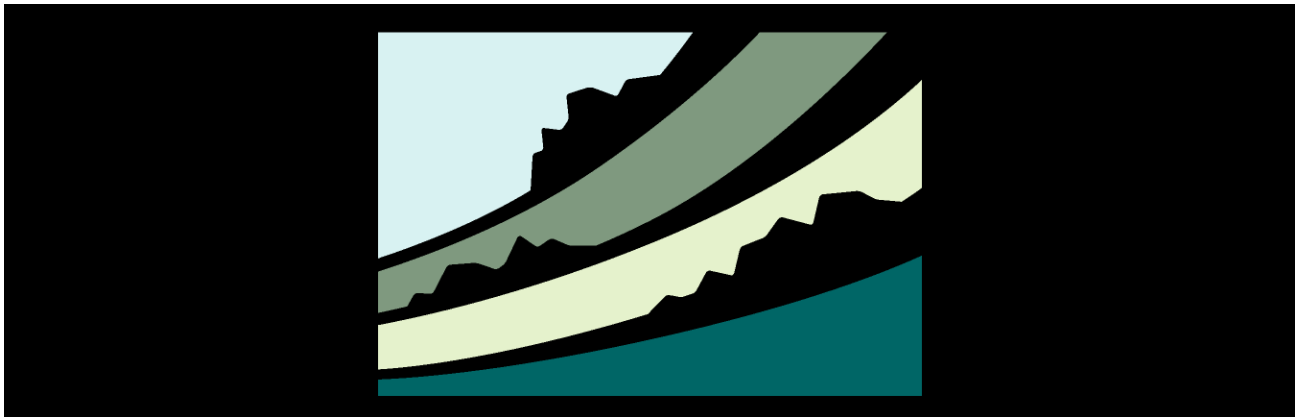


Carraig Ridge Area Structure Plan

September 14, 2007



Carraig Ridge
Conservation Community

September , 2007

MUNICIPAL DISTRICT OF BIGHORN NO. 8

CARRAIG RIDGE AREA STRUCTURE PLAN

September 14, 2007

NOTE: This document has been consolidated only for the convenience of the users. It is not a legislated consolidation pursuant to the Municipal Government Act and as such has no official status. The original Carraig Ridge Area Structure Plan and all subsequent amendments should be consulted for purposes of interpreting and applying the law.

The following bylaws have been consolidated into this document:

Bylaw 16/07

OFFICE CONSOLIDATION
OCTOBER, 2007

September , 2007

**MUNICIPAL DISTRICT OF BIGHORN NO.8
BYLAW 07/07**

A BYLAW OF THE MUNICIPAL DISTRICT OF BIGHORN NO.8 FOR THE PURPOSE OF ADOPTING THE CARRAIG RIDGE AREA STRUCTURE PLAN IN ACCORDANCE WITH THE MUNICIPAL GOVERNMENT ACT, CHAPTER M-26, RSA 2000 AS AMENDED.

WHEREAS the owner of Lots 10, 11, 12 and 13, Plan 9911677, which comprise approximately 268 ha (662 acres), wants to increase the density of subdivision and development on those lands through a “transfer of subdivision density” concept;

AND WHEREAS the Municipal District of Bighorn’s Municipal Development Plan requires preparation of an area structure plan prior to the type of subdivision intensification envisioned by the landowner;

AND WHEREAS the property owner has provided the Municipal District with an area structure plan proposal and requested that it be adopted by the Municipality;

AND WHEREAS Council, having considered at a public hearing the concerns of persons claiming to be affected by this area structure plan, believes that the plan should be adopted in order to achieve the orderly, economical and beneficial use of land in the Municipal District;

NOW THEREFORE, the Municipal Council of the Corporation of the Municipal District of Bighorn No. 8 in the Province of Alberta, duly assembled in Council, enacts as follows:

1. The Carraig Ridge Area Structure Plan, attached hereto as Schedule “A”, is hereby adopted to guide the future subdivision and developments of Lots 10, 11, 12 and 13, Plan 9911677.

READ A FIRST TIME THIS 13TH DAY OF FEBRUARY, A.D., 2007

READ A SECOND TIME THIS 14TH DAY OF AUGUST, A.D., 2007

READ A THIRD AND FINAL TIME PASSED THIS 14TH DAY OF AUGUST, A.D., 2007

“original signed”

REEVE

“original signed”

MUNICIPAL SECRETARY

**BLANK PAGE INSERTED FOR
CONVENIENCE OF PAGE
NUMBERING**

THE FOLLOWING ASSOCIATES CONTRIBUTED
TO THE CARRAIG RIDGE AREA STRUCTURE PLAN;

- Ian MacGregor; Wild Buffalo Ranching Ltd. – Project Sponsor and Developer
- Randall Arendt; Randall Arendt and Associates - conceptual design
- Gary Browning; Browning Horrocks – conceptual design
- Christopher Alexander and Randy Schmidt; Pattern Language.com - planning, architecture and design
- Jim Kroeker; architectural design
- Barry Pendergast Architect; architectural design - 3D imaging
- Richard Levy Phd.; University of Calgary – 3D imaging
- Brad Neish; Airborne Imaging – ‘Lidar’ imaging and viewshed assessment
- Kate MacGregor; Wild Buffalo Ranching Ltd. - project coordinator
- Frank Liszczak; Matrix Planning – project planner
- Wayne Veldhoen, Wire Construction – project construction manager
- Ron Sadesky; Mountain Engineering – project engineer
- Bob Nowak; Groundwater Exploration and Research; groundwater geologist – groundwater supply assessment
- Julie Budgen; Corvidae Consulting – environmental assessment
- Brad Ellingwood; Sabatini Earth Technologies – geotechnical investigation
- Tomasz Kroman; Itrans Consulting – traffic impact assessment
- Larry Simpson; Nature Conservancy of Canada – Conservation Easement advisor

EXECUTIVE SUMMARY

As a land owner and ranching operator in the Jamieson Road area, Wild Buffalo Ranching, Ltd. (the Developer), is concerned about the pressures for development and subdivision that the area faces.

Through careful planning and meticulous execution, it is possible for residential development to occur in a manner that permits ranching to continue and allows for the implementation of improved conservation measures. To achieve the ideal of integrated ranching, conservation and quality development, the Developer proposes the following Area Structure Plan (ASP) for a residential community, called Carraig Ridge. The Developer intends that the concept be viewed as a development alternative, which may be more supportive of the historical ranching use of the land and may better facilitate environmental stewardship than the current standard for development, which often results in subdivision into regular 40 acre parcels.

The Carraig Ridge development concept is based on a gathering of residential density into one section of land encompassing Morelyville lots 10 through 13. Under the current Small Holdings Policy of the Municipal Development Plan (MDP), this land could be divided into sixteen 40-acre parcels. Gathering of proposed development in the ASP will be achieved by transferring subdivision density potential from eight quarter sections in the Small Holdings area of the Municipal District of Bighorn (the MD), all of which are owned by the Developer. As a condition of this transfer of development potential, these same eight quarters would be protected by Conservation Easements prior to subdivision endorsement by the MD. An accredited agency, approved by the Developer and the MD, would accept the donation of these Conservation Easements. Such Easements would prevent the future subdivision of the land and, in this case, all development except that required for the continuing operation of the Ranch.

September , 2007

Conforming to the principles of density transfer as outlined above, this ASP, if approved, will permit the subdivision and construction of up to 45 residences and the required support infrastructure. In order to achieve the high quality product envisioned, the Developer expects that the process of density transfer, easement donation, subdivision and construction will occur on a relatively slow-paced, phased schedule. Ultimate completion of the project is anticipated to take 15 years.

The driving force behind this project is the Developer's commitment to preserving the rural integrity of the Jamieson Road area. The preservation effort includes not only protecting extensive lands from further development through Conservation Easements, but ensuring that any occurring development progresses in a way that is sensitive to the environment and the Jamieson Road community. The Developer also believes it is important for development to occur in a way that allows the historical ranching use of the land to continue.

A number of significant benefits to both the Jamieson Road community and the MD will result from the approval and successive implementation of this plan:

- Conservation and environmental stewardship will be significantly improved through funding by a levy, imposed by the Developer, on the developed sites.
- The cost of ongoing services for the new development, a burden that would ordinarily fall on the MD, will be paid by the Developer and the future site owners. This will reduce potential tax increases typically associated as a result of new development demands, while creating a new tax base for the MD.
- Careful siting of lots will ensure that the disruption of neighbours views are minimized. Care will also be taken to maintain the uninterrupted, historic view of the Bow Valley from Highway 1A.

September, 2007

- The community will be accessed from Highway 1A, thus reducing future increases in traffic on Jamieson Road, which is already approaching capacity.

The following ASP explains the development concept and implementation plan for Carraig Ridge as it currently exists and the site investigations conducted to prove the viability of the Plan, given the characteristics of the chosen location. Consultant reports documenting and analyzing natural features, such as geotechnical composition and groundwater availability, and possible effects of the project, such as traffic increase and environmental impact, have been included in the appendices under a separate cover. The data collected supports the validity of the proposed ASP.

Table of Contents

1.0 INTRODUCTION 8

 1.1 How To Use This Document 8

 1.2 Project Intent..... 8

 1.3 The General Setting..... 9

 1.4 Existing Municipal Policy Framework..... 10

 1.5 Community Consultation Process 11

2.0 EXISTING PHYSICAL SITE CHARACTERISTICS 13

 2.1 Topography And Drainage..... 13

 2.2 Geology..... 13

 2.3 Agricultural Capability And Soils 14

 2.4 Sub-Regional Ecological Landscape 14

 2.5 Vegetation..... 16

 2.6 Existing Wildlife..... 16

 2.7 Heritage Resources 17

 2.8 Groundwater Capacity 17

3.0 EXISTING HUMAN FEATURES..... 19

 3.1 ON-SITE FEATURES (See Existing Land Use, Map 4) 19

 3.2 SURROUNDING LAND USE 21

4.0 LAND DEVELOPMENT CAPABILITY 24

 4.1 Agricultural Land Capacity 24

 4.2 Water Supply 24

 4.3 Wastewater Management 25

 4.4 Geotechnical Stability 26

 4.5 Stormwater Management..... 27

 4.6 Traffic And Road Considerations 28

 4.7 Landscape Ecology Values..... 30

 4.8 Open Space And Municipal Reserve 31

 4.9 Site Design Considerations..... 33

5.0 AREA STRUCTURE PLAN CONCEPT 35

 5.1 Introduction 35

 5.2 Area Structure Plan Guiding Principles..... 35

 5.3 Reducing The Development Footprint 37

 5.4 Transfer Of Subdivision Density (Tsd) 40

 5.5 Conservation Easements..... 41

 5.6 The Concept Design (See Development Concept, Map 7) 44

 5.7 Transportation Concept 46

 5.8 Water Supply And Distribution Concept..... 50

 5.9 Wastewater Management Concept..... 51

 5.10 Surface Water Management Concept..... 51

 5.11 Ecological And Energy Conservation Measures 52

 5.12 Open Space, Municipal Reserve And Trails..... 54

 5.13 Architectural Design Guidelines 55

 5.14 Wildfire And Firefighting Management Guidelines 57

 5.15 Phasing Of Development (See Concept Phasing, Map 8) 58

 5.17 MD of Bighorn Policy Amendments 60

6.0 AREA STRUCTURE PLAN POLICIES..... 62

6.1	Introduction	62
6.2	Land Use Policies	62
6.4	Reserve Land Policies	68
6.5	Servicing Policies	68
6.6	Transportation Policies	69
6.7	Community Services Policies	71
6.8	Wildfire Management Guidelines	72
6.9	Wildlife / Vegetation Management Policy	73
6.10	Implementation Policies	74

MAPS

After Page

1.	ASP Location / Land Ownership.....	9
2.	Existing Land Use Bylaw Districts.....	11
3.	Existing Topography.....	13
4.	Existing Land Uses.....	19
5.	Complete Viewshed Analysis.....	34
6.	Potential Transfer of Subdivision Density (TSD).....	37
7.	Carraig Ridge Development Concept.....	44
8.	Development Concept Phasing.....	59

1.0 INTRODUCTION

1.1 HOW TO USE THIS DOCUMENT

This Area Structure Plan (ASP) is divided into three parts:

- i. background information to answer the questions “what exists now?” (sections 1-3) and “how does it influence development potential?” (section 4);
- ii. an explanation of the Plan Concept in conversational terms (section 5); and,
- iii. a set of specific, enforceable policies (section 6) to guide the Subdivision and Development Authorities in their decisions. These implementation policies direct the M.D. and Developer to undertake specific actions that are required to ensure the area develops as intended by the ASP.

More detailed supporting information is located in an Appendix document under a separate cover. This includes the Carraig Ridge ASP:

- review of Municipal Development Plan conformity
- community consultation process
- transportation impact assessment
- groundwater assessment
- geotechnical review
- Conservation Easement and ecological review

1.2 PROJECT INTENT

It is the Developer’s intention to complete all aspects of the development at Carraig Ridge to the highest practical standards. The prime objectives are to minimize environmental impacts and construction disturbance. The ultimate goal of the project is to produce a well-built environment that not only coexists with, but supports the natural environment and the commercial ranching operations for which this property is currently used.

