



Stage 2 Neighbourhood Plan

July 18, 2011



Prepared by:

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In Conjunction with:

Focus Corp.

Tamani
COMMUNITIES

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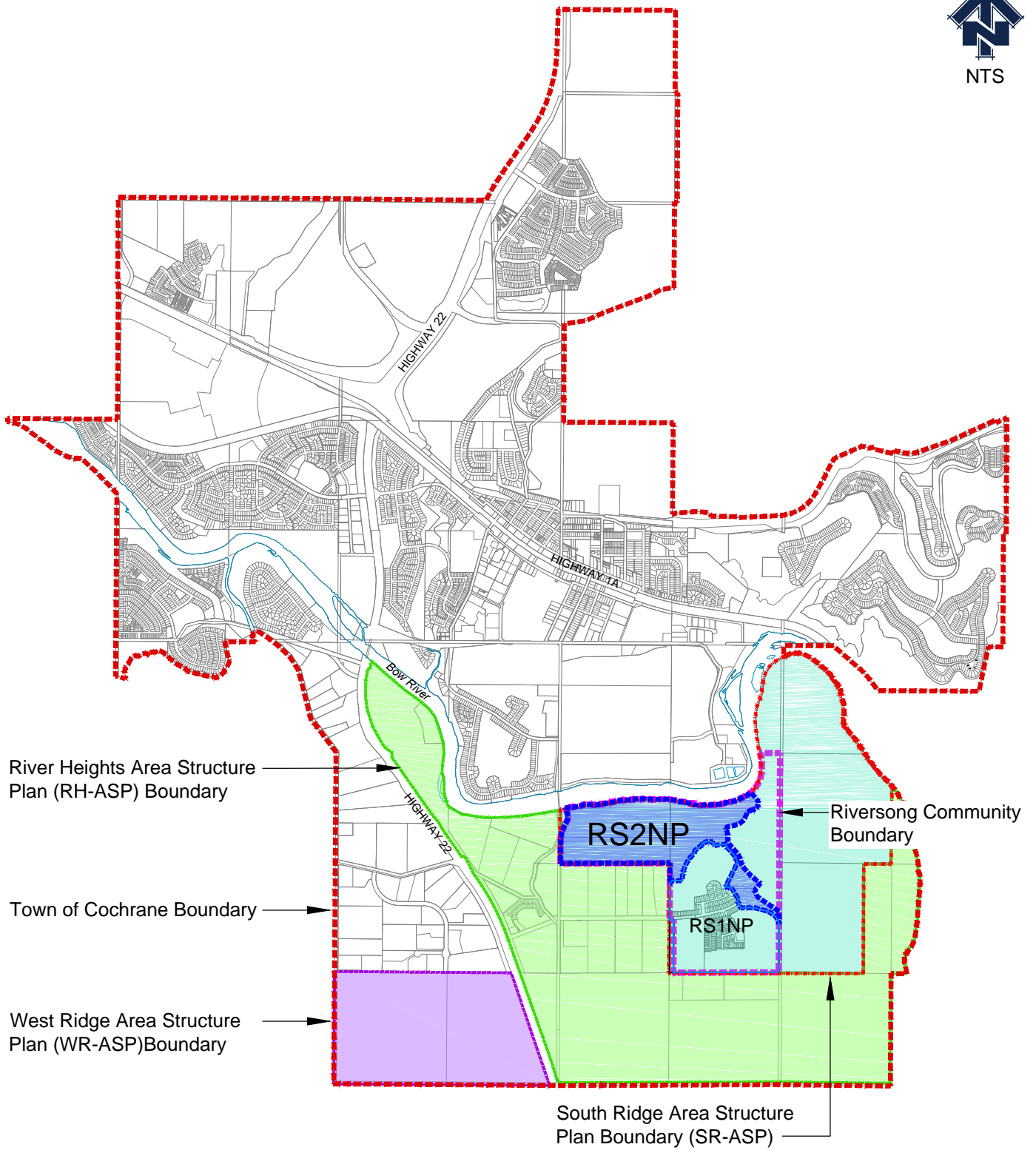


Figure 1:
Location Plan

1.0 INTRODUCTION

1.1 POLICY CONTEXT AND PURPOSE OF THE PLAN

The Town of Cochrane Council adopted its new Municipal Development Plan (MDP) in October 2008. Under the policies of the MDP, an Area Structure Plan followed by a Neighbourhood Plan shall be prepared prior to development of new communities within the Town of Cochrane. Section 14.3.2 of the MDP outlines the requirements of an Area Structure Plan and a Neighbourhood Plan.

The current South Ridge Area Structure Plan (which was adopted by the Town of Cochrane in 1994, with amendments adopted in 2001 (Bylaw 18/01) and 2002 (Bylaw 25/01)) contains many relevant policies and ideas to guide development within Riversong. However, during the preparation of the Riversong Stage 1 Neighbourhood Plan, it was recognized that there are additional principles contained in the 2008 MDP and 2009 Cochrane Sustainability Plan (CSP) that may apply to the South Ridge Area Structure Plan (SR-ASP) lands. Therefore, the SR-ASP will be amended to recognize the Riversong Design Brief, approved in June 2010, which does meet the criteria of the 2008 MDP and 2009 CSP. The Riversong Stage 2 Neighbourhood Plan will continue to adhere to the guidance of the Riversong Design Brief, and thereby demonstrating fulfilment of the MDP and CSP.

The Riversong Stage 2 Neighbourhood Plan (RS2NP) provides details on how the community of Riversong will continue to be developed. Special attention will be given to streetscapes and the pedestrian environment to ensure that Riversong is a community where residents have ample opportunity to walk or bicycle within the community, and that the connections are in place for accessing the local High School, community greenspaces and adjacent communities and services planned in the area.

1.2 LOCATION AND ADJACENT USES

The RS2NP area is located within the south sector of the Town of Cochrane and comprises approximately 60.96 hectares (150.63 acres). As shown in Figure 5, the area is bounded by:

- The Bow River to the north;
- Future Riversong residential and an existing and operating gravel extraction operation to the east;
- Agricultural lands and approved and existing Riversong residential to the south;
- Bow Vista residential development and Agricultural lands to the west.

The Town of Cochrane is currently finalizing the River Heights Area Structure Plan. This Plan will provide policy direction for the area south and west of the community of Riversong, and has taken the community of Riversong into consideration. See Figure 1 for the River Heights Area Structure Plan area relative to Riversong.

1.3 LAND TITLES AND OWNERSHIP

The lands within the Riversong Stage 2 Neighbourhood Plan are owned by 1300534 Alberta Ltd. These lands are currently managed by Tamani Communities. The lands are legally defined as:

DESCRIPTIVE PLAN 0412318

BLOCK 9

LOT 1

EXCEPTING THEREOUT:

PLAN	NUMBER	HECTARES (ACRES)	MORE OR LESS
SUBDIVISION	0910527	6.820 (16.9)	
SUBDIVISION	0911859	2.02 (5.00)	
SUBDIVISION	0912151	6.245 (15.43)	

EXCEPTING THEREOUT ALL MINES AND MINERALS

AND

MERIDIAN 5 RANGE 4 TOWNSHIP 25

SECTION 35

THAT PORTION OF THE SOUTH WEST QUARTER WHICH LIES TO
THE SOUTH OF THE BOW RIVER AND EAST OF THE EASTERLY
LIMIT IF SAID ROADWAY AS SHOWN ON PLAN 475J
CONTAINING 35.6 HECTARES (88.27 ACRES) MORE OR LESS
EXCEPTING THEREOUT:

PLAN	NUMBER	ACRES	MORE OR LESS
ROADWAY	4837BM	0.04	

EXCEPTING THEREOUT ALL MINES AND MINERALS
AND THE RIGHT TO WORK THE SAME

1.4 DESCRIPTION OF LAND

The South Ridge lands were subject to several studies during the preparation of the Area Structure Plan. These studies are summarised below.

1.4.1 Natural State

The Riversong Stage 2 lands consist of a large escarpment in the southern portion and eastern portion of the lands. The remainder of the RS2NP lands between the escarpment and Bow River are generally flat.



Figure 2:
Aerial Photograph of Existing State of Land

1.4.1.1 Geotechnical Investigation

Three geotechnical investigations have been completed for the Riversong lands.

The first investigation was a Geotechnical Evaluation¹ dated August 2000 was prepared by Golder Associates Ltd. for the entire community of Riversong. The report focused on addressing the Town of Cochrane requirements for developments on terrain with slopes greater than 15% and provided recommendations for:

1. the stability of the steep slope along the watermain alignment;
2. the development setbacks along the east plateau; and
3. the foundation conditions for the road connector between Highway 22 and River Heights Drive.

Recommendations relative to 1 and 3 above have been followed during construction for Phases 1 and 2 of the Riversong Stage 1 Neighbourhood Plan. The recommendations relative to 2 will be addressed during the development of the east plateau, which will be included with a future Neighbourhood Plan.

The Geotechnical Evaluation raised no issues directly affecting the RS2NP area. The recommendations that affected the RS1NP have been addressed, and other areas will be addressed with future development.

A second investigation was prepared in response to a request by the Cochrane Planning Commission that the presence of alluvial aquifers within the lower bench lands be investigated prior to the development of this area. Golder & Associates Ltd. have performed this investigation and prepared a technical memorandum entitled Preliminary Hydrogeological Assessment of Alluvial Aquifer² which can be found in Appendix F. The result of the investigation is that 'no mitigative measures are considered necessary to provide further protection for the aquifer'.

Slopes are a significant issue in the Town of Cochrane, therefore the third geotechnical investigation entitled Riversong Stage 2 – Lower Terrace³ examined the toe of slope within the RS2NP area. The result of this investigation was to identify potential development setbacks ranging from 0-35 metres from the toe of slope ensuring a minimum Factor of Safety of 1.5 (the accepted standard) against any potential

¹ Geotechnical Investigation For The Proposed Cochrane Crossing Development, Golder Associates Ltd., August, 2000

² Preliminary Hydrogeological Assessment of Alluvial Aquifer, Golder Associates Ltd., January 18, 2011

³ Riversong Stage 2 – Lower Terrace, McIntosh Lalani, July, 2011

slope failures impacting development. The locations within the RS2NP area affected by the required development setbacks are:

- An area within the proposed R3 development of Riversong Phase 7 (see Figure 16), south of Riverside Way. The RS2NP layout has already been adjusted by reducing the proposed R3 development area and increasing the Environmental Reserve to accommodate the setback.
- The proposed Riversong Phase 9 (see Figure 16). Due to the significant impact on this area, further geotechnical investigation will be required during the land use and/or subdivision and detailed engineering drawing stage. Changes to the road network and block configuration of Phase 9 may be required to reflect the outcome of these further investigations. Should the changes to Phase 9 be deemed significant by the Town of Cochrane, a Neighbourhood Plan amendment may be required.

The Riversong Stage 2 – Lower Terrace investigation also states that further geotechnical analysis, which will be subject to the approval of the Town of Cochrane, will be required for the portion of Riverside Way that crosses the toe of slope, once the roadway profiles have been designed.

1.4.1.2 Historical Resource Impact Assessment

A Historical Resource Impact Assessment⁴ (Report 80-181) was prepared for the SR-ASP by Lifeways of Canada Ltd. in 1981. The report identified five prehistoric archaeological sites, one paleontological site, and one historic site. Of these sites, four were stated to require additional investigation. Only one of these four sites (EhPo-49) was located within Riversong's boundary. This site (EhPo-49) was reviewed by Dr. Brian Reeves of Lifeways of Canada in 1998, at which time he concluded that the site was a natural formation and not a cultural feature. Dr. Reeves recommended to Alberta Community Development that mitigation requirements originally recommended be rescinded. This recommendation was approved, and a copy of the letter of approval is provided as Appendix C. No further historical resource investigations are required within the RS2NP or Riversong.

⁴ Historical Resources Impact Assessment Robinson Lands, ASA Permit 80-181, Lifeways of Canada, December, 1980
Riversong Stage 2 Neighbourhood Plan Report, July 18, 2011

1.4.1.3 Environmental Site Assessment

A Phase 1 Environmental Site Assessment⁵ (ESA) was completed by Almor Testing Services Ltd. on December 20, 1997 for the entire community of Riversong. This report concluded that no environmental impairment existed, and that no further investigation was required. An updated letter was provided by Almor Testing Services Ltd. dated October 12, 2006 that further supported the findings in the original report; that no further environmental investigation is required. A copy of this letter is provided as Appendix D.

1.4.1.4 Traffic Impact Analysis

(a) Internal Road Review

An internal road review was preformed by D.A. Watt and detailed in a letter report⁶ dated October 3, 2007. The letter report evaluates both the short and the long term traffic scenarios.

The short term traffic scenario is based on the existing surrounding development, RS1NP development up to and including Phase 4 and the current road network of the single route into the development being from Highway 22 via River Heights Drive.

The long term scenario is based on complete build out of the community of Riversong and all internal roads, full build-out of other future developments in the area, the New East-West arterial road, New North-South arterial road, future North-South collector west of the school site and the proposed new Bow River bridge crossing being in place.

The result of the traffic review was to recommend that:

1. Riverside Way be designed and built as a Modified Collector Road (Cross-Section 'E' in Appendix B)
2. River Heights Boulevard from River Heights Drive to River Heights Crescent, be designed and built as a 15m Modified Residential Road

⁵ Level One Environmental Site Assessment for Southland Development Corp., Almor Testing Services Ltd., December 20, 1997

⁶ Riversong Development, Cochrane – Road Standard Review, D.A.Watt Consulting, February 3, 2005

3. River Heights Boulevard from the end of the recommended Modified Residential Road to the east boundary of Riversong, be designed and built as an 19.3m Avenue Road

Recommendations 2 and 3 were addressed with the RS1NP. Recommendation 1 will be followed with the Stage 2 Neighbourhood Plan with the addendum that although the Modified Collector recommendations will be implemented this cross-section must also accommodate a water line, and an exclusive southbound (uphill) bike lane with a shared driving and bike lane in the northbound (downhill) direction. Therefore the Riverside Way cross-section will be built 27.0 metres wide rather than the recommended 25.55 metres. All other design recommendations will remain the same.

(b) External Road Review

A new Transportation Impact Assessment is currently underway to evaluate the traffic impact of Riversong and determine what, if any, road network improvements are required and the staging of these improvements; in particular with the existing section of River Heights Drive. Recommendations of the TIA shall be implemented in conjunction with the approval of any Riversong Stage 2 subdivision applications. Further discussion can be found in Section 3.0, Transportation Network.

1.4.2 Existing State

Subsequent to previous approvals, the majority of the Riversong Stage 2 area has been stripped and rough graded. Figure 2 illustrates the existing state of the RS2NP area through an aerial photograph.

The Community of Riversong has land use approved under Bylaws 19/2006 and 17/2007. Further discussion on the existing land uses can be found in Section 4.0 Land Use.

1.5 HISTORY OF DEVELOPMENT

When the community of Riversong started, in 2001, different policies were in place to guide development than what are in place today. At that time, only an approved Area Structure Plan and Concept Plan were required to achieve Land Use and Subdivision Approvals. Riversong began development under the direction of a Concept Plan which was conditionally approved in March 7, 2001. Through the guidance of a Concept Plan, Riversong received Land Use approval for the entire community, developed Phases 1

and 2 of Riversong Stage 1, and received stripping and grading permits for the majority of the community.

In 2008, Cochrane Town Council approved their new Municipal Development Plan, which includes the requirement of an approved Neighbourhood Plan to guide Subdivision Approvals. Although Riversong had already commenced development of two phases, this policy requirement of a Neighbourhood Plan was implemented for all development going forward. To help explain the state of Riversong today, the history of development, governing policies and approvals granted in Riversong are detailed below.

December 1994	The South Ridge Area Structure Plan was adopted through Bylaw 14/94;
March 7, 2001	The Cochrane Crossing Concept Plan (now called Riversong) was conditionally approved by Cochrane Planning Commission;
August 13, 2001	An amendment to the SR-ASP was adopted through Bylaw 18/01;
September 9, 2002	An amendment to the SR-ASP was adopted through Bylaw 25/01;
September 25, 2006	Bylaw 19/2006 was approved and designated Land Use throughout Riversong;
June 27, 2007	An amendment to a portion of the land use Bylaw 19/2006 was approved through Bylaw 17/2007;
Spring, 2008	Construction of Riversong Phases 1 & 2 began;
October 14, 2008	The Cochrane Town Council approved the new Municipal Development Plan;
Fall/Winter, 2008	Riversong Phases 1 & 2 were completed and occupancy began;
May 2009	The Cochrane Sustainability Plan was adopted by Resolution by the Cochrane Town Council;
May/June 2010	The Riversong Design Brief and Stage 1 Neighbourhood Plan were approved by Cochrane Planning Commission/ Cochrane Town Council.

1.6 CURRENT LAND USE DESIGNATIONS

Figure 3 shows the Riversong community within the Land Use Concept plan from the SR-ASP.

