

NATURAL HAZARDS RESEARCH FORUM

STREAM 3 WORKSHOP 3

Severe weather impact prediction

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slido

SCAN TO PARTICIPATE

CODE: NHRF23

@hazardsresearch

#NHRF23



T2-A6 NHRA Severe Weather Impact Prediction Sector Partner Engagement Project

Overview

Focused on impact from two hazards:

1. **Wind for large-scale systems**
2. **Severe thunderstorms**
involving wind, hail and/or rain

Research Questions

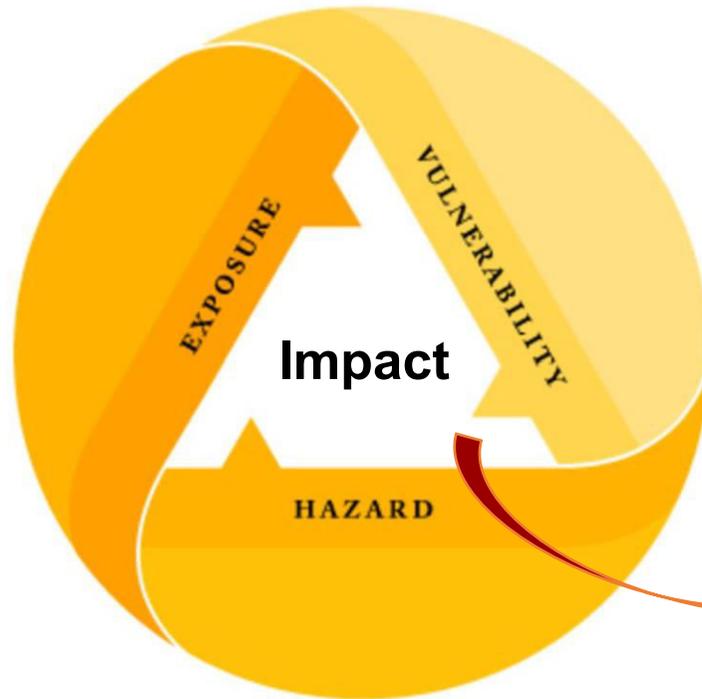
1. How can **impact- and exposure-based forecasts** be designed to **inform decision making** for planning, preparedness and response? What decisions and outcomes will be improved?
2. What **different types of information** (and in what format) are required by **different user groups** (e.g. a planning officer or a first-responder)?



The Impact Triangle

- Location-based asset information

Geoscience Australia
 Australian Exposure
 Information Platform
 (AEIP)



- Asset vulnerability – Location and characteristics including structural, economic and demographic.

Geoscience Australia databases

This project – how do response agencies want potential impact to be communicated?

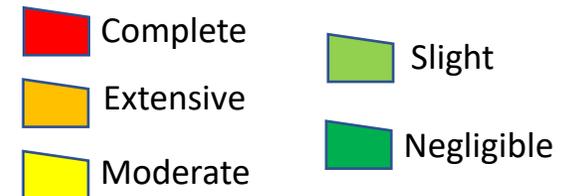
- Large-scale winds
- Severe thunderstorm

Forecasts from **Bureau of Meteorology**

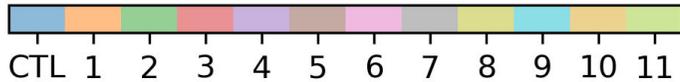
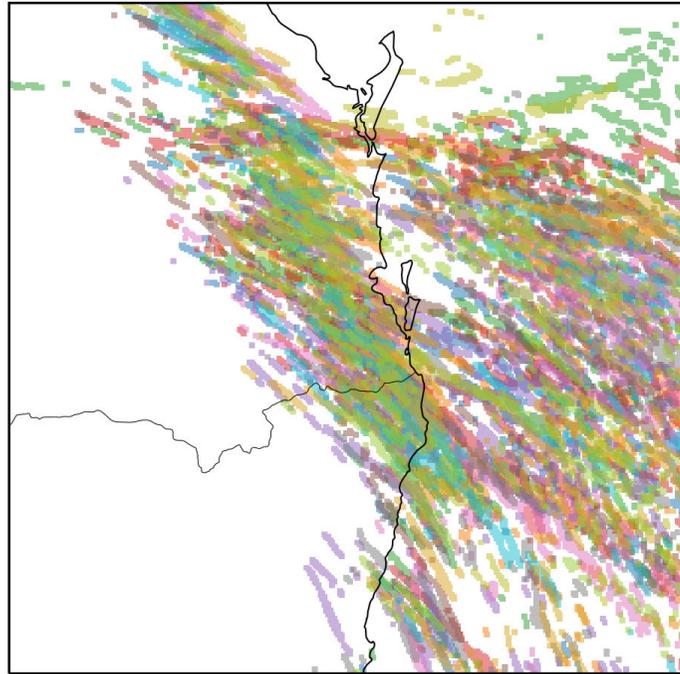
Natural Hazard Impact and Risk Service (NHIRS)