September , 2007

The Plan is to execute the project at a slow pace in a series of phases. This document describes the Developer's intentions for the first phase of the development to a level of detail appropriate for this preliminary stage of the project. The definition is relatively clear for the initial phase, but flexibility has been built in to this document to allow improvements to be incorporated as learning occurs over the life of the project. It is anticipated that, throughout the long lifespan of the project, these standards may change to maintain the priorities of minimal disturbance, conservation of the natural and built environments and integration with ranching operations. In any case, actual designs based on the standards proposed will be reviewed by Professional Engineers. Design drawings for key structures and infrastructure related to the project will be signed and stamped by a Professional Engineer where appropriate.

1.3 THE GENERAL SETTING

The Plan area is located on Highway 1A, approximately 20 km west of Cochrane (see ASP Location Map 1). The Developer, Wild Buffalo Ranching Ltd. (WBR), proposes to establish a long term development plan on the following lands; Lots 10, 11, 12 and 13, Plan 9911677. The subject land contains four parcels which together comprise approximately 268ha (662ac). The parcels together are approximately 3400m in length from north to south and 820m wide from east to west. Within the Jamieson Road area (also known as the Small Holdings Policy Area in the MD of Bighorn Municipal Development Plan) the Developer also owns another eight quarter sections comprising another 493ha (1218ac). These lands are **not** part of the ASP development area. WBR land ownership in the Small Holdings Area totals approximately 761ha (1880ac).

The ASP parcels include moderate to steeply sloping terrain incised by gullies and hills that offer expansive views of the Rocky Mountains to the west, Ghost Lake and the Summer Village of Ghost Lake (2001 pop. 69) to the south and a

September, 2007

gently undulating meadow to the north. The ASP area is divided into four parcels which were part of the original Morleyville Settlement. In the “settlement lot” system of land survey, parcels were initially divided along the “seigneurial” land survey system of long narrow parcels, each of which was intended to have access to the Bow River. The subsequent subdivision of land in later years divided the land into highway right of way and other parcels.

1.4 EXISTING MUNICIPAL POLICY FRAMEWORK

a) Municipal Development Plan

The current Municipal Development Plan (MDP) contains policies for the ASP area under Part E of Land Use Strategies. The Small Holdings Area Policy designation applies policies directly relevant to the ASP.

The current MDP allows for a subdivision density of 4 parcels per quarter in the Small Holdings policy area. It also identifies other policy documents that must be referred to when development potential is being considered. These include the

- Community Services Master Plan CS-4
- MD of Bighorn Roads Policy T-16 and
- Jamieson Road Improvement Levy Policy P-6.

Guidelines also exist for the preparation of ASPs. However, there is currently no provision for transferring existing subdivision density and concentrating development locations in a specific location. This ASP is intended to provide an MDP framework for innovative alternatives of clustering existing subdivision density in the Small Holdings MDP policy area.

A more detailed review of ASP conformity with the MDP policy framework is outlined in Appendix C under a separate cover.

b) Land Use Bylaw (see Existing Land Use Bylaw Districts, Map 2)

September , 2007

The current MD of Bighorn Land Use Bylaw zoning district for the ASP property is zoned Agricultural Conservation (AC). This District allows for a single parcel to be subdivided from an unsubdivided quarter section.

The Small Holdings MDP Policy Area contains a mix of Land Use Bylaw Districts. The Agricultural Conservation (AC) District generally applies to unsubdivided private land. The Conservation Forestry (CF) District generally applies to public land. The Small Holdings (SH) District generally applies to lands that have been approved for subdivision densities beyond one parcel plus the balance of the quarter section. Currently, approximately 10 quarter sections have been rezoned to Small Holdings (SH) District in the Small Holdings MDP Policy area. There exists a potential for approximately 58 additional quarter sections to be rezoned to the SH District of the land use Bylaw.

1.5 COMMUNITY CONSULTATION PROCESS

The MD of Bighorn Council expressed a desire to ensure that the local community had a clear opportunity to understand the development and offer suggestions and concerns. Ian MacGregor, long-time area landowner, part-time resident and project Developer, undertook a significant community consultation process with local landowners, residents and nearby jurisdictions. Ian MacGregor is President and majority shareholder of Wild Buffalo Ranching Ltd which is a family holding company for agricultural lands and other assets.

A total of four group meetings were held. The first meeting occurred on August 9th, 2006. Approximately 15 community members and members of Council and the Municipal Planning Commission attended this meeting at the Jamieson Road home of the Developer. This was followed by another community meeting at the Developer's home in late August, attended by approximately 30 area residents. In addition to the presentation given, a handout introducing the key points of the project was distributed

September , 2007

At the request of the residents of the Jamieson Road area, a site walk-through was arranged. This meeting involved a tour of the proposed development site and preliminary lot layout and a casual opportunity for questions.

The final community consultation meeting was held at Beaupre Community Hall on November 22nd, 2006. To ensure that all affected neighbours were aware of the meeting, invitations were mailed by the Municipal District. Approximately 40 community residents attended this meeting. A second handout further describing the project was made available to all attendees, and at the request of those who were unable to attend. A copy of this handout is included in Appendix H.

Throughout the process of informing neighbours about the project, a number of private consultations were requested by members of the community who had missed the scheduled group meetings. Wherever possible, these requests were accommodated. The Developer has also made continuous efforts to keep in contact with local community residents by phone and e-mail.

In addition to meeting with the residents of the Small Holdings Policy Area, efforts have been undertaken by the Developer to communicate with other interested parties in the surrounding area. The Developer met twice with a number of representatives of the Stoney Nation to present the plans for the project and to understand and resolve concerns they might have. In addition, the Developer has consulted the Councillors of the Summer Village of Ghost Lake and presented at their Council meeting on November 21st, 2006, to ensure that the village is informed of the project.

2.0 EXISTING PHYSICAL SITE CHARACTERISTICS

2.1 TOPOGRAPHY AND DRAINAGE

The development site is located on a south facing slope with an elevation change from 1200m above sea level at Highway 1A to two highpoints of 1360m midway between the north and south ends of the site (see Topography, Map 3). The total relief of approximately 160m (525ft) is substantial, offering scenic views of the Bow River valley and beyond, Ghost Lake and the front ranges of the Rocky Mountains.

Drainage on the site is in two basic directions. The southerly 2200m of the project area drains southward towards Highway 1A and the Bow River, while the northerly 1200m drains northward towards Jamieson Creek. Within these drainages, several coulees channel drainage overland within small capture areas.

2.2 GEOLOGY

Soil composition does not vary greatly across the site from south to north. The extreme south end of the site, near Highway 1A, is located in the historical Bow River floodplain. This end of the ASP area is covered with a sand and gravel deposit. An existing gravel pit is located within the southern portion of the development area, near Highway 1A.

The land rises in a series of elevated benches towards the north. The bedrock of the Brazeau Formation is exposed in highly-eroded slopes of an approximate angle of 40°, with sub-vertical bedding still visible at some locations. On the upper plain, the bedrock is covered with a thin veneer of weathered bedrock, topsoil and occasional sand and gravel deposits less than 1m thick. Bedrock outcrops are observed at various locations across the site. Several post-glacial drainage channels run through the property and end in the lower floodplain. The thin soil layers generally restrict vegetation to poplar trees and shrubs with native grasses.

2.3 AGRICULTURAL CAPABILITY AND SOILS

The soils in the area are from Soil Correlation Area 16 of the Spruce Ridge soil series (Pedocan, 1993). The soil characteristics are Orthic Gray Luvisols over moderately fine till. The topsoil, a dark brown luvisol, ranges from 5cm to 15cm in depth, The texture is generally silty loam for the topsoil and a clay loam for the subsoil with high percentage of aggregates in the B horizon. The C horizon has an even higher percentage of aggregates, with up to 50% stoniness. The mineral soil is composed of glacial till over shallow bedrock. In some areas, mostly at the crest of hills, the bedrock protrudes to the surface with no subsoil or topsoil.

The Canada Land Inventory (CLI) rating for the land in the project area is CLI class 6. Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible. The MD of Bighorn assessment files confirm the limited agricultural capacity of the land. The Rural Farmland assessment (RFA) for the ASP site is identified as 19% RFA with a grazing capacity of 28ac per head. Based on the 662ac contained within the entire ASP site, this would allow a stocking rate of a maximum of 24 animal units (eg. 24 head of cattle).

2.4 SUB-REGIONAL ECOLOGICAL LANDSCAPE

On a macro scale, while the Jamieson Road area is nominally within the Foothills Natural Subregion of Alberta, it is also at the transition among the Foothills parkland, the montane habitat of the Bow River valley to the west and the prairie grasslands to the east. It contains ecological characteristics of all these subregions. This policy area is a confluence of habitat types and typically, such interfaces create a higher degree of bio-diversity than would occur otherwise.

On a meso-scale (within the Small Holdings area), the low elevation 'edge' near both the Bow river and the lower reaches of the Ghost River combine with the existing patchwork of forested and cleared land in the upland above the river

September , 2007

valleys to offer a significant layer of habitat diversity and opportunities for wildlife movement within and between natural subregions. See photo below.



**Photo #1; A patchwork quilt of forest edge;
Looking south to the ASP area; Jamieson road in photo centre left**

2.5 VEGETATION

The topography is rolling terrain with mostly south facing slopes. The area is characterized by open grasslands and grass-shrub communities interspersed with shrub and aspen/conifer tree stands. There are patches of aspen and spruce forested areas, open grasslands and rocky outcrops. There are two wetlands on the property in low lying areas that periodically have standing water and associated willow-sedge plant communities.

Rhonda Long, MSc, a professional vegetation ecologist, was retained to conduct an ecological review of the site. The full assessment is available as an Appendix under a separate cover. The assessment indicates that most of the plant communities on the property have been modified by grazing and reflect varying levels of ongoing disturbance. There is one patch of relatively undisturbed native grassland on the southernmost ridge on the property, south of the existing Quinn residence, requiring additional care in sensitive building siting. A second area of relatively undisturbed community of mixed aspen/spruce is located in the northeast corner of the property. The ecologist report notes that there is low probability of finding rare plants in the area proposed for development due to previous and ongoing disturbance associated with grazing by horses, cattle and buffalo over several decades on almost all of the land identified for the housing development.

2.6 EXISTING WILDLIFE

Julie Budgen, BSc, a professional biologist with Corvidae Environmental Consulting, was retained to conduct a Phase 1 Environmental Site Assessment that included a review of human and ecological features. The full assessment is available as an Appendix under a separate cover. The proposed development is located in the foothills of the Rocky Mountains, between two sections of the Stoney Indian Reserve. Numerous species frequent the property and the surrounding Jamieson road area in general. These include black bear, moose, elk, white tail deer, mule deer, porcupines, badgers, gophers, skunks, red squirrels, partridges, Canadian geese, spruce grouse, mallards, hares, and snow

September, 2007

geese. No sightings of large predators such as cougar or lynx were recorded during the environmental assessment.

An elk herd does migrate to the north of the property along the Jamieson Creek riparian area (pers. comm. Ron Wiebe, ASRD, June 2006). From the lay of the land it appears that wildlife frequent the Jamieson riparian area and use the section north of the proposed development as a travel route. This land is intended to be subject to a Conservation Easement. The Developer is currently redesigning the fencing on this property to facilitate wild life movements.

There are no provincial records in Alberta Natural Heritage Information Centre (ANHIC) or Fish and Wildlife Information Management System (FWMIS) available for the area. According to Provincial wildlife officials, there are no issues or concerns regarding wildlife disturbance (pers. comm. Ron Wiebe, ASRD, June 2006). This is as a result of the property location and surrounding land use.

2.7 HERITAGE RESOURCES

A historical review of documented archaeological information was completed using the *Listing of Historical Sites and Areas, Fifth Edition*. No historical rating values (HRV) were listed in the project area. As the latest 2006 catalogue of listings showed no HRV in the area, Alberta Community Development typically does not require an historical resources impact assessment.

2.8 GROUNDWATER CAPACITY

There are currently six wells on the project site with well depths vary from about 14m to 91m. One well is located at the existing Quinn house located on the private access road located 1100m north of the Highway 1A. A second cluster of three wells is located 200m north of the Quinn residence, while the fifth and sixth wells are located near a second existing residence on site approximately 1220m north of the Quinn residence.

September , 2007

Of these six wells, three were subject of extensive long term well testing. The Project groundwater geologist determined that these wells would have more than adequate capacity to provide the necessary volume of water for the proposed development density of 45 lots. The results of the well testing are included in the Appendices under a separate cover. Current flow testing on the three wells yields a total water availability of 69.67m³/day [10.64igpm], which is sufficient to service up to 56 lots where water conservation measures are applied.

3.0 EXISTING HUMAN FEATURES

3.1 ON-SITE FEATURES (see Existing Land Use, Map 4)

The lands subject to future development are currently used as grazing land and part of the Wild Buffalo Ranching operations. This usage is expected to continue in the future. The subject land contains two residences and an access road leading north providing access into the eastern two parcels (Lots 10 and 13). The first is a stone-faced dwelling (the Quinn residence) located on the existing gravel access road some 1100m north of the Highway 1A. A second, smaller residence is located further north at the end of the access road.