As noted in Section 1.1, all of the lands within Riversong Stage 2 have approved Land Use through Bylaw 19/2006. The land uses designations, as shown on Figure 4, are as follows:

Bylaw 19/2006: (see Figure 4)	R-1 (Residential Single-Detached Dwelling District)
	R-2 (Residential Single and Two Dwelling District)
	R-M (Residential High Density Multi-Unit Dwelling District)
	P-S (Public Service)

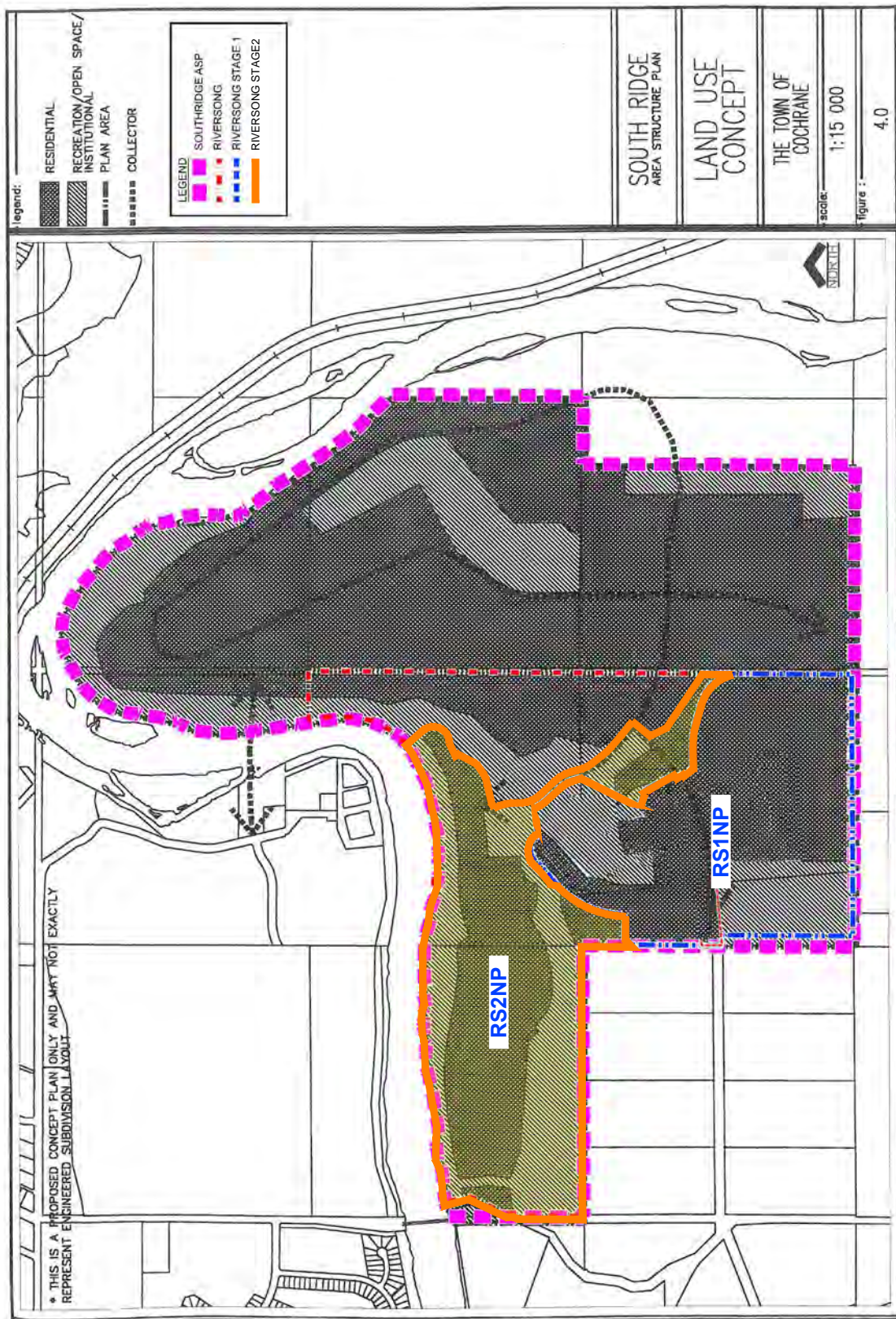


Figure 3:
Location of Riversong Stage 2 within the
South Ridge ASP Land Use Map

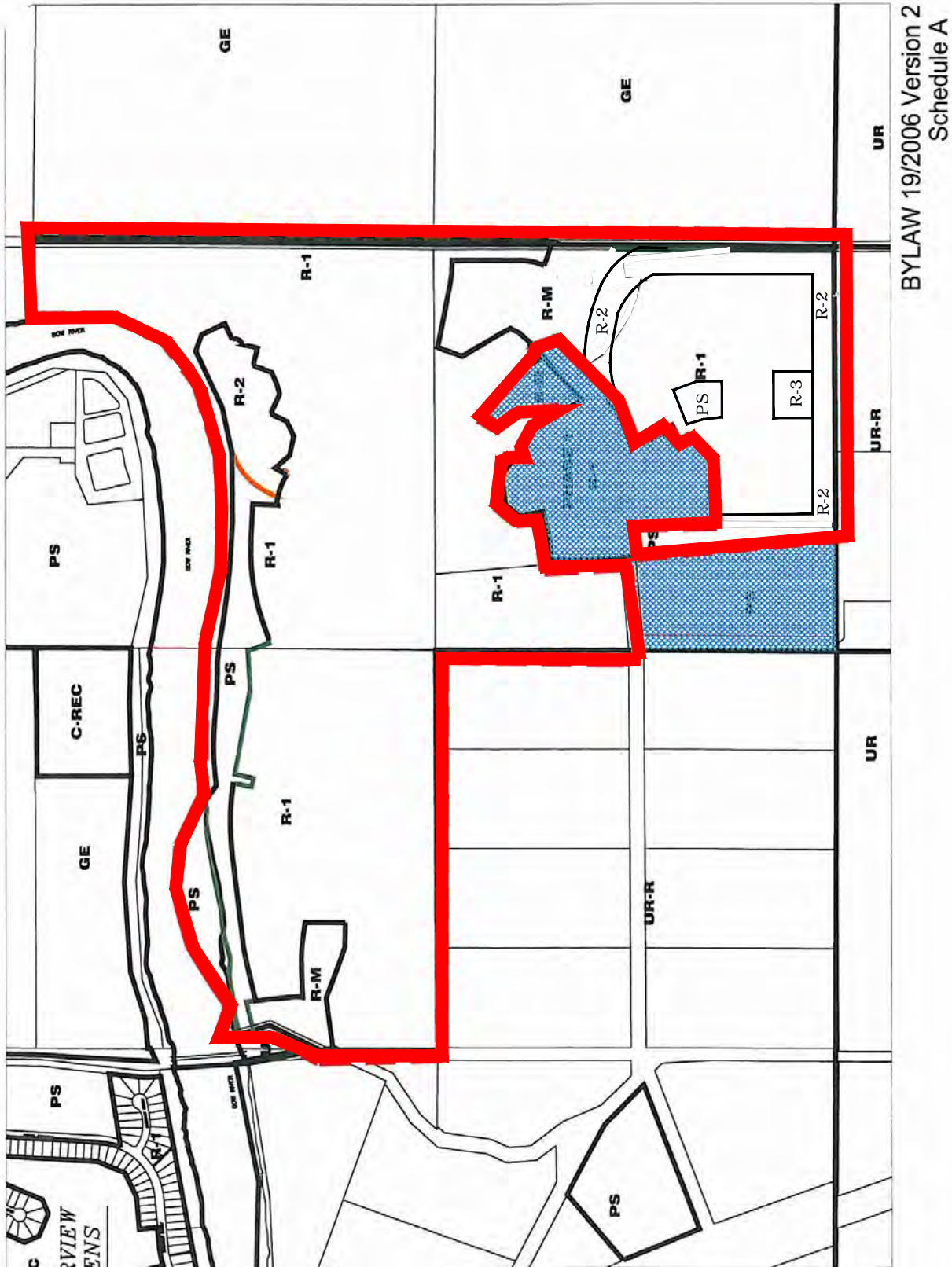


Figure 4:
Approved Land Use By-law 19/2006

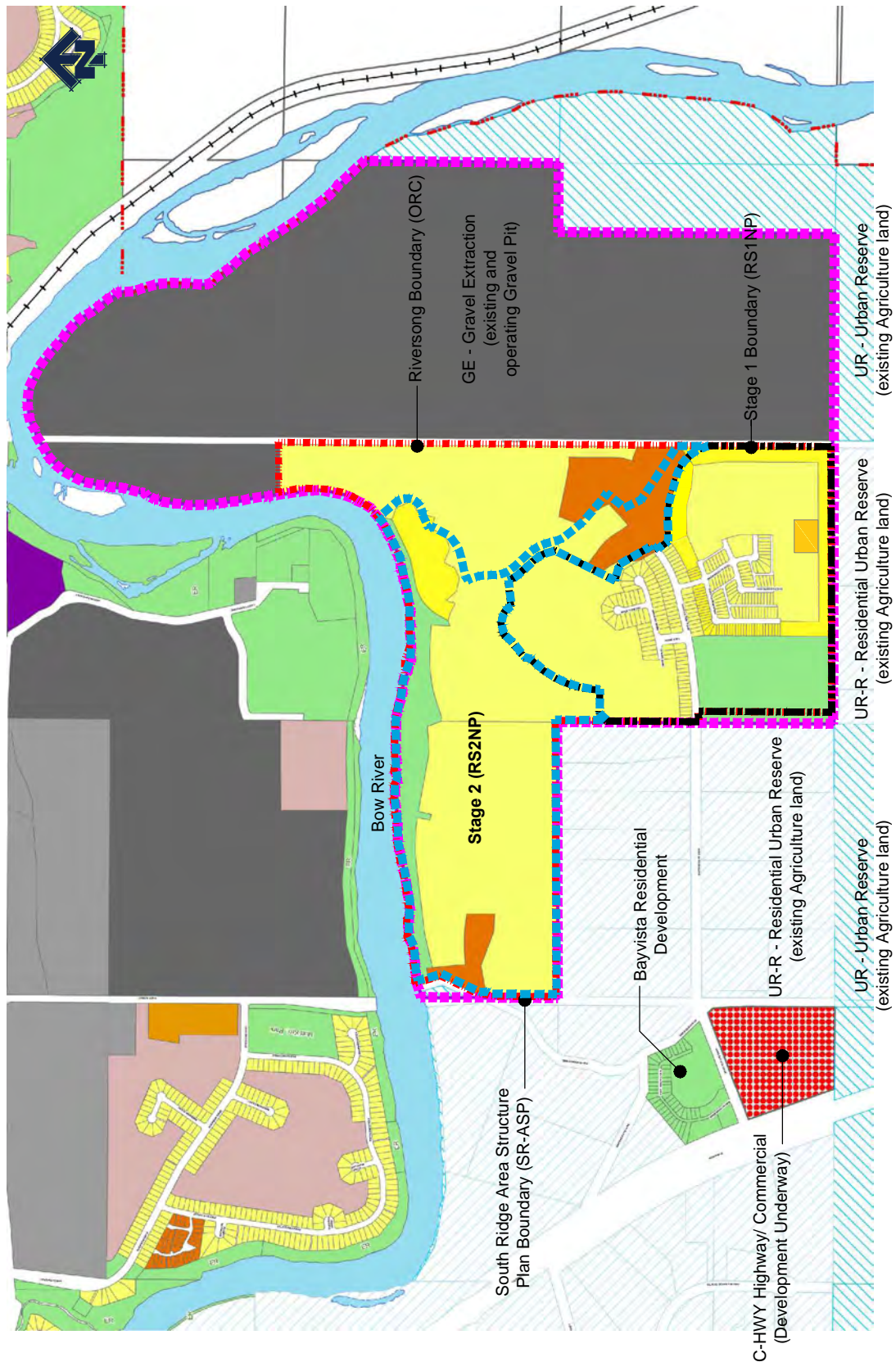


Figure 5:
Context Plan

2.0 RIVERSONG STAGE 2 NEIGHBOURHOOD PLAN

The Riversong Stage 2 Neighbourhood Plan (RS2NP) includes 60.96ha (150.63ac) of the community of Riversong, within the SR-ASP area. The boundary of the RS2NP includes Riverside Way, and the lands between Riverside Way and the Riversong Stage 1 Neighbourhood Plan boundary, within the upper bench, plus all of the lands in Riversong's lower bench area. An illustration of the Neighbourhood Plan can be seen in Figure 6.

All of the lands within the RS2NP have designated land use, granted through previous land use redesignations. In order to provide for a greater variety of housing, and thereby increase the density and intensify the land use within the RS2NP area and help to achieve the Planning Principles of the MDP, a minor land use amendment is being put forth under this Plan. The proposed land use amendment is discussed further in Section 4.0.

2.1 DESIGN ELEMENTS

The land Riversong occupies contains varied topography and significant natural amenities due to the naturally rolling lands, the escarpment and the proximity to the Bow River. The layout of the community respects these natural features, and protects the escarpment and the areas adjacent to the Bow River as environmental reserve (ER). Protecting these areas as ER will ensure that these natural features are accessible to the residents of Riversong, as well as those living in all areas of Cochrane.

Riversong will continue to provide a high standard of architectural details found in the community today, which provide a sense of place and distinguish Riversong from all other communities in Cochrane. Figure 7 illustrates the other key design elements of the RS2NP.

2.1.1 Pedestrian Connectivity

The Riversong Stage 2 pathway and sidewalk network is designed to facilitate the safe enjoyment of the community and connect residents directly to community amenities including the banks of the Bow River, the community greenspaces which will include a tot lot, a storm pond with an adjacent pathway, public art, and a community garden. See Figure 8.

Strategically placed walkways and pathways will connect residents safely and comfortably to all of Riversong's local amenities. Where appropriate, walkways bisect longer blocks to provide residents with easier access to their destination. Sidewalks will be provided on both sides of all roads to further aid in the walkability of the community.

A combination of a 2.0 metre local pathway and the 3.5 metre Bow River Pathway encircle the storm pond. This circular pathway will provide residents with an opportunity for walking, jogging or cycling around the storm pond.

Whether a resident wants to play at the local tot lot, walk the pathways through the natural escarpment, enjoy the pathways along the Bow River and storm pond, or walk to the community garden, the linkages will be in place to ensure there is a sidewalk, walkway or pathway for the resident to utilize.

2.1.2 Local Playground

The Riversong Stage 2 Neighbourhood Plan will house Riversong's second tot lot park. The local pathway runs directly adjacent to this centrally placed tot lot park, providing convenient access to residents, as well as increased safety through high visibility.

This tot lot will serve all the homes and residents in the lower bench lands. The majority of homes in the lower bench are within 500 metres walking distance of the tot lot, as well as the homes at the north end of the cul-de-sac in Phase 4 which are outside of the 500 metre walking distance of the Stage 1 tot lot park. The homes that fall outside of the 500 metre walking distance are well within a 1 kilometre catchment area which adheres to the catchment area identified in the MDP.

2.1.3 Community Garden

Riversong Stage 2 will contain a community garden to allow residents to enjoy the bounty of their own, locally grown produce as well as interact and socialize. By accommodating a community garden, the RS2NP directly supports the Cochrane Sustainability Plan (CSP) Pathway to the Future 5: We consume the bounty of our local economy.

As indicated in the approved Riversong Design Brief, the community garden is proposed to be located near the future multi-unit sites on the upper bench lands, at the easterly terminus of River Heights Drive, as illustrated on Figure 6. Residents in multi-unit developments often do not have the opportunity to plant a garden to grow their own food due to their lack of private greenspace. By placing the community garden close to the multi-unit developments, these residents will have convenient access to the site. Community gardens also become a social focus and meeting point as residents get to know each other while tending their gardens.

The final location of the community garden will be determined in conjunction with the design of these multi-unit residential sites.



2.1.4 Public Art

Riversong Stage 2 will include public art adjacent to the future storm pond, in the lower bench lands. This public art piece will increase the sense of place by creating a familiar icon that becomes associated with the community.

The final form and location of the public art will be determined at the subdivision application stage, though it generally will be located as shown on Figure 6. The public art will consist of low maintenance materials and be designed to withstand the local climate.

2.1.5 Affordable Housing

A variety of housing forms, sizes and price ranges will be available in Riversong Stage 2. To further ensure that housing is available to all income levels, the developer is committed to working with the Cochrane Society for Housing Options to determine an appropriate location and form of affordable housing within one of the multi-unit sites on the upper bench lands. Care will be taken to ensure the housing will be integrated seamlessly within the community of Riversong. The form and management will be co-ordinated with the Cochrane Society for Housing Options.

Detailed design of the multi-unit sites will be determined at the subdivision application stage. Once the form of housing suitable to the land form is determined, the developer will contact the Cochrane Society for Housing Options to determine if the housing form that is developable will fulfill a housing need within the town.

2.1.6 Transit Oriented Design

Transit Oriented Design (TOD) ensures that the connections are in place to allow residents to utilize alternative forms of transportation. Whether residents want to walk or cycle to community amenities or access public transportation, strong pedestrian connections should be in place to facilitate their safety and comfort.

Riversong Stage 2 supports TOD through the integration of a future public transit route. Public transit is anticipated to travel through the RS2NP along Riverside Way. A roundabout is proposed to provide a transit turnaround in the lower bench lands to allow transit to access this area. Figures 9 and 10 provide potential public transit and school bus routes through the RS2NP area. TOD is further supported in Riversong through the strategically located pedestrian connections, as noted in Section 2.1.1 and Figure 8. Although the Town of Cochrane does not currently have a public transportation system, it anticipates its future inception as part of its responsible growth management.

2.2 HOUSING DIVERSITY AND STREETSCAPE

The Riversong Stage 2 plan recognizes the unique opportunity to provide a new community on the banks of the Bow River. To this end, the RS2NP endeavours to provide a variety of dwelling forms, thereby allowing a range of housing needs to be met in this special area of Riversong. To provide the opportunity for residents in every stage of their life cycle to live directly adjacent to the Bow River, the RS2NP provides four different dwelling types backing onto the Bow River including high density multi-unit, townhouse development, semi-detached dwellings and single family dwellings.

The complete mix of housing styles in Riversong Stage 2 includes higher density condominiums, townhouses, semi-detached housing, mid-sized single family homes and estate single family homes. The developer has committed to work with the Cochrane Society of Affordable Housing to determine the potential for affordable housing within one of the multi-unit (R-M District) sites on the upper bench lands. This range of housing styles offered in Riversong Stage 2 supports the Cochrane Sustainability Plan's 9th Pathway to the Future "Everyone has a roof over their head".

