Manitoba Conservation

DISRAELI BRIDGES PROJECT
Environmental Impact Statement

Submitted By: The City of Winnipeg
August, 2010

Winnipeg

Report to:

MANITOBA CONSERVATION

Disraeli Bridges Project
Environment Act License Proposal
and Environmental Impact Statement

Document No. 1000070301-REP-V0004-00

Winnipeg

PUBLIC WORKS DEPARTMENT • SERVICE DES TRAVAUX PUBLICS

Engineering Division • Division de l'ingénierie

August 13, 2010

COURIER

Manitoba Conservation
Environmental Assessment and Licensing Branch
123 Main Street, Suite 160
Winnipeg, MB R3C 1A5

Attention: Mr. Bruce Webb, P. Eng.
Water Development & Control Assessment Officer

Dear Mr. Webb:

RE: DISRAELI BRIDGES PROJECT – ENVIRONMENTAL IMPACT STATEMENT

Please find enclosed 10 electronic copies (CD) and 23 hardcopies (paper) of the Environment Act License Proposal/Environmental Impact Statement for the City of Winnipeg's Disraeli Bridges Project.

Yours truly,

Bill Ebenspanger, P. Eng.
Bridge Design & Project Engineer

BE/kar

Attach.

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Public engagement summary reports compiled for this document were prepared for the City of Winnipeg by Susan Freig and Associates and Marr Consulting. Other reports prepared for the City have been cited throughout the document.

EXECUTIVE SUMMARY

BACKGROUND

The Disraeli Freeway was completed in 1960 to connect downtown Winnipeg and the northeast area of the city. The freeway is a vital transportation corridor that consists of level roads, an overpass, and a bridge over the Red River. After 50 years, the bridge and overpass have reached the end of their service life and will require replacement. The City conducted an extensive consultation process to solicit public input on concepts to reconstruct the existing river bridge. During consultation, the City worked closely with a key Stakeholder Advisory Committee (SAC), which included representation from area residents, businesses, and city-wide organizations to review design concepts.

City Council approved the procurement process for the Disraeli Bridges Project (the Project) to be a public-private partnership/design-build-finance-maintain (P3/DBFM) model for a refurbishment of the existing structures or new construction. Following a competitive process, the City selected Plenary Roads Winnipeg (PRW) as the preferred proponent. The PRW team includes Plenary Group, PCL Constructors Canada Ltd. (PCL), Wardrop Engineering Inc. (Wardrop), and Stantec Engineering (Stantec).

PROJECT COMPONENTS

The Disraeli Bridges Project is comprised of on-land and in-water works to construct a new river bridge over the Red River. A primary design consideration for the Project is to ensure that traffic is maintained during construction and avoid the 18 month crossing closure that would be required for the reconstruction of the existing bridge for vehicle traffic. The Project work plan is to construct the new river bridge immediately adjacent to the existing crossing and to route traffic to the new structure prior to the reconstruction of the existing Disraeli Bridge.

The Project design took into consideration the historic soil and sediment contamination at the project site on the west bank of the Red River. Preventative measures were designed into the Project to contain and remove any contaminate soil and sediment disturbed as a result of the Project works. Mitigation measures were also designed into the Project to ensure the Project will have no residual effects on the historic contamination.

SCOPE AND APPROACH

The Canada-Manitoba Agreement on Environmental Assessment Coordination provides for a harmonized environmental assessment (EA) process therefore an environmental assessment scoping document (EASD) was submitted to Manitoba Conservation on

2 March, 2010 for review by provincial and federal working groups. The Project scope outlined in the EASD focused on the proposed new river bridge, as the permitting triggers for the provincial and federal EA processes involve only the new river bridge. The scope presented in the EASD was found to be sufficient to proceed with the provincial EA process however due recent changes in federal project scoping all works associated with a project, regardless of whether permits are required, are required to be included in the scope of the federal EA. The intent of this environmental impact statement (EIS) is to fulfill the EA requirements for a review under the Manitoba *Environment Act.* A separate EIS as scoped in the EASD was submitted to the Canadian Environmental Assessment Agency for the federal EA process.

The EIS examines the effects of the Project on the physical, terrestrial, aquatic, and human environments within the project site, the local study area, and the region.

Document Contents

This EIS has been organized under the following main headings:

Section 1: Introduction - Provides a general overview of the Project, information about the City of Winnipeg, background, the need for the Project, the regulatory setting and the proposed Project schedule.

Section 2: Scope of Assessment - Describes the spatial boundaries and temporal boundaries considered in the EIA as well as the impact assessment approach.

Section 3: Public Engagement - Provides an overview of the public involvement activities undertaken by the City of Winnipeg for the Disraeli Bridges Project and ongoing community relations.

Section 4: Assessment of Alternatives - Provides a description of the various alternative concepts considered during the development of the proposed Project.