Another four quarter sections of working ranch are located to the north, outside the project area.

An operating Shell sour gas well is located on the west side of the property, approximately 850m north of Highway 1A. Access is by way of the private access road intersecting with Highway 1A. A second shut-in sour gas well (also Shell operated) is located on the west side of the property, approximately 1200m south of the northern property line. This second well has not produced since it was drilled, and a request has been made by WBR to Shell to abandon the well and reclaim the site. This request is currently being considered. Access to the second well is by way of a private well-access road that originates at Jamieson road and travels through the West half of Section 20-Twp 26-R6- W5M.

All proposed lot configurations will comply with AEUB regulations for setbacks from sour gas wells. The EUB has supplied correspondence denoting that the required setback of any residence is 100m from both wellsites.

A 133kV transmission line runs parallel to Highway 1A, approximately 350 metres north of the highway. All proposed lot configurations must comply with mandated setback requirements from the transmission line.

September, 2007

Servicing on site is by means of above ground 25kV power lines. Natural gas service is by means of a two inch main running north and south through the property.

A former gravel pit is located to the east of the access road approximately 100 metres north of Highway 1A. The south end of the ASP site contains a potentially significant gravel deposit running east-west parallel to Highway 1A. It is intended that this gravel deposit will be utilized in the development, minimizing offsite trucking disturbances.

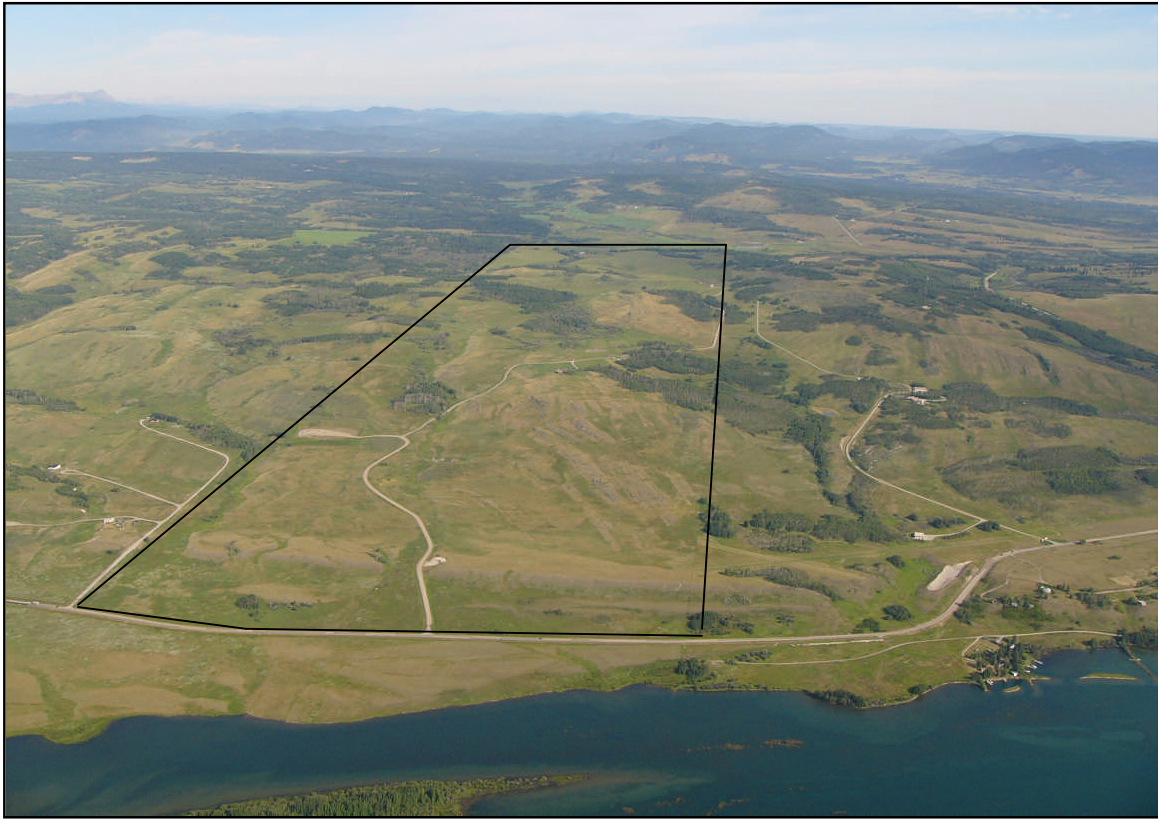


Photo #2; ASP site looking north;
Highway 1A running east/west at bottom of photo

3.2 SURROUNDING LAND USE

a) Residential

A neighbouring residence (the Keller residence) is located on a parcel to the east approximately 162ha (400ac) in size. The Parcel contains a communications tower at the north end of the site as well as a private aircraft landing strip parallel to Highway 1A running between the landowner's access road and the west property line. Siting of the proposed development has been conducted to avoid interference with the Keller landing strip.

Another three residences are located on Stoney Indian Reserve land 200m to the west of the property. Approximately 600m to the northwest of the subject property, a wellsite road in SW20-26-6-W5M provides access to another dwelling (the Dunki residence). No other residences are located within a half mile of the subject lands.

b) Other Land Uses

To the south is located the Ghost Reservoir and Ghost Reservoir Provincial Recreation Area, a local campground equipped with 112 campsites (22 with power). Highway 1A intersects between the property line and the grassland areas beside the reservoir and campground. The Summer Village of Ghost Lake (2001 pop. 69) is located nearly adjacent to the southeast corner of the subject lands. The Summer Village, largely populated by seasonal residents, is serviced with on-site water and sewer and is also served by a local marina.

c) Transportation Network

Existing access to the site is by way of a private, gravelled access road at the intersection of Highway 1A. The road provides access to most of the subject land and extends on private WBR land to the north boundary of the property and on to a private access on Jamieson Road. The northerly component of this road, has been recently constructed and allows access necessary for ranching operations. Ultimately, it would serve as an emergency access road for the development if it was approved.

Other roads in the area include Jamieson Road, located off Highway 1A 1.7km to the east, and a private access road 500m to the west of the subject property's private access road.

Highway 1A has a 6.7m wide paved surface and a posted speed of 80km/h in the area where the Carraig Ridge access is proposed. A review of this intersection's sight distance along Highway 1A indicates that it is well within the Alberta Infrastructure and Transportation (AIT) requirement of 310m for recreational double units. Since Carraig Ridge will be a residential subdivision, it is not expected that larger vehicles will use its access intersection on a regular basis.

The Transportation Impact Assessment (TIA) prepared by ITrans Consulting assessed the traffic patterns as part of its analysis. In summary, the site is located off Highway 1A north of the Ghost Reservoir and the majority of the trips are anticipated to have destinations east of the site via Highway 1A, namely the City of Calgary. This traffic pattern was confirmed through the analysis of the turning movements at the Highway 1A/Highway 40 intersection located approximately 15km east of the proposed Carraig Ridge access intersection. Turning movement and average annual daily traffic (AADT) information at this intersection was obtained from the Provincial AIT database and is provided in the complete TIA available as an Appendix under a separate cover). Based on the observation of the turning movements at the intersection of Highway 1A and Highway 40 and review of other development information, it was established that

September , 2007

80% of the trips travel eastbound on Highway 1A and 20% would proceed west. Current Annual Average Daily Traffic (AADT) volumes (2005) west of the Ghost Lake Recreation Area show a count of 2250 vehicles per day (vpd).

No vehicular traffic will be permitted through the proposed emergency access route leading to Jamieson Road except in case of an emergency, during construction or for normal agricultural usage.

4.0 LAND DEVELOPMENT CAPABILITY

The Land Development Capability Assessment summarizes the capacity of the land to accept development without unduly affecting the communal resources, the environment or neighbouring landowners. Additional supporting studies are located in Appendices under a separate cover.

4.1 AGRICULTURAL LAND CAPACITY

As stated in section 2, the MD of Bighorn assessment files confirm the limited agricultural capacity of the land. While the land does have grazing value due to its south-facing aspect, the carrying capacity is quite low (24 head of cattle spread over 662ac). In addition, the remainder of land used by Wild Buffalo Ranching will be protected from development for the long term by Conservation Easements. Much of the Conservation Easement lands, on which development will be prevented, have the same southerly exposure as the ASP land, and have higher carrying capacity, and are therefore better suited for cattle ranching. For these reasons, the proposed project will result in a better agricultural use of the WBR holdings than the currently permitted development alternatives.

4.2 WATER SUPPLY

a) Water Quantity

The site has been tested for water supply by a qualified hydrologist. Bob Nowak, PhD, P.Geol., of Groundwater Exploration and Research Ltd. has been retained to assess the capacity of the site to supply sufficient water to the proposed ASP area. The full assessment is available as an appendix under a separate cover.

The assessment of the groundwater geologist concludes that adequate water exists for up to 56 single family lots where water conservation measures are used. The assessment was based on analysis of 3 of the 6 wells existing on the property. Since the proposed development is proposed to have a maximum of

September , 2007

45 homes, this assessment is considered to be conservative. A Provincial water licence will be required as a condition of subdivision approval. More detailed analysis would be undertaken during the water licensing phase of the project.

It should be noted that the intent of the proposed development is to emphasize conservation measures in water, waste and energy management. These features will be incorporated into design and construction guidelines for the project by the Developer.

b) Bow River Connection

There has been a recent moratorium on water licenses from the Bow River and any sand & gravel units deemed to be in hydraulic connection with the river or its tributaries. Based on elevation data, the groundwater wells appear to have an elevation of about 1335m asl. The Ghost Reservoir has an elevation of about 1190m asl. The maximum well depth on the MacGregor property is 91m. Subtracting the maximum well depth of 91m from a ground elevation of 1335m yields a well bottom depth of 1244m asl, indicating that the well is above the reservoir and therefore not with the Bow River. The hydrological assessment concludes that the water supplies for the development are not in hydraulic connection to the Bow Valley drainage basin.

c) Water Quality

In terms of water quality, existing chemical tests on the site demonstrate that the groundwater chemistry is suitable for municipal use, although elevated iron, manganese and fluoride may require some water treatment.

4.3 WASTEWATER MANAGEMENT

Eight test pits were dug for purposes of soils testing by geotechnical engineers. There appears to be 30 to 50cm of topsoil and sand/silt cover before bedrock is encountered at many of the sites. A sample of the sand/silt material was collected from location 3 and submitted for grain size analysis. The soil is classified as clay loam.

September , 2007

There appears to be 30 to 50cm of topsoil and sand/silt cover before bedrock is encountered at many of the sites. A sample of the sand/silt material was collected from location 3 and submitted for grain size analysis. Soil analysis classifies the soil as clay loam. Although the clay loam material is suitable for septic field disposal, the required vertical separation of 1.5m (5ft) between the water table and/or an impervious layer (bedrock) was not noted at any of the test pit locations. Septic field disposal using natural soil conditions at the site is not possible unless areas are discovered that have 1.5m or greater of topsoil and sand/silt cover material.

4.4 GEOTECHNICAL STABILITY

a) Building Stability

The project site is underlain by bedrock between 30cm to 1m below the surface. In addition, the site has general slopes of up to 40° at bedrock outcrop locations. The remainder of the site slopes are bedrock controlled with slopes generally in the 25° to 30° range. Soil stability is not a constraint to construction. Appropriate set backs from slopes would be specific to each lot and subject to approval based on analysis and acceptance by a Structural Engineer registered with APEGGA.

b) Road Construction

Existing road cut angles are not likely to be steeper than 35° to 45° due to the bedrock being so fractured. It is anticipated that road cuts will be possible using hydraulic excavators at most locations, provided the cuts are not significant. The excavated bedrock material may be suitable for road-base construction, provided it is not platy or subject to wear due to loading.

c) Underground Utilities

Underground utility installation will require additional costs due to the anticipated depth of the excavations within the high bedrock conditions. It is anticipated that all utilities will be underground, in order to minimize visual impacts from overhead lines.

4.5 STORMWATER MANAGEMENT

Existing stormwater is readily absorbed by the overburden and the remaining runoff is generally collected along coulees and short feeder drainages. There is little evidence of erosion from natural drainage patterns except in isolated areas where naturally occurring bedrock outcrops are located on steep slopes and on exposed moraine deposits at the lower end of the site. The low density of development is not expected to create a significant difference between pre-development and post-development run-off rates and volumes. Hard surfacing of roads will create spot areas of higher runoff that will require stormwater management measures at the time of detailed subdivision design.

4.6 TRAFFIC AND ROAD CONSIDERATIONS

a) Traffic management

A Traffic Impact Assessment was prepared in 2006 by ITrans Consulting under the supervision of Tomasz Kroman, a qualified transportation engineer. This study used the assumption of 51 lots being the maximum development scenario, whereas a maximum of 45 are proposed in the ASP. The detailed results are available to be viewed in the Appendices under a separate cover.

