ATTACHMENT B

WOODGROVE AREA PLAN

Phase 2 | Growth Scenarios Assessment

JUNE 2025

CITY OF NANAIMO
THE HARBOUR CITY

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EXECUTIVE SUMMARY

The Woodgrove Area Plan (WAP) project is part of a broader initiative aimed at developing complete communities in Nanaimo's urban centres. Phase 1 of the project focused on establishing a clear understanding of the current context of the Woodgrove Urban Centre. Phase 2 centers on exploring the implications of residential and commercial growth in the Woodgrove Urban Centre.

GROWTH SCENARIO PARAMETERS

Three (3) growth scenarios were analyzed to understand the implications future residential and commercial growth may have on transportation, infrastructure and access to daily needs. Parameters were used to determine each growth scenario, and determined based on the Woodgrove Urban Centre becoming a complete community. The parameters were also informed by the *Phase 1: Baseline Assessment Report* and the *Phase 1: Community Engagement Summary*.

Growth parameters were applied to all three scenarios, which are summarized in the table below. They include new population and retail space that span a 30-year time horizon. To align with *City Plan* policy and complete community goals, a mixed-use housing form with ground-floor retail were an assumed parameter.

PARAMETER	SCENARIO 1	SCENARIO 2	SCENARIO 3
New Population	2,500 people	5,000 people	7,500 people
New Housing Units	1,274 units	2,548 units	3,823 units
New Retail Space	40,000 ft^2	80,000 ft^2	120,000 ft^2

FINDINGS

TRANSPORTATION

- **Scenario 1:** Transit access in Woodgrove is concentrated in the west, but major gaps in the walking and cycling networks and long travel or wait times limit convenient access for most residents. Traffic congestion is a significant issue at key intersections, and the area remains heavily car-dependent, with limited progress toward supporting walking, cycling, or transit.
- **Scenario 2:** Relocating the transit exchange and adding new cycling routes greatly improve access to transit and active transportation, especially in central Woodgrove. Traffic flow and intersection

performance improve in some areas, but increased traffic from growth still strains key routes, even as more residents benefit from better walking and cycling connections.

- **Scenario 3:** Further enhancements to walking and cycling infrastructure, along with more frequent transit service, result in the largest improvements to good access to transit by active modes. While traffic at critical intersections remains a challenge, a shift toward lower car use helps reduce overall vehicle volumes despite ongoing development.

ACCESS TO DAILY NEEDS

- **Scenario 1:** A new pedestrian and cycling link and park and open space at the proposed Bowers District site show slight improvements to residents' ability to access their daily needs. However, gaps persist in the pedestrian and cycling infrastructure and a lack of destinations such as parks and open spaces locations, recreation and culture facility, and a school.
- **Scenario 2:** Relocating the transit exchange, infilling new pedestrian and cycling routes within a 800 metre radius of the exchange, in addition to new destinations such as parks and open spaces, a recreation and culture facility, and school show large improvements in residents' ability to access their daily needs. However, the lack of pedestrian and cycling infrastructure on the Island Highway demonstrates how important that connection for basic access and improving the distance and time it takes to access daily needs.
- **Scenario 3:** Infilling all pedestrian and cycling infrastructure throughout the study area, in addition to maintaining key daily needs such as the transit exchange, recreation and culture facility and school show the greatest improvements in residents' ability to access their daily needs. These findings highlight the importance of pedestrian and cycling infrastructure and offering a range of daily needs are to the Woodgrove Urban Centre transforming into a complete community.

INFRASTRUCTURE

- **Sanitary Sewer:** As Woodgrove's population grows, the sanitary sewer system will require phased upgrades, with the scale and location of pipe improvements depending on the number and location of new residents. Initial upgrades are planned for Turner Road and Hammond Bay Road at 2,500 additional residents, with further expansions needed for 5,000 and 7,500 residents, eventually requiring regional pipe upgrades at 15,000. The City has identified necessary projects at each stage to prevent system overloads, ensuring infrastructure can support future growth.
- **Water System:** Across all scenarios, water system upgrades are required to support population growth in Woodgrove. For 2,500 new residents, a new watermain through the Bowers District will ensure adequate supply and fire flow. With 5,000 residents, additional watermain loops and upgrades at several key locations are needed to maintain pressure and flow standards. For 7,500 residents, all previous upgrades plus a new loop from 6700 Island Highway to Portsmouth Road are required, ensuring the system remains effective as demand increases.
- **Stormwater System:** Across all scenarios, stormwater system upgrades are required to manage major storm events.
- **Hydro & Natural Gas:** Across all scenarios, upgrades are required to both hydro and natural gas infrastructure to meet anticipated demand.

1.0 PROJECT OVERVIEW

1.1 PURPOSE

The Woodgrove Area Plan (WAP) project is part of a broader initiative aimed at developing complete communities in Nanaimo's urban centres. Its context is rooted in *City Plan: Nanaimo Relmagined* (City Plan) which identifies six Secondary Urban Centres, one of which includes the Woodgrove Secondary Urban Centre (Woodgrove Urban Centre). This area is envisioned to become a primary hub of activity characterized by high-intensity land uses and mixed-use development. Recognized as Nanaimo's northern gateway, the Woodgrove Urban Centre serves both a city-wide and regional centre function for commercial activity.

Phase 1 of the project focused on establishing a clear understanding of the current context of the Woodgrove Urban Centre. This culminated in the *Phase 1: Baseline Assessment Report*, which examined existing conditions through four critical lenses: housing, access to daily needs, transportation, and infrastructure. Insights on the findings were gathered from the community and summarized in the *Phase 1: Engagement Summary Report*.

The Woodgrove Area Plan project is currently in Phase 2 – Growth Scenarios. The purpose of Phase 2 is to understand how future growth might impact the transportation and infrastructure networks, and Woodgrove residents' ability to access their daily needs. This phase builds on City Plan: Nanaimo Reimagined future land use designation policies, the Phase 1 – Baseline Assessment report and Phase 1 – Engagement Summary. Phase 3 will focus on translating the learnings and recommendations from earlier phases into policies and actions. Throughout all phases, ongoing public involvement remains a cornerstone of the process, ensuring that the evolving plan continues to reflect the community's vision for a complete community.

Figure 1: Woodgrove Area Plan Process

1.2 STUDY AREA CONTEXT

The Woodgrove Urban Centre is located in the northwest area of the City of Nanaimo. It functions as the City's northern gateway, sharing boundaries with the Regional District of Nanaimo and the District of Lantzville. The area prominently includes the Woodgrove Centre mall and its surrounding lands.

Figure 2: Woodgrove Area Plan Study Area

The Woodgrove Urban Centre is designated as a Secondary Urban Centre in *City Plan*. Secondary Urban Centres are intended to be large scale urban centres that serve the entire city. They are characterized as being anchored by public or civic institutions and employment centres, offer a broad range of housing types, have excellent transit access and walking, rolling, and cycling routes.

2.0 GROWTH SCENARIO PARAMETERS

2.1 GROWTH SCENARIOS PARAMETERS

Using the methodology prescribed by the Complete Communities assessment guide, three growth scenarios were analyzed using the four complete community lenses: housing, transportation, access to daily needs and infrastructure. These lenses represent the key elements and characteristics to create a complete community.

The purpose of the analysis was to understand: i) the implications future residential and commercial growth may have on the transportation and infrastructure networks, and Woodgrove residents' ability to access their daily needs; and ii) the actions that can be taken to move us closer to achieving a complete community.

The following parameters, shown in Table 1, were applied to all three growth scenarios. They are based on projections completed for *City Plan* and assume a 30-year time horizon. Additional parameters were applied, relating to each complete community lense (see Table 2). Note that for the housing lens, it was assumed a mix of uses and building forms per the land use framework already established in *City Plan* for the Woodgrove Secondary Urban Centre.

Table 1: Growth Scenarios Parameters

CATEGORY	PARAMETER	SCENARIO 1	SCENARIO 2	SCENARIO 3
POPULATION, HOUSING & RETAIL	New Population	2,500 people	5,000 people	7,500 people
	New Housing Units	1,274 units	2,548 units	3,823 units
	New Retail Space	40,000 ft^2	80,000 ft^2	120,000 ft^2

CATEGORY	PARAMETER	SCENARIO 1	SCENARIO 2	SCENARIO 3
LENSES				
TRANSPORTATION	Mode Split	» 85% auto » 10% active » 5% transit	» 80.5% auto » 13% active » 6.5% transit	» 76% auto » 16% active » 8% transit
	Transit Network	Routes per Transit Redevelopment Strategy & Frequency increased for each Scenario to achieve *City Plan* targets (see Table 1 for transit frequency assumptions).		
	Woodgrove Exchange	Current Location	Island Hwy/Aulds Rd/Hammond Bay Rd intersection	
	New Active Transportation Infrastructure & Road Connections	Bowers District roads	Scenario 1 + complete Ring Road + two new multi-use paths	Scenario 2 + Woodgrove Boulevard + two new multi-use paths
ACCESS TO DAILY NEEDS	Daycares	» No additional daycares	» One new daycare	» No additional daycares beyond that in Scenario 2
	Employment Options	» No new employment options	» New employment options relate to new retail space proposed	» New employment options relate to new retail space proposed
	Grocery Stores	» No additional grocery stores	» No additional grocery stores	» No additional grocery stores
	Parks & Open Spaces	» One new park & open space	» Five new parks & open spaces	» No additional parks added beyond those in Scenario 2
	Pharmacies	» No additional pharmacies	» No additional pharmacies	» No additional pharmacies
	Recreation & Cultural Facilities	» No new recreation and culture facility	» New recreational & cultural facility » 90,000 ft^2 - 155,000 ft^2	
	Schools	» None	» One new school	
INFRASTRUCTURE	Sanitary Sewer System	» Per Capita Sewer Flow: 230 litres /capita / day » Infiltration: 2500 litres / hectare / day		
	Water System	» Minimum Residual Pressure (PHD) 300 kPA (44 psi) » Minimum Residual Pressure (hydrant) (MDD+FF) 150 kPa (22 psi) » Minimum Residual Pressure (system) (MDD+FF)- 35 kPa (5 psi) » Maximum Velocity MDD+FF - 3.5 m/s		
	Stormwater System	» Stormwater Management Model (SWMM) model calibrated using rainfall data collected by the City. » Subcatchment slope were determined directly using LiDAR		

Table 2: Peak Period Frequency by Route (minutes between trips)

ROUTE		SCENARIO 1	SCENARIO 2	SCENARIO 3
1	Nanaimo Rapid Line to South Parkway Plaza	7.5	5	3.5
2	VIU Line	7.5	5	4
3	Hospital Line to VIU	7.5	5	4
9	Intercity Line	30	20	15
10	VIU/Woodgrove via Jingle Pot	20	20	20
11	Rutherford - Hospital	20	15	12
12	Hammond Bay/Departure Bay Ferry	20	15	12
31	Lantzville	60	30	30
72	Hammond Bay - NRGH - VIU	20	15	12

Source: Woodgrove Exchange Capacity Estimate, Brian Mills and Associates

2.1.1 SCENARIO 1 | PARAMETERS +2,500 PEOPLE

POPULATION, HOUSING & RETAIL PARAMETERS

Scenario 1 anticipates 2,500 new residents (~1,274 housing units) and 40,000 ft^2 of new retail space. The growth parameters applied to Scenario 1 reflect the residential and retail growth currently proposed or under construction. The developments include: 6261 Hammond Bay Rd (Rezoning Application- Bowers District); 6320 Sentinel Dr (Development Permit Application); and 6985 Island Hwy (under construction).

TRANSPORTATION PARAMETERS

Scenario 1 includes the addition of a new mobility collector through 6261 Hammond Bay Rd, (i.e. Bowers District) connecting Enterprise Street to Calinda Street (see Figure 4). The road will be multi-functional providing both sidewalks and separated cycling infrastructure (see Figure 5). The parameters for transit routes are those approved within the RDN's *Transit Redevelopment Strategy* (Figure 6). No additional improvements to roads, sidewalks or cycling infrastructure are proposed.

ACCESS TO DAILY NEEDS PARAMETERS

Scenario 1 includes a new park and open space within the Bowers District development at 6261 Hammond Bay Road. No additional destinations are proposed for Scenario 1, beyond those that are currently in existence (see Figure 7).

