COCHRANE LAKE
CONCEPTUAL SCHEME

Adopted by resolution of Council on August 22, 1995

Prepared in support of applications for redesignation and subdivision
located in portions of Sections 27 & 28 in 28-26-4-W5M

MUNICIPAL DISTRICT OF ROCKY VIEW NO. 44
Department of Planning and Development

OFFICE CONSOLIDATION

This document has been consolidated for convenience only. A copy of the original Bylaw and all amending Bylaws can be obtained from Rocky View County. This office consolidation comprises the following Bylaws:

Bylaw	Amendment Type	Date of Approval
N/A	Original Bylaw	August 22, 1995
C-7986-2019	Amendments throughout to include Neighbourhood plan	February 23, 2021

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APPENDIX - SUPPORTING DOCUMENTATION
(As a separate document)

A. Phase 1 Environmental Site Assessment - Chiron Environmental Services Inc.
B. Vegetation and Wildlife Reconnaissance - Chiron Environmental Services Inc.
C. Typical Road Cross Sections - GPEC Consulting Ltd.

1.0 INTRODUCTION

1.1 PURPOSE OF THE PLAN

The purpose of the Cochrane Lake Concept Plan is to facilitate the comprehensive planning and development of lands through a non-statutory document which addresses generalized land use, internal road hierarchy, development issues including sewer and water services, storm water management, aesthetics, densities, phasing and their impact on surrounding land uses, and establish appropriate and comprehensive mitigative measures through clear and concise policy direction contained within the Plan. Evaluation of on-site characteristics which include but are not limited to geotechnical features, environmental conditions through an environmental audit of the lands, hydrology, traffic impact analysis and proposed site servicing have been included in the supporting documentation submitted with this Plan.

The Cochrane Lake Village Neighbourhood Plan, appended to this Conceptual Scheme,provides site-specific direction for future development on the lands west of Cochrane Lake. Where this Conceptual Scheme and the Neighbourhood Plan differ, the Neighbourhood Plan should be considered as the governing document for the lands west of Cochrane Lake.

1.2 Policy Direction

The Cochrane Lake Concept Plan has been prepared pursuant to the provisions of the Municipal District of Rocky View No. 44 Policy 644 as contained within the Policy Handbook.

Council, in their motion of February 7, 1995 directed the preparation of this Concept Plan as a prerequisite for the land use redesignation, subdivision and development of the Plan area. The redesignation application from Agricultural (2) District, Agricultural Balance (AG-B) District, Direct Control (DC) District and Small Holding (SH) District to Direct Control (DC) District with Guidelines will be the subject of a statutory public hearing under the Municipal District of Rocky View No. 44 Land Use Bylaw.

Concept Plans are considered by the Municipality to be an important component of the planning process within the Municipality. Concept Plans are generally focused at the quarter section scale, are strategic in character and are intended to:

- identify development issues
- establish the appropriateness of land uses proposed
- facilitate the phasing of subdivision and development
- facilitate efficient and comprehensive development through innovative subdivision design,
- servicing efficiencies and on-site development opportunities
- facilitate community input

Council, at its sole discretion, may chose to adopt a proposed Concept Plan by resolution of Council. The minimum procedural requirements for the preparation and processing of the

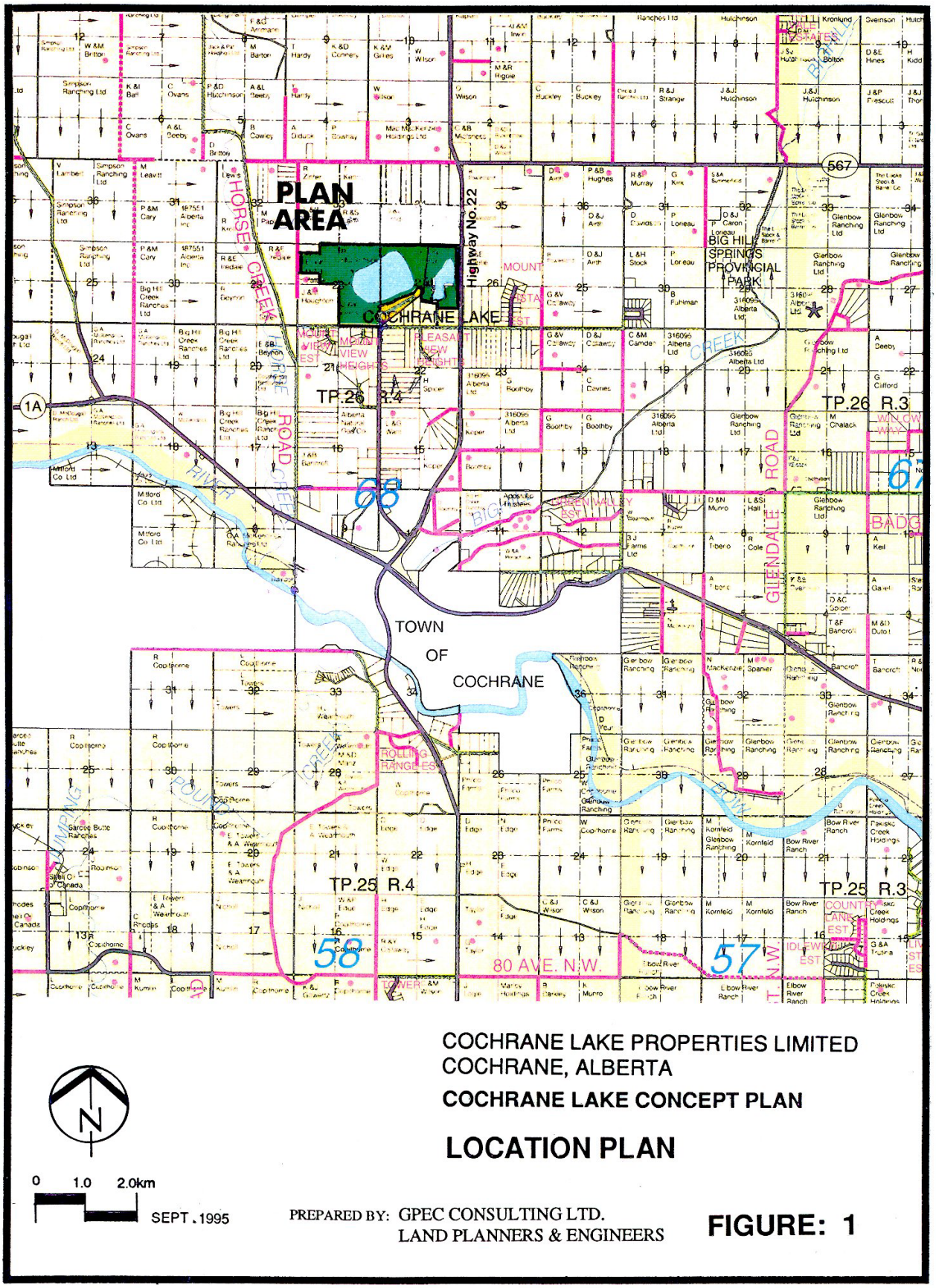
Concept Plan have been in accordance with Council Procedure No. 039.

1.3 Plan Interpretation

In this Plan:

1. "Concept Plan" means a land use concept prepared for the Plan area in accordance with policy No. 644 on the Municipal District of Rocky View No. 44.
2. "Municipality" means the Municipal District of Rocky View No. 44.
3. "Council" means the Council of the Municipal District of Rocky View No. 44.
4. "Plan" means the Cochrane Lake Concept Plan.
5. "Qualified Professional" means a professional engineer, geologist or geophysicist licensed to practice in the Province of Alberta.
6. "Regional Plan" means the Calgary Regional Plan as ratified by the Minister of Municipal Affairs
7. "Plan of Subdivision Preparation stage" shall mean that stage of the land development process in which detailed site analysis is undertaken; local planning needs and development philosophy are identified and site specific subdivision design is prepared.
8. "Plan of Subdivision" is a detailed proposal for development of land and may form the basis for application to subdivide.

Figure 1 - Location Plan



2.0 THE PLAN AREA

2.1 Location

The Plan area is located approximately 5.6 km north of the Town of Cochrane and is bounded on the east by Highway 22 and extends approximately 3.2 km to the west. Access from the City of Calgary is gained via Highway 1 and 22 or Highway 1A through the Town of Cochrane then north on Highway 22. The proposed development area has paved roads to the south and east property lines.

2.2 Plan Area

2.2.1 The Plan area is comprised of 640.33 acres currently held in 6 titles under the ownership of Cochrane Lake Properties Ltd.

Table 1 and Figure 2 provide the legal descriptions

Table 1 - Legal Descriptions: Plan Area

Title Number	Description	Area - Acres	Area - Hectares
941 219359	Part NE 114 *See.* 27-26-4-W5	132.72	53.711
941 219 359 +I	Part SE 114 Sec. 27-26-4-W5	50.75	20.538
941 219 359 +2	Part NE, SE, SW & NW Sec 27-26-4-W5M	91.36	36.973
941 219 358	Part SE 114 Sec. 28-26-4-W5M	128.50	52.003
941 219361	Part NE 1/4 Sec. 28-26-4-W5M	100.18	40.542
941 219 362	Part NW 1/4 Sec. 28-26-4-W5M	136.82	55.370
TOTAL AREA		**640.33**	**259.137**

2.2.2 For the purposes of this Plan the boundaries contained herein shall be considered as approximate only, and minor variations shall not require an amendment to the Plan.

Figure 2 - Legal Descriptions: Plan Area

COCHRANE LAKE PROPERTIES LIMITED
COCHRANE, ALBERTA

COCHRANE LAKE CONCEPT PLAN
LEGAL DESCRIPTIONS -
PLAN AREA

PREPARED BY:
GPEC CONSULTING LTD.
LAND PLANNERS & ENGINEERS

NOT TO SCALE SEPTEMBER 1995

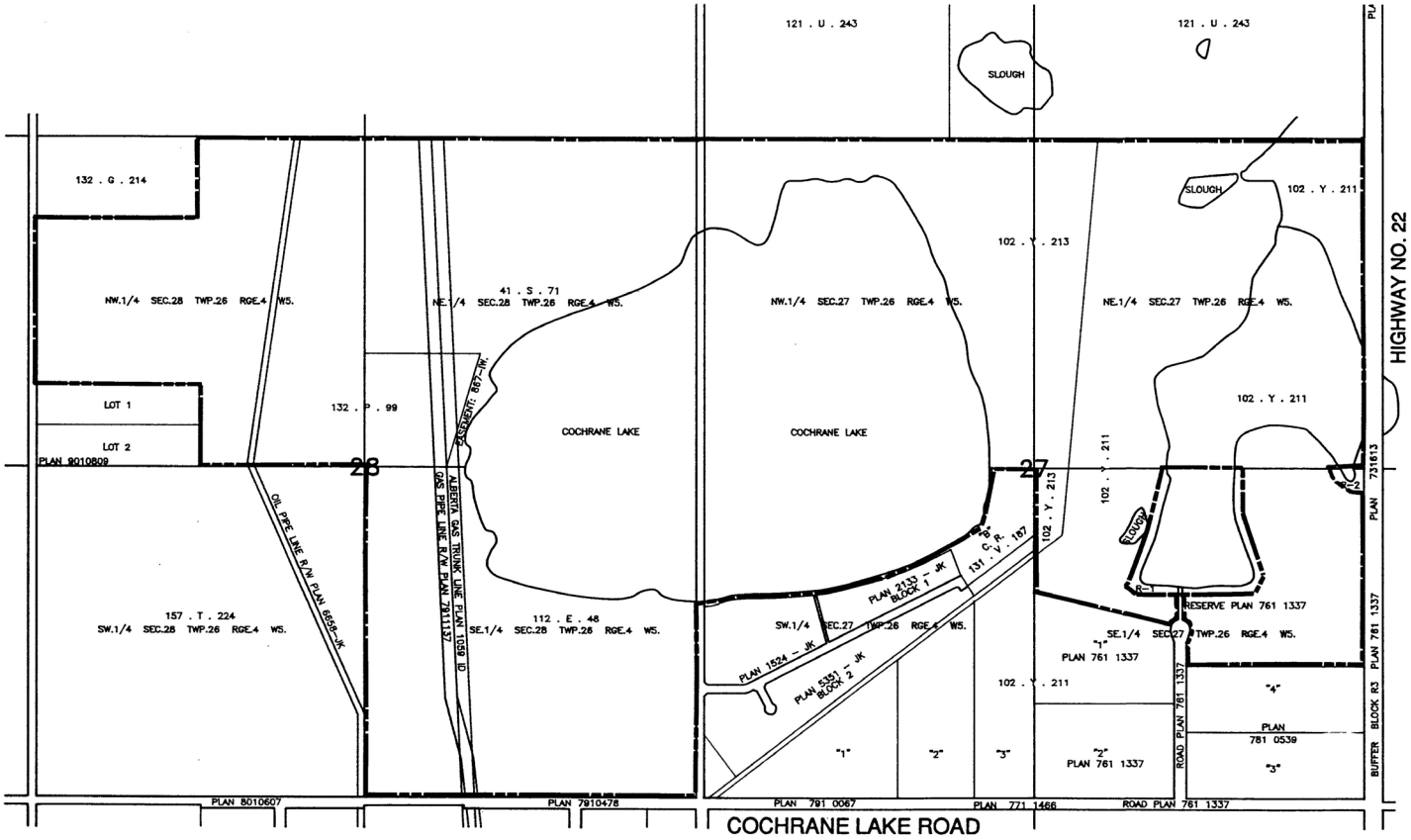


FIGURE: 2

2.3 Policy Framework

2.3.1 The Calgary Regional Plan

The Cochrane Lake Concept Plan shall conform to the following:

The Calgary Regional Plan ratified in May 1984 with Amendments is still the primary document setting out broad policies for land use throughout the Region. The Plan area is contained within the Calgary Region.

Chapter 4 Section 12 of the Regional Plan addresses the planning principles regarding hamlets and their role in accommodating a variety of urban uses. With the existence of the Hamlet of Cochrane Lake and the inclusion of a portion of the Plan area within the current hamlet boundary, the Concept Plan adheres to the key Regional Plan provision stated in 4.1 2.1 0 of the Regional Plan

"The Regional Plan encourages the revitalization of Hamlets as places to provide an alternative lifestyle."

In keeping with the provisions of Chapter 4 Section 7, Recreation, the Concept Plan seeks to create ***appropriate development and conservation of one of the few high quality recreation areas existing within the region.*** The Concept Plan adheres to the general planning principles and policy provisions as contained within the Regional Plan.

2.3.2 The General Municipal Plan

The Municipal District of Rocky View No. 44 General Municipal Plan adopted by Council October 6, 1992, is the principal Statutory Plan affecting land use within the Municipality.

Pursuant to the General Municipal Plan the Cochrane Lake Concept Plan is consistent with the specified policies and objectives as contained with Section 12 - Hamlets, of the General Municipal Plan.

3.0 THE PLAN OBJECTIVES & PRINCIPLES

3.1 Plan Objectives

3.1.1 Goal

The Cochrane Lake Concept Plan serves to provide comprehensive planning and development of the lands by creating a residential development which is focused on the existing lakes in the Plan area and aims to achieve the highest design, aesthetic and environmental standards in conformance with existing provincial, regional and municipal policy documents as outlined in Section 2 of the Plan.

3.1.2 Objectives

a) To identify development issues within the Plan area and establish appropriate and comprehensive policies for addressing these issues.

b) To establish the appropriateness of the Plan area for the land uses proposed by the Plan.

c) To establish servicing proposals appropriate to the Concept Plan and a policy framework for the implementation of same.

d) To facilitate the phasing of subdivision and development of the Concept Plan through the establishment of a comprehensive phasing plan.

e) To facilitate land use designation and subdivision design that maximizes lot yields, servicing efficiencies and on-site development opportunities.

f) To facilitate conservation and development of the natural lakes and foreshore lands within the Plan area and mitigate any negative impacts of development.

g) To facilitate the opportunity for land ownership within the Plan area based on a bare land condominium plan.

4.0 THE CONCEPT PLAN

4.1 Introduction and Background

GPEC Consulting Ltd. was commissioned in June, 1994 to proceed with preparation of a preliminary development plan and feasibility study for the residential development of Cochrane Lake. The focus of the report was to establish the development feasibility of approximately 259.137 ha (640.33 ac) of land which surround and are adjacent to Cochrane Lake. To do so required that the report establish the lands' suitability for development as a permanent, resort style residential development focused on the lake and providing a variety of recreational and residential opportunities. During the early stages of study, the primary objective was to establish a generalized land use plan upon which the developments' utility requirements would be evaluated and which would in turn be the subject of preliminary discussion and applications to Alberta Environmental Protection for water rights and preliminary evaluation of sanitary sewer servicing, treatment and disposal options based on the scope of the development to be supported.

Of primary importance to the development at the outset, was the ability to secure adequate water supply to meet the needs of the development and the approval of a sewage treatment and disposal system which is environmentally acceptable.

Following the establishment of serviceability and options, application was made to the Municipal District of Rocky View and the Town of Cochrane for the approval to use an existing municipal road right of way for installation of the water line. Concurrent with these applications, discussion with the Municipal District focused on the form of planning documents required to support Municipal approval and Land Use Redesignation applications. Council at its meeting of Tuesday February 7, 1995 approved the application for use of the right of way for the water line, subject to Land Use Amendment approval and directed that a "Concept Plan" as defined in Policy No. 644 be required to support such an application for Land Use Amendment.