Three multi-unit sites have R-M land use within the RS2NP. These sites will be developed as comprehensive multi-family sites and are subject to Development Permits. At the Development Permit stage, a detailed review of the site will be undertaken to determine a suitable form of housing development.

Townhouse development is proposed along Riverside Way, at the bottom of the hill east of the proposed Tot Lot and Community Art location. This will provide an attractive streetscape entrance to the rest of the Stage 2 area, while offering another housing option within the RS2NP. High end architectural details will ensure that the townhouse development compliments the surrounding community. The lay-by on the south side of Riverside Way adds character to the townhouse development and provides a buffer between the front driveways and Riverside Way. It also provides the opportunity for additional low maintenance landscaping to enhance the streetscape.

A Residential Single and Two Dwelling District (R-2) area is provided east of Riverside Way, adjacent to the Bow River in Riverside Court. The R-2 area along Riverside Court provides a semi-detached housing option within the lower bench lands. Section 4.0 provides additional details on the proposed land uses within the RS2NP. The R-2 land use district allows for single detached homes as well, and although semi-detached housing is the vision for this Riverside Court, single detached homes may be utilized in sections with challenging grades.

The remaining Stage 2 lands, west of the semi-detached units and east of the multi-unit site will be single family units (R-1 District). A range of lot sizes will be found within this area, supporting standard front drive dwelling unit sizes and larger, estate dwelling units with attached triple garages. A second lay-by has been added to this area to enhance the streetscape and provide an additional landscaping opportunity.

Riversong Stage 2 continues the life-cycle housing opportunities found in Riversong Stage 1. A resident of Riversong could initially move into a multi-unit condominium (R-M District) development or townhouse (R-3 District), and then expand into a semi-detached (R-2 District) or standard lot single detached dwelling unit (R-1 District) as they age or start a family. Eventually this same resident may desire to attain a large-estate home (R-1 District), also available within Riversong. At later stages in life, a resident can downsize to a semi-detached (R-2 District), townhouse dwelling (R-3 District) or condominium unit (R-M) but still live within the community they have become accustomed to.

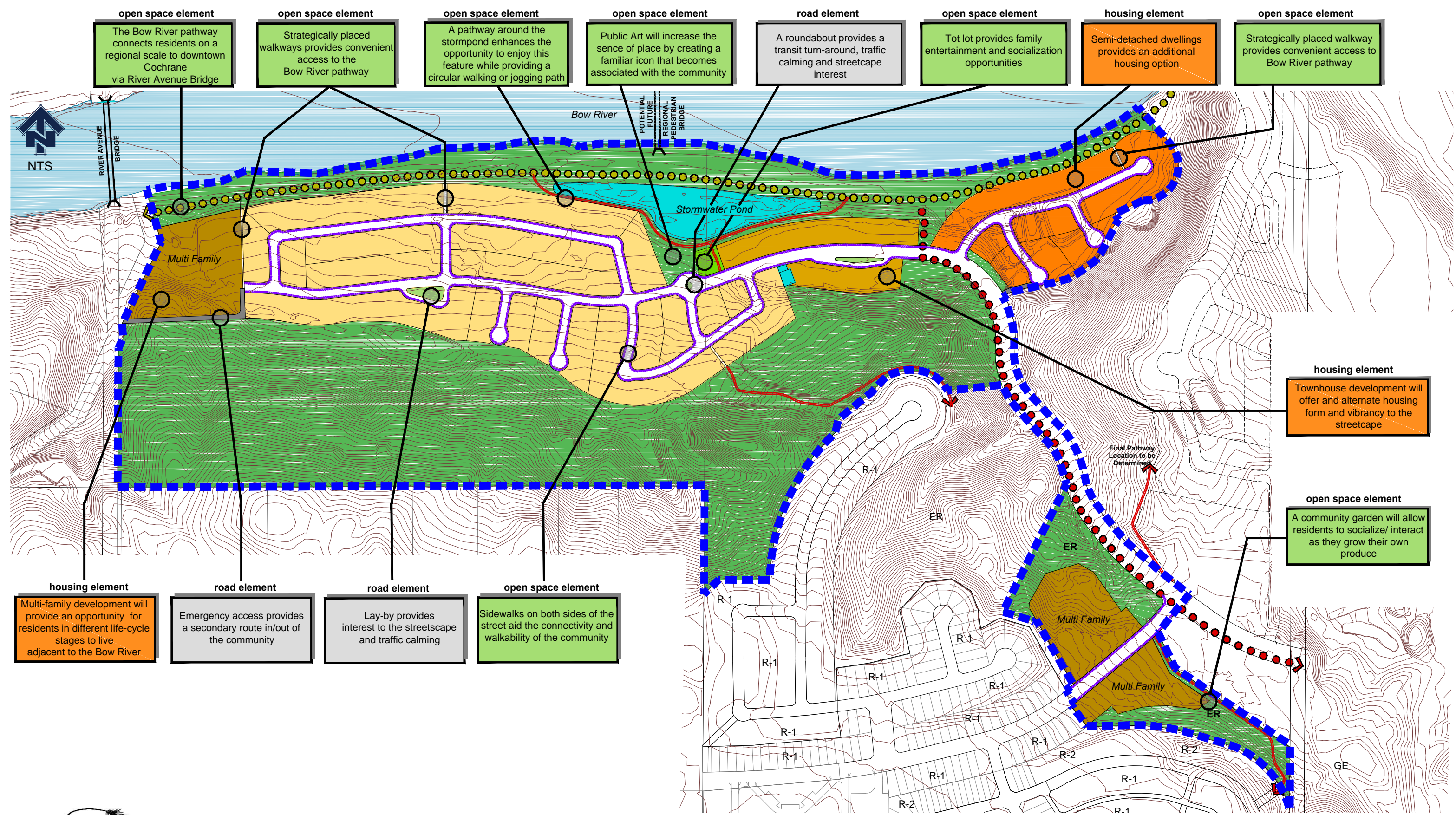


Figure 7:
Key Elements

2.3 PEDESTRIAN ORIENTED DEVELOPMENT

As previously noted in Section 2.1.4, the RS2NP recognizes that the escarpment and the Bow River are natural amenities in Riversong, which will provide an opportunity for residents to enjoy their outdoor environment. Therefore, to facilitate Riversong's existing and future resident's safe enjoyment of the community, the RS2NP offers numerous, strategically located, pathways and walkways, along with sidewalks on both sides of the street to aid connectivity. This system of pathways and walkways provides easy access throughout the RS2NP area, its amenities, as well as regional connectivity to other services and amenities within the Town of Cochrane. As development proceeds bike pathways shall be reviewed and incorporated into the development where possible.

A 2.5 metre regional pathway system will be constructed along Riverside Way and will connect residents with the Bow River Pathway. Sidewalks and pathways lead residents directly to the parks and the community greenspaces while facilitating a safe walking environment throughout. Residents will have multiple route options for walking and cycling in their own community.

There are a variety of greenspace connections and/or walkways purposefully situated to ensure convenient access to the Bow River Pathway or the local pathway network. A combination of a local pathway and the Bow River Pathway create a circular walking/jogging track around the storm pond which can be utilized for outdoor fitness. Some of the pathways through the escarpment may include post and cable fences to discourage pedestrian encroachment into these environmentally sensitive areas. This detail will be investigated further at the Subdivision stage of development.

Once on the Bow River Pathway, residents will be able to sit near the stormwater management facility and enjoy the community art, visit the Tot Lot, walk along the River to an alternate walkway connection to circle back to their home without retracing their steps, or connect to downtown Cochrane via the River Avenue Bridge.

The pedestrian connection to Cochrane's downtown industrial and commercial areas directly supports the Cochrane Sustainability Plan's 11th Pathway to the Future "Wherever you are in Cochrane you are close and connected, and 12th Pathway to the Future: "There are diverse options for getting around". If you live in Riversong you could walk or cycle to the downtown area or the Spray Lakes Recreational Centre as an alternative to driving. Walking or cycling to work is a viable option for residents in the RS2NP.

2.4 PUBLIC TRANSPORTATION

As per the Riversong Design Brief, Transit Oriented Design (TOD) shall be considered for the RS2NP. TOD creates communities that are less dependent on private vehicular transportation and focus more on alternative methods of transportation. Whether utilizing public transit, cycling or walking, residents of TOD communities should have

access to all the community's amenities through strong pedestrian connections. Section 2.3 discusses RS2NP pedestrian connectivity to facilitate alternative forms of transportation such as walking and cycling. Although the Town of Cochrane does not currently have a local public transportation system, it anticipates its future inception as part of its responsible growth management.

Riversong accommodates the possibility of public transportation in the future. The ultimate route for public transit in Riversong would be through River Heights Drive to Riverside Way, north on Riverside Way to a bus turnaround, and then back south to head east out of the community. The public transit route can be seen on Figure 9.

Figure 10 illustrates the potential school bus route through RS2NP area. This route as illustrated provides complete 400m school bus walking distance coverage to the entire RS2NP area.

The final location of bus zones will be determined at the subdivision application stage to the satisfaction of the Town of Cochrane.

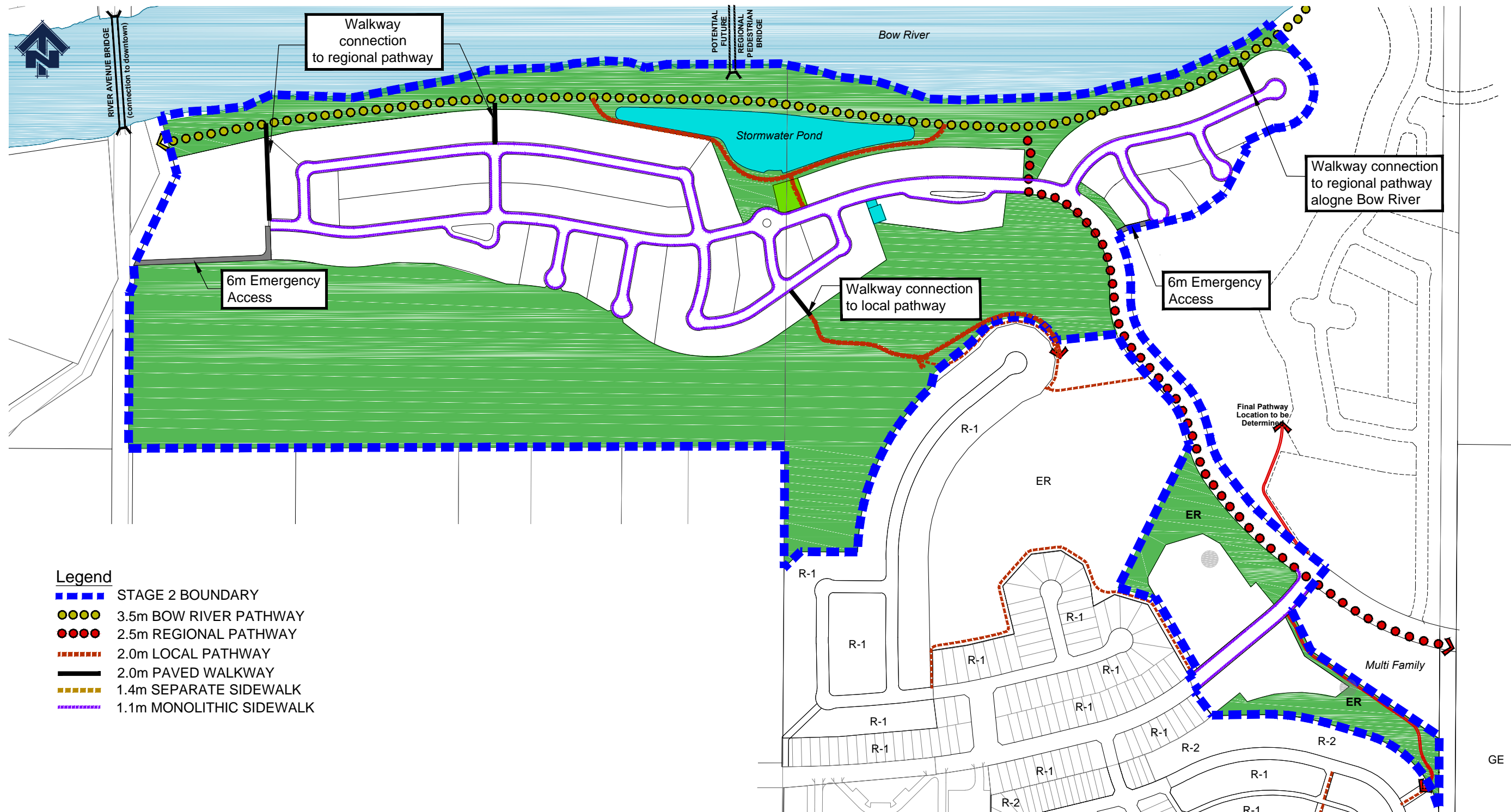


Figure 8:
Pedestrian Connectivity Plan

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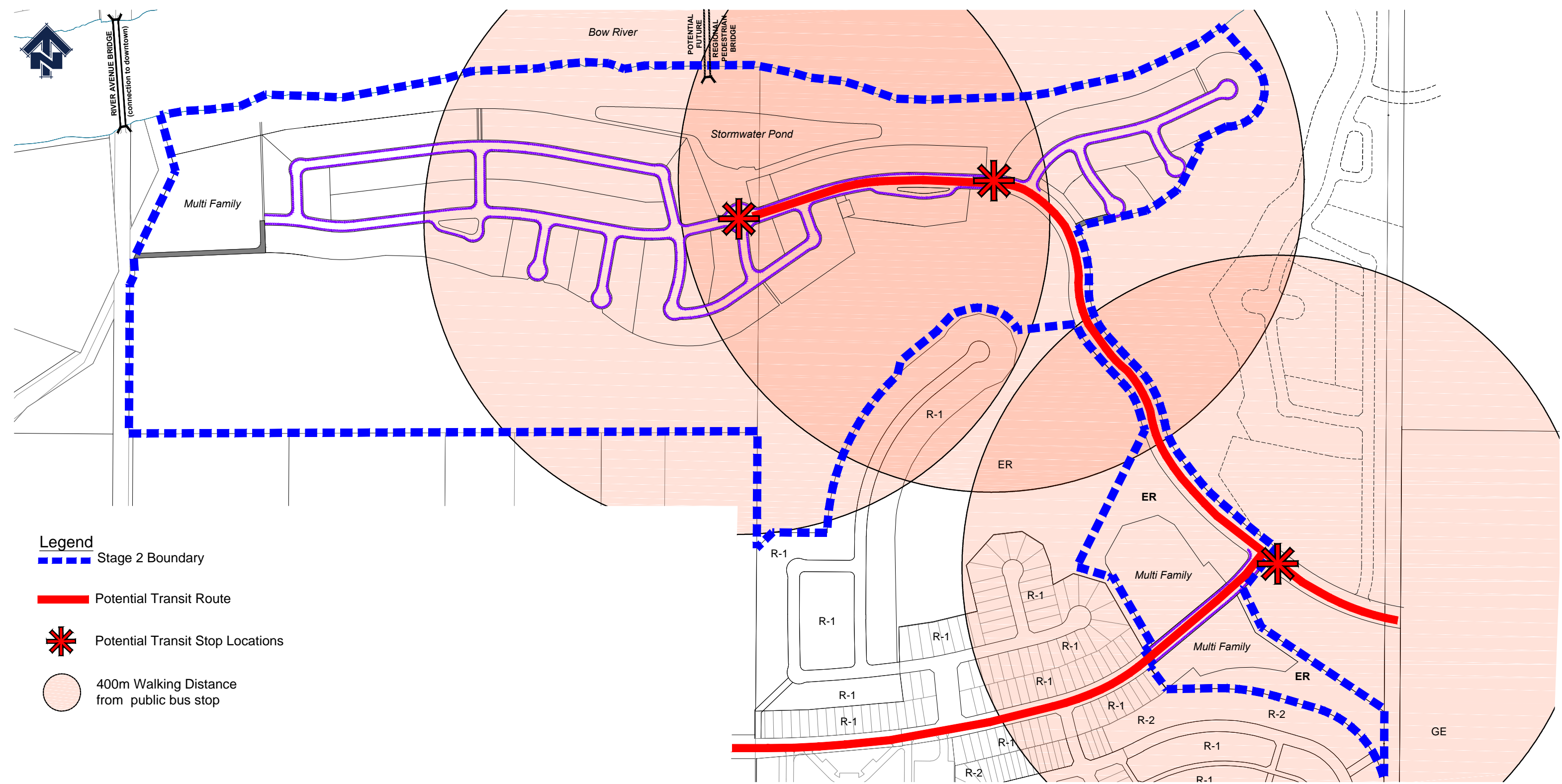


