
CITY OF KELOWNA
MEMORANDUM

SCHEDULE A

Date: January 31, 2017
File No.: Z17-0001

To: Community Planning (EW)

From: Development Engineering Manager (SM)

Subject: 1915 Enterprise Way Development

This forms part of application
Z17-0001

Planner
Initials

EW



C4 to CD17

Development Engineering Department have the following comments and requirements associated with this application. The road and utility upgrading requirements outlined in this report will be a requirement of this development. The Development Engineering Technologist for this project is Sergio Sartori

General

- a) The proposed hotel and multi-family development triggers a traffic impact assessment (TIA). The City Transportation & Mobility department will review and provide the approval of the terms of reference (TOR) & traffic impact assessment (TIA). Recommendations from the Traffic Impact Analysis (TIA) will become requirements of rezoning.
- b) These Development Engineering comments/requirements are subject to the review and requirements from the Ministry of Transportation & Infrastructure (MOTI).

1. Domestic Water and Fire Protection

- (a) This lot is serviced with a 150 mm-diameter water service. The developer's consulting mechanical engineer will determine the domestic and fire protection requirements of this proposed development and establish hydrant requirements and service needs.
- (b) The applicant, at his cost, will arrange for the removal of all existing unused services and the installation of an additional fire hydrant, if required, and one new larger metered water service. The estimated cost of this construction for bonding purposes is **\$28,000.00**. If it is determined that upgrades to the existing water distribution system must be made to achieve the required fire flows, additional bonding will be required.
- (c) A water meter is mandatory for this development and must be installed inside the building on the water service inlet as required by the City Plumbing Regulation and Water Regulation bylaws. The developer or building contractor must purchase the meter from the City at the time of application for a building permit from the Inspection Services Department, and prepare the meter setter at his cost. Boulevard landscaping, complete with underground irrigation system, must be integrated with the on-site irrigation system.

- (d) A water meter is mandatory for this development and must be installed inside the buildings on the water service inlet as required by the City Plumbing Regulation and Water Regulation bylaws. The developer or building contractor must purchase the meter from the City at the time of application for a building permit from the Inspection Services Department, and prepare the meter setter at his cost. Boulevard landscaping, complete with underground irrigation system, must be integrated with the on-site irrigation system.

2. Sanitary Sewer

- (a) This lot is serviced with a 150mm-diameter sanitary sewer service. The developer's consulting mechanical engineer will determine the requirements of this proposed development and establish the required size of the new service. Only one service will be permitted for this development. The applicant, at his cost, will arrange for the removal of all existing small diameter services and the installation of a new larger service.
- (b) The applicant, at his cost, will arrange for the installation of one larger service, as well as the removal of all existing unused services. Only one service will be permitted for this development. The estimated cost for construction for bonding purposes is **\$16,800.00**
- (c) A downstream flow analysis check is required by a consulting civil engineer to determine the impact of additional flow contributions on the existing pipe system. If it is determined that upgrades to the existing facilities must be made, additional bonding will be required.

3. Storm Drainage

- (a) The developer must engage a consulting civil engineer to provide a storm water management plan for the site, which meets the requirements of the Subdivision, Development and Servicing Bylaw No. 7900. The storm water management plan must also include provision of lot grading plan, minimum basement elevation (MBE), if applicable, and provision of a storm drainage service for the development and / or recommendations for onsite drainage containment and disposal systems.
- (b) This lot has been pre-serviced with a 150mm-diameter overflow storm sewer service. Only one service will be permitted for this development.
- (c) Storm drainage systems for the site will be reviewed and approved by Engineering when design drawings are submitted.

4. Road Improvements

Spall Road and Enterprise Way fronting this development are urbanized. Frontage modifications and improvements required at this time are as follows:

- (a) The existing driveway access to Spall Road will need to be removed. This work will require curb let down and asphalt driveway removal and barrier curb replacement.
- (b) The existing access on Enterprise Way will be permitted as a right in right out only driveway access. Access channelization modifications are required.
- (c) The new access proposed on Enterprise Way will be permitted as a right in right out and left in only. This will require pavement marking signage modifications.
- (d) Provide a Traffic Signs/Pavement Marking design drawing.

- (e) Boulevard landscaping complete with street trees is required on Enterprise Way and Spall Road complete with underground irrigation systems. A landscape & irrigation design drawing for approval is required.
- (f) Service upgrades will require road cuts and pavement restoration work within Spall Road and Enterprise Way.
- (g) The estimated cost of this construction for bonding purposes is **\$64,400.00**

Protect existing curb and sidewalks during construction. Replacement of damaged works and restoration will be at the developer's expense. The extent of the restoration works will be determined by the City Engineer once construction is completed.

5. Subdivision

By registered plan to provide the following:

- (a) Grant statutory rights-of-way if required for utility services.

6. Electric Power and Telecommunication Services

- a) The electrical services to this development must be installed in an underground duct system, and the building must be connected by an underground service. Existing distribution and service connections, on that portion of a road immediately adjacent to the site, are to be relocated and installed underground as this site is located within the Midtown urban town centre.
- b) It is the developer's responsibility to make a servicing application with the respective electric power, telephone and cable transmission companies to arrange for these services which would be at the applicant's cost.

7. Engineering

Road and utility construction design, construction supervision, and quality control supervision of all off-site and site services including on-site ground recharge drainage collection and disposal systems, must be performed by an approved consulting civil engineer. Designs must be submitted to the city engineering department for review and marked "issued for construction" by the city engineer before construction may begin.

8. Design and Construction

- (a) Design, construction supervision and inspection of all off-site civil works and site servicing must be performed by a Consulting Civil Engineer and all such work is subject to the approval of the City Engineer. Drawings must conform to City standards and requirements.
- (b) Engineering drawing submissions are to be in accordance with the City's "Engineering Drawing Submission Requirements" Policy. Please note the number of sets and drawings required for submissions.
- (c) Quality Control and Assurance Plans must be provided in accordance with the Subdivision, Development & Servicing Bylaw No. 7900 (refer to Part 5 and Schedule 3).
- (d) A "Consulting Engineering Confirmation Letter" (City document 'C') must be completed prior to submission of any designs.