Section 5: Project Description - Provides a detailed overview the Project including the Project components, construction procedures, schedule, maintenance, and integrated mitigation measures.

Section 6: Existing Environment - Provides an overview of existing environmental characteristics of the Project site and surrounding area.

Section 7: Effects Assessment, Mitigation and Monitoring - Describes potential Project-related effects on the physical, terrestrial, aquatic, and human environments, the significance of those effects. Also describes proposed mitigation measures and monitoring procedures during construction and performance monitoring procedures following construction.

Effects Assessment, Mitigation, and Monitoring

A detailed list of the potential environmental effects of the Project during construction is presented in Table E.1. Potential effects are listed by type and source and include the mitigation measures. A detailed list of the potential environmental effects of the Project during operation is presented in Table E.2.

Significance of Effects

All potential effects are mitigated through preventative measures designed into the Project or have minor residual effects.

Table E.1 Summary of the Environmental Impact Assessment for the Disraeli Bridges Project during Construction

Adverse Effect	Source	Mitigation	Monitoring/Follow up	Adverse Residual Effects/ Cumulative Effects
Removal of riparian vegetation	Clearing right-of-way for new bridge construction; river access for pier construction	Minimize area of access locations, install and maintain sediment control measures, re-establish vegetation cover; adhere to Health, Safety and Environment Plan (HSEP)	On-site monitoring; sediment control measures and re-vegetation works will be regularly monitored until vegetation re-established	None
Soil and riverbank erosion; riverbank stability	Equipment operation on riverbanks, river access for pier construction;	Minimize work area footprint; install and maintain sediment control measures, re-establish vegetation cover; adhere to HSEP; review and Waterway Permit by Planning, Property and Development	On-site monitoring; sediment control measures and re-vegetation works will be regularly monitored until vegetation re-established; HSEP guidelines; Waterway Permit conditions	None
Loss of fish habitat	Substructure footprint of river piers SU5, SU6, SU7	Pier armouring for SU6 and SU7 exceeds the combined habitat loss of the substructure footprints of SU5, SU6, and SU7; pier armour provides structure and enhances habitat diversity	Non	None
Disruption of fish habitat	Temporary work bridges will cover benthic invertebrates	Works limited to late fall/winter only and work bridges removed before spring freshet	On-site monitoring; HSEP guidelines; MB Hydro Comprehensive Environmental Management Plan (CEMP)	None
Alteration of fish habitat	Permanent rock placement at piers SU5, SU6, SU7 will alter substrate for benthic invertebrates	Works limited to late fall/winter only and work bridges removed before spring freshet	On-site monitoring; HSEP guidelines; MB Hydro CEMP	None
Disruption of fish passage	Temporary work bridges confine river flow to a narrow channel with increased velocities	Works limited to late fall/winter only and work bridges removed before spring freshet	River flow monitored daily while work bridges in river channel	None
Reduction in habitat quality	Temporary work bridges confine river flow to a narrow channel with increased velocities and may cause scouring and transport of sediment	Place 30 mm gravel layer in channel if flow exceeds 154 m^3/s	River flow monitored daily while work bridges in river channel	None
Reduction in habitat quality	Construction and removal of temporary work bridges will disturb riverbed and re-suspend sediment, construction of river pier SU5	Temporary work bridges works limited to late fall/winter only and removed before spring freshet; armour SU5 work area with clean rock start works 15 June	On-site monitoring; HSEP guidelines	None
Reduction in habitat quality	Construction of pier SU5; installation and removal of west temporary work bridge	Place rock pad over work areas on bank and around pier SU5 to prevent disturbance of soil/sediment; place filter fabric on riverbed prior to rock placement; leave rock layer on riverbed; Remedial Action Plan; HSEP	On-site monitoring; HSEP guidelines	None
Risk of water quality degradation	River pier substructure construction through historic contaminants in riverbed; contaminated porewater displacement by west temporary work bridge; potential spills from equipment and construction material	In-stream works limited to winter months; primary and secondary containment for caisson installation; containment and removal of water and sediment to shore for assessment and treatment; caisson remedial action plan (RAP); HSEP	On-site monitoring; caisson RAP; HSEP guidelines	None

Table E.1 (cont'd) **Summary of the Environmental Impact Assessment for the Disraeli Bridges Project during Construction**