Figure 9:
Public Transportation Route

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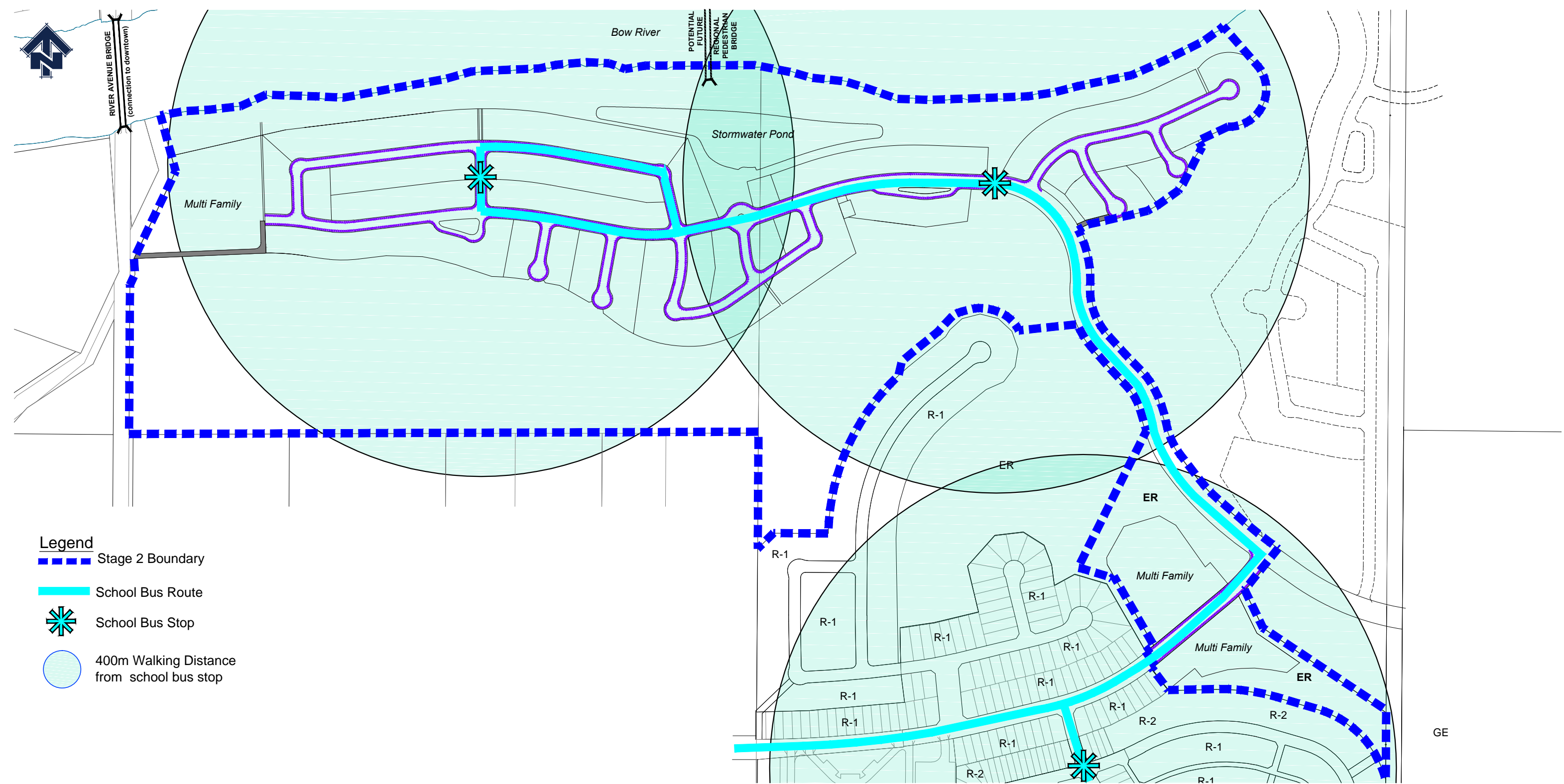


Figure 10:
Potential School Bus Route

2.5 CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

The RS2NP recognizes the importance of Crime Prevention through Environmental Design (CPTED). Crime prevention through environmental design happens when the built environment helps to reduce the incidence of crime and the fear of crime occurring. The MDP provides basic criteria for designing communities with CPTED. The criteria and how Riversong addresses them is outlined below.

Awareness of the Surrounding Environment

The MDP states that “awareness of the surrounding environment occurs when people can see and understand their surrounding environment through unobstructed sightlines, adequate lighting, and avoidance of hidden spaces”⁷.

- The majority of the RS2NP is a modified grid design which provides unobstructed sightlines along straight roads as well as intersections that provide good visibility in all directions.
- Portions of the RS2NP that include curved streets utilize walkways to provide multiple accesses to and from the area to avoid entrapment. Most cul-de-sac streets open to a greenspace to avoid a dead end.
- Street lighting will be provided along all roads and near walkways.

Visibility by Others

- Special attention was given to the placement of pathways and walkways within the RS2NP area to ensure they are adjacent to roadways and/or highly visible open spaces.
- The regional pathway runs along Riverside Way, and then connects in two locations to the Bow River Pathway. Pathways have been avoided between the escarpment and back of lots. Crime is less likely to occur when there is a high potential for the crime to be witnessed, and people feel safer when they can easily be seen.
- The tot lot park north of Riverside Way is located adjacent to this main roadway, has a local pathway running adjacent, which then connect to the Bow River Pathway to the north of the tot lot. This park is in a highly visible location.

Finding Help

- Residents of a close nit community are more likely to report a crime or intervene to help. The separation of the RS2NP area from the rest of Riversong due to the escarpment will create a sense of a small close nit community. The tot lot park, the community art, community garden and extensive pathway/sidewalk system will help foster the social development of the community, in turn facilitating the sense of safety in the community as residents get to know their neighbours.

⁷Town of Cochrane Municipal Development Plan, October 2008, Appendix E, page 73
Riversong Stage 2 Neighbourhood Plan Report, July 18, 2011

Sightlines

- Attention will be given to the placement of landscaping features, the growth characteristics of plants and their placement in relation to potentially vulnerable areas throughout the community.

Lighting

- Attention will be made to provide street lighting at key locations, and near walkways to allow continued visibility at night.
- To increase safety in some walkway locations, lighting options will be investigated at the Subdivision stage of development.
- Lighting within the RS2NP will be Dark Sky sensitive by not causing glare for drivers or light trespass to neighbours.

Predictable Routes

- The combination of sidewalks, pathways and walkways in the RS2NP provide multiple options for reaching destination points. Residents do not have to take the same route every time, nor do they have to retrace their steps to return home after a walk, jog or cycle.

Entrapment Spots

The MDP defines entrapment spots as “small, confined areas near or adjacent to well-travelled routes that are shielded on three sides by some barriers, such as walls or bushes”⁸.

- The design of the RS2NP does not provide small areas that are shielded on three sides resulting in potential entrapment situations.
- Attention will be given to future landscaping plans and the growth patterns of plantings to ensure future entrapment spots do not occur.
- Pathways have purposely not been placed between the escarpment and backs of lots to avoid entrapment spots.

Isolation

- Feelings of isolation will be largely avoided by maintaining well lit sidewalks and walkways providing visibility to residents, and of residents utilizing these areas.
- Highly visible pathways and attention to landscaping will help eliminate feelings of isolation by ensuring residents maintain good visibility of their surroundings and can be seen by others.

⁸ Town of Cochrane Municipal Development Plan, October 2008, Appendix E, page 75

3.0 TRANSPORTATION NETWORK

3.1 CONSTRAINTS TO THE EXTERNAL ROAD NETWORK

3.1.1 Topography

The escarpment and natural topography of Riversong put limitations on the transportation network and connectivity. The design of the transportation network respects the topography of the land by minimizing the impact on the escarpment, resulting in limited vehicular connectivity in some areas of Riversong. The Bow River also creates a natural boundary on the north side of the community, impeding access from this direction.

3.1.2 Ownership

Separate ownership of the lands on the west and east side of Riversong adds constraint to the transportation network.

Riversong is not directly adjacent to Highway 22, but it relies upon this highway as the permanent access route to and from the community, via River Heights Drive. There are several landowners between the west side of Riversong and Highway 22. This creates challenges on the timing and financing of upgrading River Heights Drive.

The gravel extraction operation on the east boundary of Riversong also falls under separate ownership. Although River Heights Drive currently accommodates all gravel truck traffic entering and exiting the site, the Town of Cochrane along with the effected landowners and developers are working together to finalize an alternate gravel haul route.

3.1.3 Access

Riversong is situated immediately south of the Bow River, and approximately one kilometre east of Highway 22. The permanent access into Riversong is from Highway 22 via River Heights Drive.

From Highway 22 to Riversong's west boundary, River Heights Drive is currently a 7 metre wide rural roadway with ditches rather than curb and gutter for stormwater management. At the entry point into Riversong, River Heights Drive changes to a 21 metre collector standard road.

River Heights Drive terminates at the proposed Riverside Way. Riverside Way provides access into Riversong's lower bench area and to future urban development to the east of Riversong. Future development to the east of Riversong is not anticipated to occur within the next 15 years as the gravel extraction operation has significant operating life remaining.

The Transportation Update Plan 2009⁹ identifies a major arterial road running north/south, within the SR-ASP lands to the east of Riversong. This future arterial road will provide an additional route south to Highway 22, as well as the connection to the future second bridge crossing of the Bow River. Each of these will provide improved access to Riversong. Additional discussion of the future bridge can be found in Section 3.2.4.2.

3.2 THRESHOLDS OF THE EXTERNAL ROAD NETWORK

The existing and future transportation networks are identified in Figures 11 and 12. These Figures are based on the Transportation Update Plan 2009 prepared by Urban Systems under the direction of the Town of Cochrane.

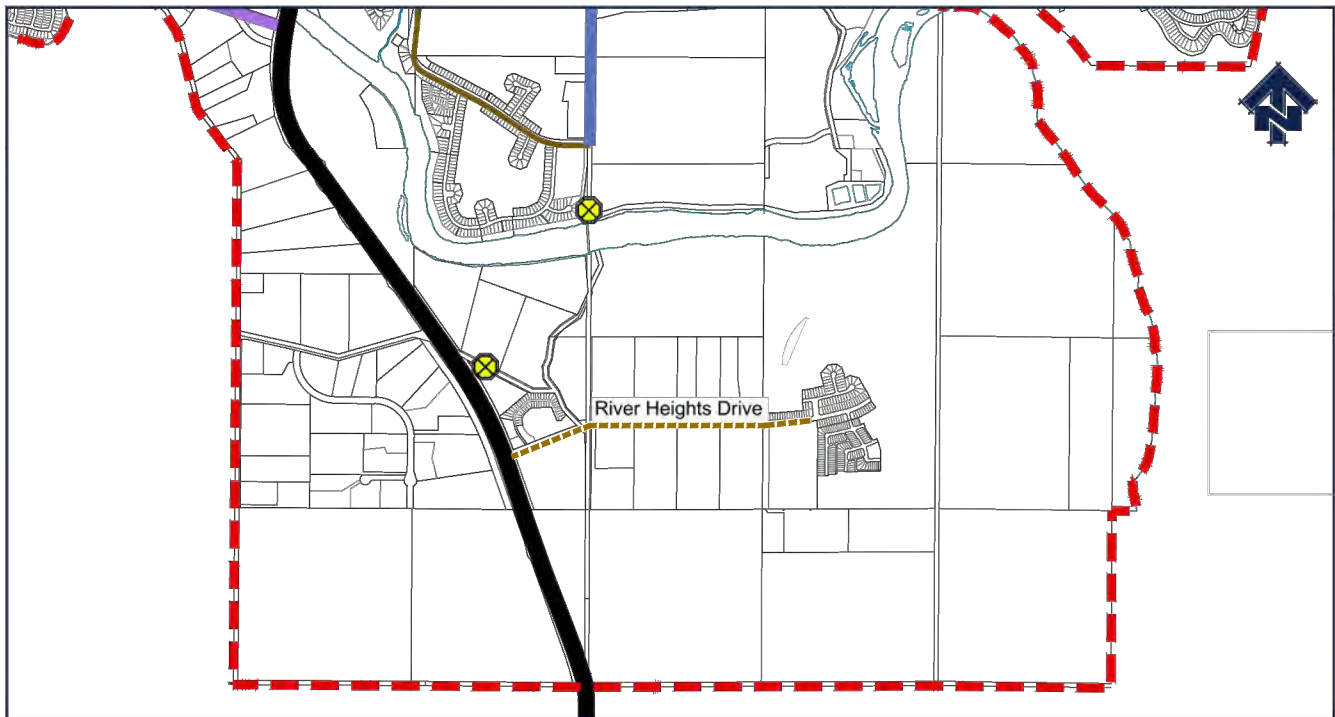
3.2.1 Current Intersection of Highway 22 and River Heights Drive

An Intersection Traffic Study¹⁰ (ITS) completed by Focus Corporation, determined that the intersection of Highway 22 and River Heights Drive currently operates at an overall Level of Service A. However, the westbound right and left turning movements operate at a Level of Service C.

⁹ Town of Cochrane Transportation Update Plan 2009, Urban Systems, April 2009

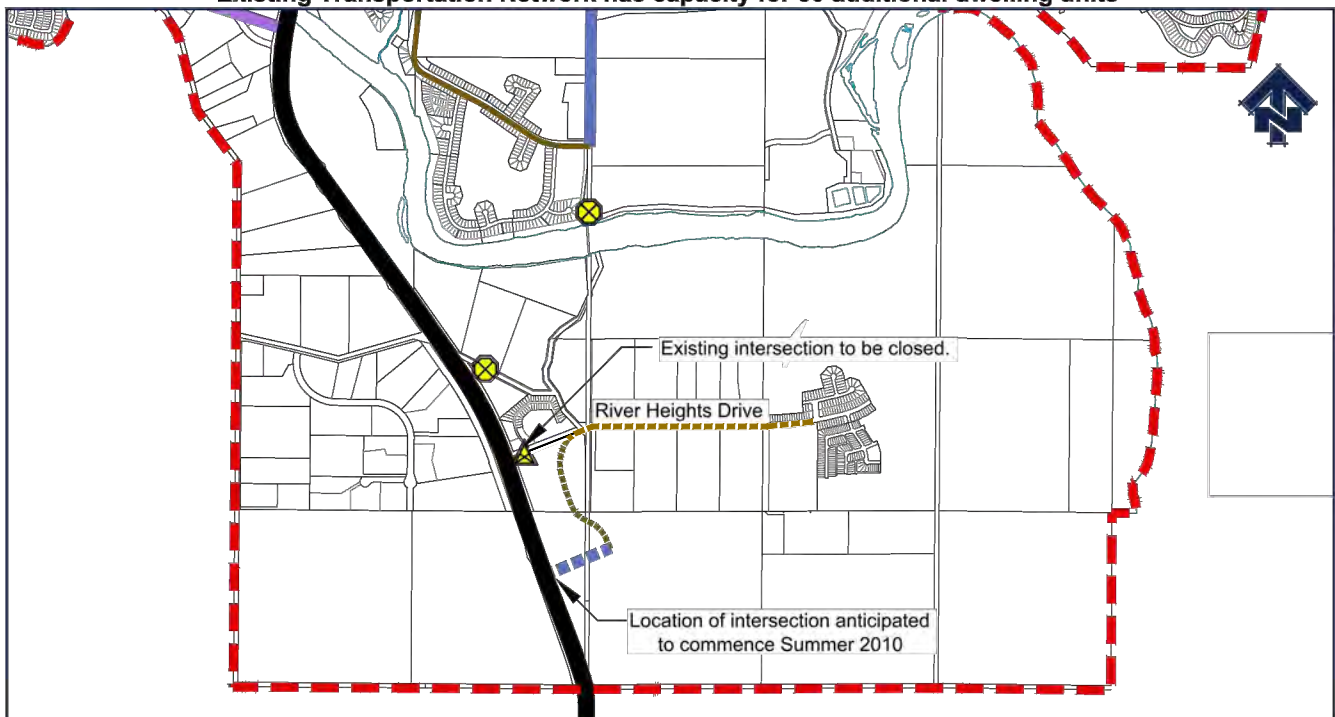
¹⁰ Intersection Traffic Study, Focus Corporation, February 17, 2010

Riversong Stage 2 Neighbourhood Plan



Transportation Network Stage 1

Existing Transportation Network has capacity for 50 additional dwelling units



Transportation Network Stage 2

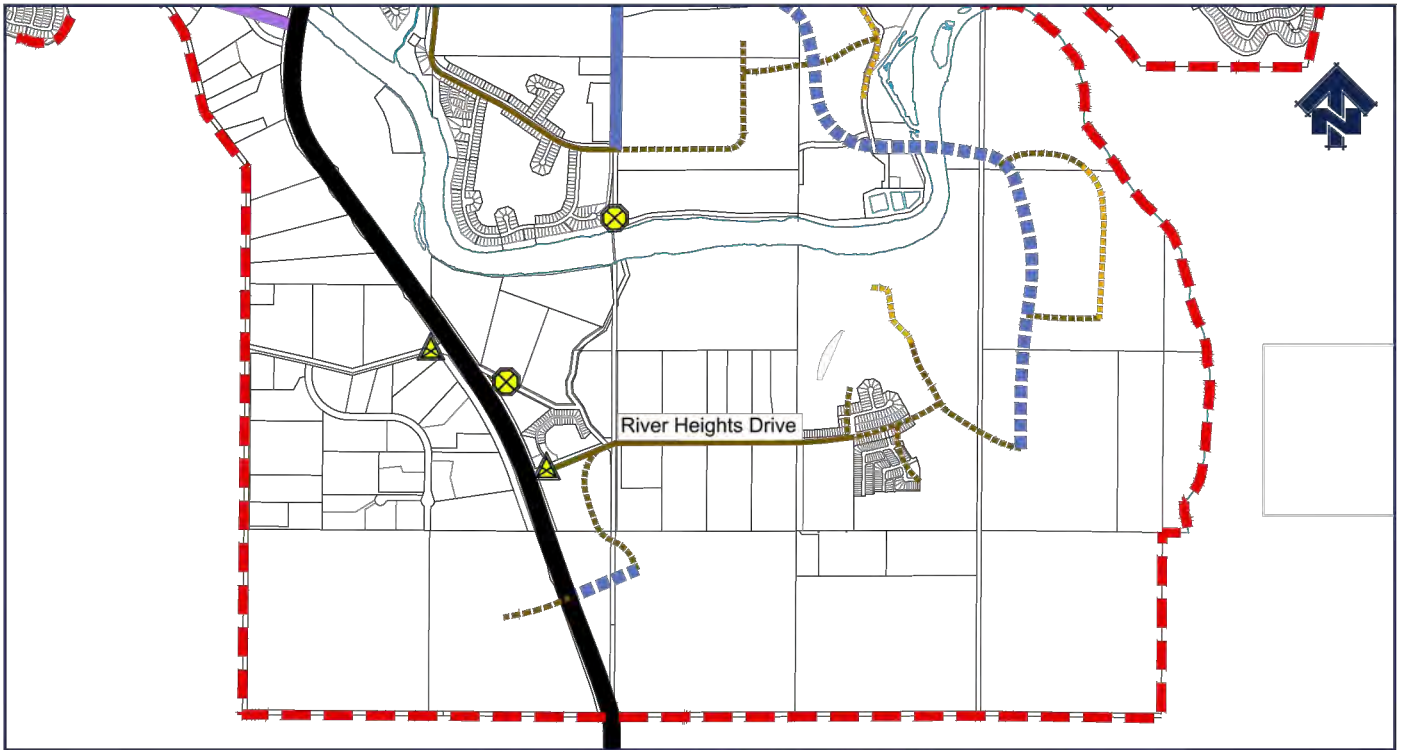
Spring 2010 Construction of new intersection will increase the capacity of the Transportation Network and allow 880 additional dwelling units to be constructed.

