Willowbank School Transport Assessment

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Quality Assurance Information

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Date issued	Status	Approved by
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8 October 2021	Draft	Kate Brill
21 October 2021	Draft	Kate Brill
12 November 2021	Final	Kate Brill
10 January 2022	Revised with inclusions from AC/AT feedback	Kate Brill

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1. Introduction

Abley has been commissioned by Ministry of Education (MoE) to provide a transport assessment for the full masterplan build of the existing Willowbank School, located at 56 Middlefield Drive in Dannemora.

Willowbank School has a roll cap in the designation conditions to restrict the roll to 540 students, with the ability to expand up to 700 students for a maximum of three years. The school currently has a roll of over 800 students with a masterplan roll of 900 students. However, for the purpose of sensitivity testing and adopting a conservative approach, we have assumed a student roll of 1,000 students for the transport assessment.

The purpose of the Transport Assessment is to understand the transport issues currently facing the school and address the requirements needed to ensure the roll cap can be removed.

The location of the site is shown in **Figure 1.1** below.

Figure 1.1 Site Location

1.1 Consultation and Engagement

Engagement has been undertaken with Auckland Council (AC), Auckland Transport (AT) and the neighbouring properties adjacent to the school. A summary of the engagement with neighbouring properties is provided in Appendix C of this report.

Auckland Council and Auckland Transport requested further information in regard to the initial lodged notice of requirement documentation, as outlined in the table in Appendix D. Abley have revised the Transport Assessment report to incorporate the additional information. A response to the matters raised by AC and AT is provided in Appendix D.

2. Existing site

The existing school has 32 teaching spaces / classrooms. Willowbank School is a primary school catering for Years 0 - 6 with an existing student roll of just over 800 students. The school roll was 809 students when the parking surveys for this report were undertaken. It should be noted that the surveys were undertaken during Alert Level 1 when traffic levels were unlikely to be affected by Covid-19 restrictions.

2.1 Existing car parking

There are 63 parking spaces on the existing site spread across two parking areas, the staff car park at the northern end of the site and the pickup drop off area at the front (western boundary) of the school.

The staff car park, as shown in **Figure 2.1**, has a total of 50 parking spaces including two mobility parks. Entry to the staff car park is via an entry only access on Middlefield Drive, with an exit only onto Middlefield Drive at the southern access. The accesses are restricted to left in, left out only with No Right Turns on both access points at school start and finish times (8.30-9.30am and 2.30-3.30pm).

Figure 2.1 Staff car park

The car park at the front of the school, along the western boundary of the site, shares the same accesses as the staff car park off Middlefield Drive, as shown on **Figure 2.2**. The front car park has a total of 13 parking spaces which consist of 7 pick up/ drop off spaces, 4 staff parks, 1 visitor park and a further space used by the school minivan.

Figure 2.3 Front car park / PUDO area

At the time of writing this report, the school had chosen to close off the front car park to caregivers picking up and dropping off their children. The car park was initially closed off due to 2020 Covid-19 alert levels, however the school chose to not reopen the PUDO area for the following reasons:

- Some drivers would drive at speed through the PUDO car park causing a safety concern

- Reports of aggressive behaviour from drivers
- Limited space for children to wait for pick up resulting in children spilling out into the parking / traffic lanes
- Caregivers arriving late to the school to pick up children, presumably due to the children being safely waiting within the school grounds. This puts extra pressure on teacher resource.
- A queue for the PUDO would sometimes form on Middlefield Drive. Through traffic would overtake on the pedestrian crossing to bypass the queue.

Design measures have been proposed for the PUDO area to help mitigate the current issues. These are discussed later in the report.

2.2 Travel Plan Results / Modal share

The students of Willowbank school currently undertake annual travel surveys as part of the Travelwise programme. Results from the 2020 travel survey were acquired from the school and summarised below. Staff are not included in the travel survey.

Figure 2.4 shows how students travelled to and from school in 2020. Approximately half the students travelled by family car with 52% arriving by car in the mornings and 47% in the afternoons. A further 19% of the students travelled to school by way of Park and Walk (Car/Walk) which is an initiative supported by the Travelwise programme which encourages caregivers to drop their children at a safe location at least 400m away from the school. This initiative reduces the number of cars outside the school gate and encourages walking even for a short distance.

Walking is a popular option at Willowbank with 26% walking to school and a significantly higher 33% walking home in the afternoons. Biking and scootering to school is very low with only one student recorded as biking to school. The number of students scootering to school however may be misrepresented in the survey and may have been counted as pedestrians. This is sometimes dependant on how the teacher asks the question within the classroom.

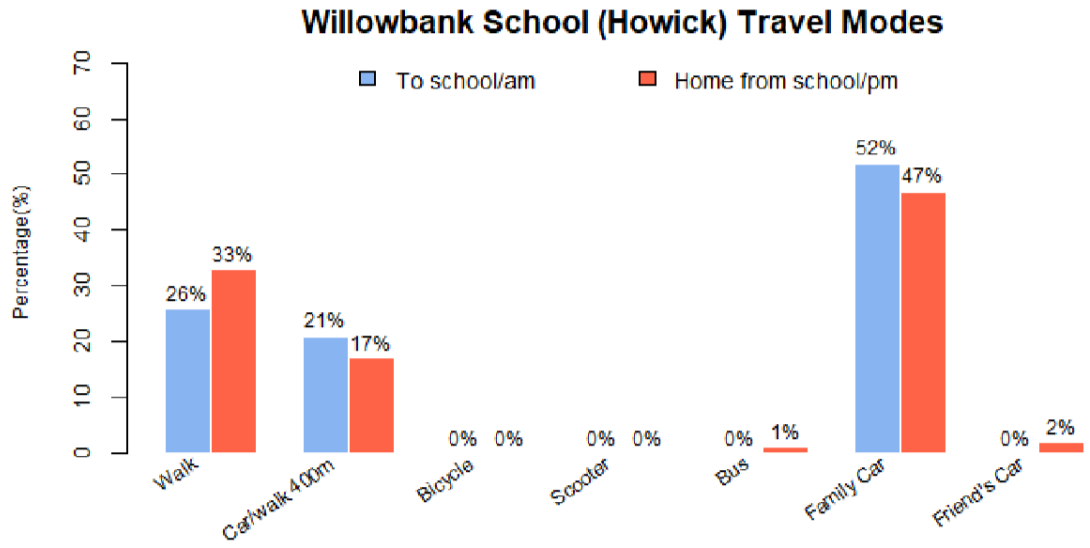

Figure 2.4 Travel Survey Results 2020

Vehicle access

The access points on Middlefield Drive have a width of 6 metres (northern access) and 5.2 metres (southern access). The crossings are relatively wide for one-way traffic flow.

The accesses are restricted to left in, left out movements only. No right turns are permitted into or out of either access point at school start and finish times (8.30-9.30am and 2.30-3.30pm). The introduction of the right turn bans was to prevent queues forming outside the school. The right turn bans are unlikely to present problems as the adjacent roundabouts on either side of the school frontage can facilitate turning movements.

The southern access where vehicles are exiting the school site experiences good sight lines. The Road Traffic Standards Part 6 *Guidelines for visibility at driveways* (RTS 6) requires 40m of sight distance for a high-volume vehicle crossing with frontage onto a road with a speed limit of 50km/hr. Sight distance in excess of 40m is achieved from the southern access, in both directions. Sight lines for the northern access is not a consideration as it is entry only.

2.3 Loading

Delivery and waste collection vehicles currently access the school site via Middlefield Drive, with rubbish collection occurring in the main staff car park. It is understood deliveries utilise the PUDO area where vehicles enter and exit via Middlefield Drive.

The loading arrangement is likely to remain the same for Stage 1 of the school build where the car park arrangement will continue to operate as it does currently. This will be confirmed at Outline Plan of Works (OPW) stage as it is a detailed matter.

The future stages of school expansion (for the Masterplan build) are still to be finalised. Detail such as trucks manoeuvring on-site will be determined at OPW stage. However, it is expected that trucks will be able to manoeuvre on-site to ensure minimal reversing on-site and ability to exit the site in a forward direction.

2.4 Pedestrian access at the school gate

Pedestrians and cyclists access the school at three access points, indicated by yellow arrows in **Figure 2.5**. The two on-street pedestrian crossings are circled in white. The pedestrian access points are described in more detail below:

Northern pedestrian access on Middlefield Drive

The pedestrian access at the north-west boundary of the site is off Middlefield Drive. There is a gate approximately 2m wide with the path widening further onsite to approximately 3m wide. There is a pedestrian zebra crossing on Middlefield Drive leading into this access, with a further crossing on-site to provide a safe crossing point across the vehicle lane into the staff car park.

Surveys showed high volumes of students use this access in both the mornings and afternoons, crossing at the patrolled zebra crossing on Middlefield Drive.

Southern pedestrian access on Middlefield Drive

The pedestrian access at the southern boundary of the site on Middlefield Drive is approximately 1.5m wide. There is a level difference between the footpath and the vehicle lane which provides some protection for pedestrians, however the internal path exits onto the vehicle crossing with no separation between pedestrians and vehicles. Very few students use this access.

Gracechurch Drive pedestrian access

There is an existing pedestrian path at the eastern boundary of the site, off Gracechurch Drive, which is positioned directly adjacent to the Kea Crossing on Gracechurch Drive which is patrolled in the mornings and afternoons. The path is approximately 1.3m wide and has steps at the northern end of the path leading down towards the school. A high volume of school students use this path in the mornings and afternoons.

Figure 2.5 Pedestrian access

2.5 Cycle Parking

There are currently approximately ten cycle stands at the school, with ample room to extend the cycle racks when demand grows.

The travel survey results indicate that there is a low uptake in cycling to school, with only one student recorded as cycling. It is understood that the school does not encourage students from Years 0-5 to cycle unless they are accompanied by an adult. The low cycle modal share should be taken into consideration when assessing requirement for future cycle racks.

2.6 Pedestrian/Cycle infrastructure on surrounding road network

The school zone extends approximately 1.5km north to south, and approximately 3km from west to east, as shown in **Figure 2.6**. There are two main arterial roads running north to south through the school zone, namely Chapel Road and Te Irirangi Road. Both of the arterial roads have safe crossing points for children residing in the eastern side of the school zone. Te Irirangi Road has a signalised pedestrian crossing at the northern end of the zone and a pedestrian overbridge at the southern end. Chapel Road also has signalised pedestrian crossing points at the northern and southern end of the zone.