Figure 3: Scenario 1 – Road Network

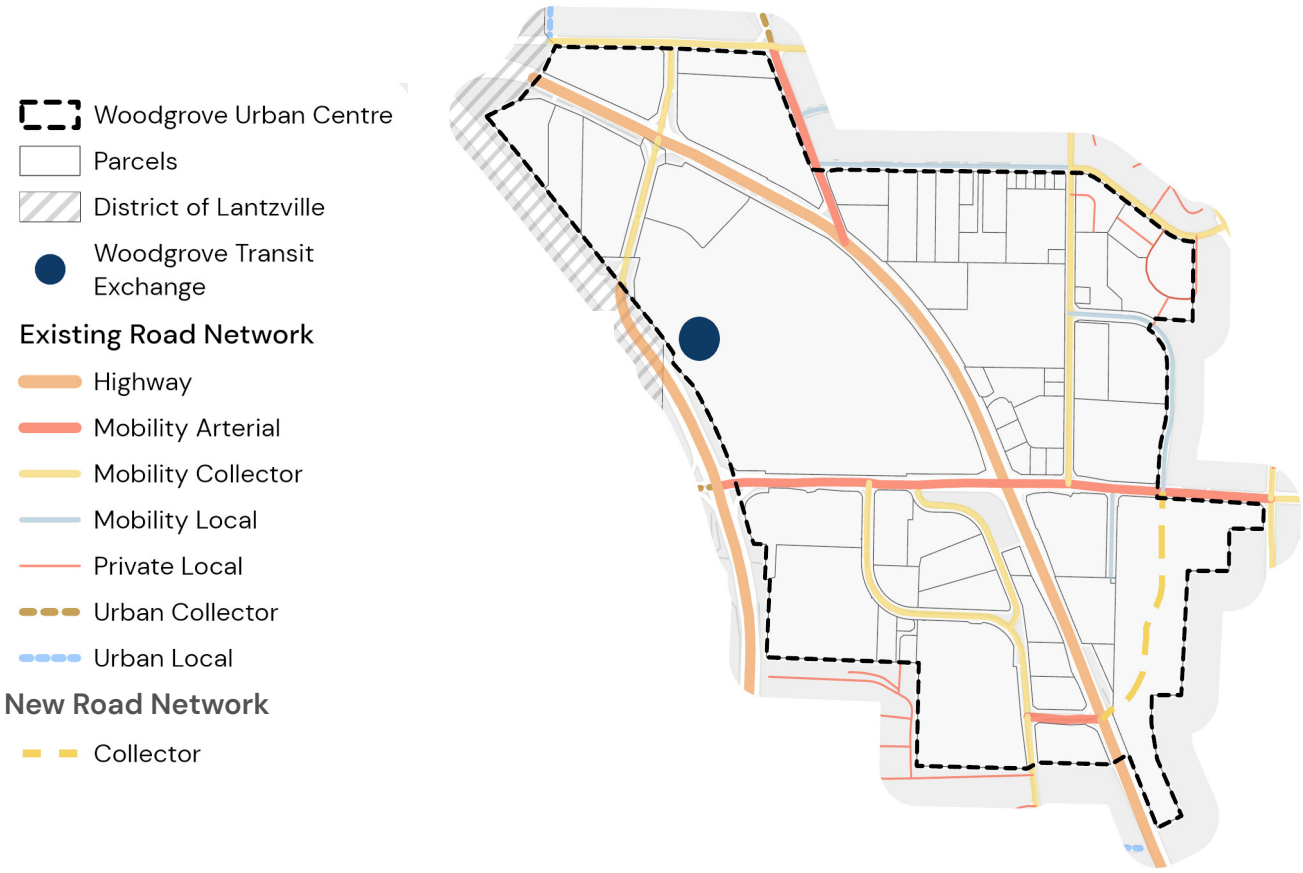


Figure 4: Scenario 1 – Sidewalk & Cycling Infrastructure

Figure 6: Scenario 1 – Transit Network

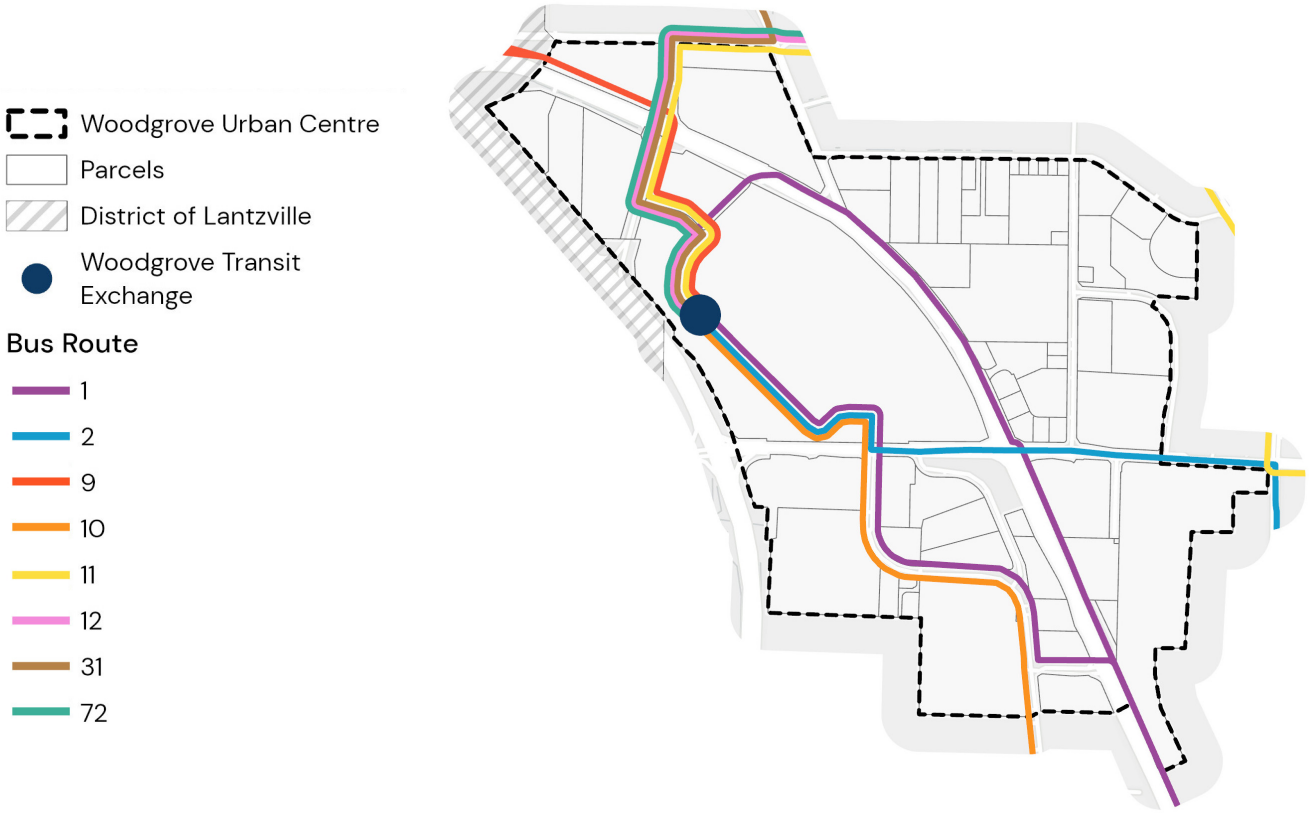
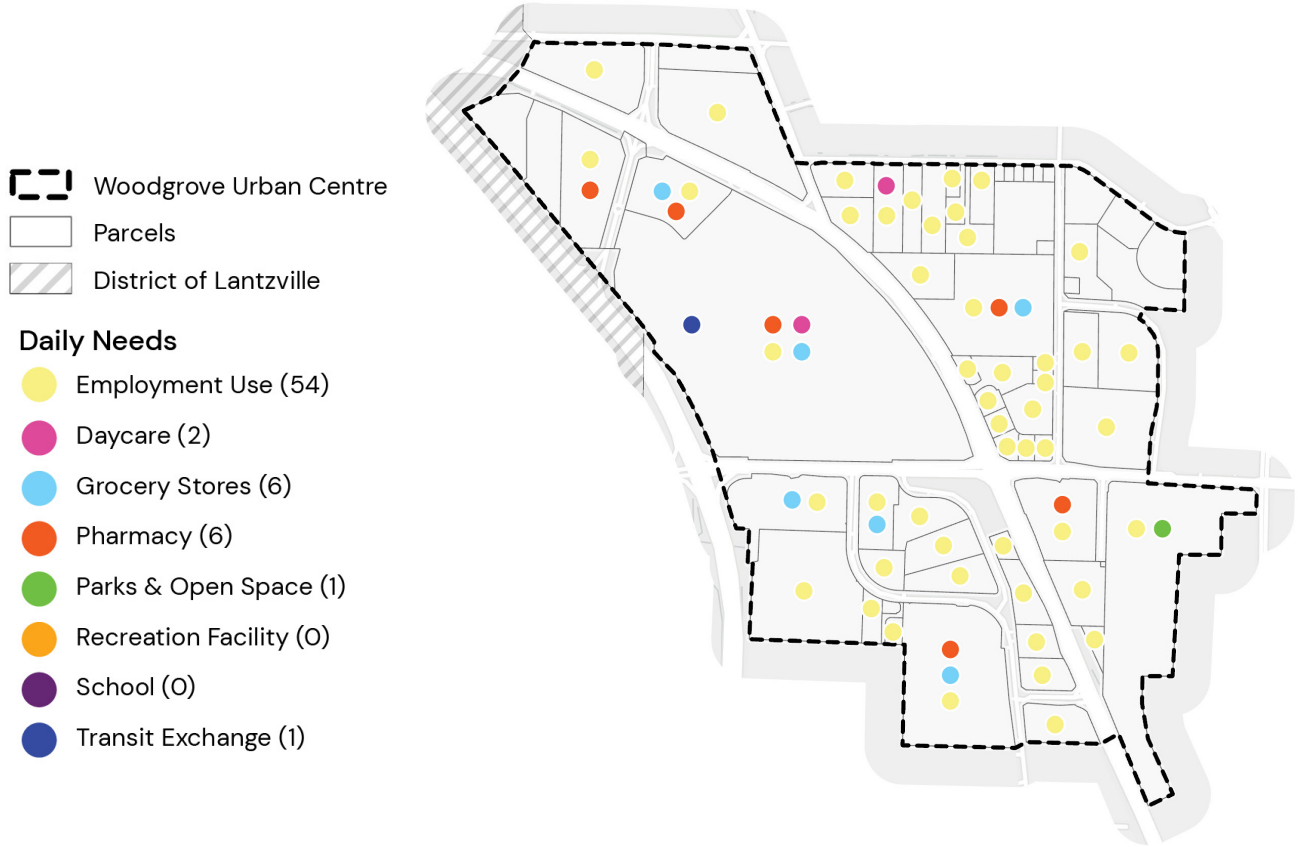


Figure 5: Scenario 1 – Daily Needs Destinations



2.1.2 SCENARIO 2 | PARAMETERS +5,000 PEOPLE

POPULATION, HOUSING & RETAIL PARAMETERS

Scenario 2 anticipates 5,000 new residents (~2,548 housing units) and 80,000 ft^2 of new retail space. The growth parameters assume the new population and housing are evenly distributed across the study area. An exception is that no additional population and retail space was allocated to the six parcels recently constructed because redevelopment of these sites is unlikely in the phase 2 and 3 time frames. The six parcels are: 6975 Island Highway; 6330 McRobb Avenue; 6540 Metral Drive; 6261 Hammond Bay Road; 6320 Sentinel Drive; and 6985 Island Highway.

TRANSPORTATION PARAMETERS

Scenario 2 includes: 1) the proposed new Bowers District road and a new ring road and intersection connecting Calinda Street to Aulds Road (see Figure 8). Classified as a mobility collector, the road includes both sidewalks and separated cycling infrastructure (see Figure 9); 2) Infilling sidewalks and cycling infrastructure within a 400 m radius of the proposed transit exchange. This includes two new multi-use paths to improve connectivity between proposed park and open spaces; and 3) Relocating the transit exchange to the intersection of Island Hwy/Hammond Bay Rd/Aulds Rd* triggering the adjusted routing (see Figure 19) and increasing frequency (see Table 1);

**Actual location of the future transit exchange is yet to be determined*

ACCESS TO DAILY NEEDS PARAMETERS

Scenario 2 includes the addition of 1 new daycare, 6 new employment locations, 5 new park and open spaces, 1 new elementary school* and 1 new recreation and culture facility* (see Figure 10).

