

Queenstown Lakes District Council

Wanaka Ponds Traffic Impact Assessment

September 2007

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Queenstown Lakes District Council

Wanaka Ponds, Transport Assessment

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1. Introduction

Queenstown Lakes District Council (QLDC) is currently updating and finalising the Wanaka Structure Plan (the Structure Plan). As part of the Structure Plan, QLDC is proposing to introduce a Plan Change to rezone the existing Ballantyne Road Oxidation Ponds Site (Ponds Site) (20ha) to allow for 'yard-based' industrial activities (e.g. transportation or timber yards) to proceed in accordance with a Master Plan.

The purpose of this report is to provide a traffic impact assessment of the proposed development on the surrounding transport network, and undertake a transport assessment of the Ponds Site in terms of accesses, linkages to adjacent land uses and other non-vehicular transport modes.

This report focuses on the transport effects of the development of the Ponds Site in the short term and assesses the traffic impacts of the proposal on the existing road network under current traffic conditions. It is recognised that the Structure Plan envisages major development in the area and that the Ponds Site will form part of this development. The proposed land use activities of this major development are shown on the Structure Plan zoning map in Appendix E. The future development will be supported by new transport infrastructure and this will have a redistributive effect on the traffic associated with the Ponds Site.

The longer term traffic effects of the development of the Ponds Site, assessed in the context of the future development on adjoining land as shown on the Structure Plan, has been assessed under the Wanaka Transportation Study which is currently underway.

This report considers the transport related aspects of the proposed rezoning of the Ponds Site and is addressed as follows:

- **Section 2** describes the site location, existing traffic flows, and crash history in the vicinity of the proposed development;
- **Section 3** discusses the proposed development including likely traffic generation, expected traffic distribution, vehicle access, and parking provisions;
- **Section 4** considers the impacts of the traffic generation on the surrounding transport network;
- **Section 5** considers opportunities to access the site by non-car modes;
- **Section 6** summarises the transport and parking related impacts of the proposal and provides conclusions.

2. Existing Traffic Situation

2.1 Site Location

The Ponds Site is located on Ballantyne Road approximately 2 km from the Wanaka town centre and is currently zoned “Rural General” in accordance to the QLDC District Plan. It is situated opposite existing industrial land use activities on Ballantyne Road. Figure 2.1 shows the location of the site and its relation to the transport network in the area.



Figure 2-1: Site Location

The Ponds Site lies within a boundary of three key roads that form an enclosed triangle of the area. Within this bounded area, significant zone changes are proposed in the Structure Plan. The key roads are: -

- Ballantyne Road
- Riverbank Road
- State Highway 84 (SH84)

Ballantyne Road is predominantly rural and is currently classified as a Collector Road between SH84 and Golf Course Road. It intersects with SH84 in at a T-junction. SH84 connects to Riverbank Road and SH6 at a staggered intersection. SH84 is the as the main road to and from Wanaka collecting traffic from Albert Town (SH6 North) and from Cromwell (SH6 East). Lastly, the boundary is completed by the linkage of Ballantyne Road with SH84 by Riverbank Road, which is a rural road.

Opposite the Ponds Site is Frederick Street, which is an industrial cul-de-sac.

The posted speed limit on Ballantyne Road in the vicinity of the site is 100 km/h. The north western boundary of the site is approximately at the point of the speed limit on Ballantyne Road increases from 70 km/h to 100 km/h.

The total width of the carriageway on Ballantyne Road is approximately 8.8m, and comprises of two 3.5 m lanes and 0.9 m shoulders.

2.2 Existing Traffic Volumes

2.2.1 Traffic Volumes

Traffic flows for 2006 were obtained from the Wanaka Transportation Study. These are pseudo daily volumes, which have been calculated using factors for the morning peak, interpeak and evening peak models and are listed in Table 2.1.

Table 2-1 : Average Daily Traffic Volumes

Street Name	Location	Date	Average Daily Traffic
Ballantyne Road	South of SH84	2006	1,900
Ballantyne Road	South of Macpherson Street	2006	2,800
Ballantyne Road	South of Golf Course Road	2006	1,500
Ballantyne Road	West of new spine road	2006	1,250
Ballantyne Road	West of Riverbank Road	2006	1,250
Ballantyne Road	West of SH6	2006	1,900

The table shows that ADT volumes on Ballantyne Road are generally in the range from 1,250 to 1,900. Along the section between Macpherson Street and Golf Course Road there is a significant increase to 2,800 ADT, this is because Macpherson Street provides an attractive route for vehicles travelling to the north west.

2.3 Existing Intersections

The Ponds Site is located within the Ballantyne Road, Riverside Road and SH84 triangle. Traffic accessing the site will predominately use the three intersections that form the triangle enclosure. The intersections likely to be most affected by the development proposals are:

- Ballantyne Road / SH84
- SH84 / SH6 / Riverbank Road
- Ballantyne Road / Riverbank Road

Intersection counts for the three key intersections were undertaken in January 2007. The results of these counts are attached in Appendix F.

Opposite the Ponds Site is the existing T-junction intersection of Ballantyne Road and Frederick Street.

2.4 Road Safety

A search was undertaken of the Land Transport New Zealand's Crash Analysis System (CAS) to determine the number, location and types of crashes that have been reported in the vicinity of the ponds site for the five year period from 2002 to 2006. The purpose of reviewing the historic crash records has been to identify any existing crash trends that might be exacerbated by the rezoning.

The five year crash history reported one minor crash on Ballantyne Road between Gordon Road and Riverbank Road. The reported crash was a result of vehicle failing to give way to traffic on Ballantyne Road when entering the road from a private access way. A crash diagram and crash listing from the CAS database are presented in Appendix B.

The reported crash on Ballantyne Road was a result of driver error. In this instance it is not likely that the increased traffic associated with the Plan Change would exacerbate the road safety in the vicinity of the site.

3. Proposed Development

3.1 Description of the Proposed Development

The proposed Plan Change to the 20 ha Ponds Site comprises the following components:

- Yard-Based Industry (10.00ha)
- Higher Density Employment (2.9ha)
- Mixed Use (deferred zone) (5.55ha)
- Non-Residential Mixed Use (1.28ha)
- Setback Landscape Reserve (0.67ha)

The Master Plan layout in Appendix A illustrates the conceptual site layout.

The Plan Change proposals include the following features:

- Use of the existing access as a secondary or emergency access to site.
- A new access to the site located opposite Frederick Street
- An internal road network within the site
- Opportunities for road linkages within the site to the proposed future development on adjoining land as shown on the Wanaka Structure Plan, which is a mixed use zone.
- Provision of footpath and cycleways within the site and also linkages to the future development on adjoining land.

3.2 Vehicular Access

3.2.1 External Vehicle Access Points

There are currently two access points to the Ponds Site from Ballantyne Road as shown in the Master Plan, which are located on either side of the boundary of the ponds. The proposed new access is located opposite Frederick Street, and would serve as the main entrance to the site. The secondary access uses the existing vehicle access on the southern boundary of the site and will be used for accessing the rear part of the site and provide a secondary or emergency access.

The new access to the site would form a cross junction with Frederick Street being the opposite minor road to Ballantyne Road. However in accordance with the Structure Plan, it is proposed that the cul-de-sac of Frederick Street will eventually be upgraded and form part of the road network in Wanaka, as shown in Appendix E. This would mean that the intersection of Frederick Street and Ballantyne Road would generate higher traffic flows

whereby making an uncontrolled cross junction a more unsuitable form of access. An alternative arrangement could be a right-left stagger.

It is recommended that the proposed new access is staggered to Frederick Street to avoid potential conflicts of vehicles on either side of Ballantyne Road. Another possibility is to use the existing access on the northern boundary of the site.

Sight distances were measured for the accesses, to determine whether the required minimum sight distance of 250m for a 100km/h road speed can be achieved. Both accesses meet the minimum sight distance required. Whilst travelling southbound on Ballantyne Road, the road is elevated but on site measurements confirm that that the minimum sight distance can still be achieved.

There are two proposed access points to the site from Ballantyne Road. However taking into account the road network in the Wanaka Structure Plan, there will be additional accesses into the site from the future development on the adjoining land. Until the Structure Plan has been finalised, the transport assessment will only consider access from Ballantyne Road.

3.3 On-Site Parking Requirements

3.3.1 District Plan Car Parking Requirements

The District Plan provides minimum standards for the provision of on-site car parking for new developments. The Plan Change proposal will provide parking to comply with the minimum standards.

3.4 Traffic Generation

3.4.1 Traffic Generation of Proposed Development

The total peak hour trip rate for the proposed development has been calculated as shown in Table 3.4.1.

The trip generation rates applied have been derived from Transfund NZ Research Report 209. Warehousing trip rates of 0.5 trips per 100m² has been applied for the yard-based land use. Given that the location of the site is in an industrial environment, a trip rate of 1.2 trips per 100 m² specified for business parks is most applicable for the higher density employment and non-residential mixed land use zones.

Table 3.4.1

Land Use	Ha	Developable	Peak Vehicle Trip Generation Rate	Peak Hour Trip Generation
Yard-based	10.0	30%	0.5/100m ²	150
Mixed Use (deferred zone)	5.55	40%	1.2/100m ²	264
Higher Density Employment	2.90	50%	1.2/100m ²	174
Non-Residential Mixed Use	1.28	50%	1.2/100m ²	77
Total Peak Hour Trip Rate				665

3.4.2 Traffic Distribution

The distribution of the development traffic has been based on the combination of volume of traffic recorded on the surrounding road network and on the assumption that there would be more traffic associated with Wanaka and the residential area to the north and east of the site. On this basis it has been assumed that 60% of trip ends would be derived from Wanaka and the residential area to the north and east of the site and the remaining 40% with south and east destinations. The assignments of traffic to the key intersections are based on proportions from the existing survey counts in Appendix F.

