



COCHRANE NORTH CONCEPTUAL SCHEME

February 2018

BYLAW C-7719-2017

A Bylaw of Rocky View County known as the Cochrane North Conceptual Scheme.

The Council of Rocky View County enacts as follows:

PART 1 – TITLE

This Bylaw shall be known as Bylaw C-7719-2017

PART 2 – DEFINITIONS

In this Bylaw, the definitions and terms shall have the meanings given to them in the Cochrane North Conceptual Scheme, the Land Use Bylaw and the Municipal Government Act.

PART 3 – EFFECT OF BYLAW

THAT Bylaw C-7719-2017, being the “Cochrane North Conceptual Scheme”, affecting the S-1/2-34-26-04-W05M, be adopted as defined in Schedule ‘A’, which is attached to, and forms part of, this Bylaw.

PART 4 – TRANSITIONAL

Bylaw C-7719-2017 is passed when it receives third reading, and is signed by the Reeve/Deputy Reeve and the Municipal Clerk, as per Section 189 of the *Municipal Government Act*.

Division: 9

File: 06834003/4 /PL20160092

PUBLIC HEARING WAS HELD IN COUNCIL this 27th day of February, 2018

READ A FIRST TIME IN COUNCIL this 27th day of February, 2018

READ A SECOND TIME IN COUNCIL this 8th day of May, 2018

~~UNANIMOUS PERMISSION FOR THIRD READING~~ day of _____, 2018

READ A THIRD TIME IN COUNCIL this 8th day of May, 2018

[Signature]
Reeve

[Signature]
CAO or Designate

May 22, 2018
Date Bylaw Signed



SCHEDULE 'A'
FORMING PART OF BYLAW C-7719-2017

A Conceptual Scheme affecting S ½ 34-26-04-W05M, consisting of a total of ± 128.47 hectare (± 317.46 acres) of land, herein referred to as the Cochrane North Conceptual Scheme.



Cochrane North
Conceptual Scheme

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Waterline Resources Inc.
Stormwater Solutions Inc.

February 2018

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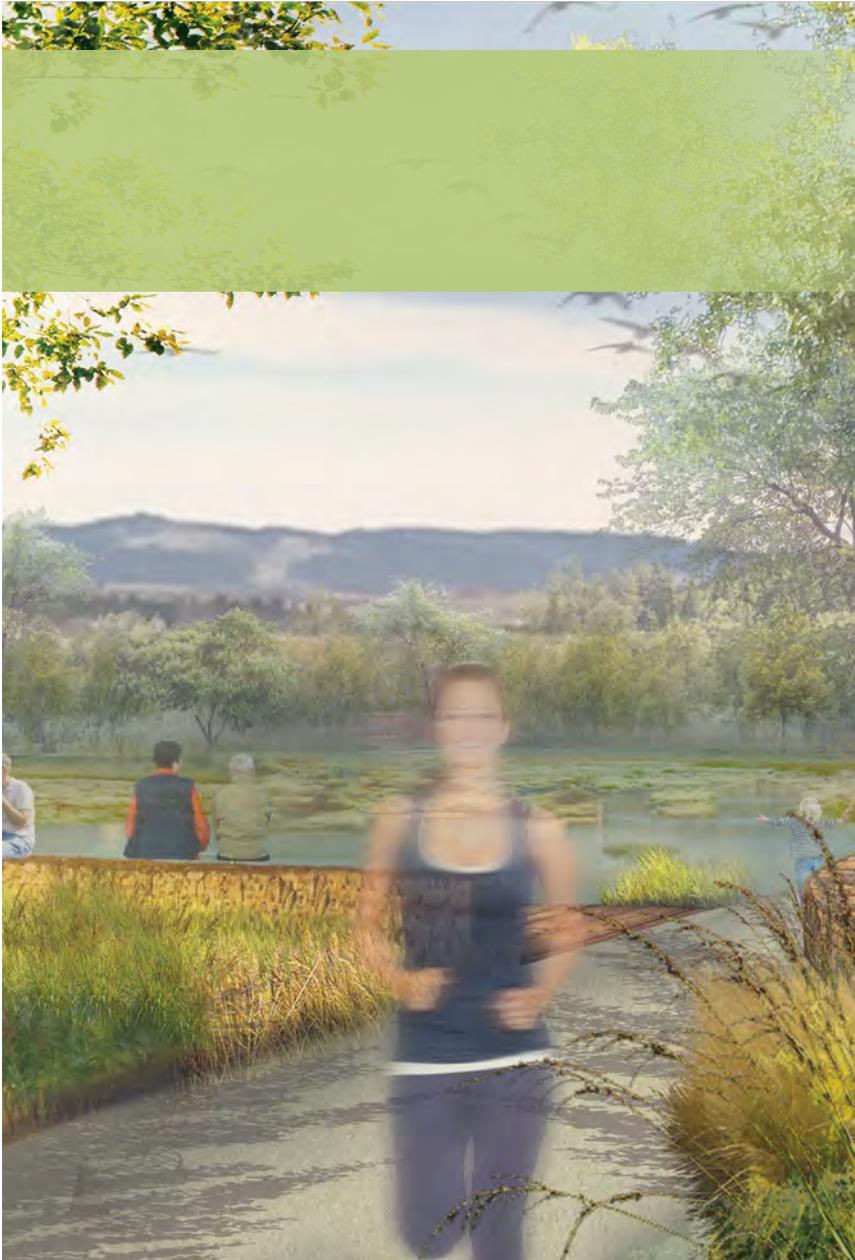


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FIGURE 1. LOCATION MAP

Aerial Source: Google Earth, 2016

1. INTRODUCTION

This Cochrane North Conceptual Scheme was prepared on behalf of Weedon Joint Venture for the development of a new clustered residential community. Cochrane North is located immediately north of the Monterra at Cochrane Lake development on lands legally described as S½-34-26-4-W5M. The Cochrane North project is within the Cochrane North Area Structure Plan area that was prepared in 2007 by Rocky View County.

The intent of this conceptual scheme is to provide a comprehensive policy framework to guide and evaluate land use redesignation and subdivision applications. It also describes the open space design as well as details pertaining to servicing, road networks, and environmental reserve. This document fulfills conceptual scheme requirements stated in the Cochrane North Area Structure Plan.

The Cochrane North lands consist of cultivated farm land, pasture land, and a number of wetlands. The land slopes from north to south and generally from east to west. The elevation at the northeast corner of the project is approximately 1316.0 m above sea level and slopes to the centre of the parcel at an elevation of approximately 1285.0 m above sea level.

See Figure 1 for the location of Cochrane North.

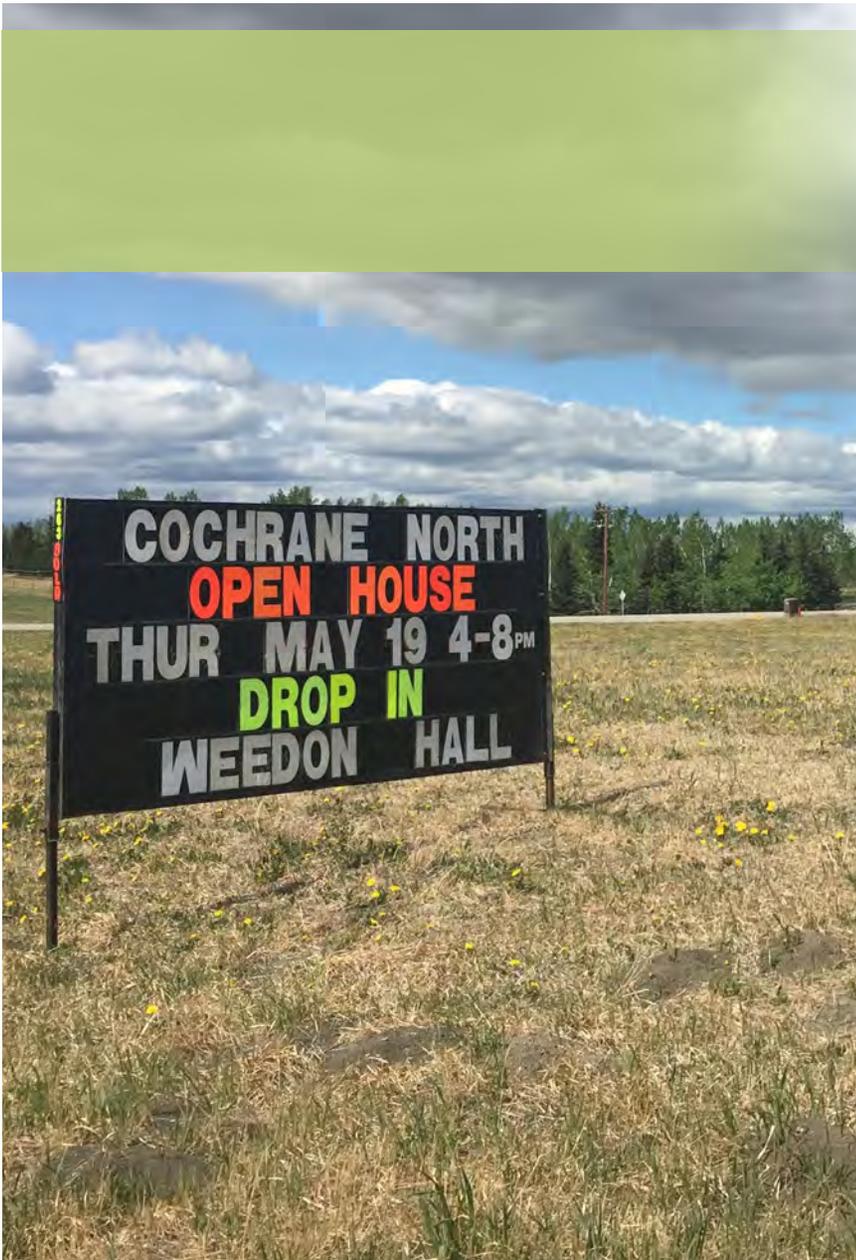


2. GUIDING PRINCIPLES

The following guiding principles for Cochrane North incorporate County policies, and values and ideas from the existing community and the development team. These guiding principles have informed the form and style of the proposed community.

- **Create a clustered residential community in nature**
 - Orient residential lots to take advantage of existing natural features and mountain views
 - Create urban scale lots while maintaining a rural feel by designing lots to back onto open space
 - Utilize natural site topography to inform location of residential clusters
- **Open space and trail networks**
 - Create a variety of active and passive recreational opportunities that connect to adjacent communities through the Regional Pathway network
 - Provide pedestrians and cyclists access to experience community amenities, parks, Dawson's Pond and smaller existing kettle ponds
- **Preserve wetlands and natural areas of environmental significance**
 - Create a Kettle Corridor that highlights existing wetlands as an asset and connects to the existing natural corridor
 - Maintain significant vegetation where possible and incorporate native plant species
 - Maintain wetland health by ensuring post-development runoff mimics pre-development values
- **Highlight Dawson's Pond as a local landmark**
 - Protect and enhance Dawson's Pond
 - Provide views of Dawson's Pond from residential areas and utilize trails to connect Dawson's Pond to the greater community
- **Maintain rural and agricultural character**
 - Utilize open space to maintain local agricultural practices
 - Implement architectural style that is influenced by the local rural character
 - Maintain a sensitive interface with adjacent landowners
 - Respect our neighbours
- **Provide a sound servicing and utilities solution**
 - Connect to existing regional utility servicing infrastructure where feasible
- **Multi Generational Planning**
 - Create a trail network that has amenity spaces for all ages
 - Seniors programming in the open spaces, such as bird blinds
 - Provide meeting places for residents in the community and surrounding area to interact and meet





3. PUBLIC PARTICIPATION

A transparent and inclusive public participation process was undertaken in order to better understand the local community's values, needs and concerns about development. In an effort to meet with all interested and impacted individuals, there have been several meetings held since February 2016 to allow continued dialogue with the project team.

Meetings took place between the project team and the following stakeholders:

- Individual Monterra residents (from both Phase 1 and 2)
- Individual Hamlet residents
- Landowners west of RR 43 (5 people)
- Group meeting with Weedon Trail residents (+25 people)
- Public information session (+100 people)
- Alberta Transportation
- Alberta Environment and Parks
- Rocky View County Administration

On May 19, 2016 a public information session took place at the Weedon Pioneer Community Hall and over 100 local residents attended. The entire project team was in attendance to discuss the plan and approach to development and to answer any questions that residents had. Feedback from this session directly affected the plan by informing which recreational amenities should be included within Cochrane North, by clarifying servicing expectations, and by clarifying vehicle and pedestrian connection points that are needed within the area. On October 12, 2016, the project team returned to Weedon Hall to present a finalized conceptual plan that incorporated feedback heard at the May session. Approximately 80 local residents were in attendance.