**Actual location of the elementary school and recreation and culture facility is yet to be determined*

Figure 7: Scenario 2 – Road Network

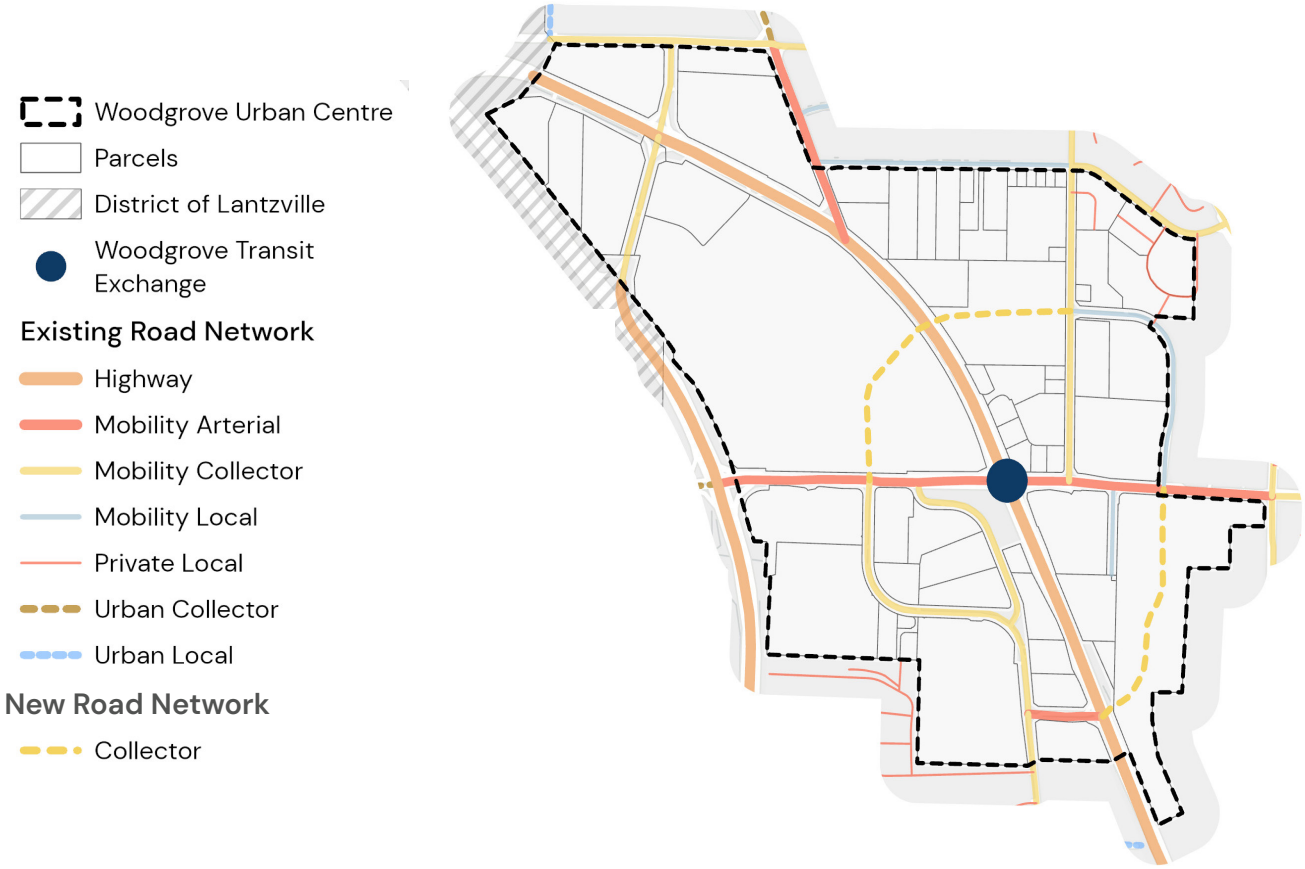


Figure 8: Scenario 2 – Sidewalk & Cycling Network

Figure 9: Scenario 2 – Transit Network

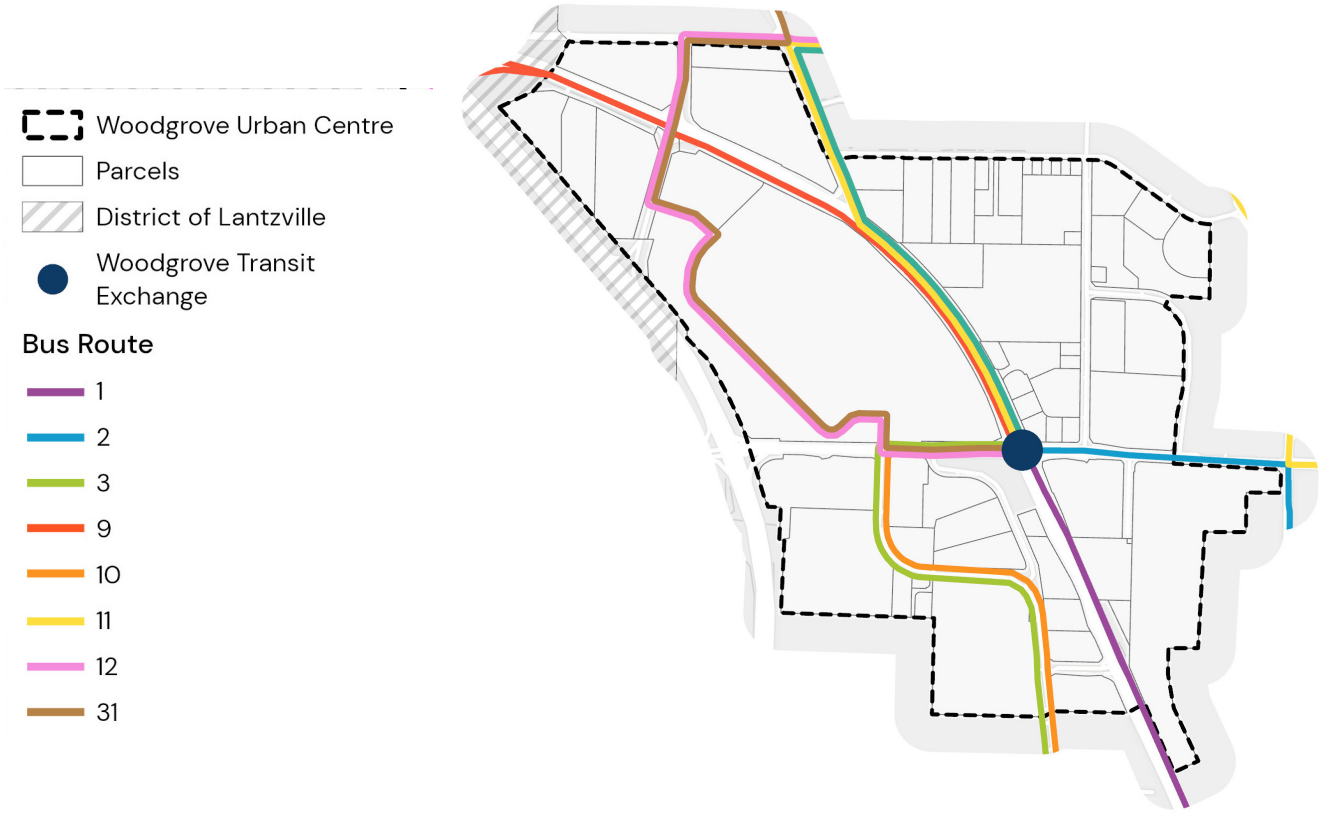


Figure 10: Scenario 2 – Daily Needs Destinations

2.1.3 SCENARIO 3 | PARAMETERS + 7,500 PEOPLE

POPULATION, HOUSING & RETAIL PARAMETERS

Scenario 3 anticipates 7,500 new residents (~3,823 housing units) and 120,000 ft^2 of new retail space. The growth parameters assume the new population and housing are evenly distributed across the study area. An exception is that no additional population and retail space was allocated to the six parcels recently constructed because redevelopment of these sites is unlikely in the phase 2 and 3 time frames. The six parcels are: 6975 Island Highway; 6330 McRobb Avenue; 6540 Metral Drive; 6261 Hammond Bay Road; 6320 Sentinel Drive; and 6985 Island Highway.

TRANSPORTATION PARAMETERS

Scenario 3 includes 1) the proposed new Bowers District road, the new ring road and a new road through the Woodgrove Centre extending north (i.e. Woodgrove Boulevard) (see Figure 12). Classified as a mobility collector, the road includes both sidewalks and separated cycling infrastructure; 2) Infilling sidewalks, crosswalks and cycling infrastructure throughout the entire Woodgrove Urban Centre. This includes two new multi-use paths, in addition to those proposed in Scenario 2, to improve connectivity between the proposed park and open spaces (see Figure 13).; and 3) Relocating the transit exchange to the intersection of Island Highway/Hammond Bay Road/Aulds Road* triggering the adjusted routing (see Figure 14) and increasing frequency (see Table 1);

**Actual location of the future exchange is yet to be determined*

ACCESS TO DAILY NEEDS PARAMETERS

Scenario 3 includes no additional destinations, beyond those proposed in Scenario 2 (see Figure 12).

