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Issued via email: **jonathan@planzconsultants.co.nz**

Dear Jono

The Bay Hill Mixed Used Development
Timaru District Council Request for Further Information

Timaru District Council (TDC) has requested further information on transportation related matters in relation to the Bay Hill Development in Timaru. For completeness, some tables and figures have been replicated from the Integrated Transport Assessment.

This report comprises five sections. The first section provides an updated description of the development proposal to address discrepancies between the Integrated Transport Assessment report and the revised application plans. This provides the basis for revised estimates of the expected traffic generation which are described in the second section of the report.

The SIDRA models of the signalised intersections on Sefton Street have been updated to address the comments raised in the Abley peer review and a revised assessment of the traffic effects is provided in the third section of this report.

The fourth section of the report focuses on parking. It provides an assessment of the existing and future parking supply in the area, an assessment of the parking demands and the potential parking effects that could arise because the parking demands cannot be met on site.

The final section of the report addresses servicing and accessible parking provisions for the development.

1. Development Proposal

The development proposal comprises three buildings; an office block, an apartment block, and a parking building and hotel. Building 1 is located in the south-eastern corner of site and will accommodate office activity above the ground floor. Building 2 is located at the centre of the site and will include residential apartments above the ground floor. The two buildings will be linked at the ground and mezzanine levels to accommodate a mix of retail, food and beverage activity. Building 3 is located at the western end of the site and has frontage to Sefton Street (State Highway 78) only. It will provide parking for the development on three levels including the basement and a hotel above. The following table provides a breakdown of the proposal by activity.

Activity	Quantity
General Retail	400m^2 GFA
Food and Beverage	417m^2 GFA
Office	2, 298m^2 GFA
Hotel	68 rooms
Residential	32 apartments

Table 1: Development Proposal Quantities

Building 3 will provide parking over three levels; basement, ground floor and first floor. A single lane circular ramp will link each parking level with access to the ramp being controlled by signals. The basement level has been reconfigured to provide 60 parking spaces generally marked as 2.5m wide right angle bays either side of a single parking aisle. Twenty four spaces will be configured as tandem spaces. The ground floor and first floor provide a further 30 spaces across these two levels. All spaces will have a marked depth of 5m. The aisle width behind the spaces generally exceeds 6.2m which meets the minimum requirements of NZS2890.1 Off-Street car parking. There are some spaces where the aisle width reduces to 5.8m which provides sufficient space for an 85 percentile car to use the space but not a larger 99 percentile sized car. In order to maximise the number of spaces, there are some spaces where the desirable clearance of 300mm from vertical obstructions has not been achieved.

Given the constrained nature of the parking building, it is proposed that the parking facilities will only be available to people that are familiar with its design, that is apartment residents, office employees and hotel valet parking attendants. The allocation of spaces is expected to be broadly as shown in Table 2. The tandem parking spaces would be managed by the hotel with valet parking facilities. Three spaces will be marked for use by disabled people at ground level. Reconfiguration and expansion of the basement level has enabled a further 23 spaces to be accommodated on the site compared with the parking plans as originally submitted.

Activity	Spaces
Residential	32
Hotel	25
Office	33
Total	**90**

Table 2: Parking Space Allocation

2. Traffic Generation and Movement Patterns

The mixed use development being proposed will have three distinct sources of traffic generation.

The traffic generation rate of residential activity is dependent upon the location and type of dwelling but is typically in the range of 8-10 vehicle movements per day (vpd) per unit on average. Inner city apartments will normally be at or below the lower end of this range because residents can use travel modes other than a private vehicle to travel to or from their workplace. Although Timaru is not a large city, it is considered likely that the average daily traffic generation for the proposed apartments will also be relatively low and a rate of 8vpd per unit has been adopted.

The typical peak hour in the morning for the residential activity will be 8:00am to 9:00am with a peak hour generation of 0.8 vehicle movements per hour (vph) per unit. In the morning,

about 85% of all residential vehicle movements are expected to be away from the site. In the evening peak hour, 5:00pm to 6:00pm, 65% of all movements are expected to be into the site. Again, a peak hour generation of about 0.8vph per unit is expected.

