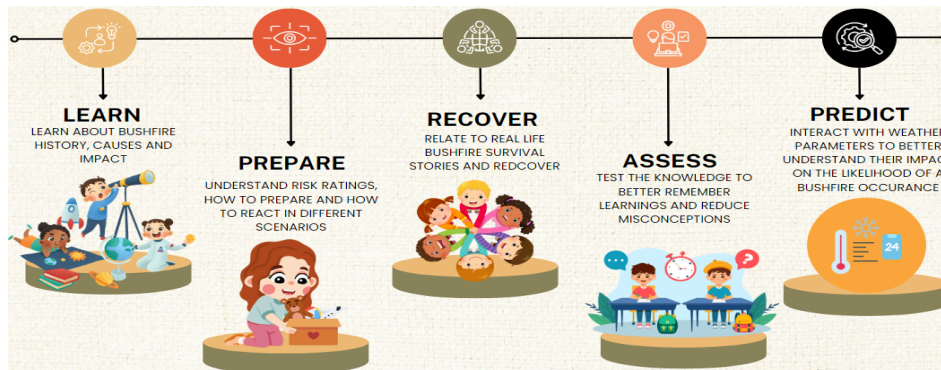
| Students   | Guardians/Teachers   |
|--|--|
| <a href="#">Persona</a><br><a href="#">Empathy Map</a><br><a href="#">User Journey Map</a> | <a href="#">Persona</a><br><a href="#">Empathy Map</a><br><a href="#">User Journey Map</a> |

### 1.4 Team Information

For information regarding team members' roles, emails and LinkedIn profiles, please refer to the [Team Information](#) document.

## 2. Unmatched value proposition

### 2.1 Learning Journey





## 2.2 Unique features and benefits

**ANIMATED TUTORS**  
BENEFIT: INCREASE ENGAGEMENT FOR CHILDREN  
GAP BRIDGED: REDUCES TRADITIONAL TEXT EXPLANATIONS

**INTERACTIVE LEARNING**  
BENEFIT: HANDS-ON ENGAGEMENT FOR KIDS  
GAP BRIDGED: ENCOURAGE ACTIVE PARTICIPATION

**DATA ANIMATION**  
BENEFIT: VISUALIZE COMPLEX DATA AND CONCEPTS  
GAP BRIDGED: ENCOURAGE MORE CRITICAL THINKING

**MACHINE LEARNING: WEATHER-BASED BUSHFIRE PREDICTOR**  
Station Region: 5  
Min Temperature (°C): 9.2  
Max Temperature (°C): 20.7  
Rain (mm): 0.2  
9AM Humidity (%): 61  
9AM Wind Speed (km/h): 6  
3PM Humidity (%): 61  
Predict  
LOW BUSHFIRE RISK! Under this weather condition, there is a 36.97% probability that a bushfire is likely to occur.  
BENEFIT: MAKES COMPLICATED CONCEPTS EASIER TO GRASP  
GAP BRIDGED: PROVIDES A DYNAMIC INTERACTIVE TOOL TO BETTER UNDERSTAND CAUSE AND EFFECT

**ASSESS SURROUNDING RISK**  
BENEFIT: INCREASE AWARENESS OF THE ENVIRONMENT  
GAP BRIDGED: REDUCES TEXT HEAVY EXPLANATIONS

**VICTORIAN CURRICULUM BASED**  
BENEFIT: LEARNINGS ARE ALIGNED WITH SCHOOL CURRICULUM  
GAP BRIDGED: SCATTERED CONTENT COMPILED IN ONE POINT

**EMERGENCY KIT PACKING GAME**  
BENEFIT: FUN AND MEMORABLE CONTENT  
GAP BRIDGED: EMPHASIS ON PRACTICAL PREPAREDNESS

**SIMPLIFIED ANIMATED CONTENT**  
BENEFIT: BREAK DOWN COMPLEXED CONTENT  
GAP BRIDGED: CATERED FOR CHILDREN TO BETTER UNDERSTAND

**REAL-LIFE STORIES AUDIO NARRATION**  
BENEFIT: MORE ENGAGING COMIC THEMED REAL EXPERIENCES  
GAP BRIDGED: MORE PERSONAL INTERACTION TO AID RECOVERY

**QUIZZES AND ACHIEVEMENTS**  
BENEFIT: REINFORCING UNDERSTANDING  
GAP BRIDGED: PROMOTES LEARNING RETENTION IN CHILDREN

CHECK IT OUT: [PRODUCT VIDEO](#)

