CORPORATION OF THE CITY OF VERNON

ADVISORY PLANNING COMMITTEE

TUESDAY, FEBRUARY 12, 2018

4:00 pm – OKANAGAN LAKE ROOM

A G E N D A

1. **ELECTION OF VICE-CHAIR**

2. **ADOPTION OF AGENDA**

3. **ADOPTION OF MINUTES**

   January 22, 2018 (attached)

4. **NEW BUSINESS**

   a) **ZON00322/DVP00447–** Rezoning and Development Variance Permit applications for Silver Star Gateway Business Park

5. **INFORMATION ITEMS**

   a) An update of APC related items discussed at the February 11, 2019 will be provided.

6. **NEXT MEETING**

   The next meeting is tentatively scheduled for Tuesday, February 26th, 2019**.**

7. **ADJOURNMENT**

THE CORPORATION OF THE CITY OF VERNON

MINUTES OF ADVISORY PLANNING COMMITTEE MEETING

HELD

TUESDAY, JANUARY 22, 2019

PRESENT: VOTING
Mark Longworth
Monique Hubbs-Michiel
Don Schuster
Jamie Paterson
Larry Lundgren
Bill Tarr
Phyllis Kereliuk
Harpreet Nahal
Lisa Briggs

NON VOTING
Councillor Mund

ABSENT: Doug Neden

STAFF: Craig Broderick, Manager, Current Planning
Jing Niu, Environmental Planning Assistant
Janice Nicol, Legislative Committee Clerk

ORDER The Chair called the meeting to order at 4:00 p.m.

INTRODUCTIONS OF NEW MEMBERS The Committee held round-table introductions.

ELECTION OF CHAIR AND VICE-CHAIR There were three calls for nominations for the position of Committee Chair for 2019.

Moved by Jamie Paterson, seconded by Monique Hubbs-Michiel;

> THAT Mark Longworth be re-elected as Chair of the Advisory Planning Committee for 2019.
>
> **CARRIED**.

There were three calls for nominations for the position of Committee Vice-Chair for 2019.

Doug Neden and Jamie Paterson were nominated. Jamie Paterson respectfully declined the nomination and Doug Neden was absent.

Moved by Jamie Paterson, seconded by Monique Hubbs-Michiel;

THAT the election of Committee Vice-Chair be postponed to the next meeting of the Advisory Planning Committee.

CARRIED.

ANNUAL REVIEW OF THE BULLYING AND HARASSMENT POLICY

The Committee reviewed the Bullying and Harassment Policy that was attached to the agenda and signed the sheet from Human Resources verifying this.

ADOPTION OF AGENDA

Moved by Don Schuster, seconded by Monique Hubbs-Michiel;

THAT the agenda of the Advisory Planning Committee meeting for Tuesday, January 22, 2018 be adopted.

CARRIED.

ADOPTION OF MINUTES

Moved by Don Schuster, seconded by Larry Lundgren;

THAT the minutes for the Advisory Planning Committee meeting of December 11, 2018 be adopted.

CARRIED.

NEW BUSINESS:

DEVELOPMENT VARIANCE PERMIT APPLICATIONS FOR 9738 DELCLIFFE ROAD

The Advisory Planning Committee reviewed the Development Variance Permit application DVP #00446 for 9738 Delcliffe Road. The Environmental Planning Assistant reviewed the application. The following points were noted by the Committee:

- Clarification and correction of wording on Page 4 under #7;
- Clarification of footprint, proposed house will be built on the existing foundation with the second storey overhanging existing patio;
- There are other sites for development on this property other than building on the existing foundation;
- The approval process was questioned – if Council did approve this development in its existing location, approval at the provincial level could still be denied.

Moved by Jamie Paterson, seconded by Monique Hubbs-Michiel;

> THAT the Advisory Planning Committee recommends that Council **not support** the Development Variance Permit application submitted by Ryan Molitwenik of Heartwood Homes Ltd. to vary the minimum riparian area setback as set out in Section 4.13.2 of Zoning Bylaw #5000 from 15.0m from the High Water Mark of Okanagan Lake to 0.0m from the High Water Mark of Okanagan Lake in order to construct a two storey single family dwelling on Lot 21, Plan 10667, Sec 4, Tp 13, ODYD (9738 Delcliffe Road).
>
> **CARRIED.**

INFORMATION ITEMS:

The Manager, Current Planning reviewed the APC related items discussed at the January 7th and 21st, 2019 Council Meetings:

January 7th, 2019

- DVP00444 for 5350 Anderson Way – issued once all conditions are met
- Appointments to APC declassified
- Bylaw 5730 – Additional setback from City Roads – adopted.

January 21st, 2019

- ZON00303 – 2907 26th Street –Bylaw 5721 Adopted.

NEXT MEETING The next regular meeting of the Advisory Planning Committee is tentatively scheduled for **Tuesday, February 12, 2019.**

ADJOURNMENT The meeting of the Advisory Planning Committee adjourned at 4:22 p.m.

CERTIFIED CORRECT:

_____Chair

THE CORPORATION OF THE CITY OF VERNON
REPORT TO COUNCIL

SUBMITTED BY: Roy Nuriel,
Economic Development Planner

COUNCIL MEETING: REG ☒ COW ☐ I/C ☐
COUNCIL MEETING DATE: February 25, 2019
REPORT DATE: February 4, 2019
FILE: ZON00322 / DVP00447

SUBJECT: **REZONING AND DEVELOPMENT VARIANCE PERMIT APPLICATIONS FOR 4800, 4808, 4816, 4824, 4940, 5012 SILVER STAR ROAD**

PURPOSE:

To review applications to rezone the subject properties from residential to light industrial and commercial, and to vary sections of Zoning Bylaw #5000 to develop a three phase light industrial and commercial business park *(Silver Star Gateway Business Park)* at 4800, 4808, 4816, 4824, 4940, 5012 Silver Star Road.

RECOMMENDATION:

THAT Council support the application to rezone Lot 3, Plan KAP90756, Sec 2, Twp 8, ODYD (5012 Silver Star Road), Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road) from RR – Rural Residential to I1 – Light Industrial;

AND FURTHER, that Council support the application to rezone a portion of Lots 2, 3 and 4, Plan KAP83899, Sec 2, Twp 8, ODYD (4800, 4808, 4816 Silver Star Road) that is located within the top of the bank area from R7 – Mobile Home Residential to C5 – Community Commercial;

AND FURTHER, that Council support of ZON00322 is subject to the following:

a) That the owner registers a blanket easement on the titles of 5012, 4940, 4824, 4816, 4808 and 4800 Silver Star Road for private road access, shared parking and private utility corridor;

b) That Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road) be consolidated;

c) That the owner is to dedicate road right-of-way widening adjacent to Silver Star Road on Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road); and

d) That the owner registers a Section 219 Restrictive Covenant on the titles of 5012, 4940, 4824, 4816, 4808 and 4800 Silver Star Road that an environmental monitor will be retained by the owner, primarily to ensure that within the identified wildlife movement corridor no development and/or soil disturbance will occur outside of the identified development footprint, and that the owner is to provide a monetary security in the amount of 125% of the estimated costs of the environmental works and monitor;

AND FURTHER, that Council support Development Variance Permit application #DVP00447 to vary the following sections of Zoning Bylaw #5000 to allow for an industrial development to be constructed on Lot 3, Plan KAP90756, Sec 2, Twp 8, ODYD (5012 Silver Star Road):

a) to vary the minimum east side yard setback from 10.0m to 7.0m (Section 11.1.5);

b) to vary the minimum rear yard setback from 6.0m to 3.0m (Section 11.1.5);

c) to vary the minimum landscape buffer on the rear yard from 2.0m to 0.0m (Section 6.6.2, Table 6.1); and

d) to vary the parking space requirement for light industrial use in the I1 – Light Industrial zoning district from 2.0 spaces per 100m^2 to 1.4 spaces per 100m^2 (Section 7, Table 7.1);

AND FURTHER, that Council support Development Variance Permit application #DVP00447 to vary the following sections of Zoning Bylaw #5000 to allow for an industrial development to be constructed on Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road):

a) to vary the minimum front yard setback from 7.5m to 1.1m (Section 11.1.5); and

b) to vary the minimum landscape buffer on the front yard from 3.0m to 1.0m (Section 6.6.2, Table 6.1);

AND FURTHER, that Council support Development Variance Permit application #DVP00447 to vary the following sections of Zoning Bylaw #5000 to allow for an industrial development to be constructed on Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road):

a) to vary the minimum front yard setback from 7.5m to 1.1m (Section 11.1.5);

b) to vary the minimum landscape buffer on the front yard from 3.0m to 1.0m (Section 6.6.2, Table 6.1);

c) to vary the minimum rear yard setback from 6.0m to 3.0m (Section 11.1.5); and

d) to vary the minimum landscape buffer on the rear yard from 2.0m to 0.0m (Section 6.6.2, Table 6.1);

AND FURTHER, that Council support of DVP00447 is subject to the following:

a) the owner is to enter into a Works Contribution Agreement for off-site works along Pleasant Valley Road adjacent to the subject property at the time of development of the adjacent lot;

b) the owner is to provide additional bicycle parking stalls beyond the minimum Zoning Bylaw #5000 requirement; and

c) that the site, floor, elevation and landscaping plans, Environmental Site Review and Transportation Impact Assessment generally shown as Attachments 2 to 6 inclusive and Attachments 10 and 11 in the report titled "Rezoning And Development Variance Permit Applications for 4800, 4808, 4816, 4824, 4940, 5012 Silver Star Road" and dated February 4, 2019 by the Economic Development Planner be attached to and form part of DVP00447 as Schedule 'A'.

ALTERNATIVES & IMPLICATIONS:

1. THAT Council support the application to rezone Lot 3, Plan KAP90756, Sec 2, Twp 8, ODYD (5012 Silver Star Road), Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road) from RR – Rural Residential to I1 – Light Industrial;

   AND FURTHER, that Council support the application to rezone a portion of Lots 2, 3 and 4, Plan KAP83899, Sec 2, Twp 8, ODYD (4800, 4808, 4816 Silver Star Road) that is located within the top of the bank area from R7 – Mobile Home Residential to C5 – Community Commercial;

AND FURTHER, that Council support of ZON00322 is subject to the following:

a) That the owner registers a blanket easement on the titles of 5012, 4940, 4824, 4816, 4808 and 4800 Silver Star Road for private road access, shared parking and private utility corridor;

b) That Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road) be consolidated;

c) That the owner is to dedicate road right-of-way widening adjacent to Silver Star Road on Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road);

d) That the owner registers a Section 219 Restrictive Covenant on the titles of 5012, 4940, 4824, 4816, 4808 and 4800 Silver Star Road that an environmental monitor will be retained by the owner, primarily to ensure that within the identified wildlife movement corridor no development and/or soil disturbance occur, outside of the identified development footprint, and that the owner is to provide a monetary security in the amount of 125% of the estimated costs of the environmental works and monitor; and

e) *(to be cited by Council);*

AND FURTHER, that Council support Development Variance Permit application #DVP00447 to vary the following sections of Zoning Bylaw #5000 to allow for an industrial development to be constructed on Lot 3, Plan KAP90756, Sec 2, Twp 8, ODYD (5012 Silver Star Road), Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road): *(to be cited by Council);*

AND FURTHER, that Council support of DVP00447 is subject to the following:

a) the owner is to enter into a Works Contribution Agreement for off-site works along Pleasant Valley Road adjacent to the subject property at the time of development of the adjacent lot;

b) the owner is to provide additional bicycle parking stalls beyond the minimum Zoning Bylaw #5000 requirement; and

c) that the site, floor, elevation and landscaping plans, Environmental Site Review and Transportation Impact Assessment generally shown as Attachments 2 to 6 inclusive and Attachments 10 and 11 in the report titled "Rezoning And Development Variance Permit Applications for 4800, 4808, 4816, 4824, 4940, 5012 Silver Star Road" and dated February 4, 2019 by the Economic Development Planner be attached to and form part of DVP00447 as Schedule 'A'.

d) *(to be cited by Council);*

Note: This alternative supports the rezoning and development variance permit applications subject to the conditions cited by Administration, as well as any other conditions cited by Council.

2. THAT Council support the application to rezone Lot 3, Plan KAP90756, Sec 2, Twp 8, ODYD (5012 Silver Star Road), Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road) from RR – Rural Residential to I1 – Light Industrial;

AND FURTHER, that Council support the application to rezone portions of Lots 2, 3 and 4, Plan KAP83899, Sec 2, Twp 8, ODYD (4800, 4808, 4816 Silver Star Road) that is located within the top of the bank area from R7 – Mobile Home Residential to C5 – Community Commercial;

AND FURTHER, that Council support of ZON00322 is subject to the following:

a) That the owner registers a blanket easement on the titles of 5012, 4940, 4824, 4816, 4808 and 4800 Silver Star Road for private road access, parking and private utility corridor;

b) That Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road) be consolidated;

c) That the owner is to dedicate road right-of-way widening adjacent to Silver Star Road on Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road); and

d) That the owner registers a Section 219 Restrictive Covenant on the titles of 5012, 4940, 4824, 4816, 4808 and 4800 Silver Star Road that an environmental monitor will be retained by the owner, primarily to ensure that within the identified wildlife movement corridor no development and/or soil disturbance will occur outside of the identified development footprint, and that the owner is to provide a monetary security in the amount of 125% of the estimated costs of the environmental works and monitor;

AND FURTHER, that Council not support Development Variance Permit application #DVP00447 to vary sections of Zoning Bylaw #5000 to allow for an industrial development to be constructed on Lot 3, Plan KAP90756, Sec 2, Twp 8, ODYD (5012 Silver Star Road), Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road).

Note: This alternative has Council supporting the rezoning application but not supporting the development variance permit applications, which would result in development on the property needing to comply with the development regulations of the I1 – Light Industrial zoning district. The applicant would need to redesign the proposal to comply with the I1 zoning district.

3. THAT Council not support the application to rezone Lot 3, Plan KAP90756, Sec 2, Twp 8, ODYD (5012 Silver Star Road), Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road) from RR – Rural Residential to I1 – Light Industrial;

   AND FURTHER, that Council not support the application to rezone portions of Lots 2, 3 and 4, Plan KAP83899, Sec 2, Twp 8, ODYD (4800, 4808, 4816 Silver Star Road) that is located within the top of the bank area from R7 – Mobile Home Residential to C5 – Community Commercial;

   AND FURTHER, that Council not support Development Variance Permit application #DVP00447 to vary sections of Zoning Bylaw #5000 to allow for an industrial development to be constructed on Lot 3, Plan KAP90756, Sec 2, Twp 8, ODYD (5012 Silver Star Road), Lot A, Plan 39472, Sec 2, Twp 8, ODYD (4940 Silver Star Road) and Lot 5, Plan KAP83899, Sec 2, Twp 8, ODYD (4824 Silver Star Road).

   Note: This alternative does not support the rezoning and development variance applications. The owner would have to develop the property in accordance with the current zoning.

ANALYSIS:

A. Committee Recommendations:

At its meeting of February 12, 2019, the Advisory Planning Committee adopted the following resolution:

" ".

B. Rationale:

1. The subject properties at 4800, 4808, 4816, 4824, 4940 and 5012 Silver Star Road, as shown on Figures 1 and 2, are located on the south-east corner of the intersection of Silver Star Road and Pleasant Valley Road and total 3.45 hectares (8.53 ac) in area.

2. The owner has submitted a rezoning and development variance permit application to redevelop the subject properties into a three phase new light industrial and commercial business park (*Silver Star Gateway Business Park)*. The intent is to develop 37 multi-tenanted units in a total in five industrial and commercial buildings, as follows:

Phase	Address	Use	Building #	# of Units	Floor Area
1	5012 Silver Star Rd.	Industrial	1	4	20,640 sf
			2	5	16,152 sf
2	4940 and 4824 Silver Star Rd.	Industrial	3	8	28,795 sf
			4	8	20,042 sf
3	4800, 4808, 4816 Silver Star Rd.	Commercial	5	12	30,496 sf
			Total	**37**	**116,125 sf**

The proposed business park site and grading plans and phase one building elevation, renderings and landscape plan are shown as Attachments 1 to 6.

3. The site area of the proposed business park includes three different land uses in the Official Community Plan (OCP). The lots in phases one and two are designated Light Industrial in the OCP and zoned RR – Rural Residential in Zoning Bylaw #5000. The lots in phase three are split between two OCP land designations, Community Commercial on the north (adjacent to Silver Star Rd.) and Residential Low Density on the south side. The current zoning of the lots is R7 – Mobile Home Residential. The OCP land use and zoning maps are provided in Attachments 7 and 8. The existing and proposed zoning districts are provided in Attachments 12 – 15.

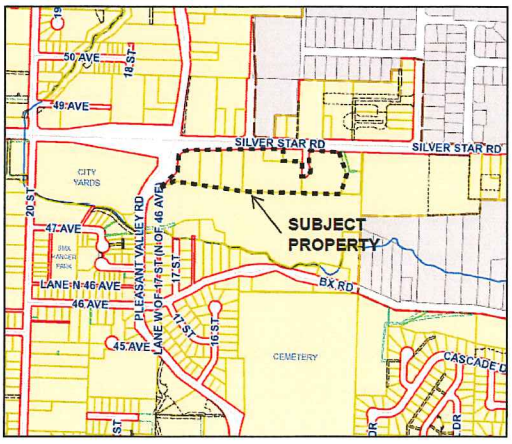


Figure 1: Property Location Map

Figure 2: Aerial Photo of Property

The application is to rezone the lots in phase one and two (5012, 4940 and 4824 Silver Star Road) from RR – Rural Residential to I1- Light Industrial. This rezoning complies with the land use direction set out in the OCP and is supported by Administration.

The applicant has also applied to rezone portions of the lots in phase three (4800, 4808, 4816 Silver Star Road) that is located within the top of the bank area from R7 – Mobile Home Residential to C5 – Community Commercial. As shown in the OCP map (Attachment 7), these lots are split between two land uses - Community Commercial and Residential Low Density. Without amending the OCP land use for the site, the requested rezoning to C5 – Community Commercial zoning district is only consistent with the portion of the lots designated Community Commercial. As illustrated in the grading plan (Attachments 3), the rear portion of the lots in phase three have a topographic change of 8.0m from top of the bank to the south property line and is mostly unbuildable. The slope area also has an environmental value as an active wildlife corridor (Attachment 9). The intent of the OCP by designating portions of the lots as Residential Low Density was to establish a large transition area to the adjacent residential properties and to protect the wildlife corridor. As reviewed in the environmental site assessment (Attachment 10), the development footprint of phase three is limited to the top of bank area. Based on the environmental assessment, Administration recommends to using the top of the bank line as the rezoning boundary between the C5 – Community Commercial and R7 – Mobile Home Residential zoning districts. The southerly boundary of the commercial area would follow the top of bank line and any portion of the lots that are below the line would stay R7 – Mobile Home Residential. Using the topography as the rezoning boundary is consistent with the overall intent of the OCP and an OCP land use amendment would not be required.

4. As illustrated in the site plan (Attachment 2), owner's proposed development includes six separate lots that would function as one business park. The owner's intention is that the park include three lots / titles split into the development phases. As such, it is recommended as a condition of this rezoning the owner registers a blanket easement that guarantees future private access, shared parking and a utility corridor through the subject properties on the titles of 5012, 4940, 4824, 4816, 4808 and 4800 Silver Star Road. It is also recommended that, Lot A (4940 Silver Star Road) and Lot 5 (4824 Silver Star Road) be consolidated prior to Final Reading and Adoption of the rezoning bylaw. At this stage, the consolidation of the three lots in phase three (4800, 4808, 4816 Silver Star Road) is not required as part of the rezoning process. However, the owner is encouraged to consolidate the lots into one lot concurrently.

5. As noted above, the subject properties includes an area identified as moderate by the EMA Strategy and has conservation value and functions as a wildlife corridor (Attachment 9). Approximately 4.3% of the development footprint is planned to occur on the moderate area. As such, an environmental site assessment was conducted by Canyon Wren Consulting Inc., for the site. The report (Attachment 10) concludes that:

> *"the location of this development is such that it makes use of level, existing disturbed, non-native and weedy habitats, while avoiding steeper and somewhat more natural areas. With the identified mitigation of enhancing tree and shrub vegetation within the sloped wildlife movement corridor and implementing a weed management program throughout the Subject Property, the proposed development will minimize impacts to the greatest extent possible. Given these mitigations, it is my professional opinion that environmental impacts resulting from the identified works, will be low in nature".*

The environmental report is also recommended that an environmental monitor be retained by the owner, primarily to ensure that within the identified wildlife movement corridor, no development and/or soil disturbance will occur outside of the identified development footprint. Administration recommends that this recommendation would be noted as part of the rezoning approval conditions, as would a covenant on the subject properties title, and the owner would provide a monetary security in the amount of 125% of the estimated costs of the environmental works and monitor.

6. Concurrently with the rezoning application, the applicant has applied to vary the following sections of Zoning Bylaw #5000, as follows:

Phase 1 – Lot 3 (5012 Silver Star Road):

a) to vary the minimum east side yard setback from 10.0m to 7.0m (Section 11.1.5);

b) to vary the minimum rear yard setback from 6.0m to 3.0m (Section 11.1.5);

c) to vary the minimum landscape buffer on the rear yard from 2.0m to 0.0m (Section 6.6.2, Table 6.1); and

d) to vary the parking requirement for industrial uses in I1 – Light Industrial zoning district from 2.0 spaces per $100m^2$ to 1.4 spaces per $100m^2$ (Section 7, Table 7.1);

Phase 2 – Lots A and 5 (4940 and 4824 Silver Star Road):

Lots A and 5 would be consolidated into one as part of the required rezoning conditions. At this time, the requested variances are separated to each lot, however, should Council approve the project, the issuance of a development variance permit would follow adoption of the rezoning amendment and be for one new legal lot (following consolidation).

Lot A (4940 Silver Star Road):

a) to vary the minimum front yard setback from 7.5m to 1.1m (Section 11.1.5);

b) to vary the minimum landscape buffer on the front yard from 3.0m to 1.0m (Section 6.6.2, Table 6.1); and

Lot 5 (4824 Silver Star Road):

a) to vary the minimum front yard setback from 7.5m to 1.1m (Section 11.1.5);

b) to vary the minimum rear yard setback from 6.0m to 3.0m (Section 11.1.5);

c) to vary the minimum landscape buffer on the front yard from 3.0m to 1.0m (Section 6.6.2, Table 6.1); and

d) to vary the minimum landscape buffer on the rear yard from 2.0m to 0.0m (Section 6.6.2, Table 6.1).

7. The proposed business park master plan (Attachments 1 – 2) is comprised of four light industrial buildings and one commercial building. All buildings are facing Silver Star Road and have a total floor area of 116,125 sq.ft. spread over 37 units. The business park would generally be built from east to west over three phases. Should Council approve the proposed project, the works on phase one are anticipated to begin during spring of 2019. The proposed main traffic access to the site includes two access points along Silver Star Road, one in the east of the development (i.e. Phase one) and the second in the middle of the development (i.e. phase two). As recommended in the Transportation Impact Assessment (Attachment 11), phase three would not have a direct access to Silver Star Road, due to the proximity of the adjacent intersection. The traffic access to the commercial building would be able to use the easements for access to a private internal road. As part of the rezoning conditions, it is recommended that the owner register on title a blanket reciprocal easement for using the internal road, shared parking and utility corridor.

At this stage, the owner has applied for a development permit for phase one (i.e. industrial buildings 1 and 2). The drawing package includes a floor plan, building elevations and the landscape plan (Attachments 1-6). The proposed design is oriented to the road frontage and includes modern architectural elements including a variety of materials, elements of colour, large display windows, glass and canopies. The proposed landscape design (Attachment 6) also enhances the attractiveness of the building and includes a variety of deciduous trees, shrubs, perennials and ornamental grasses in the buffer area. Existing trees in the east slope would be retained where possible and all undisturbed areas would be protected by fencing during construction.

8. With respect to the request to reduce **the minimum east side yard setback from 10.0m to 7.0m** on 5012 Silver Star Road, development of phase one is challenging due to the steep slope to the east (Attachment 2 and 3). In order to construct building number one outside the side yard setback, significant retaining walls would be required. The 3.0m variance to the east side yard for the small corner section of building one is supported by Administration as it would minimize the height of the retaining wall and improve the appearance of the project.

9. With respect to the request to reduce **the minimum rear yard setback from 6.0m to 3.0m** and **the minimum landscape buffer on the rear yard from 2.0m to 0.0m** on 5012 and 4824 Silver Star Road (Attachment 2), in order to minimize the stability risk to the east slope, building two was located as far away as possible from the east side yard. Reducing of the rear yard setbacks for buildings two and three allows the developer to recover some of the lot building area on the east. These variances are supported by Administration because of their minimal impact on the adjacent mobile home park to the south. The buildings are located on the top of the bank, separated from the residential area by a steep slope and undisturbed protected wildlife corridor. The mature trees in the corridor would provide natural screening of the buildings.