- (e) Before any construction related to the requirements of this subdivision application commences, design drawings prepared by a professional engineer must be submitted to the City's Works & Utilities Department. The design drawings must first be "Issued for Construction" by the City Engineer. On examination of design drawings, it may be determined that rights-of-way are required for current or future needs.

9. Servicing Agreements for Works and Services

- (a) A Servicing Agreement is required for all works and services on City lands in accordance with the Subdivision, Development & Servicing Bylaw No. 7900. The applicant's Engineer, prior to preparation of Servicing Agreements, must provide adequate drawings and estimates for the required works. The Servicing Agreement must be in the form as described in Schedule 2 of the bylaw.
- (b) Part 3, "Security for Works and Services", of the Bylaw, describes the Bonding and Insurance requirements of the Owner. The liability limit is not to be less than \$5,000,000 and the City is to be named on the insurance policy as an additional insured.

10. Geotechnical Report

As a requirement of this application the owner must provide a geotechnical report prepared by a Professional Engineer qualified in the field of hydro-geotechnical survey to address the following:

- (a) Area ground water characteristics.
- (b) Site suitability for development, unstable soils, etc.
- (c) Drill and / or excavate test holes on the site and install piezometers if necessary. Log test hole data to identify soil characteristics, identify areas of fill if any. Identify unacceptable fill material, analyse soil sulphate content, Identify unsuitable underlying soils such as peat, etc. and make recommendations for remediation if necessary.
- (d) List extraordinary requirements that may be required to accommodate construction of roads and underground utilities as well as building foundation designs.
- (e) Additional geotechnical survey may be necessary for building foundations, etc.

12. Development Permit and Site Related Issues

Access and Manoeuvrability

- (i) A MSU standard size vehicle must be able to manoeuvre onto and off the site without requiring a reverse movement onto public roadways. If the development plan intends to accommodate larger vehicles movements should also be illustrated on the site plan. Indicate on the site plan, the locations of the garbage and recycle bins.
- (ii) Perimeter access must comply with the BC Building Code. Fire Truck access designs and proposed hydrant locations will be reviewed by the Fire Protection Officer.

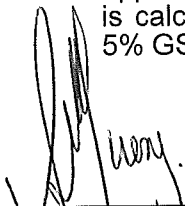
13. Bonding and Fee Summary(h) Bonding

Enterprise Way, Spall Rd frontage improvements	\$ 64,400.00
Service upgrades	\$ 44,800.00
Total Bonding	\$109,200.00

NOTE: The bonding amounts shown above are comprised of estimated construction costs escalated by 140% to include engineering design and contingency protection and are provided for information purposes only. The owner should engage a consulting civil engineer to provide detailed designs and obtain actual tendered construction costs if he wishes to do so. Bonding for required off-site construction must be provided as a condition of subdivision approval or building permit issuance, and may be in the form of cash or an irrevocable letter of credit, in an approved format.

The owner must also enter into a servicing agreement in a form provided by the City prior to 4th reading of the zone amending bylaw.

An administration charge will be assessed for processing of this application, review and approval of engineering designs and construction inspection. The administration charge is calculated as 3.5% of the total off-site construction costs, not including design, plus 5% GST will be added.



Steve Muenz, P. Eng.
Development Engineering Manager

SS

PROPOSED 6-STOREY HOTEL & 6-STOREY MIXED USE DEVELOPEMENT AT 1915 ENTERPRISE WAY, KELOWNA, B.C.



24		19		8	ISSUED FOR DP 6	DEC 23 2016	Project Name	1915 ENTERPRISE WAY	Sheet Name	3D PERSPECTIVE VIEWS	Sheet No.	A001	<p>These plans are COPYRIGHTED and ALL RIGHTS ARE RESERVED. The reproduction of these plans in any form, in part or as a whole is strictly prohibited. This plan and design are, and all items herein are the exclusive property of MARA + NATHA ARCHITECTURE LTD., and may not be reproduced without written consent.</p> <p>It is the responsibility of the Owner and General Contractor to verify all dimensions and site conditions prior to commencement of work and they shall notify the architect of any errors, omissions or discrepancies. Any work completed without architect's knowledge will be the full responsibility of the Owner and General Contractor.</p>
23		18		7	ISSUED FOR DP 5	DEC 13 2016	Project Address	1915 ENTERPRISE WAY			Project No.	21101	
22		17		6	ISSUED FOR DP 4	NOV 29 2016		KELOWNA, B.C.			Start of Project	JUN, 2016	
21		16		5	ISSUED FOR DP 3	NOV 18 2016							
20		15		4	ISSUED FOR DP 2	OCT 26 2016							
19		14		3	ISSUED FOR DP 1	SEP 02 2016							
18		13		2	ISSUED FOR FINAL REVIEW	AUG 15 2016							
17		12		1	ISSUED FOR PRELIM PLAN	JULY 27 2016							
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8		3											
7		2											
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4													
3													
2													
1													

ATTACHMENT A
This forms part of application
Z17-0001
Planner Initials **EW**
City of Kelowna
COMMUNITY PLANNING



MARA + NATHA
ARCHITECTURE LTD.
285 - 9600 Cameron Street Burnaby B.C. V3J 7N3
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Email: rob@maranarch.com
Web: www.maranarch.com
AIBC, AAA, SAA



ATTACHMENT A
This forms part of application
217-6003

Planner
Initials **EW**



24				8	ISSUED FOR DP 6	DEC 23 2016
23				7	ISSUED FOR DP 5	DEC 13 2016
22				6	ISSUED FOR DP 4	NOV 29 2016
21				5	ISSUED FOR DP 3	NOV 18 2016
20				4	ISSUED FOR DP 2	OCT 26 2016
19				3	ISSUED FOR DP	SEP 02 2016
18				2	ISSUED FOR FINAL REVIEW	AUG 15 2016
17				1	ISSUED FOR PRELIM PLAN	JULY 27 2016
				9	ISSUED FOR ADT RESPONSE	FEB 22 2017

Project Name
**KELOWNA 6-STORY
HOTEL & 6-STORY
MIXED USE BUILDING
DEVELOPMENT**

Project Address
**1915 ENTERPRISE
WAY
KELOWNA, B.C.**

Sheet Name
**3D PERSPECTIVE
VIEWS**

Sheet No.
A002

Project No.
21101

Start of Project
JUN, 2016

SIGN & SEAL

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It is the responsibility of the Owner and General Contractor to verify all dimensions and site conditions prior to commencement of work and they shall notify the architect of any errors, omissions or discrepancies. Any work completed without architect's knowledge will be the full responsibility of the Owner and General Contractor.