Given the timing requirements for scheduling of Public Hearings on Land Use Redesignation applications the attached Concept Plan is submitted in fulfillment of Council's direction in order to establish the context for Land Use Redesignation and subsequent subdivision and development approvals.

Applications to, and discussions with Alberta Environmental Protection are ongoing under the separate approvals process required by the Environmental Protection and Enhancement Act.

4.2 Site Overview

The subject land is rolling in nature and surrounds Cochrane Lake which in August 1994, had a total surface water area of approximately 50.79 ha (125.5 acres). There are several high points on the land particularly to the north and west to the lake and all of the lands drain towards the lakes. The land offers a variety of views of the main lake itself and distant views of the foothills

and the mountains to the south and west. A second small lake lies towards the easterly side of the property and has, on occasion, in past years been dry. In August 1994, this lake had a surface water area of approximately 18.9 acres. The main lake is fed by several springs on the sloping land north of the lake as well as being a catchment area for local run-off from a substantial drainage area to the north and west. The smaller seasonal lake to the east is primarily fed by natural drainage from the subject lands and a drainage area to the north and east of Highway No 22.

4.3 Existing Development

The Hamlet of Cochrane Lake lies on the south shore of the lake and accommodates a total of approximately 60 permanent residences on 0.2 to 0.4 hectare lots. The Cochrane Lake Properties lands contain a primary residence and accessory buildings located within the SE 1/4 of Section 28. In the immediate vicinity of the Plan area there are a number of country residential and small holding subdivisions mixed with a variety of fragmented parcel subdivisions.

4.4 Existing Land Use Designations

The existing developed area of the Hamlet of Cochrane Lake is designated Hamlet Residential Single Family District (HR-1). The majority of the Plan area is either designated Agricultural (2) District (AG-2) or Agricultural Balance District (AG-B). A portion of the lands within the SE 1/4 of Section 2 (Title No: 891 185 284) carry a Small Holding District designation which dates from the early 1980's.

In 1984, an application for redesignation from Agricultural Conservation (1) District to Direct Control District to create a 540 unit residential/recreation complex was approved by the Municipal District of Rocky View for those lands described in Title No. 941 219 359 +2 and containing 36.96 ha (91.36 acres). The Bylaw C-1769-84 includes development guidelines and permitted uses for the proposed development which had a density of approximately 5.9 units per acre.

The lands covered by Bylaw C-1769-84 are now incorporated into the Plan area which contains approximately 875[1] residential units on 259.1 38 ha (640.33 acres). This will produce an average density of only 1.4 units per acre which is more in keeping with the lands' capabilities and the general nature of the surrounding area development.

[1] *Please refer to Utility Infrastructure Section 5 3 , page 19, for explanation of density provisions*

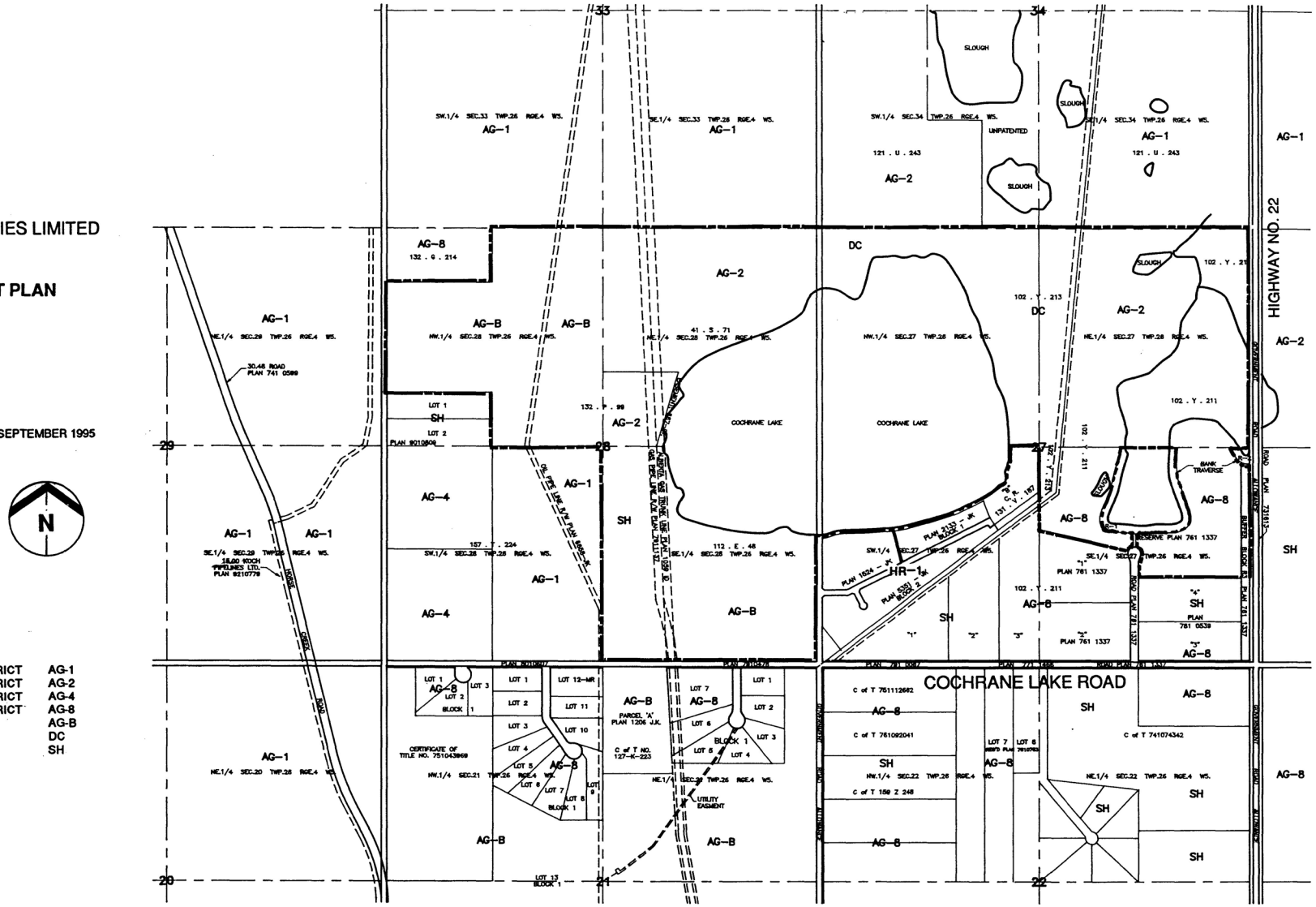
Figure 3 - Existing Land Use Designation

COCHRANE LAKE PROPERTIES LIMITED
COCHRANE, ALBERTA

COCHRANE LAKE CONCEPT PLAN
EXISTING LAND USE DESIGNATIONS

PREPARED BY:
GPEC CONSULTING LTD.
LAND PLANNERS & ENGINEERS

NOT TO SCALE SEPTEMBER 1995



LEGEND

AGRICULTURAL CONSERVATION (1) DISTRICT	AG-1
AGRICULTURAL CONSERVATION (2) DISTRICT	AG-2
AGRICULTURAL CONSERVATION (4) DISTRICT	AG-4
AGRICULTURAL CONSERVATION (8) DISTRICT	AG-8
AGRICULTURAL BALANCE DISTRICT	AG-B
DIRECT CONTROL DISTRICT	DC
SMALL HOLDINGS DISTRICT	SH

FIGURE: 3

4.5 Cochrane Lake

Cochrane Lake is the only significant body of water within this area of the M.D. of Rocky View, and offers potential for development as a recreation area and waterfowl habitat integrated with the proposed residential development. The development of the subject lands will preserve, enhance and integrate natural characteristics of the landscape.

The lake has been subject to variations in water level over the past decade or more, however, in the last two years has regained some of its level as a result of increased rainfall in the region. The lake is currently relatively shallow with an average estimated depth of approximately 1 meter (3.28 ft). The shoreline topography suggests that the level can be raised approximately 1.5m to 2.0m (4.9 to 6.5 feet) thereby creating an average depth of 2.5 - 3 meters (8.2 to 9.8 ft.) without adversely impacting the adjacent developed and undeveloped lands and existing mature stands of trees.

The design water levels contemplated by the Concept Plan would result in a surface water area of approximately 75.27 ha (186 acres) in Cochrane Lake and approximately 26.7 ha (66 acres) in the lake to the east.

Figure 4 - Development Constraints & Opportunities

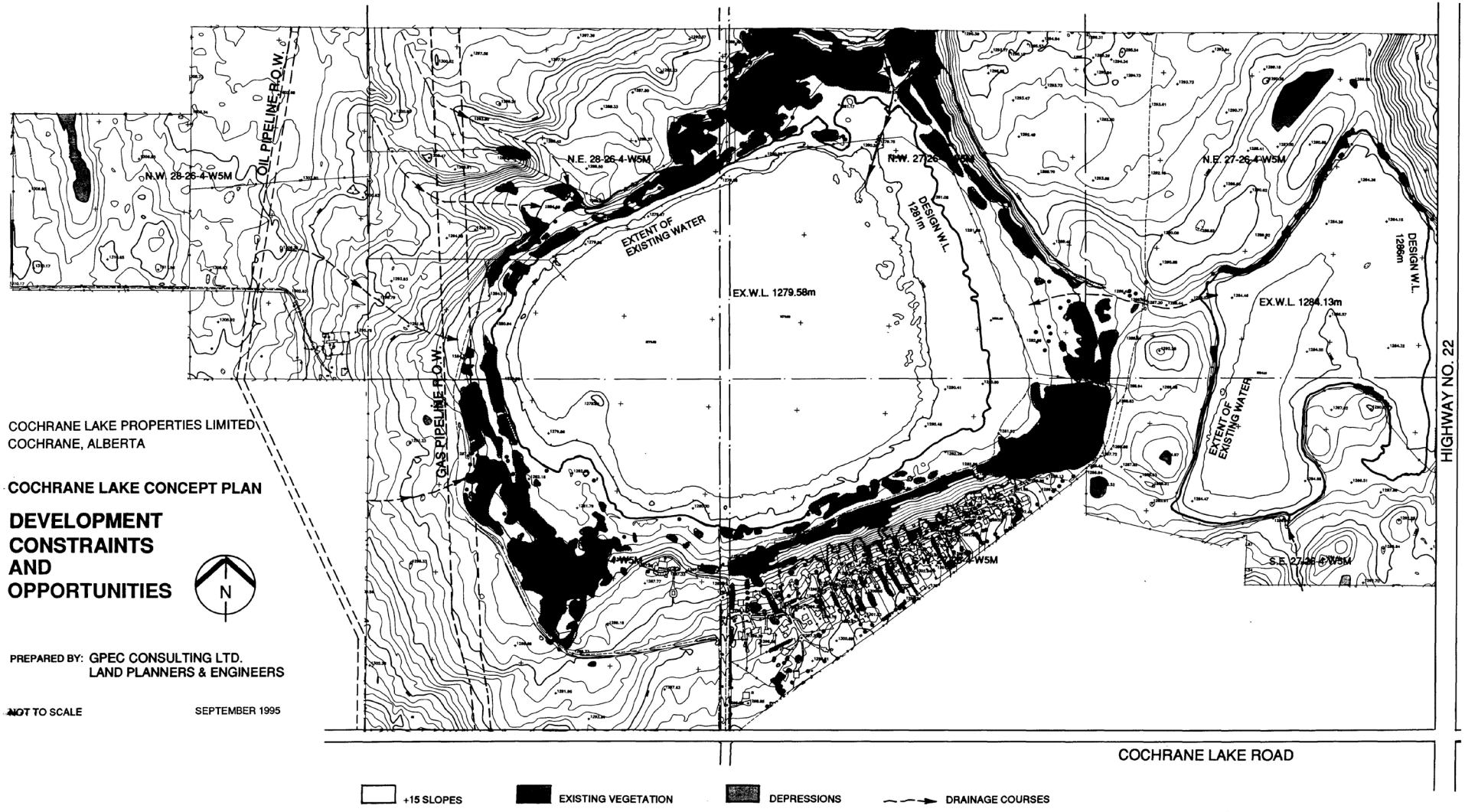


FIGURE: 4

4.6 Land Use Concept

The proposed development of the subject lands is in the form of an extension to the Hamlet of Cochrane Lake in order to provide a variety of residential accommodation complete with recreational opportunities, support facilities and a full range of utilities.

It is intended that this residential development will co-exist with the existing Hamlet development and the Town of Cochrane and will complement rather than compete with the Town of Cochrane development. The objective is to create a development which by its existence would generate an additional commercial/retail and industrial market for the existing and future business development in the Town. Other than a small convenience store outlet associated with the proposed Village Core there is no commercial/industrial development contemplated. The development would essentially serve as a "bedroom" community to the Town and the City of Calgary marketplaces.

A development of the scope contemplated will require a utility infrastructure capable of supplying the needs of the existing development along with the proposed land uses on a staged basis. The land use concept is presented in a form consistent with the requirements of a Concept Plan in that it identifies proposed land uses for the area, major transportation links, utility systems to serve the development lands, density of population for each development cell and a staging sequence for development of the lands based on sound land use practice, market considerations and utility infrastructure provisions.

The targeted market for the development is a residential community in a quasi-rural setting with both passive and active water-based recreational opportunities integrated within the development. The proposed form of development, based on the land analysis undertaken, will be a cluster style of community, and may be integrated under a "bare land condominium plan". The lake will act as the focus for the development, with careful integration of wildlife habitat, view potential and the rural interface of surrounding land uses. Included within the development are support facilities which include a small convenience commercial outlet to serve the day to day needs of the residents, along with a recreation/community facility which will incorporate a variety of recreation activities including a golf driving range.

The general design philosophy allows for the creation of quality development cells of a size suited to the land and housing form proposed in each instance. The Plan area is served by a road network which provides access to the development as a whole and links the individual cells efficiently and safely. In addition to the road linkages there is an integrated open space system, complete with walking and hiking trails, which connects the cells to one another and also is connected to the community facilities and the lakeshore amenities.

The cell concept permits the integration of a variety of housing forms while addressing the logical

phasing and utility servicing considerations essential to a development of this type. The overall Concept Plan allows for logical development of the land holdings while maximizing the exposure to the lands natural amenities and integrating both the aesthetics and servicing considerations.

The Concept Plan has been developed with the general principal that all lots should have access to the lakeshore. Unlike the majority of existing lake communities in southern Alberta, the lakeshore has not been ringed with lots thereby providing exclusive access to only a small percentage of the lots.

4.7 Proposed Land Use Amendment

The proposed Land Use Bylaw Amendment submitted concurrent with the Concept Plan contemplates the redesignation of a portion of the subject lands from their current designations to Direct Control (DC) District with comprehensive guidelines and policies to control development. The Direct Control Bylaw will be dealt with at a Public Hearing under the requirements of the Land Use Bylaw and is referenced in this Concept Plan. The policies contained within the Concept Plan are consistent with the provisions of the proposed land use redesignation.

Figure 5 - Land Use Concept

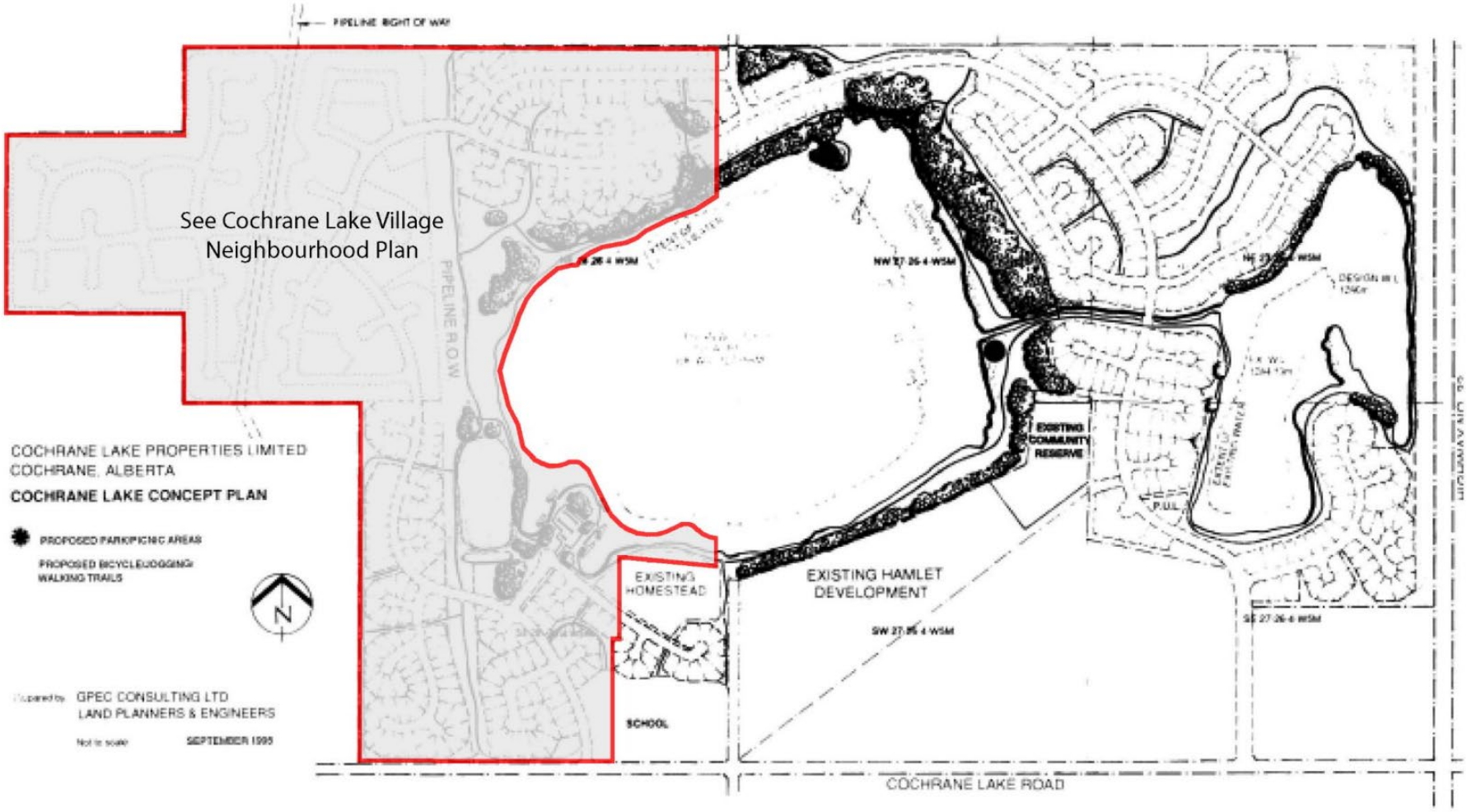


FIGURE: 5

4.8 Environmental Considerations

In any development analysis it is essential to consider the environmental limitations and opportunities in concert with the physical development analysis. In order to establish the appropriate mitigative measures to minimize any negative impacts of development the evaluation of the lands vegetation, topography and wildlife habitat is necessary along with consideration of the archaeological and historical significance of the land.

