

TUTORIAL FOR RISKSCAPE – TSUNAMI IMPACTS AND EXPOSURE VANUATU

RiskScape is a natural hazard impact and risk modelling tool.

This tutorial provides an introduction to the functionality of RiskScape. In this tutorial you will create an exposure analysis for Vanuatu. This scenario is a demonstration only and the results should not be used for decision making.

Contents

1	Overview	2
2	Tsunami Evacuation Exposure and Impact	2
	2.1.Step 1: Load RiskScape and change the coordintate system	2
	2.1.Step 2: Create a scenario to examine building exposure	5
	2.1.Step 3: Run the analysis	9
	2.1.Step 4: View the results	9
	2.1.Step 5: View the per asset results	12
	2.1.Step 6: View the aggregated results	13
	2.1.Step 7: Export the results.....	14

This tutorial has been created for the PARTneR: Pacific Risk Tool for Resilience Advanced training
January 2018

For more information about the tool visit
www.riskscape.org.nz

This tutorial is for demonstration purposes only and the results produced should not inform decision making in any way.

RiskScape v1.0.3. was used to create this tutorial

Date: 12th December 2017

1 Overview

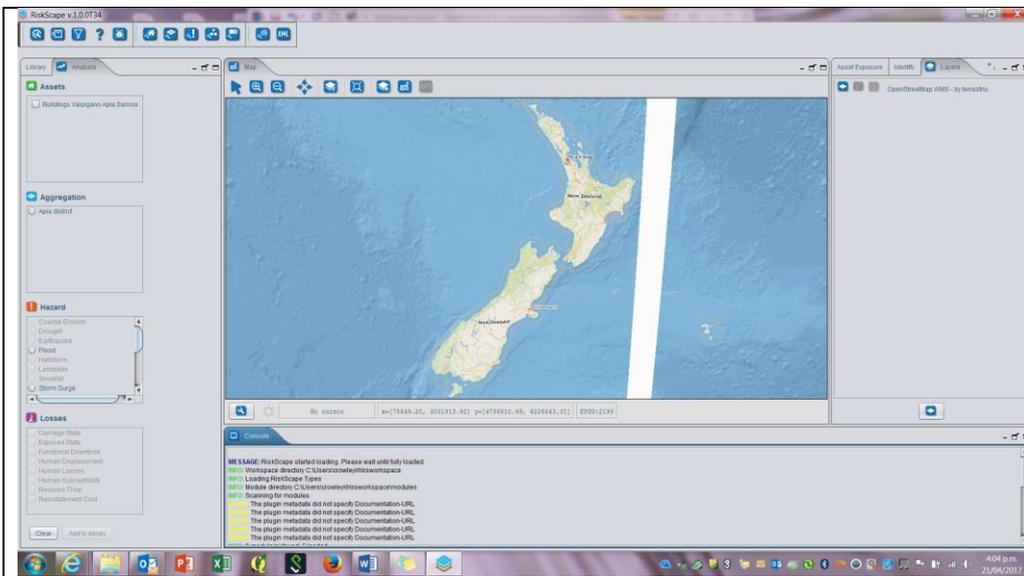
For this tutorial, we will use RiskScape to investigate the tsunami exposure and impact on buildings. This is a fictional tsunami event and the results must not be used in decision making.

This tutorial will show you how to:

- Run a scenario in RiskScape
- Examine different impacts

2 Tsunami Evacuation Exposure and Impact

	 Please make notes
<p>2.1.Step 1: Load RiskScape and change the coordintate system</p> <p>Using the <u>programs menu</u> find and start RiskScape; or double click on the RiskScape icon on your desktop.</p> <p>RiskScape is loading when you see the image below appear on your screen.</p>  <p>The diagram shows the RiskScape logo in the center. Surrounding it are several icons: a bar chart, a diamond grid, a location pin, a house, a lightning bolt, and an exclamation mark. Green arrows point from the diamond grid icon to the bar chart, from the diamond grid icon to the location pin, from the house icon to the diamond grid icon, and from the lightning bolt icon to the house icon. Below the RiskScape logo are the logos for NIWA (Taīhoro Nukurangi) and GNS Science.</p>	
<p>Once RiskScape has loaded, maximise the screen.</p>	

