

ENVIRONMENT ACT PROPOSAL

BRADY ROAD RESOURCES RECYCLING FACILITY



**WINNIPEG WATER AND WASTE DEPARTMENT
SOLID WASTE SERVICES DIVISION**

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BRADY ROAD ENVIRONMENT ACT PROPOSAL FORM (EAPF)

1.0 INTRODUCTION

1.1 DEVELOPMENT COMPONENTS TO BE LICENSED

This Environment Act Proposal Form (EAPF) is submitted by the City of Winnipeg, Water and Waste Division, in respect of licencing the Brady Road Landfill. For purposes of applying *The Environment Act*, the “Development” within the meaning of the Classes of Development Regulation (Manitoba Regulation [MR] 164/88) is:

- The landfill operations and related site management of the Brady Road Landfill, east of Brady Road, south of the Perimeter Highway and west of Waverley Street (Figure 1).
- The future Brady Road Landfill as its site layout, operations and cell developments evolve in response to City Council’s endorsement of a Comprehensive Integrated Waste Management Plan (CIWMP, “The Garbage and Recycling Master Plan”) on October 19, 2011 (Figure 2).
- Ongoing environmental monitoring.
- Periodic research and development, usually involving support for landfill-related topics of interest to engineers and scientists undertaking graduate studies.
- The Division’s commitment to ongoing public disclosure and accountability.

The landfill operates pursuant to Waste Disposal Ground Operating Permit No. 1-015 issued October 13, 1993 (Appendix A).

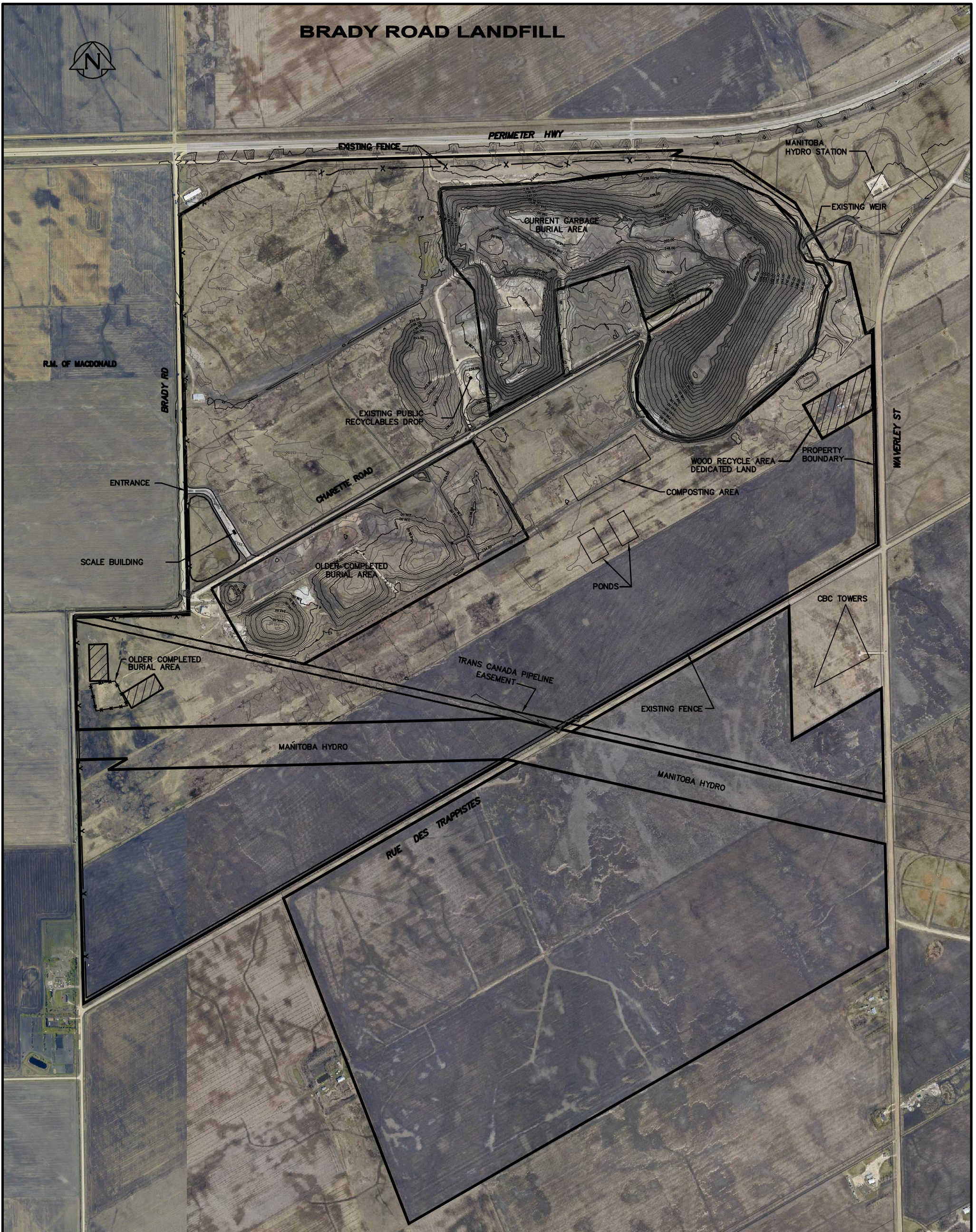
The evolution of the Brady Road Landfill over the next decades is expected to be substantial, as CIWMP implementation causes reduced deliveries to and burial at the site. Further, effects of the CIWMP include a significant increase in the upstream diversion of recyclable materials which currently are being buried in the landfill. Organic wastes will be a particular target of upstream diversion in the next half-decade. Materials now being landfilled which give rise to malodorous conditions (e.g., organic yard waste, kitchen waste, sulfide-containing wallboard, wood, etc.) will be increasingly diverted from burial. As the CIWMP is implemented, the “Development” will include on-site provision for enhanced materials recovery, organics recovery or composting, on-site materials reprocessing and commodification, and opportunities for development of related businesses.