Map-based depiction of potential impacts from forecast weather events (automatic assessment service)

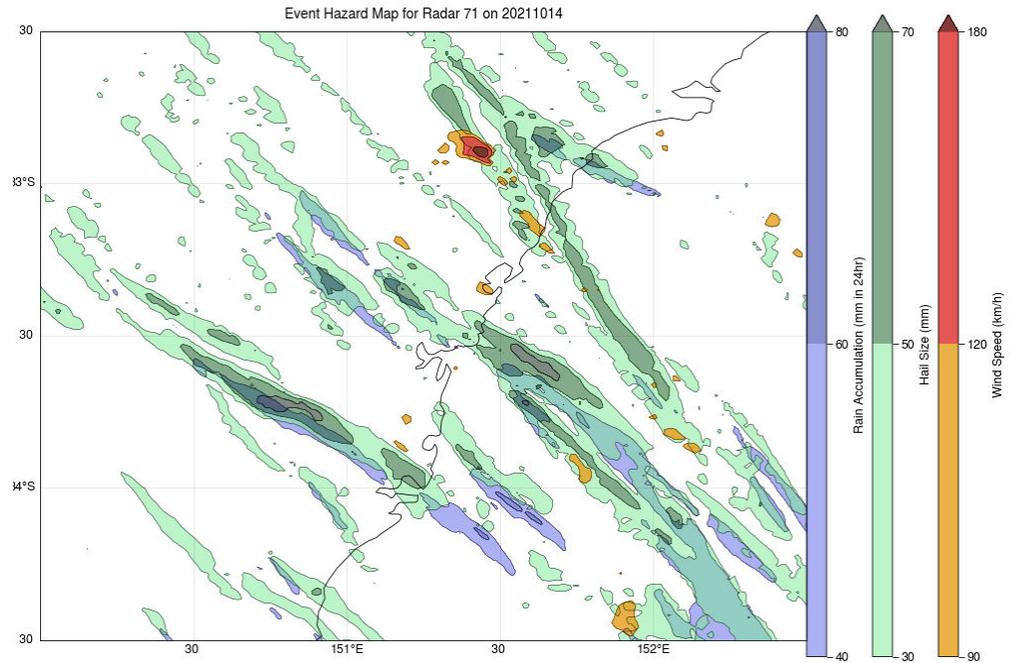
Damage State



Bureau of Meteorology – Thunderstorm Footprint



Forecast of potential thunderstorm footprint (out to 1.5 days) can alert users to potential impact (exposure estimates)



Radar-diagnosed storm hazard footprint for rain, hail and wind (Diagnosis)