10. With respect to the request to reduce **the minimum front yard setback from 7.5m to 1.1m** and **the minimum landscape buffer on the front yard from 3.0m to 1.0m** on 4940 and 4824 Silver Star Road, (Attachment 2) to allow for the location of industrial building number four within the front yard setback. As part of the rezoning process, 4824 and 4940 Silver Star Road, will be consolidated into one lot and the owner is to dedicate Road Right of Way (ROW) adjacent to Silver Star Road as per Zoning Bylaw #5000, Schedule B, in order to accommodate the ultimate road works including a multi-use path. Upgrade of works in Silver Star Road is a defined Development Cost Charge (DCC) Project (TR1). Upgrade works in this area of Silver Star Road were endorsed by Council at its Regular Meeting of October 9, 2018 to be included in the 2022 project list within the 2018 Rolling 4 Year Capital Plan. Building four is planned to be the focal point of the business park, and the proposed position of the building within the front yard setback helps to recover the site area lost to dedication. The width of the front yard landscape buffer would also be affected by the position of the building, however, the building's design together with the landscape plan would provide a highly articulated façade and street presence that would reduce its visual impact. As such, Administration supports these variances.

11. The applicant requested to **reduce the required parking spaces from 68 spaces (2.0 spaces per 100m^2 of gross floor area for light industrial) to 48 spaces (1.4 spaces per 100m^2 of gross floor area)** on 5012 Silver Star Road only (phase one). The applicant's Transportation Impact Assessment (TIA) (Attachment 11) outlined the justification for the reduction in parking spaces. The median parking requirement for light industrial land uses in three BC Interior municipalities (Kelowna, Kamloops, and Penticton) is 1.5 spaces per 100m^2, which is the transportation consultant's recommendation for communities the size of Vernon. The applicant also indicated they would provide a bicycle repair station within the development as an additional amenity to support cycling. Moreover, phase two (4940 and 4824 Silver Star Road) would provide 17 more parking spaces than required, leading to an overall parking reduction of three spaces when considering phase one and phase two combined (1.96 spaces per 100m^2). Given the provided justification as part of the TIA, Administration recommends supporting

the parking variance, subject to a shared parking agreement being registered on property title, and that more bike parking is provided than the minimum required for phase one and phase two. Moreover, for future building permits for tenant improvements, Administration would recommend that site layouts include cyclist end of trip facilities (e.g. change rooms and showers) to further encourage active transportation to/from the development for employees.

12. Should Council support DVP00447, Administration recommends that the following conditions be required as part of DVP approval:

    a) the owner is to enter into a Works Contribution Agreement for off-site works along Silver Star Road and Pleasant Valley Road adjacent to the subject property;

    b) the owner is to provide additional bicycle parking stalls beyond the minimum Zoning Bylaw #5000 requirement; and

    c) that the site, floor, elevation and landscaping plans, Environmental Site Review and Transportation Impact Assessment generally shown as Attachments 2 to 6 inclusive and Attachments 10 and 11 in the report titled "Rezoning and Development Variance Permit Applications for 4800, 4808, 4816, 4824, 4940, 5012 Silver Star Road" and dated February 4, 2019 by the Economic Development Planner be attached to and form part of DVP00447 as Schedule 'A'.

C. Attachments:

Attachment 1 – Silver Star Gateway Business Park renderings
Attachment 2 – Proposed site plan
Attachment 3 – Grading concept plan
Attachment 4 – Phase one site and floor plan
Attachment 5 – Buildings one and two elevations
Attachment 6 – Landscape development plan
Attachment 7 – OCP map
Attachment 8 – Zoning map
Attachment 9 – EMA map
Attachment 10 – Environmental Site Assessment
Attachment 11 – Transportation Impact Assessment
Attachment 12 – RR: Rural Residential
Attachment 13 – I1: Light Industrial zoning district
Attachment 14 – R7: Mobile Home Residential zoning district
Attachment 15 – C5: Community Commercial zoning district

D. Council's Strategic Plan 2015 – 2018 Goals/Deliverables:

The subject involves the following deliverables in Council's Strategic Plan 2015 – 2018:

- Support sustainable neighbourhoods by implementing neighbourhood plans and the OCP.
- Endorse and implement the Industrial Lands Action Plan.
- Support sustainable urban development by reducing off site costs and reviewing parking requirements for infill development.

E. Relevant Policy/Bylaws/Resolutions:

1. The subject properties includes three land uses in the Official Community Plan (OCP). The lots in phase one and two are designated Light Industrial and zoned RR – Rural Residential in Zoning Bylaw #5000. The lots in phase three are split between two OCP's land uses, Community Commercial on the north side (adjacent to Silver Star Road) and Residential Low Density on the south side. The current zoning of the lots is R7 – Mobile Home Residential.

2. The development is located adjacent to a future road upgrades including a multi-use pathway on Silver Star Road, which is DCC Project #TR1 and endorsed by Council at its Regular Meeting of October 9, 2018 to be included in the 2022 project list within the 2018 Rolling 4 Year Capital Plan.

3. The Local Government Act provides Council with the authority to vary local bylaws based on site specific considerations. The granting of such variances does not set a precedent within the community for future variances to be based upon, as each variance application must be evaluated on its own merit and potential implications to the whole community and the specific neighbourhood.

BUDGET/RESOURCE IMPLICATIONS:

N/A

Prepared by:

X
Signer 1

Roy Nuriel
Economic Development Planner

X
Signer 2

Kim Flick
Director, Community Infrastructure and Development

Approved for submission to Council:

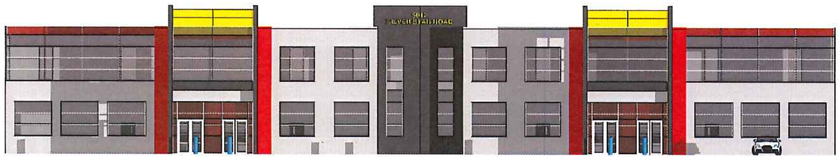
Will Pearce, CAO

Date: _____

REVIEWED WITH

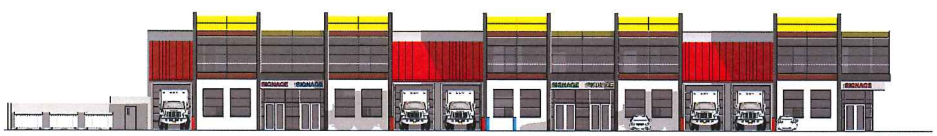
- ☐ Corporate Services
  - ☐ Bylaw Compliance
  - ☐ Real Estate
- ☐ RCMP
- ☐ Fire & Rescue Services
- ☐ Human Resources
- ☐ Financial Services
- ☒ COMMITTEE: APC (Feb.12/19)
- ☐ OTHER:
- ☐ Operations
  - ☐ Public Works/Airport
  - ☐ Facilities
  - ☐ Utilities
- ☐ Recreation Services
- ☐ Parks
- ☒ Current Planning
- ☒ Long Range Planning & Sustainability
- ☐ Building & Licensing
- ☒ Engineering & Development
- ☐ Infrastructure Management
- ☒ Transportation
- ☒ Economic Development & Tourism

Attachment 1



NORTH ELEVATION BUILDING ONE

BUILDING ONE FROM NORTHWEST



NORTH ELEVATION BUILDING TWO

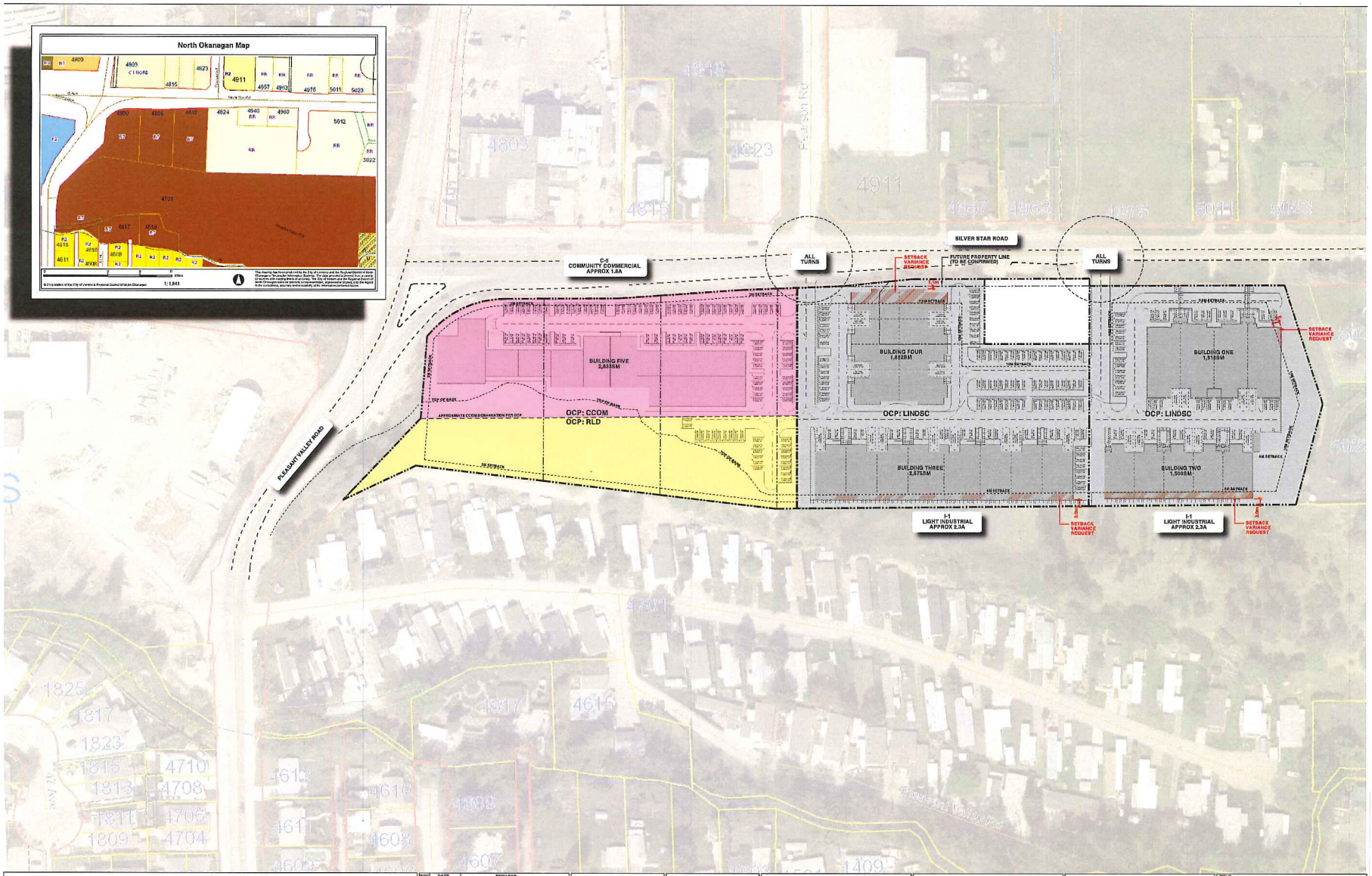
BUILDING TWO FROM NORTHWEST

cta design group

SILVER STAR GATEWAY BUSINESS PARK

PHASE 1

5012 SILVER STAR ROAD, VERNON, BC
DP SUBMISSION OCT 31, 2018



REV #	DATE	REMARKS
A	OCT31.18	REZONING SUBMISSION

N

ARCHITECTURE & ENGINEERING
101 - 1815 KIRSCHNER AVENUE
KELOWNA BC V1Y 4N7
TEL 250 763 0505
FAX 250 763 0501
cta design group
CHAN ARCHITECTS & ENGINEERS
A PARTNERSHIP OF LIMITED COMPANIES

Written dimensions shall take precedence over scaled dimensions. The General Contractor shall verify all dimensions, datum and levels, prior to commencement of any work. Any discrepancies shall be reported immediately to the Design Group. Do not proceed with any work until in possession of "FOR CONSTRUCTION" drawings.
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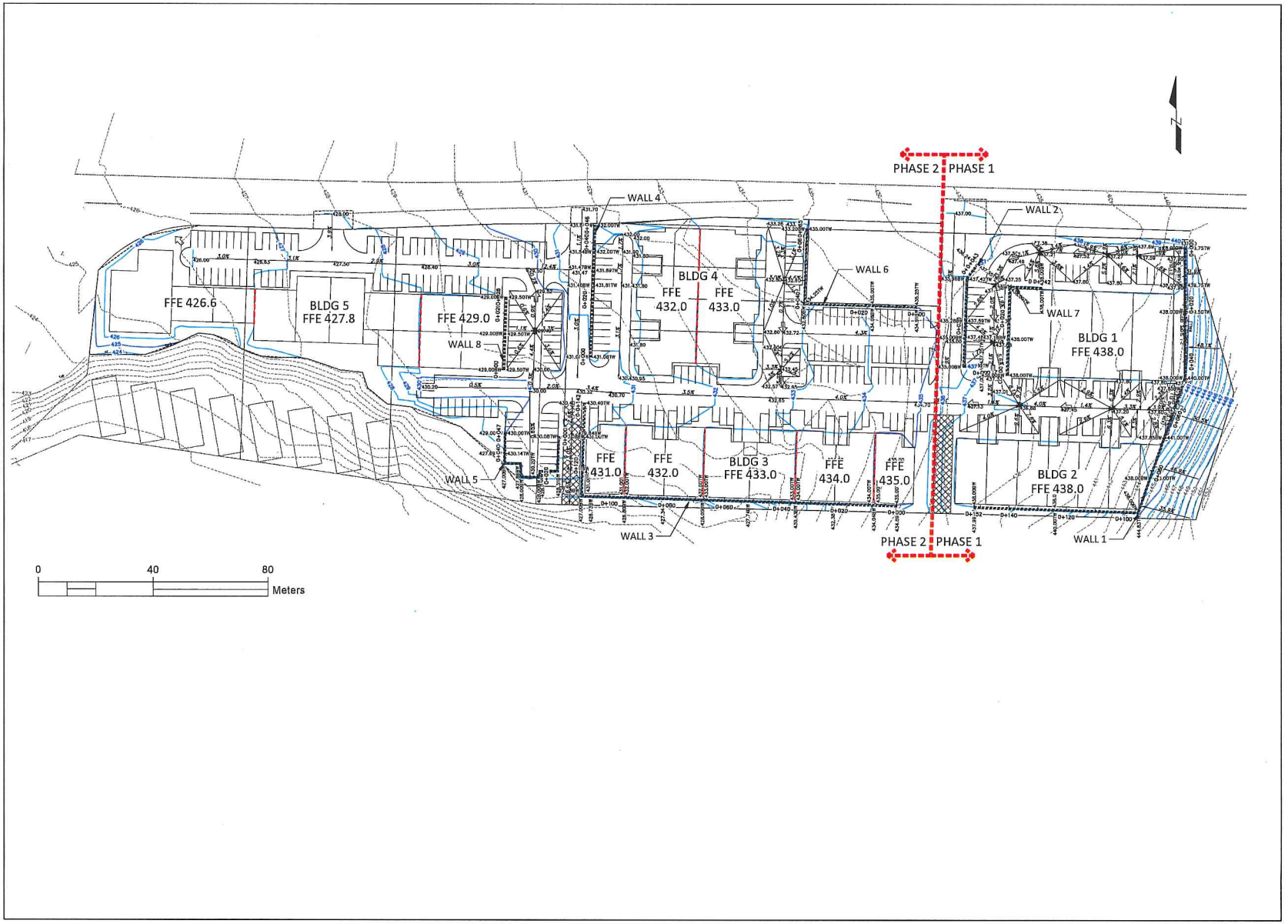
PROPOSED
DEVELOPMENT
FOR
SILVER STAR GATEWAY BUSINESS PARK LTD

5015 SILVER STAR ROAD
VERNON BC

TITLE:
-PROPOSED
REZONING PLAN
-CURRENT OCP PLAN

DRAWN:	JK	CHECKED:	JK
SCALE:	1:750	FILE:	
DRAWING NUMBER	REZ1	VERSION	A

Attachment 2



LEGEND

- ORIGINAL GROUND MINOR CONTOUR
- ORIGINAL GROUND MAJOR CONTOUR
- FINISHED GRADE MINOR CONTOUR
- FINISHED GRADE MAJOR CONTOUR
- RETAINING WALL
- BUILDING ELEVATION STEP
- 428.00 FINISHED GRADE ELEVATION
- 2.0% FINISHED SLOPE & DIRECTION
- 433.100TW TOP WALL ELEVATION
- 425.100BW BOTTOM WALL ELEVATION

No.	DATE	DESCRIPTION	BY
2	08/30/18	EARTHWORKS V2	SL DP
1	15/08/18	EARTHWORKS FENCE EDITION	SL DP

REVISIONS

CONSULTANT SEAL

ISSUED FOR 08/30/18
REVIEW

TRUE CONSULTING
SUITE 203, 570 RAYMER AVE
KELOWNA, B.C.
PHONE: (250) 861-8783
info@true.bc.ca

OBALLA REALTY LTD.

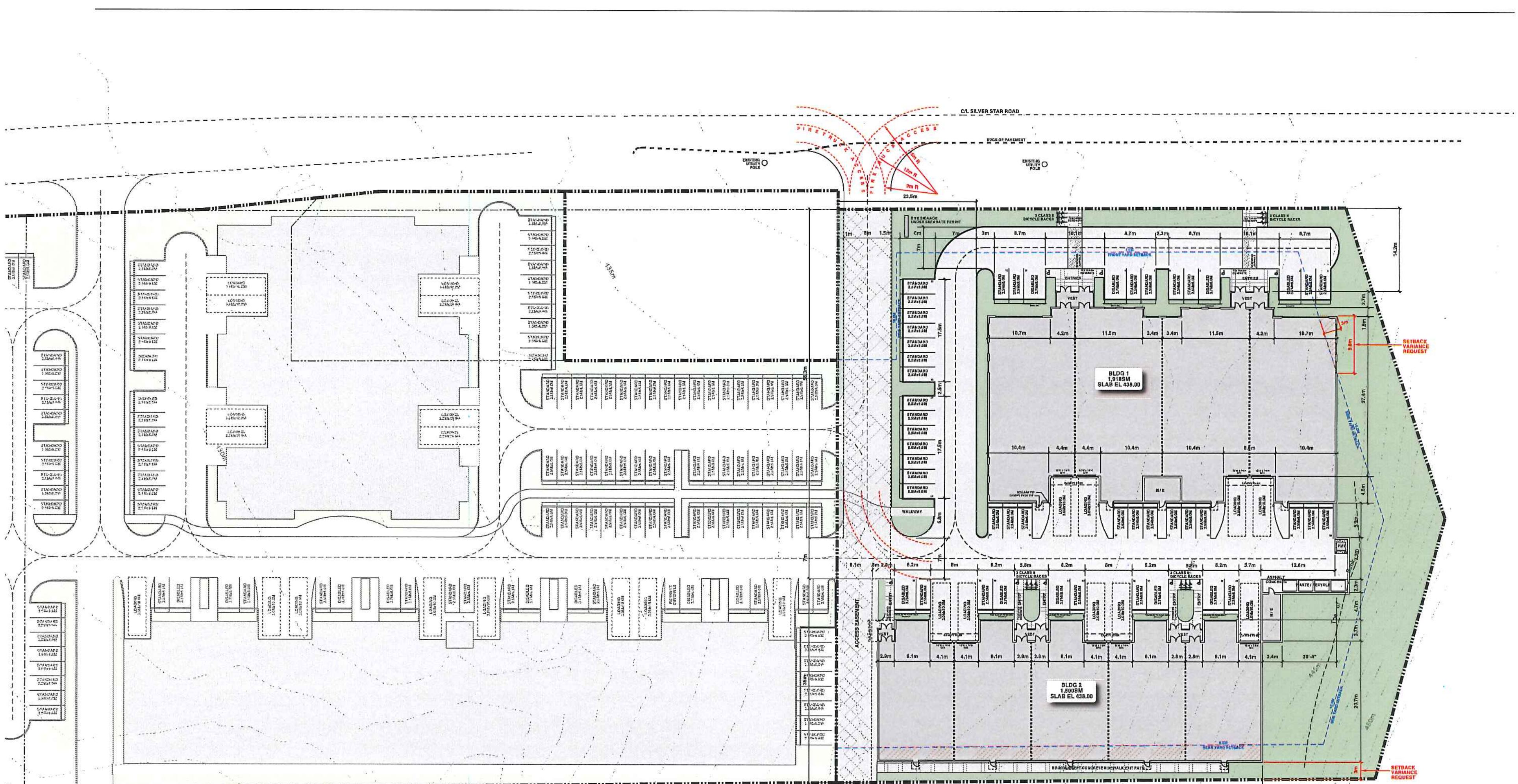
4800-5012
SILVER STAR
ROAD

GRADING
CONCEPT PLAN
V2

SCALE	1:600
DESIGN BY	DP
DRAWN BY	SL
DATE	SEPT 2018
PROJECT No.	1521-011
ACAD FILE	
DRAWING No.	1521-011
SHEET	2 OF 2
REVISION	2

Attachment 3

Attachment 4



Development Data

Address:	5012 Silver Star Road
Legal Description:	Lot 3, Sec 2, TWP 8, ODYD, Pl KAP90755
Current Zoning:	RR
Proposed Zoning:	I1
Current OCP Designation:	LINDSC
Description of proposed development:	Construction of two multi-tenant industrial buildings
Proposed Slab Elevation:	438.00
Site Area:	Approx 9,418sm
New Building One Footprint:	1,918sm
New Building Two Footprint:	1,500sm
Total Building Footprint:	3,418sm
Approx site coverage:	35%
Proposed Max Building Height:	10.7m
Front Yard Setback:	Required 7.5m; Proposed 14.2m
Rear Yard Setback:	Required 6.0m; Proposed 3.0m
Side Yard Setback (W):	Required 10.0m; Proposed 23.5m
Side Yard Setback (E):	Required 10.0m; Proposed 10.0m * (* partial relaxation requested at NE corner Building One)
Parking Required (2/100sm):	68 stalls
Parking Proposed (1.4/100sm):	48 stalls
Loading required (1/1000sm):	2 bays
Loading provided:	9 bays
Bicycle stalls required (0.2/100sm):	7 stalls
Bicycle stalls provided:	12 stalls

REV #	DATE	REMARKS
A	OCT31.18	DP SUBMISSION

TOPOGRAPHIC SURVEY COURTESY
WILLIAM E MADDOK
BC LAND SURVEYOR
3500-30TH ST VERNON BC
FILE# R10405

N

ARCHITECTURE & ENGINEERING
101 - 925 WEST EIGHTH AVENUE
VANCOUVER BC V5Z1E4
TEL 604 736 2554
FAX 604 732 7451
cta design group
CIARAN J DEERY P ENG - JOHN E KRISTIANSON MAIBC
A PARTNERSHIP OF LIMITED COMPANIES

Written dimensions shall take precedence over scaled dimensions. The General Contractor shall verify all dimensions, datum and levels prior to commencement of work. All errors and omissions shall be reported immediately to CTA Design Group. Do not proceed with any work until in possession of "FOR CONSTRUCTION" drawings.