The intended future new activities at the site will be protected by an alteration of the zoning applicable to the City’s properties, which amendment is planned by the City to occur in 2012.

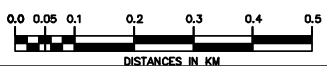
1.2 PREVIOUSLY LICENSED COLLATERAL DEVELOPMENT


This development includes, but the licencing decision now being sought excludes, the design, construction and operation of a landfill-gas (LFG) recovery project. The LFG project has previously been reviewed by Manitoba Conservation, which issued Environment Act license No. 2890 on July 22, 2009 (revised as License No. 2890R on September 8, 2010), to regulate its operations.

BRADY ROAD LANDFILL



THIS DRAWING CONTAINS A 2009 AERIAL PHOTO



 THE CITY OF WINNIPEG WATER AND WASTE DEPARTMENT	SHEET 1 OF 1
	CITY DRAWING NUMBER
BRADY ROAD LANDFILL CURRENT SITE PLAN	
FIGURE 1	

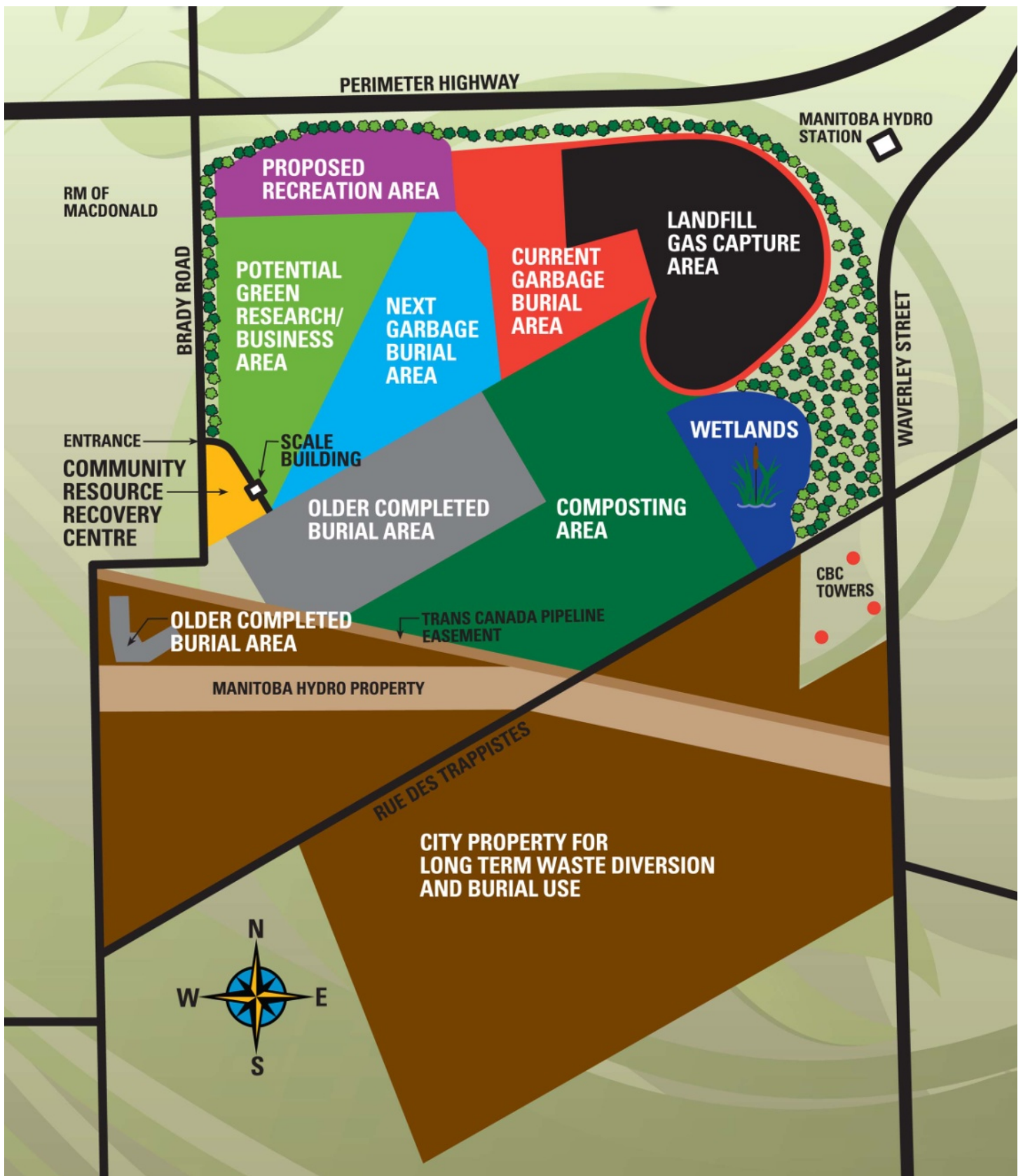


Figure 2
Brady Road Resources Recovery Facility

2.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 PROPERTY OWNERSHIP

Appendix B provides hard-copy legal descriptions of all of the parcels of land owned by the City which comprise the Brady Road Landfill site. Included in Appendix B is a graphic illustrating the spatial distribution of these land parcels (City Plan No. 10998/1). The City, with the exception of easements described on a number of the Records of Title, is the owner of the land. As otherwise indicated in various Records of Title in the attached, the City is the owner of the mineral rights associated with each individual parcel.

2.2 LAND USES AND DESIGNATIONS

Adjoining land uses include residential to the northwest, north and northeast, and agricultural to the east, south and west, with the exception of CBC broadcasting towers on one parcel to the west of Waverley Street (Figure 1).

Planned changes in land use on this site, as contained in the Garbage and Recycling Master Plan adopted by the City of Winnipeg Council on October 19, 2011 (Council approval attached as Appendix C) include the following:

- Expanding diversion and recycling operations, including:
 - Areas for segregating and managing Construction and Demolition (C&D), and Industrial, Commercial and Institutional (IC&I) wastes.
 - The possible construction and operation of a new on-site Materials Recovery Facility (MRF).
- Providing for a Source-Separated Organics (SSO) Processing Facility.
- Expanding the size and types of composting operations.
- Creating research and resource-recovery-related business facilities.
- Allocating designated space as public-recreation areas.

The land use on the parcels of land described in Appendix B is currently for the burial and long-term management of a wide diversity of domestic, commercial and industrial solid waste as well as for diversion of bulk metals, used tires, some wood and a small leaf and yard waste composting operation. The evolution of the site during implementation of the CIWMP will include a significant increase in reduction of the quantities and types of materials now being landfilled that are capable of recycling, repurposing and commoditization. Thus, portions of the site will be allocated to such activities (land uses) as materials separation, storage, reprocessing and shipment.