Included in the evaluation were such matters as development proximity to water bodies, slope protection, retention of vegetation adjacent to water bodies and on slopes, storm water management plans and general construction management.

Chiron Environmental Services Ltd. undertook an assessment of vegetation and wildlife habitat on the subject lands and present their conclusions and recommendations in a summary letter report, a copy of which is contained within the Appendix. The following extracts, which were taken from this report, illustrate how the Concept Plan successfully addresses opportunities and limitations which were identified.

Incidental sightings of wildlife and all wildlife signs were recorded during the site visit. A large variety of waterfowl and shorebirds was found on both lakes. Most of these species will nest in vegetation on the shore. Other waterfowl and shorebird species may utilize the lakes during migration in the spring and fall.

The vegetation at fourteen sites within the assessment area was observed and documented. As much of the land in the assessment area is cultivated, the majority of the vegetation field work was conducted in the vicinity of the two lakes

Recommendations

Based on this preliminary reconnaissance, the area is not considered to have botanical concerns that would preclude the proposed development. Based on the preliminary reconnaissance, a few wildlife concerns should be addressed. It is recommended that a buffer zone of trees and shrubs be maintained around the lakes and slough for maintenance of wildlife habitat and viewing opportunities. This buffer will provide nesting area for waterfowl, shorebirds, and other birds. It will also provide some set-back distance for species which may be sensitive to human disturbance. The lakes and shorelines may also be an important stopover point during migration. Cochrane Lake is one of the largest lakes in the area and has the potential for a large variety of migratory waterfowl and shorebirds in the spring and fall.

It is suggested that wildlife corridors be maintained throughout the development to allow ungulates, carnivores, and other animals access to the water. Leaving undeveloped, protected

areas will allow wildlife passage and will increase the aesthetic appeal of the area. It appears that the lakes are currently used by pedestrians and occasional vehicles, and such corridors may also provide nature paths for human use.

The Phase I Environmental Assessment prepared by Chiron Environmental Services Ltd. is also contained within the Appendix of the Concept Plan. The findings indicate that the level of current environmental risk at the Plan area is low. No evidence of contamination was found during the assessment and no further action is warranted. These assessments were undertaken as required by the Municipal District's policy requirements for preparation of a Concept Plan and are submitted in support of both the Concept Plan and the Land Use Redesignation application.

4.9 Transportation

The proposed road system allows for ease of access to the new development while integrating existing development and minimizing any negative impacts on the existing residences. Alternate access is provided to the north via the existing undeveloped municipal road allowance between sections 33 and 34, Twp. 26, Rge. 4, W5M and in the long term via the west entrance from the existing developed road allowance. Coupled with the two southern access points this system provides adequate capacity for the total development. Discussions with Alberta Transportation have addressed the capacity of Highway 22 from Cochrane to the vicinity of the development and identifies capacity considerations and design upgrades to accommodate this development. Consideration has been given to the intersection with the Cochrane Lake Road regarding the need for addition of turning lanes to improve traffic flow and general safety. In addition the projected need and timing of upgrades to the intersection and Cochrane Lake Road itself will be identified in the Policy section of this Plan and the Land Use Bylaw. The Traffic Impact Analysis and preliminary design considerations form part of this Concept Plan submission and the requirements of Alberta Transportation and Utilities are addressed both in the Concept Plan and the Land Use Bylaw Amendment.

All internal roads will be designed and developed in accordance with established design cross sectional elements which will form part of detailed design at the subdivision stage. It is intended that a modified rural cross section will be used, minimizing the need for "piped" storm sewer systems, yet providing a pleasant and well maintained appearance. All roadways shall be paved throughout and as the development is to be undertaken on a "bare land condominium" plan these roads shall be private and will be the maintenance responsibility of the Condominium Association.

Figure 6 - Transportation Network

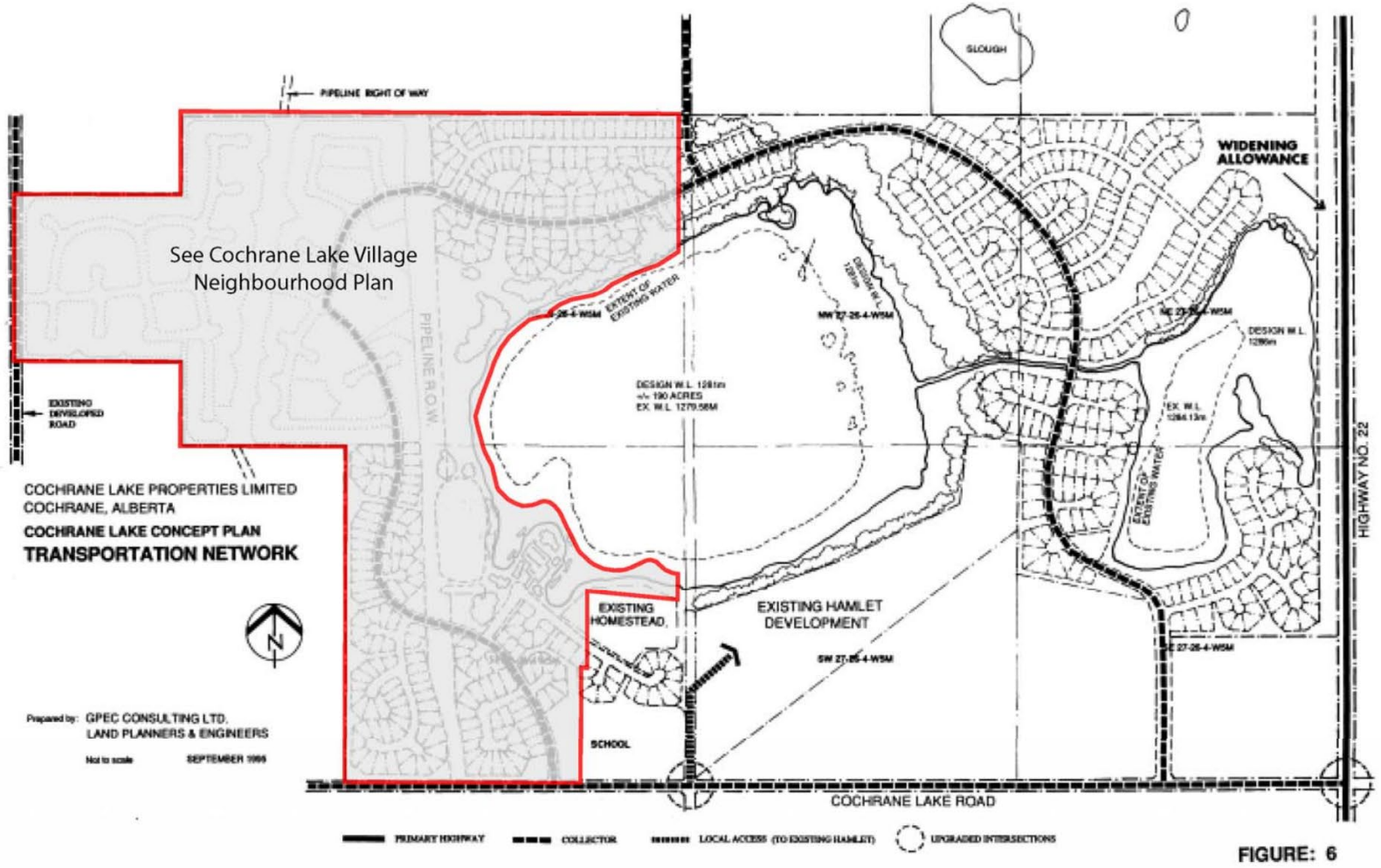


FIGURE: 6

4.10 Utility Services

The utility systems required to service the residential lots will include water, sanitary sewer, electric power, gas, telephone and cable television service. These utilities will be developed to accepted industry standards and in accordance with construction advertising and approvals required from Alberta Environmental Protection and in keeping with Development Agreements and Direct Control guidelines approved by the Municipal District. All systems will be located within road allowances or utility easements as required and will be designed to expand on a staged basis.

Figure 7 - Water Distribution

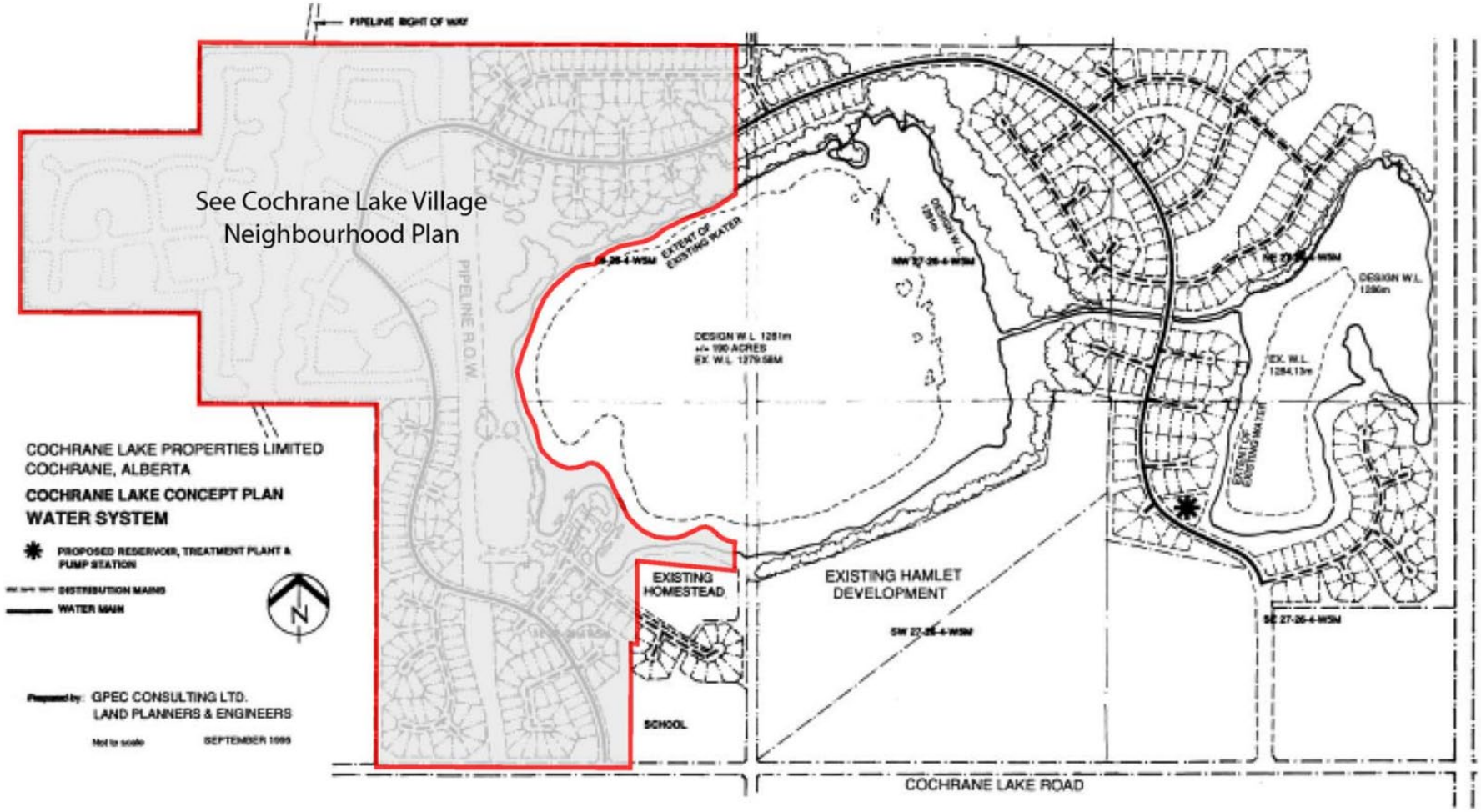


FIGURE: 7

Figure 8 - Sanitary Sewer System

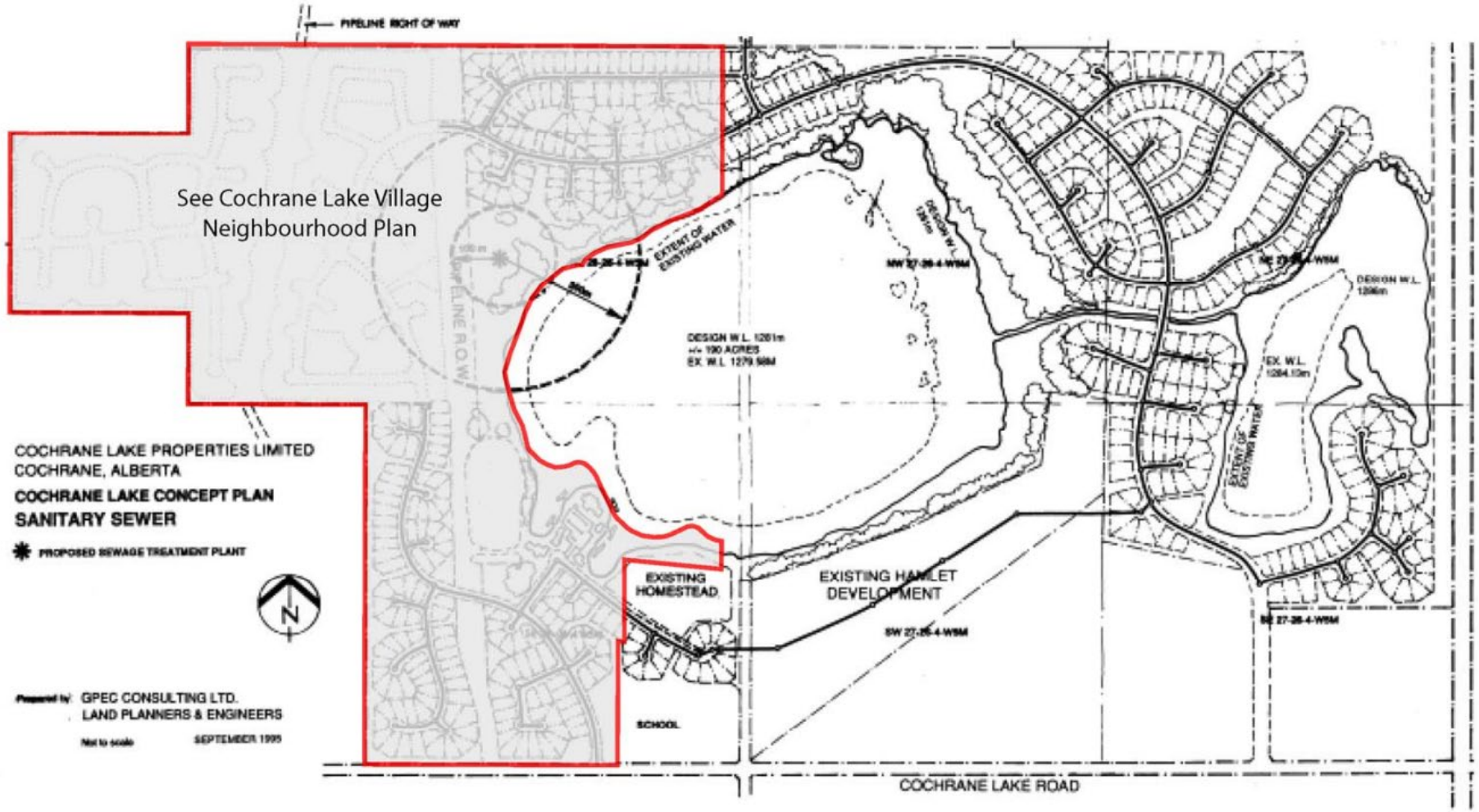
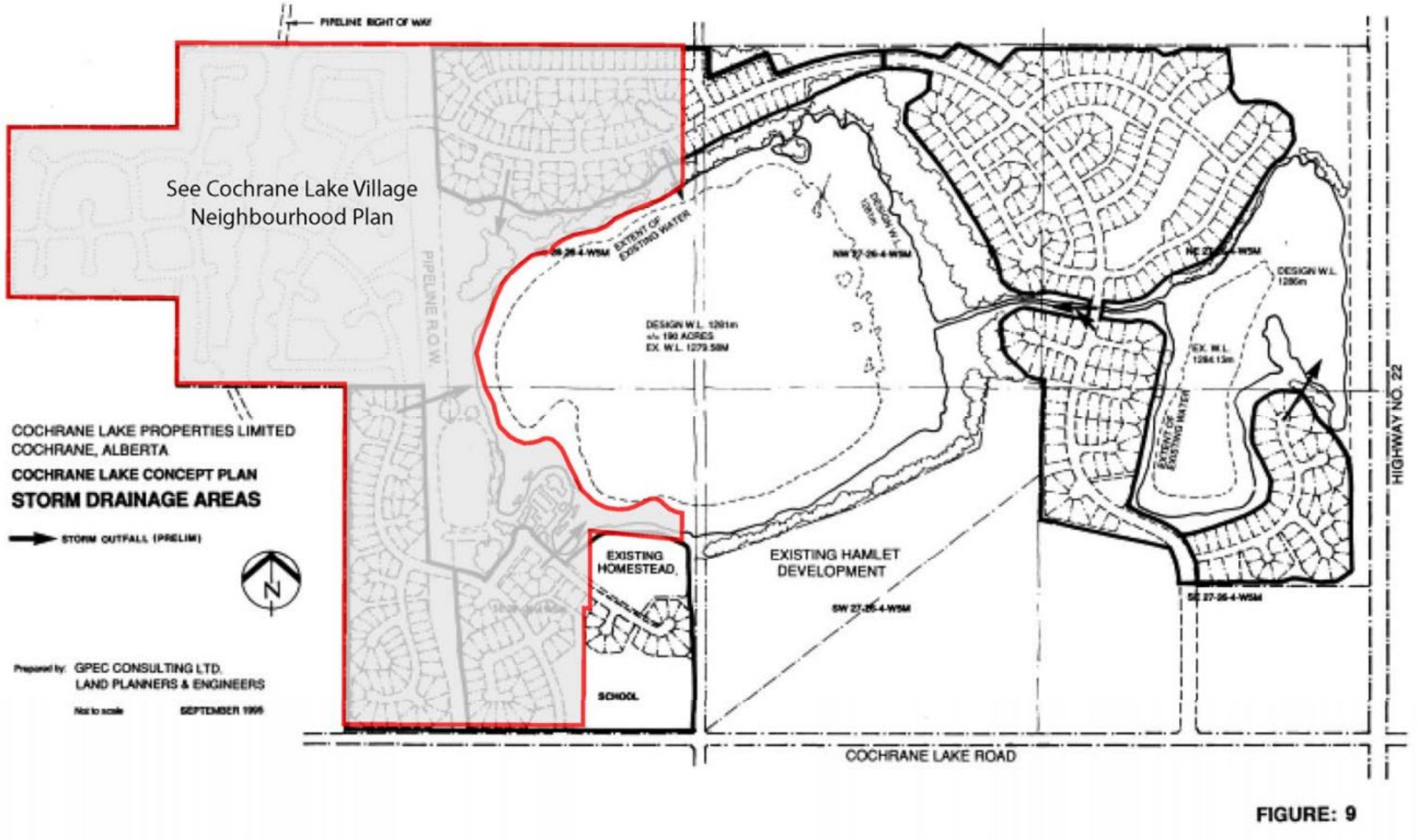