In summary, total traffic conditions for 5, 10, 20 and 30 year horizons were studied, examining both the ASP site and the growth in expected traffic on Highway 1A. Analysis of the proposed intersection of Highway 1A and the Carraig Ridge access road was conducted using Synchro/SimTraffic Micro-simulation Software, based on Highway Capacity Manual (HCM) 2000 methodology. Based on the results of the Synchro analysis, the proposed Carraig Ridge Access Road/Highway 1A intersection will operate at a low volume-to-capacity ratio of 0.21 at the 30 year horizon and an overall Level of Service (LOS) of 'A' over the analysed horizon years. Therefore, the impact of the Carraig Ridge construction on the operations of Highway 1A could be considered negligible. Nonetheless, the intersection of Highway 1A and the project site will require road upgrading to handle the anticipated turning movements.

b) Emergency Access

An emergency access road will be required to provide alternate access to the project site. This road is partially constructed at the current time and is currently used for movement of agricultural equipment.

c) Jamieson Road Improvement Levy Policy P-6

In 1998, the MD of Bighorn instituted an Improvement Levy for the upgrading of Jamieson Road. The relevant policy is quoted as follows;

“As a condition of approval of any subdivision for which vehicle access will be either directly or indirectly via Jamieson Road, the approving authority shall require that the applicant or owner enter into an agreement pursuant to Sections 655, 65i or any other applicable sections of the Municipal Government Act, Chapter M-26.1, S.A. 1994, as amended (MGA).”

The stated objective of undertaking the improvements is

“to increase the volume of traffic that Jamieson Road can safely accommodate. The road was originally constructed for fairly low traffic volumes and must have its carrying capacity increased if it is to handle the traffic expected to be generated as a result of Small Holdings subdivisions that may be approved in the future in the Jamieson Road area.”

The intent of the Carraig Ridge ASP is to minimize added traffic on Jamieson Road. If this proposal is approved, it will significantly reduce future traffic demands on Jamieson Road, since land that could have been developed more intensely will not be developed and will be protected under Conservation Easements. The ASP proposes that there will be no use of Jamieson Road to gain access to Carraig Ridge except for emergency access and access for heavy equipment for continued ranching operations and during construction.

4.7 LANDSCAPE ECOLOGY VALUES

a) Wildlife

As noted earlier, there are no provincial records in Alberta Natural Heritage Information Centre (ANHIC) or Fish and Wildlife Information Management System (FWMIS) available for the area. According to Provincial wildlife officials, there are no issues or concerns regarding wildlife disturbance (pers. comm. Ron Wiebe, ASRD, June 2006). This is as a result of the property location and surrounding land use. However, an elk herd does migrate to the north of the property along the Jamieson Creek riparian area (pers. comm. Ron Wiebe, ASRD, June 2006). From the lay of the land it appears that wildlife frequent the Jamieson riparian area and use the section north of the property as a travel route. The Developer intends to maintain the open grassland areas and to reorient fencing for cattle operations to enhance and promote wildlife movement through the area. While wildlife does not migrate through the specific ASP area, there are numerous species that frequent the property. Cross-fencing and property line fencing will be wildlife friendly, including such aspects as an elevated bottom wire. Significant amounts of fencing currently installed on the property used in ranching operations are scheduled for removal or reorientation to minimize wildlife disturbance.

b) Rare Plants

All of the proposed residential building lot sites were surveyed for rare plants by vegetation ecologist Rhonda Long, MSc, using a floristic survey method and walking roughly parallel transects in areas approximately 50m x 50m. No rare vascular plant species were recorded on any of the proposed house sites. The wetland adjacent to the northernmost existing residence was also surveyed using a meandering search pattern and no rare plants were recorded from this location.

The environmental site assessment reports that there is low probability of finding rare plants in the area proposed for development due to previous and ongoing

September, 2007

disturbance associated with grazing by horses, cattle and buffalo over several decades on almost all of the land identified for the housing development.

c) Native Vegetation

There are some native plant communities on the rocky outcrops, of which re-colonization by native species could take several decades. Disturbance to the remnant native fescue community on top of the southernmost knoll on the property should be minimized to the greatest extent possible. Any dwellings sited in areas of less disturbed aspen/spruce in the northeast corner of the ASP area will be carefully designed to minimize tree disturbance and removal.

Avoidance of development within the wetlands and incorporation of native grasslands into open spaces are concepts that will be incorporated at subdivision stage. The overall desired result is a community surrounded by native vegetation of non-palatable species. Mesiscaping (landscaping using native plants and low water requirements) and use of prescribed native seed mixes will minimize requirements for irrigation. Irrigation for landscaping will be sourced from existing stormwater run-off wherever possible and design specifications for the project will avoid use of non native landscaping in order to minimize water usage for this purpose.

4.8 OPEN SPACE AND MUNICIPAL RESERVE

The Community Services Master Plan is a municipal policy document guiding the Council as to how to allocation municipal reserve requirements under the Municipal Government Act. Currently there is no reserve-sharing agreement between the MD of Bighorn and the numerous school boards operating within its boundaries. The following interprets the spirit and intent of the Community Services Master Plan.

Section 2.2.3 of the Master Plan requires playground facilities for populations greater than 100 persons. The intent of the Carraig Ridge ASP is to develop 40

September , 2007

parcels, with additional space for five further parcels in the future if additional land is purchased. At an average population density of 2.47 persons per household, 40 lots would generate approximately 99 persons under the current scenario and a total of 111 under the full build-out scenario of 45 lots.

Section 5.1.1 refers to the 'distant future' where increased population densities in the Small Holdings area would trigger a trails system for community use.

“5.1.1 (excerpt) - Because small holdings subdivisions occur in rural areas, lower population densities reduce the need for maintained parkland in the short term. Instead long term planning shall be undertaken with the objective of providing a large integrated trail system that can be developed in the distant future if densities increase in the area, and the dedication of one larger parcel for future community use. “

Section 5.2.1 directs that the taking of Municipal Reserve (MR) in the Small Holdings area will be by deferment to the balance of the quarter section. Section 5.2.2 directs MR to be taken as land once parcels less than 4 hectares are being proposed. It could be assumed that this policy intent anticipates development pressures that would eventually trigger a policy change by the M.D. that would allow higher subdivision densities than are currently allowed for in the Small Holdings area. Since the Carraig Ridge proposal is density neutral, application of the Community Services Master Plan could defer reserve to the balance of the quarter sections; however this would not meet with the greater community's needs. Municipal Reserve dedication requirements, for the Carraig Ridge ASP lands, therefore, will be met through a mixture of cash-in-lieu and MR deferment to future development, to the satisfaction of M.D. Council.”

4.9 SITE DESIGN CONSIDERATIONS

a) Design factors

As with any development site, there exists a mix of opportunity and constraint factors that will determine the final development concept. In the case of the Carraig Ridge ASP development, key determinants are as follows;

- The development site eliminates the need to access Jamieson Road and thus reduces future traffic on Jamieson Road.
- Minimize disturbance to the existing landscape respecting road widths, infrastructure, stormwater management and building development.
- Design land use, trails and other amenities to be in harmony with WBR ranching operations.
- A single entrance requires an alternate emergency access route.
- Design the lot alignment to minimize environmental disturbance and maximize view opportunities.
- Design roads only after the dwelling locations are determined.
- Design roads and utility row for minimal environmental disturbance.
- Minimize roofs breaking the horizon and minimize views of new dwellings from neighbouring houses.
- Ensure that the Carraig Ridge project minimizes the visibility of new development and retains the historic Bow Valley view west to the mountains as seen from Highway 1A.
- Low density development will allow generous site development options.
- A bareland condominium concept is planned to be applied.
- Water supply will include a treatment plant, storage and underground distribution lines.
- Powerlines after the distribution line to the property will be underground where possible.
- Shallow bedrock will require special considerations for utilities, road construction and sewage disposal.
- The rolling nature of the site offers the potential for development of residential pods: small neighbourhoods within the development where

September, 2007

residents can bond together, through the sharing of common viewsapes and landscape amenities, while at the same time offering the privacy afforded by small clusters of houses.

- Wetlands and other sensitive areas are to be avoided during construction.
- Fire-smart design will be mandated.
- Development will proceed at a relatively slow rate to allow learning and improvements with each new phase.

b) Viewshed Analysis (See Complete Viewshed Analysis, Map 5)

The variety of close, medium and distant views from different directions provides a high capability for unobstructed view potential. In order to assess what two neighbouring landowners would be able to see under a given development scenario, a viewshed analysis was undertaken for the ASP. This involved creating a highly accurate Digital Elevation Model (DEM) using a “Lidar” terrain model. The model is accurate to within 20cm (1ft) vertical distance and 40cm (16in) horizontal distance. This terrain model also includes the position of existing features such as buildings and vegetation. The model identified what a person would see if they looked towards the ASP area from the top of the roof of the Keller residence and of the Dunki residence. The analysis also included views of motorists in vehicles looking north up towards the ASP area from the intersection of Highway 1A and the ASP access point. The digital elevation model was then modified to include the roof peak on imaginary houses located on 45 proposed sites throughout the development area. The roof peak height was defined as 10m (33ft) above the ground. The model then generated a map showing what the viewer would see looking out at the ASP area from the second floor height of the two neighbouring houses and from the ground at Highway 1A. The results of this survey indicate that there will be minimal impact on views from neighbouring properties and the rural nature of the area will be maintained.

5.0 AREA STRUCTURE PLAN CONCEPT

5.1 INTRODUCTION

Section 5 of this Plan provides the spirit and intent in which the plan policies are written. This section should not be interpreted as policies per se but as explanation for the policies. Section 6 contains the policies that express the specific Plan regulations. Please note that the mapping included in the Plan is conceptual in nature and will likely require further adjustments at the subdivision approval stage.

5.2 AREA STRUCTURE PLAN GUIDING PRINCIPLES

The Carraig Ridge concept plan is rooted in the following guiding principles;

- 1) Protecting undeveloped land from dispersed subdivision over a wide portion of the Jamieson road area is beneficial to existing landowners, the MD of Bighorn and its ratepayers, wildlife populations and the long term health of the ecological landscape.
- 2) Concentrating the current subdivision potential onto a small development footprint in a less-sensitive part of the Jamieson Road area is also beneficial, primarily in terms of environmental impact.
- 3) The mechanism by which this concentration of subdivision potential will be accomplished is the Transfer of Subdivision Density (TSD), which will be implemented after the allowable density under existing regulations is exceeded. The ASP requests that the MD of Bighorn pass a new Land Use Bylaw District to permit the implementation of the Carraig Ridge ASP. This new District would be entitled the “Transfer of Subdivision Density District (TSD)”, A new Land Use Bylaw District and zoning map amendment is

September , 2007

included as a separate application for adoption by the MD of Bighorn as a bylaw.

- 4) Other Wild Buffalo Ranching (WBR) land holdings not intended to be developed under this ASP will be protected through a Conservation Easement supported by adequate funding by the Developer to ensure its ongoing care in perpetuity. The Conservation Easement grantee will be a recognized charitable environmental conservancy organization. Conservation Easement donations will commence once the currently allowable density of four houses per quarter section is exceeded. It is expected that development and conservation easement donations will occur in phases over a 15-20 year period.
- 5) The land uses and infrastructure in the ASP describe the direction and commitments to the project in a conceptual manner and will evolve as additional planning and engineering work is completed. Future subdivision and development applications will be based on further detailed design of roads, lot layouts and infrastructure which will also be based on learning that occurs over the course of development.
- 6) Implementation of the project will occur and evolve over the next 15 years as a carefully crafted legacy. As each phase of development is completed, a review will be undertaken to ensure that the internally imposed standards for the project, which will meet or exceed the MD's standards in all cases, will continue to improve and evolve.
- 7) The development on the ASP lands will be true to values of land use conservation, water conservation, energy conservation and ecologically sensitive development and continued useage for ranching. Substantial capital will be invested to ensure these values are reflected in later subdivision and development applications and maintained in perpetuity.