MARA + NATHA
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AIBC, AAA, SAA

PROJECT DATA
CITY ADDRESS
1915 ENTERPRISE WAY
KELOWNA, BC
LEGAL DESCRIPTION
LOT 2, PLAN 24969
DISTRICT LOT 140 O.D.Y.
RD 103-025-121

ZONE
CA
TOTAL SITE DETAILS
SITE AREA: 1 186.24 m² (1 777 ACRES OR 77 362 SF)
SITE WIDTH: 148.53 m
SITE DEPTH: 55.36 m
SITE COVERAGE OF BUILDINGS, DRIVEWAYS, AND PARKINGS:
75.5% (1 102 117.53 m² / 1 155.85 + 2 628.30) / 1 186.24
DENSITY: 1.80 (1 12 308.28 / 1 186.24)

BUILDING HEIGHT
HOTEL
PROPOSED BUILDING HEIGHT: 25.10 m (8-STORY)
MIXED USE
PROPOSED BUILDING HEIGHT: 24.34 m (8-STORY)
RETAIL
HOTEL
FRONT (NORTH): 6.164 m
REAR (SOUTH): 3.202 m
SIDE (WEST): 6.544 m
SIDE (EAST): 76.207 m
MIXED USE
FRONT (NORTH): 1.557 m
REAR (SOUTH): 15.338 m
SIDE (WEST): 6.544 m
SIDE (EAST): 7.394 m

TOTAL FLOOR AREA
HOTEL GROSS FLOOR AREA
HOTEL 1: 1 035.00 m²
HOTEL 2: 1 035.00 m²
TOTAL GROSS FLOOR AREA: 15 221.40 m²
NET FLOOR AREA
HOTEL 1: 1 035.00 m²
HOTEL 2: 1 035.00 m²
TOTAL NET FLOOR AREA: 12 388.75 m²
DENSITY: 1.72 (1 12 388.75 / 1 186.24)

HOTEL DEVELOPMENT
TOTAL NUMBER & TYPE OF UNITS
HOTEL 1: 103
HOTEL 2: 103
FLOOR AREA
GROSS TOTAL: 9 127.32 m²
EXCLUDING AREA: 2 028.72 m²
NET TOTAL: 7 100.60 m²

MIXED USE DEVELOPMENT
TOTAL NUMBER & TYPE OF UNITS
COMMERCIAL: 8 UNITS
RESIDENTIAL: 56 UNITS
FLOOR AREA
GROSS TOTAL: 8 004.68 m²
EXCLUDING AREA: 894.32 m²
NET TOTAL: 5 289.15 m²

NET FLOOR AREA
MAIN FLOOR: 1 302.24 m²
2ND FLOOR: 1 485.68 m²
3RD FLOOR: 1 485.68 m²
4TH FLOOR: 1 485.68 m²
5TH FLOOR: 1 485.68 m²
6TH FLOOR: 1 485.68 m²
NET TOTAL: 9 127.32 m²

NET FLOOR AREA
MAIN FLOOR: 1 302.24 m²
2ND FLOOR: 1 485.68 m²
3RD FLOOR: 1 485.68 m²
4TH FLOOR: 1 485.68 m²
5TH FLOOR: 1 485.68 m²
6TH FLOOR: 1 485.68 m²
NET TOTAL: 9 127.32 m²

MIXED USE GROSS FLOOR AREA
MAIN FLOOR: 1 302.24 m²
2ND FLOOR: 1 485.68 m²
3RD FLOOR: 1 485.68 m²
4TH FLOOR: 1 485.68 m²
5TH FLOOR: 1 485.68 m²
6TH FLOOR: 1 485.68 m²
NET TOTAL: 9 127.32 m²

MIXED USE NET FLOOR AREA
MAIN FLOOR: 1 302.24 m²
2ND FLOOR: 1 485.68 m²
3RD FLOOR: 1 485.68 m²
4TH FLOOR: 1 485.68 m²
5TH FLOOR: 1 485.68 m²
6TH FLOOR: 1 485.68 m²
NET TOTAL: 9 127.32 m²

PRIVATE OPEN SPACE
CLASS 1
REQUIRED: N/A
PROPOSED: 204.58 m²
MIXED USE BUILDING
COMMERCIAL
REQUIRED: N/A
PROPOSED: N/A

RESIDENTIAL
REQUIRED: 870 m² (1 15026 + 10025 + 645)
PROPOSED: 888.94 m² (1 28688 m² (PRIVATE BALCONY) + 450.05 m² (RESIDENTIAL ROOF DECK))

NUMBER OF PARKING STALLS / LOADING SPACE
PARKING
TOTAL REQUIRED: 248 STALLS (165 + 64 + 19)
TOTAL PROVIDED: 221 STALLS (149 + 64 + 18)
TOTAL VARIANCE REQUIRED: 17 STALLS
HOTEL
REQUIRED: 165 (165 SLEEPING ROOMS + 1 MEETING ROOM)
TOTAL: 149 STALLS (114 FULL SIZE 4.00 X 10.00, 32 MEDIUM SIZE (2.15 X 5.15), 3 SMALL SIZE STALLS (2.0 X 5.15))
SURFACE PARKING: 130 STALLS (45 FULL SIZE, 32 MEDIUM SIZE, 3 SMALL SIZE STALLS)
LOADING SPACE
PROPOSED: 18 SPACE (14.30 m² X 3.6 m X 12.2 m)