FIGURE: 8

Figure 9 - Storm Drainage Areas



All supply and main trunk requirements are discussed in detail later in this Concept Plan in Section 5.0 - Utility Infrastructure and are the subject of current applications and processing by Alberta Environmental Protect ion.

4.11 Open Space Provisions

In accordance with the provisions of the Planning Act, a total of 10% of the lands contained within the Plan area will be dedicated in the form of Municipal Reserve or provided as cash in lieu. In addition, with the cluster style of development there is a comprehensive trail system which will be developed throughout the development area.

The Reserve land calculation has been provided based on the Concept Plan and addresses school reserve requirements as identified by the Rocky View School Division planners. The reserve calculations are subject to final confirmation at the tentative plan of subdivision approval stage for each development phase.

4.12 . Density Considerations

Based on an analysis of the opportunities and limitations of the Plan area for development and consideration of the utility supply requirements, the following parameters were applied in establishing both the total scope and overall density of the development.

Based on the form of development in the existing Hamlet, the surrounding area and the targeted market for this proposed development, residential lots in the size range of 1,000 to 2,000 square meters (10,800 to 21,500 square feet) are proposed. While a variety of housing forms are to be considered, the majority will be of the detached, single family form.

Provision will be made for some areas of semi-detached housing development along with a small convenience commercial outlet and a Village Core, however, the overall concept is for a low density, quasi-rural/residential style of development.

4.13 Development Staging

In a development of this scale several stages are necessary over a six to eight year build-out period. Subject to market absorption rates a total of four residential stages of development will be necessary. All utilities and access requirements are integrated with the staged concept to ensure that each stage is economically viable and provides an adequate level of service to the proposed lots. The Concept Plan establishes “Development Phases or Cells” which are referenced both in the Proposed Land Use Bylaw amendment and the Phasing Plan included in this Concept Plan.

The following is the general projected sequence of development based on the Phasing Plan and assumed market absorption and other economic based issues.

a) Phase 1 - Residential Cell and Existing Homestead
b) Phase 2 - Residential Cell

c) Phase 3 - Residential Cell including School Site and Recreation Development Phase

d) Phase 4 - Residential Cell

Figure 10- Phasing

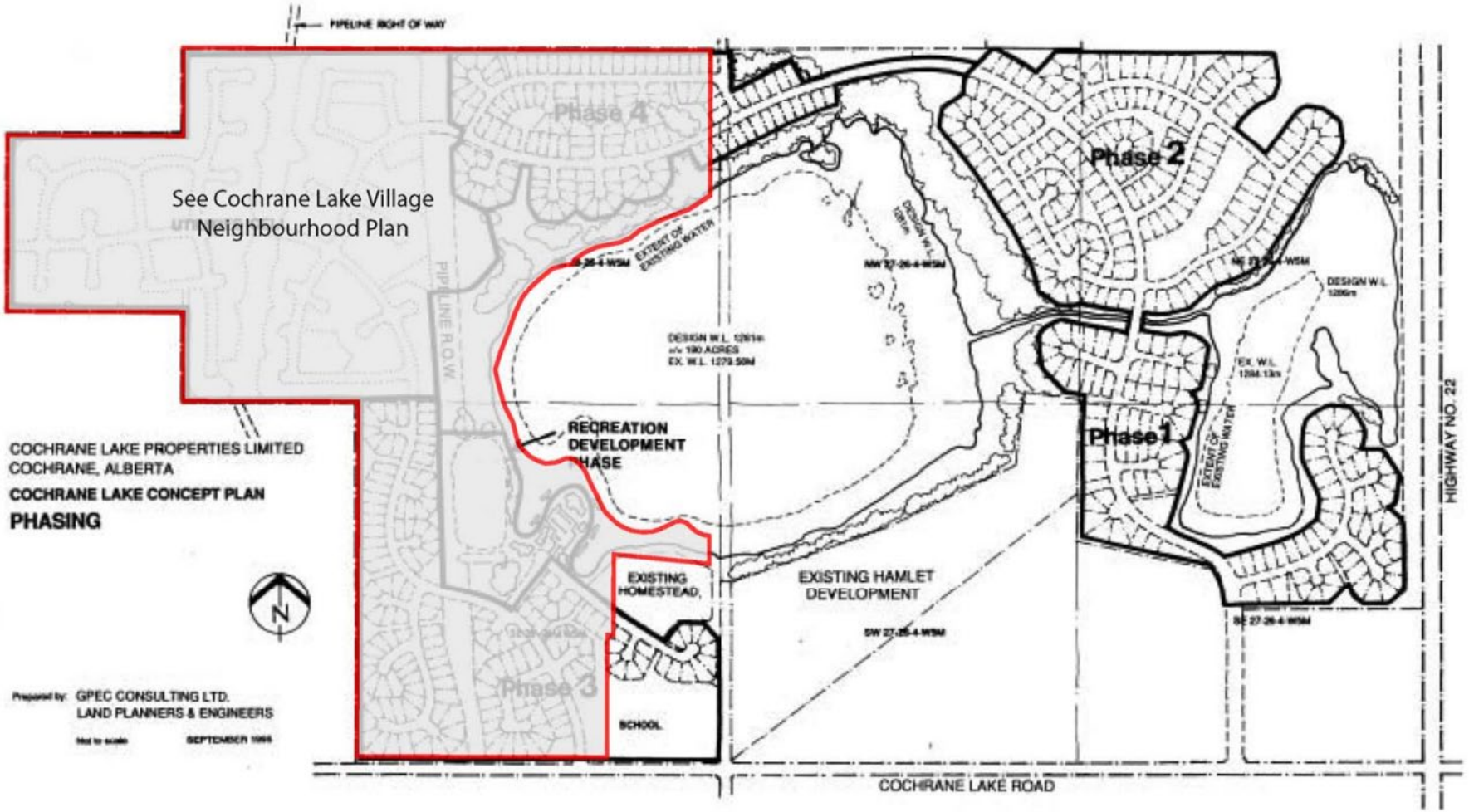


FIGURE: 10

5.0 UTILITY INFRASTRUCTURE

5.1 Existing Utilities

Existing development in the Hamlet of Cochrane Lake is served by individual water wells for each residence and individual septic tanks and fields for sewage treatment and disposal. Single-phase electric power, natural gas and telephone service are available within the Hamlet and adjoining areas. Three phase power exists on the westerly boundary of the lands.

Natural gas pipelines traverse the property within the east half of Section 28 (on the west side of the lake) in a north-south direction and two HPV pipelines are located further west within the north west of Section 28.

As part of the detailed analysis, for the purpose of this Concept Plan process, an evaluation of the existing franchised utility infrastructures was undertaken in consultation with the Utility Companies. At this time, it is noted that the infrastructure can be expanded to meet the needs of the proposed development.

5.2 Water Supply, Treatment and Distribution Requirements

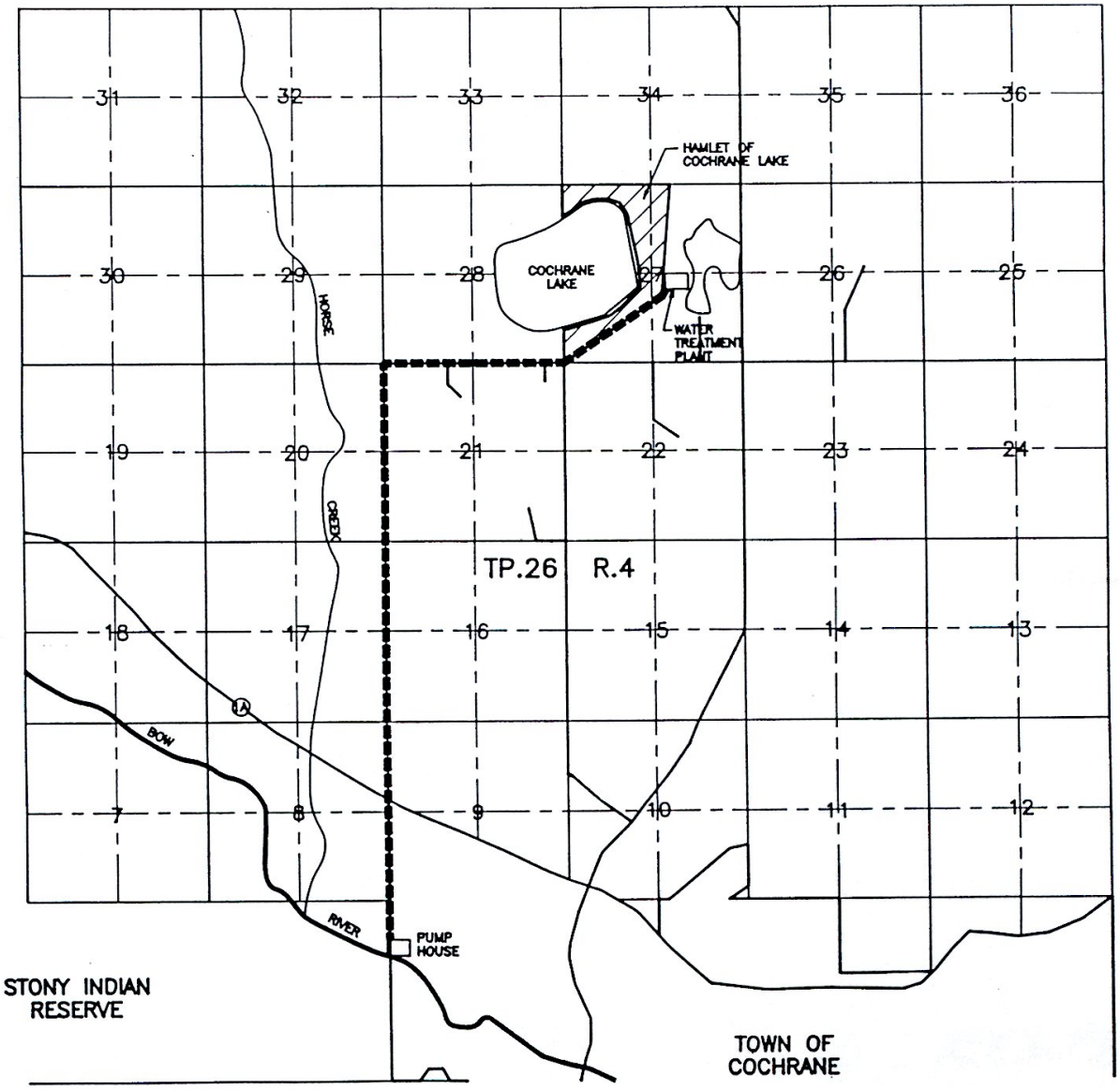
The overall water requirements for the development must be provided by a pipeline system from the Bow River to meet the domestic needs of a development of this size and also to provide make-up water for maintenance of lake levels and some area irrigation.

The preferred option is the construction of an intake system at the Bow River, west of the Town of Cochrane and the construction of a dedicated supply main from that point to the development area. At this time, it is clear that the Bow River is the closest source and that the best available method of transmission will be a direct pipeline. This option is the subject of applications to Alberta Environmental Protection for a license to divert water under the provisions of the Environmental Protection and Enhancement Act.

Central to the considerations of providing water to the development was the need to secure the necessary pipeline right of ways from the source to the point of use. Several options were investigated prior to selection of the final route which formed the basis of the recent application to the M.D of Rocky View and the Town of Cochrane for the right to use an existing Municipal Road Allowance.

Figure 11 shows the area between the Bow River and Cochrane Lake and delineates the conditionally approved alignment for the supply pipeline. Finalization of the preferred option will require a formal agreement with the Municipality and the Town following land use redesignation as well as the necessary permits and licenses from Alberta Environmental Protection and any easement acquisition required.

Figure 11 - Water Supply Main & Pumphouse Locations



COCHRANE LAKE PROPERTIES LIMITED
COCHRANE, ALBERTA

COCHRANE LAKE CONCEPT PLAN

WATER SUPPLY MAIN & PUMPHOUSE LOCATIONS

N

NOT TO SCALE

PREPARED BY:
GPEC CONSULTING LTD.
LAND PLANNERS & ENGINEERS

SEPTEMBER 1995

FIGURE: 11

An Application for License, Pursuant to *Sec.* 11 (1) (a) (b) (c) of the Water Resources Act, to divert 995 acre-feet of water annually from the Bow River for the proposed development has been submitted to Alberta Environmental Protection and is currently being processed.

Primary consideration was the amount of water required for development needs based on the scope of the development contemplated.

5.2.1 Domestic Water Requirements

Based on the assumption that the full build out of the development will encompass approximately 875 residences with ancillary uses such as recreational/amenities and a local convenience commercial centre, the following domestic needs are calculated:

Table 2 – Water Requirements

Proposed residential	875 homes @ 450 igpd	393,750 igpd
Existing residential	50 homes @ 450 igpd	22,500 igpd
Proposed Local Commercial		10,000 igpd
Recreational/Amenities Areas		10,000 igpd
TOTAL DAILY REQUIREMENTS		**447,500 igpd**

The average daily requirement for domestic water for residential use is based on an average occupancy of 3 people per dwelling and 100 gallons of water per person per day. The daily consumption level per capita for domestic water assumes that the development will institute requirements for water conserving fixtures in all new residences and the installation of water meters. In addition an average allowance of 150 gallons per day per residence is added for lawn and garden irrigation purposes. All amounts for other uses are baseline assumptions only pending detailed design for each use proposed.

Supply, treatment, storage and distribution of water for potable use is governed by a number of guidelines issued by Alberta Environmental Protection, Environment Canada, as well as good engineering practice. It is proposed that a package, gravity-style water treatment plant be constructed to treat the required daily volumes with storage in underground, reinforced concrete reservoirs. The reservoirs would be sized to allow for peak use requirements and fire fighting capabilities. Distribution pumps in the treatment plant building would pressurize the treated water and distribute it to the end users within the development via a network of main distribution pipes and services to each lot. The provision of water system infrastructure will be phased to reflect the staged development of the project.

5.2.2 Lake Level Control and Local Irrigation Requirements

In order to maintain constant lake levels and to control water oxygen content and algae growth, it will be necessary to augment the flows from natural drainage and the existing springs which

currently feed into Cochrane Lake. Based on the design lake levels, which result in a total water area of approximately 102.15 hectares (252.4 acres), it is estimated that approximately 1.5 million cubic meters (330 million gallons) will be needed initially to bring the lake to design depths. Annually, seepage, evaporation and water withdrawn for local irrigation will have to be compensated. It is estimated 630,000 cu.m. will be necessary to compensate for evaporation, 315,000 cu.m. for seepage to adjacent ground and 30,000 cu.m. will be needed for local amenities irrigation. Estimates indicate that the natural runoff and existing springs will be capable of supplying a significant portion of the annual requirement although provision to back up this system to 50 percent capacity would require an average daily dedication of 2670 cu.m. (587,000 gallons) to be on standby for fluctuations in natural capabilities.