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The land-use designations for the site and adjoining lands are set out below:

- The Brady Road Landfill is designated as a “Rural and Agricultural Area” in “Complete Communities, an ‘Our Winnipeg’ Direction Strategy” (Figure 3). The lands are zoned “A” Agricultural, in the City of Winnipeg Zoning Bylaw 200/06, which allows landfills as a conditional use. The landfill will be rezoned with a Plan Development Overlay to more appropriately reflect the imminent and future land uses of this site.
- Lands south and east of the landfill are designated “Rural and Agricultural Land” and zoned Agricultural, except for the lands designated Recent Communities southeast of the Waverley/PTH 100 intersection, as shown on the “Urban Structure in Complete Communities” (Figure 4). These Recent Communities lands are zoned “R1-M” Residential-Single Family. The area east of Waverley, north of Rue de Trappistes is designated as a New Community and is currently zoned “A” Agricultural.
- Lands northeast of the Waverley/PTH 100 intersection are designated “Recent Communities” and zoned “RR5” Rural Residential and “R1-M” Residential-Single Family.
- The lands northwest of the Waverley/PTH 100 intersection are designated “Recent Communities” and zoned as an “R1-M” Residential-Single Family (Medium) District, an “RMF-S” Residential Multi-Family (Small) District, an “RMF-M” Residential Multi-Family (Medium) District, a “PR1” Parks and Recreation 1 (Neighbourhood) District, a “C2” Commercial Community District, and a “C3” Commercial Corridor District, respectively (Bylaw No. 82/200 amended 137/2009). A significant portion of lands northwest of Waverley and PTH 100 are zoned “A” Agricultural, but are part of the Waverley West development. They will be developed in future phases as a mix of residential, commercial and employment uses.
- Lands to the west of the landfill are in the RM of Macdonald. Lands are zoned Agricultural General Zone in Bylaw 15/95. In the Macdonald/Ritchot Planning District Development Plan, the lands are designated Rural “Green Zone.”

2.3 CURRENT AND PROPOSED DEVELOPMENTS

2.3.1 Current Activities

The Brady Road Landfill (Photo 1) now receives approximately 400,000 tonnes of domestic and commercial waste each year, largely from the City of Winnipeg. A small amount of waste is also received from provincial parks. Some commercial and industrial wastes from the City are landfilled at the BFI facility north of the North Perimeter Highway, in the R.M. of West St. Paul and at the MidCanada facility southeast of the City in the R.M. of Richot.

When waste haulers arrive on-site, the gross weight of the vehicle is established at a weigh-in station, and the trucks are directed to an active working face, where the materials are tipped from the truck onto a slope that is being worked by heavy-duty compaction equipment (Photo 2). Compacted waste is covered with daily cover each day, to minimize access by vermin and other nuisance vectors (e.g., migratory birds and gulls). When compacted wastes have reached the maximum elevation, a final cover of soil and native vegetation will be installed.

