Ministry of Education

Chapel Downs Primary School – Notice of Requirement

Integrated Transportation Assessment

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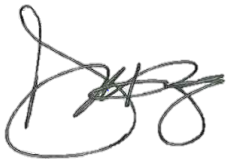

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1 BACKGROUND

1.1 Introduction

Don McKenzie Consulting Ltd has been commissioned by the Ministry of Education ("**Ministry", "MOE**") to prepare this Integrated Transport Assessment ("**ITA**") in support of a Notice of Requirement ("**NOR**") facilitating the redevelopment and expansion of the Chapel Downs Primary School to provide educational facilities for Years 9-10 students/ākonga at the current Chapel Downs School site at Chapel Road/Dawson Road, Auckland. As a Requiring Authority, the Ministry is seeking a change to the existing designation applying to the site via the NOR process.

The wider Chapel Downs / Flat Bush area is experiencing substantial growth especially in the eastern parts around Murphys Road, Thomas Road and further east including the Murphys Park, Regis Park, Mission Heights and Tuscany Estates areas. As such, additional education facilities especially within the Year 7-10 age group have been assessed by the Ministry as necessary to serve the growing residential population in the surrounding area. The geographic catchment area for the additional Year 9-10 population will generally lie to the south and east of the Dawson Road site and include parts of the new housing developments in the Thomas Road / Murphys Road areas including developments further east of Murphys Road.

The transportation effects assessed here and addressed through the proposed transport strategy measures relate to those associated with additional year groups (Years 9 - 10). However, in order to provide a robust framework for assessment, and to comprehensively appreciate the traffic environment, consideration and reference to the whole school roll growth (Years 0 – 10 ākonga) has been provided.

1.2 Notice of Requirement Context

The Chapel Downs Primary School site has been identified by the Ministry as suitable to accommodate a future masterplanned role of up to 1250 primary aged ākonga (Years 0 – 6) drawn from the surrounding residential areas of Chapel Downs/Flat Bush. It currently provides a primary level educational facility for Years 0-6 plus an on-site Early Childhood Education centre ("**ECE**"). The site will continue to provide these facilities within the existing site, and be added to via the addition of Years 7-10 ākonga, which the masterplan roll estimates to be up to 1500 in number.

It is acknowledged that the existing Chapel Downs School Designation 4912 provides for educational purposes for Years 0-8 already, and that there is no school roll cap on the number of ākonga that can be accommodated on the site under this existing designation. The need for an expanded school facility in the Flat Bush area is well-aligned with the anticipated future residential growth especially within the eastern parts of Flat Bush / Murphys Park.

As is typical for a school catering for ākonga Years 0-10, some or all of the following are expected to be developed on the site as part of future Outline Plan of Works ("**OPW**") applications:

- Buildings; including classrooms, hall, library, administration office space, staff workspace, caretakers' facilities, sick bay etc;
- Playing fields, hardcourts, playground structures;
- Vehicle accessways, parking space for staff and visitors; on-site pick-up and drop-off ("**PUDO**") area;
- Footpaths, landscaping and fencing;
- Servicing; including water, sewer, stormwater, electricity, heating, telecommunications and outdoor lighting.

1.3 Liaison with Consenting and Transport Authorities

Meetings were held between the Ministry, Auckland Council and Auckland Transport ("**AT**") during November 2023 to assist with developing the approach to this transportation assessment in support of the NOR. It was generally agreed that traffic modelling would be undertaken for key intersections surrounding the site, and that a key focus for transport assessment would be the consideration of walking, cycling and overall school travel planning mechanisms to ensure that effective transport outcomes for the future school and surrounding transport network would be achieved.

Written feedback has been received from both Auckland Council and Aukland Transport. Responses to the items raised by each is provided in **Appendix D**.

2 Existing Site Context

2.1 Site Location

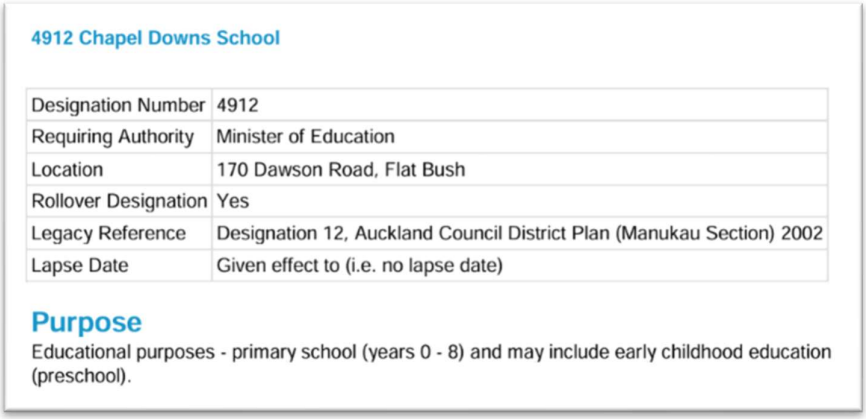
The existing Chapel Downs Primary School site is positioned to the north-west of the intersection of Chapel Road and Dawson Road, Flat Bush. It has legal road frontage, together with vehicular and pedestrian connections to both Dawson Road and Chapel Road.

The urban area surrounding the site is largely residential in nature with a small neighbourhood centre accommodating a variety of retail and services in the north-eastern quadrant of the intersection, with vehicular access off both Thomas Road and Chapel Road frontages. A two-storey residential apartment complex adjoins the school site to the south-east and immediately abuts the signalised intersection of Chapel Road and Dawson Road. This site gains access to Chapel Road via a two-way driveway towards the northern end of its frontage placing it approximately 30m south of the school boundary.

Figure 1 shows an aerial photo of the existing school site and its surroundings.

Figure 1: Site Location

An existing designation (Reference 4912) within the AUP applies to the site and provides for primary education as follows:



4912 Chapel Downs School

Designation Number	4912
Requiring Authority	Minister of Education
Location	170 Dawson Road, Flat Bush
Rollover Designation	Yes
Legacy Reference	Designation 12, Auckland Council District Plan (Manukau Section) 2002
Lapse Date	Given effect to (i.e. no lapse date)

Purpose

Educational purposes - primary school (years 0 - 8) and may include early childhood education (preschool).

Figure 2: Existing Designation 4912 – Auckland Unitary Plan

2.2 Existing Zoning, Designation and Surrounding Landuse

The surrounding areas of residential activity west of Chapel Road (and including the areas to the south of Dawson Road and extending to the south and west of the Chapel/Dawson intersection as far as Thomas Road) is zoned Mixed Housing – Urban within the AUP. The residential area to the east of Chapel Road as far south as Thomas Road is zoned Mixed Housing Suburban Zone. Areas of Residential – Town House and Apartment Building ("**THAB**") zone are provided for along both sides of Flat Bush School Road to the north of the school.

The neighbourhood shopping area to the east of the school site is zoned Business – Neighbourhood Centre.

In this regard and in terms of the existing and future likely school catchment zones that are discussed in this report, the Mixed Housing Urban and Mixed Housing Suburban zones create a range of residential densities surrounding the school supporting the establishment of the Years 9-10 education facilities proposed by the NOR, as well as the additional roll growth arising from the currently designated primary elements. While high density residential may not eventuate in the near future in close proximity to the school, it is considered that the surrounding area carries the potential for a large number of additional housing units within the catchment area for the school and supporting other existing and proposed schools in the wider area. This is anecdotally supported by an estimated 40% increase in roll growth for the existing primary school from 2023 to 2024 enrolments alone.

2.3 Public Transport

Existing public bus services run along both Chapel Road and Dawson Road through the course of each weekday with bus stops close to the Chapel Downs School site. An extract from the Auckland Transport's AT Metro bus service map is shown in **Figure 3** below.

Figure 3: Existing Bus Services and Stops

The nearest bus routes are the Route 35 service along Chapel Road connecting between Manukau and Botany Town Centres, and the Route 325 service connecting Manukau Town Centre with Mangere Town Centre via Otara and Otahuhu.

Route 35 services operate along Chapel Road adjacent to the school at a frequency during weekdays of between 15-20 minutes in each direction, with the 325 services along Dawson Road running every 20 minutes in each direction.

There are pairs of bus stops immediately adjacent to the school accesses on both Dawson and Chapel Road frontages, placing them within a one-minute walk of the school entrances, enabling a convenient access to the areas served by these bus routes.

3 Transport Environment

3.1 Existing Road Network

Figure 4 shows the location of the site (outlined in blue) in relation to the surrounding road network.

Figure 4: Road Network Surrounding the Subject Site

The key roading links and features in relation to the site primarily centre on Chapel Road and Dawson Road as the immediate legal road frontage routes across the site boundaries. The signalised intersection between these two routes is positioned near the south-eastern corner of the school site. To the west of the school site, Te Irirangi Drive provides one of the main arterial routes in the area connecting from the SH1 Southern Motorway and Great South Road within the suburb of Manukau to the south, to the Botany Town Centre and Botany Road to the north.

In relation to the Chapel Downs School site, the following sections discuss the key road frontages to the site.

3.1.1 Dawson Road

Dawson Road between the signalised intersections with Chapel Road and Te Irirangi Road (a section length of approximately 480m), is an urban road with one lane in each direction and including various sections of sealed parking shoulders (interspersed with No Stopping at All Time and bus stops) along each side. A signalised mid-block pedestrian crossing is provided adjacent to the school's pedestrian entry point approximately 120 west of the Chapel Road signals.

A typical cross section of the Dawson Road between Chapel Road and the mid-block pedestrian signals is shown in the following **Figure 5**.

Figure 5: Dawson Road (west of Chapel Road (Source: Google Streetview)

The screenshot shows the combination of kerbside parking lanes and the bus stops on each side of the carriageway, as well as the mid-block traffic signals positioned close to the main pedestrian access into the school site (located to the right of the signals). Fully continuous footpaths are available on both sides of Dawson Road, connecting with the signalised intersections at each end of this block, as well as to the school entrance point and other pedestrian routes including a walkway connecting to Nuneaton Drive which extends along the western side of the school site.

There are no time restricted controls applying to the kerbside parking areas along each side of Dawson Road between the intersections with Te Irirangi Drive and Chapel Road. A short section of No Stopping at all Times (broken yellow) markings apply adjacent to the bus stops and signalised mid-block pedestrian crossing and on the approach to the Chapel Road signals.

Dawson Road is not subject to an arterial road classification in the AUP and provides an important connection between the arterial routes to the east (Chapel) and west (Te Irirangi). The route generally operates under a posted speed limit of 50km/h, however the frontage of the school (and for an additional distance of some 125m west of the school's western boundary) currently operates as part of a 40 km/h school speed zone with reduced speed

limits operating prior to and after the school day. Additionally, the Auckland Transport Katoa Ka Ora Speed Management Programme proposes the establishment of a 30km/h temporary speed reduction (once again during school start and finish times) programmed to be operational from 2026.

The latest publicly available traffic count for Dawson Road (between Chapel and Te Irirangi) was undertaken by Auckland Transport ("**AT**") in August 2022. The count data from the AT on-line database shows a five-day (weekday) average daily traffic of some 13,870 vehicles per day ("**vpd**"). The daily and peak hour two-way volumes along this route are summarised in the following table.

Table 1: Dawson Road Traffic Count data (Source: AT traffic database)

Direction	Weekday Average Daily Traffic Volume (vpd)	AM Peak (vph)	PM Peak (vph)	Date of Count
Bothways	13,870	1,160	1,260	Aug 2022

Such volumes demonstrate a reasonably busy transport route with both the daily and peak volumes generally within the range of traffic-carrying capacity for an urban, two-lane, two-way carriageway such as Dawson Road.

3.1.2 Chapel Road

To the east of the site, Chapel Road is a classified arterial route (per AUP classifications) that extends through the Flat Bush area towards Botany in the north. The route connects via Matthews Road (to the south of the Dawson Road traffic signals) with the Aspiring Avenue – Hollyford Drive – Redoubt Road route ultimately connecting to the SH1 Southern Motorway via the Manukau interchange. To the north Chapel Road continues past the school through to the Botany suburb via major signalised intersections at Flat Bush School Road, Ormiston Road and Stancombe Road.

Chapel Road provides one traffic lane in each direction – widening to provide turning lanes at each of the signalised intersections – supported by flush medians and marked turning bays at the minor road (unsignalised) intersections. There is a narrow (1.8 – 2.0m) kerbside lane on each side of the route near the school providing for casual, unrestricted short-stay parking as well as catering for bus stops along the route. Buses using the stops along Chapel Road would straddle partly into the general traffic lane thereby requiring occasional use of the painted flush median by general traffic as they pass the buses.

The typical weekday daily volume on Chapel Road (as recorded by AT in its latest count) in this section near the school is approximately 17,500vpd and other peak hour volumes are shown in the following table.

Table 2: Chapel Road Traffic Count data (Source: AT traffic database)

Direction	Daily Traffic Volume (vpd)	AM Peak (vph)	PM Peak (vph)	Date of Count
Bothways	17,490	1,420	1,530	May 2021

The daily and peak hour flows carried by Chapel Road represent approximately 20-25% higher volumes compared to the Dawson Road route, indicating a pattern and scale of activity that is towards the upper end of the available traffic-carrying capacity of a two-lane, two-way urban arterial (generally 20,000vpd).

The current posted speed limit on Chapel Road adjacent to the school is 50 km/h. As part of the AT Katoa Ka Ora Speed Management programme, the speed limit on Chapel Road across the frontage of the school site is proposed to be subject to a temporary (start and finish of school periods) reduction to 30km/h from 2026.

3.1.3 Te Irirangi Drive

This more significant arterial route connecting Manukau with Botany (and beyond) through the Flat Bush suburb carries daily two-way volumes of approximately 37,000 vpd and peak directional flows of 1600 – 1800 vph per direction in the weekday or morning peak hours. These scale of traffic flows reflect the greater capacity of the route and the higher level of arterial function provided by this route.

The primary form of Te Irirangi Drive is a four-lane, two-way, solid median divided carriageway, with full footpaths along each side of the road. The primary intersections along its length including at Dawson Road are traffic signal controlled and provide full pedestrian crossing phases across each approach to the junctions. Due to the solid median form of the carriageway especially within the section between Dawson Road and Ormiston Road, many of the local road connections to Te Irirangi Drive are restricted to left in/left out and supported by a limited number of u-turning facilities.

Te Irirangi Drive has a current posted speed limit of 60 km/h to both the north and south of the Dawson Road intersection. A future planned phase of the AT Katoa Ka Ora (Speed Management) programme intends to reduce the permanent speed limit to 50 km/h. It is anticipated that this would occur during 2026.

3.1.4 Thomas Road

Thomas Road extends to the east from the signalised intersection of Chapel Road and Dawson Road. It provides an extension of Dawson Road connecting to Murphys Road some 1.6km to the east.

It is a two-lane, two-way urban route with opposing directions of travel separated by a simple centreline. Footpaths are available on both sides of the road over a distance of

approximately 1200m from Chapel Road, with on-going urban development of residential opportunities along the route through to Murphys Road progressively delivering additional lengths of footpath.

The latest available traffic count data from AT dates back to 2013 which, given the recent urban development within the eastern parts of the route, is considered to be of limited relevance to the current NOR process. Instead, as will be presented in more detail in later sections of this report, peak period counts were commissioned at the Thomas/Chapel/Dawson intersection, and these have been assessed to provide an updated estimate of the 2023 counts for Thomas Road. The peak hour two-way counts obtained from the survey showed the following:

Table 3: Thomas Road Traffic Count data (Source: MOE surveys)

Direction	AM Peak (vph)	PM Peak (vph)	Estimated Daily Traffic (vpd)	Date of Count
Bothways	625	674	6,500	Sept 2023

As can be appreciated, the flows on this western route are approximately one third of the flows carried by either Dawson Road or Chapel Road, reflecting the relatively lesser function played by the route in the wider network, and the comparatively smaller catchment area served by the route. It is nonetheless an important route serving the current and planned school activities within the Chapel Downs site.

3.2 Active Modes

The surrounding area of Chapel Downs and Flat Bush represents a combination of established urban area and developing residential, including a range of facilities for walking and cycling. The older (western) parts of the Chapel Downs area (around Chapel Road and Te Irirangi Road) typical involve standard footpaths along both sides of each. These can be appreciated in the previous photographs in this report depicting the sections of Chapel Road and Dawson Road. The more recently developed area east of Chapel Road and towards (and beyond) Murphys Road has incorporated additional off-road walking and cycling facilities – and these are continuing to be developed progressively in this area as new residential and urban development is delivered by land developers.

A diagram indicating the general extent of the more recent delivered and planned cycling infrastructure serving the area is included as **Figure 6** below.

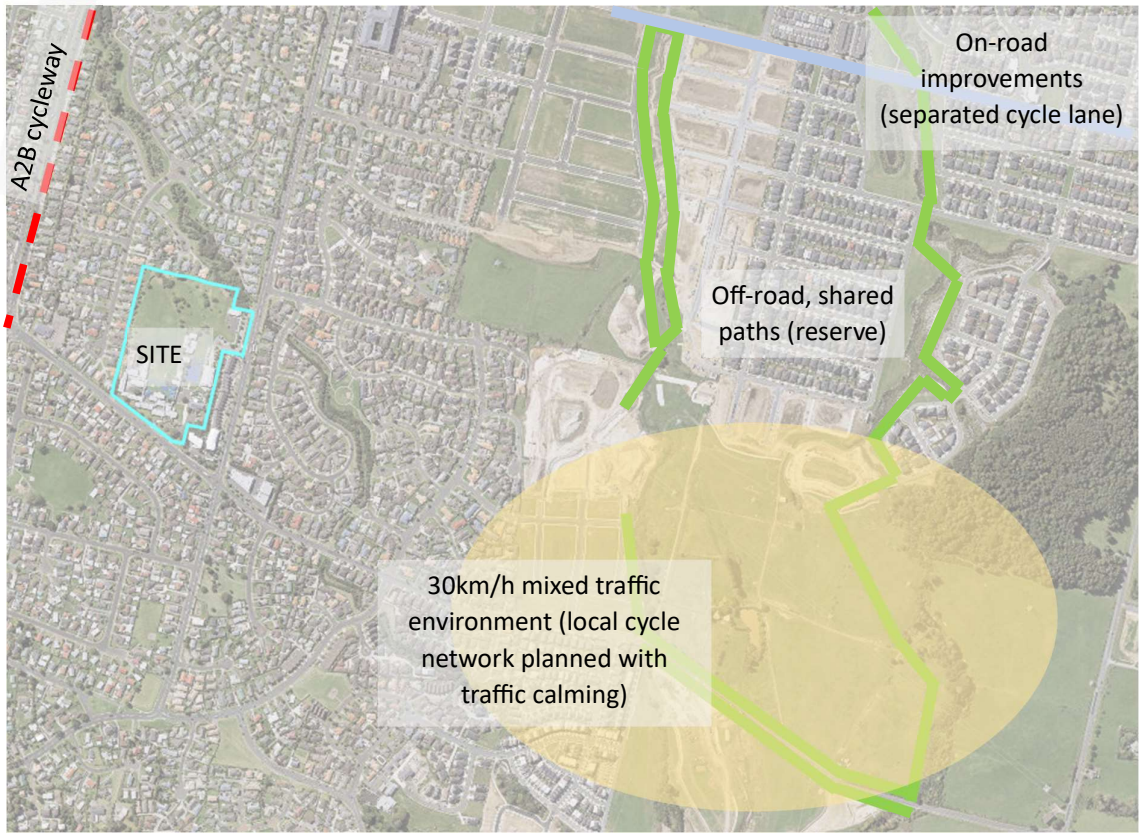


Figure 6: Surrounding Dedicated Cycling Facilities

The existing signalised pedestrian crossing facilities at the intersection of Chapel Road and Dawson Road, and at the mid-block crossing over Dawson Road to the west of the Chapel Road intersection provide a heightened level of provision for walking movements to and from the surrounding area. Standard width footpaths are available along the full frontage of the existing site and provide connection via the existing public road network surrounding the site including the walkway connection from Dawson Road into Nuneaton Drive shown in **Figure 7** below.

Figure 7: Walkway Connection Dawson Road – Nuneaton Drive

An unsignalised pedestrian crossing facility (and equipped with central refuge islands but no other markings) is positioned on Chapel Road between the entry and exit driveways serving the school. This is shown in the **Figure 8** below.

Figure 8: Chapel Road mid-block crossing

The combination of current established walking routes, along each of the adjoining and surrounding roads near the site, together with this enhanced network of provision being developed progressively in the area (including a combination of both dedicated and shared facilities) will assist in the enhancement of walking and cycling opportunities to serve the future school.

The Ministry will continue to work alongside Auckland Transport and other agencies through the future OPW and Travel Planning processes and stages of development within the site to identify active mode improvement opportunities

3.3 Future Planned Network and Improvements

The key future road network improvement projects potentially affecting the Flat Bush area are the Airport to Botany ("**A2B**") rapid transit (busway) route via Te Irirangi Drive, and a potential upgrading of Murphys Road between Mill Road and Ormiston Road.

3.3.1 Airport to Botany / A2B

The A2B project relates to the development of a separated rapid transit busway between Botany Town Centre and Auckland Airport. It was recently the subject of a NOR public hearing held during September and October 2023. The NOR was heard by a panel of independent commissioners and a recommendation on the designation for the route is expected in early 2024. Project delivery and construction is subject to a range of funding and programming factors including processes emerging from recent changes in Central Government, however even under the most favourable funding conditions, it is unlikely that the project would be open and operational for at least 10-15 years.

In relation to the Chapel Downs School site, the key features of the A2B project relevant to transport and travel operations in the vicinity of the school site would involve:

- A central-running, two-way dedicated busway on Te Irirangi Drive;
- Kerbside separated cycling and walking facilities along both sides of Te Irirangi Drive;
- A northbound bus stop/station immediately to the north of the Dawson Road intersection, and a southbound bus stop/station immediately to the south of the intersection;
- Transition of the Te Irirangi Road/Dawson Road upgrading works along Dawson Road to connect into current footpath and carriageway details.

3.3.2 Murphys Road Upgrade

Flat Bush has for many years been recognised as an area that will experience significant growth in the coming decades. This growth needs to be supported by the expansion and extension of transport facilities including additional and upgraded arterial roads (including the Mill Road corridor project to the south), bus routes such as those anticipated to be delivered by the A2B and Eastern Busway projects, pedestrian facilities, and cycling facilities.

As part of this wider transport network development, the section of Murphys Road between Redoubt Road and Flat Bush School Road had been identified within the New Zealand Upgrade Programme ("**NZUP**") (being managed and delivered by NZTA in co-ordination with AT) in the form of the Manukau to Takaanini Access and Safety ("**MTAS**") Project. This project involves widening and upgrading (including proposed traffic signals at Thomas Road) to accommodate the future expected volumes along Murphys Road, as well as providing

consistency with other sections of and connectivity to the Murphys Road and Mill Road corridors.

It is understood that the business case for pre-implementation funding to pursue the designations enabling this project is currently being considered by the Minister of Transport. Pending approval and confirmation of that business case, Waka Kotahi would proceed to undertake further investigations, refine the designs and securing the necessary designations for the upgrade projects over the coming years.

3.4 Road Safety

A search was made of the NZTA's Crash Analysis System for all reported crashes that have occurred within the vicinity of the site for the full five-year period from 2019 - 2023. The search area included:

- Chapel Road between (and including) the intersections of Dawson Road and Carrick Glen Road.
- Dawson Road between (and including) the intersections of Chapel Road and Te Irirangi Drive;

The recorded safety record for this search area over the past five years has been dominated by the crashes reported at the two major signalised intersections of Chapel/Dawson and Dawson/Te Irirangi which account for the larger scale and intensity of through and turning movements. A total of 43 crash events have been reported over the period with 13 at the Te Irirangi/Dawson intersection and 17 recorded at Chapel/Dawson.

