



Section 2.0

Site Description

SECTION 2.0 SITE DESCRIPTION

The site of the proposed OlyWest pork processing facility is located in the south eastern quadrant of the City of Winnipeg, in the southern portion of the St. Boniface Industrial Park approximately 1.3 km (0.8 mi) west of the Rural Municipality (R.M.) of Springfield. Approximately 19 ha (48 acres) in size, on the west side of the 46 ha (114 acre) parcel of land, the property is bordered by Mazenod Road to the west, Plessis Road to the east, the St. Boniface Industrial Park to the north, and CN Railway's Symington Yards to the south, as indicated in Figure 1.1. The closest flowing surface water body, excluding runoff collection ponds, is the Seine River, located approximately 4 km (2.5 mi) southwest of the site.

The site is located approximately 314.1 km (195.2 mi) east of the Manitoba-Saskatchewan border, approximately 136.2 km (84.6 mi) west from the Manitoba-Ontario border, approximately 97.2 km (60.4 mi) north from the Canada-United States of America border, and approximately 54.2 km (33.7 mi) south of Lake Winnipeg. The nearest cities along with their approximate distance from Winnipeg include: the City of Brandon (210.2 km or 130.6 mi west), the City of Portage La Prairie (89.8 km or 55.8 mi west), the City of Winkler (102 km or 63.4 mi southwest), the City of Steinbach (48 km or 29.8 mi southeast), and the City of Selkirk (21 km or 13.1 mi northeast) (Travel Manitoba Canada, 2006). The closest First Nation Community is Brokenhead Ojibway Nation (Brokenhead 4), located approximately 82 km (50.9 mi) northeast of the proposed site (Indian and Northern Affairs Canada, 2004).

Winnipeg and the surrounding area are situated in the physiographic region known as the Red River Plain, a subsection of the Manitoba (Lowland) Plain of the Glacial Lake Agassiz. It is a level to very gently sloping plain containing mainly lacustrine clay and alluvial deposits (Ehrlich et al., 1953).

Prior to its acquisition to accommodate the proposed OlyWest facility, the land for the proposed site belonged to the City of Winnipeg and was an undeveloped section of land zoned M3 for heavy industry. The site is situated in an industrial park and as such there are several industrial business located to the north. To the south there is a Manitoba Hydro station and CN Railway's Symington Yards and Intermodal Terminal. To the northeast, approximately 1.5 km (1.0 mi) from the site, there is a local golf course. Immediately surrounding the remainder of the site to the west is undeveloped land. The current zoning designations for the area are included in Figure 2.1 and the site zoning designation is M3. The proposed property use falls within those activities approved under the M3 designation and meets the requirements of local zoning, and would be compatible with adjoining areas.

The proposed site is located in the capital city of Manitoba. The City of Winnipeg, as of 2001, has a population of 619,544 (Statistics Canada, 2001a). The proposed site, located in the St. Boniface Industrial Park, is at the northeast edge of the neighbourhood of St. Boniface East, at an approximate distance of 6.8 km (4.2 mi) southeast from the corner of Portage Avenue and Main Street in downtown Winnipeg.

2.1 STUDY AREA

The regional study area comprises all areas within a 10 km (6.2 mi) radius of the proposed facility centre as shown in Figure 2.2. A greater detail of study has been conducted within a 3

km (1.9 mi) radius (Figure 2.3) where effects of the proposed development are anticipated to be more prominent. The larger study area extends north of the intersection of Highway No. 59 and the Perimeter Highway, south of the intersection of Highway No. 75 and the Perimeter Highway, to the east of Deacons Reservoir, and east of the intersection of Omand's Creek and the Assiniboine River. It also includes nearly all of the central and eastern regions of the City of Winnipeg. The 3 km (1.9 mi) radius area extends east of Archibald Street to west of Symington Road in an east-west direction and south of Ravelston Avenue to south of the Royal Canadian Mint in a north-south direction.

As of 2001, the estimated population within the 10 km (6.2 mi) radius of the proposed site is approximately 355,129 persons, the majority of whom reside in the City of Winnipeg (352,327 persons). Within the 3 km (1.9 mi) radius (about 28.3 km² or 10.9 mi²) centered on the proposed OlyWest facility, it is estimated that the total population is about 16,644 persons, with a rural residential population of about 28 persons, and an urban residential population of about 16,616 persons. Within the 3 km study area, there is an approximate population density of about 588.7 persons per square kilometre (1,528.6 persons per square mile). As of 2001, the population density within the City of Winnipeg is estimated at approximately 1,331.9 persons per square kilometre (3,449 persons per square mile) (Statistics Canada, 2001a; Statistics Canada, 2001c; Statistics Canada et al., 2004).

2.2 GENERAL PHYSICAL SETTING

The proposed OlyWest facility is located just within the limits of the City of Winnipeg, Manitoba near the City's eastern boundary with the R.M. of Springfield (Figure 1.1).

Topography in the Winnipeg area is generally flat to gently sloping, with an average slope of approximately 0.9 to 1.5 m per 1.6 km (3 to 5 ft per mi) (Michalyna et al., 1975). According to topographic maps provided with Baracos et al. (1983), topography in the vicinity of the project area has a fairly constant gradient, with a general increase in elevation towards the Red River Floodway and a general decrease in elevation towards the Seine River and Red River. According to the same source, the topography of the proposed OlyWest site varies from approximately 231.6 meters above sea level (m.a.s.l.) (760 ft) in the west of the proposed OlyWest site to 233.2 m.a.s.l. (765 ft) in the east of the proposed site.

2.3 GEOLOGICAL BACKGROUND

The Winnipeg area is situated at the confluence of the Red and Assiniboine Rivers, in the broad plain of the Red River Valley. A typical undisturbed soil profile in the Winnipeg area consists of glacial Lake Agassiz deposits of silts and clays overlying silty till and Paleozoic carbonate bedrock. The upper 60 m (200 ft) of stratigraphy of the Winnipeg area is divided into four units: Complex Zone, Glaciolacustrine Clay, Glacial Till, and Carbonate Bedrock (Baracos et al., 1983).

The Complex Zone is the uppermost unit and consists mainly of stratified silty clay and silt, with varying amounts of organic soils, alluvial silts and sands and man-made fill. This unit

ranges from 1 to 4.5 m (3 to 15 ft) in thickness, but is generally about 3 m (10 ft) thick. In undisturbed areas, tan silt interlayers and lenses are generally encountered within the top 2 m (6 ft) of the profile, and typically range from a few centimeters to about one metre (a few inches to about 3 to 4 ft) thick. The near-surface groundwater in the Complex Zone is generally encountered between 1.5 and 3 m (5 and 10 ft) below ground level (Baracos et al., 1983).

Glaciolacustrine silty clay generally underlies the Complex Zone and ranges from zero to 21 m (70 ft) in thickness, but is generally about 9 to 12 m (30 to 40 ft) thick. The upper 1.5 to 4.5 m (5 to 15 ft) is weathered oxidized brown clay laminated with silty interlayers, and is highly fissured in the upper sections and is underlain by a grey clay. Rock fragments ranging from gravel to boulder in size are found in the lower portion of the grey clay, but are seldom encountered in the brown clay (Baracos et al., 1983).

The Glaciolacustrine clay deposits are underlain by Glacial till. The Glacial till consists of silty tills, which may involve a transition zone of till lenses in clay, followed by clay inclusions in the till. Till thickness ranges from zero to greater than 9 m (30 ft), but is typically 3 to 6 m (10 to 20 ft) thick. The upper till section is frequently loose and soft, and water bearing. The lower till section is generally dense to very dense. The tills are highly variable in terms of thickness, density index or consistency, boulder content, and permeability (Baracos et al., 1983).

The Glacial till is underlain by sedimentary Paleozoic, Ordovician Period Carbonate Bedrock. Extensive weathering in preglacial times followed by glacial modifications has resulted in irregular bedrock surfaces, with the upper 0.3 to 0.9 m (1 to 3 ft) usually highly fractured and disturbed, and often intermixed with sand and gravel (Baracos et al., 1983).