Legend:

- Provincial Highway (Existing)
- Major Arterial (Existing)
- Minor Arterial (Existing)
- Major Collector (Existing)
- Major Arterial (Future)
- Major Collector (Future)

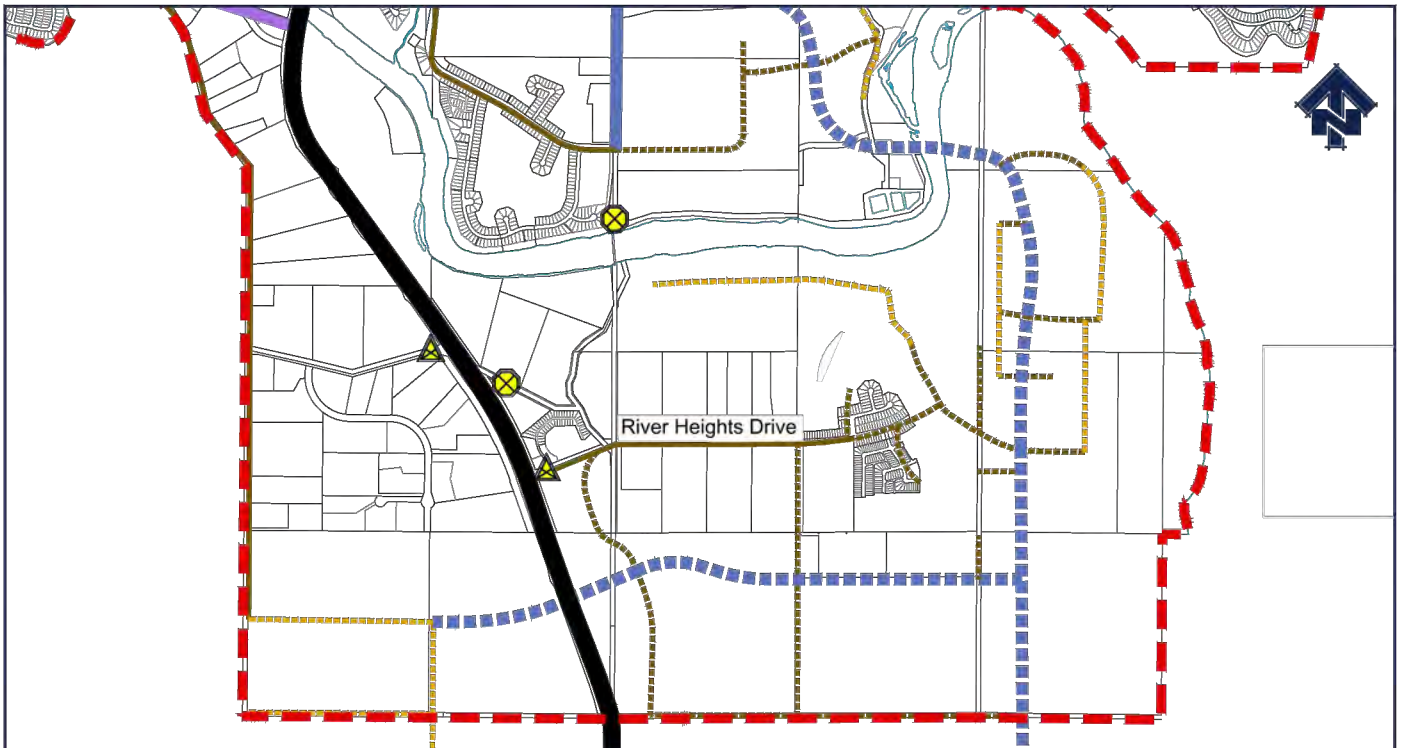


Figure 11:
Stages 1 & 2 of External Transportation Network



Transportation Network Stage 3

2016 Recommended Future Road Network as per the Town of Cochrane Transportation Plan update 2009



Transportation Network Stage 4

2026 Recommended Future Road Network as per the Town of Cochrane Transportation Plan update 2009

Legend:

- | | |
|-------------------------------|--------------------------|
| Provincial Highway (Existing) | Major Arterial (Future) |
| Major Arterial (Existing) | Major Collector (Future) |
| Minor Arterial (Existing) | Minor Collector (Future) |
| Major Collector (Existing) | |
| Minor Collector (Existing) | |



Figure 12:
Stages 3 & 4 of External
Transportation Network

3.2.2 Planned Intersection of Highway 22 and River Heights Drive (via James Walker Trail)

The new intersection for Highway 22 and River Heights Drive (via James Walker Trail) is under construction. This new intersection is located 550± metres south of the existing intersection, and will be fully channelled with future signalization as required. Private land ownership exists between the locations of the existing intersection and proposed intersection. A connection through private land was required to connect the new intersection with the existing River Heights Drive. This agreement has been reached, and construction is underway.

With the opening of the new intersection, the old Highway 22/River Heights Drive intersection will remain intact and function as an emergency access only.

3.2.3 River Heights Drive

With the consideration of Riversong Stage 1, River Heights Drive is currently operating at capacity from the existing Highway 22 intersection to the west boundary of Riversong. The Town of Cochrane has requested that a new Traffic Impact Assessment (TIA) be prepared for all of Riversong to comprehensively investigate the staging of upgrades to River Heights Drive.

The new TIA is currently underway and will identify the interim upgrades required for River Heights Drive as well as the staged capacity provided through the upgrades. The new TIA will be subject to the approval of the Town of Cochrane, and implementation of its recommendations shall begin in conjunction with the approvals of any Riversong Stage 2 subdivisions.

The developer of Riversong will be entitled to 100% recoveries on the upgrades to River Heights Drive, based on frontage obligations from all benefiting lands. The Town will work with the Developer to set up the recovery mechanism.

3.2.4 Access

Riversong currently has a permanent access in place via River Heights Drive and Highway 22. This access will soon be enhanced by the new intersection of River Heights Drive and Highway 22, and the new River Heights Drive major collector road connection just east of Highway 22, as discussed in Section 3.2.2. Should the upgrades identified in the new TIA result in the remaining section of River Heights Drive, east of the new section, require a divided cross section

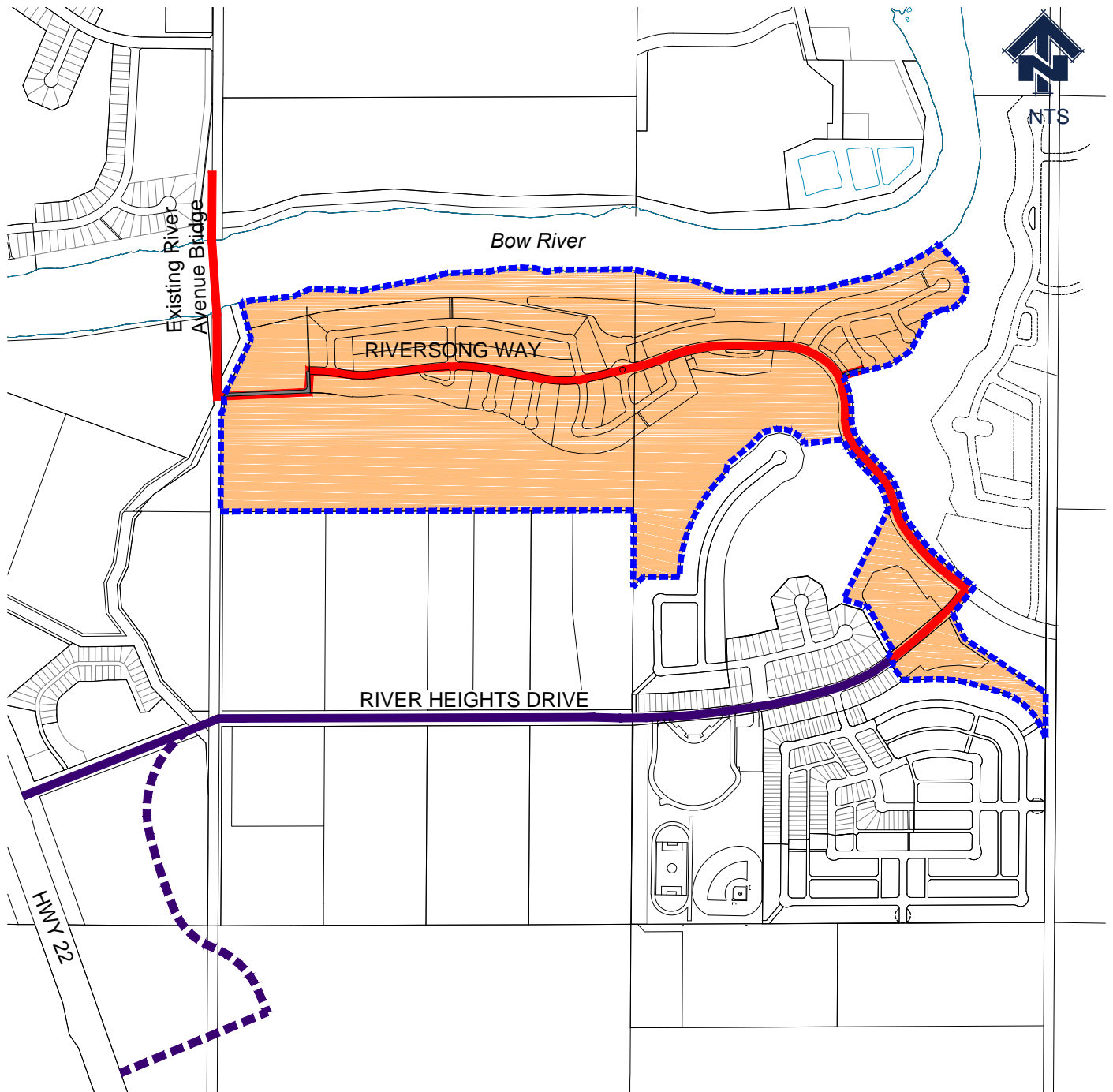
with a median separation along the centre of this road, this will be considered as two access routes into Riversong on an interim basis.

3.2.4.1 Emergency Access (External) via River Avenue Bridge

Secondary emergency access will be provided to Riversong via the River Avenue Bridge. See Figure 13. An all weather access road through the westerly R-M site will connect to Riverside Way.

River Avenue Bridge has the capacity to carry up to 40 tons, as verified by Alberta Transportation to the Town of Cochrane Engineering Department, which will accommodate all Town of Cochrane emergency response vehicles except the aerial apparatus. Therefore River Avenue Bridge will be utilized as an emergency access while remaining closed to public vehicular traffic.

It is important to note that the River Avenue Bridge remains under the jurisdiction of Alberta Transportation. Alberta Transportation has agreed to allow the use of River Avenue Bridge as an emergency access into Riversong. A letter stating this agreement can be found in Appendix D.



Legend

- Riversong Stage 2 Neighbourhood Plan Boundary
- Existing Access
- New Access to be Constructed Spring 2011
- Emergency Access Route

3.2.4.2 Future Bridge

A second permanent bridge crossing of the Bow River has been identified in the MDP and the SR-ASP. The approximate location of this new bridge has been identified northeast of Riversong, within the SR-ASP lands.

The timing and construction of the new bridge will be guided by the policies of the MDP. Sections 9.3.1(j) – (l) state that:

- (j) In accordance with the Town of Cochrane Analysis of Future Bow River Crossings: Planning Study, as amended from time to time, a new Bow River bridge shall be constructed and the existing River Avenue bridge shall be converted to a pedestrian crossing and emergency access.
- (k) Design and construction costs for bridges (pedestrian and vehicular) required to serve lands south of the Bow River shall be collected through offsite levies or other appropriate financial strategies.
- (l) The Town shall determine when design, construction, and completion of any bridges are to occur.¹¹

3.3 INTERNAL ROAD NETWORK FOR RIVERSONG STAGE 2

The internal road network of Riversong Stage 2 respects the natural topography of the land by minimizing impact. Although the topography provides challenges to the opportunity of providing a grid like street design, this type of road network is provided where possible. Grid like street design provides a high level of connectivity, which is desirable for a pedestrian oriented community. In areas of challenging grade or with limited space due to the escarpment, cul-de-sac layouts are utilized. To mitigate the connectivity limitation of the culs-de-sac they are either restricted in length or a walkway is provided near the bulb to provide pedestrian access.

In accordance with the Riversong Design Brief, an emergency access will be provided to Riverside Court, the long cul-de-sac east of Riverside Way containing R-2 land use.

The portion of Riverside Way that includes frontage housing contains roundabout which will significantly calm traffic as vehicles slow down to manoeuvre through it.

Riverside Way will terminate with a cul-de-sac within the multi-family site at the RS2NP's northwest boundary. An emergency-only access will then connect the

¹¹ Town of Cochrane, Municipal Development Plan, October 2008, Section 9.3.1 (j) – (l), page 43

terminus of Riverside Way to Cochrane, and emergency services, via the River Avenue Bridge as discussed in Section 3.2.4.1.

3.3.1 Emergency Access (Internal)

All internal emergency accesses shall be constructed as a 6.0m wide, all-weather surface, capable of accommodating all emergency vehicles and maintained to provide year-round access.

3.4 TEN MINUTE RESPONSE TIME

Portions of Riversong Stage 2 currently fall outside of the ten minute response time from the Town of Cochrane's permanent fire station. The Alberta Building Code provides options for decreasing the rapid fire spread amongst residential buildings outside of a ten minute response time. Residential development within Riversong Stage 2 which falls outside of the ten minute response time should adhere to the Alberta Building Code. It is recognized by the Town of Cochrane and the developer that innovative solutions to prevent rapid fire spread amongst residential buildings are being implemented in other Alberta municipalities. Should any such solutions be brought forth, they would be subject to approval by the Town of Cochrane as a variance to the Alberta Building Code.

4.0 LAND USE

Figure 4 shows the approved land uses within Riversong and Figure 14 illustrates the ultimate proposed land use redesignations within the RS2NP area. Prior to the approval of the Phase 9 (see Figure 16) land use redesignations, further geotechnical investigations, as identified in Section 1.4.1.1, must be performed to the satisfaction of the Town of Cochrane.

The land use within Riversong is primarily residential. A land use amendment is proposed to amend two blocks of existing Residential Single-Detached Dwelling District (R-1) to Residential Multi-Unit Dwellings District (R-3). This amendment is proposed with the intention of introducing townhouse development into the RS2NP.

The proposed land use amendment supports Section 8.4.3(a) of the 2008 MDP by providing a variety of housing options, as well as many of the Cochrane Sustainability Plan's Pathways to the Future, including Pathway 9: Everyone has a roof over their head.

The land use designations provided in the RS2NP are discussed in greater detail below. The land use amendment will be applied for under a separate Land Use Amendment application.

The proposed land use is consistent with the land use pattern of the SR-ASP Land Use Concept, and aside from the above noted amendment, the proposed land use is consistent with the approved Land Use as per Bylaw 19/2006.

4.1 RESIDENTIAL

The RS2NP provides for 17.05 hectares (42.13 acres) of residential land use which is 27.97% of the total RS2NP. A variety of residential dwelling units will be available within RS2NP including single detached, semi-detached, townhouse and multi-dwelling units.

A range of lot sizes will be available within the single family residential dwellings (R-1) district of the RS2NP. Larger, estate type lots will be available adjacent to the Bow River and more conventional sized, front drive lots will be available throughout the remainder of the RS2NP R-1 area. To this end, the R-1 lots that back directly onto the Bow River have been accounted for separately in the Neighbourhood Plan Statistics as seen in Figure 15.

Semi-detached housing (R-2) and street-oriented townhouse (R-3) will also be available within RS2NP. These land uses will provide the opportunity for the RS2NP to provide entry level housing options, and diversity in its built form.

4.2 PUBLIC SERVICE

The Public Service lands within the RS2NP area include both Municipal Reserve and Environmental Reserve.

The entire 10% of Municipal Reserve owing for the community of Riversong has been dedicated previously with Riversong Stage 1. The Bow Valley High School site and Stage 1 Tot Lot together over fulfill the MR dedication requirement by 0.30 ha (0.75 ac). Although there is no dedication requirement remaining, the developer recognizes the need for a Tot Lot within the lower bench lands of Stage 2. Therefore the RS2NP voluntarily dedicates 0.13ha (0.32 ac) of MR to provide a Tot Lot.

Public Service lands in the form of Environmental Reserve accounts for 33.20 hectares (82.04 acres), 54.46% of the total RS2NP area. The design of the RS2NP respects the natural features of the topography and protects them as amenities. The floodway lands and the natural escarpment will be protected as environmental reserve. Vegetation and wildlife species will be left in their natural state throughout the environmental reserve area.

The open space system will be linked together through a pathway and trail network that provides good connectivity while minimizing the impact on the environmental reserve.

Two public utility lots are included within the RS2NP. One will house the stormwater management facility and one will provide a lift station site.

