


Community Oral Health Service:
Henderson Intermediate School
Transport Assessment
April 2010

Project: **Community Oral Health Service: Henderson Intermediate School**
Title: **Transport Assessment**
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EXECUTIVE SUMMARY

Flow Transportation Specialists has been commissioned to assess the transport planning and traffic engineering implications associated with the provision of a six chair dental facility on site at Henderson Intermediate School, Henderson, Auckland. The dental facility will be provided as part of the Community Oral Health Service (COHS) that is facilitated by Waitemata District Health Board (WDHB). The lease of the school site for the purpose of the community oral health service defines the service as publicly funded oral health promotion and oral health clinical services for children, adolescents and (if agreed by the parties) adults. Accordingly, for the case of this assessment it has been assumed that the dental facility will service students of Henderson Intermediate School in addition to students from other surrounding schools as this will be the majority, if not all, of the patients.

The six chair facility will be staffed with six dental therapists and three dental assistants, and as stated will have six operational dental chairs.

Access to the facility will be via footpaths internal to the school and from the surrounding neighbourhood via a driveway leading to Fairdene Avenue. Pedestrians, cyclists and vehicles will be accommodated on this driveway. Those travelling by bus to the facility would alight on Lincoln Road and walk around Fairdene Avenue to reach the driveway.

Parking on site will be provided for 13 cars, including one accessible space. This amount of parking is considered appropriate for the facility. The use of the facility will be limited during school start and end times so that the driveway can be used exclusively by pedestrians. At other times, its 4 m width will provide for one way traffic and pedestrians in a shared environment. Traffic signals will be provided that control the use of the one way access for vehicles, with priority given to those entering in order to limit waiting on Fairdene Avenue. With these measures, it is considered that transport to and from the facility can be provided for appropriately.

Based on nine staff members and four chairs operating with seven appointments per day this results in

- ♦ 18 trips daily by staff members
- ♦ 84 trips daily by patients

This is a total trip measure and includes internal trips from students within the school and those that travel to the school via public transport, walking, cycling or drop off and pick up.

The 84 patient/visitor trips (60 car trips) will be distributed evenly throughout the day according to appointment times. These trips will be readily accommodated into the existing footpaths, bus provisions and surrounding road network.

By way of summary, the proposed six chair dental facility will be supported with pedestrian links from Fairdene Road, bus provisions on Lincoln Road and appropriate parking provisions and the vehicle trips generated will be able to be accommodated within the surrounding road network

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APPENDIX A TRACKING

1 INTRODUCTION

Flow Transportation Specialists has been commissioned to assess the transport planning and traffic engineering implications associated with the provision of six chair dental facility on site at Henderson Intermediate School, Henderson, Auckland. The dental facility will be provided as part of the Community Oral Health Service (COHS) that is facilitated by Waitemata District Health Board (WDHB). The lease of the school site for the purpose of the community oral health service defines the service as publicly funded oral health promotion and oral health clinical services for children, adolescents and (if agreed by the parties) adults. Accordingly, for the case of this assessment it has been assumed that the dental facility will service students of Henderson Intermediate School in addition to students from other surrounding schools as this will be the majority, if not all, of the patients. .

The following transport assessment considers the facilities and services provided to support the facility, and assess the proposal from a transport planning and traffic engineering perspective.

