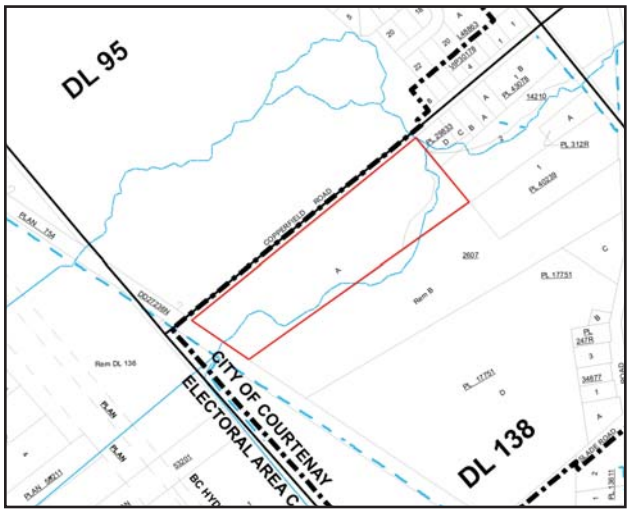
Executive Summary

The owners of Lot "A", are submitting this application for a rezoning of the property from the current R-1A zone to a Comprehensive Development (CD) zone in order that the property can be developed as outlined herein.

Lot "A"

Lot "A" is an undeveloped 5.82 ha (14.53 ac.) parcel of land located in the City of Courtenay at its western boundary. The subject property is currently zoned Residential 1A (R-1A) and Suburban Residential OCP designation. This zoning bylaw amendment application seeks conversion from R-1A to a comprehensive development zone suitable for creation of lots as shown below.



Proposed Development

Working with JWT Architecture and Planning and Current Environmental and using their Environmental Constraints Map as a base, the plan shown below was developed .

The proposed rezoning and development plan includes the creation of 35 lots (15 townhomes; 2 duplexes; 18 single family) within the 5.82 ha property while maintaining and preserving key environmentally sensitive habitats.

Proposed Rezoning and Development Plan

Environmental Assessment

Due to the existence of several environmentally sensitive areas on the property, Current Environmental Ltd. was retained to provide an environmental inventory, impact assessment, and impact mitigation plan to facilitate project planning and to assist with securing approval from regulatory agencies. The Environmental Assessment and Protection Plan is attached as Appendix B. Preserved areas included within the site plan include four seasonal wetlands, Piercy Creek mainstem and Tributary 11, all with associated setbacks prescribed according to the City's Arden Local Area Plan (LAP) and the Riparian Areas Regulation (RAR) of the BC Fisheries Protection Act.

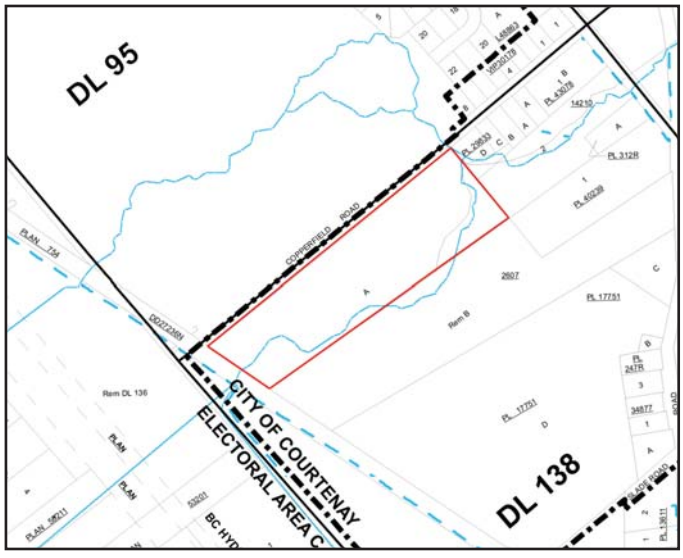
Application Support Documentation

1. Lot "A"

Development within this neighbourhood includes a mixture of single family homes and small acreage parcels. To the west of the property are a mixture of small and larger acreage properties, typically improved with older single family homes while to the immediate east along Arden Road are single family dwellings on a mixture of large and small holdings. To the southeast across Cumberland Road are small acreage properties, some of which that have recently been re-developed as a strata-titled townhouse project.

Site Description

Lot "A" is an undeveloped 5.82 ha (14.53 ac.) parcel of land located in the City of Courtenay. As can be seen on the plan below, the property is located at the western boundary of the City. It is bounded by the Copperfield Road right-of-way to the north, the Comox Lake Road to the west and the Copperfield Ridge Development to the south.



Vehicular Access

The development site is accessed by Copperfield Road via Arden Road.

Copperfield Rd. from Arden Rd.

There is currently no actual vehicular access to the property as the paved portion of Copperfield Road terminates at the north-east corner. The existing full-width Copperfield ROW runs along the top of the property and connects the existing Copperfield Road to the Comox Logging Road to the west.

Pedestrian Access

The existing trail is proposed to be relocated outside the riparian buffer areas. This new neighbourhood is connected to the existing trail network to the south by way of an existing stream crossing..

Existing Trail

Utilities and Street Improvements

Potable Water

There is an existing 150mm diameter water main stubbed at the end of Copperfield Road which is proposed to service the site.

Sanitary Sewer

The project site is currently serviced via a 200 mm diameter PVC main which travels east down Copperfield Road, south along Arden Road and then east down 20th Street to manhole P-28 where it connects to the recently upgraded Central Arden Trunk Sewer.

Topography

The site grades are relatively flat with a gentle slope of less than 3% gradient. In general, the site slopes down towards the northeast corner of the subject property.

Storm Drainage

Drainage catchments impacting the study area are defined by the surrounding roads and creeks. Comox Logging Road defines the western limits, 20th Street defines the south limit, and Piercy Creek and Tributary 10 define the east limit.

Hydrology

There are identified wetland areas in each corner of the property except for the southwest corner. Piercy Creek flows from the south west corner towards the north east corner of the property.

Geotechnical Assessment

Terran Geotechnical Consultants Ltd. were retained to conduct a geotechnical investigation of the property.

The soils represent the regional till that consist of glacial deposited clay, silt, sand, gravel and cobbles. A till-like layer is nearly hydraulically impervious, and it is expected that the groundwater is perched and the water table is deeper in depth.