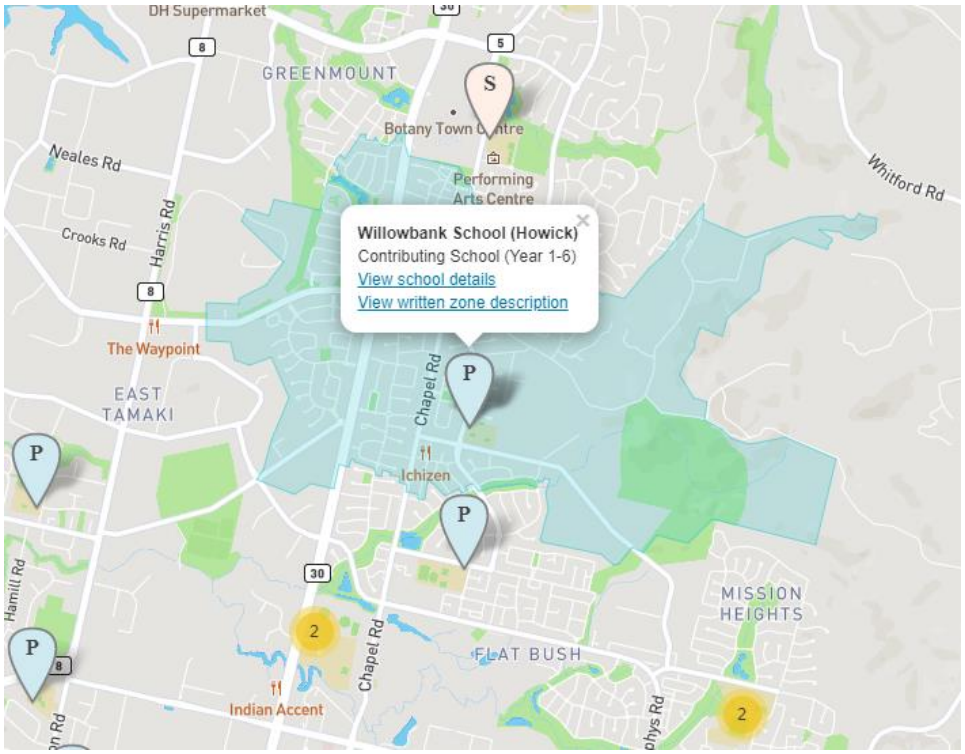

Figure 2.6 Willowbank School Zone

There are footpaths on the majority of the roads within the school zone, allowing for students to walk or scooter from all areas of the zone. The school frontage roads have safe crossing points with a zebra pedestrian crossing on Middlefield Drive and a Kea Crossing on Gracechurch Drive, both of which are patrolled at school start and finish times. The Middlefield Drive / Gracechurch Drive roundabout has pedestrian refuges in the traffic islands on all four legs, however crossing at the roundabout should not be necessary where the majority of the students can cross at the school patrolled crossing points.

On-road cycle lanes are provided on Chapel Road, however these are unprotected and not considered appropriate for school aged children. There are no cycle facilities on the local roads surrounding the school as they are generally low speed environments with low traffic volumes.

In summary, the infrastructure on the surrounding road network caters for students walking and scootering to school, with footpaths on both sides of the road and safe crossing points. There are no cycle facilities in the area, however cycling at primary schools (years 0-6) is generally not encouraged. The low rate of cycling at Willowbank School is not expected to be a result of the lack of cycle infrastructure, more likely due to cycling not an encouraged mode of transport for primary aged children.

2.7 Public Transport

The school site is well serviced by public transport. Chapel Road has frequent bus services that link Botany Bus Station with Manukau Transport Interchange, with bus stops around 300 metres from the school. There is also a bus route which passes the school (route 355) which travels between Botany and Manukau transport interchanges as seen in **Figure 2.7.**

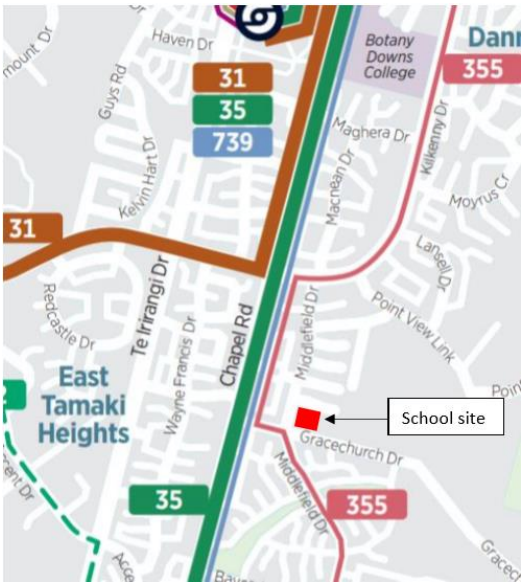

Figure 2.7 Public Transport Routes in vicinity to the school

2.8 Crash History

To understand the existing safety performance of the road network in the vicinity of the school, crashes that were recorded within the last five years (2016 – 2020 inclusive) were obtained through the Waka Kotahi Crash Analysis System (CAS) database. The extent of the crash search area is shown in **Figure 2.8**. A total of eight crashes were recorded, of which four crashes resulted in no injuries, three crashes resulted in minor injuries, and one crash resulted in a serious injury.

Four crashes occurred at the Gracechurch / Middlefield Drive roundabout with the cause of all four related to vehicles failing to give way to oncoming traffic. Two crashes involved adult cyclists, one a motorcycle and the remaining crash was between two vehicles.

The remaining four crashes each involved a vehicle travelling too far left and hitting a parked vehicle, with two occurences on Gracechurch Drive and two on Middlefield Drive. The only crash that occurred during school hours on a weekday was at 3.15pm where a northbound vehicle hit a parked car outside the school frontage. The accident is not considered to be related to the school as other crashes of a similar nature are recorded outside of school hours.

The crash history is relatively low and typical of the local road network in Auckland. The CAS report is provided in Appendix B.

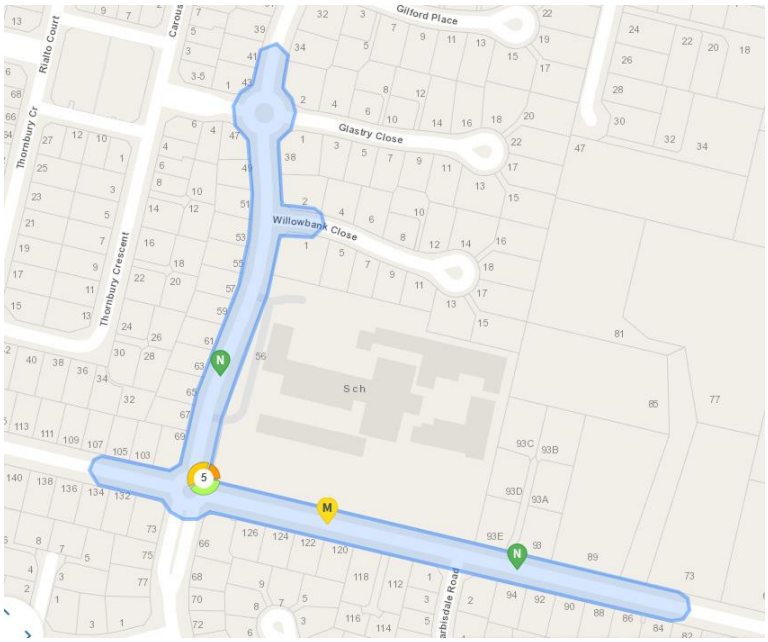

Figure 2.8 Crash Search Area

3. Drone Surveys

Video footage using a drone was used to collect parking, traffic and observational data on the streets surrounding the school, during school start and finish times. The following datasets were collected:

- Parking demand and capacity (on-site and on-street)
- Pedestrian demand at access points; and
- Capacity at nearby intersections;

3.1 Parking Surveys

On Tuesday 8 December 2020, video footage using a drone was undertaken to collect parking data on the surrounding streets of Willowbank School, during school start and finish times. The weather on the survey day was fine and dry.

Footage was taken at the times given below to capture school traffic at school start and finish times; with additional footage taken outside of the peak times for comparative purposes. The school bell for Willowbank School rings at 8.50am in the mornings and 3pm in the afternoons. Students are recommended to arrive between 8.30-8.45am for the 8.50 bell.

Video survey times:

Morning: 8:30 – 8:50am, then again at 9.15am for a comparative dataset.

Afternoon: 2:55 – 3:15pm, then again at 3.30pm for a comparative dataset.

3.2 Extent of School Parking (On-street)

Video surveys were taken during the peak school start and finish times, and then again outside of the peak times. The two datasets were analysed to understand which parking areas on the surrounding streets were affected by school traffic. The results differed for the morning and afternoon peaks.

The on-site Pick up Drop off (PUDO) zone was not open at time of the surveys, with all pick up and drop off of students occurring on-street. All on-street parking in vicinity of the school is unrestricted.

In the mornings, school traffic primarily relied on the on-street parking on Gracechurch Drive and Middlefield Drive with some spilling over onto the cul-de-sacs closest to the school, as seen in **Figure 3.1.** The parking zones are labelled A – E which correspond to the parking zones provided in the survey results in Appendix A.

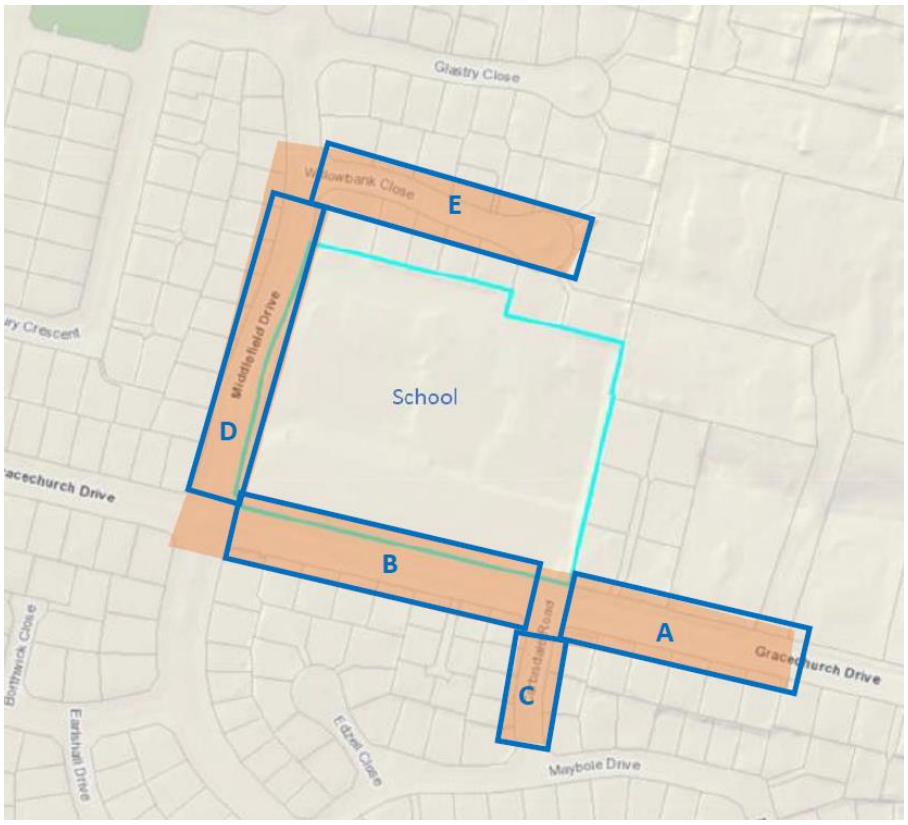

Figure 3.1 Extent of school traffic parking in mornings

The extent of the parking used by school traffic extends slightly further in the afternoons, as seen in **Figure 3.2**. The area extends to the Gracechurch Drive, west of Middlefield Drive, further north on Middlefield Drive and includes several cul-de-sacs. The parking zones are labelled A – J which correspond to the parking zones provided in the survey results in Appendix A.