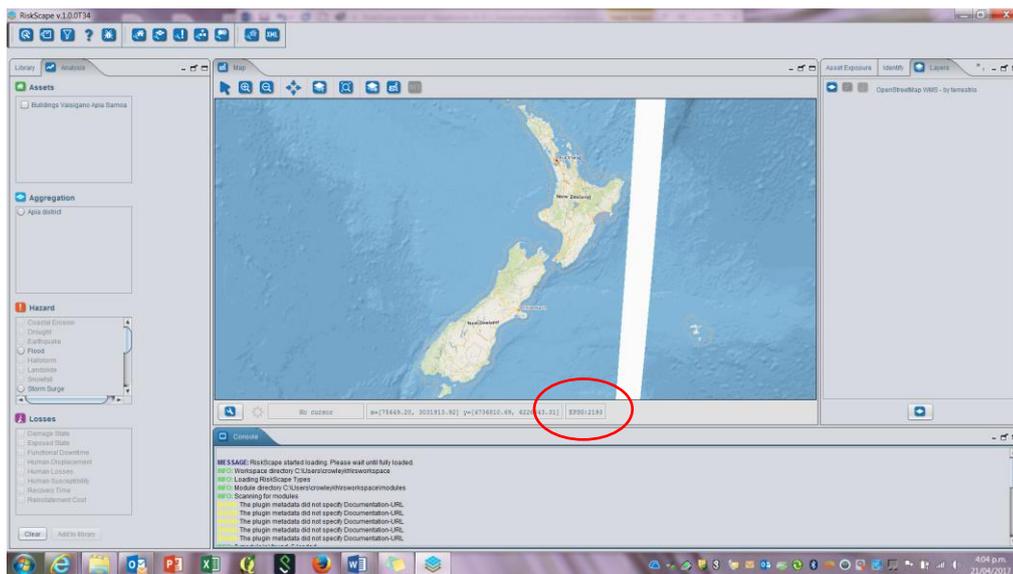


This is what we call the User Interface (UI).

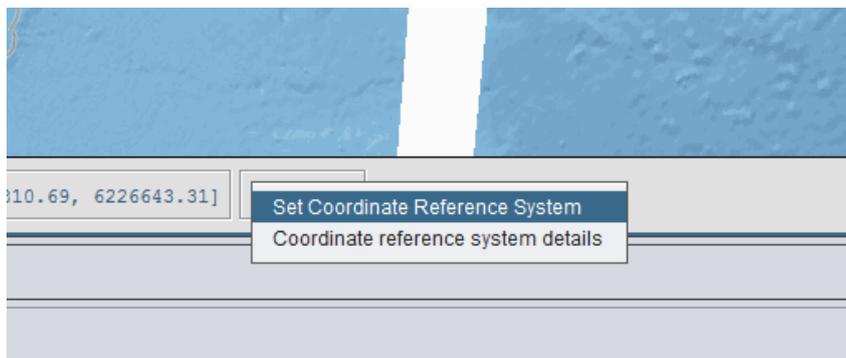
Important

First you need to change the coordinate system for Vanuatu.

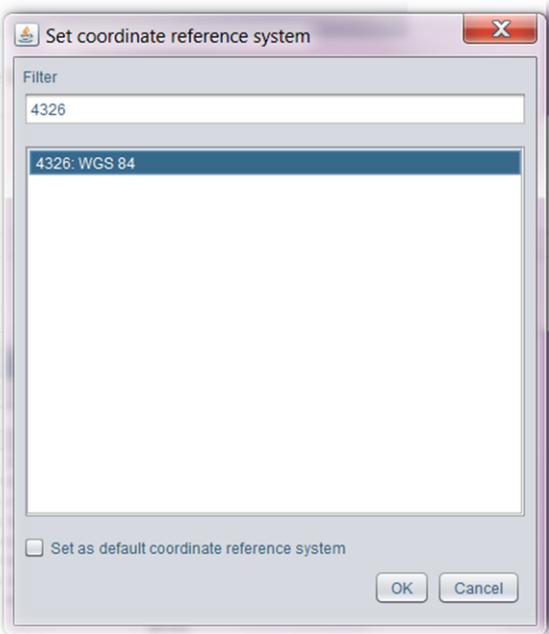
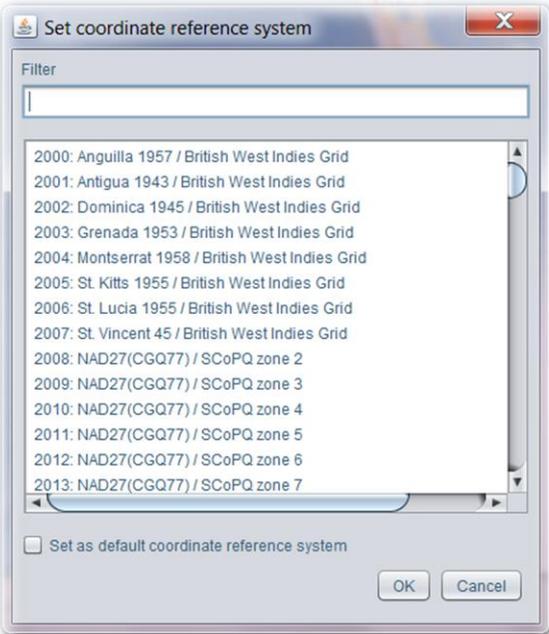
You can do this by clicking coordinate tab (circled).