Figure 1 in Appendix C sets out the recorded weekday evening peak hour traffic flows for the three key intersections:

- Ballantyne Road / SH84
- SH84 / SH6 / Riverbank Road
- Ballantyne Road / Riverbank Road

The following distribution is assumed for the evening peak:

- 60% turn right out of the site onto Ballantyne Road (north / west)
- 40% turn left out of the site onto Ballantyne Road (south / east)

As stated in section 2.2, it is considered that Macpherson Street provides a shorter alternative route for vehicles turning right onto SH84 from Ballantyne Road. It is therefore assumed that 20% of development traffic travelling northbound on Ballantyne Road will use the intersection of Macpherson Street / SH84.

Figure 2 of Appendix C indicates how this traffic has been assigned to the local road network and Figure 3 indicates the combined effects of the network and development traffic.

The impact of the additional trips on the road network is discussed in Section 4.

4. Traffic Impacts of the Proposed Development

4.1 Traffic Flows

Peak hour traffic flows have been tabulated for the various parts of the surrounding road network. Table 4-1 compares the effects of the additional development traffic on the existing local road network.

Table 4-1: Comparison of Existing and Predicted Peak Hour Traffic Volumes

Street Name	Average Weekday PM Peak Flow (veh/hr) 17:00-18:00		
	Existing	Existing + Development	Percentage Increase
Ballantyne Road – south of SH84	174	467	168%
Ballantyne Road – west of Riverbank Road	200	466	133%
Riverbank Road – north of Ballantyne Road	74	123	66%
Riverbank Road – south of SH84	77	127	65%
SH84 – west of Riverbank Road	675	675	0%
SH84 – east of Ballantyne Road	1146	1236	8%
SH84 – west of Ballantyne Road	1210	1412	17%

In general, the proposed development is predicted to significantly increase traffic on Ballantyne Road with the maximum two-way peak flow predicted to be 467 vehicle movements. Ballantyne Road is approximately 8.8 metres in width which has a capacity to carry up to 1,400 vehicle per hour in each lane. On this basis there is sufficient link capacity to accommodate the additional flows generated by the Plan Change proposal.

4.2 Intersection Operation

The effects of the additional development traffic demands on the three key intersections have been tested using SIDRA and are compared with the performance of the intersections under base traffic conditions.

The results are expressed in terms of levels of service (LOS), summarised as follows:

- LOS A is the top level representing free flow conditions
- LOS B and C offer stable conditions with less freedom to select desired speeds and manoeuvres.
- LOS D is approaching unstable flow conditions; and
- LOS E and F represent conditions whereby junctions are operating at or over capacity characterised by flow break-down with queuing and delays occurring.

Figures 4 to 6 in Appendix D compare LOS in terms of delays for the base and development scenarios.

The right turn movements from Ballantyne Road onto SH84 are a LOS F in both the existing and the proposed model scenarios, therefore the development traffic is not the root problem. The poor LOS for this movement has been identified as an issue in the Wanaka Transportation Study.

The access to the site and Ballantyne Road intersection has also been modelled using SIDRA to determine its performance with the additional development trips. The overall LOS for the intersection is B and the results can be found in Figure 7 in Appendix D and summarised in Table 4.2.

Table 4.2

Road	LOS Existing	LOS Existing + Development
Ballantyne Road / SH84		
SH84 West	B	B
SH84 East	A	A
Ballantyne Road	F	F
Ballantyne Road / Riverbank Road		
Ballantyne Road West	B	B
Riverbank Road North	C	C
Ballantyne Road East	B	B
Riverbank Road South	C	C
SH84 / SH6 / Riverbank Road		
SH84	B	B
SH6 North	C	C
SH6 East	B	B
Riverbank Road	C	C
Site Access / Ballantyne Road		
Ballantyne Road North		A
Site Access		B
Ballantyne Road South		A

The results show that there is no reduction in level of service at these key intersections as a result of the additional traffic associated with the Plan Change and that the proposed site access can safely accommodate the development flows.

5. Access by Non-Car Modes

5.1 Public Transport

At present there is no public transport within Wanaka. However the Wanaka Transportation and Parking Study identifies the Ballantyne Road industrial area as an area for potential future public transport options linking with Wanaka services.

5.2 Pedestrian and Cycle Access

Provisions have been made in the Master Plan for good connectivity in terms of pedestrian and cycle linkages with the proposed development on the adjoining land. These linkages have been included from the boundaries of the Ponds Site.

6. Summary and Conclusions

The transport related issues discussed in this report are summarised as follows:

- The Ponds Site is located adjacent to and within close proximity of the classified road network and has good road access;
- The Ponds Site is bound by three key intersections. Two operate within capacity, whilst the Ballantyne Road/ SH84 Intersection operates over capacity during evening peak times under base and development scenarios;
- There is sufficient link capacity to accommodate the additional traffic generated by the proposal;
- There is no inherent traffic crash problem associated with roads in the vicinity of the site;
- The proposed re-development of the site accords with the long term comprehensive development of the area as shown in the Wanaka Structure Plan;
- Two points of vehicle access will be provided on the Ballantyne Road frontage that will be designed and located to accord with QLDC engineering standards;
- On-site vehicle and cycle parking spaces will be provided to comply with minimum parking standards;
- The internal road layout associated with the proposal would provide for vehicle, pedestrian and cycle linkages to be neighbouring developments;
- Capacity assessments of the site access junction indicate that this could operate within capacity during peak times;
- The proposal will have no significant effect on the levels of service provided at the existing key intersects that surround the site.

It can be concluded that the proposed Plan Change to rezone the existing Ponds Site for industrial and commercial activities will have less than minor effects on the surrounding road network and can therefore be supported from a traffic and transport perspective.

Appendix A – Master Plan

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Draft



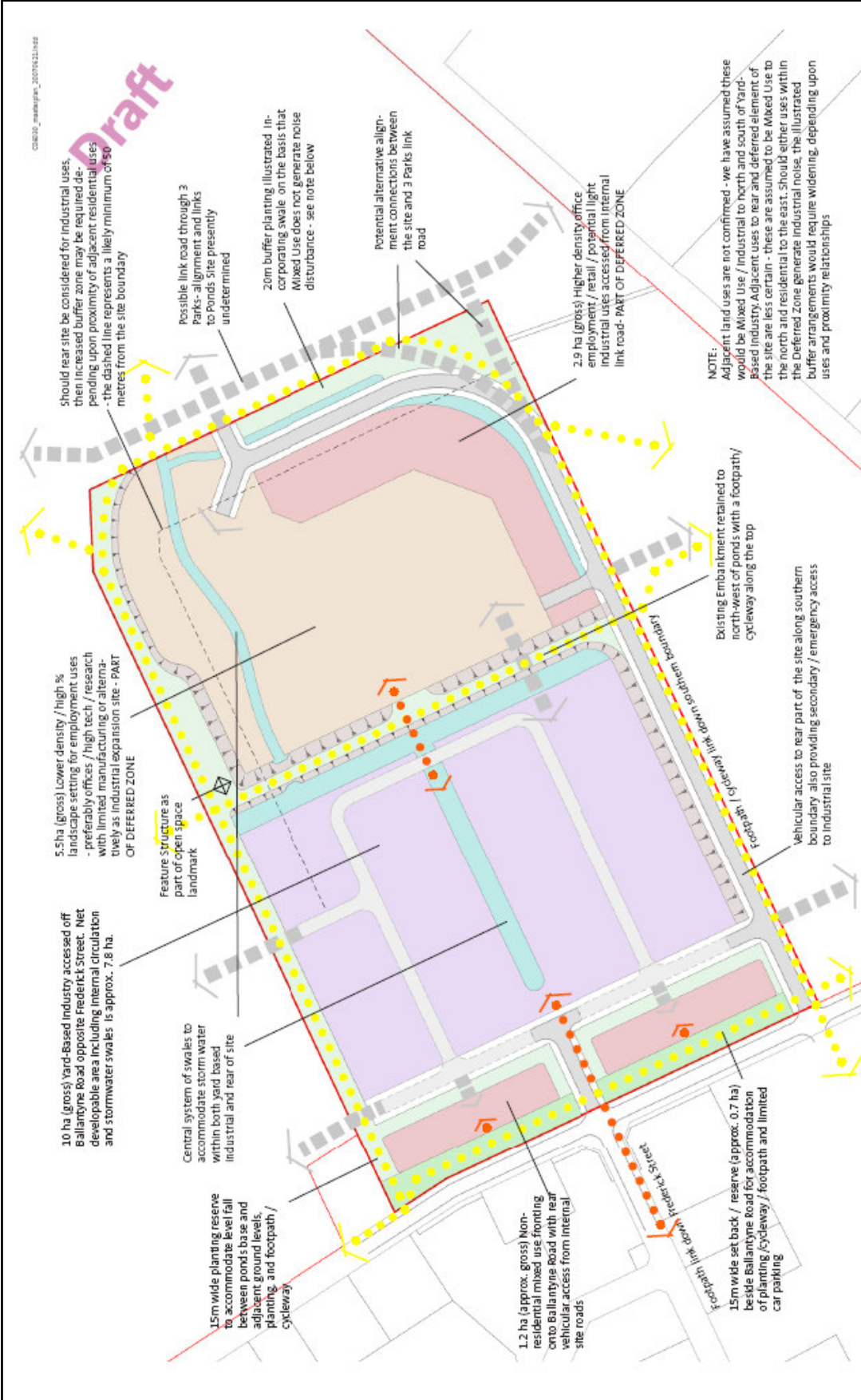
Ballantyne Road Ponds
DRAFT ZONE PLAN

Contact: ivormschorney@boffamiskell.co.nz
Date: 21 June 2007



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Draft



Should rear site be considered for industrial uses, then increased buffer zone may be required depending upon proximity of adjacent residential uses - the dashed line represents a likely minimum of 50 metres from the site boundary