A project website was created and has been updated with relevant project information. Project communications and engagement will continue with stakeholders as the project continues to evolve.

<http://cochranenorth.com/>



4. SITE CONTEXT

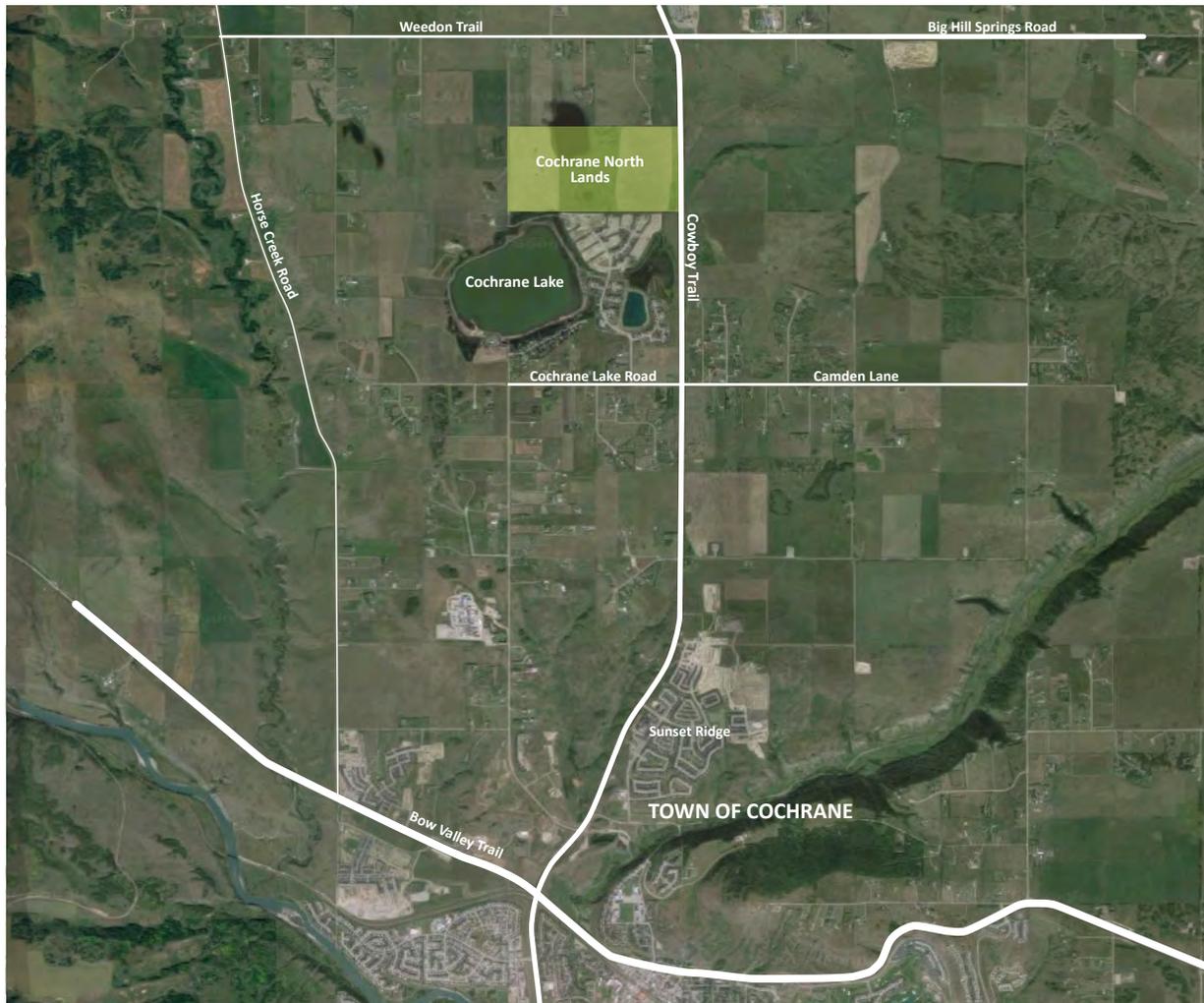


FIGURE 2. SITE CONTEXT

Aerial Source: Google Earth, 2016

The subject lands are located immediately north of the Monterra at Cochrane Lake development and are bordered to the east by Highway 22, to the west by Range Road 43, and to the north by private landowners.

The site consists of primarily cultivated fields, patches of remnant upland aspen woodlands, ephemeral and permanent wetland features and a native grassland patch in the central portion of the site. The vegetation types provide both food and foraging and nesting ground to many bird species. Dawson's Slough (Pond) is the local name for a large permanent wetland that serves as a landmark for the area and views of the Rocky Mountains to the west and rolling foothills add character to the area.

The site exists within the Cochrane North Area Structure Plan (ASP), and is located directly north of the Cochrane Lake Conceptual Scheme area. Although the progression of development in Cochrane Lake and Monterra has experienced some delays, it is the intention of this Conceptual Scheme to follow the guidance of the ASP, and to build upon the approved plans and vision of development in the region.

5. VISION & RATIONALE

5.1 Vision of Development

Cochrane North is a clustered residential community with strong connections to nature. Small clusters of diverse and distinctive homes will have direct access to public open space and trails. Maintaining an overall low residential density across the site, the residential lots are designed to seamlessly integrate with the rural open space character that weaves through the community. The neighbourhood layout encourages an active living lifestyle that is available to people of all ages.

Protecting and enhancing the natural characteristics of the site contributes to the distinct sense of place and will embrace the rural history of the area. The central conservation corridor will be a restored kettle landscape protecting the existing wetlands and riparian areas, while any

remaining agriculture lands will be re-established to the natural grasslands that predated agricultural production.

The open space network will be anchored by a community hub that promotes social connectivity and includes a central community centre, two

neighbourhood parks, and small pocket parks all within easy walking distance and knitted together by the off-street trail system. The landscape plan and street tree planting seek to showcase the existing undulating topography and preserve views of the Rocky Mountains to the west.

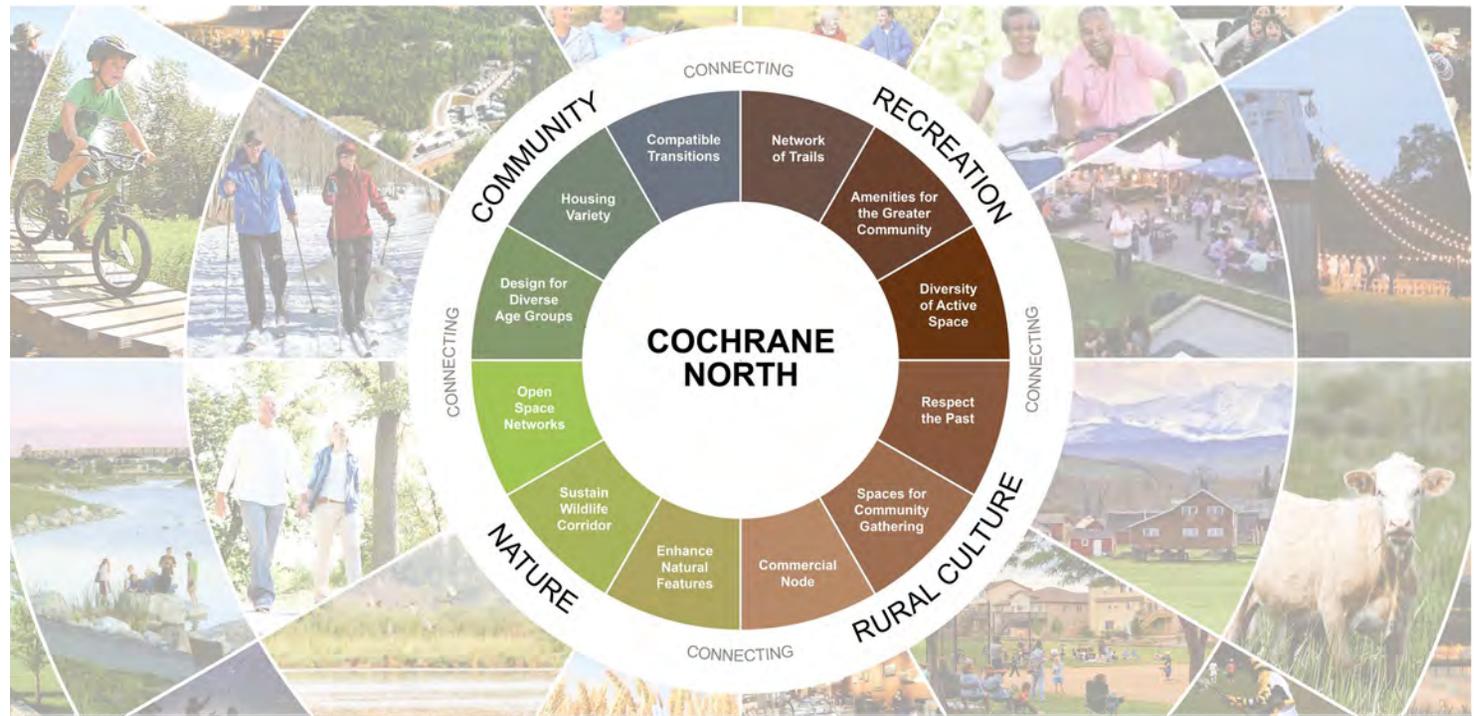


FIGURE 3. VISION



5.2 Development Rationale

The Rocky View County Municipal Development Plan (County Plan) designates the Cochrane North lands as “Country Residential (Area Structure Plan)”. The rural and agricultural character of the region is to be maintained and natural areas of environmental significance are to be preserved. The vision for Cochrane North maintains the policy intent for the area.

Cochrane North is located within the Cochrane North Area Structure Plan. Policies within this plan stipulate that this land be developed in a “Cluster Residential and Open Space” style (Figure 6; Section 6.2) with a range of housing types (Policy 6.2.2) and a minimum of 30% open space (Policy 6.2.30). Regional and local pathway connections should be enhanced to connect to adjacent lands (Policy 6.6.2) and a sensitive interface must be achieved. These policies are reflected in the proposed Cochrane North development.

Cochrane North embraces the natural features of its setting to create a unique community. The community concept capitalizes on the preservation of existing wetlands and views of mountains from the site. In order to attract a diversity of residents, Cochrane North incorporates different types of housing product. Higher density housing product will include villa-type attached bungalows, with the opportunity to offer age-friendly amenities facilitating ageing in place.

Cochrane North is located in close proximity to the Hamlet of Cochrane Lake and Monterra at Cochrane Lake. The proposed development will complement and connect to the existing communities while also providing amenities that can be used by residents of the greater area.



6. DEVELOPMENT CONCEPT & OPEN SPACE

Policy 6.1.1: Maximums and Minimums for residential lots are as follows:

- a) Maximum building height:
principle building: 12.00 m;
Accessory Building: 4.00 m*
- b) Minimum front yard: 5.00 m for
side drive garage; 7.00 m for
front drive garage*
- c) Maximum site coverage for
buildings: 40%*

Policy 6.1.2: All residential lots shall back onto open space.

Policy 6.1.3: Single family lot widths may vary between 45 and 60 feet.

Policy 6.1.4: Community RV Storage should be less than 0.8 ha in size and appropriate screening, landscaping, and fencing will be required. Users of the RV Storage site will be limited to community members.

6.1. Development Concept

6.1.1 Residential

The layout of this clustered residential community will include up to 425 residential units that are distributed across the parcel and integrated with the open space. The density of the development will be approximately 1.3 UPA, with 72% open space, including storm ponds and environmental reserve. Please refer to Section 6.4 Cochrane North Land Use Statistics for more details about the land use breakdown.

Emphasis has been placed on providing views of Dawson's Pond and the surrounding countryside with predominantly south and west facing lots. To emphasize the rural feel of the neighbourhood, all lots back onto open space. Housing types in Cochrane North will be diverse, including both single and multi-family units. Single family residences will range from 1500-3500 square feet, on lots approximately 45 to 60 feet wide and 120 feet deep. Higher density residences will feature villa type attached bungalows, which may be appropriate for Rocky View County's ageing population.

The clustered residential community concept was developed to provide an opportunity for neighbourhood connections with an urban residential feel, while keeping the overall density low and preserving as much open space as possible. Interface with adjacent agricultural uses was considered by buffering the proposed residential lots with open space. This buffer was considered to be at minimum the average distance of a single family home lot. Each lot has a smaller footprint than typical country residential lots, while also maintaining a connection with the communally owned open space.

Ecological features on the landscape formed a basis for the development of the community concept. The large wetland, Dawson's Pond, serves an important ecological function and migratory staging refuge for many migratory bird species. It is surrounded by stands of aspen and mixed deciduous trees and forms part of a wildlife corridor that connects the site to the region. The significant biodiversity on the land is to be preserved by avoiding major biophysical features including the wetlands, and preserving natural topography.