5.3 REDUCING THE DEVELOPMENT FOOTPRINT

a) **Current MDP subdivision policy**

Within the Small Holdings policy area, there exists a potential for four parcels to be subdivided from any un-subdivided quarter section. To date, approximately 10 quarter sections have been re-zoned to Small Holdings (SH) District in the MDP's Small Holdings policy area (see Existing Land Use Bylaw Districts, Map 2). In total, approximately 58 additional privately owned quarter sections could still be rezoned to the SH District of the land use Bylaw. It is expected that land development pressures from a strong Calgary-area economy will continue and landowners in the Small Holdings District will continue to apply to rezone lands which will further fragment the remaining undeveloped land in the area.

b) **Proposed subdivision policy**

The proposed ASP gathers the existing subdivision potential from WBR landholdings ("the Sending Parcels") and transfers this subdivision potential to other more suitable lands (the "Receiving Parcel") located on portions of Lots 10, 11, 12 and 13, Plan 9911677 (see Potential Transfer of Subdivision Density, Map 6). Within the receiving parcel, the ASP contemplates concentrating this development on smaller lot areas from 0.4ha (1ac) to 2ha (5ac). This Transfer of Subdivision Density (TSD) will, when completed, eliminate further subdivision and development potential within the Jamieson road catchment area on eight quarter sections owned by the Developer. Considering the current existing development on these lands, this will result in a reduction in the future subdivision potential of the Jamieson road area by 25 parcels. Conservation Easements that will be registered against the title of this land will ensure that approximately 494ha (1220ac) of land remains in its current state of development. Once this process is completed, only changes necessary for economic ranching operations will be permitted under the terms of the Conservation Easements.

c) **Subdivision limitations**

September , 2007

The ASP concept provides for the creation of up to 45 country residential parcels within 268ha (662ac) in Lots 10, 11, 12 and 13, Plan 9911677. WBR currently has sufficient lands to permit 40 parcels to be created. It is proposed that if WBR acquires additional land or development rights from other land owners in the Small Holdings policy area up to a further five parcels would be allowed under the ASP. This flexibility to increase to a total of 45 parcels is described more fully in Plan Policy, Section 6. Until such land purchases or arrangements with other land owners occur, 40 lots will be the maximum number permitted under the proposed ASP.

d) Implications of reducing rural sprawl

It is likely that, due to the existence of the Small Holdings policy, further subdivision and development will occur in the Jamieson Road area. While the intensity after this permitted development would be still relatively low in comparison with urban development, continuing the existing subdivision pattern to its full potential it would result in a checkerboard grid of 40 acre parcels.

While the SH district has a minimum parcel size of 4ha (10ac) parcels, 16ha (40ac) parcels are common and marketable in this area. It is expected that with continued, dispersed subdivision of the area, pressure will mount for further subdivision into increasingly smaller parcels and higher densities. This has been the pattern in numerous other rural municipalities in Alberta.

As noted in Section 2, the landscape ecology of the Jamieson road area offers a diverse habitat blend. Continued large-lot subdivisions, widely dispersed across this area in such a regular grid pattern, will increasingly fragment the landscape. It also increases the likelihood of human–wildlife interactions and a reduction in natural bio-diversity. The subdivisions that are permitted under the current policy also effectively preclude economic ranching operations and result in a loss of this land for its primary use since Alberta was founded.

September , 2007

This ASP proposal offers an alternative to rural sprawl by concentrating allowable development onto a smaller footprint and by eliminating the temptation of further subdivision by future landowners. Reducing rural sprawl will have positive outcomes for both Developer and MD efficiencies and municipal cost savings. It results in:

- The reduction in future traffic pressures on Jamieson Road.
- A secured freedom of movement for future wildlife populations on land that will remain in its natural state in perpetuity.
- Added amenity value for existing residences adjacent to conservation lands.
- An increased tax base for the MD with little increased service demand. Essential municipal services will be undertaken by the Developer's condominium association (under section 38 of the Condominium Property Act, a 25 year reserve fund budget must include funding to ensure independent operation of infrastructure associated with the bareland condominium).
- Assurance that a majority of the land remains available and useful for ranching. Under the ASP more than 70% of the land area is available for ranching operations after development has been completed. If this land was developed under the current policy it is likely that the roads, fences and development that were necessary to service 16ha (40ac) parcels would result in a complete loss of the full land area for economic ranching operations. Evidence of this fact, while anecdotal, can be seen in every area that has been subdivided following the policy to date.

5.4 TRANSFER OF SUBDIVISION DENSITY (TSD)

a. **Background on Transfer of Subdivision and Development Density History in North America**

The TSD concept is often referred to as Transfer of Development Rights (TDR) in the United States or Transfer of Development Credits (TDC) in Canada. The transfer of density concept is a relatively recent planning technique, having been first applied in New York City in 1968 to conserve historic landmarks. Since then, United States jurisdictions have implemented numerous examples of density transfer programs. One 2003 study has documented at least 137 such American programs. In Canada, several urban municipalities have applied single-landowner transfers of development density in order to conserve historical buildings and to encourage affordable housing. However, to date there is no known municipality in Canada where a multi-landowner density transfer program has been implemented for purposes of rural land conservation.

b. **TSD Definition and Explanation for the Proposed ASP**

The following section explains the mechanics of the proposed MDP policy amendment to allow for the implementation of a TSD policy. The Small Holdings Area identified in the MD of Bighorn's Municipal Development Plan policy allows up to four parcels to be subdivided from an un-subdivided quarter section. The Developer (WBR) proposes a TSD policy to gather the existing subdivision potential on their land, on a quarter section by quarter section basis, in the Small Holdings area (the "Sending Parcel") and transfer that subdivision potential to the landowners ASP site (the "Receiving Parcel").

The lots to be subdivided on Receiving Parcels will be reduced in size from a typical 4 hectare or 16 hectare (10ac or 40ac) subdivision to approximately 0.4-2ha (1-5ac). There will be no change to current MDP policy respecting the number of lots allowed to be subdivided from a quarter section but the new policy would allow these same number of lots to be gathered in an alternate appropriate area. The proposed clustering of subdivision and use of smaller lot

September, 2007

sizes will significantly reduce the amount of land affected by human development, but would not increase the overall allowable development density on WBR land. Except for existing development, trail development and development required to operate a ranch, there will be no future development allowed on the Sending Parcels.

It is proposed that the sending activity would occur in phases concurrent with the subdivision applications. Currently, each of the four quarter sections which make up the Receiving Parcel has allowable subdivision potential of four houses. As development exceeding this allowable subdivision threshold occurs on the Receiving Parcel (being lots 10-13), this ASP requires that, on a quarter section by quarter section basis, a Conservation Easement on the Sending Parcel must be donated prior to seeking further subdivision approval from the MD. Staging the process in this manner would allow initial development to occur up to the currently permitted density and allow sufficient time to complete the Conservation Easement negotiations.

5.5 CONSERVATION EASEMENTS

a) Definition and Explanation

The Sending Parcels noted above must have some type of encumbrance registered on title to ensure that future landowners and future municipal Councils cannot allow additional development on them and that this condition will remain in perpetuity. The Developer proposes to accomplish this objective through the application of a *Conservation Easement to the appropriate pieces of land*. A Conservation Easement is a legal encumbrance registered against the title of the property that establishes certain rights in favour of the party to whom it is granted. The concept is defined under sections 22-24 of the Environmental Protection and Enhancement Act (EPEA). The holder of the Conservation Easement is an organization recognized under the legislation. In the case of this Plan, it is likely that the designated organization would be the Nature

September, 2007

Conservancy Canada (NCC). Discussions between the Developer and the NCC have commenced, but the agreements and paper work necessary for this to occur have not currently been completed. The process of coming to final terms with the NCC can typically take up to a year to complete. As described above, it is proposed that prior to any subdivision in excess of four parcels per quarter section, WBR would provide appropriate documentation to the MD that sufficient lands for the subdivision being applied for have been protected by Conservation Easement with a party recognized under the legislation. WBR will also commit to provide sufficient funds to ensure that the agency which receives the Conservation Easement is able to ensure compliance with the terms of the Conservation Easement Agreements.

All land within the ASP Receiving Lands, plus the undeveloped land within the Sending Lands, will be precluded from further development in perpetuity through the application of Conservation Easements, except for land needed for ASP development (including land subject to earthmoving and gravel supply in the process of construction). The terms of the Conservation Easement Agreement would permit activities related to the continuing use of the lands for ranching but would not allow any other type of development.

b) Land To Be Conserved Within The ASP (all numbers approximate)

Respecting lands in the ASP area (i.e. settlement lots 10-13 Plan 991 1677), the Developer intends to design residential parcels with sizes between 0.4-2ha (1-5ac). Using an average area of 1.2ha (3ac) per residential lot, actual residential land to be subdivided into 45 lots would consume 54ha (135ac). Additional land reserved for other uses such as maintenance and amenity structures (community building, horse stables, utility structures, paths and communal open space etc) would add another 31.6ha (78ac). Road surfaces would use 4.7ha. Therefore, the area to be subdivided from the project site is roughly 94 ha (232ac) out of a total ASP site area of 268ha (662ac) - a land utilization factor of 35% within the ASP study area. The remaining 65% of land within the ASP study area will be protected by a Conservation Easement. The Conservation Easement may

September, 2007

specify other exclusions to the total noted above, plus land to be required for ASP construction purposes, ongoing ranch operations, existing homesteads, etc). It is not anticipated that these exclusions will be material in terms of the percentage of the total land affected or the types of uses that may occur.

c) Land To Be Conserved Under All WBR-Owned Land

Of the 762ha (1,883ac) owned by WBR, up to an estimated 668ha (1,653ac) will be protected by Conservation Easements in perpetuity as subdivision phases proceed. When combined with the conserved land on the ASP site, this will result in approximately 88% of all WBR land within the Small Holdings policy area remaining in its current state of development in perpetuity. Most of this land will remain in a large, contiguous block of land suitable for continuing ranching operations.

ESTIMATE OF POTENTIAL CONSERVATION LAND TO BE DEDICATED

LAND AREA	TOTAL LAND HOLDINGS HECTARES (AC)	FUTURE DEVELOPMENT AREA	REMAINING CONSERVATION AREA
ASP area	268 ha (662 ac)	94 ha (230 ac)	174 ha* (432 ac)
other WBR land in Small Holdings Policy Area but outside ASP	494 ha (1221 ac)	0 ha*	494 ha* (1221 ac)
Total area	762 ha (1883 ac)	94 ha (232 ac)	668 ha (1653 ac)

* excepting thereout land used to be used for ASP construction purposes, ongoing ranch operations, existing homesteads, etc.

d) Scheduling of the Subdivision Density Transfer and Conservation Easement

The Conservation Easement and density transfer to receiving lands in the ASP area would be triggered once the initial phase of 4 parcels in each of lots 10-13 plan 991 1677 has been registered. Each fifth or subsequent new lot to be subdivided thereafter in each lot would require

- i) a transfer of density from a Sending Parcel in the Small Holdings area to a Receiving Parcel within the ASP boundary and
- ii) a Conservation Easement registered against the title of the Sending Parcel to prohibit further subdivision and limit development
- iii) a re-districting of the Conservation Easement lands to a CE District in order to flag both the conservation easement conditions and elimination of future subdivision potential on that parcel.

Finally, a Conservation Easement will be applied to the land within the ASP area once all construction has been completed in accordance with this ASP. In this way, the location of development will have been finalized and the remainder of the lands would be identified for protection.

5.6 THE CONCEPT DESIGN (see Development Concept, Map 7)

a) Parcel Density

As noted earlier, the ASP identifies only 40 parcels that would be considered eligible for subdivision at this time. Should additional land within the Small Holdings policy area be acquired by WBR, or terms arranged with other land owners in the SH area, there is an option under the ASP to add five more lots to the ASP site without requiring an amendment to the Plan. No increases in density above the 45 parcels would be permitted.

b) Lot Size and Distribution

The concept map identifies six development pods which are intended to contain clusters of five to ten dwellings per cluster. Each ASP cluster will be subdivided into residential lots between 0.4–2.0ha (1-5ac) in size. The location of the development pods was first designed specifically with views in mind. Road design followed lot placement. Development pods maximize the opportunity for close, medium and distant views. It is in the interest of the Developer to minimize the visibility of the dwellings from Highway 1A, and neighbouring landowners.

While potential dwelling sites are identified in the project phasing, the ASP policy does not specify the exact location of the dwellings at this time. This will be refined at the time of subdivision approval. Instead, the development clusters on Map 7 provide general concepts regarding how the development will occur. It is expected that over the course of the anticipated twenty-year development term, lot placement, lot size, road configuration, the number of clusters and cluster orientation will evolve as more detailed work is completed for the site. For this reason, the site layout provided in Map 8 should be considered as conceptual. It is expected that the concept will continue to change to improve conservation, minimize disturbance and allow the configuration to become more aesthetically pleasing in the future.

c) Accessory Buildings and Uses

A site of approximately 7.3ha (18ac) on the common lands will be used for a maintenance site and residential amenity area. Uses may include, but are not limited to, a shop for maintenance equipment, security office, recreation building, community center, community workshop, riding stables, an equestrian arena and space for essential utilities such as a water treatment, fire fighting equipment and waste transfer.