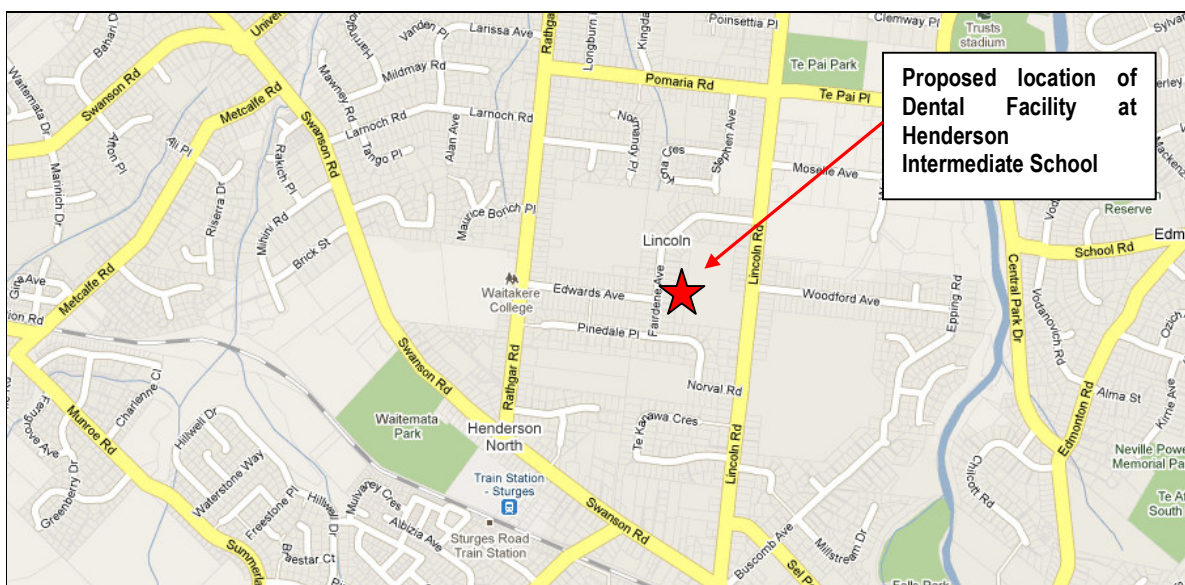
2 EXISTING CONDITIONS

The site of the dental facility is proposed to be located at Henderson Intermediate School, adjacent to classrooms and the playing fields.

2.1 Site Location and Surrounding Road Network

Henderson Intermediate School is located at 70 Lincoln Road, in Waitakere City, Auckland. The location of the school within the surrounding network is shown below in Figure 1.

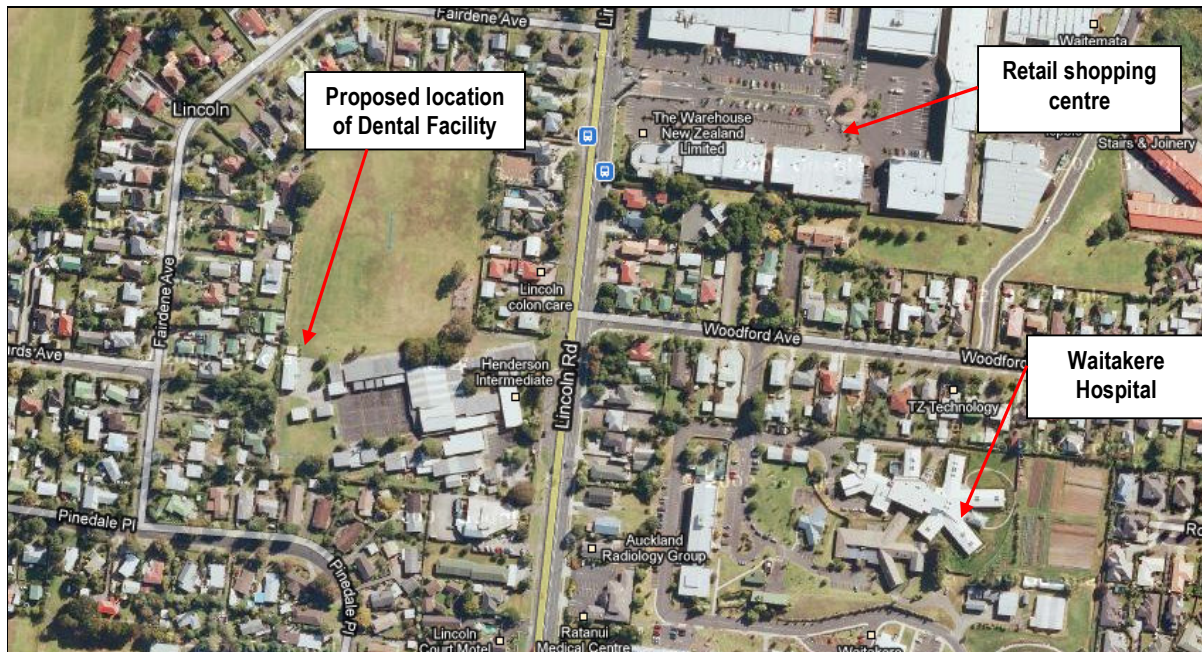
Figure 1: Location of Edmonton Primary School¹



¹ www.wises.co.nz

To the west of the school the area is predominately residential. However the eastern site boundary is adjacent to Lincoln Road, a Regional Arterial Road. On the western side of Lincoln Road, in the vicinity of Henderson Intermediate School, is Waitakere Hospital and a Mega Centre shopping area containing retail stores. The surrounding area is shown below in Figure 2.

Figure 2: Location of Glenfield Intermediate School²



2.2 Existing Traffic Conditions

Lincoln Road is classified as a Regional Arterial Road in the Waitakere City District Plan. This is defined as follows:

"These roads carry major traffic flows between principal sectors of Region not catered for by Strategic Arterial Roads. The through traffic proportions are high and these roads should also be designed for safe and efficient operation at higher traffic speeds. Access to abutting land may be controlled."

