Explaining the manipulations in detail… After collecting data the next thing that I did was to geocode the data in my survey using ArcMap and ArcCatalog and the files from the TCC. I created layers using the information that I collected … I did the geocoding by adding the excel table to my map in ArcMap and then using the right click menu instructing the software to geocode the information using the address locator. It then turned my data into points in my map which allowed me to easily see this data in map form (1). I did this process several times and geocoded the different modes of transport, one into each layer. I made each layer a different colour I then used the information to create layers to show visually how many students drove to school and from where. I also created layers to show (2) ….. This can be seen in Map 3 on my layout. I did this so that I could turn the different layers on and off and see how many people lived where. My results showed that 53% of students drive to school, 23% come on the bus, 8% walked, 4% cycled and 12% got to school in another way. A strength of this manipulation is that real data can be used. A weakness is that if data is entered incorrectly it won't be shown on the layout. The next thing I did was to create 2 buffer zones around the school to show which areas around the school were within walking distance of the school and thereby show which students in my survey who drove to school could have walked instead. I did this by creating a new shape file in ArcCatalog and ensuring that I was using the correct projection (3). Once I had created this file I was able to add it to my map of Tauranga in ArcMap. Once this was added I used the editor tool to create a 2km buffer around the school to show … I followed the same process to create a 3km buffer to show which students …

The last thing I did was to look at the layers that I created and count how many students who drive could in fact walk or cycle to school. I did this by looking at the legend on Map 4 to see which students who drove to school fell into the 2km buffer zone and could in fact walk to school. It showed me that 24 students fell into this category. I did the same thing by looking at my 3km buffer to see how many students could walk rather than drive. The results showed me that 10 students fell into this category. A strength of this method is that you can visually see who lives where. A weakness is that some houses are on the boundary of the zones so it can be confusing (4).

Proposing a solution to a geographic problem

From the results of my analysis, I see that there is definitely a shortage of parking at our school. 53% of students drive to school (graph 2) and require parking, but Table 1, one can see that of the 188 parking spaces, 186 and 170 spaces were occupied at 8:45am and 2:00pm respectively. There are both staff and students who use these parking spaces and from Image 1, you can see the location of the different car parks and also shows the limited space for the creation of new parking areas. Street car parks were occupied all day, and A Block was near full all day, and J Block was in fact overfull at 8:45am with students parking on the grass (5).

A solution to this problem could be for students to apply for a parking permit and receiving one would be determined by strict criteria. This would make it possible to monitor the use of car parks and reduce the number of cars trying to park at school (6)… The criteria could be that students who live within 3km of school cannot get a permit. From Map 4 on my layout, you can see that this criteria would have a big impact as there are 24 students who drive to school but they could walk as they live close enough to the school. There are also 10 students who drive to school who could cycle to school (7)… By enforcing these permits, these students are not hindered from getting to school as

they have another option of getting to school. Structuring the criteria so that the people with no alternative way to get to school and those living the furthest away have first option to a permit…

An alternative to this solution could be introducing a fee where student' would rent a car park. Charging students for the permit would also reduce the number of students who wish to park at school as many of the surveyed students lived on a bus route so could take this as it is cheaper than paying for parking (8). Again these students would still be able to get to school, and it would reduce the pressure on the parking at school… An added advantage of this option is that the money earned could be used to upgrade the facilities… A weakness of this solution is that students who don't have an alternative way of getting to school would be seriously disadvantaged…