



THE CITY OF WINNIPEG
WATERWORKS, WASTE, AND DISPOSAL DEPARTMENT

IN REPLY PLEASE REFER TO

1500 PLESSIS ROAD • BOX 178 TRANSCONA P.O. • WINNIPEG • MANITOBA • R2C 2Z9

1990 02 26

Manitoba Environment
Building 2
139 Tuxedo Avenue
Winnipeg, Manitoba
R3N 0H6

ATTENTION: Mr. N.B. Brandson, P.Eng., DIRECTOR OF ENVIRONMENTAL MANAGEMENT SERVICES

Dear Sir:

RE: ENVIRONMENT ACT PROPOSAL FOR THE WEST END WATER POLLUTION CONTROL CENTRE - Our Files ST-3.3 and WE 2-9(c)

In accordance with the request of November 14, 1989 from the Honourable J. Glen Cummings, Minister of Environment to His Worship, Mayor William Norrie, please find enclosed 20 copies of an Environment Act proposal for the West End Water Pollution Control Centre (WEWPCC). This proposal is submitted pursuant to Section 11(6) of the Act for the existing development as well as the planned expansion.

Engineering services for the design of the WEWPCC expansion are currently in progress. It is anticipated that tendering will commence prior to the end of 1990 and that the new facility will be placed into operation in 1993.

The functional design for the expansion is currently being completed, with the final report expected by April 1, 1990. Copies of the report will be forwarded at that time. As noted herein several aspects of the facility are currently under review. The status of these unresolved issues will be identified with the functional design report submission.

It is our understanding that the public hearings which will establish water quality objectives to be used for setting sewage treatment plant discharge requirements will take place in the fall of 1990. Since it is anticipated that the issuance of licences for the existing sewage treatment plants will occur after establishment of the discharge requirements, and since it is proposed that the expanded facilities be included under this proposal it is respectfully requested that to avoid a delay in the commencement of construction that the proposed expansion be approved pursuant to Section 14 prior to October 1, 1990.



WINNIPEG
..where the New West begins.

Please contact Mr. B.D. MacBride at 986-4434 if you have any further requests regarding this application.

Yours truly,



W.J. Borlase, P.Eng.
Acting Director

EJS/lw
attach.

cc: L. Strachan, P.Eng.
R.J. McRae, P.Eng. Commissioner of Works and Operations
B.D. MacBride, P.Eng.
G. Rempel, P.Eng., Wardrop/MacLaren
J.C. Herbert, P.Eng., Reid Crowther



Environment Act Proposal Form

This form prescribes the nature and sequence of the information required to file a proposal for a development pursuant to subsections 10(3), 11(7), and 12(3) of the Manitoba Environment Act.

Name of development West End Water Pollution Control Centre	
Name of the proponent of the development City of Winnipeg; Waterworks, Waste & Disposal Department	
Location (city, town, legal description) SW Corner of Wilkes Avenue and the Perimeter Highway	
Name of principal contact person for purposes of the environmental assessment Mr. B.D. MacBride, P.Eng.	
Mailing address 1500 Plessis Road, Box 178 Transcona P.O.	Postal code R2C 2Z9
Winnipeg, Manitoba	Telephone 986-4434
Date February 25, 1990	Signature of Contact Person <i>B MacBride</i>

OFFICE USE ONLY	
Date Received	<i>March 2/90</i>
Client File Number	<i>53.00</i>
Development Review Class	<i>2</i>
Region	<i>City of Wpg</i>
Department Contact Person	<i>LARRY STRACHAN</i>
Phone Number	<i>945-7071</i>

(The proponent should reproduce the underlined portions of each section as noted below adding the required information following each section).

DESCRIPTION OF THE DEVELOPMENT:

- i) Certificate of Title showing the legal description of the development; or in the case of highways, rail lines, electrical transmission lines, or pipelines a map or maps at a scale no less than 1:50,000 showing the location of the proposed development:
- ii) Name of the owner(s) of the land upon which the development will be constructed:
- iii) Name of the owner of Mineral Rights beneath the Land if this is not the same as the surface owner:
- iv) Description of the existing land use on the site and adjoining it as well as changes that will be made thereto for the purposes of the development:
- v) Land use designation for the site and adjoining land as identified in a development plan adopted pursuant to the Planning Act or the City of Winnipeg Act and the zoning designation as identified in a Zoning By-Law, if applicable:
- vi) Description of the previous studies and activities relating to feasibility, exploration, or project siting and prior authorization received from other government agencies:
- vii) A description of the proposed development and the method of operation including hours of operation:
- viii) A description of the potential impacts of the development on the environment, including, but not necessarily limited to:
 - type, quantity and concentration of pollutants to be released into the air, water or land
 - impact on wildlife
 - impact on fisheries
 - impact on surface water, and groundwater
 - forestry related impacts
 - impact on heritage resources
 - socio-economic implications resulting from the environmental impacts