RURAL AND AGRICULTURAL AREAS

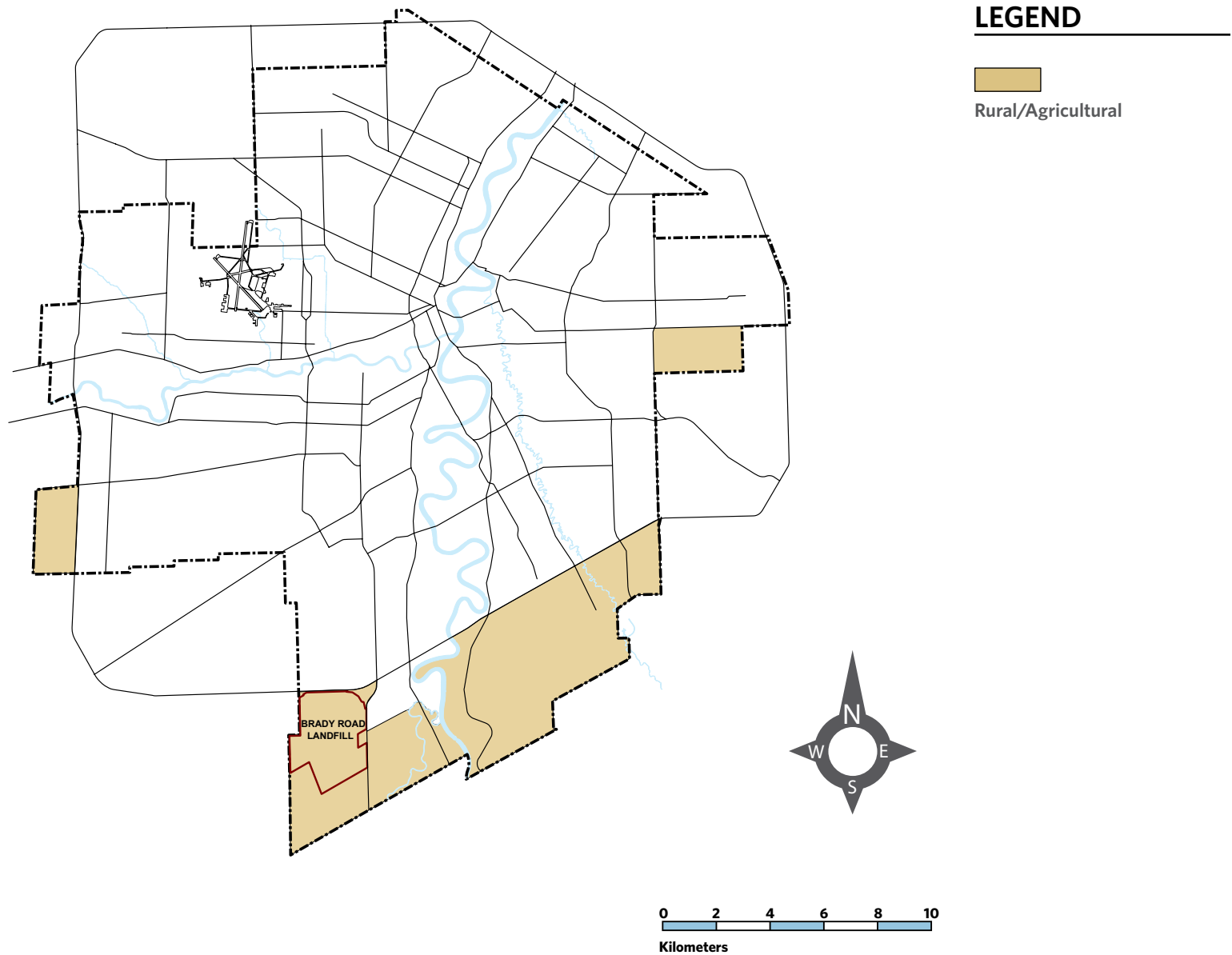
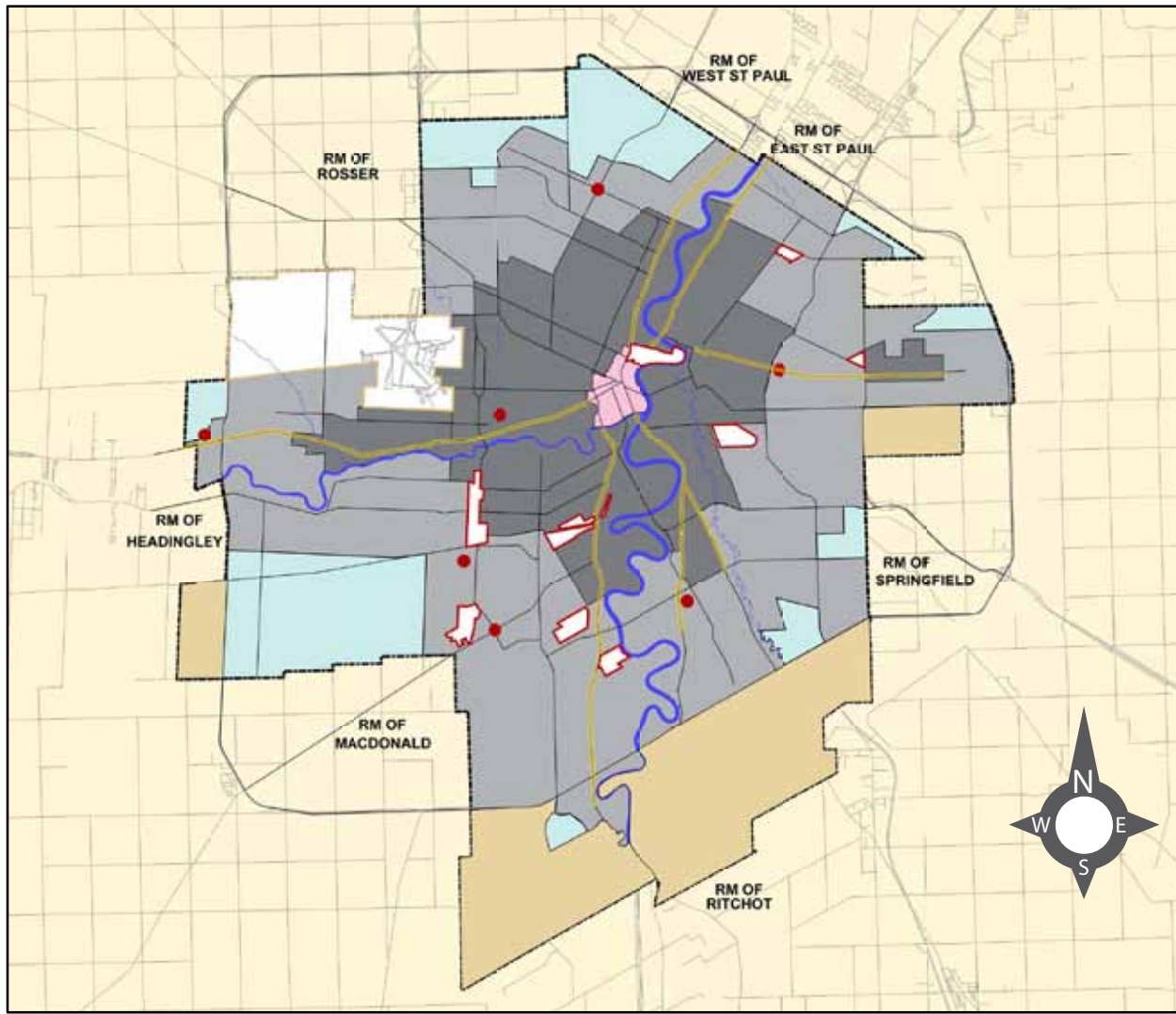


