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The outcomes:

+ **Improved community awareness and resilience.** NSW SES harnessed the power of maps for community education by creating a range of engaging location-based information products that can be personalised by the user. This has enhanced the community's understanding of tsunami threats and helped improve their preparedness – strengthening public resilience by empowering people to make more informed decisions themselves.

+ **Added value to existing data sources.** Data feeds and legacy data previously obtained through things like inundation modelling were collated to develop maps and apps – enhancing the value of existing NSW SES resources. This increased ROI from its mapping infrastructure by removing the need to upgrade solutions.

+ **More accurate understanding of tsunami risk.** Using location-based analytics, the resourcing needed for evacuation has been better identified. This has made planning easier. Interactions sparked by the evacuation areas map have led to the gathering of important feedback and provided additional data about which areas are vulnerable.

+ **Increased compliance with open data policy.** The solutions ensure NSW SES can meet its regulatory and ethical duty to share information with the public and improve community safety.

+ **Greater decision-making support.** Static information and real-time feeds were transformed into actionable insight to support decision-makers and coordinated actions across departments.

+ **Improved warning systems.** These tools enable NSW SES to improve the delivery, format and speed with which warnings are issued and interpreted by the community.

Solution mix:

+ **ArcGIS Online**
+ **ArcGIS for Desktop**
+ **Esri Story Maps**

Interactive maps helping communicate the threat of tsunamis

New South Wales State Emergency Service

With almost 1,800 kilometres of New South Wales coastline, the potential impact of tsunamis is real and the need for preparation crucial.

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Project overview

The New South Wales State Emergency Service (NSW SES) is responsible for responding to and planning for flood and storm emergencies throughout the state. Part of this work includes educating the public on the threat of tsunamis, as well as coordinating response in the wake of such an event.

To help build preparedness and community resilience, the agency launched TsunamiSafe: a community-based initiative providing NSW SES, other agencies and citizens with the necessary tools and information they need to make more informed decisions both prior to and during a tsunami.

Recognising the unique value interactive maps have in helping visualise and communicate the potential impacts of a tsunami, NSW SES used location-based analytics to develop a suite of information products to support the TsunamiSafe initiative.

This led to the development of two location-based solutions:

✛ An evacuation areas mapping application: a public-facing map that provides the community and other agencies with insights on areas vulnerable to a land-threat tsunami.

✛ The TsunamiSafe story map: a community engagement tool that educates the public on tsunamis and the dangers they pose in NSW.

NSW State Emergency Service in focus:

NSW SES is a 9,000-strong volunteer-based emergency and rescue service that provides support to the people of New South Wales 24 hours a day, seven days a week.

The majority of situations the agency responds to relate to flooding and storms, however, it also provides general rescue services in the state's rural areas, including road accident rescue, vertical rescue and rural area search and rescue.

In addition, the agency assists other New South Wales emergency service organisations during major operations, including the state's police force, rural fire service and ambulance service.

Geographic Information System (GIS) technology is critical to NSW SES operations and is leveraged to generate new applications and capabilities to support mitigation, preparedness, response and recovery efforts for both everyday incidents and large-scale events.

❝ The response from the public to both our story map and evacuation areas map has been very encouraging. People are more aware, taking action, taking note of vulnerable areas in their neighbourhoods, and now have a better understanding of the risk overall. ❞

Elliott Simmons, Manager Geospatial Intelligence, NSW State Emergency Service

The challenge:

Unlike many neighbouring countries in Asia or the South Pacific, modern Australia has yet to experience a truly destructive tsunami. However, in the recent past, a number of smaller marine-threat tsunamis have been experienced, which had the potential to put coastal infrastructure, property, sea vessels and even lives at risk.

As the agency responsible for ensuring New South Wales residents are educated and prepared for tsunami threats, NSW SES has an obligation to improve community awareness on the issue. This remains a challenge though due to a general level of misunderstanding relating to tsunami risks.

To cut through this ambivalence, NSW SES required an approach that would collate authoritative tsunami data and present it in an appealing and meaningful format.

More specifically, NSW SES wanted to:

✛ Create engaging information products that would help educate the community on the risk of tsunamis – both on land and offshore.

✛ Develop platforms that would disseminate TsunamiSafe information – currently available via a self-service website – in a format that was easy to understand and use.

✛ Augment and replace hardcopy documents with easily updatable and expandable platforms that could provide current and relevant advice and information.

✛ Accommodate the inevitable surges in online traffic that occur during emergencies.

✛ Transform existing data into a clean, simple-to-use community engagement tool that helps identify evacuation areas in the event of a land-threat tsunami.

The solution:

Using location-based analytics technology as the foundation for its tsunami awareness solutions, NSW SES developed two key map-based information products:

Evacuation areas map

While the likelihood of a NSW coastal land-threat tsunami is low, the potential impact of such an event remains high.

The evacuation areas map collates various data sources to display reliable information on areas likely to be affected and where higher ground can be found – insights that benefit both the community and emergency responders.

Public-facing tsunami story map

The story map combines authoritative maps about the impacts of tsunamis in NSW with narrative text, images and multimedia content to create an educational tool that enables the public to better prepare.

This medium was chosen as an easy way to harness the power of maps and geography to tell an educational and engaging story.

The innovation:

A first-of-its-kind for Australia

The evacuation areas map was an Australian first-of-its-kind at a state-wide level, with similar maps previously only developed at local levels.

Other states are now in consultation with the agency on how to replicate the innovation.

By simply leveraging a configurable commercial-off-the-shelf (COTS) solution and utilising readily available data, NSW SES were also able to develop the country's first public-facing story map on tsunami history and risk.

Legacy data given a new lease of life

The public release of legacy tsunami information by the agency was a game-changer. With location-based analytics technology, old datasets, surveys and models – content unsuitable for brochures or leaflets – could finally be made available to the public in a usable format.

Seamless scalability for the entire state

This ensures the map can cope with very large peak usage and means that – in the face or wake of a disaster – access is guaranteed to anyone who needs the map in an emergency.

Faced with a level of community ambivalence towards the threat of tsunamis on the New South Wales coast, NSW SES leveraged a location-based solution to get the message through.