Figure 3.2 Extent of school traffic parking in afternoons

3.3 On-street Parking Occupancy

The extent of school parking in proximity to the school is limited to the local streets surrounding the school. The most highly utilised area is the 13 marked car parks on the northern side of Gracechurch Drive, along the school frontage. This effectively operates as a dedicated pick up and drop off zone for the school, with a safe route directly into the school with no need to cross any roads. The parking at this location appears to only be used by school traffic.

Parking Occupancy at school start time (Mornings)

Parking occupancy surveys were taken from 8.30am – 8.50am, with school starting at 8.50am. Students are encouraged to arrive to school from 8.30am.

On-street parking occupancy in the school morning peak averaged below 65% for the extent of the drop off period, as shown in **Figure 3.3.** Drop off occurred relatively consistently between 8.30 – 8.50am, with a busier period between 8.30-8.40am averaging between 52-63% occupancy.

For the purposes of comparison, parking occupancy was surveyed again at 9.15am on the same day, after school drop off had finished. During this time, the parking occupancy on the same streets represented during school peak averaged 29% parking occupancy. This is expected as school demand eases off.

Observation surveys indicated very few or no vehicles parking on no stopping lines or blocking driveways in the morning peak. There reflects the capacity available in the morning peak.

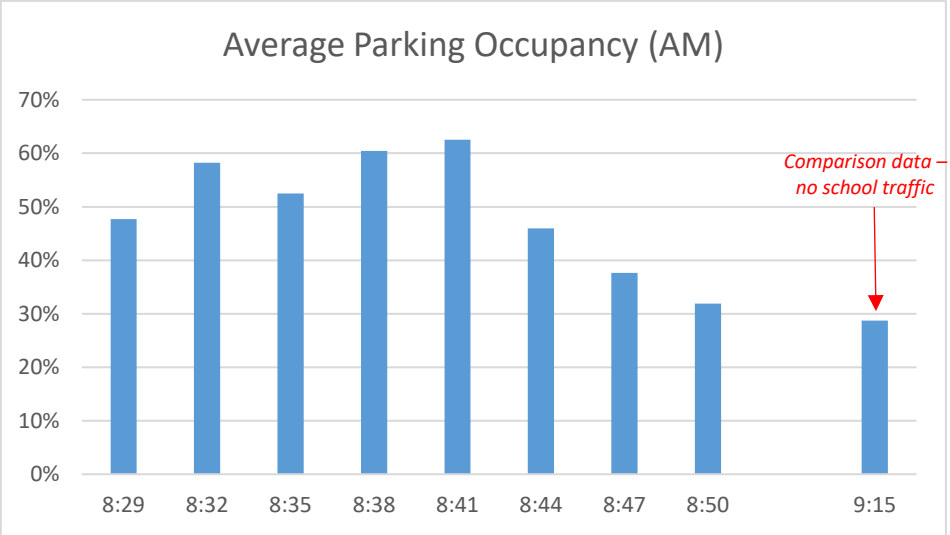

Figure 3.3 AM On-street Parking Occupancy

Parking Occupancy at school finish time (Afternoons)

Parking occupancy surveys were taken from 2.55pm – 3.15pm, with the school bell ringing at 3.00pm for all students.

Parking occupancy within 200 metres of the school in the afternoon peak averaged between 70-80% in the peak of the drop off period, as shown in **Figure 3.4**. The demand tapered off to under 50% occupancy around 7-10 minutes after the bell rang. Parking along the school frontage on both Gracechurch Drive and Middlefield Drive experienced 100% occupancy prior to the school bell at 3:00. However, there was capacity at the peak time slightly further afield on Middlefield Drive and Gracechurch Drive and on the surrounding cul-de-sacs, still within 200m of the school.

For the purposes of comparison, parking occupancy was surveyed again at 3.30pm on the same day, after school pick up had finished, with an average parking occupancy of 18%. This is expected as school demand eases off.

Observation surveys indicated a very small number of vehicles stopping on no stopping lines outside the school, mainly on Gracechurch Drive. When this occurred, it was a minor infringement with one or two vehicles on either end of the marked parking spaces. No safety concerns were observed.

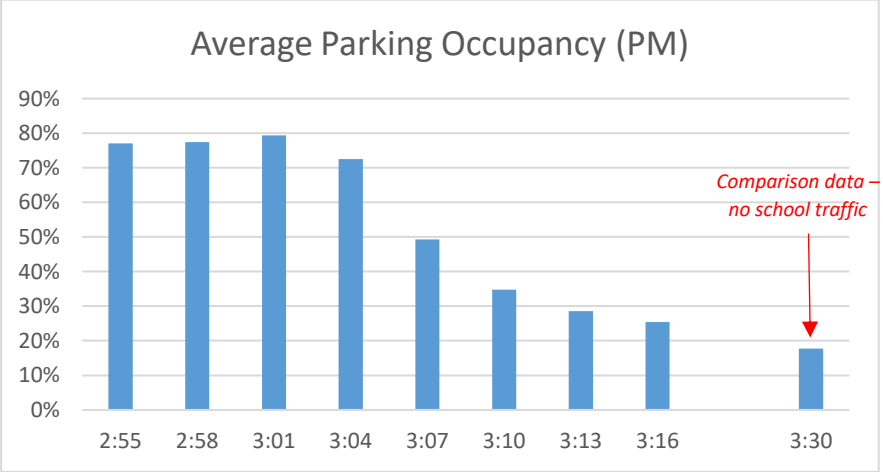

Figure 3.4 PM On-street Parking Occupancy

As expected, the survey results indicate that parking demand is relatively high in the afternoons, directly before the bell rings for the finish of school. However, there is just over 20% capacity, at the peak time, on the surrounding streets within 200m walk to the school.

3.4 Staff and Visitor Car Park Occupancy

The existing number of car parks provided for staff and visitors at the school is 63 parking spaces, 50 spaces in the main car park and 13 spaces in the PUDO area. As noted earlier, the PUDO was closed to pick up and drop off and had signage at the gate to this effect.

Current use of the staff / visitor car park at Willowbank School was surveyed in the morning and afternoon on Tuesday 8 December 2020. The parking occupancy is provided in **Table 3.4**.

Time	Number of car parks available	Parking Occupancy (%)
Morning (school start time)	**7** car parks available out of a total of 63 car parks (50 in main car park and 13 in PUDO area)	89% full
Afternoon (school finish time)	**18** car parks available out of a total of 63 car parks (50 in main car park and 13 in PUDO area)	71% full

Table 3.4: Parking occupancy for staff / visitor car park

The parking demand of the staff / visitor car park averaged at 80% occupancy, with 89% occupancy (7 car parks available) at its peak at school start time.

3.5 Intersection Performance

The key intersections affected by school traffic are the two roundabouts on Middlefield Drive, namely Middlefield Drive / Gracechurch Drive and Middlefield Drive / Glastry Close intersections.

The travel surveys results indicate that 52% travel by family car in the mornings and 47% in the afternoons. The school roll at time of the parking surveys undertaken for this report was 809 students. This equates to 300 vehicles in the mornings and 272 vehicles in the afternoons (assuming an average student occupancy of 1.4 students per car). For a student roll of 1,000 this would equate to 371 vehicles in the mornings and 336 in the afternoons. Therefore, the *additional* number of vehicles estimated to drive to school at the masterplan roll of 1,000 students will be 71 vehicles (142 trips) in the mornings and 64 (128 trips) in the afternoons. Not all of these vehicles will drive through the roundabouts on Middlefield Drive.

A survey of queue lengths was taken from the drone footage for the two roundabouts, with results provided below.

Middlefield Drive / Gracechurch Drive Intersection

The majority of school traffic travels via the Middlefield Drive / Gracechurch Drive roundabout. Queue length surveys and observations from the drone footage indicate that the roundabout operates at a good level of service in both the mornings and afternoons. **Table 3.5** shows the average and the longest queue length for each of the approaches to the roundabout, in the morning and afternoon school peaks.

Table 3.5 Average and longest queue lengths (number of vehicles) at Middlefield Drive / Gracechurch Drive intersection

Approach	Middlefield Dr South	Middlefield Dr North	Gracechurch Dr West	Gracechurch Dr East
Morning				
Average queue length (no. of vehicles)	2.6	0.3	1.2	0.5
Longest queue length (no. of vehicles)	6	5	4	3
Afternoon				
Average queue length (no. of vehicles)	1.2	0.2	1.0	1.2
Longest queue length (no. of vehicles)	6	2	5	6

The highest average queue length occurs on the Middlefield Drive south approach, with an average queue of 2.6 vehicles in the morning peak. The average queue on all other approaches range between 0.2 – 1.2 vehicles, over both time periods. The longest queue length recorded 6 vehicles which occurred on the Middlefield Drive south approach in the mornings and on the Gracechurch Drive east approach in the afternoon peak.

The intersection is generally busier in the morning peak with maximum queues building up to 6 vehicles, which clear with minimal delay. This is often due to a queue of vehicles delayed by the pedestrian crossing on Middlefield Drive. The pedestrian crossing is patrolled by the school, so queues clear quickly which in turn clear the roundabout quickly with minimal delays. Although vehicles may move through the intersection at a slower pace in the mornings, there is no operational issues with very little delay. Additional traffic that may be generated by an increase in the school roll can comfortably be accommodated on the road network.

As mentioned above, the queues travelling northbound on Middlefield Drive are primarily a result of school children crossing the pedestrian crossing on Middlefield Drive. Relocating the crossing approximately 55m closer to the Middlefield Drive / Gracechurch Drive roundabout is likely to increase the frequency of vehicles queueing back across the roundabout, due to the reduction in stacking space on Middlefield Drive, south of the crossing. The relocated crossing will still allow for approximately 80m of stacking space for vehicles on Middlefield Drive, on the northern approach to the pedestrian crossing. If traffic does queue back through the roundabout, the delays are minimal as the traffic queue dissipates very quickly once the pedestrian crossing is clear. The crossing is patrolled by school staff, therefore allowing the ability to manage traffic queues and minimise delays to traffic. The transport effects of relocating the pedestrian crossing approximately 55m south are considered acceptable and provides a safer outcome to the existing location of the crossing.

Middlefield Drive / Glastry Close Intersection

Table 3.6 shows the average and the longest queue length for each of the approaches to the roundabout, in the morning and afternoon school peaks.