figure 08a

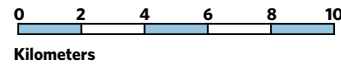
URBAN STRUCTURE



LEGEND

- Downtown
- Major Redevelopment Sites
- New Communities
- Regional Mixed Use Centre
- Regional Mixed Use Corridor
- Mature Communities
- Recent Communities
- Rural and Agricultural
- Airport Area

figure 02a
Winnipeg's urban structure.



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“Special waste” can also be deposited on-site. Bagged asbestos, carcasses of dead animals and food products deemed to be unacceptable for some reason by the Canadian Food Inspection Agency (CFIA) can be delivered to the site from time to time. Such wastes are buried immediately in locations recorded by GPS.

On-site composting (Photo 3) has occurred for over two decades, without complaint from adjoining landowners, although some complaints related to recent deliveries of treatment plant biosolids have been received. Biosolids are now being co-deposited with the waste. The long-standing licensed practice of land spreading of biosolids on selected lands approved for this purpose was ended by the City on December 31, 2010, as the result of new provincial regulations which reduced biosolids application rates to land (and banned winter application). Since then, the City has been examining various options for dealing with this material (including composting some of the material at the landfill), pending a longer-term solution.

2.3.2 Planned Future Activities

The site is comprised of approximately 790 ha. In the mid-1980s, the then-current development plan presumed that waste would be received without significant upstream diversion or minimization at the site for perhaps as much as a century. Implementation of the CIWMP will give rise to three fundamental changes affecting the long-term site use:

- The site will become a perpetual-care facility, with more land available for cell development than will likely be needed for at least the next century. Land previously thought necessary for waste burial but now unlikely to be needed for that purpose will be dedicated to waste diversion and public recreation.
- The previous conception of a 90-m hill at the site to facilitate public recreation, along with the original conception of a series of larger on-site ponds (Figure 5), has been significantly adjusted. The maximum elevation of the landform created by buried waste will now not exceed 30 m above the prairie, and large ponds will no longer be contemplated except for dry ponds for runoff control or the sand-wash facility noted below. Because the facility is close to the southern approach to the Winnipeg International Airport, ponds will be discouraged on-site to reduce attraction to migratory birds, or will be designed and operated to minimize bird attraction and/or as “dry ponds.”
- Finally, the site will be the recipient of a significant landscaping effort, as portions of the site are completed, to encourage on-site public recreation and visual screening from adjoining lands. Vegetation of soil cover will occur in a portion of the current landfill being retrofitted for landfill-gas recovery. Starting initially with appropriate cultivars of fast-growing full-canopy trees (e.g., hybrid poplar), visual screening of the site will commence on the north and east sides, facing the growing subdivision development on these sides of the landfill. Slower-growing trees (e.g., willow and evergreens) will infill behind the poplars, to add to the visual screening and sound deadening, and to create year-round botanical screening and improved site aesthetics.

