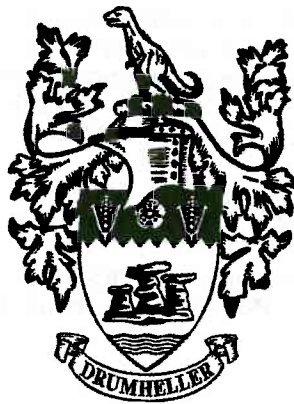


TOWN OF DRUMHELLER



MUNICIPAL DEVELOPMENT PLAN

VOLUME 1 BACKGROUND STUDY

Prepared by:

**Town of Drumheller and
Palliser Regional Municipal Services**

1.0 INTRODUCTION

1.1 PURPOSE OF THE PLAN

The purpose of the Municipal Development Plan is to establish a statutory statement of goals and objectives for development in the Town of Drumheller, and to outline strategies for achieving them. It is intended to provide the framework within which the orderly, economical and beneficial development and use of land can take place. The plan provides an opportunity for developing a relatively comprehensive decision-making framework for Council, the public, developers and others making future oriented decisions.

The Plan is based upon an analysis of the environmental, social, aesthetic and management characteristics of the Town of Drumheller. It will need to be monitored and reviewed on an ongoing basis, and amended when necessary, to respond effectively to changing trends, activities and needs. This information will be important to determine if different implementation actions are needed to ensure that plan objectives remain achievable.

1.2 STATUTORY REQUIREMENTS OF THE PLAN

Section 632(1) of the Municipal Government Act (R.S.A., 2000, Ch M-26.1) requires that a municipality having a population of 3500 or more, must, by bylaw, adopt a Municipal Development Plan (MDP).

The MDP must:

- a) Address
 - i. the future land use within the municipality,
 - ii. the manner of and the proposals for future development in the municipality,
 - iii. the coordination of land use, future growth patterns and other infrastructure with adjacent municipalities,
 - iv. the provision of required transportation systems,
 - v. the provision of municipal services and facilities,
 - vi. the type and location of land uses adjacent to sour gas wells,
 - vii. the provision of municipal, school and municipal and school reserves, and
 - viii. policies respecting the protection of agricultural operations.

As well, the MDP may address any other matters relating to the physical, social or economic development of the municipality.

1.3 PLAN IMPLEMENTATION AND AMENDMENT

The Municipal Development Plan shall become a statutory document of the Town of Drumheller on the day it is adopted by Council. This plan shall not relieve a person from compliance with the Land Use Bylaw nor any other document established pursuant to the Municipal Government Act. It is intended to provide the framework that will guide and inform more detailed plans and policy. In particular, the Town of Drumheller Land Use Bylaw will be an important tool for implementing the policies of this Plan.

The Council of the Town of Drumheller may amend this plan, as it considers necessary. Pursuant to Section 230 of the Municipal Government Act, the Council shall hold a public hearing prior to giving the proposed amendment second reading.

1.4 PLAN PREPARATION APPROACH

The Municipal Development Plan is organized in two major volumes. Volume 1 consists of the background study which is the preliminary report leading to the drafting and production of the statutory MDP. The background study is undertaken to highlight and analyze some of the relevant trends, issues and development options. This is done with the intent of allowing the Plan to be focused on the current areas of change and activity in the Town of Drumheller. Volume 1 outlines the context within which the policies of the Plan are based. The technical studies upon which the background study is based are referred to throughout Volume 1.

Volume 2 is the statutory Municipal Development Plan. It contains guiding policies to address land use issues and desired goals and should be considered part of the overall framework for growth within the Town of Drumheller. The Municipal Development Plan is intended to be part of a dynamic planning process, therefore the Plan indicates those areas which require further analysis in order to develop the Plan policies contained in Volume 2 in more detail and to apply them to specific situations and problems.

2.0 PLAN GOALS

The specific objectives and policies contained in Volume 2 of the Municipal Development Plan are all related to the following general goals. These goals form the basis for the plan objectives and policy statements, which, in conjunction with the Town's Land Use Bylaw and other statutory plans, serve as the framework for land use planning in Drumheller.

2.1 GROWTH MANAGEMENT STRATEGY

Growth management is the process of directing or guiding development to achieve predetermined objectives. The development of a growth management strategy for the Town of Drumheller will form the basis for all other policy in this plan. The growth management strategy identifies the preferred type, location, amount and timing of development to be encouraged for the municipality.

GOAL: *To establish a comprehensive growth management strategy to ensure the sustainable development of an orderly, economical and beneficial use of land.*

2.2 LAND USE

A comprehensive land use plan represents the Town's vision of future development. A future land use concept recognizes that there are competing demands for land use, such as residential, commercial, industrial, open space and public institutions. The location, balance and intensity to which each land use is developed will determine the future character of the Town. The specific objectives and policies contained in Volume 2 of the Plan regarding residential, commercial, industrial, open space and community service land uses further define the overall land use concept.

GOAL: *To develop a fiscally and socially responsible land use pattern that is economically efficient, that will minimize environmental impacts, and that enhances economic development possibilities within the Town of Drumheller.*

2.3 NATURAL ENVIRONMENT

The visual amenities within the Town of Drumheller's river valley setting provide a valuable public resource. It is important for the Town to accept the challenges posed by this setting in order to protect these unique and aesthetic qualities of the landscape. The specific policies contained within this plan are intended to facilitate development within sound planning and environmental principles.

GOAL: *To preserve and enhance the Valley's physical environment by ensuring that principles of sustainable development and environmental sensitivity are embodied in planning decisions.*

2.4 Community Development

The promotion of growth within existing urban areas can often revitalize older neighbourhoods, which may accommodate the preferred lifestyle of residents while recognizing the resources of the municipality. Redevelopment, rehabilitation and infill within older communities can efficiently utilize existing services and is often the least-cost option for urban growth.

Goal: *To improve and promote development and redevelopment of existing areas within the Town of Drumheller.*

3.0 TOWN OF DRUMHELLER - THE MUNICIPALITY

3.1 PHYSICAL SETTING

The Town of Drumheller is located in the southeastern portion of Alberta approximately 135 kilometres east of Calgary. The Town has one of the largest land bases of all towns in Alberta, encompassing a total area of 27,493 acres (11,126 ha) or 111 square kilometres. It stretches for approximately 31 kilometres along the Red Deer River with an average width of approximately 5 kilometres. The Town of Drumheller's trade area extends well beyond the boundaries of the Counties of Kneehill, Starland, Wheatland and Special Areas #2.

Drumheller provides a very unique physical setting. It is located in the Red Deer River Valley bottom with badlands topographic features and a vertical rise of approximately 122 meters from the valley floor to the upper prairie plain. Figure 1 illustrates the location of the Town within the region and the province.

3.2 BACKGROUND

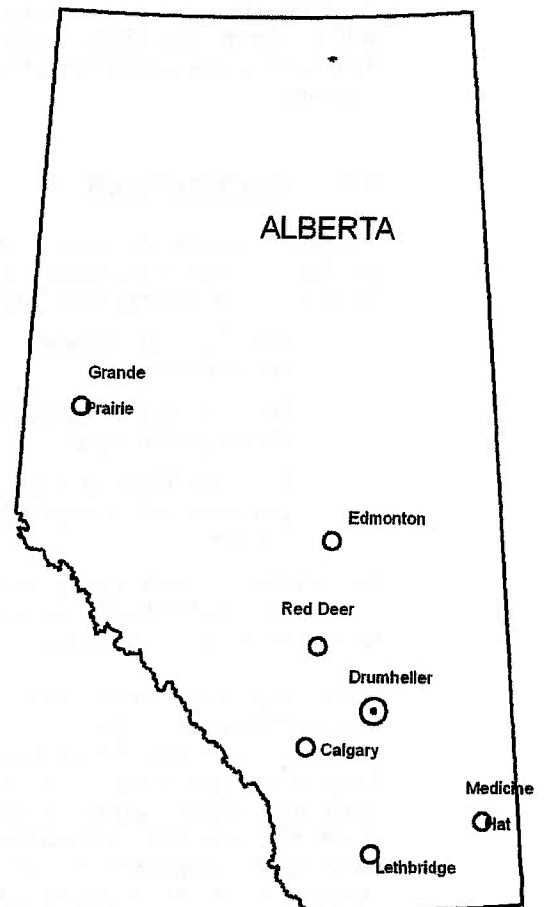
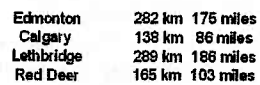
The Town of Drumheller was formed through the amalgamation of the City of Drumheller and the Municipal District of Badlands No. 7 on January 1st, 1998. From a land use planning perspective, there were a number of issues that favored the amalgamation of these two municipalities:

- The two municipalities had much more in common with each other than surrounding municipalities;
- The two municipalities were consistently faced with the same physical planning and development issues;
- The new Town of Drumheller creates a recognizable social and economic unit as a predominantly urban sub-region within the greater agricultural region of southeastern Alberta.

East Coulee, Lehigh, Cambria, Wayne, Rosedale and Nacmine, formerly hamlets within the Municipal District of Badlands, retain their names and become suburb communities in the Town of Drumheller. These communities will retain their unique identity.

There is significant public interest in the Drumheller Valley as a destination point for tourists. The themes being developed focus on the scenery provided by the badlands topography, rich paleontological finds in the area and the valley's coal mining heritage. The Royal Tyrrell Museum of Paleontology and Research Institute, which opened in 1985 is recognized as a world-class tourist destination, highlighting the fossil finds of the badlands. A selection of other attractions of interest to the tourist include Midland Provincial Park, the Badlands Historic Centre, Homestead Antique Museum, the Suspension Bridge in Rosedale, East Coulee Atlas Coal Mine, East Coulee School Museum, the Hoodoos and the ghost town of Wayne. These local attractions have resulted in the expansion of the tourism sector of the region's economy, especially during the summer months. Regionally this area is being marketed under the theme of the Canadian Badlands.

2007



3.3 POPULATION

3.3.1 PAST GROWTH TRENDS

The historical population figures for the former municipalities of the City of Drumheller and the Municipal District of Badlands No. 7 are illustrated in Table 1. This outlines the population growth and decline trends in the Drumheller Valley, which now form the Town of Drumheller study area.

Population growth in the Drumheller Valley was originally due to locational advantages in terms of proximity to the coal reserves of the Red Deer River Valley and to rail facilities. The coal mining industry had a dramatic effect on the population variations observed in the Valley. During the period 1930 to 1955, commercial coal mining contributed greatly to the Valley's growth, largely occurring within the Municipal District of Badlands No. 7. The residential areas of East Coulee and Wayne each had more than 3000 residents in the 1930's and 1940's. As such, a substantially higher population distribution outside of the City of Drumheller's boundaries was prevalent up until the mid 1950s.

Following a decrease in the importance of the coal industry in the 1950s led to a drastic decline in the population of the Municipal District of Badlands. Through a more diversified economy, the City of Drumheller felt this impact to a lesser extent. During the period from 1956 to 1981 the City experienced a significant population increase of 148 percent. Much of this growth was due to the annexation of surrounding hamlets, which increased the City's population by approximately 2,100 persons.¹ It is also expected that some of the out-migration from the communities in the Municipal District relocated to the City, thus contributing further to the increase in population.

Despite significant population fluctuations within the City and Municipal District, the overall change in population observed in the Valley has been much more stable. It is this entire population of the Valley that is now subject to the Municipal Development Plan's long-range land use proposals. The population change percentages shown in Table 2 indicate that over the past 50 years, the total population of the Valley has declined approximately 1.8%. Over the past 20 years the population has been increasing slowly with an overall population gain of approximately 0.3% per year.

Natural increase figures for the Drumheller Valley are presented in Chart 1. Vital statistics have been available only for the City of Drumheller; therefore it is these trends, which have been applied to the entire Town of Drumheller. However, it is assumed that the trends in the rural areas are similar to those in the urban centre due to similar population characteristics.

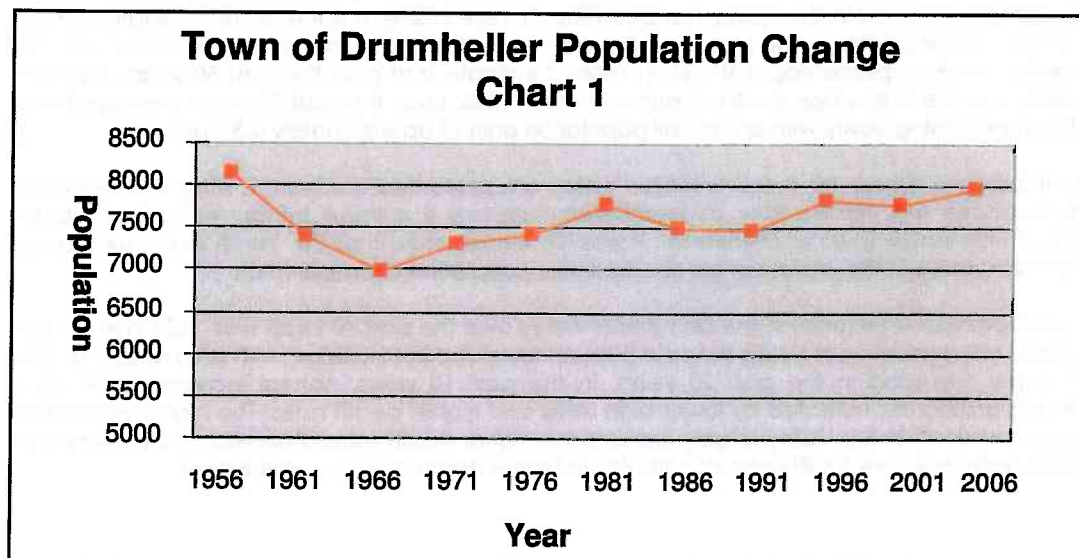
The average natural increase in the Drumheller Valley over the past 40 years was 10.24 persons per thousand. However, recent trends indicate a much lower natural increase, with an average of 2.95 persons per thousand in the past 25 years. In the past 10 years, natural increase rates have declined significantly, reflected by lower birth rates and higher death rates. The higher proportion of elderly residents in the Valley largely explains the higher death rates observed. The presence of a large continuing care facility also contributes to higher death rates to some extent.

¹ Bankview annexation (1964)
Newcastle and North Drumheller annexation (1967)
Midland annexation (1972)

Table 1

HISTORICAL POPULATION TRENDS

Year	City of Drumheller		M.D. of Badlands		Town of Drumheller	
	Population	% Change	Population	% Change	Population	% Change
1956	2632		5502		8134	
1961	2931	11.4%	4470	-18.8%	7401	-9.0%
1966	3574	21.9%	3403	-23.9%	6977	-5.7%
1971	5446	52.4%	1860	-45.3%	7306	4.7%
1976	6154	13.0%	1266	-31.9%	7420	1.6%
1981	6528	6.1%	1263	-0.2%	7791	5.0%
1986	6366	-2.5%	1145	-9.3%	7511	-3.6%
1991	6277	-1.4%	1191	4.0%	7468	-0.6%
1996	6587	4.9%	1246	4.6%	7833	4.9%
2001					7785	-0.6%
2006					7932	1.9%

**3.3.2 POPULATION STRUCTURE**

The age/sex population pyramids shown in Table 2 illustrate the age and sex distribution for the five-year age groups in the Drumheller Valley for the years 1991 to 2001. The population structure for Alberta in 2001 has also been included for comparative purposes. In order to represent the age/sex structure, the census populations of the City of Drumheller and the Municipal District of Badlands No. 7 have been combined and analyzed. The following trends can be observed:

- That there is significantly more males than females in the 20 – 40 age range can be explained by the predominantly male Drumheller Penitentiary population;

- The 'baby boom' (born between 1946 and 1966) generation is evidenced in the population pyramid by the 'bulge', which moves up the pyramid from 1991 – 2001. The baby boomer's children, known as the 'echo' generation, are shown by the smaller bulge between the ages of 5 – 19. It is important to note the significant decline in the proportion of children under the age of 4 in the 2001 population, which reflects the decline in the proportion of young families with parents under the age of 35.
- The population of young women between the ages of 20 – 30 shows a sharp decline. It is very common in smaller centers and rural areas in Canada to show a decline in the number of young adults, as they tend to gravitate to the larger centres for education and employment opportunities. In Drumheller, the loss of young men pursuing education and employment is offset by the influx of young men to the Drumheller penitentiary.
- There is a clear trend of aging across Canada, and Drumheller is no exception. While the portion of persons over the age of 65 had not substantially changed in Drumheller between 1991 and 2001, there has been a significant increase in the 50 -65-age ranges. If these persons choose to remain in Drumheller for their retirement, there will be a significant increase in the number of seniors in Drumheller over the next 20 years;
- The population structure of the Town of Drumheller differs from that of Alberta. When compared to the 2001 Alberta age/sex structure, the Valley population illustrates a slightly lower percentage between 0 and 19 and a significantly higher proportion of citizens over the age of 50. The number of young women is lower than the Alberta average, reflecting the lack of educational and employment opportunities common to towns and rural areas.

3.3.3 POPULATION PROJECTIONS

It is important to provide estimates of population growth to project the amount of land and infrastructure necessary to accommodate future development in the Valley. Based on the observed historical growth trends, significant population growth in the near future does not appear to be likely. However, historical growth trends are not the only factor to consider in projecting future population growth. Potential economic and social factors which can influence growth should also be recognized, despite the fact that they are difficult to quantify in a growth projection analysis. In order to anticipate a range of growth scenarios, this plan will utilize two population growth rates: a moderate annual population growth rate of 1.0%, and a higher growth rate of 2.0 % per year. Both of these growth rates are significantly higher than has occurred in Drumheller in recent decades; however, it is in line with the projected growth rate for the entire province (projected at 1.4%, using a 'medium growth' scenario). Alberta Finance has predicted an annual growth rate of 1.1% for the Drumheller region over the next 10 years.

Actual growth rates will vary from year to year depending on such factors as the level of economic activity in the Valley and the availability of land and housing. The application of a 1% and 2% growth rate per year merely provides a range of years within which the target population levels may be reached. This estimate allows the Town to adequately plan for additional land and infrastructure for a 25-year period. Using the growth rate of 1.0% per year establishes a design population of 10,343 for the Town in the year 2031 (see Table 3).

(1) Alberta Finance, September, 2004

Table 2

Town of Drumheller Population Structure 1996 - 2006

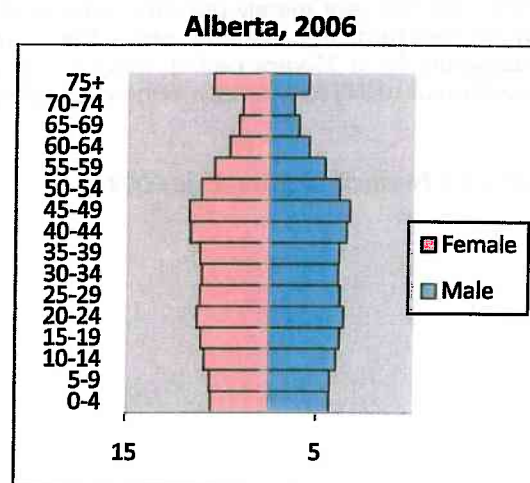
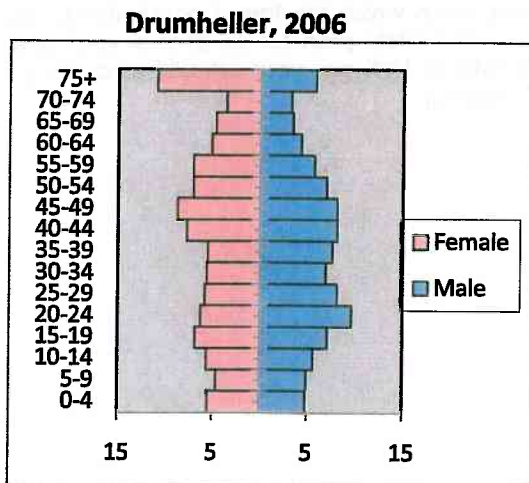
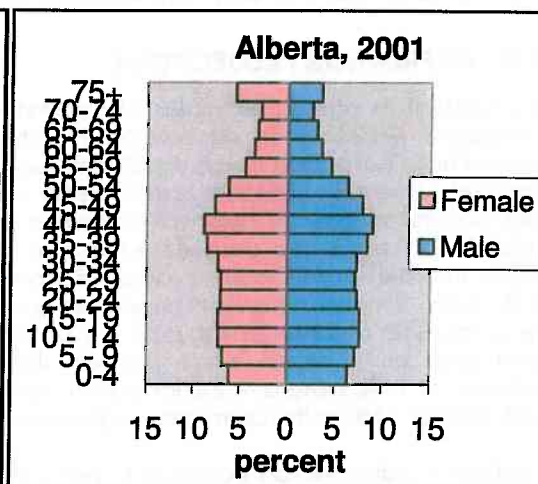
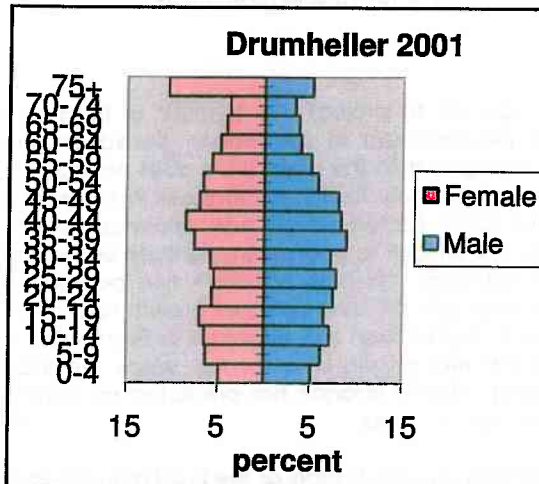
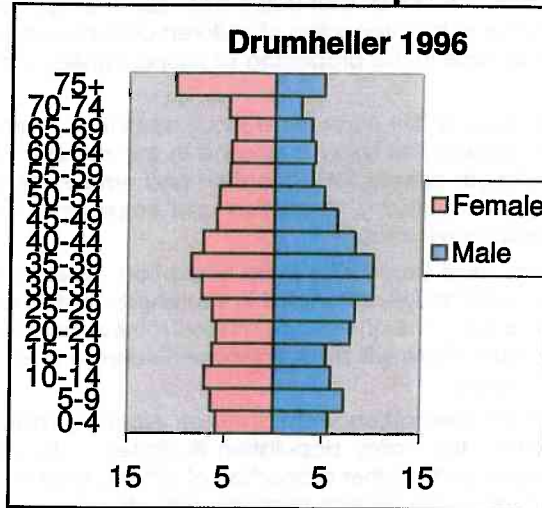


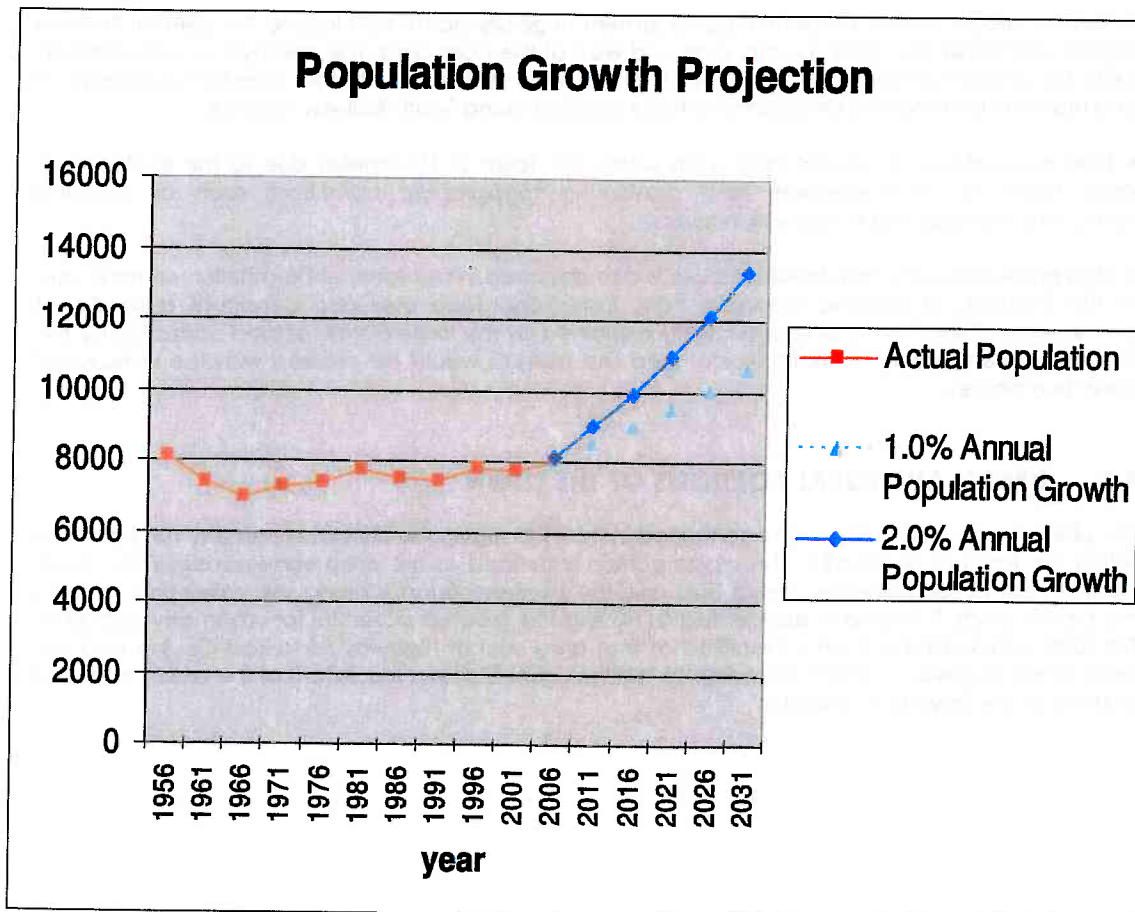
Table 3

Population Forecast**Town of Drumheller 2006 – 2031****1.1% average annual growth****2.0% average annual growth**

Year	Projected Population	Population Increase	Projected Population	Population Increase
2006*	7932*	200	7932	200
2011	8476	491	8992	1007
2016	8909	432	9928	936
2021	9363	454	10962	1033
2026	9841	478	12103	1141
2031	10343	502	13362	1260

*estimate: 2001 population 7833 + (total # building permits (87) for dwellings issued – total # demolition permits for dwellings issued (29)) * avg. occupancy of 2.3 people per unit

Chart 2



4.0 LAND USE

4.1 INTRODUCTION

It is important to describe and review present land uses in the Town of Drumheller to understand the constraints for future development. The present land use pattern is an important indicator of potential future land use. It is necessary that future land requirements for various land uses be established to formulate a land use strategy for the community.