Possible link road through 3 Parks - alignment and links to Ponds Site presently undetermined

20m buffer planting, illustrated incorporating swale on the basis that Mixed Use does not generate noise disturbance - see note below

Potential alternative alignment connections between the site and 3 Parks link road

2.9 ha (gross) Higher density office employment / retail / potential light industrial uses accessed from internal link road - PART OF DEFERRED ZONE

NOTE:
Adjacent land uses are not confirmed - we have assumed these would be Mixed Use / Industrial to north and south of 'Yard-Based' Industry. Adjacent uses to rear and deferred element of the site are less certain - these are assumed to be Mixed Use to the north and residential to the east. Should either uses within the deferred zone generate industrial noise, the illustrated buffer arrangements would require widening, depending upon uses and proximity relationships

Existing Embankment retained to north-west of ponds with a footpath/cycleway along the top

Vehicular access to rear part of the site along southern boundary also providing secondary / emergency access to industrial site

5.5ha (gross) Lower density / high % landscape setting for employment uses - preferably offices / high tech / research with limited manufacturing or alternatively as industrial expansion site - PART OF DEFERRED ZONE

Feature structure as part of open space landmark

10 ha (gross) Yard-Based Industry accessed off Ballantyne Road opposite Frederick Street. Net developable area including internal circulation and stormwater swales is approx. 7.8 ha.

Central system of swales to accommodate storm water within both yard based industrial and rear of site

15m wide planting reserve to accommodate level fall between ponds base and adjacent ground levels, planting, and footpath / cycleway

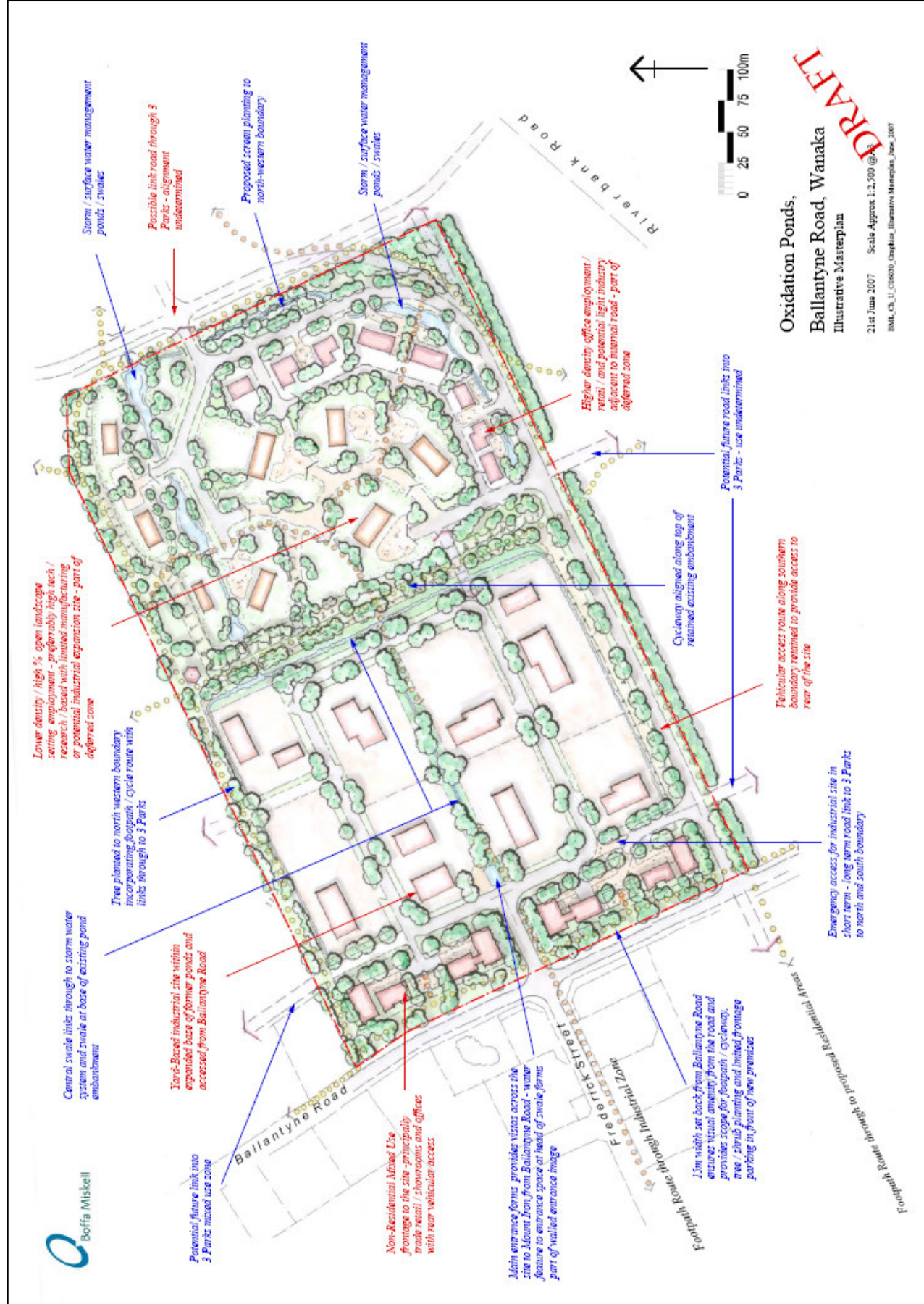
1.2 ha (approx. gross) Non-residential mixed use fronting onto Ballantyne Road with rear vehicular access from internal site roads

15m wide set back / reserve (approx. 0.7 ha) beside Ballantyne Road for accommodation of planting / cycleway / footpath and limited car parking

Ballantyne Road Ponds MASTERPLAN

Contact: ivor.mckerny@boffamiskell.co.nz
Date: 21 June 2007



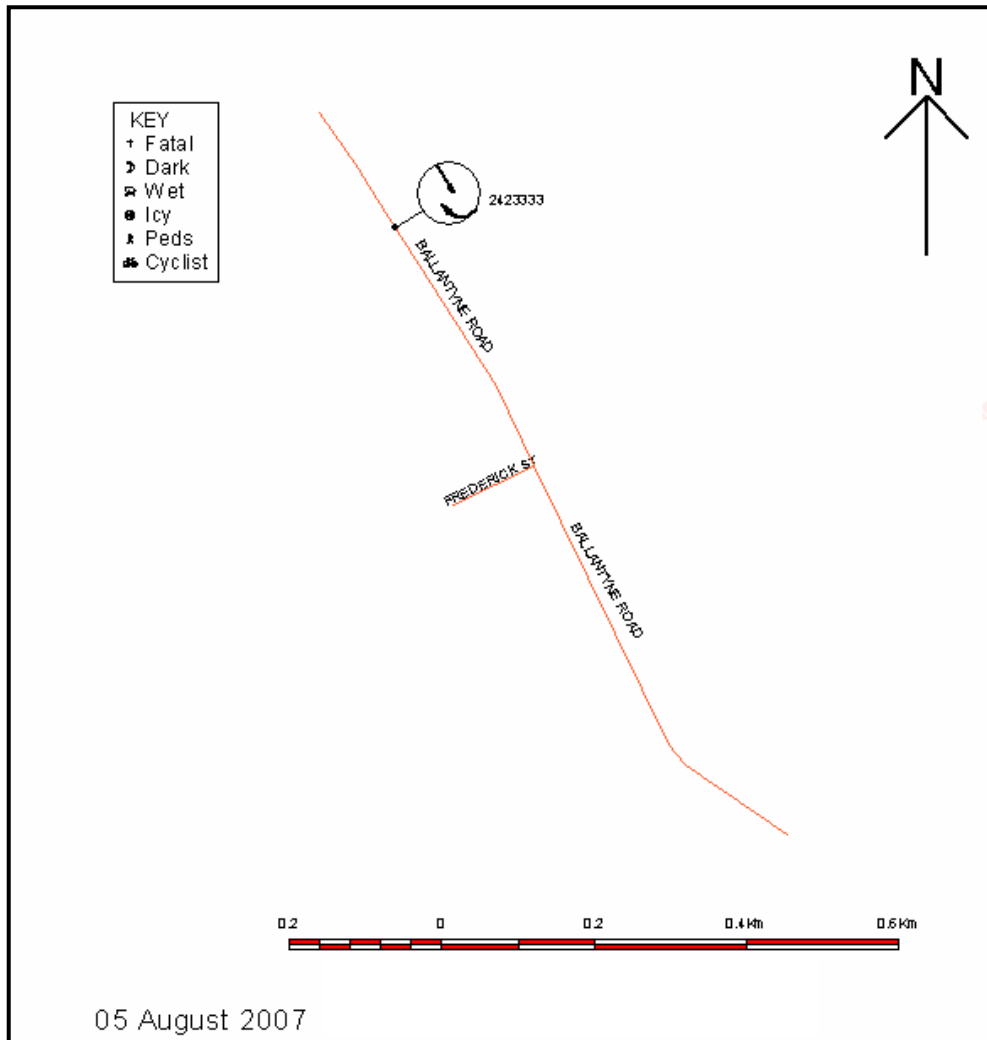


Appendix B – Crash Diagram and Crash Listing

Plain English Report

First Street	Second street or landmark	Crash Number	Date	Day	Time	Description of Events	
Distance							
			DD/MM/YYYY	DDD	HHMM		
BALLANTYNE ROAD	800S GOLF COURSE ROAD	2423333	21/12/2004	Tue	1605	CAR1 SBD on BALLANTYNE ROAD hit CAR2 turning right onto BALLANTYNE ROAD from the left	
Crash Factors		Road	Natural Light	Weather	Junction	Cntrl	Tot Inj F S H A E I T R M
(ENV = Environmental factors)							
CAR1 lost control under heavy braking CAR2 failed to give way at driveway, didnt see/look when required to give way to traffic from another direction ENV: entering or leaving private house / farm		Dry	Overcast	Fine	Driveway	Nil	1