Specific additional new future activities include the following:

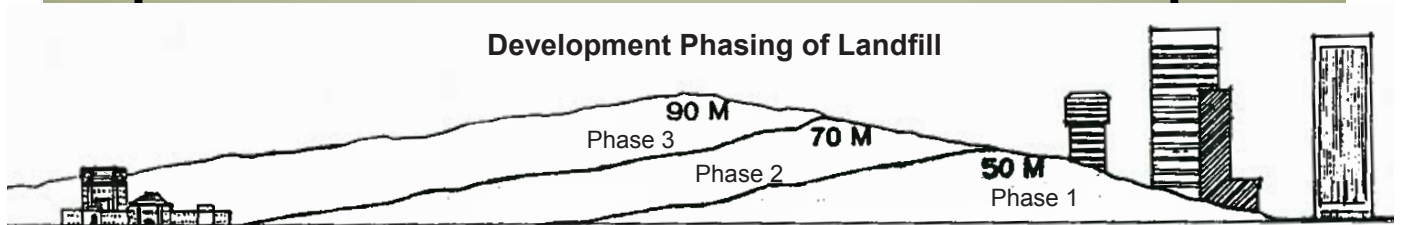
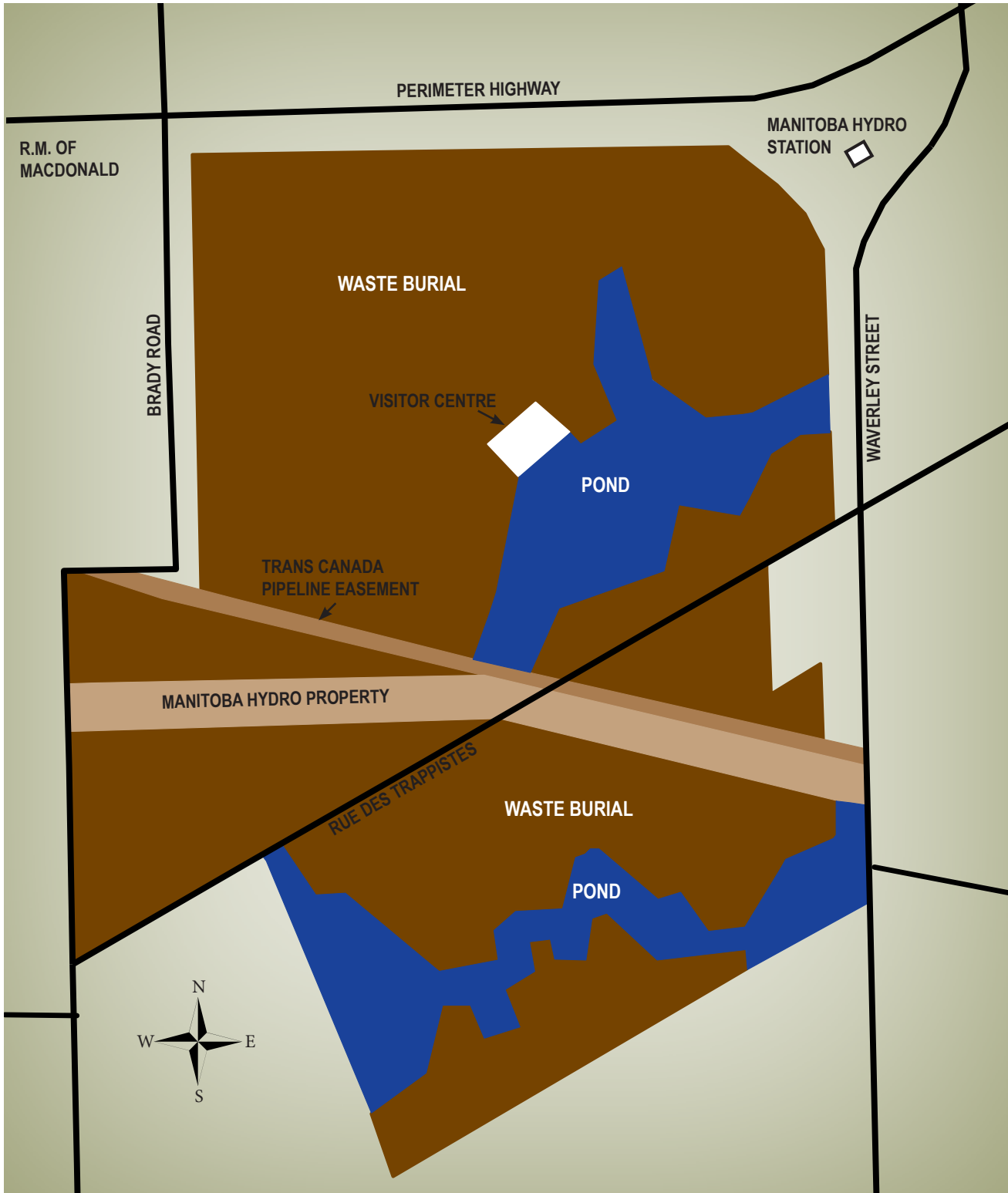


Figure 2
Original Site Development Concept in 1987

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2.3.2.1 Recycling Facilities

On-site recycling of materials is currently limited to metal goods, appliances (Photos 4a, 4b) and used tires (Photo 5). There is also an operation to recover usable wood from diseased elm for use as flooring (with the residue being chipped; Photo 6). Future development of the site to increase the frequency and extent of materials diverted includes the allocation of space for a comprehensive Community Resource Recovery Centre (CRRC; e.g., Photo 7; Figure 2). The CRRC will accommodate mechanisms for recycling a much broader range of materials than are stored and recycled now, likely including household hazardous wastes and electronic wastes (“e-waste”).