And select 'Set Coordinate Reference System'.



In the set coordinate reference system filter type: 4326.



Then select **OK**. The background map view may go grey this is normal if your internet connection is slow.

2.1.Step 2: **Create a scenario to examine building exposure**

Select the data layers

In the “Analysis” window of the Analysis and Library Panel, choose the assets, hazard and impacts for the model run.

For this tutorial, we have already loaded the data layers you need.

Select the following layers to create your tsunami exposure scenario:

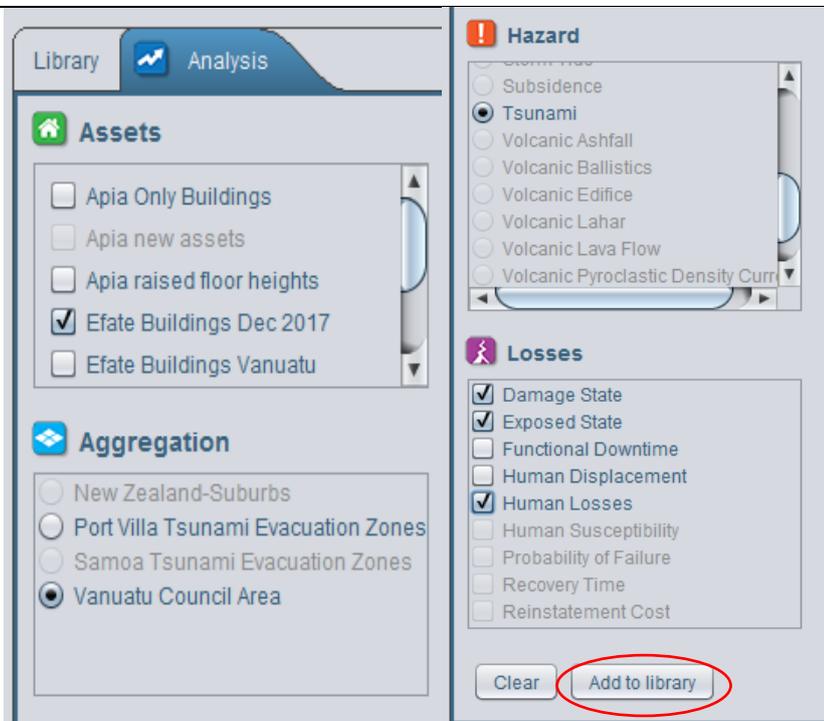
Efate Buildings Dec 2017(Assets),

Vanuatu Council Area (Aggregation),

Tsunami (Hazard),

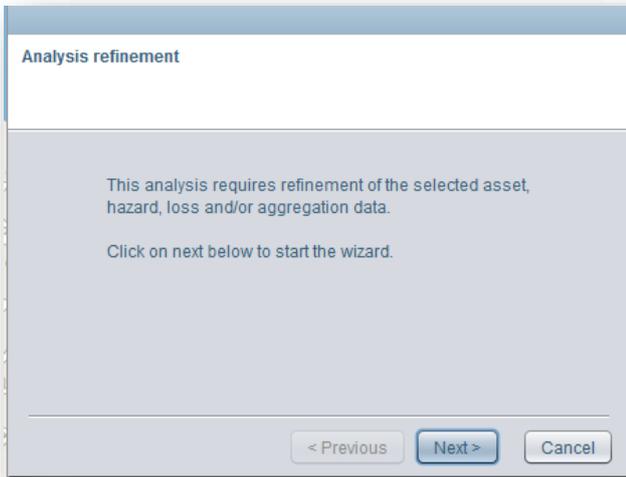
Exposed State, damage state and human losses (Losses).

Add selections to **Library** by clicking on **Add to library** (encircled).



Refine your scenario

Once you click on **Add to library**, the **Analysis Refinement** steps will allow you to refine the scenario.