Traffic counts undertaken by Waitakere City Council in 2008 indicate that traffic volumes on Lincoln Road are in the region of some 46,600 vehicles per day in both directions.

Fairdene Road is classified as a Local Road in the Waitakere City District Plan. The District plan defines local roads as:

"..The main function of Local Roads is to give access to abutting land and they have limited (if any) through traffic. Local Roads should be designed for safe and efficient operation of motor vehicles at low speeds, allowing for easy and safe movements around neighbourhoods by pedestrians and cyclists.... Traffic volumes on Local Roads are generally less than 1,500 vehicles per day and can be as low as one or two hundred vehicles per day".

² Image sourced from "Google Earth"

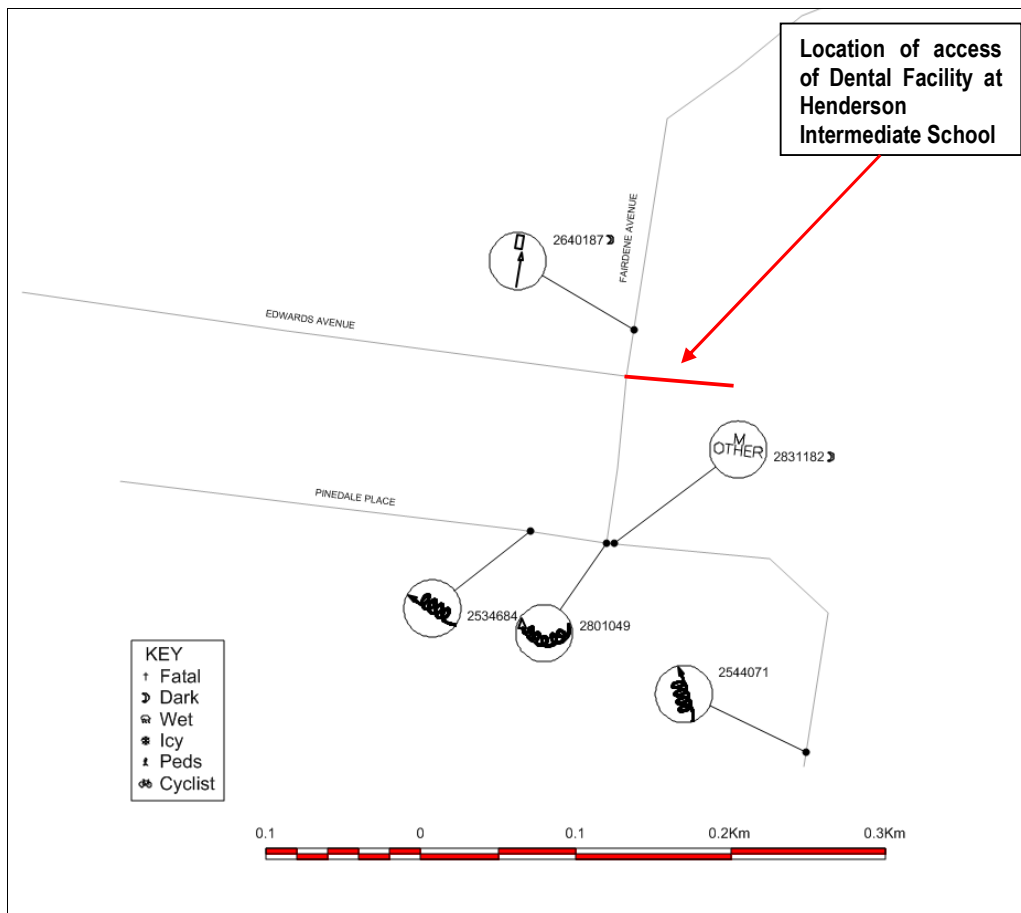
Traffic counts on Fairdene Avenue were undertaken by Waitakere City Council in July 2005 with a two way average daily count of some 2,300 vehicles per day.

The existing driveway to the school from Fairdene Avenue is located adjacent to the intersection of Edwards Avenue and Fairdene Avenue. Yellow no stopping lines are marked within approximately 20 m of the intersection of Edwards Avenue and Fairdene Avenue. Edwards Avenue joins Fairdene Avenue with Rathgar Road.

2.3 Road Safety

A search of the New Zealand Transport Agency's (formerly Land Transport Safety Authority) Crash Analysis System (CAS) for the five year period from 2004 to 2008 was undertaken in the vicinity of the site. Figure 3 below shows the crash history in the immediate vicinity of the site.