As well, the construction of a Materials Recycling Facility (MRF) is being contemplated to add recyclables processing capacity. Another opportunity being considered is the diversion of materials from the Industrial, Commercial, Institutional and the Construction and Demolition waste streams for materials such as cardboard, drywall, wood waste and shingles.

2.3.2.2 Composting Facility

Currently there is a windrow-type composting operation on site that composts leaf and yard waste materials collected either at depots or curbside or delivered to the site (Photo 3). The composted product is used on-site for landscaping purposes. Under the CIWMP, this operation will be significantly expanded (Figure 2). Also under the CIWMP, a Source-Separated Organics (kitchen waste) program is to be implemented; however, the technology for composting this material has not yet been determined. Once determined, the SSO-management technology will be developed and housed on-site.

2.3.2.3 Sand-Wash Facility

The feasibility of recycling recovered sand from winter street sanding is currently being determined. With this concept, accumulated sand recovered from street-sanding operations after winter will be stockpiled on-site, and washed each summer using runoff stored in a new sand-wash pond facility. The washed sand would then be reused each winter on icy streets. The water accumulating in the sand-wash pond would be available for on-site firefighting.

2.3.2.4 Runoff Polishing

Whereas all surface runoff now flows naturally to the La Salle River without any on-site treatment, future alterations to the site will include provision of a new engineered wetland (e.g., Photo 8; Figure 2) for polishing of this runoff before it leaves the property.

2.3.2.5 Gas Recovery

The City is in the process of retaining professional services to design and develop a landfill gas-(LFG) recovery system (e.g., Photo 9; Figure 2). The LFG project, as noted in Section 1 above, has previously been reviewed and licensed by Manitoba Conservation. Initially, the recovered gas will be flared to reduce the greenhouse gas (GHG) content. As the evolution of deliveries to and burial at the facility occur during the implementation of the CIWMP, consideration will be

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given to alteration of the LFG facility. Depending on the proven amount and quality of the gas recovered, it may be possible that energy production can be achieved.

2.3.2.6 Site Renaming

The site will soon be formally renamed as the “Brady Road Resources Management Facility” to reflect the long-term vision of resource recovery and waste diversion. Signage at the site will soon acknowledge this new fundamental shift in and repurposing of the Brady Road Landfill. The “rebranding” of the site will emphasize the long-term materials-management and perpetual-care concepts that City Council adopted on October 19, 2011.

2.4 FUNDING

No grant or loan of capital funds has been requested by the City of either the provincial or federal government for this development.

2.5 APPROVAL STATUS

The site was developed after a comprehensive site-selection study conducted some 45 years ago (see Executive Summary of the “Site-Selection Report” attached as Appendix D). The site was permitted as a waste-disposal ground pursuant to Manitoba Regulation 150/91, on January 28, 1992, pursuant to *The Environment Act*.

The site does not currently possess an *Environment Act* license.

Because site attributes and operations do not impinge upon any known federal interest or fiduciary duty, there are no known requirements for federal permits, approvals or authorizations.

2.6 PUBLIC CONSULTATION

The City engaged in an extensive process of dialogue with the general public, and an interest-based Stakeholders Advisory Committee (SAC), throughout 2011. The SAC was chaired by an independent moderator. Documentation of this process has been consistent, using many media.

Public consultations were undertaken jointly by the City and Stantec in respect of the current and proposed future Brady Road Landfill. An Open House was convened in St. Norbert on October 27, 2011, for specific consultations on community views about the landfill. The attached report prepared by the City (Appendix E) details this consultation process. This process was also hosted by an independent moderator. (The Moderator’s Report is appended to the EIA.) Members of the public were pleased about the planned evolution of the Brady Road Landfill as a key expression of the consequences of Council adopting the CIWMP.

2.7 DESCRIPTION OF EXISTING ENVIRONMENT IN THE PROJECT AREA

The existing environment is described in the EIA attached hereto (Appendix F). No rare, threatened or endangered species are known to be present on-site. The site land uses include an easement for an underground gas pipeline (Figure 1). There is no aquatic environment on-

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site and no associated fish resources, fish habitat, benthic invertebrates, or aquatic macrophytes.

The terrestrial environment has been greatly modified for purposes of either agriculture, on parcels not yet used for cell development, or for waste burial, in those parcels where cells have been developed over the past four decades (Photo 1).

In terms of the socio-economic environment, there are no known existing public safety or health risks within the development area beyond those associated with typical daily landfill operations. These matters are the subject of a new draft Operating Plan for the site which has been developing over the past two years for the site (Appendix G). The Standard Operating Procedures (SOPs) contained within the draft Operating Plan include many intended to prevent or minimize human-health or environmental risks. The draft Operating Plan requires further refinement and will, in any case, evolve over the years as a “living document.”

There are no affected areas (e.g., provincial parks) on the site, or adjacent to it. There are no known, or suspected, heritage resources on the site because of the extensive land use for agriculture and/or waste disposal for close to four decades.