Based on review of maps provided with the University of Manitoba's Geological Engineering Report, depth to till, which represents the combined thickness of the Complex Zone and the Glaciolacustrine silty clays, is about 15.5 to 18.3 m (51 to 60 ft) at the proposed OlyWest site. Depth to Carbonate Bedrock at the proposed site is about 18.6 to 21.3 m (61 to 70 ft). The underlying bedrock geology in the vicinity of the proposed OlyWest site is the Selkirk Member of the Red River Formation, primarily a mottled fossiliferous, tan coloured dolomitic limestone with abundant chert nodules as well as occasional layers high in calcium near the top. The Winnipeg Formation, a sequence of interlayered shales and silica sandstones, directly underlies the Red River Formation (Baracos et al., 1983).

2.4 SOILS

2.4.1 Soils of the Winnipeg Area

The study area includes several soil series including the Red River, Fort Gary, Osborne, St. Norbert, and Riverdale Series (Figure 2.4) (Ehrlich et al., 1953): however, only two occupy the area of the proposed OlyWest site. These are the Osborne and Fort Garry soil series. The

predominant series within the site is the Osborne series with the Fort Garry series located only in the southwest corner of the site.

2.4.1.1 *Osborne Series*

The Osborne soils occur on flat or depressional topography. These areas have negligible to very slow surface runoff and the permeability is very slow. The soils consist of poorly drained Rego Humic Gleysol soils that have developed on moderately to strongly calcareous, fine textured lacustrine and alluvial deposits. The Osborne soil's native vegetation consists of meadow grasses, sedge, reeds cattails, and some willows.

The Osborne soils are characterized by a thin partially decomposed organic layer that extends 5 to 15 cm, a very dark gray to dark gray Ah horizon 10 to 18 cm thick, and a dark gray to olive gray calcareous C horizon. Distinct to prominent mottles may be present in the C horizon. In areas of prolonged saturation and reducing conditions, a thin light grey AC horizon may be present below the Ah horizon.

Several variations of the Osborne soil occur including slightly saline, peaty saline, and poorly to very poorly drained. The slightly saline variation contains sufficient soluble salts other than gypsum in the rooting zone to adversely affect crops. These salts predominately are magnesium sulphate with some sodium chloride. The peaty saline variation consists of a peaty surface layer 15 to 40 cm thick and soluble salts other than gypsum within the root zone which can affect crop growth. The poorly to very poorly drained variation occurs where surface drainage is difficult due to topographic restraints. They consist of soils that are depressional and subject to regular ponding.

2.4.1.2 *Fort Garry Series*

The Fort Garry soils consist of moderately well drained Orthic Black soils developed over a thin moderately calcareous fine textured layer of lacustrine sediments over a variable depth of very strongly calcareous silty sediments. These overlie moderately calcareous lacustrine clay either within or below the one meter depth.

The soil is characterized by a very dark gray to black granular Ah horizon 15 to 25 cm thick, and a greyish brown Bm horizon 20 to 30 cm thick. The profile is usually developed in the clay mantel, but some tonguing and development of the Bm or BC horizon may be present in the very strongly calcareous light olive brown to pale yellow stratified silty sediments.

2.4.2 Soils at the Proposed OlyWest Site

A detailed geotechnical investigation at the proposed OlyWest site was undertaken by Dyregrov Consultants in April, 2006. The investigation included the drilling and sampling of 12 deep testholes at specific locations throughout the proposed building footprint area and 17 shallow testholes on other locations, as shown in Figure 2.5. A complete copy of the report is provided in Appendix A.

According to the report findings, the soil profile consisted of organic topsoil, underlain by a thick deposit of Lake Agassiz lacustrine silty clay, followed by a glacial silt till deposit. Near the upper part of the clay deposit, tan silt was encountered in a number of the testholes.

The dominant Lake Agassiz lacustrine silty clay extends to depths of 11.9 to 16.0 m (39.0 to 52.5 ft) below the existing ground surface, between elevations of 218.3 to 220.8 m (716.1 to 724.3 ft). The thickness of the Lake Agassiz lacustrine silty clay ranges from 11.6 to 15.9 m (38 to 52 ft), with the transition of brown to grey clay occurring near a depth of 7.6 to 9.1 m (25.0 to 30.0 ft).

In 13 of the 29 testholes, light brown (tan) silt was encountered in the upper 2.1 m (7.0 ft) and varied from 0.1 to 1.4 m (0.3 to 4.5 ft) in thickness. At the time of drilling (April 3-5, 2006), the silt was relatively dry, with no significant seepage noted.

According to the report, the glacial till was a light brown to grey heterogeneous mixture of clay, sand, gravel, cobble, and boulder-size materials in a predominantly silt matrix. A layer of sand was noted in several of the testholes above and within the glacial till. The glacial till extended until auger refusal was encountered. The clay-till transition occurred between elevations of 218.3 and 220.8 m (716.1 and 724.3 ft), approximately 11.9 to 16.0 m (39.0 to 52.5 ft) below the existing ground surface.

According to Borehole Logs, some groundwater was encountered in the testholes in the range of 14.0 to 15.2 m (46 to 50 ft) below the ground surface.

2.4.3 Soil Capability for Agriculture

According to the Canada Land Inventory (CLI), mineral soils are grouped into seven classes according to soil survey information. Classes 1, 2 and 3 are considered to be suitable for sustained production of field crops; class 4 is considered to be marginal; classes 5 and 6 are considered useable but not generally suitable for crop production. According to the CLI, the area of the proposed OlyWest site is classified as Class 2 and Class 3.

The land capability for agriculture within the majority of the study area is predominately designated as Class 3, soils with moderately severe limitations that restrict the range of crops or require special conservation practices. Small areas, including the west portion of the site, are designated as Class 2, soils with moderate limitations that restrict the range of crops or require moderate conservation practices (Figure 2.6) (Canada Land Inventory, 2000a).

2.5 CLIMATE

The Winnipeg area is located in an area described as a continental climate. It receives 513.7 mm of precipitation per year, with 415.6 mm as rainfall and 110.6 mm as snow (Environment Canada, 2004). Table 2.1 shows the monthly temperature, precipitation and wind over the normal year. Table 2.2 shows other relevant weather parameters for Winnipeg.

Table 2.1: Climatic Data for Winnipeg International Airport (1971-2000)
Latitude 49° 55' N Longitude 97° 13' W Elevation 238.70 m¹

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Yr
Daily Average Temperature (°C)	-17.8	-13.6	- 6.1	4.0	12.0	17.0	19.5	18.5	12.3	5.3	-5.3	-14.4	2.6
Precipitation (mm)	19.7	14.9	21.5	31.9	58.8	89.5	70.6	75.1	52.3	36.0	25.0	18.5	513.7
Average Wind Speed (kph)	17.1	16.7	17.7	18.4	17.9	16.4	14.6	14.9	17.1	18.0	17.4	17.1	16.9
Most Frequent Wind Direction	S	S	S	S	S	S	S	S	S	S	S	S	S
Days With Winds ≥ 52 km/hr	2.4	1.4	1.8	2.2	2.2	1.6	1.2	1.3	2.4	2.4	1.4	1.9	22
Days With Winds ≥ 63 km/hr	0.8	0	0.5	0.6	0.4	0.6	0.3	0.4	0.5	0.8	0.4	0.8	6
Lake Evaporation (mm)					4.8	5.1	5.1	4.5	3.1				

Note: 1. Data obtained from Environment Canada.

Table 2.2: Other Weather Parameters for Winnipeg, Manitoba

Weather Parameter	Value
Last Spring Frost (0°C) ¹	May 23
First Fall Frost (0°C) ¹	Sept 22
Frost Free Period (over 0°C) ¹	121 days
Extreme Maximum Temperature (°C) ²	40.6 (Aug, 1949)
Extreme Minimum Temperature (°C) ²	-45.0 (Feb, 1966)
Extreme Daily Rainfall (mm) ²	83.8 (Aug, 1962)
Maximum Hourly Wind (kph) ²	89.0 (Jul, 1959)
Maximum Gust (kph) ²	129 (Feb, 1965)

Notes: 1. Data obtained from personal communication with Bernard Duguay, Meteorological Inquiry Specialist, Environment Canada.

2. Data obtained from Environment Canada.

The location of the meteorological station (Latitude 49° 55' N; Longitude 97° 13' W) where the climate data was recorded is at the Winnipeg International Airport as indicated on Figure 2.7.