Click **Next** to proceed

Choose your asset data

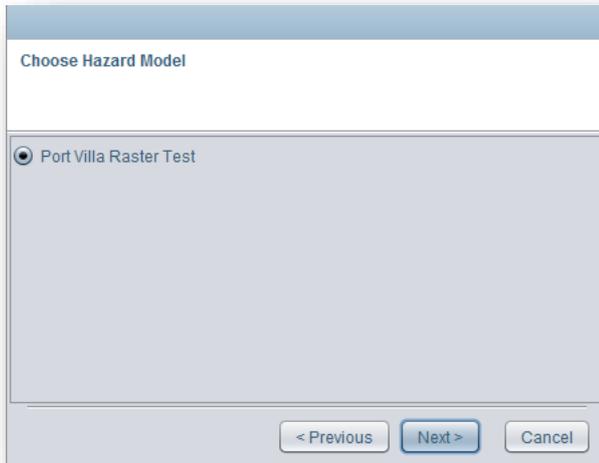
The first model refinement decision select the **Use complete dataset** option. Click **Next**



Choose a hazard layer

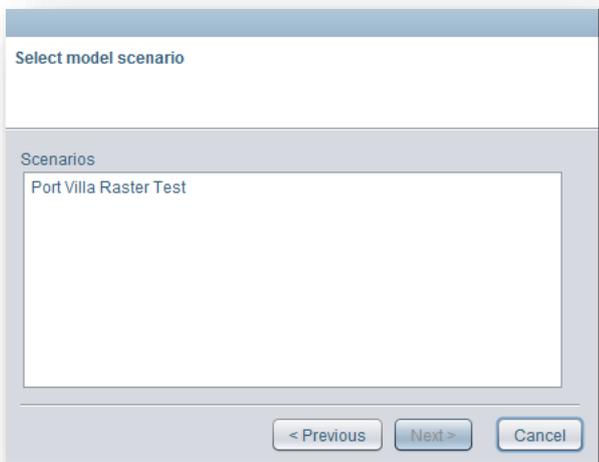
Select the hazard layer available

Select the **Port Vila Raster Test** event and click **Next**



Select model scenario

Select the **Port Vila Raster Test** model and click **Next**

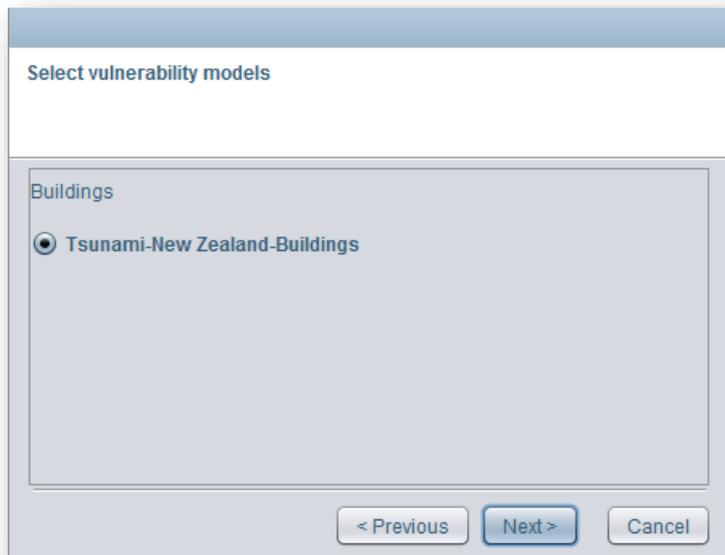


Choose Vulnerability Model(s)

Impacts to buildings can be determined in RiskScape from a vulnerability model that uses a relationship between building damage and tsunami-depth.

Keep the default option and click **Next** to continue.

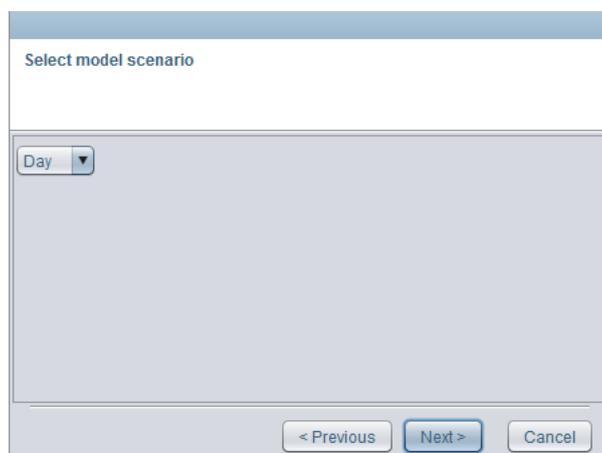
Please note that we are using vulnerability models developed for New Zealand building types.