5.7 TRANSPORTATION CONCEPT

It is recognized that full development at Carraig Ridge is expected to occur over a 15-20 year period. The intent of the transportation policy is to meet the highest practical standards for appropriateness of the transportation infrastructure to meet the intended uses of the community as development progresses. It is expected that these standards, particularly regarding road alignment, width and construction technique may evolve over the schedule of the development. The standards outlined in this document apply to the first phase of development, but may be improved in future stages. These detailed designs and commitments will be properly implemented through existing Municipal and Provincial approval processes, development agreements, Conservation Easements and other MD policy documents. While the development will need to cooperate with MDP policy, it is expected that Carraig Ridge will have on-site policy for road construction in order to remain consistent with the prime objective of minimal disturbance to the site. All road designs will be appropriate for the traffic and speeds limits imposed in the development regulations. Road design will be approved by APEGGA-licensed Professional Engineers in consultation with the MD of Bighorn staff

One of the main objectives of producing an appropriate road system for the community is to minimize disruptions to the natural environment. Recognizing that many of the lot locations and road locations are at this point are preliminary and will evolve over time, the transportation policy will evolve to meet standards which are appropriate in the future when the actual development occurs. Since the transportation infrastructure will be the financial responsibility of the Development, these standards will be set by a Professional Engineer hired by the Developer at the appropriate time relative to the construction of new infrastructure with the objective of constructing road infrastructure that meets acceptable safety standards with minimum site disturbance. In order to achieve these objectives it may be necessary to incorporate speed reducing designs for additional road clearing during winter and other measures that promote reduced road construction requirements.

a) Access points

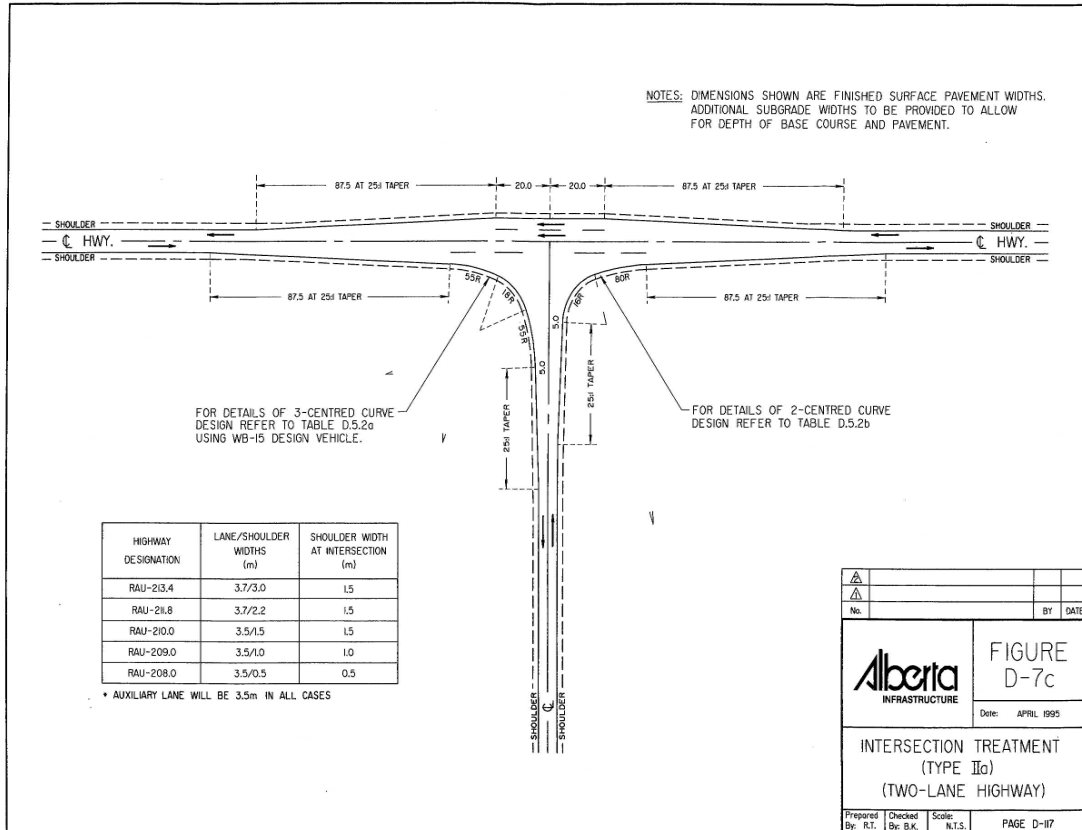
Access to the site will be by Highway 1A only. No traffic except for ranch equipment and heavy construction equipment will be allowed to enter the project from Jamieson Road. A gravel access road between Jamieson Road and the ASP area is under construction with the intent of providing access for ranching and construction activities. This road will eventually serve as an alternative emergency access. The access point will be gated and secured with breakaway locks. No passenger vehicle access other than ranch trucks will be allowed on this road.

b) Highway Intersection Treatment

A 2006 Traffic Impact Assessment has concluded that the impact of the ultimate Carraig Ridge traffic on the operations of Highway 1A is considered negligible. Nonetheless, the intersection of Highway 1A and the Project Site will require road upgrading to handle the anticipated turning movements. Upgrading will include paved centre turning lanes and paved acceleration/deceleration lanes. The access intersection at Highway 1A would be constructed to the Type IIa standard as per AIT requirements. A sample plan of the proposed intersection is shown below.

September, 2007

PROPOSED HIGHWAY 1A ROAD INTERSECTION TREATMENT



c) Internal Road Cross-section

The concept plan proposes that most internal road cross-sections reflect a paved, country lane-style access. The access road between the main entrance at Highway 1A and the community access point is located about 150m north of the junction of the existing access road to the Shell gas well. This section of road will remain as a gravel road within a 20m right of way in order to maintain a low profile for the project. Beyond that point, a secondary entrance feature will signal a transition to paved surfaces.

These paved roads are characterized by traffic calming measures such as narrower road widths, speed bumps and internally enforced speed limits of 30km/h or lower. Secondary roads serving individual development clusters will be reduced in size, where practical and safe, to minimize environmental disturbance. Private lanes leading from the main or secondary internal road

system will be largely located within the confines of each residential lot and for the most part are not located on common property.

d) Road Cross-section Enhancements

The ASP proposes a variation of the standard to allow for the following increase in road standards;

- Where necessary, add additional right of way to widen load-bearing shoulders. The widened shoulders would be dressed with topsoil and seeded with native grass varieties. This option is intended to offer passing opportunities and enhanced vehicle manoeuvrability around occasional obstacles without increasing the width of unsightly pavement.
- Detailed designs for road cross-sections and grades will be finalized at subdivision approval stage and will be based on proven systems from other communities. In addition, approval by an APEGGA registered Professional Engineer engaged for this purpose by the Developer in consultation with the MD of Bighorn staff will be required. Other road treatments will be considered to ensure safety on this country-lane philosophy including:
 - Enhanced delineation, signage and road widening for sharp curves;
 - Improved road geometry, especially for horizontal curves, including design elements, such as curvature, and widening through the curve;
 - Enhanced pavement markings;
 - Skid-resistant pavement surfaces;
 - Improved shoulders to prevent run-off-road (ROR) over-recovery, including elimination of edge drops and improved shoulder slopes; and
 - Rumble strips to slow vehicles on approaches to hazardous locations.

e) Jamieson Road Improvement Levy Policy P-6

September, 2007

The Carraig Ridge Transportation Impact Assessment estimates the traffic generated from the project will average 103 vehicle trips daily using the Highway 1A and Carraig Ridge road intersection. The ASP would allow up to 29 parcels to be transferred from the area of the Small Holdings Policy are accessed by Jamieson road to the ASP area. Using the transportation impact assessment formula (derived from the ITE Trip generation manual; 7th edition), this would result in future daily vehicle trips on Jamieson Road being reduced by 59 vehicles.

In 1998, the MD of Bighorn instituted an Improvement Levy for the upgrading of Jamieson Road. The stated objective of undertaking the improvements is handle the traffic expected to be generated as a result of Small Holdings subdivisions that may be approved in the future in the Jamieson Road area. The intent of the Carraig Ridge access scheme is to eliminate added traffic on the Jamieson Road.

WBR will provide the MD with a levy in accordance with the P-6 policy. This levy will be paid at the time of subdivisions are registered by the developer.”

5.8 WATER SUPPLY AND DISTRIBUTION CONCEPT

Water supply is a key development factor. According to the Carraig Ridge Groundwater Supply Assessment, sufficient water has been proven on the site for 56 dwellings where water conservation measures are implemented. The community will be required to use water-saving and recycling devices as well as applying water-saving landscaping principles to achieve a usage at or below 1.2 m³/day/lot. It is anticipated that water supply will be by means of several connected wells on-site and a water treatment plant. A reservoir with deep water lines for water distribution is being considered. This reservoir would also serve for fire fighting purposes.

September, 2007

The piped water distribution system will generally follow road alignments to minimize construction, except where impractical because of subsurface conditions, such as rock. Firefighting capacity will be enhanced with a 20,000 gallon reservoir or alternatively distributed reservoirs with the same capacity and dry hydrant(s).

A water licence will be obtained prior to subdivision endorsement by the MD. Other options exist; to provide a well for each house or water trucking should regulatory requirements necessitate an alternative solution.

5.9 WASTEWATER MANAGEMENT CONCEPT

Each parcel will be required to install a state-of-the-art Extended Aeration (Bio-Kinetic) on-site sewage disposal system. These systems are potentially capable of achieving a tertiary treatment standard of 10 parts per million (ppm) Biological Oxygen Demand (BOD) and 10ppm Total Suspended Solids (TSS). Secondary effluent disposal will be through an engineered treatment mounds in accordance with Provincial guidelines. While native soil material is available to be used in the construction of private treatment mound septic fields, additional suitable loam and supplementary material may need to be imported to the site.

5.10 SURFACE WATER MANAGEMENT CONCEPT

Stormwater will be managed on-site in conformity with Alberta Environment Stormwater Management Guidelines. Provincial guidelines require that post-development flow volumes/rates do not exceed pre-development rates. The main area expected to require additional attention is increased runoff flows due to road development.

September, 2007

Runoff from dwellings will be easily managed on site and existing drainage courses will not be altered. Opportunities also exist to use runoff for on-site purposes such as irrigation and firefighting. Detailed stormwater management design will be presented to the MD at the subdivision stage.

5.11 ECOLOGICAL AND ENERGY CONSERVATION MEASURES

The Carraig Ridge logo includes the subheading “A Conservation Community”. The Developer is committed to this concept and will undertake ecological, water and energy conservation measures consistent with the expectation suggested by the concept of a Conservation Community.

a) Wildlife fencing

Wildlife advisors will provide a program for the sensitive use of fencing along the ASP property line and surrounding the residential clusters. Site design guidelines will prohibit any fencing which would significantly affect elk or other large animal movements. More specifically, the development and ranching plan will involve configuring property-line and cross-fencing to have minimal disturbance on the elk herd and other species frequenting the area. This may be achieved by increasing the height of the bottom strand of wire fences. Development-cluster fencing will be constructed to different standards than those for cross-fencing, as required to meet specific design character requirements. These fences will be arranged to permit the unrestrained flow of wildlife around the development clusters.

b) Site-specific environmentally significant areas

The Carraig Ridge Environmental Site Assessment document (Section 6 - Table 3) contains a number of on-site construction recommendations. It also identifies several significant sites that should be protected in their natural state.

Land outside the ASP area that is intended to be part of the Conservation Easement will be identified as part of a baseline assessment undertaken by the

September, 2007

Conservation Easement holders. Further, architectural and landscaping design guidelines and condominium bylaws will require landscaping with primarily native species. Controls will also be implemented on the area of each site that can be landscaped.

c) Water conservation

The Carraig Ridge water supply assessment used three of the six existing wells to provide water for 56 lots using 1.2m³/day/lot. This is based on using water conservation measures. All water using devices will be mandated to use ultra-low flow fixtures. Water-conserving landscaping (mesiscaping) techniques such as drip-irrigation and use of engineered soils to optimize moisture retention will be included in landscaping guidelines for each lot. Rain barrels and more sophisticated roof collection systems will also reduce irrigation needs.

d) Energy Efficiency

The Developer is committed to applying optimal energy efficiency methods. Architectural and design guidelines will impose requirements for energy efficient appliances, home insulation and strongly encourage active and passive solar strategies. The methods for achieving high standards for energy efficiency are expected to evolve over the life of the project but the intent will be to meet the highest current standard for energy efficiency as new development occurs. The Developer plans to evaluate the use of alternative energy supplies such as wind power for the development and will incorporate them if they appear economic over the life of the project.

e) Lighting Strategies

People love to gaze at the night sky. Residents also want protection from intrusive lighting from neighbours. Architectural design guidelines will apply strategies and techniques to reduce glare while still maintaining essential property security. A guide for this approach is outlined at www.darksky.org. This website is dedicated to balancing legitimate security and safety needs with the desire to avoid nuisance glare or be able to enjoy a starry sky at its best. Architectural guidelines will be prepared and enforced for specific lighting uses.

Communal street lighting will only be permitted in group use areas or where security is a prime consideration. This program will be adopted for both residential and amenity areas.

5.12 OPEN SPACE, MUNICIPAL RESERVE AND TRAILS

a) Municipal Reserve Allocation

The Community Services Master Plan is a municipal policy document guiding the Council on the allocation of municipal reserve requirements under the Municipal Government Act. This ASP is guided by the Community Services Master Plan. The Master Plan directs that subdivision approvals to the Small Holdings District of the land use bylaw defer Municipal Reserve to the balance of the quarter. It is assumed that the spirit and intent of section 5.1.1 of the Community Services Master Plan refers to a time where there will be subdivision densities greater than currently allowed for in the existing Small Holdings Policy of the MDP. Since the ASP proposes no additional density in the Small Holdings than the current policy, there will be no change in overall population pressures in the Small Holdings area that would trigger a need for Municipal Reserve.

b) Environmental Reserve

No land for Environmental Reserve (ER) has been identified within the ASP. Any requirement for ER will be identified at the subdivision stage.

c) Trail systems

A key attraction of Carraig Ridge will be an on-site trail system and the entrenched values of environmental conservation. These private trails will also be available for use by other Jamieson Road land owners. Usage of the trails will be governed by a written agreement, specifying terms of use based on common courtesy and joint usage with continued ranching operations. The agreement will specify at a minimum: non-motorized use only, stay on trails, pick up after oneself, no hunting or firearm discharge, refrain from nuisance activities

September, 2007

such as excessive noise, keep gates closed and such other restrictions that are appropriate to the conservation elements of the project and the continued ranching use.