2.6 VEGETATION AND WILDLIFE

A study team conducted site visits to the property in April 2006 and continued field work up to and including August 17, 2006. The complete report of the encountered vegetation and wildlife of the proposed OlyWest site is included in the report by David R. M. Hatch of Green Spaces Environmental Consulting titled “*Environmental Impact Assessment of the OlyWest Site, Winnipeg, Manitoba*” included in Appendix B.

2.6.1 Natural Vegetation: An Overview

The tract of land investigated has a host of native plants and some of the species are considered very scarce in the immediate area but are in good supply on the proposed OlyWest

site. None of the plant species on the proposed OlyWest site fall into the classification of being rare in Manitoba, although some of them are significant because they are found in very small quantities in the general Red River Valley and in the Winnipeg area. Appendix B gives the common and scientific names of all of the plant species found in the area.

According to Rowe (1972), the study area is located within the Aspen-Oak forest of the Boreal Forest Region. This area is characterized by groves of trees, interspersed with grasslands. The dominant tree species is aspen, while balsam poplar is common in wet areas and bur oak will sporadically occur along rivers. Other common species include white elm, Manitoba maple, eastern cottonwood, and possibly basswood and black ash.

2.6.2 Wildlife: An Overview

According to report included in Appendix B, the proposed OlyWest site is part of a major urban block of grassland habitat with some trees and this tract is large enough to support a diversity of wildlife. A list of wildlife species encountered on the site is included in Appendix B. No rare or scarce mammals were encountered on the proposed OlyWest site. A pair of Northern Harriers were noted to utilize the property for hunting and nested on the site. This bird species is not a common bird species in Winnipeg and its presence is worth noting. A few large specimens of Northern Leopard Frogs were seen on the site during June, July and August. This frog species is classified as a Species-at Risk in Canada. There is no permanent deep water on the property and deep water is essential as wintering habitat for the species. The proposed OlyWest site also has no permanent breeding habitat under normal conditions. Consequently these Leopard Frogs must strictly be regarded as transient and if the species is to be maintained in the eastern portion of the city limits, it is imperative to safeguard its critical habitat, which is definitely not on the proposed OlyWest site.

The capability for ungulates in the study area including the facility site is rated as having moderately severe limitations to the production of ungulates (Class 5) as shown in Figure 2.8 (Canada Land Inventory 2000b).

Information on the capability in the study area for waterfowl was unavailable from the CLI however the Green Spaces Environmental Consulting report (Appendix B) indicates that the retention ponds within the Industrial Park attract a great many migrating waterfowl.

2.7 HYDROLOGY

Winnipeg is drained by the Red River and its tributary streams, supplemented by construction of road ditches and artificial channels and culverts that discharge into natural streams (Michalyna et al., 1975).

The Red River originates in Lake Traverse on the Minnesota-South Dakota border, as the Bois de Sioux River joins the Otter Tail River and flows north. It receives its major tributary, the

Assiniboine River, at the Forks in Winnipeg and eventually flows into Lake Winnipeg. (Marsh, 2006).

Except for the Assiniboine River, the only natural tributaries flowing into the Red River from the west are the Marais, the Plum, the Morris, and the La Salle Rivers. These intermittent channels tend to be dry in summer droughts, but can overflow their banks from flash and flood waters during snowmelt or heavy rainstorm events (Ehrlich et al., 1953).

The natural tributaries flowing into the Red River from the east are the Joe River, the Roseau River, the Rat River with its tributaries the Marsh River and Joubert Creek; the Seine River, and Cook's Creek. These tributaries are considered continuous and less erratic than those that flow from the west (Ehrlich et al., 1953).

Topography in the Winnipeg area is generally flat to gently sloping, with a slope gradient of approximately 0.9 to 1.5 m per 1.6 km (3 to 5 ft per mi) (Michalyna et al., 1975). According to the predevelopment topographic survey of the proposed OlyWest site, the area is relatively flat, with surface elevations ranging between 231.6 and 233.6 m (759.8 and 766.4 ft), as shown on Figure 2.9.

Local drainage in the vicinity of the proposed OlyWest plant is influenced by roads, road ditches and culverts, as illustrated in Figure 2.10. The St. Boniface Industrial Park north of the proposed site is drained into three retention ponds, all within a radius of 0.6 to 1.0 km (0.37 to 0.62 mi) from the centre of the proposed facility. Approximately 1.4 km (0.87 mi) north of the proposed site, there is a second order drain that travels in an east-to-west direction along Dugald Road which discharges to the Seine River (Manitoba Land Initiative, 2006). According to preliminary design layouts, drainage for the proposed OlyWest site would be collected in an on-site retention pond, which would then drain through the St. Boniface retention ponds and be pumped to the Dugald drain to eventually discharge into the Seine River. There is also another second order drain near the southeastern limit of the proposed site that flows south along Plessis Road to its convergence with another second order drain. This now third order drain meanders in a westerly direction through CN Railway's Symington Yards approximately 1.0 km (0.62 mi) from the proposed site, to its discharge into the Seine River. This drain will not be utilized to a large extent by the proposed OlyWest development.

Review of topographic maps and the topographic survey indicates that overall surface drainage at the proposed site would tend to migrate west towards the Seine River, the only significant natural drainage channel in the vicinity of the project area. The Seine River is located approximately 4 km (2.5 mi) southwest of the site, flowing in a northerly direction to its convergence with the Red River. (Figure 2.10)

The City of Winnipeg is located in the natural flood plain of the Red River, therefore flooding is always a possibility. Generally, flooding is more of a threat during the spring snowmelt. Variables such as water content of the snow pack, moisture content of the soil, rainfall, and temperature influence the rate and amount of water released in the snowmelt, and will therefore dictate the magnitude of any potential flood (Baracos et al., 1983).

The City is protected by the Red River Floodway, a channel with a current capacity of approximately 1,700 cubic metres (60,000 cubic feet) of water per second which protects the City from floods with a 1-in-90 year probability of recurrence. Current expansion of the floodway channel to 4,000 cubic metres (140,000 cubic feet) of water per second will increase the level of protection to a 1-in-700 year probability of recurrence (Manitoba Floodway Authority, 2006).

Review of the Interim Flood Risk Map of the City of Winnipeg along the Red, Assiniboine and Seine Rivers produced by Environment Canada illustrates that the proposed OlyWest site is not in a designated floodway or floodway fringe (Figure 2.11) (Environment Canada, 1979). Therefore, except for surface flooding in extreme summer storm events, there is no significant risk of flooding at the proposed OlyWest site.

2.8 HYDROGEOLOGY

In southern Manitoba, there are two regional-scale aquifers that have been developed as a water resource. The first aquifer is called the Carbonate aquifer and is divided into the Upper Carbonate aquifer and the Lower Carbonate aquifer. The Upper Carbonate aquifer occurs in the top 15 to 30 m (50 to 100 ft) of the Paleozoic limestones and dolomites. It is partially confined above by the glacial drift and below by the slightly pervious underlying carbonate rock. The Lower Carbonate aquifer is a relatively minor aquifer that occurs in the bottom 7.5 to 15 m (25 to 50 ft) of the Red River formation, along the upper shale unit of the Winnipeg Formation (Baracos et al., 1983). The Carbonate aquifer (both Upper and Lower) is a primary source of groundwater supply in southeastern and central Manitoba for industrial, rural residential, irrigation, and agricultural purposes. The aquifer also provides groundwater for many industrial and commercial heating/cooling systems in the Winnipeg area. It is estimated that more than 20,000 wells throughout southeastern and central Manitoba are currently withdrawing water from this aquifer (Betcher et al., 1995).

The second, less developed aquifer is called the Sandstone aquifer, located within the interlayered shales and silica sandstones of the Winnipeg Formation. This aquifer consists of both an Upper and Lower Sandstone aquifer, both of which contain saline water (Baracos et al., 1983). An estimated 800 wells in southeastern Manitoba have been drilled into the Sandstone aquifer and are used primarily for rural domestic purposes. The upper shale layer of the Winnipeg Formation acts as an effective aquitard separating the Carbonate and Sandstone aquifers (Betcher et al., 1995).