Hotels can have a relatively high traffic generation rate per occupied room compared with residential development because visitor travel often involves taxis. For the purposes of this assessment, a peak hour traffic generation rate of 1.2vph per room has been adopted which is consistent with the 85 percentile rate in the NZTA Research Report 453 "Trips and Parking Related to Land Use". For the purposes of establishing a movement pattern, 75% of all movements have been assumed to be by taxi which will generate similar volumes of inbound and outbound movements during the peak hour. In the morning peak, 90% of all other vehicle movements are expected to be outbound with this pattern reversing in the evening.

The office activity in Building 1 is expected to have daily traffic generation of about 26vpd per 100m^2 GFA and a peak hour traffic generation of about 2.5vph per 100m^2 GFA[1]. During the morning peak period, about 80% of all vehicle movements are expected to be towards the site. This directionality will reverse during the evening peak.

The other activities proposed at ground level will generally have a very low traffic generation during the morning commuter peak with vehicle movements being dominated by employee travel rather than customers. The food and beverage activity is expected to generate peak travel demands of about 10vph per 100m^2 GFA during the lunchtime period and also in the early evening. The retail activity will generally rise during the morning to a mid-afternoon peak and then fall through the late afternoon.

The following table shows the expected traffic generation of the development in the morning and evening peak hour based on the activity breakdown shown in Table 1.

ACTIVITY	QUANTITY	AM		PM	
		Outbound	Inbound	Outbound	Inbound
Apartments	32	21	5	9	17
Hotel	62	49	32	33	48
Office	2,011m^2	8	42	40	10
Food and Beverage	400m^2	0	4	20	20
General Retail	417m^2	0	4	21	21
Total		78	87	123	116

Table 3: Expected Peak Hour Traffic Generation and Movement Patterns

Since the parking building will not meet the parking demands for all of the proposed activities and the hotel activity will involve taxis, the development traffic generation will be split between the parking building and the car parks off The Bay Hill. All vehicle movements associated with the food and beverage activity are expected to occur on The Bay Hill. Table 4 shows the expected traffic movements at the parking building entrance and on The Bay Hill.

[1] NZTA Research Report 453 Trips and Parking Related to Land Use

ACTIVITY	AM		PM	
	Outbound	Inbound	Outbound	Inbound
Parking Building	44	32	35	41
The Bay Hill	34	55	88	75

Table 4: Expected Traffic Generation and Movement Patterns

The forecast traffic volumes at the two signals following full development of the site is shown in Figure 1.