Collision Diagram



Appendix C – Traffic Flow Diagrams

Figure 1: Existing PM Peak Weekday Flows

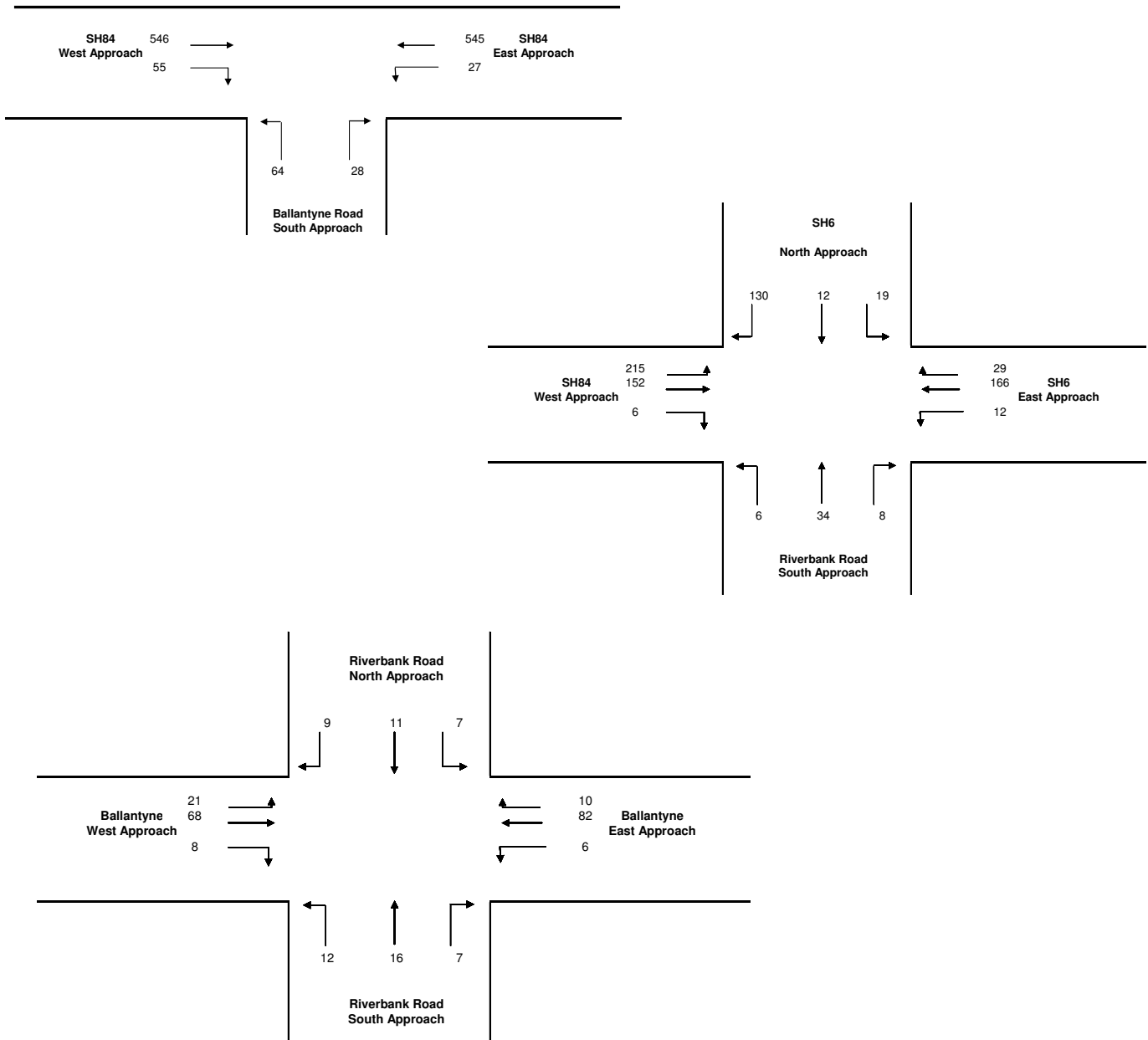


Figure 2: Distribution of Development Traffic

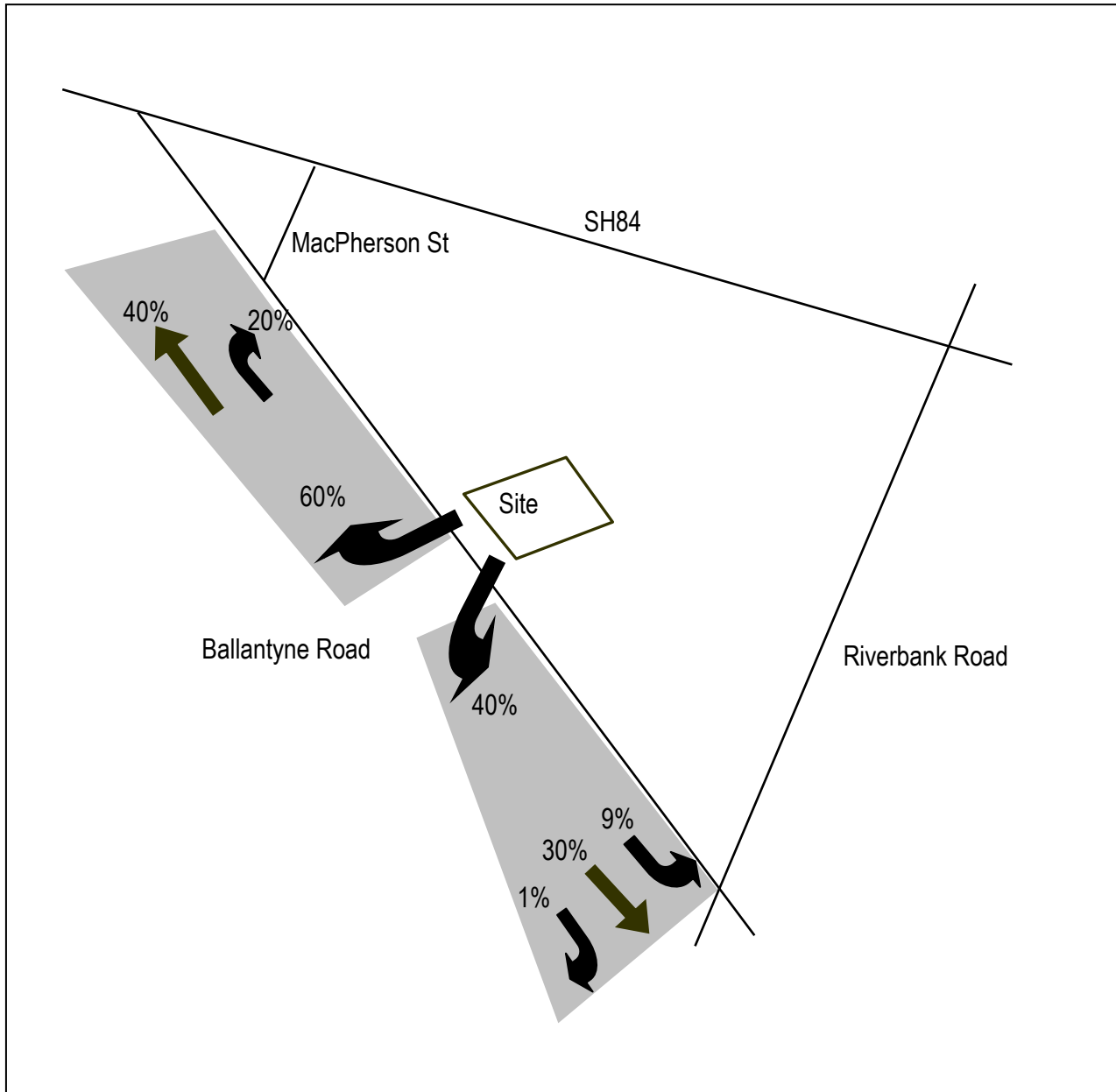
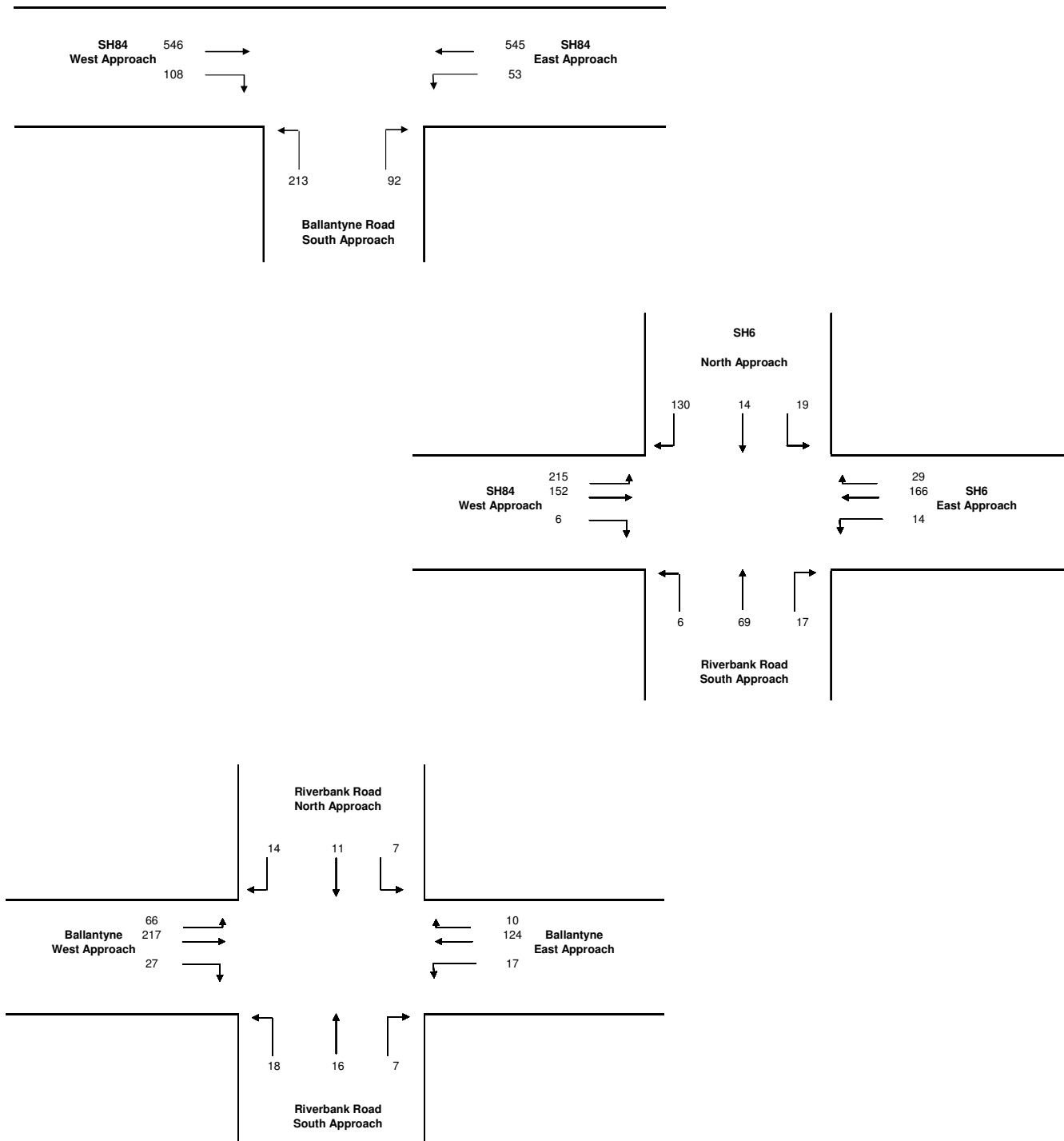