The highest average queue length occurs on the Rialto Close approach, with an average queue of 0.7 vehicles in the afternoon peak. The average queue on all other approaches range between 0 – 0.3 vehicles, over both time periods. The

longest queue length recorded 3 vehicles which occurred on the Middlefield Drive south and Rialto Close approaches in the afternoon peak.

As can be seen from the queue length surveys, the Middlefield Drive / Glastry Close intersection operates very well with next to no delay or queues in both the mornings and afternoons. Additional traffic that may be generated by an increase in the school roll can easily be accommodated on the road network.

Table 3.6 Average and longest queue lengths (number of vehicles) at Middlefield Drive / Glastry Close intersection

Approach	Middlefield Dr South	Middlefield Dr North	Rialto Court	Glastry Close
Morning				
Average queue length (no. of vehicles)	0	0	0.2	0.1
Longest queue length (no. of vehicles)	0	0	2	1
Afternoon				
Average queue length (no. of vehicles)	0.3	0.1	0.7	0
Longest queue length (no. of vehicles)	3	1	3	0

3.6 Pedestrian access points

Observation surveys show that there is roughly equal distribution of students using the northern pedestrian access on Middlefield Drive and the eastern pedestrian access on Gracechurch Drive. The southern pedestrian access on Middlefield Drive (alongside the exit of the PUDO area) has minimal usage.

4. Proposal

Willowbank School will be expanded in the future over two stages, the ‘Stage 1 Build’ and the ‘Masterplan Build’. These stages are detailed below:

Stage 1 Build – this stage will include the addition of two classrooms, with a total of 34 classrooms, and a school roll of 850 students. This stage proposes 69 parking spaces (including PUDO parking).

Masterplan Build – this stage will include the addition of another four classrooms, with a total of 38 classrooms, and a school roll of 900 students (with a sensitivity test of 1000 students). This stage proposes 75 parking spaces (including PUDO parking). The majority of the staff car parks will be stacked in a tandem arrangement, as discussed later in the report.

4.1 Car Parking Supply

Stage 1 Build

Stage 1 of the expansion will include a total of 69 parking spaces, including 56 staff car parks and 13 PUDO / visitor car parks. The parking layout is shown in **Figure 4.1** below. Visitors that arrive during school hours (outside of school start and finish times) can utilise the student PUDO area. Utilising the PUDO area for different users, at different times of the day, results in a more efficient use of land.

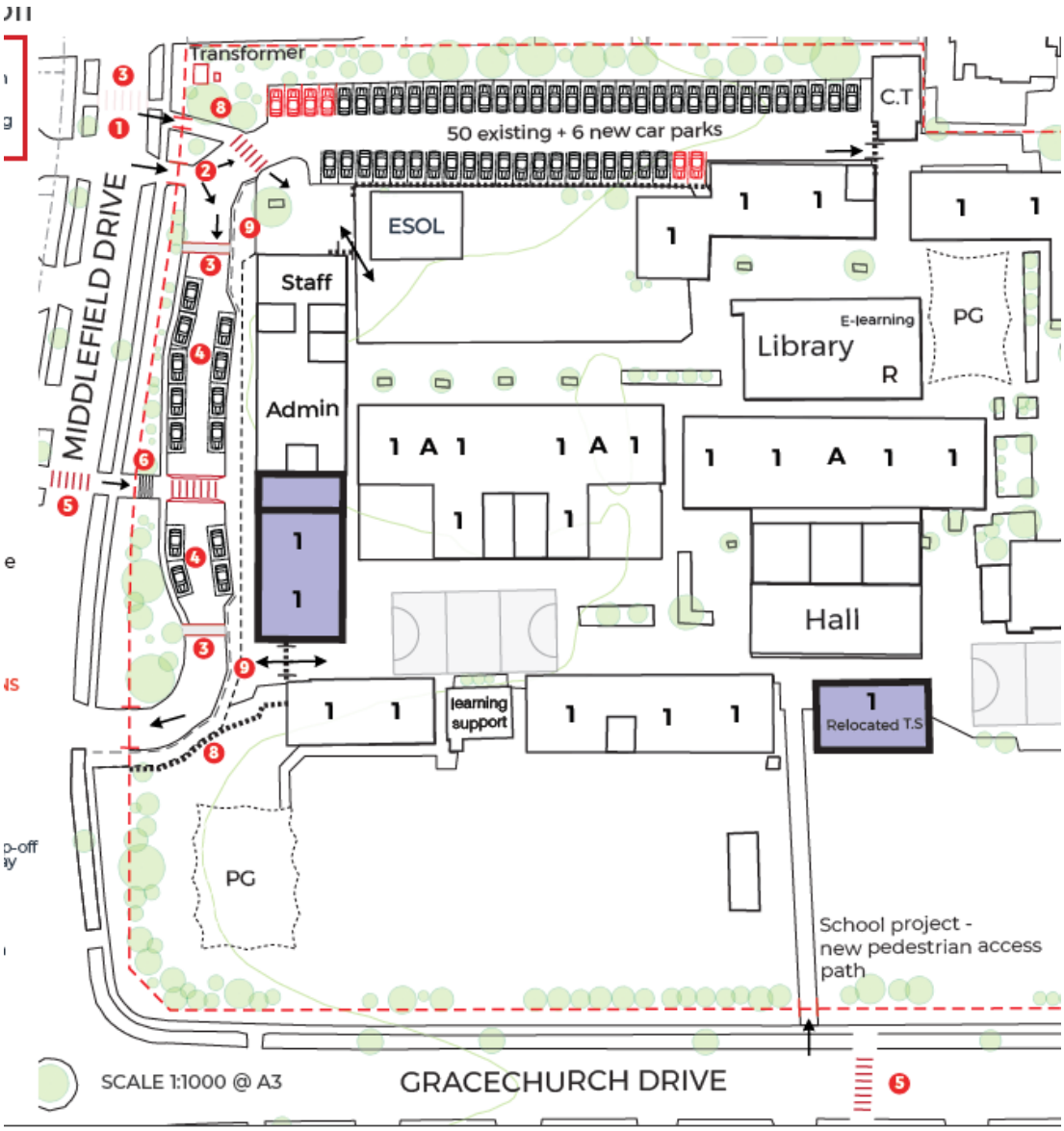

Figure 4.1 Parking layout for Stage 1 Build

Masterplan Build

The Masterplan Build will include a total of 75 parking spaces, including 62 staff car parks and 13 PUDO / visitor car parks. The parking layout is shown in **Figure 4.2** below. Visitors that arrive during school hours (outside of school start and finish times) can utilise the student PUDO area. Utilising the PUDO area for different users, at different times of the day, results in a more efficient use of land.

The Masterplan stage of expansion will relocate the staff car park from the northern boundary to the south-western corner of the school. The majority of the car parks in the staff car park will be stacked in a tandem arrangement. The stacked parking arrangement can easily be managed well by the school as all staff and visitors enter and leave the school via the school office. It is recommended that all the parking spaces in the front row are assigned to staff only with no designated visitor parking in the front row. This will allow the school to effectively manage the stacked parking with a system for staff.

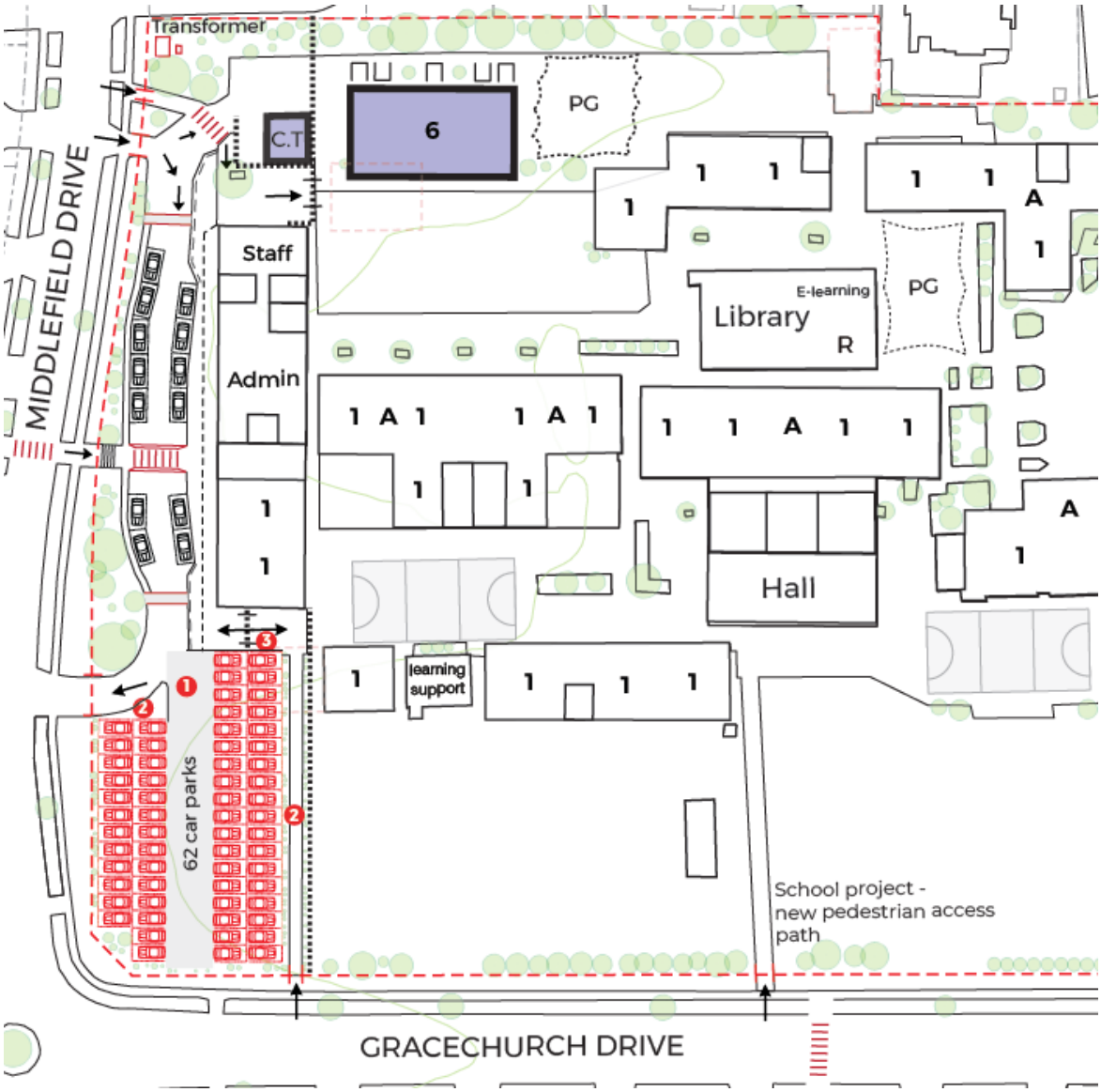

Figure 4.2 Parking Layout for Masterplan Build

4.2 PUDO Design

The school has concerns with the current design of the PUDO area for the reasons outlined in Section 2.1. The following design measures (refer to **Figure 4.2**) are proposed to mitigate the safety and operational concerns:

1. The pedestrian crossing on Middlefield Drive is proposed to be shifted slightly to the south with the new position between the two access points of the school. This location will be more convenient to access the school for students coming from the north and south. The new location will also resolve the current safety issue where through traffic is overtaking queued vehicles on the pedestrian crossing. The new location of the pedestrian crossing is subject to consultation with Auckland Transport and other stakeholders.
2. Narrowing down the entry and exit of the PUDO will reduce the speed of vehicles travelling through the PUDO area and ensure a single lane of traffic only.
3. Install a raised pedestrian crossing and two vertical speed humps throughout the PUDO area to further reduce speeds.
4. Widen the pedestrian entrance points into the school.