Figure 3: Collision Diagram Fairdene Road 2004 – 2008 inclusive



By way of summary, there were five crashes recorded for the five year period searched for the area adjacent to the proposed entrance to Henderson Intermediate School on Fairdene Road. Details of these crashes are as follows

- ♦ Three due to loss of control , these were all located on Pinedale Road that links into Fairdene Avenue, 1 minor injury, 2 non injury.
- ♦ Two due to a collision with a parked vehicle, both non injury

Given the low volume traffic on Fairdene Avenue (2,300 vehicles per day) and the residential nature of the streets with on street parking unrestricted in most areas, this crash summary is considered to be typical of this environment.

2.4 Existing Active Mode Provisions

Faridene Road, Edwards Avenue and Lincoln Road have footpaths provided on both sides of the road in proximity to the school, linking to a wide area surrounding the school.

Currently there is pedestrian access into the school from Lincoln Road and a dedicated pedestrian access at Fairdene Avenue. This access at Fairdene Avenue is proposed to be utilised as a shared vehicle and pedestrian access to the dental facility.

As noted below, Henderson Intermediate actively encourages cycling to school, however guidelines on the school website³ state that students must walk their bicycle into the school grounds, and as such students that cycle use the pedestrian access points to enter the school grounds.

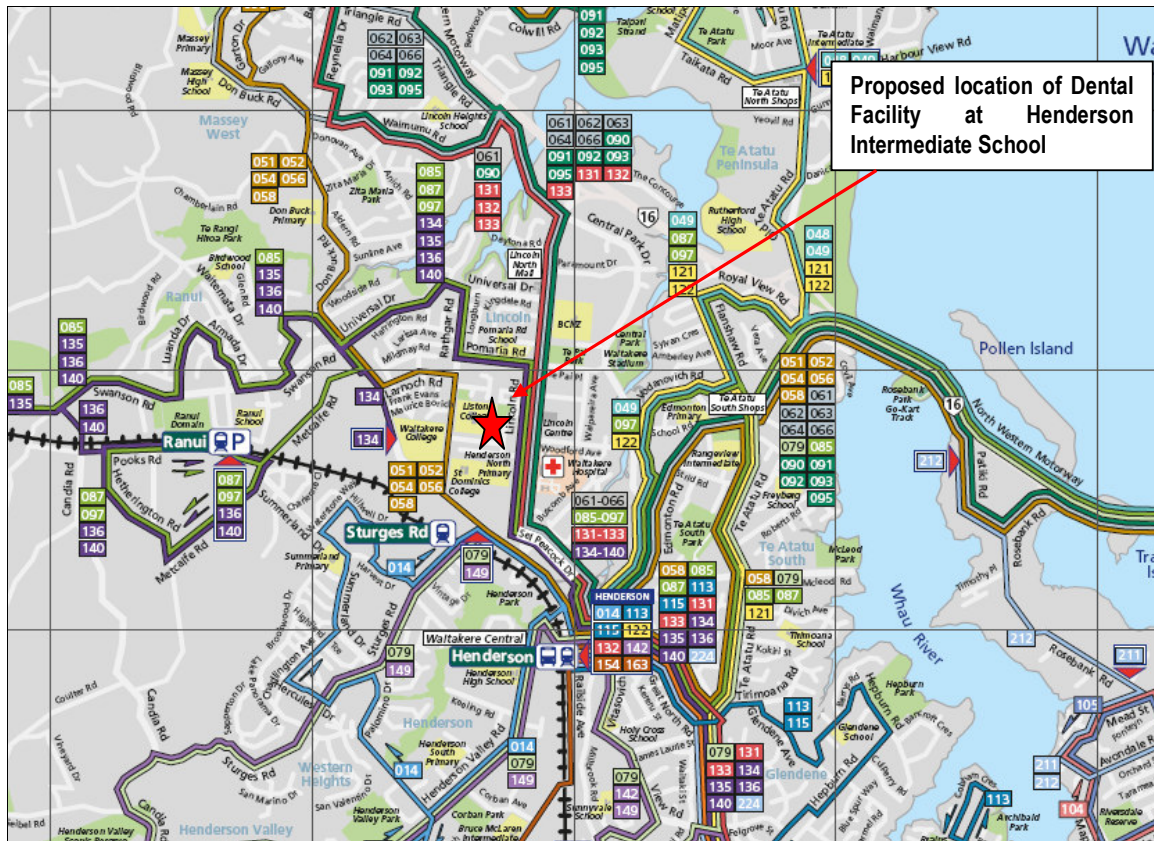
2.4.1 School Travel Plan

Henderson Intermediate School is part of the Waitakere City Safer Routes and School Travel Plan programme. They actively encourage walking and cycling and have a Cycle Buddy programme in place. Congestion and safety around the school has been considered through a collaborative process involving the school, Waitakere City Council and Auckland Regional Transport Authority

³ <http://www.hendersonint.school.nz/Information/Information.htm>

2.5 Existing Passenger Transport Provisions

Figure 4: Bus Routes within the vicinity of Henderson Intermediate School



The table below provides a summary of the frequency of bus services in the vicinity of the dental facility. There are no bus services that travel directly along Fairdene Avenue however it is approximately 600 m walking distance from the Fairdene Avenue access to the Lincoln Road bus stop. Accordingly, the bus services shown here are for Lincoln Road.