5.3 Sanitary Sewage Collection, Treatment and Disposal Requirements

Given a total domestic water requirement of 305,00 igpd (excludes amount used for irrigation), it is estimated that the resultant flows will approximate the treatment and disposal requirements. Collection, treatment and disposal of sewage is governed by a number of guidelines issued by Alberta Environmental Protection as well as good engineering practice. Collection of the effluent from the total development will be accomplished by gravity sewer mains and manholes and a series of small lift stations where required. These will lead to a central sewage treatment plant which will treat the sewage to provincial standards for discharge and disposal.

Several disposal options were investigated and the current preferred option is as follows. The effluent could be treated to the provincial standards for disposal through wastewater irrigation of agricultural lands within the Plan area.

The development as proposed will be serviced by a package sewage treatment plant and treated effluent will be stored in a pond with an average depth of 4 m (13 feet), located on the NE ¼ Section 28 of the Plan Area. The volume of the pond is sufficient to store 365 days worth of treated effluent from the completed development as required by Alberta Environment guidelines. The treated effluent will be applied to the lands, within the portion of the NE 1/4 Section 28 and the NW Section 28 which lie west of the Nova Pipeline ROW and which are identified as the “Utilities Cell” in Figure 10 - Phasing, by pivot irrigation systems each year. Application rates vary by crop and region, however, based on application of 460 mm (1.5 feet) of treated effluent to pivots irrigating 72.84 hectares (180 acres) of either a forage crop in support of pasture or a tree farm, all effluent will be disposed of in a productive manner.

In order to achieve this objective of treated effluent disposal through irrigation the developer has undertaken to designate those lands which lie within the north half of Section 28 within the Plan area and west of the Nova pipeline ROW as a Utility Cell thereby facilitating the treatment of estimated effluent flows from approximately 590 new home sites within the four (4) residential phases and the Recreation Cell and the Municipal/School Reserve phase of the proposed

development.

Should an alternative method of disposal, off-site, be approved at some future date a residential overlay for the Utility Cell is provided which accommodates an additional 285 home sites. Should this option become available in the future, the Land Use Bylaw would require amendment at that time.

These options will be further evaluated during the subdivision approval process and the necessary approvals for permit to construct and licensing by Alberta Environmental Protection.

5.4 Storm Water Management

Given that Cochrane Lake is the drainage basin for local area, it will be in the best interest of the development to protect the lake from degradation due to runoff characteristics. For this reason development of the road and storm sewer network as well as surface drainage will incorporate provisions for areas to control the silt content of the runoff. The storm water management program has been the subject of study during the Concept Plan preparation stage of this project. While general standards are recommended at this time, detailed design will form part of the subdivision approval and Development Agreements with the Municipal District for each stage of development.

The development proposal includes increasing the area of Cochrane Lake to 75 ha by increasing its water level from 1279.6 m to 1281.0 m and the east lake to 27 ha by increasing its water level from 1284.1 m to 1286.0 m. Both of these proposed water levels are well below the property lines of the lots in the existing hamlet or adjacent lands. It is intended that a flowing channel between the east lake and Cochrane Lake be created. Water pumped from the Bow River would be introduced into the east lake and flow into Cochrane Lake by gravity through the channel. Water from Cochrane Lake will be recirculated back to the east lake to maintain aesthetic flows in the channel. Some enhancement of the water quality is expected because of the water movement.

As both Cochrane Lake and the east lake are land-locked and do not have defined inlets and outlets, artificial manipulation of the water levels in the lakes must take probable storm and snow melt events into account. As the development is to be constructed on the lands surrounding the lakes, a stormwater management plan is necessary to safely convey storm water through the subdivision and into the lake.

5.4.1 Development Contributory Areas

5.4.1.1. Area Delineation

Both Cochrane Lake and the east lake are land-locked water bodies. There is no inlet or outlet, however a reasonably regular spring is located at the northeast shoreline of Cochrane Lake. Water losses are limited to evaporation, plant uptake and seepage. Table 3 has been prepared based *on* provincial 1:50,000 contour mapping and indicates that the contributory area is bounded by Highway 22 to the east and includes the following lands:

Table 3 - Drainage Areas

East half of SE1/4 Sec32-Twp26-Rge04-W5M	32 ha
S 1 /2 Sec33-Twp26-Rge04-W5M	130 ha
S1/2 Sec34-Twp26-Rge04-W5M	130 ha
Sec27-Twp26- Rge04-W5M	260 ha
Sec28-Twp26-Rge04-W5M	260 ha
A portion of NE1/4 Sec29-Twp26-Rge4-W5M	20 ha
N 1 ***/2*** Sec22-Twp26-Rge04-W5M	130 ha
N E I /4 Sec21 -Twp26-Rge04-W5M	65 ha
East half of NW1/4 Sec21 -Twp26-Rge04-W5M	32 ha
Total	**1,059 ha**

The lands are generally a mixture of pasture, cropped land and rural residential subdivisions. Cochrane Lake and the east lake are both located in Sec 27 and Sec 28-Twp 26-Rge 4-W5M. The lands in question have a very low antecedent moisture content indicating a large ability to take moisture. Unless frozen conditions are encountered, very little of the land surface could be considered impermeable.

5.4.1.2. Rainfall Considerations

The total flow generated by runoff from any watershed is comprised of rainfall, snowmelt or both. In Alberta, the governing event for urban storm water management is rainfall. Many methods for predicting the duration and amount of runoff to expect from a given rainfall event have been developed. These include computer simulations (e.g. HYMO, ILLUDAS, CANSWMM, etc.), Chicago hyetograph as well as historic hyetographs developed from local data by Atmospheric Environment Services of Environment Canada, Isochrone Method and Unit Hydrograph Method. Generally, computer simulations using SWMM are performed based on the historical storm data available and run at a number of durations to determine the critical storm duration. This critical storm duration is used to guide designers in predicting and accommodating large scale storm flows.

These simulations are reasonably accurate in predicting storm events for large basins. Smaller basins (e.9. 50 ha or less) generally use the traditional Rational Method to predict storm events. In the Calgary area, the Rational Method is based on:

Q (cu.m/sec) = 0.00278 x C x i (mm/hr) x A (ha)

This method of stormwater prediction is very sensitive to the selection of the co-efficient "C" which is intended to represent the imperviousness of the ground surface. Certainly, cultivated ground (C=0.25) is much more capable to take on and hold runoff that an asphalt surface (C=0.75) or roof top (C=O.9). Generally, the value given to an area is a weighted average representing the variety of surface present in the area.

5.4.1.3. Water Quality Concerns

The chemical composition of runoff water is generally accepted to be dependent on the nature of the land use of the catchment area. *As* water quality in both the east lake and in Cochrane Lake *is* a primary concern to the development, it should be addressed as part of the management program. Water quality as well as the capabilities of both bodies of water to assimilate incoming stormwater are key to the successful maintenance of good quality water in the lakes. Post-development erosion and sedimentation are also key design issues that are addressed at the detailed design stages.

5.4.2 Design Considerations

5.4.2.1. Minor Storm Sewer System

Storm Water Management strategies usually depend on the "dual drainage system" to accommodate a variety of possible storm events while still being cost effective. The minor component of the dual system uses a series of catch basins, inlets and trunk mains to carry smaller storm events through the developed areas to the receiving body. Figure 9 depicts the smaller drainage basins inherent to the development and shows locations of trunk mains that are proposed to direct area runoff through the development to Cochrane Lake and the east lake. These mains will be designed by the Rational Method using the 1:5 frequency of return intensity/duration curve published for the City of Calgary area.

5.4.2.2. Major Storm Sewer System

The major system consists of swales, roadways and identified overland drainage channels that are dedicated to transporting major event storm flows. Typically they are designed to accommodate 1:100 year rate of return frequency. A lot grading plan is essential to the success of the overland drainage scheme.

5.4.3 Special Considerations

It is generally accepted that the roof eavestrough and downspouts be surface drained in order to

direct roof flows to the overland or major storm sewer system. Weeping tile drains are occasionally seen tied to the sanitary sewers. This practice has been discouraged in later years and weeping tile is not considered to be necessary on any of the proposed lots with the possible exception of the recreation center.

It is proposed that no intermediate dry ponds will be incorporated into the design. To minimize sedimentation and trap possible pollution, catch basins will be installed with traps or sumps and storm sewer manholes discharging to the lakes will be similar to the new "Stormceptor" manholes produced by Lafarge Construction Materials. These manholes are intended to remove oil and sediment from urban runoff and have been accepted by a number of municipal authorities.

5.4.4 Operations and Maintenance

Operation of the lake system as a recreational and wildlife asset as well as a receiving body for snowmelt and rainfall runoff requires a careful discussion of management of the lake levels as well as available storage volumes.

Management and operation of the east lake can be simplified somewhat because there will be the capability to bring water from the Bow River and to pass water to Cochrane Lake. The east lake has limited recreational opportunities; however, it does contain many elements that make it suitable for waterfowl and wildlife. Stable water levels, especially in nesting season, are critical to this aspect of lake level management.

Cochrane Lake must be managed as a closed lake system in that water levels must be progressively lowered at times when a future inflow of runoff is anticipated. For example, winter lake levels may be left low by an amount that would allow for the largest foreseeable snowmelt runoff event to be contained in the remaining lake freeboard. Prior to anticipated rainfall seasons, the lake inflow from the Bow River would be turned off to slowly lower the lake level in anticipation of the storm runoff.

It should be noted that the size of Cochrane Lake allows for considerable runoff to be directed towards the lake before a significant increase in the lake level is noted. The pipeline from the pumphouse at the Bow River will be designed to take water back down to the river from the lake instead of bringing water from the river to the lake. In anticipation of high run-off periods when the lake(s) are already at operating levels this will be the preferred method of lowering lake levels to accommodate the run-off and avoid any potential flooding.

6.0 POLICY FRAMEWORK

This section discusses the implementation of the Concept Plan objectives and principles of development outlined in Sections 3 and 4 and reflected in the proposed Land Use Concept.

The Cochrane Lake Concept Plan provides the Municipal District of Rocky View No. 44 with a master planned community consisting of residential land use, recreational lands use and support facilities. The development scenario shown on Figure 5 illustrates a residential community focused on the lakes and open space and trail systems which are linked throughout and access the proposed Village Core situated on the south-west shore of Cochrane Lake.

The land areas provided for each use or phase in the Land Use Bylaw are approximate only and may vary without need for amendment of this Plan. The Concept Plan provides the Municipality with the opportunity to manage development and growth in the Plan area and allows for but is not limited to:

i. The provision of full scale utility systems both in terms of sewer and water;

ii. The provision of community facilities such as the proposed Village Core, school site, parks and picnic areas and pedestrian/bicycle trail systems;

iii. Economic viability of the amenities and infrastructure both in terms of the utility servicing and recreational uses, by comprehensively planning and developing the entire Plan area;

iv. The review and resolution of external transportation issues prior to development.

6.1 General

Principle:

- **To ensure all development is in accordance with current statutory policy and municipal and provincial standards.**

6.1.1 All subdivision and development shall conform to statutory documents adopted by Council:

i. Bylaw C-3894-92 being the Municipal District of Rocky View No. 44 General Municipal Plan;

ii. Bylaw C-1725-84 being the Municipal District of Rocky View No. 44 Land Use Bylaw.

6.1.2 All subdivision and development shall be consistent with the relevant guidelines of Environment Canada, Alberta Environmental Protection and Alberta Transportation and Utilities.

6.1.3 Development Approval shall be contingent upon a signed Development Agreement between the Municipal District and the Developer.

6.2 Residential

Principles:

- **To provide a type and level of development that reflects the site characteristics of the Plan area;**
- **To allow the provision of a variety of residential land uses attendant and supportive to the recreational focus of the development;**
- **To allow flexibility with respect to parcel size and density;**
- **To provide the opportunity for land ownership based on a bare land condominium ownership.**

6.2.1 Specific densities for residential land use identified in the Plan area shall be determined at the plan of subdivision stage and shall be a function of the site characteristics and suitability within the Plan area.

6.2.2 Pursuant to the Land Titles Act and the Condominium Act, Phases 1 and 2 of the residential component will be based on bare land condominium ownership.

6.2.3 In order to retain many of the natural attributes of the Plan area i.e. vegetation, views and topography, residential land use shall occur in such a manner as to minimize impact upon the site and ensure that views, vistas etc. are protected.

6.3 Recreation Development - Open Space and Municipal/School Reserve

Principles:

- **To provide for the development of recreational use, amenities and supportive uses;**
- **To ensure that suitable community services are provided;**
- **To provide pedestrian/bicycle/nature trails for the use and benefit of the development.**

6.3.1 A Municipal School Reserve (MSR) consisting of 15.0 acres shall be dedicated to accommodate the School District's requirement for an elementary and/or middle school. The following criteria shall be used for consideration in judging the suitability of a school site:

i. suitable site topography to maximize use;

ii. preferably on a collector road;
iii. placement on site to optimize use of land for school and playing fields;
iv. placement for minimum impact on nearby residences and student protection;
v. all turn access on major collector roads;
vi. pedestrian crosswalks as required.

6.3.2 A series of pedestrian/bicycle/nature trails connecting the key elements of the development shall be provided. The specific locations and alignments shall be established at the tentative plan of subdivision stage. Special emphasis shall be focused on a takeshore facility linkage providing access to beach and picnic areas and nature viewing.

6.3.3 The design and construction of any man made features associated with the lakeshore shall be carried out by a qualified professional to the satisfaction of the Municipal District, Environment Canada and Alberta Environmental Protection.

6.3.4 Public access to the lakeshore areas and pathway systems shall be facilitated through land dedication, easements and signage.

6.4 Village Core

Principles :

- **To provide a type and level of recreation centre/activities that meets the needs of the residents of the Plan area and the surrounding recreational district.**

6.4.1 The Village Core comprising approximately 2.75 acres (1.11 ha) will serve as the focal point for the Cochrane Lake community. This centre will provide support recreational amenities to service the needs and requirements of the Plan area residents, the existing hamlet area residents and the resident of the Cochrane Regional Recreation area.

6.4.2 The Village Core may provide, but is not limited to the following uses: recreational opportunities, small-scale commercial uses, and facilities for human-powered watercraft rentals. The proposed Village Core shall be scaled to service the Plan area and surrounding residents and:

i. shall derive access from developed roadways;
ii. shall be architecturally controlled based on an overall architectural theme including landscaping, paved parking areas, street lighting etc.

6.5 Environmental

Principle:

- **To ensure that all development on or near environmentally sensitive areas as identified within the evaluation of environmental conditions is supported by an Environmental Overview satisfactory to Alberta Environmental Protection and the Municipality.**

6.5.1 Where development is proposed odor adjacent to slopes greater than 15 percent, a geotechnical evaluation and slope stabilization analysis shall be undertaken by a qualified professional to the satisfaction of the Municipality and Alberta Environmental Protection.

6.5.2 As a condition of subdivision approval, a grading plan detailing proposed lot and building grades shall be prepared to the satisfaction of the Municipality.

6.5.3 Environmentally sensitive areas may be utilized for passive recreational uses such as parks and trail systems to the satisfaction of Alberta Environmental Protection and the Municipality.

6.5.4 Prior to the issuance of Development Permits an Environmental Overview report shall be prepared to the satisfaction of Alberta Environmental Protection and the Municipality.

6.6 Lands with Historical Significance

Principle;

- To address significant historical sites in the Plan area.

An evaluation of the Plan area by staff of the Archaeological Survey of Alberta has identified the potential for the proposed development to adversely impact any archaeological resources. This review indicates that a Historical Resources Impact Assessment for archaeological resources be undertaken on the Plan area prior to its development. The proposed project is located on erosional uplands which are a remnant of the Nose Hill complex. This feature has provided evidence of ancient occupations in deeply buried contexts throughout the area. The presence of standing water (or marsh) would have been attractive to both game and waterfowl. Although no known sites are present these characteristics lead to the conclusion that there is a high potential for archaeological sites within the Plan area, both on the surface, and in deeply buried contexts. Therefore the Historical Resources Impact Assessment, which is to include deep testing, is recommended.

A Palaeontological and Historical period resources impact assessment is not recommended however, if any fossils or such remains are encountered the Royal Tyrell Museum and the Historic Sites and Archives Services should be contacted.

6.6.1 All subdivisions and development within the Plan area shall adhere to the requirements of Alberta Community Development, Cultural Facilities and Historical Resources Division and a Historical Resources Impact Assessment shall be undertaken at the Developers expense in accordance with Alberta Community Development's letter of April 7, 1995.

6.7 Utility Servicing

Principal:

- **To provide a high level of services which will protect adjacent lands and provide qualify water supply and sewer service to the Plan area.**

6.7.1 Water Supply and Distribution

The development will draw water from the Bow River through licensing by the Province of Alberta and will treat the water by a provincially licensed, privately owned and operated water treatment plant. The water will be delivered by a privately owned and operated distribution system.

6.7.1.1. The water distribution and supply system required to service subdivision and/or development within the Plan area shall comprise a privately owned and operated supply system from the Bow River and distribution system designed and constructed to a standard satisfactory to the Municipality and Alberta Environmental Protection.