PROPOSED
DEVELOPMENT
FOR
SILVER STAR GATEWAY BUSINESS PARK LTD
5012 SILVER STAR ROAD
VERNON BC

TITLE: -PHASE ONE SITE / FLOOR PLAN	
DRAWN: JK	CHECKED: JK
SCALE: 1:300	FILE:
DRAWING NUMBER: ---- A1	VERSION: A

Attachment 5


NORTH (STREET) ELEVATION BUILDING ONE
SOUTH (INTERNAL) ELEVATION BUILDING ONE
PRE-FINISHED METAL FLASHINGS TYP
SURFACE-MOUNTED SIGNAGE UNDER SEPARATE PERMIT
COMPOSITE METAL PANELS
PAINTED CONCRETE PANELS
SPANDREL GLAZING
TINTED GLAZING IN CLEAR ANODIZED ALUMINUM FRAMES
SECURITY BOLLARDS AT MAIN ENTRY TYP
STOREFRONT ENTRY DOORS
PREFINISHED METAL CANOPY TYP
TINTED GLAZING IN CLEAR ANOD ALUM FRAMES
PREFINISHED METAL FLASHINGS TYP
PAINTED STEEL MAN DOORS C/W SECURITY GLAZING
WEST ELEVATION BUILDINGS ONE & TWO
RETAINING WALL
NORTH (INTERNAL) ELEVATION BUILDING TWO
SOUTH (REAR) ELEVATION BUILDING TWO
STOREFRONT ENTRY TYP
SIGNAGE UNDER SEPARATE PERMIT
PAINTED CONCRETE PANEL TYP
PAINTED STEEL BOLLARD TYP
PAINTED ACCENT PANEL TO MATCH LOADING DOCK CANOPIES TYP
PAINTED HORIZONTAL ACCENT TYP
PREFINISHED METAL FLASHINGS

REV #	DATE	REMARKS
A	OCT31.18	DP SUBMISSION
B	JAN18.19	ACCENT PANELS

cta design group

PROPOSED DEVELOPMENT FOR SILVER STAR GATEWAY BUSINESS PARK LTD

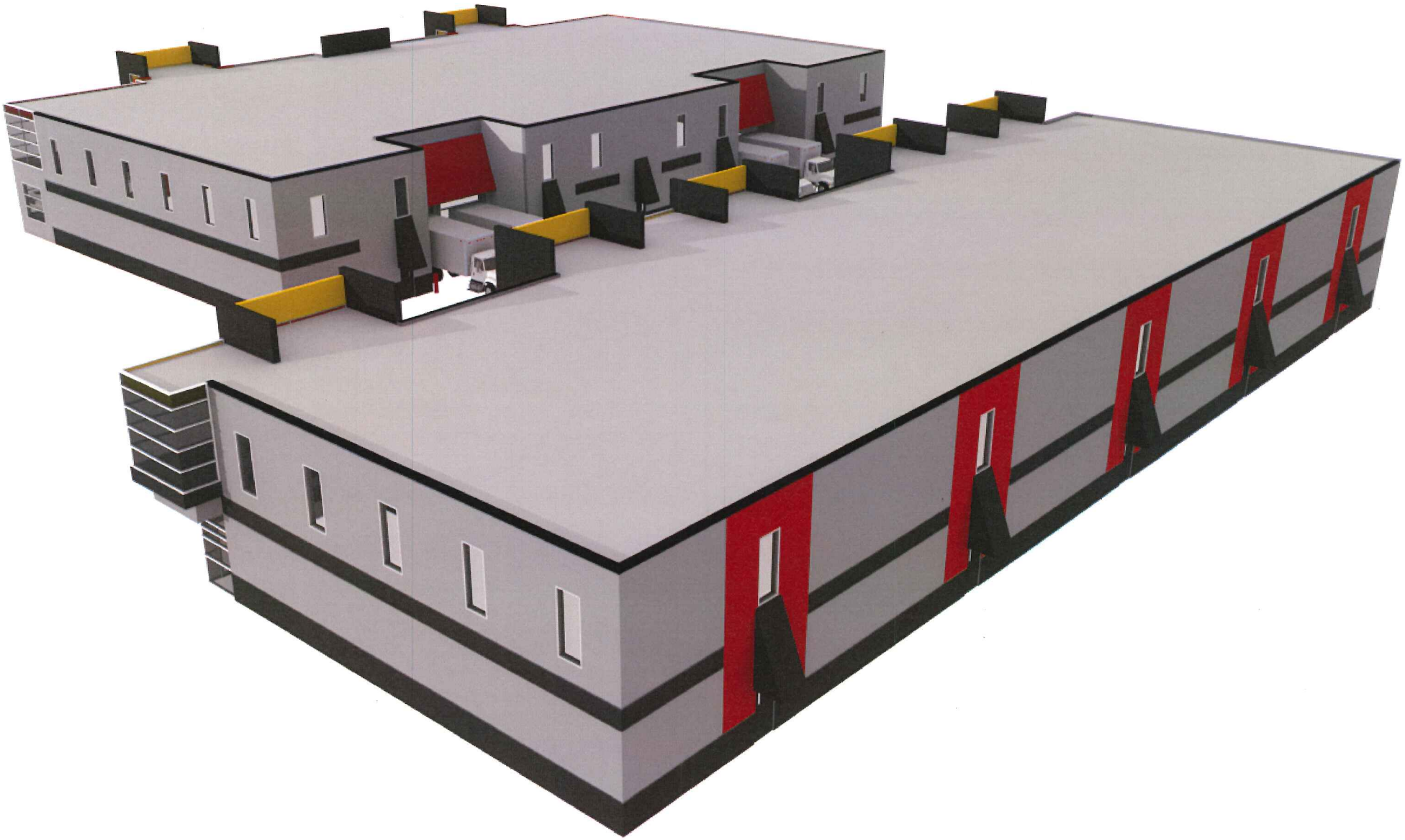
5018 SILVER STAR ROAD VERNON BC

TITLE: -ELEVATIONS: BLDGS ONE & TWO

DRAWN: JK | CHECKED: JK

SCALE: 1:200 | FILE:

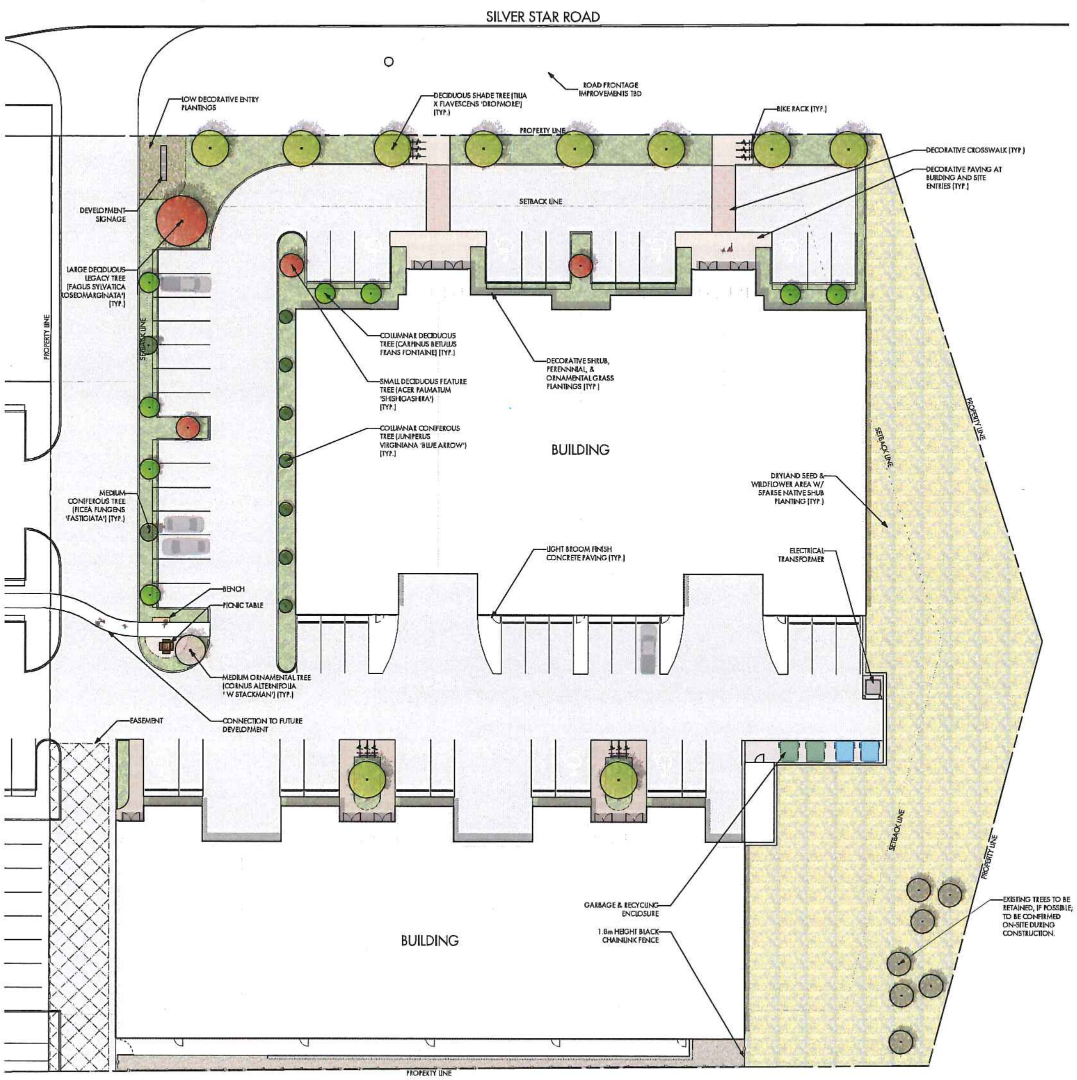
DRAWING NUMBER: ---- | A3 | VERSION: B



Attachment 6

OUTLAND DESIGN
LANDSCAPE ARCHITECTURE

303 - 590 KLO Road
Kelowna, BC V1Y 7S2
T (250) 868-9270
www.outlanddesign.ca



PLANT LIST

BOTANICAL NAME	COMMON NAME	QTY	SIZE / SPACING & REMARKS
TREES			
ACER PALMATUM 'SHISHIGASHIRA'	SHISHIGASHIRA JAPANESE MAPLE	3	6cm CAL 1.5m CLEAR STEM HT.
CARPINUS BETULUS 'FRANS FONTAINE'	COLUMNAR HORNBEAM	8	6cm CAL 1.5m CLEAR STEM HT.
CORNUS ALTERNIFOLIA 'W STACKMAN'	GOLDEN SHADOWS PAGODA DOGWOOD	1	6cm CAL 1.5m CLEAR STEM HT
FAGUS SYLVATICA 'ROSEOMARGINATA'	TRICOLOR BEECH	1	6cm CAL 1.5m CLEAR STEM HT./LEGACY TREE
JUNIPERUS VIRGINIANA 'BLUE ARROW'	BLUE ARROW JUNIPER	7	2.5m HT
PICEA PUNGENS 'FASTIGIATA'	COLUMNAR BLUE SPRUCE	2	2.5m HT.
TILIA X FLAVESCENS 'DROPMORE'	DROPMORE LINDEN	8	6cm CAL 1.5m CLEAR STEM HT
SHRUBS, PERENNIALS & GRASSES (ORNAMENTAL PLANTING AREAS)			
BERBERIS THUNBERGI 'GENTRY'	ROYAL BURGUNDY BARBERRY	47	#02 CONT. /1.0M O.C. SPACING
CORNUS STOLONIFERA 'FARROW'	ARCTIC FIRE DOGWOOD	57	#02 CONT. /0.9M O.C. SPACING
HELICTOTRICHON SEMPERVIRENS	BLUE OAT GRASS	83	#02 CONT. /0.75M O.C. SPACING
HEMEROCALLIS 'RUBY STELLA'	RUBY STELLA DAYLILLY	118	#02 CONT. /0.6M O.C. SPACING
MISCANTHUS SINENSIS 'GOLDBAR'	GOLDBAR MAIDEN GRASS	83	#02 CONT. /0.75M O.C. SPACING
PANICUM VIRGATUM 'ROSTRAHLBUSCH'	RED SWITCH GRASS	57	#02 CONT. /0.9M O.C. SPACING
PICEA ABIES 'NIDIFORMIS'	NEST SPRUCE	21	#02 CONT. /1.5M O.C. SPACING
PICEA PUNGENS 'GLOBOSA'	BLUE GLOBE SPRUCE	12	#02 CONT. /2.0M O.C. SPACING
RUDBECKIA FULGIDA 'GOLDSTURM'	GOLDSTURM CONEFLOWER	118	#02 CONT. /0.6M O.C. SPACING
SALIX PURPUREA 'NANA'	DWARF ARCTIC WILLOW	21	#02 CONT. /1.5M O.C. SPACING
SALVIA NEMOROSA 'MAY NIGHT'	MAY NIGHT SALVIA	118	#02 CONT. /0.6M O.C. SPACING
SPIRAEA BUMALDA 'FROEBELII'	FROEBEL'S SPIREA	23	#02 CONT. /1.25M O.C. SPACING
SHRUBS (NATURALIZED PLANTING AREAS)			
AMELANCHIER ALNIFOLIA	SASKATOON	26	#02 CONT. /2.0M O.C. SPACING
CORNUS STOLONIFERA	RED OSIER DOGWOOD	17	#02 CONT. /2.5M O.C. SPACING
HOLODISCUS DISCOLOR	OCEAN SPRAY	17	#02 CONT. /2.5M O.C. SPACING
ROSA WOODSII	WILD ROSE	46	#02 CONT. /1.5M O.C. SPACING
SYMPHORICARPOS ALBUS	SNOWBERRY	46	#02 CONT. /1.5M O.C. SPACING

NOTES

1. PLANT MATERIAL AND CONSTRUCTION METHODS SHALL MEET OR EXCEED CNLA STANDARDS.

2. ALL ORNAMENTAL PLANTING AREAS SHALL BE WATERED BY A FULLY AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. HYDROSEEDED DRYLAND GRASS & WILDFOWER AREAS AND NATIVE SHRUB PLANTINGS WILL RECEIVE TEMPORARY ESTABLISHMENT IRRIGATION FOR TWO YEARS.

3. TREE AND SHRUB BEDS TO BE DRESSED IN A MINIMUM 75mm DECORATIVE ROCK MULCH, AS SHOWN IN PLANS.

4. TREE AND SHRUB BEDS TO RECEIVE A MINIMUM 300mm DEPTH TOPSOIL PLACEMENT. HYDROSEEDED DRYLAND GRASS & WILDFLOWER AREAS TO RECIEVE A MINIMUM 50mm DEPTH TOPSOIL PLACEMENT.

5. ALL UNDISTURBED NATURAL AREAS TO BE PROTECTED WITH CONSTRUCTION FENCING DURING CONSTRUCTION.

6. HYDROSEEDING DRYLAND SEED AREAS:

DRYLAND SEED MIXTURE	*BY WEIGHT*	*BY SPECIES*	*WILDFLOWER SEED MIXTURE*	*BY WEIGHT*
BLUE BUNCH WHEAT GRASS	41%	23%	SILKY LUPINE	30%
ROUGH FESCUE	25%	20%	BALSAM ROOT	30%
IDAHO FESCUE	15%	19%	BROWN EYED SUSAN	35%
PERENNIAL RYEGRASS	10%	7%	COMMON YARROW	5%
SANDBERG BLUEGRASS	5%	13%		
JUNE GRASS	4%	18%		

HYDROSEEDING APPLICATION RATE (DRYLAND SEED AREA)

NATIVE SEED DRYLAND SEED MIXTURE	125KG/HECTARE		
	WILDFLOWER SEED MIXTURE	1KG/HECTARE	
FERTILIZER	18-18-18-2, 50%	SULPHUR COATED UREA	300KG/HECTARE
MULCH	CANFOR ECOFIBRE PLUS TAC	2,800KG/HECTARE	
TACKIFIER	GUAR	3% OF MIX	

THE PRECEDING HYDROSEEDING MIXTURE IS TO BE APPLIED TO THE DRYLAND SEED AREA AS SHOWN ON THE DRAWING. SEED MIX TO BE CERTIFIED #1 GRADE BY AGRICULTURE CANADA. REFER MANUFACTURER'S SPECIFICATIONS FOR PRODUCT DELIVERY, STORAGE & PROTECTION.

N

PROJECT TITLE

5012 SILVER STAR ROAD

Vernon, BC

DRAWING TITLE

CONCEPTUAL LANDSCAPE PLAN

ISSUED FOR / REVISION

1	19.01.24	Development Permit
2		
3		
4		
5		

PROJECT NO	18-011
DESIGN BY	KA
DRAWN BY	WC
CHECKED BY	FB
DATE	JAN 24, 2019
SCALE	1:200
PAGE SIZE	30x42"

SEAL

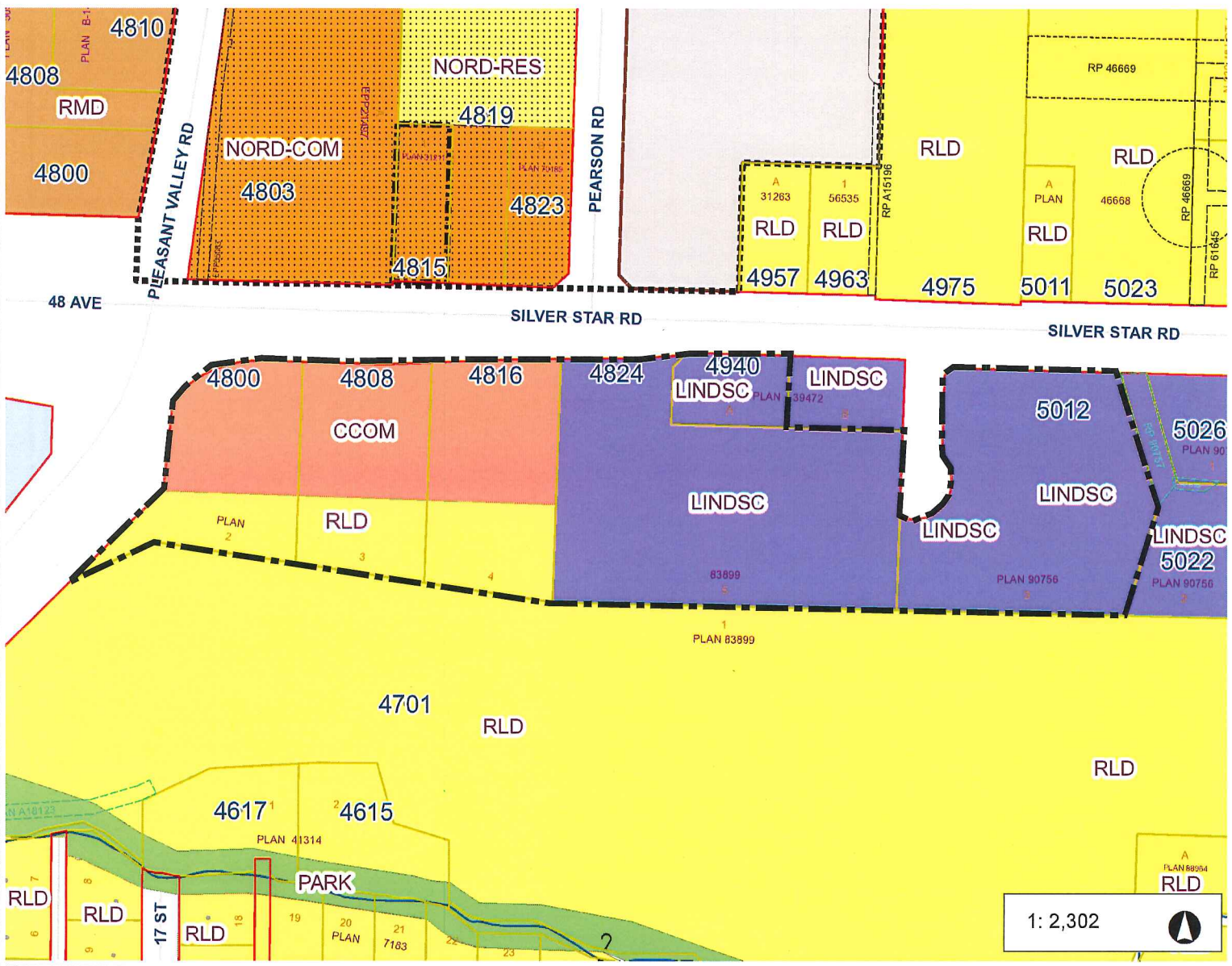
BRITISH COLUMBIA SOCIETY OF LANDSCAPE ARCHITECTS
REGISTERED MEMBER
FIONA BARTON
334

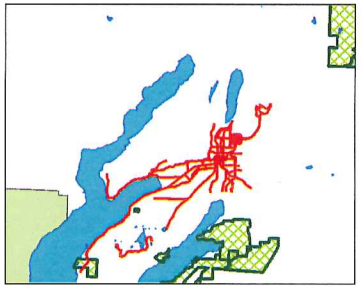
DRAWING NUMBER

L1/1

ISSUED FOR REVIEW ONLY

Silver Star Gateway Business Park OCP Land Use Map





Legend

- Light Industrial/Service Commercial
- Community Commercial
- Residential Low Density

Notes

0.1 0 0.04 0.1 Miles

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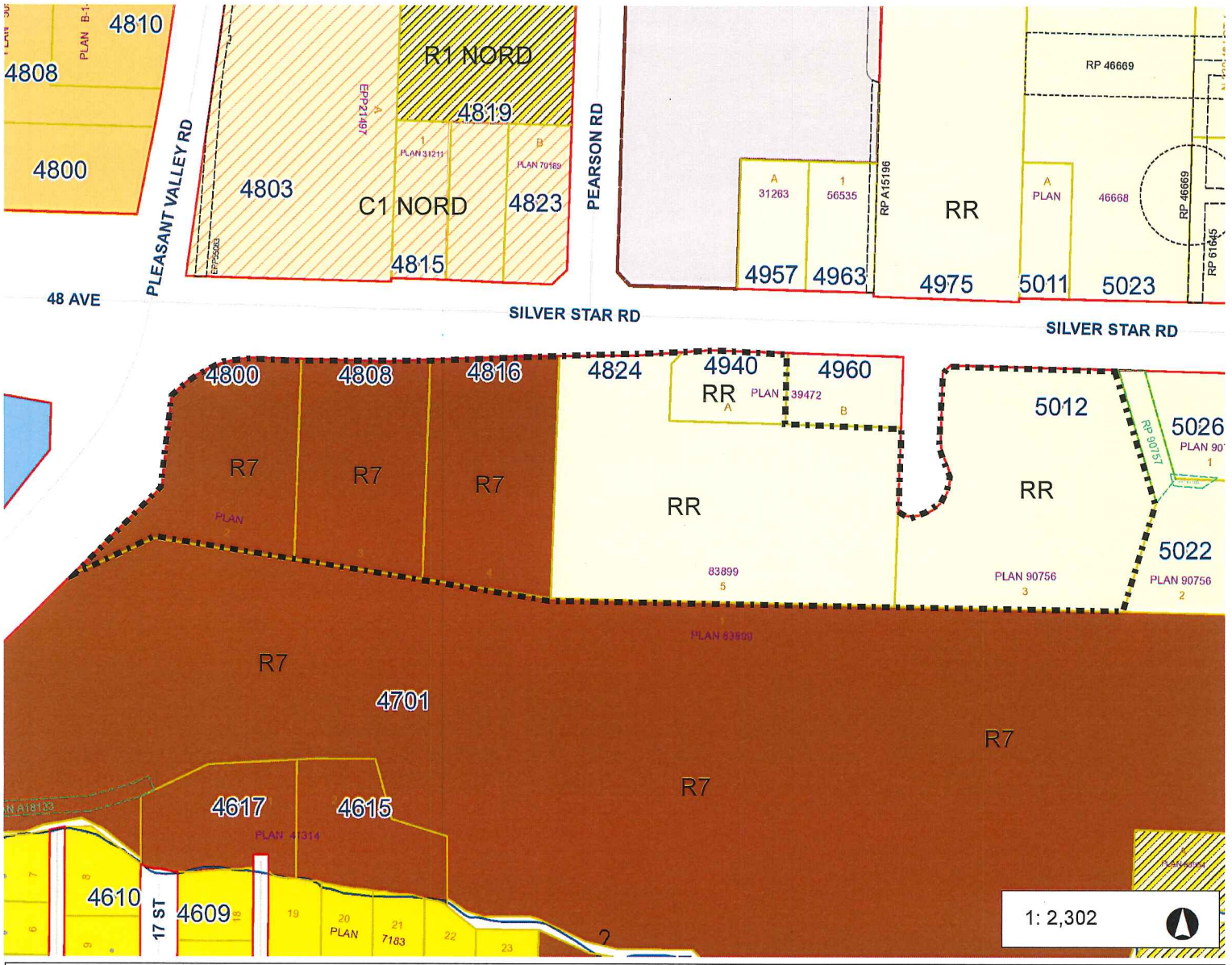
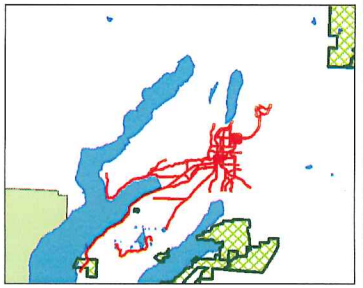
Attachment 7

Silver Star Gateway Business Park Zoning Map





Legend

- R1 NORD
- C1 NORD
- RR RURAL RESIDENTIAL
- R7 MOBILE HOME RESIDENTIAL

Notes

ZON00322
DVP00477
DP000790

0.1 0 0.04 0.1 Miles

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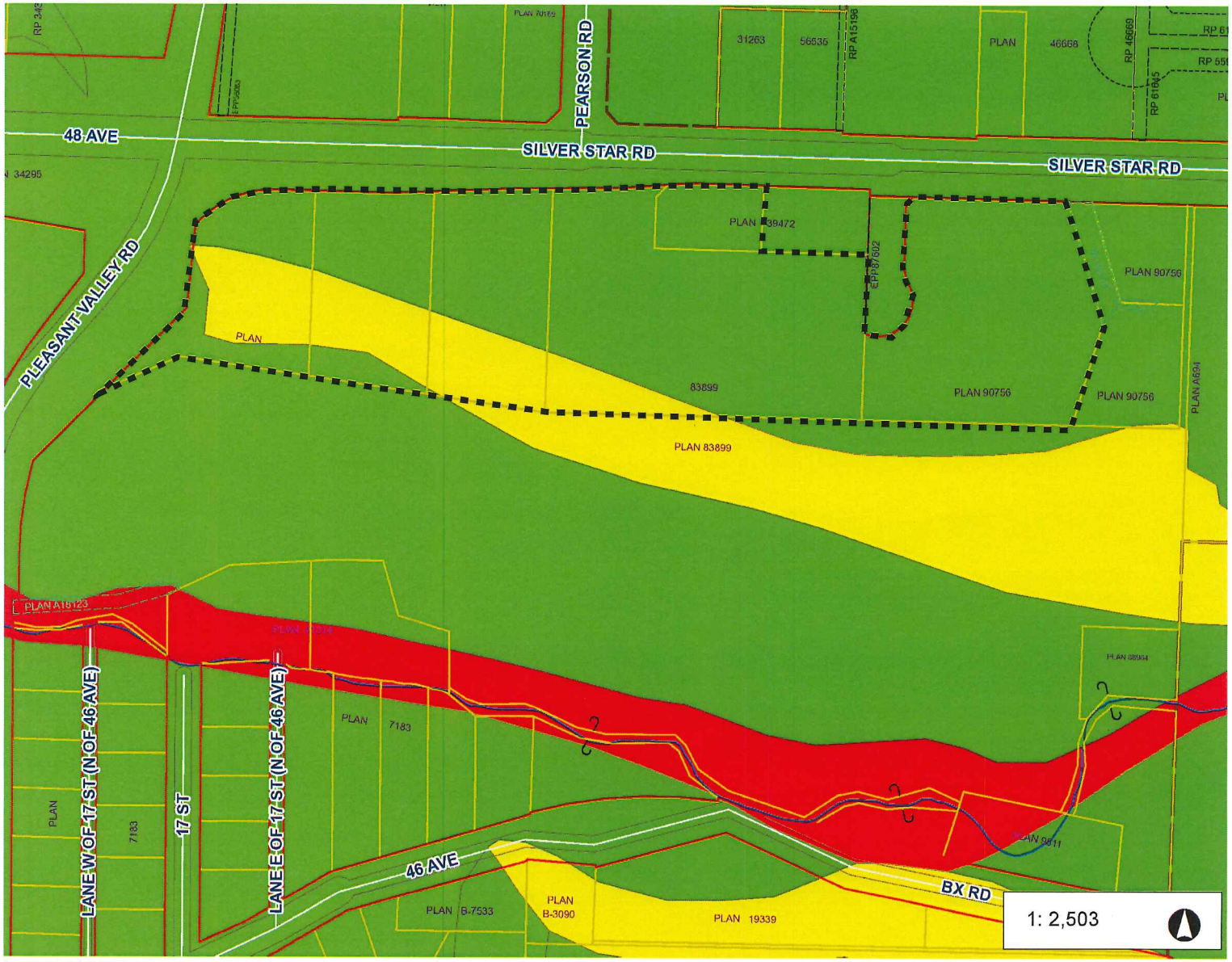
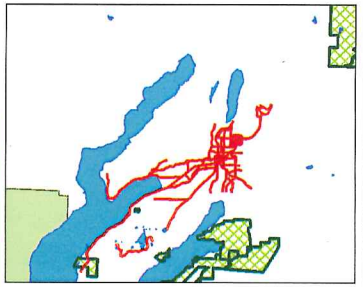
Attachment 8

Silver Star Gateway Business Park EMA Map





Legend

- Low
- Moderate
- High

Notes

0.1 0 0.04 0.1 Miles

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Attachment 9

CANYON WREN CONSULTING INC.