Table 1: Bus Availability in proximity to proposed dental facilities

Route Number	Description	Frequency (Monday to Friday)	Distance from nearest bus stop to dental facility
090/091/092	West Harbour/Hobsonville to Downtown	Every 30 minutes from 8:00 am to 9:15 am Every hour from 9:15 am to 4:15 pm Every hour and a half from 4:15 pm to 9:55 pm	200 m from main entrance, 600 m from Fairdene Avenue access
131/132/133	New Lynn to Takapuna	Every 30 minutes between 6 am and 9:30 am and from 3:30 pm to 6:10 pm Every 45 to 60 minutes between 9:30 am and 3:30 pm	200 m from main entrance, 600 m from Fairdene Avenue access
097	Ranui to Downtown	Every 35 minutes between 6:25 am and 7:40 am (AM service only)	200 m from main entrance, 600 m from Fairdene Avenue access

Table 1: Bus Availability in proximity to proposed dental facilities

Route Number	Description	Frequency (Monday to Friday)	Distance from nearest bus stop to dental facility
085/087	Ranui to Downtown	Every 25 minutes between 5:45 am and 8:55 am Every 1 hour and five minutes from 2:55 pm till 5:05 pm	200 m from main entrance, 600 m from Faidene Avenue access
134/135/136/140	Larnoch/Swanson/Ranui to Downtown	Every 35 minutes from 5:45 am to 8:15 am Every hour until 10:00 pm	200 m from main entrance, 600 m from Faidene Avenue access

Overall, accessibility to the site by public transport is good, even though there is 600 m walk from Lincoln Road to the driveway access. It is assumed that dental therapists and assistants will be able to walk through the school grounds and access the dental facility via Lincoln Road and therefore public transport is seen as a reasonable option for staff. There are numerous routes that arrive at 30 minute intervals in the commuter period and throughout the day, and as such the overall public transport accessibility is seen to be good.

