



# **ALBION FLATS DEVELOPMENT**

## **EXISTING TRAFFIC CONDITIONS AND POTENTIAL IMPACTS**

**FINAL REPORT – SEPTEMBER 2010**



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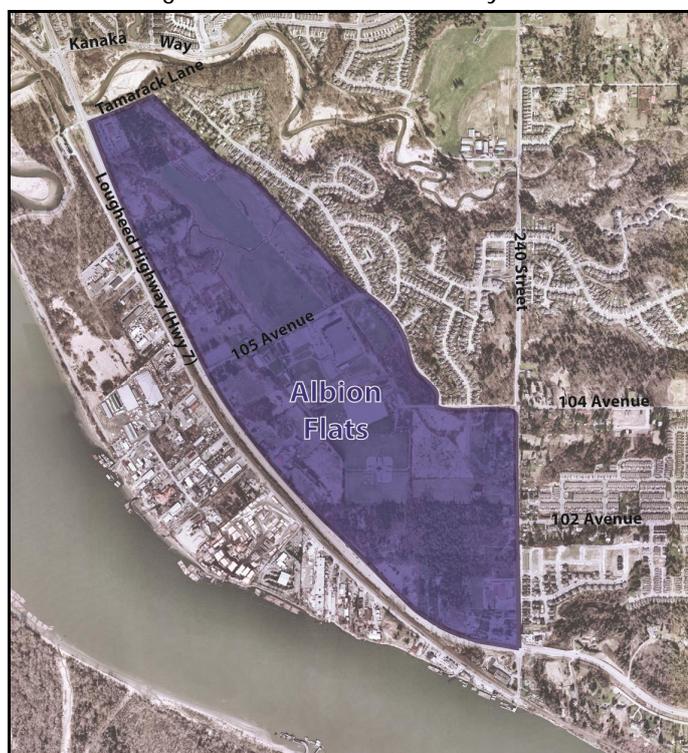
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## 1.0 INTRODUCTION

The Albion Flats area in the District of Maple Ridge has been identified as a strategic area for intensified land use development. In February 2010, the District's Council approved the process for preparing the Albion Flats Concept Plan for submission to the Agricultural Land Commission. The concept plan will include a review of various land use concepts and the required infrastructure to support these land uses. The geographic boundaries of the study area are shown in Figure 1.1.

Figure 1.1 – Albion Flats Study Area



Urban Systems Ltd. has been retained by the District to conduct a high level assessment of existing and future roadway network conditions, as well as assessing the potential impacts of intensifying development at Albion Flats will have on the community. The following intersections will be considered in this review:

- Lougheed Highway and Tamarack Lane
- Lougheed Highway and 105<sup>th</sup> Avenue
- Lougheed Highway and 240<sup>th</sup> Street
- 240<sup>th</sup> Street and 104<sup>th</sup> Avenue



This preliminary phase of the work program will guide the Public Charette that will examine potential development strategies for the Albion Flats area. This document will focus on the following topics:

- Existing Traffic Conditions
- Future Traffic Conditions
- Potential Impacts of Albion Flats Development

## 2.0 EXISTING TRAFFIC CONDITIONS

Recent residential development in the areas neighbouring Albion Flats has placed increased pressure on the surrounding road network. The intersections surrounding Albion Flats include:

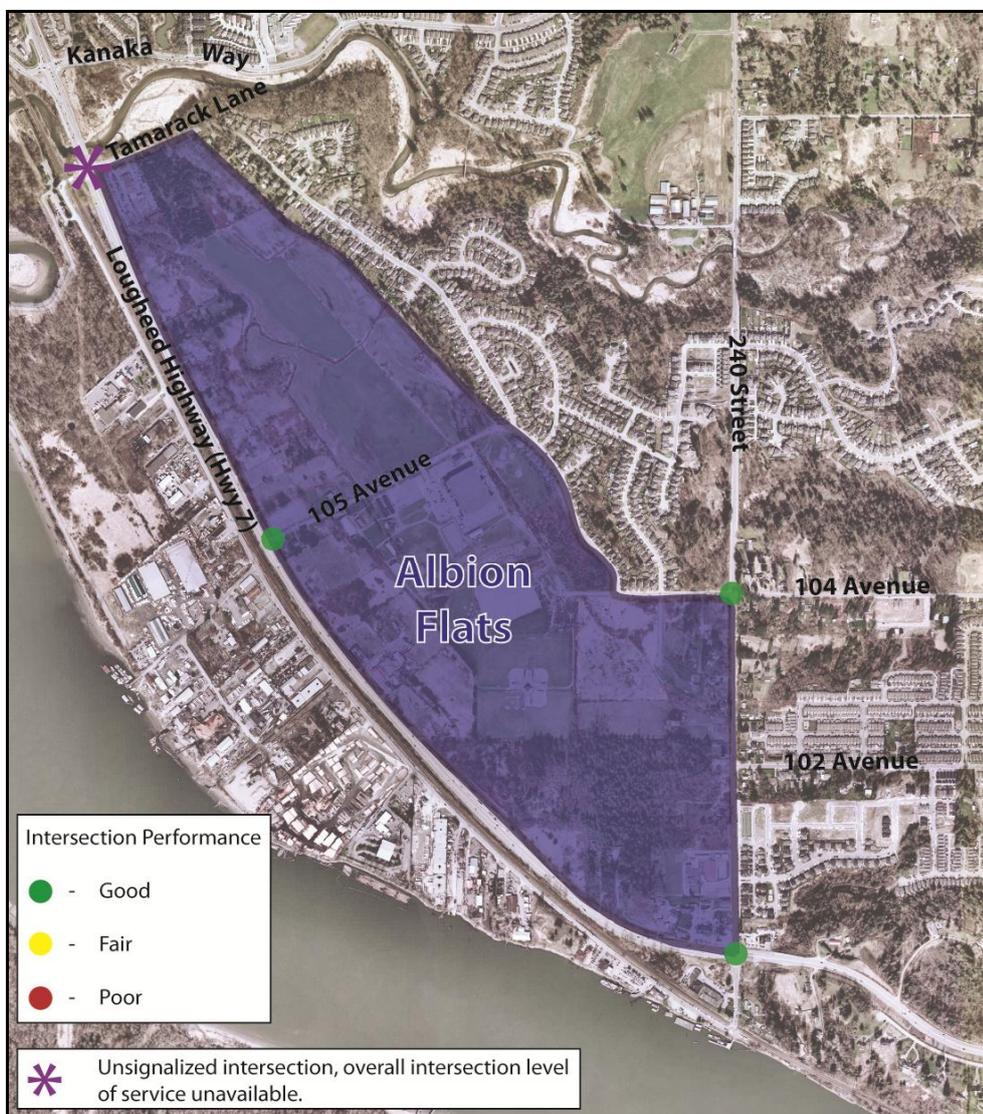
- Lougheed Highway and Tamarack Lane
- Lougheed Highway and 105<sup>th</sup> Avenue
- Lougheed Highway and 240<sup>th</sup> Street
- 240<sup>th</sup> Street and 104<sup>th</sup> Avenue

Currently, Lougheed Highway (Highway 7) and 105<sup>th</sup> Avenue is the primary access into Albion Flats area. The existing playing field can be accessed via 240<sup>th</sup> Street and 104<sup>th</sup> Avenue. The residential area north of Albion Flats may access Lougheed Highway via Tamarack Lane, 105<sup>th</sup> Avenue or 240<sup>th</sup> Street. Using available existing traffic count data and intersection analysis software, existing intersection performances were evaluated for the critical PM peak period. Figure 2.1 illustrates the existing intersection performances. The level of service (LOS) has been categorized into "Good" (LOS A – C), "Fair" (LOS D) and "Poor" (LOS E – F). Due to software limitations, the LOS is not reported for Lougheed and Tamarack Lane because it is an unsignalized intersection. In general, the movements on Lougheed Highway at Tamarack Lane are performing at a relatively good level of service.