The major aquifer underlying the Winnipeg area is the Upper Carbonate aquifer. It is characterized by a network of fractures, joints and bedding planes. The upper 7.5 m (25 ft) of the carbonate rock is the major zone of permeability in the aquifer and generally exhibits the highest hydraulic conductivity (Baracos et al., 1983). Groundwater movement is primarily to the west and northwest in southeastern Manitoba (Betcher et al., 1995). Lateral recharge occurs through the glacial till and glaciofluvial deposits located in the uplands along the border of the Red River Basin and in the Birds Hill area (Baracos et al., 1983). Natural

discharge occurs as spring flow into local streams and as seepage into the Red River, particularly north of Winnipeg (Betcher et al., 1995).

In the Winnipeg area, transmissivities range from less than 100 m²/d to more than 2,500 m²/d (8,000 and 200,000 U.S.G.P.D./ft). Well yields range from less than 0.2 L/s to more than 120 L/s. Most domestic wells in the aquifer will yield 0.5 to 5 L/s while wells developed for high capacity municipal or industrial purposes generally yield 5 to 10+ L/s. (Betcher et al., 1995).

The transmissivity of the Upper Carbonate aquifer in the area of the proposed OlyWest facility is approximately 625 m²/d (50,000 U.S.G.P.D./ft) based on review of the transmissivity map provided with the University of Manitoba's Geological Engineering Report (Baracos et al., 1983).

Review of potentiometric surface elevation maps show that groundwater in the Upper Carbonate aquifer underlying the proposed OlyWest site flows primarily to the west and northwest, approximately 12.2 m (40.0 ft) below the existing ground surface. A detailed description of the soil profile encountered at the site is provided in Section 2.4.2. The elevation of the Upper Carbonate aquifer was between 219.5 and 222.5 m (720 and 730 ft) in April of 1974, but declined slightly to between 217.9 and 221.0 m (715 and 725 ft) in September of 1980 (Baracos et al., 1983).

According to the Province of Manitoba's groundwater pollution hazard map, the proposed OlyWest site does not fall within a designated hazard area, as shown in Figure 2.12 (Phimister, 1976).

2.8.1 Extent of Groundwater Use

Based on a review of Manitoba Water Stewardship's Groundwater Management Section 2005 well records, an estimated 173 registered wells exist within a 3 km radius of the proposed OlyWest site, including 38 registered wells with unknown exact locations. According to the well records, of the 173 registered wells, 147 are registered as production wells, 12 are registered as test wells, 8 are registered as recharge wells, and 6 are registered as observation wells. Within a 1.5 km radius of the site there are 18 registered wells according to the same source. The well records indicate that of the 18 registered wells, 11 are registered as production wells, 3 are registered as test wells, 3 are registered as recharge wells, and 1 is registered as an observation well. A summary of the water use of the production wells within a 3 km and 1.5 km radius of the proposed site is indicated in Table 2.3.

Table 2.3: Number of Registered Production Wells by Water Use Within 3 km and 1.5 km of the Proposed OlyWest Site¹

Distance to OlyWest	Domestic	Industrial	Air Conditioning	Domestic & Air Conditioning	Irrigation	No water use listed	Total
3.0 km ²	125	8	3	2	3	6	147
1.5 km	8	2	1	-	-	-	11

Notes: 1. Manitoba Water Stewardship, Groundwater Management Section (2005).

2. Includes wells within 1.5 km of OlyWest site.

As indicated in Table 2.3, the majority of the production wells in the 3 km study area are intended for domestic water use. The depth from the ground surface to the open hole from which water is drawn in the wells within the 1.5 km radius of the site ranges from 18 m to 91 m (60 to 300 ft) below the ground surface. The shallowest well within the 1.5 km radius has a depth of 23.6 m (77.4 ft) below the ground surface.

The approximate estimated locations of the registered wells within a 3 km radius of the site are shown on Figure 2.13. Based on the review of Manitoba Water Stewardship's Water Branch 2005 well records, the closest well to the proposed OlyWest site is located in R.C. Mission Lot 202 at the south end and east side of Mazenod Rd. and to the south of the rail road tracks. The well is registered to WRB and is designated as an observation well with no water use indicated on the well log. According to the well log, the soils in the vicinity of the observation well consist of topsoil underlain by silty clay extending to a 16.2 m (53 ft) depth overlying light grey till which extends to a 17.8 (58.5 ft) depth below the ground surface. The light grey till is underlain by rubble rock and carbonate bedrock to 23.6 m (77.4 ft) below the ground surface. The two closest production wells to the site are located at 100 Paquin Rd and on the west side of Mazenod Rd and are registered to Philips & Temro Industries Ltd. and a private owner respectively. The well registered to Philips & Temro Industries Ltd. is registered for industrial use while the private well is registered for domestic use. Conversation with the private well owner indicates that the well has been capped off since 1998 and is not in use. The two shallowest wells within the 3 km radius both have depths of 6.1 m (20 ft) and are observation wells located at 945 Marion St. The shallowest production well in the 3 km radius has a depth of 14.3 m (47 ft) and is registered for domestic use. The exact location of this well is unknown as in the well record its location is indicated as River Lot unknown in Parish of St. Boniface.

It is not the intention of OlyWest to construct supply wells on the property or to withdraw or utilize any encountered groundwater from the area. All water to be utilized at the proposed site will be provided by the City of Winnipeg through their existing distribution network.

2.9 AMBIENT AIR QUALITY

No ambient air quality data for the proposed OlyWest site exists, as there is no continuous air quality monitoring at the proposed location. However, Manitoba Conservation has monitoring stations located within Winnipeg, Brandon, Flin Flon, and Thompson. In this case, the

downtown Winnipeg station, located at 65 Ellen Street, was chosen as most representative of the proposed OlyWest site given its urban setting surrounded by predominantly industrial land use (Figure 2.7).

Air Quality data for downtown Winnipeg from 1995 to 2004 was obtained from Manitoba Conservation (2006). The data included the following parameters; Carbon Monoxide (CO), Nitrogen Dioxide (NO₂), Oxidants Ozone (O₃), Inhalable Particulate (PM₁₀ and PM_{2.5}), Total Suspended Particulate (TSP), and others (see Appendix C). Table 2.4 provides a summary based on the data provided by Manitoba Conservation.

Table 2.4: Estimated Ambient Air Quality for the Downtown Winnipeg Area (2004)¹

Name of Pollutant	Data Source	Units of Measurement	Averaging Period	Average Annual Air Quality
CO	Downtown Winnipeg, Manitoba	ppm	1995-2004	0.57
TSP	Downtown Winnipeg, Manitoba	µg/m ³	1995-2002	48.63
PM ₁₀	Downtown Winnipeg, Manitoba	µg/m ³	1995-2004	21.00
PM _{2.5}	Downtown Winnipeg, Manitoba	µg/m ³	1997-2004	5.86
NO ₂	Downtown Winnipeg, Manitoba	pphm	1995-2004	1.61
O ₃	Downtown Winnipeg, Manitoba	pphm	1995-2004	1.68

Note: 1. Manitoba Conservation, Air Quality Section.

2.10 LOCAL ECONOMY

As of 2000, the main components of the economy of Winnipeg are manufacturing (13.31%), retail trade (12.42%), health and social services (10.87), government services (8.72%), and educational services (7.48%). The largest public sector employer is the Province of Manitoba with 14,500 employees, followed by the City of Winnipeg with 8,300 employees, the University of Manitoba with 5,860 employees, the Health Sciences Centre with 5,000 employees, and Manitoba Hydro with 4,000 employees. The largest private sector employer is Manitoba Telecom Services with 4,257 employees, followed by Palliser Furniture Ltd. with 2,340 employees, Great-West Life Assurance Co. with 1,829 employees, Motor Coach Industries with 1,200 employees, and New Flyer Industries with 1,120 employees (Manitoba Intergovernmental Affairs, 2000a). Of the top five employers, four are from the public sector and one is from the private sector. Aside from the proposed OlyWest facility, recent developments in the Winnipeg area include the expansion of the Red River Floodway and the construction of a new Water Treatment Facility. As a point of interest, the Manitoba pork

industry employs approximately 16,000 people, which is more than twice as many people as Bristol, Boeing, Standard Aero, New Flyer and Motor Coach Industries combined.