Figure 11: Scenario 3 - Road Network

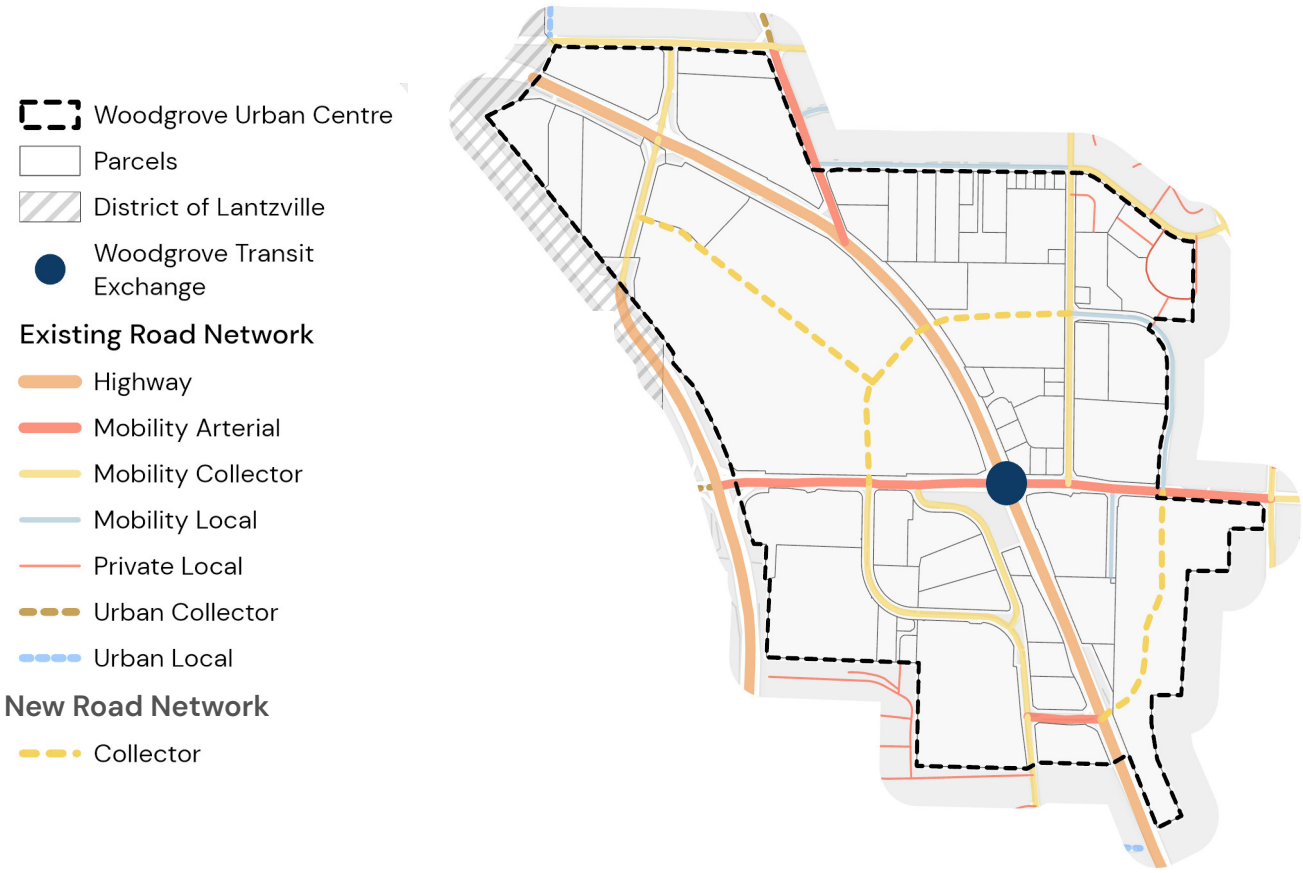


Figure 12: Scenario 3 - Sidewalk & Cycling Network

Figure 13: Scenario 3 - Transit Network

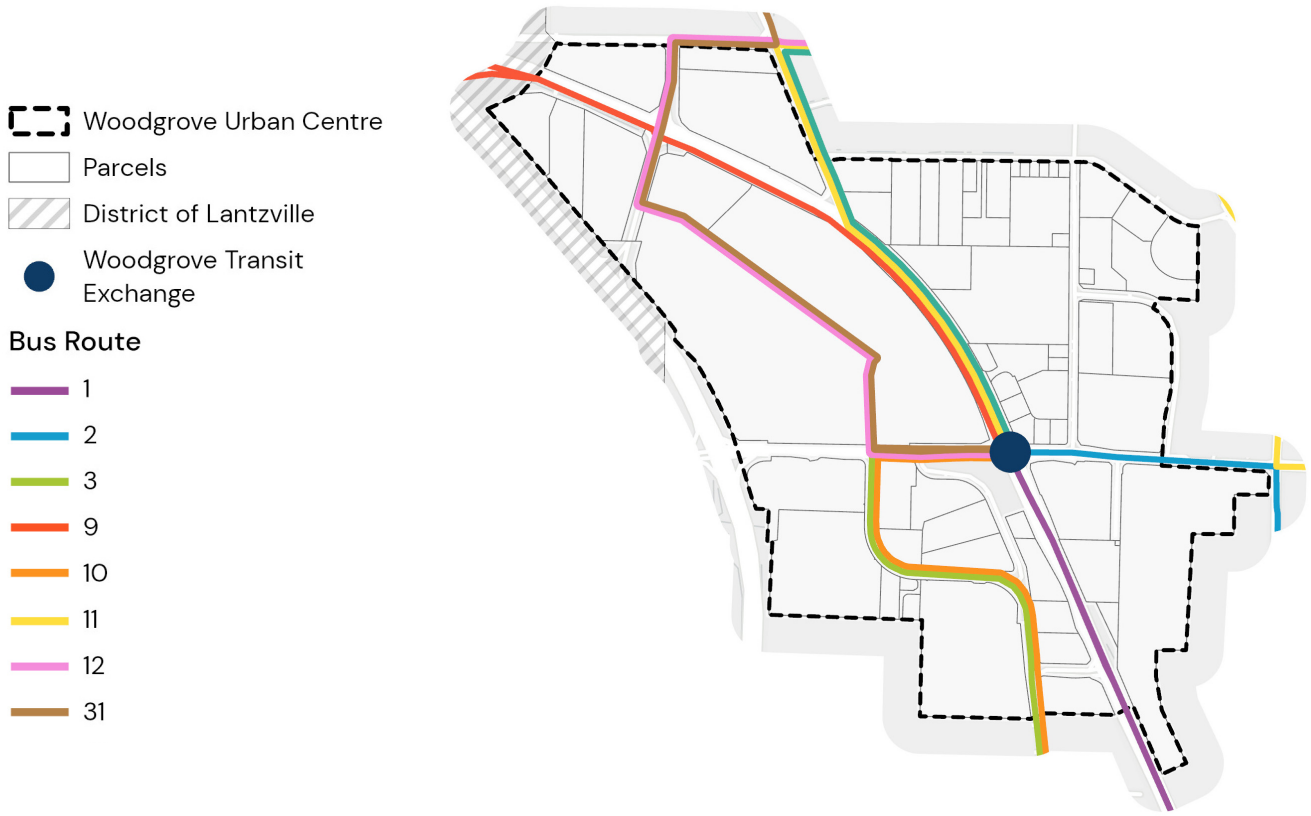


Figure 14: Scenario 3 - Daily Needs Destinations

3.0 GROWTH SCENARIOS FINDINGS

The following section explores the implications of residential and commercial growth on transportation, access to daily needs and infrastructure. Three growth scenarios were analyzed to test options and identify trade-offs, ensuring that future planning decisions are informed by both evidence and public input. The findings of this analysis are intended to inform what actions and policies are needed to transform the Woodgrove Urban Centre into a complete community.

3.1 TRANSPORTATION

The *Phase 1 – Baseline Assessment* showed that the Woodgrove Urban Centre, like much of the region, exhibits a high dependency on private automobile usage. The results also showed poor sidewalk and cycling connectivity, and transit access at the southeast portion of the study area. The following indicators were analyzed for each growth scenario, to understand what implications they have on the transportation network: walk/cycle and wait time to transit; intersection level of service; and vehicle trip types.

3.1.1 Walk/Cycle & Wait Time to Transit

ASSESSMENT

This indicator measures the walk/cycle and wait time it takes to access transit throughout the Woodgrove Urban Centre. The indicator was analyzed using Geographic Information Systems (GIS), taking into account planned improvements to active transportation and transit networks. Walking and cycling travel times were calculated based on actual routes to bus stops, rather than straight-line distances, and transit wait times were estimated as half the average bus headway (i.e. the amount of time a passenger might wait for the next bus at a stop).

Based on the mode share and daily transit trip targets assumed within *City Plan* and the transit routes approved within the RDN's *Transit Redevelopment Strategy*, transit frequency within the Woodgrove Urban Centre was assumed to increase.

The assessment of transit accessibility in the Woodgrove Urban Centre also used a specific threshold to define 'good' access. This is characterized as a total of less than 12.5 minutes of combined walk/cycle and wait time to reach a transit stop.

Further analysis was conducted based on parcel-specific population projections to better understand how transit accessibility is distributed throughout the community. The coverage for each parcel was calculated based on the proportion of dots along the parcel frontage that had access or good access to transit, assuming that the populations within each parcel would be distributed equally across the parcel.

FINDINGS

Figures 16 - 21 represent the average time it takes to access transit by walking and cycling for all three scenarios. Areas classified as inaccessible (the blank areas in the figures) were either located more than 50 meters away from a sidewalk/cycle route or required a travel time of more than 20 minutes to the nearest bus stop.

One limitation of this area-based approach is it does not account for any new or existing publicly accessible pathways or trails which provide connections across and between parcels, and can be achieved through future redevelopment. Therefore, a location in the centre of a large parcel could be deemed inaccessible to transit due to its distance (>50m) to the nearest active transportation facility, even if there are sidewalks and bike routes along the parcel frontage. This analysis may underestimate the transit coverage and accessibility, especially for some of the larger parcels.

Table 3 shows the percentage of the Woodgrove Urban Centre area compared to the Woodgrove population with access to transit via active transportation modes.

Table 3: Percentage of Woodgrove Urban Centre with Access to Transit via Active Transportation Modes

MODE	ACCESS TO TRANSIT	SCENARIO 1	SCENARIO 2	SCENARIO 3
Walk	Access to Transit	41%	50%	71%
	Good Access to Transit	28%	39%	65%
Cycle	Access to Transit	15%	44%	68%
	Good Access to Transit	15%	44%	68%