MIXED USE BUILDING
REQUIRED: 84 (16 DWELLING UNIT + 8 VISITOR) + 56 (7)
PROPOSED: TOTAL: 144 (114 FULL SIZE 4.00 X 10.00, 32 MEDIUM SIZE (2.15 X 5.15), 3 SMALL SIZE STALLS (2.0 X 5.15))
SURFACE PARKING: 130 STALLS (45 FULL SIZE, 32 MEDIUM SIZE, 3 SMALL SIZE STALLS)
LOADING SPACE
PROPOSED: 18 SPACE (14.30 m² X 3.6 m X 12.2 m)

COMMERCIAL
REQUIRED: 18 STALLS (15 FULL SIZE 4.00 X 10.00, 3 MEDIUM SIZE (2.15 X 5.15), 3 SMALL SIZE STALLS (2.0 X 5.15))
PROPOSED: 18 STALLS (15 FULL SIZE 4.00 X 10.00, 3 MEDIUM SIZE (2.15 X 5.15), 3 SMALL SIZE STALLS (2.0 X 5.15))
LOADING SPACE
PROPOSED: 18 SPACE (14.30 m² X 3.6 m X 12.2 m)

SETBACK TO PARKING
MIN. REQUIRED
FRONT: 2m
REAR: N/A
SIDE: N/A
PROPOSED
FRONT (NORTH): 2 m
REAR (SOUTH): 1.58 m
SIDE (WEST): 43.2 m
SIDE (EAST): 3.92 m
DRIVE AISLE WIDTH
SURFACE: 8.10 m (7.05 m)
USE PARKING: 7 m

NUMBER OF BICYCLE PARKING SPACES
REQUIRED
9 CLASS 1 STORAGE
9 CLASS 2 STALLS
PROPOSED: 1 CLASS 1 STORAGE, 9 SURFACE LEVEL CLASS 2 STALLS
MIXED USE BUILDING
RESIDENTIAL: 29 (16 X 0.5)
CLASS 2 STALL: 6 X 0.5
PROPOSED: 34 CLASS 2 STALLS
COMMERCIAL
REQUIRED: 30 (15 X 0.5)
CLASS 2 STALL: 6 X 0.5
PROPOSED: 30 CLASS 2 STALLS

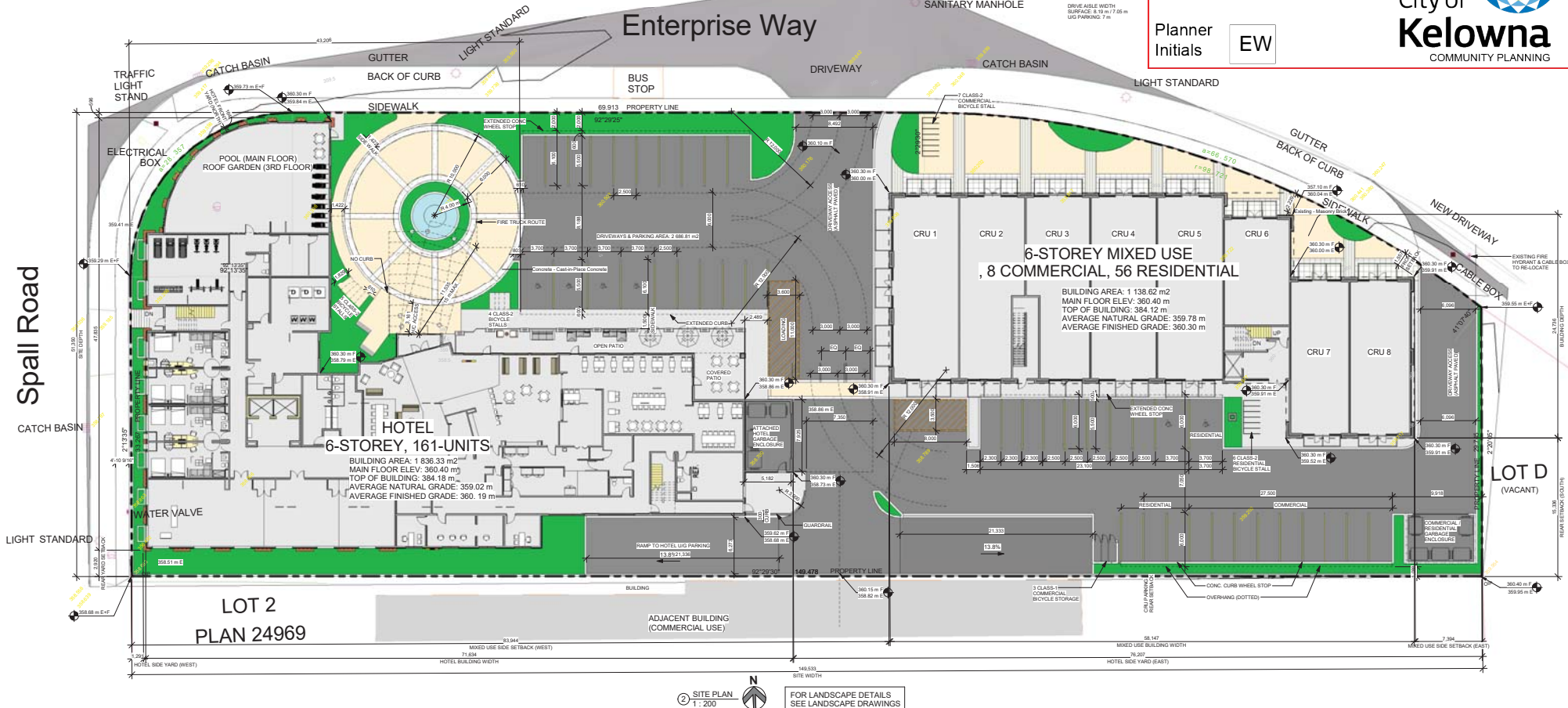
COMMERCIAL
REQUIRED: 30 (15 X 0.5)
CLASS 2 STALL: 6 X 0.5
PROPOSED: 30 CLASS 2 STALLS