In their Geotechnical Investigation Report Terran stated

> *"Based on our experience and site investigation, it is our opinion that subject property are (sic) suitable for subdivision site development for typical lightly loaded residential dwellings. The proposed development is geotechnically feasible and the land can be used safely for their intended purposes with provided that the recommendations … are followed."*

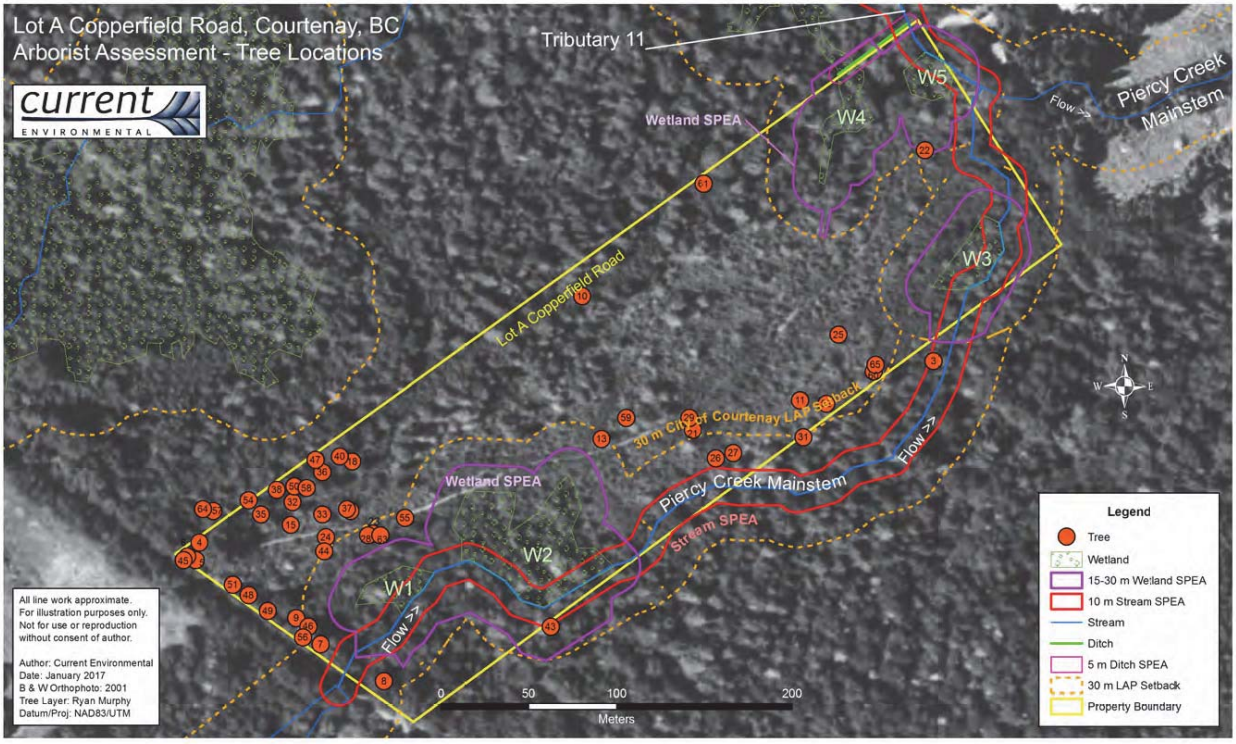
The Geotechnical Investigation Report is attached as Appendix D.

Tree Inventory and Assessment

Ryan Murphy, an ISA Certified Arborist, was retained to catalogue and assess the trees on Lot A for overall health and stability.

He noted that the forest appears to have been cleared 60-70 years prior as indicated by the size of the largest trees. The property is now treed with a mixture of second growth coastal species. The understory varies from areas of typically thick brush to areas of thinner salal and fern. Overall, no wide spread tree-related hazards were observed on Lot A. No evidence of widespread root-rot was observed nor was any prior incidence of wind-throw.

Individual 'feature' trees, or mature trees in low density stands were mapped and are shown on the following plan. It is planned that building envelopes will be defined for each lot to save these trees to the greatest extent possible.



Map of Mature Trees

The Tree Inventory and Assessment is attached as Appendix E.

Environmental Assessment

Current Environmental was retained to provide environmental consulting services in support of the planning for the development of Lot "A". The first objective was to complete an environmental constraints map based primarily on the BC Riparian Areas Regulation (RAR) and the City of Courtenay Official Community Plan (OCP) bylaw.

The map of Protected and Developable Areas delineates the existing water courses and wetlands on the property . It also shows the 30 m. setbacks as required by the City of Courtenay OCP.

Protected and Developable Areas

Wetland and Riparian Area Conservation

The site development plan includes 100% retention of Wetlands 1-3 & 5 and their associated riparian habitat through the implementation of a 30 m LAP setback. The proposed setbacks will help ensure adequate shade, water quality maintenance, LWD recruitment, and water retention/infiltration to sustain fish habitat values remain intact over the longterm. These values will improve as the riparian communities mature. This wide buffer also provides important habitats and a continuous migration corridor for terrestrial and semi-aquatic species.

Wetland 4 and its riparian area will be impacted by development of the City ROW off the end of Copperfield Road and the access road into the site. The loss of wetland and riparian areas will require approval from the City of Courtenay, DFO via request for review, and by MFLNRO under Section 11 of the Water Sustainability Act.

Protected vs. Encroachment Areas

LAP setbacks the proposed development layout will include 3.2 ha (55 % of the total area) of the site set aside for environmental protection. The total LAP protected area will exceed RAR-mandated setback areas (2.1 ha) by 1.1 ha (or an increase of 19 % more than RAR protected areas). In addition to prescribed LAP setback areas the proposed development will include the dedication of 0.26 ha of protected area to partially offset 0.34 ha of encroachment into wetland and riparian setbacks.

2. *Planning Context*

City of Courtenay Official Community Plan

Within the City of Courtenay Official Community Plan, the property is designated as "Suburban Residential' as shown on the following map.

Local Area Plan

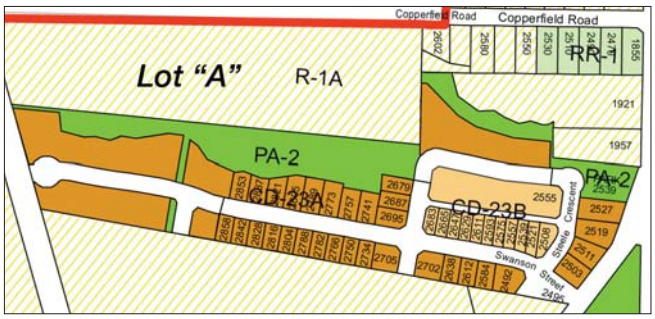
In December of 2013 the City of Courtenay adopted the Arden Road Local Area Plan. As stated in the OCP Amendment Bylaw "The objective of the LAP is to project and respond to anticipated growth in the Arden Corridor through regulation of land use and servicing that is in keeping with the values of the community, the identity of the City and the City's commitment to environmental protection."