Phone: 250.307.2038
Email: mark@canyonwren.ca

Nov. 30, 2018

City of Vernon
3400 – 30 Street
Vernon, BC V1T 5E6

Via: Marco Oballa
Email: marco@oballa.com

RE: Environmental Site Review for 4800, 4808, 4816, 4824, 4940 and 5012 Silver Star Rd., Vernon, BC (PIDs: 027-092-721, 027-092-739, 027-092-747, 027-092-755, 010-580-921 and 028-223-497)

To Jing Niu,

Canyon Wren Consulting Inc. was retained by Marco Oballa of Silver Star Gateway Business Park Ltd. (the Proponent), to conduct an environmental site assessment for the following development proposal. The development area consists of six adjacent lots. At present the Proponent is planning for Phase 1 of their project, which will occur on lot 5012. The entire project however, is proposed across all six lots and will ultimately consist of light industrial (L1) rental space on lots 4824 through 5012, and community commercial (C5) retailers, offices, etc on the northern 2/3^{rds} of lots 4800 through 4816. Meanwhile, the southern 1/3rd of those same lots is to remain zoned as mobile home residential (R7). Canyon Wren's role was to complete a site visit and prepare a letter identifying environmental impacts likely to arise from proposed development, along with appropriate mitigation's.

The development area is within the Cities Neighbourhood District (MA 2) and therefore requires review of the following features, as per the Cities Environmental Management Areas (EMA) Strategy (2008). Features not applicable to the subject property are identified with an NA.

Neighbourhood District – MA 2

1. Identification of natural features on property
2. Tree identification and inclusion on a site plan
3. Wildlife corridor identification as appropriate (based on SEI polygon data and mapping)
4. Presence of interface between residential and agricultural, park, or greenfield lands
5. Creek, lake, pond or wetland identification, and Riparian Areas Regulation assessment if necessary – **NA** (no RAR features are present within the subject property)
6. Identification of stormwater drainage and percentage of impervious surfaces
7. Landscaping requirements i.e. irrigation demand, landscaping type
8. Sustainability Scorecard – **NA** (the City has not yet implemented this feature)

OBSERVATIONS AND ASSESSMENT

Site visits on November 13th and 30th, 2018 revealed the following, which are described in the same order as the MA2 features listed above:

- The total area of the subject properties is 3.54 ha, of which approximately 2.54 ha are planned for permanent disturbance (i.e. structures, roads, parking, see Proposed Development in Figure 2). Approximately 0.154 ha of the disturbance footprint is planned to occur within the mapped moderate conservation value and wildlife corridor habitat polygon, as defined by the EMA Strategy (2008, see Figures 1 and 2).

- The EMA habitat polygon, rated as moderate conservation value (CV) and a regional wildlife corridor, occurs primarily south of the proposed development. It is mapped as 70% IDFxh1 PB structural stage 5 site series and 30% IDFxh1 WB:wk structural stage 2 site series (Table 1). However, the mapped polygon was produced via aerial imagery at a 1:20000 scale. At the much finer spatial scale of this assessment, it was observed that portions of the moderate CV polygon proposed for development, are all disturbed. These areas and the remainder of the subject property, take the form of existing or formerly cultivated fields (CF), or areas of residences and other human developments (UR). See Table 1 below for vegetation community observations.

Table 1. Observed vegetation communities.

Biogeoclimatic Zone	Site Series code	Common Name	Status	Habitat
IDFxh1	PB structural stage 5	Douglas-fir / Ponderosa pine: Bluebunch wheatgrass - Balsamroot	Blue listed	Gentle warm aspect slopes with deep, medium-textured soils – Photos 1 and 2.
IDFxh1	WB:wk structural stage 2	Bluebunch wheatgrass – Balsamroot: Bluebunch wheatgrass - Knapweed seral association	The Non-seral association is Blue listed	Moderately steep, warm aspect slopes with deep, medium textured soils: mid to late serial association, typically with reasonable component of bluebunch wheatgrass with either knapweed and/or cheatgrass – Photos 2 and 3.
	CF	Cultivated Field	NA	Existing or formerly cultivated fields – Photos 4 and 5.
	UR	Urban	NA	Areas of residences or other human developments – Photo 4.

- The vegetation communities occurring within the EMA habitat polygon rated as moderate conservation value (CV) and a regional wildlife corridor, are in fair to poor ecological condition. The forested PB portions of the polygon, located south of the east end of the development are in fair condition. The remainder of the polygon to the west is in extremely poor condition. Weedy and invasive plant species are abundant throughout. Invasive and agronomic species located throughout the Subject Property include: sulphur cinquefoil, knapweed, burdock, Canada thistle, blue chickory, western goat's-beard, crested-wheatgrass and smooth brome.

- Project impacts to sensitive habitats are not anticipated. Refinement of previous mapping shows that the proposed works will all occur above the top-of-bank, in areas that are dominated by CF and UR habitats.

- There are limited trees on the portion of the Subject Property proposed for development. Nearly all of these are non-native (i.e. Siberian elm, sugar maple, honey locust). The exceptions are several young native trees (cottonwoods and Ponderosa pine) and two large Ponderosa Pine. These trees are generally located along the southern boundary of lot 5012 and in the proposed parking area at the south end of the driveway on lot 4824. See Figure 2 for detailed tree locations. None of these trees were observed to contain cavities or sticknests.

- The EMA Strategy has identified BX Creek, located south of the proposed development (Figure 1), as a regional wildlife movement corridor. Meanwhile, a branch that extends off BX Creek and through the Subject Property, is identified as a corridor option, although without a defined linkage back to BX Creek. The intersection of Silver Star and Pleasant Valley Roads poses a dramatic limitation to existing wildlife use. Meanwhile, the approved and ongoing development of Cornerstone Village (at the southern terminus of the northern Regional Corridor Option line – Figure 1), further limits potential use by larger terrestrial wildlife.

  This corridor however, can still function as a movement corridor for smaller terrestrial wildlife, allowing movement back up and along BX Creek, as well as for birds. Many species of birds have been shown to prefer movement through vegetated corridors and be deterred from crossing even gaps as small as 50

m, although crossing tolerance is species specific. At present however, much of the identified wildlife corridor within and adjacent to the Subject Property, contains limited tree and/or shrub cover.

- The proposed development will be bordered to the west by public industrial yards, northwest by commercially zoned properties and remaining sides by various forms of residential zoning. No official parks occur, although greenfield areas are present in varying quality, in the form of Cultivated Fields (like much of the Subject Property), or forested and grassland steep slopes (like portions of the identified movement corridor).
- There are no riparian features on or adjacent to the subject properties.
- Stormwater drainage is currently being planned with the City and will conform to their requirements. Stormwater from the development will NOT be directed in the form of overland flow into the modified movement corridor.
- Given the current development layout, the project will result in an area of approximately 2.54 ha or 71.8 percent, of impervious surface from roads, parking and structures.
- The Proponent has identified numerous landscaping strips and boxes adjacent to proposed structures and parking areas. These are to be populated by a variety of smaller ornamental trees and shrubs. Consideration will be given to planting low water requirement species.

  Two larger transition areas are also identified (Figure 2). One is located in the area immediately east of the structure proposed on Lot 5012. The second is located immediately south of the structures on Lots 4800, 4808 and 4816. These areas will provide for transitions to the adjacent residential properties and the wildlife movement corridor to the south.

RECOMMENDATIONS

As described in the observations and assessment section above, the proposed development site is largely disturbed with native vegetation primarily limited to patches within the identified wildlife corridor, the best of which occurs south of lot 5012. As such, impacts to wildlife habitat values and rare or sensitive plant communities will be low. To ensure that impacts to the environment from the proposed development are minimized, and do not extend beyond the existing disturbance footprint, the following mitigation measures will be adhered to:

- An environmental monitor will be retained by the proponent, primarily to ensure that within the identified wildlife movement corridor, no development and/or soil disturbance occur, outside of the identified development footprint. There will be a pre-construction meeting during which snow-fence will be used to identify the allowable disturbance extent and to communicate the importance of movement corridor protection, and erosion and sediment control in these areas. Site inspection frequency will be timed to key construction activities in areas adjacent to the movement corridor and based on weather events (e.g. after periods of intense rainfall). The monitor has the authority to halt construction activities if impacts to sensitive habitats are likely to occur.
- Prior to site development, conduct clearing of necessary ornamental and native trees and vegetation between August 16 and March 15, to discourage nesting of migratory birds, by removing suitable habitat.
- Avoid vegetation disturbance activities from April 1 through August 15 to reduce potential for destroying active bird nests. Active migratory bird nests are fully protected under the B.C. Wildlife Act and the federal Migratory Birds Convention Act; it is an offence to destroy nests occupied by a bird, its eggs or it's young. Vegetation disturbance or removal activities during this nesting period will required an intensive series of per-construction nesting bird surveys by a qualified wildlife biologist.
- Once site grading is complete, areas identified as transition areas (Figure 2), will receive top soil as appropriate and be seeded with a native and non invasive grass seed mix (see Table 2 for seed mix recommendation). Note: the mix identified in the Conceptual Landscape Plan, by Fiona Barton of Outland Design, is great.

Immediate revegetation of these areas will be for erosion control and to limit invasive plant colonization. Annual ryegrass and dutch white clover can be added to the seed mix (maximum of 10%), as they are quick growing, and clover is a nitrogen fixer. This will help to ensure a prompt vegetation establishment to reduce soil erosion potential and can improve available nutrients for the native grasses that are slower to establish. Interior Landscape Reclamation in Lake Country can be contacted for blend availability, minor modifications to the mix and/or hydro seeding. Do NOT include timothy, crested wheatgrass, smooth brome or orchard grass in seed mixes.

Table 2. Proposed suitable native seed mix for disturbed slopes.

Species	% by Weight	% by Species
Blue bunch Wheatgrass	40%	16%
Rough fescue	25%	20%
Idaho Fescue	15%	19%
Perennial ryegrass	10%	6%
Sandberg Bluegrass	5%	13%
June grass	4%	19%
Canada Bluegrass	1%	7%

- Upon development conclusion, it is recommended that transition areas AND the movement corridor slopes on lots 4800, 4808 and 4816 be landscaped with additional native trees and shrubs. This along with invasive species management will improve the health of the habitats and improve the ability of birds to utilize the movement corridor. Suitable trees and shrubs include, but are not limited to the following: Douglas-fir, ponderosa pine, hawthorne, pin cherry, choke cherry, saskatoon, mock-orange, Oregon grape, and snowberry. Shrub spacing in the range of 6 – 10 m on average, in small clumps, is likely adequate.

- The Proponent should implement an invasive weed management program that applies weed control measures such as a combination of mechanical and chemical controls (examples in Appendix 1).

  Twice a year, **in June and August,** the development site and adjacent movement corridor grasslands should be inspected and spot sprayed with a suitable herbicide and/or mechanical control, to reduce presence and competition from invasive species, most notably the following noxious species: sulphur cinquefoil, knapweed, Scotch thistle and Canada thistle. These efforts should start next June and continue for a minimum period of 2 years post development.

- A post-development report, outlining the degree of compliance with the above mitigation's and reviewing the success of migrations implemented during construction, will be produced and submitted to the City.

CONCLUSION

In summary, the location of this development is such that it makes use of level, existing disturbed, non-native and weedy habitats, while avoiding steeper and somewhat more natural areas. With the identified mitigation's of enhancing tree and shrub vegetation within the sloped wildlife movement corridor and implementing a weed management program throughout the Subject Property, the proposed development will minimize impacts to the greatest extent possible. Given these mitigation's, it is my professional opinion that environmental impacts resulting from the identified works, will be low in nature. Please contact the undersigned if you have any questions or to discuss this in further detail.

Sincerely,

Mark Piorecky, M.Sc., R.P.Bio.
Senior Wildlife Biologist
Canyon Wren Consulting Inc.

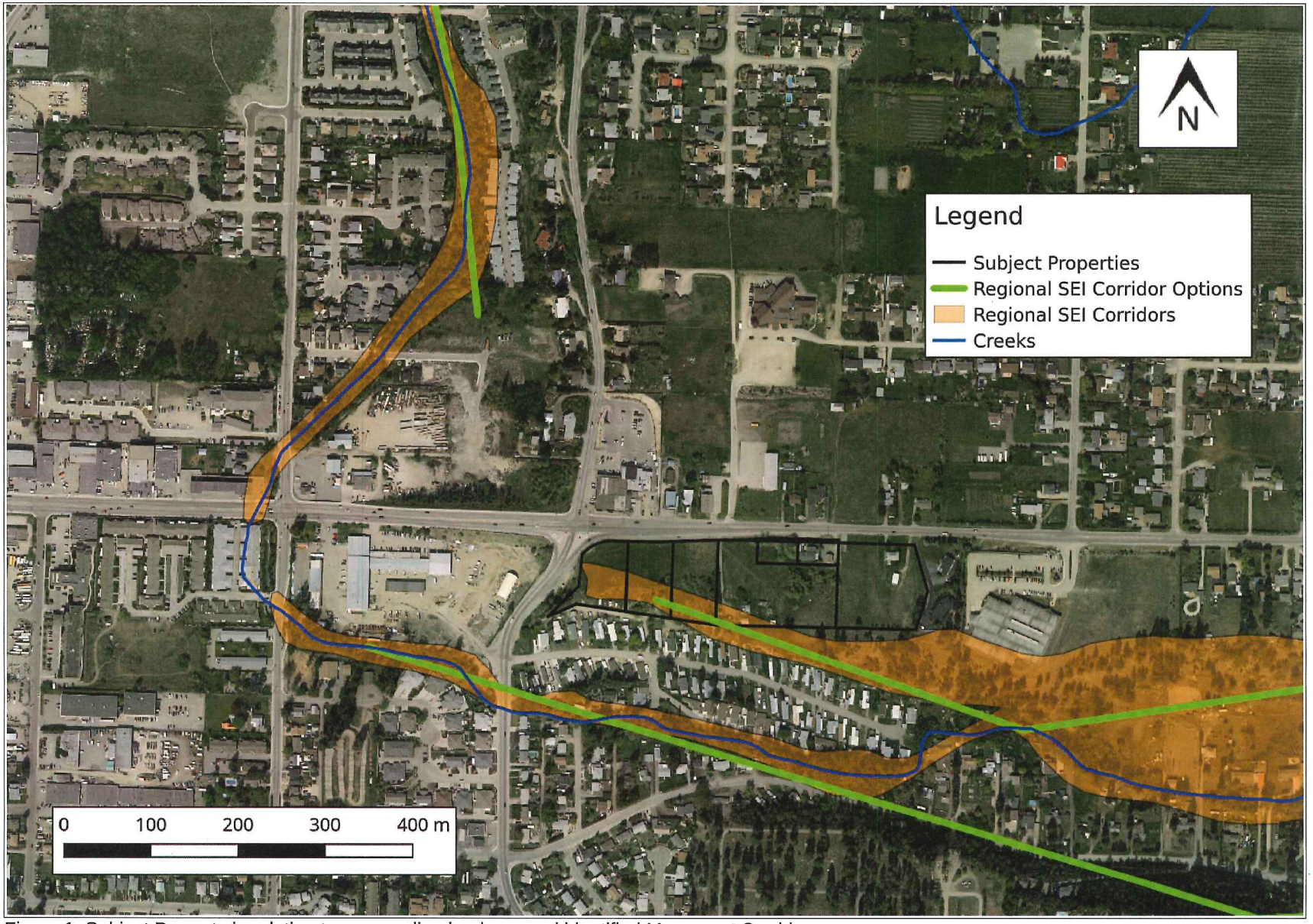

Figure 1. Subject Property in relation to surrounding land-use and identified Movement Corridors.

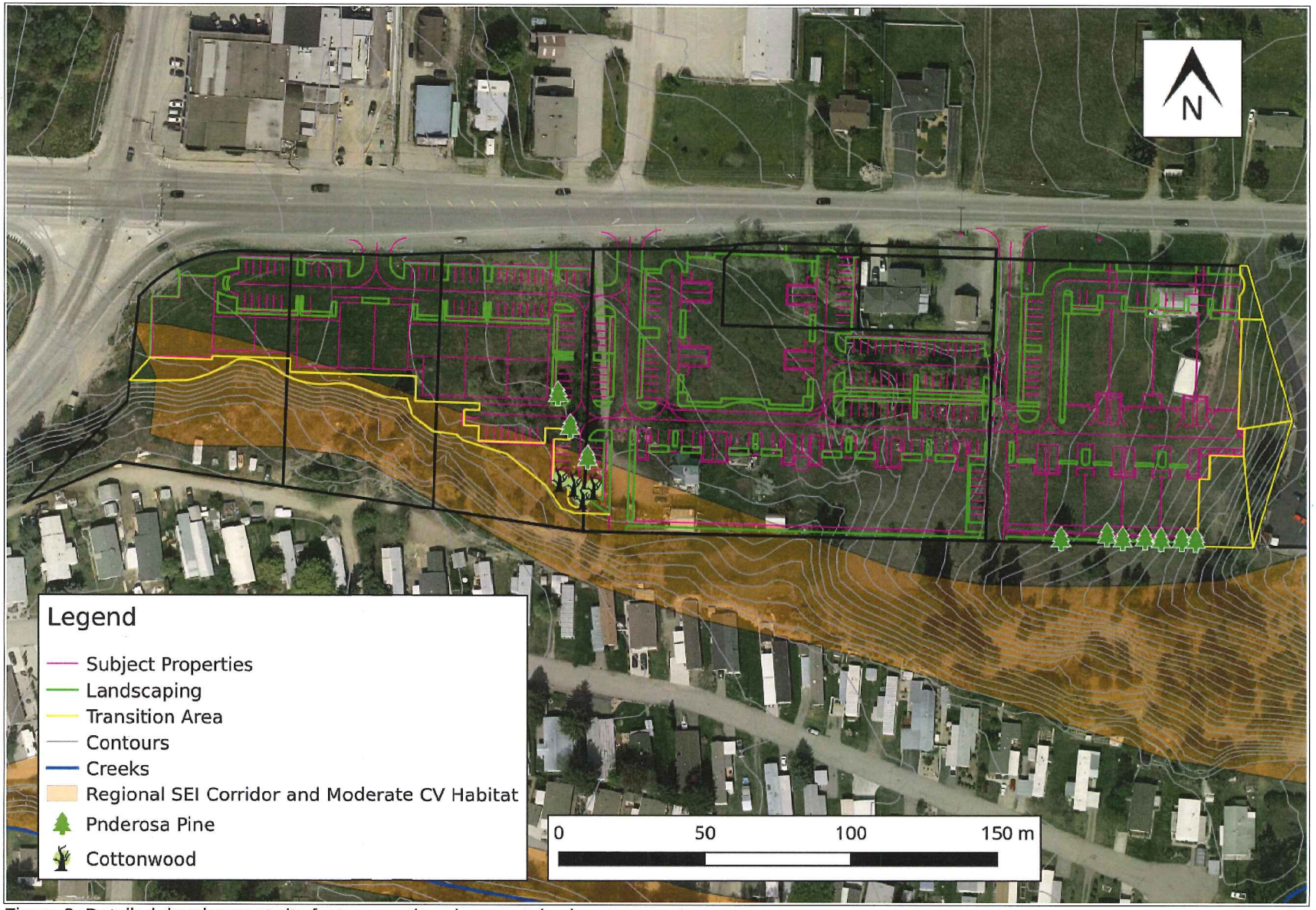

Figure 2. Detailed development site features and environmental values.

Photo 1. View of good quality forested PB habitat in movement corridor south of Lot 5012 (facing SSW) – Nov 13, 2018.

Photo 2. View of west end of wildlife movement corridor, degraded WB grassland slope and PB forest patch at end (facing W) – Nov 13, 2018.

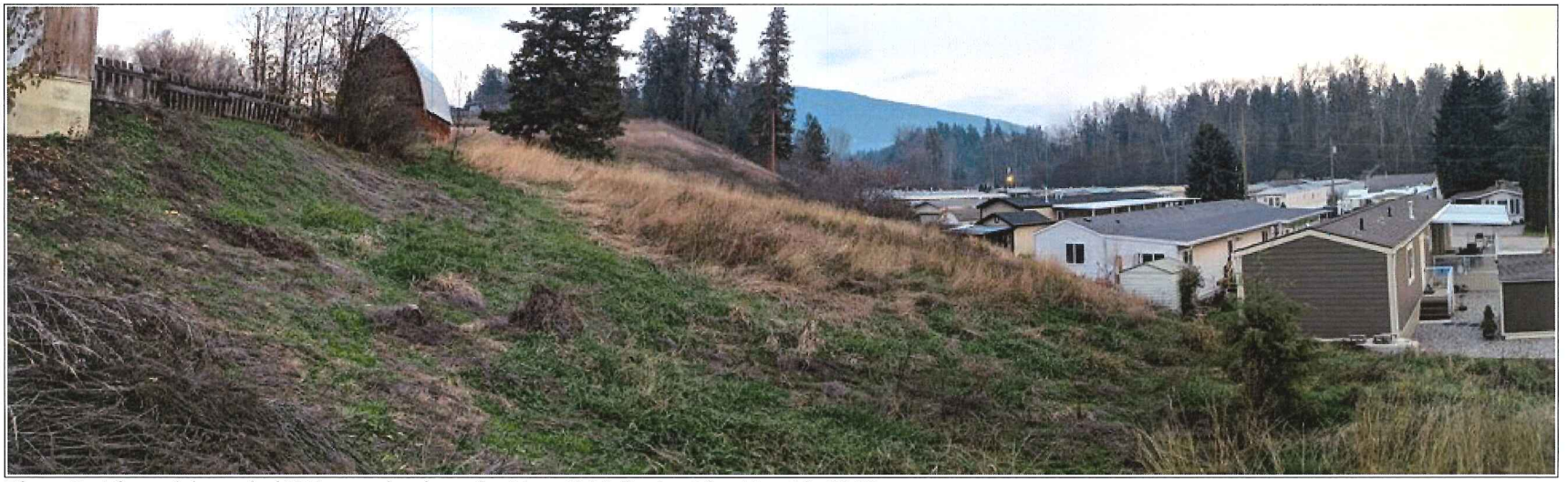

Photo 3. View of degraded WB grassland south of Lot 4824 (facing E) – Nov 13, 2018.

Photo 4. View of CF and UR (centre and far right) habitats (facing W) – Nov 13, 2018.

Photo 5. Another view of CF looking toward movement corridor below edge of horizon (facing S) – Nov 13, 2018.