Geoscience Australia Capability



Australian Government
Geoscience Australia



Australian Government
Geoscience Australia



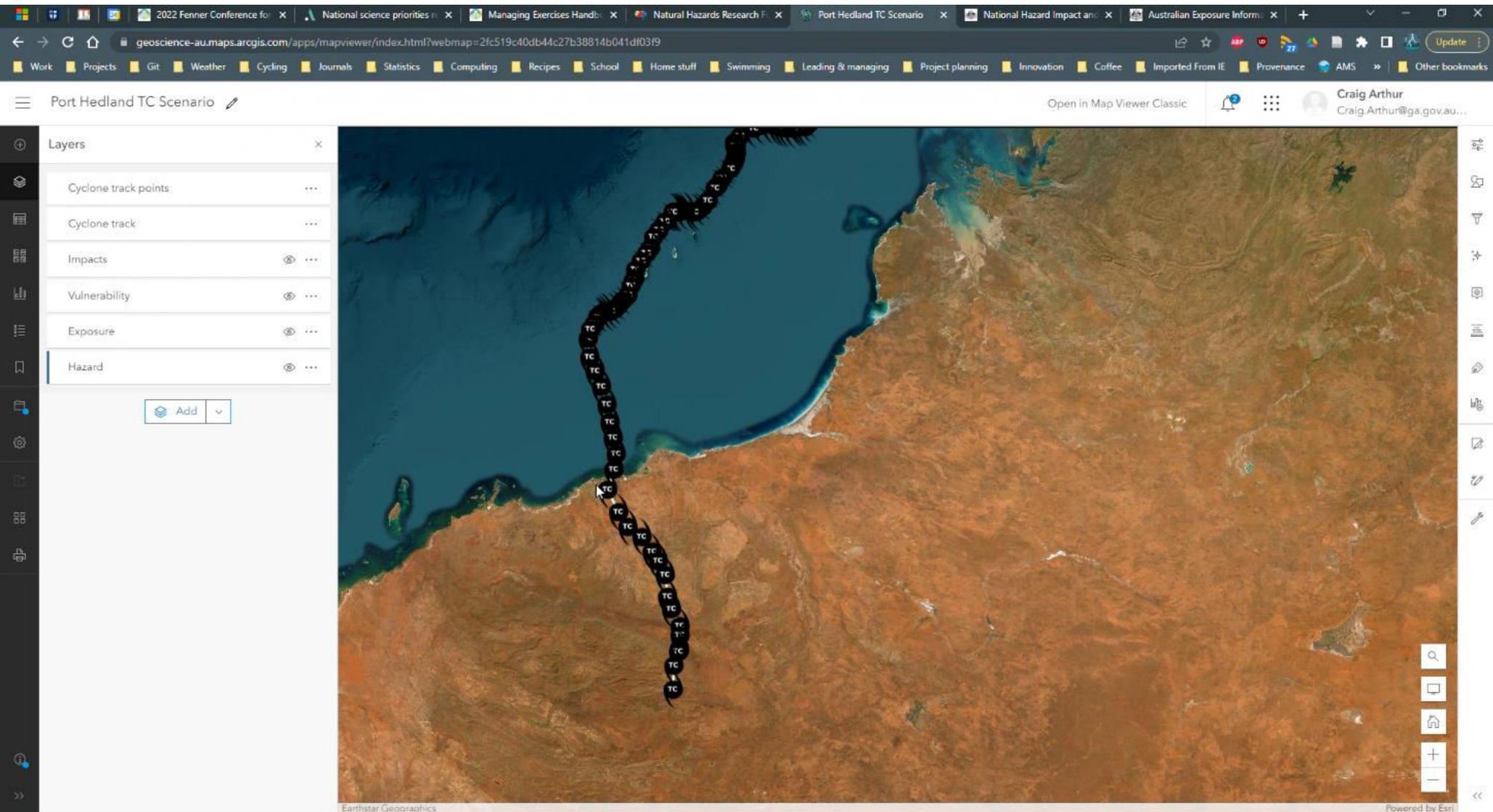
National Hazard Impact and Risk Service ([NHIRS](#))



Australian Government

Geoscience Australia





NHIRS - 1 of 9

2022 Fenner Conference for... National science priorities... Managing Exercises Handb... Natural Hazards Research F... Port Hedland TC Scenario... National Hazard Impact an... Australian Exposure Inform... +

geoscience-au.maps.arcgis.com/apps/mapviewer/index.html?webmap=2fc519c40db44c27b38814b041d103f9

Work Projects Git Weather Cycling Journals Statistics Computing Recipes School Home stuff Swimming Leading & managing Project planning Innovation Coffee Imported From IE Provenance AMS Other bookmarks

Port Hedland TC Scenario

Open in Map Viewer Classic

Craig Arthur
Craig.Arthur@ga.gov.au...