FIGURE 4. DEVELOPMENT CONCEPT



6.2. Landscape Concept

The open space and park concepts reflect feedback from the preliminary public open house regarding programming preferences to the parks and open space areas as well as guidance from the Rocky View County Parks and Open Space Master Plan, Agricultural Master Plan and Parks and Pathways Planning Development and Operational Guidelines. The park amenities seek to balance the needs of a range of ages, provide activities throughout the year, and balance both active and passive spaces. Design strategies seek to enhance human comfort by maximizing solar exposure and providing protection from prevailing winds.

Approximately 72% of the site area will be publicly accessible open space. Wetland preservation and avoidance formed the basis of the landscape concept, with 13.1 ha of wetlands preserved. Throughout the site, strategic tree plantings will identify trail intersections and rest nodes, while allowing for desirable vistas and screening unwanted views. The plantings and restored landscapes will provide texture and colors that are attractive and distinctive throughout the seasons.

FIGURE 5. LANDSCAPE CONCEPT



Policy 6.2.1: A Landscaping Plan shall be required prior to the endorsement of a plan of subdivision or the issuance of a Development Permit.

Policy 6.2.2: Grassland landscape shall not require irrigation from potable water.

Policy 6.2.3: Open space amenities throughout the plan shall be aimed at serving a range of ages and providing activities throughout the year.

Policy 6.2.4: Design of open spaces shall seek to enhance human comfort by maximizing solar exposure and providing protection from prevailing winds

Policy 6.2.5: Access to open space shall be publicly accessible and street trees and other plantings shall be designed to enhance views.



FIGURE 6. VISUALIZATION KETTLE CORRIDOR

This landscape plan employs landforms and tree massing to create buffers from harsh winter winds while channeling pleasant summer winds and allowing for solar access.

The majority of the residential block development occurs to the east and west of the Kettle Corridor on what is now cultivated lands. The residential areas are situated in the context of a restored prairie. Restored native grasslands naturally occur on the driest south and west facing slopes. The dominant species found in this landscape type is mountain rough fescue, bluebunch fescue, and Perry oatgrass. This landscape will provide wildlife habitat, open views, and highlight the majestic rolling hills in Cochrane North. Once

established, the grassland landscape will not require irrigation. Maintenance of these lands will consist of occasional mowing to sustain a healthy landscape. Maintenance activities will be managed by the Home Owner's Association (HOA); however, are likely to be carried out by a contracted professional in combination with neighbourhood volunteers.

Street tree plantings, particularly along the urban and rural collector road running from east to west, will follow regular spacing with strategic clearings framing the open landscapes of the site and toward the mountains at key points. Along the east-west collector, the intent of tree plantings will be to create contrasting experiences between

a sense of enclosure and expansiveness through tree density and strategic clearings. The clearings will open to both the central conservation corridor and Kettle Ponds as well as towards the mountains to the west. The tree placement and species selection will help to create a sense of character and identity throughout the site. Trees will be utilized to screen on-coming vehicles at three-way intersections to protect homes from vehicle lights and provide a privacy screen.



6.3. Parks and Recreation

Cochrane North boasts a number of programmed park spaces throughout the development, the developed parks complement the landscape and passive recreational amenities offered within the open space corridor. Three park typologies are integrated into the clustered residential development, including the community hub, neighbourhood parks and pocket parks.

6.3.1. Kettle Corridor (40.06 hectares/98.99 acres)

The core of Cochrane North is the central Kettle Corridor featuring natural resources including Dawson's Pond to the north and three small kettle ponds to the south. The Kettle Ponds or sloughs are remnants from glaciers in the region and are natural assets that will be preserved for their ecological functions as wetlands and riparian zones. This conservation corridor ties into the Cochrane Lake area to the south of the site, providing for a connected wildlife corridor as well as passive recreation and educational or interpretive features. Regional trails traverse along both the southern and western edges of the corridor which link to an integrated network of local paths and nature trails providing access to both residents of Cochrane North and the general public. These trails will allow for passive, trail based recreation while preserving the integrity of the landscape. The



FIGURE 7. KETTLE CORRIDOR CROSS SECTION

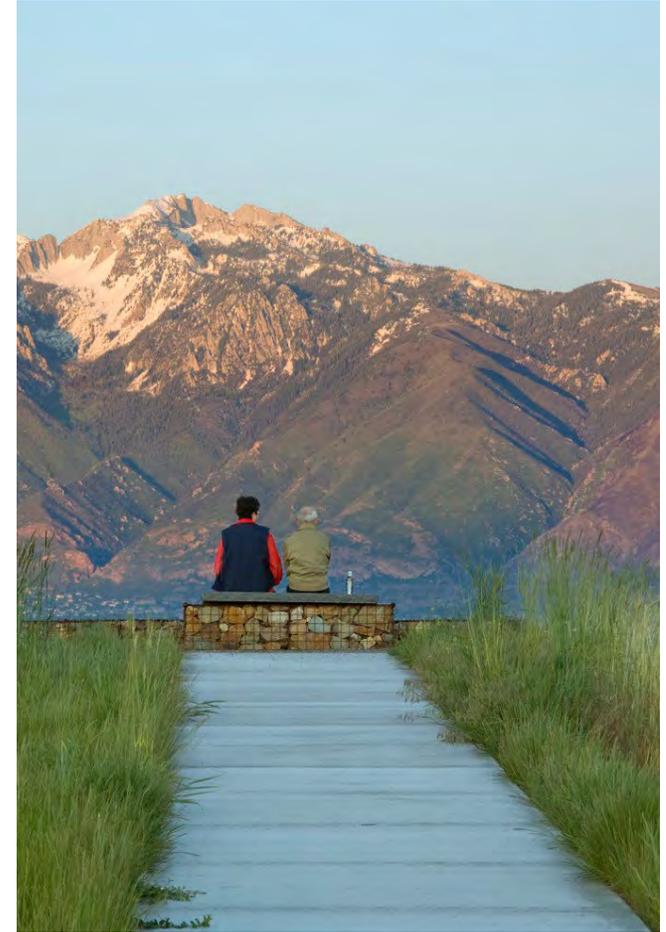
nature trail leads to a high point within the Kettle Corridor, opening up the views to the west toward the Rocky Mountains.

Two constructed stormwater ponds on Public Utility Lots (PULs) will be located within the Kettle Corridor and will be accessed by 4-metre maintenance paths. These ponds mitigate much of the stormwater on the site, they are designed to emulate the natural shape, native wetland vegetation, and comparable depths of the existing ponds. The specifications for these PULs will align with the Master Drainage Plan submitted under separate cover. Plantings will

build on native species in the lower areas of Cochrane North, including balsam poplar, plains cottonwood, and aspens with understories of wild red raspberry, wild white geranium, and other forbs and plants including beaked hazelnut, bunchberry, wild lily of the valley, and wild sarsaparilla. The lowest depressions and edges of Dawson's Pond is where willow, sedge, and tufted hair grass communities will flourish. This particular landscape type with healthy vegetation is expected to be a destination for a variety of waterfowl.



FIGURE 8. KETTLE CORRIDOR CONCEPT PLAN





6.3.2. Community Gathering Place

The community gathering space is the social hub of Cochrane North and features various programming elements that strive to accommodate the needs of various ages and interests. This community park is located just off the main east-west collector street within easy access of the residential nodes and linked by both regional and local trails. Parking will be provided for those coming from other areas; however, walking and bicycling will be encouraged by the easy trail access which also provides access to the network of trails within the Kettle Corridor.

The location of the community hub will also function as a small commercial neighbourhood node. It will serve as a community resource, with community mailboxes located in the neighbourhood node. The neighbourhood node will also provide opportunities for social interaction with the opportunity for limited commercial operations. This community hub (or community barn) will function as a community focused, flexible space and may include small permanent/semi-permanent commercial uses and other community oriented services. For example, the space could function as a day-care during the weekdays, host movie nights during the evenings and as a yoga studio on weekends. This inherent flexibility can provide for a potentially strong revenue stream for the HOA in order to keep community fees low.



FIGURE 9. VISUALIZATION COMMUNITY GATHERING PLACE

Programming is centred around a large community barn which will be collectively owned and operated through the HOA. The barn will be designed to be tailored to the community's interests with spaces such as an artists' workshop, a community kitchen, game room and/or other indoor activity spaces. In addition, the barn will serve as a focal point for indoor and outdoor community events like farmer's markets and can be available for rentals as a private event space for weddings or birthdays. The area surrounding the barn could host park amenities

including an outdoor amphitheater, a community playground, or a basketball and volleyball court. Land in this area is also available for the HOA to utilize as a community garden or other use according to residents' needs or interests.

Policy 6.3.1: An Open Space Management Plan shall be required prior to the endorsement of a plan of subdivision or the issuance of a Development Permit.





FIGURE 10. COMMUNITY HUB CONCEPT PLAN





Neighbourhood Park West potential programming:

- Playground
- Sheltered seating
- Walking loop
- Open lawn
- Multi-purpose field
- Landform buffers



FIGURE 11. WEST NEIGHBOURHOOD PARK CONCEPT



6.3.3. Neighbourhood Park East and West

Two Neighbourhood Parks are located on each side of the Kettle Corridor which will be dedicated as Municipal Reserve (MR) lands. At 4.22 ha (10.44 acres) and 2.40 ha (5.94 acres) for the east and west parks respectively, these amenities follow Rocky View County standards for neighbourhood park requirements. On the east side of the development, Neighbourhood Park East anchors the entrance to the site off Highway 22, encompassing a large cluster of native vegetation along the park's eastern edge. This park also serves the neighbourhood node to the south of the entrance road. Anticipated amenities for the park include planted areas, shaded seating, a small playground, open lawn (accommodates 2 multipurpose U-8 field size 20 by 30 metres, and an enclosed, off-leash dog park, this park will serve both community members and visitors alike. The Neighbourhood Park West offers planting areas, open lawn, shaded seating, and a 1 km trail loop. The informal lawn space is sized to fit a 40 by 70 metre playing field suitable for U-11 youth.

Policy 6.3.2: Pathways shall be generally developed as shown in this Conceptual Scheme. Sidewalks shall be provided on one side of roads supporting sidewalk connections.

Policy 6.3.3: The developer shall be responsible for the construction of the major recreational amenities of Cochrane North including the integrated trail system, the community hub and the park system.

Policy 6.3.4: Management of programming in the community hub shall be by the Home Owner's Association.



FIGURE 12. EAST NEIGHBOURHOOD PARK CONCEPT



6.3.4 Pocket Parks

Cochrane North's three pocket parks serve the more immediate residences within approximately a five-minute walk. These parks will be owned by the Home Owner's Association and will follow Rocky View County's Open Space standards totaling approximately a half-acre each with simplified programming. These community gathering spaces offer a simple, passive

open space area with planted areas, shaded seating and open lawn. These spaces will each have unifying elements as well as unique features, for example parks located near semi-detached villa-style houses will feature a meditative garden and contemplative spaces as this product may be well-suited to the ageing community in Cochrane North.