Click **Next**

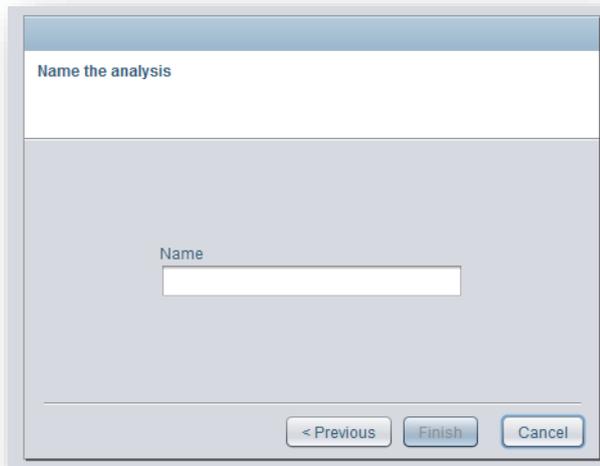
Select day or night

Select if you would like the result for day or night time. This option corresponds to occupancy information for each building and is relevant for human loss estimates.



Name the model

Provide a name for the model run and click **Finish** to continue.



Your new scenario will automatically appear **in the Library**.

All the necessary datasets are now assigned and ready for the model run / analysis. You can check the analysis parameters by right clicking on the scenario name in the Library and selecting Parameters from the drop-down menu.

2.1.Step 3: **Run the analysis**

Find your model run in the **Library** and click on the **Play** button (circled below) to perform the analysis.



After clicking the "Play" button, you can track the progress of the analysis being in the "Console Panel" at the bottom of the UI. It might take a minute or so as the impacts for the run are being calculated.

Once the analysis run is complete you will see the message "Analysis Complete" in the 'Console Panel'

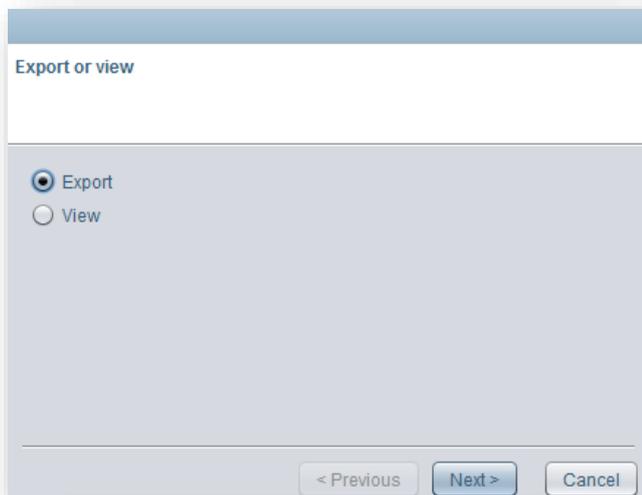
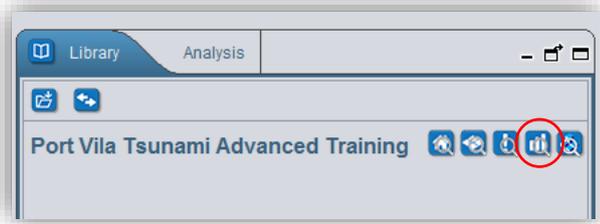


2.1.Step 4: **View the results**

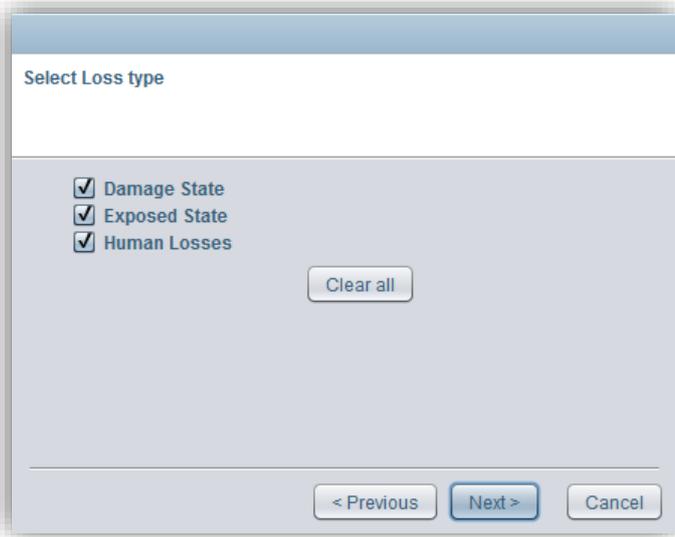
You can now view the data you used to create the scenario and the results. The first three blue icons allow you to view the data used to create the scenario the final two icons allow you to view or export the results of the analysis.