There are no First Nations communities in the vicinity of the proposed development.

3.0 DESCRIPTION OF ENVIRONMENTAL EFFECTS OF THE PROPOSED DEVELOPMENT

The EIA attached (Appendix F) represents a comprehensive consideration of the potential vectors for environmental impact in relationship to existing, and future, waste-management practices. The EIA has been prioritized to focus on the two vectors of greatest concern for landfills:

- The generation of leachate and its vertical migration through the protective clay liner systems and the underlying soils, with attendant implications on groundwater quality.
- Emissions (largely GHG and other gases) from the working face of the landfill and particulates from site roads and covered portions of inactive cells.

In addition to these two areas of interest, a variety of other potential vectors for impact have been considered in the EIA. These include surface runoff, transportation, visual intrusion, malodorous gas emissions, etc. As well, consideration was given to human-health effects from close to four decades of operation. This involved the retention of independent expertise (Manitoba CancerCare), and statistical analysis of health records, to explore the potential for longer-term impacts of past operations on health indices in census districts immediately adjacent to, and further away from, the landfill.

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On the basis of the EIA (Appendix F), it has been concluded that there are no significant adverse effects from almost four decades of landfill operations that can be discerned from analysis of publicly available data describing community health, air quality and groundwater quality.

The EIA has also considered the consequences of future landfill design and operations as affected by implementation of the CIWMP. The consequences of reduced waste volumes, increased upstream diversion of recoverable materials, on-site processing and management of organic and inorganic materials in lieu of burial, and increasing vigilance to enforce community bylaws and waste-management policies, will be that the current “envelope” of discernible impacts can only be **reduced**. The proposed improvements in landfill design and operations should be characterized by a net improvement relative to the current situation.

3.1 RESIDUAL EFFECTS

There are few residual effects associated with landfill operations as they now occur. The only long-term measurable effect of landfill operations is a very slight increase in chemicals associated with waste in the groundwater directly beneath the areas where waste has been buried. As indicated in the EIA, the concentrations of these chemicals do not approach action levels (i.e., applicable water-quality guidelines). They should decline in future years in consequence of CIWMP implementation. The small quantities of these chemicals in the groundwater do not represent a public-health impact because the groundwater in question is saline (i.e., salty), and is not known to be used for domestic (i.e., drinking water or purchase water) purposes by any parties downstream.

The other significant residual vector from the landfill is landfill gas and associated occasional odour nuisance. As noted in the EIA and above, a landfill gas-recovery project is being implemented by the City. It will significantly reduce the volumes of gases, some of which are malodorous, released to the receiving airshed. Further, the City is planning for Best Practices in on-site SSO management, and composting, which should also reduce odour generation. The long-term operation of the LFG project (and any future SSO process) will also be the subject of monitoring, by means of systems specifically designed and installed for this purpose.

Accordingly, these residual effects are judged to be infrequent, transient and mitigable, and therefore “not significant.” The consequence of CIWMP implementation is that these vectors will be reduced in the future, due to the effects of reduced waste deliveries and burial because of greater upstream diversion.

4.0 MONITORING AND ACCOUNTABILITY

Notwithstanding these findings, the longer-term monitoring of surface runoff, leachate, groundwater quality and (to a lesser extent) landfill gas emissions, will continue.

Monitoring networks for understanding leachate, runoff and groundwater chemistry have been assessed and found to be both substantial and appropriate. Parameters for surveillance have been improved, and the improved monitoring protocols and frequencies will continue to reflect all future monitoring efforts for decades to come. New groundwater-monitoring wells installed by the City have elaborated the architecture of the groundwater-monitoring system and this will further improve the long-term monitoring system effectiveness.

Monitoring of LFG and SSO management processes will be instituted as these projects are commissioned.

The City has committed that the annual results of monitoring will be documented and provided to Manitoba Conservation each year. The longer-term trend analyses of accumulated data will be specifically documented and shared with both Manitoba Conservation, and the public.

Lastly, the City has committed (Section 4.12 in the EIA) to some form of a periodic accounting to its various stakeholders by means of accounting instruments now widely used in the private sector (systems akin to the Global Reporting Initiative, or other forms of Corporate Sustainability Reporting).

4.1 CONCLUSION

On the basis of the above stated commitments to long-term monitoring, particularly those focused on residual vectors (e.g., leachate production, landfill gas generation), and in consideration of the very small “footprint” of the landfill operating effects after close to four decades, it is predicted that there will be no significant incremental environmental or human-health risk assessments from the evolution of the site, and from the associated operations, for the next decades to come.

5.0 SUPPORTING DOCUMENTS

Appendix H attached here lists a number of the key documents relied upon by the study team in developing the EIA attached hereto.



Photo 1: Aerial oblique view of landfill (facing east)

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Photo 2: Typical working face and compaction equipment



Photo 3: On-site composting of yard waste

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Photo 4a: "White Goods" and other appliance segregation for recycling



Photo 4b: "White Goods" and other appliance segregation for recycling

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Photo 5: Used tire segregation for recycling



Photo 6: Chipping of residue from wood wastes for recycling

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Photo 7: Typical Community Resources Recovery Centre



Photo 8: Typical wetland

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Photo 9: Typical Landfill-Gas Recovery System