4.3 COMMERCIAL

Home-based businesses are encouraged throughout the single family and semi-detached residential areas within the Plan. Home-based business is not discouraged within other residential land uses areas, but particular attention must be given to ensure the parking requirements of the Cochrane Land Use Bylaw 01/2004, or current, are met.

The need and desirability of local commercial uses to provide a complete community for existing and future residents is acknowledged and was reviewed during the preparation of the Riversong Design Brief and the Riversong Stage 1 Neighbourhood Plan. The result of this review supported the Town of Cochrane's previous decision that a local commercial use would be better located elsewhere in the SR-ASP due to the following:

- The Transportation Plan Update, prepared by Urban Systems in 2009 identifies a future major arterial road through this area and to eventually connect to downtown Cochrane via a new bridge crossing over the Bow River. This arterial road is proposed to be located approximately 150m east of Riversong's easterly boundary, and run the length of this boundary. By design, this road will see a

much larger traffic volume than the collector roads in Riversong. Local commercial development would likely be more successful adjacent to this arterial road, while still within walking distance to much of Riversong.

- Commercial needs of Riversong residents will be further met through lands proposed for development for highway commercial at the intersection of Highway 22 and River Heights Drive. This proposed commercial site is located less than 1 kilometre to the west of Riversong. Residents will pass this site as they enter and exit Riversong, making it a convenient commercial location. This commercial site is part of the River Heights Area Structure Plan (RH-ASP) currently being prepared by the Town. There is opportunity within the RH-ASP for this highway commercial site to become a commercial node offering a variety of services.

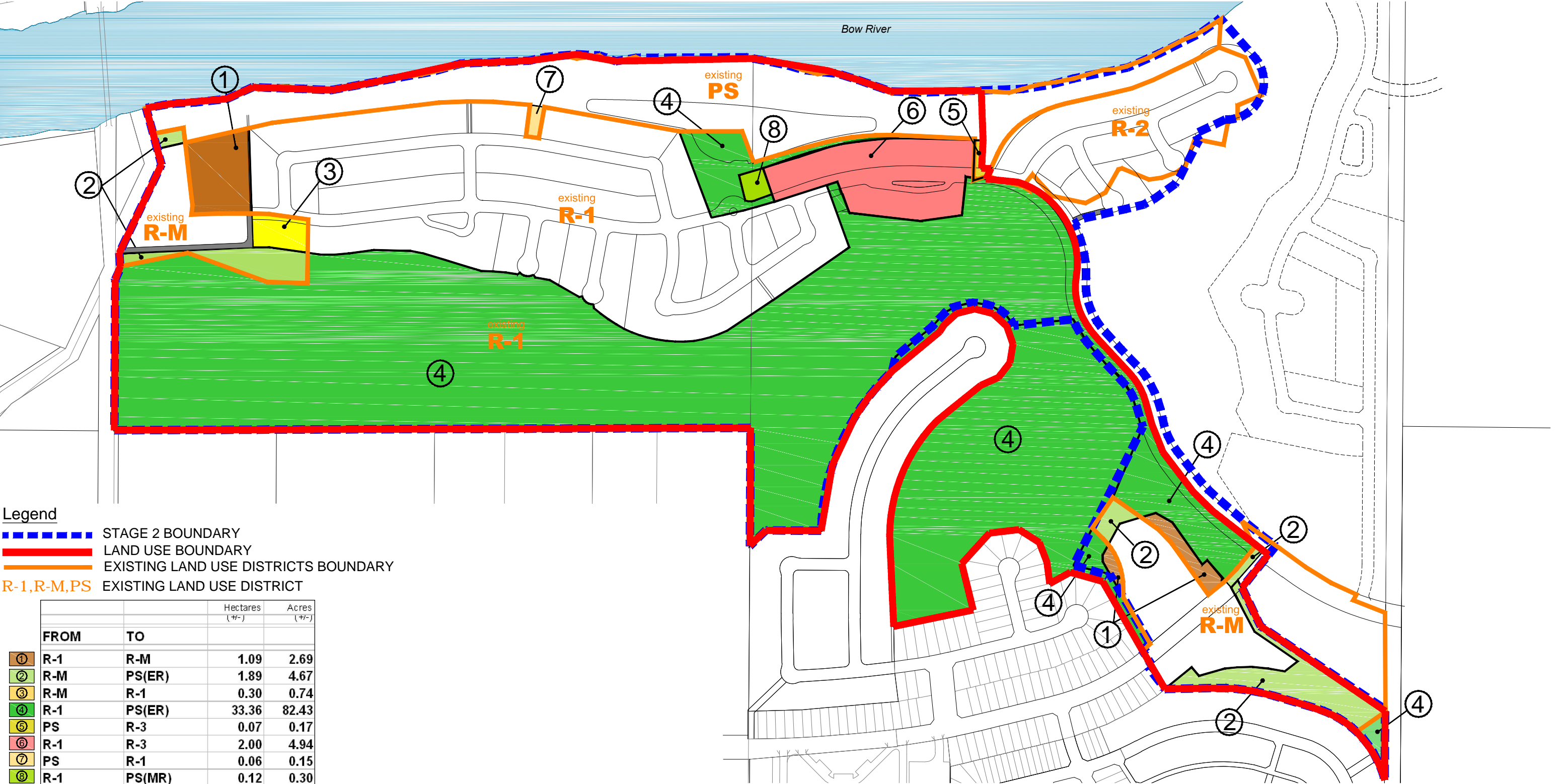


Figure 14:
Proposed Land Use Districts

5.0 NEIGHBOURHOOD PLAN STATISTICS

The Neighbourhood Plan statistics provide the areas and projected number of units for each land use category. Typically Neighbourhood Plan statistics are general in their category description, but in this case actual land use districts are identified. It is important to note that only 0.4% of the Gross Developable Area (GDA) is provided as MR. The community of Riversong's entire 10% MR dedication was provided with Riversong Stage 1. Riversong Stage 1 provided 9.41 ha (22.50 ac) of MR, which resulted in an over dedication of 0.30ha (0.75 ac). The additional 0.12 ha (0.30 ac) of MR provided in Stage 2 is voluntary MR to allow for a Tot Lot within the lower bench lands. The additional Stage 2 MR dedication will result in a total over dedication of 0.42 ha (1.05 ac) within the community of Riversong.

6.0 DENSITY AND POPULATION

The anticipated density for Riversong Stage 2 is 19.9 units per hectare (8.0 units per acre) with a maximum density of 42.4 units per hectare (17.1 units per acre), as noted on Figure 15.

This density, combined with Riversong Stage 1 will put the community of Riversong's anticipated density at 18.4 units per hectare (7.5 units per acre) and maximum density at 28.2 units per hectare (11.5 units per acre). Stage 3 of Riversong will provide the opportunity for the overall community density to meet or exceed the MDP requirements.

The population prediction for Riversong Stage 2 assumes the following:

R-1	3 people/household x 246 anticipated units
R-2	3 people/household x 98 anticipated units
R-3	2.5 people/household x 37 anticipated units
R-M	2 people/household x 170 anticipated units

The above assumptions calculated with the anticipated unit counts for each land use category result in a population prediction of 1465 people.

7.0 PHASING

Figure 16 identifies the phase boundaries for Riversong Stage 2.

It is important to note that offsite development may occur with a particular Phase development to put utilities in place. This means that the engineering Phase boundary may not exactly coincide with the planning Phase boundary.

Riversong Stage 2 Neighbourhood Plan

	Frontage (m)	Hectares (+/-)	Acres (+/-)	Number of units	% of GDA
Total Land Area		60.96	150.63		
Environmental Reserve		33.20	82.04		
Gross Developable Area (GDA)		27.76	68.59		100%
General Land Uses					
Residential		17.05	42.13		61.4%
R-1, Residential Single Detached Dwelling District	2790	10.81	26.71		
<i>River lots</i>					
Anticipated number of lots based on 13.4m	494			37	
Maximum number of lots based on 9m lot width				55	
<i>Standard lots</i>					
Anticipated number of lots based on 10.97m	2296			209	
Maximum number of lots based on 9m lot width				255	
R-2, Residential Single and Two-Dwelling District	780	2.86	7.07		
Anticipated number of lots based on 7.92m				98	
Maximum number of lots based on 6m				130	
R-3, Residential Multi-Unit Dwellings District		1.49	3.68		
Anticipated 10 upa				37	
Maximum 30 upa				110	
RM, Res. High Density Multi-Unit Dwellings District		1.89	4.67		
Anticipated 18 upa				84	
Maximum 60 upa				280	
RM, Res. High Density Multi-Unit Dwellings District*		2.33	5.76		
Anticipated 15 upa				86	
Maximum 60 upa				345	
Municipal Reserve		0.12	0.30		0.4%
Park		0.12	0.30		
Roadways and Public Utility Lots		10.59	26.17		38.1%
Stormpond		1.48	3.66		5.3%
Roadways		9.11	22.51		32.8%
Total number of units					
Anticipated.				552	
Maximum				1176	
Density					
Anticipated.				19.9 upha	8.0 upa
Maximum				42.4 upha	17.1 upa

* Two of the R-M sites on the upper bench lands are deemed likely to support Townhouse development rather than higher density development due to their topography, therefore the anticipated density for these sites is lower

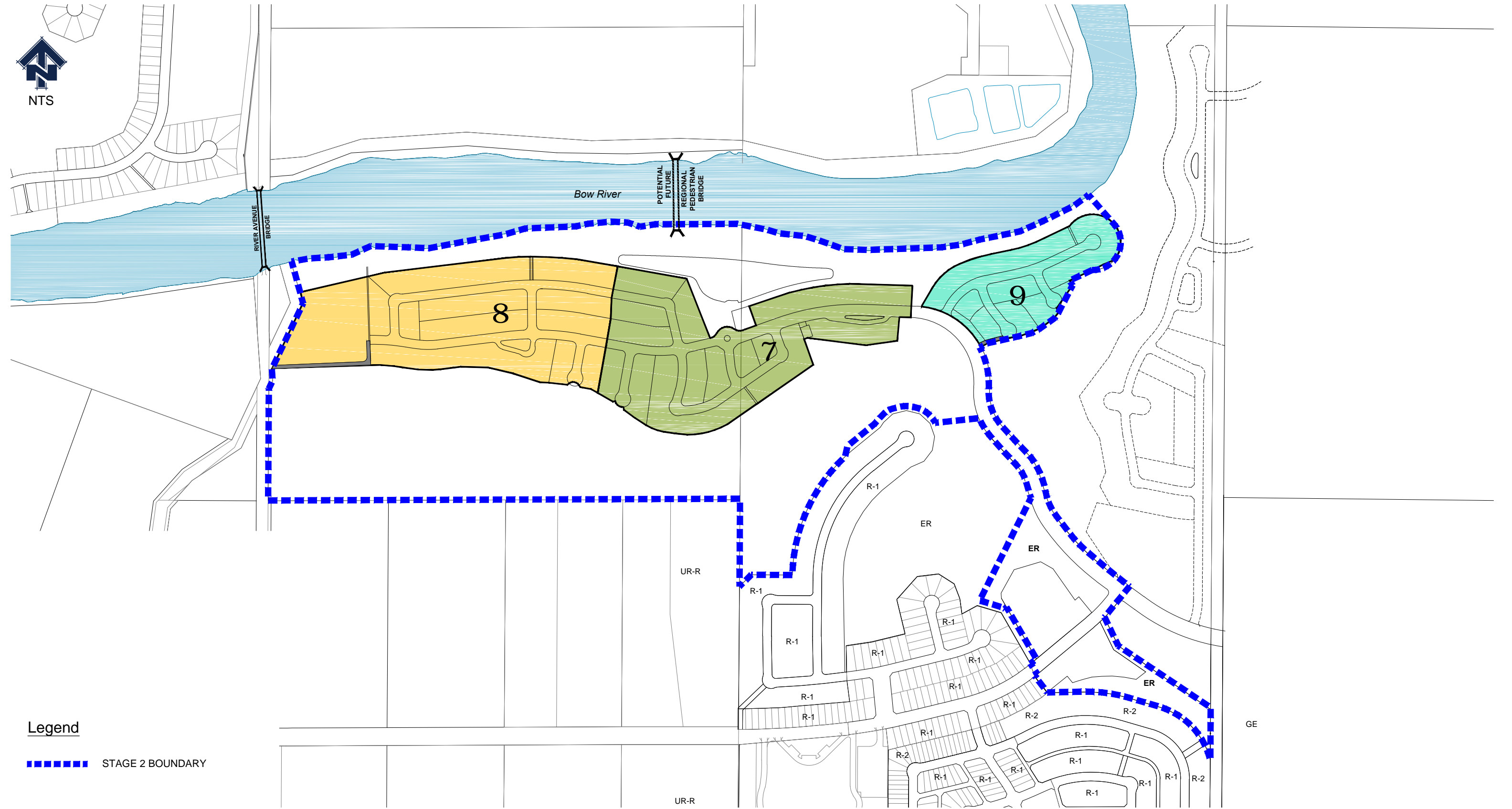


Figure 16:
Riversong Stage 2 Phasing Plan

8.0 UTILITY SERVICING

As previously noted in Section 7.0, as development proceeds in Riversong, a phase's Planning boundary may or may not correspond with that same phase's Engineering boundary. Should this deviance occur, it may be a result of off-site servicing required to be completed with a particular phase. Phase boundaries, planning and engineering, will be determined at Tentative Plan stage. Figure 17 illustrates the conceptual utility servicing layout.

8.1 SANITARY SERVICING

The proposed sanitary servicing concept, as shown on Figure 17, will include gravity mains on site, flowing to a proposed lift station, where a proposed forcemain will convey the sewage to the existing sanitary sewer siphon system in Riverside Way, continuing under the Bow River. The sanitary trunk and siphon system were constructed by the developer as part of Riversong Phase 1 and has the capacity to service the RS2NP area.

The existing Town of Cochrane to City of Calgary Sanitary Forcemain (450mm Yellow Jacket Pipe) is located within the RS2NP development area, located in a Utility Right-of-Way.

8.2 WATER MAIN DISTRIBUTION

The proposed water system distribution concept is shown on Figure 17, and is an extension of the existing watermain distribution network from the Riversong Stage 1 development area.

Distribution mains will extend through the RS2NP area on a grid system as shown, and in accordance with the Town of Cochrane Water System Master Plan. All internal valve and hydrant coverage will be provided in accordance with Town of Cochrane requirements.

The RS2NP area is serviced by the existing River Heights Water Reservoir and Pump Station and is within the River Heights water pressure zone (Elev 1170 to 1210). The watermain in Riverside Way will include a pressure reducing valve (PRV) assembly and stub, after the looping tie to Phase 4, to provide service to future development area in the lower main Town pressure zone (Elev 1130 to 1170). A secondary watermain connection for the RS2NP development area will be obtained by extending the system westward and connecting into an existing facility (location and size to be determined).

8.3 STORMWATER MANAGEMENT

The stormwater management strategy for the RS2NP area is addressed in the report entitled “Staged Master Drainage Plan for Cochrane Crossing” by Westhoff Engineering Resources, Inc. (Nov 2005). The Staged Master Drainage Plan has been approved by the Town Administration.

The existing topography of the RS2NP area, will facilitate gravity drainage to the storm water storage facility located adjacent to the Bow River in the SW & SE ¼ - 35 – 25 – 4 – W4M. The storm water management facility will outfall to the Bow River.

The RS2NP area will be serviced by conventional minor (pipe) and major (surface) drainage systems which will convey drainage to the proposed storm water storage facilities. The proposed storm sewer pipe system will connect to the storm water storage facilities via the storm trunk in Riverside Way. The existing trunk will be extended along Riverside Way, to the storm water storage facility. Riversong Phase 2 Offsite Storm design drawings and the Riversong Phase 2 Offsite Storm Pond Hydraulic Grade Line Analysis report have been prepared by Focus and approved by the Town. Subsequent to the approval of the Riversong Stage 1 Neighbourhood Plan, a development permit application has been approved to begin the construction of the stormwater management facilities.

8.4 SHALLOW UTILITIES

Shallow utility servicing to the RS2NP area will be provided as an extension of the existing facilities from the Riversong Stage 1 development area. All power, telephone, natural gas, and cable television distribution systems will be constructed underground within the RS2NP area.

8.4.1 Flood Potential and Proposals for Mitigation

Although the some of the lands within the RS2NP area are adjacent to the Bow River and within the Flood Fringe area, the entire lower bench area will be raised during grading which will reduce and/or eliminate the flood potential.