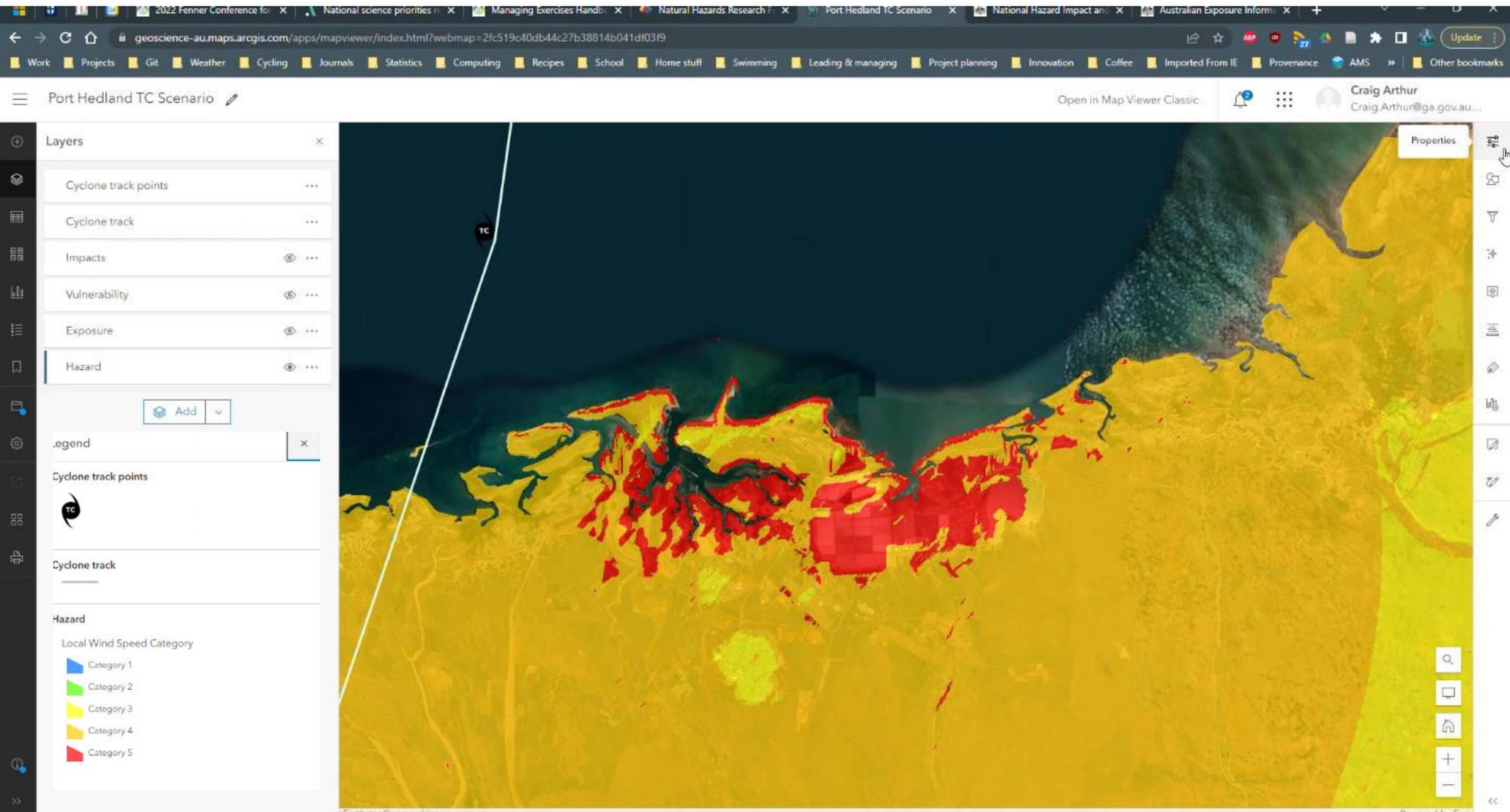
Layers

- Cyclone track points
- Cyclone track
- Impacts
- Vulnerability
- Exposure
- Hazard