4.2 EXISTING DEVELOPMENT PATTERN

The land use pattern of the Town of Drumheller consists of a clearly dominant urban area, formerly the City of Drumheller, and a large rural area, formerly the Municipal District of Badlands. Currently, the urban areas account for approximately 5.8 percent of the total area within the Town of Drumheller. Outside the boundaries of the urban settlements, the rural areas are quite varied in terms of physical features, land use, development potential and constraints. The dominant land use is agriculture, with grain farming and cattle ranching on the bench lands and market gardening and limited rural industrial development along the Valley floor. The rest of the Valley consists of badlands topography or brush along the banks of the Red Deer River and its tributaries.

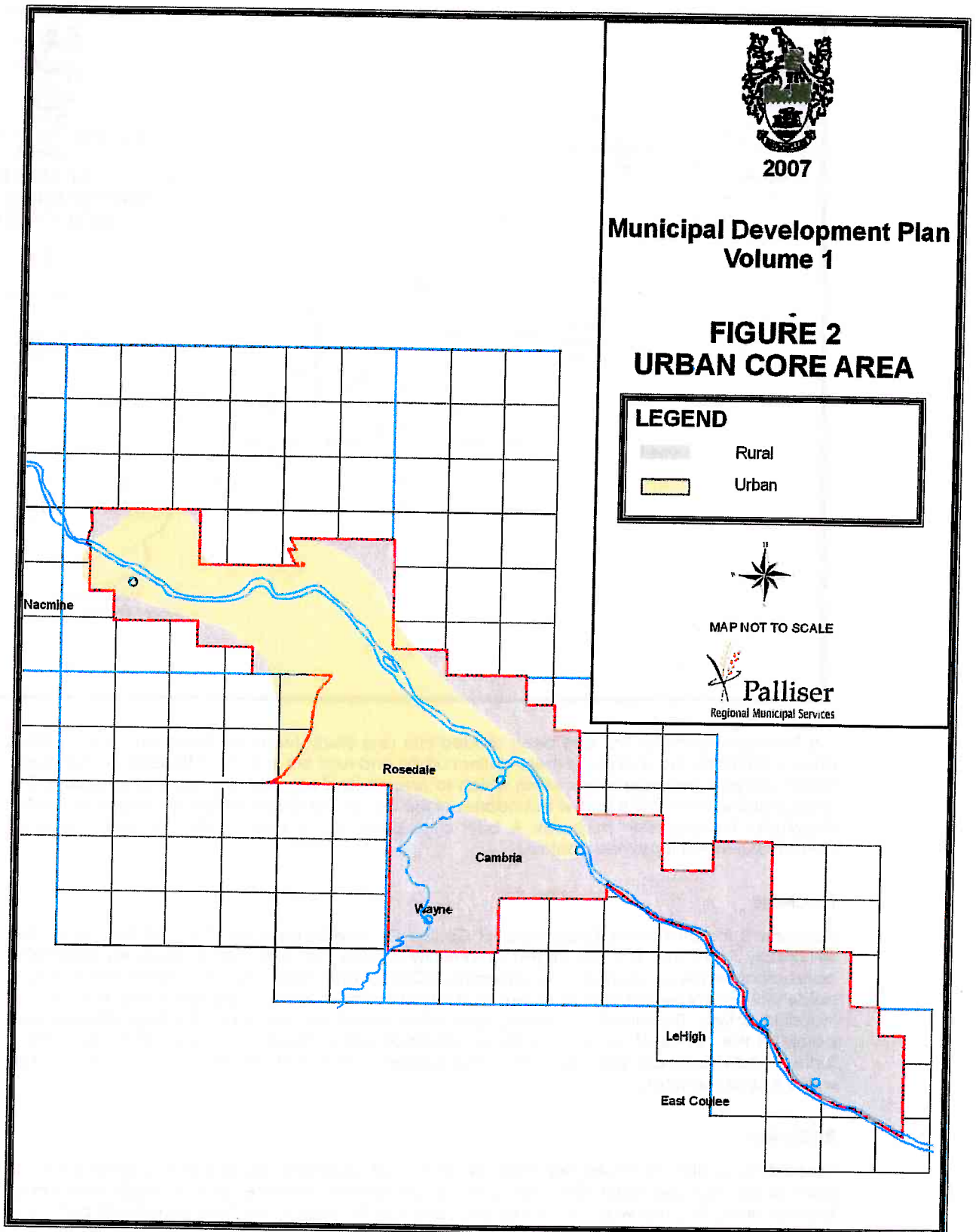
Within the urban centre, residential development originally occurred close to the Central Business District, eventually expanding north, east and west of the core area. The railway line, which initially limited southward growth, has posed much less of a barrier in recent history as industrial, residential and highway commercial development have located along South Railway Avenue.

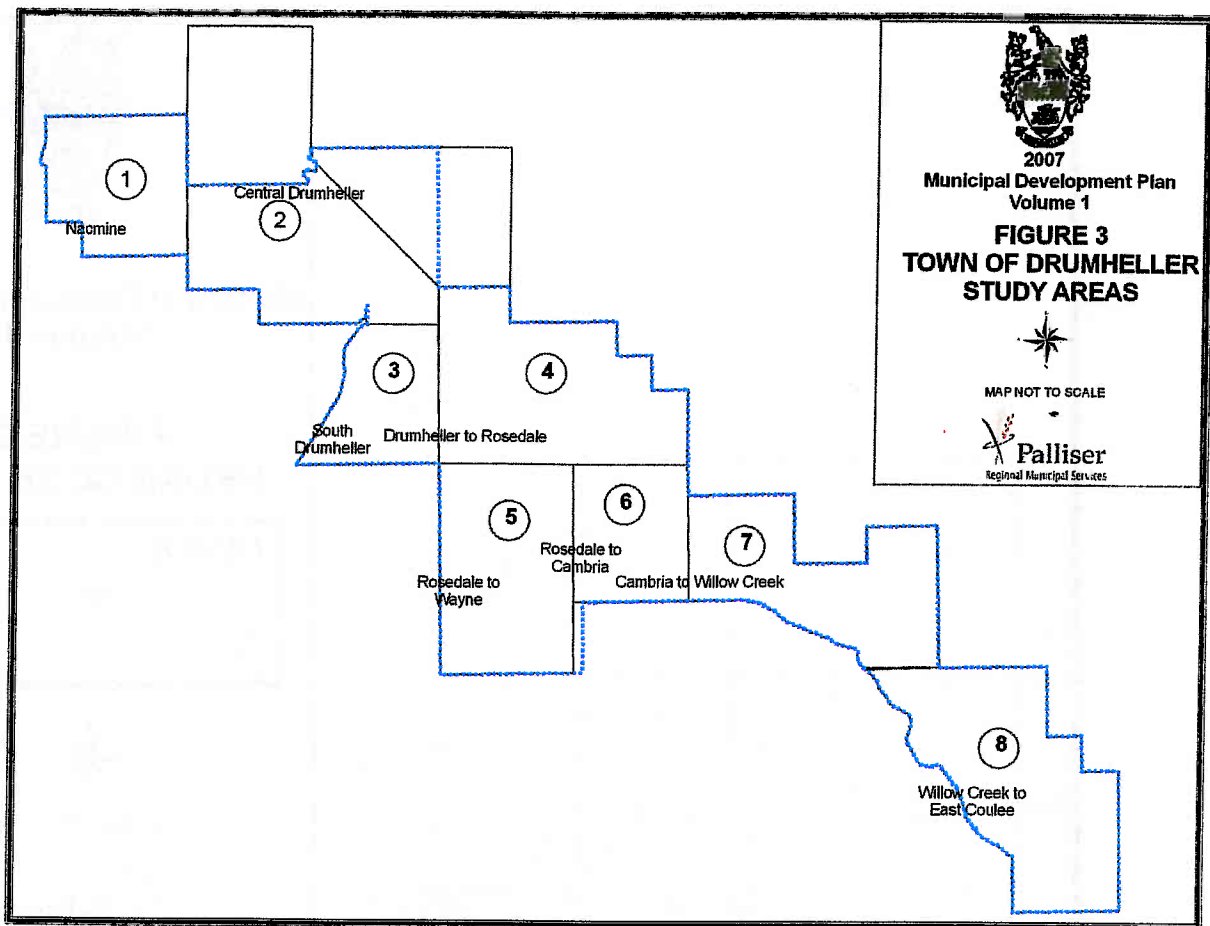
A high percentage of vacant land exists within the Town of Drumheller due to the existence of large tracts of undevelopable land containing topographic conditions such as badland formations, coulees and valley wall incisions.

A high proportion of recreational land use is also observed in the Town of Drumheller, primarily due to the inclusion of Midland Provincial Park. Institutional land uses also constitute a significant percentage of the Town's land use, largely explained by the large parcel of land occupied by the Drumheller Penitentiary. A more typical land use pattern would be realized with the removal of these two parcels.

4.3 URBAN AND RURAL PORTIONS OF THE TOWN

The planning analysis and policies contained in this Plan recognize distinct urban and rural portions within the Town of Drumheller. The urban portion is defined as the area encompassing Nacmine, Central Drumheller, Rosedale, Aerial Flats and the intervening lands along the valley floor and on the bench lands. This area is represented as having the greatest potential for urban development. The rural portion of the Town is identified as that area east of Highway 56 to East Coulee and the lands along Highway 10X from Rosedale to Wayne. Figure 2 shows the extent of the urban and rural portions of the Town of Drumheller.





The Town of Drumheller has also been divided into nine Study Areas, as shown on Figure 3. This is done to facilitate the analysis of these distinct urban and rural areas present throughout the Valley, and to provide workable areas within which to present land use planning recommendations. The area contained within the former boundaries of the City of Drumheller will be referred to as Central Drumheller for discussion purposes. A brief description of the communities located outside of Central Drumheller is provided below.

NACMINE

Nacmine is located immediately west of Central Drumheller between the Red Deer River and Secondary Road 575. It is the largest community outside the major urban area, encompassing approximately 134 acres. Due to its proximity to Central Drumheller, Nacmine serves primarily as a residential commuter community as well as a retirement area. There is very limited commercial and industrial activity. The majority of vacant land within Nacmine is made up of a large undeveloped parcel at the centre of the community consisting of approximately 20 acres. Large lots in which further subdivision is possible characterize the eastern portion of Nacmine. Nacmine is serviced by water & sewer services.

ROSEDALE

Rosedale is located approximately 5 kilometres east of Drumheller along Highway 10 on the south bank of the Red Deer River. The community is traversed by a number of man-made and natural features, including Highway 10, railway lines and the Rosebud River. Rosedale serves both as a

commuter community for Central Drumheller and contains a modest commercial and industrial centre. The existing commercial sector includes farm implement sales, a hotel, laundry and other service oriented businesses. The industrial component presently includes a major plastics manufacturer, trucking operations, paving contractor, and meat packer. Rosedale is serviced by water & sewer services.

WAYNE

Wayne is located along Highway 10X approximately 5 kilometres south of Rosedale. The Rosebud River and a railway line bisect the community. The majority of existing development in the community is residential with a minor commercial sector comprised of a hotel and tavern. There is also a small industrial sector that includes trucking and warehousing operations.

CAMBRIA

Cambria is located adjacent to Highway 10 approximately 3 kilometres east of Rosedale. The community is divided into two major areas; the main developed residential area south of the highway and smaller country residential properties north of the highway. Cambria is county residential in nature with no commercial or industrial land uses located in the community.

LEHIGH

Lehigh is located along Highway 10 approximately 2 kilometres northwest of East Coulee. The community is predominantly country residential in nature with large development sites encompassing approximately 45 acres. There are no commercial or industrial land uses within Lehigh.

EAST COULEE

East Coulee is located approximately 21 kilometres east of Central Drumheller along Highway 10 on the north bank of the Red Deer River. Originally a mining community, the community now serves as both a commuter community as well as a small commercial centre. The community is located close to many tourist attractions, including the Atlas Coal Mine. East Coulee is serviced by a sewage collection system, but not water.

4.4 DEVELOPMENT CONSTRAINTS

The physical characteristics of a narrow valley setting greatly affect opportunities for new or expanding land uses. These development constraints include:

- the escarpment badlands constraining growth north and south;
- the Red Deer River flood plain and undermining conditions which restrict land use; and
- oil and gas facilities which pose potential development conflicts.

Table 4

Drumheller Development Constraints

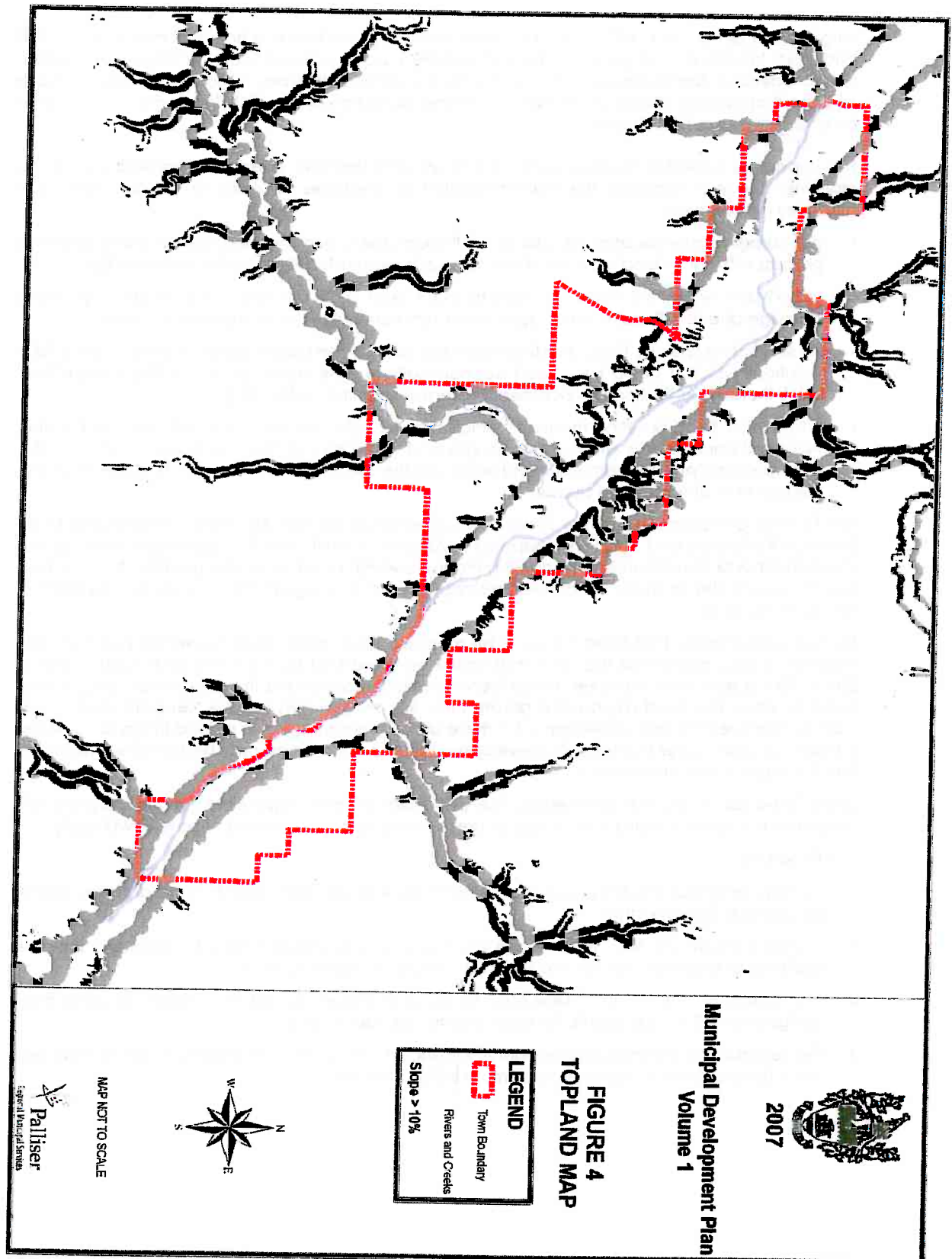
Constraint	Area (ha)	Percent of Drumheller area
Slopes > 10%	3960	35.6%
Floodway	542	4.9%
Flood Fringe	401	3.6%
Rivers and Creeks	352	3.2%
Undermining and Subsidence	2480	22.3%

4.4.1. TOPOGRAPHY OF THE DRUMHELLER VALLEY

The physical features of the Drumheller Valley pose significant development constraints to future development expansion. Badlands formations, as the transition zone between the flat Valley floor and the top lands, cover a large portion of the Valley, both north and south of the Red Deer River. This topography severely constrains future large-scale development due to the significant costs associated with leveling these formations. The steep slopes of the escarpment lands that form the outer walls of the Valley also have soil conditions that limit development potential. Soil instability at the base of these escarpments lands and along the Valley sides, largely due to sparse vegetative cover, presents conditions, which are not well suited for further development. Figure 4 shows the general topography of the Drumheller Valley. A rough estimation is that a total of 3,960 ha (35.6% of the total area of Drumheller) in the Town have a slope of greater than 10% (see Figure 4)

4.4.2. FLOOD RISK AREA

Urban development in the Town of Drumheller clearly exhibits a linear pattern. Contained within the bottomlands, development extends from the toe of the escarpment slope to the banks of the Red Deer River. Development occurred in these areas due to proximity to employment centres and the relative ease of building upon flat land as opposed to badland topography. These bottomlands, however, are subject to periodic flooding by the Red Deer and Rosebud Rivers. The flood risk area is defined as the area which would be inundated by the design flood and is identified by the Provincial and Federal governments for urban areas subject to flooding concerns. In Alberta, the design flood is a 1 in 100 year flood, or one which has one percent chance of being equaled or exceeded in any year. This flood risk area is shown in the Land Use Bylaw as lying below the design flood level as defined by Alberta Environmental Protection. Figure 5 identifies the extent of the flood risk area within the Town of Drumheller. The total area of land lying within the flood risk area is 943 ha. (8.5% of the total area of Drumheller).



Large floods occurred in 1901 and 1915, while less significant flooding has occurred in 1948, 1952 and 1954. In 2005 a 1:100 year flood event occurred, but significant flood damage was avoided due to extensive, temporary upgrades to the Town's network of dykes. All floods occurred primarily as a result of multiple upriver storm events, with the exception of the 1948 flood which was caused by an ice jam near East Coulee.

The impact of potential flooding within the Town of Drumheller presents a significant land use planning concern, requiring the implementation of measures to mitigate the risk. Mitigation measures may include:

- discouraging intensification of a land use through the subdivision and development approval process within the flood risk area which can be implemented through the Land Use Bylaw;
- restrict uses within the flood risk area to those least likely to result in loss of life or property damage due to a flood, such as agricultural, recreational or transportation land uses;
- implementing specific flood proofing measures, such as the use of elevated pads or earth fill in locations which it could be utilized economically to raise buildings above the design flood level, thereby facilitating development in areas susceptible to flooding; or
- utilize other flood proofing measures which may include certain safeguards such as locating electrical panels and shut off valves for gas and water lines above the design flood level, the waterproofing of basement walls and restricting the use of rooms below the flood level and/or the provision of sumps and pumps.

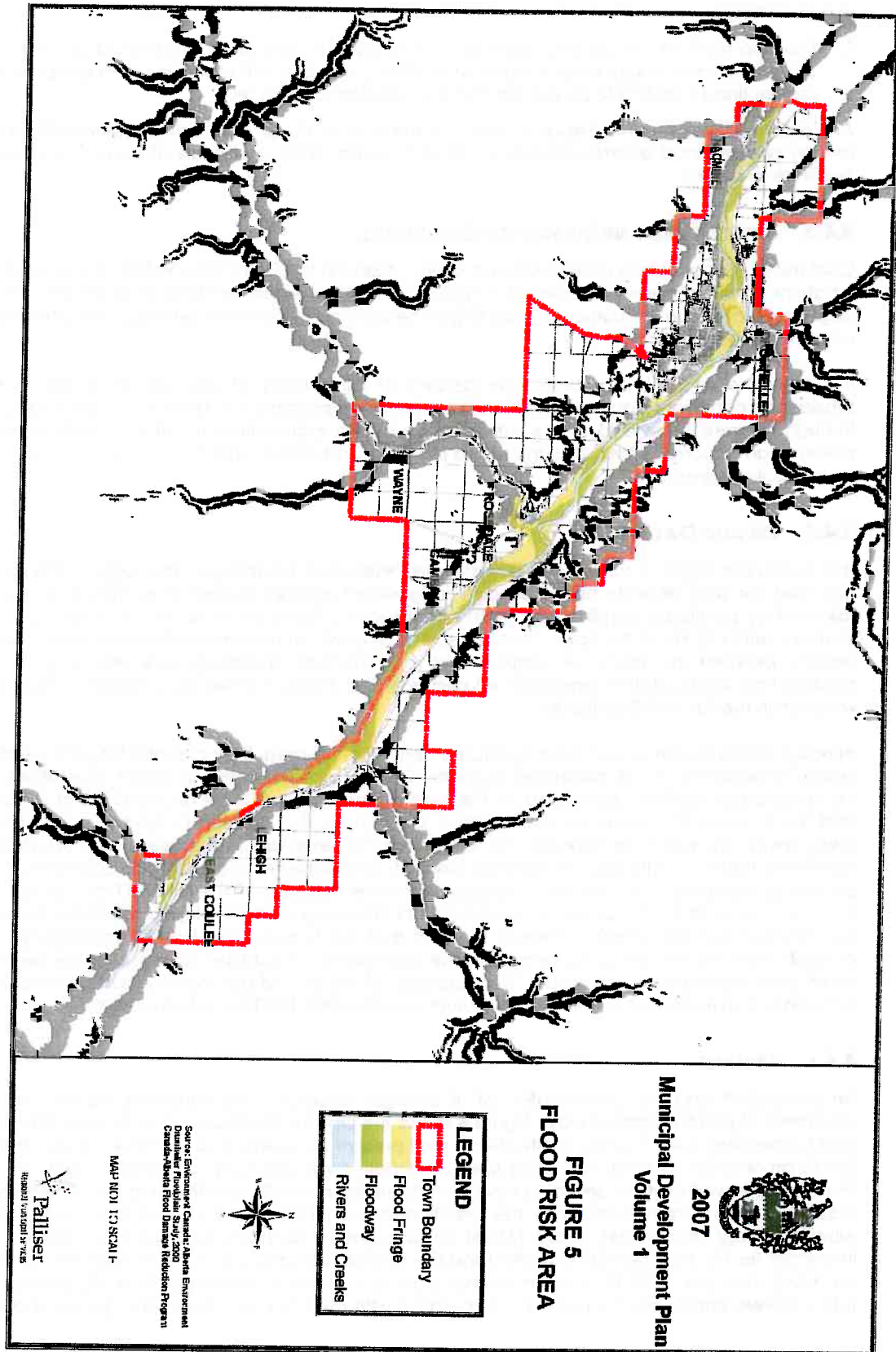
The Federal Government and the Province of Alberta signed "An Agreement Respecting Flood Damage Reduction and Flood Risk Mapping in Alberta" in April 1989. This agreement initiated the Canada-Alberta Flood Damage Reduction Program, which is based on the premise, that the best way to reduce the financial toll of flood damage is to discourage inappropriate development in the flood risk area.

The program requires that flood risk areas be mapped in all urban areas across the province. The flood risk area is defined as the area that would be inundated by the 1:100 year flood event. In Drumheller, a distinction has been made between the floodway and the flood fringe areas of the flood risk zone. The floodway has the greatest risk: floodway waters are the deepest, fastest, and most destructive and new development in these areas is discouraged. In a flood fringe area, water is shallower and moves more slowly. Development in the flood fringe may be permitted provided that it is adequately flood proofed.

Once flood risk maps are completed, the provincial minister responsible for the program will designate the floodway and flood fringe as areas where certain government policies will apply:

In a floodway:

1. No new federal or provincial buildings or structures that are vulnerable to flood damage will be placed in a flood risk area;
2. Financial assistance from federal and provincial sources will no longer be available for new buildings or structures placed in a flood risk area and subject to flooding;
3. Any buildings or structures vulnerable to flood damage placed in a flood risk area after designation will not be eligible for flood disaster assistance; and
4. The federal and provincial governments will encourage local municipalities to adopt land use restrictions to prohibit further development in flood risk areas.



In a flood fringe:

1. Development will be allowed, provided it is adequately protected from flood damage. Also, any additions or enlargements made to existing buildings in a flood fringe after designation will require flood proofing to be eligible for future disaster assistance.

Any existing development already in place at the time of designation will continue to be eligible for government flood disaster assistance. Normal maintenance and repair of existing structures will continue as before.

4.4.3. UNDERMINING AND SUBSIDENCE CONDITIONS

Coal mining has occurred under extensive areas of land in the Drumheller Valley. The approximate locations of mined areas are outlined in Figure 6. Since the extent and depth of mining activity is largely unknown due to insufficient reporting in the past, many potential development sites may be subject to subsidence risk.

It is therefore necessary to assess the degree of risk existing at any site expected to have subsidence conditions caused by undermining. Providing proper verification to relevant authorities, through engineering tests to ensure satisfactory subsurface conditions for urban development are present can accomplish this. Through sound planning and design, sites can be developed with an acceptable degree of risk.