ATTACHMENT A

This forms part of application
Z17-0001

Planner Initials **EW**

City of Kelowna
COMMUNITY PLANNING



Rev	Description	Date	Project Name	Project Address	Sheet Name	Sheet No.	Project No.	Start of Project	Revision
24	ISSUED FOR DP 6	DEC 23 2016	KELOWNA 6-STORY HOTEL & 6-STORY MIXED USE BUILDING DEVELOPMENT	1915 ENTERPRISE WAY KELOWNA, B.C.	SITE PLAN	A100	21101	JUN, 2016	SIGN & SEAL
23	ISSUED FOR DP 5	DEC 13 2016							
22	ISSUED FOR DP 4	NOV 29 2016							
21	ISSUED FOR DP 3	NOV 18 2016							
20	ISSUED FOR DP 2	SEP 28 2016							
19	ISSUED FOR DP 1	SEP 28 2016							
18	ISSUED FOR FINAL REVIEW	AUG 15 2016							
17	ISSUED FOR ADJ RESPONSE	FEB 22 2017							
16	ISSUED FOR ADJ RESPONSE	FEB 22 2017							
15	ISSUED FOR ADJ RESPONSE	FEB 22 2017							

COST

TIME

QUALITY

June 28, 2017

Project No.: 17018

West Fraser Developments Ltd.
13070 115 Avenue
Surrey, BC V3R 2T9

Attention: Mr. Navi Sandhu



Re: 1915 Enterprise Way Hotel, Kelowna, BC
Transportation Impact Study

We are pleased to provide the following review of the anticipated traffic generated by the proposed mixed-use Hotel and Residential site on the south-east corner of Spall Road and Enterprise Way, located at 1915 Enterprise Way. This review has been completed to reflect comments received from the Ministry of Transportation and Infrastructure and the City of Kelowna, based on the May 2017 Terms of Reference prepared by CTQ Consultants Ltd. (CTQ), and our work on previous submissions.

Executive Summary

The Transportation Impact Study has been prepared to determine the effect the proposed mixed-use Hotel and Residential development, combined with the anticipated community growth, will have on the adjacent Highway 97, and City of Kelowna roadway infrastructure. This report addresses the off-site planning, traffic generation and distribution, traffic analysis, and recommendations for street improvements.

The development consists of a mix of 161 room hotel, 54 residential units and ground floor commercial.

The full build out of the site is anticipated to generate the following off-site peak hour traffic volumes:

- Full Build Out of Development:
 - AM Peak Hour 143 trips, 79 entering, 64 exiting; and,
 - PM Peak Hour 256 trips, 128 entering, 128 exiting.

The background traffic on; and adjacent to Highway 97 is anticipated to grow at a rate of 2% per year. The background traffic on the adjacent local street network is anticipated to grow at a similar rate.

With the anticipated growth in traffic for the Highway 97 and Enterprise Way corridors, there is a marked decrease in the overall system performance. The Highway 97 Spall Road intersection operates below acceptable operational capacity.

The site is proposing to have two points of all moves access to the site from Enterprise Way, one at the center of the site and on at the east end of the site.

The addition of the site traffic has a minor impact on the overall area operation.

A) SITE CONTEXT

The site is located on the south side of Enterprise Way, and east side of Spall Road. The site is currently vacant. The Mill Creek Crossing mixed use commercial developments is on the north side of Enterprise Way. The multi-family residential units on the west side of Spall Road do not have any access to Spall Road.

The site is currently zoned C4 - Commercial with the proposed development rezoning to a CD Zone with a mix of Hotel, Commercial and Residential.

The geographic scope of the study area is the Highway 97 and Spall Road commercial area, with the adjacent Enterprise Way to the east.

The overall area is shown on Figure 1.

Figure 1 - Aerial View of the Study Area

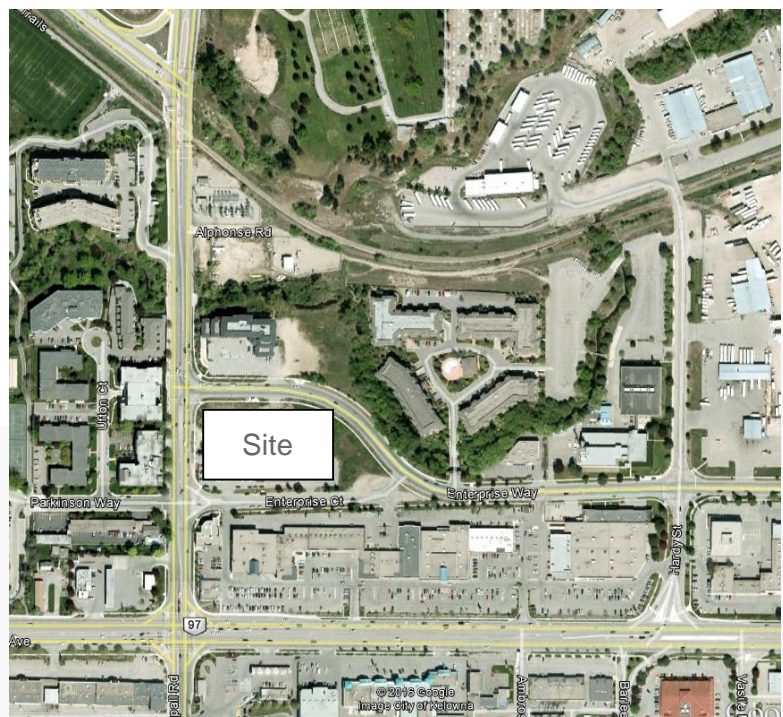




Figure 3 - 2017 Background PM Peak Hour Traffic

The anticipated 2% growth in the Highway 97, and City of Kelowna Roadways to 2027 for the AM and PM Peak Hour are presented in Figure 4 and Figure 5 below.