In general, the subject intersections evaluated are performing relatively well and operating within their respective capacities. As expected, the left-turn movements at all the intersections are experiencing the most delays and queues. In relative terms, the intersection of Lougheed and 240<sup>th</sup> Street experiences the longest delays and queues. However, its performance is still considered good.



Figure 2.1: Existing PM Peak Intersection Performance



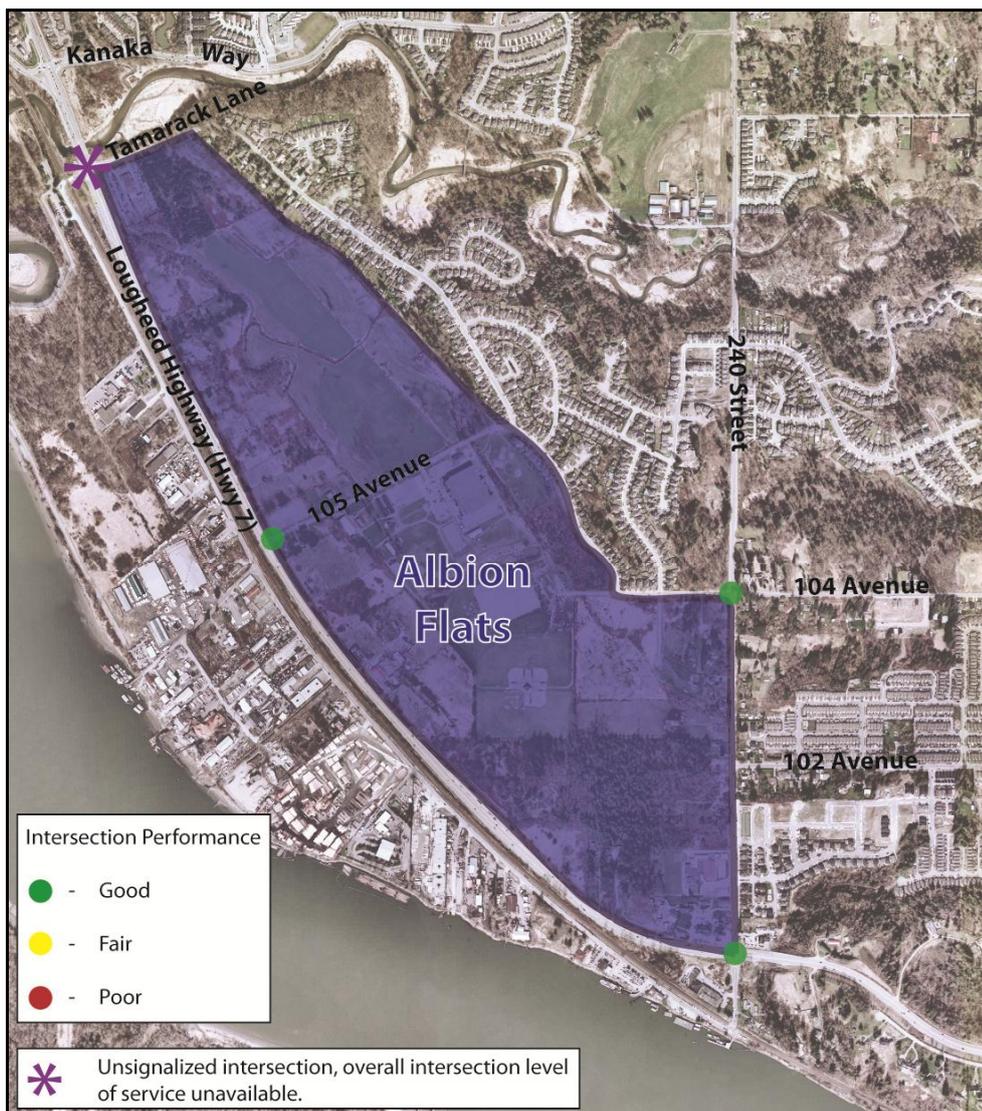
### 3.0 FUTURE TRAFFIC CONDITIONS

Growth along Lougheed Highway is expected to continue over the next decade, even without the potential development of the Albion Flats area. A year 2021 future base case scenario or the 'no network improvement' scenario was developed assuming a modest traffic growth rate of 1.5% per year. This growth will equate to an approximate 34% increase from today's condition. Without intersection improvements, intersections are expected to experience increased delays and queues. However, as illustrated in Figure 3.1, the performance of the intersections remains relatively the same as existing conditions. This indicates that the



existing intersections have capacity to accommodate future growth along the Lougheed corridor without significant impacts to the intersection performance.