LAP Map 2

Demonstration Plan and HighLevel Design Principles

Current Zoning

The subject property is currently zoned Residential 1A (R-1A). This is a single family zone mandating a minimum lot size of 1 ha.



Copperfield Ridge CD Zoning

The current zoning is becoming increasingly out of context with the surrounding properties as they are rezoned to permit greater density. This is particularly so with CD-23A and CD-23B zoning of the Copperfield Ridge development immediately below Lot "A".

3. *Proposed Development Of Lot "A"*

Development Objectives

1. Conformity with the Arden Corridor Local Area Plan

The development of Lot "A" in a manner that responds to the strategy, principles, housing policy and Conceptual Land Use Plan of the Local Area Plan.

2. Housing Affordability

Provision of affordable housing by developing small lots thereby reducing the land and servicing costs per dwelling unit.

3. Minimal Environmental Impact

Development of the property in a manner that limits the extent of site disturbances on:

- critical habitats of rare and endangered species;
- fish, the waters they inhabit and the riparian areas that support them;
- nesting birds and the nests of all raptors;
- hydrological features and function.

4. Marketability

Provision of a diversity of housing types that are attractive to young couples, families, and seniors.

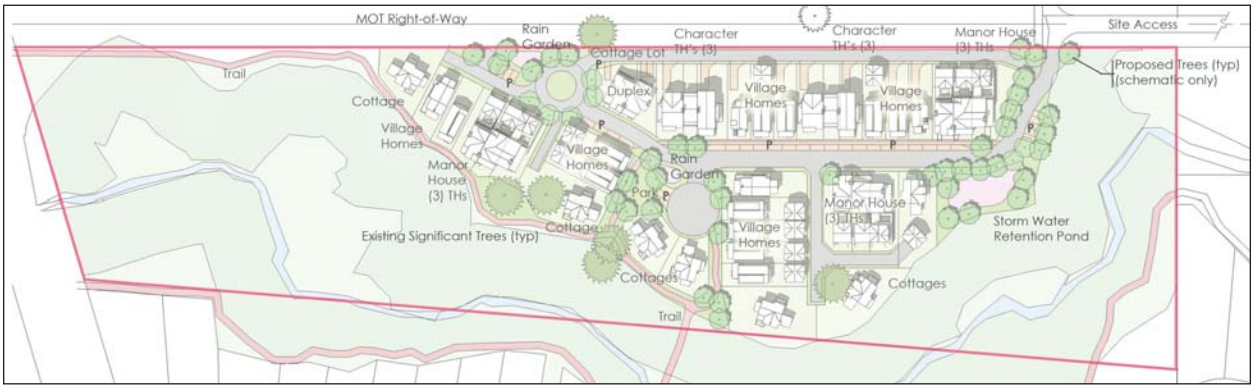
5. <u>Respond to Local Neighbourhood Context</u>

Maintain the character of a single family neighbourhood while providing the option of more affordable multi-family dwellings.

Development Planning

The results of the environmental assessment were used to support planning efforts specific to the development of the property and to inform land use decisions with regard to buildable areas, stormwater management, and the retention of ecologically significant features.

Proposed Development Plan



Proposed Rezoning and Development Plan

Using the RAR Setbacks Map as a base, numerous conceptual development plans were prepared, resulting in the proposed development plan as shown above. This plan is envisioned as a bare land strata.

Care has been taken in crafting the layout of building parcels. Parcels are strategically located based on building typology to create both interest and coherence to the

neighbourhood's design. irregular shaped parcels are designated as cottage lots to encourage creative house plans. Interior lots are narrower in width and include townhouse parcels (with interior lot lines) and 33' wide and alley loaded single family lots.

Major Components of the Plan

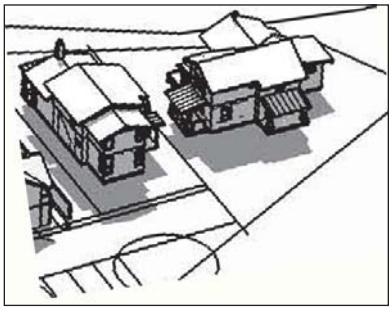
Dwelling Types

Unit types include:

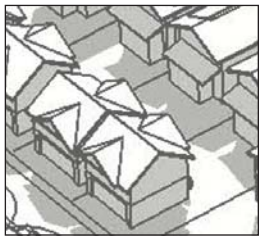
- 33' wide single family lane access lots with carriage units at the lane;
- duplex(s);
- town homes (lane access) - designed to read as larger single family homes, or character townhomes with unique street appearances for each unit;
- manor homes or triplexes - also designed to read as larger single family homes.

Cottage Lots/ Small Lot Single Family

Smaller home-sites make for affordable design solutions. They foster smaller yet more creatively developed floor plans and gardens. Smaller homes are by nature more affordable. The plan proposes a variety of single family home-sites, including homes serviced by alleys, homes facing into green spaces and smaller irregular lots which beg for creative design solutions.



Carriage Homes



Carriage homes are typically residential suites located above detached garages. By making provisions for carriage homes through flexible and creative zoning, builders and home owners can develop them when economic conditions are favourable. They can be rented out as revenue suites (aka mortgage helpers) or become "granny flats' facilitating multi-generational living within one single family lot. These units would not carry separate title and would be permitted as secondary detached suites.

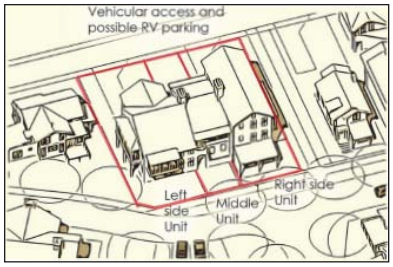
Duplex

One duplex parcel is planned for Lot A. Its design is intended to be in the character of a single family home.

The idea behind character of typical duplex building design is to maintain the character of a single duplex family building home design while providing for two a units sharing a common and party wall. When from the street it would be difficult to discern that this unit is occupied by two units.

Each duplex will sit on its own strata lot with shared walls being the common element. By sharing a common wall building lots can be smaller and more affordable.

Townhomes



Two townhome (TH) parcels are planned for Lot A. Their design is intended to be sympathetic to the scale and character of a single family home, while being in the form of three distinct townhome units. Each TH unit will sit on its own strata lot with shared walls being the common element. Townhomes are a form of multi-family housing. Each unit would share common walls and have privately controlled front and rear yards. Townhomes offer an affordable and safe housing typology. Sharing common walls lowers the cost of construction as well as the cost the cost of upkeep and heating and cooling. Garages would be detached, and they can be car ports or surface parking.


Character Sketch - Concept only to illustrate character and scale

Manor Homes/Triplexes

Three triplex parcels are planned for Lot A. Their design is intended to be in the character of a single family home. Each triplex unit will sit on its own strata lot with shared walls being the common element.

