Location: Tauranga Girls' College is located in Tauranga on the North Island of New Zealand. **Latitude** is 37° 44' 42"S; **Longitude** is 176°08'38"E with an elevation of 20 metres.

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Map 1: Tauranga, North Is. NZ

Note: Maps and co-ordinates clearly show spatial location

Map2: Tauranga and surrounds

Image 1 - location of the five parking areas on campus.... Table 1 shows, there are 188 parking spaces available...

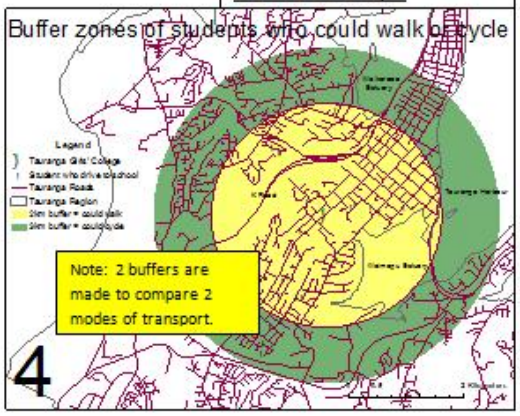
Note – Image is annotated and shaded to show study area.

Image 1: Google maps image showing existing parking areas at TGC

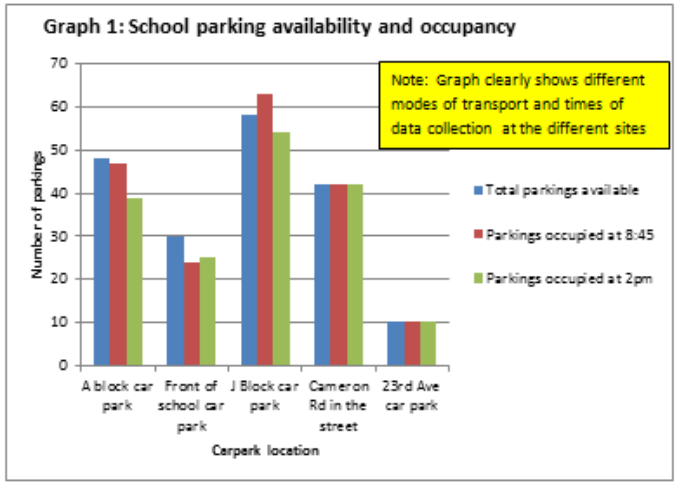
Table 1: Parking occupancy at TGC

	Number of parkings available	Occupied parkings at 8:45	Occupied parkings at 2pm
A block (1)	48	47	39
Front of school (2)	30	24	25
J block (3)	58	53 (+10 in grass)	50 (+4 on grass)
Cameron Rd in front of school (4)	42	42	42
23rd Ave outside K block (5)	10	10	10
Totals	188	186	170

Map 3 – Buffer Zones of students who could walk or cycle



Note: 2 buffers are made to compare 2 modes of transport.

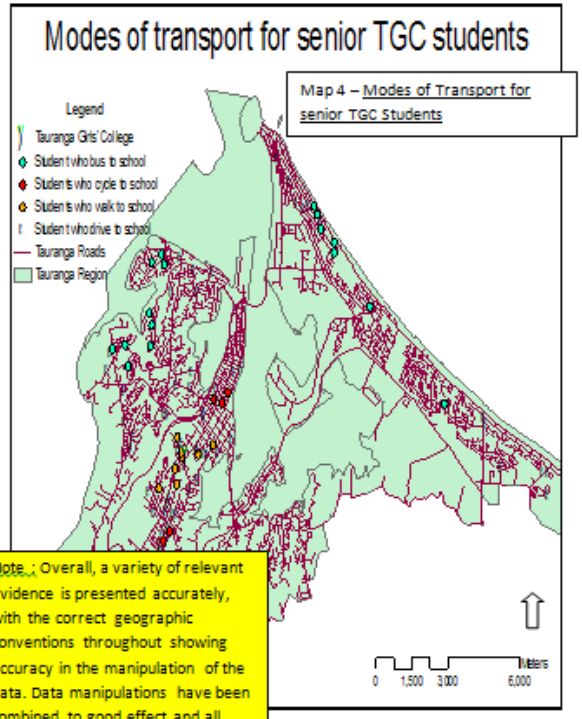


Note: Graph clearly shows different modes of transport and times of data collection at the different sites

Graph 1 shows occupancy of the 5 parking areas at TGC is high throughout the day. Both street parking areas were full at both counts. A block and front of school were near full, with only 1 bay free in A Block at 8:45am and 9 at 2:00pm. ..

J Block parking was over full with 10 students parked on the grass.

This graph highlights the shortage of parking and the need for a solution.



Map 4 – Modes of Transport for senior TGC Students

Note : Overall, a variety of relevant evidence is presented accurately, with the correct geographic conventions throughout showing accuracy in the manipulation of the data. Data manipulations have been combined to good effect and all relate to the problem. The findings of the manipulations are explained in detail.

Map 4

Is a spatial representation of the different modes of transport that senior students use to get to school. From the map one can see that while the school is located in the suburb of Gate Pa, students come to the school from different suburbs around the city as represented by the different coloured dots.

The majority of students drive to school (blue dots), while other ...

From this map one can see that there are many students who drive to school who live close to the school and could possibly walk...

This manipulation is key in suggesting a solution that encourages students who drive to find another mode or transport and reduce the pressure on existing parking areas.

Explaining manipulations

There were many manipulations that I did in order to analyse the problem of parking at school. I used ArcMap and ArcCatalog to geocode the data from TCC and from my surveys...

I created layers using the information that I collected about how senior students get to school, by putting their addresses into an Excel table. I did the geocoding by adding the Excel table to my map in ArcMap and then using the address locator it turned my data into points in my map, see map 4. This manipulation made it possible for me to see where students lived and compare distances (2). This process was repeated several times for 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. It was now possible to turn the layers on and off separately…

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. A solution to this problem could be for students to apply for a parking permit with strict criteria. This would immediately reduce the number of cars trying to park at school, as only a set number of permits would be allocated… The criteria would relate to the distance students lived from the school (3). Students who live within 3km of school cannot get a permit. From Map 4 on my layout, you can see that 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. The distance from school could vary with the number of applicants for parking permits; this would make it possible to regulate the distance by the number of parks available in any year…

An alternative is to ban students from parking at school with the exception of those students who have no alternative way of getting there. This is quite similar to the solution proposed as the criteria can be such that only selected students are eligible (4). The school could use and idea like carless days, where certain people can bring a car on stipulated days, this was more people would have the option to bring a car…