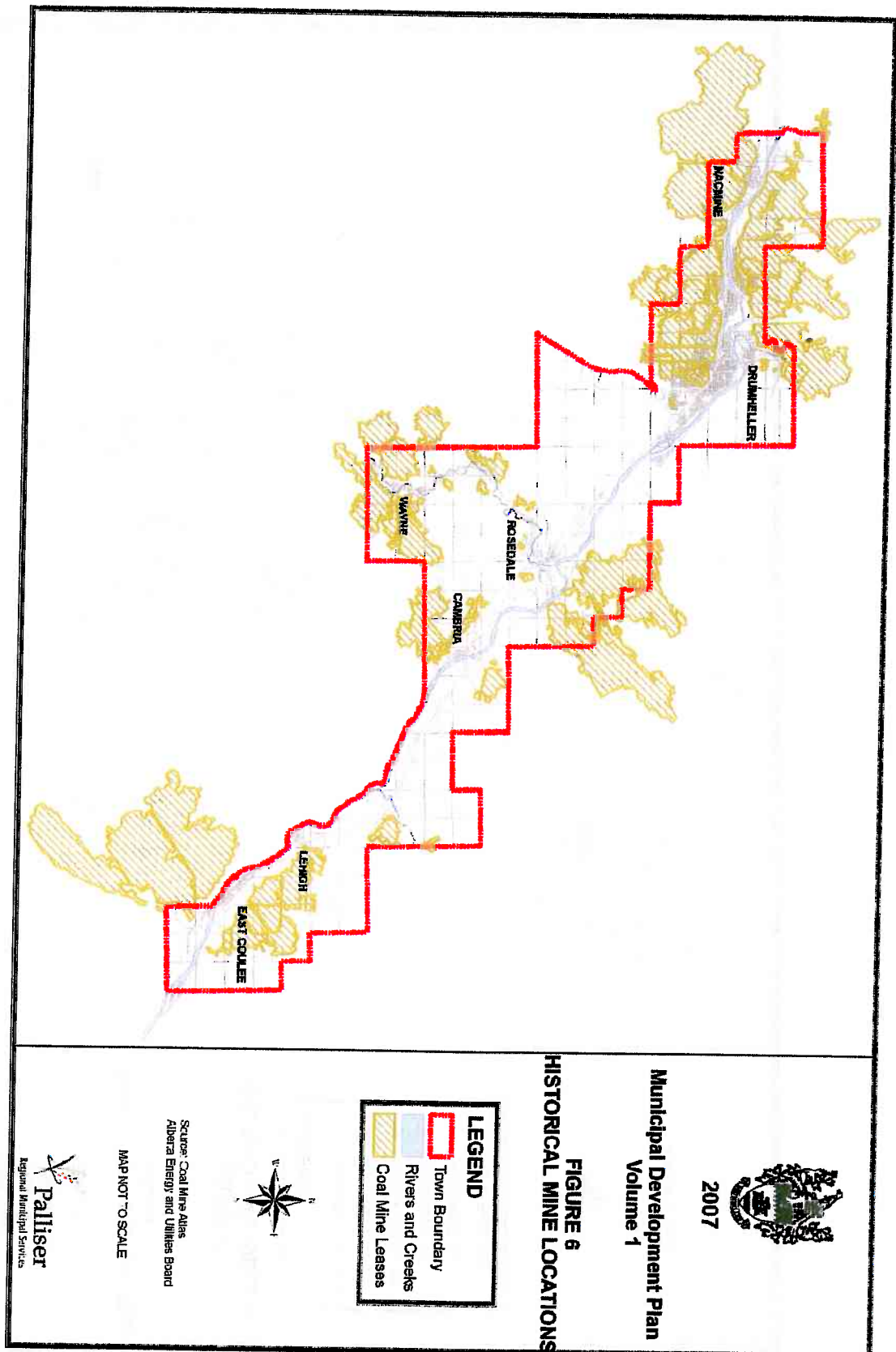
4.4.4. OIL AND GAS WELLS

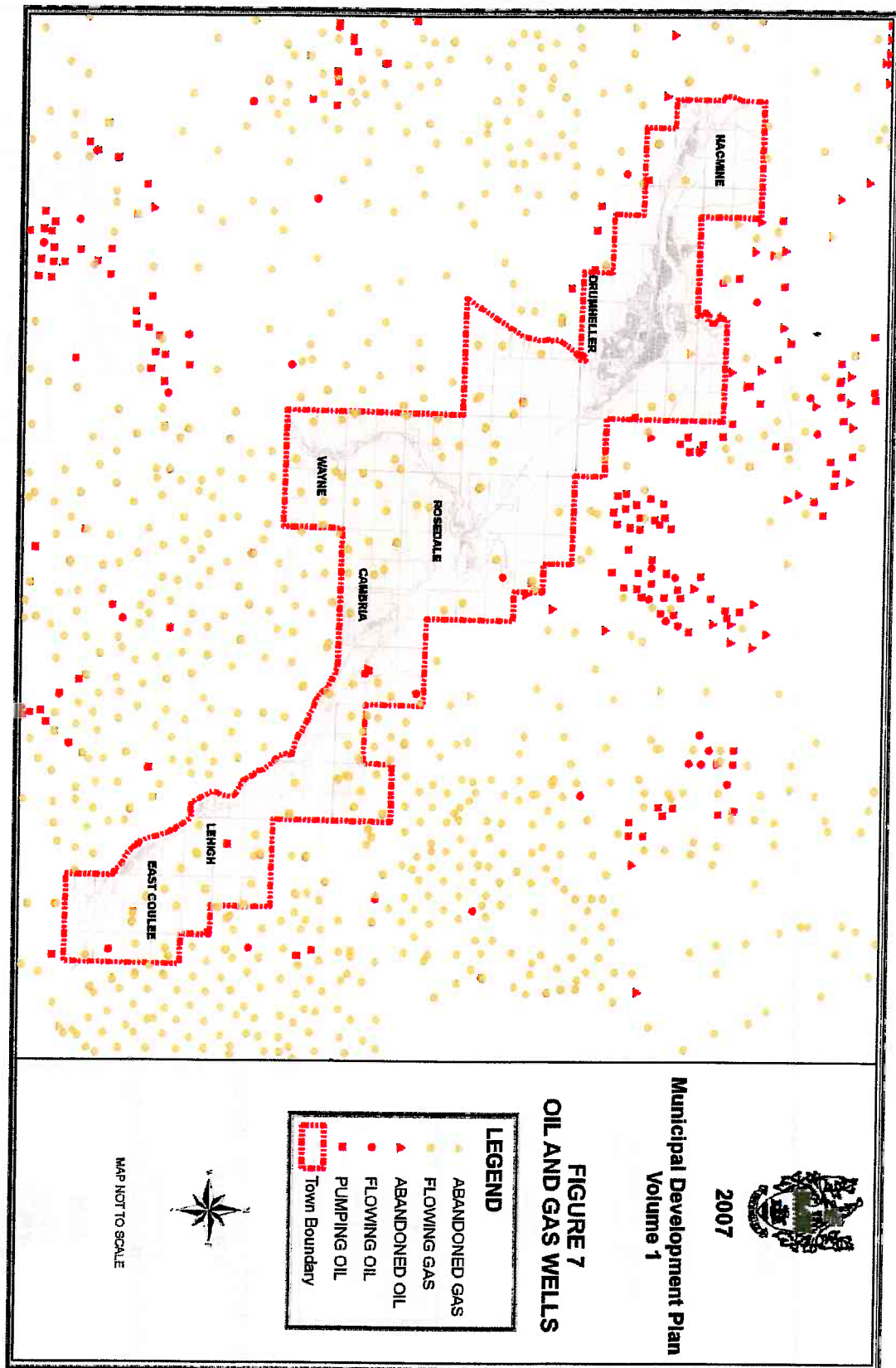
The Drumheller region is surrounded by extensive reserves of oil and gas. The surge in the price of gas over the past decade has resulted in a significant amount of seismic activity in the region, followed by significant pipeline and facility construction. There are over 23,000 oil and gas wells licensed within 50 km of the Town boundaries; 12,100 of which have been licensed since 1998. This activity provides a variety of employment opportunities, including well servicing, oil field construction, transportation, and other related activities. Figure 7 shows the location of oil and gas wells within the Town of Drumheller.

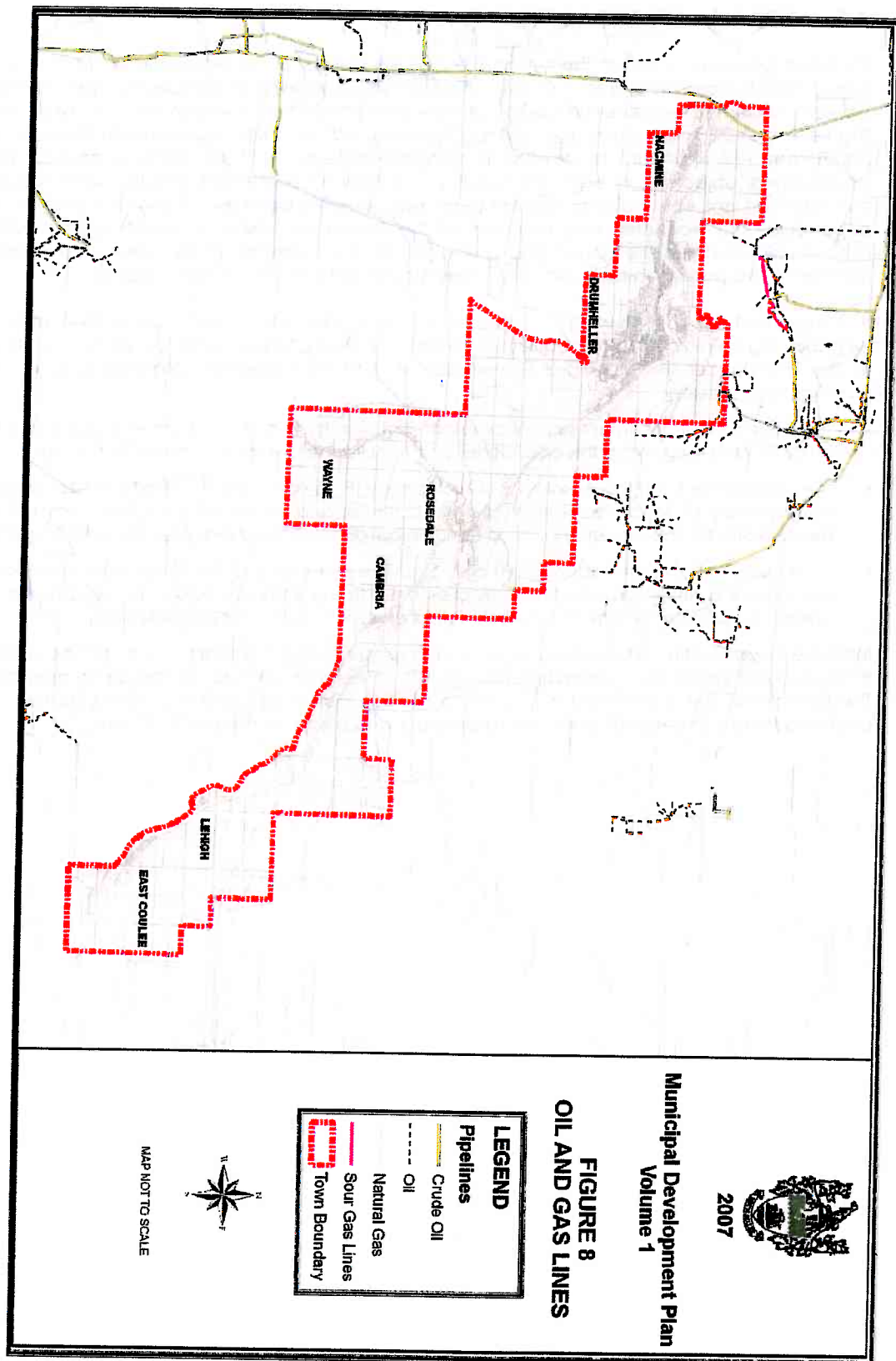
Although these resources can be a significant benefit to the area, they can also be perceived as a serious impediment if not managed properly. Oil and gas extractive resource operations may cause land use conflicts depending on the type of resource, the scale and method of extraction and the location of operations and facilities. Conversely, the location of land uses adjacent to these areas may preclude their use. For this reason it is necessary to provide a land use strategy, identifying future growth areas to minimize conflicts and achieve an orderly and efficient land use pattern. Developments of wells and batteries within the meaning of the Oil and Gas Conservation Act are exempt from the provisions under Part 17 (Planning and Development) of the Municipal Government Act (Sec 618.01). Despite the fact that the responsibility for their management lies primarily with the Provincial Government, the municipality should be aware of these resources when planning decisions are made. The expansion of the oil and gas industry must be considered with regards to its impact on existing and future growth within the Town of Drumheller.

4.4.5. PIPELINES

An associated land use consideration of oil and gas resource development is the location and alignment of pipeline right-of-ways. Figure 8 shows the pipeline locations in the Town of Drumheller and surrounding area. Pipeline rights-of-way may present an obstacle to various land uses through the fragmentation of land, rendering land unsuitable for many types of development. This can result in increased costs for servicing land, disturb environmentally sensitive and historical resource areas and create complications for the orderly and economical subdivision of land. Although the Alberta Energy and Utilities Board (AEUB) holds approval authority over pipeline projects, it is important for the municipality to understand the implications and impact that pipelines can have on future land use. With this understanding, advance provisions for integration of pipelines with future developments can be made in cooperation with the AEUB and the oil and gas companies.







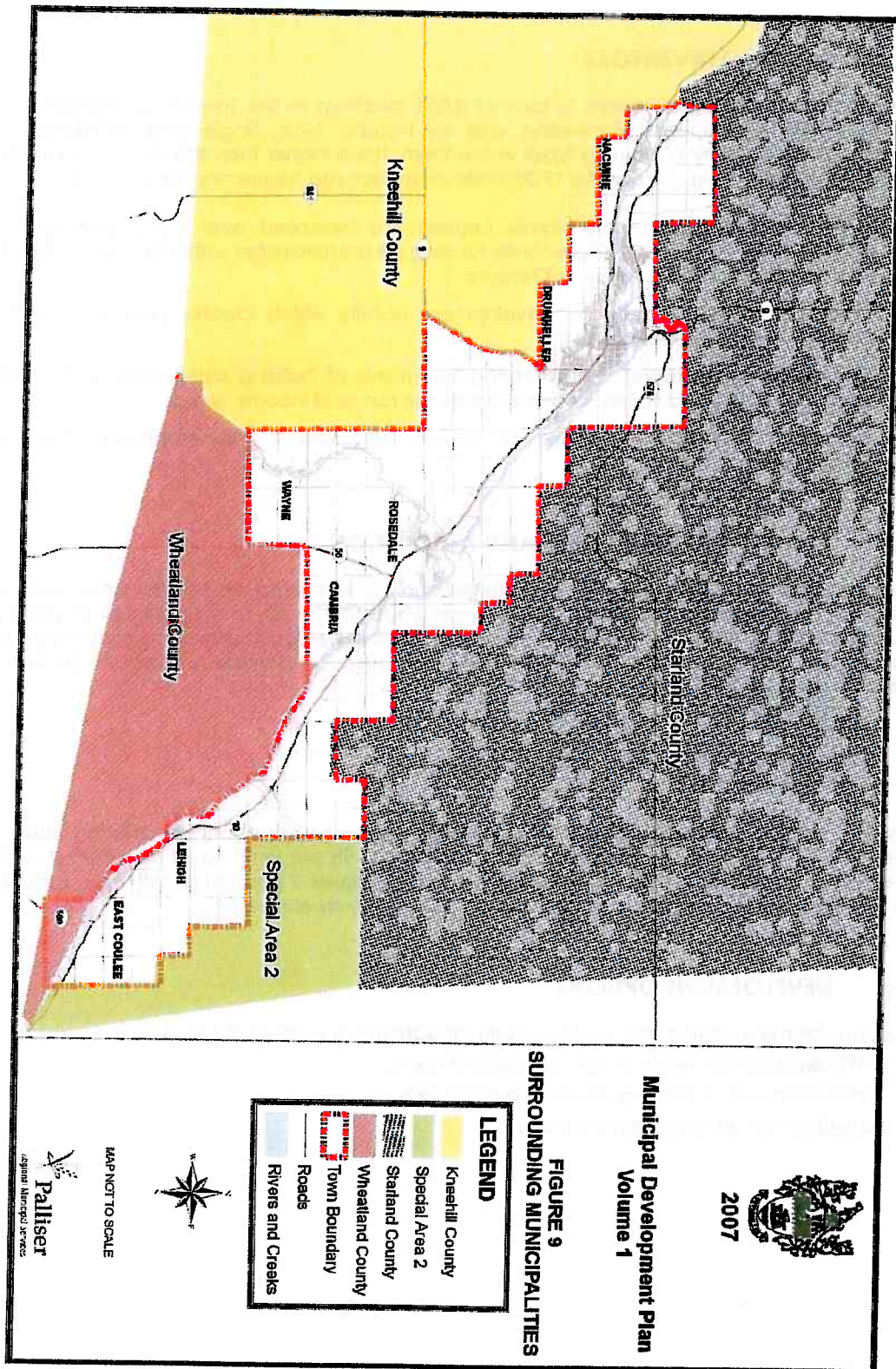
4.5. URBAN AND RURAL FRINGE

The large geographic size of the Town of Drumheller creates an extensive urban and rural fringe area, which is shared with a total of four different municipalities. Starland County, Special Area #2, Wheatland County, and Kneehill County all have common boundaries with the Town of Drumheller (Figure 9). Although the Town does not regulate land use for these areas outside their corporate boundaries, it is important to develop a planning strategy for fringe areas to co-ordinate the development objectives of each municipality. The Town of Drumheller and the surrounding rural municipalities not only have similar concerns and interests but their economies are also inter-dependent. The economy and residents of the Drumheller Valley is deeply rooted with the agricultural industry in the surrounding municipalities. It is therefore to everyone's advantage to maintain good working relationships and co-operation between each municipality.

It is important for the Town of Drumheller to foster interaction and cooperation among its neighbouring municipalities to address fringe-planning issues. Various statutory plans are available to the Town under the Municipal Government Act to implement this planning process. These planning tools include:

- The adoption, of an intermunicipal development plan by two or more councils to include those areas of land lying within the boundaries of the municipalities as they consider necessary;
- The requirement for the Municipal Development Plan to address, among other things, the coordination of land use, future growth patterns and other infrastructure with adjacent municipalities in the absence of an intermunicipal development plan (Section 632(3)(a)(iii));
- Joint cooperation in the adoption of area structure plans for specific fringe areas and detailed use rules and development standards prescribed in the land use bylaw. This will provide for a greater level of detail than the intermunicipal and municipal development plan.

Increased cooperation and communication with surrounding municipalities can also be achieved through an Intermunicipal Committee, composed of members of Council from each municipality. The purpose of this Committee would be to provide a formal communication channel as the preferred means to deal with common fringe issues and problems on a mutual basis.



5.0 RESIDENTIAL DEVELOPMENT

5.1 HOUSING INVENTORY

The 2001 Federal Census reports a total of 3,035 dwellings in the Town of Drumheller. Table 5 illustrates the percentage of dwelling units by housing type. Single-family dwellings (79.9%) constitute the majority of housing types in the Town. This is higher than the provincial average of 64.9%. Multi-family units account for 17.3% while manufactured homes account for 3.0%.

Although the proportion of multi-family housing has increased over the past 5 years from approximately 14.3% to 17.3%, single-family housing still predominates within the Town. This trend is expected to continue for a number of reasons:

- Drumheller currently lacks the development activity which creates pressure to maximize density within residential areas;
- The housing stock represents a heterogeneous mix of building styles, ages and conditions which provides good variety of choice to a wide range of income groups;
- Growth in the housing market has tended to favour the development of residential subdivisions;

5.2 PROJECTED RESIDENTIAL LAND ABSORPTION

Residential growth in the Town of Drumheller can be estimated by utilizing future population estimates and average household size to approximate the number of additional dwelling units. Based on current demands, increasing house prices, it is expected that over the next few years the housing mix will move closer to the provincial average. For estimating purposes, the following percentages are used:

Single Family	70%
Apartments	15%
Duplexes/Semi detached	12%
Manufactured Homes	3%

The 2001 Federal Census reports an average household size of 2.3 persons per dwelling. Based on a growth rate of 1.0 percent, an average of 43 dwelling units per year would be required, while an average of 94 units per year would be required at the higher 2 percent growth rate. Table 6 also provides the breakdown of estimated housing demand by dwelling type.

5.3 DEVELOPMENT OPTIONS

The development options that exist to accommodate future residential growth are:

- infill development within existing developed areas;
- redevelopment of existing developed areas; and
- development of undeveloped areas.

TABLE 5

Percentage of Dwelling Units By Dwelling Types, 2006

	Drumheller		Alberta
	# Dwellings	Percent	Percent
Single-detached	2446	79.4%	63.4%
Semi-detached	176	5.7%	4.8%
Row house	34	1.1%	7.0%
Detached duplex	5	0.2%	2.6%
Apartment (fewer than five storeys)	330	10.7%	14.7%
Apartment (five or more storeys)	0	0.0%	4.4%
Other dwellings	89	2.9%	3.1%
Total number of occupied private dwellings:	3080	100%	100%

5.3.1 INFILL POTENTIAL

Infill areas refer to built-up urban areas containing vacant serviced sites available for development. Infill development can greatly increase the efficiency of residential land use through the optimization of existing servicing systems. In some areas, infill becomes feasible when utility services are expanded or extended. Some areas of Drumheller that currently have larger lots may be able to resubdivide or redevelop once water and sewer services are installed or expanded. Infilling of lots help minimize the costs of extending utility lines and providing municipal services, such as garbage collection, police and fire protection, street cleaning and snow cleaning services. Further, community services such as schools, hospitals, parks and recreational facilities that exist in many urban core neighbourhoods can be utilized in a more efficient and cost-effective manner.

Table 7 illustrates the potential for infill growth in a number of areas in Drumheller. These figures include lots that could be available within existing neighbourhoods in addition to new subdivisions that are in the planning and development stages. It is important to note that Table 7 reflects infill potential rather than the actual number of lots currently available to the market. The main areas within the Town of Drumheller that have the potential for infill growth are shown on Figure 10-1.

Table 7 Residential Infill Growth Potential

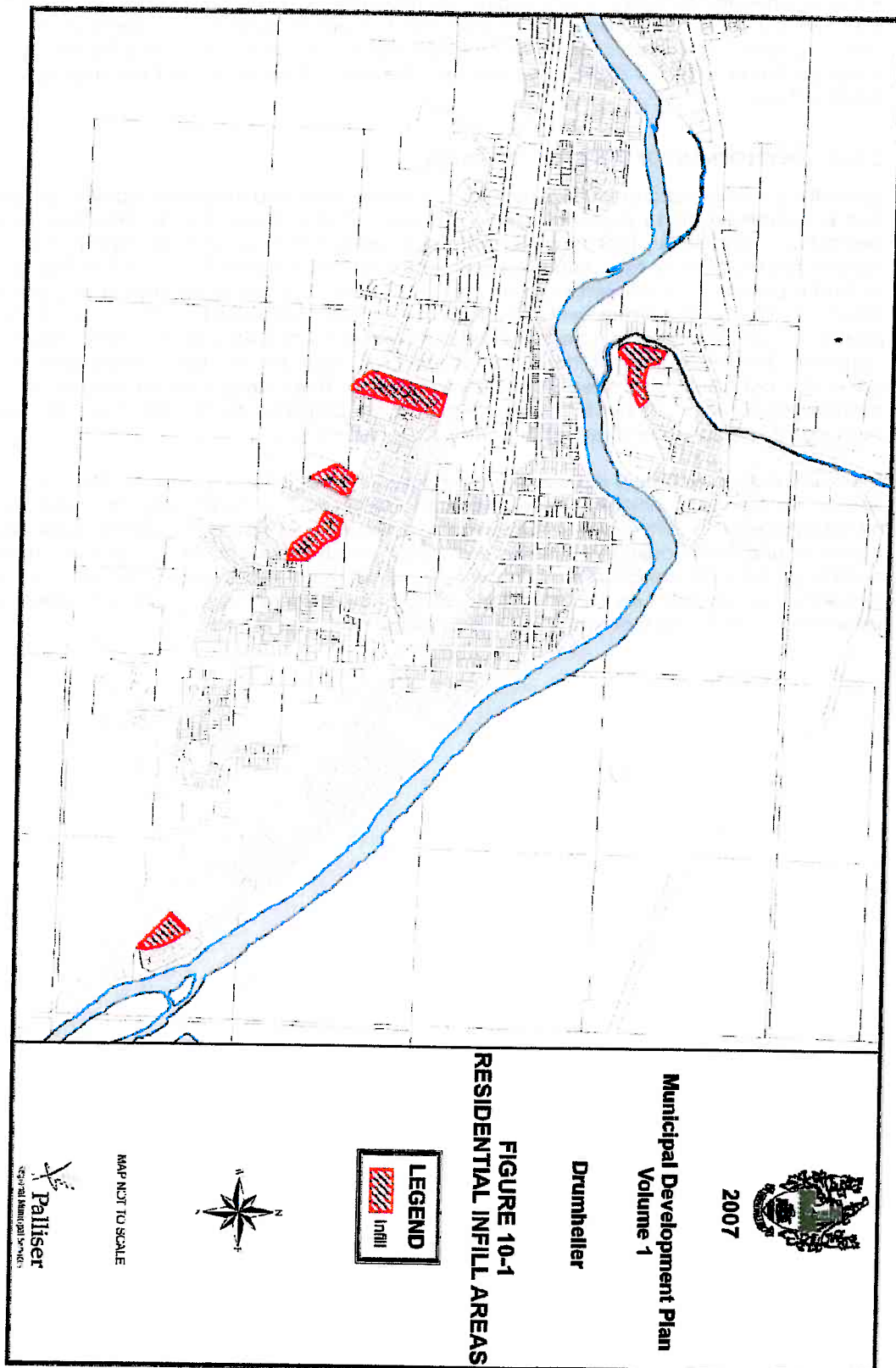
Site	Number of Lots	Number of Units	Estimated Population
Riverside Gardens	38	38	87
Hillsview	40	40	92
Bankview	45	45	104
Green Close, Nacmine	25	25	58
West Beech Street	10	10	23
Total	158	158	364

Note: Population Estimates assumes 2.3 persons per single-family dwelling

5.3.2 REDEVELOPMENT OF EXISTING DEVELOPED AREAS

Redevelopment is the revision or replacement of existing land use in a built up area. In terms of residential redevelopment, the following factors may favor redevelopment projects.

- The age and condition of existing residential buildings;
- Buildings may be dilapidated to the point where the cost of rehabilitation is so high that redevelopment is the only viable alternative;
- New or improved utility services;
- Redevelopment may bring about a significant improvement in the quantity and quality of buildings;
- The municipality has more comprehensive control over redevelopment through local planning processes.



It is recommended that prior to any large-scale redevelopment, an Area Redevelopment or Area Structure Plan should be prepared. Such plans should focus on issues such as the appropriate land uses, the removal or replacement of buildings; the preservation and rehabilitation of existing buildings, the provision of social amenities, and the reconstruction of roadway and public utility infrastructure.