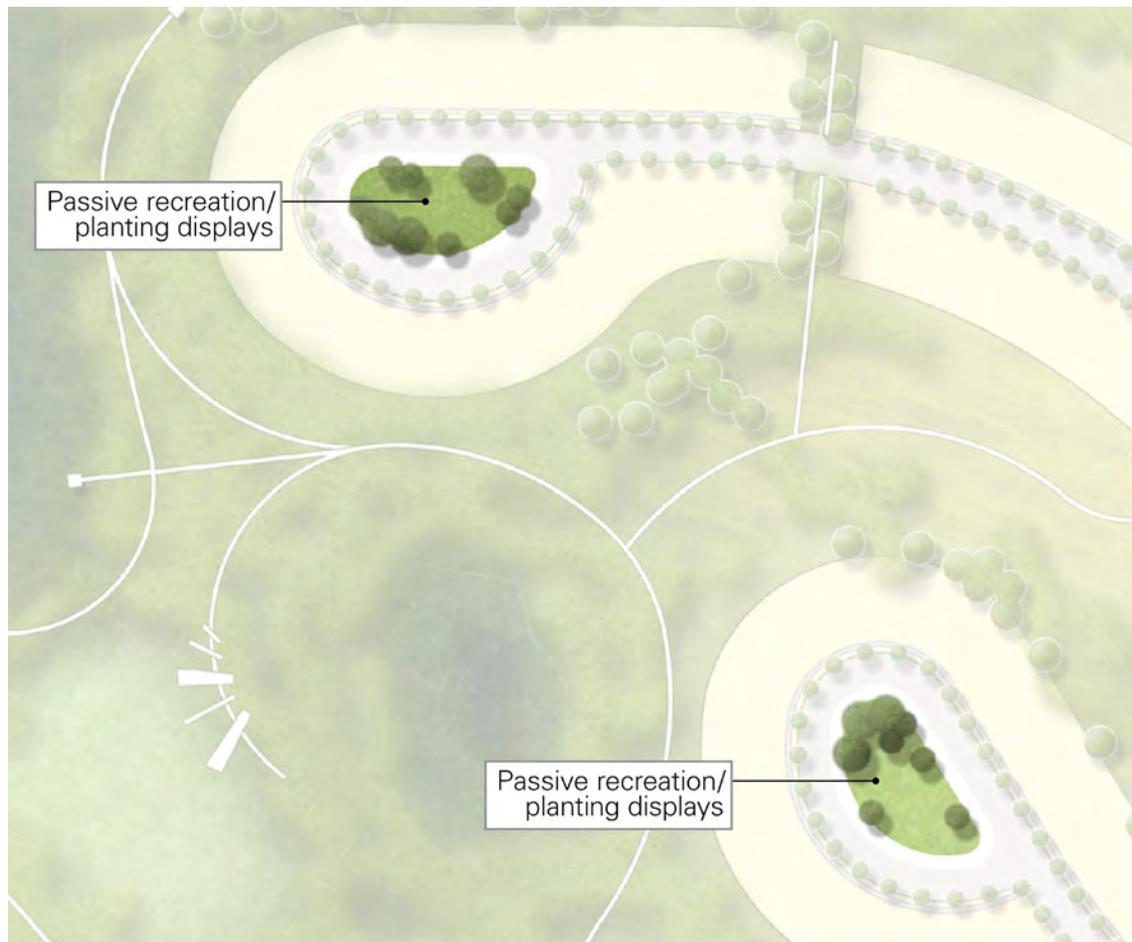


FIGURE 13. POCKET PARKS (CENTRAL)



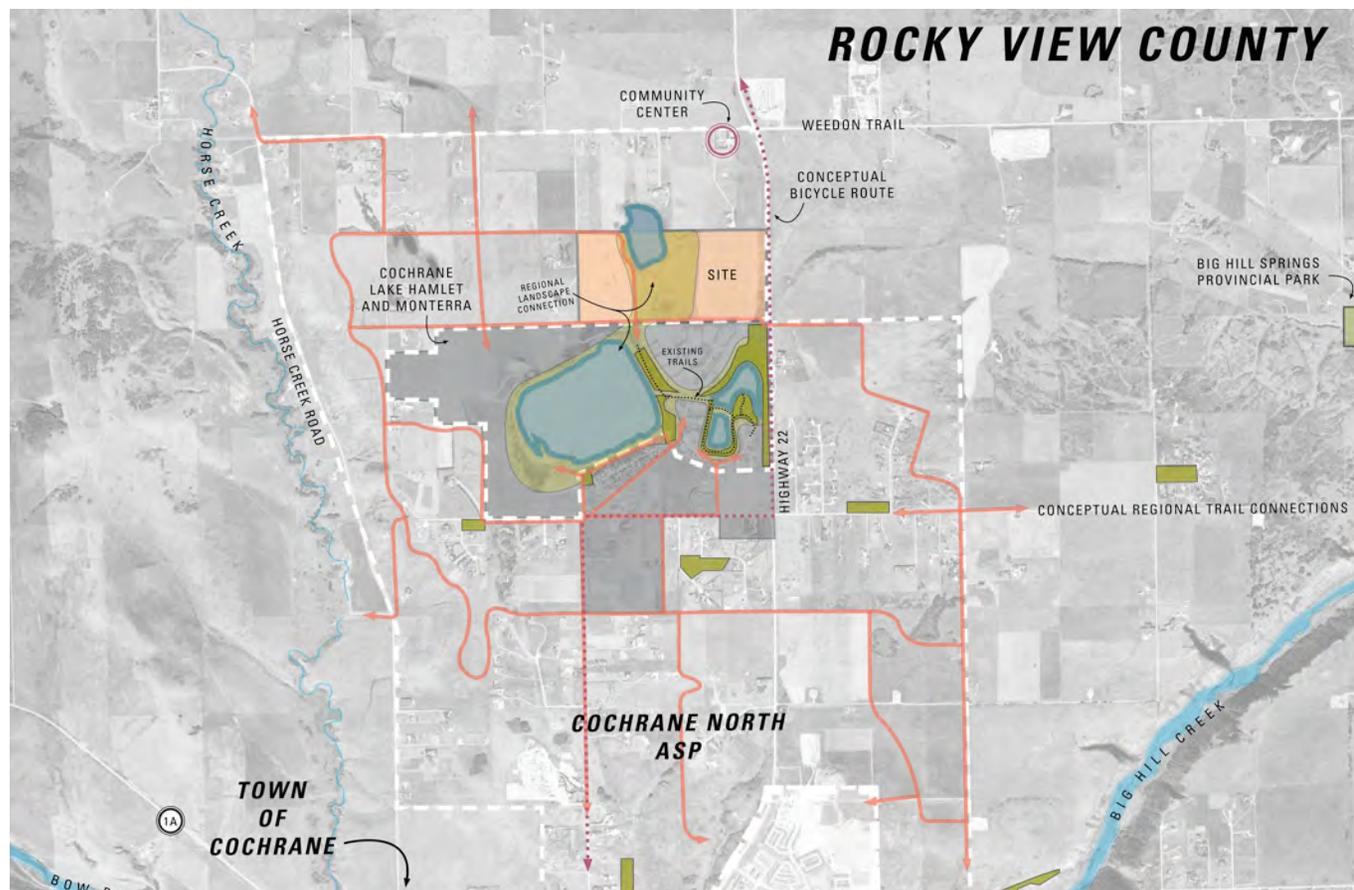
FIGURE 14. POCKET PARK (WEST)



6.3.5 Trails and Pedestrian Linkages

The non-motorized connectivity of Cochrane North is important to preserving rural character and encouraging active lifestyles. A robust and interconnected trail network includes Regional Pathways, Local Trails, and Nature Trails which traverse the diverse landscape zones of the site and offer a variety of experiences to future residents. The trails connect to neighbourhood nodes including the parks, community node and supplement the on-street network of sidewalks. Each of the trail types will be designed pursuant to Rocky View County's Parks and Pathways Planning, Development and Operational Guidelines and will be open to the public.

FIGURE 15. OPEN SPACE & TRAILS



Policy 6.3.5: The grasslands will require maintenance and will be coordinated by the Home Owner's Association. Maintenance activities in these areas may include limited mowing.

Policy 6.3.6: The community hub shall be collectively owned and operated through the Home Owner's Association.

Policy 6.3.7: The maximum total square footage of commercial uses within the community barn shall not exceed 3048 m² (10,000 square feet).

Policy 6.3.8: The community barn should be designed to accommodate both community and permanent/semi-permanent commercial uses.

Policy 6.3.9: The commercial neighbourhood node shall be pedestrian friendly, and linked with the local trails network.



6.3.6 Regional Pathways

The Regional Pathways are the foundation of the larger trail and pathway system in Rocky View County for all non-motorized users. The general locations of the Regional Pathways are consistent with the guidance provided in the Cochrane North Area Structure Plan. These routes will eventually connect the site to the broader region by providing direct access to area destinations. Regional Pathways are the most generous width of 2.5 – 4 metres within a dedicated trail right-of-way. The Cochrane North site offers 3.3 km of regional trails. These corridors will be dedicated as Municipal Reserve lands. The north-south connection links to the trails at Cochrane Lake and skirts along the edge of the Kettle Corridor, providing access to the community centre before exiting at the site’s northeast corner. An east-west connection is also provided along the site’s southern edge providing the opportunity to link to Big Hill Springs Provincial Park to the east and Horse Creek to the west as trail connections are completed off-site by others. The paths are designed to respond to the site’s topography and minimize intersections with roadways to the greatest extent possible.



FIGURE 16. REGIONAL TRAIL CONCEPT

6.3.7 Local Trails & Sidewalks

The Local Trails provide community connections to the Regional Pathway system. Within Cochrane North, the local trails also serve as a path for community members to connect to amenities within the development such as the Community Centre and the various parks. By traveling on the local trails, non-motorized trail users can often access amenities without commuting on the vehicular roadways. These are designed to be between 1.5 and 2 metres wide with approximately 4.5 km of local trails throughout the development.



FIGURE 17. LOCAL TRAIL CONCEPT



6.3.8 Nature Trails

Nature Trails are smaller-scale, natural surface meandering pathways which are primarily located within the Kettle Corridor and the grassland meadows or common lands of Cochrane North. These trails provide low-impact access to experience Dawson's Pond and the smaller kettle ponds to the south. In addition, the trails take visitors up to a high point overlook to view the Rocky Mountains to the west. The Nature trails vary from 0.5 to 1.5 m wide, with approximately 4 km of trails. These trails, in addition to some of the local trails, can transition in the wintertime to provide Nordic trail connections for cross-country skiing and snowshoeing.

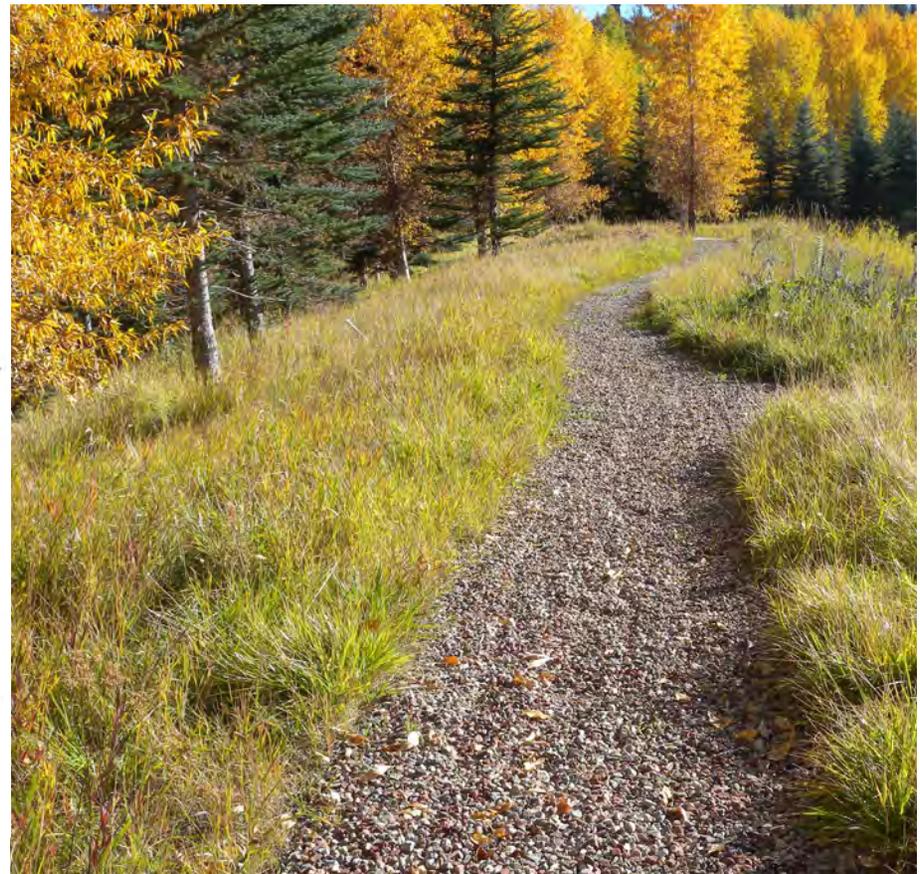


FIGURE 18. NATURE TRAIL CONCEPT



FIGURE 19. TRAILS



6.4. Architectural Guidelines

The mix of architectural forms in Cochrane North are designed to add character, interest, and definition. Homes will exhibit good design principles in a modern interpretation of traditional styles to minimize visual impact. The architectural themes are projected to include Arts and Crafts, Prairie, Farmhouse, and French Country styles and should support the rural character of the area. Both traditional and interpreted expression homes are encouraged. “True to form” Architecture is clearly defined, incorporating traditional styles while fusion techniques bring modern representation and elements to chosen available styles. Form and massing should be minimized to ensure that views of open space, the surrounding countryside, and the Rocky Mountains are available to the public. Further details are provided in the Architectural Guidelines for Cochrane North document.



Policy 6.4.1: A detailed set of architectural controls and restrictive covenants shall be prepared and submitted as a prior to release condition of subdivision.

Policy 6.4.2: Architectural Controls shall inform the quality of the built environment as an instrument on title. Applications for building permits shall not be permitted to proceed without adherence to the Architectural Guidelines.