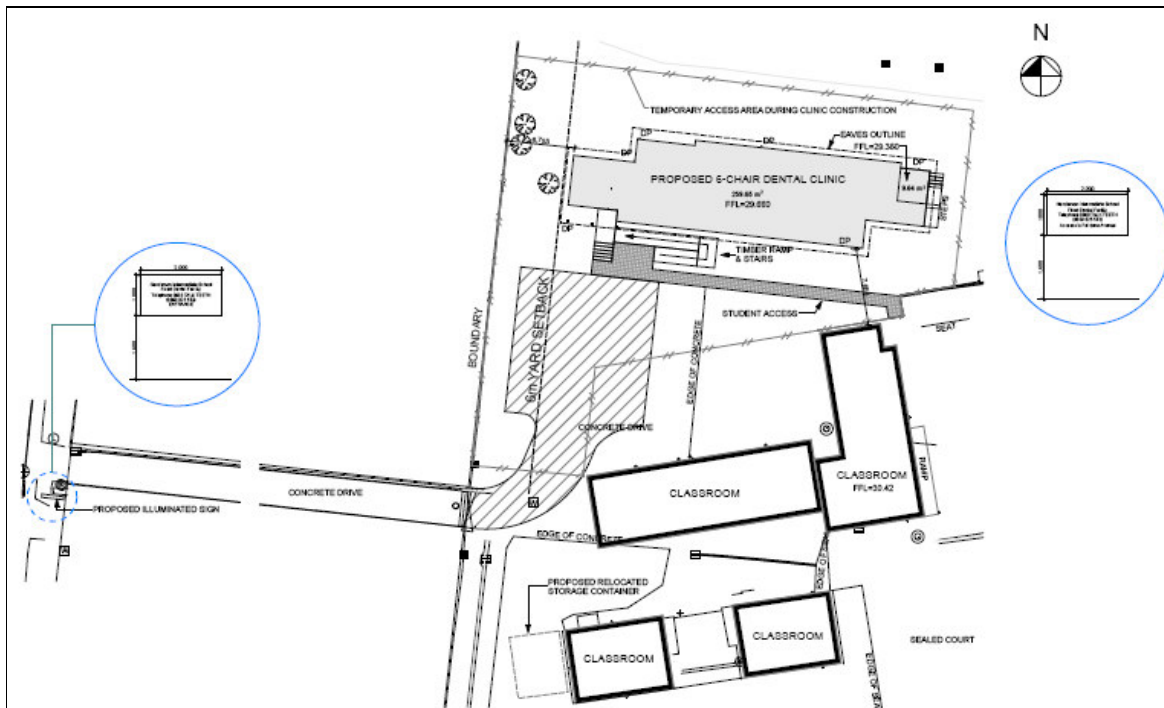
3 PROPOSED DEVELOPMENT

The proposal is for a six chair dental facility that will be located on site at Henderson Intermediate School. The dental facility will provide oral health services to students of Henderson Intermediate School and additional schools in the area. It is anticipated that patients that are not students of Henderson Intermediate will travel to the school with their guardians or parents for a specific appointment time.

As stated earlier in this report, the lease of the school site for the purpose of the community oral health service defines the service as publicly funded oral health promotion and oral health clinical services for children, adolescents and (if agreed by the parties) adults. Accordingly, for the case of this assessment it has been assumed that the dental facility will service students of Henderson Intermediate School in addition to students from other surrounding schools as this will be the majority, if not all, of the patients. .

The six chair facility will be staffed with six dental therapists and three dental assistants, and as stated will have six operational dental chairs.

Figure 5: Proposed Dental Facilities at Henderson Intermediate



4 ACCESS

4.1 Pedestrian Access

The Lincoln Road access to Henderson Intermediate will remain unchanged and it is assumed that this access will only be used by staff of the dental facility who travel by bus or walk from Lincoln Road. Patients and visitors to the dental facilities will access the facilities via Fairdene Avenue. As detailed below, this access will be shared with vehicles.

4.2 Cycle Access

Cycle access to the site will be via Fairdene Avenue as with pedestrians and vehicles. Bicycles can be parked outside the building and we recommend that provisions be made so that they can be securely locked.

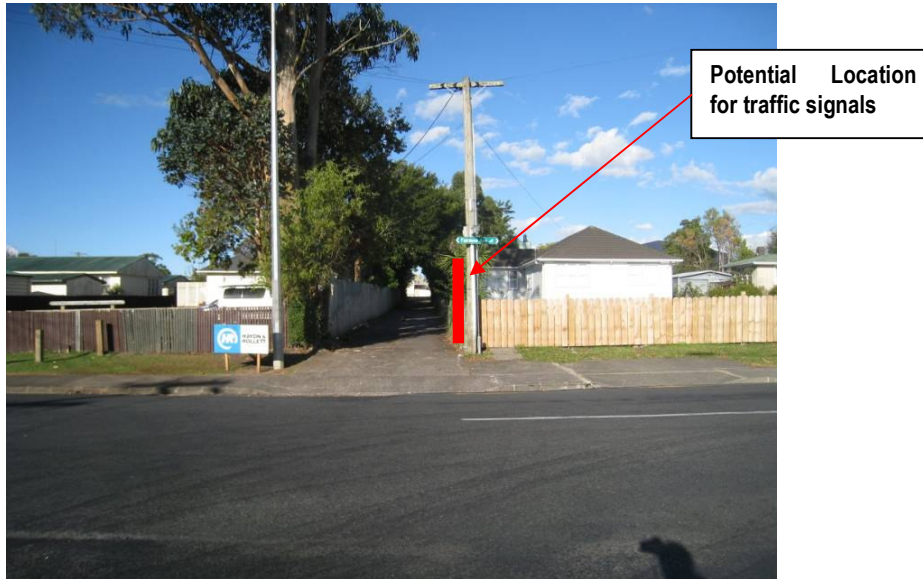
4.3 Vehicle Access

Vehicle access will be via the driveway from Fairdene Avenue. This access is currently utilised as an access for pedestrians and cyclists walking their bikes. The access will be upgraded in order to accommodate vehicular traffic; however the width will remain at 4 m. However, the dental facility will not operate during school start and finish times so that the driveway can be used solely by pedestrians at those times.

Given the limited width, this access will operate as a one way system with traffic lights in place to control exiting and entering vehicles. Traffic lights are recommended as the access is approximately 80 m in length. Priority will be given to entering traffic to minimise the impact on Fairdene Avenue. Internally, there will be a waiting bay marked that will provide sufficient space for entering vehicles to pass any

vehicle waiting to exit, whilst also allowing detection of the vehicle by way of detection loops in the pavement. The lights will show green for entering vehicles, other than at times when a vehicle is exiting. Detection loops will also be installed at the Fairdene Avenue end of the driveway so that an exiting vehicle can trigger the lights to return to green for entering traffic. The traffic lights will be located within the property boundary and visible for vehicles approaching from the access from both north and south on Fairdene Avenue.