A summary of the distribution of the reported crashes over this time is presented in **Figures 9 and 10**.

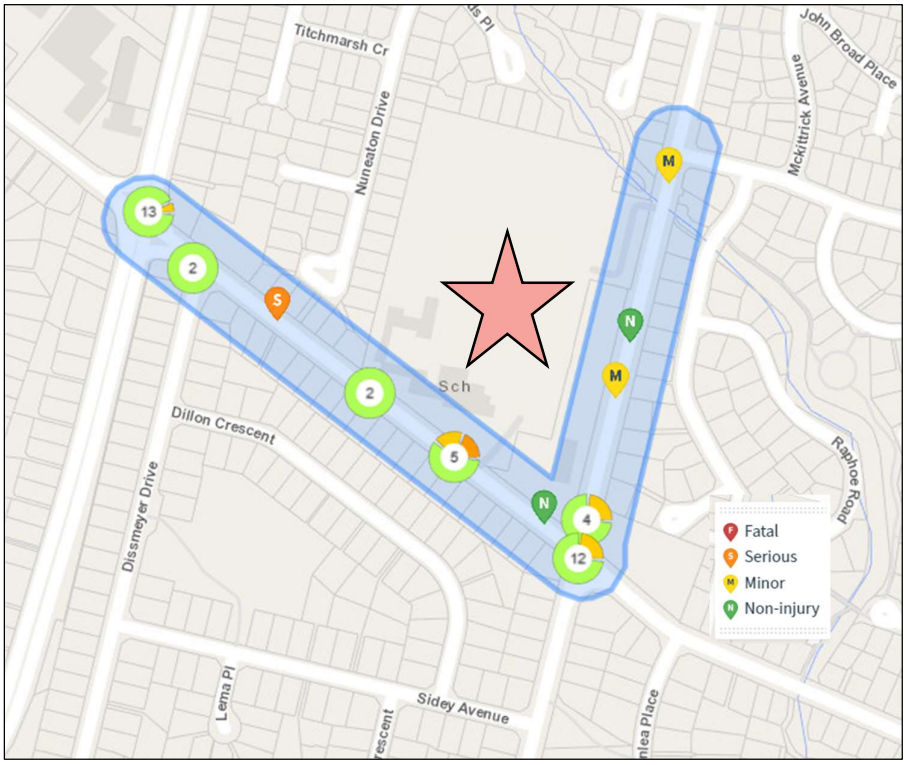


Figure 9: Crash Reports (by severity) (2019-2023)

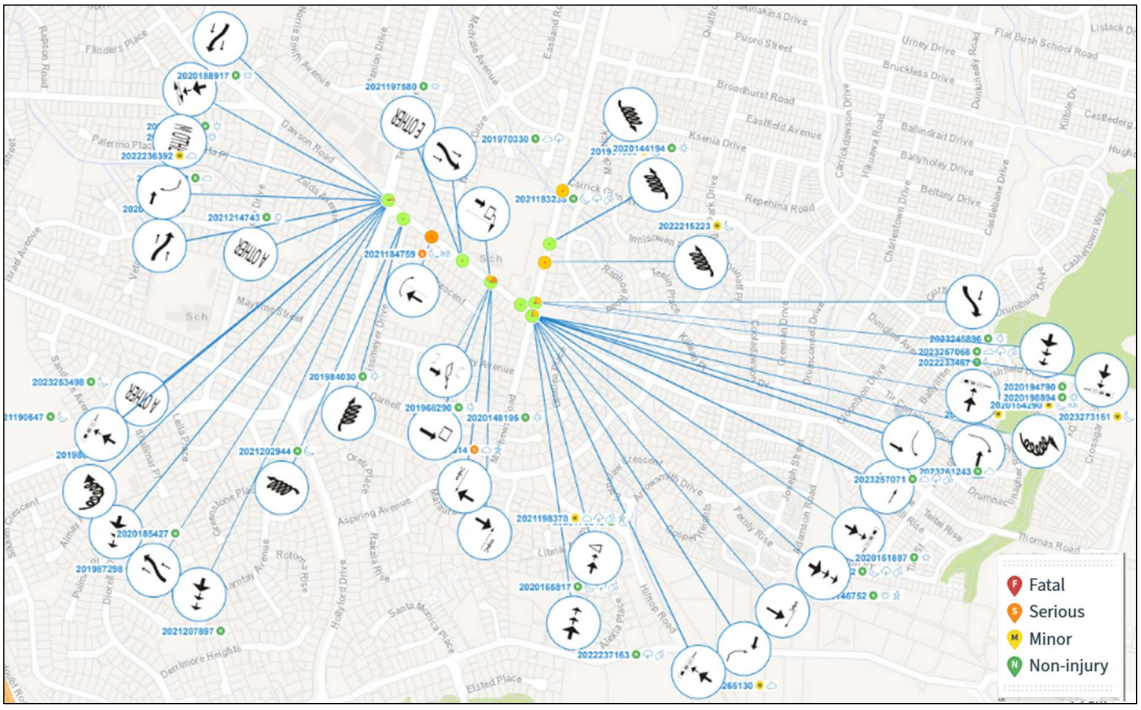


Figure 1010: Crash Reports (by manoeuvre) (2019-2023)

Key features of the pattern and nature of crashes reported include:

- Dawson/Te Irirangi – one minor, and 12 non-injury crashes reported. The clear majority of the events reported involved either queuing/rear end or overtaking/lane changes. Only one (minor-injury) event involved a turning vehicle.
- Mid-block Dawson (excluding the intersections with Te Irirangi and Chapel) – two serious, one minor and seven non-injury crashes reported. A variety of manoeuvres were involved including u-turn collisions, conflicts between through traffic and pedestrians (see below), parking manoeuvres, access to private properties and changing lanes.
- The reports for this mid-block section of Dawson Road include one serious and one minor injury pedestrian crossing crashes both involving ākonga at or near the pedestrian crossing / mid-block traffic signals at the school entrance on Dawson Road. One of the events (minor injury) involved a vehicle not stopping for the pedestrian signals and colliding with a school-aged pedestrian crossing towards the school; while the serious injury event involved a school-aged child crossing from the school side of the road following the end of school emerging from between cars on the northern side of the road being struck by a passing vehicle.
- Intersection of Chapel and Dawson Roads – the pattern of the total of 17 reported events (including four minor and 13 non-injury events) over the five-year search period represent a range of manoeuvres typical for a busy, urban signalised intersection. Only one non-injury event involved a pedestrian where a driver failed to stop at a red light (arrow) impacting with a school-aged pedestrian was crossing Chapel Road towards the school.
- Other manoeuvres represented with the intersection record largely centre on queuing and lane changing (ten of the 17 reported crashes) together with crossing/turning, merging and loss of control.
- Mid-block Chapel Road (Thomas/Dawson to Carrick Glen Road) – two minor and one non-injury crashes all involving loss of control due to driver inattention or negligence. It is noted that within this section there have been no events involving either pedestrians or access to/from the school's driveways.
- Intersection of Chapel Road and Carrick Glen Avenue – no events have been reported at this location over the search period.

As discussed above the three pedestrian related events (involving one serious, one minor and one non-injury crash) plus three parking/unparking/manoeuvring non-injury events help to illustrate the variety of road user activity generated by the current school. These matters highlight the importance of road safety within the wider consideration of the school activity for future OPW processes once development proposals are known and the specific design responses have been developed within the school and adjoining connections to the surrounding road network. While there have been road safety events reported over the past five years involving both pedestrians and parking activity along the site frontages, this does not highlight a specific or repeated road safety concern. These events however identify the on-going need to ensure that future OPW and Travel Planning associated with the delivery of the additional Years 9-10 education facilities within the site includes specific attention to road safety and appropriate provision for those active modes of travel, in particular.

In terms of the overall operation and effectiveness of the road environment under ordinary, day-to-day operation, this record of road safety events does not raise any concern with regard to the on-going operation of the site under the existing designation catering for Years 0-8 ākonga and is not likely to be affected by the proposed NOR seeking extension of learning facilities to include Years 9-10 ākonga. Further detailed and updated road safety reviews are expected to support all subsequent OPW applications to assess the specific effects of specific activities within the overall framework of development that will be facilitated by the change of designation to the Chapel Downs School site currently being sought.

4 Strategic Context

4.1 Relevant Strategies and Policies

The following relevant regional and local plans need to be considered from a transport perspective to ensure consistency with outcomes.

4.1.1 Auckland Plan

A 30-year strategy to manage Auckland's growth and development. The Auckland Plan identifies three major challenges facing Auckland:

- Population growth and its implications.
- Sharing prosperity with all Aucklanders, and
- Reducing environmental degradation.

Among the transport-related focus areas of the Auckland Plan (albeit that it addresses the issues facing the whole region and addresses bigger-picture, strategic transport matters relevant to the whole region) include making walking, cycling and public transport preferred choices, reducing death and serious injuries on the road, and developing a sustainable and resilient transport network. The Plan acknowledges that few Aucklanders use their bikes to travel to school, and that achieving a greater overall number and proportion of ākonga cycling to their daily school attendance will ease congestion, reduce the environmental impact of travel, and improve the health of those that cycle. Auckland Council has indicated cycling infrastructure as an area for increased investment.

The key elements of the NOR and its supporting conditions being sought for the Chapel Downs school designation that will be discussed in later sections of this report address each of these matters with a particular focus away from private car travel for ākonga attending the future schools on the site and promoting walking and cycling.

4.1.2 Auckland Regional Land Transport Plan 2021-2031

The Regional Land Transport Plan ("**RLTP**") is a 10-year transport investment programme for Auckland which sets out the land transport objectives, policies and measures for the Auckland region over the next 10 years. It aligns with other strategies and plans (including the Auckland Plan and the Auckland Transport Alignment Project between Auckland Council and Central Government) as well as drawing together plans, strategies and projects delivered by other transport agencies such as Waka Kotahi | New Zealand Transport Agency.

It is intended that the RLTP will (amongst other areas) identify the projects and associated funding programme to achieve the anticipated growth of Auckland without increased congestion through multiple and genuine travel choices. In order to address Auckland's challenges, the RLTP tracks the active and sustainable mode share at schools as a performance measure.

The RLTP does not refer to any specific road or transport facility upgrade works in proximity to the NOR site other than the Airport to Botany Busway previously described along the Te Irirangi Drive corridor.

5 Notice of Requirement

5.1 Current School Arrangements and Designation

The current Chapel Downs Primary School caters for Years 0-6 ākonga. The existing Designation 4912 within the AUP enables education facilities within the subject site to cater for Years 0-8 ākonga and is supported by a standard MOE designation condition requiring a minimum of two on-site parking spaces for each teaching space where a net increase occurs. The predicted growth of the primary school is for the current roll of 720[1] ākonga to grow to 1,250 ākonga over the next 5-10 years. This growth is enabled under the current designation, with effects expected to be addressed through future Outline Plans of Works associated with changes to the built form to accommodate the student population.

Existing facilities within the Chapel Downs Primary School include:

- A total of 32 teaching spaces (as at the time of the Sept 2023 surveys[2]);
- Approximately 70 on-site parking spaces;
- Vehicle access to staff parking via a two-way driveway connecting to the Dawson Road frontage, and access to parent/visitor PUDO and parking areas via Chapel Road (via a pair of one-way driveways);
- Separated pedestrian access routes connecting the schoolgrounds to each of the footpaths across the site road frontages, and
- A large playing/sports field within the northern part of the site.

5.2 Existing Catchment/Zoning

The current Primary School operates an enrolment zone covering the following areas:

[1] At the time of writing
[2] At the time of writing

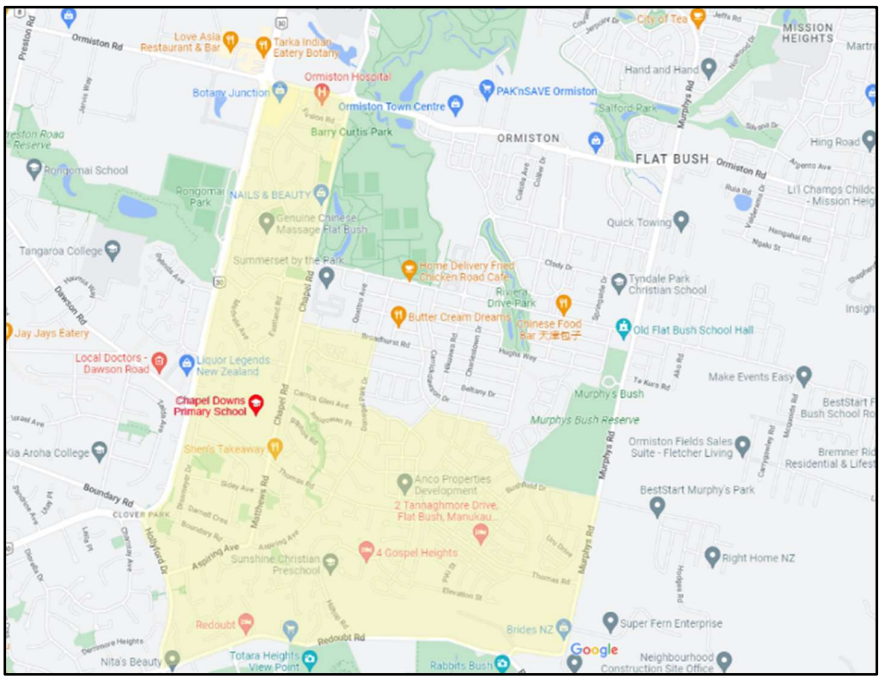


Figure 11: Existing Enrolment Zone (Primary)

As can be appreciated from the above figure, the current student roll is drawn from the broader Chapel Downs/Flat Bush area generally contained with the geographic area bounded by:

- Te Irirangi Drive;
- Redoubt Road;
- Murphys Road;
- parts of Bushfield Road, Castlebane Drive, Donegal Park Drive and Broadhurst Road, and
- Ormiston Road.

In this regard, and as will be evident in the following assessment of the traffic distribution of current and future school rolls, the majority of the current catchment area lies to the south-east of the site and is accessed via Thomas Road and Matthews Road.

5.3 Change of Designation Proposal

In response to the current and planned residential growth in the Flat Bush and surrounding residential areas, there is a specific and identified need for the school to grow both within the Years 0-6 primary school and to extend the education facilities available within the site to Years 7-10 ākonga. The NOR's proposal to alter the conditions of the current designation reflects the transportation conditions discussed in the following sections of this report, facilitating an effective school facility aligned and integrated with the surrounding transport network over the years to come.

A diagram indicating the indicative catchment zones for Year 7-10 ākonga and the existing Chapel Downs Primary School Enrolment Scheme (underlaid by the current AUP zoning of the area) is shown in **Figure 12** below.

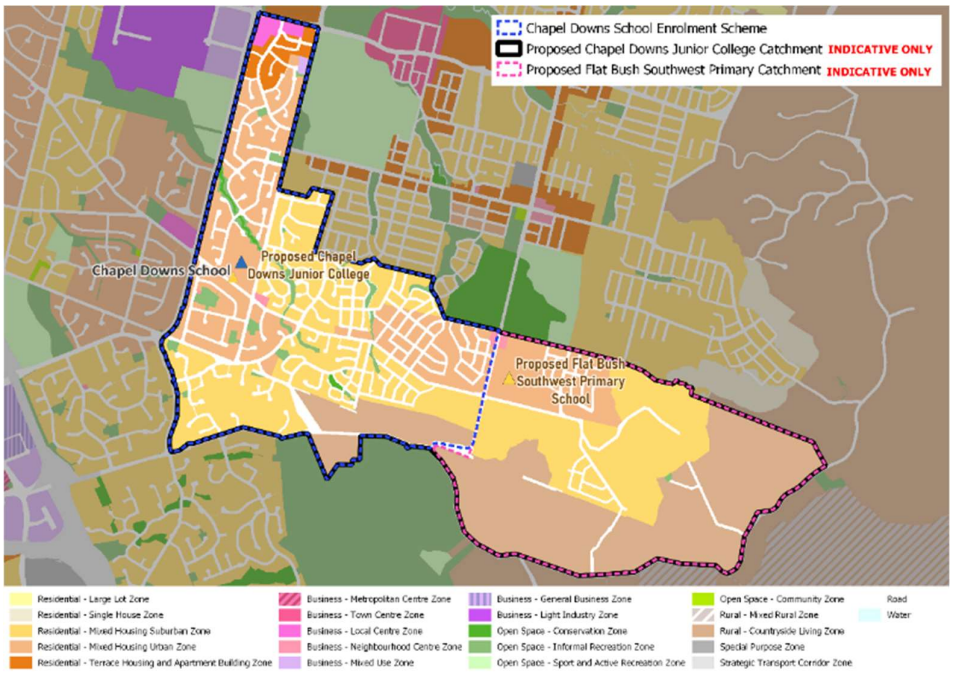


Figure 12: Indicative Future Enrolment Zones

6 Assessment of Transport Effects of NOR

6.1 Overview

The proposed transport strategy supporting the proposed Year 9-10 educational activities that will be facilitated through the Alteration of Designation process has been framed around specific consideration of the existing and future transport network surrounding the site. The effects assessed here and addressed through the proposed transport strategy measures relate to those associated with additional year groups (Years 9 and 10), however in order to provide a robust framework for assessment and to comprehensively appreciate the traffic environment consideration and reference to the whole school roll growth (Years 0 – 10) has been provided. The proposed designation conditions are intended to address the external effects associated with the generation of parent/caregiver vehicles dropping off and picking up ākonga at the site and encouraging/promoting a range of alternative travel modes to be adopted by ākonga and their families in accessing the site.

As will be shown in the following sections of this report, the assessment of the existing (and likely future) turning traffic volumes along the Chapel Road frontage of the site inclusive of the school access points and the nearest signalised intersections (Dawson Road and Flat Bush School Road), has identified the likely need to limit the additional turning traffic movements to and from the school site (across the Chapel Road site frontage) based on traffic capacity constraints at these signalised intersections near the school.

Accordingly, a multi-faceted approach to limiting the additional traffic movements to and from the future school site (via the Chapel Road accesses) is proposed. This focuses on a managed transport and parking scenario where both on-site PUDO and parking facilities and recommended school travel planning processes are proposed. As will be appreciated from the preceding assessment and discussion, the “managed transport outcome” approach to addressing and managing transport effects arising from the NOR, has sought to optimise specific physical interventions or changes to infrastructure to match the specific needs of the travel demands associated with future development of the school, and the relationship between the school and the surrounding road network especially as it develops and changes over coming years.

The roll growth of the baseline Primary School activity on the current site is generally unconstrained in terms of the current NOR, while the rate and nature of specific development and growth of the Years 9-10 cohort will be largely uncertain. In recognition of these issues and the desire to maintain infrastructure and travel management response to a level that is commensurate with the transport effects that are to be addressed, it is considered appropriate that an iterative assessment approach be adopted. It will be through those future OPW processes (each including specific assessment of transport effects and in recognition of potential changes within the surrounding transport network) that greater levels of certainty can be built into assessments at those future date and any specific transport interventions (either by way of infrastructure or travel demand management) be

identified alongside and in response to the outcomes of School Travel Plan processes and the like.

In parallel with the dynamic nature of transport environment, it is also appreciated that the urban growth and development that is currently occurring within that area around Thomas Road, Murphys Road and further east will most likely lead to additional travel demands both by vehicle and walking movements (some of which will be associated with a vehicle movement by way of a PUDO activity). In this regard, it is anticipated that the managed, travel plan focussed transport responses by the Ministry, or the school associated with future OPWs could include the identification of additional capacity and safety-related improvements such as potential signal controls for the Chapel Road driveway. The triggering of these is recommended to be addressed as part of the OPW processes and Travel Plan review requirements as set out in the NOR conditions, which would also allow for consideration of other improvements that AT might be investigating (or have already implemented) for the surrounding network.

The proposed transport strategy elements recommended to support the Notice of Requirement include:

- Managed and Limited On-site Parking – additional on-site parking spaces (and use as PUDO) will be provided within the school site, with access from Chapel Road, and limited to one parking space per teaching space. Priority use of the PUDO parking spaces is recommended to be afforded to younger primary ākonga;
- Access – Dawson Road – staff entrance and secondary entrance to parent/visitor parking area;
- School Travel Plan – development, operation and review of a School Travel Plan (potentially in association with Auckland Transport's TravelWise travel planning programme);
- Potential Additional Walking Access – consideration of the need for, and the options to create, new walking connections to and from the school site – including for example Gerold's Place along the northern boundary of the site, via Medvale Avenue Reserve.

6.2 Current Operations – Chapel Road

A series of intersection traffic counts were commissioned and undertaken on 19 September 2023 covering each of the following intersections/driveways surrounding the Chapel Downs School site:

- Chapel Road / Flat Bush School Road;
- Chapel Road / School exit
- Chapel Road / School entry
- Chapel Road / Dawson Road
- Dawson Road / school staff driveway
- Dawson Road / Te Irirangi Road

Diagrams showing the pre- and post-school peak period traffic counts at each of these locations are attached in **Figure 13** and **Figure 14**.

Information pertaining to the intersection of Te Irirangi Drive and Dawson Road is attached in **Appendix B**. It has been determined that due to the limited traffic movements directed to and from the school site and the overall capacity of that intersection, that specific traffic modelling of that intersection as part of this assessment was of limited value in the overall consideration of the NOR application.