WEBSITE: [BUSHFIRE BRIGADE](#) (password: PleaseWeNeedHD)

MAHARA PAGE: [PROJECT OVERVIEW](#)

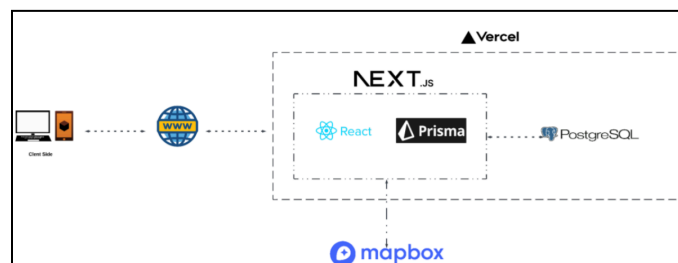


**Teacher and Parent Resources:** Clear website flow with feature details can be found in the [user manual](#), helping adults navigate better and support children's learning.

Please visit the platform's website and watch the accompanying product video for a thorough introduction of Bushfire Brigade's features and offerings.

## 3. Cutting-edge Technology Stack

### 3.1 Key technologies powering the platform





### 3.2 Scalability, Reliability and Costs

The Bushfire Brigade platform is designed with scalability in mind, allowing it to accommodate a growing user base without compromising performance. Its reliable infrastructure ensures consistent access and a seamless user experience, even during peak usage. Importantly, the platform is offered free of charge, making it accessible to all, thus maximising its impact and outreach in educating children and families about bushfire safety.

### 3.3 System Maintenance

For details about the development lifecycle, system architecture and all maintenance activities, please refer to the [Maintenance](#) document. Detailed information regarding the process for setting up the server, security maintenance, and data management summary can be found in the [Support](#) document.

## 4. Implementation Plan & Resource Requirements

### 4.1 Implementation Strategy

The implementation of the Bushfire Brigade platform will follow an iterative development model, ensuring continuous improvements based on user feedback and testing. A phased roll-out is proposed, beginning with pilot testing in select schools in bushfire-prone areas which would allow us to gather insights from teachers, parents, and students. If positive feedback is received, this will be followed by broader deployment, with continuous updates based on performance metrics, user engagement, and feature enhancement requests. Vercel will host the platform, while Neon.tech manages the database, ensuring scalability and reliability during the roll-out.

### 4.2 Resources, key dependencies and partners

The platform will rely on the following resources and partners to ensure its smooth operation:

- **Technical Resources:** Vercel for hosting, Neon.tech for database management, GitHub for version control, and continuous integration/deployment.
- **Human Resources:** A development team to maintain the platform, a support team to address user queries, and educators to provide feedback on educational content.
- **Partners:** Key partnerships with educational and government bodies will assist in promoting the platform across schools and integrating it into broader safety initiatives.
- **Support & Maintenance:** Regular security audits, performance monitoring, and database backups, as outlined in the [Support](#) and [Maintenance](#) documents, will ensure long-term platform reliability and user safety.

## 5. Effective Data Utilisation

### 5.1 Data Overview and Management

For the Bushfire Brigade project, data management involved cleaning datasets using Python and designing [Entity-Relationship Diagrams](#) (ERDs) for robust database development. These databases supported data visualisation in Tableau, enabling engaging representations of the data. The cleaned data was also utilised in developing our machine learning model, enhancing the platform's educational effectiveness. Further details can be found in the [Data Management Plan](#).

### 5.2 Privacy Policies, Protection, and Security Testing

A comprehensive risk analysis was conducted prior to the development from which the findings were recorded in the [Risk Registry](#) along with relevant risk responses. Furthermore, a detailed [security plan](#) outlining these measures can be found in the accompanying documentation.

## 6. Ethics & Compliance

### 6.1 Ethics Canvas

The Ethics Canvas for Bushfire Brigade outlines the key ethical considerations that guided the development of the platform. The Canvas provides a framework for addressing potential challenges and helps ensure that the platform delivers its educational goals while safeguarding the rights and well-being of its users.