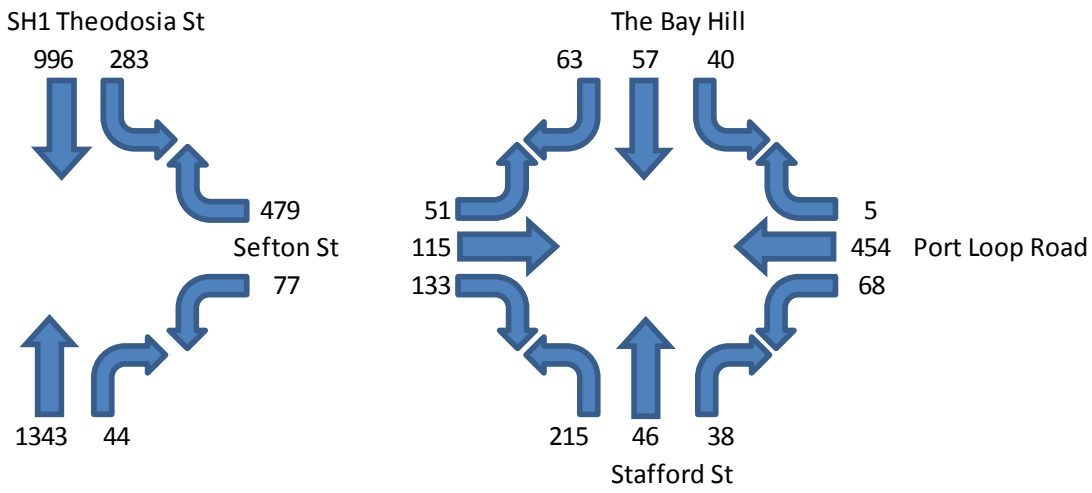


Figure 1: Forecast Traffic Volumes with Full Development – Evening Peak Hour

3. Expected Traffic Effects

3.1 Existing Situation

Turning volumes at the Sefton Street / Theodosia Street and Sefton Street / Stafford Street intersections were surveyed during the evening peak period in December 2015. Since it was not possible to obtain detailed signal timing information from the SCATS controller during the survey, data was extracted for an equivalent period in the following week. It showed that the signal phase timing varied widely through the peak periods and that one of the three signals phases, B phase, was not always run.

SIDRA models of the two signalised intersections on Sefton Street have been created to investigate the effects of the proposed development. Since the signal timing on the street showed high levels of variability, the SIDRA optimised timing was used to provide a comparison between the existing situation and the situation following full development of the site. It has been noted that the SIDRA optimised signal timing suggests shorter cycle times than were observed with the SCATS timing.

The SIDRA analysis suggests that the two signals could operate with level of service (LOS) B. However, with the longer cycle times being operated by SCATS, it is considered likely that the signals were operating with LOS B / C during the survey. The following table shows the average vehicle delay expected with different cycle times.

Cycle Time	Sefton St / SH1	Sefton St / Stafford St
50s	15 (B)	16 (B)
60s	15 (B)	17 (B)
90s	18 (B)	21 (C)
120s	22 (C)	27 (C)

Table 5: Average Vehicle Delays and Levels of Service

3.2 Development Scenario

In order to provide a conservative assessment of the potential traffic effects of the development, a base scenario with 20% growth in the state highway traffic volumes has been adopted. The levels of service provided by the two signalised intersections will depend upon how they are operated but average vehicle delays are expected to remain in the range 15-25 seconds which represents LOS B to C.

Cycle Time	Sefton St / SH1	Sefton St / Stafford St
50s	17 (B)	15 (B)
60s	15 (B)	15 (B)
90s	18 (B)	19 (B)
120s	20 (B)	23 (C)

Table 6: Average Vehicle Delays and Levels of Service – with 20% Growth in State Highway Volumes

Again the average vehicle delay will be dependent upon how the signals are operated but are still expected to be in the range 15-25 seconds. It is considered unlikely that drivers would notice any difference because any increase in delay would be smaller than the typical variation in delays resulting from changes in cycle times.

Cycle Time	Sefton St / SH1	Sefton St / Stafford St
50s	17 (B)	16 (B)
60s	15 (B)	17 (B)
90s	18 (B)	22 (C)
120s	20 (B)	27 (C)

Table 7: Average Vehicle Delays and Levels of Service – with 20% Growth and Development Traffic

The 95 percentile queue length for the right turn movement from Sefton Street into Stafford Street will be in the range 12-18m depending upon how the signals are operated. This can be accommodated within the right turn bay that is proposed as part of the alterations to the pavement markings on Sefton Street.

The analysis of the driveway performance indicates that the right turn out movement will be subject to the greatest delay in the evening peak period. It has a forecast average delay of 20 seconds which represents LOS C. In practice, the range of delays is likely to exhibit a wide range of values because the signals at the two nearest intersections will create platoons in the

eastbound and westbound flows. The 95 percentile queue length for the right turn into the site is less than one vehicle long.

3.3 Heavy Vehicle Volumes

The proportion of heavy vehicles within the state highway flows has been based on the survey results. The survey recorded a very high percentage of heavy goods vehicles travelling both eastbound (25%) and westbound (10%) during the evening peak. Since these are already high, no further adjustment was considered necessary when defining the development scenarios for the original assessment.