APPENDIX 1. Potential Subject Property Weed Control Measures

Chemical Methods to Control Sulphur Cinquefoil			
Chemical	**Trade Name**	**Application Timing**	**Remarks**
2,4-D	Several names Killex, etc	Postemergence when plants are in the pre-bud stage	• broadleaf-selective and safe on most grasses. • It has minimal soil activity. • Repeat application is usually required. • Do not apply when outside temperatures exceed 80°F.
Aminopyralid	Milestone	Postemergence when plants are in spring rosette to pre-bud stage.	• safe on most grasses, • applications can decrease seed production in some annual and perennial grass species
Picloram	Tordon 22K	Postemergence when plants are in the pre-bud stage or to fall regrowth.	• Picloram controls a wide range of broadleaf species and has relatively long soil residual activity. • well-developed grasses are not usually injured by labeled use rates

Mechanical and Chemical Methods to Control Scotch Thistle			
Control Technique	**Application Season**	**Number of Treatments**	**Remarks**
digging	Before flower heads open	Once should suffice	• Small infestations can be removed by manual methods. • Digging is effective and the preferred manual removal method. • When digging, sever the root below the soil surface (i.e. with polaski or shovel)
Note: The combination of cutting tall plants prior to seed emergence, combined with spraying the remaining rossette of leaves near the ground, with and appropriate chemical spray, will help to deplete the plants root reserves, and likely increase killing efficiency.			
Chemical	**Trade Name**	**Application Timing**	**Remarks**
2,4-D	Several names Killex, etc	Post emergence from rosette to beginning of bolting, or fall rosette. Most effective on small rosettes.	• Often tank-mixed with chlorsulfuron or dicamba for quicker burndown. • Does not control large bolting plants. • broadleaf-selective and safe on most grasses. • It has minimal soil activity. • Do not apply when outside temperatures exceed 80°F.
Aminopyralid	Milestone	Post emergence from the rosette to young bolting stage.	• Longer soil residual than clopyralid. • Safe on most grasses, • Applications can decrease seed production in some annual and perennial grass species. • Provides over 90% control when applied to rosettes. • For post emergence applications, adding a non-ionic surfactant (0.25 to 0.5% v/v spray solution) enhances control under adverse

			conditions; this is not normally necessary.
Glyphosate	Roundup, Accord XRT II, and others	Post emergence to rapidly growing plants from the rosette to early bolting stage.	• will only provide control in the year of application, and will not kill seeds or inhibit germination the following season. • has no soil activity and is nonselective. • It can create bare ground conditions that can make an area susceptible to weed recruitment. • In areas with desirable vegetation, use spot treatment. • Glyphosate is a good control option if reseeding is planned shortly after application, as it will not injure seedlings emerging after application.

Biological and Chemical Methods to Control Knapweed			
Biological Controls			
As an additional alternative Contact John Friesen (RDNO bylaw enforcement) to see about arranging a release of biological control agents in Middleton Mountain Park.			
Chemical	**Trade Name**	**Application Timing**	**Remarks**
aminopyralid	Milestone	any time during the growing season, including fall when plants are actively growing	Adv – low use rates (5 to 7 fl oz product per acre) and safe near water
clopyralid	Transline	applied during late bolt or bud stages, and least effective when applied after flowering (fall)	Rate - 2/3 pint per acre Adv – safe for conifers and no decrease in forb diversity Disadv – cannot be used on sites with course-textured soil and shallow groundwater.
aminopyralid + 2,4-D	GrazonNext HL	any time during the growing season or fall	Rate - 1.5 to 2 pints per acre Controls wider spectrum of broadleaf species compared to Milestone alone, but may also increase injury to desirable forbs

TRANSPORTATION PLANNERS AND ENGINEERS

Attachment 11

bunt &associates

5012 Silver Star Road, Vernon, BC

Transportation Impact Assessment

Final Report V02

Prepared for

Silver Star Gateway Business Park Ltd.

Date

January 25, 2019

Project No.

04-18-0391

January 25, 2019
04-18-0391

Marco Oballa
CEO
Silver Star Gateway Business Park Ltd.
#207 - 3975 North Road
Burnaby, BC V3J 1S2

Dear Mr. Oballa:

Re: 5012 Silver Star Road, Vernon BC
Transportation Impact Assessment

Bunt & Associates are pleased to present the following Transportation Impact Assessment (TIA) report for a proposed five building Light Industrial and Commercial development. The site is located at 5012 Silver Star Road in Vernon, BC.

Access alterations have been undertaken by Silver Star Gateway Business Park to remove a previously desired access from the Silver Star Road frontage due to its proximity to the Silver Star Road and Pleasant Valley Road intersection.

This report offers a review of the site's proposed parking supply which is consistent with Bylaw when the three phased development is assessed as a whole but represents a slight variance from Bylaw when Phase One and Two are observed independently. Despite the low anticipated transportation impact of the proposed development the report does include recommendations to assist the development to further reduce its potential impact including transportation demand management strategies aimed to minimize the development's parking demand and corresponding traffic impact.

We look forward to continued correspondence on this file.

Best regards,
Bunt & Associates

Jason Potter, M.Sc. PTP
Senior Transportation Planner

CORPORATE AUTHORIZATION

Prepared By: Jason Potter, PTP
Senior Transportation Planner

Bunt & Associates Engineering Ltd.
530- 645 Fort Street
Victoria, BC V8W 1G2
Canada

Reviewed By: Tyler Thomson, RPP PTP
Transportation Planner

Telephone: +1 250 592 6122

Date: January 25, 2019
Project No. 04-18-0391
Status: Final

TABLE OF CONTENTS

EXHIBITS

TABLES

EXECUTIVE SUMMARY

Background

Silver Star Gateway Business Park Ltd is proposing to introduce a three phase, five building commercial and light industrial development at 5012 Silver Star Road in Vernon, BC.

Traffic Operations

No significant traffic impacts are anticipated and as such no road network mitigation measures are recommended with the exception of a slight road width extension on Silver Star Road's south edge which can be completed during the finishing of this road frontage.

The proposed development is anticipated to generate approximately 166 two-way vehicle trips during the weekday PM peak hour. This equates to approximately one vehicle entering the site and two vehicles leaving the site per minute during the weekday PM peak hour period.

The adjacent Silver Star Road and Pleasant Valley Road intersection is forecasted to operate within its capacity limits with, or without the proposed development.

Vehicle Access

Bunt recommends the Silver Star Road frontage have just two access points instead of the proposed three Silver Star Road accesses; with a third access point instead from Pleasant Valley Road. This will represent an update to the site plan presented herein.

Parking

Phase One on its own will be approximately 20 spaces short of the Bylaw required vehicle parking supply. After Phase Two the site will be three spaces less than the Bylaw requirement. Phase Three, however, provides an additional 108 spaces which is greater than the requirements for that commercial Phase. With Phase Three, the site's overall parking supply of 264 spaces is compliant with Bylaw required minimums for the whole site and is in fact 48 spaces above Bylaw requirements.

A review of other interior municipalities as well as the Institute of Transportation Engineer (ITE) Parking Generation Manual (4th Edition) suggest that the proposed parking supply is appropriate for the proposed development. It is our opinion that the Phase One and Phase Two combined parking supply can accommodate Phase One and Phase Two parking demand including the potential addition of mezzanine area to the Light Industrial land uses of Phases One and Phase Two if these are desired by future light industrial tenants. This parking reduction below Bylaw rates (for Phases One and Two) can be considered as a step towards the promotion of alternative modes of transportation when supported with recommended Transportation Demand Management strategies.

The proposed development also has the advantage of being able to review its parking supply needs after the occupation of Phase One and Phase Two then readjust subsequent phase parking supply if it is desirable.

It is recommended that the development review its parking supply six months after occupation of Phases One and Phase Two. This can be done by observing peak period weekday parking occupancy over three weekdays. If a parking shortage is observed then the developer can either provide additional spaces with Phase Three or reduce Phase Three density.

Bicycle Parking

It is recommended that the development provide Class I (long-term) and Class II (short-term) bicycle parking spaces to meet or exceed Bylaw requirements. Specifically we recommend the development provide 12 Class II spaces for Phase One (this exceeds bylaw required 10 spaces), an additional 12 Class II spaces for Phase Two, and up to 17 additional Class II spaces for Phase Three (for a total of 41 Class II spaces). 6 Class I bicycle spaces are proposed with Phase Three of the development.

Transportation Demand Management

It is recommended that the developer provide a bicycle repair station which should be placed near a pool of Class II bicycle parking spaces.

It is recommended that the developer provide cycling lanes or amenities on its Silver Star Road frontage that are consistent with Silver Star Road's north edge or City of Vernon's plans for a multi-use pathway.

1. INTRODUCTION

1.1 Study Purpose

Silver Star Gateway Business Park Ltd. is proposing to introduce a three phase, five building Light Industrial and Commercial development at 5012 Silver Star Road in Vernon, BC. The location of the site is shown in **Exhibit 1.1**.

As part of the project approvals process, the City of Vernon has requested a Transportation Impact Assessment (TIA) report.

1.2 Report Outline

This TIA report is structured as follows:

- Section 2 provides a review of existing street network and transportation conditions in the study area;
- Section 3 provides a site plan design review including site access, parking and loading;
- Section 4 provides future traffic conditions analysis;
- Section 5 offers potential Transportation Demand Management strategies for the development; and,
- Section 6 offers a summary of our findings and recommendations.

Exhibit 1.1
Site Location

04-18-0391

5012 Silver Star
October 2018

bunt & associates

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Exhibit 1.1: Site Location

2. EXISTING CONDITIONS ANALYSIS

2.1 Road Network

The study area road network is illustrated in **Exhibit 2.1**.

West of the Pleasant Valley Road intersection, Silver Star Road extends to the west with two travel lanes in each direction and left turn lanes at major intersections. West of Pleasant Valley Road, Silver Star Road is referred to as 48th Avenue.

East of the Pleasant Valley Road intersection, Silver Star Road extends to the east with two eastbound receiving lanes; these two lanes merge into one eastbound travel lane for 210m which represents the majority of the proposed development's Silver Star Road frontage. In addition, there is a westbound acceleration lane that extends from the intersection's northbound to eastbound right turn movement. This acceleration lane merges into the eastbound travel lanes approximately 85m from the intersection. There are shoulders present on each side of Silver Star Road.

Pleasant Valley Road located on the site's west edge has a two lane cross section with one travel lane in each direction and shoulders on each side. The speed limit along Pleasant Valley adjacent to the site is 50km/hour.

The Silver Star Road and Pleasant Valley Road four leg intersection operates under signal control. The Silver Star Road and Pleasant Valley Road intersection has westbound and eastbound left turn lanes. The eastbound Silver Star Road approach has an approximate 45 meter left turn lane plus taper length. The westbound approach has an approximate 55 metre left turn lane plus taper length. The traffic signal does not have separate left turn phases.

2.2 Existing Conditions Data Collection

Traffic volume data was collected at the Silver Star Road and Pleasant Valley Road intersection on Wednesday October 3rd, 2018, from 4:00 to 5:30 pm. A review of area datasets confirm the weekday PM peak hour typically has higher volumes than the weekday AM peak hour. The weekday PM peak hour occurred from 4:00 pm to 5:00 pm. A review of nearby Bunt and Ministry of Transportation and Infrastructure (MOTI) data sets confirms this peak hour.

Exhibit 2.2 illustrates the existing (2018) weekday PM peak hour traffic volumes at the intersection (as well as the traffic operations which are discussed in Section 2.3.2).

During our site visit, spot counts were also collected at the Pearson Road and Silver Star Road intersection. These volumes were collected in case they were needed but do not appear in our study area analysis.

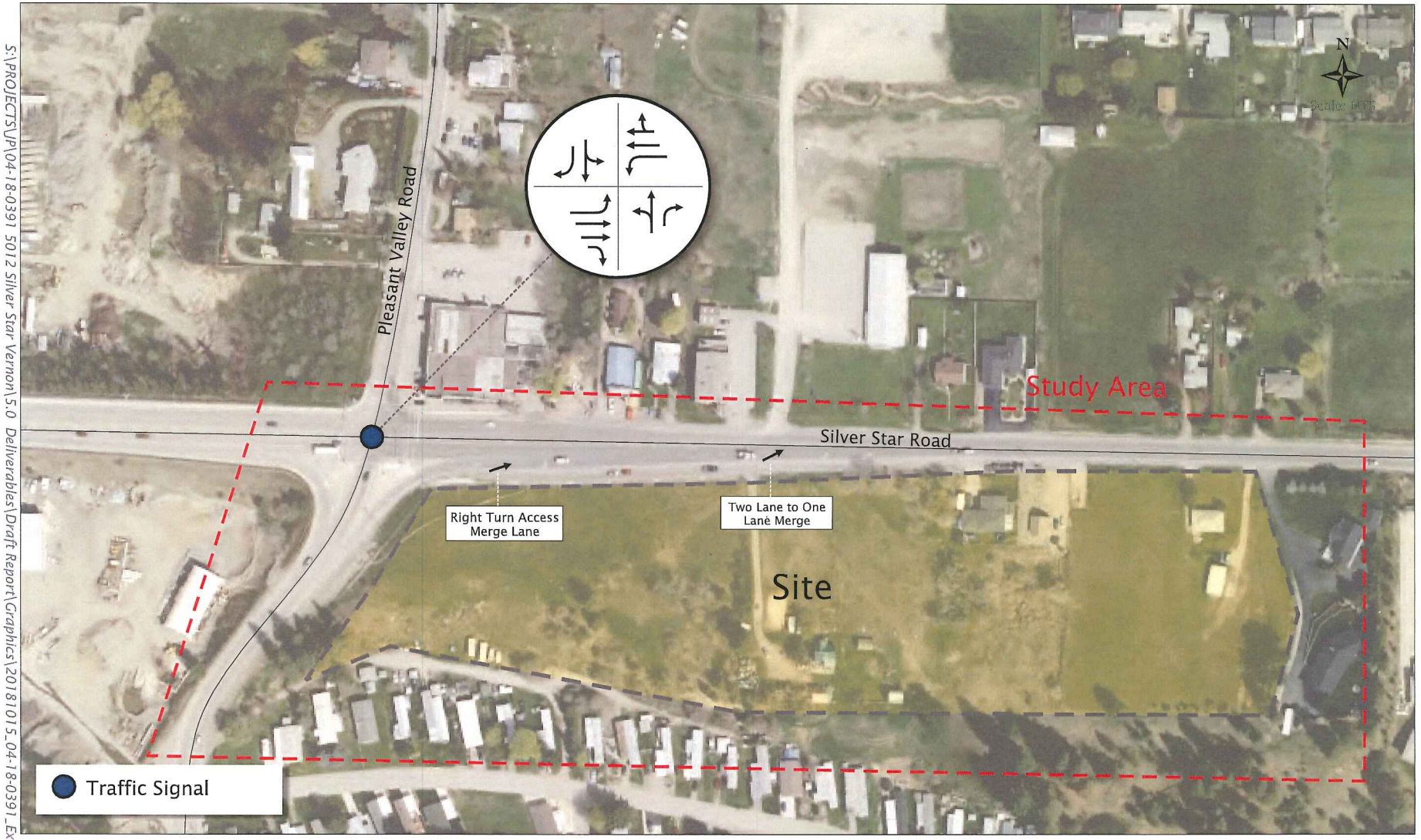

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Exhibit 2.1

Study Area & Laning

04-18-0391

5012 Silver Star
October 2018

bunt &associates

2.3 Existing Traffic Operations

2.3.1 Methodology

The study intersection's traffic operations were evaluated using Trafficware's Synchro/SimTraffic 9.0 traffic analysis software. This software uses standard procedures to test the Volume to Capacity ratio (V/C) and delay-based Level of Service (LOS) at each intersection.

A V/C ratio less than 0.90 typically indicates acceptable traffic conditions with sufficient capacity to accommodate demands; a V/C ratio between 0.90 and 0.95 indicates a near-capacity traffic condition with considerable delays and vehicle queuing. A V/C ratio over 0.95 indicates that traffic conditions are close to saturated or saturated, while a V/C ratio above 1.00 indicates traffic demand exceeds the available capacity.

For unsignalized intersections SimTraffic results are reported as SimTraffic provides a study area wide micro-simulation which therefore takes into account the gaps provided by the nearby traffic signal. The SimTraffic modeling software estimates 95th percentile peak hour delays which were generated using three random number generated simulation runs each of 20 minute intervals. The Level of Service ranges from LOS 'A' conditions with minimal delay (< 10 sec per vehicle) through to LOS 'E' 'near capacity' conditions (> 35 sec to ≤ 50 sec per vehicle) and LOS 'F' 'over-saturated' conditions (> 50 sec per vehicle).

2.3.2 Results

As shown in **Exhibit 2.2** the Silver Star Road and Pleasant Valley Road intersection operates well within capacity without significant delays during the existing weekday PM peak hour period. V/C ratios for all traffic movements are at or under 0.45 indicating ample intersection capacity.

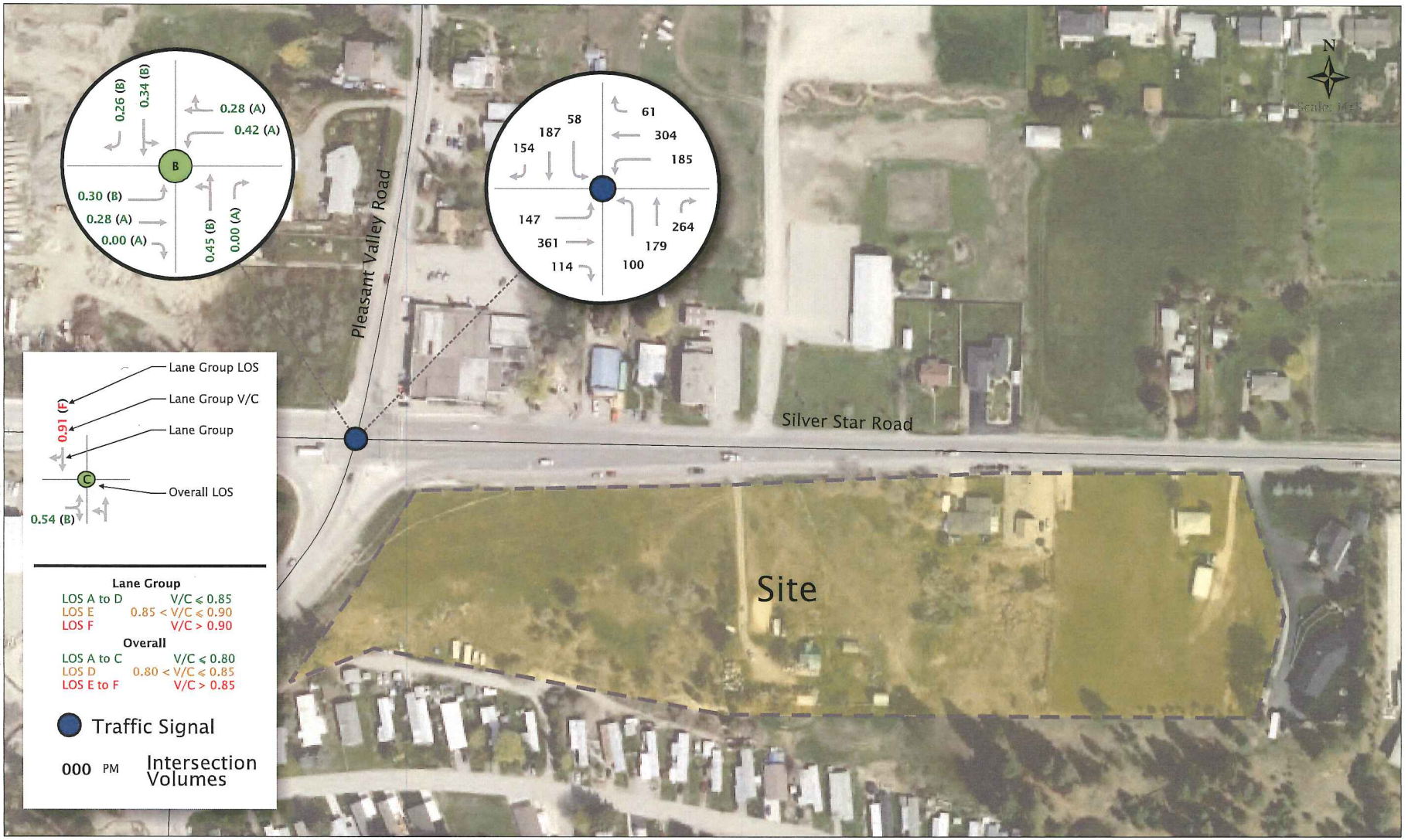

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Exhibit 2.2

Existing (2018) PM Peak Hour Vehicle Volumes & Traffic Operations

04-18-0391

5012 Silver Star
October 2018

bunt & associates

2.4 Transit & Walking

BC Transit's bus route 2 (Pleasant Valley) provides the site with approximate 30 minute service headways during weekday AM and PM periods. This route has a bus stop adjacent to the proposed development site, along the site's Pleasant Valley Road frontage.

Transit is therefore considered a viable commuting option for employees at the future 5012 Silver Star Road development.

There are no existing sidewalks along either the Pleasant Valley Road or Silver Star Road site frontages.

2.5 Cycling

The City of Vernon has been developing cycling facilities along 48th Avenue west of the development site, including a separated multi-use pathway. West of the site, 48th Avenue has painted bike lanes of approximately 1.2 m width with curbs along both road edges.

East of the site, Silver Star Road has a painted bike lane/ shoulder along both road edges.

There is currently a painted bike lane along Silver Star Road's north edge across from the site. Silver Star Road's south edge, fronts the site, it has an unfinished gravel shoulder road edge.

Pleasant Valley Road, where developed has painted bike lane shoulders of approximately 1.2 m width.

3. SITE PLAN REVIEW

3.1 Proposed Development

The development is planned to be constructed in three phases. The development will generally be built from east to west. The phased development approach allows for a future review of parking provisions after the occupation of Phases One and Two. The first two phases are comprised of four light industrial land use buildings. The third phase, with one building introduces commercial land use to the project. Specific tenants are not determined at this time for any of the five buildings. Each of buildings is divided into multiple businesses/ tenants.

For the purposes of this study we are examining the impacts of the full build out site plan.

The breakdown of the full development is provided below in **Table 3.1**.

Table 3.1: Development Summary – Build-Out

PHASE	COMPONENT	UNITS
1	Light Industrial / Office	3,418 m^2 (36,792 ft^2)
2	Light Industrial / Office	4,537 m^2 (48,837 ft^2)
3	Commercial/ Retail	2,833 m^2 (30,496 ft^2)

The proposed development site plan is shown in **Exhibit 3.1**.

N

Scale: NTS

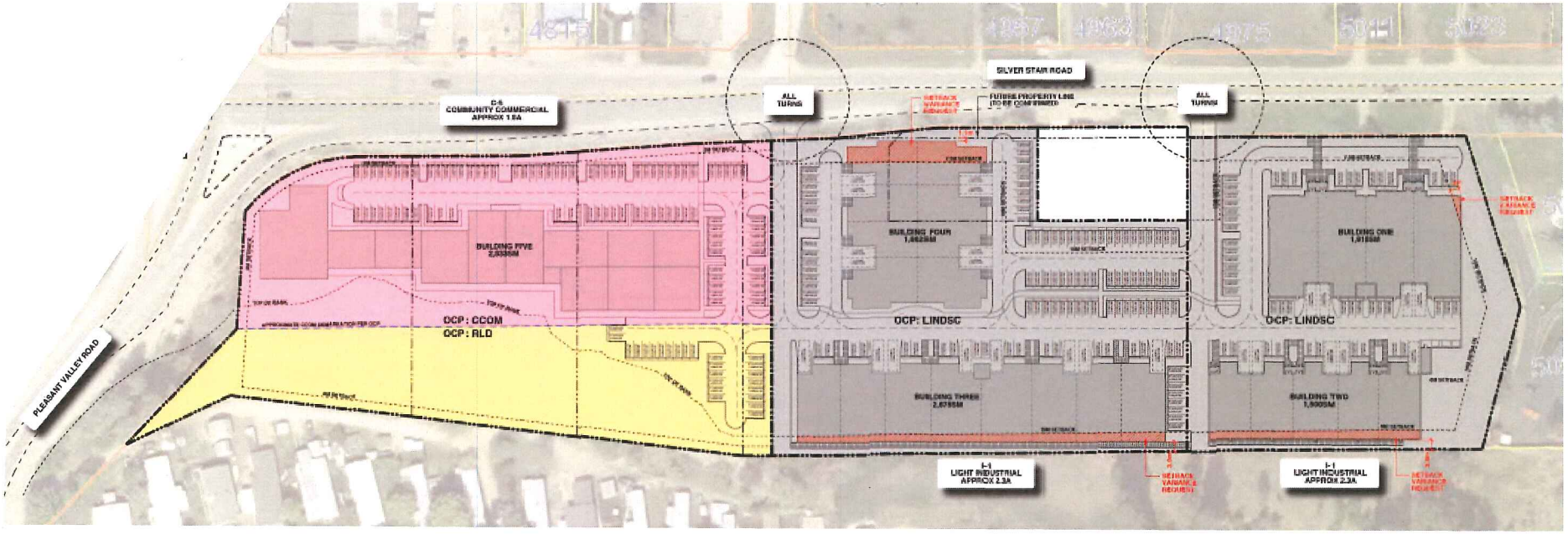

Exhibit 3.1
Site Plan

04-18-0391

5012 Silver Star
January 2019

bunt & associates

3.2 Site Access

The current site plan indicates three access points to/ from Silver Star Road. These three access points are referred to herein as West Access, Middle Access and East Access. The Middle Access and the East Access are proposed to be full movement accesses, while the West Access was proposed to be a right-in/ right-out only access.