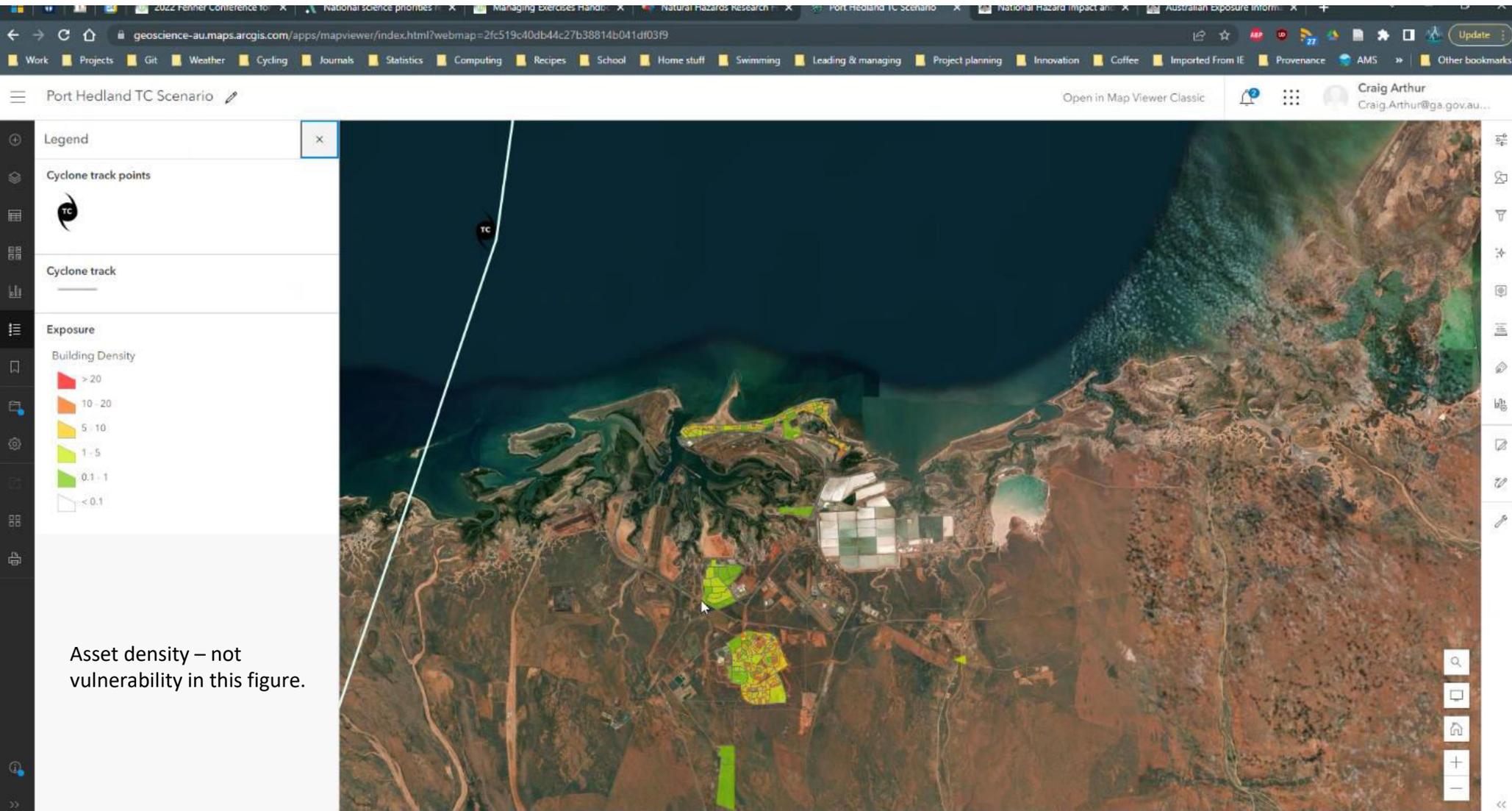
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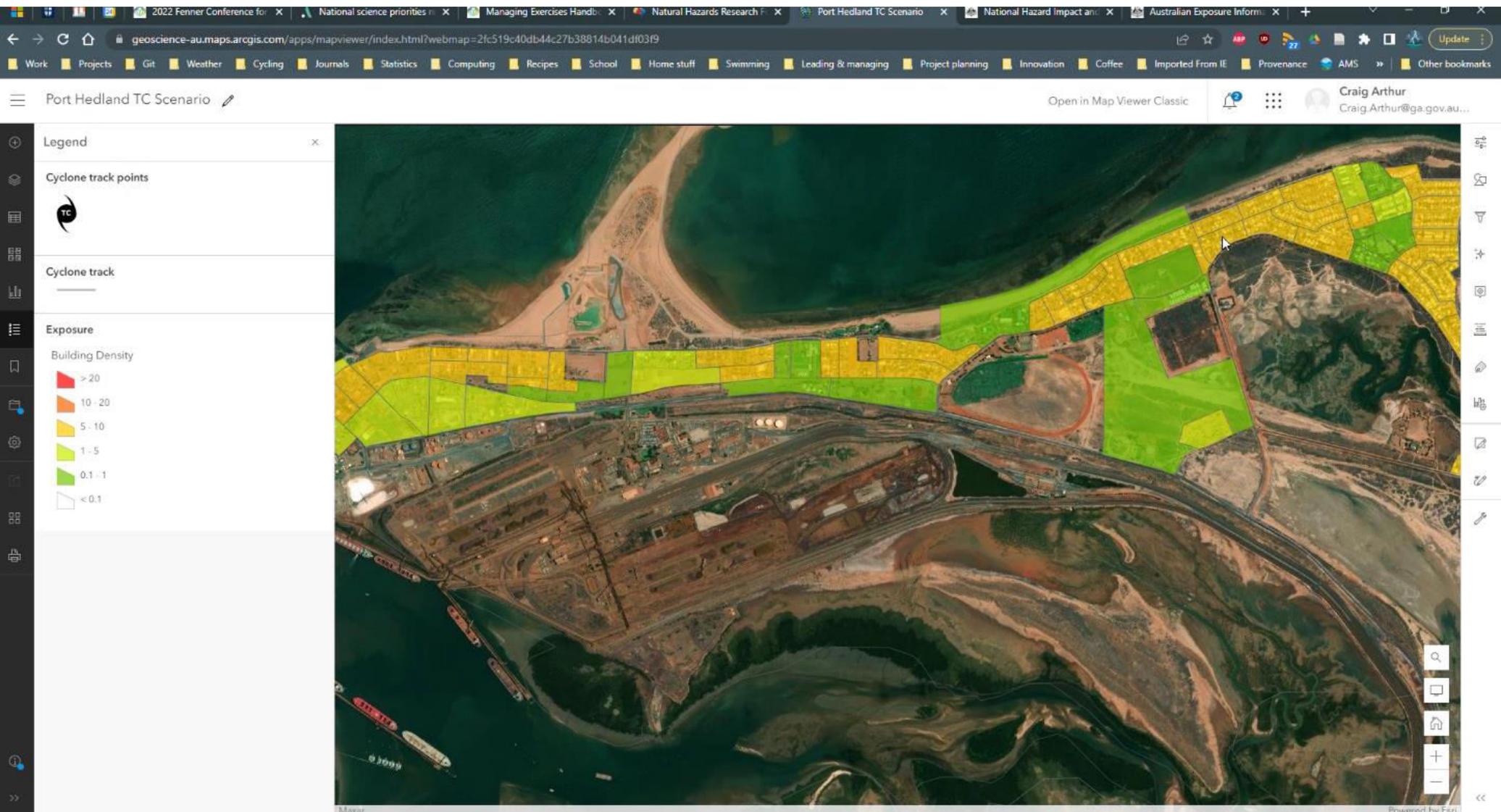
NHIRS - 2 of 9



