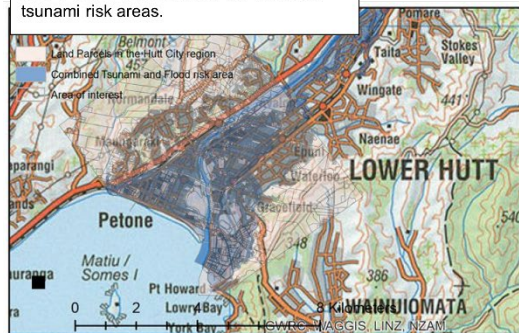


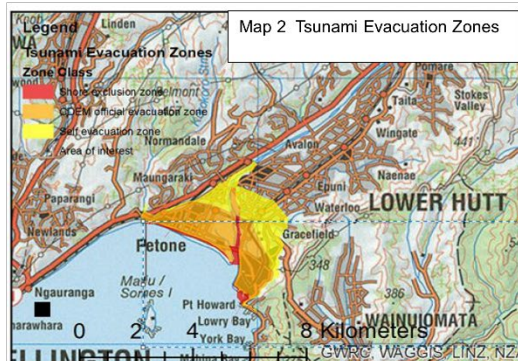
Merit

NZQA Intended for teacher use only

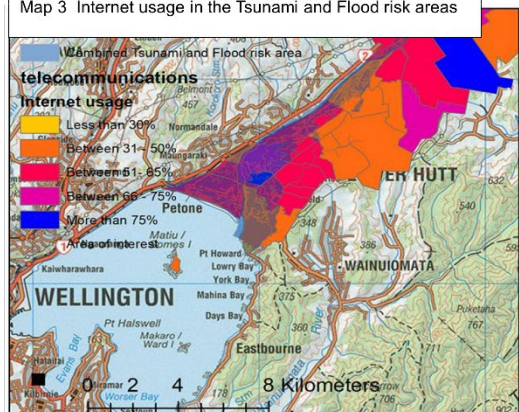
Map 1 Base Map showing the flood and tsunami risk areas.