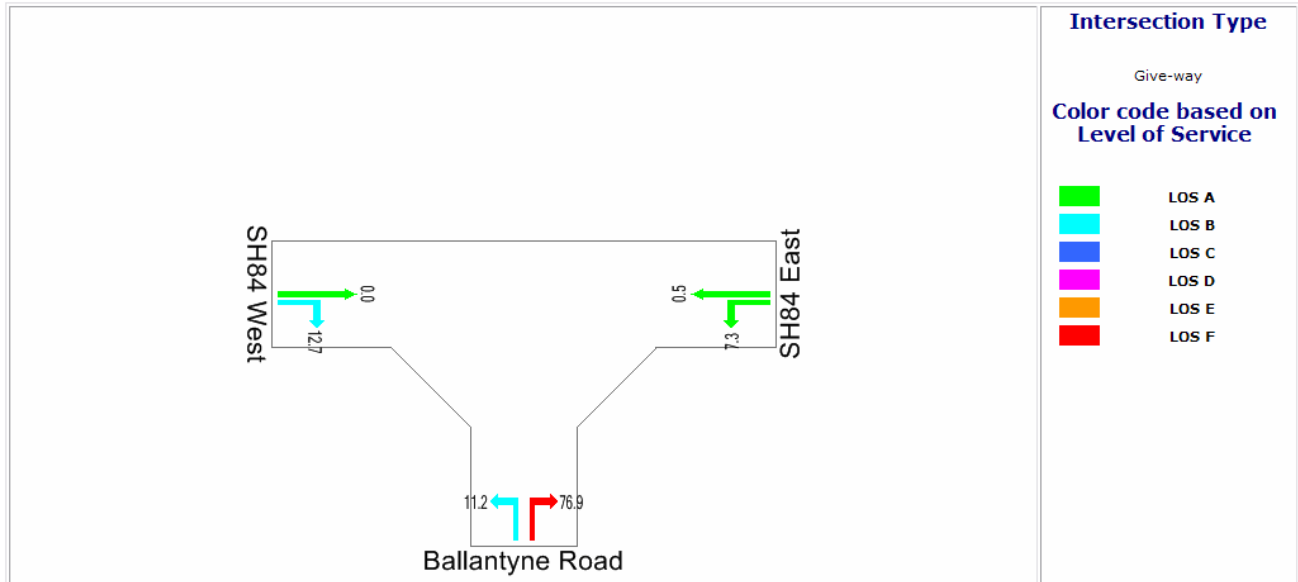
Figure 3 Existing + Development PM Peak Weekday Flows



Appendix D – Level of Service Diagrams

Figure 4: Ballantyne Road / SH84 – Average Delay

PM Existing



PM Existing + Development

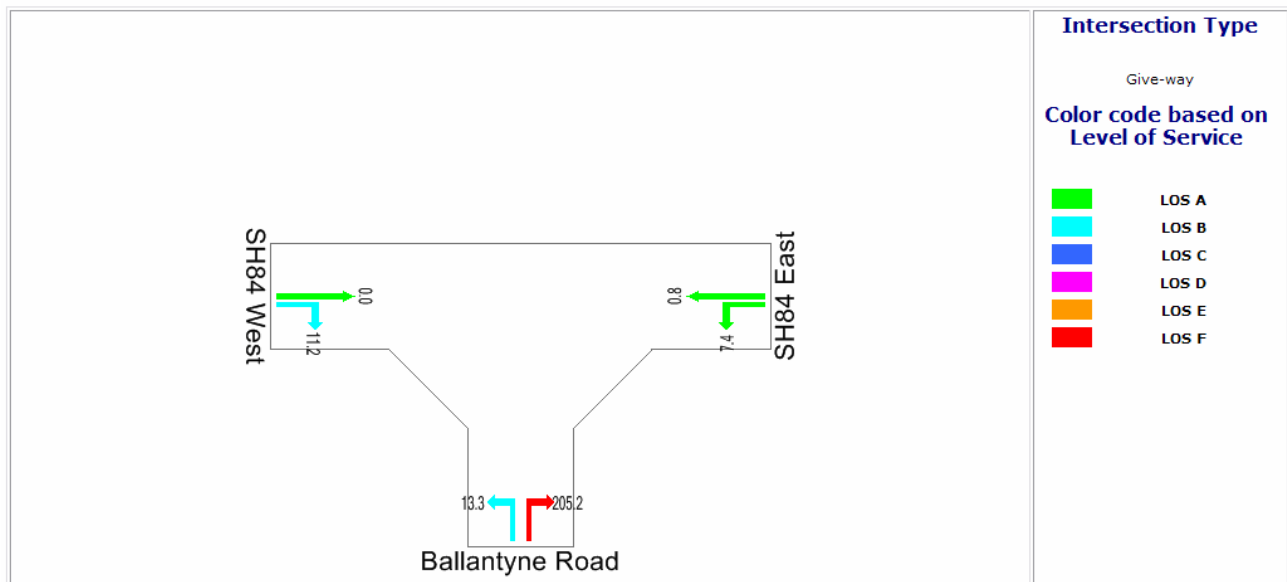
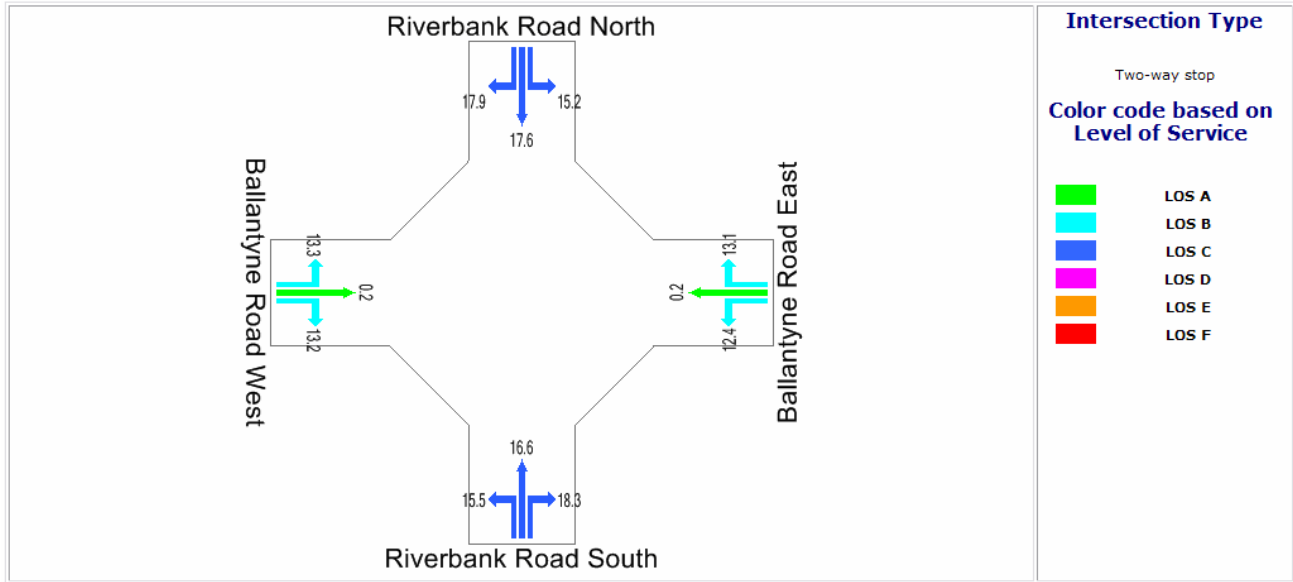