Figure 15: Scenario 1 – Walk & Wait to Transit

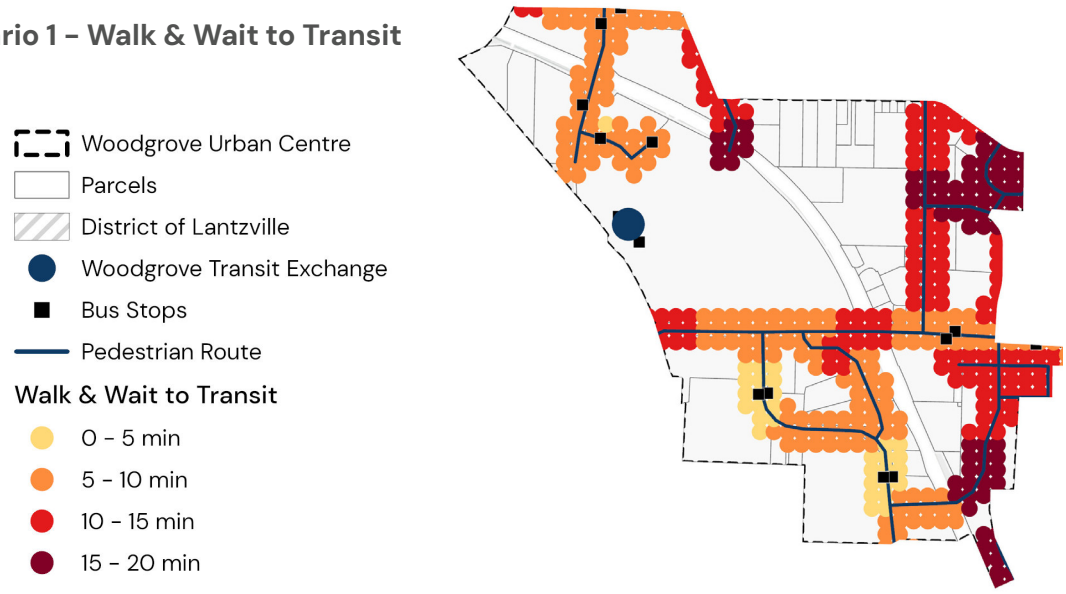


Figure 16: Scenario 2 – Walk & Wait to Transit

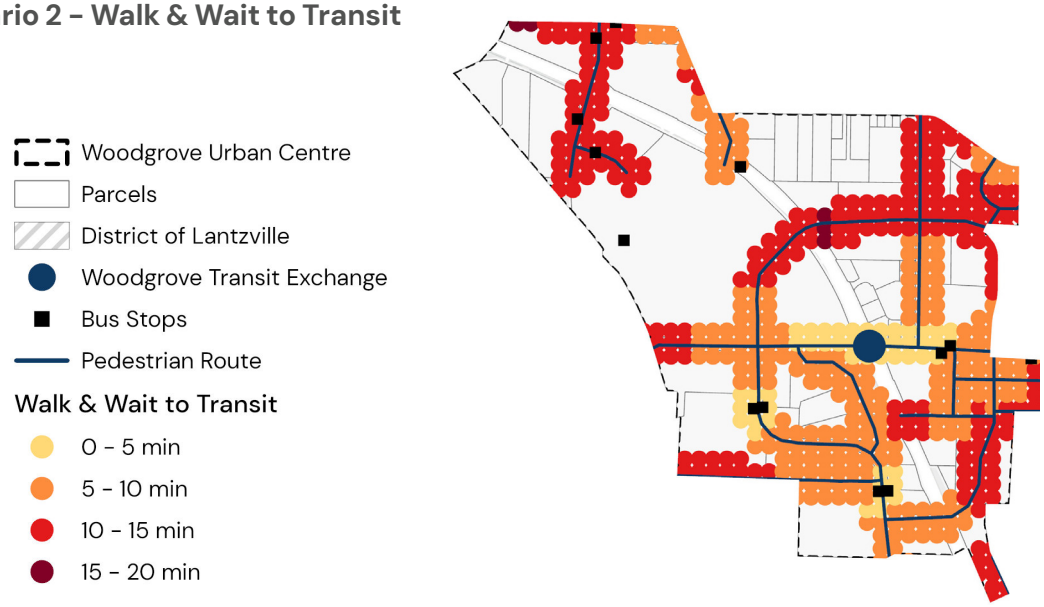


Figure 17: Scenario 3 – Walk & Wait to Transit

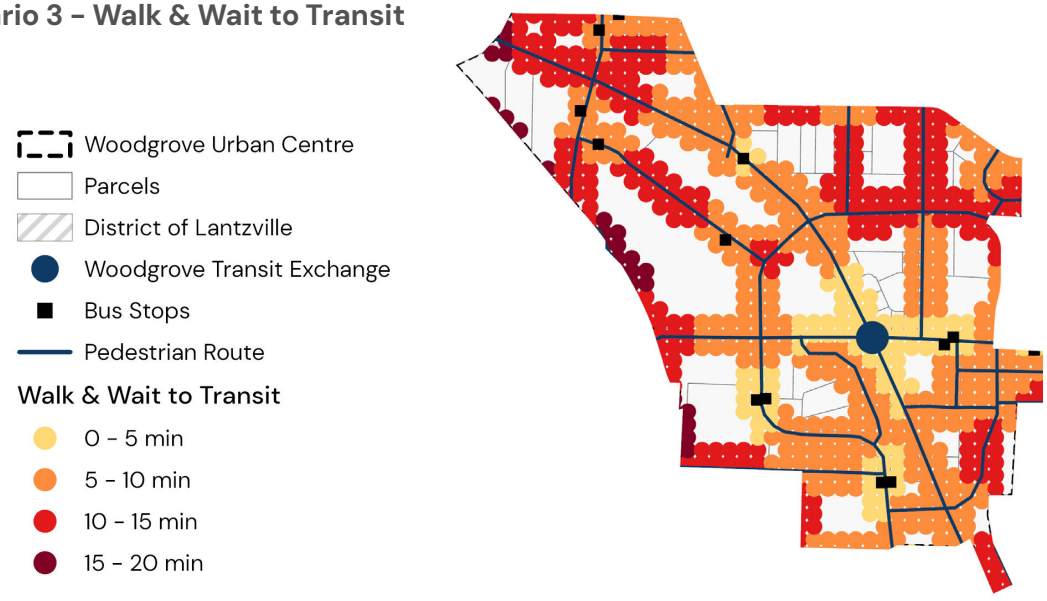


Figure 18: Scenario 1 - Cycle & Wait to Transit

Figure 19: Scenario 2 - Cycle & Wait to Transit

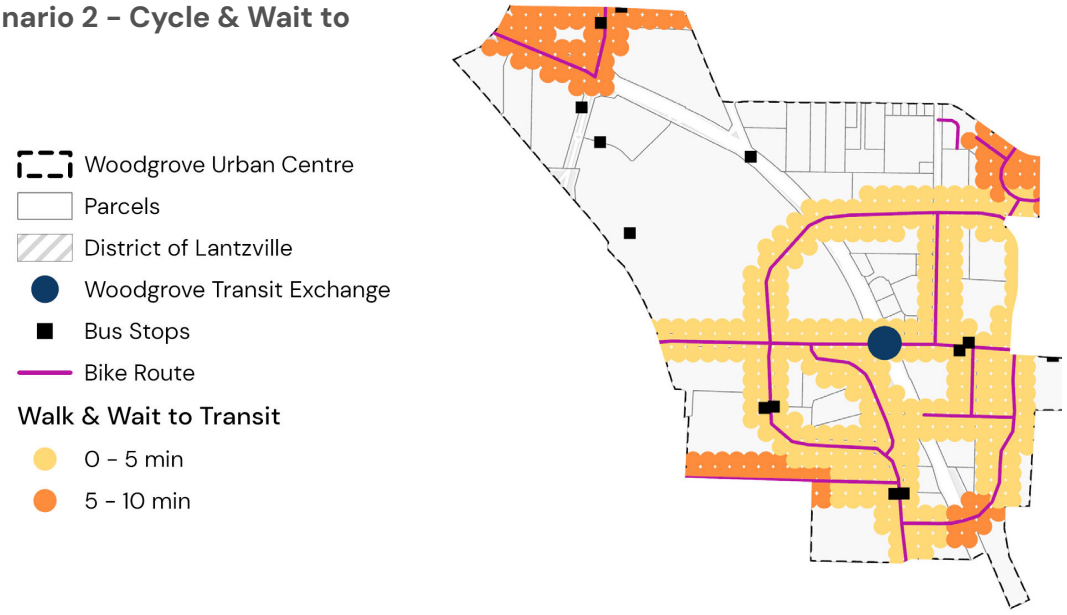
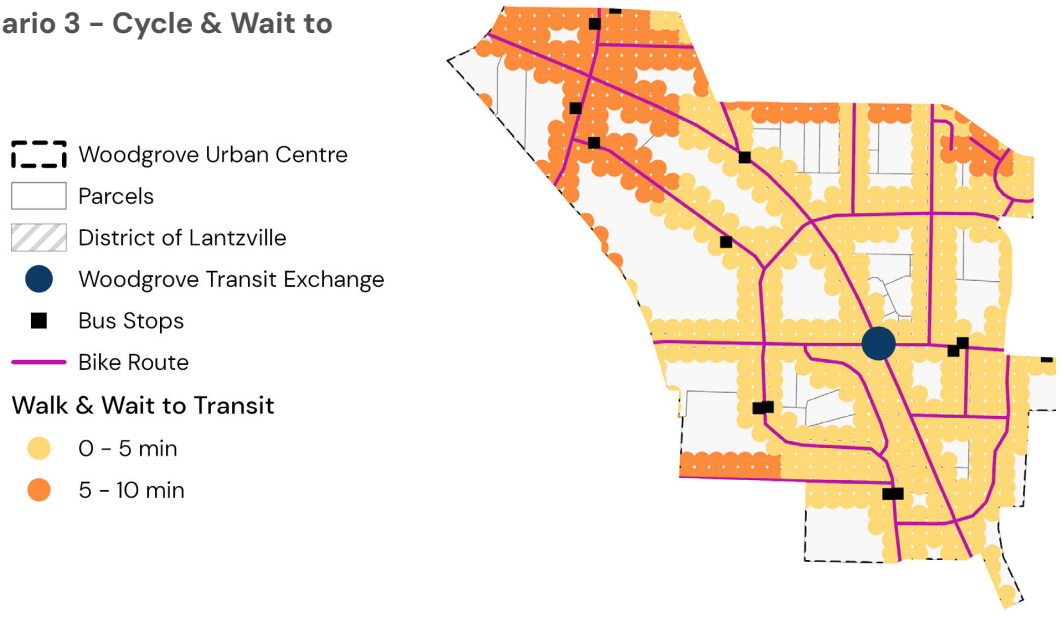


Figure 20: Scenario 3 - Cycle & Wait to Transit



SCENARIO 1 FINDINGS

- Similar to existing conditions, access to transit is better in the western portion of Woodgrove, near the existing exchange and along Metral Drive.
- There are major gaps in the cycling network which limits the ability for cyclists to travel to and from bus stops. For example, the cycling facilities along the new Bowers District connector road do not connect to the existing cycling network and do not provide access to transit.
- 41% of the area has access to transit via walking; however, only 28% of the area possesses "good" access by walking indicating that many of these connections still involve long travel times or long wait times.

SCENARIO 2 FINDINGS

- The relocated transit exchange significantly improves transit access around the Island Highway/ Aulds Road intersection and the centre of the Woodgrove area.
- Walking access to transit improves in Scenario 2, with the overall proportion of area with access and "good" access to transit both increasing by about 10%. This indicates that the combined improvements in network connectivity and service frequency are effectively reducing travel and wait times for many residents.
- New cycling facilities along the Ring Road and Aulds Road/Hammond Bay Road provide Woodgrove with a continuous spine of cycling routes, facilitating access to the transit exchange and other key destinations. The coverage of good access by bike increases dramatically in Scenario 2, with the amount of area increasing from 15% to 44%.

SCENARIO 3 FINDINGS

- The new walking and cycling routes further improve active transportation coverage connectivity within Woodgrove, with about 65% of the Woodgrove area classified as having good access to transit via these modes. The presence of several large parcels limits the ability to further increase this spatial percentage, though it is expected that these parcels will contain private pathways or routes which connect to the public active transportation network. Looking at the results through a different lens (Table 3) highlights that Scenario 3 has excellent access to transit with its complete coverage of active transportation facilities on all roads.
- The increased transit service further reduces average transit wait times.

3.1.2 Intersection Level of Service

ASSESSMENT

This indicator provides an overview of traffic operations. Future traffic volumes were forecasted based on the assumed mode splits, Woodgrove area development, road network improvements and general background traffic growth for each scenario.

When reviewing these results, it should be acknowledged that a certain amount of peak period road congestion is greatly beneficial in inducing major changes to travel behaviour, as this congestion may incentivize travelers to seek out closer destinations that don't involve vehicle travel on congested corridors, find alternate destinations that are close enough to walk/cycle to, or simply choose not to travel at all during the peak hours.

While this indicator is focused on vehicle operations only, any infrastructure improvements should consider the impact to all road users.

FINDINGS

Table 4 summarizes traffic operations at the study intersections in terms of Level of Service (LOS) and Volume-to-Capacity (V/C) ratio. It also highlights the worst operating movement (WOM) at each intersection.

SCENARIO 1 FINDINGS

- Woodgrove is Nanaimo's northernmost urban centre, therefore the predominant flow of study traffic occurs to and from the south. The Nanaimo Parkway/Aulds Road and Island Highway/Turner Road intersections, which represent the southernmost study area boundaries along the two highways, were identified to be the worst operating intersections in the future scenarios.
  - Both intersections were shown to operate with overall LOS E, exceeding the acceptable performance threshold.
  - The westbound left movement was also shown to be the critical movement at both intersections.
- The Island Highway/Aulds Road intersection was also found to exceed acceptable performance thresholds.
- The new connector road connecting Enterprise Way and Calinda Street was found to provide more direct access to Island Highway for the Bowers District and neighbourhoods located north of Hammond Bay Road.

SCENARIO 2 FINDINGS

- The completion of the ring road was shown to redistribute traffic away from the roads located within the central ring, particularly along Aulds Road/Hammond Bay Road.
  - The overall LOS at the Island Highway/Aulds Road and Aulds Road/Hammond Bay Road intersections improved from a failing LOS E in Scenario 1 to an acceptable LOS D in Scenario 2. A similar improvement was projected for the Hammond Bay Road/Applecross Road intersection.
  - Due to the orientation of Island Highway, the new ring road was found to provide the largest benefit for traffic traveling north-to-west and south-to-east (or vice versa).
  - The increased road network connectivity and capacity also provides opportunities to modify existing intersections (such as removing dual turning lanes and split phasing) to further improve operations for all travel modes.

Table 4: Intersection Level of Service

INTERSECTION	SCENARIO 1			SCENARIO 2			SCENARIO 3		
	WOM	LOS	V/C	WOM	LOS	V/C	WOM	LOS	V/C
Dover Rd & Mary Ellen Dr	NBL	D	0.48	NBL	C	0.46	NBL	D	0.49
Dover Rd & Dickinson Rd	SBL	A	0.36	SBL	A	0.35	SBL	B	0.36
Dover Rd & Applecross Rd	NBL	D	0.42	NBL	E	0.45	NBL	E	0.45
Dover Rd & Uplands Dr/Blueback Rd	NBL	C	0.65	NBL	C	0.70	NBL	C	0.76
Island Hwy & Mary Ellen Dr*	SBL	B	0.32	SBL	B	0.28	SBL	B	0.28
Portsmouth Rd & Dickinson Rd	WBL	C	0.18	WBL	C	0.14	WBL	C	0.16
Portsmouth Rd & Applecross Rd	WBL	C	0.06	WBL	C	0.04	WBL	C	0.04
McRobb Ave & Uplands Dr	WBL	D	0.14	WBL	D	0.17	WBL	E	0.20
Mary Ellen Dr & Mall Access	SBL	A	0.36	SBL	A	0.34	SBL	A	0.35
Island Hwy & Dickinson Rd*	EBL	C	0.51	EBL	C	0.49	EBL	D	0.52
Calinda St & Applecross Rd	WBL	C	0.03	EBL	C	0.58	WBR	C	0.67
Aulds Rd & Nanaimo Pkwy*	**WBL**	**E**	**0.80**	**WBL**	**E**	**0.86**	**WBL**	**F**	**0.89**
Aulds Rd & Metral Dr	EBT	D	0.56	NBL	D	0.75	NBT	D	0.76
Aulds Rd/Hammond Bay Rd & Island Hwy*	**SBL**	**E**	0.72	SBL	D	0.66	SBL	D	0.68
Hammond Bay Rd & Applecross Rd	SBR	C	0.65	SBR	B	0.33	SBR	B	0.31
Hammond Bay Rd & Calinda St	WBL	B	0.47	WBL	B	0.46	WBL	B	0.49
Hammond Bay Rd & Uplands Dr	SBT	B	0.46	SBT	B	0.46	SBT	B	0.47
Enterprise St & Metral Dr	WBT	C	0.56	WBT	C	0.57	WBT	C	0.58
Enterprise St & Island Hwy*	SBL	C	0.67	SBL	C	0.69	SBL	C	0.71
Doumont Rd & Metral Dr	NBT	C	0.81	NBT	D	0.86	NBT	E	**0.93**
Turner Rd & Island Hwy*	**WBL**	**E**	0.79	WBL	**E**	0.81	**WBL**	**F**	**0.86**
Turner Rd & Uplands Dr	SBL	C	0.58	SBL	C	0.62	SBL	D	0.65
Turner Rd & Metral Dr	SBT	C	0.75	SBT	C	0.81	SBT	D	0.88
Island Hwy & Ring Rd	n/a	n/a	n/a	SBL	C	0.53	NBL	C	0.61
Woodgrove Blvd & Ring Rd	n/a	n/a	n/a	n/a	n/a	n/a	EBR	C	0.71

Note: For two-way stop-controlled intersections, LOS and V/C are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection. **Bolded** values indicate operations exceeding acceptable performance thresholds.