6.7.1.2. A reservoir, as a component of the internal water system, shall be required to provide the volumes, pressure and levels of service required to accommodate development in the Plan area and provide fire flow protection as required.

6.7.1.3. The design, operation maintenance and monitoring of the proposed water treatment facility shall comply with the Alberta Environmental Protection regulations and conditions as amended from time to time.

6.7.2 Wastewater Collection, Treatment and Disposal

The development is proposed to be serviced by a state-of-the-art package sewage treatment plant, located on the lands within the NE 1/4 Sec. 28-26-4-W5M, which will treat the effluent and store it in a pond or series of ponds prior to discharge on the lands contained within the Utility Cell through wastewater irrigation.

The level of treatment will ensure that the quality of the effluent meets the requirements of licensing by Alberta Environmental Protection and results in no negative effects on adjacent lands.

6.7.2.1. Waste water collection, treatment and disposal systems required to accommodate subdivision and development in the Plan area shall be provided by:

- direct connection to wastewater collection, treatment and disposal facilities located

within the Plan area and licensed by Alberta Environmental Protection and acceptable to the Municipality;

OR

- connection to the Town of Cochrane infrastructure.

6.7.2.2. Phasing of the sewage treatment facilities shall be determined during the tentative plan of subdivision preparation stage for the first phase of the development plan. The Developer must provide the location of the sewage treatment facility or provide locational criteria of same.

6.7.2.3. The waste water collection, treatment and disposal system may be phased to accommodate subdivision and development as required.

6.7.2.4. The design and operation and maintenance of the proposed wastewater collection treatment and disposal system shall comply with Alberta Environmental Protection's requirements and conditions.

6.7.2.5. Where a waste water treatment and disposal system is proposed within the Plan area and contains a holding pond as an element of the proposed system, no residential land use subdivision and/or development shall be permitted which contravenes separation distances acceptable to Alberta Environmental Protection.

6.8 Transportation

External Roads

Principle:

- **To establish future highway requirement that will provide for the safe and efficient movement of traffic in accordance with the long term goals of Alberta Transportation and Utilities**

Internal Roads

Principle:

- **To develop an efficient internal roadway system to service the Plan area development.**

6.8.1 Subdivision and development plans shall recognize that Alberta Transportation and Utilities require additional land for widening of Highway *22.* A strip of land in separate title shall be provided along the east side of the Plan area adjacent to the existing highway right of way of a width satisfactory to Alberta Transportation and Utilities prior to approval of subdivision for the Phase 1 Residential area.

6.8.2 A traffic impact analysis shall be provided by the Developer in order to determine the improvements required to the intersection of Highway 22 and the Cochrane Lake Road and upgrading of Cochrane Lake Road to accommodate staged development of the Plan area.

6.8.3 A strip of land shall be provided on the east side of the Plan area in addition to the required widening to provide for visual screening and noise attenuation.

6.8.4 The master drainage and grading plan shall ensure that the Highway ditch is not used to collect storm water from the Plan area.

6.8.5 A road connection shall be provided to the existing undeveloped road allowance which lies between Sections 33 and 34, to the north of the Plan area as an integral part of the road network for Phase 4 of residential development, thereby providing direct access to Secondary Road 567 to the north.

Internal Roads

A road hierarchy is proposed for the Plan area. Typical cross-sections are provided in the Appendix to this Plan.

6.8.6 Internal roads may be constructed as private roads under the provisions of a bare land condominium plan. Typical cross-sections will be as shown in the Appendix.

6.8.7 All private roads shall be constructed at the expense of the Developer and subsequently maintained at the expense of the Condominium Association formed under the proposed bare land condominium plan.

6.9 Phasing

The land use concept provides for Phasing within the Plan area. Utilities servicing and recreation amenities shall be provided concurrently with subdivision approvals of each phase in accordance with the provisions of this Plan.

6.9.1 Subdivision and/or development within the Plan area shall generally proceed in accordance with the phasing established on Figure 8. Substantial completion of approved phases shall be required prior to approval of subdivision for subsequent phases. For the purposes of this Plan substantial completion shall mean endorsement of the Final Plan of Survey for the approved phase and registration of same at Land Titles.

6.9.2 Notwithstanding Policy 6.9.1, the Municipality at its sole discretion, may issue development approval for the provisions of roads and/or utilities necessary to service the Plan Area.

6.9.3 The timing of dedication of the school site shall be as directed by the Rocky View School Division during circulation review of each phase of subdivision.

7.0 IMPLEMENTATION

The development of the Cochrane Lake Concept Plan area is regulated by the provisions of the Direct Control Land Use District. Subdivision of the lands is guided by the policies contained therein. Development Agreements between the Municipality and the Developer as a condition of development approval and the subdivision approval process ensure the regulations of the Direct Control Bylaw and the Concept Plan are addressed to the satisfaction of the Municipality.

Cochrane Lake Village

Neighbourhood Plan

Cochrane Lake Village Neighbourhood Plan

Landowner:

Macdonanld Communities Limited (MCL)
Suite 104, 122 17th Avenue
Calgary, Alberta T2G 1H2

Attention: Mr. Ken Till, Senior Development Manager

Prepared by:

Urban Systems Ltd.
#101 – 134 11th Avenue SE
Calgary, AB T2G 0X5

T: 403.291.1193
www.urbansystems.ca

December, 2020

File Number: 4466.0001.01

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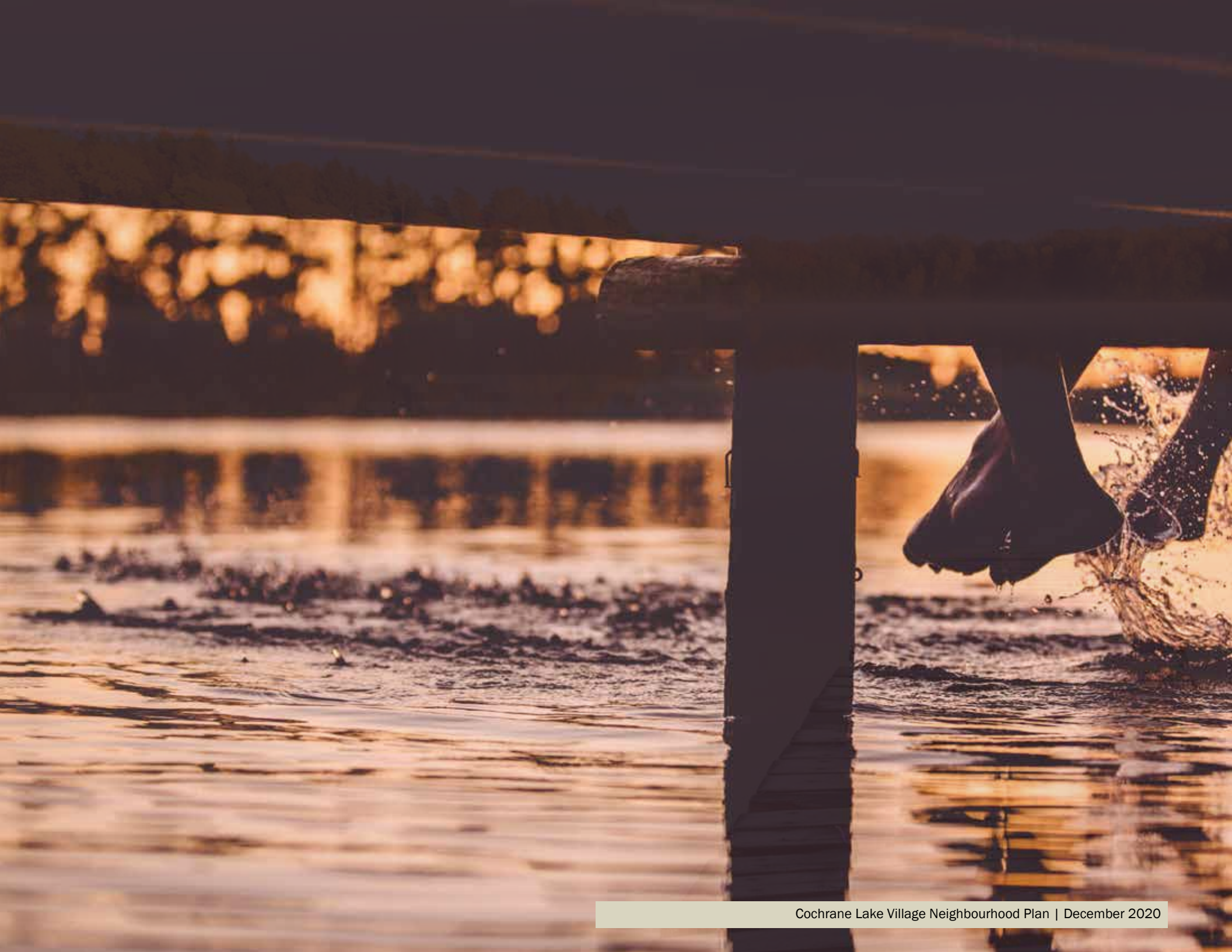


1.0 INTRODUCTION

The Cochrane Lake Village Neighbourhood Plan provides a comprehensive framework to guide and evaluate land use redesignation and subdivision applications. It also describes development details pertaining to open space design, road networks, servicing including sewer, water and stormwater management, development densities and future phasing.

The plan area lands are located within Neighbourhoods D, E, and F of the Cochrane Lake Hamlet Plan and within the Cochrane Lake Conceptual Scheme. Ultimately, the lands will form a logical extension of existing and proposed developments, including the Cochrane North Conceptual Scheme, Monterra on Cochrane Lakes, and the Hamlet of Cochrane Lake, which are located to the north and east of the site.

2.0 SITE CONTEXT

2.1 Location & Ownership

Cochrane Lake Village is located in Rocky View County, bounded to the south by Cochrane Lake Road, to the west by acreage development and Range Road 44, to the north by acreage development and agricultural lands, and to the east by Cochrane Lake, lands owned by the Colvin Family Trust, the Hamlet of Cochrane Lake, Monterra on Cochrane Lakes, and the Cochrane North Conceptual Scheme, see **Figure 1**.

The Cochrane Lake Village Neighbourhood Plan encompasses lands located within a portion of NW-28-26-4-W5M, NE-28-26-4-W5M, and SE-28-26-4-W5M, comprising approximately 141.07 ha (348.67 ac). The Neighbourhood Plan area is wholly owned by Macdonald Communities Limited (MCL).

2.2 Existing Land Uses

The Neighbourhood Plan area is undeveloped and is currently designated as Direct Control (DC) District 36 in the Rocky View County Land Use Bylaw C-8000-2020. This district was created to accompany the Cochrane Lake Conceptual Scheme. Adjacent land uses include other lands within Direct Control (DC) District 36, Agricultural, General District (A-GEN), Agricultural, Small District (A-SML), Residential, Rural District (R-RUR), and Residential, Urban District (R-URB) see **Figure 2**.

FIGURE 1. CONTEXT & LAND OWNERSHIP

FIGURE 2. SITE CONDITIONS & SURROUNDING AREA

2.3 Site Constraints and Conditions

Currently, the Neighbourhood Plan lands are used for agricultural purposes, including hay production and cattle rearing. The Cochrane Lake Village Neighbourhood Plan area is characterized by rolling topography providing views westward, towards the Rocky Mountains, and is intersected by several pipeline rights-of-way. Physical characteristics will be maintained and enhanced as gathering spaces and greenways through future development. Due to the history of agricultural land use within the plan area, there is no significant existing landscape aside from a mix of both native and introduced species of grasses. Existing conditions are highlighted in **Figure 2**.

Cochrane Lake Village is located along Cochrane Lake, forming a significant water amenity adjacent to future development. Over the years, Cochrane Lake has experienced various issues relating to water levels and water quality, impacting existing residents and landowners. MCL has undertaken technical studies, including a Transportation Impact Assessment (TIA), a Water and Sewer Servicing Strategy, a Stormwater Drainage Master Plan for the entire catchment area, a bathymetric evaluation for Cochrane Lake, and is currently undertaking a limnology study of Cochrane Lake to establish the best methods of enhancing lake water quality.

3.0 PLAN CONFORMANCE

3.1 County Plan

In 2013, Rocky View County adopted a new County Plan (Bylaw C-7280-2013), providing vision, goals, and policies to direct long-term growth and development in the County. The County Plan shows the Cochrane Lake Village lands as part of an area designated "Hamlet – Growth as per the adopted plan". In the County, Hamlets form a traditional part of the rural landscape and the Hamlet of Cochrane Lake is expected to experience moderate growth and to become a rural community with basic services.

The vision for the County Plan indicates that as part of a Hamlet, Cochrane Lake Village should:

- Have a strong sense of community identity;
- Preserve viewscapes;
- Be reflective of its history and environment; and,
- Be sensitive to the needs of all residents.

Cochrane Lake Village will be a distinctive community within the Hamlet with a range of uses, including a small-scale neighbourhood hub with commercial activity, diverse open spaces, and a variety of residential forms. Overall, the vision and design of the Cochrane Lake Village community exemplify County Plan goals and policies.

3.2 Cochrane Lake Hamlet Plan

Cochrane Lake Village is located within the Cochrane Lake Hamlet Plan, which was adopted in 2011 to provide a vision for future development in the area surrounding Cochrane Lake.

The Plan encourages future development to:

- Focus on the Lake as a central community amenity;
- Preserve and enhance natural areas for environmental integration and resident enjoyment;
- Focus on public spaces that enhance neighbourhood aesthetics and character;
- Incorporate diverse building forms that ensure garages and vehicular movements do not dominate the streetscape;
- Incorporate a range of housing choices catering to different lifestyles;
- Ensure appropriate transitions to neighbouring agricultural uses and residential infill areas;
- Ensure neighbourhood structure allows the choice to live, work, shop, and recreate within the neighbourhood; and,
- Incorporate design standards that seek to define a human-scale rural town character.

The Cochrane Lake Village Neighbourhood Plan was written in accordance with the Hamlet Plan and follows the vision and policies of the Hamlet Plan along with other relevant municipal policies.

3.3 Cochrane Lake Conceptual Scheme

The Cochrane Lake Conceptual Scheme was adopted in 1995, in support of development applications for the Monterra on Cochrane Lakes development. At the time of adoption, Monterra comprised approximately 259 ha (640 ac) and included the proposed Cochrane Lake Village lands. To date, the eastern portion of the plan area forming Phases 1 & 2 of Monterra have been developed since the adoption of the Conceptual Scheme. The intent of development within the Conceptual Scheme is to be a complementary extension of the existing Hamlet of Cochrane Lake and to provide, in part, additional facilities and utilities forming a more complete community in this area of the County.

For the Cochrane Lake Village lands, the Conceptual Scheme proposes cluster-style residential development with a small convenience commercial outlet and a recreation/community facility that supports a variety of recreation activities. In the Conceptual Scheme, the westernmost portion of the Cochrane Lake Village lands is identified as a Utilities Cell. It is proposed that these lands be used for irrigation until an alternative solution is approved – at which time the lands may be used for residential development.

The Cochrane Lake Village Neighbourhood Plan incorporates the core principles of the Conceptual Scheme, providing a residential development that embraces the natural features of its setting to create a community that caters to a variety of residents. Cochrane Lake Village will complement the existing Hamlet of Cochrane Lake and Phases 1 & 2 of Monterra to form a residential community complete with recreational and small-scale amenities that can be used by both residents and visitors of the greater area.

4.0 PUBLIC ENGAGEMENT

Outreach to the surrounding community was completed prior to the submission of the Neighbourhood Plan. In an effort to ensure the adjacent community were informed, the project team completed door-knocking at adjacent properties. This offered a chance for face-to-face conversations with neighbours, and to extend invitations to the public open house.

On December 13, 2018, a public information session took place at the Weedon Pioneer Community Hall and over 120 local residents attended. The project team was in attendance to discuss the plan and approach to development and to answer any questions.

5.0 VISION & COMMUNITY DESIGN

The overall vision for Cochrane Lake Village is to be welcoming and walkable lakeside community within the larger Hamlet area that embraces its rural setting and natural environment while providing great access for residents and visitors alike to year-round recreational opportunities.

In Cochrane Lake Village, residents and visitors are able to take in nearby amenities and enjoy the surrounding rural landscape. Rural history and all-season recreational opportunities are emphasized within the community through open spaces and amenities located adjacent to Cochrane Lake. The community will be comprised of treed, walkable neighbourhoods, diverse residential uses, a vibrant Village Core, and extensive open spaces, connected by meandering streets, beautiful vistas, and inviting trails and pathways.

This Neighbourhood Plan is responsive to the topography, with lot layouts taking advantage of existing land forms, encouraging a sensitive form of development. Engineering solutions within the plan area seek to utilize alternate stormwater management strategies with swales and water gardens where possible instead of traditional storm drains. This approach to servicing is both cost-effective and environmentally sensitive.

Cochrane Lake Village will feature an authentic and naturalized community entrance that capitalizes on the rural character of the site. Cochrane Lake Village further leverages the rural and agricultural character of the surroundings through proposed monumentation, streetscapes, architectural features, and open spaces. Some open spaces may include community gardens, as well as other recreational opportunities catering to the rural interests of the residents.

Main streets through the community will feature planted boulevards where possible, with local streets incorporating a more modest design in order to ensure differentiation. The main community access road will provide vistas of both lake and mountains with extensive greenery on each side of the road. Overall, the Neighbourhood Plan encourages walkable streets and pathways, ensuring that residents and visitors alike have choice when navigating through the community.

FIGURE 3. CONCEPT VISION

RESIDENTIAL POLICIES

5.1.1: Cochrane Lake Village Neighbourhood Plan shall achieve a maximum of 800 residential units.