Figure 6: Driveway from Fairdene Avenue to Proposed Dental Facilities



4.4 Sight Distances

The Waitakere City Council: Parking and Driveway Guideline⁴ provides Roadway Design Visibilities for various traffic speed environments. The guidelines specify that the traffic speeds applied should be measured using the 85th percentile speed or alternatively a default speed can be applied based on the Roding Hierarchy as per the District Plan.

By utilising the default speeds the table provided, the guidelines⁵ state that an appropriate default speed for an Urban Local Road is approximately 60 km per hour, although from a site inspection, it would appear to be closer to 50 km per hour. With a 0% gradient (at the access), at 60 km per hour the design visibility is 95 m.

⁴ Waitakere City Council Parking and Driveway Guidelines, October 1997

⁵ Waitakere City Council Parking and Driveway Guidelines, October 1997

Photograph 1: Sight Distance to the South of the proposed dental facility access



Photograph 2: Sight Distance to the North of the proposed dental facility access



Photograph 1 and Photograph 2 above are taken from the driveway/footpath at Fairdene Avenue. The sight distance in both directions exceeds 95 m. In addition, the sight distance towards the access from the road also exceeds 95 m. Accordingly, the accessway meets the recommended distance for safe operation of an access.

4.5 Management of Shared Pedestrian and Vehicle Access

Currently the access is utilised solely by pedestrians. The proposal is to have vehicles and pedestrians utilise the access. Accordingly, measures will need to be implemented in order to facilitate safe operation of the access.

4.5.1 Hours of Operation

Henderson Intermediate School has starts at 8:40 am and finishes at 2:50 pm, although there are extracurricular activities that occur before and after school. It is recommended that appointments to the clinic do not start until after 9:00 am, giving students sufficient time to enter the school without conflicting with entering vehicles. This is perhaps more important in the afternoon period when a significant number of students will exit simultaneously, as opposed to a more dispersed arrival pattern in the morning. Accordingly, it is recommended that appointments are finished by 2:30 pm with the following appointment not starting until at least 3:15pm. This 45 minute period should provide a sufficient window for most students to depart the school grounds. This operationally should be reviewed once the dental clinic is operational to ensure that the 45 minutes is sufficient, or overly conservative.

4.5.2 Speed Restrictions

The speed of travel for vehicles on the access way should be restricted to 10 km/hr with signs advising of this for both directions of traffic.

4.5.3 Signage

Clear signage will be provided indicating that restricted speed limits apply and that there are pedestrians present. These signs should be in place for both entering and exiting the accessway.

5 PARKING

5.1 Parking Requirement

The Waitakere City Council Parking and Driveway Guidelines specify that medical centres have a recommended parking provision of one space per 18 m². Given the six chair facility is 260 m² this results in a parking provision of 14 spaces.

Under the parking requirement of “Hospital”, staff parking demand is stated as two parking spaces per three staff members, and beds as one parking space per four beds. The staff parking rate of two parking spaces per three staff is applicable in this scenario, however the parking rate of one parking space per four chairs would be insufficient given the short term nature of the dental appointments.

Additionally, the Ministry of Health’s guidelines for dental facilities states that an accessible space is to be provided in all parking areas associated with dental care facilities

5.2 Parking Demand

Parking demand has been assumed based on the following:

- ♦ Two spaces per three staff – ie 6 spaces
- ♦ 70% of visitors/patients will travel to the facility by car
- ♦ A cross over of 50% with regards to those waiting for their appointment whilst the previous appointee has not yet left.

The assumption regarding the staff parking is based on the hospital staff parking rates, as detailed above.

With regards to the visitors/patients, many of these will be school students, who will walk from the school to the facility. Others will come from outside the school and will travel to the facility by foot, cycle, bus, motorbike, taxi or car. It has been assumed that the percentage travelling by car will be about 70%⁶.

In addition, the parking demand will be influenced by the different start and finish time of appointments, with sometimes there being a cross over of parking demand. It has been assumed that this could amount to half at any one time.

Accordingly it is considered that the parking demand will typically comprise a total of twelve parking spaces.

5.3 Parking Supply

The car parking provided in conjunction with the dental facility will be marked for use by staff and visitors/patients of the dental facility. The parking area has 13 parking spaces including one accessible space. This does not meet the 14 space requirement under the District Plan based on the requirements for medical centres, however, based on the assessment of demand we consider that it will provide sufficient parking to ensure that there is minimal impact with regards to on street parking on the surrounding road network.