6.5 Cochrane North Land Use Statistics Table

The municipal reserve calculation and development statistics in the following table are based on the total gross area of the site, less the areas for environmental reserve and the stormwater management ponds. The determination of the environmental reserve was based on the delineation of existing wetlands and their buffers based on the Biophysical Impact Assessment and the Wetland Value Assessment. There exists a proposed road widening area adjacent to Highway 22 on the west side of the project. However, as this road widening has not yet been registered on title, the following land use statistics do not reflect it. Figure 20 shows the distribution of land use areas over the site.

Municipal Reserve Calculation		Ha	Ac	
Total gross area		128.04	316.39	
Less				
Environmental Reserve		19.88	49.12	
Public Utility Lot (PUL)		3.45	8.53	
Net Developable Area		104.71	258.74	
10% Municipal Reserve Owing		10.47	25.87	
Development Statistics		%	Ha	Ac
Residential		24.28	25.43	62.83
Municipal Reserve		10.00	10.47	25.87
Privately Owned Open Space (Home Owner's Association)		56.33	58.98	145.75
Roads – Collector		3.93	4.11	10.16
Roads - Residential		5.46	5.72	14.13
Net Developable Area		100	104.71	258.74
Open Space		%	Ha	Ac
Total Gross Area		100	128.04	316.39
Environmental Reserve			19.88	49.12
Public Utility Lot			3.45	8.53
Municipal Reserve			10.47	25.87
Privately Owned Open Space			58.72	145.11
Total Open Space		72.3	92.52	228.63

Policy 6.5.1: Municipal Reserve dedication as shown on Figure 20 is to be provided to Rocky View County in accordance with Section 666 of the Municipal Government Act.

Policy 6.5.2: The Municipal Reserve lands shall be maintained and operated by the Home Owner's Association via a license arrangement with Rocky View County.

Policy 6.5.3: The Municipal Reserve dedication includes the two neighbourhood parks and the 10 meter wide regional trail.

Policy 6.5.4: The wetlands and buffers as shown on Figure 20 are dedicated as environmental reserve. Establishment of these areas were based on the Biophysical Impact Assessment and the Wetland Value Assessment. Each wetland has a unique buffer between 20 metres and 50 metres. Maintenance of these areas shall be the responsibility of Rocky View County.

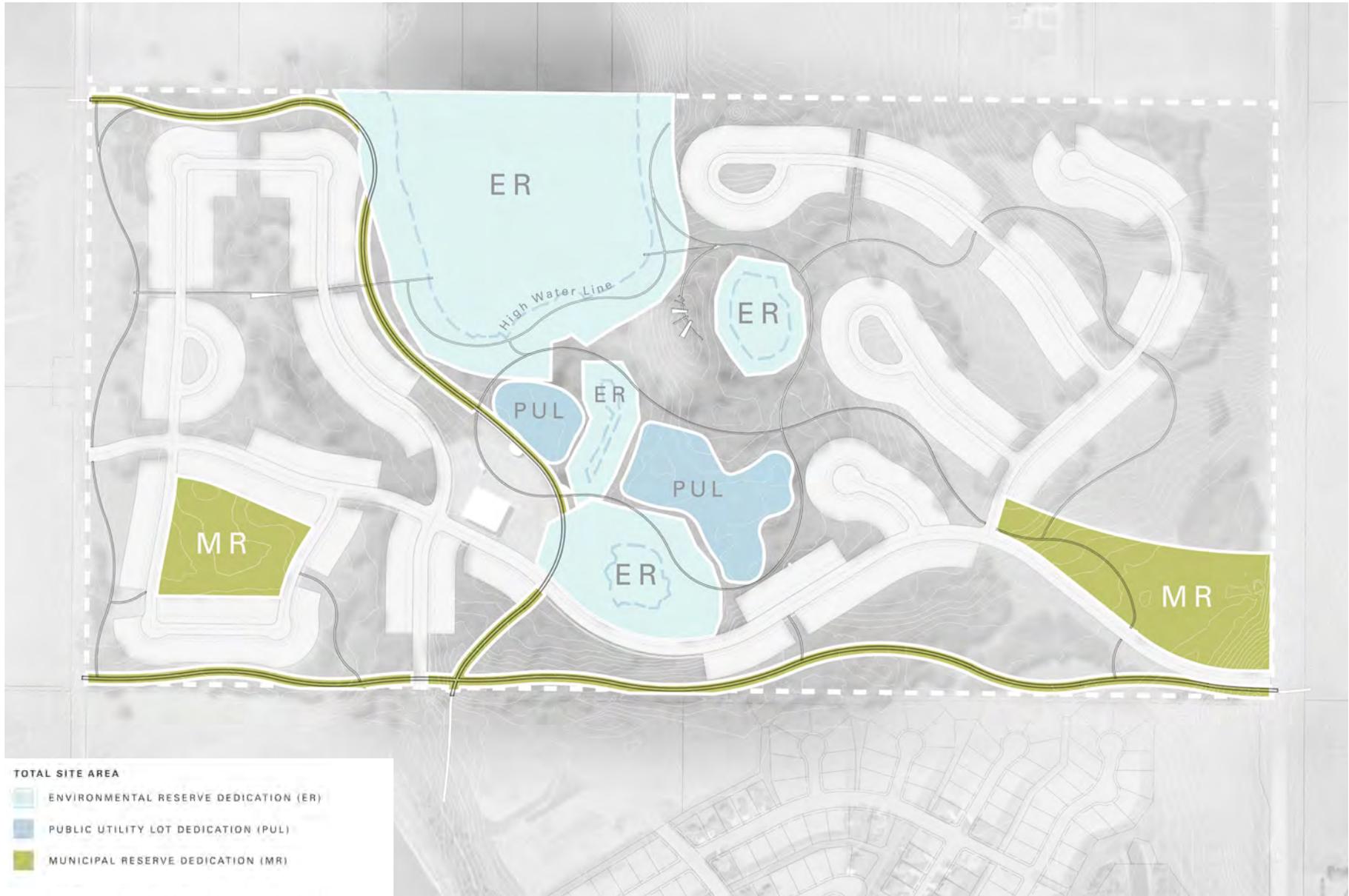
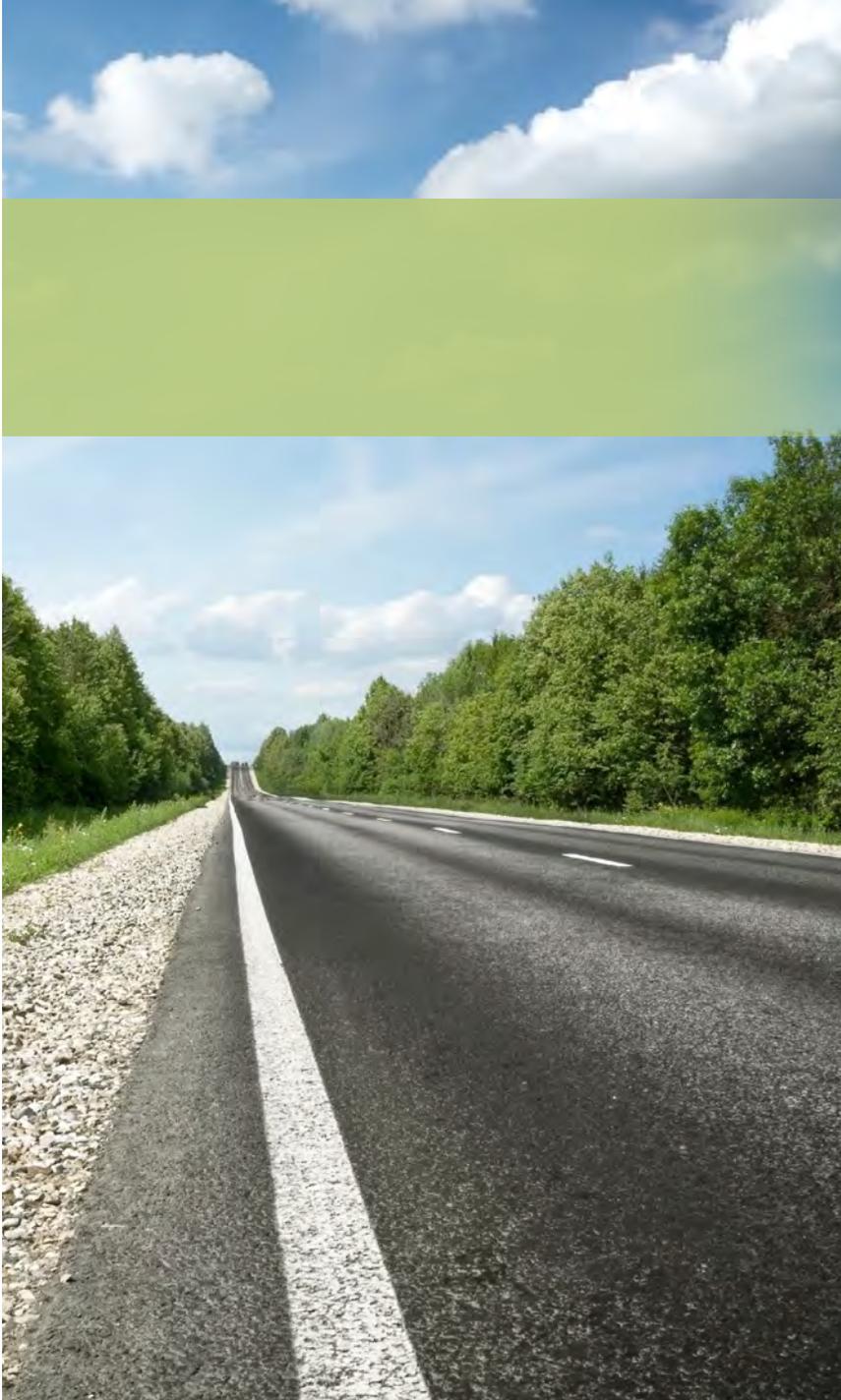


FIGURE 20. LAND USE CONCEPT



7. TRANSPORTATION

7.1. External Road Network

A Transportation Impact Assessment (TIA) was completed in 2016 by Watt Consulting Group in support of this conceptual scheme. External road network connections to Cochrane North are made via Highway 22 to the east, Range Road 43 to the west, and a road connection to Monterra to the south. The external connection points and are in alignment with the Cochrane North ASP and Hamlet Plan Transportation Study which reviewed the long term road network in the area.

Currently, Range Road 43 is a low volume road with a gravel driving surface. Based on the anticipated daily traffic volumes, it is recommended that Range Road 43 be upgraded to Regional Transitional Paved Road under the Rocky View County road classification. Highway 22 will also require a road widening setback in order to accommodate the future twinning of Highway 22 by Alberta Transportation. The road widening setback will be dedicated at the subdivision stage.

7.2. Internal Road Network

The internal road network has been designed in concordance with the pedestrian trail network and supports the clustered residential layout. The east-west collector road will provide direct access to Highway 22 from Cochrane North and the surrounding communities, and is consistent with the collector road network outlined in the previous transportation study of the area. Traffic calming features will be explored at the detailed design stage to make this collector safe for the pedestrians and vehicles. A maximum speed limit has been set at 40 km/h.

Road names in accordance with approved municipal policy will be determined at subdivision stage, pending branding and theming of the neighbourhood.