5.3.3 DEVELOPMENT OF UNDEVELOPED AREAS

Given the previously discussed development constraints, new residential development on raw land can be identified on 16 potential sites in the Town of Drumheller. The developable area and approximate population that may be accommodated, including housing densities is shown in Table 8. The locations of new residential areas are identified in Figures 11. A total of 786± hectares of land is provided for residential growth areas. This land base would be able to accommodate approximately 17428 persons, with development potential estimated at 7586 units. During the preparation of this MDP, a number of potential development sites were looked at in more detail to determine the serviceability of these sites. As part of this exercise site designs were done. In these cases, the potential lot numbers were determined from these designs rather than based on an average of 15 units per hectare. The Town may be prepared to provide these designs and servicing information to land owners or potential developers.

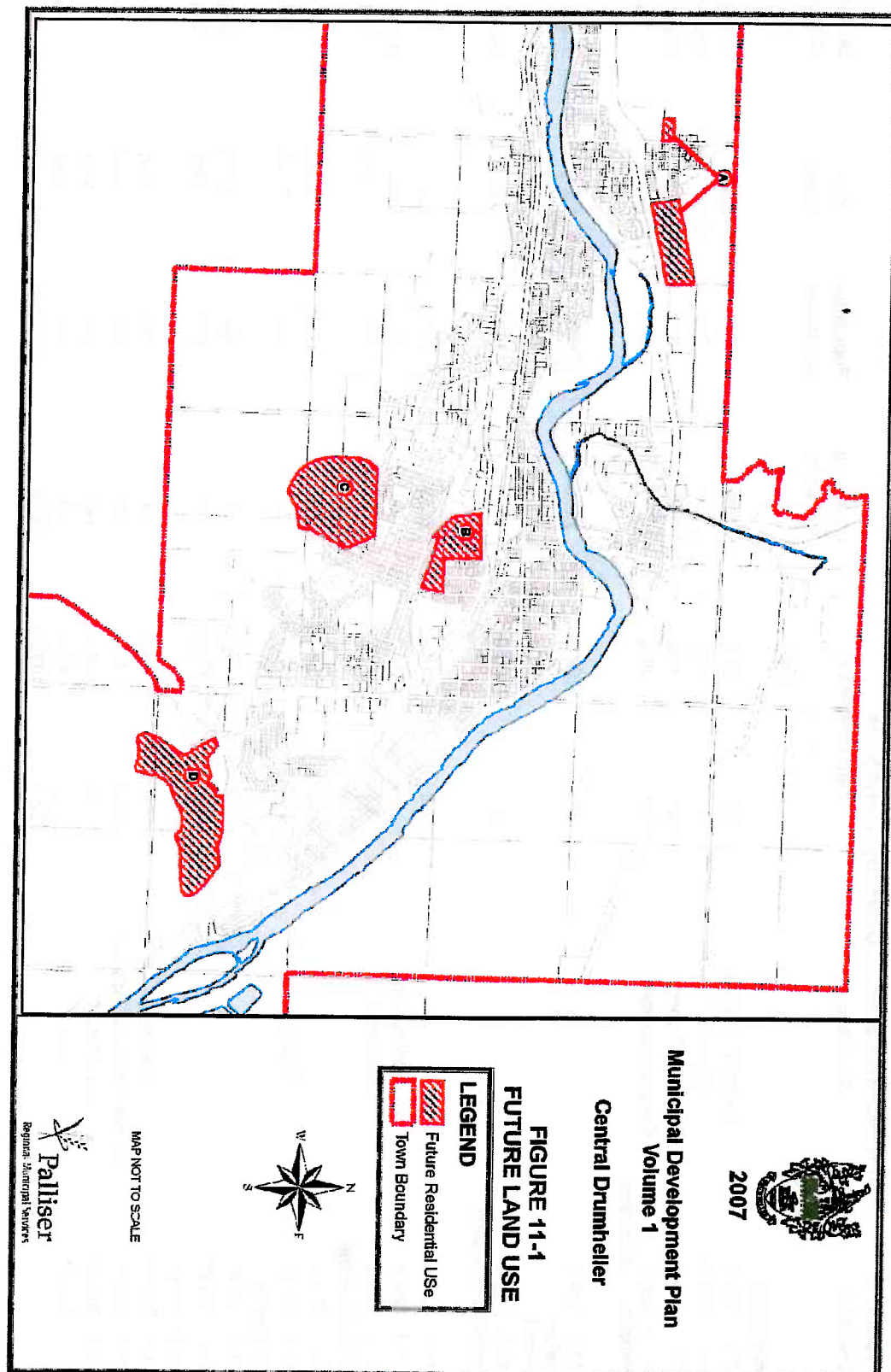
The residential development sites identified in Figures 11 present the potential development sites. In terms of serviceability, short-term development should be directed to the Valley floor sites that can be linked to existing utility systems. The serviced communities of Nacmine, Central Drumheller and Rosedale and lands adjoining these communities, which represent the urban core area, are considered the most suitable areas for shorter-term future residential development within the Town. Residential development on the bench lands should be considered as a longer-term option due to serviceability constraints that would necessitate major new capital costs.

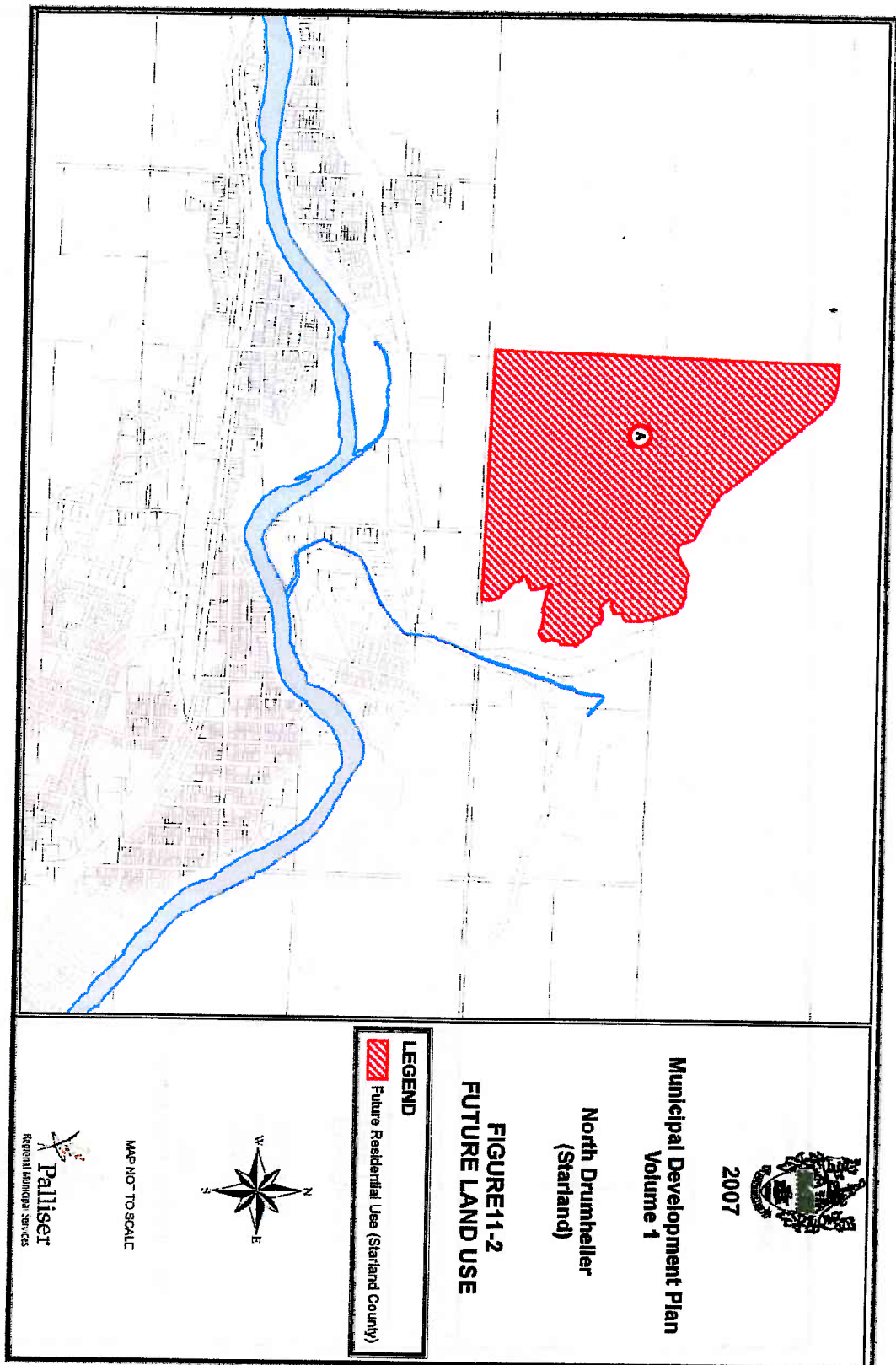
Table 8 Potential Residential Development Sites

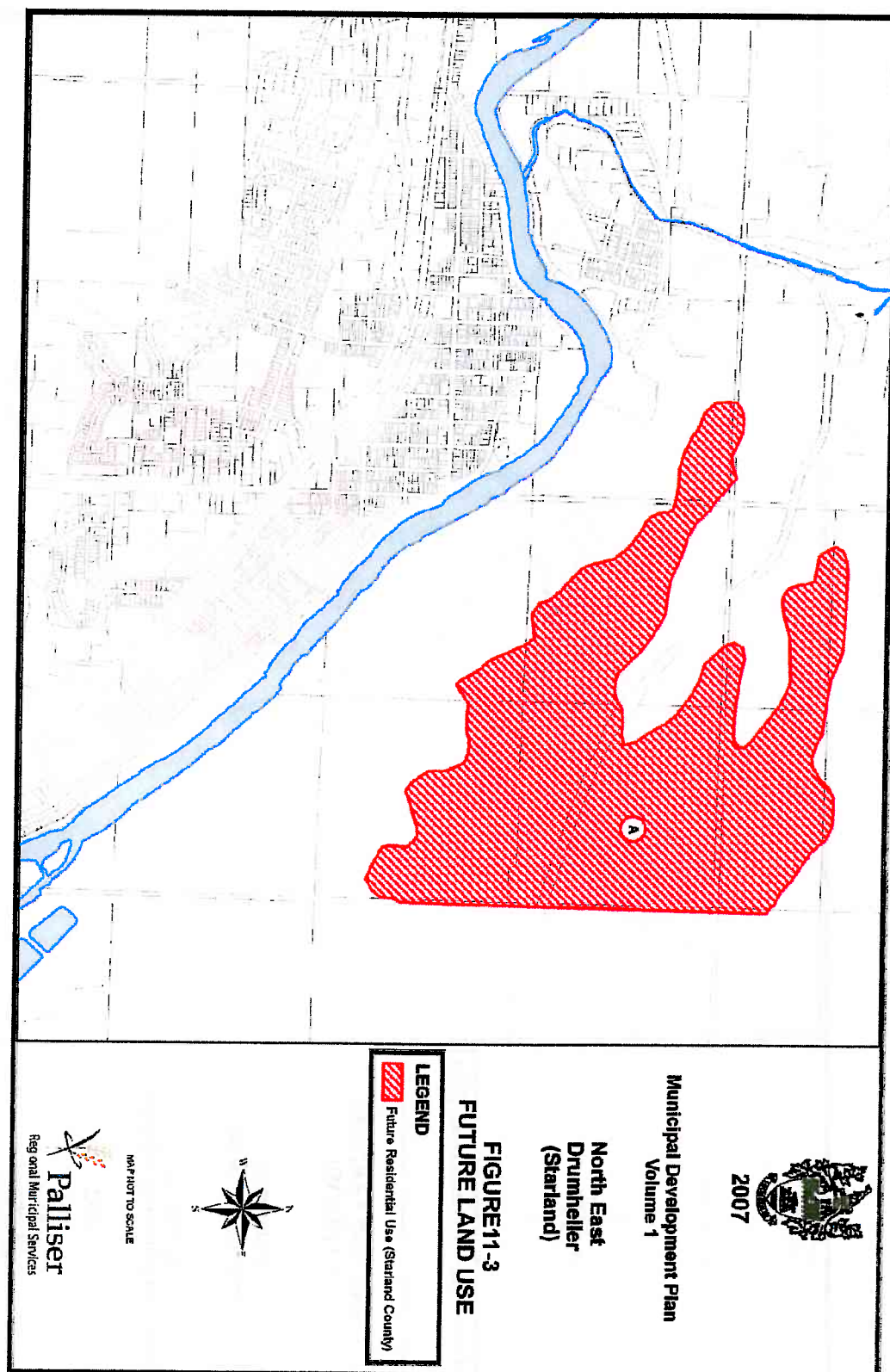
Location	Site Name	Development Area		Estimated # of Units	Population Estimates	Dev Stage	Development Constraints (potential)
		Hectares ±	Acres ±				
1. Central Drumheller							
Fig 11-1 Site A	Electra Properties	8.6	21.3	129	297	Short	Undermining
Fig 11-1 Site B	Elgin Hill **	7.8	19.3	120	276	Short/Med	Undermining
Fig 11-1 Site C	Eccleston Property **	18.1	44.8	140	322	Short	Undermining
Fig 11-1 Site D	Canyon Meadows **	23.8	58.8	256	589	Short	Slopes
2. North Drumheller (Starland County)							
Fig 11-2 Site A		146	360.8	2190	5037	Long	Undermining/ Slope stability
3. NE Drumheller (Starland County)							
Fig 11-3 Site A*		180.7	446.5	447	1027	Long	Slope stability
4. South Drumheller (Kneehill County)							
Fig 11-4 Site A	Devco/Brazeau	210.2	519.4	3153	7252	Long	Slope/ grading
Fig 11-4 Site B	First Bench	43.1	106.5	204	469	Long	Slope/ grading
Fig 11-4 Site C		8.5	21.0	43	100	Long	
5. Drumheller to Rosedale							
Fig 11-5 Site A		35.5	87.7	533	1225	Long	Flood Risk
Fig 11-5 Site B*	Parrup	4.86	12	10	23	Short	Flood Risk
6. Rosedale to Wayne							
Fig 11-6 Site A*		11.3	27.9	28	64	Long	Slope stability
Fig 11-6 Site B*		41.7	103.0	103	237	Med	Slope stability
7. Rosedale to Cambria							
Fig 11-7 Site A*	Sands	17.9	44.2	44	102	Med	Flood Risk
Fig 11-7 Site B	Former Par 3 Golf Course**	3.52	8.7	27	62	Short	Flood Risk
Fig 11-7 Site C*	Areal Flats**	13.5	33.4	145	334	Med	Flood Risk
Fig 11-7 Site D*	Pinter	20	49.4	49	114	Med	Flood Risk
TOTAL		798.3	1972.9	7630	17547		

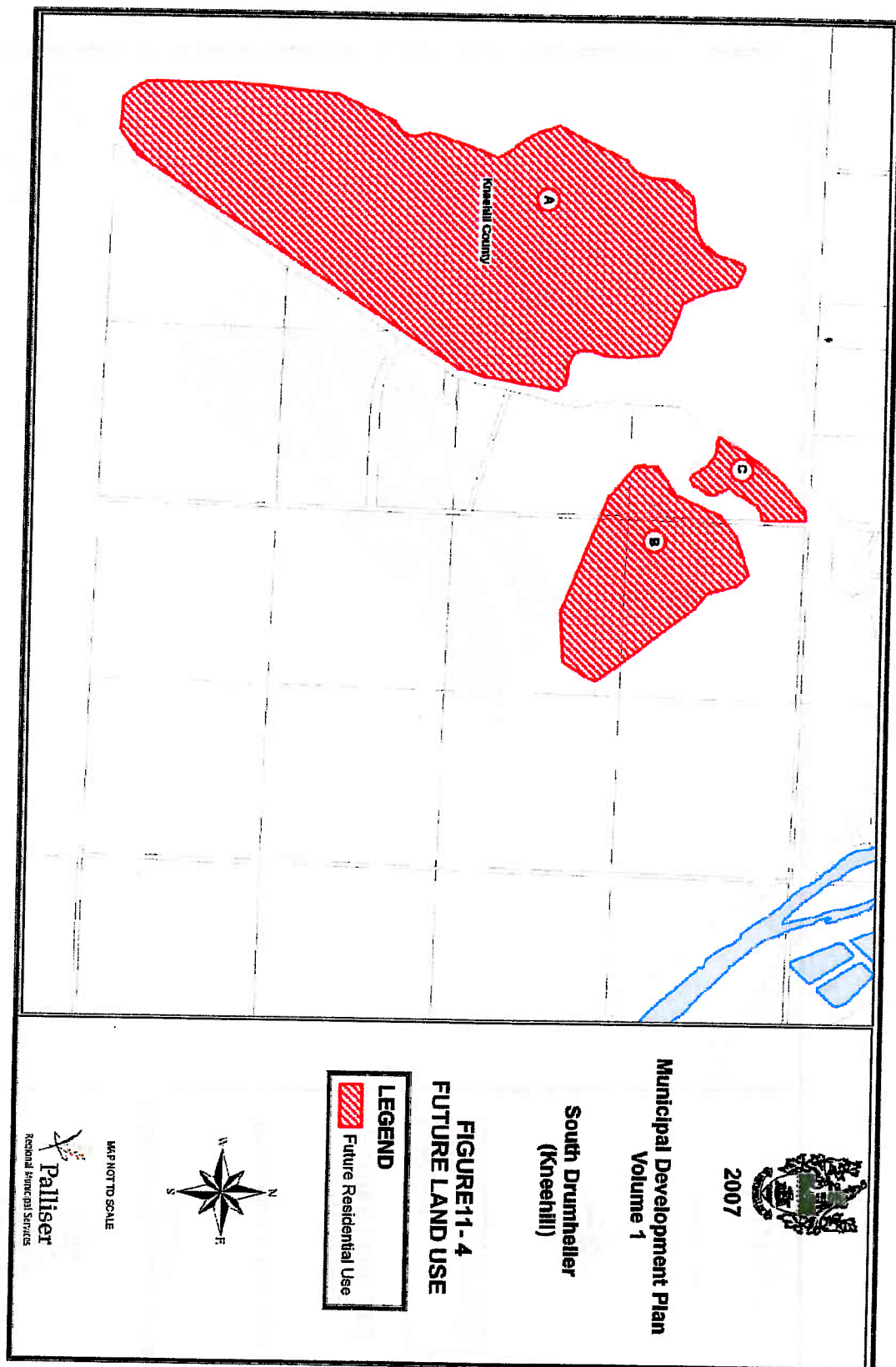
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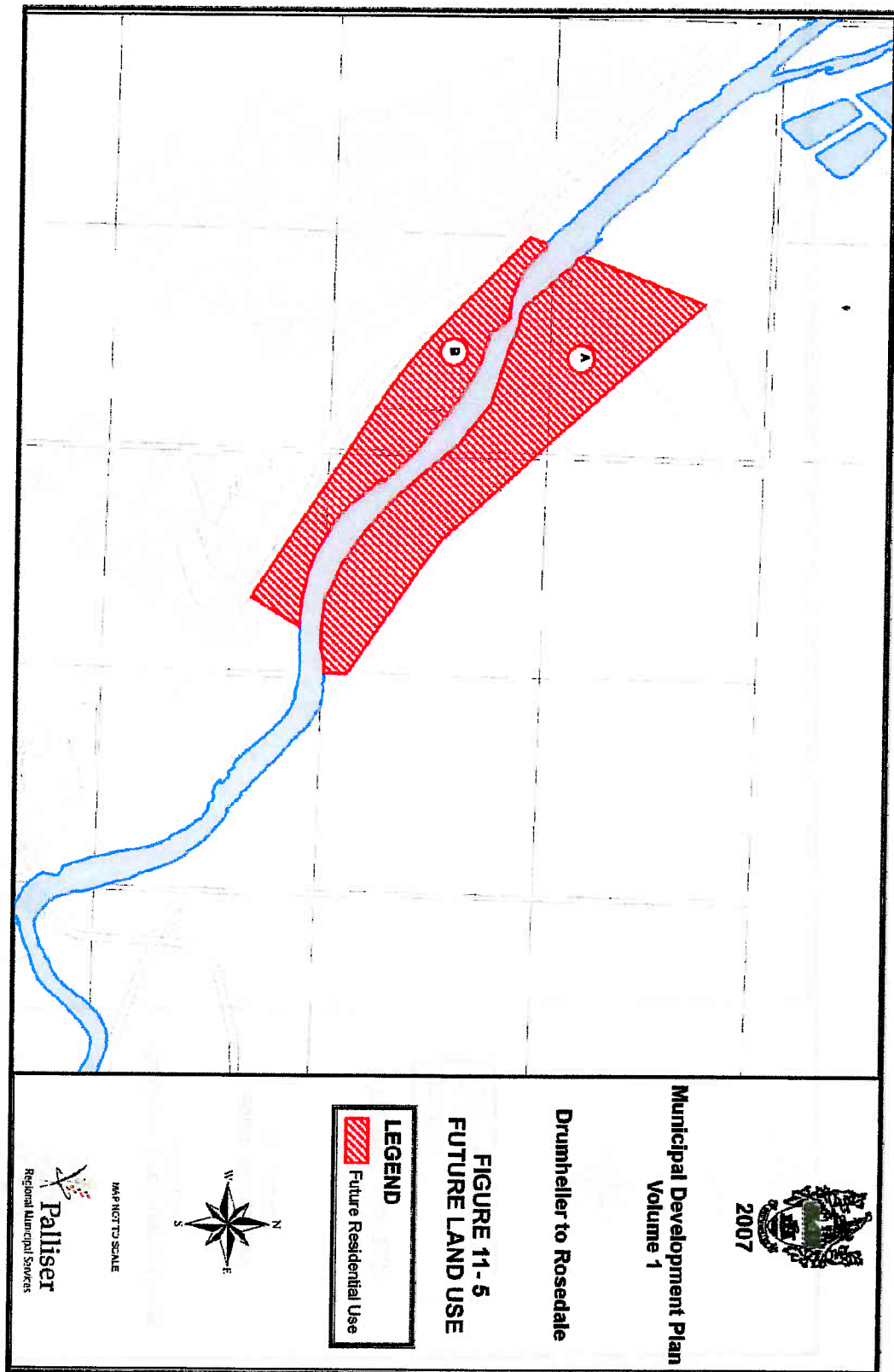
* Includes Country Residential Lots (2.5 Lots/ha) – based on preliminary designs

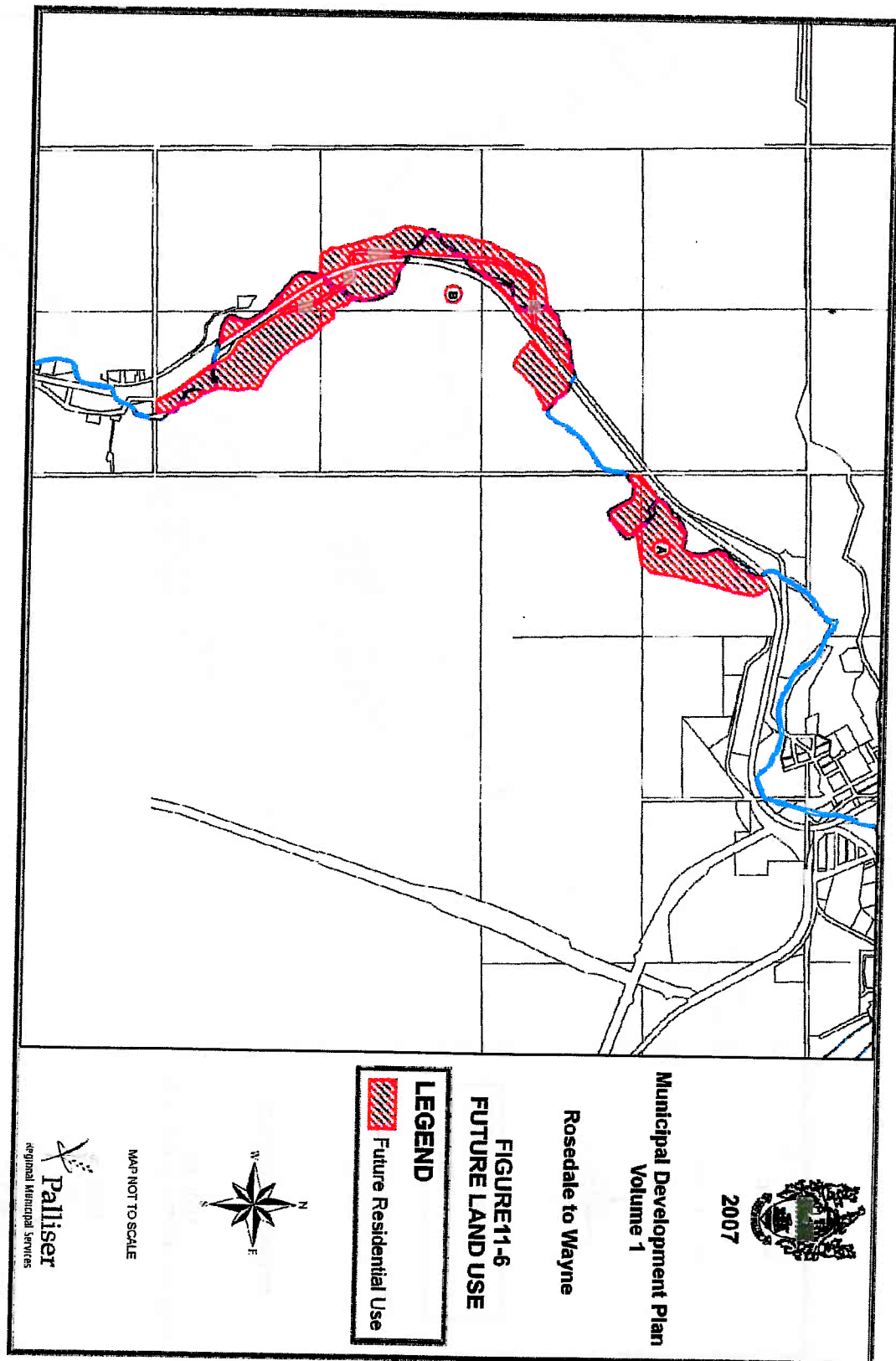


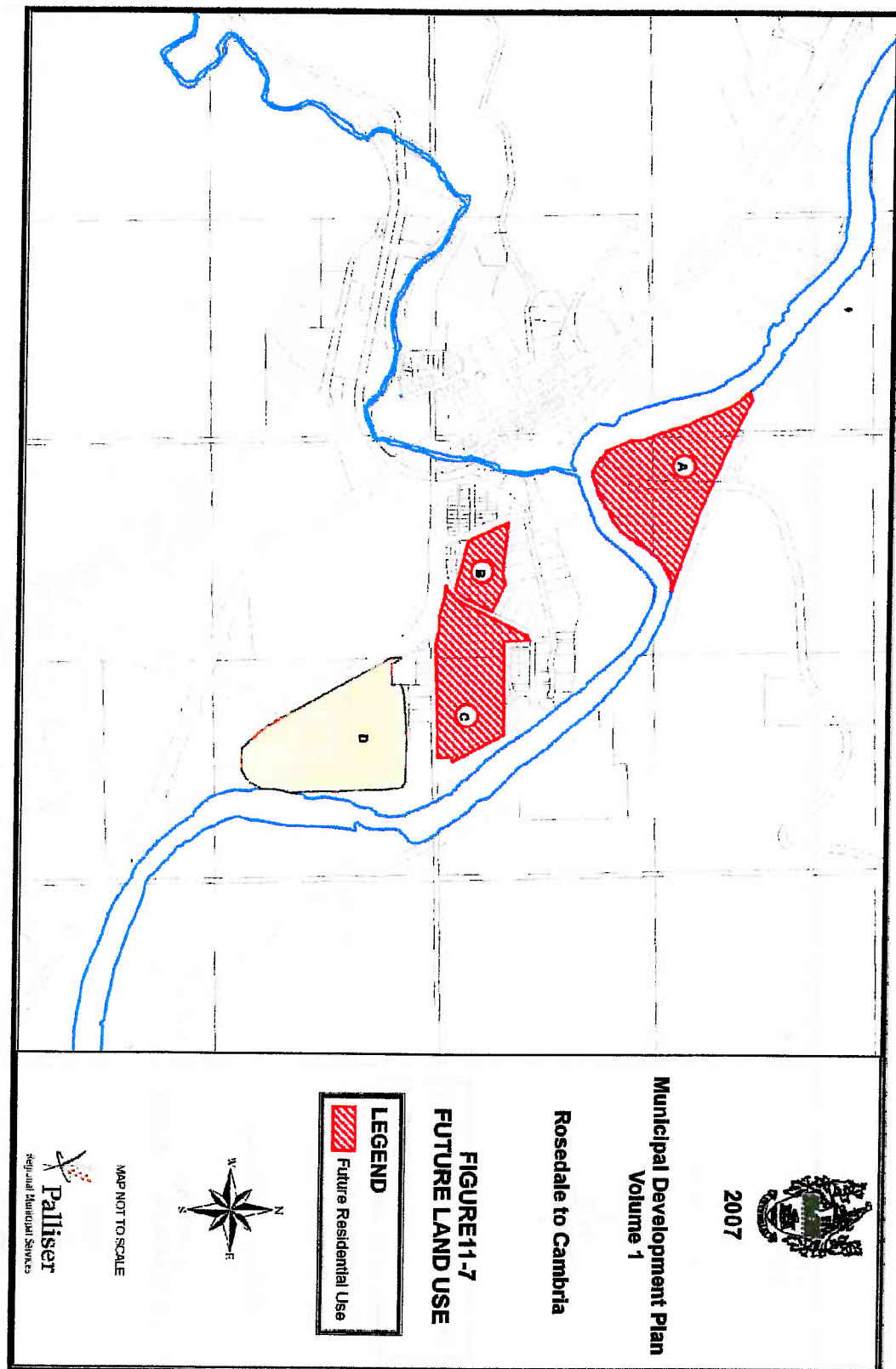












5.4 AFFORDABLE HOUSING

The provision of affordable housing is typically an issue associated with high growth communities, which is not representative of the Town of Drumheller. However, as economic and demographic conditions change, the cost of housing and rents can change quickly. Although past trends have indicated a strong preference towards the development of new single-family dwellings, the Town should take the appropriate measures to ensure that a sufficient supply of adequate, accessible affordable housing is available to all types of households in the future.