5. Widen the footpaths on the eastern side of the PUDO area to allow increased waiting room for students. These widened footpaths propose to have barriers to ensure students have a safe waiting area without spilling out onto the roadway.
6. Signage instructing drivers not to leave their vehicles unattended (i.e. pick up and drop off only) or P2 (parking for 2 minutes only) at school start and finish times.

The design measures provided above have been developed in consultation with the Principal of Willowbank School and considered an improved outcome that address the existing concerns. Suitable design changes can be addressed in future Outline Plans required for school expansion.

4.3 Pedestrian Crossings (On-street)

The expansion of the school proposes changes to the two pedestrian crossings on Willowbank Drive and Gracechurch Drive.

Middlefield Drive

It is proposed that the existing zebra crossing on Willowbank Drive which is relocated approximately 55m south, for reasons provided in Section 4.2. It is recommended that the new zebra crossing on Willowbank Drive is constructed as a raised platform, however this will be subject to consultation with Auckland Transport.

The new crossing location will inevitably result in the removal of some on-street parking spaces on the western side of Middlefield Drive. However, the removal of the existing zebra crossing will be replaced by on-street parking, which will likely result in no loss of parking overall on Middlefield Drive.

Gracechurch Drive

A new pedestrian walkway is proposed through the school field and linking up with Gracechurch Drive, as shown on **Figure 2.5.** The existing Kea Crossing on Gracechurch Drive is proposed to be relocated approximately 80m further west to line up with the new accessible path. It is proposed that the relocated crossing will remain as a Kea Crossing which is adequate for use for a secondary access to the school. The type of crossing will be subject to consultation with Auckland Transport, who may wish to upgrade the crossing to a raised zebra crossing if considered beneficial to the wider community.

The new crossing location will inevitably necessitate the removal of some on-street parking spaces on both sides of Gracechurch Drive. However, the removal of the existing Kea Crossing will be replaced by on-street parking, which will likely result in no loss of parking overall on this block of Gracechurch Drive.

5. Parking Assessment

5.1 Staff and Visitor Parking

National Policy Statement – Urban Design

The National Policy Statement on Urban Development 2020 issued by the Ministry for the Environment in July 2020 includes a new policy (Policy 11) which removes a requirement for a minimum number of car parks for a particular development.

The purpose of Policy 11 is to enable greater supply and ensure planning is responsive to changes in demand, particularly in urban areas where there is good accessibility to public transport and alternative travel modes. It enables the space to be used for higher value purposes rather than car parking.

It should be noted that the change in policy does not affect the requirement for accessible car parks which remains as existing.

This parking review has taken guidance from the AUPOP, the existing modal share and accessibility to public transport to support a condition for a reduced parking requirement for the masterplan build. The proposed reduction in parking provision is considered to be consistent with the outcomes intended by Policy 11 in the NPS-UD.

Car parking Requirements as per Auckland Unitary Plan – Operative in Part.

The number of car parks recommended for the Stage 1 Build and the Masterplan Build has been assessed against the transport rules of the Auckland Unitary Plan (Operative in Part) Chapter K Designations for Ministry of Education. The parking guidance for primary schools in Chapter E27 have also been used for comparative purposes.

Chapter K – School Standard Designation Requirements

The standard designation conditions for the number of required car parks is stated below:

On-Site Car Parking – Schools: Additional on-site car parking shall be provided at the rate of two carparks per new classroom or classroom equivalent , except where the council accepts, on the basis of a specifically commissioned parking study by an appropriately qualified engineer and/or transportation planner, that a lesser level is appropriate. For the avoidance of doubt, this condition shall only apply where there is a net increase in the number of classrooms or classroom equivalents.

The existing school has 32 classrooms and propose to add a further 6 classrooms for the masterplan build. There are currently 56 parking spaces allocated to staff and visitors and 7 PUDO car parks. We understand that the original designation condition in the Manukau District Plan required 2 car parks per classroom and as such the current school configuration may not be meeting its current parking requirement.

The Stage 1 Build will accommodate 34 teaching spaces/classrooms. Referring to the above condition, two car parks per classroom results in a total of 68 carparks for staff and visitor parking.

The Masterplan Build will accommodate 38 teaching spaces/classrooms. Referring to the above condition, two car parks per classroom results in a total of 76 carparks for staff and visitor parking.

Alternatively, it could be calculated based on the existing number of car parks (56) for 32 classrooms, plus two carparks for each of the additional classrooms. This would result in a total of 60 parking spaces for Stage 1 Build and 68 parking spaces for the Masterplan Build. The school technically meets the on-site car parking condition however we have taken the more conservative approach of applying two car parks for each of the total number of classrooms, as the existing car parking provision is lower than the original parking requirement.

Chapter E27

For Primary School activities, E27.6.2.3 recommends a minimum parking provision of 0.5 carparks per FTE employee plus 1 visitor space per classroom. It is understood that the new school build will employ around 45 FTEs (based on a 1:20 staff-student ratio) and 34 classrooms for Stage 1 and 50 FTEs and 38 classrooms for the Masterplan. This results in a requirement for 57 parking spaces for Stage 1 Build and 63 parking spaces for the Masterplan build.

Table 5.1 shows the recommended and proposed car parking provision as per the AUP-OP.

Stage	Recommended no. of car parks		Proposed no. of car parks		
	AUPOP Standard School Designation Condition (Chapter K)	AUPOP E27 (Table E27.6.2.3)	Total no. of on-site car parks	Staff / Visitor car parks	PUDO / Visitor car parks
Stage 1 Build	68	57	69	56	13
Masterplan Build	76	63	75	62	13

Table 5.1 AUPOP Parking Guidance vs proposed car parking numbers

As presented in **Table 5.1** the total number of parking spaces provided on-site for the Stage 1 Build (69 spaces) exceeds both of the AUPOP recommendations for number of car parks. For the Masterplan build, the proposed number of parking spaces (75) exceeds the E27 recommendation by 12 car parks and falls short by one car park for Standard Designation condition. The total number of car parks used for this assessment includes the PUDO spaces as the PUDO spaces will double up as visitor parks outside of the school start and finish times.

Accessible Parking

The AUP-OP refers to the NZS 4121-2001 standard which defines the following accessible parking requirements:

Total no. of car parks	Number of accessible parks
1-20	Not less than 1
21-50	Not less than 2
For every additional 50 car parks or part of a car park	Not less than 1

The activity proposes 75 parking spaces to service the school; therefore 3 mobility parking spaces are required. Two accessible parks are provided in the proposed car park for both stages of the school build. There is also the pick up drop off zone outside the front door of the school office that could be used by mobility users. The provision for accessible parks at the school is considered appropriate.

Assessment of Staff and Visitor Car Parking Provision

The total number of on-site car parks proposed for school staff and visitors, including the number of PUDO spaces for use by visitors, is 69 parking spaces for Stage 1 and 75 for the Masterplan build. The total number of car parks generally meet the designation condition of two car parks per classroom (with a shortfall of one parking space for the Masterplan build).

For the purpose of assessing the staff car park numbers only (without consideration of the PUDO/visitor parking spaces), there are 56 parking spaces as per the Stage 1 Build and 62 parking spaces as per the Masterplan Build. This is fewer than the AUPOP guidance specified in the standard conditions provided in Chapter K which recommends 68 and 76 car parks respectively. The number of car parks to be provided through the Masterplan development is considered appropriate for the reasons provided below.

- Thirteen car parks in addition to the staff car park are proposed at the front of the school as part of a Pick-up / Drop off (PUDO) area for school students. Visitors that arrive during school hours (outside of school start and finish times) can utilise the student PUDO area which is a preferred option as intuitively a visitor is more likely

to park at the front of the school entrance. Utilising the PUDO area for different users, at different times of the day, results in a more efficient use of land.

- Surveys showed that there is some existing capacity within the staff car park with peak occupancy reaching 89% in the morning peak with seven available parking spaces. Towards the end of the school day, there were 18 car parks available, with an occupancy of 71%.
- Willowbank School is well positioned for staff to travel to/from school via public transport, with two key bus routes within 300 metres of the school.
- In the event of the carpark being at capacity, there is plenty of on-street car parking available on the surrounding streets to accommodate any overspill without any noticeable effect. Our parking surveys indicate there is ample (over 70%) capacity on the surrounding streets during school hours.
- Willowbank School is a Travelwise school which aims to reduce dependency on single use vehicle trips for staff as well as students. These measures support the need for a lower number of carparks required to service the site.
- A traffic assessment will be submitted with each stage of the Masterplan development in support of each outline plan of works and in accordance with the standard MOE designation carparking condition.

5.2 Student Pick Up / Drop Off Parking

Students travelling to school by car are either dropped off and walk independently into school, or alternatively park and are escorted into the school grounds. The latter tends to be more common for the younger students, say Years 0-2.

There is little research or data available on the flow rate for pick up drop off (PUDO) area for schools. Abley undertook surveys at two Auckland primary schools in 2019/2020 (Gladstone Primary School in Mt Albert and Silverdale Primary School) to understand how many vehicles can effectively utilise a PUDO during the school start and finish times. Survey results are included in Appendix A. Our findings were as follows:

- The average vehicle dwell time for drop offs in the morning was 39 seconds.
- The dwell time in the afternoons was unsurprisingly considerably longer with vehicles waiting approximately 5 minutes after school finish time before departing. However, vehicles continued to use the PUDO for 20 minutes after school finish time with shorter dwell times after the initial waiting period.
- The average number of students was 1.4 students per vehicle
- The drop off peak in the mornings was relatively consistent for the twenty minute period before school start time.
- A significant number of caregivers park their vehicle outside of the PUDO area to walk their child/ren to and from the classroom. This is more likely the case for the younger children that may need escorting to and from the classroom as many schools require the caregiver to collect younger children from the classroom.

PUDO Demand

There are two areas at Willowbank School where pick up and drop off of students can occur, namely:

- The on-site PUDO area at the front of the school with access off Middlefield Drive.
- The on-street PUDO area on the northern side of Gracechurch Drive, between Middlefield Drive and Carbisdale Road.