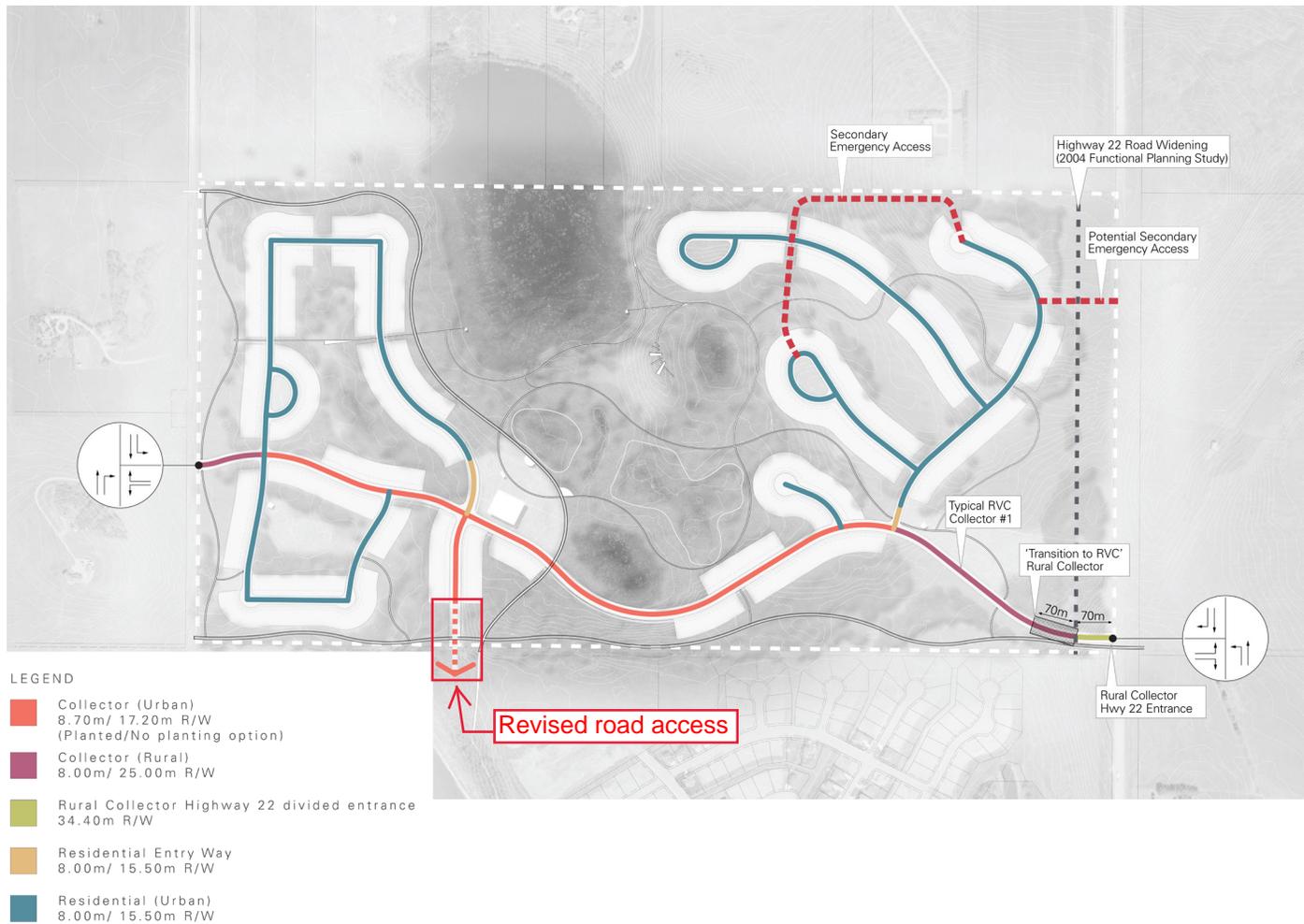


FIGURE 21. INTERNAL ROAD NETWORK

Policy 7.1.1: Development shall satisfy the requirements of Alberta Transportation with respect to access and interface with Highway 22.

Policy 7.1.2: Development shall provide the required road right of way widening of Highway 22 to the satisfaction of Alberta Transportation.

Policy 7.1.3: Access to the subdivision shall be generally in accordance with Figure 21.

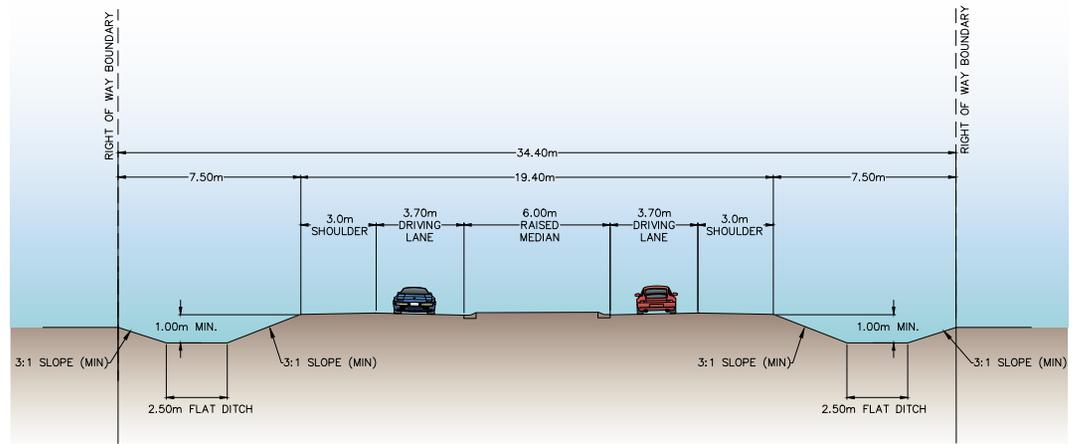
Policy 7.1.4: The development will provide and maintain appropriate emergency vehicle access, to the satisfaction of Rocky View County.

Policy 7.2.1: All road systems shall be constructed by the Developer to the satisfaction of Rocky View County.

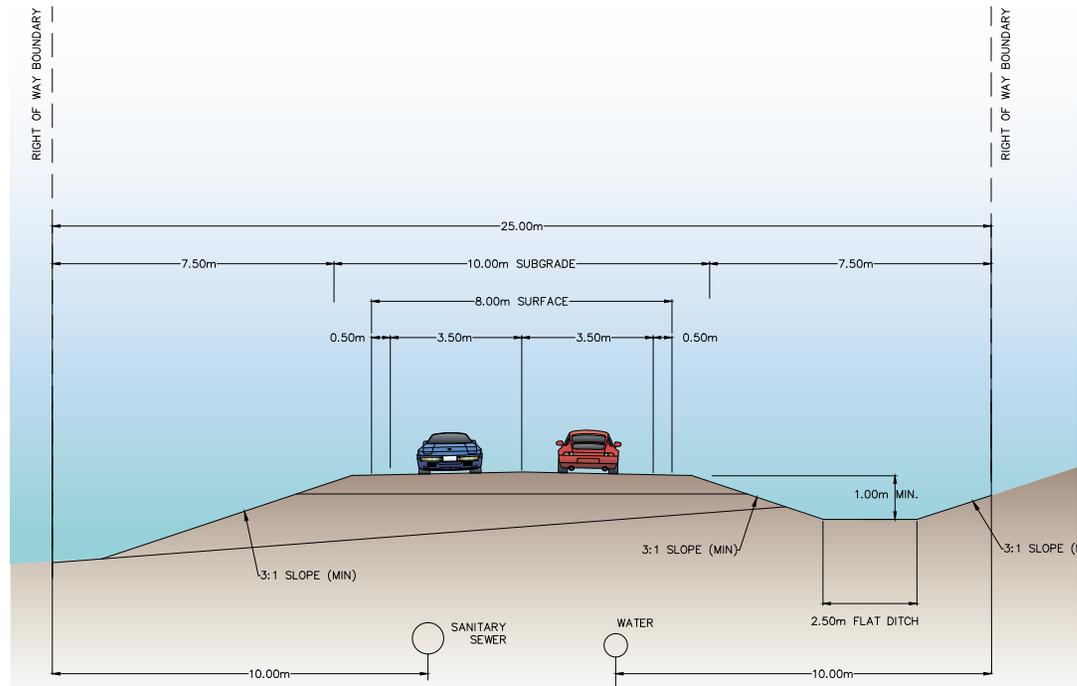
Policy 7.2.2: Although not required for ingress/egress, the connection point to Monterra shall only be constructed subject to appropriate access agreements.

EW COLLECTOR

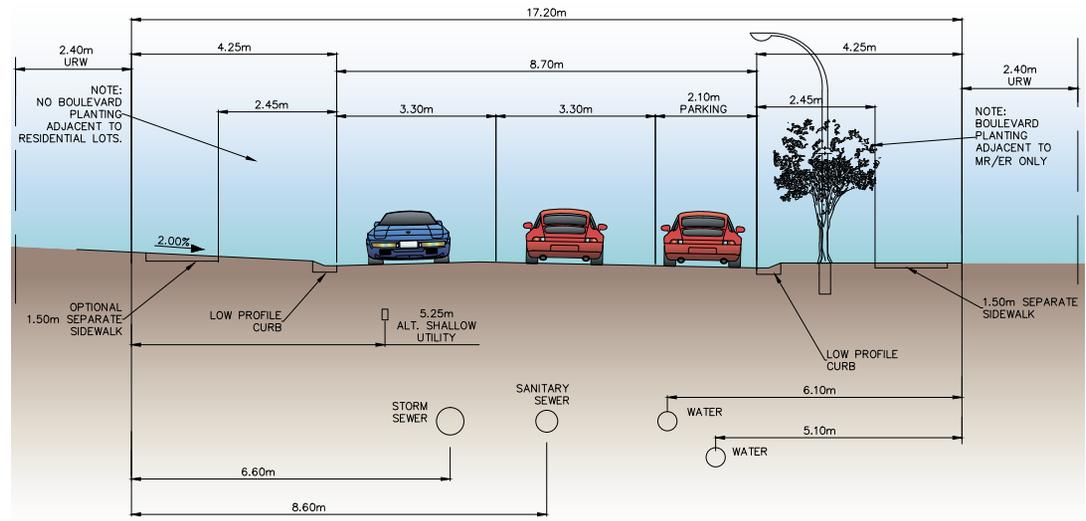
Entrance



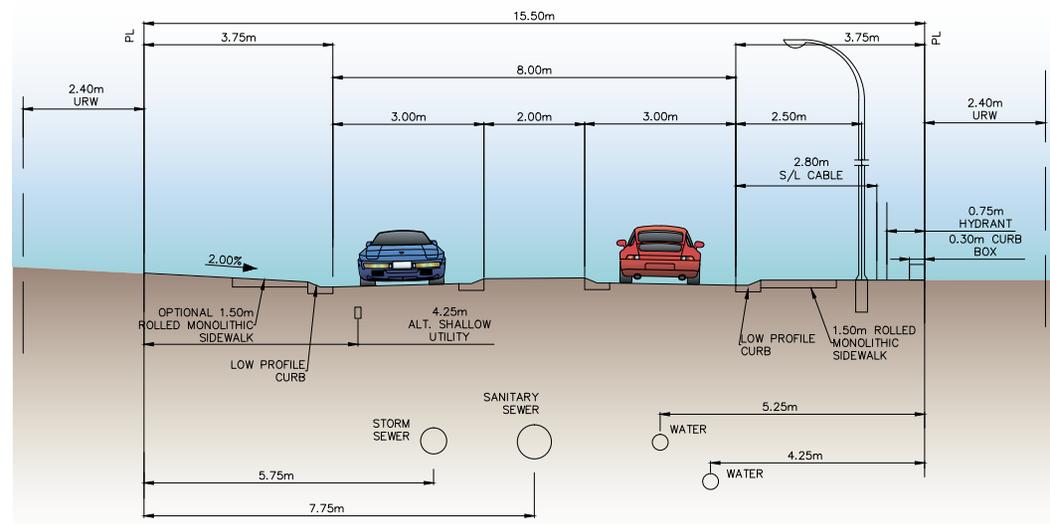
Rural



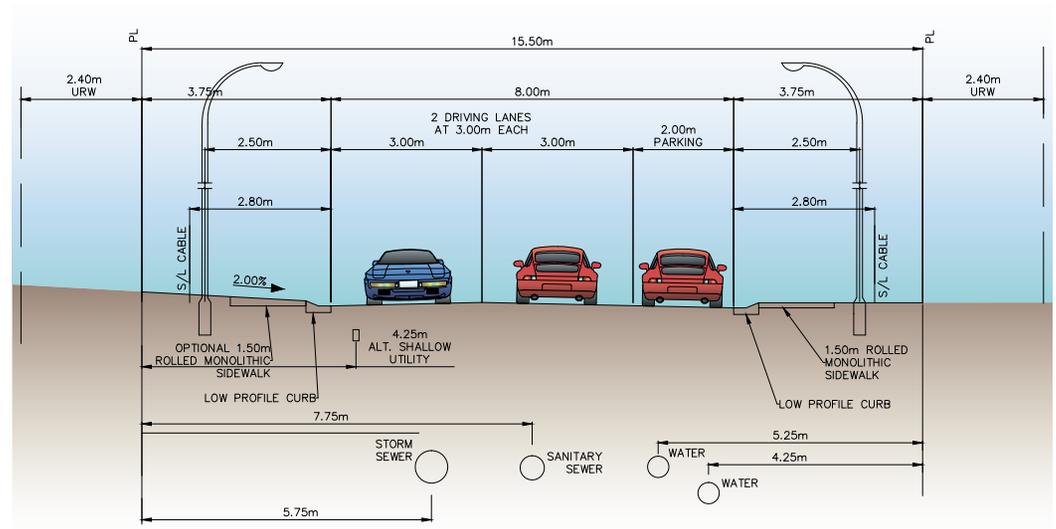
Urban



Residential Entry Way



Residential





8. WATER SUPPLY & SERVICING

8.1. Servicing & Utilities

A comprehensive servicing design brief has been prepared by BSEI Municipal Consulting Engineers (BSEI) which details the capacity of the existing utility systems and projected water and wastewater servicing demands of the Cochrane North development.

The locations of all rights-of-way, easements and related line assignments, have been determined at the conceptual scheme stage to the mutual satisfaction of the County, the developer and the utility regional utility company.