It has been estimated that as many as 2338 additional dwelling units may be required in the next 25 years. Multi-family residential developments will be necessary if growth projections for the Town of Drumheller are realized for those residents who are downsizing in housing and/or to meet the needs of those residents not able to afford single detached housing. Due to the demographic trends that identify an aging population and a decline in household size, the demand for smaller and senior oriented homes appears evident in the Town of Drumheller. A number of initiatives and alternatives to ensure an adequate supply of affordable housing may be possible. These may include the efficient use of land, provisions related to intensification of older residential and commercial buildings, and implementing development conditions that protect the existing stock of affordable housing when areas are being redeveloped. Policies and initiatives should be developed in Volume 2 or the Land Use Bylaw among other Municipal policy documents.

Provincial initiatives recognize a number of affordable housing issues in which municipalities are encouraged to identify and address the scope of housing need in local land use planning processes.² This includes, among others, the challenges accommodating housing needs of low-income households, seniors and special needs sectors.

The 2001 Federal Census reports that 280 of 810 renters (34.6%) in the Drumheller Valley were paying greater than 30% of their income on housing, and 245 of 2225 owners (11.0%) were paying greater than 30% of their income on housing.³ Thus, a total of 17.3% of households had an affordability problem in 1996. These statistics are quite similar to the provincial average, which identifies 36.0% of tenants spending over 30% of their income on housing and 15.5% of owners spending over 30% of their income on housing. As Table 9 shows, the average household income is lower than the provincial average, but so is the average cost of housing. It must be noted that the average value of dwellings has risen in Drumheller in recent years, and data used in this analysis is 5 years out of date.

²Provincial affordable housing initiatives include the Provincial Land Use Policies (November, 1996); The Affordable Housing Partnerships Initiative (AHPI) which includes CMHC and Alberta Seniors and Community Supports (June, 2002).

³ A general rule of thumb is that "affordable housing requires persons to pay no more than 30% of their gross income for shelter costs.

Table 9

Housing Affordability, 2001

	Drumheller	Alberta
Total number of private households	3035	1104100
Average household income	\$60,365	\$73,566
Percent of Households Renting	26.7%	28.6%
Average gross rent	\$529	\$673
Tenant households spending 30% or more of household income on gross rent	34.6%	36.0%
Percent of Households Owning	73.3%	66.6%
Average owner's major payments	\$673	\$875
Owner households spending 30% or more of household income on owner's major payments	11.0%	15.5%
Average value of dwelling	\$103,597	\$159,698

Source: Statistics Canada 2001 Federal Census

The supply of rental housing has been limited in Drumheller in recent years. Table 10 shows the vacancy rates in Drumheller from 1996 – 2005. The vacancy rate in a 2005 survey was 0.0% - not a single apartment available for rent. MDP policies should address this shortage by ensuring there is an adequate supply of land available for the development of rental housing. In addition, the plan may adopt policies allowing outlining the conditions that would allow for the redevelopment of lands in established communities for multifamily rental accommodations.

Table 10

Drumheller Rental Housing Vacancy Rates

Year	Vacancy Rate	Average Rent for a 2 Bedroom Apartment
1996	2.8	\$418.00
1997	2.8	\$422.00
1998	1.4	\$427.00
1999	4.3	\$430.00
2000	1.8	\$434.00
2001	1.8	\$454.00
2002	1.1	\$464.00
2003	2.9	\$477.00
2004	1.1	\$485.00
2005	0.0	\$496.00

Source: Alberta Seniors and Community Supports, 2005

6.0 COMMERCIAL DEVELOPMENT

6.1 COMMERCIAL LAND USE

The Town of Drumheller's retail businesses and service activities are concentrated in two primary areas: the Central Business District (C-B) and the Highway No. 9 Commercial District. A third, smaller commercial area is located in North Drumheller along Highway No. 9. These commercial districts provide regional goods and services to both the urban and rural residents of the Town and the surrounding rural areas. Smaller nodes of local commercial areas are also dispersed throughout the Town, generally comprised of local food and confectionery outlets. Figure 12 outlines the general location of these commercial areas within Drumheller. Commercial activity in the other communities of the Town is quite minor in nature, with facilities limited to serving the day-to-day convenience shopping needs of local residents: Local Commercial District (C-1).

6.2 TRADE AREA

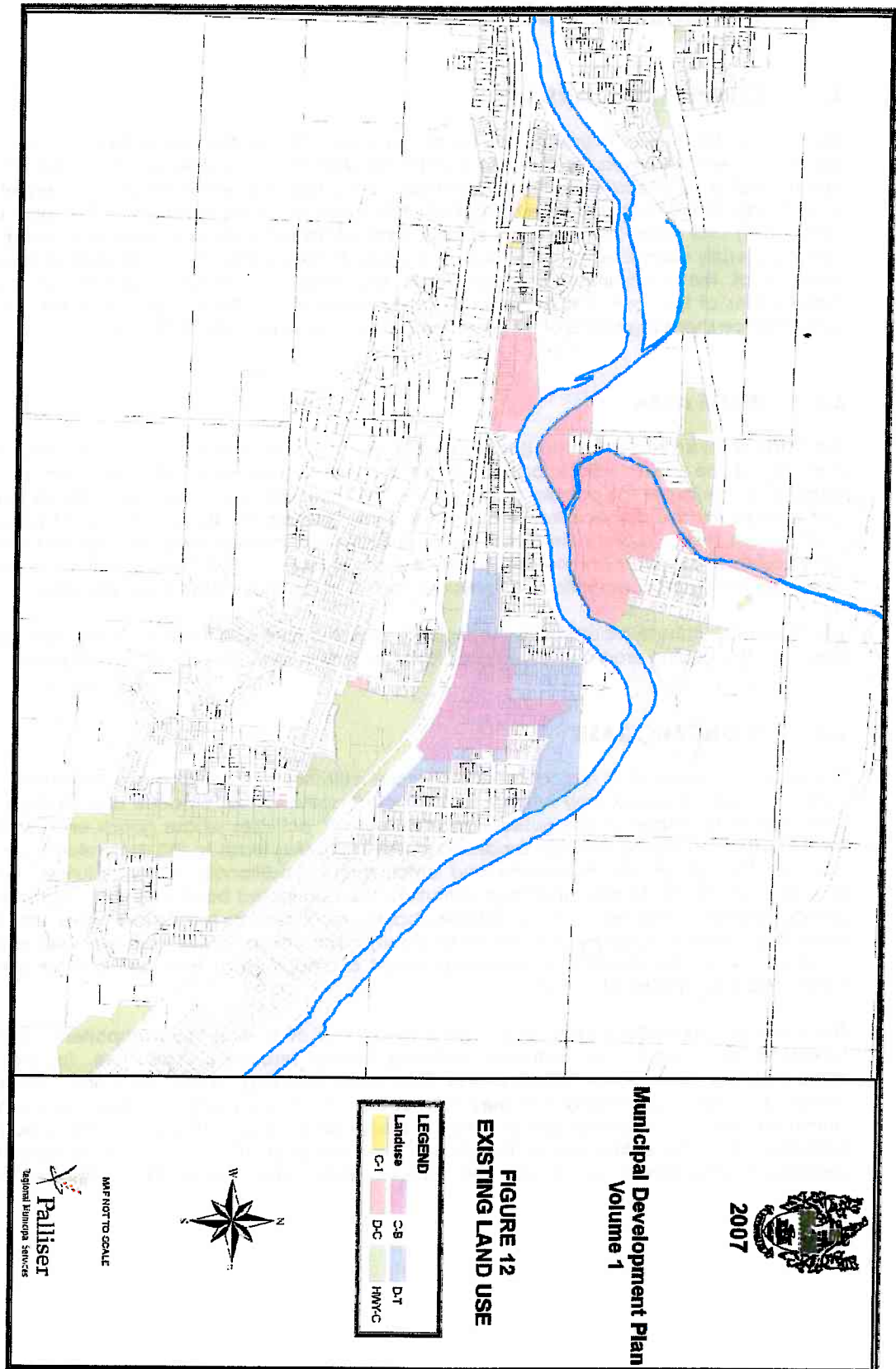
The trade area is defined as the geographical area from which business draws its customers. The concept of the trade area is based on the distance people are willing to travel to shop in Drumheller. The larger the population of a place, the more goods and services it is likely to provide and the greater the distance from which it will attract people to take advantage of these goods and services. It should be realized that the establishment of a trade area assumes that consumers will travel to the nearest commercial facility without regard to other factors such as accessibility, consumer behavior, competition and physical barriers which may affect the trade area.

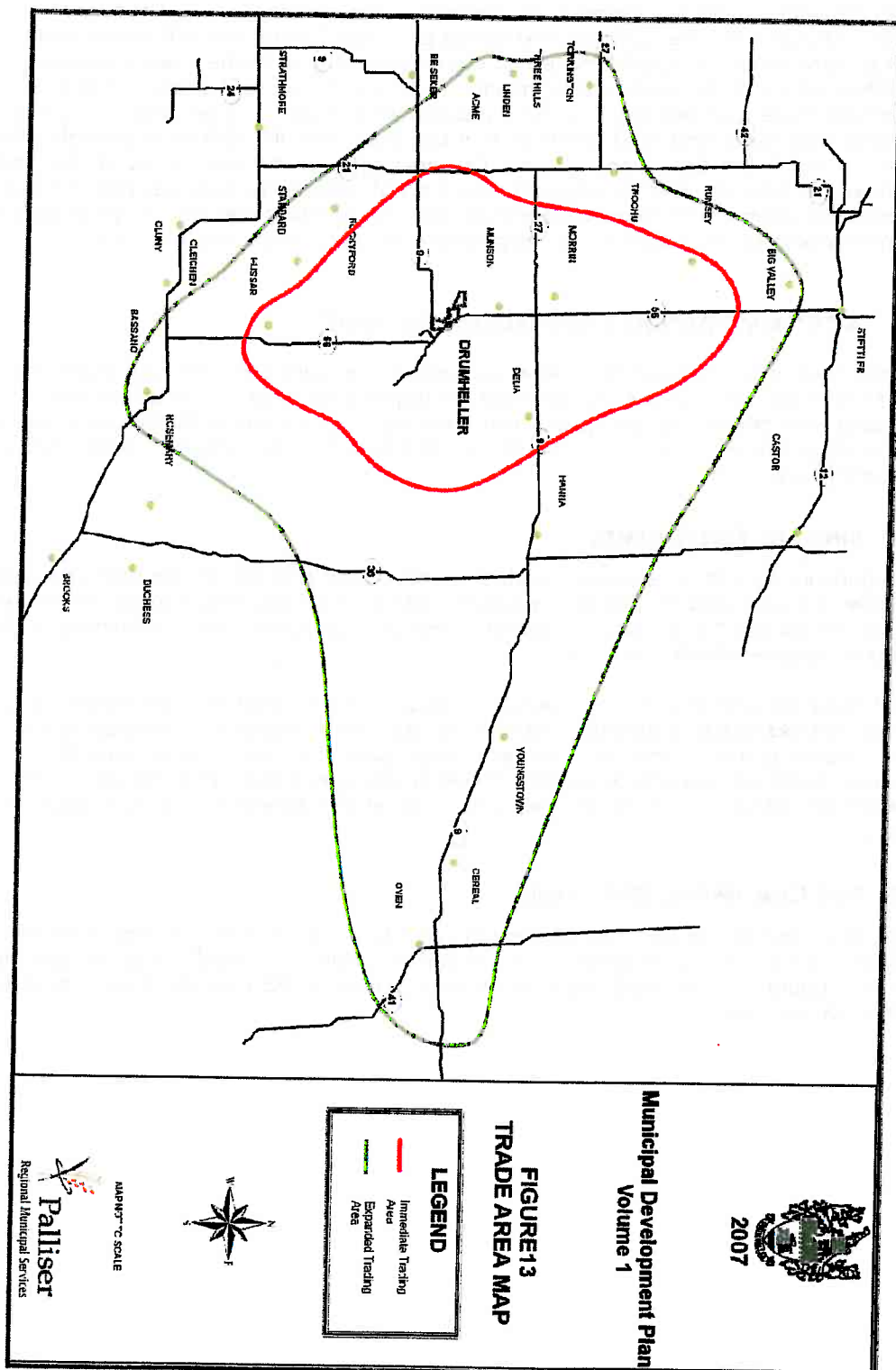
The Town of Drumheller operates as the regional service centre with the retail trade area shown on Figure 13. The trading area contains a population of approximately 35,000 to 40, 000 persons.

6.3 ECONOMIC BASE

The economic base of a region consists of those activities that result in a dollar inflow from all outside sources. The economy is made up of "basic" activities that produce and distribute goods and services for export to the outside, and "non-basic" activities whose goods and services are consumed within the community. Expansion in basic activities leads to the expansion of non-basic activities through growth in income and employment. Traditionally, manufacturing, extractive industries, wholesale, tourism and large institutions are considered basic economic activities; while service oriented activities such as schools, banks, local serving retail stores and the like are considered service. However, it is difficult to classify economic activities exclusively either basic or non-basic, since the majority of businesses export a proportion of their output while the rest is consumed within the local market.

The Town of Drumheller's economic base is comprised of several key components, which are typical of basic economic activities, including natural resources, agriculture, tourism, public administration, professional services and light manufacturing. These economic sectors are important in terms of bringing in money from outside the municipality, and illustrate Drumheller's dominant role as a regional service centre. Based on employment statistics for a number of businesses that have located in Drumheller over the past 10 years, these businesses have generated employment for around 540 people, which work out to 38 people per hectare.





6.4 FUTURE COMMERCIAL LAND REQUIREMENTS

In the past, the traditional methods of forecasting the amount of land required for future commercial used either the 'average retail space per capita' or the 'Retail Turnover' method. The average retail space per capita looked at the amount of retail in the town, compared to the population, where as the retail turnover method took into account the amount of retail sales per square foot. These methods may provide a reasonable estimate in larger centres. However, with changing trade areas and retail trends such as box stores, etc, it is difficult to estimate what will happen in the future based on the past. On average, over the past 10 years, the Town of Drumheller has had demand for approximately 2 ha of commercial land per year. For planning purposes, it is assumed this trend will continue. This plan identifies sites that may be suitable for commercial activities and leave the development of these sites to the market forces.

6.5 ACCOMMODATING COMMERCIAL GROWTH

Currently, there is limited commercial land available in the Drumheller valley, especially for larger sites. As a result, new commercial land will be required to meet the long-term needs of an expanding Town and trading area population. Three basic options are available to accommodate commercial growth within the Valley. These are infill and redevelopment and the development of new commercial areas.

6.5.1 INFILL AND REDEVELOPMENT

The opportunity for infill development exists on under-utilized and vacant lots within the Town of Drumheller. It is expected that the large proportion of new commercial floor space will locate in or close to the existing Central Business District or designated Highway No. 9 Commercial District. These areas are identified in Figure 14.

Opportunities for redevelopment in the Central Business District exist through vacant lands and commercial building space despite certain site development constraints with respect to narrow lot widths, access problems and less desirable fringe area sites. The policies contained in the Downtown Drumheller Area Redevelopment Plan encourages infill locations for new commercial development, primarily on 1st Street West and 1st Street East between Railway Avenue and 3rd Avenue.

6.5.2 NEW COMMERCIAL DEVELOPMENT

The development of new commercial sites not currently designated commercial under the Land Use Bylaw can also accommodate future commercial growth. 9 potential sites are identified in Table 11 & Figure 15. Combined, these sites provide a total of 79.5 hectares of land for potential commercial development.