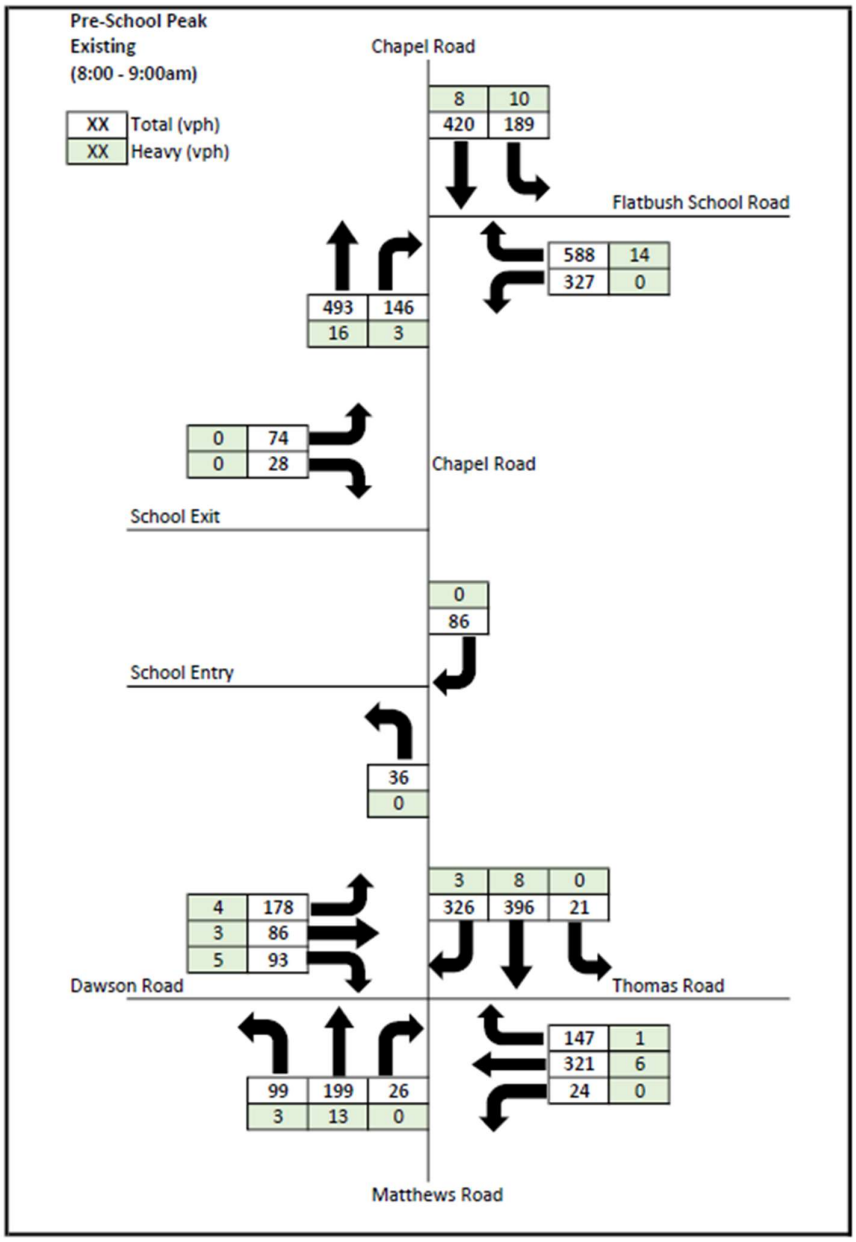


Figure 13: Existing Before School Peak Flows (8.00 – 9.00am)

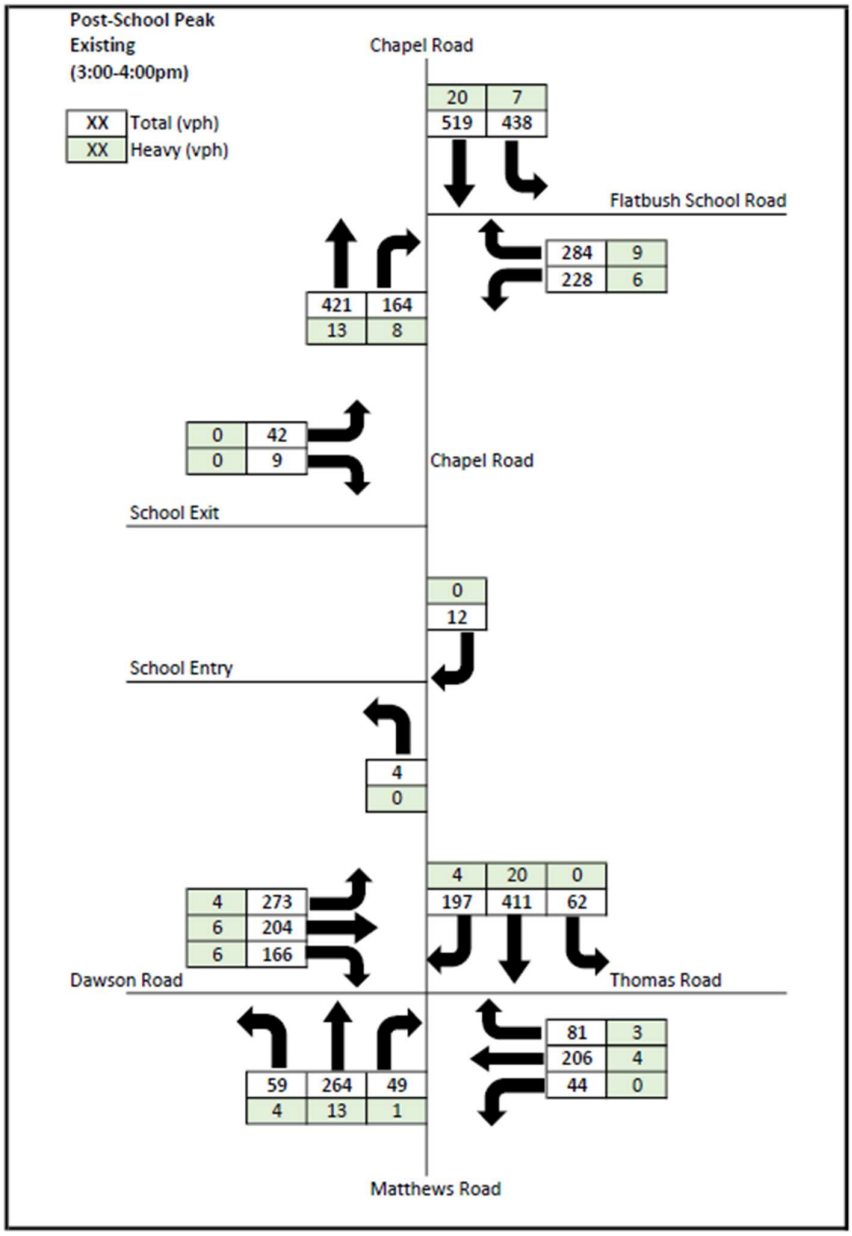


Figure 14: Existing After-School Peak Flows (3.00 – 4.00pm)

The key patterns emerging from the counts show the combined dominance of the arterial through-movements along both Chapel Road and Te Irirangi Drive especially during the pre-school peak period. The mid-afternoon post-school peak carries generally lower traffic flows than during the commuter peak occurring later in the afternoon. However, during this period and as will be evident in some of the analysis presented in subsequent sections, there is a general level of traffic movement and activity evident along the Chapel Road corridor especially. While many of the busiest movement directions represent movement generally towards the Southern Motorway (and onward towards other parts of the city), there is also a notable northbound movement direction along both of these north-south routes with traffic headed towards Botany and Flat Bush Town Centre. Dawson Road represents a key

connection between these two north-south routes and combines the flows approaching Te Irirangi Drive from both Thomas Road (east of the school) and Chapel Road (north of the school).

For the entry movements into the school (via the Chapel Road entry-only driveway) approximately one third approach from the south and two-thirds from the north (from the direction of Flat Bush School Road and Ormiston). Then upon departure during the morning period, there is a dominance of turns left out of the school driveway (back towards the north) reflecting a notable proportion of parents/caregivers are delivering ākonga to the school as a primary (or specific) visit to the site. There is more modest level of "pass-by" movement where the delivery of ākonga to the school site represents part of a passing traffic movement along Chapel Road.

Copies of the current performance of the two key signalised intersections at Flat Bush School Road and Dawson Road intersections with Chapel Road, as assessed using SIDRA intersection traffic modelling software are included in **Appendix B**.

As will be discussed in more detail in the following section, the operation of the Flat Bush School Road / Chapel Road intersection represents a particularly busy intersection within the surrounding network, and with the volume of right turning movements out of Flat Bush School Road onto Chapel Road northbound towards Ormiston Road and Botany, there are evident constraints in terms of the capacity of this intersection compared to for example, the Ormiston/Chapel intersection. The Flat Bush School Road route serves the transport needs of the growing urban area east of Chapel Road and Murphys Road (Murphys Park) and upon intersecting with Chapel Road, flows are required to turn left or right. The Thomas Road/Dawson Road route extends from the Murphys Park area towards the school and across Te Irirangi Road, terminating at Preston Road to the west.

As will be presented in the next section of this assessment, the increasing dominance of Thomas Road in serving the future school catchment area will play an increasingly important role for both vehicular as well as general school population travel patterns to and from the school.

6.3 Anticipated Traffic Effects

The current primary school operates under the existing Designation 4912 which authorises development of the primary school subject only to the provision of a minimum of two parking spaces per teaching space. The assessment framework against which the effects of the proposed Alternation of Designation is set reflects the fact that the current Designation does not impose any additional restriction on the scale or intensity of the primary school activity that could be developed within the site (other than through the normal OPW requirements). Such a forward planning pathway (or baseline) for primary school activity within the site is therefore not specifically constrained by the existing (or likely future) operation of the surrounding Flat Bush transport network.

The Years 9-10 component of the school operation that would be facilitated through the Alteration of Designation 4912 would see a student enrolment catchment broadly as per **Figure 15**.

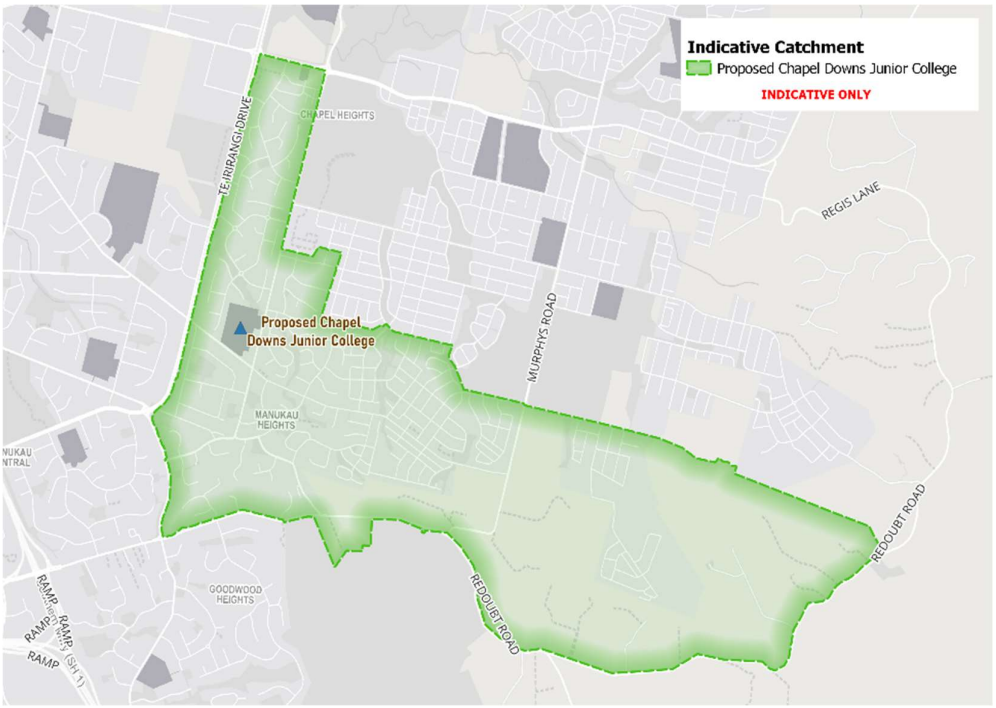


Figure 15: Expected Years 7-10 Enrolment Zone

The catchment can be described as lying generally between Redoubt Road to the south and Ormiston Road in the north and as far east as Redoubt Road. The future catchment for Years 7-10 is currently expected to span part of the existing enrolment zones for both Tangaroa College and Ormiston Junior College. The combined catchments for the Chapel Downs site depicted above is indicative only at this stage. The final catchment zone will be subject to discussions and confirmation by the School's Board of Trustees following consultation with the community undertaken in tandem with this NOR.

In terms of the proposed alteration to conditions for a change of the designation, it has been assessed that simple expansion of the current primary school activities would give rise to a range of external transport effects that may not be able to be satisfactorily accommodated by the surrounding network. A quantified traffic generation analysis has been undertaken using the surveys of current school PUDO activity as surveyed in September 2023. A summary of the analysis is provided as follows:

1. Existing peak (pre-school) peak generation of the current school is associated with a total of 230vph (two-way) in the hour ended 9.00am to and from the Chapel Road frontage of the site;
2. The equivalent post-school hourly traffic generation was found to be 73vph (3.00-4.00pm);
3. The critical peak period was therefore found to be the morning pre-school peak hour ended 9.00am;
4. The existing primary school (at the time of the surveys in September 2023) comprised of a total of 32 classrooms/teaching spaces ("**TS**") and 70 on-site parking/PUDO spaces;
5. The pre-school peak generation rate was therefore determined to be 7.2 vph/TS;
6. The current school site comprises 20 TS and 70 parking spaces, representing a parking supply ratio of 2.2 parking spaces/TS;
7. The latest masterplan developed by the Ministry anticipates a future site development of some 123 TS (within the wider school site catering for Years 0-10 ākonga), and
8. Application of a pro-rata basis of the existing traffic activity (and assuming continuation of the current parking ratio) the future total traffic generation of the site (incorporating current activity) could be in excess of 880vph in the morning pre-school peak hour ended 9.00am.

On the basis of a range of evaluations of the adjoining Chapel Road corridor including specific consideration of the ability of the two signalised intersections at Flat Bush School Road and Dawson Road to accommodate additional peak period traffic movements, it has been identified that the future operation of these intersections can be reasonably expected to be maintained if the additional traffic generation into and out of the site from its existing Chapel Road access points associated with the change of designation was limited to +200 vph in the hour ended 9.00am.

Copies of the SIDRA analysis developed and reflecting the expected future catchment areas of the school accommodating the additional 200vph to and from the school site are included within **Appendix B**.

The following diagrams **Figures 16 and 17** show the turning traffic movements for the scenario including an additional 200vph to and from the Chapel Downs school site.

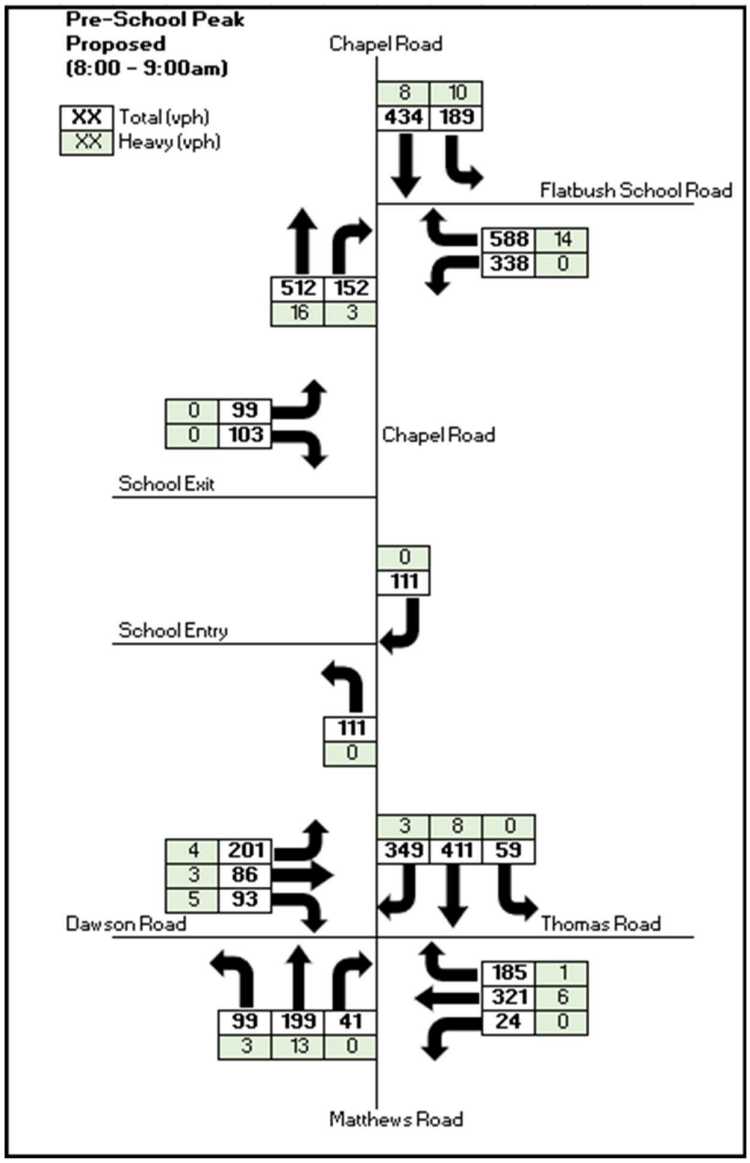


Figure 16: Future Before School Peak Flows (8.00 – 9.00am)

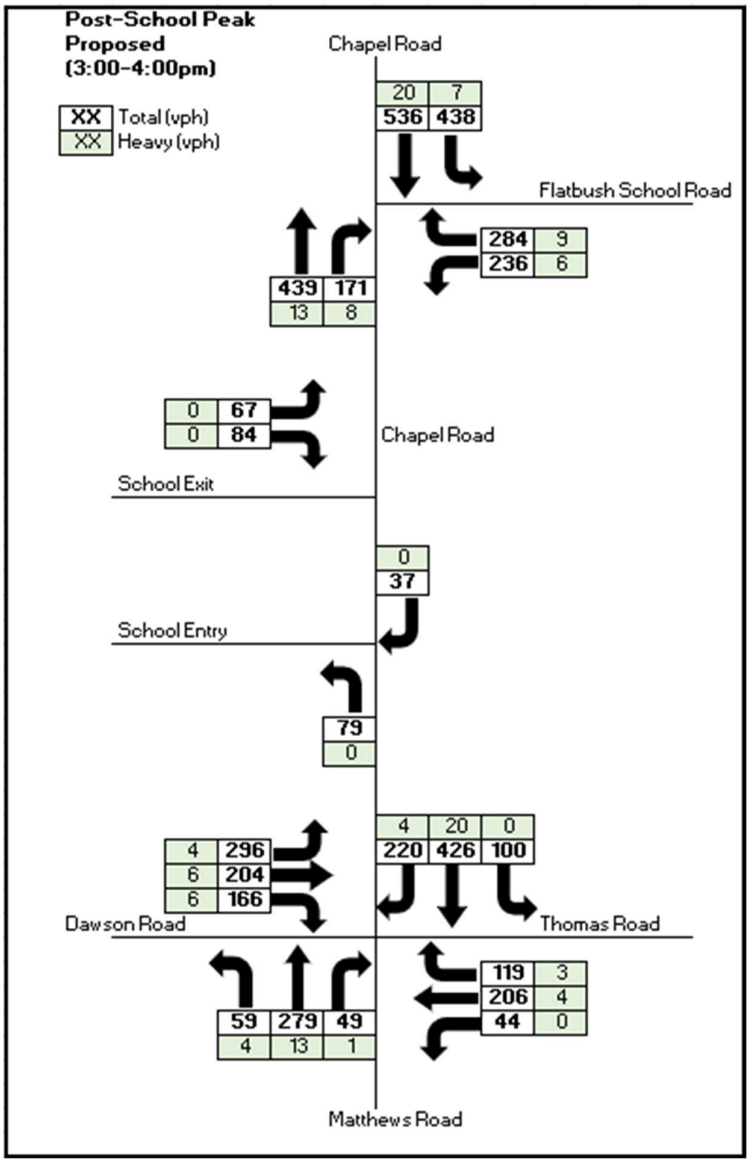


Figure 17: Future Post- School Peak Flows (3.00 – 4.00pm)

The future expected enrolment zone would see a focus on the residential areas adjacent to and surrounding Thomas Road to the east of the Chapel Downs site, as well as extending to the east of Murphys Road. In this regard, the future traffic activity associated with the change of Designation 4912 is considered to be associated with approximately 75% of activity directed to/from the south and of these movements 20% to/from Matthews Road, 50% via Thomas Road, and 30% to and from Dawson Road.

The SIDRA analysis shows that each of the critical traffic movements at the Chapel/Dawson intersection remain within the practical traffic carrying capacity (Degree of Saturation less than 1.0, and average movement delays less than approximately 40 sec/veh). It is recognised that on-going urban and residential growth of the surrounding areas in Flat Bush, Botany and Murphys Park will continue to put pressure on the transport network, however as will be discussed shortly, the transport response associated with the addition of the Years

9-10 ākonga and roll growth for the primary school, will need to be associated with promotion of additional mode choices including greater walking and cycling activity.

6.4 Mechanisms to Support Transport Strategy Outcomes

6.4.1 On-site Parking

The current school provides an on-site parking/PUDO supply ratio of approximately 2.2 parking spaces/TS. In order to constrain the external traffic movements to and from the school site under the change of Designation 4912, it is recommended that a reduced on-site parking supply ratio is implemented by way of the proposed conditions in support of the revised designation. The following analysis sets out the development of the required parking supply to help deliver the anticipated transport outcomes.

- The SIDRA traffic analysis has determined that an additional 200vph (up to a total pre-school peak hour period total traffic movements of 430vph);
- On the assumption that the masterplanned school development inclusive of primary (including roll growth up to 1250 ākonga) and a future Years 9-10 ākonga (up to a future roll of 1500 ākonga) there would be some 123 TS within the site;
- The future "unconstrained" trip generation of the site would therefore be 430vph divided by 123 TS or 3.5 vph/TS;
- The current trip generation (determined by way of Sept 2023 surveys) was found to be 7.2 vph/TS;
- The ratio of these trip generation rates is then 3.5 ÷ 7.2 = 0.49;
- Applying this multiplication factor to the current on-site parking supply ratio gives: 2.2 x 0.49 = 1.07 spaces/TS, and
- It is therefore recommended that in order to achieve a restriction of external traffic movements to no more than 200vph, on-site parking associated with the amended designation should be limited to a maximum of 1.0 space/TS.

6.4.2 External Pick-Up and Drop-Off

On the basis of the previous assessment, it is expected that the 123 on-site parking spaces (at a supply ratio of 1.0 spaces/TS) would be intended to serve a portion of the school roll, primarily those more vulnerable younger ākonga. It is therefore recommended that priority be afforded to the younger age ākonga using the on-site PUDO areas. On the basis of general experience that on-site drop-off of primary school-age ākonga would typically involve an average occupancy of a parking space of 5min and that school drop-off in the morning generally occurs over a 30-minute period prior to the start of school, the total of 430vph able to be accommodated at the school's Chapel Road access driveways would cater for the PUDO needs of the following numbers of ākonga:

- Stats NZ information from the 2018 Census and "Main Means of Travel to Education" dataset pertaining to the Ormiston census area (inclusive of primary, Junior and Senior College education facilities) indicated that 71% of primary-aged ākonga are driven to school and 50% of Junior High-aged ākonga are driven;
- Applying the masterplan roll of 1500 for Years 7-10 and a mode share of 50% travel by car and a vehicle occupancy of 1.4 ākonga per vehicle gives a total PUDO demand generation of up to 535 Years 7-10-related vehicles;
- With the proposed priority for on-site PUDO given to primary school as recommended, this translates into the requirement for these 535 Years 7-10 vehicles to be catered for within the surrounding roads and any future remote PUDO facilities that may be developed in the future around the Chapel Downs area;
- At an estimated average drop-off duration for these Years 7-10 ākonga of 2 minutes (for the morning), and the morning pre-school drop-off activity extending over approximately 30 minutes, this would likely involve approximately 36 parking spaces (each space turning over approximately 15 times during the 30 minutes leading up to the start of school);
- Meanwhile, applying the masterplan roll of 1250 Primary ākonga and the mode share of 71% travel by car from Census 2018 and a vehicle occupancy of 1.4 ākonga per vehicle gives a total (on-site plus off-site) PUDO requirement of 633 primary-related vehicles. With an average drop-off duration of 5 minutes per vehicle during the morning drop-off period (and a consequential turnover of each space 6 times within the 30 minutes prior to the start of school) the 633 vehicles would typically occupy a total of 105 spaces.
- Meanwhile recognising a greater duration of stay (and earlier arrival of parents) during the post-school period, consideration has been given to a doubling of the average duration of stay to 10 minutes per vehicle during the past-school period (i.e. each space turns over only 3 times during the 30-minute period following the end of school day). In this case the 633 vehicles generated would typically occupy up to 211 spaces during this afternoon period.
- As the masterplan development is recommended to provide no more than 123 on-site parking and PUDO spaces, it is projected that at least half of these will be available for parent PUDO activity leaving a likely requirement for up to approximately 60 external kerbside spaces surrounding the school site for primary PUDO activities during the morning pre-school period and up to 120 external kerbside spaces during the post-school period.

Based on a preliminary assessment of the kerbside parking facilities currently available around the site there is at least 800m of kerbline or between 130 and 150 vehicle parking spaces available within approximately 5 – 8 minute walk (580m) of the school.

A depiction of the extent of kerbside parking facilities currently available within the 5-8minutes walk of the school site is shown in the following **Figure 18**.

Figure 18:Kerbside Parking Extent (8min, 580m from school entrances)

In this regard, it is considered that there will be ample available kerbside parking facilities and options throughout the surrounding area than can be adopted by the parents of the future school as whole.

Using the combination of the reported crash assessment presented in Section 3.3 of this reported together with on-site observations of pre- and post-school activity it can be concluded that with the current extent of both available kerbside (and other) parking areas and the formalised crossing facilities at both the mid-block pedestrian crossing and the signalised intersection of Dawson Road / Chapel Road, the continued and expanded use of these kerbside areas can be expected to continue to operate safely. The continued and potentially expanded school safety patrols at key crossing and entry points to the school is expected to maintain the existing safety performance of the surrounding routes.