Figure 3.1: Future (2021) Base PM Peak Intersection Performance





#### 4.0 POTENTIAL IMPACTS OF ALBION FLATS DEVELOPMENT

The Albion Flats area has been identified as a strategic area with opportunities for intensified land use development. It is essential to strategically plan the allocation of land use in a manner that enhances and complements the desirable characteristics and ensures the long-term vitality of the surrounding communities. In addition, it must be ensured that the existing roadway network surrounding the development can accommodate the anticipated traffic growth. Most importantly, the impacts on the surrounding communities and infrastructures should be minimized or improvements may be implemented at the major intersections that are impacted.

Although intensification in an area may create employment, foster a vibrant center of activities and facilitate the development of a sustainable community, there are several challenges that need to be considered and addressed from a community standpoint. These include:

##### Land Use Impacts

It is important to ensure that future land use is compatible with surrounding land uses and will enhance the characteristics of surrounding communities, as well as meeting compliance with zoning by-laws. Different types of land use can have a varying degree of impact on the community and the surrounding roadway network. The degree of impact is dependent on the type and size of facilities that will be developed, as well as the type and time of traffic the generator will attract. Table 4.1 provides a summary of several general types of land uses, what the impacts are when intensifying these land uses, and the approximate traffic volumes a certain size of land use would generate.



ALBION FLATS DEVELOPMENT  
EXISTING TRAFFIC CONDITIONS AND POTENTIAL IMPACTS

Table 4.1: Potential Impacts of Land Uses

TYPE OF LAND USE	TYPE OF DEVELOPMENT	TYPE OF TRAFFIC GENERATED	TYPICAL PEAK HOUR OF TRAVEL	TRAFFIC CONDITIONS	POTENTIAL IMPACTS	POTENTIAL PM PEAK HOUR TRAFFIC
RESIDENTIAL	Low, medium and high density residential development	Private vehicles, light trucks and transit	7AM - 9AM 4PM - 6PM	Majority of traffic exits during the morning peak period and enters during the afternoon peak period.  Parking is available on residential streets.	Increased local traffic activity.  Potential impact on traffic circulation, accessibility and intersection performance. May encourage speeding and short-cutting.	500 single-detached family units = 320 inbound and 185 outbound trips
COMMERCIAL/ RETAIL	Big box stores, shopping centers	Mostly private vehicles; Some buses if transit is available; Delivery trucks	Weekday varies between 11AM - 7PM  Weekend varies between 11AM - 6PM	Regardless of time period, there is generally an equal distribution of traffic entering and exiting. Increased traffic activity is expected during the weekends and especially during the holiday and summer seasons.  On-site parking facilities is sufficient to serve its own parking demands.	Increased traffic activity and noise.  Potential impact on traffic circulation, accessibility and intersection performance. May encourage short-cutting.	100,000 Sq. Feet Gross Floor Area = 180 inbound and 190 outbound trips
INDUSTRIAL	Facilities for warehousing, processing, and manufacturing	Mostly private vehicles; High percentage of light, medium and heavy trucks for shipping and receiving	Peak hour generally coincide with peak hour of adjacent street traffic	Majority of traffic enters during the morning peak and exits during the afternoon peak. Facilities with employees on shift work may peak at other hours. Truck activity is generally constant throughout the day (9AM to 3PM)	Increased truck activity.  Potential impacts include air emissions, noise, vibration, odour and dust.	100,000 Sq. Feet Gross Floor Area = 15 inbound and 90 outbound trips
AGRICULTURAL	Farmlands and facilities for farmer's markets	Mostly private vehicles; Some tractors and high percentage of light, medium and heavy trucks for shipping and receiving	Peak hour generally coincide with peak hour of adjacent street traffic	Majority of traffic enters during the morning peak and exits during the afternoon peak. Facilities with employees on shift work may peak at other hours. Truck activity is generally constant throughout the day (9AM to 3PM)	Increased truck activity.  Potential impacts include air emissions, noise, vibration, odour and dust.	100,000 Sq. Feet Gross Floor Area = 185 inbound and 195 outbound trips
RECREATIONAL	Recreational centers, including outdoor athletic fields	Private vehicles, light trucks and transit	Peak hour generally coincide with peak hour of adjacent street traffic	Increased traffic activity is expected throughout the day, especially during the PM peak period, evenings and weekends.	Increased local traffic activity.  Potential impact on traffic circulation, accessibility and intersection performance. May encourage speeding and short-cutting.	100,000 Sq. Feet Gross Floor Area = 15 inbound and 90 outbound trips