- ix) A description of the proposed environmental management practices to be employed to prevent or mitigate adverse implications from the impacts identified in (viii) which will have regard to, where applicable: containment, handling, monitoring, storage, treatment and final disposal of pollutants; conservation and protection of natural or heritage resources; environmental restoration and rehabilitation of the site upon decommissioning; and protection of environmental health.

SCHEDULE:

- i) The date of commencement of construction, commencement of operation including staging of the development and termination of operation, if known:
- ii) Latest date by which the proponent would like to complete the requirements of the Environment Act and seek approval for the development. Briefly state the reasons for the selection of this date.

FUNDING:

Name and address of the the Government Agency (Federal, Provincial or otherwise) from which a grant or loan of capital funds have been requested, where applicable.

NOTE:

The Environment Act requires that subject to the Confidential Information clause, Section 47, a proposal shall be filed in the public registry.

Proprietary information provided in this form should be clearly noted. A separate summary of the proposal excluding the proprietary information should accompany the proposal for the public registry file.

The completed Proposal Form should be sent together with a covering letter to:

Environmental Management Division
Department of Environment and Workplace
and Safety and Health
Box 7, Building 2
139 Tuxedo Avenue
Winnipeg, Manitoba
R3N 0H6

ENVIRONMENTAL ACT PROPOSAL FORM

CITY OF WINNIPEG
WEST END WATER POLLUTION CONTROL CENTRE

DESCRIPTION OF THE DEVELOPMENT

i) Certificate of Title

A copy of the Certificate of Title showing the legal description of the land is appended to this proposal as Appendix 1.

ii) Owner of the Land

The owner of the land is the City of Winnipeg.

iii) Owner of Mineral Rights

The owner of the Mineral Rights beneath parcels one, two and three is the Province of Manitoba, the owner of the Mineral Rights beneath parcel four is the City of Winnipeg, as stipulated on the Certificate of Title.

iv) Existing Land Use

The existing land use on the site is a wastewater treatment plant, the West End Water Pollution Control Centre. No changes to this land use will be made for purposes of the development. The subject site consists of approximately 470 hectares. Adjoining land uses are agricultural.

v) Land Use Designation

The land use designations for the site and the adjoining lands are established by City of Winnipeg By-law No. 2960/81- "Plan Winnipeg" as shown by the drawing enclosed as Appendix 2. The land use designation for the subject site and adjoining lands as established by "Plan Winnipeg" is "Rural Area (within the City of Winnipeg)" with the exception of the lands to the northeast of the intersection of the Perimeter Highway and Wilkes Avenue which are designated as "Suburban Residential".

Additionally, under "Plan Winnipeg", development within one kilometre of Water Pollution Control Centres is subject to the following policy which is quoted verbatim from By-Law 2960/81:

"CHAPTER: WATER, WASTE AND DISPOSAL

SECTION: SEWERAGE AND POLLUTION CONTROL SYSTEM

SUBJECT: ODOUR CONTROL

61(1) POLICY

- (a) *The City shall, through the development approval process and land use controls, regulate all development within the development control lines around wastewater treatment plants and facilities, as defined on the Map attached to this By-law and marked "Plan Winnipeg Policy Areas," in order to minimize the impact of odour emissions on adjoining land uses; and*
- (b) *The City shall ensure that whenever a major wastewater treatment plant or facility requires expansion or modification, an analysis of odour control methods is included in the expansion design including a review of the separation areas defined by the development control lines on the Map attached to this By-law and marked "Plan Winnipeg Policy Areas."*

61(2) OBJECTIVE

To minimize the impacts of odour emissions from wastewater treatment facilities upon living and working areas."

Zoning By-law No. 1800 specifies zoning districts for the subject site and adjacent lands as shown in Appendix 3. The site as well as adjoining lands are designated "A" General Agricultural.

vi) Previous Studies and Activities

In 1964 the Charleswood Sewage Lagoons were constructed with the objective of removing all raw sewage flows from the Assiniboine River. An expansion in 1976 constructed an extended aeration plant to work in conjunction with the lagoons.