Figure 5: Ballantyne Road / Riverbank Road – Average Delay

PM Existing



PM Existing + Development

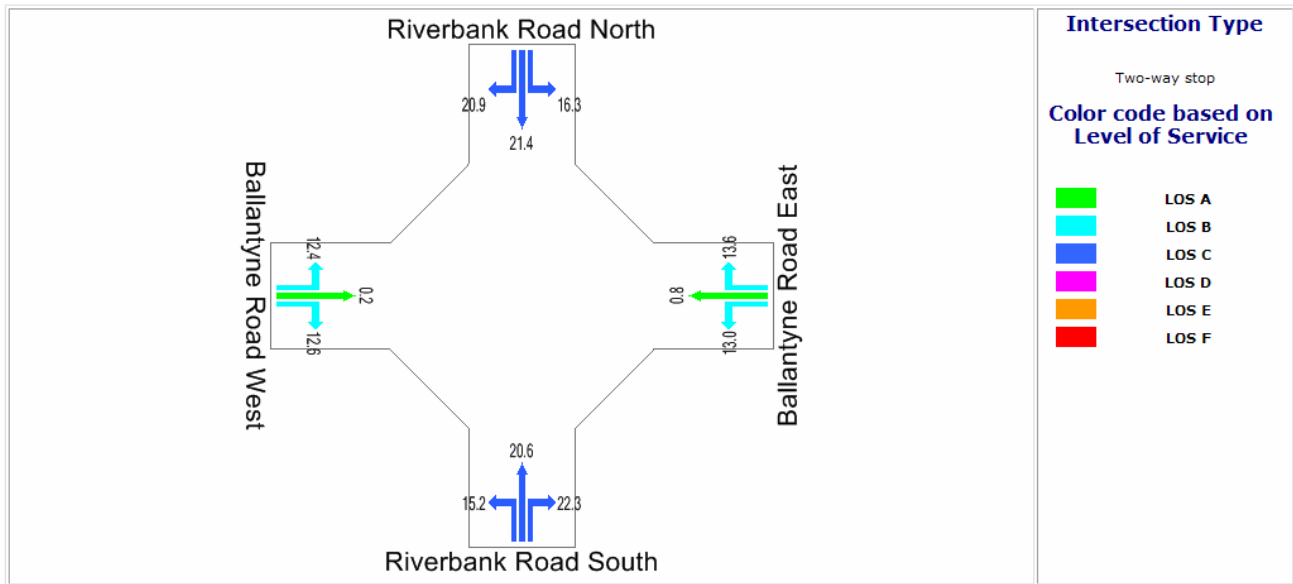
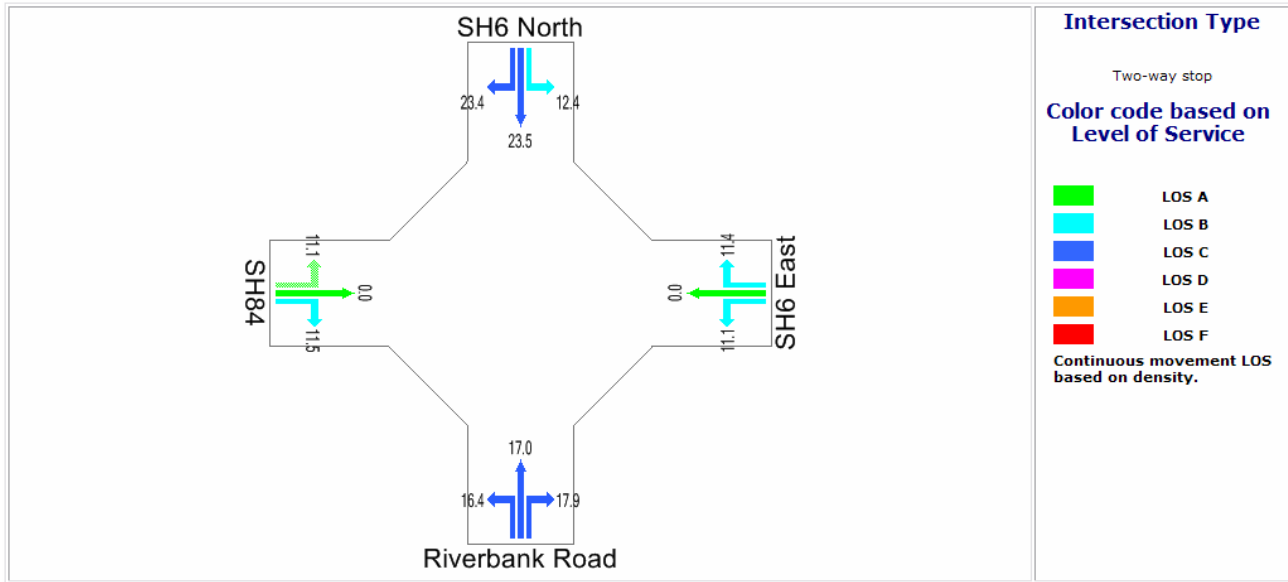


Figure 6: SH84 / SH6 / Riverbank Road – Average Delay

PM Existing



PM Existing + Development

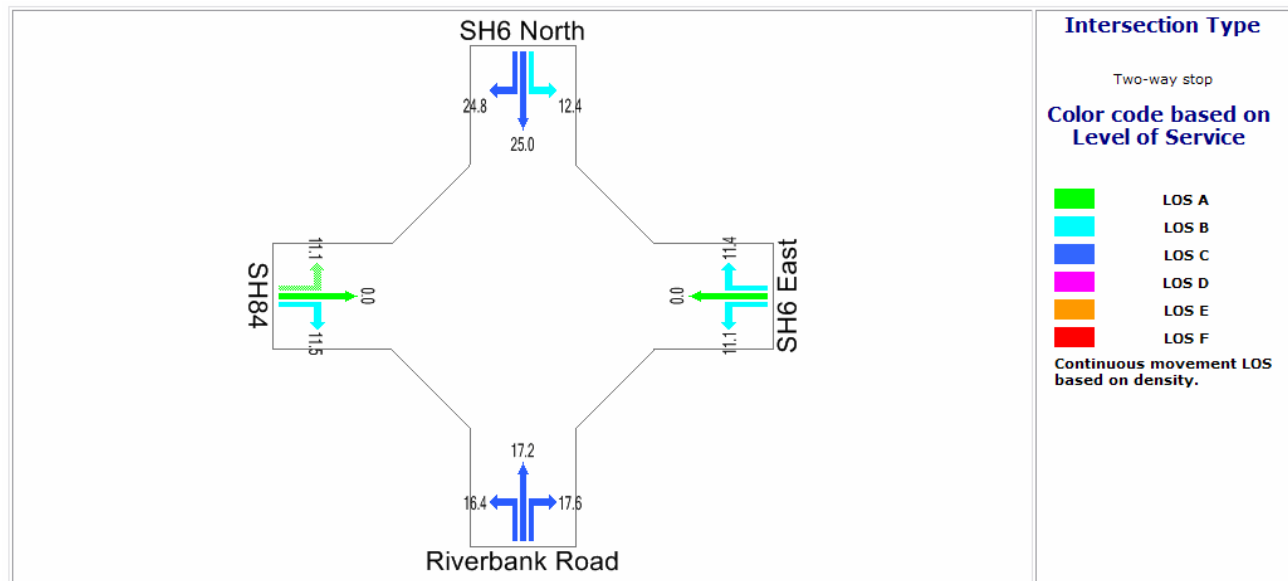
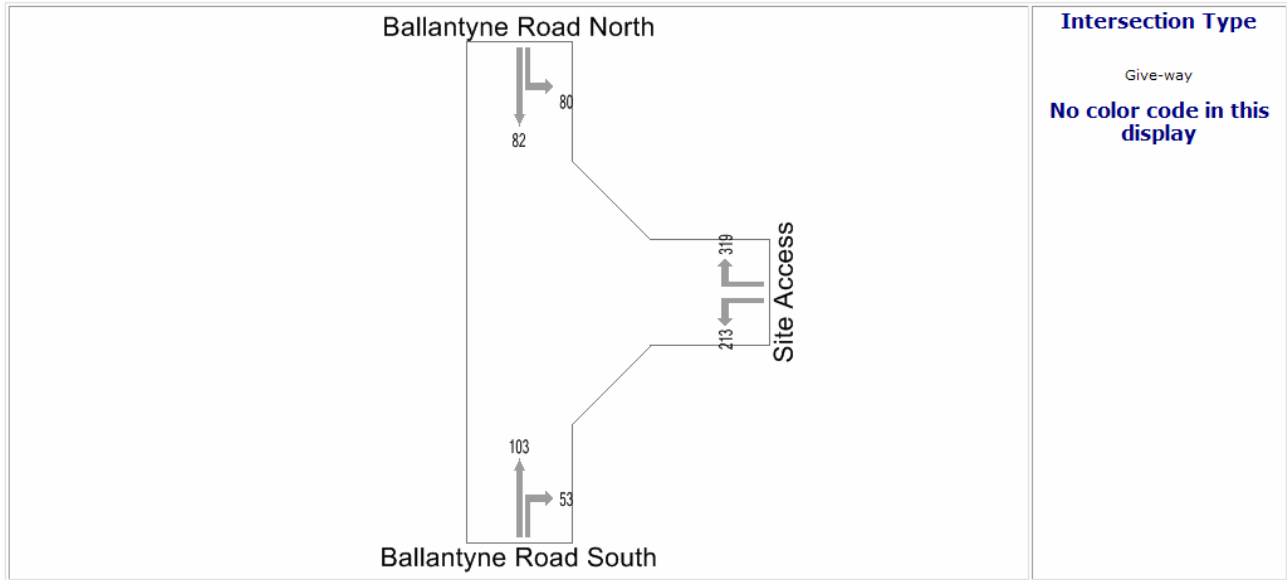
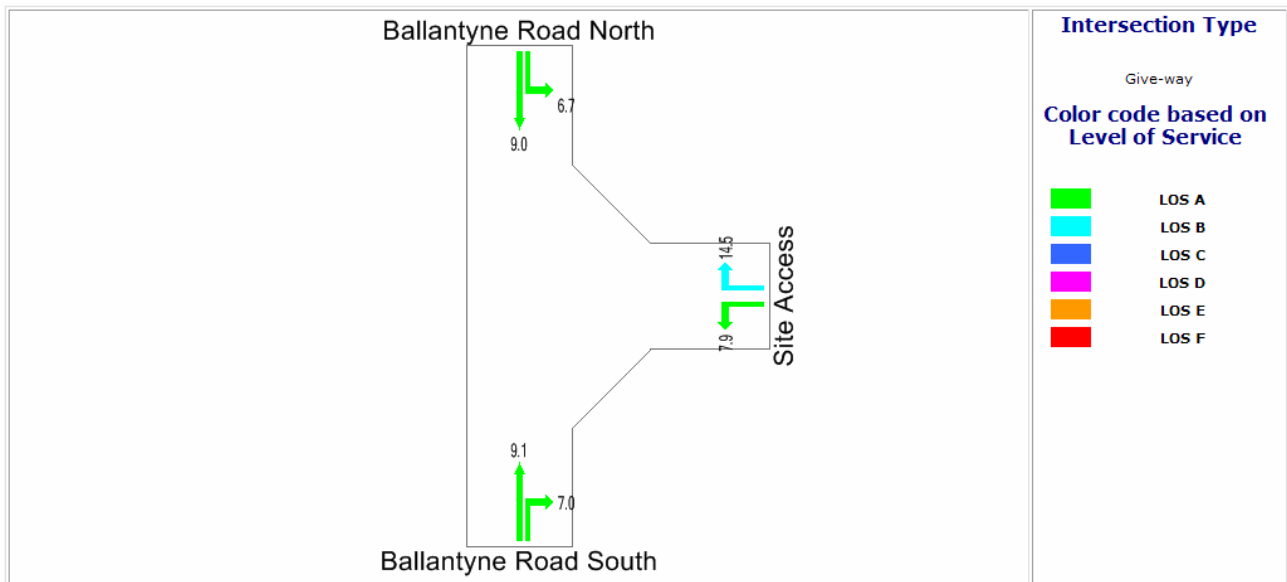