Future OPW applications to deliver the educational facilities identified within the framework that will be established through the Alteration to Designation, will assess in greater detail the extent and nature of the off-site kerbside parking needs (and other transport facilities) associated with each stage of the future school development.

6.4.3 Early Childhood Education (ECE) Parking

In addition to any car parking required for the school through future OPW processes, on-site parking for any ECE / preschool activity is recommended to be provided at a rate of one car

park for every 10 children to be catered for at the facility, plus one per each full-time equivalent staff member. Once again (as in relation to other parking to be provided within the wider Chapel Downs site) these ratios should be confirmed and agreed with Council on the basis of specific study aligning with the wider objectives of the travel planning and transport objectives previously discussed.

A recommended condition of the NOR relating to ECE parking is proposed accordingly.

6.4.4 School Travel Planning

It is recommended that the Alteration to Designation 4912 be supported by conditions requiring the development and operation of a School Travel Plan (as part of a Transportation Assessment Report prepared as part of the Establishment phase of the Years 7-10 activities) to assist in the reinforcement of travel choice behaviour on the part of ākonga and their parents. The recommended School Travel Plan could be produced and supported by Auckland Transport's TravelWise programme.

It should provide measures and mechanisms to encourage and incentivise active travel to and from the school site, and to reinforce the previously identified traffic capacity constraints imposed by the adjoining road network. Alongside the travel demand and management approach recommended, the school's travel plans and the reviews proposed alongside Auckland Transport should consider and incorporate the need for and implementation arrangements for any physical measures or interventions within or adjoining the school site, or in the surrounding area.

As included in the proposed conditions, the School Travel Plan should be prepared as part of the Establishment OPW in conjunction with the Design Concept Plan and Transport Assessment.

6.4.5 Pedestrian and Cyclists

Pedestrian and cycle access for the school is currently separated from the vehicle accesses allowing for a separation between vehicles and ākonga/parents entering and exiting the school grounds on foot. Primary pedestrian entrances are currently available on both Dawson Road and Chapel Road and these are proposed to be retained in large part to cater for the future primary and Year 7-10 activities accommodated on site.

Further, more detailed design of any changes to the pedestrian and cyclist access points and associated facilities within the site will be developed at OPW stage taking into account accessibility, safety and pedestrian desire lines.

It is recommended that subsequent OPW processes can and should consider any provision for additional walking routes connecting to the school site, for example from Gerolds Place and the Medvale Reserve along the northern boundary of the site. Currently, the only means of pedestrian access into the site from the north is via the current public footpaths

on Medvale Avenue, Chapel Road, Nuneaton Drive and Dawson Road connecting to the school pedestrian entries on each of the site's road frontages. A connection to and from the north would allow an increased pedestrian permeability and utilisation of the surrounding pedestrian network, safely catering for those ākonga and whanau walking from the catchment area located between Chapel Road and Te Irirangi Drive north of the site.

7 Conclusions

This transportation assessment has been prepared in support of a Notice of Requirement facilitating an Alteration of Designation 4219 within the Auckland Unitary Plan to allow for the future development and expansion of the Chapel Downs Primary School to provide for Years 9-10 educational facilities within the site.

As addressed within the detail of the reporting, the Flat Bush area and surrounding suburbs are experiencing and expecting substantial growth over coming years. As such, additional education facilities especially within the Years 7-10 ākonga have been assessed by the Ministry as necessary to serve the growing community. The detail of the assessment contained in this report has identified a number of transport challenges faced by the school site and the surrounding transport network, in large part due to the growth of the urban population in the surrounding area. Accordingly, the transport response accompanying the NOR draws upon a multi-modal, transport management approach recognising the limitations imposed by the adjoining public road network, as well as promoting walking, cycling and travel planning to address the travel needs of the future school population. In particular, it is recommended that a constrained on-site parking regime be initiated for the establishment of the Year 9-10 component of future development, to be undertaken in association with a school travel plan preparation and implementation/review.

The purpose of the transportation evaluation contained within the following report is to evaluate the overall transportation effects associated with the NOR addressing both the roll growth of the existing Primary School (Years0-6) and the addition of Year 7-10 ākonga at this site.

It is considered that the land to be designated for educational purposes and the existing surrounding roading network can accommodate the anticipated traffic of the proposed school with the provision of adequate access, limited on-site parking and school travel plan/travel management arrangements.

It is considered that on the basis of the assessments undertaken and reported on herein, that subject to the proposed conditions offered by the Ministry that there are no general or specific matters of a transportation nature that prevent the Alteration to Designation 4912 from being confirmed.

Don McKenzie Consulting Ltd

Appendix A – Crash Summary

CODED CRASH ID	Crash road	Distance	Direction	Side road	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
1295587	DAWSON ROAD		I	TE IRIRANGI DRIVE	2021214743	2/06/2021	Wed	8:14	SUV1 NDB on DAWSON ROAD overtaking SUV2	SUV1, too far right	Dry	Bright sun	Null	Crossroads	Traffic Signals	0	0	0
1364323	DAWSON ROAD		I	TE IRIRANGI DRIVE	2023253498	28/03/2023	Tue	21:39	SUV1 WDB on DAWSON ROAD overtaking Car/Wagon2	SUV1, emotionally upset/road rage, intentional collision	Dry	Dark	Fine	Crossroads	Traffic Signals	0	0	0
1200871	DAWSON ROAD		I	TE IRIRANGI DRIVE	201965897	29/04/2019	Mon	14:35	Car/Wagon1 SDB on DAWSON ROAD hit rear end of SUV2 stop/slow for cross traffic	CAR/WAGON1, alcohol test below limit, attention diverted by other traffic, failed to notice car slowing, stopping/stationary SUV2, alcohol test below limit	Dry	Bright sun	Fine	T Junction	Give way	0	0	0
1258047	DAWSON ROAD		I	TE IRIRANGI DRIVE	2020185427	18/09/2020	Fri	17:00	Car/Wagon1 NDB on DAWSON ROAD changing lanes/overtaking to right hit SUV2	CAR/WAGON1, incorrect merging/diverging manoeuvre	Null	Unknown	Null	Crossroads	Traffic Signals	0	0	0
1287360	DAWSON ROAD		I	TE IRIRANGI DRIVE	2021190547	8/06/2021	Tue	18:29	Car/Wagon1 WDB on DAWSON ROAD hit rear end of Car/Wagon2 stop/slow for signals	CAR/WAGON1, alcohol test below limit, attention diverted by passengers CAR/WAGON2, alcohol test below limit	Dry	Dark	Fine	Crossroads	Traffic Signals	0	0	0
1301518	DAWSON ROAD		I	TE IRIRANGI DRIVE	2021218406	9/06/2021	Wed	16:19	Car/Wagon1 SDB on DAWSON ROAD hit rear end of Car/Wagon2 stop/slow for cross traffic	CAR/WAGON1, failed to notice car slowing, stopping/stationary	Dry	Bright sun	Null	T Junction	Give way	0	0	0
1216477	TE IRIRANGI DRIVE		I	DAWSON ROAD	201980367	10/09/2019	Tue	15:40	SUV1 DIRN on TE IRIRANGI DRIVE lost control turning right but did not leave the road	SUV1, evading enforcement	Null	Unknown	Null	Nil (Default)	Unknown	0	0	0
1261368	TE IRIRANGI DRIVE		I	DAWSON ROAD	2020188917	16/10/2020	Fri	18:31	SUV1 SDB on TE IRIRANGI DRIVE changing lanes/overtaking to right hit Car/Wagon2	SUV1, other misjudged speed, distance or position	Dry	Bright sun	Fine	Crossroads	Traffic Signals	0	0	0
1286796	TE IRIRANGI DRIVE		I	DAWSON ROAD	2021207897	19/04/2021	Mon	17:20	Car/Wagon1 SDB on TE IRIRANGI DRIVE hit rear end of Car/Wagon2 stop/slow for queue	CAR/WAGON1, other attention diverted	Null	Unknown	Null	Crossroads	Traffic Signals	0	0	0
1226162	TE IRIRANGI DRIVE		I	DAWSON ROAD	201987298	12/12/2019	Thu	18:50	Van1 SDB on TE IRIRANGI DRIVE, CLOVER PARK, AUCKLAND hit rear end of Car/Wagon2 stop/slow for queue	VAN1, intentional collision	Dry	Overcast	Fine	Crossroads	Traffic Signals	0	0	0
1260746	TE IRIRANGI DRIVE		I	DAWSON ROAD	2020188346	23/09/2020	Wed	15:22	Car/Wagon1 NDB on TE IRIRANGI DRIVE changing lanes/overtaking to right hit Car/Wagon2	CAR/WAGON1, incorrect merging/diverging manoeuvre	Null	Unknown	Null	Crossroads	Traffic Signals	0	0	0
1323228	TE IRIRANGI DRIVE		I	DAWSON ROAD	2022236392	29/09/2022	Thu	13:00	SUV2 turning right hit by oncoming Car/Wagon1 NDB on TE IRIRANGI DRIVE	CAR/WAGON1, alcohol suspected SUV2, alcohol suspected, failed to give way turning to non-turning traffic	Dry	Overcast	Fine	Crossroads	Traffic Signals	0	0	1
1344410	TE IRIRANGI DRIVE		I	DAWSON ROAD	2022236822	29/09/2022	Thu	13:30	Car/Wagon1 SDB on TE IRIRANGI DRIVE hit Car/Wagon2 manoeuvring	CAR/WAGON1, alcohol test below limit, did not check/notice another party behind, emergency vehicle attending emergency	Dry	Overcast	Fine	Crossroads	Traffic Signals	0	0	0
1299445	DISSMEYER DRIVE		I	DAWSON ROAD	2021202944	20/10/2021	Wed	4:00	Car/Wagon1 NDB on DISSMEYER DRIVE lost control; went off road to left, Car/Wagon1 hit tree, traffic sign	CAR/WAGON1, too far left	Dry	Dark	Fine	T Junction	Stop	0	0	0
1221697	DISSMEYER DRIVE		I	DAWSON ROAD	201984030	28/10/2019	Mon	6:00	Car/Wagon1 NDB on Dissmeyer Drive lost control; went off road to right, Car/Wagon1 hit kerb	CAR/WAGON1, too far right	Dry	Bright sun	Fine	End of road	Unknown	0	0	0
1257496	DAWSON ROAD	143	S	TE IRIRANGI DRIVE	2021184759	8/04/2021	Thu	7:06	Motorcycle1 NDB on DAWSON ROAD hit Van2 U-turning from same direction of travel	MOTORCYCLE1, alcohol suspected VAN2, alcohol test below limit, did not check/notice another party behind	Dry	Dark	Fine	Nil (Default)	Nil	0	1	1
1205424	DAWSON RD (FLAT BUSH) (SE)	211	S	DISSMEYER DRIVE	201970330	10/06/2019	Mon	9:00	Car/Wagon1 EDB on DAWSON ROAD, CLOVER PARK, AUCKLAND changing lanes/overtaking to right hit Car/Wagon2	CAR/WAGON1, alcohol suspected, drugs suspected, speed on straight	Dry	Overcast	Light rain	Nil (Default)	Unknown	0	0	0
1295176	DAWSON ROAD	188	S	DISSMEYER DRIVE	2021197580	12/08/2021	Thu	17:30	Car/Wagon1 NDB on DAWSON ROAD hit obstruction, Car/Wagon1 hit stationary (attended) vehicle	CAR/WAGON1, evading enforcement CAR/WAGON2, alcohol test below limit, emergency vehicle attending emergency	Dry	Bright sun	Fine	Nil (Default)	Nil	0	0	0
1203331	DAWSON RD	125	N	CHAPEL ROAD	201968290	22/05/2019	Wed	8:36	Car/Wagon1 SDB on DAWSON ROAD hit Car/Wagon2 parking/unparking	CAR/WAGON2, following too closely, other attention diverted	Dry	Bright sun	Null	Nil (Default)	Unknown	0	0	0
1232375	DAWSON ROAD	150	N	CHAPEL ROAD	2020148195	11/03/2020	Wed	11:00	Truck1 EDB on Dawson Road hit parked veh, Truck1 hit parked (occupied) vehicle	TRUCK1, alcohol test below limit, too far left	Dry	Bright sun	Fine	Nil (Default)	Unknown	0	0	0
1255016	DAWSON ROAD	149	N	CHAPEL ROAD	2021181614	9/03/2021	Tue	15:13	Ute1 NDB on DAWSON ROAD hit Pedestrian2 (Age 7) crossing road from right side	UTE1, alcohol test below limit, PEDESTRIAN2, other pedestrian crossing road	Dry	Overcast	Fine	Nil (Default)	Nil	0	1	0
1272539	DAWSON ROAD	139	N	CHAPEL ROAD	2021198378	6/08/2021	Fri	9:30	Car/Wagon1 EDB on Dawson Road hit Pedestrian2 (Age 10) crossing road from right side	CAR/WAGON1, failed to give way to a pedestrian	Wet	Overcast	Light rain	Nil (Default)	Isolated Pedestr	0	0	1
1278610	DAWSON ROAD	130	N	CHAPEL ROAD	2021183235	1/04/2021	Thu	23:58	SUV1 EDB on DAWSON ROAD hit rear of Car/Wagon2 EDB on DAWSON ROAD turning right from centre line	SUV1, alcohol test above limit or test refused, attention diverted by passengers, failed to notice car slowing, stopping/stationary CAR/WAGON2, alcohol test above limit or test refused	Wet	Dark	Light rain	Driveway	Nil	0	0	0
1235331	DAWSON ROAD	37	W	MATTHEWS ROAD	2020151887	10/05/2020	Sun	11:30	Car/Wagon1 EDB on DAWSON ROAD hit rear end of Ute2 stop/slow for queue	UTE2, alcohol test below limit CAR/WAGON1, alcohol test above limit or test refused, failed to notice car slowing, stopping/stationary	Dry	Bright sun	Fine	Nil (Default)	Nil	0	0	0
1249432	CHAPEL ROAD		I	DAWSON ROAD	2020173043	31/05/2020	Sun	12:00	Unknown1 DIRN on CHAPEL ROAD hit rear end of Car/Wagon2 stop/slow for obstruction	UNKNOWN1, following too closely CAR/WAGON2, suddenly braked	Null	Dark	Null	Crossroads	Give way	0	0	0
1357988	CHAPEL ROAD		I	THOMAS ROAD	2023265130	19/08/2023	Sat	17:35	Car/Wagon2 turning right hit by oncoming Unknown1 SDB on CHAPEL ROAD	UNKNOWN1, did not stop at steady red light, wrong way in one way street, motorway or roundabou	Dry	Overcast	Fine	Crossroads	Traffic Signals	0	0	1
1231314	DAWSON ROAD		I	CHAPEL ROAD	2020146752	25/02/2020	Tue	8:40	Car/Wagon1 EDB on DAWSON ROAD, CLOVER PARK, AUCKLAND hit Pedestrian2 (Age 6) crossing road from left side	CAR/WAGON1, failed to give way to a pedestrian	Dry	Bright sun	Fine	Crossroads	Traffic Signals	0	0	0
1367945	DAWSON ROAD		I	CHAPEL ROAD	2023257071	11/05/2023	Thu	10:07	Car/Wagon1 SDB on DAWSON ROAD hit Car/Wagon2 merging from the left	CAR/WAGON1, alcohol test below limit, did not stop at steady red light CAR/WAGON2, alcohol test below limit	Wet	Overcast	Light rain	Crossroads	Traffic Signals	0	0	0
1373776	DAWSON ROAD		I	MATTHEWS ROAD	2023261243	5/07/2023	Wed	12:00	Car/Wagon1 EDB on DAWSON ROAD hit Bus2 crossing at right angle from right	CAR/WAGON1, did not stop at steady red light	Dry	Overcast	Fine	Crossroads	Traffic Signals	0	0	0
1336017	DAWSON ROAD		I	MATTHEWS ROAD	2022231642	7/08/2022	Sun	20:00	Car/Wagon1 SDB on DAWSON ROAD hit rear end of Ute2 stop/slow for signals	CAR/WAGON1, other inattentive	Wet	Dark	Light rain	Crossroads	Traffic Signals	0	0	0
1367944	MATTHEWS ROAD		I	DAWSON ROAD	2023257068	11/05/2023	Thu	9:10	Van1 NDB on MATTHEWS ROAD hit rear end of Car/Wagon2 stop/slow for signals	CAR/WAGON2, alcohol test below limit, suddenly braked VAN1, alcohol test below limit, other inattentive	Wet	Overcast	Light rain	Crossroads	Traffic Signals	0	0	0
1337975	MATTHEWS ROAD		I	DAWSON ROAD	2022233467	11/08/2022	Thu	23:26	Car/Wagon1 NDB on MATTHEWS ROAD hit rear end of Bus2 stop/slow for signals	CAR/WAGON1, alcohol suspected, failed to notice car slowing, stopping/stationary, new driver/under instruction BUS2, alcohol suspected	Dry	Dark	Fine	Crossroads	Traffic Signals	0	0	0
1194023	MATTHEWS ROAD		I	DAWSON ROAD	201959193	19/07/2019	Fri	17:08	Car/Wagon1 NDB on MATTHEWS ROAD hit Car/Wagon2 turning right onto AXROAD from the left	CAR/WAGON1, alcohol test above limit or test refused, did not stop at steady red light CAR/WAGON2, alcohol test above limit or test refused, did not stop at steady red light	Dry	Twilight	Fine	Crossroads	Traffic Signals	0	0	1
1244902	MATTHEWS ROAD	31	S	THOMAS ROAD	2020165817	3/06/2020	Wed	6:39	Ute1 NDB on MATTHEWS ROAD hit rear end of Car/Wagon2 stop/slow for queue	UTE1, failed to notice car slowing, stopping/stationary	Wet	Dark	Light rain	Nil (Default)	Nil	0	0	0
1342691	THOMAS ROAD		I	CHAPEL ROAD	2022237163	19/09/2022	Mon	17:36	SUV1 WDB on THOMAS ROAD hit rear end of Car/Wagon2 stop/slow for signals	SUV1, alcohol test above limit or test refused, failed to notice car slowing, stopping/stationary CAR/WAGON2, alcohol test below limit	Wet	Twilight	Heavy rain	Crossroads	Traffic Signals	0	0	0
1233723	THOMAS ROAD		I	MATTHEWS ROAD	2020154290	15/05/2020	Fri	23:55	Motorcycle1 NDB on THOMAS ROAD lost control turning left; went off road to right, Motorcycle1 hit kerb	MOTORCYCLE1, alcohol test above limit or test refused, lost control when turning	Dry	Dark	Fine	T Junction	Stop	0	0	1
1356364	CHAPEL ROAD	43	N	DAWSON ROAD	2023245896	16/01/2023	Mon	17:46	Car/Wagon1 SDB on CHAPEL ROAD changing lanes to left hit Car/Wagon2	CAR/WAGON1, alcohol test below limit, evading enforcement, over the speed limit CAR/WAGON2, alcohol test below limit	Dry	Bright sun	Fine	Nil (Default)	Nil	0	0	0
1368608	CHAPEL ROAD		I	DAWSON ROAD	2023273151	12/11/2023	Sun	3:46	SUV1 SDB on CHAPEL ROAD hit rear end of Car/Wagon2 stop/slow for signals	CAR/WAGON2, alcohol test below limit SUV1, alcohol suspected, sudden illness	Dry	Dark	Fine	Crossroads	Traffic Signals	0	0	2
1268399	CHAPEL ROAD	30	N	THOMAS ROAD	2020194790	25/11/2020	Wed	8:45	Truck1 SDB on CHAPEL ROAD hit rear end of Car/Wagon2 stop/slow for queue	TRUCK1, failed to notice car slowing, stopping/stationary	Null	Unknown	Fine	Nil (Default)	Unknown	0	0	0
1273325	CHAPEL ROAD	25	N	THOMAS ROAD	2020198894	15/12/2020	Tue	11:00	Car/Wagon1 SDB on CHAPEL ROAD hit rear end of Car/Wagon2 stop/slow for queue	CAR/WAGON1, other inattentive	Dry	Bright sun	Fine	Nil (Default)	Nil	0	0	0
1296362	CHAPEL ROAD	138	N	DAWSON ROAD	2022215223	8/03/2022	Tue	0:10	Ute1 NDB on CHAPEL ROAD lost control; went off road to left , Car/Wagon2 hit dropped on vehicle (from roadside/bridge)	UTE1, alcohol suspected, other lost control	Dry	Dark	Fine	Nil (Default)	Nil	0	0	1
1229958	CHAPEL ROAD	172	S	CARRICK GLEN AVENUE	2020144194	4/02/2020	Tue	12:00	Car/Wagon1 NDB on CHAPEL ROAD lost control; went off road to left, Car/Wagon1 hit parked (unattended) vehicle	CAR/WAGON1, alcohol test below limit, other fatigue, too far left	Dry	Bright sun	Fine	Nil (Default)	Nil	0	0	0
1179742	CHAPEL ROAD	26	S	CARRICK GLEN AVENUE	201951852	11/03/2019	Mon	23:24	Van1 SDB on CHAPEL ROAD lost control; went off road to left, Van1 hit fence, transformer	VAN1, alcohol test below limit, other lost control	Dry	Dark	Fine	T Junction	Give way	0	0	1

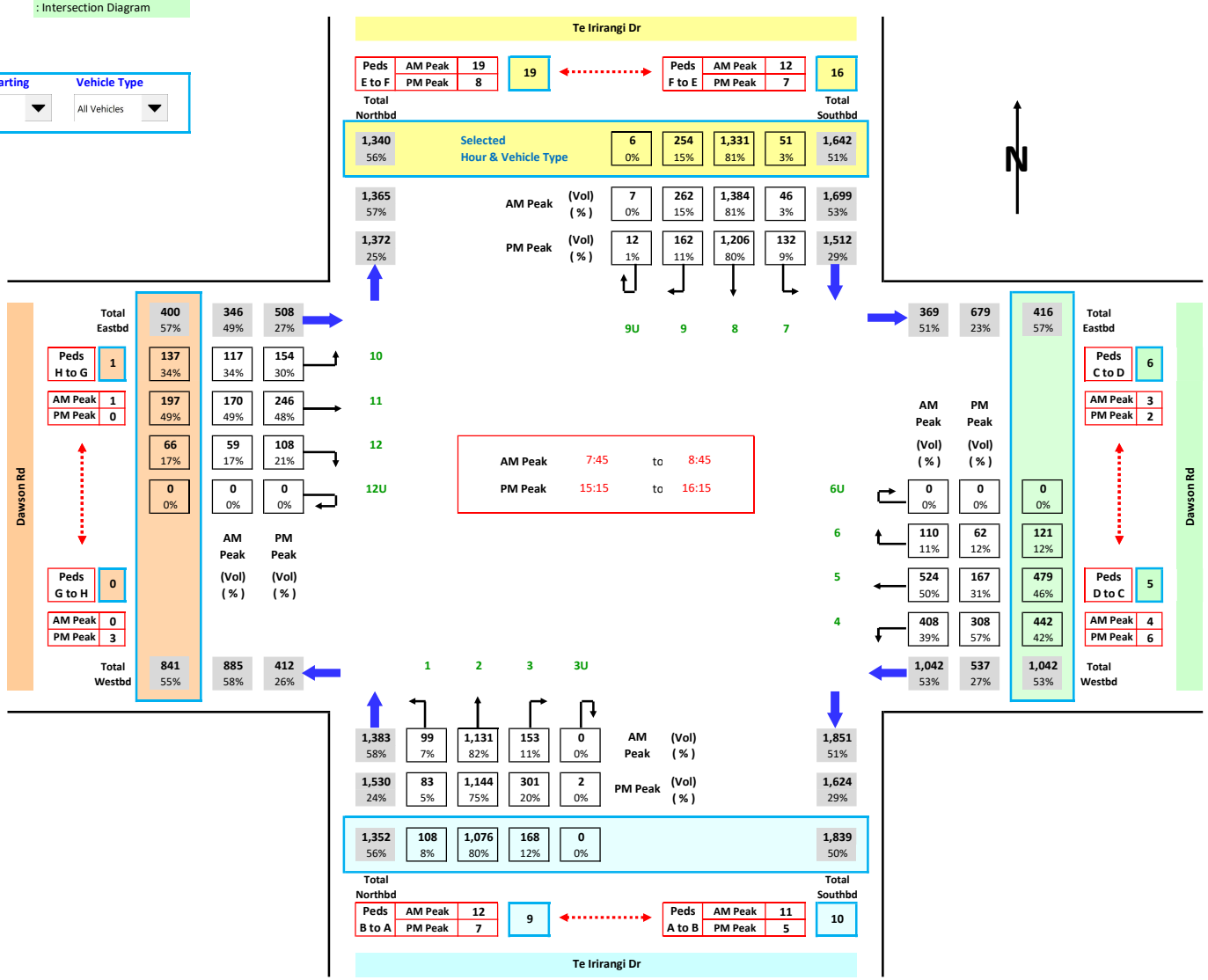
Appendix B – Te Irirangi / Dawson Traffic Count