The Abley peer reviewer has suggested that the proportion of heavy vehicles on Sefton Street could increase as part of the future year growth. As a sensitivity test, the proportion of heavy vehicles was increased by 5% for both the eastbound and westbound traffic flows. The forecast change in average vehicle delay at both signalised intersections was less than one second and would not be noticeable to drivers.

4. Parking Effects

4.1 Parking Supply

The Bay Hill is classified as a local road and has been constructed to promote a low speed traffic environment with a narrow carriageway and parking on both sides of the road. There are 33 on-street parking spaces on The Bay Hill with a mix of right angle and parallel parking space configurations. Spaces on the western side of the road have a 30 minute parking restriction while spaces on the eastern side of the road have a 120 minute parking restriction.

The northern end of The Bay Hill can be accessed from Theodosia Street via a one-way road that leads to a small roundabout with a connection to two small public car parks with a total capacity of 55 spaces. The northern car park includes 21 right angle parking spaces with a P120 restriction. The southern car park is accessed via a short lane and includes 34 public spaces with 14 spaces marked as privately leased and 20 spaces allowing all day parking.

Parking is also permitted over a distance of about 20m on the northern side of Sefton Street which provides sufficient kerb length for three vehicles to park.

Following the development of the site, the three parking spaces on the northern side of Sefton Street will be removed. The parking building proposed on Sefton Street will provide 90 off-street parking spaces.

4.2 Timaru District Plan Parking Requirements

The District Plan requirement for parking for the development proposal is set out in the following table. It shows that 154 spaces would be required to meet the District Plan rule. Since the proposal only includes 90 parking spaces, there is a shortfall in parking of 64 spaces compared with the District Plan requirement.

Activity	Quantity	Requirement	Spaces
Residential	32 apartments	1 space / unit	32
Hotel	68 rooms	1 space / room	68
Office	2,298m^2	1 space / 50m^2 GFA	46
Retail	417m^2	None - Commercial 1A Zone	0
Food and Beverage	400m^2	1 space / 50m^2 GFA	8
		Total	154

Table 8: District Plan Parking Requirements

4.3 Parking Demands

The District Plan parking requirement rule would ensure that there is sufficient parking on site if the peak parking demand period for all proposed activities coincided. In practice, this is considered highly unlikely given the range of activities being proposed and an investigation of expected parking demands has been undertaken.

An occupancy survey of the two public car parking areas to the east of Theodosia Road was undertaken on Wednesday 9 December. The survey recorded occupancy of the 56 parking spaces including the 14 which were marked as leased spaces.

The duration of stay in the parking spaces ranged from 15 minutes to over four hours with an average of one hour.

Figure 2 shows the number of occupied spaces (excluding leased spaces) recorded between midday and 6:00pm. It shows a lunch-time peak occupancy of 16 spaces (40% occupancy), a low of one space occupied and occupancy rising during the evening peak.