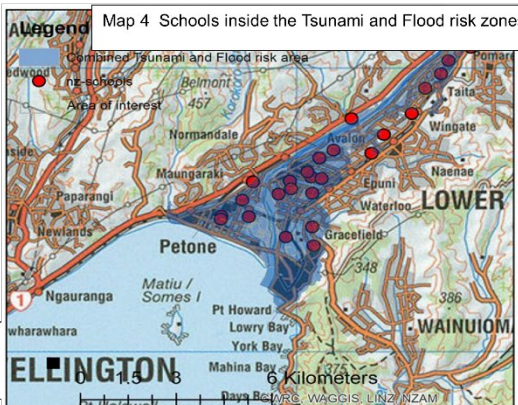
Map 2 Tsunami Evacuation Zones



Map 3 Internet usage in the Tsunami and Flood risk areas

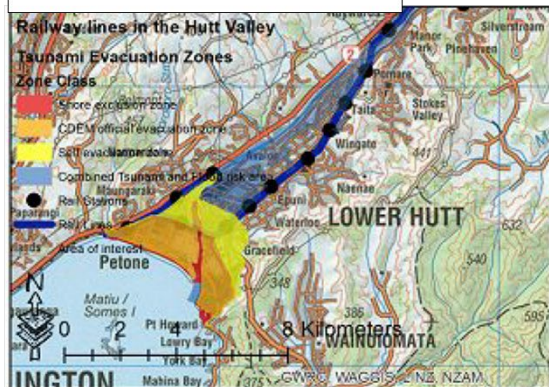


Map 4 Schools inside the Tsunami and Flood risk zones

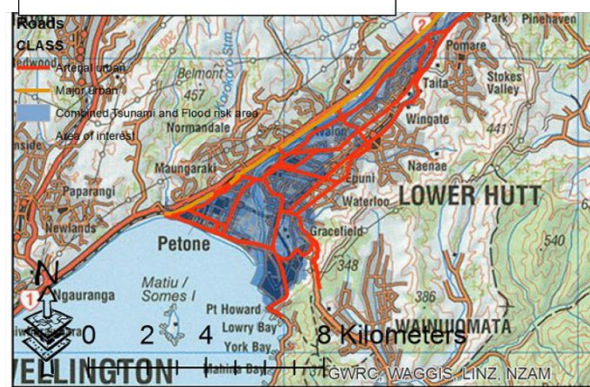


All maps are orientated

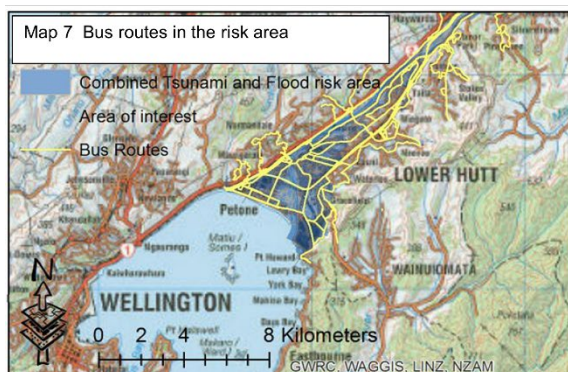
Map 5 Rail lines and stations in the risk area



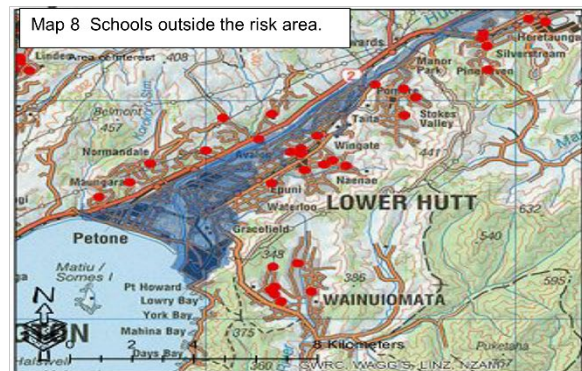
Map 6 Major roads in the risk area



Map 7 Bus routes in the risk area



Map 8 Schools outside the risk area.



Hutt Valley is at risk from flooding both from the river and from a tsunami.

GEOGRAPHIC PROBLEM: How to inform people of the flooding and tsunami risk for the Hutt Valley? Options to consider are

1. A media campaign - using local newspapers and the council website
2. A general mail out with the rate demand
3. An individualised mail out advising each property owner of the specific risks to their property

Map one shows the combined Tsunami and Flood risk area as well as the extent and relief of the study area. I will use this information to analyse the areas that need to be targeted so that we are not using excess money on areas that will not be affected by Flood and Tsunami risk. I preferred to use the combined risk rather than the just the individual risk of just the flood risk or just the tsunami risk as it doesn't show us the full picture. The purpose of the combined flood and tsunami risk is to identify tsunami evacuation zones for civil defence

emergency evacuation purposes and for the development of tsunami evacuation plans and routes for local communities at risk from tsunami inundation.

To create the combined flood and tsunami risk area I had to insert the 440 year flood data and the tsunami evacuation zones data and use the union tool and insert the two data sources into it. This created a union that I named Combined Tsunami and Flood risk area. I then deleted the 440 year flood data and tsunami evacuation zones flood the data frame as the union held their place. I then changed the transparency from 0% to 50% so I could see the area that I was looking at. Also I changed the colour from brown to lapis lazuli as I didn't want it to clash with the basemap which worked out well as you can still see the area's on the basemap.

Map 2 was created because the basemap didn't clearly show the tsunami risk area which has tended to be covered with the flood shading. The red symbolises the highest risk areas to tsunami and these are mainly by the shore as you would expect as well up the river as that is a channel for water to flush through during a tsunami. The orange symbolises the area with the second most amount of risk and yellow is self-evacuation and is the least amount of risk. Using this map with the base map shows the tsunami risk area to be quite densely populated. It has commercial and light industry areas which means there are going to be people coming to the area from places outside of the Tsunami risk area and they need to know how to properly evacuate. I inserted the Tsunami data into a new data frame as well as the Wellington Region Topographic map, then manipulated the Tsunami Zone areas transparency from 0% to 50% as it made it easy to see the area I was surveying. I left the colour scene the same as red, orange and yellow as this is a generally accepted way of showing different types of risk.

These two maps show that the tsunami risk information needs to focus a more targeted group than the flood data which is more extensive. This information will influence my decisions.