The trail design will be based on the following principles;

- private trails are for the use of Carraig Ridge and Jamieson Road landowners,
- minimize the need to travel over road rights of way,
- trails will be established on conservation lands over time and within proper ecological parameters under NCC or other conservation-supportive guidelines from the agency receiving the Conservation Easement,
- the use is consistent with continued ranching operations.

5.13 ARCHITECTURAL DESIGN GUIDELINES

The houses of Carraig Ridge shall be built to very high standards from the points of view of design, materials, landscaping, energy efficiency, and water efficiency. The design and construction of the homes shall be guided by detailed architectural processes and guidelines to be developed by the Developer working in cooperation with Christopher Alexander and his firm Patternlanguage.com. Such prescribed processes and guidelines shall form a part of the rules of the Carraig Ridge condominium development.

In brief, the houses shall all share a uniformly high quality of materials and construction. The houses shall share a handmade feeling of very high quality. The houses, though individually designed, shall be built from a shared palette of construction materials and construction systems. The respective designers of the houses, though given a great deal of discretion, shall choose the system and material of their liking from a “kit of parts”, an approved list of materials and systems to be developed the Developer working in cooperation with experienced architectural consultants. These materials shall likely include natural local stone,

September , 2007

heavy timber, river stone, heavy masonry structure, high quality trowelled interior plaster, custom-made multi-pane windows, a high level of thermal insulation, low stone walls on the land, wood fences here and there. In short, this will be a community of very high quality, in keeping with the beauty and feeling of the land and in keeping with the rural nature of the area.

In addition to materials and construction systems prescribed in the guidelines the process by which houses are to be designed will also be specified, in order to ensure that the siting design and architectural design of each home is respectful of the land, respectful of existing neighbours both on the subject property and beyond the property, and respectful of views of the house and from the house. The details of these architectural guidelines and design process guidelines shall be further delineated in the future, and incorporated in the rules of the Carraig Ridge condominium association.

Many housing communities, even very high-end communities, are designed in a very schematic master plan fashion. In other words, a plan, which dictates the entire development is done roughly and quickly and then governs the details of each house. Even though the houses may number in the dozens, the hundreds, the thousands; and even though some of them may not be built for ten or fifteen years or more, such a plan is locked in at the very outset.

This process is rife with error. The thousandth house is precisely located, sized, often even designed in detail, before the first house is even built. There is no opportunity to learn from the earlier houses when siting and designing the later houses; no opportunity to respond to viewsheds which have developed or been modified by the progressing construction; no chance to adjust to give greater privacy to neighbours' houses previously built in the project; no opportunity to respond to changes over time in the natural landscape. In short this process is a conceit of great proportion; it embodies the mistaken belief that one can foresee every way to make each and every house as good as possible, in every detail, before the first house has even been started. This is of course impossible, and

September , 2007

so this process is guaranteed to deliver a sub-optimal result, perhaps even a grim and dreadful result.

This project is intended to avoid these mistakes, and achieve superior results: its goal is a community of buildings harmonious with the land, with each other, and with neighbouring, off-site homes. And so the house locations and road locations shown herein are all approximate, and represent only the best efforts to date to locate these elements. The detailed location and configuration of all buildings and roads shall ultimately be adjusted from the locations shown herein.

As the project proceeds in construction, in order to maximize the quality of the final developed community, each house and section of road shall be checked and adjusted before it is built. In this fashion, all parties: the developer, the firm writing the guiding rules for design, the individual home designers themselves, the lot owners; can all learn from and adapt to what is done first. They can adapt and improve the particulars of each individual building to the local situation at that moment. For example, a house can be shifted and rotated, in order to avoid staring into the main window of the neighbouring house which had been built the year previous; a lane can be re-aligned so as to preserve a beautiful stand of trees and yet still reach the house which has been so shifted, and so on.

5.14 WILDFIRE AND FIREFIGHTING MANAGEMENT GUIDELINES

The MD of Bighorn MDP requires policies that apply 'firesmart' design guidelines. The ASP policy specifies guidelines derived from the Partners in Protection Program (1999), *Fire Smart: Protecting Your Community from Wildfire*. While most of the ASP development area does not contain heavily forested areas, grass fires remain a concern. In addition to other fire prevention methods, a 20,000 gallon water reservoir, or distributed reservoirs of equivalent capacity will

September , 2007

be constructed with a dry hydrant(s). The Developer also intends to consult with the Jamieson Road volunteer fire brigade and may commit to supplementing the existing firefighting equipment in the area. Where economically practical, all dwellings and community use buildings other than those of masonry construction will include sprinkler systems.

5.15 PHASING OF DEVELOPMENT (see Concept Phasing, Map 8)

The locations of building sites and road infrastructure on Map 8 are conceptual and will be more closely defined at the subdivision stage. The first phase of development will include approximately 15 dwellings which are expected to be constructed over a five year period. The remaining phases of development are expected to be completed over a 15 to 20 year time frame. During the first phase, the necessary improvements to access from Highway 1A and the major access roads, including the emergency access road, will be constructed if required by Alberta Transportation. The maintenance buildings and other community type buildings will be constructed to meet the needs of the community as they evolve. The first phase will require basic infrastructure of roads, maintenance structures, water treatment plant and waste management site. The conceptual site areas requirements for the Carraig Ridge Plan are as follows;

SUMMARY OF CARRAIG RIDGE ASP LAND DEVELOPMENT (ESTIMATED)

Districts	Total Hectares (Ac)	Number of residential parcels	% of ASP area	estimated population (@2.47 PPDU)
Carraig Ridge single family dwellings	53 ha (131 ac); assumes avg 1.2ha/lot	44 lots (max. dev't scenario)	20.1%	109
Quinn Residence subdivision	approx. 4 ha (10 ac)	1	1.5%	3
ROW within clusters	approx. 16 ha (40 ac)	N/A	6%	N/A
Main Commons	Approx. 4 ha (10ac)	N/A	1.5%	N/A
Local Commons (Each Cluster)	Approx. 6 ha (15 ac)	N/A	2%	N/A
Communal open space	173 ha (427 ac)	N/A	65%	N/A
maintenance and recreation site	7.3 ha (18ac)	N/A	2.7%	N/A
road carriageway @5.5m	4.7 ha (11.6 ac)	N/A	1.7%	N/A
Total	268 ha (662 ac)	45	100%	112

5.16 MANAGEMENT OF PRIVATE INFRASTRUCTURE

It is proposed that the project will be developed as a Bareland Condominium under the Condominium Act. Road maintenance, water supply, water treatment and solid waste transfer will be administered under the condominium association bylaws and paid for by the residents.

Municipalities are often concerned that private services and facilities may fall into disrepair or require the municipality to take over private infrastructure if a condominium association is not diligent, is under-capitalized or chooses to dissolve the association. Infrastructure facilities that are abandoned as a result (known as “orphan facilities”) typically become the municipality’s responsibility. To ensure that this will not occur, the Condominium Act now requires a 25 year reserve fund budget to establish a fund that ensures the diligent re-capitalization of the communal infrastructure in perpetuity. This reserve fund will grow as subdivision occurs over the expected 20 year development period.

5.17 MD OF BIGHORN POLICY AMENDMENTS

Other relevant implementing bylaws are intended to be approved concurrently with this ASP and are included in the Appendices under a separate cover but do not form part of this ASP Bylaw.

a) Municipal Development Plan Amendment

An MDP amendment is included as a separate application concurrent with the ASP application. It sets out a relatively simple policy framework to provide for landowner TSD initiatives that can be implemented within the normal approval processes of the MD of Bighorn by any landowner in the Small Holdings Policy area.

b) New Land Use Bylaw Districts

September , 2007

Two new land use bylaw district are included as separate applications as part of the implementation of the ASP. The first District, entitled the Transfer of Subdivision Density District (TSD) is applied to Receiving Parcels. The second District, entitled the Conservation Easement District (CE) is applied to Sending Parcels.

c) Land Use Bylaw District Map Amendment

A land use bylaw map amendment is included as a separate application to address the rezoning needed to allow for the ASP site to be implemented.

6.0 AREA STRUCTURE PLAN POLICIES

6.1 INTRODUCTION

The following policies are the standards that the Developer and the municipality shall follow unless an application is made to amend the ASP and/or the Land Use Bylaw.

6.2 LAND USE POLICIES

a) Future subdivision and development shall be in accordance with this Area Structure Plan. Major deviations from the Plan design and policies shall require an amendment to this Plan. Minor relaxations may be considered without an amendment to this Plan where the Developer can demonstrate to the satisfaction of the Subdivision or Development Authority that the proposed changes would maintain the overall intent of the Plan policies. The plans that have been submitted are conceptual in nature and intended to evolve within the stated objectives of the plan as additional work is undertaken.

b) MDP Amendment - Subdivision of parcels shall be in accordance with the overall density allocation within the Small Holdings Policy in the MD of Bighorn Municipal Development Plan (MDP) as amended from time to time. Proposed MDP policy provides the option for Transfer Subdivision Density (TSD) from sending parcels to receiving parcels within the Small Holdings Area. The TSD concept and application are described in sections 5 and 6 of this Plan.

c) Subdivision Limits - The maximum subdivision density allowable in the ASP area shall be

- i. 4 residential parcels per Settlement Lot (this total includes the existing Quinn residence) without a requirement for a transfer of subdivision density from other quarter sections in the Small Holdings Area of the MDP or,
- ii. 17 to 40 residential parcels where there is a transfer of subdivision density from other quarter sections owned by WBR within the Small Holdings Policy Area of the MDP or
- iii. 41 to 45 residential parcels where there is a transfer of subdivision density from other quarter sections owned by WBR and/or other landowners within the Small Holdings Policy Area of the MDP.

d) Further residential subdivision beyond 40 lots shall require the transfer of additional density from Sending Parcels in the Small Holdings policy area but shall not require an amendment to this ASP. Residential subdivision beyond 45 lots shall not be allowed without an amendment to this ASP. A fifth or subsequent lot on any quarter section within the ASP will trigger the requirement for a transfer of subdivision density as provided for in this Plan.

e) Other Bareland Units – Other subdivision to create non-residential bareland units for the purpose of amenity areas, infrastructure or ranching operations are considered ancillary to residential uses and shall not be considered part of the density calculation nor require a conservation easement.

f) Concept Design – The Carraig Ridge Development Concept, Map 7 is conceptual. For each phase of development, lot configuration and final road alignments will be designed prior to the subdivision approval stage for that phase.

September, 2007

g) Concept Phasing - The Development Concept Phasing, Map 8 is conceptual. The actual numbers of lots within each phase will be determined based on detailed design. The developer may change lot orientation, location and configuration as long as the total number of lots does not exceed the maximum permitted of 45. The anticipated build out of the development is expected to occur over a 15 year time period.

h) Land Uses - Land uses in the ASP area shall be limited to

- single detached dwellings and accessory uses thereto,
- associated public utilities as may be needed to service the Plan area,
- recreational and amenity uses that are accessory and in support of the primary residential use including areas such as equestrian uses and recreation buildings for use of lot owners,
- stripping, grading and sand and gravel excavation as required to construct on-site development,
- maintenance works uses.

i) Architectural guidelines - Architectural design guidelines will be established in consultation with MD staff by the Developer in accordance with the proposed conceptual plan at the subdivision approval stage. Conceptual architectural design concepts are identified in Section 5 of this ASP.

j) Slopes - Most of the project site is underlain by bedrock, thereby allowing for placement of buildings near slope edges. Moreover, such areas are not subject to fluvial forces or subsidence. Structures located within 30m of a slope of 15% or greater shall require a Professional Engineers geotechnical study and stamped drawing.

k) Trail System - The Developer shall develop a written agreement that will extend usage privileges to Carraig Ridge and Jamieson Road land owners to the trail system that will be developed. The terms of this agreement between

September, 2007

prospective users and Wild Buffalo Ranching will allow access to the trail system consistent with the usage of the land as a working ranch and the conservation plan, which is to be implemented and improved from time to time. This agreement will allow WBR to temporarily or permanently revoke trail usage privileges in the event trail usage rules are violated. The intent of the agreement will be to treat trail users as good neighbours who use the trails with the understanding that trail users are in a conservation area and part of a working ranch. Part of the agreement between trail users will include a clause indemnifying WBR, its employees and consultants, the condominium association and individual property owners from liability claims.

l) Horse Stables – Any proposed horse stables shall be located on sending lands in proximity to the ASP area but not on the ASP Plan area lands themselves.