The total number of reports written on the West End facility held in this department's library is 42. The listing provided herewith indicates several main reports related to the planning, design and operation for the major works and expansions of the West End Plant. Copies of the reports listed below and a copy of the listing of all reports are available upon request. A separate listing of reports written on the Red and Assiniboine Rivers is also available upon request.

Conceptual Design Study: Expansion Requirements of South and West End Water Pollution Control Centres, 1986.

Author: MacLaren Engineers Inc.

Subjects:

1. Wastewater Flows & Characteristics
2. Existing Facility Descriptions
3. Expansion Requirements

Functional Design Report: Perimeter Road Pumping Station/West End Water Pollution Control Centre, 1987.

Author: Reid, Crowther & Partners Ltd.

Subjects:

1. Existing Conditions
2. Design Criteria
3. Upgrading Alternatives & Recommendations

Preliminary Design Report: West End Water Pollution Control Centre, 1988.

Author: Reid Crowther & Partners Limited

Subjects:

1. Existing Conditions
2. Design Criteria

Draft Functional Design Report: West End Water Pollution Control Expansion, 1989.

Authors: Reid Crowther & Partners Limited

Subjects:

1. Design Criteria
2. Process Description

vii) Description of the Proposed Development and the Method of Operation

The WEWPCC consists of a series of facultative lagoons constructed in 1964 and an extended aeration mechanical treatment plant constructed in 1975. The lagoons consist of 3 primary cells and 2 secondary cells. The mechanical treatment plant includes:

- Fine screening
- Extended Aeration Secondary Treatment
- Secondary Clarifiers
- Sludge Wasting to Primary Lagoons

A plan of the facility is included on the zoning plan in Appendix 3. A fact sheet on the WEWPCC giving capacities for these processes is attached as Appendix 4. Appendix 5 includes planning data on population served and the trend in flows. Detailed descriptions of the facility and drawings are available as outlined in vi) above, previous studies and activities.

The facility is operated continuously, 24 hours a day, 365 days a year. Operating and maintenance staff visit the plant daily from the SEWPCC. The facility is unmanned at nights and on weekends.

The lagoons are operated in series. The lagoons are operated at full elevation during the summer. During the fall the lagoons are drawn down to minimum elevation to provide maximum winter storage.

The extended aeration plant has a peak capacity of 27 ML/d. Flows above this capacity are diverted to the lagoons. The effluent from the mechanical plant is discharged to one of the secondary lagoon cells in the winter to cool the effluent in order to reduce open water on the Assiniboine River.

Proposed Development

The proposed expansion project involves the abandonment of the existing facultative lagoons as well as the existing extended aeration mechanical treatment plant. A new activated sludge treatment facility will be constructed to replace the abandoned facilities.

The new facility will include:

- bar screens and grit removal
- two circular 30m diameter primary clarifiers
- two aeration tanks
- two circular 30m diameter secondary clarifiers
- sludge storage facilities with haul to the NEWPCC for treatment/disposal
- pre-chlorination (under review)
- administration and service buildings
- liquid waste haulers' disposal facilities (under review)
- an effluent heat sink to be implemented on a trial basis
- odour control stack (under review)
- distributed digital control system.

A detailed description of the proposed development is included in the draft functional design report listed in vi) above. A plan of the proposed facility is included as Appendix 6.

The treatment process sizing is based on providing the best practicable secondary treatment. Peak 30 day averages of 25 mg/L BOD5 and 30 mg/L SS were selected as the process design basis.

viii) Description of the Potential Impacts of the Development on the Environment

The purpose of the WEWPCC is to protect the aquatic environment of the Assiniboine River. This is done by treating raw sewage to produce an effluent amenable to discharge into the river. In this sense the WEWPCC has an important positive impact on the environment.

Residual pollutants from the treatment of raw sewage are released into the environment from the WEWPCC. These include the liquid effluent released into the Assiniboine River, and odorous air streams released to the atmosphere, and noise.

The process control parameters within the West End Water Pollution Control Centre and effluent quality are monitored daily from Sunday to Thursday using 24 hour composite samples. Appendix 7 attached details the monitoring that is done and includes a summary of plant operation and quality of discharges for 1989. Detailed daily data is available upon request.

The impacts of the discharge of treated sewage effluent are considered to be most significant on surface water quality and on aquatic life in the Red River. Impacts on wildlife, groundwater, forestry, heritage resources, and socio-economic impacts from sewage treatment are, to our knowledge, not significant.