Adverse Effect	Source	Mitigation	Monitoring/Follow up	Adverse Residual Effects/ Cumulative Effects
Soil and groundwater contamination due to spills and historic contamination	Equipment operation in project area, particularly on riverbanks and in channel; excavations and construction through historic contamination	Mitigation measures outlined in upland RAP and HSEP	On-site monitoring; notify Manitoba Conservation; MB Hydro CEMP groundwater monitoring	None
Groundwater/aquifer contamination due to historic contamination	Construction excavations; pier caissons installed through zone of historic contamination in soil and sediment	Primary containment prevents groundwater migration along outside of caissons; caissons filled with concrete to prevent groundwater movement inside caissons; mitigation measures as outlined in upland RAP and caisson RAP	On-site monitoring; upland RAP; caisson RAP; HSEP guidelines; MB Hydro CEMP groundwater monitoring	None
Temporary disturbance of wildlife	Construction activities including equipment operation and vegetation removal in work areas	Minimize area of vegetation removal; re-establish vegetation as soon as possible following construction	On-site monitoring during construction and until vegetation re-established	None
Loss of vegetation and wildlife habitat	Clearing right-of-way for new bridge construction; river access for pier construction	Re-establish similar plant species as soon as possible following construction	On-site monitoring during construction and until vegetation re-established	Permanent loss vegetation; some will be replaced with similar vegetation
Disturbance of wildlife in the project area	Clearing right of way for new bridge construction; river access for pier construction	Clearing to be conducted in fall and winter to avoid disturbance of nesting birds. Disturbed areas will be re-planted following construction	On-site monitoring during construction and until vegetation re-established	None
Removal of bird habitat	Existing bridge and overpass provide nesting and roosting habitat for Rock Doves and other birds	New bridge, overpass, and AT bridge will increase available habitat	None	None
Public safety concerns	Construction staging and site activities	Fence work areas to prevent public access; ensure public awareness through communications	On-site monitoring; HSEP guidelines	None
Pedestrian/vehicle traffic affected by dust due to construction	Construction activities generating dust	Dampening work areas and cleaning streets of mud	On-site monitoring and responding to public concerns	None
Risk to construction worker safety at site	General construction activities	Adherence to Manitoba Workplace Safety and Health guidelines	On-site monitoring; inspection by Workplace Safety and Health	None
Residents/office workers/pedestrians affected by construction noise	General construction activities; driving piles and sheet piling; excavation activities	Schedule construction activities to minimize disruption to public; ensure public awareness through communications	On-site monitoring and responding to public concerns	None
Pedestrian access to the river and recreation	Work areas at project site will prevent access to the to the riverbanks for recreational users	Minimize disruption of pedestrian access over the Red River; HSEP controls types and timing of construction activities to minimize disruptions	On-site monitoring during construction phase	None
River use and navigability	Construction activities, pier and superstructure construction	Pier construction to occur in winter and after fall draw down; navigation channel to be maintained and marked	On-site monitoring; HSEP guidelines; River Patrol	None
Risk to pedestrian/vehicular safety	Construction activities and construction traffic	Traffic controls, workforce parking controls, signage, ensure public awareness through communications, HSEP	On-site monitoring; HSEP guidelines	None
Pedestrian /vehicular access	Bridge construction activities	Commission new bridge before decommissioning existing bridge, schedule lane closures during off-peak hours	On-site monitoring; HSEP guidelines	None
Service access, e.g. Winnipeg Transit	Construction activities restricting traffic flow	Communication, alternate routing, schedule lane closures for off-peak hours	Monitoring by respective services	None
Impact on local businesses and residences	Vibration from construction activities such as pile driving and heavy equipment operation	Minimize the use potentially damaging construction techniques; HSEP	Conduct photographic condition survey of area buildings prior to construction	None

Table E.2 Summary of the Environmental Impact Assessment for the Disraeli Bridges Project during Operation

Adverse Effect	Source	Mitigation	Monitoring/Follow up	Adverse Residual Effects/ Cumulative Effects
Alteration of fish habitat	Pier alignment could change river flow, riverbank armour, pier armour, and west temporary work bridge pad will change substrate texture	Piers aligned with river flow, current shadows enhance habitat diversity, rock enhances substrate diversity	None	None
Reduction in habitat quality	Rock placed on riverbed and banks could change river flow causing scouring and re-suspension of finer sediments and contaminants.	East bank armouring above winter ice level notched into bank; rock placed on below winter ice level, on west bank, at west temporary work bridge pad, and around SU5 will be tapered into existing bank/bed profile to minimize flow turbulence.	On-site monitoring; HSEP guidelines; MB Hydro CEMP	None
Reduction in water and habitat quality	Bridge maintenance works	Conduct works from superstructure and install containment structures/decks to contain all materials generated by works; follow DFO Bridge Maintenance operational statement; adhere to HSEP	On-site monitoring; HSEP guidelines	None
Risk of soil/water contamination from spills of fuels and other materials	Accidental release of materials	Adhere to HSEP	Adhere to guidelines in HSEP	None
Human safety	Pedestrian and vehicle bridges and overpass	Crime Prevention Through Environmental Design; lighting; continued use of vehicle bridge by pedestrians; removable bollards for emergency access	Monitor incidents, traffic volume and composition	None

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