5.1.2: Residential development shall be designed to be sensitive to adjacent acreage and agricultural development by incorporating complementary interface and transition treatments.

5.1.3: Both laned and front drive product shall be incorporated into the overall design of residential development to support community interaction, street parking, continuous sidewalks, and consistent frontage with a strong relationship between dwellings and the street.

5.1.4: All residences in the Plan Area shall be located within a 400 metre radius (or 5 minute walk) of some form of open space.

5.1.5: At the subdivision stage, the Developer shall prepare and implement architectural design guidelines for all residential development that reflects the community's character and ensures an aesthetically coordinated appearance of development from the street and public areas.

5.1 Residential Development

The area around Cochrane Lake is experiencing renewed interest in future residential development through the approval of the Cochrane North Conceptual Scheme, and the eventual build-out of Monterra on Cochrane Lakes. Residents are attracted to the natural and recreational amenities, and the lifestyle options offered outside of the city. To support development in the area, Cochrane Lake Village will contain a variety of housing types ranging from low density single-detached estate homes to higher-density townhomes. By offering a range of housing types, this new community will attract a diverse population of residents in different stages of life.

HOUSING TYPES

Single-family homes will be located throughout the plan area, with options for laned, laneless, and estate homes. Laned homes are located throughout the community and are intended to appeal to those witha rural or small-town background choosing to move to Cochrane Lake Village. The integration of rear lane homes within Cochrane Lake Village allow for the creation of welcoming and walkable streetscapes that emphasize important vistas. It is anticipated that demand for laned home product will be high.

Laneless or front-drive homes are generally located on the edges of the community, providing good structure and transitional areas for each neighbourhoods. These homes have been designed to appeal to those from more densely populated urban centres looking for the quieter pace of the countryside. Estate homes are generally located backing onto open spaces with views of the lake, and have been designed for those wanting a larger lot and more space.

Townhomes are located within close walking distance to the Village Core, with views fronting onto Cochrane Lake and providing appropriate transitions of density from the Village Core area. These homes will appeal to people seeking condominium-style housing or smaller homes with minimal maintenance. This will enable the maintenance of the country-style of living, while being in close proximity to amenities and services offered in the Village Core.

HAMLET NEIGHBOURHOODS & DISTRICTS

The Cochrane Lake Hamlet Plan identifies Neighbourhoods D, E, and F within the boundaries of the Cochrane Lake Village Neighbourhood Plan. Neighbourhood D (Hamlet Centre) is expected to serve as a Community Centre focused on Cochrane Lake that incorporates a mix of uses including retail, employment, institutional, and residential uses. Given the proximity to the Town of Cochrane as well as the nearby commercial development at the intersection of Highways 22 and 567, this Neighbourhood Plan contemplates minimal commercial opportunities only in the Village Core located in Neighbourhood D. Neighbourhoods E and F (Hamlet Neighbourhoods) are expected to be focused on providing a range of housing types and public uses.

Within each Neighbourhood, the Hamlet Plan also specifies 3 types of districts within each neighbourhood: Centre District, Transition District, and Edge District. The Hamlet Plan describes the Districts as follows:

- **Edge:** Most rural, lowest intensity, primarily single family detached homes.
- **Transition:** Mid-intensity includes single family, duplex, town houses, and small multi-unit buildings, corner stores, institutional; all with shallow setbacks and parking in the rear.
- **Centre:** Highest intensity allows ground floor retail; town houses, multi-unit buildings, institutional, office; all with zero or minimum front setbacks.

Figure 4 shows the distribution of Hamlet Districts within each Neighbourhood. Cochrane Lake Village achieves and/or exceeds the Hamlet District Allocation requirements noted in Section 3.2.5.B of the Hamlet Plan as noted in **Table 1**.

FIGURE 4. HAMLET DISTRICT ALLOCATIONS

TABLE 1. NEIGHBOURHOOD DENSITIES

Neighbourhoods	D	E	F
Edge District	5.3%	16.2%	10.6%
Transition District	43.1%	57.2%	38.9%
Centre District	18.8%	6.2%	8.8%
Public Space and Other MR	29.4%	19.3%	28.5%

5.2 Open Space & Community Amenities

Green and open spaces are a key part of Cochrane Lake Village. The Neighbourhood Plan incorporates open spaces throughout the community, as shown in **Figure 5**, which ofer opportunities for both passive and active recreation. Approximately 27% of the total plan area comprises open spaces.

The main component of open spaces will be located along the lake edge and interlaced with open spaces within the pipeline rights-of-way located within the property. There will be a series of pedestrian connections to the lake via pathways and greenways, providing both visual and walkable access to the lake from everywhere in the community. This area also provides an opportunity for the creation of a dedicated off-leash dog park that is closely connected to the pathway network. Wherever possible, connections will be made to the regional pathway system to encourage pedestrian movement throughout the community, to adjacent communities, and within the greater Hamlet area.

The community landscape will be designed to reflect the natural context of the surrounding area. The landscape design will utilize mostly native plant materials, such as conifers to create the semblance of a native woodland trail along pathways and a variety of tall prairie grasses and wildflowers throughout other areas of the site, with the only manicured areas located immediately adjacent to homes. Open spaces will be utilized to highlight and enhance vistas and views of to the lake, mountains, and surrounding natural areas to ensure that views throughout the plan area remain accessible to all.

FIGURE 5. OPEN SPACE CONCEPT

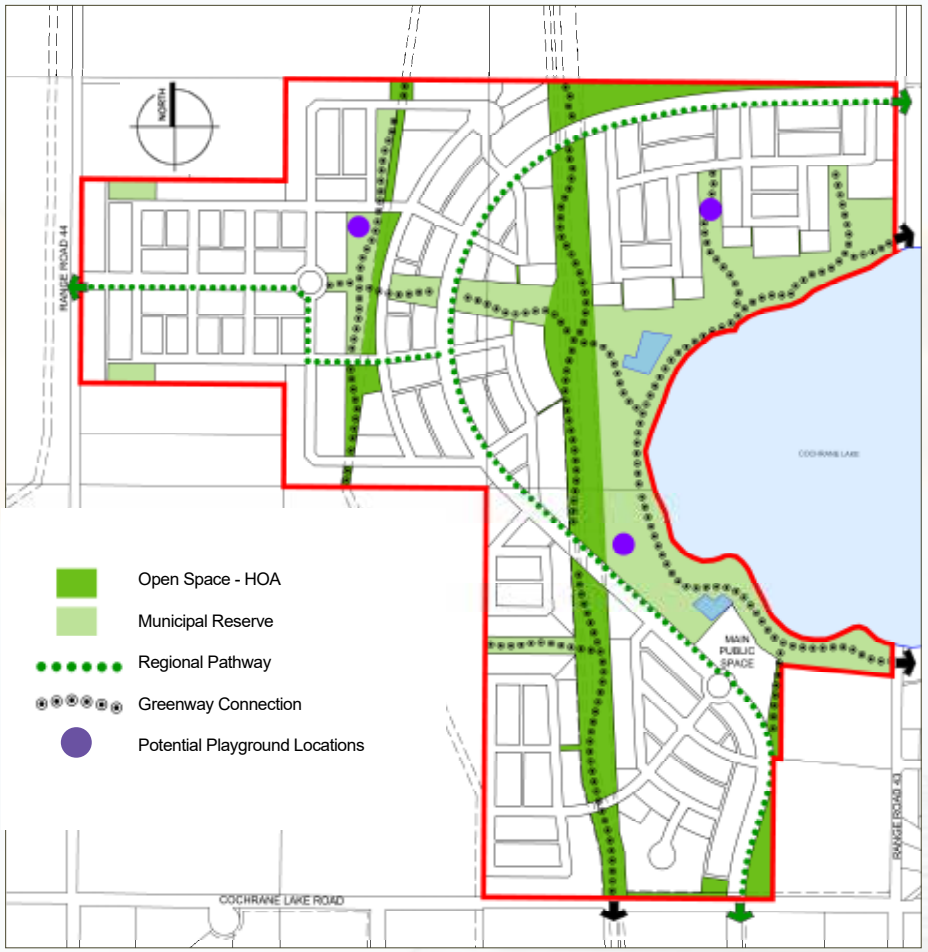


TABLE 2. OPEN SPACE STATISTICS

TOTAL AREA	HA	AC	%
Municipal Reserve	22.95	56.71	17
Open Space - HOA	15.47	38.23	8
Public Utility Lot and Other	102.44	253.14	73

OPEN SPACE & COCHRANE LAKE POLICIES

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

5.2.2: A minimum 8 meter MR strip shall be established surrounding the Lake to provide for a multi-use regional pathway, including interpretive signage and benches.

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

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

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

COCHRANE LAKE

The Neighbourhood Plan has been designed to ensure each home has a connection to the Lake. These connections may range from:

- Homes located on the lake front
- Homes featuring direct views of the lake
- Homes with direct connections to the lake via pathway/greenway
- Resident access to the dock and public area on the lake
- Public access to the dock and gathering spaces on the lake

Community design leverages Cochrane Lake as an asset in a variety of ways, maximizing the benefit to the residents of Cochrane Lake Village. Future improvements to the lake will ensure that the lake remains an accessible amenity to all and will allow Cochrane Lake to provide four-season recreational opportunities such as: boating and fishing in the summer and skating, cross country skiing, ice surfing and ice yachting as potential winter activities.


COMMUNITY
PIER & KAYAK
LAUNCH
VILLAGE
CORE
STORMWATER
DETENTION
POND
LAKEFRONT
WALKWAY

Having the lake as an adjacent amenity for all residents is a unique feature that differentiates Cochrane Lake Village from other communities. The Neighbourhood Plan anticipates the enhancement of the lake experience with an amenity building that creates a central community node with kayak/canoe storage and a launch area. The intent is that the amenity building will be available for year-round use with cross-country skiing, ice kiting and ice surfing equipment available for rent throughout the winter.

Proximity to the mountains and other outdoor recreational opportunities is an important aspect of the Plan. Development within Cochrane Lake Village will take advantage of existing topographical features, highlighting the rolling foothills of the Rocky Mountains, and its closeness to Canmore, Banff, and other Rocky Mountain recreational assets will be a major attraction for residents choosing to live in this community.

ENVIRONMENTAL

This Neighbourhood Plan aims to incorporate innovative development standards to create a progressive community that promotes water conservation and energy efficiency. To do so, all homes will meet or exceed the latest Building Code requirements for energy usage, and passive design incorporating deep overhangs to provide sun shading, and reducing cooling loads significantly.

The use of native planting is a further enhancement to the overall environment. To conserve water in a visible way, the use of rain barrels will be encouraged by homeowners but it will not be mandated. These barrels will be connected to the roof drains to both limit surges of storm water into the system, but also to serve as supplementary irrigation in drier times of the year.

Bioswales will form an integral part of the storm drainage system which, along with the planned stormwater ponds, is expected to help enhance the water quality in Cochrane Lake. These bioswales will decrease the runoff into the storm system thus minimizing storm peaks as well as acting as filtration systems to reduce contamination of Cochrane Lake.

FIGURE 6. VILLAGE CORE CONCEPTUAL RENDERING

VILLAGE CENTRE POLICIES

5.2.1: The Village Core shall be designed to be compatible with the regional road network with facilities for cycling, walking and transit, often termed as "active transporation".

5.2: The Village Core shall be collectively owned and operated through the Homeowners Association.

5.2.3: Management of programming in the Village Core shall be by the Homeowners Association.

5.3 Village Core

Alongside Cochrane Lake, the Neighbourhood Plan incorporates a small Village Core, consisting of potential uses such as:

- Small-scale commercial opportunities associated with recreational uses
- A boathouse for storing kayaks, paddle boards and other human powered watercraft as well as providing storage for the ice yachts, ice surfer and ice kites. This facility may be operated by a concessionaire who would make equipment available for rent for residents and visitors to enjoy both summer and winter lake sports
- A pier designed for year-round use
- A daycare, to be leased to a qualified operator to achieve affordable childcare for residents
- A community centre space with meeting rooms available to book/rent.

Significant commercial development is not contemplated in this Neighbourhood Plan. There will be some convenience commercial opportunities centered around the dock area providing for a small coffee shop which will be part of the overall community amenity. This space would be the sales office for the duration of the project before being converted to its ultimate commercial use. This assembly of small structures proximate to the water's edge will become the heart of Cochrane Lake Village and are shown in **Figure 6**, an illustration of the Village Core.

5.4 Dark Sky

Outdoor lighting throughout Cochrane Lake Village will be designed to be as unobtrusive as possible while still maintaining a high quality, attractive, and pedestrian-oriented environment. Cochrane Lake Village will have an outdoor lighting system that complies with the County's Dark Sky Policy as well as the International Dark Sky Association guidelines. The intent is to reduce the effects of unnatural lighting on the environment and surrounding community and to also reduce energy usage.

Street lighting will conform to both County and Alberta Transportation's design standards at the time of installation. Lighting along the project corridors will be designed to provide a cohesive project identity. Lighting will be placed where appropriate for safety, security, and night time ambiance, including parking areas located around the dock and amenity area and the pedestrian walkways throughout the community. Along pedestrian movement corridors and plaza areas, low mounted lighting will be utilized to reinforce the pedestrian scale. Lighting fixtures will be coordinated with respect to design, material, colour and quality of light.

DARK SKY POLICIES

5.4.1: Residential Development shall incorporate dark sky design principles and lighting techniques to reinforce area character and maintain visibility and safety. Appropriate illumination of programmed areas (seating areas, pathway intersections, trail heads, etc.) in Municipal Reserves should also be incorporated.

6.0 LAND USE STATISTICS

The land use statistics represent a breakdown of all development lands within Cochrane Lake Village. The plan area consists of a mix of residential forms, open spaces, recreational and community uses, and stormwater facilities. Approximately 48% of the developable area within the Neighbourhood Plan consists of residential land uses, with 27% being open spaces. The anticipated number of residential units is 800 units, resulting in a maximum density of (7.9ha) 3.2 units per acre. **Table 3** and **Figure 7** illustrate the distribution of land use areas over the site.

Density can be described at two scales: at a district allocation and an average neighbourhood level. **Figure 8** and **Table 4** identify the number of units per acre by Districts. **Table 5** summarizes **Figure 8** identifying the density of all the districts in the neighbourhood.

LAND USE STATISTICS POLICIES

6.0.1: Residential development shall be generally consistent with the land use concept shown in Figure 7.

6.0.2: Municipal Reserve dedication as shown on Figure 5 is to be provided to Rocky View County in accordance with Section 666 of the Municipal Government Act.

6.0.3: All Municipal Reserve lands shall be maintained and operated by the Homeowner's Association via a license agreement with Rocky View County.

FIGURE 7. LAND USE CONCEPT

FIGURE 8. NEIGHBOURHOOD & LAND USE DSTRICT DENSITY

TABLE 3. LAND USE DISTRICT STATISTICS

	Ha	Ac	%
GROSS AREA	**140.86**	**348.07**	**100.00**
RESIDENTIAL	67.46	166.70	47.89
OPEN SPACE	38.42	94.94	27.28
COMMERCIAL	1.62	4.00	1.15
PUBLIC UTILITY LOT	0.63	1.56	0.45
ROADS	32.73	80.88	23.23

TABLE 4. DISTRICT ALLOCATION & DENSITY

	Ha	Ac	Units	UPA
NEIGHBOURHOOD DISTRICT AREA	**100.16**	**247.51**		
EDGE DISTRICT	15.20	37.56	53	1.36
TRANSITION DISTRICT	68.60	169.51	610	3.46
CENTRE DISTRICT	16.36	40.43	137	3.27
TOTAL	**100.16**	**247.51**	**800**	

TABLE 5. NEIGHBOURHOOD DENSITY STATISTICS

	Ha	Ac	Units	Total Units /acre	Total Units / ha
ALL DISTRICTS	100.16	247.50	800		
COMMERCIAL	1.62	4.00	-		
TOTAL	**101.78**	**251.50**	**800**	**3.2**	**7.9**

Anticipated unit numbers are based upon average lot width divided by total frontage within each district type.

7.0 MOBILITY NETWORK

The Cochrane Lake Village transportation network will facilitate multi-modal connections throughout the plan area. The integration of bike lanes, separated pathways and other facilities into the traditional road network provides opportunities to encourage active living and accommodate multi-modal forms of transportation..

7.1 External Road Network

A Transportation Impact Assessment (TIA) was completed by Bunt & Associates. External road network connections to Cochrane Lake Village are to be made via Cochrane Lake Road to the south, Range Road 44 to the west, and Range Road 43 to the east, through the Colvin Family Trust lands.

As part of the first phase of development, the TIA recommends an upgrade to Cochrane Lake Road (between Sheriff Road and the entrance to Cochrane Lake Village) for a distance of 1.5 km, to a Regional Arterial Road. The TIA also concluded that an upgrade to Range Road 43 (south of Weedon Trail) a Regional Paved Road may be required due to estimated traffic volumes. The TIA further recommended that, as the forecasted volumes are only slightly above road capacities, volumes along this road be monitored and upgrades only be initiated if data supported the need for upgrades in the future.

7.2 Internal Road Network

The internal road network has been designed in conjunction with the pathway network and reinforces the rural atmosphere of the development. The overall road network and classifications are shown in **Figure 9**. It is expected that a mixture of Urban and Alternative Road Standards are used throughout the community. Specific locations for each cross section will be determined at the detailed design stages but will be selected to ensure consistency with the stormwater management concept.