Manor Homes are a type of multi-family housing that are similar to townhomes, The primary difference is they are designed to appear like a larger single family home that has several apartments located within it. They are an appropriate housing type for infill development where sensitivity to neighbourhood context is an important factor to consider during the design process. They add character and affordability to a neighbourhood. Each unit would share common walls and have privately controlled front and rear yards. They offer an affordable and safe

housing typology for families with single parents, retirees, singles with satellite families as well as the traditional nuclear family. Garages would be detached.

Park

At the centre of the plan is a 15,600sf park. It is flanked by townhomes and single family homes with front porches. Strategically located adjacent to the larger greenway

park of Percy Creek, this community amenity space will serve as a gathering place for the neighbourhood. Parks need not be large to be functional and it is often said the best designed neighbourhood parks are large enough to provide for playground equipment, park benches and passive green space, yet small enough to feel safe and

connected to the adjacent homes.

Rain Gardens

Rain Garden

Rain gardens are designed to capture and cleanse storm water as it comes off the areas of vehicular traffic within a neighbourhood street network. They are located close to but lower than the roadway's curb and gutter. Rain gardens are populated with river washed stone, native and ornamental grasses, ground covers and perennials. Drain inlets are often located in rain gardens and can direct cleansed water into detention areas downhill of the garden. Our design locates two rain gardens uphill of the proposed storm water detention area.

Street Trees

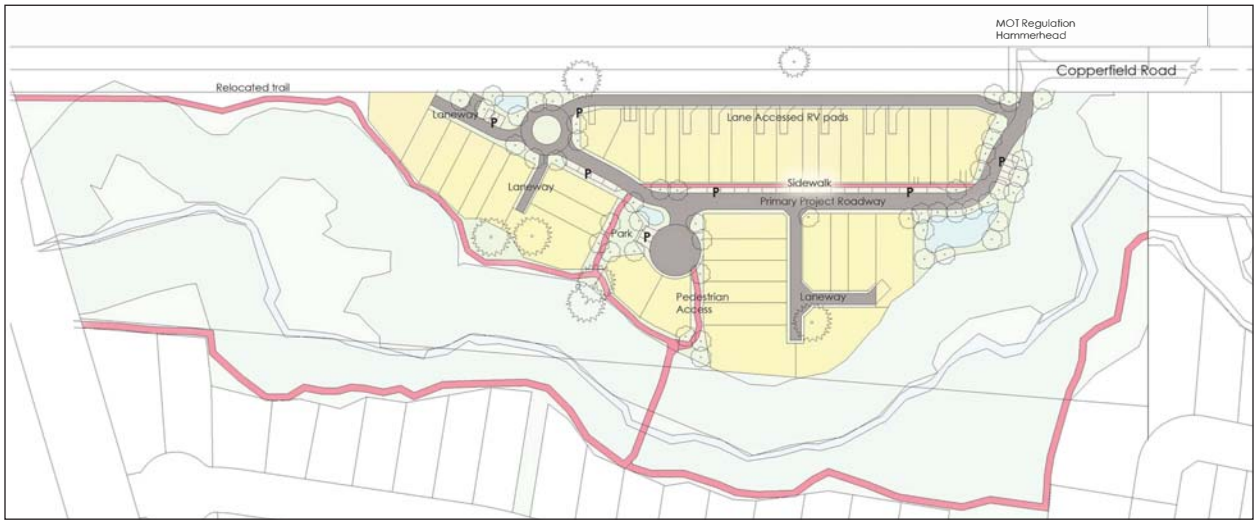
While lots may be small, the opportunities to create a leafy new enclave of affordable homes remain large. Trees are located in concept within areas of the strata road right-of ways. In a few select areas trees are shown within the lots. While this is a concept plan only, and not a prescriptive tree planting plan, it is intended to be a framework for the detailed design that will follow rezoning.

Conceptual Street Tree Planting Plan

Vehicular Access

Copperfield Road is proposed as the main and only entrance to the site. Access will be provided by extending Copperfield Road along the existing road right-of-way to Ministry of Transport and Infrastructure standards. The access drive is terminated by a hammerhead turn-around. The access road will upgrade an existing culvert crossing of Tributary 11 by replacing the closed-bottom culvert with an arched design that will include re-instating natural stream bed substrates and profile. The access drive will be owned and maintained by the bare-land strata corporation.

Within the project site one main road and one spur road are terminated with a round-about and cul-de-sac. A series of laneways provides access to rear loaded garages as well as, in select places, RV parking pads. Guest parking is proposed in both parallel and head-in configurations.



Vehicular and Pedestrian Movement Plan

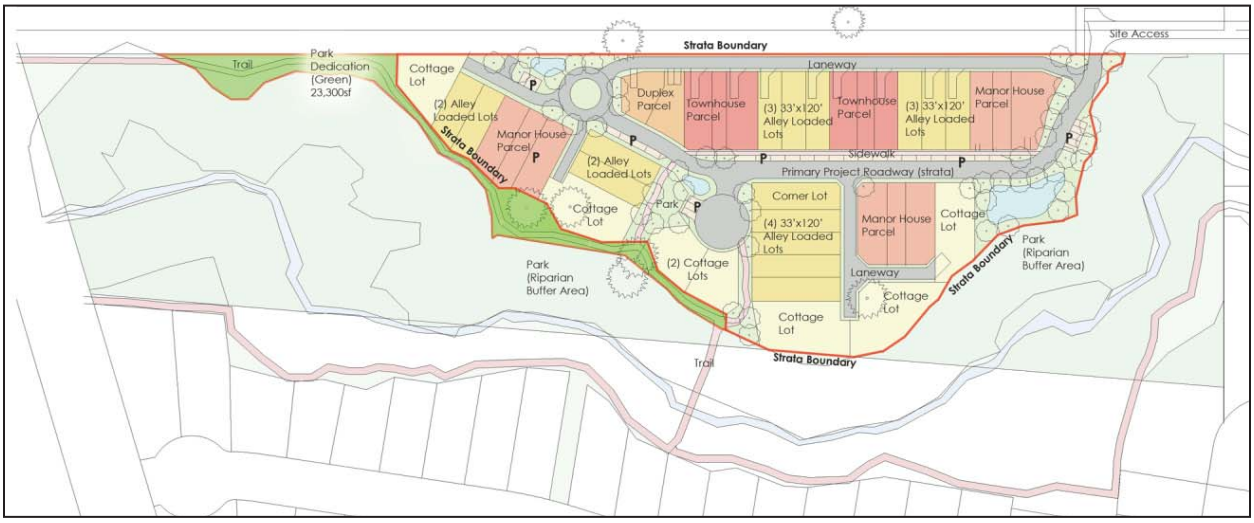
Pedestrian Access

Parts of the existing trail currently traverse sections of RAR mandated SPEAs, and as noted in the Arden LAP: encroachment into SPEAs is prohibited. Those portions of the trail will be realigned outside the SPEA but within the LAP setback.