A number of assumptions have been made to ascertain the demand for PUDO spaces, some of which have been based on the previously mentioned school survey results, and are listed below:

- An average vehicle dwell time of 39 seconds, and a 20 minute drop-off peak in the mornings.
- An average number of students is 1.4 students per vehicle

- Approximately 30% of caregivers park their vehicle outside of the PUDO area to walk their child or children to and from the classroom. This is more likely the case for the younger children (Years 0-2) that may need escorting to and from the classroom.
- A car modal share of 50% (Willowbank School has an average car modal share of 49%)

AM Peak

With a dwell time of 39 seconds per vehicle and an average of 1.4 students per vehicle, this equates to 1 parking space catering for 2.3 students per minute. With a morning peak of 20 minutes this equates to 46 children per PUDO space. The assumption is made that the caregivers of Year 0-2 students park their vehicles and walk their child or children into the school grounds. The remaining say 70% of students (Years 3-6) are assumed to use the PUDO.

For a potential future roll of 1000 students and an adopted modal split of 50% vehicle use equates to approximately 500 students arriving by car. Assume approximately 70% (Years 3-6) will utilise the PUDO over a 20-minute period in the morning peak. By applying the factor of 46 children per PUDO space, this results in a **PUDO demand of 8 parking spaces in the AM Peak**.

For the purpose of sensitivity testing, we have tested the conservative scenario of all students using the PUDO rather than a proportion being escorted into the school. This scenario would result in a PUDO demand of 11 parking spaces in the AM Peak.

PM Peak

Demand in the afternoon peak when students are being picked up from school is more difficult to cater for as caregivers often park and either wait for their child/ren to walk out to the car or walk to the classroom to pick up their child/ren.

It is not considered practical to provide enough PUDO spaces to cater for the relatively high volumes of vehicles that require carparks for the 15 minute peak right on school finish time. There are more practical ways to manage this demand through the school travel plan, such as staggering pick up times over a 15-minute period; identifying park and walk locations in vicinity of the school; and on-street parking zones where caregivers and students organise a pick up location in advance. The surveys undertaken for this report show that the afternoon pick up currently operates within capacity on surrounding streets, within a 200m distance of the school. Therefore, such measures are not considered necessary for the Masterplan Build.

The school drop off time in the morning peak coincides with the network peak. It is therefore more pertinent to manage the transport effects on the road network during the busy morning peak. However, school finish time is less of a concern as there is considerably less traffic on the roads in the inter-peak.

The overspill of vehicles that cannot be accommodated in the PUDO area in the afternoon peak will need to utilise on-street parking on the streets surrounding the school. There is ample on-street parking within a short walk of the school as detailed in Section 3.1.

Assessment of Pick Up Drop off Car Parking Provision

Both stages of the school proposal, Stage 1 Build and Masterplan Build, offer 13 on-site PUDO spaces at the school entrance. The proposed 13 spaces in the PUDO area are considered sufficient for the morning peak to operate safely and efficiently. The afternoon peak will likely need to utilise the on-street car parking spaces as overflow to the PUDO parking.

The parking surveys show that there is sufficient on-street parking availability within 200m of the school site at both school start and finish times. The surveys were undertaken when the school roll was just over 800 students. The on-street parking availability was over 35% in the mornings and over 20% availability in the afternoons. There is also ample parking capacity on the surrounding streets more than 200m from the school site without the need for school traffic to impact on the arterial road network. It should be noted that the 13 proposed PUDO parks are in addition to the on-street capacity as the PUDO was not in operation during the parking surveys.

The additional 13 PUDO parking spaces will allow for a more efficient turnover of vehicles as opposed to on-street parks. Systems that allow for children to wait adjacent to the PUDO and go directly to the vehicle as it pulls into the PUDO will ensure a higher turnover of vehicles. The use of the PUDO also allows caregivers to arrive a few minutes after school

finish time as the children will be safely waiting within school grounds. This allows for a greater distribution of school traffic through the afternoon peak.

The on-site PUDO and the parking capacity on the surrounding streets are considered adequate to operate efficiently and safely at the school roll anticipated for the Masterplan Build.

5.3 Cycle Parking

Cycle Parking – AUPOP Requirement

The requirement for bicycle parking in Table E27.6.2.5 of the AUPOP is provided below.

Visitor (short stay) cycle parking - The visitor (short stay) parking rate is 1 space plus 1 space per 400 students and FTE employees. The school is therefore required to provide 4 visitor cycle parks.

Long stay cycle parking - The secure (long stay) parking rate is 1 per 30 students in Year 1 to 5; plus 1 per 15 students in Year 6 plus 1 per 20 employees.

The school caters for Year 0 – 6 therefore it is assumed that 1 in 6 students will be in Year 6. For a proposed roll of 1000 students this results in a requirement for 42 secure cycle stands.

Overall a total provision of 46 cycle stands (short and long stay) would be needed to meet the recommendations of E27.6.2.5 of the AUPOP. However, there are no conditions in the Designation requiring a minimum number of cycle parks.

Cycle Parking Provision – Assessment

There are currently ten cycle stands at the school, with ample room to extend the cycle racks when demand grows.

The travel survey results indicate that there is a low uptake in cycling to school, with only one student recorded as cycling. It is understood that the school does not encourage students from Years 0-5 to cycle unless they are accompanied by an adult. It is recommended that the school continue to provide cycle racks if and when demand grows.

6. Conclusion

This Transport Assessment reports on the existing and future transport and parking demands for school staff, visitors and student pick-up and drop off. Our conclusions include:

- The crash history on the surrounding streets does not indicate a road safety issue in the area.
- The school is well serviced by public transport.
- The future stages of expansion of the school will include 13 Pick up Drop off (PUDO) parking spaces.
- There is currently on-street parking capacity at school start and finish times, within a 200 metre walk to the school. The proposed PUDO spaces and the on-street parking capacity is considered to be sufficient to cater for the Masterplan school roll of 1000 students.
- The existing staff and visitor car park currently has some capacity. The additional car parking proposed as the school grows is considered appropriate.
- The stacked parking arrangement proposed at Masterplan Build is considered adequate and can be managed through the school office.
- Observation surveys did not raise any safety or operational issues on the surrounding streets during the busy school pick up / drop off period.
- The intersections on Middlefield Drive were observed to operate at a good level of service.
- Design changes to the PUDO and the on-street pedestrian crossings as outlined in Section 4.2 are considered acceptable.

Overall, the removal of the school roll cap and the further expansion of the school to a masterplan roll of 1000 students is considered acceptable from a transport perspective.

Appendix A - Survey Results:

1. Parking Surveys Results
2. Queue Length Surveys at Intersections
3. PUDO Surveys (at other schools)

MORNING PARKING SURVEY RESULTS

MORNING - WILLOWBANK SCHOOL PARKING SURVEYS - 8/12/2020					
	Gracechurch East	Gracechurch PUDO	Carbisdale Rd	Middlefield Dr	Willowbank Close
Time	A	B	C	D	E
8:28	13	18	6	4	4
8:31	13	21	6	8	6
8:34	13	18	7	5	5
8:37	14	22	7	7	6
8:40	14	20	6	9	8
8:43	15	15	6	3	4
8:46	4	8	6	3	9
8:49	4	13	6	3	2
9:15	3	6	6	4	3

AFTERNOON PARKING SURVEY RESULTS

AFTERNOON - WILLOWBANK SCHOOL PARKING SURVEYS 8/12/2020					
	Gracechurch East	Gracechurch PUDO	Carbisdale Rd	Middlefield Dr	Willowbank Close
Time	A	B	C	D	E
2:55	22	28	9	14	15
2:58	22	28	10	14	14
3:01	22	28	10	14	16
3:04	22	25	9	14	12
3:07	13	14	6	10	7
3:10	3	10	5	6	6
3:13	3	6	6	5	6
3:16	3	5	6	6	2
3:30	2	3	6	1	4
	Glastry Close	Gracechurch West	Middlefield South	Edzell close	Middlefield north of Glastry
Time	F	G	H	I	J
2:55	13	21	0	5	7
2:58	13	21	0	5	7
3:01	14	21	0	5	7
3:04	12	22	0	5	5
3:07	9	17	0	4	4
3:10	8	12	0	4	2
3:13	6	9	0	2	2
3:16	3	10	1	2	2
3:30	2	6	0	2	0

QUEUE LENGTH SURVEYS - MIDDLEFIELD / GRACECHURCH ROUNDABOUT
AM SCHOOL PEAK 8.30-8.50AM

	Middlefield South	Middlefield North	Gracechurch West	Gracechurch East
8:31	6	0	2	0
8:33	4	0	3	1
8:35	4	0	4	1
8:37	3	0	0	0
8:38	0	0	0	0
8:39	0	0	0	0
8:40	0	1	4	0
8:41	3	0	0	0
8:42	2	5	0	0
8:43	6	0	1	0
8:43	6	0	3	0
8:44	5	0	3	0
8:44	0	0	0	0
8:45	3	0	2	3
8:46	4	0	0	0
8:46	0	0	0	0
8:47	2	0	1	3
8:48	2	0	0	1
8:50	0	0	0	0
Average queue	**2.6**	**0.3**	**1.2**	**0.5**
Longest queue	**6**	**5**	**4**	**3**

QUEUE LENGTH SURVEYS - MIDDLEFIELD / GLASTRY / RIALTO CLOSE ROUNDABOUT
AM SCHOOL PEAK 8.30-8.50AM

	Middlefield South	Middlefield North	Rialto Court	Glastry Close
8:32	0	0	0	0
8:34	0	0	0	0
8:36	0	0	1	1
8:38	0	0	0	0
8:40	0	0	0	0
8:42	0	0	0	0
8:42	0	0	2	0
8:44	0	0	0	0
8:45	0	0	0	0
8:46	0	0	0	0
8:47	0	0	0	0
8:49	0	0	0	0
8:50	0	0	0	0
Average queue	**0**	**0**	**0.2**	**0.1**
Longest queue	**0**	**0**	**2**	**1**

QUEUE LENGTH SURVEYS - MIDDLEFIELD / GRACECHURCH ROUNDABOUT
PM SCHOOL PEAK 2.55-3.12PM

	Middlefield South	Middlefield North	Gracechurch West	Gracechurch East
2:55	0	1	0	0
2:56	0	0	0	0
2:58	0	0	0	0
2:59	0	0	2	0
3:00	0	0	0	0
3:01	0	0	0	0
3:02	0	0	0	0
3:03	0	0	0	0
3:04	6	0	0	3
3:06	2	0	5	6
3:07	2	1	1	3
3:08	2	0	3	0
3:09	0	0	0	1
3:09	3	0	0	0
3:10	0	0	0	3
3:11	2	0	2	2
3:12	4	2	4	3
Average queue	**1.2**	**0.2**	**1.0**	**1.2**
Longest queue	**6**	**2**	**5**	**6**