Figure 4 - 2027 Background AM Peak Hour Traffic



Figure 5 - 2027 Background PM Peak Hour Traffic

C) TRAFFIC GENERATION and DISTRIBUTION

Development Traffic

The analysis period used in this study are the weekday AM and PM peak hour that coincide with the peak hour periods on the adjacent streets. The basis of traffic generation data used for the study is the Institute of Transportation Engineers (ITE) 9th Edition Trip Generation Rates Manual. The AM and PM Peak Hour Rates used to determine the development traffic generations are as per the ITE 9th Edition Trip Generation Rates Manual.

The *Institute of Transportation Engineers Trip Generation 9th Edition Manual* is used as an industry standard to provide estimates of vehicle trips for specific developments. The rates are based on information collated from actual traffic studies, and presented for the average weekday Peak Hour volumes the specific land use will generate, during normal operations.

We anticipate the attached development plan will generate traffic of a similar proportion and distribution to the *Institute of Transportation Engineers Trip Generation 9th Edition Manual* for the following ITE Land Use Codes:

- Shopping Center land use code 820;
- Apartment land use code 220;
- Hotel land use code 310.

The ITE trip generation rates and anticipated AM and PM traffic volumes are presented in Table 1 below.

Description /ITE Code	Units	ITE Vehicle Trip Generation Rates								Expected Units	Total Generated			Total Distribution of Generated Trips					
		Weekday	AM	PM	Pass-By	AM In	AM Out	PM In	PM Out		Daily	AM Hour	PM Hour	AM In	AM Out	Pass-By	PM In	PM Out	Pass-By
Shopping Center 820 (Equation)	KSF ²	Equations			34%	62%	38%	48%	52%	11.1	1,627	41	137	17	10	14	44	47	47
Apartment 220	DU	6.65	0.51	0.62		20%	80%	65%	35%	56	372	29	35	6	23	0	23	12	0
Hotel 310	Rooms	8.17	0.53	0.60		59%	41%	51%	49%	161.0	1,315	85	97	50	35	0	49	47	0
											3,315	155	269	73	68	14	115	107	47

Table 1 – Development Traffic

For most developments, there are four types of trips generated by a development:

- Primary trips;
- Diverted link trips;
- Pass-by trips, and;
- Internal trips.

Primary trips are trips completely devoted to the proposed development and only result because of the development. These are primarily home-based trips. Diverted link trips are made by vehicles already on the road network, but are diverting from their travel pattern to access the development. Pass-by trips are trips to the development that are caused by vehicles on the road network that pass by the development and decide to enter. For both the pass-by trip and the diverted link trip, the vehicles are on the roadway for final destinations other than the proposed development. We have taken the conservative approach that all the site generated trips are primary in nature.

Based on the above, the full build out of the site is anticipated to generate an average of 155 two-way vehicle trips during the AM Peak Hour (80 entering, and 75 exiting) and 269 two-way vehicle trips during the PM Peak Hour (138 entering, and 131 exiting).

The site is proposed with two all moves points of access onto Enterprise Way. One at the center of the site and one at the eastern end of the site.

The following Figures 6 and 7 show the anticipated site generated AM and PM traffic and the distribution onto the adjacent street network.



Figure 6 – Site Traffic Distribution AM



Figure 7 – Site Traffic Distribution PM

D) TRAFFIC ANALYSIS

The operation of the intersections has been analyzed utilizing Highway Capacity Manual Synchro 9 software for signalized and unsignalized intersections. An operational level of service is determined for each movement based upon the calculated delay.

The Levels of Service (LoS) for signalized intersections are as follows:

- LoS A represents less than 10 seconds of average delay and is considered a good operating condition.
- LoS B represents greater than 10 seconds and less than 20 seconds of average delay and is considered a good operating condition.
- LoS C represents greater than 20 seconds and less than 35 seconds of average delay and is considered a fair operating condition.
- LoS D represents greater than 35 seconds and less than 55 seconds of average delay and is considered a fair operating condition.
- LoS E represents greater than 55 seconds and less than 80 seconds of average delay and is considered a poor operating condition.
- LoS F represents more than 80 seconds of average delay and is considered a failed operating condition.

The LoS for unsignalized intersections are as follows:

- LoS A represents less than 10 seconds of average delay and is considered a good operating condition.
- LoS B represents greater than 10 seconds and less than 15 seconds of average delay and is considered a good operating condition.
- LoS C represents greater than 15 seconds and less than 25 seconds of average delay and is considered a fair operating condition.
- LoS D represents greater than 25 seconds and less than 35 seconds of average delay and is considered a fair operating condition.
- LoS E represents greater than 35 seconds and less than 50 seconds of average delay and is considered a poor operating condition.
- LoS F represents more than 50 seconds of average delay and is considered a failed operating condition.

Generally, and in accordance with the *Ministry of Transportation Site Impact Analysis Requirements Manual*, in urban areas, improvements are considered when the overall intersection performance nears LoS E. For arterial streets, through traffic improvements are to be considered when the performance nears LoS D.

The Background traffic was analyzed for the Weekday PM Peak Hour traffic for the 2017, and 2027 horizon years. The Background Traffic Synchro 9 analysis results are provided in the Tables 2, 3, 4, and 5. The 95th percentile queue lengths are identified for critical movements. The Synchro summary sheets for each intersection are included in the appendix.