*Ministry of Transportation & Transit Intersections

Figure 21: Scenario 1 – Intersection Level of Service

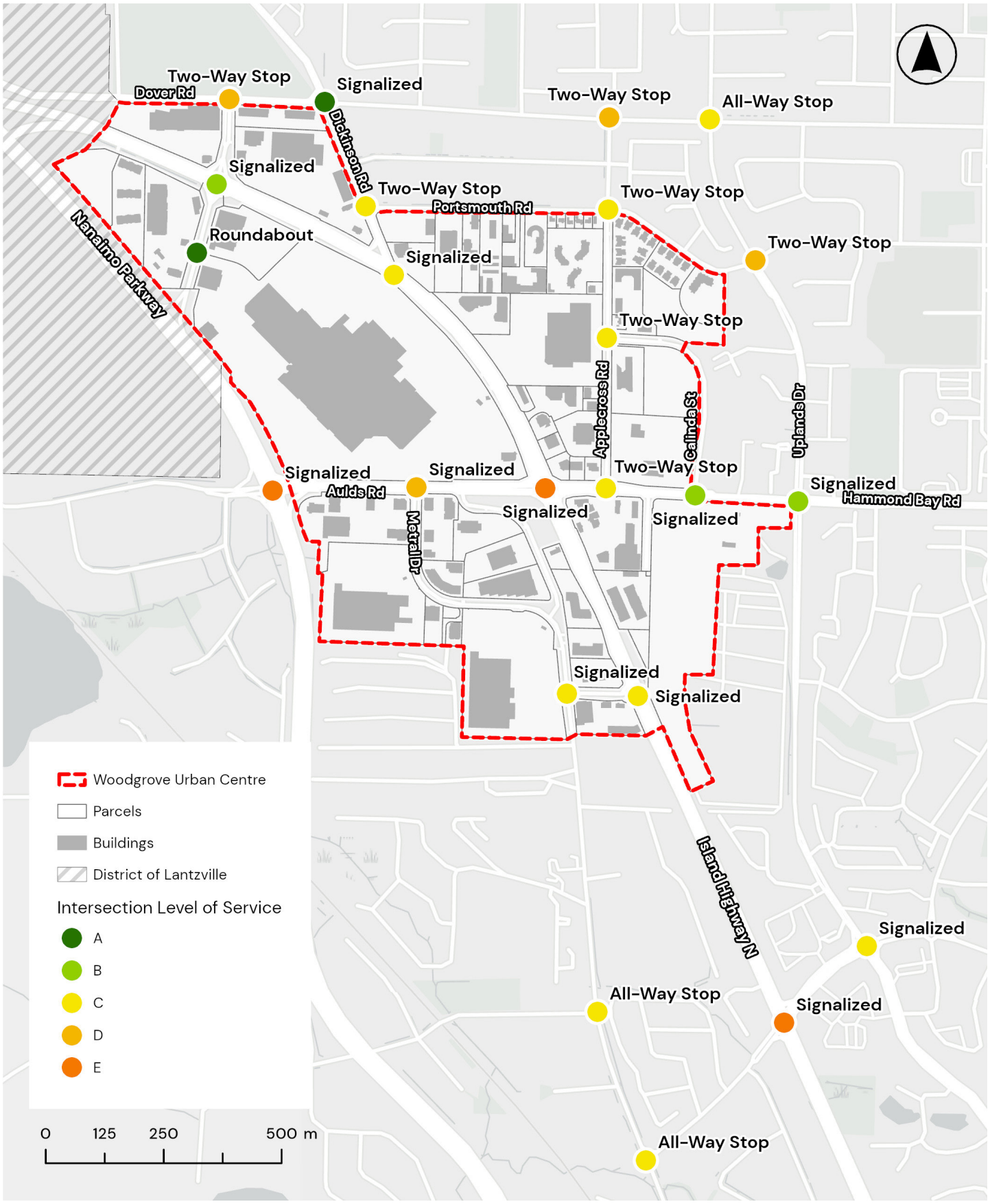


Figure 22: Scenario 2 - Intersection Level of Service

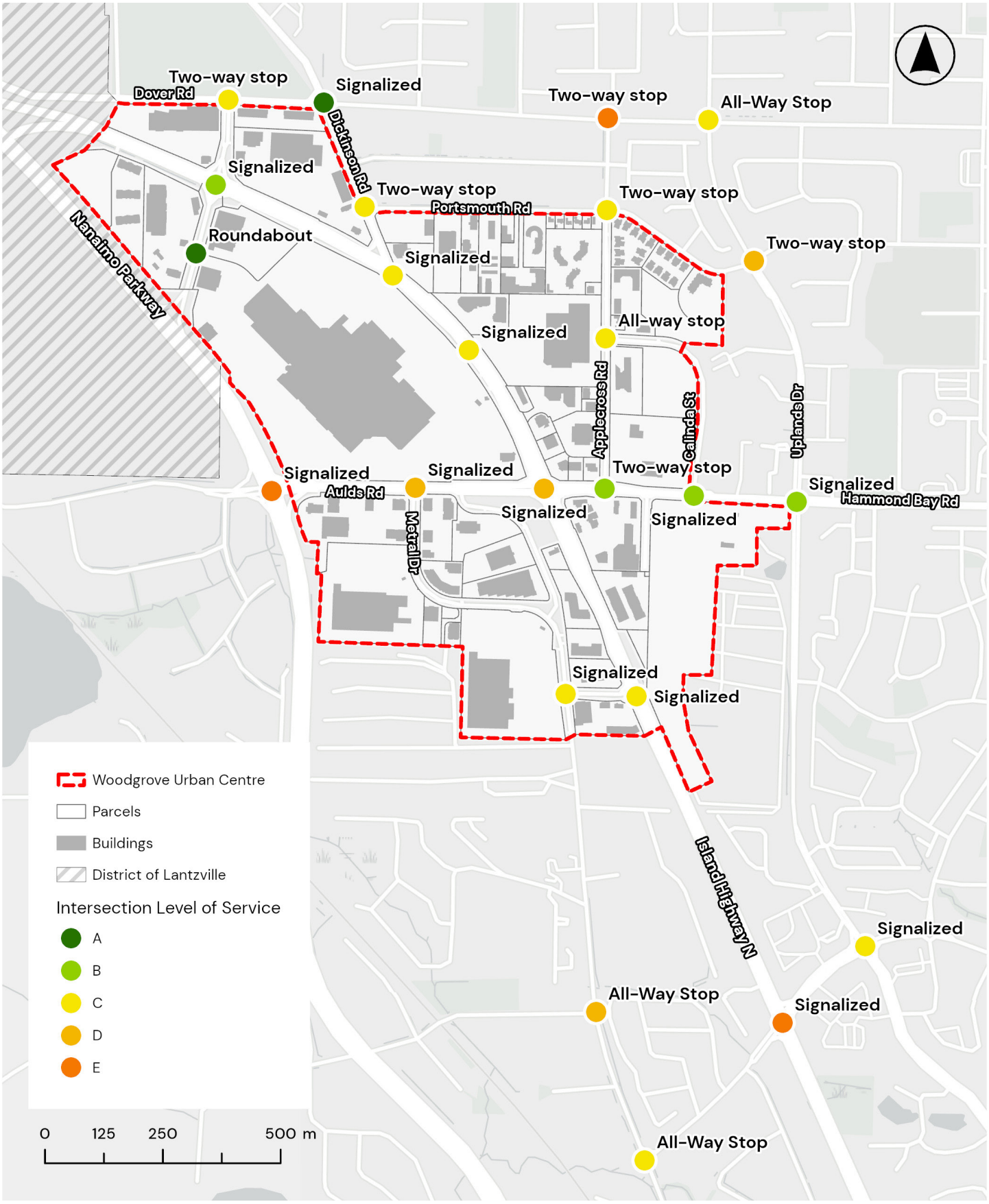
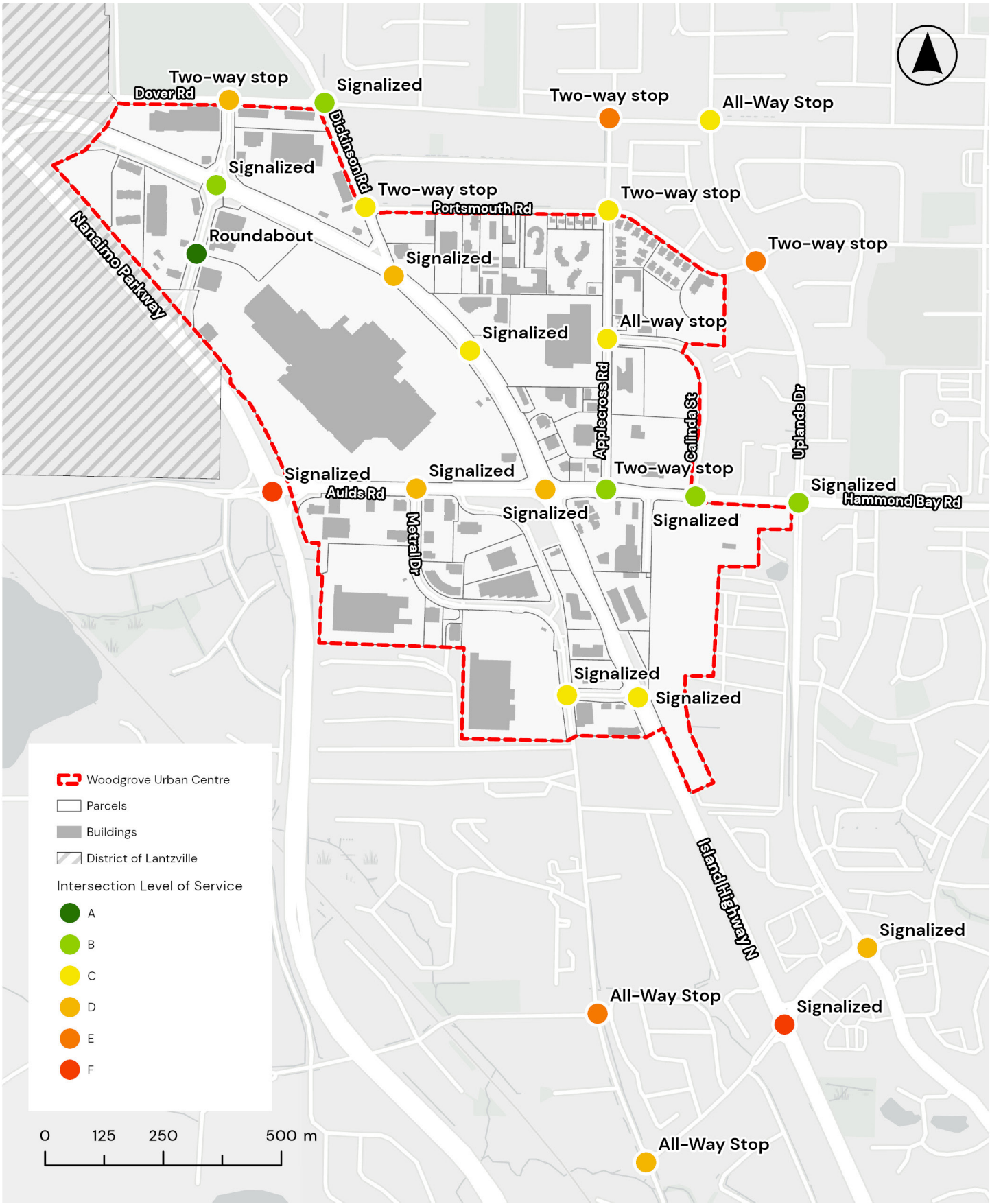


Figure 23: Scenario 3 - Intersection Level of Service



- The existing two-way stop control at the Calinda Street/Applecross Road intersection was found to be insufficient with the new west leg. All-way stop control was modeled instead.
- The issues identified at the critical Nanaimo Parkway/Aulds Road and Island Highway/Turner Road intersections in Scenario 1 were exacerbated by the additional traffic generated within Scenario 2.

SCENARIO 3 FINDINGS

- The new Woodgrove Boulevard/ring road intersection was assumed to be all-way stop controlled.
- The issues identified at critical intersections in the previous scenarios were further exacerbated by the additional traffic generated within Scenario 3.
- Approximately 800 turning vehicles were forecasted on the critical westbound left turn from Aulds Road onto Nanaimo Parkway.

3.1.3 Vehicle Trip Types

ASSESSMENT

This is a new indicator which was not included within the *Phase 1: Baseline Assessment Report*. Vehicle trip types represents the breakdown of Woodgrove vehicle traffic based on their origin and destination locations.

1. **Internal-Internal**: Trips between zones within the study area.
2. **Internal-External**: Trips originating in the study area, but destined to locations beyond the study area boundaries, which would pass through one of the external gates of the model.
3. **External-Internal**: Trips originating outside the study area, but destined to traffic zones within the study area boundaries, which would pass through one of the external gates of the model.
4. **External-External**: Trips with both an origin and destination outside of the study area but passing through two external gates of the model.

The total of the first three types of trips is equivalent to the total vehicle trip generation of the study area traffic zones. The last trip type represents the "through" traffic in the study area. Note the study area used in the traffic model extends beyond the Woodgrove Urban Centre boundary to more accurately model travel patterns.

FINDINGS

Table 5 summarizes vehicle trip types by volume and percentage.

Table 5: Vehicle Trip Type – Note: Volumes rounded to the nearest 100 trips

TRIP TYPE	SCENARIO 1		SCENARIO 2		SCENARIO 3	
	Volume	Percentage	Volume	Percentage	Volume	Percentage
Internal-Internal	800	5%	800	5%	800	5%
Internal-External	4,300	28%	4,300	27%	4,400	26%
External-Internal	4,100	26%	4,200	26%	4,300	26%
External-External	6,300	40%	6,800	42%	7,400	42%
Total	**15,500**	**100%**	**16,100**	**100%**	**16,900**	**100%**

SCENARIO 1, 2 & 3 FINDINGS

- The total amount of peak hour study area traffic is expected to continually increase over the next 30 years.
- Traffic growth across the future scenarios is largely driven by an increase in External-External trips traveling through the study area (expected to grow at a rate of 1% per year).
- Scenarios 2 and 3 experienced relatively minor increases in internal study area trip generation (Internal-Internal, Internal-External, and External-External trips) even with the continued development of the Woodgrove Urban Centre. This is caused by the reduced automobile mode shares (80.5% auto in Scenario 2, 76% auto in Scenario 3) assumed for these scenarios, which limits the amount of new vehicular traffic being added onto the road network. This finding highlights how the traffic impacts of new development can be mitigated with changing travel behaviours and modal splits.
- The target 76% auto mode split in Scenario 3 results in approximately 1,000 fewer peak hour vehicle trips (6% decrease) compared to a situation where the mode split is unchanged from the existing 85% auto mode share. Traffic congestion would be significantly worsened with these additional vehicle trips, further proving how mode shifts away from private automobile reliance is critical in supporting the proposed growth.