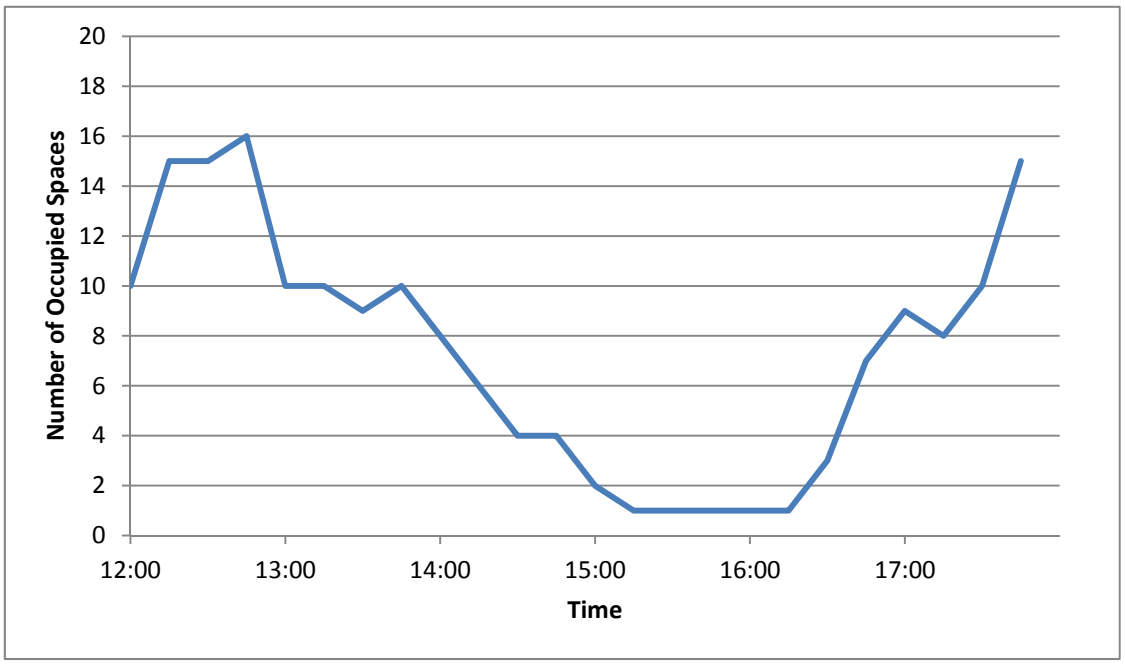


Figure 2: Number of Occupied Spaces (15 minute intervals) – Excluding Leased Parking Spaces

The parking occupancy rates during a subsequent visit in February 2016 showed a lower level of parking demand at lunchtime with one leased space being occupied, three long stay spaces

being occupied and only one short stay space being occupied, as shown in the following photographs.

Photograph 1: Northern Car Parking Area at Midday

Photograph 2: Southern Car Parking Area at Midday

Since the mixed use development being proposed will involve activities that have peak parking demands at different times of the day, a parking demand model has been created using parking demand profiles taken from the ITE Parking Manual. Figure 3 shows an updated output from the model that separates the residential and non-residential parking demands. It indicates that the office activity will generate the highest parking demands and could reach 50 spaces in the morning but fall to less than ten spaces in the evening. The food and beverage (F&B) activities would be expected to create a short stay parking peak demand at lunchtime, fall through the afternoon and then rise to a lower peak in the evening. The hotel parking

demands are expected to fall through the morning to a minimum during the day and then rise again in the evening. The overall effect is that there will be a peak parking demand during the morning for about 90 non-residential parking spaces. The office activity will typically generate a demand for long stay spaces whereas the other activities will typically involve short stay parking during the day. On this basis, the proposed offices could create a demand for 40-50 long stay parking spaces with a similar number of short stay parking spaces being required for the other activities.