For the Winnipeg Census Metropolitan Area (CMA) (includes City of Winnipeg, R.M. of Springfield, R.M. of Headingly, R.M. of East St. Paul, R.M. of Ritchot, R.M. of Rosser, R.M. of St. Clements, R.M. of St. Francois-Xavier, R.M. of West St. Paul, and the Brokenhead First Nation Reserve), the unemployment rate was 4.5% with a labour force participation rate of 70.1% .

The 2001 Census of Canada contains more community-specific information on unemployment and labour force participation. Table 2.5 highlights the labour force participation rate and unemployment rate for incorporated municipalities and First Nation communities nearest the study area, as compared to the Province as a whole.

Table 2.5: Unemployment Rate and Labour Force Participation Rate

Community	Unemployment Rate 2001	Labour Force Participation Rate 2001
Incorporated Municipalities		
City of Winnipeg ¹	5.7%	68.1%
R.M. of Springfield ¹	3.5%	77.1%
First Nation Communities		
Brokenhead 4 ¹	21.2%	67.3%
Manitoba²	3.6%	68.4%

Notes: 1. Derived from Statistics Canada Census Data, (Statistics Canada, 2001a, 2001b, 2001c).
2. Derived from Confidential Social Economic Impact Report.

2.11 SETTLEMENT AND POPULATION

2.11.1 City of Winnipeg

In 1738 the Winnipeg area became a fur-trading post, and in 1812 the first permanent settlement was established. The City of Winnipeg was incorporated in 1873 with 1,869 people. In 1972 the unified City of Winnipeg was created by amalgamating 13 municipalities, towns and cities. These were the R.M.'s of Charleswood, North Kildonan, Fort Garry, and Old Kildonan, the Town of Tuxedo, the Cities of West Kildonan, Transcona, St. James-Assiniboia, East Kildonan, St. Vital, St. Boniface, and Winnipeg, as well as the Metropolitan Corporation of Greater Winnipeg. The name Winnipeg has its origin in the Cree Indian name given to Lake Winnipeg meaning "Win", muddy, "nipee", water. In 1885, the arrival of the Canadian Pacific Railway brought a 30-year period of growth and prosperity which contributed to making Winnipeg a financial, commercial, wholesale and manufacturing centre of western Canada (Manitoba Intergovernmental Affairs, 2000a).

The City of Winnipeg is situated almost midway between the Atlantic Ocean and the Pacific Ocean, about 97.2 km (60.4 mi) north of the Canada-United States of America border and 136.2 km (84.6 mi) west of the Manitoba-Ontario border. Its average elevation is 231.6 m (760 ft) m.a.s.l., with an average elevation of 228.6 m (750 ft) in the downtown region and along the Red River, and 238 m (780 ft) along the outskirts of the City. The City of Winnipeg covers an approximate area of 475.2 km² (183.5 mi²) (Manitoba Intergovernmental Affairs, 2000a).

As of 2001, the City of Winnipeg had an estimated population of 619,544 (Statistics Canada 2001a), up 0.2 percent from the 618,477 given in the 1996 Census data. The R.M. of Springfield, as of 2001, had a population of 12,602, up from 12,162 in 1996, a 3.6 percent increase (Statistics Canada 2001c). Between 1996 and 2001, the population increase in the Winnipeg and surrounding area was notable when compared to the Province as a whole, which had 0.5 percent increase between 1996 and 2001.

2.11.2 Services

Services provided in the City of Winnipeg include a fire department and police service. The fire department is a combination of fire fighters and paramedics and consists of 26 fire stations located throughout the City, and 10 ambulance stations, one for each Winnipeg neighbourhood, with some of the fire and ambulance stations being combined. Dispatch methods include 911 for both City and rural calls. The Winnipeg police service consists of 15 centres distributed throughout the city. Dispatch methods include both a 911 for emergencies and a secondary number for non-emergencies (Manitoba Intergovernmental Affairs, 2000a).

Health care facilities in the City of Winnipeg include: Concordia Hospital (195 beds), Deer Lodge Centre (434 beds), Grace General Hospital (281 beds), Health Sciences Centre (804 beds), Manitoba Adolescent Treatment Centre (25 beds), Misericordia Health Centre (211 beds), Rehabilitation Centre for Children (0 beds – day programs only), Riverview Health Centre (278 beds), Seven Oaks Hospital (294 beds), St. Boniface General Hospital (544 beds), Victoria General Hospital (221 beds), 121 medical clinics, and 39 personal care homes providing residence to more than 5,700 people (Oliveiria, 2006). The City of Winnipeg services most of its residents via three sewage treatment plants, and provides drinking water service. The City of Winnipeg uses Shoal Lake as its primary potable water source.

The Winnipeg area is served by the Brady Road Landfill located on Brady Road south of the City's Perimeter Highway. The landfill is a regional facility serving both the City of Winnipeg and the R.M. of MacDonald. This landfill has an estimated life span of approximately 100 years (Manitoba Intergovernmental Affairs, 2000a). BFI Canada also operates a landfill located approximately 17 km north west of the City of Winnipeg Centre. This landfill has an estimated lifespan of approximately 40 years (BFI Canada, 2003). There are eight hazardous waste haulers within the Province, with the nearest Licensed Hazardous Waste Disposal facility located in Letellier, Manitoba, 75 km south of the City of Winnipeg.

2.11.3 Rural Municipality of Springfield

The R.M. of Springfield is the oldest municipality established in the province and was created in 1873. Located in the Eastman Region of the Province, it has an area of approximately 1,103 km² (426 mi²). The municipality is located on the east side of the Province of Manitoba, with its upper eastern boundary being Provincial Highway No. 12, its lower eastern boundary just east of Brokenhead River, its northern boundary south of Provincial Highway No. 44, its southern boundary is just north of the TransCanada Highway, its lower western boundary being the eastern limits for the City of Winnipeg, and its upper western boundary being Provincial Highway No. 59 as indicated in Figure 2.14. The R.M. includes the Unincorporated Urban Centres of Dugald and Oakbank, as well as the communities of Prairie Grove, Anola and Hazelridge. The Red River Floodway runs through the municipality from the south to the north (Rural Municipality of Springfield, 2004).

According to the 2001 Census of Canada, the population in the R.M. of Springfield was 12,602 people, an increase of 3.6 percent from 1996. Throughout this same time period, the Province as a whole experienced a 0.5 percent increase in population. (Statistics Canada, 2001c)

2.11.4 Services

The Canadian Pacific (CP) and CN rail lines run through the R.M. of Springfield. The municipality is bisected by Provincial Highway No. 15 running east/west and Provincial Highway No. 12 running north/south. The TransCanada Highway enters the municipality from the City of Winnipeg on the west and exits to the south. The City of Winnipeg Perimeter Highway also enters the municipality on the west and forms part of the municipality boundary. Provincial Highway No. 59 skirts the north-west boundary of the municipality. The communities of Dugald and Oakbank are serviced by a municipal water system where groundwater is treated and distributed to residents while the remainder of the residents within the R.M. of Springfield obtain water from private wells.

Police services for the R.M. of Springfield are provided by the Oakbank RCMP Detachment, based out of the Unincorporated Urban Centre of Oakbank. Fire-fighting services are provided to the municipality by the Unincorporated Urban Centre of Oakbank, and the Community of Anola. Residents of the R.M. are also covered by the 911 emergency response system based out of the Unincorporated Urban Centre of Oakbank (Manitoba Intergovernmental Affairs, 2000b).

The main health facilities for residents in the R.M. of Springfield are found in the Cities of Winnipeg and Selkirk, as well as the Town of Beausejour. Oakbank also hosts a medical clinic and a personal care home for the municipality.

The R.M. of Springfield is also serviced by two solid waste transfer stations; the Hillside transfer station located on Hillside Road to the east of East St. Paul and the Oakwood transfer station located north-east of Anola (Rural Municipality of Springfield, 2004).

2.11.5 First Nation Communities

The closest First Nation Community is the Brokenhead Ojibway Nation (Brokenhead 4) located approximately 82 km (50.9 mi) northeast of Winnipeg. The Brokenhead Ojibway Nation is home to some 372 residents (Statistics Canada, 2001b). Brokenhead 4 has an experienced labour force of 155 people but does not have any people with unique occupations to processing, manufacturing, and utilities.