COSTING

High-level costing was conducted for the transportation infrastructure improvements (including new active transportation facilities, roadways, and intersections) assumed for each of the three future scenarios. Overall costs associated with the new transportation infrastructure were estimated to be about $50 million for Scenario 1, $100 million for Scenario 2, and $150 million for Scenario 3. While Scenarios 2 and 3 have higher costs compared to Scenario 1, these scenarios also assume increased growth and development, which provides additional opportunities for funding through development financing tools.

3.2 ACCESS TO DAILY NEEDS

The *Phase 1: Baseline Assessment Report* showed that Woodgrove Urban Centre is poorly connected by sidewalks and cycling infrastructure, impacting residents' ability to access their daily needs. The assessment further identified a lack of parks and open spaces, recreation and culture facilities, and schools within the Woodgrove Urban Centre.

ASSESSMENT

This indicator measures Woodgrove Urban Centre residents' accessibility to daily needs using pedestrian or cycling infrastructure. Measuring this indicator is important because it helps determine how well-connected residents are to the resources they rely on for daily living. Access and proximity to these amenities is also crucial for enhancing convenience, reducing reliance on cars, promoting active transportation, and improving overall quality of life.

The indicator was analyzed using GIS, taking into account proposed improvements to sidewalks and cycling infrastructure. Walking and cycling travel distances and times were calculated based on actual routes, rather than straight-line distances. Existing concrete sidewalks, cycle tracks and local roads built to the standard of the day were included for the analysis. The model used a threshold of 800 metres, with a walking time of 0.8 metres/second and a cycling time of 3 metres/second.

Recreation & Culture Facility

Feedback received during Phase 1 of this project, in addition to input received during *Reimagine Nanaimo*, was used to determine the need for a recreation and culture facility. The range in the size of the facility was determined by assessing top architectural programming elements desired by community and comparing them to typical spatial sizes of the programming elements seen in other communities. The architectural programming elements tested included: public gymnasium/indoor courts; rehearsal and performance space; fitness centre; weight room; music and art rooms; multi-purpose rooms; indoor outdoor play areas (e.g. splash pad, playground); child-minding; community gathering spaces, performing arts space, partnership space (e.g. library/health/school), pool, arena and public art space.

School

In the Woodgrove Urban Centre and surrounding neighbourhoods, anticipated new housing developments are expected to impact future student numbers at local schools. The methodology for projecting these numbers involved grouping new housing units by their catchment area and estimating how many students each type of housing would likely generate, based on recent trends and data from similar developments. This approach helps the School District plan for changes in enrollment while ensuring schools have the capacity and resources needed as the community grows.

FINDINGS

Table 6 represents the findings of the recreation and culture facility and school assessment. In regards to the recreation and culture facility, it was determined that a 90,000 ft^2 building is needed to meet the programming needs. The facility is intended to serve the 5,000 to 7,500 additional residents in the study area, as well as serving as a regional amenity.

In terms of the need for a new school, School District 68 is anticipating significant growth at the elementary level in the north end. The District is reopening Rutherford Elementary (outside of the Woodgrove study area) in September 2025, which will provide additional capacity. However, capacity pressure is likely to remain and an additional school may be needed in the area. Additional population growth in the Woodgrove area may require a potential new school, particularly to address overcapacity at Pleasant Valley Elementary.

With respect to additional high school enrollment, Dover Bay High School is slated to grow well beyond its capacity. However, the District does not envision a secondary school within the vicinity of the Woodgrove Urban Centre due to the proximity to Dover Bay High School. Any solution will involve areas to the west (e.g. Lanztville or the expansion/reopening of currently existing sites).

The District has examined future growth and already proposed and applied for a new school in its *Long Range Facilities Plan*. However, a new school in Nanaimo is unlikely to be approved in the next 5 years. As a result, the parameters of a new elementary school were only added to Scenarios 2 and 3.

Table 6: Recreation & Cultural Facility & School

CATEGORY	PARAMETER	SCENARIO 1	SCENARIO 2	SCENARIO 3
DEMOGRAPHICS	Population Increase	2,500	5,000	7,500
	Units	1,274	2,548	3,823
	Recreation Space (sqft)	None	90,000	
	School Catchments (additional new students)	» 11-26 elementary » 11-30 high school	» 40-90 elementary » 37-96 high school	» 74-165 elementary » 67-174 high school

Tables 7 and 8 are a summary of the results for Woodgrove resident's ability to access their daily needs using pedestrian and cycling infrastructure. Note, the total number of residential units in Scenario 1 is proposed to be 58 properties. The number of residential properties in Scenario 2 & 3 jumps to 105 properties, accounting for the increase in population.

Table 7: Access Daily Needs Destination Using Pedestrian Infrastructure

PEDESTRIAN INFRASTRUCTURE	SCENARIO 1	SCENARIO 2	SCENARIO 3
Daycare	• 55 out of 58 residential properties (95%) can access a daycare within 800 metres or 15 min walk • 4 properties (300 residential units) have no access, as no sidewalks exists	• 94 out of 105 residential properties (96%) can access a daycare within 800 metres or 15 min walk • 11 properties (351 residential units) have no access, as no sidewalks exists	• 105 out of 105 residential properties (100%) can access a daycare within 800 metres | 15 min walk
Employment Options	• 55 out of 58 residential properties (95%) can access an employment option within 800 metres or 15 min walk • 4 properties (300 residential units) have no access, as no sidewalks exists	• 101 out of 105 residential properties (96%) can an access employment option within 800 metres or 15 min walk • 4 properties (300 residential units) have no access, as no sidewalks exists	• 105 out of 105 residential properties (100%) can an access employment option within 800 metres or 15 min walk
Grocery Store	• 55 out of 58 residential properties (95%) can access a grocery store within 800 metres or 15 min walk • 4 properties (300 residential units) have no access, as no sidewalks exists	• 94 out of 105 residential properties (96%) can access a grocery store within 800 metres or 15 min walk • 11 properties (351 residential units) have no access, as no sidewalks exists	• 105 out of 105 residential properties (100%) can access a grocery store within 800 metres or 15 min walk
Park & Open Space	• 45 out of 58 residential properties (78%) can access a park & open space within 800 metres or 15 min walk • 8 properties (1488 residential units) have no access, as no sidewalks exists	• 79 out of 105 residential properties (75%) can access a park & open space within 800 metres or 15 min walk • 11 properties (810 residential units) have no access, as no sidewalks exists	• 105 out of 105 residential properties (100%) can access a park and open space within 800 metres or 15 min walk
Pharmacy	• 55 out of 58 residential properties (95%) can access a pharmacy within 800 metres or 15 min walk • 4 properties (300 residential units) have no access, as no sidewalks exists	• 96 out of 105 residential properties (90%) can access a pharmacy within 800 metres or 15 min walk • 11 properties (351) residential units) have no access, as no sidewalks exists	• 105 out of 105 residential properties (100%) can access a pharmacy within 800 metres or 15 min walk
Recreation & Cultural Facilities & School	N/A	• 79 out of 105 residential properties (75%) can access the recreational & cultural facility and school within 800 metres or 15 min walk • 17 properties (892 residential units) have no access, as no sidewalks exists	• 105 out of 105 residential properties (100%) can access the recreational & cultural facility and school within 800 metres or 15 min walk

PEDESTRIAN INFRASTRUCTURE			
	SCENARIO 1	SCENARIO 2	SCENARIO 3
Transit Exchange	• 4 out of 58 residential properties (7%) can access the transit exchange within 800 metres or 15 min walk • 4 properties (300 residential units) have no access, as no sidewalks exists	• 79 out of 105 residential properties (75%) can access the transit exchange within 800 metres | 15 min walk • 17 properties (892 residential units) have no access, as no sidewalks exists	• 94 out of 105 residential properties (90%) can access the transit exchange within 800 metres or 15 min walk

Table 8: Access Daily Needs Destination Using Cycling Infrastructure

CYCLING INFRASTRUCTURE			
	SCENARIO 1	SCENARIO 2	SCENARIO 3
Daycare	• 9 out of 58 residential properties (15%) can access a daycare within 800 metres or 15 min cycle • 49 properties (749 residential units) have no access, as no cycling infrastructure exists	• 59 out of 105 residential properties (56%) can access a daycare within 800 metres or 15 min cycle • 45 properties (762 residential units) have no access, as no cycling infrastructure exists	• 105 out of 105 residential properties (100%) can access a daycare within 800 metres | 15 min walk
Employment Options	• 16 out of 58 residential properties (29%) can access an employment option within 800 metres or 15 min cycle • 42 properties (449 residential units) have no access, as no cycling infrastructure exists	• 104 out of 105 residential properties (99%) can access an employment option within 800 metres or 15 min cycle • 1 properties (1 residential unit) has no access, as no cycling infrastructure exists	• 105 out of 105 residential properties (100%) can access an employment option within 800 metres or 15 min walk
Grocery Store	• 1 out of 58 residential properties (1%) can access a grocery store within 800 metres or 15 min cycle • 57 properties (1931 residential units) have no access, as no cycling infrastructure exists	• 47 out of 105 residential properties (45%) can access a grocery store within 800 metres or 15 min cycle • 49 properties (749 residential units) have no access, as no cycling infrastructure exists	• 105 out of 105 residential properties (100%) can access a grocery store within 800 metres or 15 min walk
Park & Open Space	• 1 out of 58 residential properties (1%) can access a park & open space within 800 metres or 15 min cycle • 57 properties (1931 residential units) have no access, as no cycling infrastructure exists	• 46 out of 105 residential properties (43%) can access a park & open space within 800 metres or 15 min cycle • 58 properties (872 residential units) have no access, as no cycling infrastructure exists	• 105 out of 105 residential properties (100%) can access a park and open space within 800 metres or 15 min walk
Pharmacy	• 1 out of 58 residential properties (1%) can access a pharmacy within 800 metres or 15 min cycle • 57 properties (1931 residential units) have no access, as no cycling infrastructure exists	• 47 out of 105 residential properties (45%) can access a pharmacy within 800 metres or 15 min cycle • 57 properties (842 residential units) have no access, as no cycling infrastructure exists	• 105 out of 105 residential properties (100%) can access a pharmacy within 800 metres or 15 min walk

CYCLING INFRASTRUCTURE			
	SCENARIO 1	SCENARIO 2	SCENARIO 3
Recreation & Cultural Facilities & School	N/A	• 46 out of 105 residential properties (43%) can access the recreation & culture facility & school within 800 metres or 15 min cycle • 58 properties (872 residential units) have no access, as no cycling infrastructure exists	• 105 out of 105 residential properties (100%) can access the recreational & cultural facility and school within 800 metres or 15 min walk
Transit Exchange	• 1 out of 58 residential properties (1%) can access the transit exchange within 800 metres or 15 min cycle • 57 properties (1931 residential units) have no access, as no cycling infrastructure exists	• 46 out of 105 residential properties (43%) can access the transit exchange within 800 metres | 15 min walk • 58 properties (872 residential units) have no access, as no sidewalks exists	• 105 out of 105 residential properties (1000%) can access the transit exchange within 800 metres or 15 min walk

SCENARIO 1 FINDINGS

- With an increase of +2,500 residents, a new pedestrian and cycling connection, and the addition of a new park and open space at 6162 Hammond Bay Road (Bowers District), access to daily needs slightly improves over the existing baseline.
- Of the 58 residential properties utilizing pedestrian infrastructure to access daily needs, 95% have access to daycares, employment options, grocery stores, and pharmacies, 78% have access to parks and open spaces, and only 7% have access to the transit exchange within 800 metres or a 15 minute walk. This means that between 300 - 1488 residential units have some limitations to accessing their daily needs, due to the lack of pedestrian infrastructure.
- Of the 58 residential properties utilizing cycling infrastructure to access daily needs, 29% have access to employment options, 15% have access to daycares, and 1% have access to grocery stores, pharmacies, and parks and open spaces within 800 metres or minute cycle. This means between 449 - 1931 residential units have some limitations to accessing their daily needs, due to the lack of cycling infrastructure.
- Gaps to recreation and culture facilities, and schools continues to persist due the lack of these destinations within the Woodgrove Urban Centre.
- These findings highlight the need for enhanced pedestrian and cycling infrastructure, as well as parks and open spaces locations, recreation and culture facilities, and a school in the Woodgrove area. Improving walking and cycling access to essential services would further support active transportation and increase the overall completeness of the community.