All internal roads have been designed using typical County road cross-sections. In total, there will be three main access points to and from the

community, including:

- To/from the south at Cochrane Lake Road
- To/from the west at Range Road 44
- To/from the north at Range Road 43

Initially, it was intended that Cochrane Lake Village tie into the road network proposed as part of the original Monterra development, however there are issues relating to direct access to and the use of the private condominium roads within Monterra Phases 1 and 2. It has been assumed that these issues can be addressed through further discussion, as such, the Neighbourhood Plan identifies a northern road connection towards Monterra through the adjacent lands owned by the Colvin Family Trust.

There will be two main spine roads within Cochrane Lake Village. The first main connector provides a connection from Cochrane Lake Road and generally runs south to north. This road turns east as it moves northwards, ultimately connecting to Range Road 43 and providing a northern connection to neighbouring Cochrane North and Monterra developments through the Colvin Family Trust lands. The second main connector runs east to west, with access from Range Road 44, intersecting with the plan area residential roads which form the rest of internal local road network.

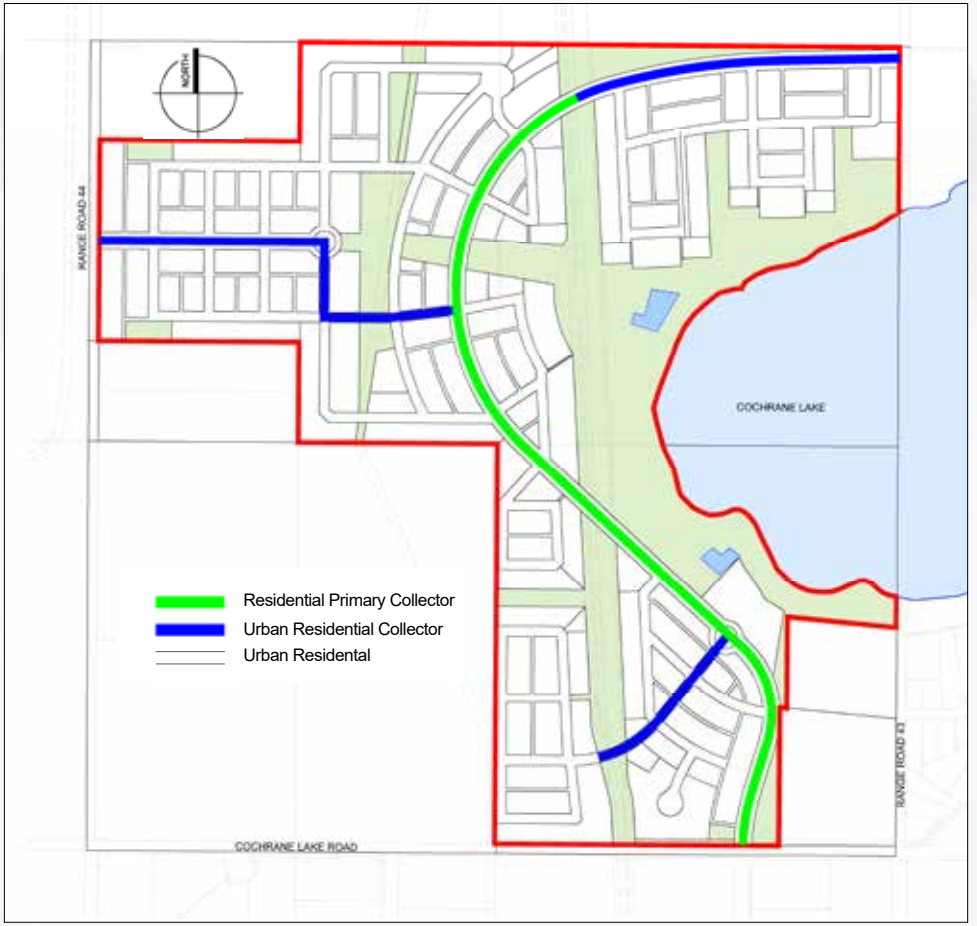
Road names in accordance with approved municipal policy will be determined at subdivision stage, pending branding and theming of the neighbourhood.

MOBILITY NETWORK POLICIES

7.2.1: Access to the subdivision shall be generally in accordance with Figure 8.

7.2.2: All road systems necessary to service the development shall be constructed by the Developer to the satisfaction of Rocky View County.

FIGURE 9. TRANSPORTATION



8.0 COCHRANE LAKE MANAGEMENT & FUNCTION

Presently, there is no formal Lake Management Plan governing the area, however there is a Lake Management Strategy in place as part of the original approval process for the Monterra development. The Strategy is contained within the Water Licence granted to Cochrane Lake Water Services, in the form of a detailed letter from BSEI, dated December 2, 2005. The Water Licence is now recognized by Alberta Environment as being under the ownership of Horse Creek Water Services (HCWS).

The Water Licence requires that HCWS maintain the Raw Water Reservoir, the Natural Pond, and Cochrane Lake within a specific water level range as defined in the Lake Management Strategy. It is recognized that these levels have not been consistently maintained and details of a solution are not clear, however it is expected that this matter will evolve through future discussions and actions.

This Neighbourhood Plan anticipates certain improvements to the shore on the edge of the lake, within Cochrane Lake Village. The proposed alteration to the lake edge is intended to function both as a device to manage variations in water levels, while also providing an opportunity to introduce a lakefront pathway. These improvements will initially be implemented in at least the lake shore fronting onto the dock area and Village Core, with expansion in future phases.

Improved water quality in Cochrane Lake is important in order to enhance its environmental quality and recreational value. As a part of this Neighbourhood Plan, some localized deepening of the lake near the dock and the Village Core shoreline will be undertaken in an effort to improve water quality. No other changes to lake depth are expected to be made. Ultimately, it is anticipated that a formal Lake Management Plan will be prepared to ensure maintenance of the recreational and environmental attributes of Cochrane Lake.


CONIFERS
ASPEN GROVES
COCHRANE LAKE
LOW BERMS
SIGNAGE
CENTRE MEDIAN
STONE FIELD WALLS
PAVING @ ENTRY
MULTI-USE PATH
SRIDLEY.

9.0 SERVICING

9.1 Shallow Utilities

Electrical power in the area is provided by Fortis and the franchisee for natural gas in the area is Cochrane Lake Gas Co-op. Neither of these providers foresee any issues with meeting the needs of the community.

Telecommunications will likely be provided by Telus, as Shaw does not yet have service in the area. Shallow utilities will be located within a 3.5 metre right of way located immediately adjacent to the road allowance.

SHALLOW UTILITIES POLICIES

9.1.1: Shallow utilities shall be provided within the Neighbourhood Plan Area at the sole expense of the Developer and shall be located within appropriate utility right of way established at the subdivision stage.

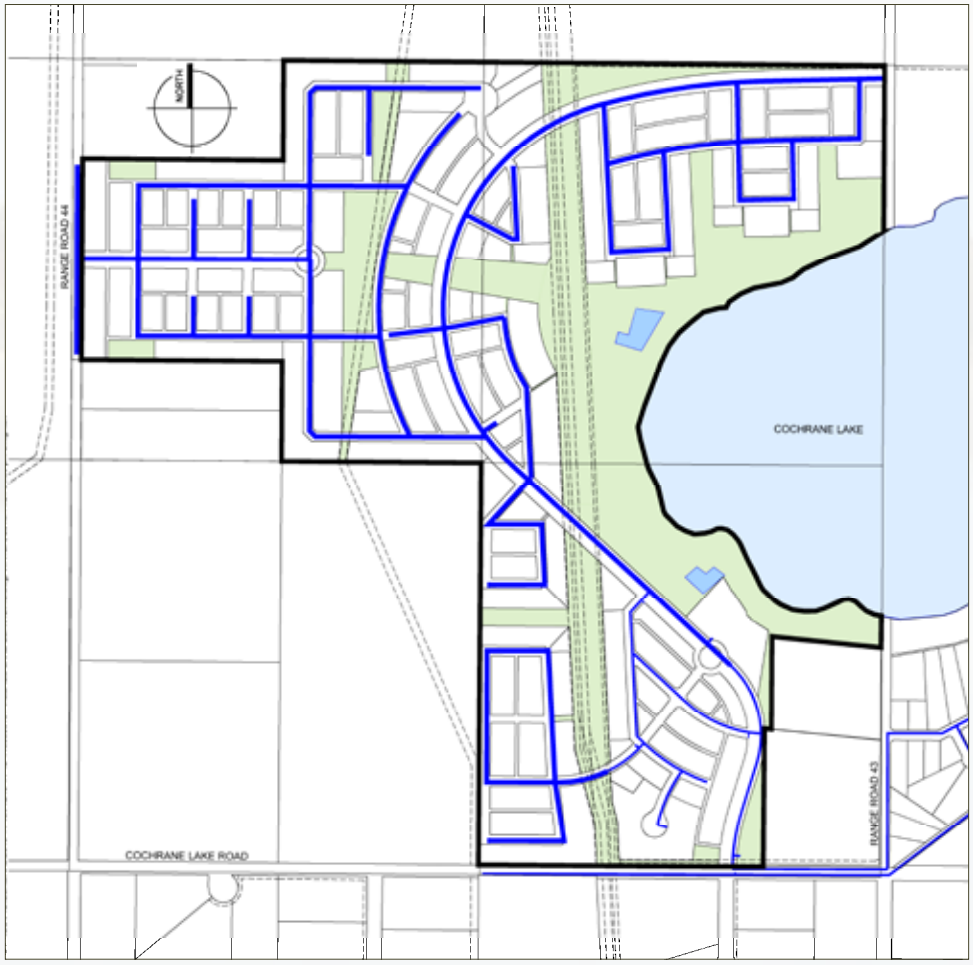
9.2 Water Servicing

Water servicing within Cochrane Lake Village will be provided by an extension to the existing system currently servicing Monterra through existing trunk connections on Monterra Boulevard. The existing system is operated by HCWS and delivers water to the adjacent Monterra development from a pump station located within the Town of Cochrane. The HCWS system was designed to accommodated development on the Cochrane Lake Village lands, as such it has the licencing and treatment capacity to service the demands of proposed development.

A skeletal model of the proposed water network was developed. **Figure 10** depicts the proposed water system network.

The watermain system would consist of newly constructed pipes within proposed roadways and will be looped throughout the proposed Neighbourhood Plan area to provide redundancy and adequate fire flows. Details of the water servicing design are described in the Water and Sewer Servicing Strategy submitted under separate cover in support of the Cochrane Lake Neighbourhood Plan.

FIGURE 10. WATER SERVICING



WATER SERVICING POLICIES

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

9.2.2: 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.

9.2.3: Potable water servicing shall be in accordance with approved Utility Servicing Strategies, the current version of the Rocky View County Servicing Standards, and all applicable Provincial guidelines to the satisfaction of the County.

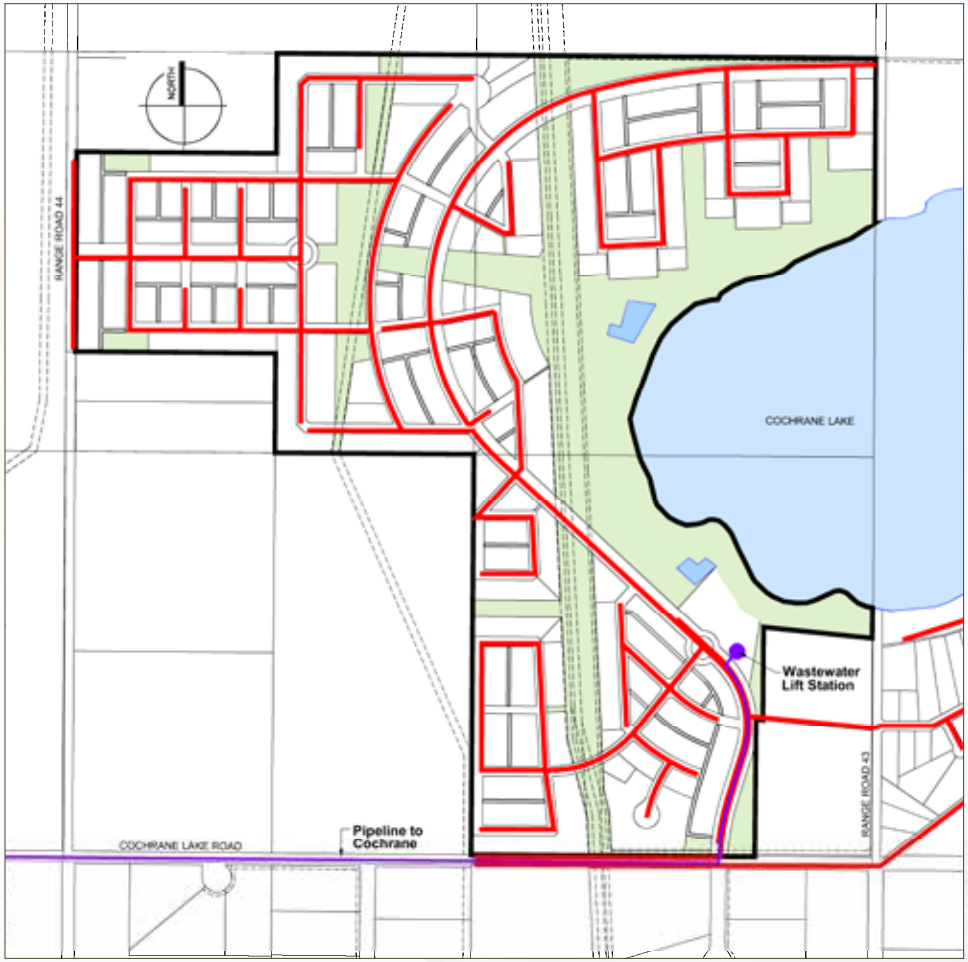
9.3 Sanitary Servicing

The Cochrane Lake Village Neighbourhood Plan area will be serviced by gravity sanitary sewer through a piping system that conveys flows towards the lift station located in the Village Core. The Cochrane Lake Village lift station will pump wastewater to the existing pressure main owned by Horse Creek Sewer Services (HCSS) located at the south end of the plan area at Cochrane Lake Road, which ultimately discharges to the Town of Cochrane sanitary sewer system.

The sanitary sewer system network will consist of pipes within roadways and would be designed and constructed according to the Rocky View County design standards.

The skeletal model of the sanitary system was developed to assess the main trunk sizes and capacities. At this stage, all sanitary sewer demands have been assigned to key junctions to ensure the sizing of the main trunk. **Figure 11** outlines the proposed sanitary sewer system network. Details of the sanitary sewer design are described in the Water and Sewer Servicing Strategy submitted under separate cover in support of the Cochrane Lake Village Neighbourhood Plan.

FIGURE 11. SANITARY SERVICING



SANITARY SERVICING POLICIES

9.3.1: Sanitary Servicing shall be provided by piped utility services.

9.3.2: Sanitary servicing shall be in accordance with approved Utility Servicing Strategies, the current version of the Rocky View County Servicing Standards, and all applicable Provincial guidelines to the satisfaction of the County.

FIGURE 12. STORMWATER SERVICING

STORMWATER SERVICING POLICIES

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

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

9.4.3: Reuse of stormwater for non-potable purposes will be considered where appropriate.

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

9.4.5: Stormwater management techniques utilized within the Cochrane Lake Village Neighborhood Plan shall conform to the Cochrane Lake Master Drainage Plan and Cochrane Lake Sub-catchment Master Drainage Plan and be employed in accordance with Alberta Environment Guidelines and to the satisfaction of the County.

9.4 Stormwater Servicing

An integrated stormwater management approach will be undertaken to accommodate the stormwater runoff in Cochrane Lake Village. Low Impact Development (LID) principles will be the foundation of the storm water utility system within the plan area. LID measures will include the implementation of source control practices such as absorbent landscaping and bioswales.

All stormwater runoff collected within Cochrane Lake Village will be stored in two onsite storm ponds. These ponds will meet all Provincial and County requirements in terms of discharge rates and overall water quality. **Figure 12** depicts the stormwater system network. Water stored in storm ponds will be released slowly at the predevelopment rates. In order to further maintain the predevelopment balance, water will be drawn from the storm ponds for irrigation. This will support the proper establishment of landscaping and trees as well as efficiently using rainwater on-site and minimizing runoff.

A technical memorandum prepared by Stormwater Solutions Inc. has been submitted under separate cover. This technical memorandum addresses issues related to stormwater and approaches for the plan area and will guide the Stormwater Master Drainage Plan, to be prepared during the design stages of the project. This technical memo has considered on-site flow conveyance and storage facilities and provides for the runoff leaving the site to be consistent with the predevelopment runoff rate and water volume.

10.0 PHASING

Phasing within the Cochrane Lake Village Neighbourhood Plan area is anticipated to occur in 20 phases, and will generally follow **Figure 13**. Based on the size of the plan area, it is anticipated that the development will take place over a 20-year period.

Development will begin in the southeast along Cochrane Lake Road, and will follow a generally clockwise direction, with the final phases expected to occur in the northeastern portion of the plan area, adjacent to Monterra lands. Ultimate phasing will depend on market demand and infrastructure requirements. The logical extension of open space amenities, roads, and utilities will progress along with additional phases of development

PHASING POLICIES

10.0.1: Residential development, amenity areas, servicing and utilities including water, wastewater and stormwater management will be developed in phases generally corresponding to the development phases shown in Figure 12.

FIGURE 13. PHASING PLAN

11.0 HOMEOWNERS ASSOCIATION

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

HOMEOWNERS ASSOCIATION POLICIES

11.0.1: 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 Municipal Reserve and privately-owned open spaces, trail system, and the associated amenities; and,

c) Solid waste management and recycling services for the residential development.