Figure 7: Site Access / Ballantyne Road – Existing + Development Traffic Flows

Predicted Traffic Volumes

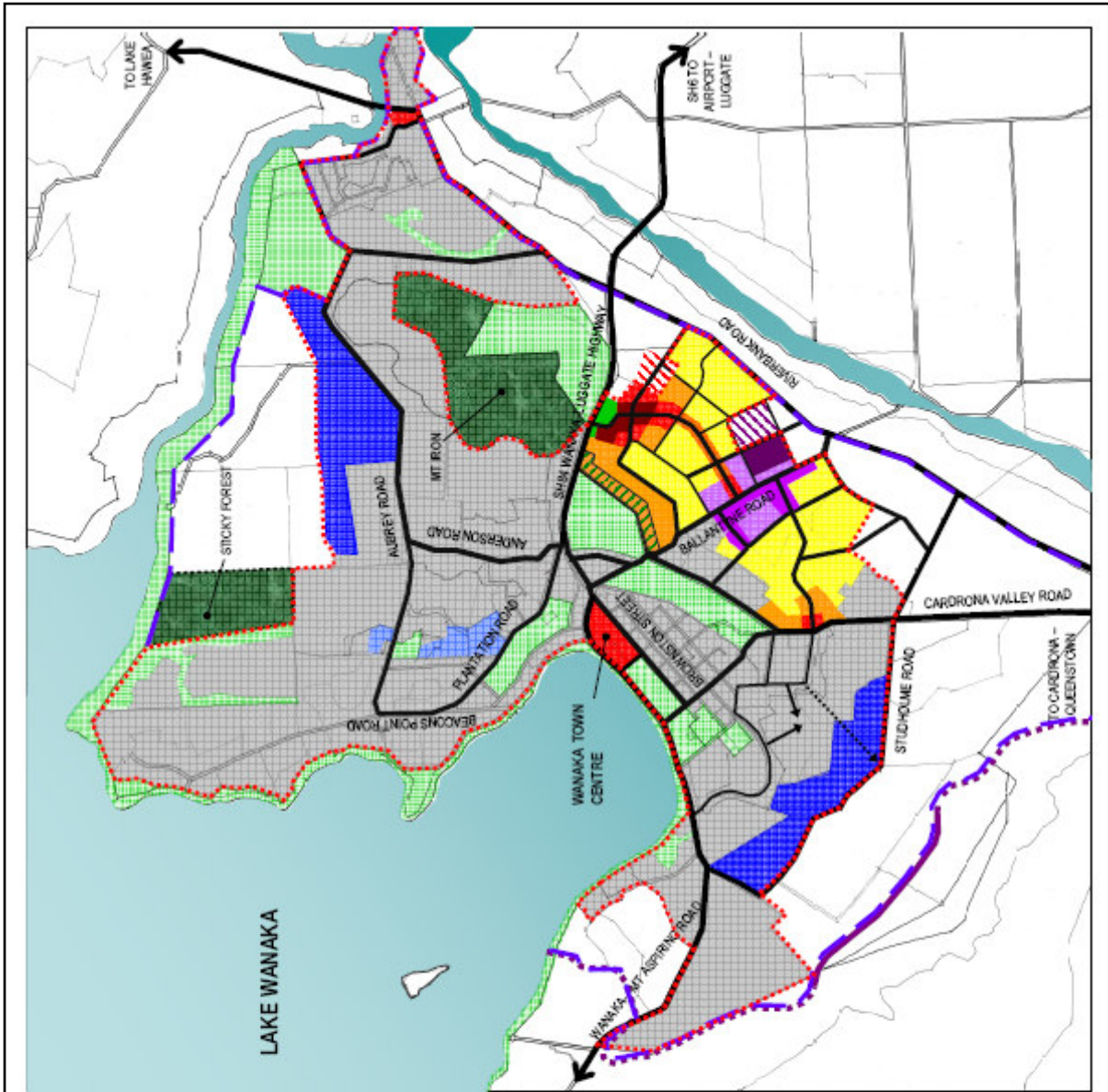


Level of Service

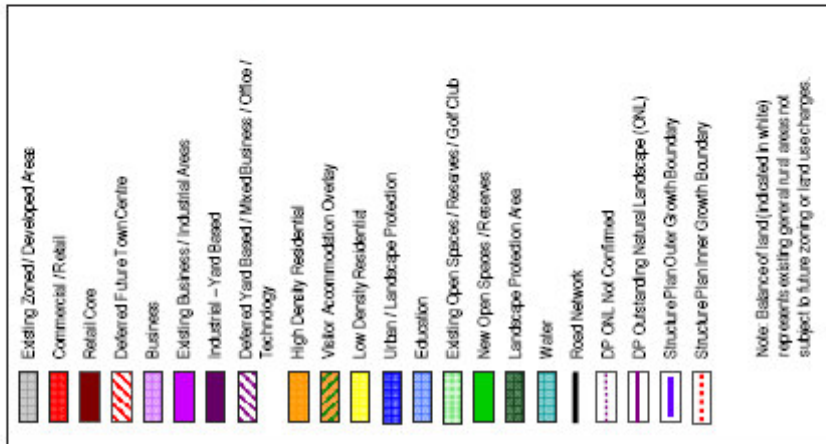


Appendix E – Wanaka Structure Plan

Wanaka Structure Plan



ZONING PROPOSED



Appendix F – Intersection Counts

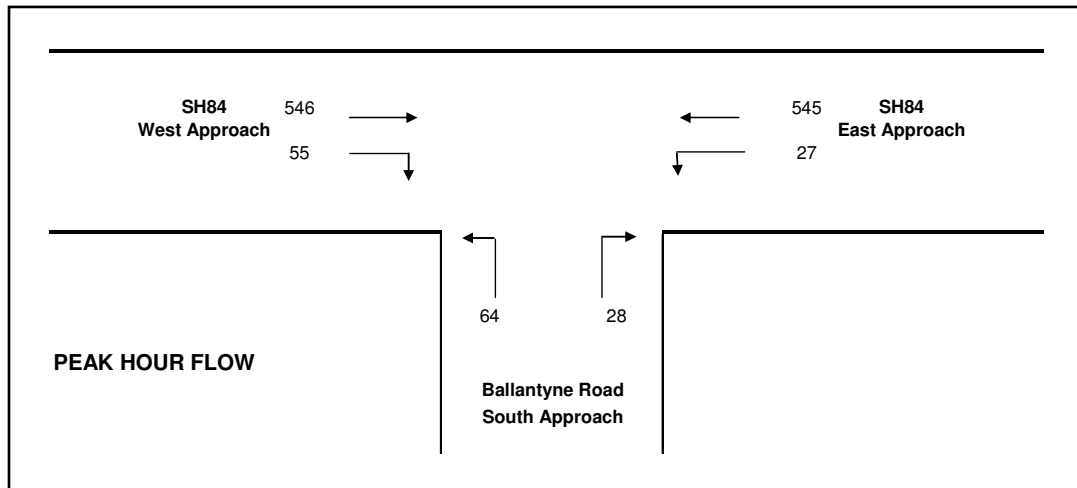
Ballantyne Road / SH84

Date 16/01/2007

Hourly flows - Cars															
Time		Movement													Total
		Ballantyne Road South Approach			SH84 East Approach			- North Approach			SH84 West Approach				
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
From	To	1	2	3	4	5	6	7	8	9	10	11	12		
8:00	9:00	60	0	20	51	315	0	0	0	0	0	211	70	727	
9:00	10:00	70	0	23	56	364	0	0	0	0	0	314	60	887	
10:00	11:00	69	0	25	37	386	0	0	0	0	0	400	63	980	
15:00	16:00	69	0	35	41	380	0	0	0	0	0	378	75	978	
16:00	17:00	78	0	34	40	464	0	0	0	0	0	455	57	1128	
17:00	18:00	60	0	23	27	541	0	0	0	0	0	536	50	1237	