Job No. : NZNth7837
Client : Don McKenzie Consulting
Suburb : Chapel Downs
Location : 1. Te Irirangi Dr / Dawson Rd

Day/Date : Tue, 19 Sep 2023
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting	Vehicle Type
8:00	All Vehicles



Job No. : NZNth7837
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Description : Classified Intersection Count
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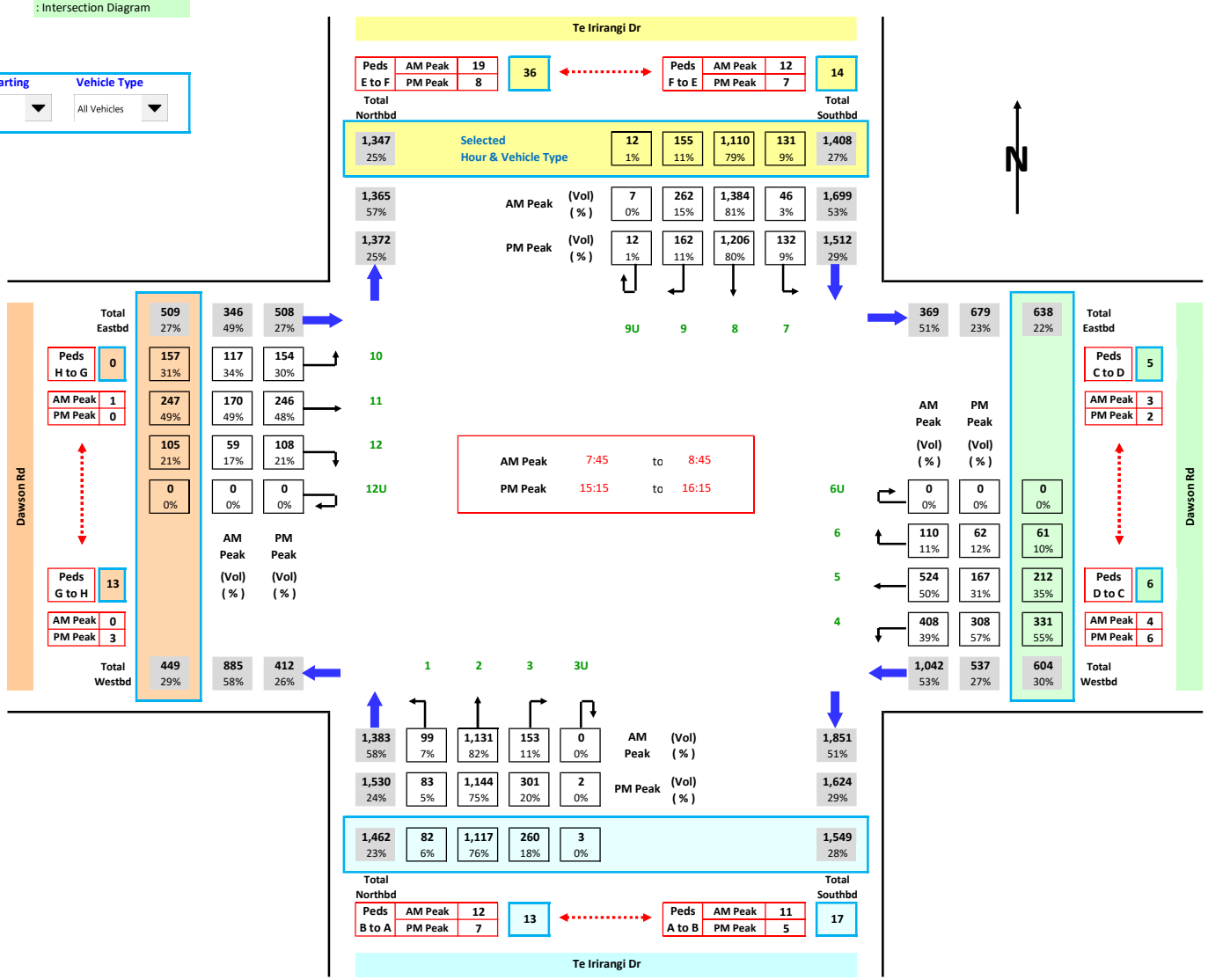
MATRIX Traffic and Transport Data

Hour Starting	Vehicle Type
15:00	All Vehicles



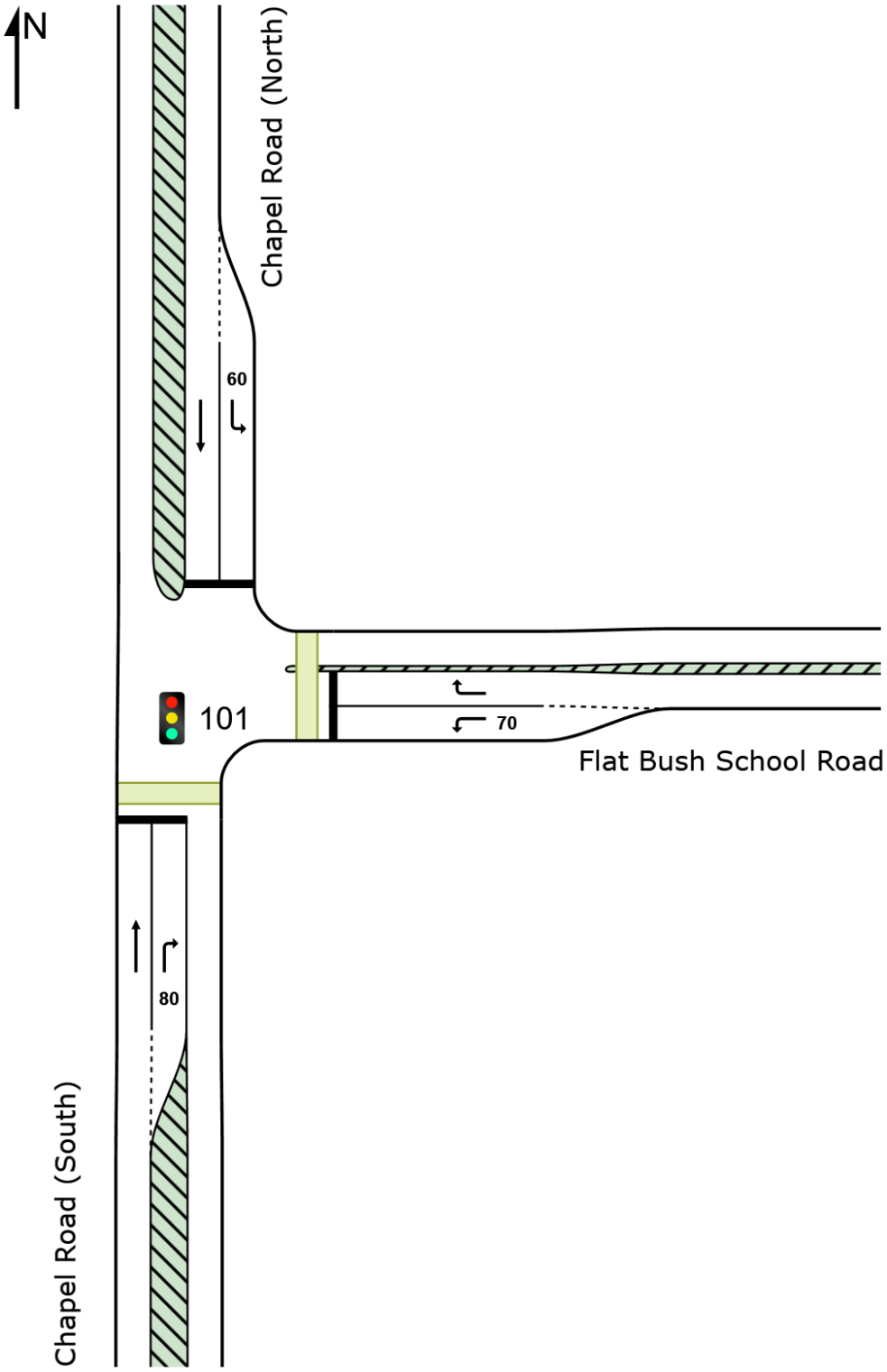
Appendix C – SIDRA Analysis (Existing, Existing + 200vph))

SITE LAYOUT

Site: 101 [Cha_Fla_AM Ex (Site Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



PHASING SUMMARY

Site: 101 [Cha_Fla_AM Ex (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

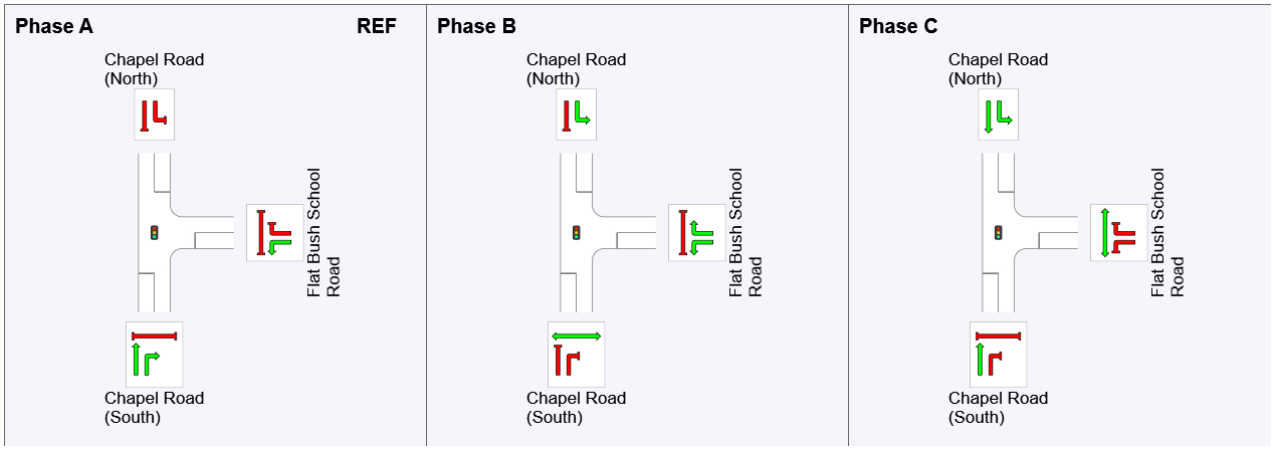
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: 3 Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

Phase Timing Summary

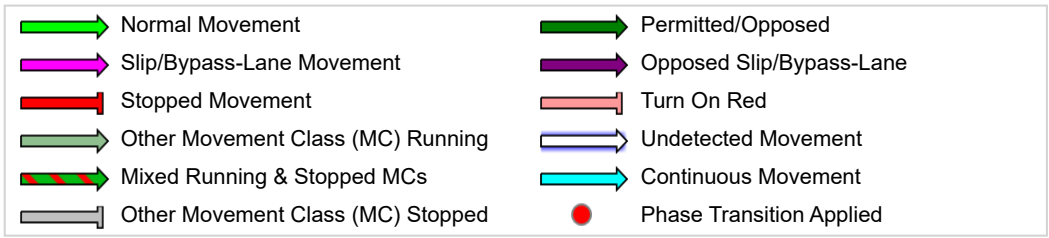
Phase	A	B	C
Phase Change Time (sec)	0	17	78
Green Time (sec)	11	55	36
Phase Time (sec)	17	61	42
Phase Split	14%	51%	35%
Phase Frequency (%)	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [Cha_Fla_AM Ex (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (South)															
2	T1	All MCs	503	3.2	503	3.2	0.616	30.6	LOS C	22.4	161.0	0.82	0.73	0.82	41.4
3	R2	All MCs	149	2.1	149	2.1	* 0.888	78.7	LOS E	9.9	70.7	1.00	0.98	1.37	26.2
Approach			652	3.0	652	3.0	0.888	41.6	LOS D	22.4	161.0	0.86	0.79	0.95	35.4
East: Flat Bush School Road															
4	L2	All MCs	334	0.0	334	0.0	0.299	29.8	LOS C	9.3	65.4	0.52	0.73	0.52	44.9
6	R2	All MCs	600	2.4	600	2.4	* 0.918	69.4	LOS E	40.6	289.9	1.00	1.00	1.22	30.2
Approach			934	1.5	934	1.5	0.918	55.2	LOS E	40.6	289.9	0.83	0.90	0.97	30.8
North: Chapel Road (North)															
7	L2	All MCs	193	5.3	193	5.3	0.133	22.1	LOS C	2.4	17.3	0.23	0.64	0.23	50.8
8	T1	All MCs	429	1.9	429	1.9	* 0.908	73.7	LOS E	28.9	205.9	1.00	1.08	1.25	30.3
Approach			621	3.0	621	3.0	0.908	57.7	LOS E	28.9	205.9	0.76	0.95	0.94	30.6
All Vehicles			2207	2.4	2207	2.4	0.918	51.9	LOS D	40.6	289.9	0.82	0.88	0.95	31.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (South)												
P1	Full	8	8	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Flat Bush School Road												
P2	Full	13	14	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		21	22	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Cha_Fla_AM Test Model (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

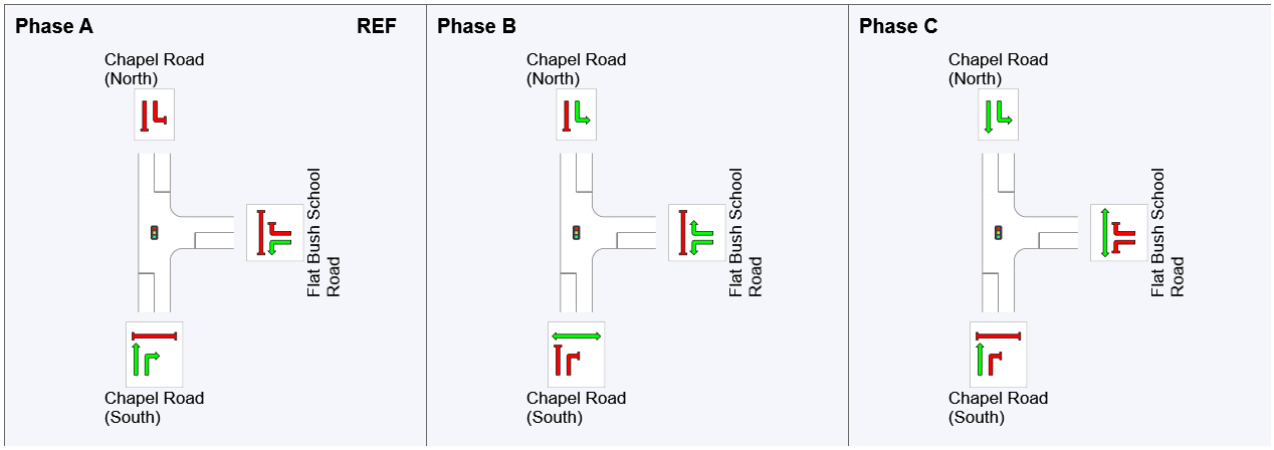
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: 3 Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

Phase Timing Summary

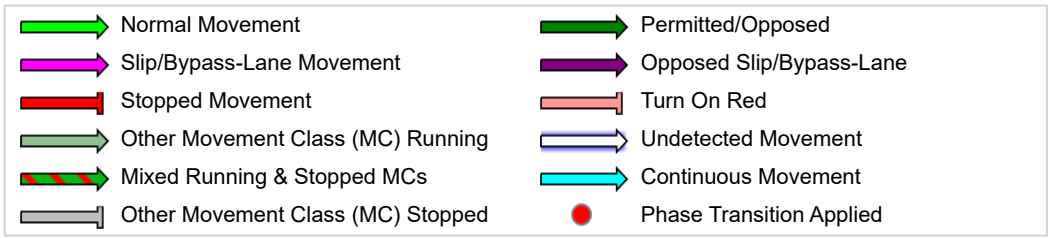
Phase	A	B	C
Phase Change Time (sec)	0	17	78
Green Time (sec)	11	55	36
Phase Time (sec)	17	61	42
Phase Split	14%	51%	35%
Phase Frequency (%)	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [Cha_Fla_AM Test Model (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (South)															
2	T1	All MCs	522	3.1	522	3.1	0.647	32.3	LOS C	23.7	170.2	0.84	0.75	0.84	41.1
3	R2	All MCs	155	2.0	155	2.0	* 0.924	84.9	LOS F	10.8	76.6	1.00	1.02	1.46	25.3
Approach			678	2.9	678	2.9	0.924	44.4	LOS D	23.7	170.2	0.88	0.81	0.98	34.5
East: Flat Bush School Road															
4	L2	All MCs	345	0.0	345	0.0	0.310	30.0	LOS C	9.7	68.1	0.53	0.73	0.53	44.8
6	R2	All MCs	600	2.4	600	2.4	* 0.927	72.1	LOS E	41.6	297.3	1.00	1.01	1.24	29.6
Approach			945	1.5	945	1.5	0.927	56.8	LOS E	41.6	297.3	0.83	0.91	0.98	30.4
North: Chapel Road (North)															
7	L2	All MCs	193	5.3	193	5.3	0.133	23.3	LOS C	2.4	17.3	0.23	0.64	0.23	50.8
8	T1	All MCs	443	1.8	443	1.8	* 0.934	81.1	LOS F	31.6	224.4	1.00	1.14	1.31	28.8
Approach			636	2.9	636	2.9	0.934	63.6	LOS E	31.6	224.4	0.77	0.99	0.98	29.1
All Vehicles			2258	2.3	2258	2.3	0.934	55.0	LOS D	41.6	297.3	0.82	0.90	0.98	31.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (South)												
P1	Full	8	8	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Flat Bush School Road												
P2	Full	13	14	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		21	22	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Cha_Fla_PM Ex (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

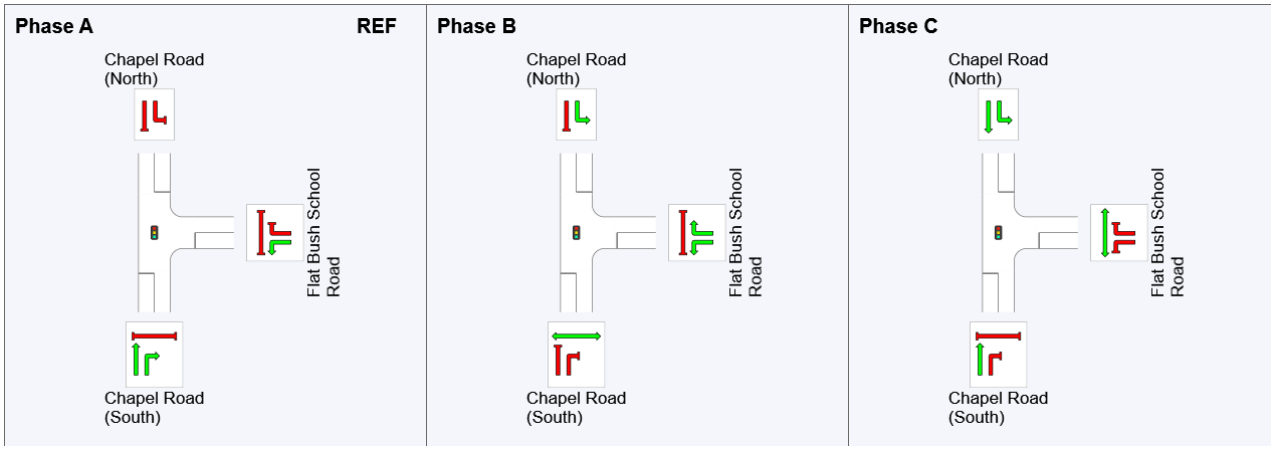
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: 3 Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

Phase Timing Summary

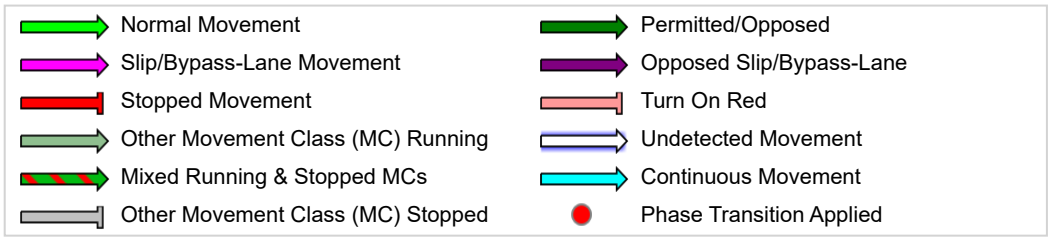
Phase	A	B	C
Phase Change Time (sec)	0	21	51
Green Time (sec)	15	24	63
Phase Time (sec)	21	30	69
Phase Split	18%	25%	58%
Phase Frequency (%)	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [Cha_Fla_PM Ex (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (South)															
2	T1	All MCs	448	3.0	448	3.0	0.334	7.4	LOS A	10.0	72.1	0.42	0.38	0.42	53.5
3	R2	All MCs	174	4.7	174	4.7	* 0.777	65.3	LOS E	10.7	77.7	1.00	0.89	1.15	28.3
Approach			622	3.4	622	3.4	0.777	23.7	LOS C	10.7	77.7	0.58	0.52	0.63	42.8
East: Flat Bush School Road															
4	L2	All MCs	241	2.5	241	2.5	0.352	34.4	LOS C	10.1	72.1	0.77	0.78	0.77	37.3
6	R2	All MCs	290	3.2	290	3.2	* 0.798	59.3	LOS E	17.3	124.4	1.00	0.90	1.11	29.7
Approach			531	2.9	531	2.9	0.798	48.0	LOS D	17.3	124.4	0.89	0.85	0.96	32.7
North: Chapel Road (North)															
7	L2	All MCs	447	1.6	447	1.6	0.314	17.1	LOS B	7.6	53.9	0.32	0.68	0.32	49.8
8	T1	All MCs	547	3.7	547	3.7	* 0.787	33.8	LOS C	26.5	191.7	0.87	0.80	0.90	41.8
Approach			994	2.8	994	2.8	0.787	26.3	LOS C	26.5	191.7	0.62	0.75	0.64	41.3
All Vehicles			2147	3.0	2147	3.0	0.798	30.9	LOS C	26.5	191.7	0.68	0.71	0.71	39.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (South)												
P1	Full	13	14	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Flat Bush School Road												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		23	24	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Cha_Fla_PM Test Model (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