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Queue Length	Comment
Spall Road & Highway 97	Signal	AM	0.87	35	C	WB left – 43m EB left – 50m NB left – 46m SB left – 54m	WB left LoS 'D' NB left LoS 'D'
Spall Road & Enterprise Court	Stop Sign	AM	0.37	1	A		
Spall Road & Enterprise Way	Signal	AM	0.93	21	C	SB left – 150m WB left – 19m	NB thru LoS 'D' SB left LoS 'D'
Spall Road & Clement Ave.	Signal	AM	0.84	26	C	NB left – 74m EB right – 54m	
Enterprise Way & Hardy Street	Signal	AM	0.84	16	B		

Table 2 - 2017 Background AM Peak Hour Intersection Performance

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Queue Length	Comment
Spall Road & Highway 97	Signal	PM	0.98	47	D	WB left – 75m EB left – 116m NB left – 103m SB left – 78m	NB left LoS 'F' SB left LoS 'E' EB left LoS 'E' WB left LoS 'E'
Spall Road & Enterprise Court	Stop Sign	PM	0.37	2	A		
Spall Road & Enterprise Way	Signal	PM	1.00	40	D	SB left – 133m WB left – 49m	NB thru LoS 'E'
Spall Road & Clement Ave.	Signal	PM	0.99	34	C	NB left – 165m EB right – 82m	NB left LoS 'E' EB right LoS 'E'
Enterprise Way & Hardy Street	Signal	PM	0.91	23	C		

Table 3 – 2017 Background PM Peak Hour Intersection Performance

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Queue Length	Comment
Spall Road & Highway 97	Signal	AM	0.96	42	D	WB left – 72m EB left – 73m NB left – 81m SB left – 66m	WB left LoS 'E' NB left LoS 'E'
Spall Road & Enterprise Court	Stop Sign	AM	0.46	1	A		
Spall Road & Enterprise Way	Signal	AM	1.02	29	C	SB left – 187m WB left – 26m	NB thru LoS 'D' SB left LoS 'D'
Spall Road & Clement Ave.	Signal	AM	0.99	44	D	NB left – 96m EB right – 96m	NB left LoS 'E' SB right LoS 'E'
Enterprise Way & Hardy Street	Signal	AM	0.90	19	B		

Table 4 - 2027 Background AM Peak Hour Intersection Performance

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Queue Length	Comment
Spall Road & Highway 97	Signal	PM	1.20	92	F	WB left – 122m EB left – 187m NB left – 166m SB left – 129m	NB left LoS 'F' SB left LoS 'F' EB left LoS 'F' WB left LoS 'F'
Spall Road & Enterprise Court	Stop Sign	PM	0.54	2	A		EB LoS 'E'
Spall Road & Enterprise Way	Signal	PM	1.16	73	E	SB left – 250m WB left – 109m	NB thru LoS 'F' SB left LoS 'F'
Spall Road & Clement Ave.	Signal	PM	1.20	68	E	NB left – 265m EB right – 127m	NB left LoS 'F' EB right LoS 'F'
Enterprise Way & Hardy Street	Signal	PM	0.92	23	C	NB left – 29m SB left – 40m	NB left LoS 'D' SB left LoS 'D'

Table 5 – 2027 Background PM Peak Hour Intersection Performance

For the Background PM Peak Hour traffic:

- 2017
 - the Highway 97 and Spall Road intersection reaches its operational limit by 2017 with the northbound left turn operating at a LoS 'F', and all other left turn operating at a LoS 'E'; and;
 - the Spall Road and Enterprise Way intersection reaches its operational limit with the northbound left turn operating at a LoS 'E'.
- 2027
 - the Highway 97 and Spall Road intersection is beyond its operational limit with all left turns operating at a LoS 'F', and the east west and northbound thru movements operating at LoS 'F', and a maximum V/C ratio of 1.20;
 - the Spall Road and Enterprise Way intersection is beyond its operational limit with the southbound left turn operating at a LoS 'F'; and northbound thru operating at a LoS 'F', and a maximum V/C ratio of 1.16; and;
 - the Spall Road and Clement Avenue intersection is beyond its operational limit with the northbound left turn operating at a LoS 'F'; and eastbound right operating at a LoS 'F', and a maximum V/C ratio of 1.20.

The City of Kelowna 2030 DCC Roads plan identifies the Clement Avenue Extension, from Spall Road to Highway 33, as a four-lane arterial, being completed in the 2025 to 2030 planning horizon. It is anticipated the Clement Extension will alleviate the anticipated operational delays forecast at the Spall Road and Enterprise Way and Spall Road and Clement Avenue intersections. The Clement Extension may also draw some of the traffic from the Highway 97 corridor. Analysis of the effect of the Clement Extension on the Highway 97 and City of Kelowna infrastructure is beyond the scope of this analysis.

The Background plus Development traffic was analyzed for the Weekday PM Peak Hour traffic for the 2017, and 2027 horizon years. The two site accesses have also been included in the analysis. The Background plus development traffic Synchro 9 analysis results are provided in Tables 6 and 7.

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Queue Length	Comment
Spall Road & Highway 97	Signal	AM	0.87	36	D	WB left – 42m EB left – 61m NB left – 46m SB left – 54m	EB left LoS 'D' WB left LoS 'D' NB left LoS 'D'
Spall Road & Enterprise Court	Stop Sign	AM	0.38	1	A		
Spall Road & Enterprise Way	Signal	AM	0.93	23	C	SB left – 158m WB left – 27m	NB thru LoS 'D' SB left LoS 'D'
Spall Road & Clement Ave.	Signal	AM	0.85	26	C	NB left – 74m EB right – 54m	NB thru LoS 'D'
Enterprise Way & Hardy Street	Signal	AM	0.71	12	B		
Enterprise Way & Main Access	Stop Sign	AM	0.49	1	A	NB – 16m	
Enterprise Way & East Access	Stop Sign	AM	0.48	1	A	NB – 15m	

Table 6 - 2017 Background plus Development AM Peak Hour Intersection Performance

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Queue Length	Comment
Spall Road & Highway 97	Signal	PM	1.02	51	D	WB left – 75m EB left – 133m NB left – 103m SB left – 76m	NB left LoS 'F' SB left LoS 'E' EB left LoS 'F' WB left LoS 'E'
Spall Road & Enterprise Court	Stop Sign	PM	0.40	2	A		
Spall Road & Enterprise Way	Signal	PM	0.99	44	D	SB left – 180m WB left – 99m	WB thru LoS 'E'
Spall Road & Clement Ave.	Signal	PM	1.00	35	D	NB left – 169m EB right – 84m	NB left LoS 'E' EB right LoS 'E'
Enterprise Way & Hardy Street	Signal	PM	0.93	25	C		
Enterprise Way & Main Access	Stop Sign	AM	0.63	1	A	NB – 9m	
Enterprise Way & East Access	Stop Sign	AM	0.62	1	A	NB – 6m	