View or Export Exposure Results

To view the results of the analysis, click on the icon 'View or export per-asset loss results' and in the wizard select **View**.



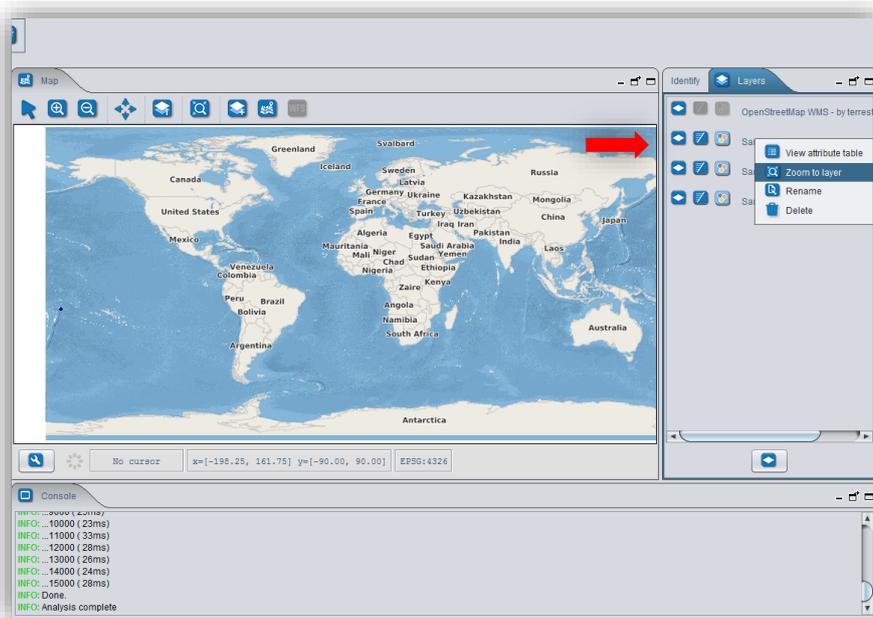
Once you have selected view you can chose the results you wish to view.



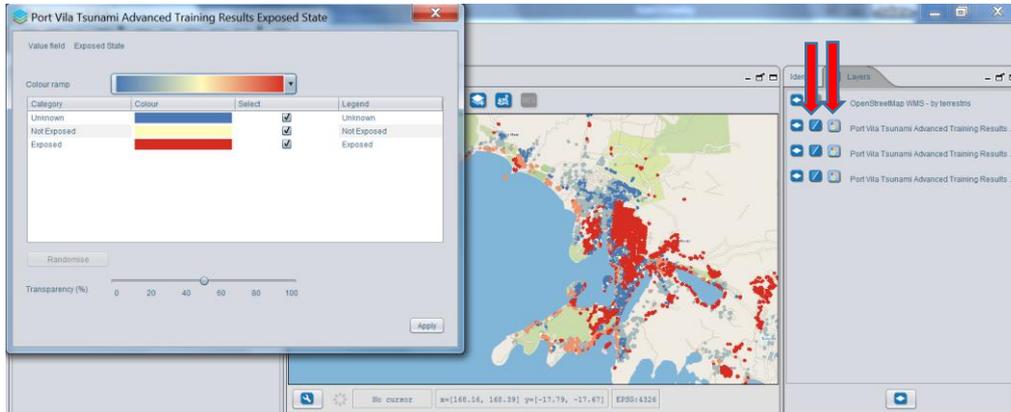
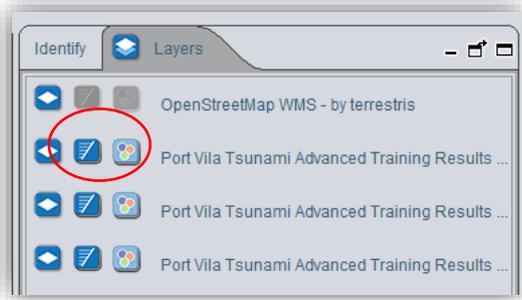
Select the results you wish to view and click **Next**.

The layer will automatically appear in the **Layers Bar**.