Table 2.6 indicates the total population, both on and off the reserve, of the nearest First Nation Community. Although First Nation population estimates can vary significantly within various data sources, we have provided only Statistics Canada estimates.

Table 2.6: Total Populations of the Closest First Nations Community in Proximity to the Proposed OlyWest Site¹

Community	Statistics Canada 6/02/2005
Brokenhead Ojibway Nation	
On-Reserve	507
Off-Reserve	1054
Total	1,561

Notes: 1. Derived from Statistics Canada.
 2. On-Reserve - includes registered males and females on own reserve.
 3. Off-Reserve - includes registered males and females on other reserves and off reserve.

2.11.6 Services

Services in the Brokenhead Ojibway Nation Community are as shown in Table 2.7.

Table 2.7: Services Available in the Brokenhead Ojibway Nation¹

Community	School	Fire Department	Nearest Hospital	Sewer & Water	Police
Brokenhead Ojibway Nation (Brokenhead 4)	K4-8 ²	Fire Pumper Truck, Ancillary Equipment, and a 20-man Trained Volunteer Fire Department	Selkirk	Piped Treated Well Water Sewage Piped to Sewage Lagoons	RCMP Selkirk One First Nation Constable Volunteer "Night Hawk Patrol"

Notes: 1. Data obtained from Indian and Northern Affairs Canada.
 2. K4 indicates nursery school.

2.11.7 Age Characteristics of Area Population

Table 2.8 presents the age structure of incorporated municipalities and the nearest First Nation Community in or near the study area. In general, the age structure of the City of Winnipeg shows fewer young people and older people (65 years or over), while the R.M. of Springfield shows greater young people and fewer older people (65 years or over), compared to that of the Province as a whole. In contrast, the age structure of the First Nation Community is

significantly younger than the incorporated municipalities or the Province. People 65 years and older are generally three to four times fewer in this First Nations Community.

Table 2.8: Age Characteristics of Incorporated Municipalities and First Nation Community in and Near the Study Area, Compared to Manitoba, 2001¹

Location	Age		
	0-19 years	20-64 years	65 years or over
Incorporated Municipalities			
City of Winnipeg	25.8%	60.5%	13.7%
R.M. of Springfield	30.3%	60.9%	8.8%
First Nation Community			
Brokenhead 4	41.9%	52.7%	6.8%
Manitoba	28.1%	58.0%	14.0%

Notes: 1. Derived from Statistics Canada.

2. Percentages are approximate only.

2.12 TRANSPORTATION

The City of Winnipeg is well serviced by a number of major highways and provincial roads as well as the CN Railway and CP Railway and an international airport. The port of Churchill provides Manitoba with direct access to the sea as well. Over 30 motor freight carriers service the City of Winnipeg (Destination Winnipeg, 2006).

Major system highways that the City of Winnipeg is connected to include the No. 1 TransCanada Highway and Provincial Highways No. 75 and No. 59 south. The TransCanada Highway provides direct connections to all major urban centers in Canada while the Provincial Highways No. 75 and No. 59 provide connections with the United States.

The following major provincial highways also have direct access to the City of Winnipeg; No. 2, No. 3, No. 6, No. 7, No. 8, No. 9, No. 15 and the Perimeter Highway. The major roads surrounding the proposed site location are Dugald Road (Provincial Highway No. 15) to the north, Plessis Road to the east with Lagimodiere Boulevard (Provincial Highway No. 59) further to the west. Dugald Road, Plessis Road and Lagimodiere Boulevard are designated as full time truck routes (City of Winnipeg Public Works Department, 2001).

Winnipeg is located on the main line of the CP and CN rail systems and has direct rail access to the United States. Both CP Rail and CN Rail have intermodal facilities in Winnipeg with CN Railway's Intermodal Terminal and Symington Yards located immediately to the south of the proposed OlyWest site.

The Winnipeg International Airport is located on the western side of the City of Winnipeg, approximately 7 km (4.4 mi) from the city centre and is open on a 24-hour basis. The airport offers both passenger and cargo services with both Canadian and international destinations.

The port of Churchill located on the north east coast of the province provides direct sea access through Hudson Bay. The port of Churchill can be reached by rail, air and sea and offers a much shorter route to Europe than the St. Lawrence and Great Lakes sea ports.

Table 2.9 indicates the Average Weekday Daily Traffic (AWDT) (two way) on the streets in the vicinity of the proposed OlyWest site according to the City of Winnipeg Public Works Department Transportation Division (2005).

Table 2.9: AWDT Counts in the Vicinity of the Proposed OlyWest Site, City of Winnipeg (2005)²

Road	Count Location	A.W.D.T. (2005)
Fermor Ave.	West of Plessis Rd. and east of Lagimodiere Blvd.	21,000
Plessis Rd.	North of Highway No. 1 and south of Dugald Rd.	10,000
Plessis Rd.	North of Dugald and south of Kernaghan Ave.	15,000
Dugald Rd.	West of Plessis Rd. and east of Beghin Ave.	18,000
Dugald Rd.	East of Lagimodiere Blvd. and west of Beghin Ave.	27,000
Lagimodiere Blvd.	North of Marion St. and south of Dugald Rd.	48,000
Lagimodiere Blvd.	North of Fermor Ave. and south of Elizabeth Rd.	37,000

Notes: 1. A.W.D.T. = Average weekday daily traffic counts.
2. Obtained from City of Winnipeg Public Works Department, Transportation Division.

The final OlyWest products will be shipped from the proposed site by truck with potential to ship products by rail in the future.

2.13 CULTURAL SETTING

2.13.1 Heritage Resources

As part of this EA of the construction and operation of the proposed OlyWest facility, a heritage resources impact assessment was undertaken. Quaternary Consultants Ltd. was contracted by Earth Tech Canada Inc. to undertake an assessment of all areas of potential impact relating to the proposed OlyWest site. The assessment, conducted on July 4, 2006, was performed under the terms of Heritage Permit A35-06, issued by Historic Resources Branch, Manitoba Culture, Heritage and Citizenship. A copy of the Quaternary Report can be found in Appendix D of this report including a copy of the Heritage Permit A35-06 (Appendix D).

2.13.2 Location and Scope of the Project

The area which held the highest potential, albeit low, for archaeological sites was the periphery of the wooded areas. The site location has a low potential for archaeological resources due to the distance to water. As the site is located at least 8 km from the nearest permanent water source, it is unlikely that this area would have been chosen as a location for a campsite which would have been occupied more than overnight.

2.13.3 Investigation Methods

The investigation consisted of foot traverses across the area, concentrating on the periphery of the wooded area. At the time of the site investigation, the majority of the ground was grass covered but approximately 15% of the surface was examined. With this percentage, isolated artifacts may not be observed but a concentration of artifacts would be discernible. Several shovel test pits were completed at locations adjacent to the treed areas.

2.13.4 Laboratory Procedures

No archaeological artifacts were recovered during this project. Thus, no laboratory activities occurred.

2.13.5 Archaeological Observations

No evidence of archaeological resources was encountered at the proposed OlyWest site. Due to the distance to a permanent water source, it is not likely that the site would have been occupied more than overnight.

2.13.6 Archaeological Recommendations

It can be recommended that no further archaeological investigations are required with regard to the development of the proposed OlyWest site.

2.14 LAND USE AND DEVELOPMENT CONTROLS

2.14.1 Regional Land Use

Within the regional study area (10 km (6.2 mi) radius surrounding the proposed site), an array of urban and rural land uses are apparent. Land use planning and development controls are generally within the purview of the R.M. of Springfield and the City of Winnipeg pertaining to their respective areas. There are currently no First Nation Reserve lands located within the R.M. of Springfield or the City of Winnipeg, where development controls would not apply in any event.