QUEUE LENGTH SURVEYS - MIDDLEFIELD / GLASTRY / RIALTO CLOSE ROUNDABOUT
PM SCHOOL PEAK 2.55-3.12PM

	Middlefield South	Middlefield North	Rialto Court	Glastry Close
2:56	0	0	0	0
2:58	0	0	0	0
3:00	0	0	0	0
3:02	0	0	0	0
3:04	0	0	0	0
3:06	0	0	0	0
3:08	0	1	1	0
3:09	3	0	3	0
3:10	0	0	1	0
3:12	0	0	2	0
Average queue	**0.3**	**0.1**	**0.7**	**0**
Longest queue	**3**	**1**	**3**	**0**

Gladstone School Number of PUDO users Thursday 19 December 2019 PM Peak			Gladstone School Number of PUDO users Friday 6 March PM Peak	
before 3:00	6		before 3:00	7
3:00-3:05	8	PUDO full	3:00-3:05	3
3:05-3:10	12		3:05-3:10	4
3:10-3:15	7		3:10-3:15	3
3:15-3:20	0		3:15-3:20	5
Total	**33**		**Total**	**22**

Silverdale Primary School Number of vehicles entering PUDO Monday 16 March 2020 AM Peak		Silverdale Primary School Number of vehicles entering PUDO Monday 16 March 2020 PM Peak		
8.15-8.20	5	before 2:45	15	PUDO full
8.20-8.25	4	2:45-2:50	6	stacking through PUDO evident
8.25-8.30	19	2:50-2:55	10	stacking through PUDO evident
8:30-8:35	35	2:55-3:00	5	stacking through PUDO evident
8:35-8:40	20	3:00-3:05	2	
8:40-8:45	23	3:05-3:10	14	
8:45-8:50	3	3:10-3:15	0	
		3:15-3:20	5	
		3:20-3:25	2	
Total vehs	**110**	**Total**	**59**	

Gladstone School PUDO Dwell Time (seconds) Thursday 19 December 2019 AM Peak		Gladstone School PUDO Dwell Time (seconds) Friday 6 March AM Peak		
	15	21	28	90
	45	59	38	16
	82	35	30	12
	54	14	20	18
	24	37	55	18
	32	35	90	20
	26	76	34	31
	12	12	18	55
	57	60	73	50
	54	44	15	12
	25	54	25	
Average (secs)	**39**	**Average (secs)**		**37**
Total Average (secs) from both surveys				**38**

Gladstone School
Number of students per vehicle
Thursday 19 December 2019
AM Peak

	1	2
	1	1
	1	2
	1	1
	1	2
	2	1
	1	2
	1	2
	1	2
	2	2
	1	1
	2	1
	2	
Average	**1.4**	**students per vehicle**

Appendix B
Crash Analysis Report

NZ TRANSPORT AGENCY CAS

Untitled query

Crash year

2016 — 2020

Saved sites

Willowbank 2

Plain English report

8 results from your query.

1-8 of 8

Crash road	*	Side road	Feature	Distance from side road feature	Direction	Reference station	Route position	Easting	Northing	Longitude	Latitude	ID	Date	Day of week	Time	Description of events	Crash factors	Surface condition	Natural light	Weather	Junction	Control	Casualty count fatal	Casualty count serious	Casualty count minor	Social cost ($m)
GRACECHURCH DRIVE		CARBISDALE ROAD		90m	W			1770470	5908995	174.914551	-36.949699	201716096	30/07/2017	Sun	02:15	Car/Wagon1 WDB on Gracechurch Drive hit parked veh, Car/Wagon1 hit non specific parked, Car/Wagon2 hit non specific parked	CAR/WAGON1, alcohol test above limit or test refused, too far left	Dry	Dark	Fine	Nil (Default)	Unknown	0	0	1	0.10
GRACECHURCH DRIVE		CARBISDALE ROAD		40m	E			1770596	5908965	174.915970	-36.949947	201847086	22/08/2018	Wed	01:30	Car/Wagon1 WDB on GRACECHURCH DRIVE, FLAT BUSH, AUCKLAND hit parked veh, Car/Wagon1 hit non specific fence, non specific parked	CAR/WAGON1, too far left	Wet	Dark	Light rain	Nil (Default)	Unknown	0	0	0	0.02
GRACECHURCH DRIVE		MIDDLEFIELD DRIVE			I			1770392	5909014	174.913666	-36.949539	2020142494	17/01/2020	Fri	19:25	Bus1 WDB on GRACECHURCH DRIVE hit Cyclist2 (Age 55) crossing at right angle from right	BUS1, alcohol test below limit, did not check/notice another party from other dirn, failed to give way at priority traffic control	Dry	Bright sun	Fine	Roundabout	Give way	0	0	1	
GRACECHURCH DRIVE		MIDDLEFIELD DRIVE			I			1770391	5909014	174.913666	-36.949537	2020171052	24/11/2020	Tue	07:45	Car/Wagon1 WDB on GRACECHURCH DRIVE hit Cyclist2 (Age 46) crossing at right angle from right	CYCLE2, alcohol test below limit CAR/WAGON1, alcohol test below limit, failed to give way at priority traffic control	Dry	Overcast	Fine	Roundabout	Give way	0	0	1	
GRACECHURCH DRIVE		MIDDLEFIELD DRIVE			I			1770393	5909014	174.913687	-36.949541	201820950	17/12/2018	Mon	08:18	Car/Wagon1 WDB on GRACECHURCH DRIVE hit Motorcycle2 crossing at right angle from right	MOTORCYCLE2, alcohol suspected CAR/WAGON1, alcohol test below limit, did not check/notice another party from other dirn, failed to give way at priority traffic control	Dry	Bright sun	Fine	Roundabout	Give way	0	1	0	0.82
MIDDLEFIELD DRIVE		GRACECHURCH DRIVE		70m	N			1770399	5909093	174.913727	-36.948830	201639299	30/05/2016	Mon	15:15	Car/Wagon1 NDB on MIDDLEFIELD DRIVE hit parked veh, Car/Wagon1 hit non specific parked	CAR/WAGON1, too far left	Wet	Overcast	Light rain	Nil (Default)	Unknown	0	0	0	0.02
MIDDLEFIELD DRIVE		GRACECHURCH DRIVE		36m	N			1770389	5909062	174.913624	-36.949106	2020176451	08/08/2020	Sat	16:45	Left scene1 NDB on MIDDLEFIELD DRIVE hit parked veh, Left scene1 hit parked (unattended) vehicle	LEFT SCENE1, too far left	Dry	Overcast	Fine	Nil (Default)	Nil	0	0	0	
MIDDLEFIELD/GRACECHURCH RAB		GRACECHURCH DRIVE			I			1770374	5909021	174.913467	-36.949482	2018101633	15/12/2018	Sat	17:15	Car/Wagon1 EDB on GRACECHURCH DRIVE, EAST TAMAKI HEIGHTS, AUCKLAND hit Car/Wagon2 crossing at right angle from right	CAR/WAGON1, failed to give way at priority traffic control	Dry	Bright sun	Fine	Roundabout	Give way	0	0	0	0.02

Appendix C
Response to Submissions

Willowbank School

Pre-lodgement feedback from neighbouring properties

The proposed expansion and removal of the roll cap for Willowbank School was consulted with neighbouring properties of the school. Three property owners have provided feedback with matters related to traffic, which were of a very similar nature.

The properties at 93 Gracechurch Drive are directly adjacent to the eastern boundary of the school site where there is a pedestrian pathway into the school that is well used. Meetings for two of the property owners over MS Teams were conducted on the week commencing 1 November where the traffic issues were discussed.

The owners have raised similar issues (in bold and italics), followed with Abley's response.

Our driveway is regularly blocked (on a daily basis) by parents dropping off and picking up students. We have a very busy shared driveway with at least 10 vehicles requiring access. An increased roll would increase our access issues.

Traffic congestion around the school at drop off and pick up time is already very dangerous, with incidents of children nearly being hit by cars witnessed regularly. There is limited parking around the school and there are not many safe options for parking further away from the school. Travelwise does not appear to alleviate any congestion at our end of the school.

We also have periodic problems with parent's parking their cars across our drive and sometimes up our drive and onto our property. While we are aware that this is not directly a problem of the school's making, any improvements that can be made to traffic management and control in the area during drop off and pick up would be appreciated.

The parking surveys show that there is currently on-street parking capacity in both the mornings and afternoons within 200m of the school, at the peak times. Drone footage was studied and there were generally minimal driver behaviour issues on Gracechurch Drive or Middlefield Drive with cars blocking driveways. However, there were some instances of vehicles blocking the driveways at 93C and 93E Gracechurch Drive. The drone footage showed that there was alternative parking available outside the school at the time when vehicles were blocking the driveways. This suggests that it is a behavioural issue as opposed to no other parking options available. However, we also acknowledge that parking is in high demand for the peak 10-15 minutes before and after school. The following mitigation may help alleviate this issue:

I. It is proposed to construct a new pedestrian pathway on Gracechurch Drive approximately 80m to the west of the existing pedestrian access; and relocate the existing pedestrian crossing to align with this path . The new pedestrian access located away from the properties at 93 Gracechurch Drive may in turn shift the highest demand for parking away from 93 Gracechurch. Whilst closing off the existing pedestrian crossing adjacent to 93 Gracechurch Drive was discussed with neighbours during consultation, the school itself does not favour closing this crossing as it provides more direct and distributed access points to classrooms.

II. The proposed expansion of the school includes redesigning the on-site pick up and drop off (PUDO) area at the front of the school on Willowbank Drive. This will add an additional 13 parking spaces which are not currently in use. The operation of the PUDO area is expected to take pressure off the on-street parking capacity and provide a more efficient system for pick up and drop off.

III. It is recommended the School consider utilising either the local Constable or AT Parking Officers to enforce this issue if vehicles continue to block driveways. It is understood this can be done alongside an education campaign through the TravelWise programme.

The streets around the school are narrow. Car parking on both sides of the road results in only one lane of traffic able to get through and causes congestion.

Gracechurch Drive has parking on both sides of the road. The road width along Gracechurch Drive is wide enough to allow for traffic to flow comfortably in both directions when parking is occupied on both sides of the road. This was also observed from the drone surveys.

Middlefield Drive outside the school has parking in one side of the road only. The road width on Middlefield Drive is wide enough to allow for traffic to flow comfortably in both directions when parking is occupied on one side of the road. This was also observed from the drone surveys.

Our surveys showed some queuing on Middlefield Drive primarily as a result of the high volume of students using the pedestrian crossing outside the school which at times backed through the Middlefield Drive and Gracechurch Drive roundabout. However, the queues clear quickly as the pedestrian crossing is patrolled.