Right click on the layer you wish to view and select **zoom to layer**:



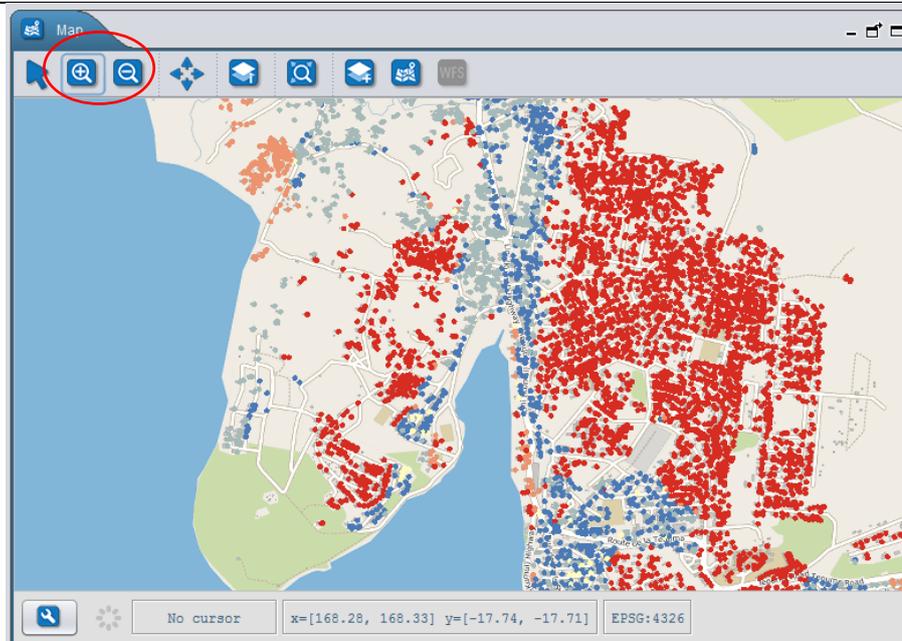
To change the mapped results to a more suitable colour system use the symbology tool



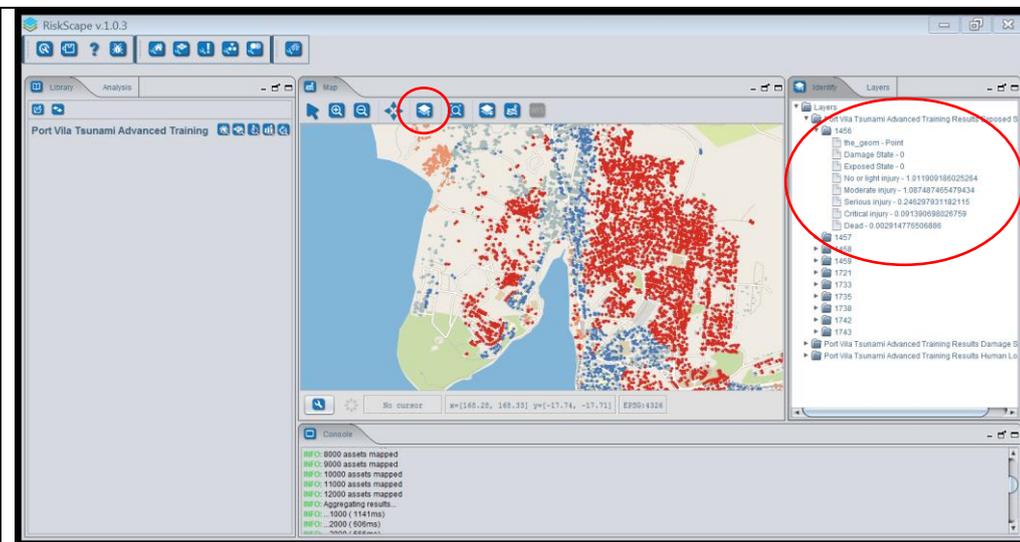
Explore the results in the map view, adjust the symbology for the layers. Export the results and examine the data.

2.1.Step 5: **View the per asset results**

Use the zoom tools to zoom in and see what assets are missing.



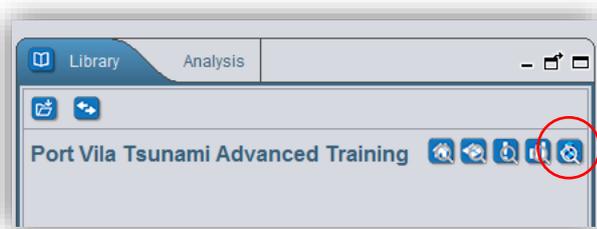
Use the identify tool located along the map view tool bar to select an individual building and examine the impact.