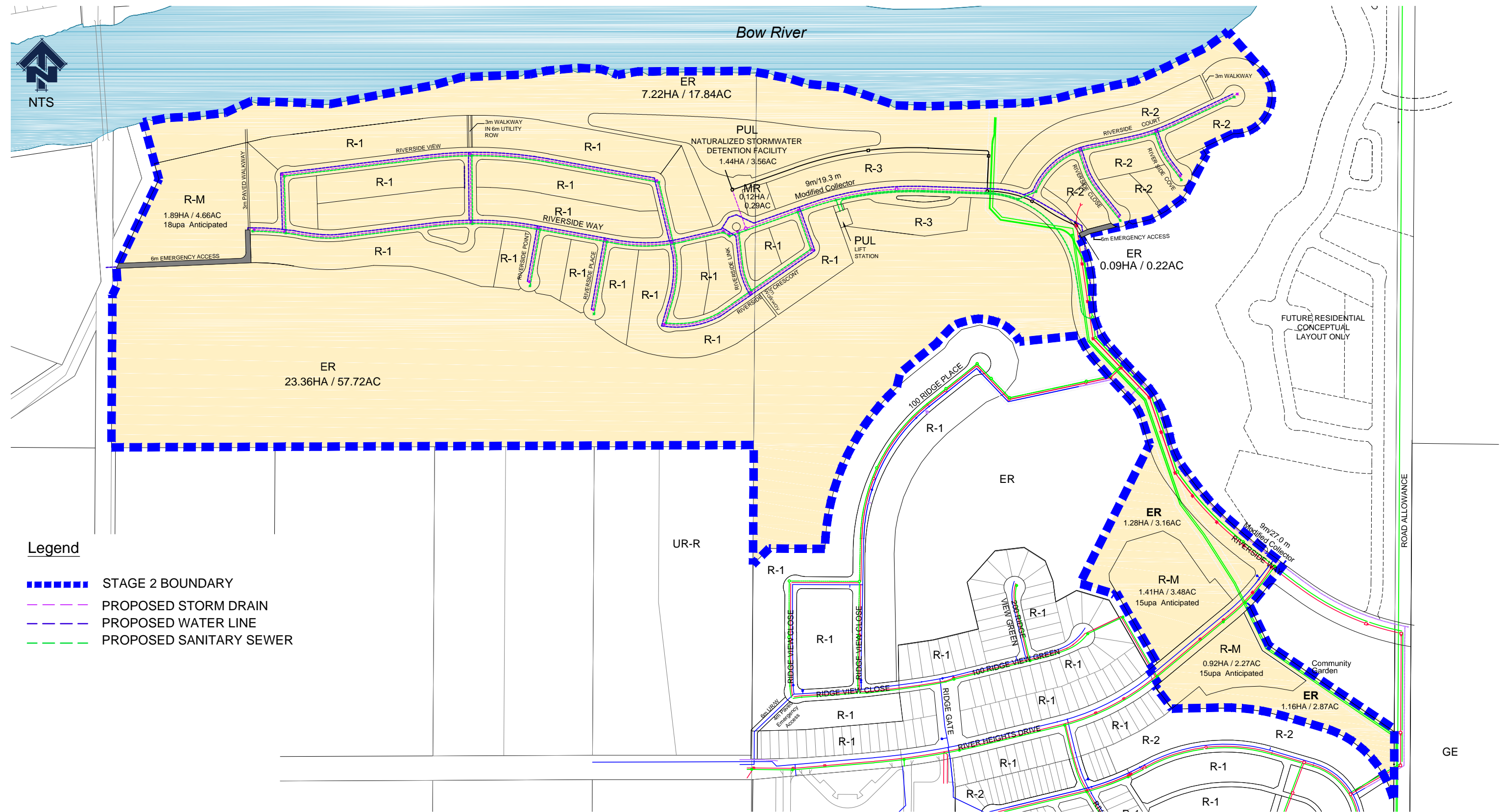


Figure 17:
Conceptual Utility Alignment



9.0 MEETING THE NEEDS OF THE TOWN OF COCHRANE

9.1 MUNICIPAL ENVIRONMENTAL IMPACT STATEMENT (MEIS)

In accordance with the Town of Cochrane MDP a review of the factors contributing to the Municipal Environmental Impact Statement (MEIS) has been made and outlined below. This is a unique situation because this information is being provided subsequent to the stripping and grading of most of the Riversong area. In some situations, further investigation is not possible.

9.1.1 Fish and Wildlife

Measures have been taken to ensure the development has no negative impact on the River or fish and other wildlife along the banks of the Bow River. The RS2NP includes 33.20 ha (82.04 ac) of environmental reserve. By preserving this land, the wildlife habitats within will be protected.

Alberta Erosion Control Ltd. Has been involved in the design, inspection and implementation of erosion and sedimentation control plans and measures on the Riversong site since May 2008. All plans have been prepared to ensure that there would be no harmful disruption to fish habitat in the Bow River. Weekly Turbidity testing of the Bow upstream and downstream of this site has demonstrated that there has been no release of sediment into the river during any construction activities in Riversong.

9.1.2 Vegetation

Site vegetation includes aspen and white spruce stands of trees along the north facing hillside and prairie grasses on the lower bench and top lands. The RS2NP was designed to preserve and enhance a large escarpment/environmental reserve area. Existing vegetation has been protected within much of this large expanse of land. The remainder of the RS2NP is stripped and graded in accordance with an approved stripping and grading plan.

9.1.3 Ecologically Significant Lands

Over half of the RS2NP area (54.46%) consists of environmental reserve. This land will be maintained and preserved in its natural state.

9.1.4 Surface and Bedrock Geology

The Geotechnical Evaluation performed by Golder Associates, prior to stripping and grading states that the upper bench area of Riversong was generally a hummocky/rolling grassed upland area and had isolated tree

clusters. The dominant materials found in hummocky uplands are silt and clay overlaying till.

The lower bench area consists of an alluvial floodplain and a lower, gently sloping alluvial terrace. The dominant materials of the alluvial floodplain are sand and gravel, while the alluvial terrace has colluvium overlaying sand and gravel.

9.1.5 Soils and Terrain

The dominant materials are silt and clay overlaying till on the upper bench lands and colluvium overlaying sand and gravel on the lower bench lands.

9.1.6 Slopes

There are significant slopes within the RS2NP, but the development proposed within the Plan is either at the base of the slopes or outside of the 15% slope areas, with special note to the location identified as 'subject to further geotechnical review' on Figure 6. See Section 1.4.1.1 for further information on the Geotechnical Investigations.

The toe of slope within the RS2NP area has been investigated by a qualified geotechnical engineer, and development will be in accordance with those findings to the satisfaction of the approving authority.

9.1.7 Geotechnical Investigation

A Geotechnical Investigation was prepared by Golder Associates Ltd. and was submitted to the Town of Cochrane during the Riversong Design Brief approval process under separate cover. See Section 1.4.1.1 for more information on the Geotechnical Investigation, and Appendix F to review the Technical Memorandum on the presence of alluvial aquifers.

9.1.8 Flood Potential and Proposals for Mitigation

Although some of the lands within the RS2NP area are adjacent to the Bow River and within the Flood Fringe area, the entire lower bench area will be raised during grading which will reduce and/or eliminate the flood potential.

9.1.9 Stormwater Study

A Stormwater Management Plan was prepared by Westhoff Engineering and has been approved by the Town of Cochrane Engineering and Planning Departments. It was prepared in conformance with the stormwater policies of the Town and Alberta Environment. See Section 8.3 for more information regarding Stormwater Management.

9.1.10 Water Quality and Quantity

The approved stormwater management facilities have been designed to provincial standards to ensure release rates and water quality standards are met. Further information can be found in the Stormwater Management Plan. See Section 8.3 for more information regarding Stormwater Management.

9.1.11 Air Quality

The proposed development within the RS2NP area is predominantly residential with over 54% open space. The development is not expected to result in any appreciable reduction in the current air quality in this portion of the Town.

9.1.12 Visual Resources

The steep escarpments and rolling terrain of the land are beautiful features of the community. The design of the RS2NP area retains the existing features and protects them as a natural amenity within the community. The design of the community takes advantage of the views of the mountains, the Cochrane valley, and the natural escarpment, by situating many residents along the escarpments where possible, so they can enjoy this unique amenity.

9.1.13 Land and Resource Use

The SR-ASP establishes that the RS2NP area include residential land uses and open space, see Figure 3. The environmental impacts of the development will be minimal and the retention of the natural open space of the escarpment will maintain habitat for wildlife and vegetation and be visually appealing to future residents.

9.1.14 Cultural and Heritage Resources

A Historical Resource Impact Assessment (HRIA) was prepared by Lifeways of Canada Ltd. The assessment indicated some archaeological sites in the general area, but no sites of significance were located within the RS2NP boundary. See Section 1.4.1.2 for more information on the HRIA.

9.1.15 Construction and Demolition Waste Management

A construction and demolition waste management plan will be provided at each phase of subdivision approval to ensure proper procedures are followed at the time of construction.

9.2 PLANNING PRINCIPLES OF THE MUNICIPAL DEVELOPMENT PLAN

9.2.1 Principle 1: Responsible Growth Management

“Responsible growth management demands that the Town make every effort to meet the needs of a growing population, in an ecologically-aware and efficient manner, using limited natural, human, built, and financial resources”.

Riversong Stage 2 meets the Town’s Responsible Growth Management goals by providing a new community for future residents of the Town of Cochrane through a logical extension of existing infrastructure and utility servicing.

A substantial sidewalk and pathway system will link current and future residents with the abundance of natural open spaces. There is 33.20 ha (82.04ac) of Environmental Reserve within the RS2NP. The natural ecology of the environmental reserve area will remain intact. The Bow River Pathway system will follow the natural alignment of the Bow River, and cross the River to access the north side via River Avenue Bridge. This bridge crossing will connect pedestrians and cyclists to Cochrane’s downtown industrial area and the downtown core. This provides an opportunity for residents to walk or cycle to work.

The proposed land use redesignation identified in the RS2NP will allow for greater range of housing choice and affordability, as well as help increase the density of the community. Higher densities support responsible growth management.

9.2.2 Principle 2: Social & Cultural Well Being

“Social well-being and a high quality of life is a reflection of living in a community that creates a safe, healthy, and comfortable environment in which to live, work and play.”

Riversong is a community that provides an abundance of greenspace, close proximity to the Bow River and well connected sidewalks and walking paths to encourage residents to venture outdoors to exercise and enjoy these natural amenities. The active presence of the residents within the community will augment the social development of the community. Interaction with the outdoors will make the residents feel connected to their environment, increasing which in turn increases their quality of life.

The variety of housing types proposed within the RS2NP, including street-oriented town housing, semi-detached dwelling units, front-drive single family homes and larger riverfront homes, to provide a diverse housing and population base in Riversong. A young family could move into an achievable housing style in Riversong, transition to a front-drive home and perhaps eventually to an estate level home before retiring into a semi-detached villa.

Residents could live out their entire life-cycle within the community of Riversong.

9.2.3 Principle 3: Environmental Stewardship

"Environmental stewardship highlights the Town's commitment to careful and responsible management of our natural resources and ecological assets"

The Riversong Stage 2 Neighbourhood Plan provides 33.20 hectares (82.04 acres) of Environmental Reserve, preserving the existing vegetation and wildlife habitats within the RS2NP boundary. The topography of Riversong is a natural feature of the community that has been preserved and respected with the community design.

9.2.4 Principle 4: Economic Vitality

"Economic vitality provides the foundation for a healthy, diverse, active, prosperous, and resilient economy."

The anticipated number of residential units with the RS2NP is 552, and the approximate projected population of Stage 2 is 1465 based on 3 people per household for R-1 and R-2 lots, 2.5 people per household on R-3 lots and 2 people per household on R-M lots. This additional population will support local business which will encourage industries and new employers to base themselves in Cochrane. Home-based businesses are encouraged throughout the single family and semi-detached residential areas within the Plan. Home-based business is not discouraged within other residential land uses areas, but particular attention must be given to ensure the parking requirements of the Cochrane Land Use Bylaw 01/2004, or current, are met.

While the community of Riversong does not include commercial development, there are commercial developments approved and anticipated within close proximity to Riversong. The residential base of Riversong will aid in the sustainability of these commercial developments.

9.2.5 Principle 5: Community Engagement

"Community engagement builds trust, ensures accountability, and improves the quality of decision making as the public plays a valuable role in the formulation of plans and developing services."

The RS2NP area does not significantly deviate from the previously approved Riversong Design Brief. The residents and neighbouring residents of Riversong are aware of the community design since it has been featured in the sales centres which they visited during the decision process to purchase a home in this particular community.

9.3 THE COCHRANE SUSTAINABILITY PLAN - THIRTEEN PATHWAYS TO THE FUTURE

The Cochrane Sustainability Plan was adopted by Council in May 2009. The plan provides thirteen (13) Pathways to the Future to help guide future development within Cochrane. These pathways are grouped into four (4) categories.

9.3.1 We Build a Culture of Responsibility

Pathway 1: We are a socially responsible and empowered community.

Riversong is a community built on natural amenities, extensive sidewalk and pathway connections and a local high school site. Design elements such as the greenspaces and parks, the community garden and public art will help create a sense of place and ownership to their community. Ownership of the environment breeds responsibility to protect and help direct its future. Residents of Riversong will feel connected to Cochrane through their enjoyment of their surroundings, and therefore empowered to become a voice in Cochrane's future.

The local high school site offers the opportunity for residents to volunteer and become involved in the community.

9.3.2 We are Responsible Citizens of the Planet

Pathway 2: We treat water as a precious resource.

Pathway 3: We use energy responsibly and innovatively.

Pathway 4: We contribute to the solution on climate change.

The community of Riversong provides density levels that meet the 19.3 units per hectare (8.0 units per acre) as required by the MDP. Higher density communities are more environmentally responsible than lower density communities as there is less land form disturbance for servicing, less vehicular impact (shorter drive times and reduced road construction), and greater opportunity for residents to use alternate forms of transportation.

The developer has and will continue to encourage the builders to build energy efficient homes within Riversong that employ innovative technology to reduce energy consumption, such as low flush toilets, energy efficient lighting, and energy star rated appliances.

Riversong has and will continue to develop under the guidelines of a proper Stormwater Management Plan to ensure the stormwater runoff quality meets Provincial standards prior to entering the Bow River.

9.3.3 We Live Locally

Pathway 5: We consume the bounty of our local economy.

Pathway 6: Our local economy is healthy and diverse.

Pathway 7: Everyone has an opportunity to pursue their potential in Cochrane.

Pathway 8: We are a caring community that lives and celebrates together.

The RS2NP will provide homes for approximately 2044 new residents to Cochrane. These residents will utilize the nearby local convenience commercial centres as well as the downtown core for their shopping, entertainment and service needs. The continued development of the community will help provide jobs to local trades people.

The local school site will provide educational needs, jobs and volunteering opportunities for Riversong residents. Sporting events, school concerts and art shows will provide residents with the opportunity to socialize and celebrate together; thereby providing a social focus for the community.

The RS2NP includes a community garden site that will allow residents to grow their own produce while interacting and socializing with their neighbours.

9.3.4 Cochrane is a Complete Community

Pathway 9: Everyone has a roof over their head.

Pathway 10: There's enough room for everything a community should have.

Pathway 11: Wherever you are in Cochrane, you're close and connected.

Pathway 12: There are diverse options for getting around.

Pathway 13: We build Cochrane on the strengths of our natural and cultural heritage.

Riversong has proposed to provide residents with a diverse range of housing options. A potential resident of Riversong could be a new home buyer considering a townhouse or semi-detached housing type which offers more affordability than a single detached home. This same buyer could then move into a single family home, small lot laned or front-drive home, as they progress through life and perhaps start a family. Larger estate homes are also offered adjacent to the escarpment which may become attractive as our buyer reaches middle age. Once the retirement years approach, lifestyle changes may result in that buyer looking to one of the maintenance free, multi-unit options that are being considered in Riversong. A resident of Riversong could live their entire life within the community that offers housing appropriate for all stages of life and affordability levels.

The extensive sidewalk, walkway and pathway system in Riversong offer residents with multiple choices for getting around their community. The Bow River Pathway system and River Avenue Bridge provides an opportunity for

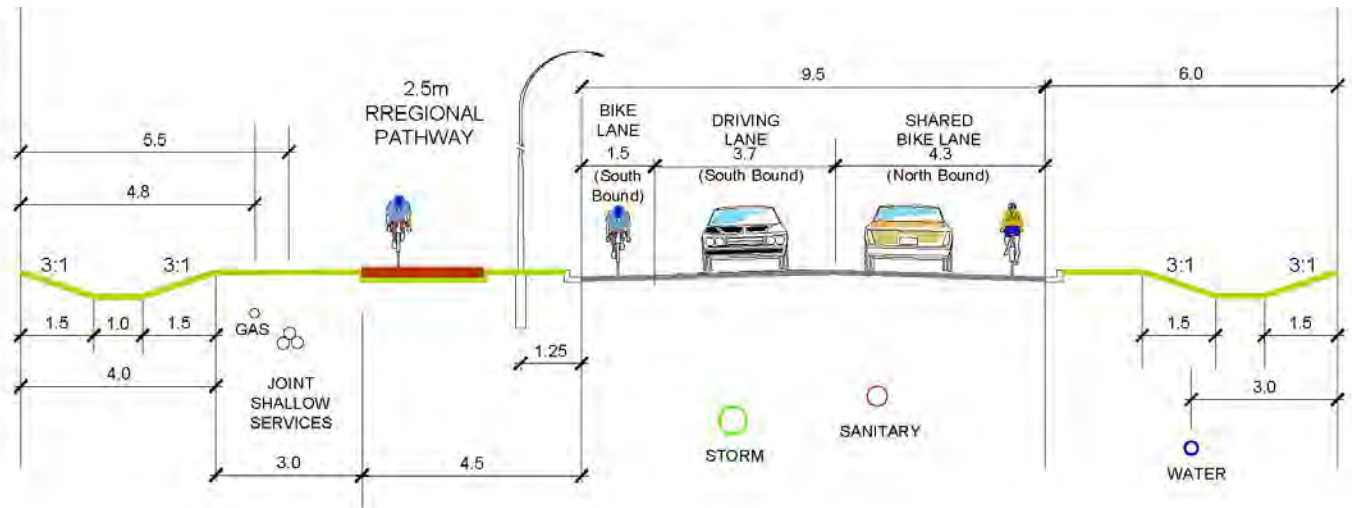
pedestrians and cyclists to directly access Cochrane's downtown industrial and commercial centres. The natural escarpment is a significant feature of the community and will be left in its natural state.

The local school provides opportunities for education, jobs and volunteering within the Riversong community.

With all of the amenities Riversong has to offer, highway commercial uses currently being developed approximately one kilometre to the west, viable local commercial opportunities located within close proximity to the east, and the Cochrane downtown core less than ten minutes drive, Riversong will provide residents with a complete community experience.