6.3 CONSERVATION EASEMENT AND DENSITY TRANSFER POLICIES

a) Receiving Parcels - Lots 10-13 Plan 991 1677 shall be designated as “receiving parcels” where subdivision density will be concentrated. However, the first phase of subdivision in this Plan (ie. four residential lots per each of Settlement Lots 10-13 inclusive), will not require a Conservation Easement.

b) Sending Parcels – Any subdivision beyond the initial 4 parcels within each of lots 10-13 plan 9911677 shall require a transfer of additional subdivision density from a Sending Parcel at the rate of four parcels per unsubdivided quarter section (or pro-rated as the case may be) without requiring an amendment to this Plan.

c) Conservation Easement - Any application for additional subdivision beyond the first four parcels within each of lots 10-13 inclusive (including the Quinn residence on lot 10), shall require a Conservation Easement to be

registered on the specific sending parcels that are the subject of the density transfer.

d) As a condition of further subdivision approval in excess of four parcels per Settlement Lot, the Developer shall enter into a Conservation Easement with an appropriate agency approved by the MD. The Conservation Easement shall be placed on other lands in the Small Holdings Policy Area so that additional subdivision density in the ASP area can only be approved after lands with equal or greater potential subdivision density have been precluded from further subdivision by the Conservation Easement.

e) Newly created residential lots in the Plan area shall be endorsed by the MD only after the applicant has registered a conservation easement (to the satisfaction of the M.D.) against the title of one or more “sending” quarters located within the Small Holdings policy area and in accordance with the ratio of one unsubdivided “sending” quarter per four lots in a “receiving” quarter as identified in section 6.3 of this Plan. The requirement for a registered conservation easement on one or more sending quarters will be triggered when the proposed lot density in one or more of the ASP “receiving” quarters will be greater than four parcels per quarter section.

f) The sending parcels as identified in map 6 of this Plan are conceptual only. The Plan anticipates that other landowners in the Small Holdings policy may become part of the Carraig Ridge density transfer. In addition, new opportunities for land acquisition by the developer may arise that would also be appropriate sending parcels. Therefore, the developer may nominate any quarter section within the Small Holdings Policy Area to transfer subdivision density to the Plan area without an amendment to this Plan. The number of parcels eligible to be transferred on a sending quarter shall be based on a mutually agreeable assessment between the developer and the M.D.

g) A Conservation Easement shall be applied on those remaining ASP lands that will not be used for subdivision or development in accordance with the

September , 2007

provisions of this ASP. The identification of lands suitable for the Conservation Easement and registration of the Easement should be concluded no longer than one year after the final phase of subdivision and development has been registered.

h) The conditions of the Conservation Easement shall include provisions to prevent future subdivision and development of the specific WBR land holding within the Small Holdings policy area which allow the transfer of the potential development density to the ASP area. The Conservation Easement will allow future trail development and appropriate stocking rates on WBR grazing land. It is expected that the Conservation Easements necessary to allow potential development density to be transferred to the ASP area will be implemented over time on a quarter by quarter basis. Conservation Easements may allow non-residential development related to agricultural or ranching operations that will be controlled by MD regulations on other lands in the area. In addition, essential infrastructure such as natural gas lines, power lines and sand and gravel resources in proximity to Highway 1A will be excepted from Conservation Easements.

i) Prior to subdivision approval for any Plan phase that requires the transfer of density from one or more sending parcels, the MD shall first rezone the specified sending parcel (or parcels) to the Conservation Easement District (CE). Prior to subdivision endorsement, a conservation easement shall be registered against the title of those parcels used as sending parcel or parcels in that Phase.

j) The Agency accepting the conservation easements will conduct an independent environmental assessment of all sending parcels. These environmental reports will be presented to the MD as required before subdivision approval. Acceptance of the easement by the chosen accredited agency will be sufficient proof of the sending parcel's environmental value.

6.4 RESERVE LAND POLICIES

a) Municipal Reserve dedication requirements for the Carraig Ridge Area Structure Plan lands will be met through a mixture of cash-in-lieu and MR deferment to future development, to the satisfaction of M.D. Council.

6.5 SERVICING POLICIES

a) Development Agreement - The Developer shall enter into a development agreement with M.D. of Bighorn prior to subdivision approval for the Plan area.

b) Servicing Costs - The Developer shall be responsible for all costs associated with on site infrastructure development related to piped water supply and all utilities.

c) Wastewater Management – Sewage treatment shall be a two-stage system including an Extended Aeration (Bio-Kinetic) on-site sewage disposal system combined with engineered sewage mounds constructed to Alberta Labour Standards.

d) Water supply and distribution - A piped water supply, water licence or alternative water supply arrangements, treatment and distribution system shall be provided to the satisfaction of Alberta Environment and the MD of Bighorn. In circumstances where a communal, piped water supply is precluded, the applicant shall provide an alternate water supply through either single-home wells other means in accordance with Provincial requirements Trucked-in water will not be allowed as a means of potable water supply. As the development is planned to occur in stages water requirements will be matched to the development contemplated at each phase in the event that water limitations on this site are encountered. If insufficient water is available for the full scope contemplated in

the ASP then the number of lots in the development will be scaled back to match the water supply acceptable to Alberta Environment

- e) The water distribution system shall be constructed to the satisfaction of the MD of Bighorn.
- f) Shallow Utilities - Underground power, communal lighting, communications and natural gas services shall be provided to the satisfaction of the MD of Bighorn. In cases where overhead electrical transmission lines are required to be brought into the ASP area to serve the residential grid, their locations within the ASP lands shall be configured to minimize viewshed impact and to minimize construction and ROW disturbance.
- g) Acreage Assessments, etc. - Acreage assessments, fees, permits, environmental considerations, amenities and/or landscaping shall be determined prior to construction and in accordance with the development agreement.
- h) Maintenance - The Developer shall be responsible for the continued maintenance of the water supply system, roadway network and solid waste collection within the Carraig Ridge area. This will be governed through the creation of a Condominium Association or a utility company contracted to assume these responsibilities by the Association.
- i) Stormwater Management – Any increased Stormwater demands resulting from development as a result of the ASP shall be retained within the ASP area and in accordance with the Alberta Stormwater Management Guidelines. A storm water management plan will be prepared prior to subdivision

6.6 TRANSPORTATION POLICIES

September, 2007

- a) Hwy 1A Access - At the time of subdivision approval, the Developer shall be required to design and construct intersection improvements between the entry to the Carraig Ridge site and Highway 1A in accordance with Alberta Transportation. The Developer shall first submit a Transportation Impact Assessment for approval by Alberta Transportation and then, based upon the results of the Assessment, submit the intersection design.
- b) Emergency Access - At the time of subdivision approval, the Developer shall enter into an agreement to ensure that the existing emergency access to Jamieson Road shall be constructed to a gravel standard and shall be used only for emergency, construction, maintenance and continued ranching purposes. The Developer shall not be required to construct or improve additional MD roads beyond that which is already constructed. The road shall be gated and locked to prevent day to day use by the residents of Carraig Ridge. Since this road is on other property not contained in the ASP lands and is owned by Wild Buffalo Ranching, no resident of Carraig Ridge will have a legal right to use the road except for emergency egress or non-vehicular travel.
- c) Internal Road Paving - The Developer shall develop internal roads to a paved standard. Paving will begin after the secondary entrance gate as described in section 6.6(e) located near the Shell access road (approx 1000m from the 1A highway). The emergency access and egress road will be retained to a gravel standard.
- d) Internal Road Standards - All on-site roads shall be engineered and constructed to the reasonable satisfaction of the M.D. All internal roads in the development will be narrower than the roads provided in other previous developments in the MD and will
- be designed by an APEGGA registered Engineer
 - minimize disruptions to the environment,
 - allow appropriate access for emergency vehicles,

September , 2007

- incorporate traffic calming measures to improve safety,
- be suitable for the traffic levels anticipated and
- ensure pedestrian walkways are separate from the roadways.

e) Access road standard - The existing access road between Highway 1A and the Shell gas well access road will be upgraded to an all weather gravel standard within a 20m right of way if required in the opinion of Professional Engineers engaged by the Developer.

f) The entrance to Carraig Ridge at Highway 1A will be a controlled access to demonstrate that roads within the development are considered private roads. A secondary gate will be located within 1000 meters north of the 1A entrance gate and from this point the roads will be paved. The secondary gate will require key card access..

g) Detailed road design shall be approved by a Professional Engineer prior to the start of each phase of the development and will be submitted to the MD staff for consultation at the appropriate subdivision approval stage

h) Driveways intended to provide access to individual dwellings shall be a paved standard and have a minimum carriageway acceptable to the Professional Engineer engaged by the Developer.

6.7 COMMUNITY SERVICES POLICIES

a) Fire Protection - The Developer shall enter into an agreement with the MD of Bighorn to provide sufficient fire protection to the reasonable satisfaction of the Municipality. The Developer shall construct a 20,000 gallon firefighting reservoir or alternatively a number of smaller reservoirs with the same capacity with dry hydrant(s) during the initial phase of the ASP implementation. The Developer shall also provide on-site fire fighting equipment.

September, 2007

- b) Police Protection - MD of Bighorn does not provide police protection services. The existing RCMP detachment located in Cochrane will provide police services. On-site security shall be provided if deemed necessary by the Condominium Association after consultation with the Cochrane RCMP Detachment.

- c) Solid Waste Disposal – The proponent will provide on-site solid waste management and materials recycling facilities/appurtenances, to the satisfaction of the M.D. Animal proof containers will be required for all solid waste containers in the community. Garbage collection and transfer services will be undertaken by the Condominium Association. Appropriate waste transfer sites will be provided by the Developer within the development site.

6.8 WILDFIRE MANAGEMENT GUIDELINES

The intent of these guidelines is to reduce the fire risk of all new development in the Plan area. The wildfire risk in the Plan area varies from place to place and for this reason, the application of the Guidelines may be relaxed if the Municipality is satisfied that the Development meets the purpose and intent of the guidelines.

The following guidelines are applicable to all Development Permit applications in the Plan area.

- a) Vegetation Guidelines - No coniferous trees shall be located within 5m of structures.

- b) All grass shall be regularly cut and/or irrigated within 10m of a structure.

September, 2007

- c) Structural Guidelines - Roofing material must meet or exceed a Class 'B' ULC rating. The use of wooden shakes and shingles for roofs shall not be allowed.

- d) Combustible material piles are not permitted within 10m of the structure (firewood, lumber, etc.).

- e) Chimneys used with solid or liquid-fuelled devices must have approved spark arrestors made of wire mesh screen with less than 12mm openings.

- f) Infrastructure Guidelines - Powerlines must be tree-free or underground.

- g) Dedicated fire suppression water supply must be provided using hydrant supply meeting Fire Underwriters Survey or NFPA 1231 standards or minimum 20,000 gallon underground tank accessible by Fire Department trucks.

6.9 WILDLIFE / VEGETATION MANAGEMENT POLICY

- a) A development and ranching plan shall be established at the subdivision stage to implement appropriate measures to address wildlife and security fencing. The development and ranching plan will involve configuring property line and cross fencing to have minimal disturbance on the elk herd and other species frequenting the area.

- b) Landscapes within the ASP area identified at the subdivision stage as being sensitive to development shall require a professionally prepared management plan in conjunction with any Conservation Easement applied at the time.

- c) The use of natural vegetation shall be emphasized throughout the Carraig Ridge development. Grassed lawns shall be discouraged as much as possible.

d) The specific allocations for cattle and humans will be defined as the project evolves. However, it is a principle that there will be appropriate separation between human settlement space and cattle grazing space. It is also a principle that grazing is an integral part of rangeland management in the ASP area. These separations will be identified at the subdivision stage and will include fencing measures.

e) The type and style of any fencing material to be used will be determined at subdivision stage and will be suitable for separation of ranching areas from areas where residences will be located. These fencing techniques will be designed to be wildlife friendly.

6.10 IMPLEMENTATION POLICIES

a) MDP and LUB amendments – An amendment to the Municipal Development Plan will be required to implement the ASP. Separate applications to amend the Municipal Development Plan will be passed concurrently with the ASP bylaw. Prior to subdivision approval for any Area Structure Plan phase that requires the transfer of density from one or more sending parcels, the M.D. shall first process a Land Use Bylaw amendment to re-zone the specified sending parcel(s) to Conservation Easement district (CE) zoning. Prior to subdivision endorsement, a conservation easement shall be registered against the title of those parcels used as sending parcels in that phase.

b) Two new land use bylaw districts and one accompanying map amendment will be required to implement the ASP. A separate application to amend the Land use bylaw and the District map will be passed concurrently with the ASP bylaw.

September , 2007

- c) Modifications - Subject to the discretion of the municipality, extension or enlargement of land use development pods as shown on the Development Concept Map 8 may be permitted by the municipality, provided that no adverse effects will occur to the surrounding area or are in conflict with the spirit and intent of this plan and provided that development density does not exceed the provisions of this ASP.

- d) The Carraig Ridge ASP area shall be maintained as a country residential subdivision and will not attain hamlet status within the M.D.

- e) The ASP will provide the MD with a levy in accordance with the P-6 policy. This levy will be paid at the time subdivisions are registered by the developer.