Table 7 – 2017 Background plus Development PM Peak Hour Intersection Performance

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Queue Length	Comment
Spall Road & Highway 97	Signal	AM	0.97	36	D	WB left – 55m EB left – 73m NB left – 61m SB left – 60m	WB left LoS 'E' EB left LoS 'E' NB left LoS 'E'
Spall Road & Enterprise Court	Stop Sign	AM	0.47	1	A		
Spall Road & Enterprise Way	Signal	AM	1.03	35	C	SB left – 191m WB left – 34m	NB thru LoS 'E' SB left LoS 'D'
Spall Road & Clement Ave.	Signal	AM	1.00	46	D	NB left – 90m EB right – 98m	NB left LoS 'E' SB right LoS 'E'
Enterprise Way & Hardy Street	Signal	AM	0.92	20	C		
Enterprise Way & Main Access	Stop Sign	AM	0.59	1	A	NB – 6m	
Enterprise Way & East Access	Stop Sign	AM	0.58	1	A	NB – 6m	

Table 8 - 2027 Background plus Development AM Peak Hour Intersection Performance

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Queue Length	Comment
Spall Road & Highway 97	Signal	PM	1.28	97	F	WB left – 122m EB left – 201m NB left – 162m SB left – 125m	NB left LoS 'F' SB left LoS 'F' EB left LoS 'F' WB left LoS 'F'
Spall Road & Enterprise Court	Stop Sign	PM	0.54	2	A		EB LoS 'F'
Spall Road & Enterprise Way	Signal	PM	1.26	103	F	SB left – 304m WB left – 104m	NB thru LoS 'F' SB left LoS 'F'
Spall Road & Clement Ave.	Signal	PM	1.22	68	E	NB left – 270m EB right – 131m	NB left LoS 'F' EB right LoS 'F'
Enterprise Way & Hardy Street	Signal	PM	0.94	25	C	NB left – 35m SB left – 40m	NB left LoS 'D' SB left LoS 'D'
Enterprise Way & Main Access	Stop Sign	AM	0.76	1	A	NB – 13m	NB LoS 'D'
Enterprise Way & East Access	Stop Sign	AM	0.75	1	A	NB – 6m	NB LoS 'C'

Table 9 – 2027 Background plus Development PM Peak Hour Intersection Performance

For the Background plus development PM Peak Hour traffic the results are consistent with the background traffic analysis results:

- 2017
 - the Highway 97 and Spall Road intersection reaches its operational limit by 2017 with the north and eastbound left turns operating at a LoS 'F', and all other left turn operating at a LoS 'E'; and;
 - the Spall Road and Enterprise Way intersection reaches its operational limit with the westbound left turn operating at a LoS 'E'.
- 2027
 - the Highway 97 and Spall Road intersection is beyond its operational limit with all left turns operating at a LoS 'F', and the east west and northbound thru movements operating at LoS 'F', and a maximum V/C ratio of 1.28;
 - the Spall Road and Enterprise Way intersection is beyond its operational limit with the southbound left turn operating at a LoS 'F'; and northbound thru operating at a LoS 'F', and a maximum V/C ratio of 1.26; and;
 - the Spall Road and Clement Avenue intersection is beyond its operational limit with the northbound left turn operating at a LoS 'F'; and eastbound right operating at a LoS 'F', and a maximum V/C ratio of 1.22.

The City of Kelowna 2030 DCC Roads plan identifies the Clement Avenue Extension, from Spall Road to Highway 33, as a four-lane arterial, being completed in the 2025 to 2030 planning horizon. It is anticipated the Clement Extension will alleviate the anticipated operational delays forecast at the Spall Road and Enterprise Way and Spall Road and Clement Avenue intersections. The Clement Extension may also draw some of the traffic from the Highway 97 corridor. Analysis of the effect of the Clement Extension on the Highway 97 and City of Kelowna infrastructure is beyond the scope of this analysis.

Infrastructure Requirements

Improvements to the Highway 97 and Spall Road intersection have not been identified as part of the 2030 Official Community Plan Development Cost Charge program (nor has the Ministry of Transportation and Infrastructure identified any future upgrades) and should form part of a review of the system wide requirements to support the growth planned within the 2030 Official Community Plan.

The access points to the site will require addition of left turn bays to the existing Enterprise Way. There is sufficient pavement width to add the left turn bays while retaining the bike lanes. There is an existing curb let down in the location of the main access point to the site.

An additional curb letdown and replacement of the sidewalk will be required for the eastern access to the site. The existing bus stops on Enterprise Way adjacent to the main access should be able to remain in their existing locations.

Both the Spall Road and Enterprise Way frontage adjacent to the site have a full urban cross-section with sidewalks, boulevards and medians. All other roadway elements in the study area have sidewalks. Spall Road and Enterprise Way have dedicated bike lanes in both directions. The bike lanes on Spall Road lead to the rails with trails route following the rail line corridor.

The area is extremely well served by Kelowna Transit with the following existing routes:

- #7 route to Glenmore via Spall Road and Enterprise Way;
- #9 route Downtown to Orchard Park via Spall Road;
- #10 route to Rutland via Spall Road and Enterprise Way; and
- #97 the rapid bus route on Highway 97, from West Kelowna to UBC Okanagan, with a stop adjacent to Parkinson Recreation Centre just to the west of the site.

No other roadway infrastructure system improvements are required to support the development of the 1915 Enterprise Way Hotel site.

We would be pleased to meet and discuss the findings presented above.

Sincerely,

CTQ CONSULTANTS LTD.

Per:



Mr. David D. Cullen, P.Eng.
Transportation Engineer
DDC: ddc