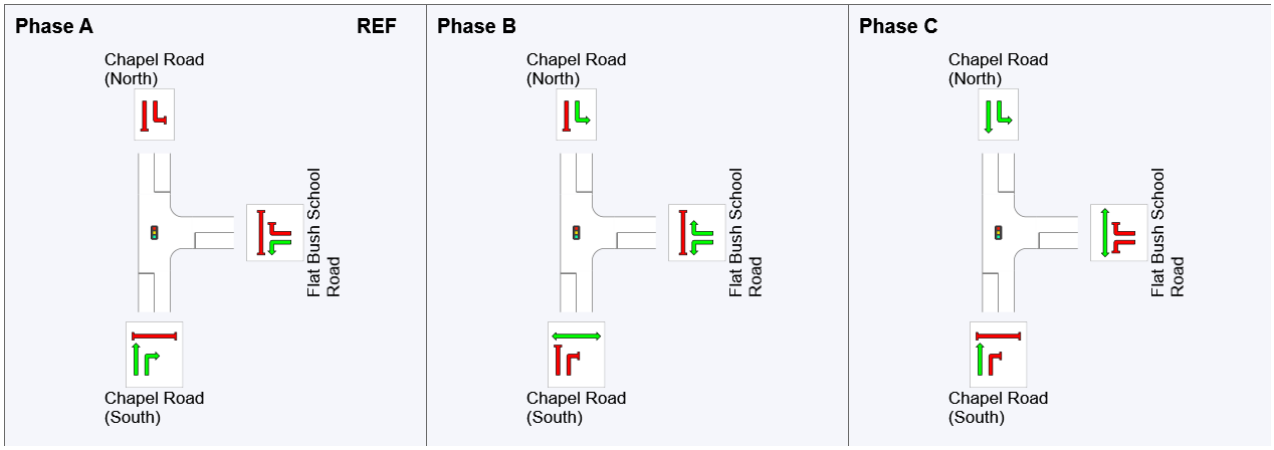
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: 3 Phase
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

Phase Timing Summary

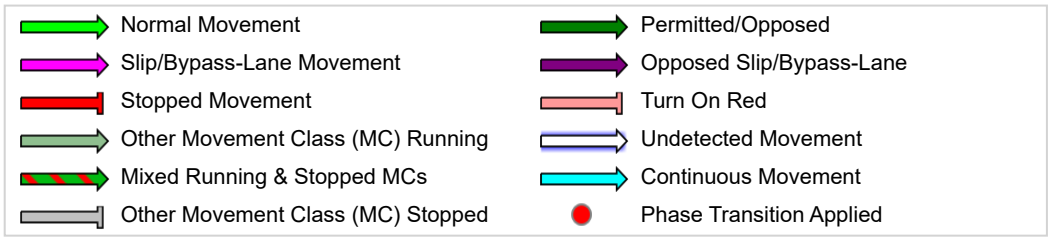
Phase	A	B	C
Phase Change Time (sec)	0	20	51
Green Time (sec)	14	25	63
Phase Time (sec)	20	31	69
Phase Split	17%	26%	58%
Phase Frequency (%)	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [Cha_Fla_PM Test Model (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Chapel Road (South)															
2	T1	All MCs	491	2.9	491	2.9	0.371	8.1	LOS A	11.7	83.6	0.45	0.40	0.45	53.0
3	R2	All MCs	192	4.8	192	4.8	* 0.916	77.9	LOS E	13.2	96.2	1.00	1.01	1.40	25.8
Approach			683	3.4	683	3.4	0.916	27.7	LOS C	13.2	96.2	0.60	0.57	0.71	40.8
East: Flat Bush School Road															
4	L2	All MCs	264	2.7	264	2.7	0.387	37.1	LOS D	11.2	80.5	0.78	0.79	0.78	37.1
6	R2	All MCs	319	3.2	319	3.2	* 0.908	73.4	LOS E	21.7	156.3	1.00	1.01	1.30	27.1
Approach			584	3.0	584	3.0	0.908	57.0	LOS E	21.7	156.3	0.90	0.91	1.06	30.3
North: Chapel Road (North)															
7	L2	All MCs	492	1.7	492	1.7	0.342	20.1	LOS C	8.3	59.1	0.32	0.68	0.32	49.9
8	T1	All MCs	600	3.7	600	3.7	* 0.916	59.1	LOS E	40.3	291.2	0.99	1.07	1.21	33.3
Approach			1092	2.8	1092	2.8	0.916	41.5	LOS D	40.3	291.2	0.69	0.89	0.81	35.2
All Vehicles			2358	3.0	2358	3.0	0.916	41.3	LOS D	40.3	291.2	0.72	0.80	0.84	35.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Chapel Road (South)												
P1	Full	13	14	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
East: Flat Bush School Road												
P2	Full	10	11	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		23	24	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96

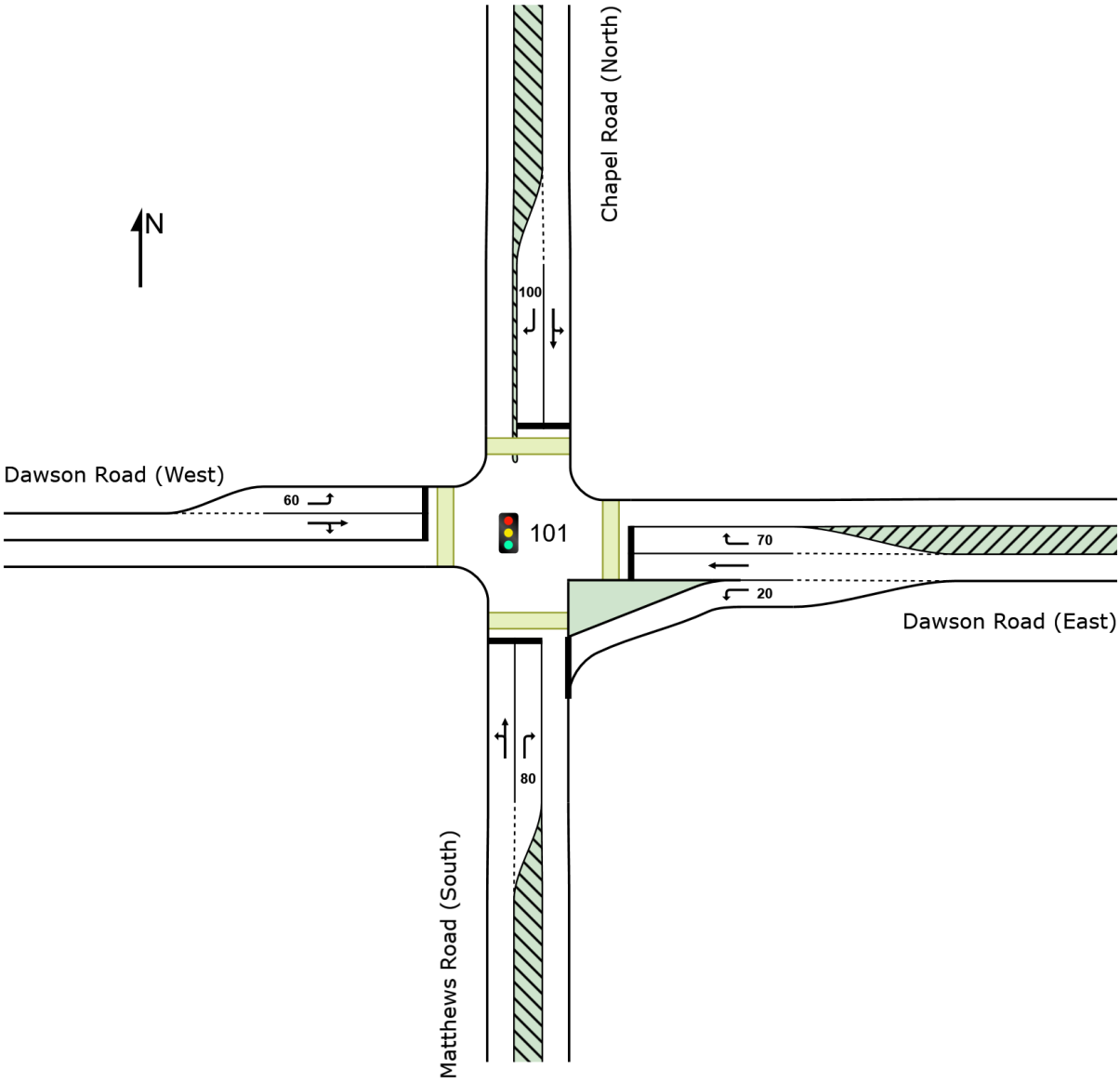
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SITE LAYOUT

Site: 101 [Daw_Cha_Tho_AM Ex (Site Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



PHASING SUMMARY

Site: 101 [Daw_Cha_Tho_AM Ex (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Split
Input Phase Sequence: A, B1*, B2*, C, D1*, D2*, D3*
Output Phase Sequence: A, B2*, C, D1*
Reference Phase: Phase A
(* Variable Phase)

Phase Timing Summary

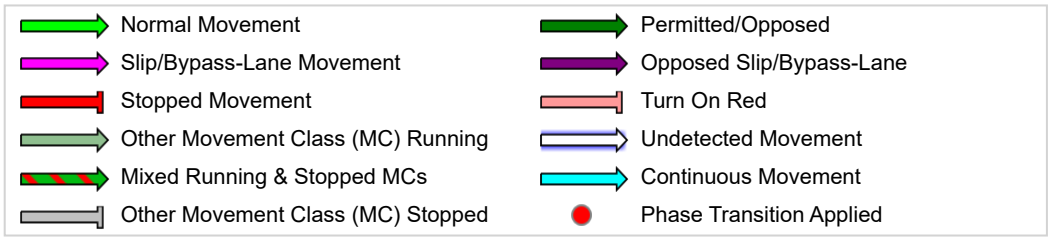
Phase	A	B2	C	D1
Phase Change Time (sec)	0	37	68	88
Green Time (sec)	31	25	14	26
Phase Time (sec)	37	31	20	32
Phase Split	31%	26%	17%	27%
Phase Frequency (%)	100.0	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

REF: Reference Phase

VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [Daw_Cha_Tho_AM Ex (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Matthews Road (South)															
1	L2	All MCs	102	3.0	102	3.0	0.642	48.5	LOS D	16.1	117.9	0.95	0.82	0.95	33.7
2	T1	All MCs	205	6.5	205	6.5	0.642	42.9	LOS D	16.1	117.9	0.95	0.82	0.95	34.6
3	R2	All MCs	27	0.0	27	0.0	0.067	45.6	LOS D	1.2	8.7	0.83	0.71	0.83	33.5
Approach			334	4.9	334	4.9	0.642	44.8	LOS D	16.1	117.9	0.94	0.81	0.94	34.2
East: Dawson Road (East)															
4	L2	All MCs	25	0.0	25	0.0	0.022	48.3	LOS D	0.4	3.0	0.37	0.91	0.37	47.6
5	T1	All MCs	331	1.9	331	1.9	*0.872	92.9	LOS F	21.2	150.6	1.00	1.02	1.21	30.4
6	R2	All MCs	152	0.7	152	0.7	0.394	53.1	LOS D	7.7	54.4	0.91	0.79	0.91	32.1
Approach			507	1.4	507	1.4	0.872	78.9	LOS E	21.2	150.6	0.94	0.95	1.08	26.0
North: Chapel Road (North)															
7	L2	All MCs	22	0.0	22	0.0	0.866	59.7	LOS E	26.8	191.0	1.00	1.01	1.16	31.0
8	T1	All MCs	408	2.0	408	2.0	*0.866	54.1	LOS D	26.8	191.0	1.00	1.01	1.16	31.7
9	R2	All MCs	336	0.9	336	0.9	*0.841	60.9	LOS E	20.7	146.2	1.00	0.93	1.15	29.3
Approach			766	1.5	766	1.5	0.866	57.2	LOS E	26.8	191.0	1.00	0.98	1.16	30.6
West: Dawson Road (West)															
10	L2	All MCs	184	2.2	184	2.2	*0.861	71.0	LOS E	11.9	84.7	1.00	0.96	1.28	27.2
11	T1	All MCs	89	3.5	89	3.5	0.858	65.1	LOS E	11.9	86.6	1.00	0.99	1.27	28.3
12	R2	All MCs	96	5.4	96	5.4	0.858	70.7	LOS E	11.9	86.6	1.00	0.99	1.27	27.7
Approach			368	3.4	368	3.4	0.861	69.5	LOS E	11.9	86.6	1.00	0.97	1.27	27.6
All Vehicles			1975	2.4	1975	2.4	0.872	63.0	LOS E	26.8	191.0	0.97	0.94	1.12	29.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Matthews Road (South)												
P1	Full	17	18	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96
East: Dawson Road (East)												

P2	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Chapel Road (North)												
P3	Full	64	67	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Dawson Road (West)												
P4	Full	9	9	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		91	96	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Daw_Cha_Tho_AM Test Model (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Split
Input Phase Sequence: A, B1*, B2*, C, D1*, D2*, D3*
Output Phase Sequence: A, B2*, C, D1*
Reference Phase: Phase A
(* Variable Phase)

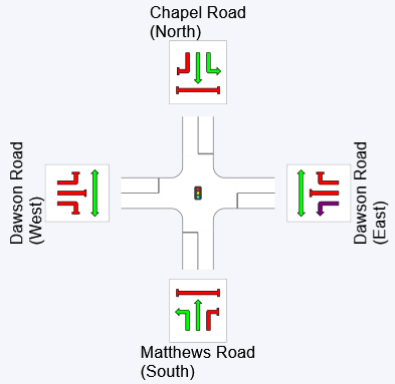
Phase Timing Summary

Phase	A	B2	C	D1
Phase Change Time (sec)	0	39	68	89
Green Time (sec)	33	23	15	25
Phase Time (sec)	39	29	21	31
Phase Split	33%	24%	18%	26%
Phase Frequency (%)	100.0	100.0	100.0	100.0

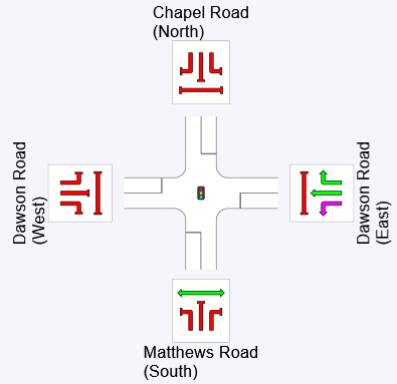
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

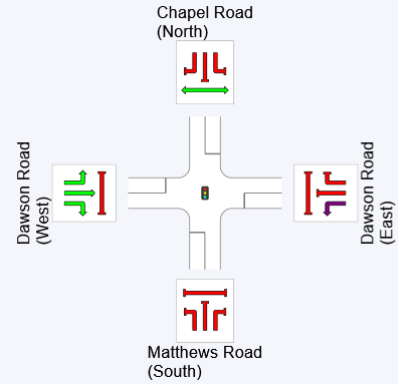
Phase A **REF**



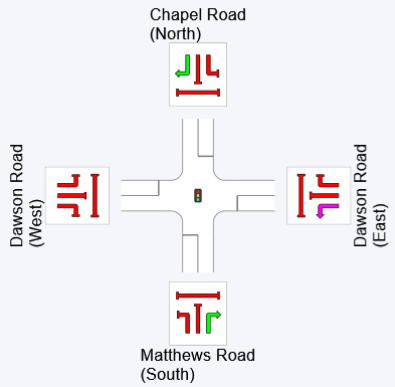
Phase B2 **VAR**



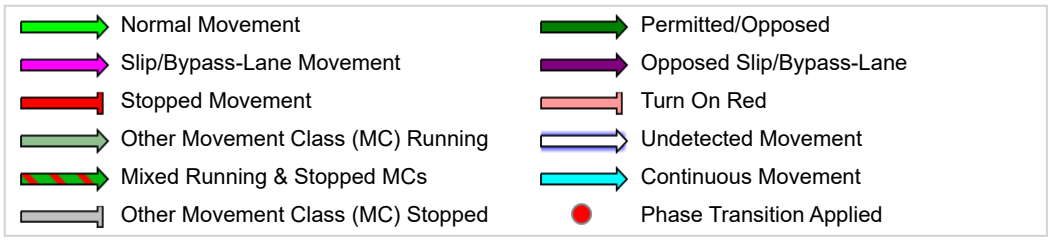
Phase C



Phase D1 **VAR**



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [Daw_Cha_Tho_AM Test Model (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Matthews Road (South)															
1	L2	All MCs	102	3.0	102	3.0	0.632	46.9	LOS D	16.7	121.7	0.93	0.81	0.93	34.2
2	T1	All MCs	221	6.1	221	6.1	0.632	41.3	LOS D	16.7	121.7	0.93	0.81	0.93	35.2
3	R2	All MCs	27	0.0	27	0.0	0.069	46.5	LOS D	1.3	8.8	0.83	0.71	0.83	33.2
Approach			349	4.7	349	4.7	0.632	43.3	LOS D	16.7	121.7	0.93	0.81	0.93	34.7
East: Dawson Road (East)															
4	L2	All MCs	25	0.0	25	0.0	0.023	51.3	LOS D	0.5	3.4	0.40	0.90	0.40	46.9
5	T1	All MCs	331	1.9	331	1.9	*0.948	110.5	LOS F	24.1	171.3	1.00	1.15	1.40	26.9
6	R2	All MCs	182	0.6	182	0.6	0.515	57.1	LOS E	9.7	68.4	0.95	0.81	0.95	31.3
Approach			538	1.3	538	1.3	0.948	89.7	LOS F	24.1	171.3	0.95	1.03	1.20	24.1
North: Chapel Road (North)															
7	L2	All MCs	53	0.0	53	0.0	0.968	86.3	LOS F	36.5	259.2	1.00	1.23	1.40	25.8
8	T1	All MCs	424	1.9	424	1.9	*0.968	80.8	LOS F	36.5	259.2	1.00	1.23	1.40	26.3
9	R2	All MCs	367	0.8	367	0.8	*0.954	85.1	LOS F	27.1	191.3	1.00	1.06	1.40	25.1
Approach			843	1.3	843	1.3	0.968	83.0	LOS F	36.5	259.2	1.00	1.15	1.40	25.2
West: Dawson Road (West)															
10	L2	All MCs	214	1.9	214	1.9	*0.936	81.3	LOS F	15.2	108.3	1.00	1.04	1.44	25.2
11	T1	All MCs	89	3.5	89	3.5	0.801	60.7	LOS E	11.4	82.9	1.00	0.93	1.17	29.3
12	R2	All MCs	96	5.4	96	5.4	0.801	66.3	LOS E	11.4	82.9	1.00	0.93	1.17	28.6
Approach			399	3.1	399	3.1	0.936	73.1	LOS E	15.2	108.3	1.00	0.99	1.32	26.8
All Vehicles			2130	2.2	2130	2.2	0.968	76.3	LOS E	36.5	259.2	0.98	1.03	1.26	26.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Matthews Road (South)												
P1	Full	17	18	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96
East: Dawson Road (East)												

P2	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Chapel Road (North)												
P3	Full	64	67	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Dawson Road (West)												
P4	Full	9	9	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		91	96	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Daw_Cha_Tho_PM Ex (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

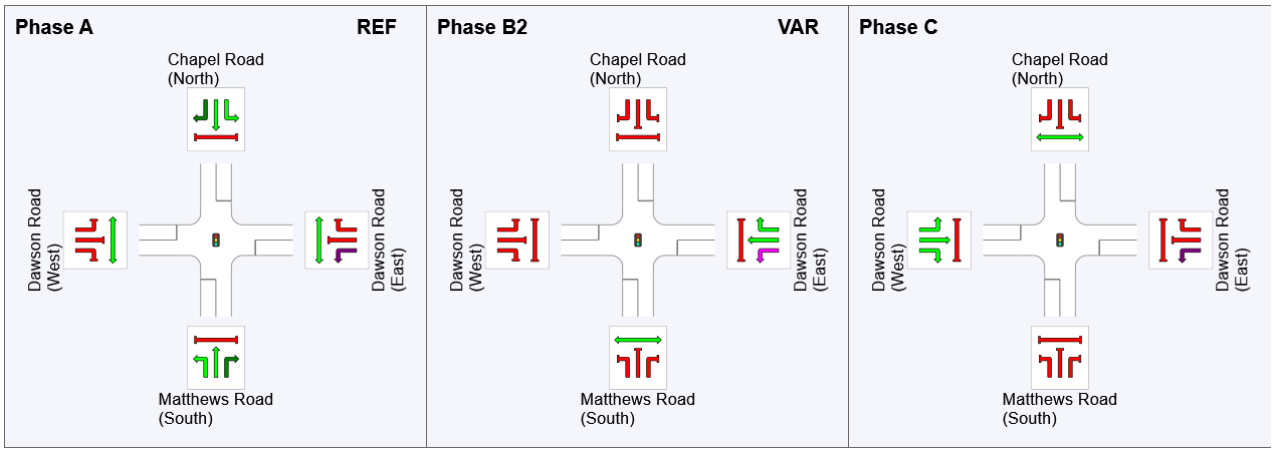
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Split
Input Phase Sequence: A, B1*, B2*, C, D1*, D2*, D3*
Output Phase Sequence: A, B2*, C
Reference Phase: Phase A
(* Variable Phase)

Phase Timing Summary

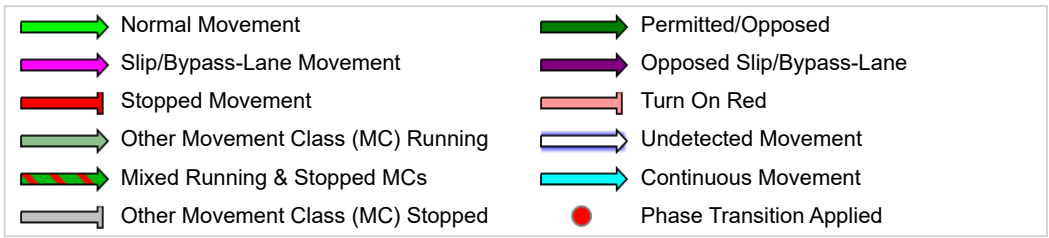
Phase	A	B2	C
Phase Change Time (sec)	0	50	76
Green Time (sec)	44	20	38
Phase Time (sec)	50	26	44
Phase Split	42%	22%	37%
Phase Frequency (%)	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [Daw_Cha_Tho_PM Ex (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Matthews Road (South)															
1	L2	All MCs	60	6.8	60	6.8	0.482	36.9	LOS D	14.8	108.0	0.82	0.73	0.82	38.0
2	T1	All MCs	269	4.9	269	4.9	0.482	31.3	LOS C	14.8	108.0	0.82	0.73	0.82	39.2
3	R2	All MCs	50	2.0	50	2.0	0.306	56.7	LOS E	2.7	19.4	0.93	0.76	0.93	30.4
Approach			380	4.8	380	4.8	0.482	35.5	LOS D	14.8	108.0	0.84	0.73	0.84	37.6
East: Dawson Road (East)															
4	L2	All MCs	45	0.0	45	0.0	0.055	43.7	LOS D	0.9	6.4	0.42	0.91	0.42	46.7
5	T1	All MCs	210	1.9	210	1.9	*0.739	81.5	LOS F	12.3	87.4	1.00	0.88	1.08	31.8
6	R2	All MCs	83	3.7	83	3.7	0.274	53.3	LOS D	4.3	31.0	0.91	0.77	0.91	31.2
Approach			338	2.1	338	2.1	0.739	69.6	LOS E	12.3	87.4	0.90	0.86	0.95	27.8
North: Chapel Road (North)															
7	L2	All MCs	63	0.0	63	0.0	0.698	40.2	LOS D	24.0	173.9	0.91	0.81	0.91	36.9
8	T1	All MCs	419	4.9	419	4.9	0.698	34.7	LOS C	24.0	173.9	0.91	0.81	0.91	37.9
9	R2	All MCs	201	2.0	201	2.0	*0.760	57.1	LOS E	12.0	85.3	0.99	0.89	1.11	30.2
Approach			684	3.6	684	3.6	0.760	41.8	LOS D	24.0	173.9	0.94	0.84	0.97	35.2
West: Dawson Road (West)															
10	L2	All MCs	279	1.5	279	1.5	0.479	49.4	LOS D	13.1	93.0	0.86	0.81	0.86	34.9
11	T1	All MCs	208	2.9	208	2.9	*0.766	50.3	LOS D	20.7	148.7	0.96	0.88	1.01	34.7
12	R2	All MCs	169	3.6	169	3.6	0.766	55.9	LOS E	20.7	148.7	0.96	0.88	1.01	33.7
Approach			656	2.5	656	2.5	0.766	51.4	LOS D	20.7	148.7	0.92	0.85	0.95	32.0
All Vehicles			2057	3.2	2057	3.2	0.766	48.3	LOS D	24.0	173.9	0.91	0.82	0.94	33.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Matthews Road (South)												
P1	Full	20	21	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96
East: Dawson Road (East)												