APPENDIX

Appendix A: CROSS SECTION 'E' – RIVERSIDE WAY MODIFIED COLLECTOR ROAD



Modified Collector Road Cross-section for Riverside Way

Appendix B: HISTORICAL RESOURCE IMPACT ASSESSEMENT CLEARANCE LETTER



Cultural Facilities and
Historical Resources Division
Office of the Assistant
Deputy Minister

Old St. Stephen's College
8820 - 112 Street
Edmonton, Alberta
Canada T6G 2P8

Telephone 403/431-2300
Fax 403/427-5598

April 2, 1998

Our File: 80-181

Mr. Ken Brisbin:
Brisbin and Sentic Ltd.
220-5403 Crowchild Trail N.W.
Calgary, Alberta
T3B 4Z1

Dear Mr. Brisbin:

SUBJECT: SOUTHLAND DEVELOPMENT CORP. - SHADOW RIDGE SUBDIVISION
MITIGATION REQUIREMENTS, ARCHAEOLOGICAL SITE EhPo-49
HISTORICAL RESOURCES ACT REQUIREMENTS

I recently received a letter (March 16, 1998) from your consultant Brian Reeves, written in response to outstanding requirements for mitigation at archaeological site EhPo-49 (Permit 80-181).

In his letter, Mr. Reeves has indicated that he revisited the site, and determined that in fact it is a natural formation of loose cobble sized rocks, rather than a cultural feature. Based on this inspection Mr. Reeves has recommended that the mitigation requirements for site EhPo-49 be rescinded.

I concur with this recommendation. Consequently, Alberta Community Development has no further concerns with or objections to development proceeding on the captioned subdivision.

Should you require additional information or have any questions regarding our Department's review of this project, please contact Barry Newton of the Historic Sites Service, (431-2330, Historical Resources Division, Alberta Community Development, 8820-112 Street, Edmonton, Alberta, T6G 2P8; or Fax 427-3956.

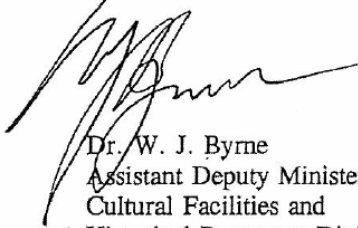
...cont.

Printed on Recycled Paper

Mr. Ken Brisbin
April 2, 1998
Page 2

On behalf of Alberta Community Development, I would like to thank you for your cooperation in our endeavour to conserve Alberta's past.

Sincerely,



Dr. W. J. Byrne
Assistant Deputy Minister
Cultural Facilities and
Historical Resources Division

cc: Brian Reeves, Lifeways of Canada Ltd.
J. W. Ives, Archaeology and Ethnology Section, P.M.A.
Barry Newton, Historic Sites Service, SUB 97.80-181.RES

Appendix C: ENVIRONMENTAL SITE ASSESSMENT LETTER UPDATE



ALMOR TESTING SERVICES LTD.

7505 - 40 STREET S.E., CALGARY, AB T2C 2H5 PHONE (403) 236-8880 • FAX (403) 236-1707

2006 10 12

86-042-03-1

Keyland Development Corporation
Box 68022 - 28 Crowfoot Terrace NW
Calgary, Alberta
T3G 3N8

Attention: Mr. Raymond Smith Sr.

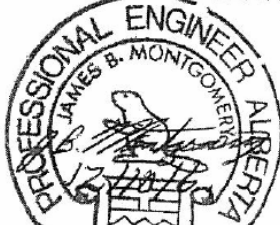
Re: Level I Environmental Site Assessment Update
Cochrane Crossing
Portions of S ½ of Sec 35, Twp 25, Rge 4, W5M and
NE ¼ of Sec 26, Twp 25, Rge 4, W5M
Cochrane, Alberta

This letter confirms we were retained to conduct an updated Phase I Environmental Site Assessment (ESA), for the above noted site. A Level I ESA was completed in January, 1998, by Almor. The surface and subsoils in the acreage area have not been compromised, since the initial observations and review. Rough Grading construction in the north portion was completed and no environmental hazards were encountered at the site. The mobile home services in the northwest corner of the site requires removal of the associated water well and septic tank. Attached are site plans of the area.

It is our opinion that no significant environmental impairment exists on the subject site. Further environmental investigation is not required, at this time.

We trust this meets with your present requirements.

Respectfully submitted,
ALMOR TESTING SERVICES LTD.



J.B. Montgomery, P.Eng.
JBM:ms:A01785

* APEGGA Permit to Practice #P2260

Appendix D: LETTER FROM ALBERTA TRANSPORTATION RE: RIVER AVENUE BRIDGE



Regional Services
SOUTHERN REGION

2nd Floor, 803 Manning Road NE
Calgary Alberta T2E 7M8

Toll-Free Connection
Outside Edmonton - Dial 310-0000
Telephone 403/297-6311
Fax 403/297-7682
www.trans.gov.ab.ca

Our File: Cochrane-137

May 4, 2010

Mr. Reg Jans
Focus Corporation
100, 6131 - 6 Street SE
Calgary AB T2H 1L9

Dear Mr. Jans:

**RE: PROPOSED USE OF RIVER AVENUE BRIDGE
BOW RIVER, EAST OF HIGHWAY 22**

Regarding your email inquiry for emergency vehicle access to this bridge, Alberta Transportation can confirm that the bridge is able to be used for emergency access to the Riversong community. This clarification was previously provided to the Town of Cochrane by the department's bridge section in an email dated March 29, 2010.

This bridge is on a local road in the Town of Cochrane. Although Alberta Transportation has continued to be involved with this bridge structure (for example providing technical assistance when a water line was added in 2007) the Town of Cochrane is the responsible road authority and the bridge is under the control and management of the Town of Cochrane.

If you have any questions, please contact this office.

Yours truly,

For Trevor Richelhof
Development and Planning Technologist

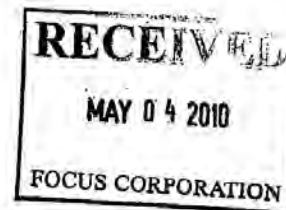
TBR/fm

cc: Mr. Kurt Alksne – Town of Cochrane

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200 / 200 * 5597#

NOTIFICATION BY



200 / 200 * 5597#

Appendix E: PRELIMINARY HYDROGEOLOGICAL ASSESSMENT OF ALLUVIAL AQUIFER

DATE January 18, 2011**PROJECT NO.** 11-1348-2011**TO** Mr. Cam Hart, South Ridge Joint Venture**CC****FROM** D.R. Brown, M.Sc., P.Geol.
Principal, Senior Hydrogeologist**EMAIL** dbrown@golder.com**PRELIMINARY HYDROGEOLOGICAL ASSESSMENT OF ALLUVIAL AQUIFER
RIVERSONG DEVELOPMENT, COCHRANE, ALBERTA****INTRODUCTION**

Golder Associates Ltd. (Golder) was retained by South Ridge Joint Venture (South Ridge) to prepare a response to the following Cochrane Planning Commission resolution dated May 26, 2010:

"MOVED by D. Marter to direct the administration to include a policy statement requiring the determination, the presence of, or lack of an alluvial aquifer within the lower bench lands, specially phase 6, and or appropriate mitigation of development set back requirements as part of the subdivision approval."

The following methodology was proposed by Golder to address this requirement:

- 1) Review background information on the proposed development and the request for determination of alluvial aquifer presence
- 2) Review local topographic and geological maps and reports
- 3) Review local water well records on file in the Alberta Environment Groundwater Management System database
- 4) Prepare a map (using the client's digital site map) showing the development and an overlay of any interpreted alluvial aquifer
- 5) Prepare a technical memorandum summarizing the information provided above and attaching the site map.

In addition to the tasks above, Golder reviewed a geotechnical report prepared by Almor Testing Services Ltd. dated March, 1998 and entitled:

"Subsoil Investigation, South Ridge Subdivision, Cochrane, Alberta"



RESULTS

Topographic and Geologic Mapping

The Riversong development lies on the south side of the Bow River in an area of mostly gently sloping lands that grade northward toward the river as shown on Figure 1 attached to this memorandum. To the south the slopes increase and, immediately south of the planned development, slopes increase significantly. The area in question for this assessment is the more gently sloping lands proposed for development.

The Alberta Research Council publication entitled *Surface Materials of the Calgary Urban Area: Calgary Sheet*, NTS 82-O/1 (S.R. Moran, 1986) maps the surficial geology of the Cochrane area, including the lands immediately south of the Bow River known as the Riversong development. Figure 1 shows the area of the development with an overlay of the two geological deposits that are mapped as covering the lower bench area of the property. Both these deposits are linear and parallel the Bow River. The deposit mapped contiguous to the Bow River is described as "gravel, minor sand; fluvial channel sediment". The second, and slightly higher deposit topographically, is described as "silt overlying gravel; fluvial overbank sediment overlying fluvial channel sediment". In our opinion, the "gravel, minor sand; fluvial channel sediment", where it is saturated, can be interpreted to be the "alluvial aquifer" referred to by the Cochrane Planning Commission.

AENV Water Well Records

A search of the Alberta Environment (AENV) Groundwater Information Centre water well record database identified eight wells that have been drilled in the SW quarter of Section 35, Township 25, Range 04 West of the 5th Meridian, within which the Riversong development lies. However, AENV does not specify the exact location of any of these wells so they cannot be used to reliably assess subsurface conditions. Of the eight records, only six provide stratigraphic logs of the boreholes drilled. Of these six records, for five of them the driller has logged predominantly fine-grained materials (clay and gravel, silty sand, black topsoil, brown till and rocks) at and near the ground surface to depths of several metres. Only one record, for a Burnco well at the "Cochrane Pit", logs gravel at the ground surface.

Subsurface Geotechnical Investigation

The Almor subsurface investigation included the drilling of some 14 boreholes on the lower bench lands proposed for development. These borehole locations are plotted on Figure 1, along with the existing proposed street plan. All of these boreholes, as summarized in Table 1 below, intersect fine-grained silty soils in the upper few metres, before entering underlying sand or sand and gravel soils at depths ranging from 2.3 to 5.7 metres below ground level. This site-specific, detailed information indicates that the sand and gravel alluvial aquifer does not "daylight" in the area proposed for development, and would be significantly protected from surface water runoff by the overlying fine-grained soils. These results differ from the geological mapping discussed above, likely due to the regional and interpretive nature of the geological map.

Such silty soils as those documented to overlie the Riversong site have slow to moderate infiltration rates and, particularly in the unsaturated zone, would provide excellent attenuation of bacteria and other pathogens that may be in surface runoff. As the report indicates, most of the boreholes were dry, indicating a thick unsaturated zone which would also favour natural attenuation of microbial contaminants. In addition, these predominantly fine-grained soils would have relatively high runoff coefficients and low recharge rates.

Table 1. Summary of Shallow Soil Logs from Almor Subsurface Investigation

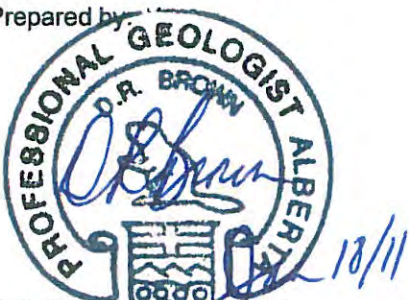
BH1	topsoil, SILT, some clay, trace to some fine sand to 3.7 m; dry to 4.15 m
BH2	topsoil, silt, some clay, trace of sand to 5.7 m; dry to 6.15 m
BH3	topsoil, silt some clay, some sand to 5.2 m; dry to 5.0 m
BH4	topsoil, silt, some clay to clayey, trace to some sand to 4 m; dry to 4.05 m
BH5	topsoil, SILT, some sand, trace of clay to 3.1 m; dry to 2.3 m
BH6	topsoil, SILT, some clay, trace of sand, trace of pebbles to 3.7 m; dry to 4.2 m
BH7	topsoil, SILT some sand, some clay to 7.3 m; water level at 6.02 m
BH8	topsoil, SILT, some sand, trace of clay to 2.7 m; dry to 3.05 m
BH9	topsoil, SILT, some fine sand, trace of clay, trace of gravel (to 0.6m) to 3.3 m; dry to 3.3 m
BH12	topsoil, SILT, some fine sand, some clay, gravelly to 3.3 m; dry to 3.65 m
BH13	topsoil, SILT, some fine sand, trace of clay to 4.3 m; water level at 3.61 m
BH14	topsoil, SILT, some fine sand, trace of clay to 3.7 m; water level at 3.71 m
BH21	SILT, some sand, some clay to 2.3 m; dry to 3.25 m
BH22	topsoil, fine Sandy SILT, trace of clay to 2.6 m; water level at 4.21 m

CONCLUSION

In light of the above information, no mitigative measures are considered necessary to provide further protection for the aquifer.

Golder Associates Ltd.

Prepared by:

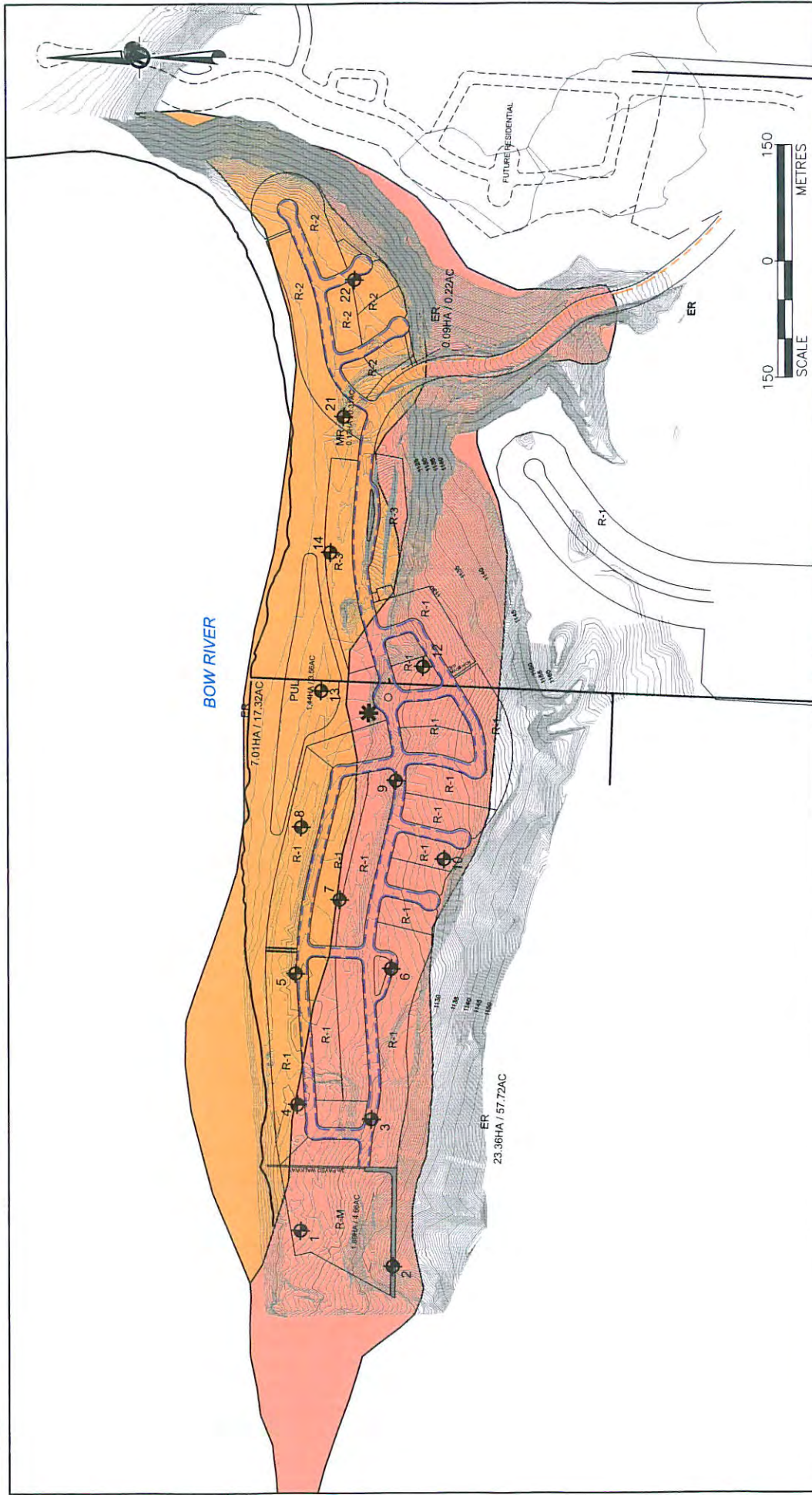


D.R. Brown, M.Sc., P. Geol.
Principal, Senior Hydrogeologist





gm

Reviewed by:

John Wozniewicz, M.Sc.
Principal, Hydrogeology Group



LEGEND

-  APPROXIMATE BOREHOLE LOCATION
-  GRAVEL, MINOR SAND - FLUVIAL CHANNEL SEDIMENT
-  SILT OVERLYING GRAVEL - FLUVIAL OVERBANK SEDIMENT
-  OVERLYING FLUVIAL CHANNEL SEDIMENT

REFERENCE

ORIGINAL DRAWING: RIVERSONG SIMPLE DWG, PROVIDED BY CLIENT.
 SURFACE MATERIALS OF THE CALGARY URBAN AREA: CALGARY SHEET,
 NTS 82-O/1 (S.R. MORAN, 1986).
 MOVED TO DATUM: NAD83 PROJECTION: ZONE 12. SITE APPROXIMATE.

PROJECT

SOUTH RIDGE SUBDIVISION
 COCHRANE, ALBERTA

TITLE

SURFICIAL GEOLOGY RIVERSONG DEVELOPMENT, COCHRANE



PROJECT	11.1348.0002.4000	FILE No. 11134800024000A001
DESIGN	DRB	13/01/11
CADD	KJM	17/01/11
CHECK	DRB	18/01/11
REVIEW	DRB	18/01/11
SCALE	AS SHOWN	REV. 0

FIGURE: 1