Upon review Bunt recommends the development consolidate its proposed three Silver Star Road access points into two Silver Star Road access points by removing the proposed West Access.

This is due to various factors including:

- It's proximity to the adjacent Silver Star Road and Pleasant Valley Road intersection;
- It's alignment being near Silver Star Road's right turn acceleration lane merge point with the two eastbound travel lanes; and,
- An alternative access from Pleasant Valley Road would help to better distribute site traffic and would utilize a lower volume road frontage.

The developer has agreed to modify the site plan to remove the West Silver Star Road Access and replace it with an access on Pleasant Valley Road that is as far south and away from the Silver Star Road and Pleasant Valley Road intersection as possible. Due to the abnormal land parcel shape estimate this Pleasant Valley Road access would be nearly 80 m south of the intersection.

The proposed Middle Access will be entering Silver Star Road during the two to one lane merge of eastbound traffic on Silver Star Road. Silver Star Road's two eastbound lanes have a total width of approximately 6.8m. At the proposed Middle Access this width is reduced to approximately 6.1m as the two lanes begin to merge into one lane.

We recommend the development consider extending Silver Star Road's westbound two lane width an additional approximate 10m meters in order to allow for a right turn movement into the site without intrusion into the adjacent travel lane or future cycling lane. This would require a slight (approximately 0.7 m) road widening at the Middle Access location for approximately 10m and the re-painting of the merge arrows.

3.3 Vehicle Parking

3.3.1 Bylaw Vehicle Parking Requirements

The City of Vernon Zoning Bylaw requires 2.0 parking spaces per 100m² of Multiple Occupancy Industrial Uses, and also 2.0 spaces per 100m² for Multiple Occupancy Commercial & Industrial Use Offices. The 2.0 spaces per 100m² rate was therefore applied to all components of the proposed development. **Table 3.2** below summarizes the City of Vernon Bylaw Parking requirements.

Table 3.2: Bylaw Vehicle Parking Rates and Requirements

PHASE	COMPONENT	UNITS	BYLAW RATE	REQUIRED PARKING SPACES
1	Light Industrial / Office	3,418 m² (36,792 ft²)	2.0 per 100 m²	68
2	Light Industrial / Office	4,537 m² (48,837 ft²)	2.0 per 100 m²	91
3	Commercial/ Retail	2,833 m² (30,496 ft²)	2.0 per 100 m²	57
	-	-	-	216

3.3.2 Proposed Parking Supply

The development's proposed vehicle parking supply is summarized in **Table 3.3**.

Table 3.3: Proposed Parking Supply

PHASE	COMPONENT	UNITS	PROPOSED RATE	PROPOSED PARKING SPACES	VARIANCE FROM BYLAW
1	Light Industrial / Office	3,418 m² (36,792 ft²)	1.4 per 100 m²	48	-20
2	Light Industrial / Office	4,537 m² (48,837 ft²)	2.2 per 100 m²	108	+17
3	Commercial/ Retail	2,833 m² (30,496 ft²)	3.8 per 100 m²	108	+51
	-	-	-	264	+48

As shown in Table 3.3, the development will have 20 spaces less than that required by City of Vernon Bylaw for Phase One. The proposed Phase One parking rate equates to 1.4 spaces per 100 m². With Phase Two the development will have 156 spaces; therefore the overall parking deficit is reduced to 3 spaces from Bylaw. The combined Phase One and Two parking rate becomes 1.96 spaces per 100 m².

Phase Three, provides an additional 108 spaces which is greater than the requirement for that Phase and results in an overall parking supply of 264 spaces which exceeds Bylaw required minimums for the site as a whole by 48 spaces.

3.3.3 Parking Analysis

A review of other municipalities in the BC Interior as well as the Institute of Transportation Engineer (ITE) Parking Generation Manual (4th Edition) suggests that the City of Vernon' Bylaw vehicle parking requirements for the Light Industrial land use is at the high end of the requirement spectrum. **Table 3.4** below summarizes the ITE Light Industrial rate as well as the General or Light Industrial rate at neighbouring communities.

Table 3.4: Comparison of Bylaw and ITE Parking Rates

COMPARABLE	BYLAW RATE
City of Vernon	***2.0 per 100 m²***
City of Kelowna	2.0 per 100 m²
City of Kamloops	1.5 per 100 m²
City of Penticton	0.5 per 100 m²
ITE Parking Generation Manual	0.81 per 100 m²

For cities the size of Vernon, Bunt typically advocates for a parking supply around 1.5 spaces per 100 m² of Light Industrial GFA depending on sustainable transportation options available to the subject site and measures taken by the developer to support these more sustainable transportation modes. The 1.5 per 100 m² of Light Industrial GFA parking rate also represents a median value of other similar Interior BC communities as shown in Table 3.4.

It is therefore our opinion that the proposed parking supply can accommodate site parking demand for each phase, if supported by Transportation Demand Management (TDM) measures as presented in Section 5 of this report. Furthermore, it is our opinion that the Phase One parking ratio of 1.4 spaces per 100 m² for Light Industrial land use could be employed overall to accommodate mezzanine area if it were to be introduced by Phase One or Phase Two tenants. This is further supported by Transportation Demand Management measures as presented in Section 5 of this report.

The proposed development has the advantage of being able to review its parking supply needs six months after the occupation of Phases One and Phase Two, then readjust Phase Three parking supply if it is desired at that time.

3.4 Bicycle Parking

Table 3.5 presents the required number of bicycle parking spaces.

Table 3.5: Bylaw Bicycle Parking Rates and Requirements

COMPONENT	UNITS	BYLAW RATE	REQUIRED PARKING SPACES
Light Industrial / Office	7,955 m² (85,629 ft²)	Class I: no requirement Class II: 0.3 per 100 m²	0 Class I 24 Class II
Commercial/ Retail	2,833 m² (30,496 ft²)	Class I: 0.2 per 100 m² Class II: 0.6 per 100 m²	6 Class I 17 Class II
-	-	-	**6 CLASS I** **41 CLASS II**

The bicycle parking requirements therefore equate to 24 Class II spaces for the first two Phases of the development (10 for Phase One and 14 for Phase Two) and an additional 17 Class II spaces for Phase Three (for a total of 41 Class II spaces) as well as 6 Class I bicycle spaces.

Class I spaces are generally secure and sheltered and would be intended for employee use. Class II spaces are short term spaces that are typically used by retail visitors.

3.5 Loading

Based on information provided by the developer, the largest vehicle expected to use the loading bays are 5-tonne trucks (SU9 vehicle). A minimum of one loading bay is provided for each Light Industrial building unit. **Table 3.6** presents City of Vernon Loading Bylaw requirements.

Table 3.6: Bylaw Loading Vehicle Parking Rates and Requirements

COMPONENT	UNITS	BYLAW RATE	REQUIRED PARKING SPACES
Light Industrial / Office	7,955 m^2 (85,629 ft^2)	1.0 per 1900 m^2	5
Commercial/ Retail	2,833 m^2 (30,496 ft^2)	1.0 per 1900 m^2	2
-	-	-	7

The site exceeds minimum loading bay requirements, which in this context is considered appropriate as it proposes loading bays for each tenant.

Bunt used AutoTURN (vehicle path simulation) software to test internal circulation for loading vehicles (SU9) to ensure loading vehicles are able to maneuver within the site and to/from the loading bays. The results of the AutoTURN analysis are presented in **Exhibit 3.2**. It is also noted that drive aisles within the proposed site meet industry standards. The site design is able to accommodate the required loading manoeuvres without issue.

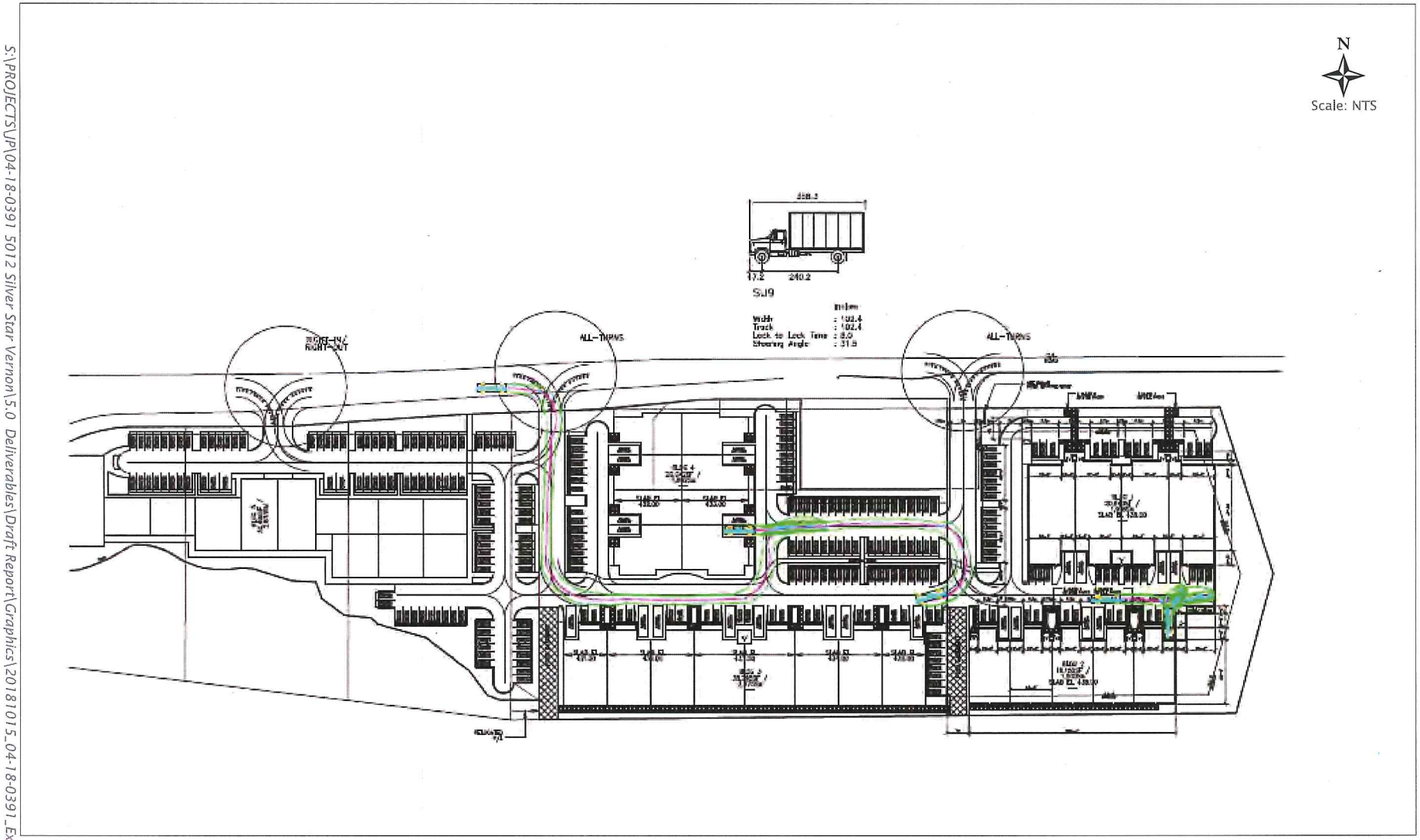

Exhibit 3.2

Site Circulation - AutoTurn

04-18-0391

5012 Silver Star
October 2018

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4. FUTURE TRAFFIC CONDITIONS ANALYSIS

4.1 Trip Generation

The estimated vehicle trip generation for the proposed development (at full build-out) is summarized in **Table 4.1**. The rates are based on ITE Trip Generation Manual Edition 9. The 9th edition was used instead of the more recent 10th edition because the rates in the 9th edition are more conservative. The General Light Industrial land use (land use code 110) category was applied to Buildings 1 through 4 (Phases One and Two). ITE's specialty retail centre (land use code 826) was used to calculated trips for Building 5 (Phase Three).

Table 4.1: Peak Hour Vehicle Trip Rates

COMPONENT	UNITS	PM PEAK HOUR		
		IN	OUT	TOTAL
Light Industrial / Office	7,955 m² (85,629 ft²)	0.20	0.77	0.97
Commercial/ Retail	2,833 m² (30,496 ft²)	1.19	1.52	2.71

Table 4.2 summarizes the anticipated future site generated vehicle trips for the proposed development based on the above rates.

Table 4.2: Weekday PM Peak Hour Vehicle Trip Volume Estimates

COMPONENT	UNITS	PM PEAK HOUR		
		IN	OUT	TOTAL
Light Industrial / Office	7,955 m² (85,629 ft²)	17	66	83
Commercial/ Retail	2,833 m² (30,496 ft²)	37	46	83
TOTALS		54	112	166 VPH

An analysis of internal site trips using NCHRP 8-51 Internal Trip Capture Estimation Tool suggests a small scale of internal trips as some employees may also visit the future Phase Three commercial land uses. However, for the site as a whole these deductions are anticipated to have minor impact and therefore to be conservative this discount was not applied to the site trip estimation.

4.2 Distribution and Assignment

Site trips were distributed in consultation with existing observed traffic patterns. Estimated site trips for the full build out development are presented in **Exhibit 4.1**.

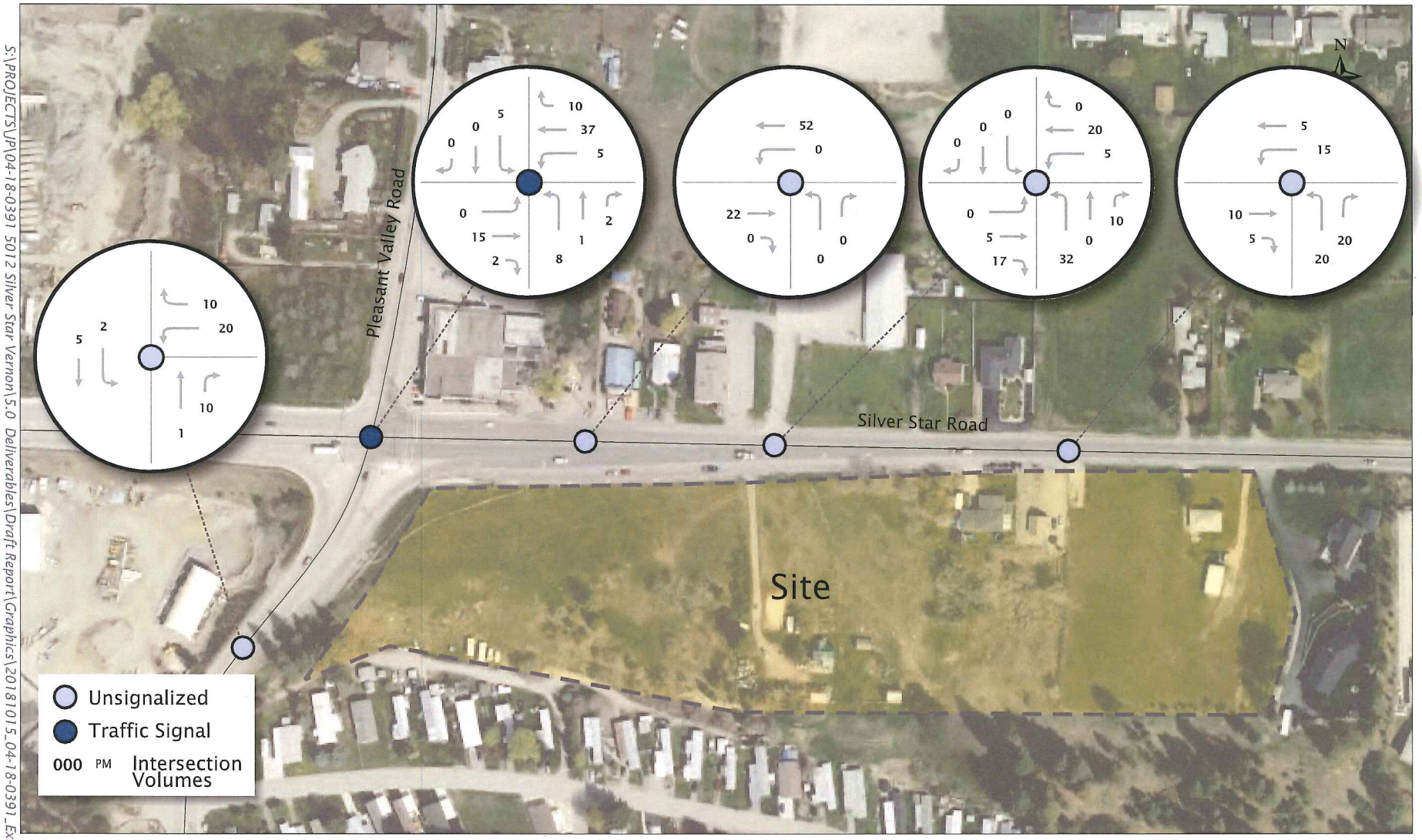

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Exhibit 4.1

Weekday PM Site Trips

04-18-0391

5012 Silver Star
October 2018

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4.3 Future Traffic Operations

4.3.1 Future Background Traffic Growth

Background traffic along Silver Star Road is both seasonal and off-peak due to the Silver Star Mountain Ski Resort which is located approximately 18 km east of the development site along Silver Star Road.

As the peak period for ski related activity is typically on weekends and during the early morning period it is generally not anticipated to occur during the adjacent street peak hour period or coincide with the weekday activity of Light Industrial land use.

MOTI volumes from various highway locations near Vernon indicate greater than typical growth over the past ten years. An industry conservative rate of 2% per year was applied to the existing traffic volumes to estimate future 2030 background volumes. This represents substantial growth over observed 2018 traffic volumes.

4.3.2 Future Background Traffic Operations

Future background PM traffic volumes and traffic operations during the opening day + 10 year scenario (2030) are shown in **Exhibit 4.2**. The background 2020 scenario represents relatively little change from existing 2018 volumes and therefore no operational analysis is reported here.

As shown in Exhibit 4.2 all intersections for the longer term Background 2030 scenario model operate within the acceptable operational thresholds outlined in Section 2.3.1.

4.3.3 Future Total Traffic Operations

Future total traffic operations examine the background future volumes with the addition of the proposed development's site trips.

Exhibits 4.3 and **4.4** illustrate the forecasted 2020 Total Weekday PM peak hour volumes and operations respectively. **Exhibits 4.5** and **4.6** illustrate the forecasted 2030 Total Weekday PM peak hour volumes and operations, respectively.

The Total 2030 scenario can be compared with the Background 2030 operations (i.e. without the proposed development) to assess the anticipated net impact of the proposed development.

As illustrated in Exhibits 4.4 and 4.6 all intersections in the Total 2020 and Total 2030 scenarios operate within the operational thresholds described in Section 2.3.1 during the weekday PM peak hour period.

Delays for vehicles exiting the site were determined to be within acceptable delay thresholds when using the SimTraffic model which takes into account the gaps produced by the adjacent Silver Star Road and Pleasant Valley Road signalized intersection.

4.3.4 Recommended Road Mitigations

At the location of the proposed Middle Access Silver Star Road's eastbound width is reduced to approximately 6.1m as the two lanes begin to merge into one lane. Just to the west, Silver Star Road's two eastbound lanes have a total width of approximately 6.8 m.

We recommend the development consider extending Silver Star Road's eastbound two lane width an additional 10 metres in order to allow for a right turn movement into the site without intrusion into the adjacent travel lane or future cycling lane. This would also require re-painting one (the westernmost) or all of the existing merge arrows. This also will result in a shorter taper length for the two to one lane merge. The merge currently occurs over an approximate 110 m length. BC MOTI Supplement to TAC Geometric Design Guide recommends a 110 m merge taper length for 50km/hour roads. This recommendation would reduce the merge length to approximately 100m. Despite this being below MOTI's recommended taper length the location being on the fringe of an urban area and its close proximity to a traffic signal (which helps to reduce vehicle speeds) this trade-off is considered worthy of consideration.

Despite our Synchro analysis indicating that left turn lanes on Silver Star Road are not required for capacity or operational reasons we understand the City of Vernon may wish to include a left turn lane into the site for westbound site entering vehicles.

If introduced we would suggest that just one of the two Silver Star Road accesses have a dedicated left turn lane due to the modest anticipated turn volumes and gaping impacts produced by the nearby Silver Star Road and Pleasant Valley Road intersection signal. The central access would be our recommended location for the left turn lane due to the required road widening area being entirely within the development site's frontage and it also being closer to the development's future Phase Three commercial land uses.

Bunt also recommends the addition of sidewalks, curbs and gutters along both the site's Silver Star Road and Pleasant Valley Road frontages. It is however also noted that the City of Vernon may instead wish to develop a multi-use path along this road frontage.

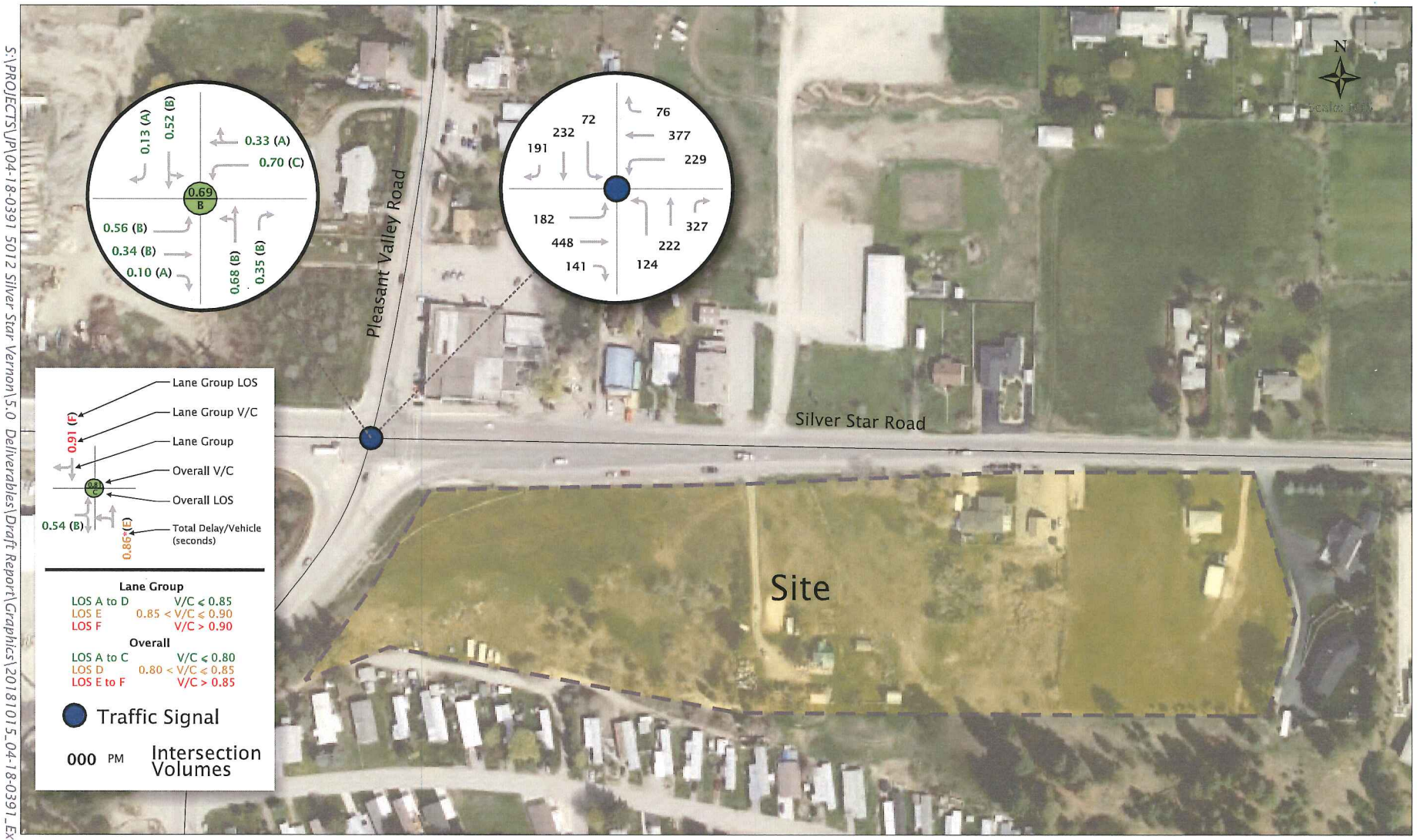

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Exhibit 4.2

Background 2030 PM Peak Vehicle Volumes & Traffic Operations

04-18-0391

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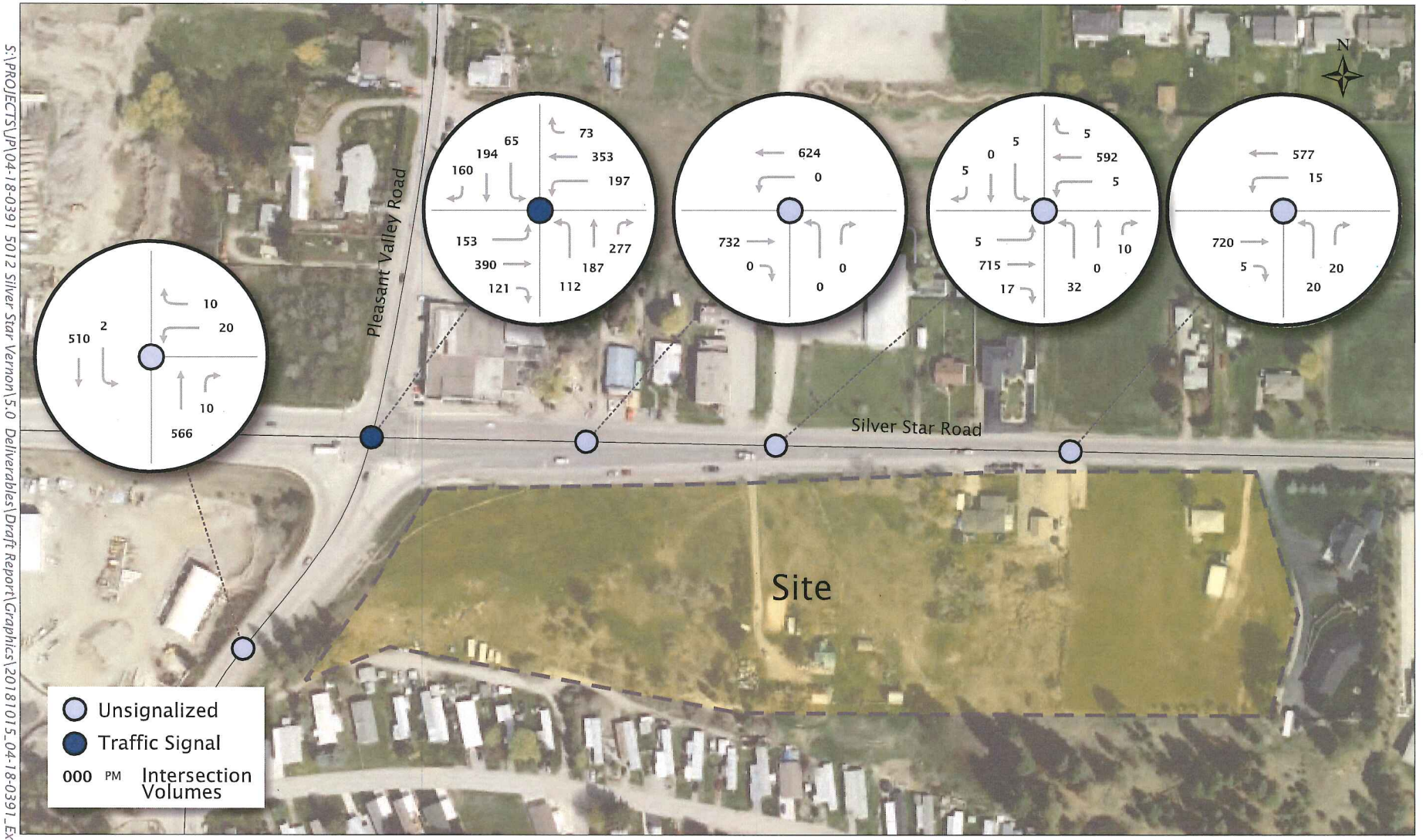