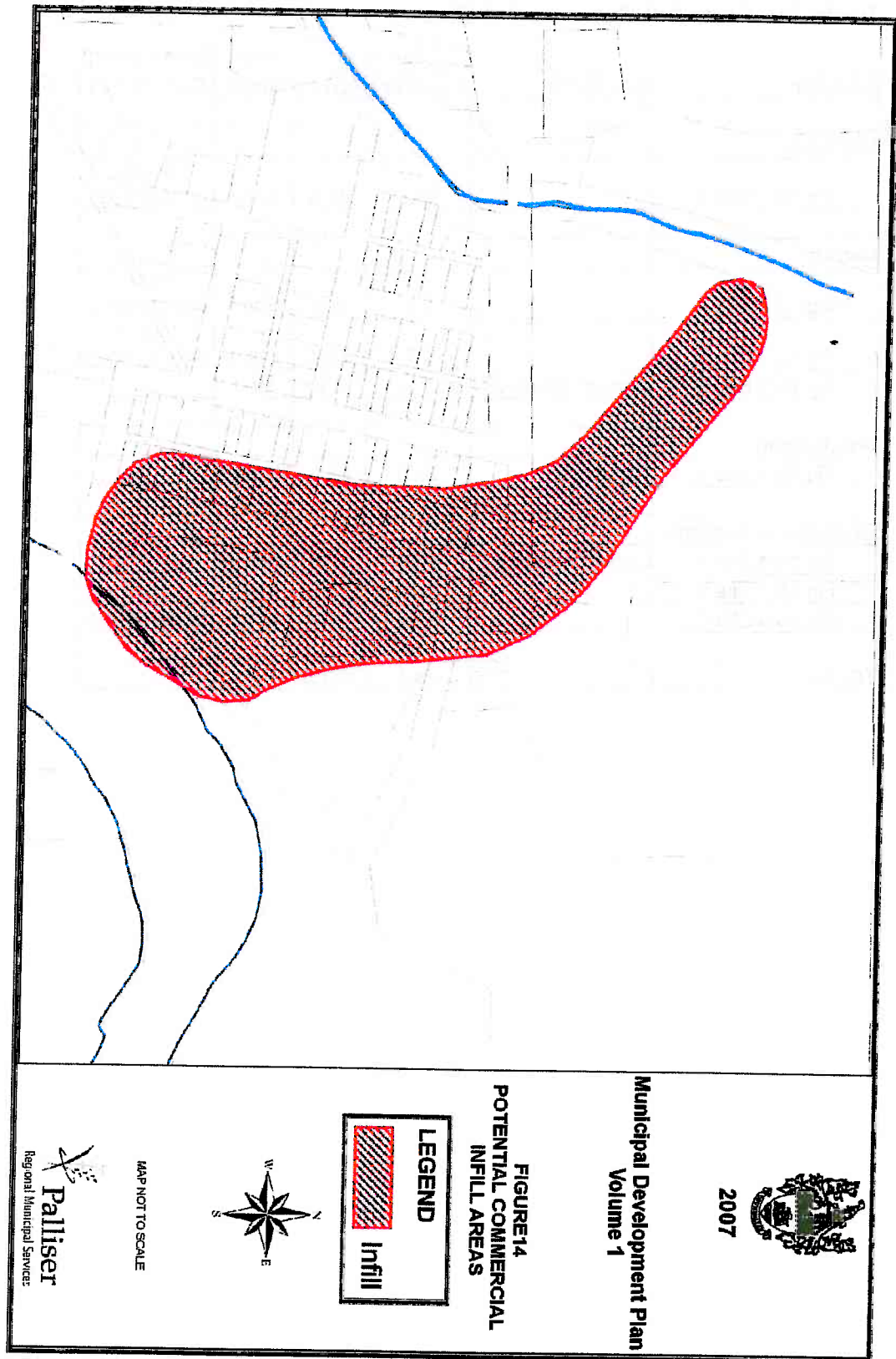
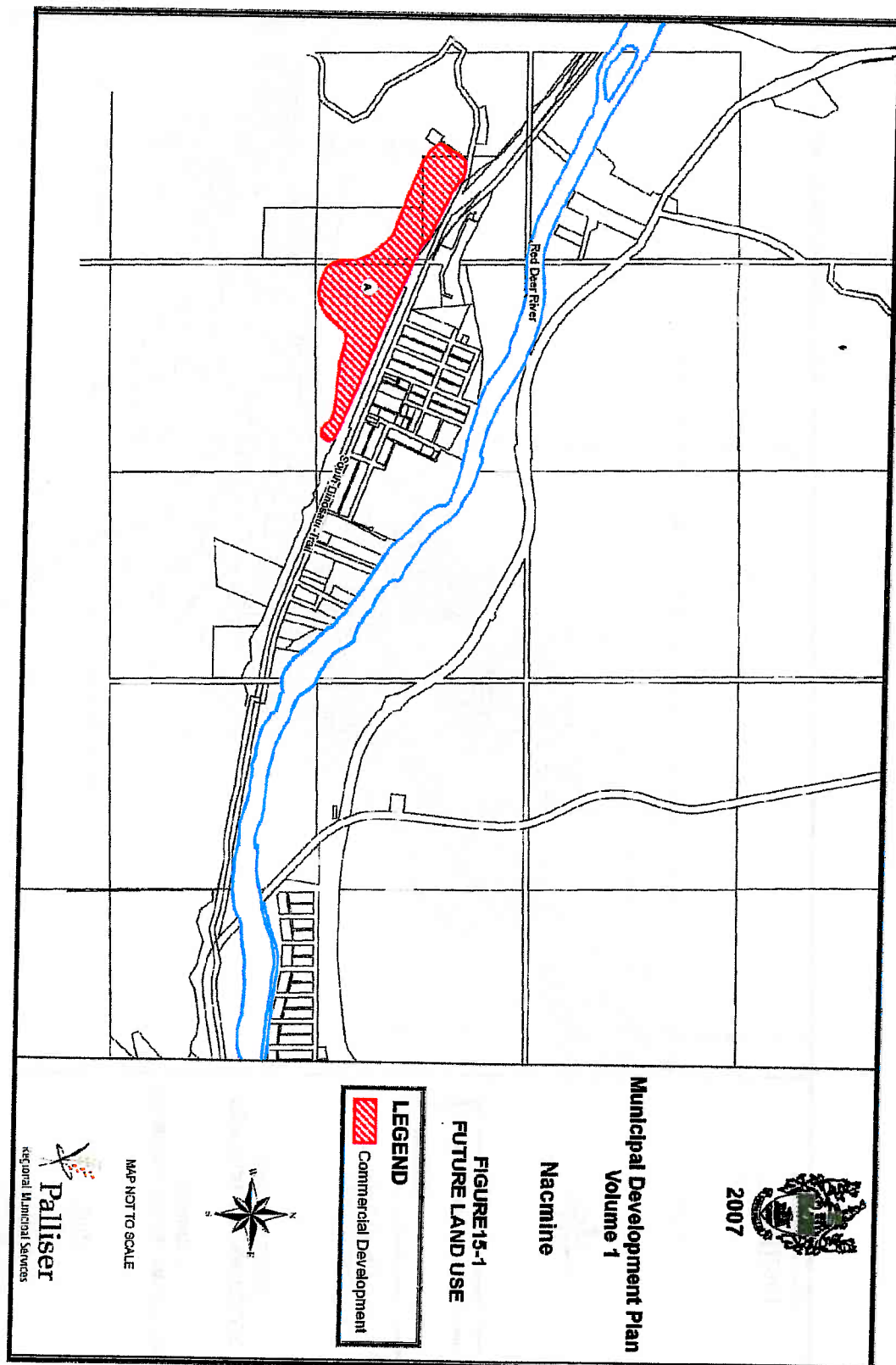
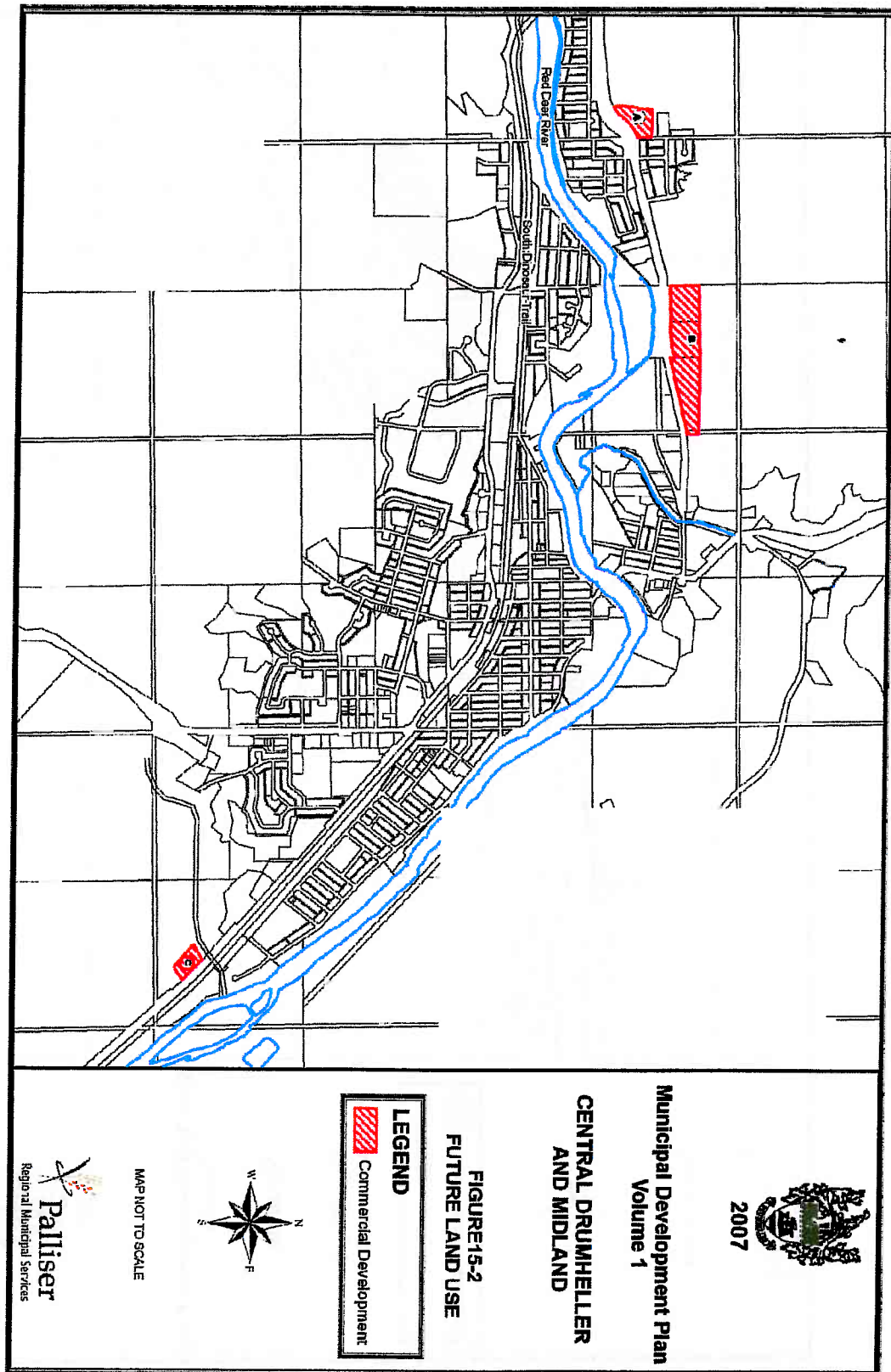
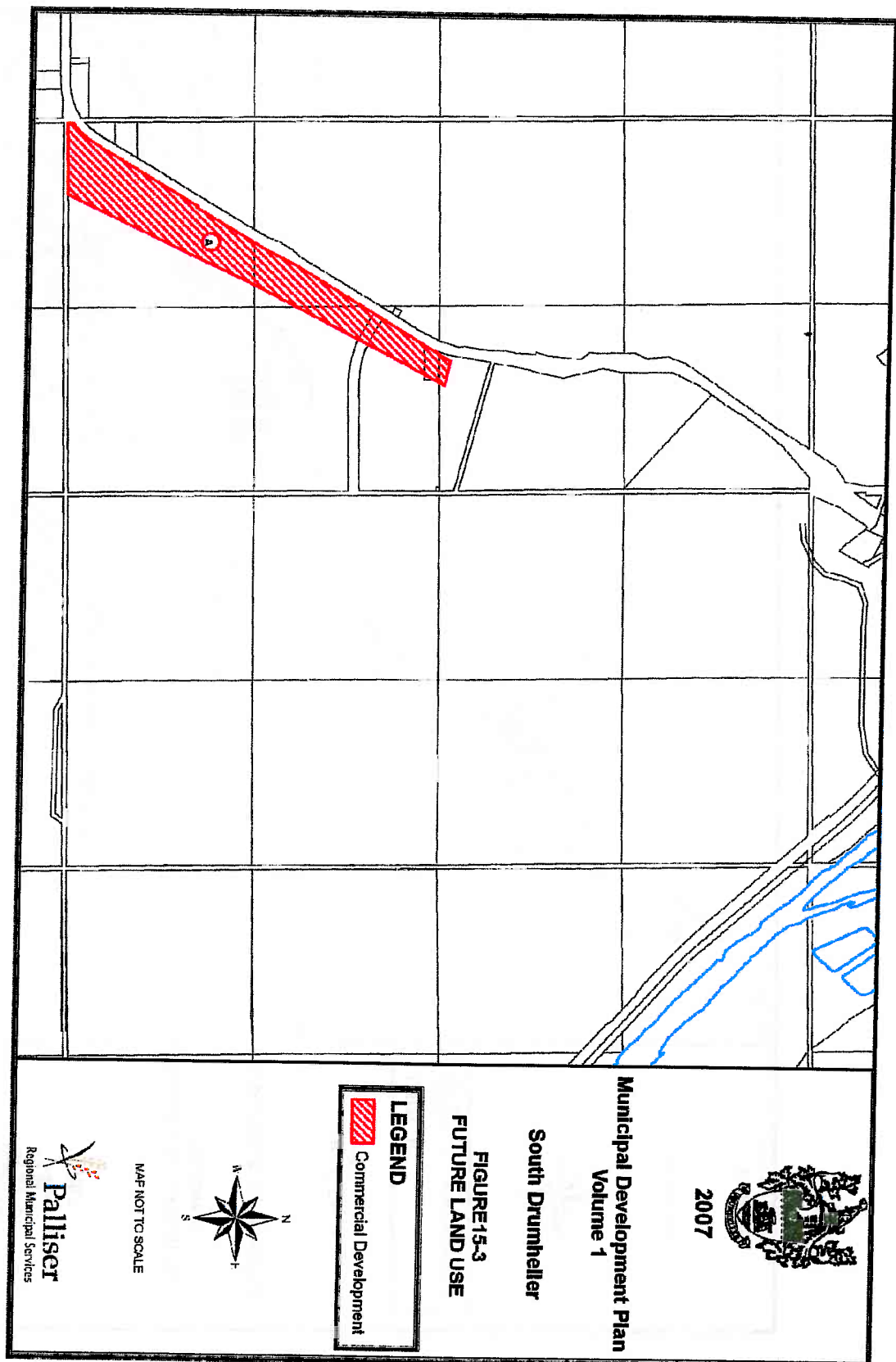


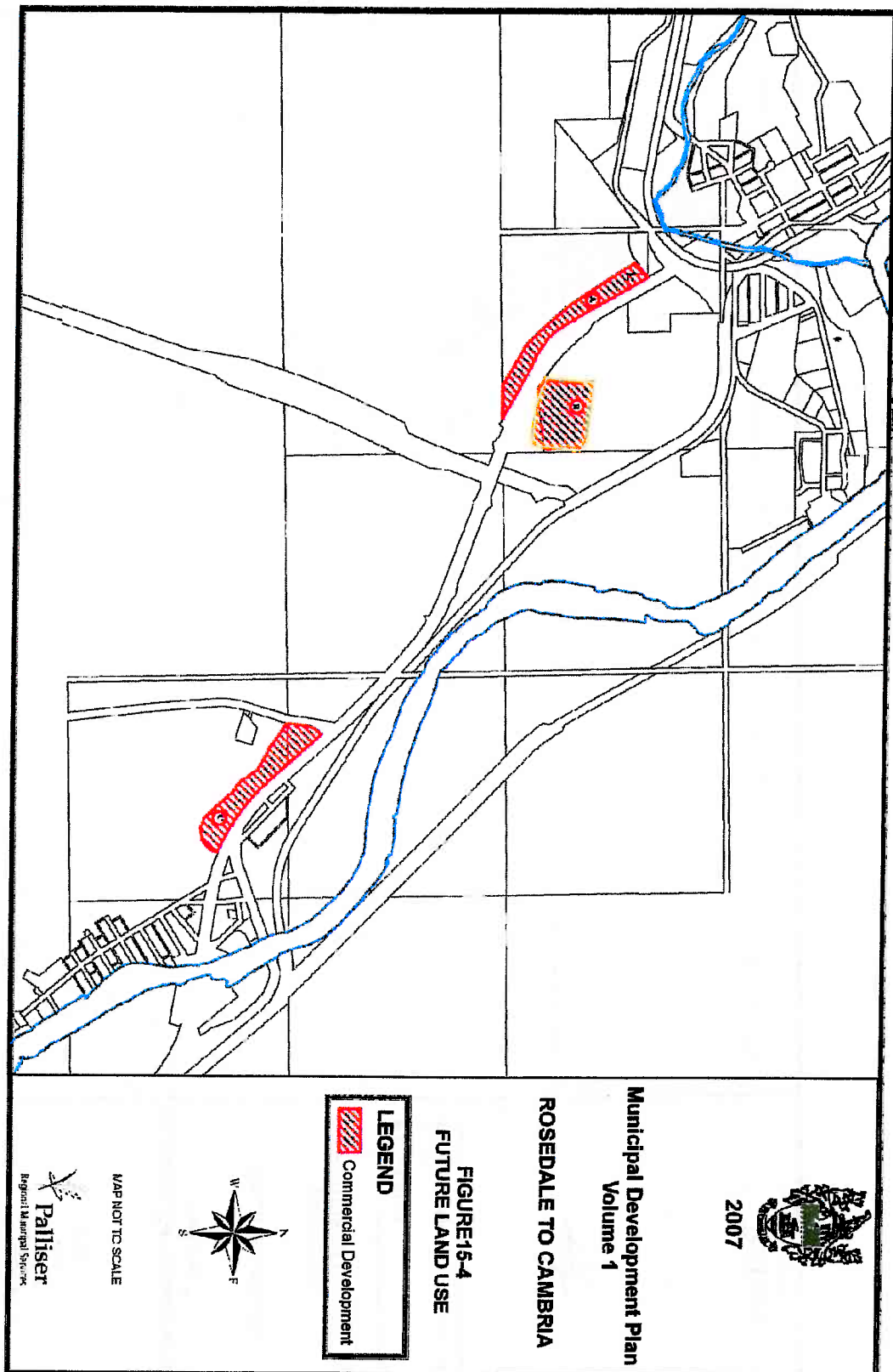
Table 11: Potential Commercial Sites

Location	Site Name	Site Area		Dev Stage	Development Constraints
		Hectares±	Acres±		
Nacmine					
Fig 15-1 Site A		18.2	44.8	Long	Slope/ undermining
Central					
Fig 15-2 Site A		2.2	5.6	Short	Slope/ undermining
Fig 15-2 Site B		9.6	23.7	Short	Slope/ undermining
Fig 15-2 Site C	Canyon Meadows	2.0	4.9	Med	
South Drum					
Fig 15-3 Site A	Top lands	22.6	55.8	Medium	
Rosedale to Cambria					
Fig 15-4 Site A	Ludwig Property	5.26	13.0	Medium	
Fig 15-4 Site B		5.26	13.0	Long	
Fig 15-4 Site C		4.82	11.9	Long	Undermining
TOTAL		78.4	193.8		









7.0 INDUSTRIAL DEVELOPMENT

7.1 INDUSTRIAL LAND USE

Industrial land in the Town of Drumheller is primarily located in Central Drumheller, near the Canadian National Railway, Highway No. 9 and the Bankview District. There are also a number of smaller industrial parcels located throughout the Town. At present, there are approximately 70 hectares of industrial land in the Town of Drumheller. Drumheller's industrial businesses stem mainly from natural resources (oil, gas, coal), agriculture and light manufacturing.

Figure 16 shows the location of the existing industrial districts within the Valley.

7.2 ESTIMATING FUTURE INDUSTRIAL LAND USE DEMAND

Industrial developments are vital to the economy of the Town of Drumheller, as they contribute to both employment and tax base of the Town. Many industries locate in a community because of a natural advantage, to fill a niche or provide a needed service in the community and surrounding region. In many cases the factors that influence an industries locating in a community are controlled by influences outside the community. From 2000 to 2005, the Town experienced unprecedented industrial growth. During this period some 32 ha of industrial land were developed. Most of this development was related to the oil and gas industry.

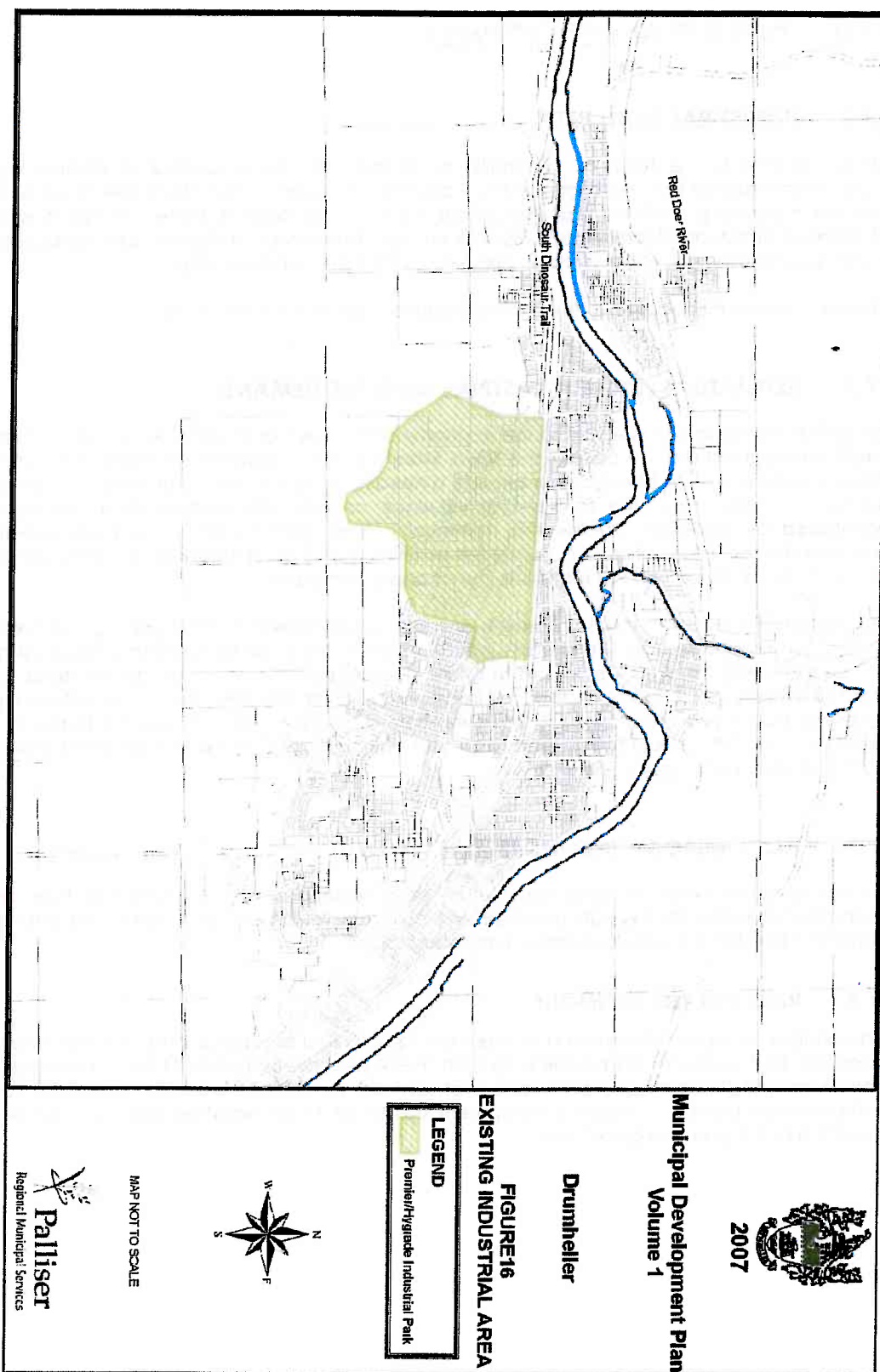
The correlation between industrial growth and population growth is no longer a good indicator of future demand as much of Drumheller's industrial growth has been from external forces. As a result, it was decided to base the estimates of future industrial land demands on growth trend over the past few years. This is assuming that this trend will continue into the future. The industrial growth over the past 5 years may be high, however, from a planning point of view it is better to ensure sufficient land is available rather than to run out of land. Based on this, it is assumed that 6 ha of industrial land will be required per year.

7.3 ACCOMMODATING INDUSTRIAL GROWTH

Similar to other types of land uses, future land requirements for industrial activity can be accommodated both through development and redevelopment of vacant and underutilized land and through the development of new industrial sites.

7.3.1 INFILL AND REDEVELOPMENT

The analysis of future industrial land requirements reveals that additional land for industrial activity is required, both presently and in the long-term. There are approximately 24 ha of industrial land in the Northwest Rosedale Industrial area that can be considered infill. The Northwest Rosedale industrial sites provide a viable development option for those industries that may not need full servicing but requiring larger lot sizes.



The redevelopment and development of vacant land within designated industrial districts also provides opportunity for accommodating industrial growth. These areas are identified in Figure 16, outlining the existing designated industrial districts within the Valley.

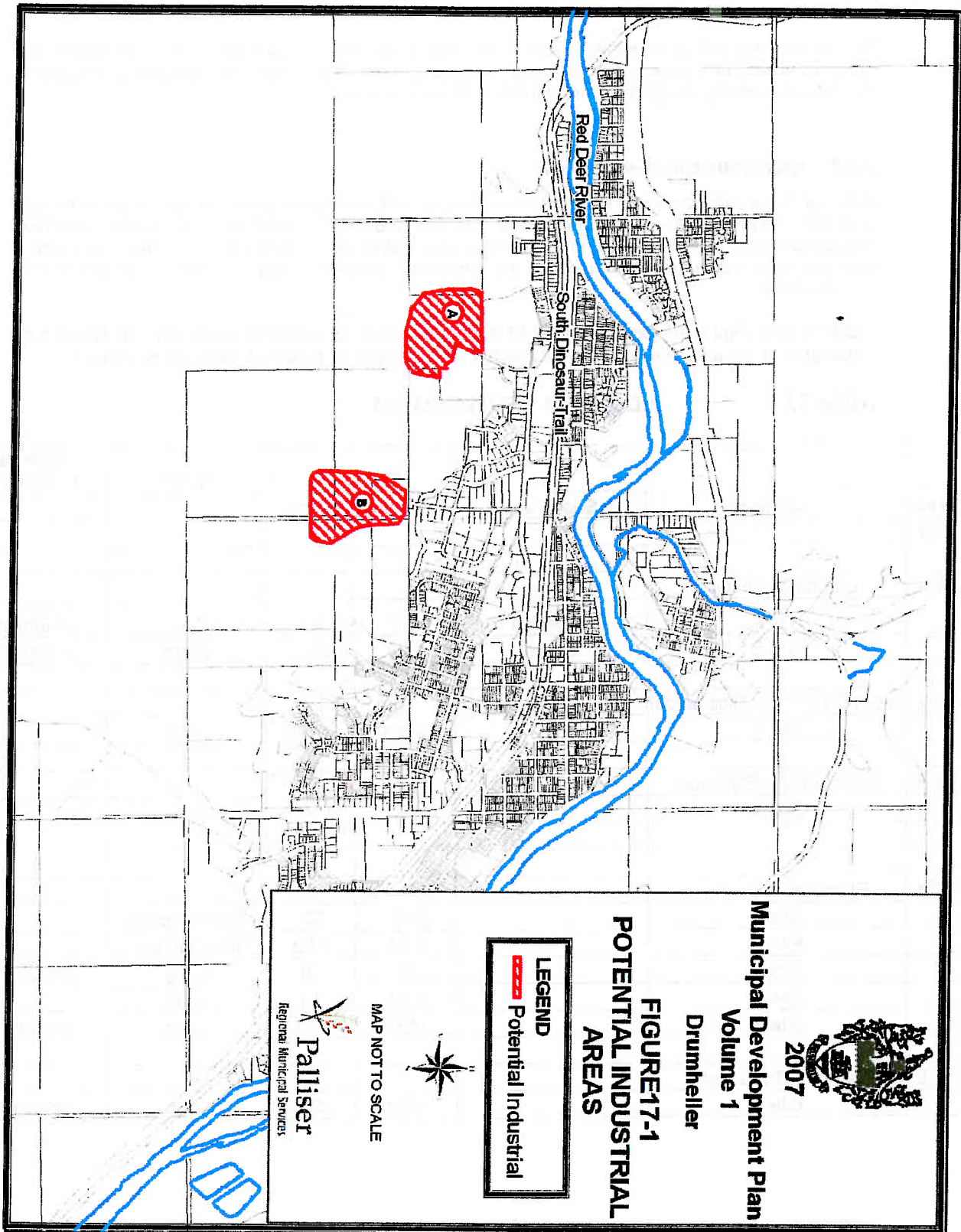
7.3.1 NEW INDUSTRIAL DEVELOPMENT

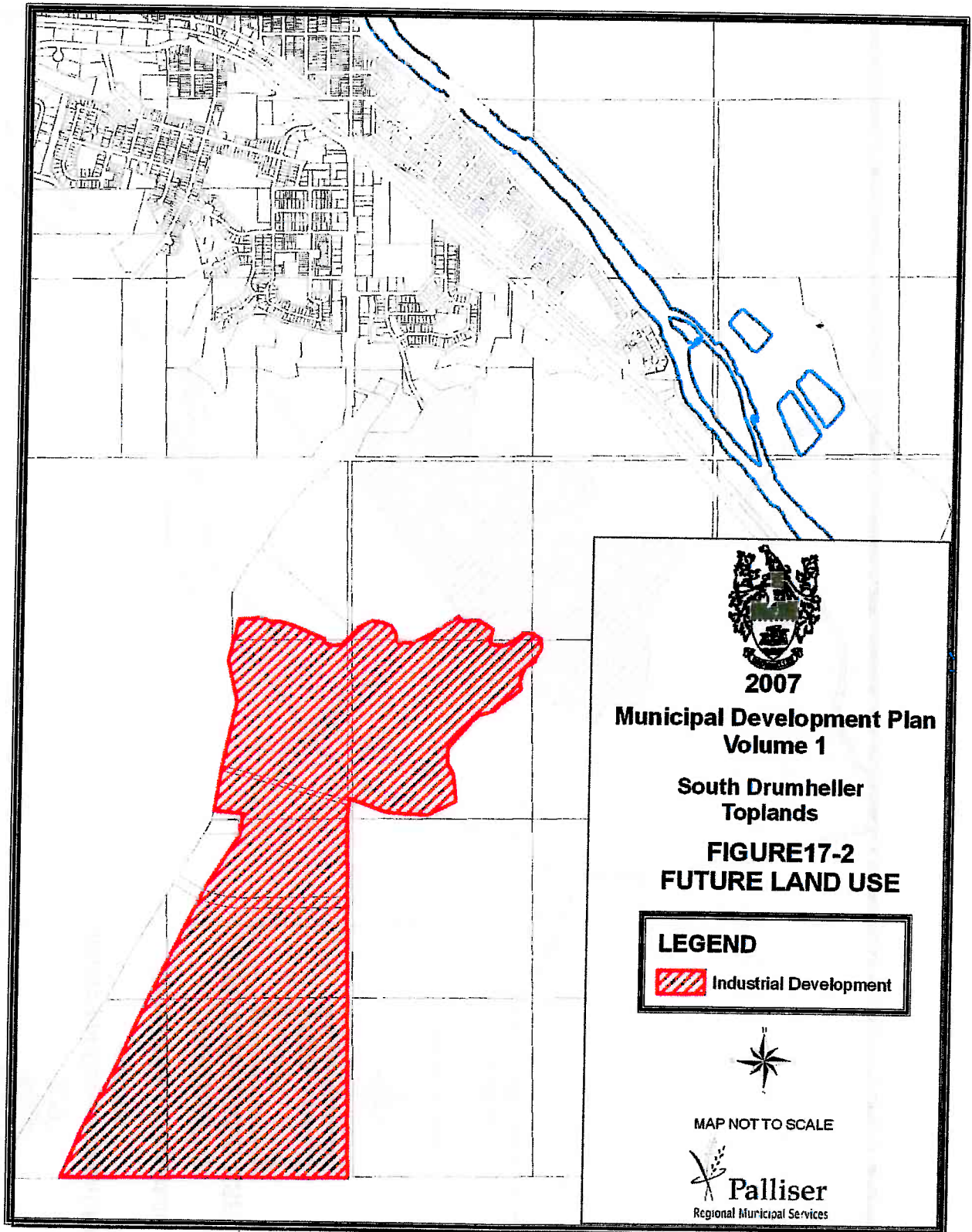
Although there appears to be land available through infill and redevelopment opportunities to meet long-term demands, there is no guarantee that the land will be developed. As a result, the Town should have land in reserve to meet some, if not all eventualities given the fact that measures such as industrial land marketing which result in the attraction of new industry may influence demand for industrial land.