As shown on the plan above, the existing trail is proposed to be relocated outside the riparian buffer areas. This new neighbourhood is connected to the existing trail network to the south by way of an existing stream crossing.

Dedication of Park and Environmental Reserve

Of the 5.82 ha. of total site area, 3.11 ha. (53%) will be dedicated to the City as environmental reserve as shown in pale green on the plan below; and 0.21 ha. (3.6%) will be dedicated as park as shown in bright green on the plan below.



Portions of Site to be Dedicated as Park and Environmental Reserve

Development Statistics

Site Area	5.82	ha	14.38	ac.	
less wetland & environmental reserve	-3.11	ha	-7.68	ac	53%
developable area	2.71	ha	6.70	ac	47%
less park dedication (8.4% of net developable area)	-0.21	ha	-0.52	ac	
net developable area	2.5	ha	6.18	ac	43%
Number of Lots	39				
Parking					
residents	2	pe	lot		
visitors	33				

Conformity With Local Area Plan

The Proposed Rezoning and Development Concept reflects that portion of the Conceptual LUP covering Lot "A", as shown in the Map 8 excerpt below. With its proposal of a discrete development cluster and dedication of 57% of the land as

Local Area Plan - Map 8 (excerpt)

Proposed Rezoning and Development Plan

environmental reserve and park, it conforms with the strategy, principles, housing policy and Conceptual Land Use Plan of the Local Area Plan.

Local Area Plan Design Principles

The Local Area Plan promotes a number of community design principles, which together enable a development pattern that supports the vision described in the Plan. These principles, and how they are applied, are as follow:

Design Principle	How Addressed in the Proposed Development Concept
Where infill development is permitted, it is in keeping with existing neighbourhood character.	The design takes into account the context of single family homes on Copperfield Road and the adjacent Copperfield Ridge development.
Public trail networks should be secured especially along Piercy and Morrison Creeks and connect to key destinations within and beyond the study area.	This new neighbourhood is connected to the existing trail network to the south by way of an existing stream crossing. This trail network connects to an internal sidewalk and trail system giving trail users access to the MOT ROW and lands beyond.

Design Principle	How Addressed in the Proposed Development Concept
Multiple mobility modes are provided along major roads including Arden Road, Cumberland Road and Lake Trail Road.	Not applicable.
Preserve contiguous parcels of green space to protect against forest and habitat fragmentation.	Current Environmental have provided mapping of environmentally sensitive features and recommendations on how to maintain connectivity of those features.
Provide trail access, but not vehicle access, from new development to existing local streets.	Trail access will be extended from the existing Copperfield Ridge development to the south to connect with a street in the Lot "A" development and will also connect to the existing trail leading to the Comox Logging Road.
Require rehabilitation of creeks and wetlands as part of new developments.	Current Environmental will advise on restoration opportunities, particularly in the area impacted by the site access road.
Preserve the hydrological function of the landscape by using Low Impact Design principles.	Rosebery Investments & JWT Architecture have worked with Current Environmental to ensure protection of the hydrological functions and features of the site.
In general, support clustered forms of development, not typical tract housing.	Using the Environmental Constraints Map to provide direction on the site layout, cluster development is proposed in order to facilitate the conservation of sensitive ecosystems, provision of open space and economical infrastructure costs.
Limit crossings to streams. Where crossings are required, clear span bridge crossings are encouraged.	Replacement of the existing culvert within the City's Copperfield Road ROW with a suitably sized, fish friendly clear-span or arched culvert with native bed material is recommended.
Expand the network of greenways as part of the municipal and regional greenways system that is connected and accessible to multiple users.	The proposed development concept envisions that 55% of the site will be set aside and dedicated as environmental reserve.
Develop the trail network in accordance with the general connections shown on Map 8.	Map 8 generally shows the existing trail and it will be used and enhanced wherever possible.

Design Principle	How Addressed in the Proposed Development Concept
Retain effective open channel stormwater management in order to promote natural hydrological functioning of the area, specifically stream health.	Introduction of source controls, along with a decentralized stormwater pond system designed to be 'natural' with a variety of native aquatic and riparian species.

Site Servicing

McElhanney Consulting Services Ltd. (MCSL) were retained to provide Engineering Consulting Services. Their servicing report was been prepared in support of this rezoning application and covers municipal sanitary sewer, storm drainage, and potable water. Commentary is also provided relative to site access, third party utilities (BC Hydro, Telus and Shaw Cable) servicing, refuse collection, sustainability checklist conformity, and affordable housing policy conformity.

The report presents both the estimated development loads as well as the general servicing methodology, confirming the suitability of the subject parcel for the proposed rezoning and increased density. The results presented will inform detailed engineering design. The report is summarized as follows.

Potable Water Demand

The sum of the total probable domestic water demand and fire flow rate is 92.99 l/s. There is an existing 150mm diameter water main stubbed at the end of Copperfield Road which is proposed to service the site. We request the City undertake a water model analysis and advise if there is sufficient capacity and pressure within the City's existing water distribution network to accommodate the additional demand. If sufficient capacity is not available, we expect that the City will outline the offsite

upgrades required to meet the required potable water demands of the proposed development.

Sanitary Sewers

The project site is currently serviced via a 200 mm diameter PVC main which travels east down Copperfield Road, south along Arden Road and then east down 20th Street to manhole P-28 where it connects to the recently upgraded Central Arden Trunk Sewer. We request the City undertake a sanitary sewer model analysis of the specific sections of downstream infrastructure, to either confirm that sufficient capacity is available to accept additional development flow or provide an outline of required offsite upgrades.

Storm Drainage

This Stormwater Management Plan has been prepared in accordance with the City of Courtenay Subdivision and Development Servicing Bylaw 2919 Section 4.1.1 Drainage Planning. We understand that the City does not have a Master Drainage Plan, Watershed Plan, or Integrated Stormwater Management Plan for the study area. The catchment area for this study uses only the developable land area, totalling 2.6 hectares, for pre- and post-development analysis.