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Exhibit 4.3

Total (2020) PM Peak Hour Vehicle Volumes

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Exhibit 4.4

Total (2020) Traffic Operations

04-18-0391

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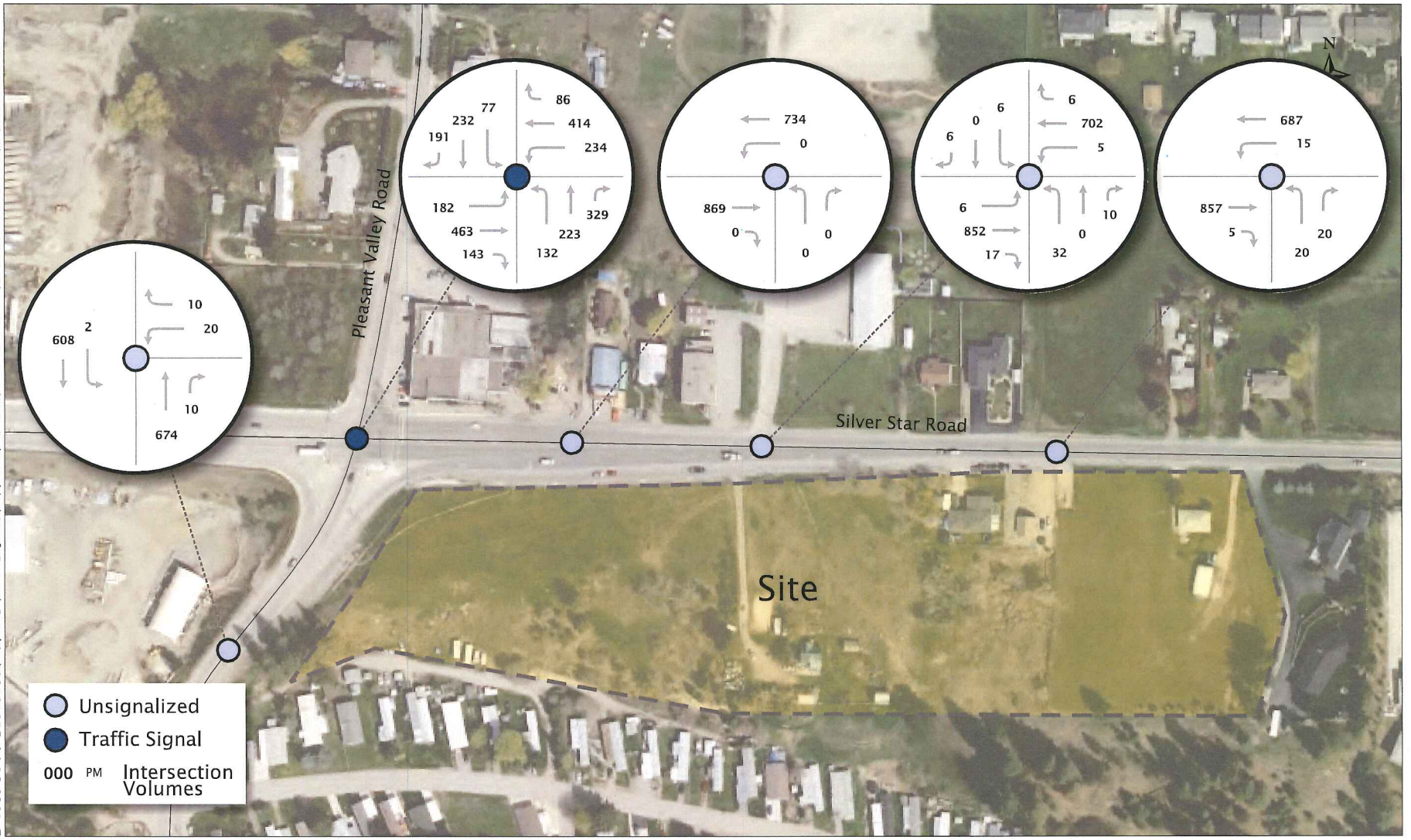

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Exhibit 4.5

Total (2030) PM Peak Hour Vehicle Volumes

04-18-0391

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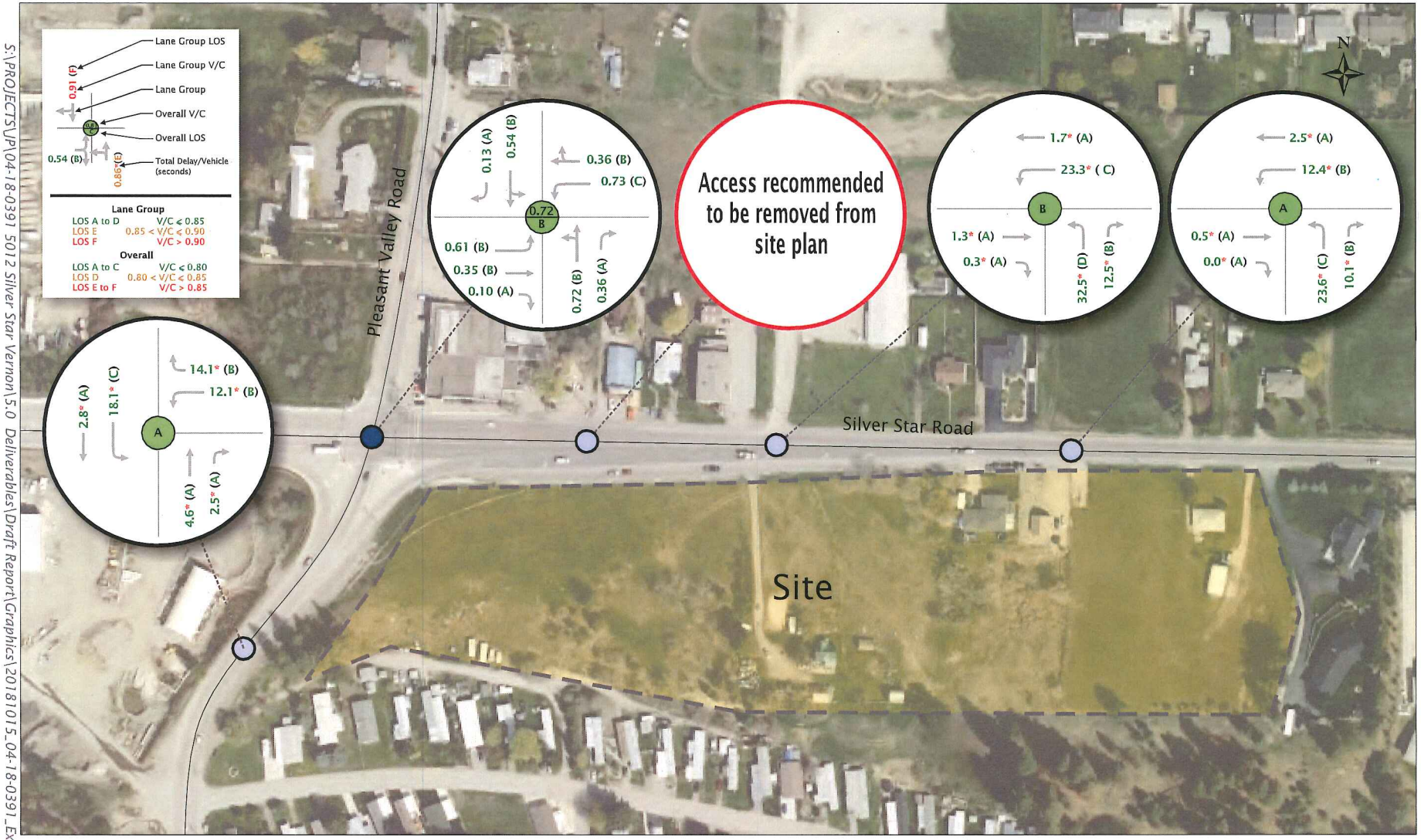

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Exhibit 4.6

Total (2020) Operations

04-18-0391

5012 Silver Star
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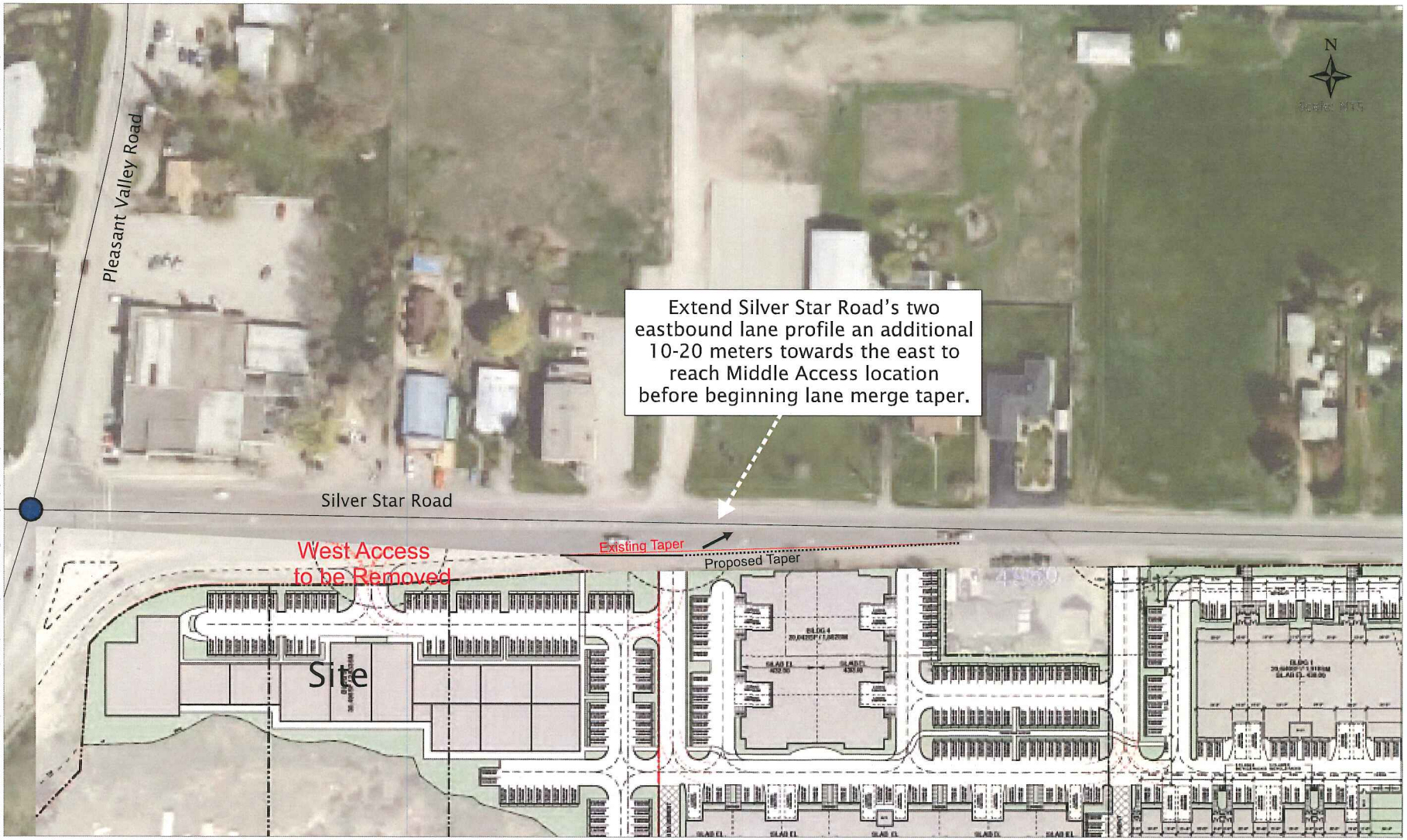

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Exhibit 4.7

Recommended Mitigation

04-18-0391

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5. TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) seeks to decrease private vehicle use by enabling other more sustainable modes of transportation.

The following elements are proposed as part of the TDM plan for the proposed development which are intended to encourage future employees to use travel modes other than single occupant vehicles and hence lower the proposed development's parking demand and corresponding vehicle trip rate.

5.1 Transit

The developer should commit to augmenting the pedestrian connection between the site and the bus stop on Pleasant Valley Road. This would include curb and sidewalk along the site frontage of both Pleasant Valley Road and Silver Star Road.

5.2 Cycling

5.2.1 Bicycle Parking

We recommend short term (Class II) bicycle parking that is highly visible and near building entrances (if possible). These bicycle parking spaces could be provided across two or three locations around the site. In addition, short term bicycle parking spaces should be made available near the entry of the future commercial building.

We recommend Class I and Class II spaces be provided to meet or exceed Bylaw requirements.

City of Vernon Bylaw requires a total of 24 Class II spaces for Phases One and Two (10 spaces for Phase One and 14 spaces for Phase Two). We recommend that 12 of these spaces be provided with the development of Phase One and a further 12 spaces be provided with Phase Two, therefore Phase One provision will exceed Bylaw requirements by two spaces. All short term bicycle spaces should be placed in highly visible locations.

5.2.2 Bicycle Repair Station

To support employee cycling we recommend the developer consider providing a bicycle repair station within the development adjacent to a pool of bicycle parking (an example image of a bicycle repair station is provided). The developer has indicated that a bicycle repair station could be incorporated into the development's third phase.

Image: Example of Bike Repair Station

6. CONCLUSIONS & RECOMMENDATIONS

6.1 Conclusions

The proposed development is anticipated to generate approximately 166 two-way vehicle trips during the weekday PM peak hour. This equates to approximately one vehicle entering the site and two vehicles leaving the site per minute during the weekday PM peak hour period.

Traffic operations are anticipated to remain within capacity thresholds. The nearby Silver Star Road and Pleasant Valley Road intersection was shown to provide adequate gaps in traffic to allow site vehicles to exit the site without delays. No delay issues warranting mitigation were noted for vehicles on Silver Star Road that share a through and westbound to southbound left turn movement from Silver Star Road (no left turn lanes on Silver Star Road warranted as per Synchro software capacity analysis).

This peak trip generation period is not anticipated to coincide with the adjacent road network peak traffic period which is believed to be substantially influenced by Silver Star Mountain Resort traffic. During peak weekend Silver Star Mountain Resort traffic periods the majority of the proposed development will not be open.

The site and its adjacent transportation infrastructure are well suited for the proposed land uses.

The site will be short from Bylaw required parking after Phase One by 20 spaces and after Phase Two it will be short from Bylaw by 3 spaces. The proposed supply is however considered appropriate for the proposed development based on a comparison of other similar communities and based on industry parking supply standards. Additionally, Phase Three offers up to an additional 108 spaces which is greater than the requirement for that commercial Phase and with that supply the site's overall parking supply of 264 spaces becomes compliant with Bylaw required minimums and is in fact 48 spaces above Bylaw requirements for the total site.

It is our opinion that the proposed parking supply can accommodate site parking demand for each phase if supported by TDM measures as presented in Section 5 of this report. Furthermore, it is our opinion that the Phase One parking ratio of 1.4 spaces per 100m^2 can accommodate Phase One and Phase Two parking demand including the potential addition of mezzanine area to the Light Industrial land uses of Phases One and Two if these are desired by future light industrial tenants.

The proposed development has the advantage of being able to review its parking supply after the occupation of Phases One and also after Phase Two, then if necessary readjust subsequent phase parking supply if it is determined to be needed. In the meantime a leaner vehicle parking supply is supported as the development will take steps towards fostering more sustainable modes of travel such as transit use and cycling.

6.2 Recommendations

1. Bunt recommends an alternative site access configuration with two access points onto Silver Star Road and one onto Pleasant Valley road rather than the three proposed accesses on Silver Star Road.

2. At the location of the proposed Middle Access the travel lane width is reduced to approximately 6.1m as the two eastbound lanes begin to merge into one eastbound lane. We recommend the development consider extending Silver Star Road's eastbound two lane width an additional approximate 10 metres in order to allow for a right turn movement into the site without intrusion into the adjacent travel lane or future cycling lane. This would require a slight deflection of the curb lane for approximately 10 m and the re-painting of the merge arrows. This would also result in a shorter, approximately 100m taper length for the two to one lane merge.

3. We recommend curb and sidewalks be provided along the site's Pleasant Valley Road and Silver Star Road frontages or the development allow for City of Vernon's potential plans to introduce a multi-use pathway along this site frontage.

4. Review parking supply after six months occupation of Phase One and again after Phase Two. This can be done by observing peak period weekday parking occupancy over three typical weekdays. If a parking shortage is observed then the developer can either provide additional spaces with the subsequent phase or reduce future phase density.

5. It is recommended that the development provide Class I and Class II bicycle parking spaces to meet or exceed Bylaw requirements. For the subject development we recommend 12 Class II spaces with Phase One and an additional 12 Class II spaces with Phase Two, then an additional 17 Class II spaces for Phase Three (for a total of 41 Class II spaces) as well as six Class I bicycle spaces with Phase Three.

6. It is recommended that the developer provide a bicycle repair station which should be placed near a pool of Class II bicycle parking spaces. This addition to the site could take place in Phase Three when the developer can adjust the layout to provide a common bicycle parking and repair area.

APPENDIX A

Synchro Output

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	147	361	114	185	304	61	100	179	264	58	187	154
Future Volume (veh/h)	147	361	114	185	304	61	100	179	264	58	187	154
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	160	392	0	201	330	66	109	195	0	63	203	167
Adj No. of Lanes	1	2	1	1	2	0	0	1	1	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	525	1416	633	481	1179	233	262	420	633	205	585	633
Arrive On Green	0.40	0.40	0.00	0.80	0.80	0.80	0.40	0.40	0.00	0.40	0.40	0.40
Sat Flow, veh/h	984	3539	1583	988	2947	583	384	1051	1583	265	1462	1583
Grp Volume(v), veh/h	160	392	0	201	197	199	304	0	0	266	0	167
Grp Sat Flow(s),veh/h/ln	984	1770	1583	988	1770	1760	1435	0	1583	1727	0	1583
Q Serve(g_s), s	5.5	3.4	0.0	5.4	1.3	1.3	2.7	0.0	0.0	0.0	0.0	3.2
Cycle Q Clear(g_c), s	6.8	3.4	0.0	8.8	1.3	1.3	7.2	0.0	0.0	4.5	0.0	3.2
Prop In Lane	1.00		1.00	1.00		0.33	0.36		1.00	0.24		1.00
Lane Grp Cap(c), veh/h	525	1416	633	481	708	704	683	0	633	790	0	633
V/C Ratio(X)	0.30	0.28	0.00	0.42	0.28	0.28	0.45	0.00	0.00	0.34	0.00	0.26
Avail Cap(c_a), veh/h	525	1416	633	481	708	704	683	0	633	790	0	633
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.6	9.1	0.0	4.6	2.8	2.8	10.0	0.0	0.0	9.4	0.0	9.1
Incr Delay (d2), s/veh	1.5	0.5	0.0	2.7	1.0	1.0	2.1	0.0	0.0	1.2	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.7	0.0	1.8	0.7	0.8	3.2	0.0	0.0	2.5	0.0	1.6
LnGrp Delay(d),s/veh	12.1	9.6	0.0	7.2	3.8	3.8	12.1	0.0	0.0	10.6	0.0	10.1
LnGrp LOS	B	A		A	A	A	B			B		B
Approach Vol, veh/h		552			597			304			433	
Approach Delay, s/veh		10.3			5.0			12.1			10.4	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0
Max Q Clear Time (g_c+I1), s		9.2		8.8		6.5		10.8
Green Ext Time (p_c), s		5.3		7.2		6.6		5.8

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	448	141	229	377	76	124	222	327	72	232	191
Future Volume (vph)	182	448	141	229	377	76	124	222	327	72	232	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98	1.00		0.99	1.00
Satd. Flow (prot)	1789	3579	1601	1789	3488			1850	1601		1861	1601
Flt Permitted	0.47	1.00	1.00	0.47	1.00			0.74	1.00		0.84	1.00
Satd. Flow (perm)	886	3579	1601	894	3488			1385	1601		1580	1601
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	198	487	153	249	410	83	135	241	355	78	252	208
RTOR Reduction (vph)	0	0	92	0	38	0	0	0	133	0	0	125
Lane Group Flow (vph)	198	487	61	249	455	0	0	376	222	0	330	83
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0			18.0	18.0		18.0	18.0
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0			18.0	18.0		18.0	18.0
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40			0.40	0.40		0.40	0.40
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Grp Cap (vph)	354	1431	640	357	1395			554	640		632	640
v/s Ratio Prot		0.14			0.13							
v/s Ratio Perm	0.22		0.04	c0.28				c0.27	0.14		0.21	0.05
v/c Ratio	0.56	0.34	0.10	0.70	0.33			0.68	0.35		0.52	0.13
Uniform Delay, d1	10.4	9.4	8.4	11.2	9.3			11.1	9.4		10.2	8.5
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	6.3	0.6	0.3	10.8	0.6			6.6	1.5		3.1	0.4
Delay (s)	16.7	10.0	8.7	22.0	9.9			17.7	10.9		13.3	9.0
Level of Service	B	B	A	C	A			B	B		B	A
Approach Delay (s)		11.4			14.0			14.4			11.6	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	390	121	197	353	73	112	187	277	65	194	160
Future Volume (vph)	153	390	121	197	353	73	112	187	277	65	194	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98	1.00		0.99	1.00
Satd. Flow (prot)	1789	3579	1601	1789	3487			1849	1601		1860	1601
Flt Permitted	0.49	1.00	1.00	0.50	1.00			0.78	1.00		0.85	1.00
Satd. Flow (perm)	915	3579	1601	950	3487			1463	1601		1598	1601
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	166	424	132	214	384	79	122	203	301	71	211	174
RTOR Reduction (vph)	0	0	79	0	38	0	0	0	165	0	0	104
Lane Group Flow (vph)	166	424	53	214	425	0	0	325	136	0	282	70
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0			18.0	18.0		18.0	18.0
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0			18.0	18.0		18.0	18.0
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40			0.40	0.40		0.40	0.40
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Grp Cap (vph)	366	1431	640	380	1394			585	640		639	640
v/s Ratio Prot		0.12			0.12							
v/s Ratio Perm	0.18		0.03	c0.23				c0.22	0.08		0.18	0.04
v/c Ratio	0.45	0.30	0.08	0.56	0.30			0.56	0.21		0.44	0.11
Uniform Delay, d1	9.9	9.2	8.4	10.5	9.2			10.4	8.9		9.8	8.5
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	4.0	0.5	0.3	5.9	0.6			3.8	0.8		2.2	0.3
Delay (s)	13.9	9.7	8.6	16.4	9.8			14.2	9.6		12.0	8.8
Level of Service	B	A	A	B	A			B	A		B	A
Approach Delay (s)		10.5			11.9			12.0			10.8	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	847	0	0	682	0	0
Future Volume (Veh/h)	847	0	0	682	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	921	0	0	741	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	79					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			921		1662	921
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			831		1687	831
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			693		89	320