The City and other agencies have carried out numerous studies of the impact of liquid discharges on the rivers. In general, typical of all wastewater treatment facilities, the impact of the effluent are as follows:

1. Sewage effluent has a biochemical oxygen demand (i.e. is biodegradable). This biodegradation uses oxygen in a stream and lowers the dissolved oxygen of the surface water. It is important that the dissolved oxygen levels remain above that required to support the most sensitive species of fish.
2. Sewage effluent from the WWPCC contains ammonia which is also toxic to fish above certain concentrations.
3. Sewage effluent contains nitrogen and phosphorus which may promote algae and weed growth in the surface water.
4. Sewage effluent contains microbiological discharges, bacteria and pathogens which raises the concentration of these in the river.
5. Sewage effluent contains low levels of other pollutants such as heavy metals, pesticides and other organics.

Assessment of the impact of these effluent on the river are done in two major ways:

- 1) Direct monitoring of the river (see section ix below); and
- 2) Use of calibrated computer models.

Recent receiving stream assessments by the City include:

1. "Report on Pollution Abatement and River Quality Study" - James F. MacLaren Limited, November 1979.
2. "Conceptual Design Study - Expansion Requirements of South and West End Water Pollution Control Centres" report to City of Winnipeg by MacLaren Engineers. November 1986.

Chapter 5.0 - Receiving Stream Assessment
Appendix D - Receiving Stream Assessment

3. Disinfection Evaluation: "City of Winnipeg Wastewater Treatment Plant Effluent". Report to City of Winnipeg, Province of Manitoba by MacLaren Engineers. October 1986.

These assessments carefully document the impacts of effluent on the river. The first two deal with dissolved oxygen and nutrients. The third deals with microbiological discharges.

The City has also retained a consultant to prepare a study and update the City's river quality model in preparation for the Clean Environment Commission hearings on establishing water quality for the Red and Assiniboine Rivers. This study will involve defining existing, and projecting future land uses, to establish point and non-point discharges to the rivers for input to the model. The model will be utilized to simulate existing and future river quality regimes in consideration of various pollution control options. Implications of enhanced river uses with associated pollution control strategies including infrastructure requirements, land use strategies, costs, and benefits will be assessed, and water quality objectives recommended.

ix) Proposed Environmental Management Practices

The function of the West End Water Pollution Control Centre is in itself an environmental management practice with respect to water emissions due to disposal of wastewater from the City of Winnipeg. Therefore, the sole environmental management practice proposed with respect to the West End Water Pollution Control Centre is the monitoring of process parameters as well as the receiving stream, namely the Assiniboine River.

Water quality in the Assiniboine River is monitored from Headingly to Main Street on a biweekly basis. A typical report is included as Appendix 8. No monitoring of the Assiniboine River is undertaken in late fall and early spring because safety considerations preclude monitoring.

Because there are no land impacts associated with the West End Water Pollution Control Centre, no environmental management practices relating to land are proposed.

Air emissions from the West End Water Pollution Control Centre consists of odour and noise. Measurements regarding noise taken at the City's other two water pollution control centres have shown that noise levels at the property line are not of concern. These issues were covered during the licensing process for the South End and North End Water Pollution Control Centres. The design of the West End Water Pollution Control Centre will be such that noise guidelines will be met.

Odour emissions from the West End Water Pollution Control Centre are currently not covered under an environmental license. The proposed facility is being designed such that odour levels at the property line will meet the Provincial criteria of two odour units.

The City is also considering future treatment and other improved environmental management practices to protect the rivers. These are highlighted in the attached brochure titled "Winnipeg's Wastewater Treatment Program, Past, Present & Future", included as Appendix 9.

SCHEDULE

i) Date of Commencement of Construction, Operation

The existing lagoons have been in operation since 1964 and the mechanical plant since 1976.

Design of the WEWPCC expansion project is currently in progress with construction expected to commence early in 1991. A schedule of the proposed activities is attached as Appendix 10.

ii) Latest Date to Complete the Requirements of the Environment Act

To avoid delays to the proposed tendering and construction schedule, it is requested that the expansion project be approved by October 1, 1990 pursuant to Section of the Environment Act, and that the proposed expansion be included in the proposal for licensing the existing facility.

It is suggested that the issuance of a licence for the WEWPCC be deferred until after the public hearings concerning water quality objectives, since the hearings will provide the basis for setting sewage treatment plant discharge requirements.

FUNDING

Grant or Loan of Capital Funds

All funding for this project is through the City of Winnipeg Sewer Utility. No grants or loans from a Federal or Provincial Agency have been requested.