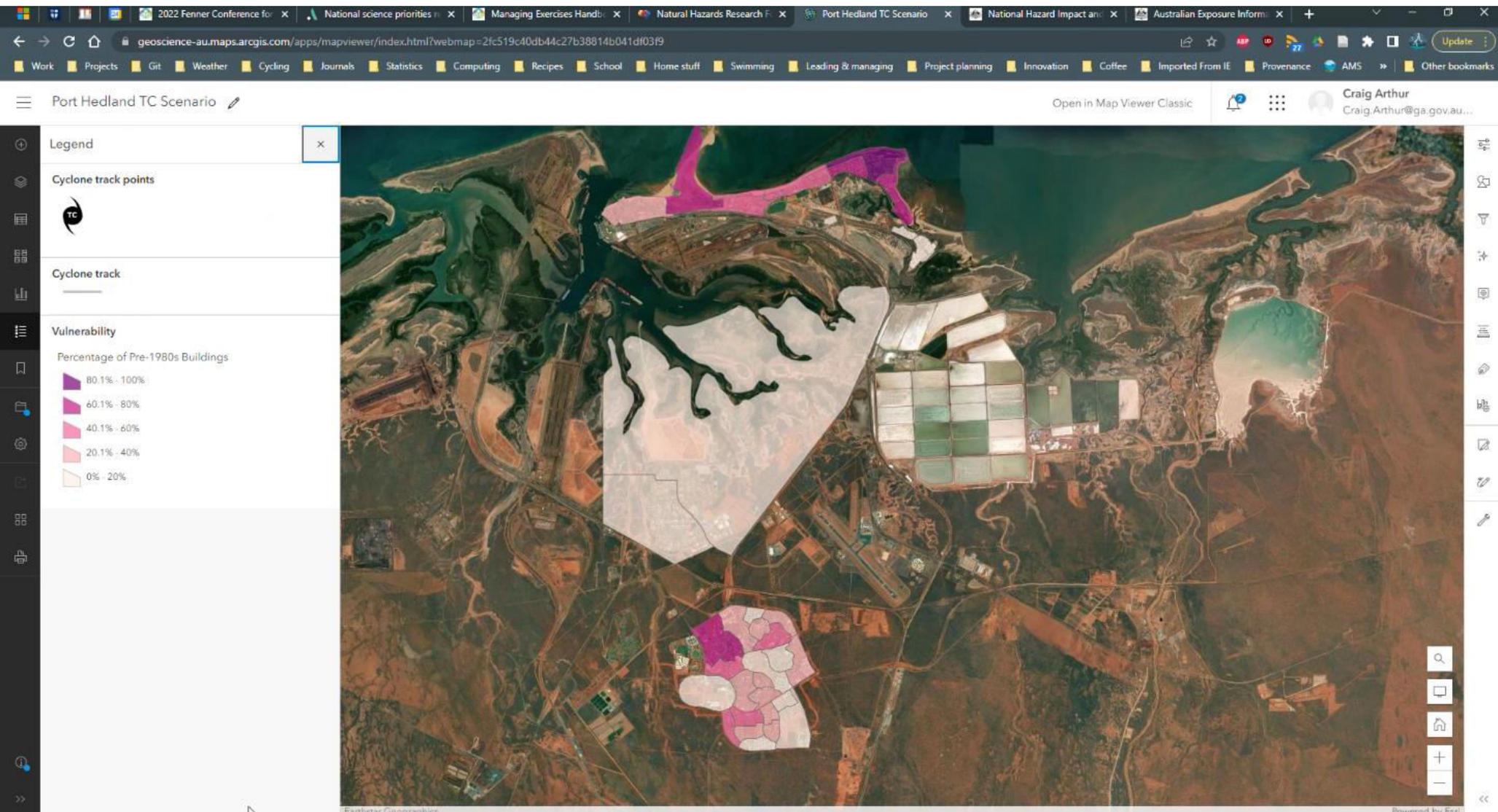
NHIRS - 3 of 9



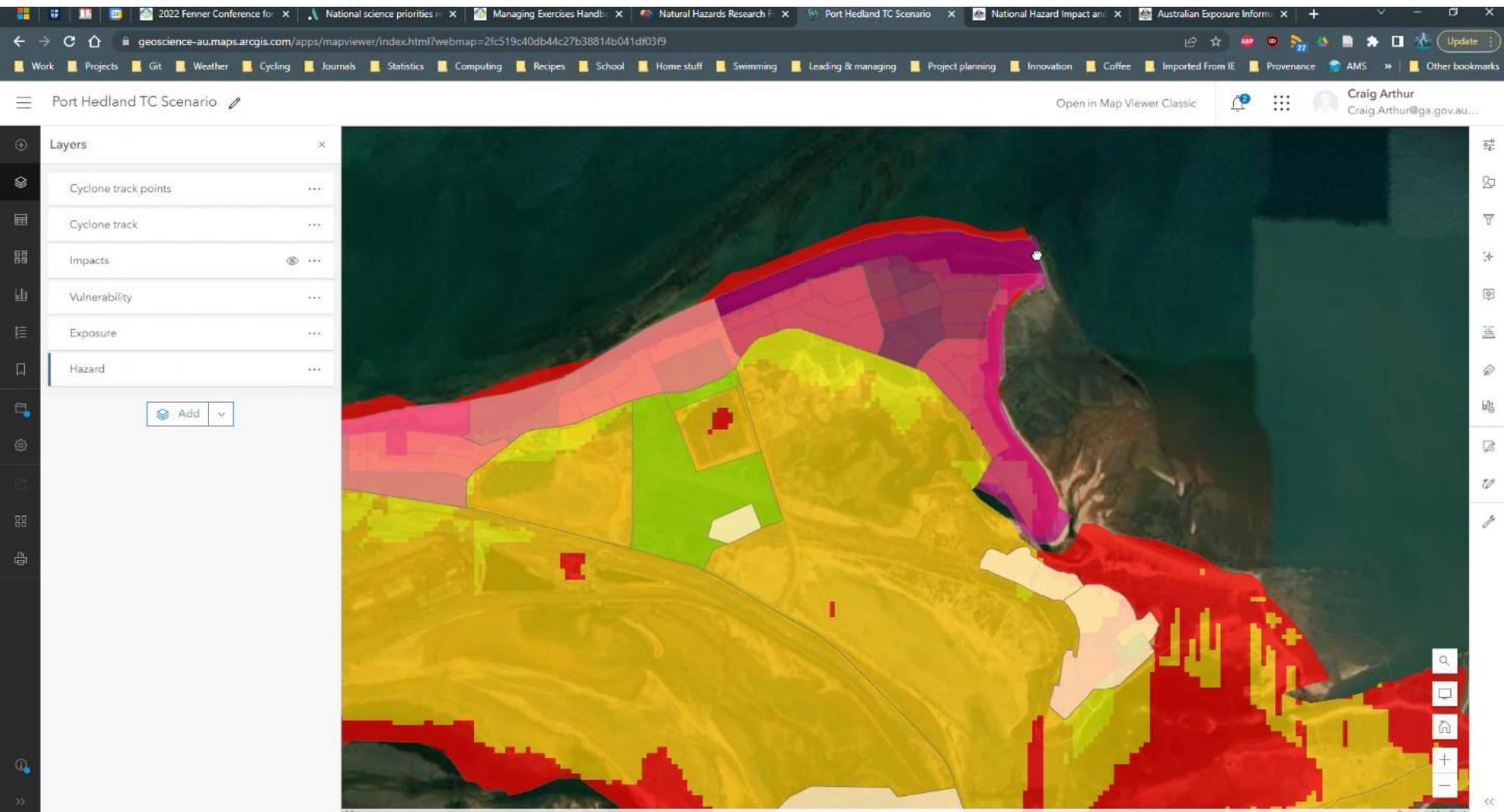
NHRS - 4 of 9



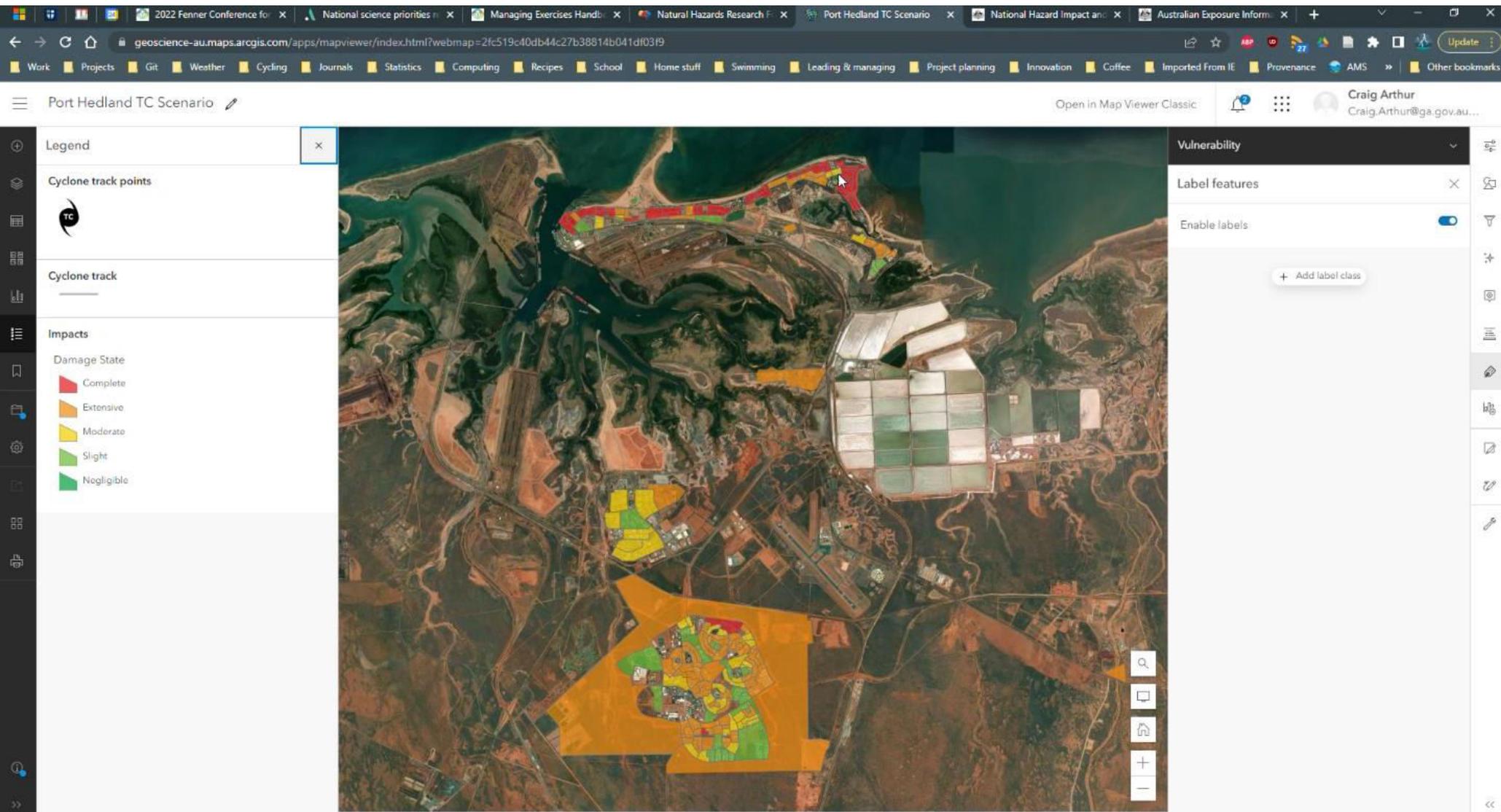
NHRS - 5 of 9



NHRS - 6 of 9



NHRS - 7 of 9



NHIRS - 8 of 9

nhirs.ga.gov.au

Australian Government Geoscience Australia National Hazard Impact and Risk Service

Welcome back, Craig (Logout)

Layers

- Base Maps
- ArcGIS World Imagery
- Tropical Cyclone
 - Latest tropical cyclone event impact information ⓘ
Updated time: 2023-04-14 11:26 UTC
 - Opacity: 83%
 - Recent tropical cyclone event impact information ⓘ
 - Exposure report for tropical cyclone wind impact zones ⓘ
 - Wind impact zone for tropical cyclone ⓘ
- Earthquake
 - Latest earthquake impact information ⓘ
 - All earthquake impact information
 - Exposure report for earthquakes
 - Neotectonic Features ⓘ
- Severe Wind
- ACCESS domain exposure reports

Lon: 122.42, Lat: -21.21

NHIRS - 9 of 9



Research Objectives

What information do decision-makers need?

1. Engage **sector partners** to better understand their **information requirements** for **large scale wind (LSW) impact-based forecasting** and **Severe Thunderstorm (STS) exposure**.
2. Better understand how **modelling outputs can be used to improve decision making**, as well as the **communication and information needs** required by different end-user groups.

How do sector partner information needs inform the technology roadmap?

3. Provide **guidance and direction** for improving severe weather impact-based forecasting, so that impact information is useful, usable and used by the emergency services sector.
4. Provide clarity on the **scientific and technical developments** required to deliver **fit-for-purpose products, services and capabilities**, identify new research opportunities as well as identify opportunities to align or connect with other relevant research activities currently underway.

Questions for sector partners

What decisions do you need to make when you're going to get hit with severe weather?

Consider planning, preparedness, response and recovery

slido Qs 1 and 2

Questions for sector partners

What are you currently using, if anything, to understand the potential impact of severe weather?

slido Q 3

Questions for sector partners

What information do you need about exposed assets to be more confident in your decision-making?

slido Q 4



For more information:

**Sector Partner engagement (user
workshops):**

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Bureau of Meteorology capability

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Geoscience Australia capability

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