Hourly flows - HCVs															
Time		Movement													Total
		Ballantyne Road South Approach			SH84 East Approach			- North Approach			SH84 West Approach				
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
From	To	1	2	3	4	5	6	7	8	9	10	11	12		
8:00	9:00	9	0	9	7	18	0	0	0	0	0	17	7	67	
9:00	10:00	13	0	7	10	8	0	0	0	0	0	24	12	74	
10:00	11:00	24	0	11	11	9	0	0	0	0	0	20	14	89	
15:00	16:00	14	0	3	4	15	0	0	0	0	0	12	15	63	
16:00	17:00	14	0	1	4	5	0	0	0	0	0	25	13	62	
17:00	18:00	4	0	5	0	4	0	0	0	0	0	10	5	28	

Hourly flows - Total															
Time		Movement													Total
		Ballantyne Road South Approach			SH84 East Approach			- North Approach			SH84 West Approach				
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
From	To	1	2	3	4	5	6	7	8	9	10	11	12		
8:00	9:00	69	0	29	58	333	0	0	0	0	0	228	77	794	
9:00	10:00	83	0	30	66	372	0	0	0	0	0	338	72	961	
10:00	11:00	93	0	36	48	395	0	0	0	0	0	420	77	1069	
15:00	16:00	83	0	38	45	395	0	0	0	0	0	390	90	1041	
16:00	17:00	92	0	35	44	469	0	0	0	0	0	480	70	1190	
17:00	18:00	64	0	28	27	545	0	0	0	0	0	546	55	1265	
Peak Hour		64	0	28	27	545	0	0	0	0	0	546	55	1265	



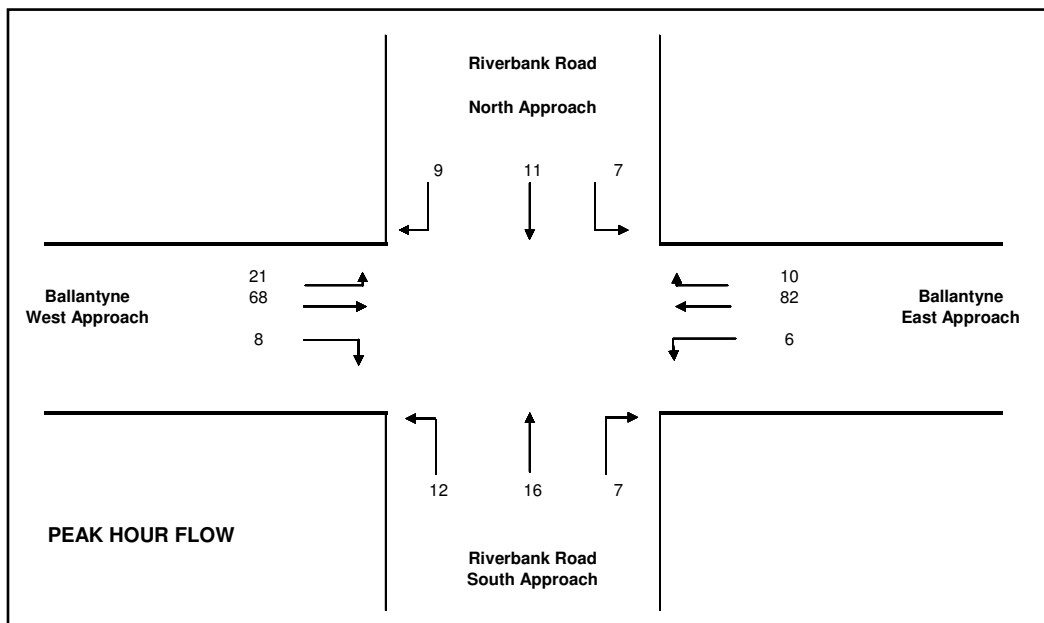
Ballantyne Road / Riverbank Road

Date 16/01/2007

Hourly flows - Cars														
Time		Movement												Total
		Riverbank Road South Approach			Ballantyne East Approach			Riverbank Road North Approach			Ballantyne West Approach			
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
From	To	1	2	3	4	5	6	7	8	9	10	11	12	
8:00	9:00	14	3	6	1	21	1	2	14	11	11	18	7	109
9:00	10:00	13	7	3	1	34	5	5	8	12	18	23	10	139
10:00	11:00	14	5	1	5	41	6	8	8	13	9	35	11	156
15:00	16:00	10	13	5	6	62	9	6	8	7	16	50	7	199
16:00	17:00	13	9	6	1	47	7	2	14	14	23	25	11	172
17:00	18:00	3	14	8	2	26	3	1	11	6	23	27	17	141

Hourly flows - HCVs														
Time		Movement												Total
		Riverbank Road South Approach			Ballantyne East Approach			Riverbank Road North Approach			Ballantyne West Approach			
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
From	To	1	2	3	4	5	6	7	8	9	10	11	12	
8:00	9:00	0	1	0	1	6	0	2	0	3	0	12	0	25
9:00	10:00	0	1	0	1	14	2	2	0	5	1	19	3	48
10:00	11:00	1	0	0	0	20	0	2	0	4	4	19	1	51
15:00	16:00	2	3	2	0	20	1	1	3	2	5	18	1	58
16:00	17:00	2	1	1	1	13	2	0	1	4	3	13	0	41
17:00	18:00	1	0	1	0	2	1	0	0	0	4	2	2	13

Hourly flows - Total														
Time		Movement												Total
		Riverbank Road South Approach			Ballantyne East Approach			Riverbank Road North Approach			Ballantyne West Approach			
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	
From	To	1	2	3	4	5	6	7	8	9	10	11	12	
8:00	9:00	14	4	6	2	27	1	4	14	14	11	30	7	134
9:00	10:00	13	8	3	2	48	7	7	8	17	19	42	13	187
10:00	11:00	15	5	1	5	61	6	10	8	17	13	54	12	207
15:00	16:00	12	16	7	6	82	10	7	11	9	21	68	8	257
16:00	17:00	15	10	7	2	60	9	2	15	18	26	38	11	213
17:00	18:00	4	14	9	2	28	4	1	11	6	27	29	19	154
Peak Hour		12	16	7	6	82	10	7	11	9	21	68	8	257



Riverbank Road / SH84 / SH6

Date 16/01/2007

Hourly flows - Cars															
Time		Movement													Total
		Riverbank Road South Approach			SH6 East Approach			SH6 North Approach			SH84 West Approach				
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
From	To	1	2	3	4	5	6	7	8	9	10	11	12		
8:00	9:00	3	8	6	5	82	5	16	27	161	65	78	4	613	
9:00	10:00	7	14	12	9	71	18	15	15	122	91	116	3	493	
10:00	11:00	5	14	11	7	72	14	21	11	116	116	115	5	507	
15:00	16:00	3	38	10	9	110	14	21	15	141	127	105	5	598	
16:00	17:00	6	29	10	13	147	25	16	13	142	143	139	6	689	
17:00	18:00	5	34	7	12	164	29	19	12	130	215	150	6	783	

Hourly flows - HCVs															
Time		Movement													Total
		Riverbank Road South Approach			SH6 East Approach			SH6 North Approach			SH84 West Approach				
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
From	To	1	2	3	4	5	6	7	8	9	10	11	12		
8:00	9:00	0	2	1	3	4	0	0	0	0	0	0	0	13	
9:00	10:00	0	1	2	3	3	1	0	0	0	0	0	0	10	
10:00	11:00	0	1	2	2	2	1	0	0	0	0	0	0	8	
15:00	16:00	0	0	1	2	3	0	0	0	0	0	0	0	6	
16:00	17:00	0	0	1	1	3	0	0	0	0	0	0	0	5	
17:00	18:00	1	0	1	0	2	0	0	0	0	0	2	0	6	

Hourly flows - Total															
Time		Movement													Total
		Riverbank Road South Approach			SH6 East Approach			SH6 North Approach			SH84 West Approach				
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right		
From	To	1	2	3	4	5	6	7	8	9	10	11	12		
8:00	9:00	3	10	7	8	86	5	16	27	161	65	78	4	627	
9:00	10:00	7	15	14	12	74	19	15	15	122	91	116	3	503	
10:00	11:00	5	15	13	9	74	15	21	11	116	116	115	5	515	
15:00	16:00	3	38	11	11	113	14	21	15	141	127	105	5	604	
16:00	17:00	6	29	11	14	150	25	16	13	142	143	139	6	694	
17:00	18:00	6	34	8	12	166	29	19	12	130	215	152	6	789	
Peak Hour		6	34	8	12	166	29	19	12	130	215	152	6	789	