SCENARIO 2 FINDINGS

- With an increase of +5,000 residents, the infill of pedestrian and cycling infrastructure within a 800 metre radius of the conceptual transit exchange location (with the exception of the Island Highway) and an additional daycare, employment options, parks and open spaces, a recreation and culture facility, and school, access to daily needs greatly improves compared to Scenario 1.
- Of the 105 residential properties utilizing pedestrian infrastructure to access daily needs, 96% have access to daycares, employment options, and grocery stores, 90% have access to pharmacies, and 75% have access to parks and open spaces, a recreational facility, and a school, within 800 metres or a 15 minute walk. This means between 300 - 892 residential units have some limitation to access their daily needs, due to the lack of pedestrian infrastructure.
- Of the 105 residential properties utilizing cycling infrastructure to access daily needs, 99% have access to employment options, 56% have access to daycares, and 43-45% have access to grocery stores, pharmacies, parks and open spaces, recreation and culture facilities, and schools, within 800 metres or a 15 min walk. This means between 749 - 872 residential units have some limitations to accessing their daily needs, due to the lack of pedestrian infrastructure.
- These findings highlight the benefits of focusing new pedestrian and cycling infrastructure and key destinations (such as the transit exchange, recreation and culture facility and school) within a central location of the study area. The findings further highlight the importance of including pedestrian and cycling infrastructure and new crossing on the Island Highway, as this lack of infrastructure not only prohibits resident's ability to access any daily needs, it also increases distances and times for all residents to access their daily needs.

SCENARIO 3 FINDINGS

- With an increase of +7,500 residents, and the infill of pedestrian and cycling infrastructure for the whole of the study area, the largest improvements to accessing daily needs is seen in relation to Scenario 1 and 2.
- Of the 105 residential properties utilizing pedestrian infrastructure to access daily needs, 100% have access daycares, employment options, grocery stores, parks and open spaces, pharmacies, recreation and culture facility and school within 800 metres or a 15 minute walk. 90% of residents can access the conceptual transit exchange within 800 metres or 15 min walk.
- Of the 105 residential properties utilizing cycling infrastructure to access daily needs, 100% have access all daily needs within 800 metres or a 15 minute walk.
- These findings highlight the benefits of providing pedestrian and cycling infrastructure across the whole study area. The findings further highlight the importance of new crossings along the Island Highway and the new multi-use paths proposed to connect daily needs destinations.

3.3 INFRASTRUCTURE

The *Phase 1: Baseline Assessment Report* determined the existing sanitary sewer and water systems in the Woodgrove Urban Centre can handle existing and projected *City Plan* population projections with the currently scheduled upgrades, but some sections are nearing or at capacity. Additional population beyond what is projected for City Plan will require significant upgrades to the water and sewer systems. It was also identified that upwards of 90% of the Woodgrove Urban Centre is impervious surface. New development will help to reduce this percentage by meeting stormwater management standards that have since been updated.

3.3.1 SANITARY SEWER

ASSESSMENT

This indicator measures how well the existing sanitary sewer system can accommodate the projected population growth in the Woodgrove Urban Centre using hydraulic modeling software. The model integrated GIS data to simulate flows, identify capacity constraints, and recommended system upgrades. The analysis also used conservative assumptions for per capita flow rates and infiltration/inflow, and considered both current and future (2046) scenarios with climate change impacts using the *Manual of Engineering Standards and Specifications (MOESS)* Intensity-Duration-Frequency (IDF) Climate Changer rainfall curves. The analysis supports City planning by determining infrastructure needs for additional population growth, focusing on gravity trunk mains and pump stations.

FINDINGS

The following is a summary of the findings from the *Woodgrove Sewer Capacity Analysis - Technical Memo* (2025).

SCENARIOS 1, 2 & 3 FINDINGS

- Based on assumptions of population growth numbers and their estimated locations, pipes require upsizing across all scenarios, and trigger upgrades across the City system at various levels. The number of pipes varies depending on the number of additional residents moving to the area. If the area grows by 2,500 residents, the sanitary sewer system will require upgrades to sections at Turner Road and Hammond Bay Road. These upgrades are scheduled for construction in 2025.

- With an increase of 5,000 residents in Scenario 2, more extensive upgrades are necessary. Upgrades to the existing sanitary sewer system on sections of Seabold Road/Parkwood Drive/ Garibaldi Drive/Tweedsmuir Crescent/Hammond Bay Road are required in addition to the Scenario 1 upgrades.
- For a population increase of 7,500 residents in Scenario 3, all upgrades from Scenarios 1 and 2 are required as well as upgrades to the existing sanitary sewer system starting from Calinda Street and McRobb Avenue, connecting to Invermere Road and up to the Regional District of Nanaimo Interceptor.
- If all the recommended upgrades are made, the City system can handle the extra people. The City of Nanaimo is working with engineers and have identified which pipes require upgrades at each stage based on assumptions of population growth numbers and their estimated locations.
- It is anticipated that if the population grows to 15,000 people, the Regional pipes will also need work.

COSTING

The estimated construction costs for the sewer upgrades are $2.75 million for Scenario 1 (+2,500 people), $5.5 million for Scenario 2 (+5,000 people) and $6 million for Scenario 3 (+7,500 people). These are 2025 figures and do not include inflation. If upgrades aren't done, there could be problems like backups or overflows.

GREATER NANAIMO POLLUTION CONTROL CENTRE

It should be noted that the Greater Nanaimo Pollution Control Center (GNPCC) capacity and expansion costs were not examined in this assessment, as they cannot be looked at in isolation. However through consultation with the Regional District of Nanaimo, it is anticipated that major unknown costs related to treatment capacity will be incurred to expand population at or around the 46,000 people projected for *City Plan*.

Currently, the GNPCC has an ultimate design treatment capacity of 2,720 L/s. If the predicted flows of the increased Woodgrove population as well as the predicted flows from the rest of the Nanaimo sewer infrastructure exceeds 2,720 L/s, a major wastewater treatment facility expansion beyond the ultimate design capacity will be required. There is no existing study or cost estimate to expand the GNPCC beyond the current ultimate design capacity. It is anticipated that such an upgrade would have very significant cost and schedule requirements.

3.3.2 WATER SYSTEM

ASSESSMENT

Using the City of Nanaimo's InfoWater hydraulic model, engineers evaluated whether the system can maintain required fire flows and adequate water pressure under the three different growth scenarios. The review identified what infrastructure upgrades are necessary for each scenario to ensure reliable water service and fire protection as the area develops.

FINDINGS

The following is a summary of the findings from the *Woodgrove Water Capacity Analysis - Technical Memo* (2025).

SCENARIO 1

- With an increase of 2,500 residents, the water system will require the construction of a new watermain through the proposed development at 6261 Hammond Bay Road (i.e. Bowers District). This upgrade is needed to deliver enough water for both daily use and emergency fire flows. The hydraulic model showed that, with this improvement, the system can still meet the City's standards for minimum water pressure and fire flow requirements.

SCENARIO 2

- For a population increase of 5,000 residents, more extensive upgrades are necessary. In addition to the new watermain at 6261 Hammond Bay Road, the following improvements are recommended:
  - A new watermain loop to Marlin Way.
  - Upgrades to existing watermains at several locations (Metral Drive, Portsmouth Road, Woodgrove Centre, and Dover Road) to increase their diameter and improve flow.
  - Additional new watermain loops at 6580 Island Highway, Calinda Road, and Dover Road.

SCENARIO 3

- If the area grows by 7,500 residents, all the upgrades from Scenario 2 are required, plus an additional new loop main from 6700 Island Highway to Portsmouth Road. This ensures the distribution network can handle the higher water demand and still meet the City's standards for pressure and fire flow. The hydraulic analysis confirms that, with these improvements, the system will continue to function effectively under the larger population scenario.

COSTING

The estimated construction costs for the water system upgrades range from $1.5 million (for +2,500 people) to over $7 million (for +7,500 people). These are 2025 figures and do not include inflation. Without these improvements, the system would not be able to provide the required fire flows or maintain minimum water pressures during peak demand, posing risks to both everyday service and emergency response.

3.3.3 STORMWATER SYSTEM

ASSESSMENT

The stormwater capacity analysis is based on the *Eagle Point Drainage Catchment Study** (2018), which was completed using InfoSWMM modeling software and calibrated based on data collected during April 2018. A Hydraulic Level of Service (HLoS) rating was assigned to each pipe based on a combination of capacity, surcharge, and storm duration. Pipes with a lower rating were determined to be undersized, and in need of replacement.

*Note, this study included pipes beyond the Woodgrove Urban Centre study area.

FINDINGS

The drainage system across Eagle Point (which includes the Woodgrove Urban Centre) is considered undersized. As precipitation is expected to fall at a higher intensity due to climate change, it is anticipated that the existing drainage system will experience significant amounts of flooding during major storm events, with the most significant flooding to occur in several areas within the Woodgrove Urban Centre; including the Woodgrove Centre parking lots. As a result, improvements to infrastructure will be needed to meet demand.

The City of Nanaimo has since updated its stormwater management standards to ensure responsible development and protect our natural environment. These standards, found in Section 7 of the *Manual of Engineering Standards and Specifications* (MOESS), set clear requirements for how stormwater (rainwater runoff) is managed in new developments and redevelopments. These requirements include:

- Pre- and Post-Development Flow: Developers must ensure that the amount and rate of stormwater leaving a site after development (post-development flows) do not exceed what would have occurred before development (pre-development flows). This helps prevent flooding, erosion, and water quality impacts downstream.
- Comprehensive Stormwater Management: The standards require the use of best management practices (BMPs) such as detention ponds, infiltration systems, and green infrastructure to manage stormwater on-site.
- Environmental Protection: The updated standards are designed to protect local waterways, reduce pollution, and support sustainable growth in Nanaimo.
- Detailed Technical Guidance: Section 7 provides technical details for engineers and developers, ensuring consistent and effective stormwater management across all projects.

3.3.4 HYDRO & NATURAL GAS

ASSESSMENT

The City of Nanaimo worked with BC Hydro and Fortis BC to understand what implications future residential and commercial growth may have on their infrastructure.

FINDINGS

HYDRO – SCENARIOS 1, 2 & 3

- With an increase of 2,500 residents (Scenario 1 - year 2035), it is expected that the existing feeders will have capacity to support modest growth until approximately 2037 before an additional feeder is required.
- As for Scenario 2 and 3, since the growth is doubling and tripling, respectfully, but the time-frame is also twice and three times as long, the result is the same as scenario #1.
- The scope of work would include the installation of an underground cable through our existing manhole system that runs up Phantom Road / Manhatten Way and then heads east along Aulds Road into the Woodgrove Urban Centre. How the circuit is configured in the area will be dependent on the specific development that are being fed; however, in general, the existing manhole system would be utilized for a new cable.

NATURAL GAS – SCENARIOS 1, 2 & 3

- With an increase of 2,500 residents (Scenario 1 - year 2035), it is expected that at a minimum system upgrades will be needed for lines running at Metral Drive, Lost Lake Road and Aulds Road. Metral Drive is already earmarked for 2026 construction schedule. Lost Lake Road and Aulds Road would be slated for 2025-2030.
- With an increase of 5,000 residents (Scenario 2 - year 2045), it is expected that at a minimum further system upgrades will be needed for lines running on Aulds Road (2035 - 2045).
- With an increase of 7,500 residents (Scenario 3 - year 2055), it is expected that at a minimum further system upgrades will be needed for lines running on Departure Bay Road, Hammond Bay Road and Applecross Road (2045 - 2055).
- Depending on the location of the loads, capacities and demands may shift accordingly.

4.0
NEXT STEPS

The next step in the Woodgrove Area Plan project is to explore and refine the emerging policies, actions, and funding models for infrastructure improvements in Phase 3. This information will be formulated into a technical document to meet the requirements of the Complete Communities grant and support the preparation of a Woodgrove Area Plan.

Housing

- Explore policies, actions and incentives that can be used to promote a mix of housing types, rental and ownership tenure options, non-market housing and family friendly bedrooms mixes as recommended in *City Plan* for the Woodgrove Urban Centre.

Daily Needs

- Explore the community and regional architectural programming needs for the recreation and culture facility.
- Refine the costing, land acquisition and partnership options for the recreation and culture facility and elementary school.
- Explore policies, actions and incentives for supporting a healthy proportion of retailers.
- Explore policies, actions and incentives for supporting a healthy mix of local vs. chain retailers, including promoting smaller retail spaces for independent businesses.
- Explore what a healthy retail vacancy rate range is for the Woodgrove Urban Centre and policies, actions and incentives that can be used to maintain the healthy range.

Transportation

- Conduct additional investigation to increase capacity at the Nanaimo Parkway/Aulds Road and Island Highway/Turner Road intersections. Any improvements are assumed to not require additional right-of-way (i.e. optimizing signal timings).
- Evaluate whether existing intersections can be retrofitted (i.e. removing split phasing and/or channelized right turns) to better balance the needs of all road users.
- Consider options to improve vehicle access from the Woodgrove area to Highway 19.
- Explore funding models for transportation infrastructure improvements.

Infrastructure

- Further analysis is not anticipated for infrastructure utilities, as additional analysis will be conducted at time of redevelopment.
- Explore funding models for sanitary sewer, water and stormwater systems improvements.

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