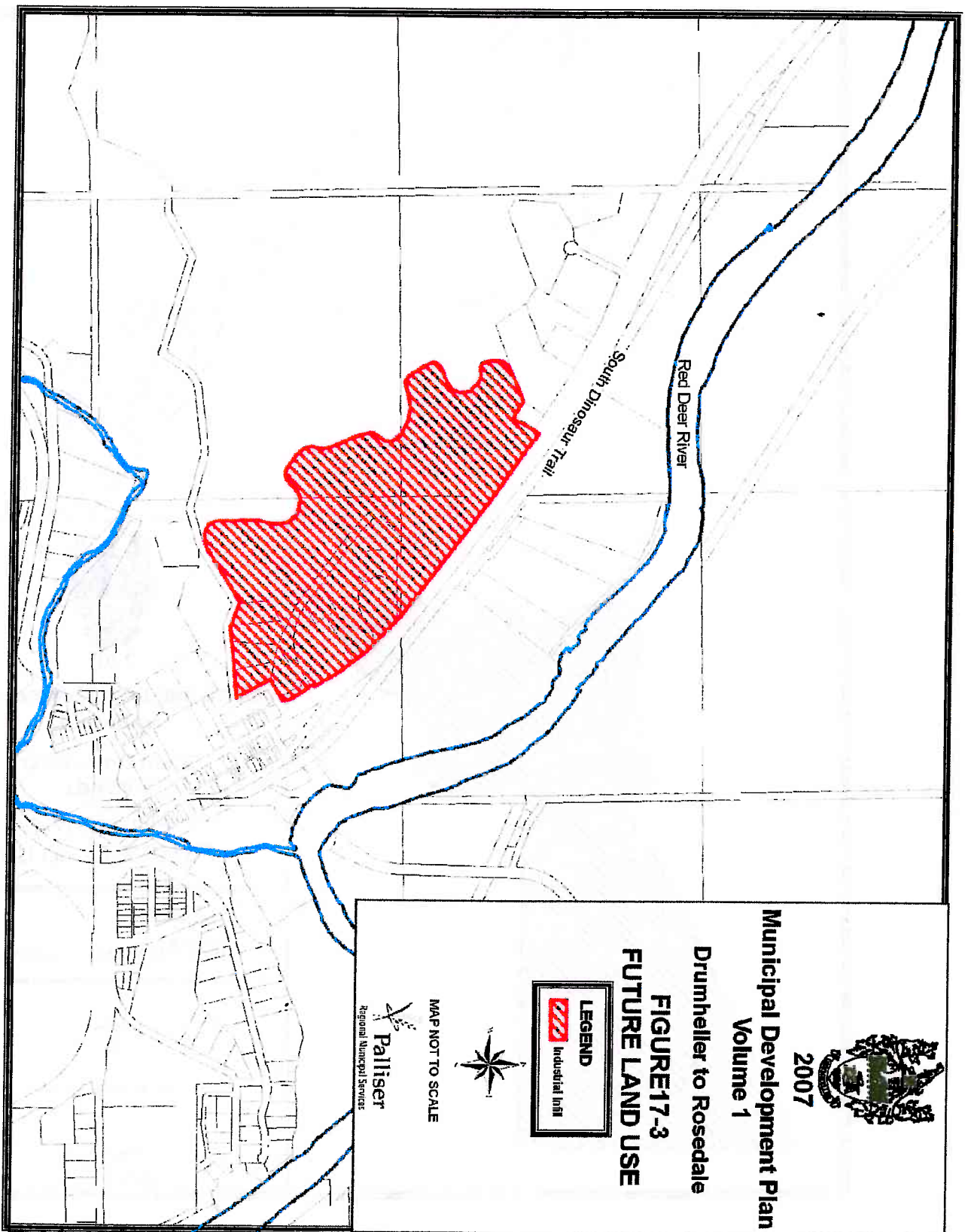
Table 12 and Figure 17 identify a total of 8 sites for potential industrial development. These sites would provide an additional 457.7 hectares of industrial land for potential future development.

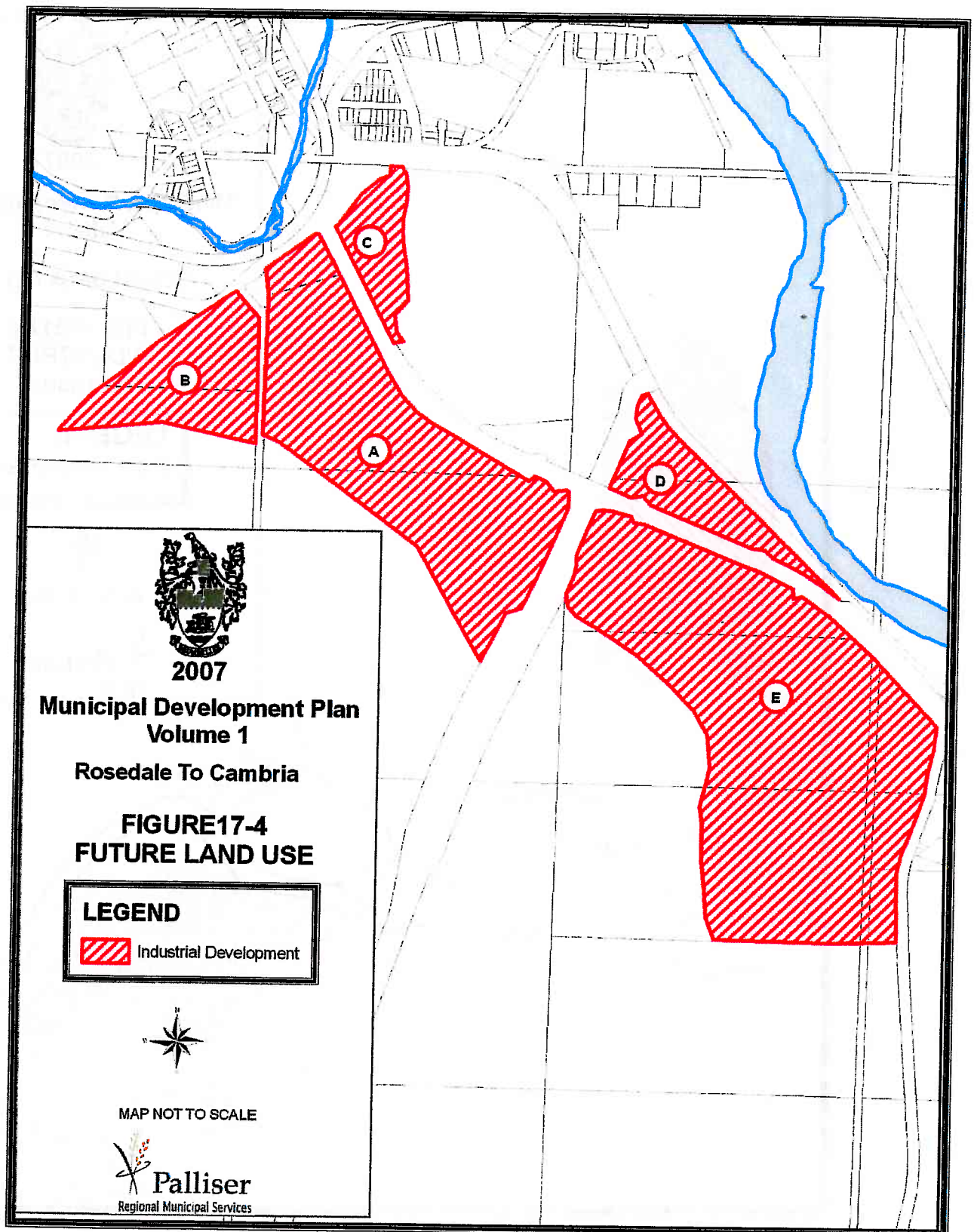
Table 12 INDUSTRIAL DEVELOPMENT

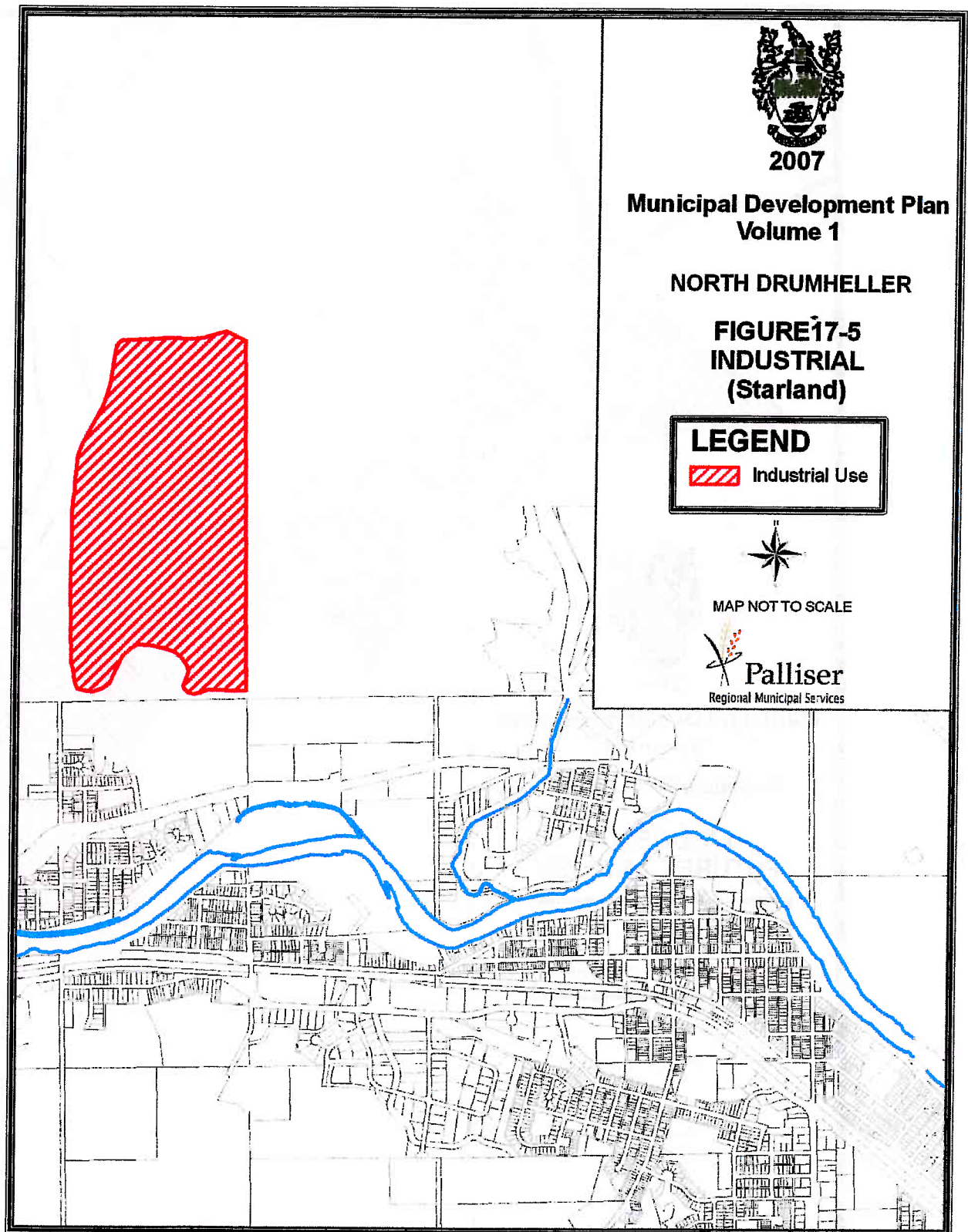
Map Ref	Location	Site Name	Site Area		Stage	Potential Constraints
			Hectares±	Acres±		
17-1	Central Drumheller					
	Site A	Llewellyn	3.9	9.6	Short	Undermining
	Site B	Brown	15.6	38.6	Short	Undermining
17-2	South Drumheller (Top lands)					
	Site A		103.4	255.5	Long	
17-3	Drumheller to Rosedale					
	Site A		248.5	614.9	Medium	
17-4	Rosedale to Cambria					
	Site A		21.04	52	Short/Medium	
	Site B		11.0	27.3	Short/Medium	
	Site C		28.1	69	Long	Undermining
	Site D		17.7	44	Long	
	Site E		142.7	353	Long	Undermining
17-5	Starland (Top Lands)					
	Site A		103.5	255.8	Long	Undermining











8.0 PHYSICAL ENVIRONMENT

8.1 BACKGROUND

The Town of Drumheller is rich in natural features, providing unique and interesting landscape features within the Red Deer River Valley. The diverse valley and rugged badland topographic features provides important visual and natural resources to the region. However, potential environmental hazards associated with this river valley setting, such as flooding, subsidence and escarpment badlands have been recognized as significant development constraints.

Environmental stewardship is a shared responsibility that requires not only the commitment of Valley residents, but also the cooperation of municipal neighbors and close working relationships with senior governments and their agencies. Since one of the goals of this plan is to develop, preserve and enhance the Valley's physical environment, it is important that environmental objectives are integrated with land use planning, social and economic objectives during decision-making processes. The policies contained in Volume 2 of the Plan address some of these environmental considerations.

8.2 RED DEER RIVER CORRIDOR

The Town of Drumheller is situated on the Red Deer River and has recognized that what happens upstream has an impact on Drumheller as well as other downstream users. The Town has recognized the importance of river management and has been involved in a variety of planning initiatives dealing with the river. Some of the initiatives include the Red Deer River Corridor Integrated Management Plan and the South Saskatchewan Water Management Plan for the Red Deer River.

The Town is also working with Alberta Environment and other government departments with regard to flooding concerns in the valley. An outcome of these processes is updated flood risk area mapping and the development of guidelines for construction in flood risk areas.

9.0 INFRASTRUCTURE

9.1 INTRODUCTION

There is a strong relationship between land use planning and the programming of major physical infrastructure. The location, capacity, and efficiency of a municipality's infrastructure greatly impact growth and development patterns. This means that the programming and construction of roads, sanitary sewerage and water systems, for example, will go hand in hand with land development. The programming of capital works, if in accordance with land use planning policies, can provide a very powerful tool to implement the policies of the Municipal Development Plan. These important decisions will trigger responses from developers, individual households and other users towards the preferred pattern of development in the Town of Drumheller.

Major improvements have occurred to the Town's infrastructure in the past number of years. However, additional infrastructure development is required to reach target populations within this Plan and to serve the new growth areas. Due to the topographic and natural characteristics of the Town, expansion of servicing systems can be costly. As a result, it will be necessary to control the sequence of development in order that the existing and planned systems are used to achieve their maximum efficiency.

The existing utility systems serving urban development within the Town of Drumheller are sanitary sewerage, waterworks, drainage, transportation and solid waste. The smaller communities outside of Central Drumheller are varied in terms of the infrastructure provided. A description and evaluation of the physical infrastructure within the Town is provided in the subsequent sections.

The objectives and policies contained in Volume 2 of this Plan are based on numerous engineering studies undertaken over the years dealing with transportation, water treatment and transmission, sewage treatment and transmission, storm water management and solid waste.

9.2 WATERWORKS

The Town of Drumheller water system has expanded into a large, multi-regional water system. The Town currently provides water to all communities within Central Drumheller, Nacmine, Rosedale, the Royal Tyrell Museum of Paleontology, the Drumheller Correctional Institute, Kneehill County, Starland County, the Villages of Carbon, Acme, Beiseker, Irricana, Munson, and Morrin. Expansion of the water system from Rosedale to Cambria is also scheduled for completion by June of 2007.

9.2.1 INTAKE AND STORAGE SYSTEM

Drumheller withdraws water from the Red Deer River at the foot of 19m Street; with a river intake pump station. The water is then pumped to a raw water storage reservoir on the north side of the river. The storage reservoir is designed to act as a settling facility for the seasonally high turbidity raw water. From the raw water storage ponds, water is pumped by a low lift station to the water treatment plant.

9.2.2 TREATMENT PLANT

The water treatment plant is located at the south side of the Red Deer River. Here, raw water is treated by chemical mixing, flocculation, sedimentation, filtration, disinfection and fluoridation. In 2006, major upgrades to the plant took place including the installation of a new rapid mixer, new coagulant aid polymer feed system, pH adjustment feed system, flocculator and clarifier weir modifications, flow meter installation, existing chemical feed system upgrades (alum, fluoride, sodium hydroxide, potassium permanganate). Also included in the upgrades was a complete

replacement of media of all four filters, installation of new under drains complete with automated air scour backwash, installation of clear well reservoir baffling and more.

9.2.3 WATER TRANSMISSION SYSTEMS

The purpose of the transmission system is to transport water from a supply point to a consumption area or to store water. The Town of Drumheller's water system consists of a transmission system, storage facilities and a network of distribution mains. Within the distribution system, water is stored to balance short-term peak demands and to provide water for fire fighting purposes. Water reservoirs are located at:

- Greentree - at the end of Juniper Road near Highway 9
- Downtown - on 3rd Street West, between 2 and 3 Avenues
- Bankview - south of the end of 3rd Street S.W.
- Newcastle - south of the end of 15 Street S.W.
- Rosedale - South of 1 St. N
- Kirkpatrick - South Dinosaur Trail serving the Kneehill Regional waterline.

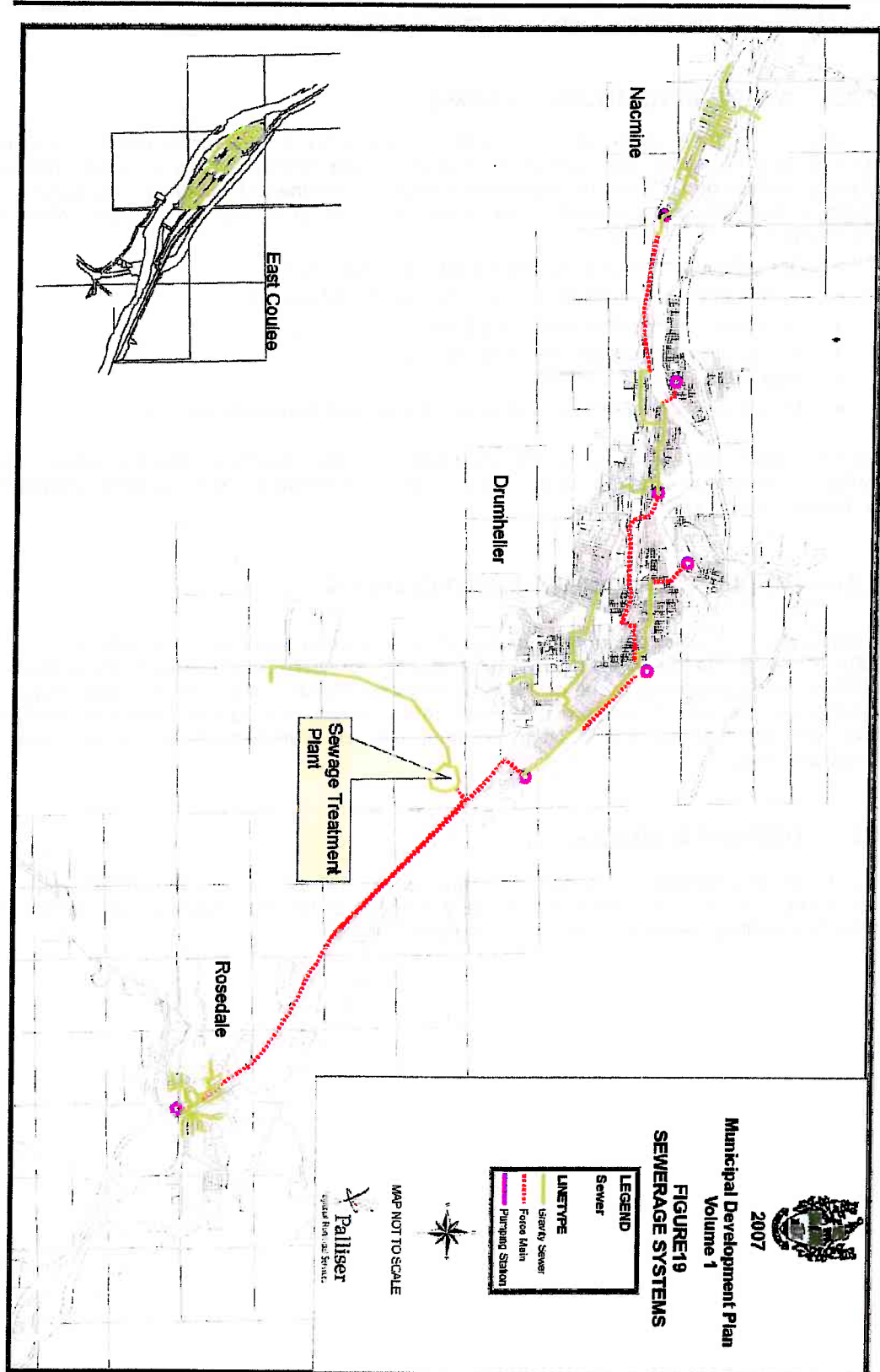
From the distribution system, water is fed by single transmission facilities to the Drumheller Correctional Institution, to Nacmine, Midlandvale, North Drumheller, Rosedale, Kneehill and Starland Regional waterlines. See Figure 18

9.2.4 EVALUATION OF THE WATERWORKS SYSTEM

A comprehensive water distribution system analysis was completed by Urban Systems Ltd. in October 2004. This report contained several recommendations for system improvements, some of which have already been completed. Some of the remaining improvements still recommended to date include looping of watermain at north end of Center Street (downtown), boost line pressure in Bankview Drive area, looping of watermain in North Drumheller, minor watermain upgrade on 7 Avenue East (Riverside area).

9.3 SANITARY SEWERAGE

The Town of Drumheller sanitary sewerage system serves Central Drumheller, Rosedale, the Penitentiary and Nacmine, while a separate system serves the community of East Coulee. Figure 19 shows the existing sewerage system in the Town of Drumheller.



9.3.1 CENTRAL DRUMHELLER SYSTEM

Central Drumheller is made up of a series of interconnected gravity collection mains, force mains, and lift stations, all terminating at the treatment plant.

Treatment Plant

Central Drumheller treatment plants contain the following operations and processes:

- Primary treatment: screening of large floating solids, grit removal.
- Secondary treatment: aeration of raw sewage and recirculated sludge for the purpose of bacterial breeding and feeding; aerated sewage settling for the purpose of removing suspended organic materials.
- Sludge digestion: the holding and aeration of solids, separated from the effluent in the secondary clarifier, for the purpose of reducing the organic content of the sludge.
- Sludge lagoon; storage of digested sludge in open ponds for the purpose of dewatering prior to final disposal of sludge on agricultural lands.

Outfall System

The primary outfall system in the Drumheller sewerage system is the 19th Street pump station and force main. In addition, a gravity main serves the Drumheller Correctional Institution, feeding directly to the sewage treatment plant.

Collection System

The Drumheller sewage collection system is an assemblage of several minor collection systems that feed into each. A total of nine collection systems exist within the Town in the following areas: Nacmine, Midland, Newcastle, North Drumheller, Central Business District, Riverview Drive North, South Drumheller / Huntington, Greentree, and Riverview Drive South.

9.3.2 ROSEDALE SEWERAGE SYSTEM

The Rosedale sewerage system consists of a collection system and lift station terminating at the Drumheller waste water treatment plant.

Collection System

A sanitary sewer network collects sewage within the community and transports it by gravity, generally running in a west to east direction to a sewage lift station located at the former treatment plant site. Sewage is then pumped to the Drumheller WWTP via forcemain. The sanitary sewer network services approximately 240 to 320 residents. The remaining residents employ private septic tank/tile field or pump out facilities on site.

9.3.3 EAST COULEE SEWERAGE SYSTEM

Treatment Plant

The East Coulee treatment plant, which was constructed in 1987, has been able to consistently achieve treatment levels well in excess of Alberta Environment standards for treated effluent. The treatment plant is located at the geographic centre of the community.

Outfall System

Treated effluent is discharged to the Red Deer River, immediately adjacent to the treatment plant via an eight inch piped gravity outfall line. A second emergence overflow line from the treatment plant also discharges to the Red Deer River.

Collection System

The existing sanitary sewer network in East Coulee collects sewage within the community and transports it by gravity to a sewage lift station located at the sewage treatment plant. The sanitary network is extended to basically all residential and commercial development within the community. Residences located in the western-most areas of East Coulee are connected by long service lines as

opposed to system extensions due to the lack of rights-of-way and the low potential service populations.

9.3.4 EVALUATION OF SEWERAGE SYSTEMS

Central Drumheller

In Central Drumheller problems have existed with overloading at the 19th Street and Newcastle pumping stations. For the most part, this has been caused by a combination of inflow and infiltration (I/I) into the sewers. The high levels of I/I have taken significant capacity away from the system, which will be needed for future expansion. A detailed analysis was completed by MPE Engineering in March 2003.

This report contained recommendations for system improvements, some of which have already been completed or started. Some recommendations included the extension of the sanitary sewer forcemain from 5 St. E. to the wastewater treatment plant (the portion of highest priority was 5th St. E. to 11 St. E. which was completed in 2004), in Central Drumheller the replacement of the South Trunk from 2 St E north of 3 Ave. E to 3 St. E south of 3 Ave. E., and also upgrading of the 5 St. lift station is recommended.