Appendix D

Response to Auckland Council and Auckland Transport Feedback

WILLOWBANK SCHOOL - ABLEY RESPONSE TO AUCKLAND COUNCIL AND AUCKLAND TRANSPORT FEEDBACK ON DRAFT ITA REPORT – DECEMBER 2021	
AUCKLAND COUNCIL FEEDBACK	
Comment	**Abley Response**
1. The Transport Assessment [TA] assessed the effects of an expansion of the roll to 1000 students; however, the proposed alteration seeks to delete the existing cap rather than amending it to 1000 students. Please provide additional information on how the roll could be limited to 1000 students or provide an assessment of the effects from a greater roll.	The master plan brief was to accommodate a roll of 900 students. 1000 has been used for the purposes of the transport assessment which is a conservative assessment and accounts for potential additional growth. The Minister does not favour roll caps on its designations and generally there are no roll caps on schools designated in the Auckland Unitary Plan.
2. The TA describes the loading situation noting that the "loading arrangement will remain the same for the future stages of school expansion". The northern part of the school, where it appears all truck movements currently occur, is expected to have significant change in future. Please provide details of the truck and other servicing traffic arrangements and movements for the existing and proposed site layouts, including how truck turning and reversing movements are proposed to be accommodated.	Manoeuvring of trucks on-site is an OPW matter and will be incorporated into the design at later stages. However, it is expected that adequate manoeuvring space will be included on-site to ensure minimal reversing on-site and no reversing onto or off the road (see Section 2.3 of the revised ITA).
3. Please provide a map showing the physical extents of the survey areas A to J noted in the appendix to the TA.	Figures 3.1 and 3.2 are updated with parking zones labelled A to J.
4. During Mr Edwards' visit to the area on the afternoon of 19 November he observed school-related on-street pick-up parking in streets not included in the TA survey, including Rialto Court and Thornberry Crescent. Please expand the physical extent of the on-street parking survey to include a wider area, including at least those streets identified above, to ensure that all areas used for pick-up and drop-off parking are measured. Note – it may be beneficial to provide a better understanding of the on-street parking situation if the surveys covered a longer period before and after school to cover the increase and decrease in parking demand.	The drone footage didn't always capture Rialto Close and Thornberry Crescent. However, we've undertaken further analysis from the drone footage that is available for this area and conclude that in the mornings, these streets were not utilised for school pick up and drop off. However, in the afternoons, there was school traffic utilising these streets, with approximately 30-40% parking availability remaining throughout the afternoon pick up period. We have not updated the parking survey results to include these roads as the data is not regular enough to match the data on the surrounding roads, and it will not dramatically change the results. In fact, it would result in a favourable result as the addition of Thornberry Crescent would increase the average parking capacity in proximity to the school. In regard to extending the survey times. The morning survey time started when children are allowed to enter the school grounds (8.30am) and finished once the school bell rang. In the afternoons, the surveys started 5 minutes prior to the school bell ringing and finished once the majority of the children had left the premises. It is recognised that caregivers likely arrive prior to 2.55pm for the afternoon pick-up however at every other time it would be unlikely that there would be any school traffic to survey. Extended

	survey times are not thought to provide any additional benefit or conclusions to the parking study outcomes.
5. The recommendations for the supply of on-site parking are dependent upon observations of parking demand during two short periods on one day. Please provide data to demonstrate that the maximum demand for on-site parking occurs during the times surveyed, and/ or provide additional survey data from other times of day. *Advice Note: The strength of the parking supply recommendation would be improved by providing survey data from additional days. Ideally this would include a winter period with poorer weather when people may be less likely to use active modes or public transport*	This query is now obsolete as MOE have since agreed to adopt the standard AUP school designation parking condition of 2 on-site parking spaces per additional classroom.
6. The TA is recommending the pedestrian crossing on Middlefield Drive is relocated approximately 55m to the south (with the form and location to be determined in consultation with Auckland Transport). Please provide details on the impact this change would have on the supply of on-street parking spaces, and how the relocation of the crossing may impact on other road users including people accessing the childcare centre located close to the existing crossing.	There is unlikely to be any net loss of parking spaces with the relocation of the pedestrian crossing, as further parks will be gained at the location of the current crossing. The new crossing location is a safer option as it will be removed from the entrance to the PUDO which is causing some safety issues. Desire lines will largely be retained for the childcare centre, aside from pedestrians coming from the north and walking on the western side of Middlefield Drive. In this scenario, pedestrians would need to walk an additional 100m to access the crossing. All pre-school children are escorted to and from the centre and will therefore be in the presence of adults when crossing the road. Effects on the childcare centre are therefore considered to be minimal.
7. A new pedestrian access point to the school is proposed near the relocated pedestrian crossing on Middlefield Drive. Please demonstrate there is sufficient space to accommodate a pedestrian gate and a stair between the site boundary and the footpath along the edge of the PUDO area or provide drawings of a revised PUDO area with an updated number of parking spaces that can be provided. *Note – this may be able to be provided at Outline Plan stage?*	This will be confirmed at OPW stage.
9. The TA assessment of on-site PUDO parking is based on several assumptions that are said to be based on previous surveys. Please provide details to support the assumption of average 39s dwell-time during the peak 20-minute period in the morning, and the assumption that 30% of vehicular traffic would not use the PUDO area due to an adult escorting a younger child to their classroom. *Advice Note: based on the TA analysis, the current roll of 809 students could be serviced by 6 PUDO spaces in the morning. This is not consistent with the observed on-street parking demand (with the PUDO closed) of at least 35 cars during the morning peak period (and over 110 cars in the afternoon peak period).*	Section 5.2 in the revised ITA, and survey results in Appendix A, provides further information on the surveys undertaken at other schools. Two dwell time surveys were taken at Gladstone School. One day had an average dwell time of 39 seconds and the second survey day was 37 seconds. The more conservative average dwell time of 39 seconds was therefore adopted for the PUDO calculations. The assumption that 30% of vehicle traffic will not simply drop off/pick up their child and will instead walk their child into the classroom is based on the understanding that the junior years (years 0-2) require a caregiver to pick up their child up from the classroom (teachers often need to see the caregiver before releasing the younger children from the

	classroom). Years 0-2 likely makes up half the school, but this has been rounded to 30% as it is not a precise science and there are no known survey datasets available. We are proposing 13 PUDO spaces at Willowbank, therefore the PUDO calculations are well and truly exceeded. PUDO spaces are likely to be more efficient that on-street spaces, with a higher turnover. This is explained further in point 10 below.
10. To allow a better understanding of the future transport situation for residents and others please provide a map showing the estimated extents of on-street parking during the afternoon pick-up period in future allowing for areas where parking is not permitted.	There is currently around 20% capacity within 200m of the school site, which in theory would accommodate a 20% growth in the school roll. In addition to the capacity of on-street parking, there will be an additional 13 PUDO parking spaces available for future use. The PUDO spaces will allow for more efficient turnover of vehicles with systems in place that allows for children to wait adjacent to the PUDO and go directly to the waiting vehicle. The use of the PUDO also allows caregivers to arrive a few minutes after school finish time as the children will be safely waiting within school grounds. This allows a greater distribution of school traffic throughout the afternoon peak.
AUCKLAND TRANSPORT FEEDBACK	
Active Modes and Public Transport Please provide further information on the low cycling, scooter and public transport mode share and identify measures to better serve these modes. Please provide a safety assessment for active mode (pedestrians, cyclists, scooters, etc) access to the school, including on the surrounding routes to school. Where mitigations are identified, please comment on the feasibility and timing of implementation.	Please refer to Section 2.6 of the revised ITA. Cycling to school is generally not encouraged for primary aged school children, as the younger years tend not to have adequate judgement for cycling on their own. It is unlikely that Willowbank School would want to actively encourage younger children to cycle to/from school. The low public transport uptake is also typical of a primary school as young children would unlike change a public bus on their own. The size of the school zone also does not lend itself to catching PT to/from school. Section 2.6 of the revised ITA provides a safety assessment of the routes to school. In summary, there are footpaths on both sides of the majority of roads and safe crossings points across the arterial roads in the school zone.
Trip Generation Confirm the existing vehicle trips generated by the school and detail the expected trips resulting from the growth proposed including staff trips and assess the impact this additional trip generation has on the intersections at Middlefield Drive / Gracechurch Drive and Middlefield Drive / Glastry Close. Please provide an assessment of the number of peak hour vehicle trips that can be generated by the site without vehicle queueing exceeding the stacking space of the intersections. The Transport Assessment lacks detail in considering these intersections.	Section 3.6 of the revised ITA provides an estimation of future traffic volumes and an intersection performance analysis of the two roundabouts on Middlefield Drive. A queue length survey was undertaken from the drone footage to assess the existing performance of the intersections. The surveys showed average queue lengths of 2.6 vehicles or less over the two peak periods. The roundabouts operate very well in both the mornings and afternoons and will comfortably accommodate any additional traffic expected with the growth of the school roll.
Miscellaneous Confirm if the designation still needs to provide for Early Childhood Education.	We can confirm the designation have not need to provide for an ECE.

Provide confirmation as to when the 'future accessible path' to Gracechurch Drive is intended to be provided and whether MOE will take responsibility for ensuring this is provided - it is identified as a school project.	The school has funding for the internal path and installing it to be ready for when Stage 1 works are being completed. This will be clarified as part of the OPW.
The transport assessment has not sufficiently established that 1.75 parking spaces per classroom is sufficient to manage the effects of travel demand. In fact it is proposed to provide more than this ratio on site - though with stacking at 1000 roll and reliance on visitor parking in the PUDO area. There has been no consideration as to the effect on vehicle movements that stacking of car parking spaces can have. Please elaborate.	We have removed the reference to 1.75 parking spaces per classroom and can confirm that we will provide the 2 car parks per classroom as per the existing standard designation condition. The stacked parking will be managed by the school office. The condition amendments proposed by Auckland Transport in regard to management of stacked parking as included in the resubmitted designation package was accepted by the Ministry of Education on behalf of the Minister.
Please elaborate on the recommendation in the Transport Assessment that the school use either the local constable or AT parking officers for enforcement to stop the blocking of private driveways.	As discussed at our meeting with Auckland Transport and Auckland Council on 14 Dec 2021, it was confirmed (by AT) that schools do have the opportunity to call on AT parking officers or the local constable to enforce illegal parking behaviours. The school also actively addresses the issue of vehicles parking over driveways through the school newsletter.
Provide consideration of the activities common to schools such as sports matches, community events, fairs, or community activities which would be permitted by the standard conditions. In particular, their transport effects particularly given the proposed roll growth and changes in parking arrangements on site.	This is an operational issue that is not relevant to the alteration. These events are infrequent and are managed by the school on a case-by-case basis. If there is a need for a larger event to be held, they may choose an offsite location.
Please provide detail on the quantum and location of easy access mobility spaces (Refer to NZS 4121).	This is an OPW matter and will be addressed at a later stage.
Please provide information about the expected staffing numbers at 1000 roll as this is relevant for determining travel demand from staff and the adequacy of the proposed parking arrangements.	This is not provided as the Minister is no longer proposing an amendment to the standard carparking condition.
Please provide information about the existing loading facilities (e.g. for waste disposal and deliveries). The Transport Assessment says that these will remain unchanged but does not establish whether they are adequate or will be affected by other changes proposed on site to accommodate roll growth.	This will be confirmed at OPW stage and should not be a matter needing to be confirmed for an alteration to the designation.