The majority, approximately 91 %, of the 3 km (1.9 mi) study area falls within the City of Winnipeg (Figure 2.3). Use and development of land within the City is governed by the City of Winnipeg Development Plan (Plan Winnipeg 2020 Vision) and Zoning By-law (By-law

No. 6400/94). These documents reflect the council's intent to shape the future of the City of Winnipeg and reflect the residents' vision of "a vibrant and healthy city which places its highest priority on quality of life for all its citizens." The current zoning of the proposed OlyWest site and surrounding lands are indicated in Figure 2.1. The City of Winnipeg is currently reviewing the Zoning By-Law and Zoning Maps for all lands within the City of Winnipeg (By-Law 6400/94), outside of the downtown area.

The remainder, approximately 9 %, of the 3 km (1.9 mi) study area is contained within the R.M. of Springfield. Use and development in the R.M. of Springfield is governed by the R.M. of Springfield Development Plan (By-law No. 98-22) and Zoning By-law (formerly By-law No. 85-26, and drafted By-law No. 06-14). "Agricultural General" is the predominant designation of land in the R.M. of Springfield within 3 km (1.9 mi) of the proposed OlyWest site (outside the City of Winnipeg Limits). The Development Plan and Zoning By-law include an array of measures designed to regulate and control the development and use of land and buildings.

The Province operates two parks within the R.M. of Springfield. The first park is Birds Hill Provincial Park, which is primarily located in the R.M. of Springfield, but has its main entrance located in the R.M. of St. Clements. Birds Hill Provincial Park was sculpted by Lake Agassiz and glacial ice, and was opened in 1967 (Manitoba Parks Department, 2006a). The second park is Duff Roblin Provincial Park, which was opened to commemorate the construction of the Red River Floodway and the establishment of a provincial system of parks by former Manitoba Premier, Duff Roblin (Manitoba Parks Department 2006b).

The overall goals of the City of Winnipeg are apparent from comments in their Development Plan as shown in the following excerpts:

"Winnipeg is characterized as having the most diverse economy in Canada. The Conference Board of Canada rates Winnipeg at 0.96 out of 1.00, with the average of Canadian cities at 0.89. As a result, the city has avoided large economic upswings or downturns while generating modest yet sustained growth. The Conference Board of Canada, in a study commissioned by The City of Winnipeg, predicts that Winnipeg will continue in this general pattern through the next two decades, with somewhat better overall performance than in recent past.

Sustainable economic growth results from serving demand external to the local economy, that is, from companies producing traded or exported goods and services. Historically, the primary (resource-based) and manufacturing sectors have been seen as providing this economic base because they create export-based employment. Increasingly, however, economists have come to recognize that major portions of other sectors – wholesale and retail trade sector, the financial sector, and the commercial sector including food and accommodation – also supply markets beyond the metropolitan area boundaries and

therefore contribute to export-based employment. In Winnipeg, these sectors are relatively strong.”

“Council is intent on shaping the future of Winnipeg by addressing the challenges we face in order to capitalize upon the opportunities. But, in doing so, it will adhere to certain principles, each of which has helped shape the policies found in this Plan, and each of which is integral to the vision that Winnipeggers hold for their city.

1. Sustainability – making certain that the choices available for future generations are not impaired by decisions made today. For example, this means committing to the reduction of greenhouse gas emissions, making decisions that do not compromise the environment, and recognizing that long term goals are more important than short term gains.

2. Social consciousness – ensuring that all Winnipeggers are treated with dignity and respect. This means committing to concepts of social equity, tolerance, diversity, and universal access, among others, and addressing issues such as child poverty.

3. Thoughtful development – evaluating the costs and benefits of development proposals. The intent is to take maximum advantage of existing infrastructure through increased densities and compact form, to commit to inner city revitalization and heritage conservation, and to provide integrated transportation options.

4. Partnership and collaboration – working cooperatively with people, other governments, the not-for-profit sector, and the private sector. The intent is to leverage resources to maximum advantage and to provide the most effective and efficient services to citizens and businesses.

5. Healthy living – promoting healthy lifestyles. In the broadest interpretation of the term this includes the provision of safe environments, education, recreation, arts, and culture to assist citizens in developing to their fullest potential.

6. Local empowerment – encouraging citizens to shape decisions that affect their lives. This requires sharing decision-making processes through citizen engagement, promoting local ownership and control, fostering a strong local economy, and facilitating ongoing participation in local government.”

Zoning designations in the City of Winnipeg Zoning By-law (6400/94) include:

- **Rural Districts:** intended to accommodate and conserve land for various agricultural uses within the Area;
- **Parks & Recreation Districts:** intended to provide and regulate parks and recreation sites in a manner consistent with the use of the Area;

- **Residential Districts:** intended to provide and regulate various types of family development in the Area;
- **Commercial Districts:** intended to provide and regulate development to meet the needs of the commercial neighbourhood and surrounding neighbourhoods in the Area;
- **Industrial Districts:** intended to provide for a wide range of industrial development while accommodating existing uses in the Area;
- **Boulevard Provencher District:** intended to accommodate a range of commercial uses and control the architecture of buildings in a manner consistent with the character of the street; and
- **Mobile Home Park District:** intended to provide land for the location of mobile homes in the Area.

2.14.2 Local Land Use

Within the local study area (3 km (1.9 mi) radius from the proposed OlyWest site) most of the land lies within the City of Winnipeg, with a small section of the study area in the R.M. of Springfield. As such, land use decisions are made in accordance with the City of Winnipeg Development Plan (Plan Winnipeg 2020 Vision) and Zoning By-law (By-law No. 6400/94).

Detailed zoning designations in the City of Winnipeg Zoning By-law are shown in Table 2.10.

**Table 2.10: Zoning Designations in the City of Winnipeg Zoning By-law
(6400/94)**

Zoning Designation	Description
A	Agricultural District
A.5	Agricultural District
PR1	Parks and Recreation District
PR2	Parks and Recreation District
RR-2	Rural Residential District
R1-20	Single-Family District
R1-9	Single-Family District
R1-9	Single-Family District
R-6	Single-Family District
R1-5.5	Single-Family District
R1-5	Single-Family District
R1-4.5	Single-Family District
R1-4	Single-Family District
R1-3.5	Single-Family District
R1-3	Single-Family District
R1-2.5	Single-Family District
R2	Two Family District
R2-T	Transitional District
RM-L	Multiple-Family District
RM-1	Multiple-Family District
RM-2	Multiple-Family District
RM-3	Multiple-Family District
RM-4	Multiple-Family District
RM-5	Multiple-Family District
RM-6	Multiple-Family District
RM-7	Multiple-Family District
C1	Commercial District
C1.5	Commercial District
C2	Commercial District
C3-1	Commercial District
C3-2	Commercial District
C4	Commercial District
CR	Commercial District
OI	Office and Institutional Planned Building Group District
CF	Commercial Fabrication District
M1	Industrial District
M1-B	Light Industrial District
M2	Industrial District
M3	Industrial District
MR	Industrial District
MP-1	Industrial District
MP-2	Industrial District
MP-S	Industrial District
BP	Boulevard Provencher District
MH-P	Mobile Home Park District

Detailed zoning designations in the R.M. of Springfield are shown in Table 2.11.

Table 2.11: Zoning Designation in the R.M. of Springfield Zoning By-Law 06-14

Zoning Designation	Description
RS	Residential Single Family Zoning District
RT	Residential Two Family Zoning District
RM	Residential Multiple Family Zoning District
RC	Residential Comprehensive Zoning District
MHR	Mobile Home Residential Zoning District
RR	Rural Residential Zoning District
CC	Commercial Central Zoning District
CH	Commercial Highway Zoning District
CR	Commercial Recreation Zoning District
MB	Industrial Business Zoning District
MG	Industrial General Zoning District
MX	Industrial Extractive Zoning District
PR	Parks and Recreation Zoning District
I	Institutional Zoning District
SNR	Sensitive and Natural Resource Zoning District
LCR	Limited Commercial-Residential Zoning District
HA	Hamlet Area Zoning District
UR	Urban Reserve Zoning District
AGL	Agriculture General (Limited) Zoning District
AG	Agriculture General Zoning District
AI	Agricultural Intensive Zoning District

The zoning designations that fall within the 3 km (1.9 mi) study area are:

- **Agricultural - A, A.5, AGL, AG**
- **Parks- PR1, PR2**
- **One Family Residential - R1-3, R1-3.5, R1-4, R1-5, R1-5.5, R1-20**
- **Two Family Residential - R2**
- **Multiple-Family Residential - RM-L, RM-1, RM-2, RM-3, RM-4**
- **Commercial - C1, C2, C3-1, C3-2, C4, CR**
- **Commercial Highway - CH**
- **Industrial - M1, M2, M3, MP-2, AGL, and AG**

The zoning surrounding the proposed site is shown in Figure 2.1.