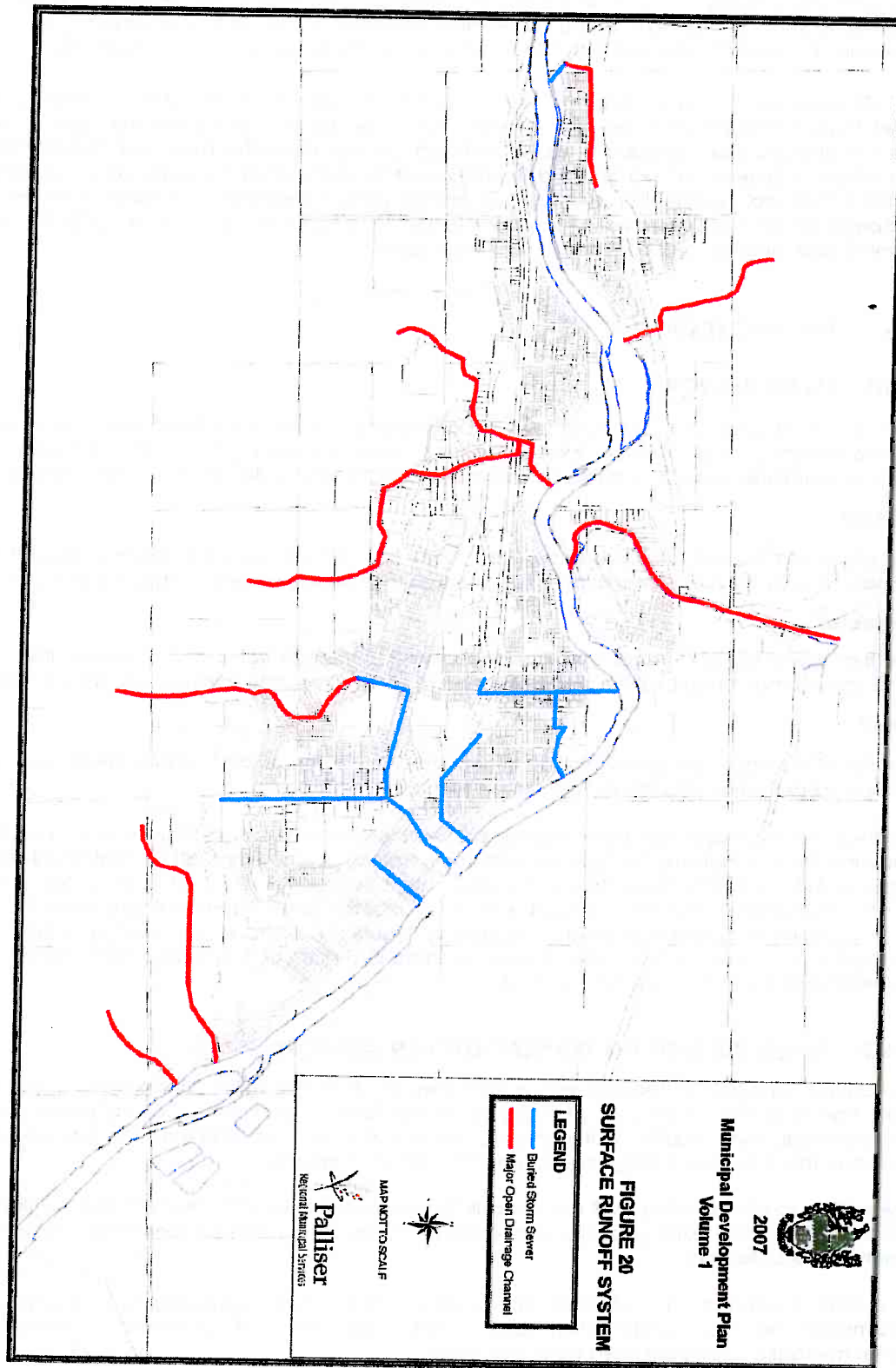
In addition to the above capital upgrades, the report also recommends operational improvements such as enforcement of the current bylaw regarding grease interceptors and for the Town to prohibit foundation weeping tile, roof leaders and other surface water from being connected into the sanitary sewer system.

East Coulee

According to past reports, the sanitary sewer network in East Coulee has appeared to be operating satisfactorily. Grant approval has been received for upgrading to the East Coulee wastewater treatment plant and is scheduled for 2007.

9.4 DRAINAGE SYSTEM

The Town of Drumheller's drainage system consists of roadside ditches and catch basin/storm sewers to control local drainage. Rosedale, Nacmine, Midlandvale, North Drumheller, Newcastle, the West Drumheller industrial area, Greentree, Huntington and Bankview are all served by surface drainage systems. Some of these areas use curb and gutter systems, while the balance of the areas use roadside ditches for surface runoff. Figure 20 illustrates the surface runoff system.



9.5 SOLID WASTE

The solid waste facility is located in the N.E. Y4 Section 36, Township 28, Range 20, W4, approximately 800 metres south of Highway 10 and immediately southeast of the existing sewage treatment plant. The land fill consists of approximately 530 acres within the Red Deer River Valley Badlands.

In 1979, a number of rural municipalities joined the City of Drumheller to form the Drumheller & District Solid Waste Management Association with the intent of serving the municipal waste disposal needs of the City of Drumheller, Municipal District of Badlands, County of Kneehill, County of Wheatland and the Village of Beiseker. In 1995, Starland County joined the Association. The Association currently consists of 20 rural municipalities with 20 waste transfer stations serving the individual communities. The site presently serves a population of approximately 28,500 people and receives about 30,000 tonnes of municipal, industrial and commercial waste per year.

9.6 TRANSPORTATION

9.6.1 ROAD NETWORK

The road transportation system in the Town of Drumheller is a modern, well-managed and maintained system providing an acceptable level of service to users. The existing transportation network in the Town of Drumheller consists of a series of interconnecting arterial, collector and local roadways.

Arterial

The primary function of arterials is to serve the major flow of traffic between major areas of the Town by providing for the movement of traffic as opposed to providing access to abutting land uses.

Collector

The function of collector roads is to combine service to through traffic and access to the abutting land uses in urban areas by collecting traffic from the local street and carrying it to the arterial streets.

Local

The function of local roads is to provide direct access to land uses along urban streets. Local streets serve local areas only and are not conducive to through traffic.

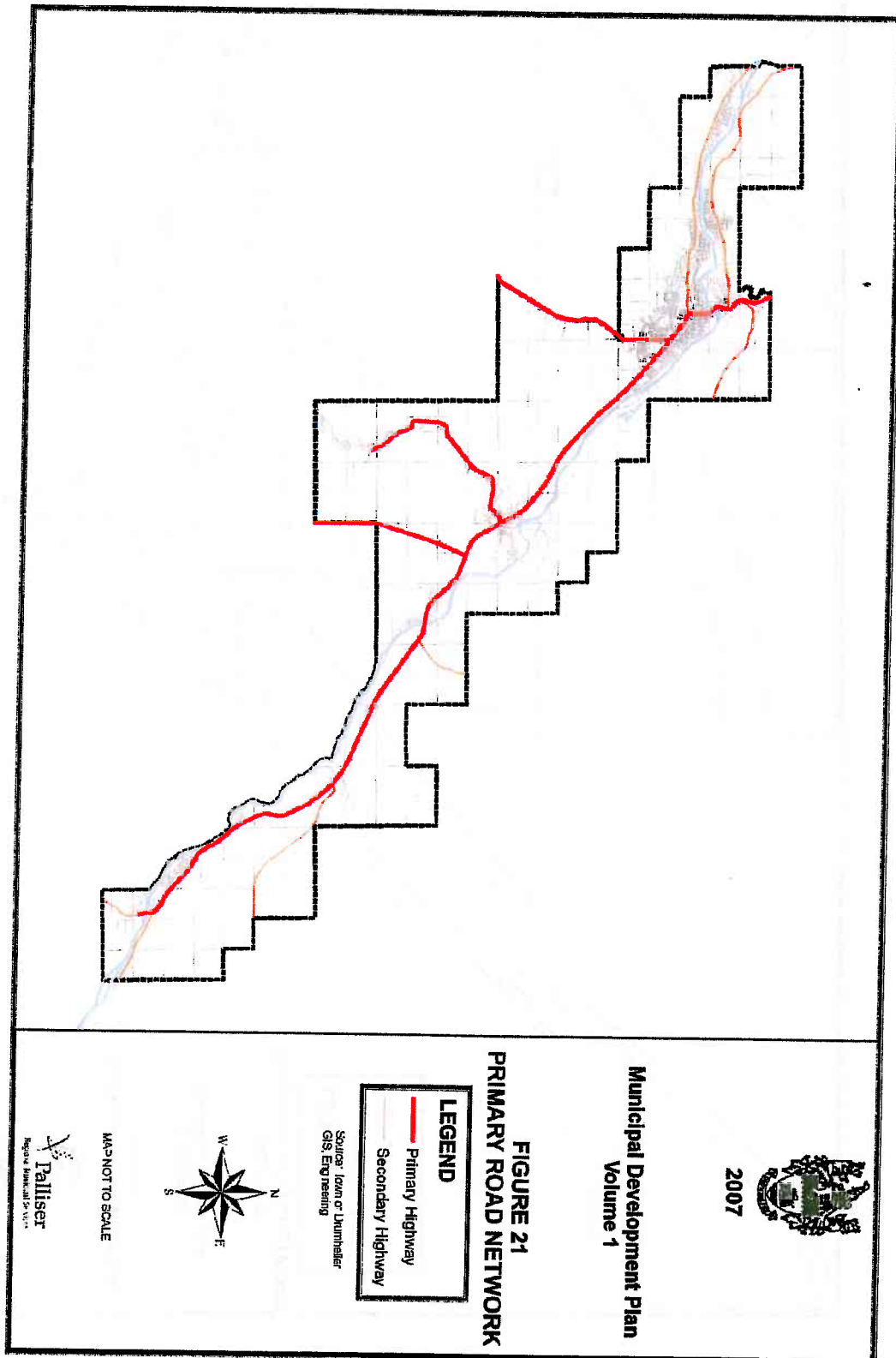
Highway 9 is the major high traffic volume primary highway that services the Town in a north-south direction. Primary Highway 10, together with South Railway Avenue through Central Drumheller, and Highway 575 provide the backbone of the road system throughout the length of the valley. A number of other highways and local roads provide access out of the valley, whereas streets within the smaller rural communities provide internal road access. Figure 21 illustrates the existing transportation network in the Town of Drumheller. A more detailed illustration of the transportation network within Central Drumheller is provided in Figure 22.

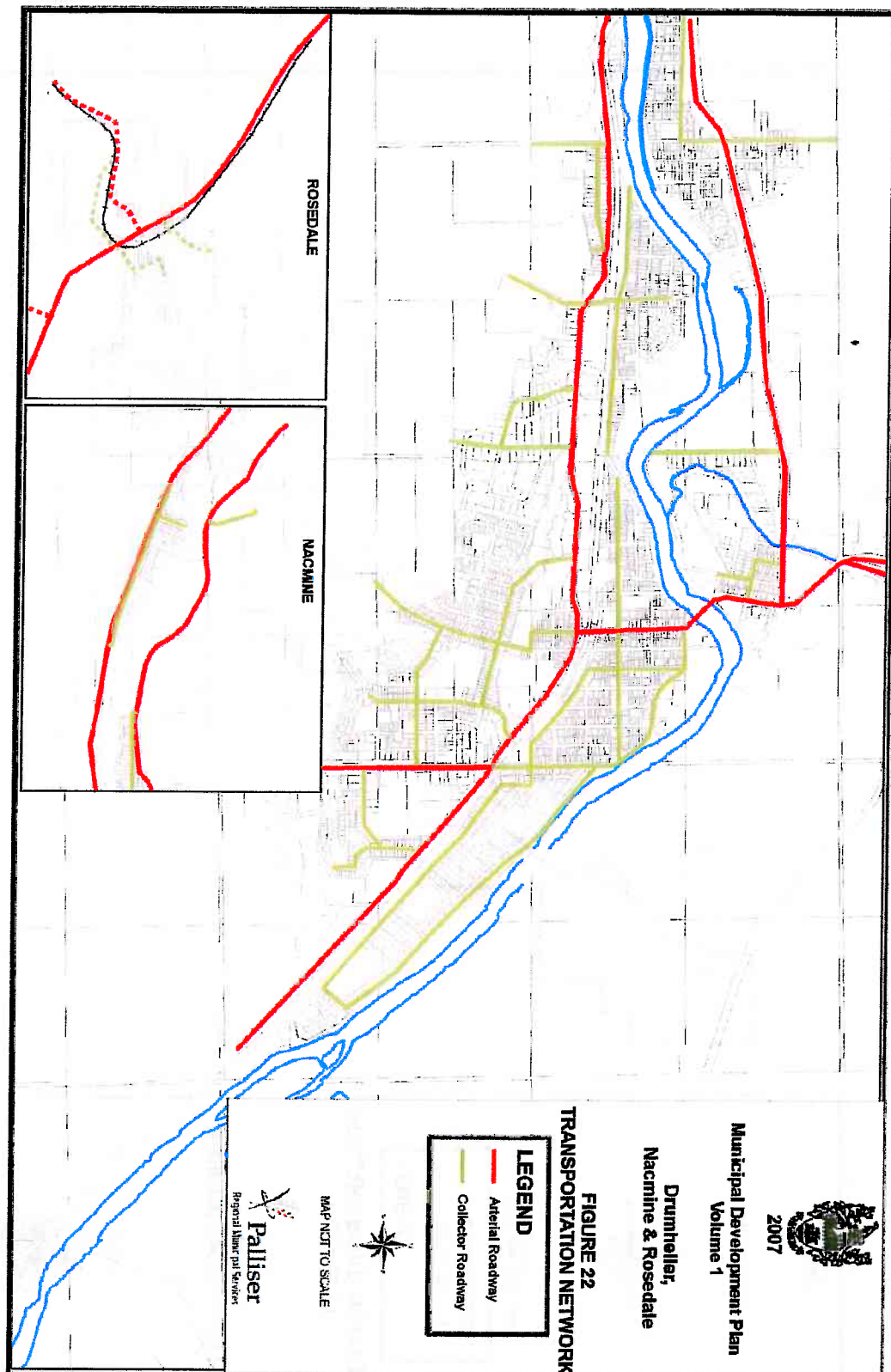
9.6.2 EVALUATION OF THE TRANSPORTATION NETWORK

The unique topographic features with a significant rise from the valley floor provide complications with regards to the construction of roads out of the Town. In addition to vertical grade problems, geotechnical, slope stability, water erosion, safety and other maintenance considerations present problems that can result in large capital and maintenance costs.

The existing roadway network will provide satisfactory service to growth. Most of the potential growth areas currently abut existing arterial and collector roadways, or can be served by relatively minor extensions of collectors.

A current Transportation and Traffic Study prepared by iTrans Consulting Ltd. provides further information on the transportation assets within the Town of Drumheller. Strategies and recommendations are contained within the report.





10.0 PARKS AND RECREATION

10.1 INTRODUCTION

Planning for open space is very important since its siting and sizing requirements are the most varied of all land uses. Open space serves a variety of purposes. These include:

- To protect people and property from environmental hazards,
- To protect and manage natural resources for economic reasons,
- To protect and enhance natural amenities,
- To provide outdoor recreation, education and cultural opportunities,
- To shape urban form, and
- To provide land reserve for future urban development.

The purpose of this section is to analyze the provision of open space within the Town of Drumheller and to ensure long-term demands for park and recreation lands are accommodated. The Town of Drumheller has completed a Recreational Master Plan through Randall Conrad and Associates (November 7, 2005). This document provides community input for future development of Indoor and Outdoor recreation needs for the community.

10.2 EXISTING PARKS SYSTEM

The Town of Drumheller's setting along the Red Deer River provides extensive areas of potential park and recreation lands. These areas consist of riverbank areas, escarpment land, and lands that are undevelopable due to topographic constraints. The natural features of the river valley provide a large amount of visual open space and many interesting vistas.

The Town of Drumheller currently has a number of parks and recreational parcels of land located throughout the Valley. To provide a meaningful analysis of parks and open spaces, the various sites are classified according to function. Figure 23 identifies these types of parks within Central Drumheller. Outside of Central Drumheller, the communities of Rosedale, Nacmine, East Coulee, and Wayne have their own Community Halls and associated recreational facilities to serve their community needs. These facilities include ball diamonds, skating rinks and picnic areas.

10.2.1 PLAYGROUNDS

The playground is the smallest unit in the Town of Drumheller's park and recreation system. Playgrounds are designed and maintained to provide recreation benefit, primarily in areas of high population density.

10.2.2 NEIGHBOURHOOD PARKS

Neighbourhood parks are sites within residential areas that are intended to serve the surrounding neighbourhood. These parks accommodate day-to-day recreation needs and can serve as locations for tot lots, playgrounds and minor recreational facilities.

10.2.3 COMMUNITY PARKS

Community parks are those that serve as the site for major recreational facilities, such as tennis courts, swimming pools and recreation centres. Community parks are similar in size to neighborhood parks but are generally more specialized in function.

10.2.4 REGIONAL PARK

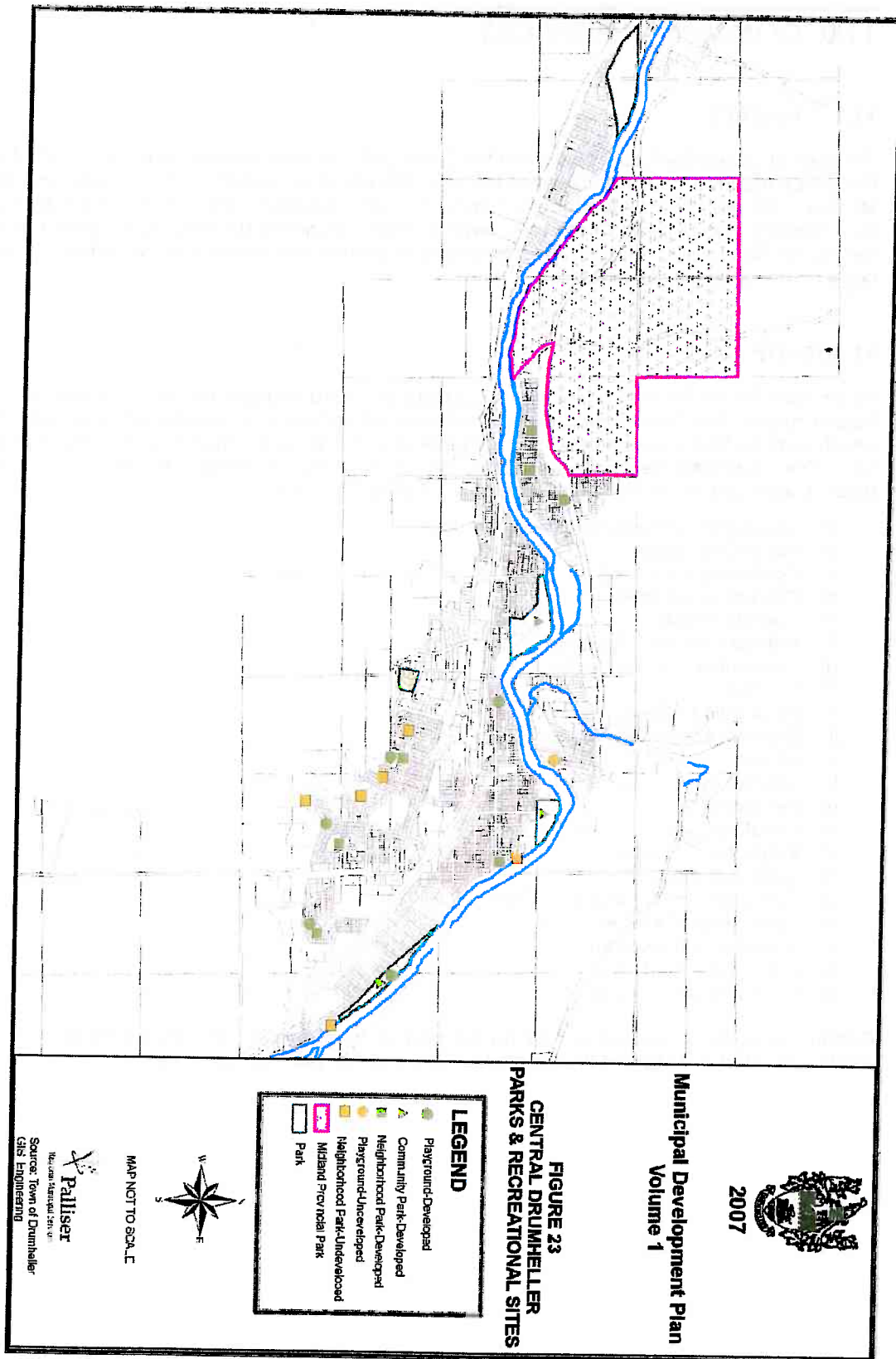
Regional parks are intended to serve both local and regional recreation needs, including rural residents and tourists. Due to the diversity of function, the regional park is often orientated towards camping, picnicking and natural history.

10.2.5 ROTARY SPRAY PARK – CENTENNIAL PARK PROJECT

This project was the reclamation of a coal-fired power station site and the creation of a major tourist destination known as the Centennial Park Project. The area included the construction of a fountain, the construction of the World's Largest Dinosaur, the conversion of the old Water Treatment Plant into a Tourist Information Centre and the construction of the Rotary Spray Park. This was a twelve year project which concluded in the 2001 with the Grand Opening of the Rotary International Spray Park. This area is truly a "world class" tourist draw.

10.3 PARK AREA STANDARDS

Park area standards provide a basis upon which to assess the existing level of service park and recreational space available within the Town of Drumheller. Figure 23 provides the park area standards for each park type previously discussed and identifies Drumheller's park needs based on the comparison between these standards and existing park land.



11.0 COMMUNITY SERVICES

11.1 PREFACE

The Town of Drumheller Council adopted the Community Services Master Plan in June 1999 which is the policy framework for the coordination and delivery of recreation, culture, parks and social services. This will be an important document to help implement the policies of this Municipal Development Plan. Alberta Community Development completed a public consultation phase of the Master Plan to give residents the opportunity to express their opinions on issues relating to the provision of community services.

11.1 HEALTH CARE

Health care for the Town of Drumheller and area is provided through The David Thompson Health Region. Mission; The David Thompson Health Region will endeavor to provide consumer responsive health services that are appropriate, affordable, accessible, accountable and promote healthy living. The Drumheller Health Centre serves the David Thompson Health Region. The Drumheller Health Centre delivers the following programs out of their facilities:

- a) Occupational Therapy/Physical Therapy
- b) Acute Care Beds
- c) Continuing Care Beds
- d) Obstetrical Services
- e) Cardiac Rehab
- f) Asthma Education Program
- g) Community Cancer Centre
- h) CT Scan
- i) Diagnostic Imaging
- j) Diabetes Education Program
- k) Dialysis
- l) Laboratory Services
- m) Hemodialysis
- n) Palliative Care
- o) Respiratory Therapy
- p) Speech Therapy
- q) Outpatient and Emergency Care
- r) Public Health Services
- s) Sexual Health Program
- t) Home Care Services
- u) Mental Health Services

Construction was completed in 2002 on the new regional hospital (Drumheller Health Centre), located at 9 Street N.W. and Michichi Drive NW on North Dinosaur Trail.

11.1 SOCIAL SERVICES

Under the direction of a community board, Central Alberta Child and Family Services Authority serves Drumheller and area. List of Services and Programs:

- a) Adoptions
- b) Child and Youth Support Program
- c) Child Care
- d) Child Intervention
- e) Family and Community Support Services
- f) Family Support for Children with Disabilities
- g) Family Violence Prevention
- h) Fetal Alcohol Spectrum Disorder
- i) First Nations – Metis Relations
- j) Foster Care
- k) Parent Link Centres
- l) Protection of Children Involved in Prostitution
- m) Youth Advisory Panel

A summary of the helping and support services is provided in the table below:

Table 13

HELPING AND SUPPORT SERVICES

Child Care <ul style="list-style-type: none"> • Time for Tots Family Day Homes • Hoo Doo Honey Bee Daycare • Bedrock Playschool • Pebbles and Bam Bam Playgroup • Before and After School Care
Services for the Handicapped <ul style="list-style-type: none"> • Big Country Outreach Program • Drumheller Adult Resource Training Society • Valley Bus Society
Drug and Alcohol Supports <ul style="list-style-type: none"> • Alberta Alcohol and Drug Abuse Commission • Drumheller Society for Recovery – Grace House • Alanon Family Group • Alcoholics Anonymous
Helping Services and Support Groups <ul style="list-style-type: none"> • Association of Communities Against Sexual Abuse • Block Parents • Birthright • Collective Kitchens • Crisis Line • Drumheller & District Victim Services • Pioneer Trail Society • Youth Justice Committee • Support and Survival (Widow/Widower) Group
Housing <ul style="list-style-type: none"> • Drumheller & District Senior's Foundation <ul style="list-style-type: none"> ◦ Sunshine Lodge ◦ Riverview Villa • Mapleridge Manor I & II • Drumheller Housing Administration (Phase I & II)

11.1 EDUCATIONAL FACILITIES

The Provincial Government's re-formation of school districts in Alberta has resulted in the amalgamation of the Town of Drumheller's Public School Division with the Golden Hills School Division that is based in the Town of Strathmore. St. Anthony's Separate School became part of the Christ the Redeemer School Division based in the Town of Okotoks. A table of the schools in the Town of Drumheller and grade levels served is provided below.

Table 14

SCHOOLS

St. Anthony's	Grades K-12
Central School	Drumheller Outreach School
Greentree School	Grades K-6
Drumheller Composite High School	Grades 7-12

Post secondary education is provided by the Big Country Education Consortium which offers credit and non-credit courses from several institutions across the province. Other adult education programs include the Drumheller and District Further Education Council and the Drumheller Literacy Program.

11.2 PROTECTION AND EMERGENCY SERVICES

Fire protection is provided by volunteer fire departments in Central Drumheller, Rosedale and East Coulee, which were combined following amalgamation of the Valley governments. A fire hall is located in each of these communities. Currently, there are 43 Fire Fighters.

The Royal Canadian Mounted Police provides police protection to the Town of Drumheller. A staff of 11 (9 officers and 2 clerical) is serves Central Drumheller while rural coverage includes a staff of 5 (4 officers and 1 clerical). Two full-time and one part-time Bylaw enforcement officers are also provided within the Town.

The Town of Drumheller has 911 coverage, with delivery provided by the City of Red Deer. Community Services coordinates the municipal Disaster Social Services during any emergencies. Ambulance service to the Town of Drumheller, which utilizes Emergency Medical Technicians, provides basic life support service and emergency medical services.

12.0 DEVELOPMENT STAGING

12.1 URBAN DEVELOPMENT

The urban area of the Town of Drumheller, as shown in Figure 2, has been identified as the area with the greatest potential for development on the basis of available infrastructure, existing land use, and physical opportunities and constraints. Development sites identified immediately adjacent to Central Drumheller and West of Rosedale are considered to be links between or extensions of existing development that can be more or less connected to existing utility services. The intent of identifying specific sites within this area, while serving as a broad guide for urban growth, does not necessarily preclude the possibility of new development in other parts of the Town. Additional small areas that are not identified also may have potential for development. However, land within the defined urban area should be preserved for urban-oriented activities.

12.2 RURAL DEVELOPMENT

The rural portion of the Town occupies the entire land area except the urban core area, as shown in Figure 2. The rural area accommodates resource and rural land uses as well as nodes of country residential development. Although many sites in the rural portion of the Town have been deemed unsuitable for residential, commercial or industrial development, they do have potential for recreational or other uses. Recreational potential exists along the valley floor in areas where topographical and/or floodplain constraints make urban-oriented development unsuitable.

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