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	921	741	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	693	1700
Volume to Capacity	0.54	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	715	17	5	592	32	10
Future Volume (Veh/h)	715	17	5	592	32	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	777	18	5	643	35	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	140					
pX, platoon unblocked			0.88		0.88	0.88
vC, conflicting volume			795		1439	786
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			696		1430	685
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		73	97
cM capacity (veh/h)			789		129	393

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	795	648	46
Volume Left	0	5	35
Volume Right	18	0	11
cSH	1700	789	154
Volume to Capacity	0.47	0.01	0.30
Queue Length 95th (m)	0.0	0.1	9.0
Control Delay (s)	0.0	0.2	38.1
Lane LOS		A	E
Approach Delay (s)	0.0	0.2	38.1
Approach LOS			E

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	720	5	15	577	20	20
Future Volume (Veh/h)	720	5	15	577	20	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	783	5	16	627	22	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	202					
pX, platoon unblocked			0.89		0.89	0.89
vC, conflicting volume			788		1444	786
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			702		1438	699
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		83	94
cM capacity (veh/h)			799		128	392

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	788	643	44
Volume Left	0	16	22
Volume Right	5	0	22
cSH	1700	799	193
Volume to Capacity	0.46	0.02	0.23
Queue Length 95th (m)	0.0	0.5	6.4
Control Delay (s)	0.0	0.5	29.0
Lane LOS		A	D
Approach Delay (s)	0.0	0.5	29.0
Approach LOS			D

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑			
Traffic Volume (veh/h)	0	847	682	0	0	0
Future Volume (Veh/h)	0	847	682	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	921	741	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		52				
pX, platoon unblocked					0.93	
vC, conflicting volume	741				1202	741
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	741				1059	741
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	862				203	359

Direction, Lane #	EB 1	EB 2	WB 1
Volume Total	460	460	741
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.27	0.27	0.44
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s)	0.0		0.0
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	10	566	10	2	510
Future Volume (Veh/h)	20	10	566	10	2	510
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	11	615	11	2	554
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						65
pX, platoon unblocked	0.86					
vC, conflicting volume	1178	620			626	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1128	620			626	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	98			100	
cM capacity (veh/h)	195	488			956	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	33	626	556
Volume Left	22	0	2
Volume Right	11	11	0
cSH	243	1700	956
Volume to Capacity	0.14	0.37	0.00
Queue Length 95th (m)	3.5	0.0	0.0
Control Delay (s)	22.1	0.0	0.1
Lane LOS	C		A
Approach Delay (s)	22.1	0.0	0.1
Approach LOS	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	463	143	234	414	86	132	223	329	77	232	191
Future Volume (vph)	182	463	143	234	414	86	132	223	329	77	232	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.98	1.00		0.99	1.00
Satd. Flow (prot)	1789	3579	1601	1789	3487			1849	1601		1860	1601
Flt Permitted	0.43	1.00	1.00	0.46	1.00			0.71	1.00		0.83	1.00
Satd. Flow (perm)	818	3579	1601	872	3487			1335	1601		1555	1601
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	198	503	155	254	450	93	143	242	358	84	252	208
RTOR Reduction (vph)	0	0	93	0	38	0	0	0	127	0	0	125
Lane Group Flow (vph)	198	503	62	254	505	0	0	385	231	0	336	83
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2		2	6		6
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0			18.0	18.0		18.0	18.0
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0			18.0	18.0		18.0	18.0
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40			0.40	0.40		0.40	0.40
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	4.5
Lane Grp Cap (vph)	327	1431	640	348	1394			534	640		622	640
v/s Ratio Prot		0.14			0.14							
v/s Ratio Perm	0.24		0.04	c0.29				c0.29	0.14		0.22	0.05
v/c Ratio	0.61	0.35	0.10	0.73	0.36			0.72	0.36		0.54	0.13
Uniform Delay, d1	10.7	9.4	8.4	11.4	9.5			11.4	9.5		10.3	8.5
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	8.1	0.7	0.3	12.7	0.7			8.2	1.6		3.3	0.4
Delay (s)	18.8	10.1	8.7	24.1	10.2			19.6	11.1		13.7	9.0
Level of Service	B	B	A	C	B			B	B		B	A
Approach Delay (s)		11.9			14.6			15.5			11.9	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	869	0	0	734	0	0
Future Volume (Veh/h)	869	0	0	734	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	945	0	0	798	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	79					
pX, platoon unblocked			0.84		0.84	0.84
vC, conflicting volume			945		1743	945
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			838		1790	838
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			668		75	307

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	945	798	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	668	1700
Volume to Capacity	0.56	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		55.7%	ICU Level of Service B
Analysis Period (min)		15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	852	17	5	702	32	10
Future Volume (Veh/h)	852	17	5	702	32	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	926	18	5	763	35	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	140					
pX, platoon unblocked			0.82		0.82	0.82
vC, conflicting volume			944		1708	935
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			820		1755	809
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		54	96
cM capacity (veh/h)			661		76	311

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	944	768	46
Volume Left	0	5	35
Volume Right	18	0	11
cSH	1700	661	93
Volume to Capacity	0.56	0.01	0.50
Queue Length 95th (m)	0.0	0.2	16.4
Control Delay (s)	0.0	0.2	77.2
Lane LOS		A	F
Approach Delay (s)	0.0	0.2	77.2
Approach LOS			F

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	857	5	15	687	20	20
Future Volume (Veh/h)	857	5	15	687	20	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	932	5	16	747	22	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	202					
pX, platoon unblocked			0.81		0.81	0.81
vC, conflicting volume			937		1714	934
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			808		1762	805
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		70	93
cM capacity (veh/h)			665		74	311

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	937	763	44
Volume Left	0	16	22
Volume Right	5	0	22
cSH	1700	665	119
Volume to Capacity	0.55	0.02	0.37
Queue Length 95th (m)	0.0	0.6	11.5
Control Delay (s)	0.0	0.7	52.0
Lane LOS		A	F
Approach Delay (s)	0.0	0.7	52.0
Approach LOS			F

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑			
Traffic Volume (veh/h)	0	869	734	0	0	0
Future Volume (Veh/h)	0	869	734	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	945	798	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		52				
pX, platoon unblocked					0.91	
vC, conflicting volume	798				1270	798
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	798				1093	798
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	820				189	329

Direction, Lane #	EB 1	EB 2	WB 1
Volume Total	472	472	798
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.28	0.28	0.47
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s)	0.0		0.0
Approach LOS			

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		55.7%	ICU Level of Service B
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	10	674	10	2	608
Future Volume (Veh/h)	20	10	674	10	2	608
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	11	733	11	2	661
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						65
pX, platoon unblocked	0.81					
vC, conflicting volume	1404	738			744	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1381	738			744	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	97			100	
cM capacity (veh/h)	129	418			864	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	33	744	663
Volume Left	22	0	2
Volume Right	11	11	0
cSH	167	1700	864
Volume to Capacity	0.20	0.44	0.00
Queue Length 95th (m)	5.4	0.0	0.1
Control Delay (s)	31.7	0.0	0.1
Lane LOS	D		A
Approach Delay (s)	31.7	0.0	0.1
Approach LOS	D		

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		46.1%	ICU Level of Service A
Analysis Period (min)		15	

9.1 RR : Rural Residential

RR

9.1.1 Purpose

The purpose is to provide a **zone** for country residential **development**, and complementary **uses**, on larger **lots** in areas of high natural amenity and limited urban services.

9.1.2 Primary Uses

- **greenhouses and plant nurseries**
- **single detached housing**

9.1.3 Secondary Uses

(* the following uses are subject to Secondary Use Development Permit approval prior to undertaking any development or change in use, except for care centre, minor where four (4) or less persons are being cared for) Bylaw No. 4884

- **animal clinics, major**
- **animal clinics, minor**
- **bed and breakfast homes** (in single detached housing only) *(Bylaw 5498)*
- **boarding rooms**
- **care centres, minor**
- ***group home, minor**
- **home based businesses, rural**
- **home based businesses, minor**
- **home based businesses, major**
- **second kitchens**
- **secondary suites**

9.1.4 Subdivision Regulations

- Minimum **lot width** is 40.0m.
- Minimum **lot area** is 4000m^2, or 10,000m^2 if not serviced by a **community sewer system.**
- Maximum **density** is 2.5 units per hectare (1 unit/ acre).

9.1.5 Development Regulations

- Maximum **site coverage** is 10% for residential **development**, and it is 35% for agricultural **structures** except it may be increased to 50% for **greenhouses** with closed wastewater and stormwater management systems.
- Maximum **height** is the lesser of 10.0m or 2.5 **storeys**, except it is 6.0m for **secondary buildings** and 13.0m for **secondary structures.**
- Minimum **front yard** is 7.5m.
- Minimum **side yard** is 2.0m for a 1 or 1.5 **storey** portion of a **building** and 2.3m for a 2 or 2.5 **storey** portion of a **building**, except it is 4.5m from a **flanking street.**
- The minimum **rear yard** is 7.5m, except it is 1.0m for **secondary buildings.** Where the **lot width** exceeds the **lot depth**, the minimum **rear yard** is 4.5m provided that one **side yard** shall have a minimum width of 4.5m.
- **Secondary buildings** housing more than 4 animals shall be located no closer than 15.0m to any **lot line.**
- The maximum **height** of any vertical wall element facing a **front**, **flanking** or **rear yard** (including **walkout basements**) is the lesser of 6.5m or 2 **storeys**, above which the **building** must be set back at least 1.2m.

- All decks, supporting posts or columns shall not exceed the lesser of 4.5m or 1 **storey** in **height**, such measurements to include the **height** of any support **structure** or **retaining wall.**

9.1.6 Other Regulations

- There shall be no more than one **single detached house** per **lot.**
- When a **home based business** of any type involves the cutting and wrapping of wild game and/or the butchering of domestic meat, the **lot** must have a minimum **lot area** greater than 0.33ha (0.8 acre).
- **Major animal clinics** shall not be located on parcels less than 2.0ha (5 acres).
- For **sites** within the **Agricultural Land Reserve**, the maximum **gross floor area** of **agricultural and garden stands** selling produce that is produced off-site shall be the lesser of 50.0m^2 or 33% of the total floor area of the **agricultural and garden stand.**
- Retail sales are subject to the *BC Agricultural Land Commission Act* and regulations.
- In addition to the regulations listed above, other regulations may apply. These include the general **development** regulations of Section 4 (secondary **development**, **yards**, projections into **yards**, lighting, agricultural setbacks, etc.); the specific use regulations of Section 5; the **landscaping** and fencing provisions of Section 6; and, the parking and loading regulations of Section 7. Lands within the **ALR** may also be affected by additional regulations of the *Agricultural Land Commission.*
- As per Section 4.10.2 - All **buildings** and **structures**, **excluding perimeter fencing (garden walls and fences)** on **lots abutting** City Roads as identified on Schedule "B" shall not be sited closer to the City Road than the setback as per the appropriate zone measured from the offset Rights of Way as illustrated on Schedule "B".
  (Bylaw 5440)

11.1 I1 : Light Industrial

I1

11.1.1 Purpose

The purpose is to provide a **zone** for the development of light industrial uses.

11.1.2 Primary Uses

- **animal clinic, minor** *(Bylaw 5155)*
- **animal clinic, major** *(Bylaw 5155)*
- **auctioneering establishments**
- **autobody repair and paint shops**
- **automotive and recreation vehicle services**
- **automotive and equipment repair shops**
- **brewing or distilling, class A**
- **brewing or distilling, class B**
- **bulk fuel depots**
- **call centres**
- **cannabis cultivation facilities** *(Bylaw 5731)*
- **cannabis processing facilities** *(Bylaw 5731)*
- **commercial storage**
- **concrete plant**
- **contractor services, general**
- **contractor services, limited**
- **crematorium** *(Bylaw 4992)*
- **custom indoor manufacturing**
- **drive-through vehicle services**
- **equipment rentals**
- **emergency and protective services**
- **fleet services**
- **food primary establishments**
- **funeral services** *(Bylaw 4992)*
- **gas bars**
- **general industrial uses**
- **government agencies** *(Bylaw 5456)*
- **high technology research and product design**
- **household repair services**
- **kennels** *(Bylaw 5339)*
- **outdoor storage**
- **offices, construction and development industry**
- **participant recreation services, indoor**
- **recycling depots**
- **recycled materials drop-off centres**
- **service stations, minor**
- **service stations, major**
- **temporary shelter service, where in active use prior to July 1, 2010** *(Bylaw 5273)*
- **truck and mobile home sales/rentals**
- **utility services, minor**
- **utility services, major**
- **vehicle and equipment services, industrial and agricultural**
- **warehouse sales**

11.1.3 Secondary Uses

- **residential security/operator unit**

11.1.4 Subdivision Regulations

- Minimum **lot width** is 40.0m.
- Minimum **lot area** is 4000m^2.

11.1.5 Development Regulations

- Maximum **floor space ratio** is 1.5.
- Maximum **site coverage** is 60%.
- Maximum **height** is the lesser of 14.0m.
- Minimum **front yard** is 7.5m.
- Minimum **side yard** is 4.5m, except it is 7.5m for any **flanking street**, and is 0.0m when **adjacent** to an **industrial** zoned property, and is10.0m when **adjacent** to a **residential**, **agricultural** or **institutional** zoned property.
- Minimum **rear yard** is 0.0m, except it is 6.0m for any **flanking street** and where the **abutting** land is zoned or designated Residential, Agriculture or Institutional.

11.1.6 Other Regulations

- No **use** shall produce dust, or other emissions except standards set by provincial legislation, without written authorization from the appropriate provincial agency.
- No **use** shall produce odour, glare, or noise that creates a **nuisance**.
- Only one **residential security/operator unit** is permitted on a **site**.
- **Outdoor storage** shall be screened from view of any **street** or **lane** and from **adjacent** properties. There shall be no **outdoor storage** of toxic, noxious, explosive, odorous, or radio-active materials.
- In addition to the regulations listed above, other regulations may apply. These include the general **development** regulations of Section 4 (secondary **development**, **yards**, projections into **yards**, lighting, agricultural **setbacks**, etc.); the specific use regulations of Section 5; the **landscaping** and fencing provisions of Section 6; and, the parking and loading regulations of Section 7.
- As per Section 4.10.2 - All **buildings** and **structures**, **excluding perimeter fencing (garden walls and fences)** on **lots abutting** City Roads as identified on Schedule "B" shall not be sited closer to the City Road than the setback as per the appropriate zone measured from the offset Rights of Way as illustrated on Schedule "B". *(Bylaw 5440*
- A **cannabis cultivation facility** shall be located in an enclosed building with odour controls so that any odour associated with the **cannabis cultivation facility** use cannot be detected beyond the parcel line of the parcel on which the **cannabis cultivation facility** is located. *(Bylaw 5731)*

9.8 R7 : Mobile Home Residential

R7

9.8.1 Purpose

The purpose is to provide a **zone** for **mobile homes** on individual **mobile home sites** in a **mobile home park** setting. The R7c sub-zoning district allows for **care centre, major** as an additional use. *(Bylaw 5467)*

9.8.2 Primary Uses

- **care centre, major** *(use is only permitted with the R7c sub-zoning district)*
- **mobile homes**
- **single detached housing on each separate fee simple or bareland strata lot in a mobile home subdivision**

9.8.3 Secondary Uses

- **boarding rooms** *(Bylaw 5440)*
- **care centres, minor**
- **home based businesses, minor**
- **office**

9.8.4 Subdivision Regulations for Mobile Home Parks

- Minimum **mobile home park lot width** is 50.0m
- Minimum **mobile home park lot depth** is 50.0m
- Minimum **mobile home park lot area** is 2ha (5 acres)

9.8.5 Development Regulations for Mobile Home Parks

- Maximum **density** is 20 units per gross hectare (8 units/gross acre).
- Minimum **mobile home park lot front yard** is 4.5m, except it is 6.0m from a public **road**.
- Minimum **mobile home park lot side yard** is 4.5m.
- Minimum **mobile home park lot rear yard** is 6.0m.
- Maximum **mobile home park site coverage** is 40%.

9.8.6 Development Regulations for individual Mobile Home Sites and Lots

For rental or phased building strata development in **mobile home parks**, the following regulations shall apply:

- Minimum **mobile home site width** is 9.5m interior **site** and 11.5m exterior **site**.
- Minimum **mobile home site depth** is 25.0m.
- Minimum **mobile home site area** is 237.5m^2.
- Maximum **building height** is the lesser of 7.6m or 1 **storey**, except it is 4.5m for **secondary buildings** and **structures.**
- Each **mobile home** shall be provided with an individual **mobile home site,** with either public or private road access.
- No **mobile home** shall be located closer than 3.0m to the back curb of a private roadway, edge of public ROW or parking area, no closer than 6.0m to another **mobile home** unless permitted by fire protection regulations, but in no case closer than 1.5m to the edge of a **mobile home site.**

For fee simple development and bareland strata subdivisions in **mobile home subdivisions**, the following regulations shall apply:

- Minimum **mobile home lot width** is 10.0m for an **interior lot** and 12.0m for an **exterior lot**.
- Minimum **mobile home lot depth** is 25.0m.
- Minimum **mobile home lot area** is 320m^2, or 10,000m^2 if not serviced by a **community sewer system**.
- Minimum **mobile home lot front yard** is 3.5m.
- Minimum **mobile home lot side yard** is 1.2m, except it is 3.5m from a **flanking street**.
- Minimum **mobile home lot rear yard** is 6.0m.
- Maximum **mobile home site coverage** is 55%.
- Maximum **building envelope** is 275m^2 or maximum **site coverage** of 55%, whichever is the lesser.
- Maximum **height** is the lesser of 7.6m or 1 **storey**, except it is 4.5m for **secondary buildings** and **structures**.

9.8.7 Other Regulations

- The minimum horizontal width of 7.0m stipulated in Section 4.14.1 for detached primary **buildings** in residential zones is not applicable to the R7 Mobile Home Residential zone.
- The **office use** is limited to one **office** for the management and operation of the **mobile home park**.
- The following additions to a **mobile home site** are permitted: garages or **carports**, sun or rain shelters, porches, rooms, and storage sheds. The additions, inclusive of a **carport** or garage, shall not be larger in area than 50% of the floor area of a single section **mobile home** or 20% of the floor area of a multi-section home.
- The owner of a **mobile home park** must provide a minimum of 6% of the gross **mobile home park** area as private open space for the **use** and enjoyment of residents, except in the case of a fee simple subdivision, the **mobile home park** is exempt from private open space provision. Buffer areas, **storage compounds**, **street** and roadway rights-of-way, parking areas or required utility easements within the **mobile home park** shall not be considered as forming any portion of the recreational or open space requirement. 50% of the recreation area shall be open space in a location convenient and accessible to the tenants, ensuring that any hillside or natural **watercourse** areas to be included in the recreation area is physically accessible to the tenants and is maintained in its natural state, or authorized improved state. Outdoor recreational areas shall be **landscaped** if not left in their natural state.
- For the purpose of calculating and satisfying recreational and open space requirements, any indoor recreational space fully developed in a community or recreational centre shall be counted as triple its **gross floor area**. Any common outdoor recreational facility, such as a swimming pool, tennis court, shuffleboard, lawn bowling or putting greens, barbecue patio, etc. may be counted as double its surface area.
- One **secondary building**, compatible in finishing materials, is permitted to a maximum area of 20m^2 on a **mobile home site**, with a maximum **height** of 4.5m.
- One or more separate storage compounds may be provided within a **mobile home park** for the storage of boats, travel trailers, recreation **vehicles**, motor toboggans, non-licensed motor **vehicles** or other large items or equipment owned by the tenants which are not appropriate to store on a **mobile home site**. The storage compound shall be securely fenced, gated and lighted for security and shall be screened from public view by approved fencing and **landscaping**. Where such a facility is not required, the above noted apparatus is not permitted to be stored on a **mobile home site** unless stored within a permitted **secondary building**.
- No outdoor portion of a **mobile home park** shall be used for or permitted to be used for the wrecking or storage of derelict automobiles, trucks, tractors, machinery,

lumber, inflammable debris or other unused items or equipment which the owner or the approval authority considers to be a public nuisance or junk.

- In addition to the regulations listed above, other regulations may apply. These include the general **development** regulations of Section 4 (secondary **development**, **yards**, projections into **yards**, lighting, agricultural setbacks, etc.); the specific **use** regulations of Section 5; the **landscaping** and fencing provisions of Section 6; and, the parking and loading regulations of Section 7.
- As per Section 4.10.2 - All **buildings** and **structures**, **excluding perimeter fencing (garden walls and fences)** on **lots abutting** City Roads as identified on Schedule "B" shall not be sited closer to the City Road than the setback as per the appropriate zone measured from the offset Rights of Way as illustrated on Schedule "B".
  (Bylaw 5440)

10.5 C5 : Community Commercial

C5

10.5.1 Purpose

The purpose is to provide a **zone** for the **development** of community commercial centres to serve more than one neighbourhood.

10.5.2 Primary Uses

- **amusement arcades, major**
- **automotive and recreation vehicle services**
- **animal clinics, minor**
- **broadcasting studios**
- **business support services**
- **care centres, major**
- **call centres**
- **commercial schools**
- **community recreation centres**
- **cultural exhibits, private**
- **custom indoor manufacturing**
- **drive-through services**
- **emergency protective services**
- **extended medical treatment services**
- **financial services**
- **food primary establishments**
- **gaming facilities****
- **gas bars**
- **government agencies**
- **government services**
- **health services**
- **hotels and motels**
- **liquor primary establishment, minor**
- **liquor primary establishment, major**
- **non-accessory parking**
- **offices**
- **participant recreation services, indoor**
- **personal services**
- **private clubs**
- **retail cannabis sales** *(Bylaw 5731)*
- **retail stores, convenience**
- **retail stores, general**
- **retail store, licensee**
- **second-hand dealerships**
- **seniors assisted housing**
- **seniors residential care**
- **seniors supportive housing**
- **service stations, minor**
- **shopping centres**
- **special needs housing**
- **spectator entertainment establishments**
- **storage, outdoor**
- **temporary shelter services**
- **used goods store**
- **utility services, minor impact**
- **warehouse sales**

** refer to definition for "gaming facilities" in Section 2.3.3. for limitation on number of slot machines permitted within the City of Vernon boundaries

10.5.3 Secondary Uses

- **amusement arcades, minor**
- **animal grooming** *(Bylaw 5339)*
- **apartment housing**
- **brewing or distilling, Class A**
- **care centres, minor**
- **carnival**
- **group homes, minor**
- **storage, outdoor**

10.5.4 Subdivision Regulations

- Minimum **lot width** is 15.0m, except it is 40.0m if there is no **abutting lane**.
- Minimum **lot area** is 460m^2, except it is 1300m^2 if there is no **abutting lane**.

10.5.5 Development Regulations

- Maximum commercial **floor space ratio** is 2.0.
- Maximum **site coverage** is 60%.
- Maximum **height** is the lesser of 15.0m or 4.0 **storeys**.
- Minimum **front yard** is 3.0m.
- Minimum **side yard** is 0.0m, except it is 3.0m for a **flanking street** or where the **site abuts** a residential **zone**.
- Minimum **rear yard** is 0.0m, except it is 6.0m where the **abutting** land is zoned or designated Residential.

10.5.6 Other Regulations

- **Major care centres, seniors assisted housing, seniors residential care and seniors supportive housing** are only allowed above the **first storey** and require a separate at-grade access from the **commercial uses**.
- A minimum area of 5.0m^2 of private open space shall be provided per **bachelor dwelling** or group home **bedroom**, 10.0m^2 of private open space shall be provided per 1 **bedroom dwelling**, and 15.0m^2 of private open space shall be provided per **dwelling** with more than 1 **bedroom**.
- **Financial services** shall have a maximum total **gross floor area** of 500m^2.
- **Convenience retail stores** shall have a maximum total **gross floor area** of 300m^2.
- Where residential **development** has access to a rear **lane**, vehicular access to the **development** is only permitted from the rear **lane**.
- For **seniors assisted housing, seniors residential care and seniors supportive housing,** a safe drop-off area for patrons shall be provided on the **site.**
- In addition to the regulations listed above, other regulations may apply. These include the general **development** regulations of Section 4 (secondary **development**, **yards**, projections into **yards**, lighting, agricultural setbacks, etc.); the specific use regulations of Section 5; the **landscaping** and fencing provisions of Section 6; and, the parking and loading regulations of Section 7.
- **Outdoor storage** shall be screened from view of any **street** or **lane** and from **adjacent** properties. There shall be no **outdoor storage** of toxic, noxious, explosive, or odorous materials.
- As per Section 4.10.2 - All **buildings** and **structures**, **excluding perimeter fencing (garden walls and fences)** on **lots abutting** City Roads as identified on Schedule

"B" shall not be sited closer to the City Road than the setback as per the appropriate zone measured from the offset Rights of Way as illustrated on Schedule "B".
(Bylaw 5440)