### Traffic Impacts

Intensified land use development in Albion Flats will certainly generate more traffic in the area, placing more demand and pressure on the surrounding road network. The degree of traffic impact is dependent on the anticipated traffic generated by each type of land use.

In general, development in Albion Flats is expected to increase traffic activity along Lougheed Highway. Some corridors in the area may be more impacted than the others, depending on the type of land use and the anticipated traffic generated. Potential traffic impacts may include increased intersection queues and delays.

Sensitivity analysis was conducted for the 2021 base scenario with emphasis on 105<sup>th</sup> Avenue, as it is the primary access point into Albion Flats. Table 4.2 provides a summary of the intersection performance of 105<sup>th</sup> Avenue with additional inbound and outbound trips.

An additional 500 trips accessing 105<sup>th</sup> Avenue in 2021 will result in a fair intersection performance and will experience a slight increase in delay and queue than the base case. Although the westbound through and eastbound left-turn movements on Lougheed Highway will experience a significant increase in delay and queue, the overall intersection is expected to perform at an acceptable level of service. However, the intersection performance will perform poorly if an additional 1,000 trips are accessing 105<sup>th</sup> Avenue in the PM peak period. Specifically, the movements along Lougheed Highway will operate well beyond its capacity and experience significant increase in delay and queue. These issues will only propagate when an additional 2,000 trips are using the 105<sup>th</sup> Avenue corridor.

Table 4.2: 2021 PM Peak Intersection Performance - Lougheed Highway/105<sup>th</sup> Avenue

ADDITIONAL TRIPS (TOTAL INBOUND AND OUTBOUND)	INTERSECTION PERFORMANCE
500	Fair
1,000	Poor
2,000	Poor

To address the issues noted above, there are various improvements that can be considered including, but not limited to:

- *Minor Intersection Improvements.* Improvements such as additional through lanes or turning lanes can be made to provide additional capacity to the intersection.



- *Connection to Other Roadways.* Provide additional roadway connection to Albion Flats, such as connecting Tamarack Lane and/or 240<sup>th</sup> Street. Possible intersection improvements can also be made to these intersections.
- *Grade Separation.* Grade separation at Lougheed and 105th Avenue can be considered to accommodate the forecast traffic volumes, as well as providing better connection to the Albion Industrial Area, south of Albion Flats.

It should be noted that at the time this document was written, the concept plan for Albion Flats is in the development stage. Once a concept plan is available, further detailed land use and traffic analysis could be conducted to comprehensively assess the potential impacts, including traffic circulation and accessibility in the area. For future planning purposes, the intersections along Lougheed Highway, including Tamarack Lane and 240<sup>th</sup> Street, should also be reviewed for intersection improvements.

### Potential Impacts and Improvement Strategies

To adequately mitigate and address potential challenges from increased traffic in the area, as well as providing better levels of traffic circulation and access, it is vital to first understand the potential impacts. The potential impacts of development within the Albion Flats area are highlighted below to assist with the Public Charette in identifying potential measures to consider early in the planning process.