P2	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Chapel Road (North)												
P3	Full	97	102	54.4	LOS E	0.3	0.3	0.95	0.95	208.2	200.0	0.96
West: Dawson Road (West)												
P4	Full	9	9	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		127	134	54.3	LOS E	0.3	0.3	0.95	0.95	208.2	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: 101 [Daw_Cha_Tho_PM Test Model (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

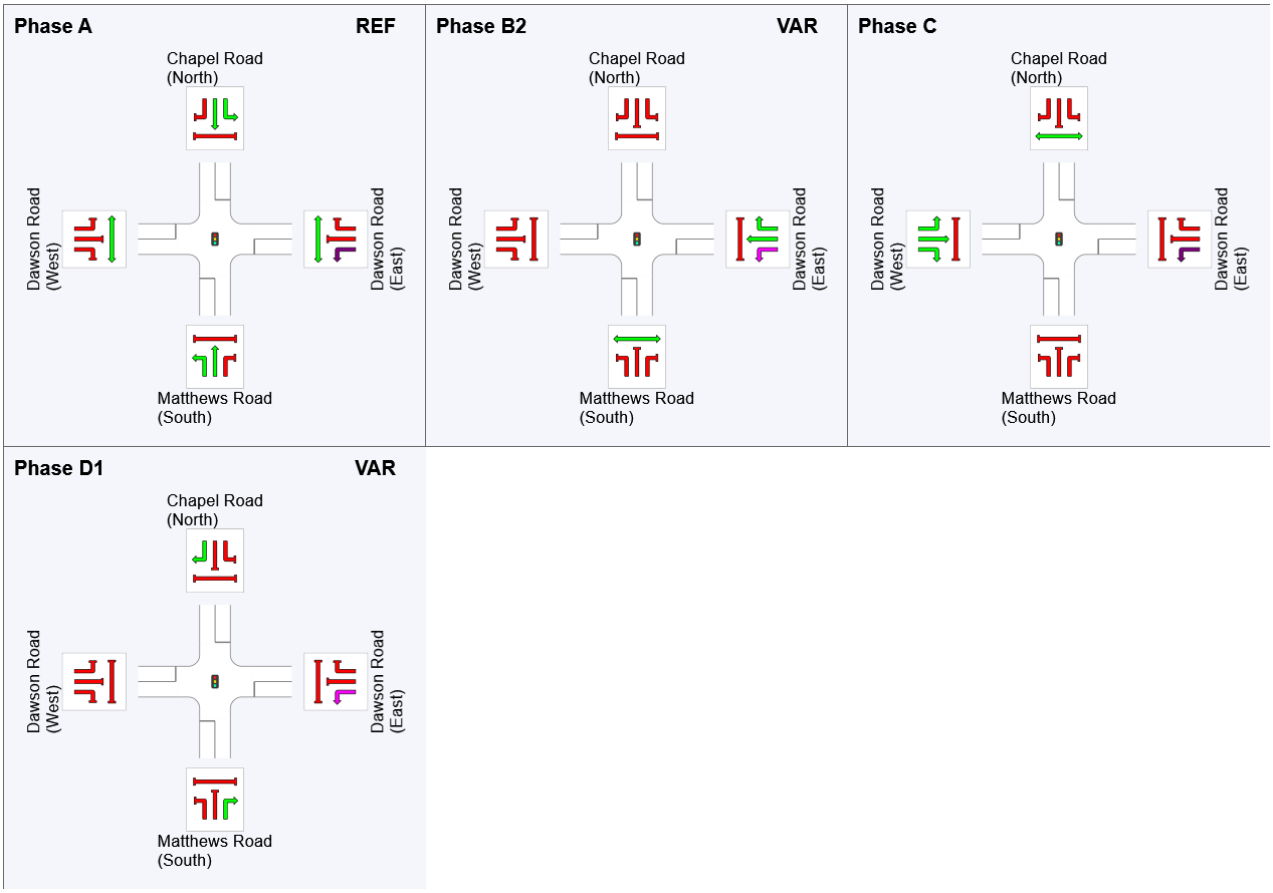
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Variable Split
Input Phase Sequence: A, B1*, B2*, C, D1*, D2*, D3*
Output Phase Sequence: A, B2*, C, D1*
Reference Phase: Phase A
(* Variable Phase)

Phase Timing Summary

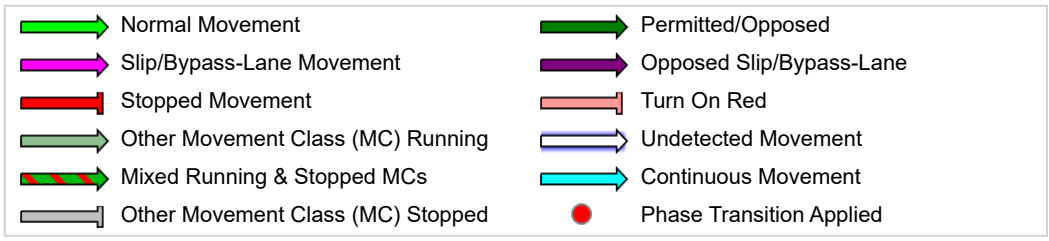
Phase	A	B2	C	D1
Phase Change Time (sec)	0	42	63	99
Green Time (sec)	36	15	30	15
Phase Time (sec)	42	21	36	21
Phase Split	35%	18%	30%	18%
Phase Frequency (%)	100.0	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [Daw_Cha_Tho_PM Test Model (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.5.224

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Matthews Road (South)															
1	L2	All MCs	60	6.8	60	6.8	0.615	44.5	LOS D	17.4	126.8	0.92	0.80	0.92	35.2
2	T1	All MCs	285	4.7	285	4.7	0.615	38.9	LOS D	17.4	126.8	0.92	0.80	0.92	36.3
3	R2	All MCs	50	2.0	50	2.0	0.219	57.6	LOS E	2.7	19.2	0.94	0.74	0.94	30.2
Approach			395	4.7	395	4.7	0.615	42.1	LOS D	17.4	126.8	0.92	0.79	0.92	35.2
East: Dawson Road (East)															
4	L2	All MCs	45	0.0	45	0.0	0.053	50.4	LOS D	1.1	7.5	0.49	0.89	0.49	45.0
5	T1	All MCs	210	1.9	210	1.9	*0.989	124.9	LOS F	16.7	118.8	1.00	1.19	1.62	23.6
6	R2	All MCs	113	2.7	113	2.7	0.497	59.9	LOS E	6.4	45.7	0.98	0.79	0.98	29.5
Approach			368	1.9	368	1.9	0.989	95.8	LOS F	16.7	118.8	0.93	1.03	1.28	23.2
North: Chapel Road (North)															
7	L2	All MCs	94	0.0	94	0.0	1.008	109.1	LOS F	45.0	325.8	1.00	1.34	1.53	22.9
8	T1	All MCs	435	4.7	435	4.7	*1.008	103.5	LOS F	45.0	325.8	1.00	1.34	1.53	23.2
9	R2	All MCs	232	1.8	232	1.8	*1.010	117.5	LOS F	19.3	136.9	1.00	1.14	1.68	21.1
Approach			760	3.2	760	3.2	1.010	108.5	LOS F	45.0	325.8	1.00	1.28	1.58	21.4
West: Dawson Road (West)															
10	L2	All MCs	309	1.3	309	1.3	0.763	66.5	LOS E	17.6	124.3	0.99	0.88	1.05	31.3
11	T1	All MCs	208	2.9	208	2.9	*1.025	123.8	LOS F	33.5	241.3	1.00	1.35	1.67	21.0
12	R2	All MCs	169	3.6	169	3.6	1.025	129.3	LOS F	33.5	241.3	1.00	1.35	1.67	20.6
Approach			687	2.4	687	2.4	1.025	99.4	LOS F	33.5	241.3	0.99	1.14	1.39	22.5
All Vehicles			2210	3.0	2210	3.0	1.025	91.7	LOS F	45.0	325.8	0.97	1.11	1.35	23.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Matthews Road (South)												
P1	Full	20	21	54.2	LOS E	0.1	0.1	0.95	0.95	208.0	200.0	0.96
East: Dawson Road (East)												

P2	Full	1	1	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
North: Chapel Road (North)												
P3	Full	97	102	54.4	LOS E	0.3	0.3	0.95	0.95	208.2	200.0	0.96
West: Dawson Road (West)												
P4	Full	9	9	54.2	LOS E	0.0	0.0	0.95	0.95	208.0	200.0	0.96
All Pedestrians		127	134	54.3	LOS E	0.3	0.3	0.95	0.95	208.2	200.0	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Appendix D – Consultation Summaries and Reponses

Table 1 - Comments on Integrated Transport Assessment Report (PTSL on behalf of Auckland Council)

Reference	Council Comment	Ministry Response
1.2	The report refers to both 1,250 and 1,500 students that the school has been master planned for. It is understood that there would be 1,250 primary and 1,500 Junior High students (i.e. 2,750 students). However, this is not clear in this section of the report.	The ITA has been updated (especially Section 1.2, but also elsewhere such as Sections 5.1 and 6) to ensure consistency.
2.2	It would be useful to include a plan of the school catchment overlayed on top of the AUP zoning for the area (I note the existing school catchment is shown on Figure 6).	Accepted. This information has been captured in a revised Figure 12 within the updated ITA.
2.3	It would be useful to identify on a plan the location of the bus stops. The report should comment on the availability of pedestrian crossing facilities in the vicinity of the bus stops.	Accepted. Figure 3 within the updated ITA address this matter by showing the location of the surrounding bus stops near the school.
3.1.1 and 3.1.2	Comment on whether there are any existing time restrictions for on-street parking would be useful.	Accepted. The updated ITA (Section 3.1.1 and 3.1.2) addresses this matter and confirms there are no existing time-restricted controls applying to parking areas adjoining the school site.

Reference	Council Comment	Ministry Response
3.3	It would be useful to include Crash diagrams and the Plain English crash report in the report. The description of the typical crashes on the Dawson Road mid-block between Te Irirangi Drive and Chapel Road are consistent with observed behaviour of motorists picking up and dropping off students (parking, U-Turns, pedestrians crossing the road away from the mid-block signals). Further assessment is required on these crashes to demonstrate whether the crashes that have occurred are related to school operations e.g. do they typically occur at school start and finish times. Similarly, the crashes at the Dawson Road / Chapel Road intersection include pedestrian crashes. Are these related to the school or occur at school start and finish times.	Accepted. The updated ITA (Section 3.4) addresses this matter and including further analysis of safety records and includes the English-language crash summary at Appendix A.
6.2	This section refers to traffic patterns on Chapel Road and Te Irirangi Drive in relation to the traffic movements. However, no traffic volumes are turning counts are provided for Te Irirangi Drive in this section of the report.	Traffic surveys for the Te Irirangi intersection are provided within the Appendices supporting the ITA. The intersection assessments undertaken leading into the preparation of the ITA had shown that the operation of this intersection was not critical, and that instead the operation of Chapel Road and Dawson Road were going to determine the future performance of the Chapel Road driveways. The Te Irirangi / Dawson traffic count information is accordingly provided for background information only.

Reference	Council Comment	Ministry Response
	The report states that the turning movements at the school entrance on Chapel Road indicate that children are being dropped off on the way to another location. However, the AM peak count does not show this (i.e. majority of traffic is from the north and then turns left out back to the north); this indicates that caregivers are generally returning back in the direction from where they originated and not passing by the school on the way to somewhere else. The comment in the report should be clarified.	The commentary within the updated ITA (Section 6.2) has been updated to address this matter, referring to a wider pattern that incorporates both a component of pass-by and primary trips.
	A similar pattern appears to occur in the PM peak but it is noted that the inbound flows are much smaller than the outbound. In the PM peak caregivers were observed to arrive prior to the end of the school day and therefore, the count data on Chapel Road which begins at 3pm may not include movements associated with parents arriving early.	Accepted, however the peak traffic volumes derived from the surveys had identified that the critical 60 minutes period was the 3-pm period, hence the adoption of this period to assess the afternoon activity.
	Traffic modelling layouts or outputs have not been provided so it has not been possible to comment on whether the models reflect current operation. The report should demonstrate calibration with existing conditions.	Modelling outputs are included in Appendices B and C of the updated ITA.

Reference	Council Comment	Ministry Response
6.3	The traffic generation for the school is based solely on the calculated trip generation rates from the operation of the Chapel Road PUDO facility. However, there is also extensive drop and off and pick up activity on Dawson Road also. Therefore, the traffic generation will be significantly under estimated.	The ITA and overall approach to NOR traffic matters involves identification and development of a traffic and transport demand management approach for the on-site and off-site activity generated by the current school that will be adjusted and tailored for additional development of and growth within the school to future conditions that will emerge through the OPW stages of the school development. The current traffic generation of the site (as identified and measured through the surveys of turning movements at the site driveways) is representative of the activity generated within the site but supplemented by observation and assessment of the wider transport activity within the surrounding parts of the transport network. It is recognised that that there are currently wider transport movements associated with the school presently and will continue to be so under future development scenarios. The analysis of future transport and parking demands associated with the subsequent phases of OPW developments that will be facilitated by the NOR/Alteration of Designation has recognised that it is not just the school site itself that will have a role to play in catering for this part of the Chapel Downs/Flat Bush social infrastructure network.
	Details of the number of vehicles entering and exiting the site have been provided. There is no information on the car occupancy i.e. number of students per vehicle only an assumed 1.4 students per vehicle. Details of actual vehicle occupancy would better inform the assessment of traffic generation.	Vehicle occupancy levels have been adopted from the latest MOE and NOR reporting (e.g. Flat Bush NOR). Surveys of current vehicle occupancy would be of limited value for projection into the future. Reference has also been made to NZTA technical research (Ref: https://www.nzta.govt.nz/assets/resources/research/reports/453/docs/453.pdf)

Reference	Council Comment	Ministry Response
	The traffic assessment acknowledges that there will be development in the area. This will result in traffic growth along the key corridors. This has not been taken into account in the analysis. The assessment is assuming the school roll will increase over time and therefore, the assessment should be based on an appropriate future year. Therefore, the limit of 200 additional vehicles per hour may be an overestimate of what can be accommodated once background growth is taken into account.	Future assessment at the time of OPW applications will take this into account and will adjust the responses accordingly. Any estimate of traffic capacity or travel demand management success (or otherwise) will be addressed at each OPW/Travel Plan review and update. The adoption of a specific "capacity" (+200vph) is effectively only an estimated starting point. For clarity, the NOR is the stage at which the future assessment framework is established in the designation conditions. Development of the school, and associated assessments of transport effects, are necessarily iterative, such that the current transport network conditions (function, capacity, limitations, safety record etc) will be accounted for at the time.
	Furthermore, the assessment is focused on the on-site PUDO activity accessed from Chapel Road. There is no consideration of the existing PUDO activity on Dawson Road and the potential for additional PUDO to occur here (or on-street on Chapel Road). Additional PUDO activity in these locations will further increase traffic through the Chapel Road / Dawson Road intersection. The assessment should take into account additional traffic associated with PUDO occurring on-street on both Dawson Road and Chapel Road.	These off-site PUDO activities are currently occurring and the expectation of the future continuation of these activities are based on current activity. The PUDO activity (as a result of the NOR and future OPWs) is considered to be a part of the wider community social infrastructure to support the growth of the surrounding community. Future OPW / Travel Plan assessments will be able to quantify these matters when the details of the OPW development are known. Notwithstanding the above, the ITA (Section 6.4.2) has assessed the overall suitability of both roads to accommodate on-street PUDO activity into the future. The continued operation of on-street PUDO has been assessed and considered acceptable from a transport effects perspective, including in respect of suitable means of safe and convenient access for ākonga/students via current facilities (such as the signalised crossing features serving both Dawson Road and Chapel Road.
	A suggested distribution of traffic is included in the report. It is not clear whether this is based on the number of anticipated households / children in each of the areas identified in the report. This information may be available as this could have informed the proposed indicative school catchment area.	The indicative ākonga/student catchment plans prepared by the Ministry (Figure 12 in the updated ITA) have informed the assessments of traffic distribution applied to the intersection assessments. The Future OPW / Travel Plan assessments will be able to quantify these matters when the details of the OPW development are known.

Reference	Council Comment	Ministry Response
	The number of car parking spaces is referenced as "70 on-site parking/PUDO spaces". It is not clear if this number of car parks includes car parks designated for staff / visitors. This should be clarified. There is a discrepancy in the analysis of the traffic generation. Point 4 states that there are 32 classrooms/teaching spaces, whereas Point 6 only refers to 20 teaching spaces but states that there are 2.2 spaces per teaching space. It is assumed the 20 teaching spaces is an error. This should be clarified.	The updated ITA has been prepared on the basis that there would be a total of 1 parking space per teaching space (total of 123 parking spaces on site), and that no more than approximately 70 of these would be available for PUDO activity.
6.4.1	The key proposed measure to minimise car travel is the restriction of car parking in the PUDO. There is no constraint on on-street parking in the vicinity of the school. The report states that there is sufficient on-street parking within a 5-8 minute walk of the school. Therefore, the number of trips are unlikely to be constrained to the additional 200 vehicles as required for the acceptable operation of the Dawson Road intersection. This has not been taken into account in the assessment. Other measures would be required to reduce use of private vehicles.	The on-site parking constraint discussed in the ITA reporting will inform future OPW and future Travel Planning/transport assessments. It is accepted that the wider roading network and kerbside parking resources will likely be adopted to cater for the wider parking demands. Future OPW/Travel Planning will be able to consider the extent of wider parking demands and the effects of this on the wider road network and the nature/extent of any mitigation/management required. Agree – these (and other) measures (both physical and management/travel demand) will be identified through the future OPW/Travel Planning process.

Reference	Council Comment	Ministry Response
	From the data provided it would appear that the AM peak is the critical peak. However, caregivers arrive early in the PM peak to pick up students and therefore wait times are much longer than those assumed for the AM peak. This would reduce the availability of both on-site and off-site car parking. Furthermore, if demand exceeds supply at the Chapel Road PUDO this could result in queuing back onto Chapel Road which would not be desirable as this is an arterial road. It would need to be demonstrated that queuing could be contained on-site without adversely affecting the safe or efficient operation of Chapel Road.	Agree. Future OPW/Travel Planning will be able to consider the relevant AM and PM patterns and the effects of this on the wider road network and the nature/extent of any mitigation/management required. Future OPW/Travel Planning processes (and site designs) will be able to consider the extent of on-site operation and design in relation to the operation of Chapel Road and any such issues that may emerge (e.g. queuing).

Reference	Council Comment	Ministry Response
6.4.2	For the on-site PUDO, each space would turn over 3.5 times (430/123) which means each space could be occupied for up to 8.5 minutes. This would indicate that there are sufficient spaces to accommodate this demand on-site, provided that all on-site spaces are available for PUDO. The last bullet of the assessment of the number of spaces required, indicates that only around half of the 123 spaces would be available for PUDO, or around 60 spaces. For the primary school, the analysis states that 105 spaces would be required (which would be prioritised on site). This exceeds the number of available spaces and therefore there would be additional demand for external PUDO than that stated. The report assesses the available on-street parking within a 5 to 8 minute walk of the school. This could significantly extend the length of time a vehicle would be parked for drop-off if caregivers walk their child to the school from the car parking location. Once the existing on-street PUDO on Dawson Road is taken into account, the actual traffic generation and demand is likely to be much higher than assessed in the ITA.	The ITA has be reviewed and updated accordingly (see Section 6.4.2) For the sake of expanding the consideration of the travel management approach adopted in support of the NOR, it is observed that the Chapel Downs site could theoretically accommodate all predicted demand for PUDO but in doing so, the Ministry would be potentially creating an issue with the vehicle crossing on (and intersection with) Chapel Road and degrading its capacity and ability to cater for those movements (as well as the movements through the Chapel/Flat Bush School intersection. Hence the recommended transport strategy adopted for the NOR is one moving away from a "predict and provide" approach to a more nuanced management approach that does not over-supply parking within the site. It is identified that the strategic approach to the setting of a constrained on-site level of parking activity will be reviewed through the OPW/travel planning process. Details and specifics of infrastructure and management approach (incl travel plan, extra staffing/wardens etc) will be developed at appropriate times.
	There is reference to a future remote PUDO. Details of possible locations of where this may be located should be provided and how this could operate safely to enable children to walk to school from the remote location.	The requirement for, potential location, operation and connection of any off-site PUDO facility will be addressed (alongside other alternatives responses to concern identified) within the OPW/Travel Plan process.

Reference	Council Comment	Ministry Response
6.4.3	A School Travel Plan is proposed and this is supported. However, this may be limited in the ability to reduce travel by private vehicle if not backed up by physical measures.	Agree in part. The ITA (Section 6.4.3) refers to the potential for there to be physical interventions alongside the travel and demand management planning aspects. The ITA confirms the combined role of both physical interventions and management activities in achieving the intended outcome for the school transport system and the surrounding transport network. Future additional assessments undertaken through the OPW/Travel Planning phases of future applications may conclude physical works are required (but would need to be considered in light of a joint responsibility by the Ministry and AT/Council or others). For the purposes of the current NOR process the management techniques that would form part of the School Travel Plan are solely within the jurisdiction of the Ministry/school. In this regard it is highlighted that the Ministry will continue to engage with Council/AT in a manner that provides integration and co-ordination regarding the Plan's sustainable travel goals. Such co-ordination will naturally require AT to be actively monitoring its own network requirements and the impact of general growth in the surrounding suburb not simply in response to school and future OPWs.
6.4.4	It is acknowledged that the existing pedestrian accesses are separate from the vehicle accesses. A potential new pedestrian access from Gerolds Place is referenced and is considered to be appropriate as this could encourage students from the residential area north of the school to use this route. No other measures are proposed to encourage walking/cycling or use of public transport. For instance there are bus stops on Chapel Road in the vicinity of the Chapel Road pedestrian access, but there are no pedestrian crossing facilities on Chapel Road. A pedestrian crossing facility would be required rather than having students walking to the Dawson Road / Chapel Road intersection to cross the road to walk to/from the bus stops.	Such measures, including the possibility of future additional walking connections via Gerolds Place, will be considered as the school develops. Noting however, the iterative nature of development and growth within the site means that this possible connection is simply an option (there could be more options developed and considered over the life of the designation). Future assessments will confirm whether this or other options are warranted and then feasible. The overall travel demand management approach (including School Travel Plan) will consider specific mitigation or management options to address the specifics of each OPW / Travel Plan review based on each specific development proposal. The ITA refers to the current higher standard signalised crossing at Chapel/Thomas/Dawson. It is an efficient use of current facilities (infrastructure) which can work alongside transport management measures (e.g. instruction to parents/whanau and staffing/wardens). Any possible improvement option such as signalisation of one or both of the Chapel Road driveways is not yet required based

Reference	Council Comment	Ministry Response
		on the findings of the ITA assessment, but such an alternative may be desirable in the future. The proposed NOR conditions do not preclude this outcome.
	The indicative catchment area extends a considerable distance to the east along Thomas Road and to the east of Murphys Road. This is well beyond a 700m walk for primary students or 1400m walk for Junior High students indicated in the TDM. This could limit the ability for active modes to travel to the school from destinations towards the eastern end of Thomas Road.	The overall Travel Planning approach adopted for the school and subsequent OPW projects will address all travel modes and depending on current (at the time) transport policies (alongside AT's regular bus services that may exist at the time), school buses will potentially contribute a role in catering for school travel to and from the site. Specifically, the Ministry's current school bus policy provides school transport assistance to Year 0-8 ākonga where they reside further than 3.2km from the school's front gate (measured over the shortest public road or pedestrian route) and for Year 9-10 ākonga where they live more than 4.8km from the school. In addition, to be eligible for assistance, there must be no suitable public transport alternatives for the route. Furthermore, the limited connectivity and current limitations of active mode physical provision in the east of the catchment is noted. However, this matter was canvassed extensively through the Flat Bush Primary School NOR process, which acknowledged that the Ministry cannot implement network upgrades of a scale as that required along Murphys Road. Therefore, the Travel Plan approach and management over physical upgrades is the logical response for the Ministry – both in establishing and operating the new primary school on Murphys Road and in establishing and operating a new Junior College at Chapel Downs School.