Map three relates to the option to use an online campaign focused on the advertising campaign using the council's website. I have created a map showing the internet usage of the Lower Hutt region. This is an important map as it shows us whether having an online media campaign is worth the cost of creating it. As you can see from the map most of the region where there is a combined Flood and Tsunami risk has internet usage of above 50% which means there is a good chance that people in the region will be able to go online and learn about the risks of tsunami. The manipulations I made to the data are that I added a new field to the data the telecommunications data set called internet_1 as using the internet field didn't show up on the map as it was a string type data source. I used the field calculator to copy and paste the string internet data into the internet_1 column and then change the data type from string to integer so that it was possible to see the internet usage of the areas on the map. I changed the colour ramp from purple, dark blue, blue, light blue and white to yellow, orange, dark pink, light pink blue as it didn't clash with either the map or the union. Unfortunately due to the transparency of the union different shades occurred as it went over different colours on the map. I normalised the internet usage from the amount of people with internet access in the area it by the total population of that area as this show's a more true figure that you can compare to other areas. I changed the values of the data ranges from 0-0.2978 to 0-0.3 , 0.2978-0.5204 to 0.31-0.5, 0.5204-0.6472 to 0.51-0.65, 0.6472-0.7568 to 0.66-0.75, 0.7568-0.9167 to 0.76-1 so that the data was cleaner and it makes the report look more professional. I changed the labels from 0.01 to 0.3 to less than 30% from 0.3001 - 0.5000 to Between 30 - 50%, 0.5001 - 0.6500 to Between 51% to 65%, 0.6501 - 0.7500 to Between 66 - 75%, and 0.7501 to 1 to Greater than 75% I was able to do this as if you multiply the original numbers by 100 you get the percentage.

Map 4 shows schools in the flood and tsunami risk areas and most of these have pupils from inside and outside of the risk areas for 8-9 hours per day. This map shows the potential risk if flooding or a tsunami happens during school hours. I examined the regions school data and removed schools outside the combined flood and tsunami risk area. This information was displayed on map 8 using the same manipulations as on map 4. This data could be used by civil defence to select evacuation centres. I changed the symbol from a triangle to a circle as the triangles were hard to see and I also increased the size of the circle from 1 to 10 so it would be easier for the naked eye as well I changed the colour of the circles from blue to orange so that the circles wouldn't clash with the union as the union's colour is a shade of blue.

The next 3 maps (5, 6, and 7) display transport which is important because as the maps show it will be seriously impacted, affecting safe evacuation, aid etc. The train route map (5) shows a good exit route from Petone to Ava to Woburn and then Waterloo as that is the safest route to evacuate. The train stations symbolised as black dots show areas for advertising tsunami and flood information sites as they are major areas where people will be each day. The manipulations that I did to this data were that I added a basemap from Arc Gis online called Wellington Region Topographic as the map we were given called topo_50 only showed the Hutt Valley and did not show the surrounding regions. I added a new coordinate system called NZGD_2000_Transverse_Mercator this was because the old co-ordinate system did not properly show the distance between areas. I then added train line and train station data. Increasing the train lines thickness from 1-4 and the train stations thickness from 1-12 as you could the information. I decreased the transparency

+++++ from 50% to 25% as you could barely see the red of the shore exclusion zone. I kept the colours the same as I believe nothing clashed. I also changed the scale from miles to kilometers as we live in New Zealand and use the metric system.

The manipulations I made to produce map 6 were adding a data source called roads as well as the basemap. From this data I removed footpaths, walking tracks, medium and minor rural roads and arterial rural routes. So I was just left with the arterial urban and the major urban symbolised as orange and red respectively. I changed the scale again from miles to kilometers on each of the transport maps. Similar manipulations were made to display bus routes (map 7). I thought buses like trains would be useful places to advertise how to get data flood and tsunami information. I changed the data shown from many unique categories to a single category as there were too many bus routes shown on the map and I wasn't looking to show these different bus routes just where the bus routes were. I changed the colour from orange to bright yellow as the orange clashed with the basemap roads and you couldn't tell where the bus routes were.

SOLUTION TO THE GEOGRAPHIC PROBLEM.

I believe that the best way we could supply information to people is using a media campaign (newspapers and the council website). The data shows that most areas inside of the combined flood and tsunami risk area have at least 50% of people with access to the internet and people who do not have access to the internet generally read the paper, so all bases are covered.

Supplying information to schools is also very important. Learning about the tsunami and flood risks and passing this information onto their parents and families.

We can also include advertising on bus and train routes as a high amount of people will see and have constant reminders of the risk of flooding and tsunami. I don't like the option of

sending it out with the council rates as people will throw the information away as well as the fact that the information doesn't go to people who are renting.

The individualised mail out is good especially to target the tsunami risk area and provide posters for workplaces. Advertising is a constant reminder of the real threat of tsunami and flood risk. However it is easily thrown away by people as junk mail so might not be worth the effort required to implement it.