Power, telephone, gas and cable will be provided by the developer at the subdivision. All power, telephone, gas and cable utilities will be buried within the development, with installation being completed by local contractors.

A Water Use Assessment and a Wastewater Servicing Assessment have been prepared by BSEI Municipal Consulting Engineers (BSEI) to accompany the Conceptual Scheme submission, which details the capacity of the existing utility systems, and projected potable water and wastewater servicing demands of the Cochrane North development.

Policy 8.1.1: Shallow utilities shall be provided within the Conceptual Scheme Area at the sole expense of the Developer and shall be located within appropriate utility right of way established at the subdivision stage.

Policy 8.1.2: The Developer shall obtain all necessary water and wastewater licensing and regulatory approvals prior to the subdivision endorsement of individual phases, and shall provide confirmation that the utility provider holds all required provincial approvals.



8.2. Potable Water

The Cochrane North project will be developed as a cluster style residential subdivision with a maximum of 425 units. (Approximately 1,275 residents) The cluster style development (including all internal roadways) will be constructed on approximately 35.66ha (88.08 acres) of the site, which accounts for approximately 27.5% of the total parcel area.

Water Use projections have been based on 300L/c/d. The calculated water demand for the proposed Cochrane North development is approximately 714.51m³/day. (260,796m³/year)

Potable Water servicing will be provided through a connection to the existing regional utility services operated by Horse Creek Water Services Ltd. The Horse Creek system is located within the existing Monterra development directly to the south of the Cochrane North lands. Two (2) connections to the existing system will be completed to provide adequate potable water supply to the Cochrane North development.

Both connections to the existing Horse Creek water system will be completed within Phase 2 of the Monterra development. There will be one connection to the existing 300mm PVC main located within Monterra Drive (north of Monterra Way), the second connection will be the existing 250mm PVC main located on Monterra Way. (East of 400 Monterra Bay) Figure 22 illustrates the location of the two connections points to the existing water distribution system.

Potable Water servicing to the Cochrane North development will occur in a logical, sequenced manner, ensuring that no more than 45 unit are serviced on without a looped water connection on a permanent basis, and that no more than 100 units will be serviced on a temporary basis, in conformance with the City of Calgary, Design Guidelines for Subdivision Servicing – Section III Waterworks, 'B-4' Looped Mains.

The Horse Creek Water Services Ltd. water distribution system has excess capacity of potable water to service the required demands of the Cochrane North project. The servicing study prepared by BSEI identifies staged upgrades to the Horse Creek system that will be required in order to meet demands for the development at full buildout.

Policy 8.2.1: Potable Water servicing shall be provided by existing regional water utility services.

Policy 8.2.2: Any portions of Cochrane North that are developed above the pressure zone limit of the existing regional water distribution system shall have a water booster station to maintain adequate pressure.

Policy 8.2.3: The potable water distribution system shall be designed to ensure adequate fire protection throughout the development, as per s.606.5 of the Rocky View County Servicing Standards. Details of Fire Flow Storage requirements will be confirmed at the detailed design stage.



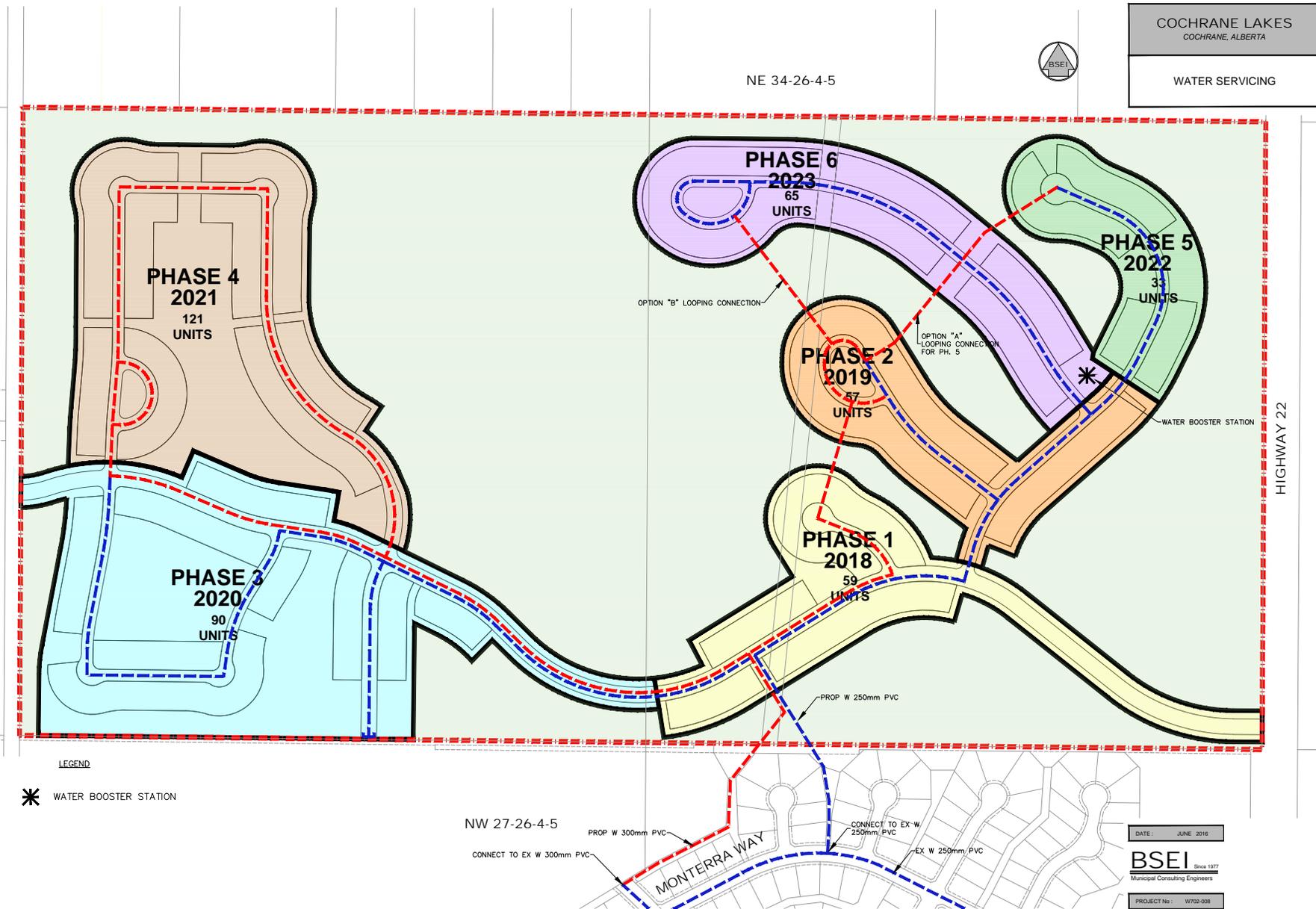


FIGURE 22. POTABLE WATER SERVICING



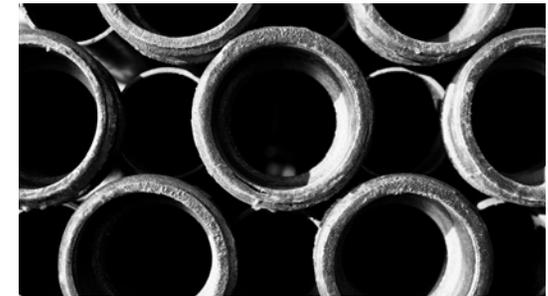


9. WASTEWATER TREATMENT

The gross developable area for the proposed Cochrane North development is approximately 35.66 Hectares. (88.08 Acres) Wastewater flow calculations are based on the Minimum Projected Average Day Wastewater Flows of 270L/day/unit. (An approximately 90% return rate for potable water usage) We have estimated the average day weather flow (ADWF) generated by Cochrane North to be 3.72L/s, or 321.41m³/day. Infiltration has been allowed for at a rate of 0.28L/s/ha, based on the Alberta Environment and Parks design guidelines. The estimated Peak Wet Weather Flow (PWWF) for the Cochrane North project is 23.93L/s.

Wastewater collection and conveyance systems within the Cochrane North ASP area are owned and operated by Horse Creek Sewer Services Ltd. The wastewater flow collected within the proposed Cochrane North plan area will be conveyed via gravity to a wastewater lift station located in Monterra Phase 1.

The varied terrain of the Cochrane North site will require split servicing within the development. The east half of the site (Cochrane North Phases 1, 2, 5 and 6) can be serviced and convey all collected wastewater to the wastewater lift station located in Cochrane North Phase 4 via a gravity connection. The west half of the site (Cochrane North Phase 3 and 4 will also be collected and conveyed to the wastewater lift station via a gravity main. The combined flow will be released to the Horse Creek system at the anticipated Average Dry Weather Flow (ADWF) of 3.72L/s. During heavy rainfall events where weather is contributing to the volume of wastewater generated, a wastewater holding tank located immediately adjacent to the proposed lift station will be required to store wastewater onsite in order to meet the Rocky View County servicing flow restriction of 12.1L/s.



The existing Horse Creek wastewater system has adequate capacity to convey the wastewater generated by the Cochrane North development to the wastewater lift station at full buildout, and without any upgrades to the current system. However, as noted in the Wastewater Servicing Assessment prepared by BSEI, servicing at full buildout of the Cochrane North and Monterra East projects will require upgrades Horse Creek Lift Station pumps.

Policy 9.0.1: Wastewater servicing shall be provided by piped utility services.



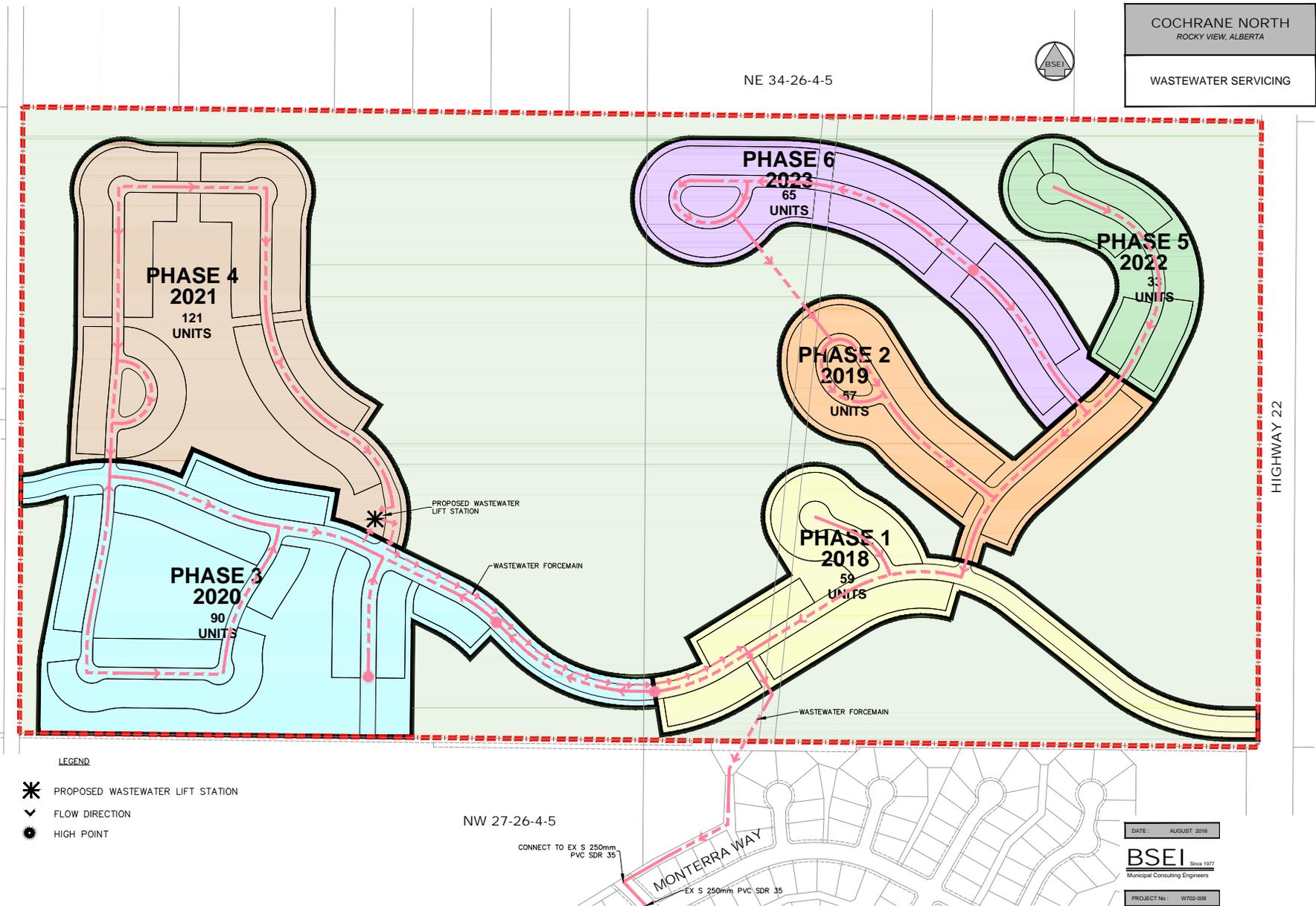


FIGURE 23. WASTEWATER SERVICING

10. STORMWATER MANAGEMENT

Cochrane North is located within the area defined by the AECOM Cochrane Lake Master Drainage Plan (2010). This report was further refined by SSI in the Sub-Catchment Master Drainage Plan for Cochrane Lake (2017).