- *Intersection operational challenges.* This analysis suggests that the intersection of 105<sup>th</sup> and Lougheed can accommodate reasonable growth in the surrounding area as well as within the Albion Flats area. Land use strategies that generate more than 1,000 trips inbound and outbound will significantly impact the performance of the intersection creating significant delays and vehicle queues. Mitigation strategies that could be explored during the planning phases of the project may include everything from intersection improvements through to completing the network to other roads connecting with Lougheed Highway, or possibly grade separation as a last resort. The impacts and possible range of improvements should be explored once preliminary land use concepts are developed for the Albion Flats area.
- *Transit service and facilities.* Transit service in the vicinity of the Albion Flats area is very limited, with only 3 routes (C45, C46 and C48), travelling through the area. During the PM peak period, route C45 runs on an approximate 60 minute frequency while route C46 runs on a 30 minute frequency. Route C48 runs only one bus during the PM peak period. The potential strategies for transit may include increasing local



services through this part of the district (adjacent or through the Albion Flats area) to providing an Albion Station for West Coast Express to accommodate regional travel to downtown Vancouver for the eastern parts of the District.

- *Walking and cycling facilities.* Connections to local and regional serving pedestrian and cycling facilities will be an important part of the development plan for Albion Flats area in addition to internal networks that support travel by modes other than driving. Today, there are limited walking and cycling facilities connecting to the Albion Flats area. The Master Transportation Plan identified the Bicycle Network Plan as a comprehensive District-wide network of bicycle facilities that link regional and local destinations throughout Maple Ridge. In the long-term, the Albion Flats area will need attractive pedestrian and cycling facilities that support local trip making and connect with neighbouring areas in this eastern part of the District. Additionally, these facilities should also connect with District-wide and regional serving bicycle routes such as along the Lougheed Highway.
- *Traffic calming within the Albion Flats area.* It is anticipated that the Albion Flats area could include land use options that bring a residential character where the local street environment supports walking, cycling, transit as well as the movement of cars. The goal should be to provide a vibrant street environment that serves people, not just cars. In addition to ensuring that facilities and services for each of these modes are attractive, traffic calming measures that generally manage the speeds of traffic within neighbourhoods should be considered. These measures may include everything from narrowing the roadway by extending the curbs at intersections and mid-blocks or constructing raised median islands through to the provision of traffic circles.
- *Noise from Lougheed Highway.* Being adjacent to the Lougheed Highway will likely present issues of traffic noise for residential development for the Albion Flats area. Noise impacts can be minimized by using measures to separate the surrounding residential community from the development. Mitigating changes in distance, topography, existing or proposed building design or orientation can be included in the noise management process.
- *Connections to the Albion Industrial Area.* The Albion Industrial Area, south of Lougheed Highway, has been identified as a prime location for redevelopment as the land is currently under utilized. As part of developing the Albion Flats area, additional traffic and connections to this area should be considered along with the challenges of providing access to this area.



## 5.0 CONCLUSION

The Albion Flats area has been identified as a strategic area with opportunities for intensified land use development. It is essential to strategically plan the allocation of land use in a manner that will ensure the long-term vitality of the surrounding communities and roadway network. Intensified land use development will certainly generate more trips into an area; as a result, it is important to understand the impacts a certain development will have on land use and the surrounding roadway network. The degree of impact will be dependent on the size of the development and the anticipated volume of traffic that will be generated.

In general, the subject intersections identified in the analysis would be able to accommodate the projected growth in 2021 and is expected to perform at a “good” level of service. Specifically, the existing intersection on Lougheed Highway and 105<sup>th</sup> Avenue would be able to accommodate an additional 500 trips to the forecasted growth in 2021. The intersection is expected to perform at an acceptable level of service. However, further traffic volume increase would require consideration of intersection upgrades as identified in this report, as well as potential upgrades to the adjacent intersections, such as Tamarack Lane and 240<sup>th</sup> Street.

A more detailed traffic impact assessment will be conducted once a concept plan defining the size and location of future land use and roadway development is developed. The findings in this document will help guide the Public Charette in identifying potential development strategies to consider in the planning process.