⁶ Whilst the Census data implies that 95% of Waitakere residents have access to a car, the New Zealand Transport Strategy states that vehicle ownership for New Zealand, is some 700 vehicles per 1000 people

5.4 Parking Layout

The parking layout has been confirmed against the Waitakere City District Plan parking dimension requirements. The parking dimensions comply with District Plan requirements in regards to width, manoeuvring space and car park depth. The car park does not provide 2m at the end of the aisle as required, however the carpark as designed allows for a car to enter and exit using multiple manoeuvres as a 0.3m has been allowed. Furthermore if council should so require this space could be allocated for

- ♦ Small cars/motorbikes
- ♦ Staff parking

6 TRIP GENERATION AND IMPACT ON SURROUNDING ROAD NETWORK

6.1 Trip Generation

The dental facility at Henderson Intermediate will have six chairs operating on a daily basis. It is anticipated that each chair will have approximately seven appointments across the day. This is an averaged figure based on currently operating dental facilities nationally.

Based on nine staff members and four chairs operating with seven appointments per day this results in

- ♦ 18 trips daily by staff members
- ♦ 84 trips daily by patients

This is a total trip measure and includes internal trips from students within the school and those that travel to the school via public transport, walking, cycling or drop off and pick up.

6.2 Mode Split

Based on the assumptions detailed in the parking assessment, it has been assumed that two out of three staff members would drive, with the others being dropped off, sharing a ride, walking, cycling or travelling by public transport. 70% of patients/visitors are assumed to travel by car with the others walking from the school and some travelling by means other than car to the facility. Accordingly, the vehicle trips associated with the facility would be:

- ♦ Some 12 vehicle trips daily by staff members
- ♦ Some 60 vehicle trips daily by patients

6.3 Impact on the Surrounding Road Network

The staff related trips to and from work (whether by bus, walking, cycling or private vehicle) are expected to generally occur prior to 9 am and between 3:30 pm and 5:00 pm (as staff will work glide time). Accordingly, there will be 18 total additional trips, generally occurring during the morning and evening commuter periods (with 12 being by car)

The 84 patient/visitor trips (60 car trips) will be distributed evenly throughout the day according to appointment times.

These trips will be readily accommodated into the existing footpaths, bus provisions and surrounding road network.

7 CONSTRUCTION TRAFFIC

The effects of construction traffic on the environment will need to be managed in the best way possible to ensure that from a transport point of view the surrounding road network operates safely for all modes of travel, in particular students entering and exiting the school. A detailed construction traffic management plan (CTMP) will be prepared closer to the commencement of the construction and will be in accordance with Council's requirements for such CTMP's and Transit New Zealand's code of practice for temporary traffic management (COTTM).

A typical CTMP for this proposal would address such matters as:

- ♦ a description of the construction site and a programme and scope of the works
- ♦ routes to be used by construction traffic to access and egress the site and the adoption of any measures on these routes to ensure a safe environment for other road users, as well as to ensure that the surrounding road network will continue to operate in an efficient manner. This could include restrictions on movements during key pedestrian times ie school start and finish times
- ♦ access for construction vehicles onto the road network from the site and measures to be adopted at these access points to ensure a safe traffic environment for other road users, especially pedestrians and
- ♦ parking for contractor vehicles to minimise any on-street parking effects as a result of the construction activity.

8 CONCLUSION

This report addresses the proposal to locate a six chair dental facility at Henderson Intermediate School to provide oral health care to the students of Henderson Intermediate School and other schools in the area. The six chair facility will have six dental therapists, and three dental assistants with approximately seven patients per day per chair being accommodated.

Access to the facility will be via footpaths internal to the school and from the surrounding neighbourhood via a driveway leading to Fairdene Avenue. Pedestrians, cyclists and vehicles will be accommodated on this driveway. Those travelling by bus to the facility would alight on Lincoln Road and walk around Fairdene Avenue to reach the driveway. Given that the access is 4 m wide and 80 m in length, traffic lights will be provided to enable two way traffic. The access will also have clear signage to signal the slow speed environment and the high level of pedestrians.

In the parking area there will be 13 spaces provided including one accessible space. This does not meet the requirement under the District Plan, however, based on the assessment of demand we consider that it will provide sufficient parking to ensure that there is minimal impact with regards to on street parking on the surrounding road network.

Based on three staff members and six chairs operating with seven appointments per day the predicted trip generation is some

- ♦ 18 trips daily by staff members (of which 12 would be by car)
- ♦ 84 trips daily by patients (of which 60 would be by car).

These trips will be readily accommodated into the existing footpaths, bus provisions and surrounding road network.

Overall, it is concluded that the design and operation of the dental facilities is such that there are no inherent concerns regarding this proposal from a transport planning and traffic engineering perspective.