Table 2 - General feedback, feedback on Integrated Transportation Assessment (December 2023) – Auckland Transport

Area of ITA	**AT Recommendation/ Query**	**Response**
Trip Generation	The ITA acknowledged that the additional trips associated with this school need to be brought down from 880 vph to 200+ in order to maintain the reasonable operations of the adjacent signalised intersections. The ITA suggested that this can be achieved by way of limiting the on-site PUDO, which will be difficult without substantial improvements on alternative modes. Further measures are needed to mitigate the additional traffic.	The ITA and overall transportation approach in support of the NOR is one involving a range of transport tools including but not limited to travel demand management, on-site information/management and possible physical measures. The ITA does not just rely on the limitation of on-site PUDO spaces, but instead proposes and anticipates a much wider range of responses including extensive travel management measures via the Travel Planning framework. Future OPW / Travel Plan assessments will be able to identify and quantify the requirements for these measures when the details (scale, effect) of each future OPW development are known.
Catchment Analysis and active mode accessibility	It is understood that the catchment for the primary school and the junior high portion of the school will be different. Thank you for sharing the early indicative catchments with AT.	Noted.
	The proposed Junior High catchment extends eastwards and there is concern here regarding accessibility via active modes. The concern is with the extension of the catchment direction towards the east (beyond Murphys Road) where there is significant severance / lack of connectivity issues.	The future catchment zone of the school is yet to be confirmed – the diagrams included are "draft" or indicative and pending public consultation. The future active travel mode connections will continue to evolve over time as part of the continued urban development of this part of Auckland. Future OPW / Travel Plan assessments will identify and quantify the requirements for these measures (not just in the Murphys Road area) when the details of the OPW development are known. Such future assessments will take into account what facilities are available at the time of the OPW/Travel Plan review. The limited connectivity and active mode physical provision in the eastern portion of the "draft" catchment is noted. However, this matter was canvassed extensively through the Flat Bush Primary School NOR process, which acknowledged that the Ministry cannot

Area of ITA	AT Recommendation/ Query	Response
		implement network upgrades of a scale as that required along Murphys Road. Therefore, the Travel Plan approach and management over physical upgrades is the logical response for the Ministry – both in establishing and operating the new primary school on Murphys Road and in establishing and operating Years 9-10 education facilities at Chapel Downs School. It is acknowledged that some of the catchment east of Murphys Road may qualify for the Ministry's bus transport arrangements. The proposed Travel Plan/OPW assessments will allow other responses to be considered where there are barriers to active transport and that these will be considered as the school grows and as students start to come from these new areas.
	It may be beneficial to undertake and include a rough assessment of main active mode routes within the proposed school catchment and any barriers. This would pick up current lack of any safe route across Murphys Road or along eastern end of Thomas Road. Currently the concern is that there may not be significant active mode take up due to the distance and challenges involved without infrastructure in place (i.e. safe cross facilities) active modes travel from area east of Murphys Road could be difficult.	Further consideration of the current and planned active mode provisions has been made in the updated ITA (Section 3.2). It is noted that while there are some areas of limited connectivity and active mode physical provision in the eastern portion of the "draft" catchment. As addressed through the Flat Bush Primary School NOR process including at the hearing, it was acknowledged that the Ministry cannot implement network upgrades of a scale as that required along Murphys Road that are related not only to the operation of the school, but also in support of the wider urban growth in this vicinity. The proposed Travel Plan approach and management over physical upgrades is considered to be the logical and appropriate response on the part of the Ministry – it will continue to liaise and work collaboratively with Auckland Transport and other agencies to achieve integrated, co-ordinated outcomes for the surrounding area.
	Ideally, if the Ministry wants to influence modes of travel the zones should reflect relative accessibility of areas to a school.	Noted.

Area of ITA	AT Recommendation/ Query	Response
PUDO	It is noted that PUDO facilities are required as part of the school's operation. A combination of on and offsite PUDO is proposed to be used. The location of the external PUDO will need to be confirmed as well as where the additional kerbside parking will be accommodated. This ideally should be located to reduce right turning or u turning.	Future OPW / Travel Plan assessments will be able to identify and quantify the requirements for these measures (including physical, management, information and behaviour change) when the details of the OPW development are known. While it is appreciated that unsafe traffic movements should be avoided, the scale and nature of these factors will only be able to be known when the future OPW / Travel Plan review is undertaken. The Ministry will be working closely with AT/Council through those process (and other processes) to identify and integrate with the surrounding transport environment.
	There is likely to be increased demand for PUDO with the proposed growth. It is also observed that parents often come earlier and wait for students in the evenings. There seems to be lesser use of PUDO on Chapel Road in pm – is there a known reason for this? Current observations show that there is significant on-street PUDO activity on the Chapel Road frontage of the school. There is a high parking demand here during PUDO and currently there is only a pedestrian refuge island which does not have adequate NSAAT for pedestrian visibility. Concern that the existing facilities are insufficient to encourage an increase of active mode use.	Such factors will be incorporated into future Travel Plan reviews and the future transport environment (including transport policy) that will exist at those future dates. Specific travel behaviours will also be able to be accounted for in a better way than overt reliance on current behaviour. The current patterns assist with developing the "managed traffic and parking environment" referred to in the ITA. This will be progressively quantified, refined and adjusted through subsequent OPW / Travel Plan stages.

Area of ITA	AT Recommendation/ Query	Response
	Further work is needed to identify measures to be required to ensure safe operation of PUDO given stated issues with right turn movements to Chapel Road and likely capacity and potential queuing.	A wide range of management and infrastructure measures will be applied to address travel behaviour change. They cannot be defined at this stage – the OPW / Travel Plan is important in that regard to address and work within a co-ordinated and integrated consideration of traffic management in this area. This proposed management approach (rather than pre-judging the outcomes for the transport environment) is the preferred approach to address a dynamic environment where there are likely to be a range of both physical and management approaches. The stated concerns about right turn movements and capacity have not been identified within the current ITA process. Future consideration of any emerging issues (or other proposals being advanced by Auckland Transport) can and should be undertaken within the future OPW/Travel Plan processes when details of generated traffic movements can be advanced in greater specificity.
	It would be useful to add the equivalent of figures 7 and 8 showing future numbers.	The ITA has been updated to address the future (+200vph) scenario (See Section 6.3).

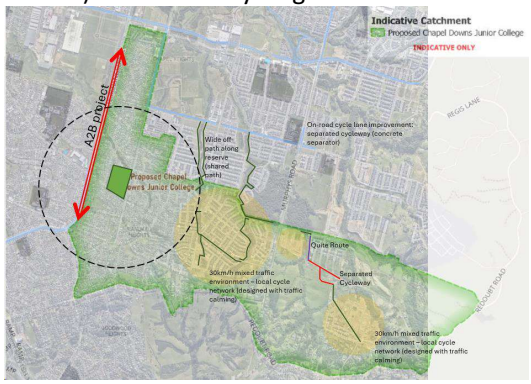
Area of ITA	AT Recommendation/ Query	Response
	Are there any examples of where and how PUDO have been managed to give priority to younger students? How is this going to be enforced in practice?	The specific measures (potentially including physical features, demand management, education and co-ordination) will emerge through the OPW when details of site development and means of priority can be developed. The management of on-site parking/PUDO and other traffic activity via priority measures are applied in a range of ways around the education network. Some schools including satellite schools/units reserve space for those parent/caregivers/visitor associated with those facilities.
	On a similar note, how different are the results from a primary school vs a junior high typically- the assumption is that older kids will be more likely able to travel to school via other modes – but is this observed.	The latest information available from other Ministry applications as well as from the latest (2018) Census travel surveys show:

<table>
<tr><th>Area of ITA</th><th>AT Recommendation/ Query</th><th>Response</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td colspan="4">Ormiston South has a junior and senior high</td></tr>
<tr><td></td><td>5 to 9 years</td><td>10-14 years</td><td>15-19 years</td></tr>
<tr><td>Driver</td><td>0</td><td>0</td><td>36</td></tr>
<tr><td>Passenger</td><td>213</td><td>132</td><td>168</td></tr>
<tr><td>Walk</td><td>75</td><td>81</td><td>156</td></tr>
<tr><td>School bus/PT</td><td>3</td><td>21</td><td>39</td></tr>
<tr><td>Bike</td><td>0</td><td>6</td><td>0</td></tr>
<tr><td>TOTAL</td><td>300</td><td>252</td><td>405</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>5 to 9 years</td><td>10-14 years</td><td>15-19 years</td></tr>
<tr><td>Driver</td><td>0.0%</td><td>0.0%</td><td>8.9%</td></tr>
<tr><td>Passenger</td><td>71.0%</td><td>52.4%</td><td>41.5%</td></tr>
<tr><td>Walk</td><td>25.0%</td><td>32.1%</td><td>38.5%</td></tr>
<tr><td>School bus/PT</td><td>1.0%</td><td>8.3%</td><td>9.6%</td></tr>
<tr><td>Bike</td><td>0.0%</td><td>2.4%</td><td>0.0%</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>97.0%</td><td>95.2%</td><td>98.5%</td></tr>
<tr><td>Other</td><td>3.0%</td><td>4.8%</td><td>1.5%</td></tr>
</table>
The Ormiston census area unit shows that for “main means of travel to education” the older year groups (10-14 years of age) represent a generally lesser proportion of travel to school as a passenger compared to 5-9 year olds. These year groups also show higher proportions of walking and cycling, compared to the younger year groups. Similar results are obtained from the Auckland-wide statistics from the 2018 Census (66% as passenger of 5-9 years across Auckland, compared with 43% passengers of 10-14 year olds).
</td></tr>
<tr><td>PUDO -Left in Left Out</td><td>AT strongly support the requirement for PUDO access off Chapel Road to be left-in, left-out. Significant right-turn movements on that corridor in peaks would be a high risk for disruption and crashes.</td><td>There is no current Ministry proposal to install any left in/left out restriction at the Chapel Road. Such measures may be considered amongst the range of future response pending the nature and scale of effects identified through future OPW/Travel Plan processes.</td></tr>
</table>

Area of ITA	AT Recommendation/ Query	Response
Assessment of PUDO times	The ITA (6.4.2) refers only to AM drop-off dwell times. PM pick-up dwell times need to be evaluated, as PM is the peak for parking demand. On-street parking availability needs to be assessed for this demand.	The ITA has been updated to address this matter (Section 6.4.2).
Failure of roads and PUDOs to cater for actual vehicle demand- Other Mitigation measure	The levels of actual transport demand created by the school may lead to adverse operational and safety effects on the transport network and that mitigation measures may be required to prevent or address these adverse effects. A condition which could include mitigation measures such as: • capping school rolls to levels that the network can accommodate; A condition imposing a roll cap or similar mechanism here be beneficial. As the redevelopment here is responding to infill and new growth it is important to ensure the ability of immediate network to accommodate extra demands can be assessed. • staggering of school start and finish times for different classes to spread demand; • remote PUDO locations and associated safe active mode routes / connections to the school; and • regular reviews with Auckland Transport.	It is accepted that there are a range of possible measures that will be required in the future as part of OPW/Travel Plan processes. However, the Ministry considers it inappropriate to pre-judge the specific nature or scale of mitigation that might be required at a future time. The proposed NOR conditions require measures to address/manage issues without specifying the exact mitigation. Overall, the transport response adopted to support the NOR proposes to create an assessment framework and process to manage the demands, as well as to integrate the school and its facilities with work that AT (and others) will be delivering between now and when the OPW / Travel Plans are assessed/reviewed. The proposed NOR conditions include requirements to develop and review the Travel Plan / OPW assessments with AT.

Area of ITA	AT Recommendation/ Query	Response
Parking	`There is concern regarding the ITA assessments assumption that there is already sufficient kerbside parking available to accommodate the expected growth in demand. The school frontage is already significantly congested and limited during pick up/drop off times. Suggest that additional measures need to be considered to mitigate the effects of further increase to PUDO volume.	Parking availability has been addressed at network wide level and based on on-site observations to assess the general suitability of the surrounding road network. The specifics of parking availability pending the actual OPW proposal will be the subject of further OPW / Travel Plan assessment.
	An assessment of any parking or traffic controls required to ensure safe and efficient access to the school or to address adverse effects on the surrounding transport network be undertaken at each Outline Plan of Works stage or as required by other conditions of consent.	It is agreed that each of the future OPW / Travel Plan assessments will be able to quantify these matters/requirements when the details of the OPW development are known.
	There is concern with the school dependency to kerbside space along Dawson Road and Chapel Road. Once we have A2B separated cycle facility, then these two roads (especially Dawson Rd) are expected to be able to provides local connection to the eastern residential area. Kerbside activity should be managed and not hinder any future transport outcome such as road reallocation, e.g. to allow separated cycleway.	It is understood that the current extent of the A2B project as included in reporting, evidence (and the forthcoming commissioner recommendation/Designation Authority decision) extends only as far as the tie-in between busway/cycleway connections to Dawson Road at the intersection with Te Irirangi Drive. Any future changes to parking management along Dawson Road (or elsewhere) will be considered within the scope of the future OPW / Travel Plan reporting and assessment. Any AT proposal to remove parking from Dawson Road would need to be accompanied by assessment of the effect of that parking removal and public consultation.
	The location of the 800 m of kerb side parking within 5-8 minute walk of school should also be depicted in the ITA. If any parking controls	The ITA has been updated (Figure 17, Section 6.4.2) to discuss this matter and provide appropriate indication of existing facilities and proposals. It is too early to identify specific parking controls that may be required.

Area of ITA	AT Recommendation/ Query	Response
	are required to ensure such spaces are free when required, this will be an additional cost	
NSAAT	NSAAT restrictions near the vehicle crossings on Chapel Road would enhance the visibility and accessibility for vehicles entering and exiting the school. This would also help alleviate congestion and parking conflicts on Chapel Road.	This level of detail will be addressed within OPW / Travel Plan and subsequent design approval stages.
Active modes	There is a need for further assessment of active modes. As mentioned in the catchment analysis section further assessment and mitigation are needed to determine how to deal with the severance issues which will hinder active modes.	Further consideration of these matters relative to the NOR stage of assessment are provided in Section 3.2 of the ITA (updated). Further detailed and specific considerations of how the planned and future provision will be addressed within the scope of the future OPW / Travel Plan reporting and assessment at the time of those OPW applications so that any changes to the extent and nature of such active mode provision relevant to the Chapel Downs school site and activities can be addressed. Any AT proposal to remove parking from Dawson Road (as part of future proposals beyond what have been the subject of the A2B NOR designation and NOR process) would need to be accompanied by assessment of the effect of that parking removal.
	Support the recommendations and conditions regarding a school travel plan and incentivising active mode use. Is there any more detail at this stage on how this will be achieved.	Agreed. Further detail of the specific measures (both of a travel plan or demand management/education and physical measure nature) will be provided within the OPW / Travel Plan processes and will be able to provide a more updated consideration and integration with other projects and plans within the surrounding area.

Area of ITA	AT Recommendation/ Query	Response
	Cycling: No route provided. Please update and include cycle network on the report. Image below is my recap diagram for cycle network (includes the sub-division area; path and local cycle network). Working closely to develop the cycle network will be beneficial - the difficult part is area adjacent the school (radius +750m) that has no cycling infrastructure. 	The updated ITA (Section 3.2) provides an indication of existing facilities and proposals. The Ministry remains willing to continue to work with AT on these matters (and as required when reviewing the Travel Plans).
	Walking: Connecting from north will require further assessment, looking by the contour and stream along the reserve there is not much space for paved path.	See Section 3.2 of the updated ITA for a discussion of the current provisions. The future consideration of additional routes and provisions will be made through future OPW/Travel Plan processes.
	North-Western reserve has existing path (2.0m), while the North-Eastern has no path connection along the stream. This should be	Noted. Such level of detailed consideration will be provided as and when proposals are advanced through OPW / Travel Plan processes.

Area of ITA	AT Recommendation/ Query	Response
	included in the pedestrian connection improvement	
Northern Pedestrian Path	In section 6.4.4 it is mentioned that a pedestrian access from the north using the reserve networks could occur. Noting that there are some pinch points in reserve which may require vegetation removal in order to accommodate a continuous path to the school's northern boundary.	Noted. Such level of detailed consideration will be provided as and when proposals are advanced.
Signalised Pedestrian Crossings	There is a need for signalised pedestrian crossings to provide safe connections. A pedestrian crossing on Chapel Road, preferably near the school entrance, would improve the safety and convenience for pedestrians. The type of crossing should be based on the traffic volume and speed on Chapel Road. It could be a signalised crossing or a zebra crossing.	In relation to Chapel Road, it is noted that there is an existing signalised crossing (Chapel/Dawson intersection) and an unsignalised crossing (via central pedestrian refuge) that can be utilised by the school. The aim of the travel plan will be to use the existing (and any planned future) infrastructure in a safe manner. The school can (and does) direct students to cross at the existing safe crossings (and in a safe and considerate manner). The travel plan will assess the effectiveness of this as time passes, and if there are any concerns identified at the time of future OPW's, then the future OPW/Travel Plans will consider and apply interventions to address any concerns or effects at that time.
	Signal crossing on Murphys Road for pedestrian (mid-block crossing) would need to be investigated. Indicative locations could include at either of one of the two locations shown below.	The current NOR process does not propose or require such mitigation. Future OPW / Travel Plan assessments will be able to quantify the need or otherwise for any physical mitigation of this nature and to integrate with other AT (and developer-led) work that might address this matter. It is preferred that consideration of such major changes to the Murphys Road corridor be undertaken in an integrated matter not simply as a mitigation. There is also a much wider consideration of the NZUP Murphys Road project to be undertaken (by AT and formerly Waka Kotahi) that will likely address these and other transport matters for the wider benefit of the Murphys Road community. Such wider area considerations are beyond the current scope of the NOR process and are best addressed by AT in its role as network managers. Furthermore, the current

Area of ITA	AT Recommendation/ Query	Response
	 This would provide a safe crossing, linking the eastern extremity of the catchment to the school at no more than 3.5 km safe cycling distance for the older year groups. With the changes to NZUP this programme cannot be relied upon to provide a safe crossing of Murphys Road, certainly not within the time frame for the school roll change.	condition of Murphys Road and its lack of safe pedestrian facilities was comprehensively canvassed with AT through the Flat Bush Primary School NOR. Through that process, AT accepted that it was not the Ministry's responsibility to upgrade a full network and further that designation conditions were not the appropriate location to reference the necessity or otherwise of such upgrades.
School buses – Need to accommodate future school buses on site	The change in the purpose of the designation will trigger the need for bus access to the school site that hasn't been required while the school has been primary-level only. With the addition of the Junior College there will be a new catchment to consider which will be larger than the existing. With pupils potentially being 5 km from the school, as opposed to the current 1.8km, a significant portion of the school catchment is likely to be severed as mentioned previously.	The Ministry continues to apply and evolve its bus transport policies in response to not only school development but surrounding catchment areas. The use of buses can be required for primary or junior high students, and therefore there is no trigger that specifically relates to junior high cohort. However the Ministry agrees that design for buses should be considered in the layout of the vehicle access points and circulation areas. The Ministry disagrees that the current NOR triggers the need for specific consideration of bus access to the site (and any consequential changes to site details). The Ministry agrees that future OPW and site design processes will consider these matters within the broader context of appropriate transport facilities for the schools, the site and the school community. The Ministry will continue to work with the Council and AT to best respond to the specific demands associated with OPW / Travel Plan changes when advancing the changes facilitated by the NOR framework.

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	Have school buses been considered or proposed for this school?	
	There may be a need to provide school bus services to the school. If this is to occur there should be on-site facilities to accommodate two school bus services.	Agreed. This potential (and other aspects associated with wider passenger transport alternatives) will be considered through future OPW / Travel Planning processes.
Planned Public Transport services in the school catchment	AT is planning to introduce a new service (358) to replace the current 314. This won't occur until the roads are completed in the catchment. This is outlined in the RPTP. It should be noted this service goes near but not to the school. There is a potential for the service to be modified to use the full length of Thomas Road through to Chapel Road. However, in stating that the planned service could be modified but there is a concern that there may not be sufficient capacity on the bus service at peak times to also cater for all the school children, hence the need for facilities on site for dedicated school buses.	The Ministry will continue to work alongside AT to ensure that there are integrated responses to not only Chapel Downs but surrounding areas and to ensure an integrated approach to such measures. Details of bus stop location, capacity of services and the like (including funding) are best addressed when there are specific proposals and catchment areas being considered.
	For a modification to the AT route, this would require the provision of extra bus stops on Thomas Road near the intersection with Chapel Road. The funding of these new bus stops would need to be discussed. However, this would have some challenges including: • The western end of Thomas Road isn't easy to put bus stops on due to existing VX and street trees that are growing very close to the kerb.	It is inappropriate to address such matters of detail at this "framework" stage when there are no firm proposals – this will come at OPW / Travel Plan stage. The Ministry will work with AT to discuss and agree appropriate mechanisms within both the AT planning/delivery of bus routes as well as the Ministry's future OPW process to properly integrated these matters into an integrated transport outcome for the school and the wider Chapel Downs/Flat Bush community.

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	• The walking route from a stop on the south side of Thomas Road would be unattractive, having to cross two arms of the Thomas-Dawson, Matthews-Chapel crossroads; including an uncontrolled left-turn slip from east to south. An upgrade here is at minimum a formalised crossing point laid across the slip. It would be hard to remove the slip as that would have to destroy a large tree that grows on the island. • It is likely that AT would probably expect a 'Barnes Dance' full ped green to remove the need for a two-stage crossing or children trying to cross diagonally against a 'red man' phase. Consequently, bus access to the school from the long eastern side of the catchment will continue to be poor even with the new service. There will be a greater need for a school-specific route as suggested, and that will require off-street (on-site) boarding/alighting/ manoeuvring space within the school's land. AT is happy to have discussions regarding the public transport opportunities here.	
NZUP	It should be noted that the NZUP programme to improved Murphys Road has been cancelled. This means there is no funding for	The Ministry continues to explore the current status of the Murphys Road project with AT and NZTA and the Minister of Transport.

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	any improvements to Murphys Road including interim signals.	
Interface with A2B	If the Chapel Road PUDO does become left in and left out only. This needs to be noted on the NOR with a provision that there is to be NO objections to the change to a left in left out.	There is no proposal to modify the Chapel Road driveway in this manner as part of the NOR. Should this be considered in the future (by AT or by the Ministry) appropriate consideration to the planning and delivery of the project will be undertaken through the normal channels of stakeholder consultation and the like. It is not considered helpful to signal a possible but not committed change of this nature within the NOR and certainly unhelpful to suggest any future action or outcome of consultation that may be years away.