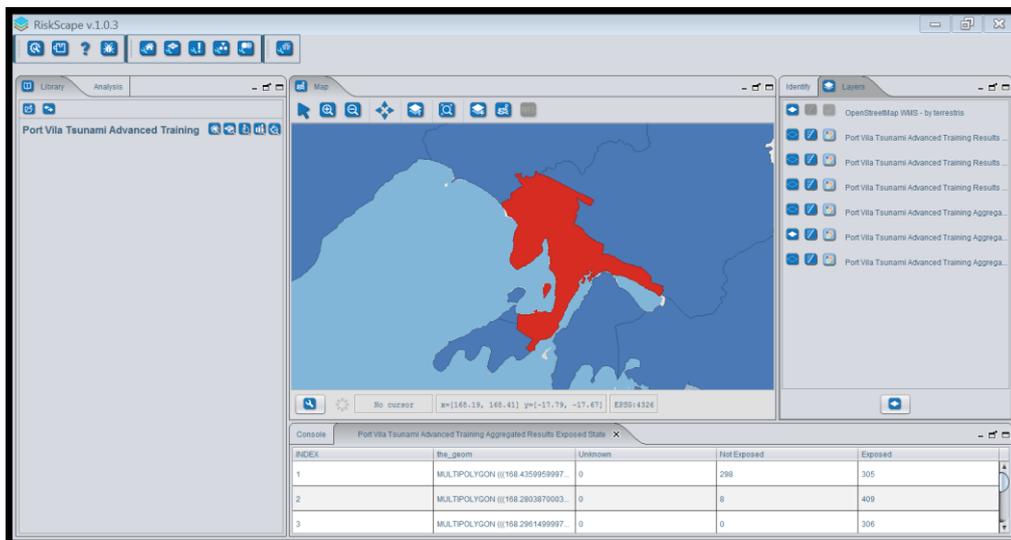
2.1. Step 6: View the aggregated results

You have looked at the per building results but you can also look at the aggregated results.

Select the final blue icon for your scenario located in the Library.



This time select view and you will see that you get the aggregated results for the scenario. Select zoom to layer and you will see the council areas for Vanuatu. Right click on the layer and select view attribute table to see the results per zone.



2.1.Step 7: Export the results

Instead of selecting view, **select export**. Chose the layers you wish to view and then open as a CSV excel spreadsheet.

Select analysis export format

- Comma Separated Value
- ESRI Shapefile
- Google Earth

< Previous Next > Cancel

FID	Asset	Area_Cou	None	Insignifica	Light	Moderate	Severe	Critical	Unknown	Not Expos	Exposed	No or light	Moderate	Serious inj
1	Efate Buildings Dec Eratap		298	0	0	30	275	0	0	298	305	557.76	599.42	135.76
2	Efate Buildings Dec Pango		8	0	0	20	389	0	0	8	409	375.86	403.94	91.48
3	Efate Buildings Dec Ifira		1	0	0	59	246	0	0	0	306	262.5	282.11	63.89
4	Efate Buildings Dec Erakor		417	0	1	123	674	0	0	416	799	1086.74	1167.9	264.51
5	Efate Buildings Dec Malorua		7	0	0	23	159	0	16	7	182	169.39	182.05	41.23
6	Efate Buildings Dec Mele		19	0	0	59	860	0	4	18	920	788.8	847.71	191.99
7	Efate Buildings Dec Port Vila		4232	1	2	509	4002	0	0	4230	4516	7957.48	8551.82	1936.85

Explore the results to see which district would be worst impacted?

This is the end of the tutorial.

Disclaimer:

Certain information in this tutorial was created pursuant to the terms of an End-User License Agreement available on the RiskScape website (<https://riskscape.org.nz/>) using the RiskScape tool owned jointly by National Institute of Water and Atmospheric Research Limited (NIWA) and Institute of Geological and Nuclear Sciences Limited (GNS). While all reasonable effort has been made to ensure that this tutorial is as accurate as practicable, neither NIWA nor GNS nor the other data source organisations can be held responsible for any data, interpretations, conclusions and recommendations contained within the tutorial or for any actions taken based on the tutorial NIWA and GNS and the other data source organisations therefore, to the full extent permitted by

law, exclude liability, including for negligence, for any loss or damage, direct or indirect and howsoever caused resulting from any person's or organisation's use or reliance on this Report, Result, Information.

Please note: This tutorial is for demonstration purposes only and the results produced are not intended to inform natural hazard management decision making.