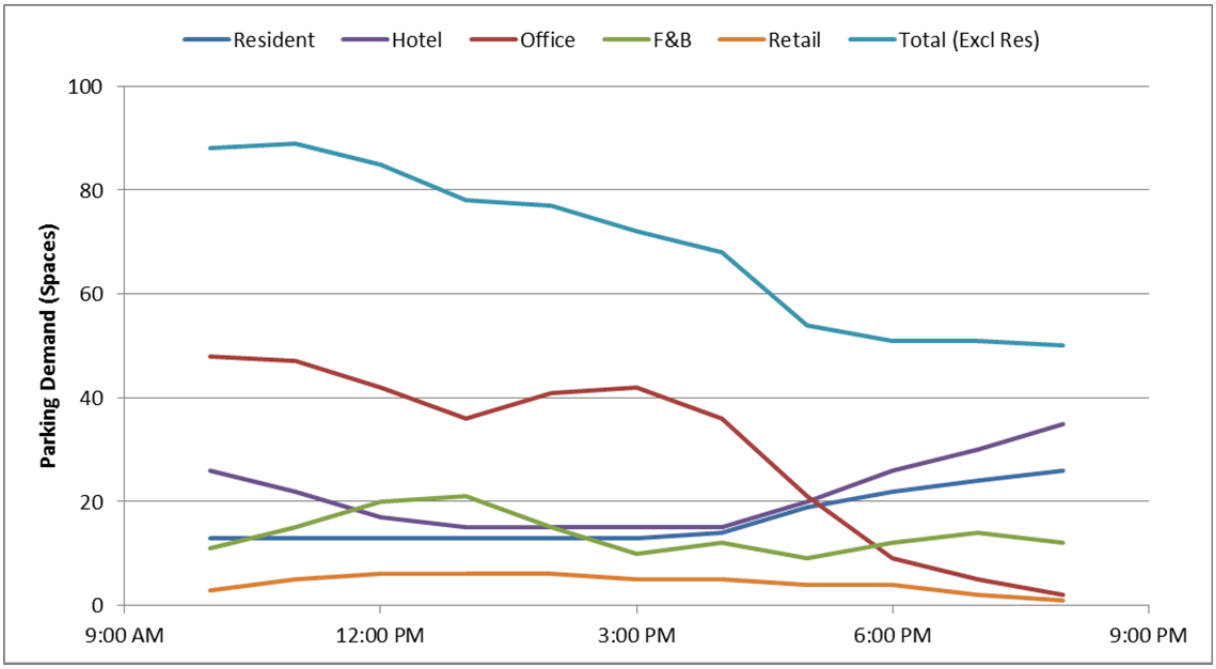


Figure 3: Expected Variation in Parking Demands

4.4 Parking Effects

The parking building will have a capacity of 90 spaces of which 32 will be allocated to apartment residents (one space per unit). If the remaining 60 spaces are used by hotel visitors and office employees, it is expected that there will be peak overflow demand for about 30 spaces (10 long stay and 20 short stay) during the morning. This overflow parking demand will fall through the afternoon and evening to an overflow demand for about 15 short stay spaces.

The office activity is expected to generate the highest demand for parking spaces and typically requires all day parking capability. Depending upon how parking spaces within the new building are allocated, it could generate an external parking demand for up to 15 long stay spaces. The existing car park on Theodosia Road includes 20 spaces for all-day parking and could meet the increased long stay parking demand. However, since the availability of the spaces could not be guaranteed, it is recommended that a condition of consent be considered that required 15 parking spaces are leased within five minutes walking distance on a long term basis for use by the offices. We are aware that the purchase of an additional off-site parking area is currently under investigation to address this shortfall and if confirmed prior to the hearing would remove the need for this type condition.

The retail, food and beverage activities will generate a parking demand that varies across the day from 13 to 27 spaces. This level of parking demand could be met within the northern car park on Theodosia Street. In practice, it is considered likely that the new and existing parking demands would be distributed between The Bay Hill on-street parking spaces and the off-street car park.

5. Other Matters

5.1 Parking Space Dimensions

The parking spaces have been set out in accordance with the New Zealand Standard NZS2890.1 for a Class 2 user which is considered appropriate for long term city centre parking and hotels.

5.2 Accessible Parking

The layout of the parking building will allow two accessible parking spaces to be created that are close to accessible routes. The proposed location of the accessible spaces is shown on the attached drawings.

This level of provision is considered appropriate because of the way that the parking spaces within the building will be managed.

5.3 Servicing

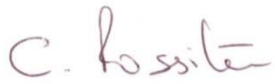
Figure 4 shows the tracking path for an 8m long medium sized rigid goods vehicle. It shows that a truck of this size can turn into Building 2 and the parking aisle before reversing into the loading dock. Since the tracking path will conflict with vehicle movements in the car park, it is recommended that deliveries are managed so that they occur at off-peak times.

5.4 Cycle Parking

An area for cycle parking has been identified on the ground floor of the parking building. This location allows for covered and secure cycle parking.

We trust that this report provides the requested information but would be happy to discuss any matter as necessary.