Guidelines and Targets

A new updated bylaw entitled City of Courtenay Bylaw 2919 provides guidelines or targets that were referenced in preparing this study. It outlines the requirement for stormwater management for subdivisions and development within the City. Bylaw requirements are outlined below:

- *Limit post-development peak flows to equal the corresponding pre-development peak flows for the 1 in 2, 1 in 5, 1 in 10 and 1 in 25 year return period 24-hour storm events;*
- *Provide escape routes to account for greater storms up to the 1 in 100 year return period storm events in a manner which does not result in flooding of any properties;*
- *Minimize the total runoff generated from storms through the application of site adaptive planning;*
- *Control discharge such that the downstream watercourses receiving outflow from detention facilities are protected from surcharge and erosion;*
- *Convey flows up to the 1 in 10 year return period storm event in the minor system;*
- *·Convey flows in excess of the 1 in 10 year return period storm event overland in the major system;*
- *Provide oil and grit separators for sites with parking for 11 or more vehicles.*

Climate Data

City of Courtenay Bylaw 2919 Intensity Duration Frequency (IDF) curves have been used for the 1 in 2, 1 in 5, 1 in 10, 1 in 25 and 1 in 100 year return storm events, developed using the Modified Chicago Distribution, in the computer simulated hydraulic modelling.

Basin Characteristics

The property is situated in an approximately 10 hectare catchment area which slopes to the south east draining to Piercy Creek. Upstream runoff is conveyed around the catchment by Tributary 11 to the north and ditching along the Comox Logging Road to the west. The subject property makes up the lower half of the catchment area. The upper half of the catchment area is located to the north in DL 95.

Post-development runoff from DL 95, which is conveyed across the subject property is expected to be cut-off by the extension of Copperfield road, and directed east to Tributary 11. Approximately 3.42 hectares of the 5.82 hectare site consist of riparian areas and wetlands which will be undisturbed by the development and continue to drain to Piercy Creek.

Stormwater Management

The following Stormwater Management Plan analyzes the site using computer simulated hydraulic modelling to set a baseline for existing runoff, size proposed stormwater management mitigation infrastructure (source controls which reduce peak runoff rates and total volume by retaining and/or promoting infiltration and evapotranspiration), and provide simulated post-development runoff peak rates and total volumes.

Design Elements

The proposed Source Controls to be implemented for this project have been developed to promote onsite capture of runoff and groundwater recharge. Properly employed, this approach will mitigate peak runoff rates, and provide qualitative treatment of runoff, prior to discharge. The following source controls are proposed for the site:

- **Amended Topsoil:** Place 300mm of amended topsoil in all landscaped (pervious). Direct surface runoff from impervious surfaces to landscaped areas wherever possible;
- **Disconnected Roof Leaders:** Where grades allow, properties backing onto the existing riparian areas should have disconnected roof leaders allowing roof runoff to sheet flow to the riparian areas

which will provide detention, infiltration, evaporation and transpiration;

- **Rain Garden:** Install a rain garden with outlet controls to reduce peak runoff rates and volume by promoting groundwater recharge;
- **Detention Pond:** Construct a detention pond to limit peak runoff rates up to the 1 in 25 year design storm event;
- **Grit Sumps:** Install grit sumps in catch basins and pond/ rain garden inlet and outlet manholes to provide pre-filtering and removal of larger particulate.
- **Bio-swales:** Constructed bioswales with aquatic planting both before and after the detention pond and aquatic plantings within the pond are proposed to remove Total Suspended Solids (TSS) and pollutant loading from stormwater runoff. Bio-swales should be designed to maximize detention time. Plantings should be selected by a qualified professional experienced in aquatic plantings to reduce TSS loading. Details of the bioswales and plantings will be determined at the design stage.

Runoff Quality

Runoff quality will be controlled be three systems, grit sumps, bio-swales and the detention pond. Grit sumps in the catch basins and pond inlet and outlet manholes will be the first line of defence to remove larger particulate. Bio-swales both up and downstream of the pond, and downstream of the rain garden are proposed to provide qualitative treatment of runoff by reducing hydrocarbon loading and Total Suspended

Solids (TSS) prior to discharge to Piercy Creek. Infiltration to ground, through the rain garden will serve to further improve/ polish the quality of runoff. The detention pond complete with aquatic plantings will also improve water quality by aiding in the further removal of hydrocarbons and TSS.

Post-Development Runoff

The analyses show that with the use of the proposed Source Controls, which promote infiltration, evapotranspiration, and detention, Bylaw 2919 requirement to limit post-development runoff peak rates below existing rates up to the 1 in 25 year design storm event are attained.

Conveyance

The stormwater collection/conveyance system will consist of a traditional minor piped system and a major overland system. Both the minor and major system will be designed to current City of Courtenay design standards. Peak 10-year return period (short duration) flows will be conveyed within the minor piped drainage system. Flows in excess of the 10-year return period design rainfall events will be conveyed via the major overland drainage system.

Low flow discharge from the rain garden and detention pond should be designed in conjunction with the project biologist to provide distributed, unconcentrated flows to the adjacent riparian wetland areas. Distributed flows will serve to further mimic predevelopment runoff. A defined vegetated pond outflow swale is proposed to convey pond discharge in excess of the 1 in 5 year design rainfall event to Piercy Creek. The outflow swale will be designed to safely convey flows up to the 1 in 100 year design storm event.

Sizes and grades for the minor and major storm system, as well as details of the distributed low flow pond discharge, will be determined at time of detailed design. The pond will also be designed to safely convey peak flows and volumes up to the 1 in 100 year design rainfall event.

Construction Sediment and Erosion Control

Prior to, or in conjunction with land clearing, grading or construction, sediment and erosion control measures must be implemented to preclude conveyance and discharge of fine silts and clay particles into the receiving environment. Construction activities should be carried out during dry weather periods that will reduce the chance of erosion. As rainfall is always a possibility, a sediment and erosion control plan must be in place prior to construction.

Maintenance

The operation and maintenance of the stormwater system will include the upkeep of catch basins, pipes, biofiltration swales, the rain garden and the detention pond, and other related components that are part of conveying stormwater within the drainage basin. Effective and timely maintenance will enable stormwater components to function as intended, mitigating risk to property and infrastructure.

Site Access

The development site is accessed by Copperfield Road (minor collector) via Arden Road (major collector). Arden Road is serviced by Lake Trail Road and Cumberland Road both of which are classified as Arterials. The conceptual site plan, Figure 1, prepared by JWT Architecture and Planning/ JWT Design Ltd., proposes an approximately 60m extension of Copperfield Road to access the site. As the extension

of the Copperfield Road right-of-way is outside the City boundaries, the extended road will be built to Ministry of Transportation and Infrastructure requirements.

The trail network is proposed to be connected through the site joining Copperfield Road to the Piercy Creek trail network.

Third Party Utilities

McElhanney confirms that BC Hydro, and third party utility services are available along Copperfield Road. All development servicing will be underground per City bylaws.

Environmental Impact Mitigation

On-site Restoration of Riparian and Aquatic Habitats

Property access is only possible from the northern property corner off the end of Copperfield Road that will require modifying 0.34 ha of wetland and riparian forest habitats. The proposed access road will minimize impacts to the riparian habitat of Wetland 5, while impacts to Wetland 4 are unavoidable.