All stormwater runoff collected within Cochrane North will be treated in onsite storm ponds, then released via a gravity main to Cochrane Lake. The Cochrane North Sub-Catchment Master Drainage Plan (2017) prepared by SSI provides the following design criteria for stormwater discharging to Cochrane Lake:

- 1.39 L/s/Ha
- 35-40 mm discharge on an annual average basis
- Removal of 85% of 50 micron particles

The existing emergency outfall pipe alignment from Cochrane Lake to Horse Creek is proposed to be decommissioned, with a new permanent outfall to the Bow River to be constructed. Figure 24 illustrates the proposed alignment. This solution will facilitate drainage and will ensure effective water recharge and refresh in Cochrane Lake while preventing flooding. All associated construction costs will be borne by new development and no municipal funds will be committed to this project. A feasibility study for the storm outlet to the Bow River has been submitted and accepted by Rocky View County.



FIGURE 24. PROPOSED COCHRANE LAKE OUTFALL ALIGNMENT

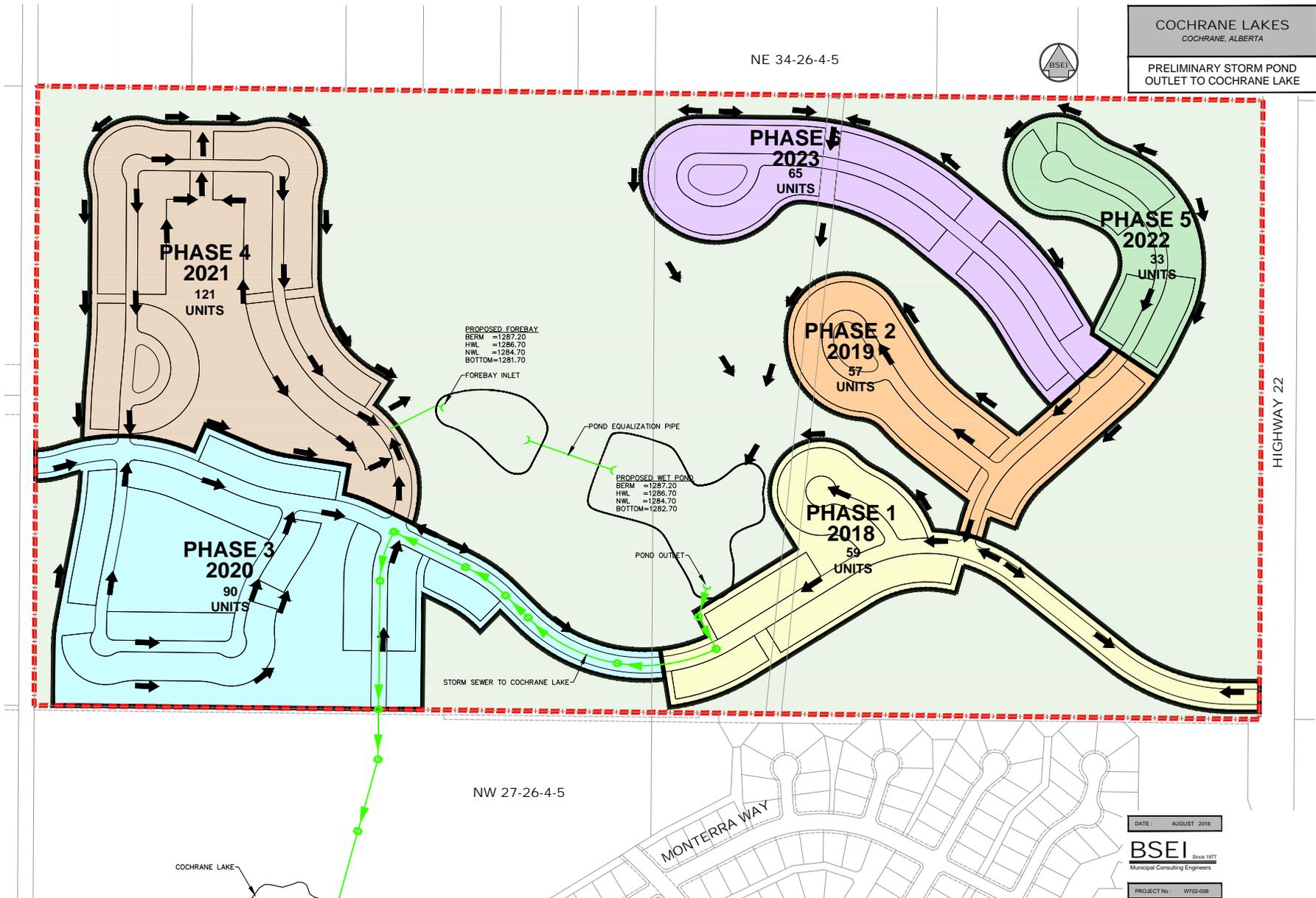


FIGURE 25. STORMWATER SERVICING





For the onsite stormwater management system, it is proposed that the majority of runoff will be directed towards a central pond system, with the exception of some back-of-lot drainage which will be directed towards the existing wetlands. The main runoff entering the pond system will be treated to the above criteria prior to release. It is expected that Low-Impact Development (LID) measures will be implemented to reduce sediment loadings and to also reduce runoff volumes. These measures may include absorbent landscaping, filter strips, disconnected downspouts, increased topsoil, and the reuse of stormwater for non-potable purposes such as irrigation within MR .

The high quality natural wetlands on site will be retained, with post-development runoff to these wetlands mimicking the pre-development values in order to maintain the wetland health. In terms of water quality, treated stormwater from the onsite ponds and back-of-lots will ensure that any water directed to the wetlands will be of higher quality than the current agricultural runoff.

As much as possible, natural open spaces will be preserved, to allow diversity of vegetation and wildlife to continue.

Policy 10.0.1: All stormwater management shall be in accordance with Rocky View County's Servicing Standards.

Policy 10.0.2: The stormwater management system for the Cochrane North site will comply with the design guidelines provided in the Sub-Catchment Master Drainage Plan for Cochrane Lake, 2016.

Policy 10.0.3: Low-Impact Development (LID) measures should be implemented to reduce sediment loadings and to reduce runoff volumes.

Policy 10.0.4: Reuse of stormwater for non-potable purposes will be considered where appropriate, including for irrigation within an individual lot.

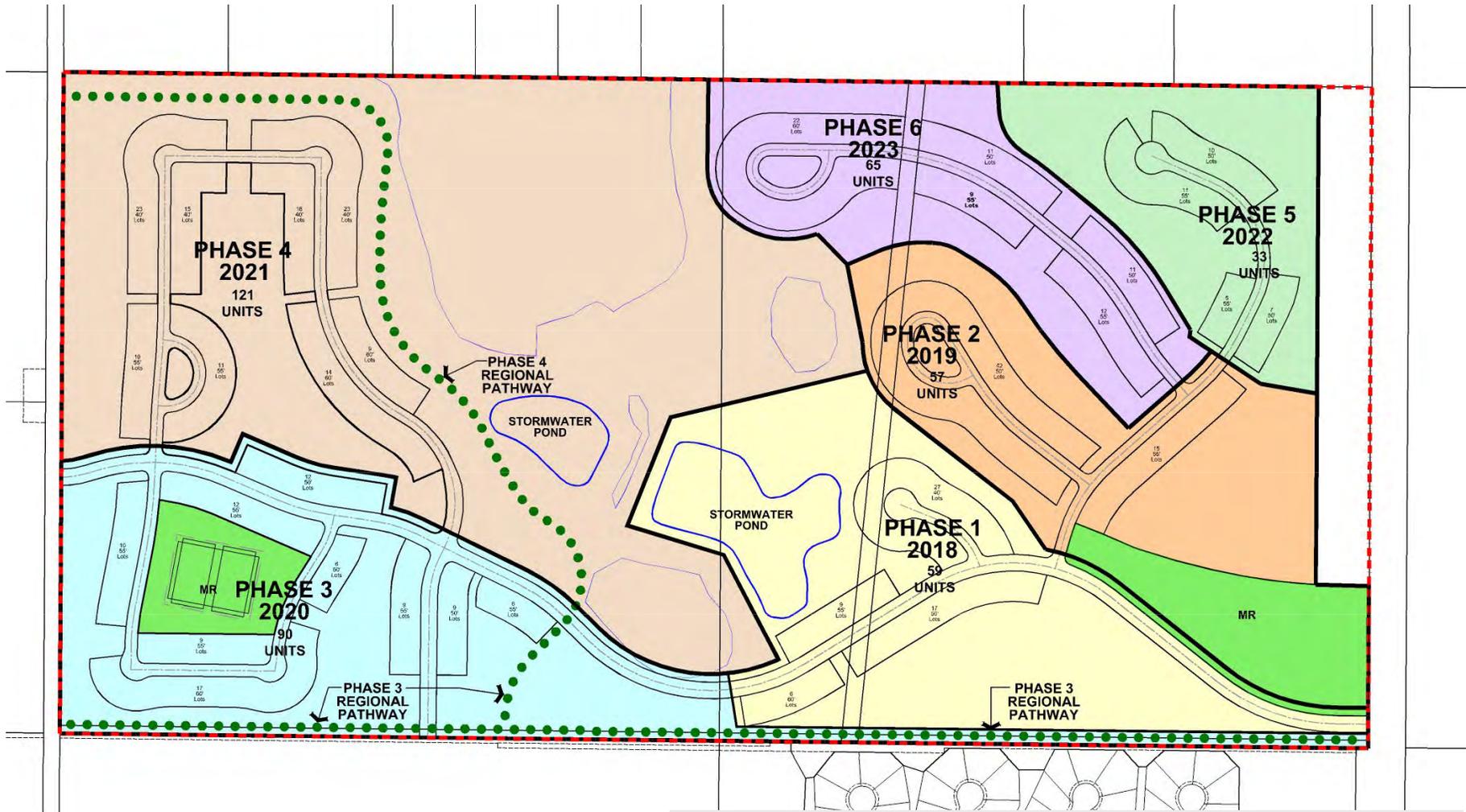
Policy 10.0.5: Stormwater infrastructure shall be owned, maintained, and operated by the County.

Policy 10.0.6: Access to stormwater ponds shall be provided by a 4 metre maintenance path that is linked into the public pathway system.

Policy 10.0.7: Post-Development runoff to the wetlands will mimic pre-development hydroperiods to maintain wetland health. Stormwater entering the wetlands should be a higher quality than the current agricultural runoff.



11. PHASING



Policy 11.0.1: Public pathways, amenity areas, servicing and utilities including water, wastewater and stormwater management will be developed in phases corresponding to the development phases.

FIGURE 26. PHASING



12. HOME OWNER'S ASSOCIATION

A Home Owner's Association will be established to administer several aspects of the Cochrane North development, including but not limited to implementation and enforcement of the architectural guidelines, operation and maintenance of the open space and associated trails and pathway network, as well as solid waste management (garbage and recycling).

Policy 12.0.1: A Home Owner's Association shall be established and shall be responsible for the following:

- a) Implementation and enforcement of the Architectural guidelines as established by the developer at the subdivision stage;*
- b) Operation and maintenance of both the publicly owned and privately owned open spaces, trail system, and the associated amenities; and,*
- c) Solid waste management and recycling services for the residential development.*





12. LIST OF STUDIES

- Biophysical Impact Assessment - Cochrane North
 - Prepared by EnviroLead Canada – June 2016
- Wetland Value Assessment - Cochrane North
 - Prepared by EnviroLead Canada – June 2016
- Cochrane North Transportation Impact Assessment
 - Prepared by Watt Consulting Group – August 2016
- Cochrane North Servicing Study
 - Prepared by BSEI – August 2016
- Cochrane North Stormwater Management Report
 - Prepared by SSI – August 2016
- Geotechnical Report
 - Prepared by SSI – July 2016
- Shallow Groundwater Study
 - Prepared by Waterline – August 2016
- Architectural Guidelines
 - Prepared by Williams Architecture – July 2016
- Historical Resources Assessment
 - Prepared by Bison Historical Services Ltd.