The key ethical decisions derived from the [Ethics Canvas](#) include:

- **Data Privacy:** We prioritise user privacy, particularly for children, by integrating SSL encryption and conducting regular audits to maintain transparency and safeguard personal data.
- **Inclusivity:** The platform is designed to accommodate users with diverse learning needs, offering features such as audio content for children with reading difficulties, ensuring accessibility for all.
- **Transparency:** Any sponsorships or partnerships are clearly labelled to maintain the integrity of the educational content, ensuring that users can trust the information provided.
- **Environmental Sustainability:** By using eco-friendly hosting options, Bushfire Brigade minimises its environmental impact, contributing to sustainable practices in digital education.

### 6.2 Alignment with ACS Code of Conduct

The Ethics Canvas has been developed in alignment with the ACS Code of Conduct principles of honesty, trustworthiness and respect (Australian Computer Society, 2023). The Ethics Canvas serves as a guiding tool to ensure that Bushfire Brigade remains focused on promoting trust, safety, and transparency. These considerations are in line with the ACS Code of Conduct, reinforcing our commitment to developing an ethically responsible and impactful platform.

## 7. Human Interaction & Training Needs

### 7.1 Required user interaction levels

The Bushfire Brigade website promotes a high level of user interaction tailored for children aged 8-12. Engaging features such as quizzes, games, videos, and simulations allow users to explore bushfire causes, safety tips, and recovery processes. Users can participate in hands-on activities, like emergency kit packing games, creating an immersive learning experience. Additionally, families are encouraged to spend time together discussing and developing emergency plans, extending learning beyond the computer and fostering collaborative preparedness. This crash course can be completed in 120min.

### 7.2 Training and support for users

The website features comprehensive survival guides along with a detailed [user manual](#) on its Help page, aimed at helping adults support children's learning and to make navigating the website easy with step-by-step instructions.

## 8. Vision for Future Growth & Expansion

### 8.1 Opportunities for platform expansion

There is significant potential to expand the Bushfire Brigade platform beyond its current scope. Future opportunities include extending content to cover other natural disasters such as floods, storms, and heatwaves, making the platform a comprehensive emergency preparedness tool for children. Additionally, partnering with schools in other Australian states, as well as international regions facing similar risks, could broaden the platform's reach. Enhancing multilingual support would also increase accessibility, catering to diverse communities across Australia.



## **8.2 Potential new features and audiences**

New features could include real-time emergency alerts integrated with the platform to notify children and families during high-risk bushfire days. Incorporating augmented reality simulations to provide immersive, hands-on learning experiences could further engage users. Expanding the platform's audience to include older students, parents, and community leaders with tailored content on advanced bushfire strategies would allow for a more inclusive approach to community preparedness, fostering resilience across all age groups.

## **9. Conclusion: Why Sponsorship Matters**

### **9.1 Why should you invest in Bushfire Brigade?**

Sponsorship of Bushfire Brigade directly contributes to enhancing children's safety and preparedness in bushfire-prone areas. As bushfire risks increase due to climate change, there is a growing need for age-appropriate educational tools that empower young learners. By investing in this platform, sponsors support an innovative, interactive solution that addresses a critical public safety issue while aligning with educational goals and community resilience efforts.

### **9.2 Long-term benefits for sponsors and communities**

This project seeks committed long-term sponsors to expand its reach and ensure its sustainability, providing children in bushfire-prone areas with the tools to stay safe. Organisations have an opportunity to support a project that directly contributes to children's safety and education. Potential sponsors that may benefit from this project include educational institutions, governmental bodies such as the Department of Education or Emergency Management Victoria, and private organisations.

Sponsoring Bushfire Brigade offers short and long-term advantages, helping to reach more schools and communities, enhancing bushfire preparedness across Victoria. This partnership promotes safety, raises awareness, and positions sponsors as advocates for child safety. In the long run, the platform can help reduce community risks, potentially saving lives and minimising damage during bushfire seasons.

### **9.3 Call to action for partnership and support**

We invite educational institutions, governmental bodies, and private organisations to partner with Bushfire Brigade in this vital mission. By supporting the platform, sponsors can make a lasting impact on bushfire education and preparedness, safeguarding future generations. Join us in expanding this life-saving resource to more children, schools, and communities. Your partnership will make a critical difference.

## **10. References**

Australian Computer Society. (2023). *ACS code of Professional Conduct*.  
<https://www.acs.org.au/memberships/professional-ethics-conduct-and-complaints.html>

Towers, B. (2015). Children's knowledge of bushfire emergency response. *International Journal of Wildland Fire*, 24(2), 179-189.