Yours sincerely
Traffic Design Group Ltd



Chris Rossiter
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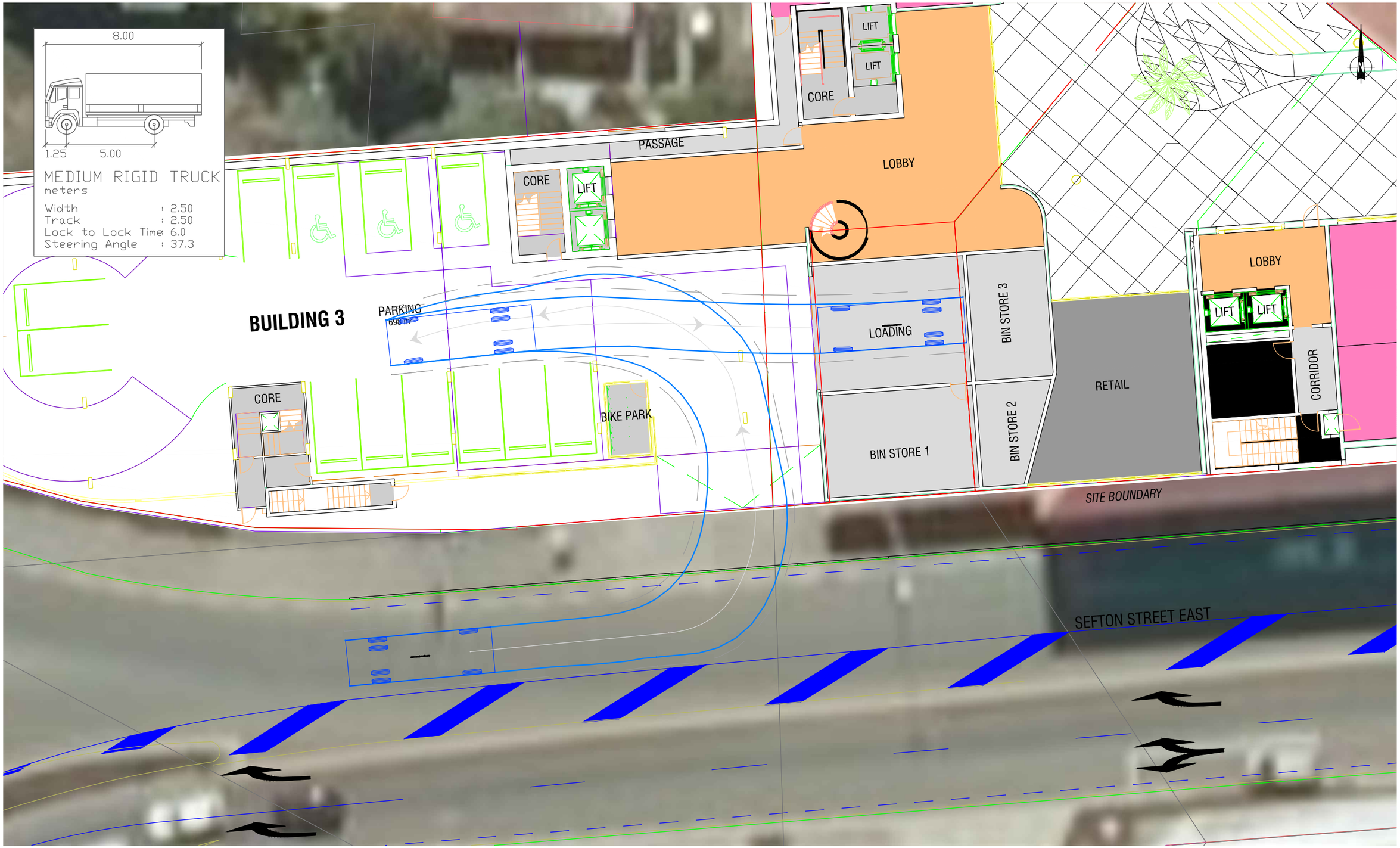
enc: Tracking Paths



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Thursday, 6 October 2016

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