On-site restoration opportunities exist that are intended to attempt to balance those areas of lost habitat. In order to compensate for the impacted riparian and wetland habitat resulting from establishing site access requirements, it is proposed that:

- 0.26 ha of otherwise developable land (beyond but adjacent to 30 m LAP setbacks), much of which is situated in areas of more mature vegetation are suggested to partially offset the modification of 0.32 ha of riparian forest habitats in and around Wetland 4.

- approximately 0.03 ha (108 m length x 3 m width) of existing pedestrian walking trail within the LAP setback area north of Wetland 2 will be decommissioned and restored using an assemblage of native vegetation species.
- a series of Newbury style riffles be installed at suitable locations within the Piercy Creek mainstem to create spawning and pool habitats that appear to be lacking within the mainstem reach on the property. property. Each riffle/pool complex will have a ballasted large woody debris feature installed within the pool to enhance rearing and shelter from predation.

Avoiding and Minimizing Residential Encroachment

Long-term residential encroachment into environmentally sensitive areas can be avoided and/or minimized by installing fencing and placing coarse woody debris that accommodates wildlife passage along the perimeter of Park Dedication areas adjacent to proposed development lots. Application of the City's prescribed tree retention requirements along the southern perimeters of lots adjacent to LAP setback areas will assist in the reduction of LAP encroachment impacts while permitting these lots to proceed with subdivision/development according to the proposed lot orientation.

Minimizing Loss of Wildlife Habitat and Species at Risk

Development will be focused in the largely disturbed (i.e. recovering 3rd growth forest) central portion of the site to minimize the loss of wildlife habitat (Figures 1-3). As mentioned, the majority of meaningful wildlife habitat lies along the southwest and northeast corners of the site, including within wetlands, watercourses, and their riparian areas.

Minimizing Impacts to Hydrological Regime

The Arden LAP policy for surface run-off is to minimize the volume/velocity of flows "into watercourses and encourage rain-water infiltration by limiting the amount of impervious cover and maintaining trees and other vegetation."

The stormwater management BMP's described in the following sub-sections will be incorporated in all levels of the project engineering design.

Rainwater Volume Management

Rain Garden

The proposed development layout includes a decentralized system that will include two rain gardens and a rainwater detention pond (Figure 1), the latter of which will discharge to the sensitive riparian/LAP setback area adjacent to the confluence of Tributary 11 and mainstem Piercy Creek (Figure 1). These rainwater management features are intended to be unobtrusive, constructed wetland-type features outside of the LAP setback that will help support rainwater infiltration and reduce impacts from peak flow discharges to the natural environment. There is to be no increase in peak discharges within watercourses as a result of this development.

Treat Road and Parking Runoff

All road surface runoff will be treated using a combination of vegetated, ephemeral bioswales and rain gardens placed strategically in green space areas located outside the setback area.

Tree Protection

All trees deemed to be safe within ESA's and designated setback areas will be protected in perpetuity. These will continue to increase in functional value as protected areas mature over the longterm. During the sub-division phase additional tree management criteria will be identified through implementation of City of Courtenay Tree Protection and Management Bylaw No. 2850 (2016).

Other Mitigation and Compensation Strategies

Lighting

The placement of lighting structures will be avoided adjacent to riparian and sensitive habitat areas. Where human safety is a concern, lighting will be installed that is of low power and located close to the ground surface and directed away from sensitive habitats.

Human Exclusion Fencing

Exclusion fencing (height to be determined in consultation with City) will be constructed along all setback areas to minimize human intrusion into sensitive areas.

Riparian Habitat Enhancement

Any coarse woody debris, salvaged from cleared areas, will be opportunistically placed, as directed by a QEP, into setback and wetland areas to provide habitat, moisture regulation, and autochthonous nutrient and energy sources for wildlife - particularly amphibians. Downed logs and bark, especially large diameter pieces will not be removed from protected areas.

Terrestrial Habitat Enhancement and Off-set Strategies

Younger 3rd growth stands, specifically the "Developable Area Added to Protected" shown in Figure 2, are recommended as partial offsets for encroachment into the riparian area of Wetland 4 required for site access and can be enhanced through a combination of planting a suitable assemblage of native coniferous trees, installing recumbent woody debris, planting “snag” habitat trees, and decommissioning/ replanting sections of the existing pedestrian trail that traverses the LAP north of Wetland 2. Planting young 3rd growth stands with coniferous species will assist in the succession process towards a mixed stand with higher wildlife values, similar to the older 2nd growth forest visible elsewhere on the property.

In-stream Habitat Enhancement

In-stream enhancement opportunities exist in mainstem Piercy Creek and near the proposed City ROW road crossing of Tributary 11 where a series of riffle/pools and large woody debris installations could be installed to offset proposed impacts to Wetland 4 in the northwestern corner of the lot. The installation of riffles dramatically increases the stream’s resilience to drying by impounding flows and releasing them slowly over time. This has worked very well on lower reaches of Piercy Creek.

Replacement of the 1.5 m x 1.0 m ovoid CSP culvert within the City's Copperfield Road ROW with a suitably sized, fish friendly clear-span or arched culvert with native bed material is recommended.

3. *Proposed Rezoning*

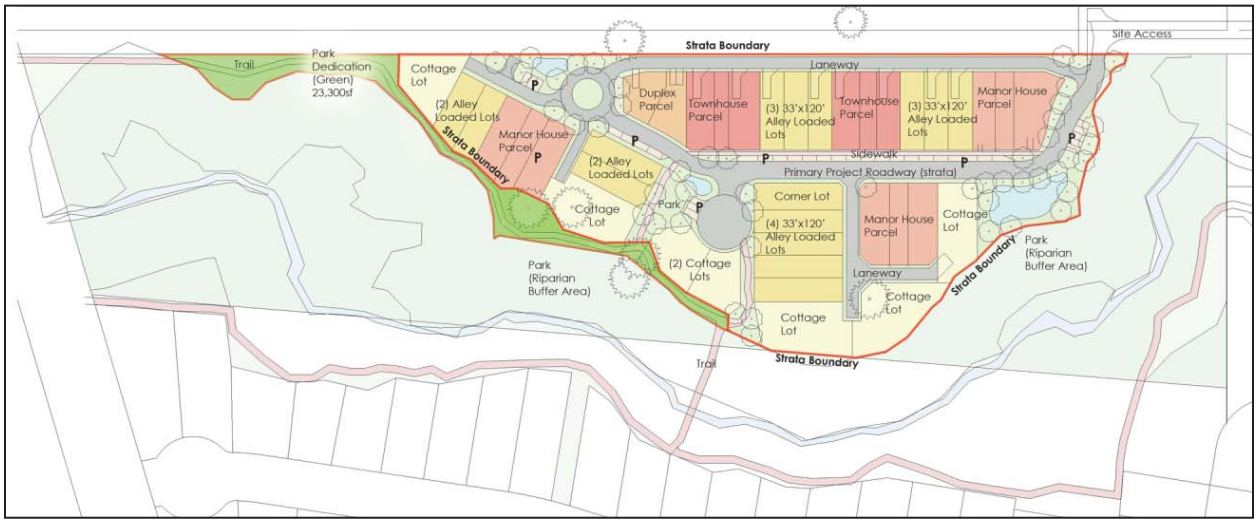
Comprehensive Development

The proposed zoning bylaw amendment application seeks conversion from R-1A to a Comprehensive Development zone suitable for the creation of:

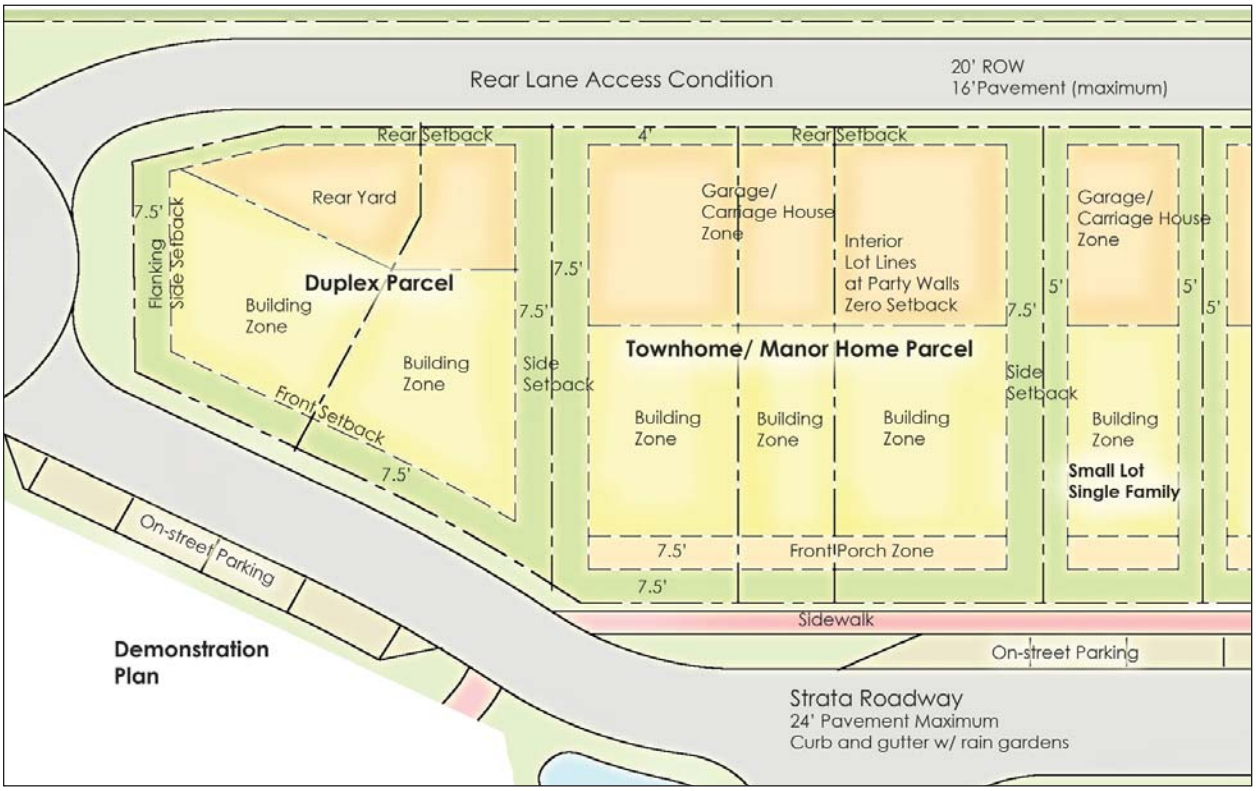
- 33' wide single family lane access lots with the option of carriage units at the lane;
- duplex(s);
- town homes (lane access);
- triplexes.

Land Use

It is proposed that the requested Comprehensive Development zoning allow the land uses as designated in the Land Use Plan below.



Land Use Plan



Setback Diagram

Lot Setbacks

Front Setbacks:

15' except 7.5' to any front porch with our without habitable space above. A front porch shall be defined as open covered deck area facing a private or public roadway but not a laneway not exceeding 8' in total width as measured from the exterior plane of structure to the sheathing of the dwelling unit it serves. A front porch may have second story habitable space above. A front porch must be at least 12" above adjacent finished grade and not more than 3' above adjacent grade.

Side setbacks:

5' from the lot line to face of sheathing except 7.5'if the dwelling unit is attached to another dwelling unit or the side lot line is facing a flanking street. Relaxations of the side setback to 3' (5.5' for flanking side yards) are allowable for bay windows, chimneys and other building elements as long as their total area in plan or projected view does not exceed six square feet.

Rear setbacks:

For lots serviced by a laneway: 45' from the rear lot line to the face of sheathing of the primary dwelling unit. Garages and carriage homes may have a relaxation to 4' provided the rooflines above to do not overhang the lot line. Decks not more than 24" above grade may be built outside of the rear setback line.

For lots not serviced by a laneway: 45' from the rear lot line to the face of sheathing of the primary dwelling unit. Decks not more than 24" above grade may be built outside of the rear setback line.

4. *Conclusion*

The proposed plan was developed working in concert with JWT Architecture and Planning, Current Environmental and McElhanney Consulting Services over a period in excess of two years.

The proposed development of the property meets the objectives of:

1. Conformity with the Arden Corridor Local Area Plan

   The proposed development of Lot "A" does respond to the strategy, principles, housing policy and Conceptual Land Use Plan of the Local Area Plan.

2. Housing Affordability

   The development plan would provide affordable housing by developing small lots thereby reducing the land and servicing costs per dwelling unit.

3. Minimal Environmental Impact

   The proposed development of the property limits the extent of site disturbances on critical habitat, riparian areas and hydrological features and function.

4. Marketability

   The proposed development provides a diversity of housing types that are attractive to young couples, families, and seniors.

5. Responds to Local Neighbourhood Context

   The proposed development maintains the character of a single family neighbourhood while providing the option of more affordable multi-family dwellings.

Given the lack of affordable, family-oriented housing in the City due to the limited supply of housing lots, this rezoning application will permit an increased supply of zoned and serviced housing lots which should serve to stabilize or reduce housing prices.