2.14.3 Dwellings and Businesses

Table 2.12 numerically illustrates the residential and business sectors within the 3 km (1.9 mi) radius study area of the proposed site. This table is divided into population, dwellings, and businesses in the neighbourhoods within the 3 km (1.9 mi) radius. The table is further subdivided to show the characteristic makeup of each of these neighbourhoods based on a 1 km (0.6 mi), 2 km (1.2 mi) and 3 km (1.9 mi) radial distance from the centre of the proposed facility. Figure 2.15 indicates the neighbourhoods within a 3 km (1.9 mi) radius of the proposed site.

In order to estimate the population, the area of each neighbourhood within the boundaries of a 1 km (0.6 mi), 2 km (1.2 mi) and 3 km (1.9 mi) radii was determined. Using neighbourhood census data from the City of Winnipeg and the estimated area, the population was determined based on the population density.

To determine the number of dwellings in the 3 km (1.9 mi) study area, the proportion of each neighbourhood within each radii was found, then multiplied by the total number of dwellings within the respective neighbourhood, which was also obtained from the neighbourhood census data.

Determining the number of businesses involved using phone directories and the names of all the streets within each respective radii. Using these techniques, it is estimated that within the 3 km (1.9 mi) radius, there is an approximate population of 16,644 residents, 5,962 dwellings, and 755 businesses. Within the business total, 13 shopping malls were counted as a single business, as well as 13 schools, 12 daycare/ nursery schools and 14 churches. There were no hospitals or personal care homes found within the 3 km (1.9 mi) radius. Only businesses were present within the 1 km (0.6 mi) radius, there were no dwellings, residents, schools, daycares/ nursery schools, or churches.

**Table 2.12: Population, Dwellings, and Businesses Within a 3 km (1.9 mi)
Radius of the Proposed OlyWest Site**

Neighbourhood	Population ¹			Number of Dwellings ^{1,4}			Number of Businesses ²		
	Within 1 km	Between 1 & 2 km	Between 2 & 3 km	Within 1 km	Between 1 & 2 km	Between 2 & 3 km	Within 1 km	Between 1 & 2 km	Between 2 & 3 km
St. Boniface Industrial Park	N/A	N/A	N/A	N/A	N/A	N/A	27	71	1
Symington Yards	N/A	N/A	N/A	N/A	N/A	N/A	2	29	0
Windsor Park	0	2959	5815	0	1131	2223	0	24	89
Maginot	0	325	1046	0	107	345	0	21	10
Stock Yards	N/A	N/A	N/A	N/A	N/A	N/A	0	7	5
Dugald	N/A	N/A	N/A	N/A	N/A	N/A	0	92	12
Southland Park	0	3	474	0	1	159	0	0	12
The Mint	N/A	N/A	N/A	N/A	N/A	N/A	0	0	1
Southdale	0	0	1743	0	0	610	0	0	41
Holden	0	0	137	0	2	61	0	0	5
Mission Industrial	N/A	N/A	N/A	N/A	N/A	N/A	0	0	117
Mission Gardens	0	839	2759	0	263	864	0	1	16
Transcona South	0	118	215	0	38	70	0	6	5
Regent	N/A	N/A	N/A	N/A	N/A	N/A	0	0	151
Transcona Yards	N/A	N/A	N/A	N/A	N/A	N/A	0	2	19
Peguis	0	0	21	0	0	9	0	0	0
Melrose	0	0	138	0	0	58	0	0	8
Victoria West	0	0	26	0	0	11	0	0	
Tyne-Teens	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0
R.M. of Springfield	0	3	25	0	1	8	0	0	1

- Notes:
1. Population data and dwelling numbers derived from City of Winnipeg Neighbourhood Census Data (Statistics Canada 2004).
 2. Business data derived from MTS Yellow Pages and Canada 411 Directory (MTS, 2006 and Yellow pages Group, 2006)
 3. N/A = Not Available by Census as it is not a residential area.
 4. Number of dwellings takes into account all houses, row houses, and apartments.
 5. Neighbourhood division lines taken through middle of street, where applicable.

In compiling the number of businesses in the study area, shopping malls were generally grouped as a single business, though they may have consisted of many. Table 2.13 lists the shopping malls that were counted as single businesses. Table 2.14 lists by name all schools, daycares/ nursery schools and churches within the 3 km (1.9 mi) study area.

Table 2.13: List of Shopping Malls Within a 3 km (1.9 mi) Radius of the Proposed OlyWest Site

Neighbourhood	Between 1 & 2 km	Between 2 & 3 km
Symington Yards	Sioux Square	N/A
Windsor Park	N/A	Windsor Park Plaza; Cottonwood Shopping Centre
Southdale	N/A	Lakewood Plaza; Southdale Centre; Southdale Square
Regent	N/A	Kildonan Place, Regent Square, Kildonan Market; Crossroads Station; Eastwinds; Rougeau Plaza
Melrose	N/A	Regent Park Shopping Centre

- Notes:
1. Malls determined from Sherlock's Map of Winnipeg 9th and 10th editions.
 2. N/A = not applicable as there were no malls found within the respective radii.
 3. Only the shopping malls counted as single businesses are listed.

There were no shopping malls found within 1 km (0.6 mi) of the proposed OlyWest site and as such there is no listing in the table for this distance.

Table 2.14: Listing of all Schools, Daycares/Nursery Schools, and Churches within a 3 km (1.9 mi) Radius of the Proposed OlyWest Site.

Neighbourhood	Between 1 & 2 km			Between 2 & 3 km		
	School	Daycare / Nursery School	Church	School	Daycare / Nursery School	Church
Symington Yards	Spring's Christian Academy	N/A	Spring's Church	N/A	N/A	
Windsor Park	General Vanier School	General Vanier Nursery School Inc; General Vanier Children's Centre	St Martyrs-Canadiens Hall; Windsor Park Christian Community	College Beliveau; Frontenac School; Ecole Lacerte; Les Franco-Lions de Lacerte; Windsor Park Collegiate; Howden School	Winakwa Nursery School; Mini-Maternal Du Parc Windsor; Little Bo-Peep Children's Day Nursery Inc; Little People's Place Inc; Windsor Park Children's Care Centre; Little People's Place Inc	Cornerstone Alliance Church; Prince of Peace Lutheran Church; St Bernadette Parish; St Bartholomew Anglican Church; Windsor Park United Church; Waves of Grace Community Church Inc
Maginot	N/A	Panda Bear Daycare	N/A	St Boniface Arts & Technology Centre	N/A	N/A
Southdale	N/A	N/A	N/A	Shamrock School; Ecole Van Bellegem School	Southdale Nursery School; Niakwa Nursery School	Evangelical Free Church (Winnipeg)
Mission Gardens	N/A	N/A	N/A	Bernie Wolfe School; Immanuel Christian School	Mission Gardens Play Centre Inc	Canadian Reformed Church; Jehovah's Witness North & South Transcona Congregation
Transcona South	N/A	N/A	N/A	N/A	N/A	Canadian Reformed Church-Redeemer
Regent	N/A	N/A	N/A	N/A	N/A	Abundant Life Baptist Church
Melrose	N/A	N/A	N/A	Ecole Regent Park	N/A	N/A

Notes: 1. All names determined from MTS Yellow Pages and Canada 411 Directory (MTS, 2006 and Yellow pages Group, 2006)

2. N/A - not applicable as there were no schools, daycares/ nursery schools, or churches within the respective radii.

There were no schools, daycares/ nursery schools or churches found within 1 km (0.6 mi) of the approximate centre of the proposed OlyWest facility and as such there is no listing in the table for this distance.

There were too many residences within the 3 km (1.9 mi) radius to be visited personally. Contact for these residences has been gained through an Open House process, an informative website with feedback ability and a Community Advisory Committee (CAC). The OlyWest public participation program is described in greater detail in Section 12.0 of this report.

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