

Madison 115 - 24 kV Station Project
ENVIRONMENTAL ASSESSMENT REPORT



February 2013

EXECUTIVE SUMMARY

Manitoba Hydro is proposing to construct a new 115 – 24 kilovolt (kV) station (Madison Station) at 555 Madison Street, south of Ellice Avenue, near Century Street, in the City of Winnipeg. The purpose of the new Madison 115 – 24 kV Station is to ensure reliable electrical supply to customers, address load growth, as well as safety and reliability issues associated with the aging St. James Station (located south of the proposed station site on St. James Street at Portage Avenue). The anticipated in-service date for the project is 2015 with construction activities planned to commence in 2013.

The proposed site for the new station is owned by Manitoba Hydro and is located adjacent to an existing Manitoba Hydro right-of-way. There is an existing building and parking lot at 555 Madison Street which will be decommissioned and demolished as part of the project. The concept for Madison Station is for the 115 and 24 kV station components to be air insulated. There is a potential that the footprint for the actual station site could be smaller if either or both of the 115 and 24 kV components are gas insulated. In either case, the new station will be contained within the property at 555 Madison Street. The decision regarding gas versus air insulated switchgear will be made at the detailed design stage for the project.

In order to provide power to the station, the project includes termination of three existing 115 kV transmission line circuits — St James to Sherbrook Station (SB14), Rosser to St. James Station (RS51) and LaVerendrye to Mohawk Station (YX48) at the proposed station. The existing SB14, which is an underground line, will be spliced south of St. James Station, and will be extended to the new station in an existing Manitoba Hydro owned right-of-way with approximately 1.5 km of new 115 kV underground transmission cabling.

The existing RS 51 transmission line, which runs overhead to the east of the new station site and dips underground at St. Matthew's Avenue to terminate at St. James Station, will be sectionalized at the new station. This will create two transmission lines — one running from the north and one running from the south. The line running from the south will be re-used to extend the existing YX48 underground line from St. James Station to the new station via an underground splice south of St. James Station. To terminate the transmission line running from the north into the new station, RS51 will be swung over to the other side of an existing deadend structure and then terminated underground to the new station.

The project will also require connecting the existing 24 kV distribution feeders currently fed from St. James Station to the new station. These existing feeders provide electrical supply to local residences and businesses. Eighteen 24 kV feeder lines will egress underground from the new station. Once the feeders leave the station, most will be routed towards St. James Station to tie into the existing feeders in proximity to the station, while others will likely tie into existing feeders around the new station. In order to interconnect the new station feeders to the existing feeders, a new 24 kV duct line will need to be constructed along Madison Street to Ness Avenue. The duct line will be located under sidewalk or on non finished surfaces. Following construction, the sidewalks will be replaced and new sidewalks built to current City of Winnipeg standards.

Development of the proposed Madison 115 – 24 kV Station Project will require a Class 2 Licence under *The Environment Act* (Manitoba). The Madison 115 – 24 kV Station Project environmental assessment report describes the Project's environmental impact assessment and provides information required by government agencies pursuant to *The Environment Act* (Manitoba). The environmental assessment report and the Environment Act Proposal Form (EAPF) are being submitted to Manitoba Conservation as application for the Environment Act Licence. The intent and scope of the environmental assessment is to describe the expected construction and operational effects of the project and other matters as set out in the EAPF.

As outlined in Section 12, Manitoba Hydro conducted public consultation regarding the proposed project. Meetings were held with Manitoba Conservation and Water Stewardship Department, and the City of Winnipeg Public Works Department, Transportation Division. In November 2012, a public notification describing the proposed project was sent to occupants of businesses and residents adjacent to the proposed project. The notices outlined project parameters, provided an invitation to the Public Open House and invited feedback on the proposed project. On December 5, 2012, a Public Open House was held at the Canad Inns Polo Park from 3:00 to 8:00 p.m. The Open House was also advertised in the local newspaper. Fifteen individuals signed the open house guest book. Five questionnaires were returned at the open house and none were subsequently received by mail. Most respondents indicated that they were satisfied with the information being conveyed at the open house.

Manitoba Hydro's practice is to undertake project development in an environmentally responsible manner. Manitoba Hydro's general practices for the design and construction of stations will be adhered to for the proposed project. Given the conventional nature of the proposed development, Manitoba Hydro's standard protocols and generic environmental protection plan for stations, measures should adequately address any related concerns. Through the environmental assessment process, Manitoba Hydro has sought to avoid adverse effects and enhance positive benefits, wherever possible or practical. The project is not expected to cause significant adverse effects. Most potential impacts are considered to be minor and will be mitigated through established design, construction and operating practices, environmental protection practices and maintenance procedures.

As outlined in the environmental assessment report, the project will have an effect on area infrastructure and, in particular, traffic and parking. In order to minimize impacts, Manitoba Hydro has identified several mitigative measures. It is anticipated that some traffic impacts will result from the movement of equipment and people during construction of the project. Any construction activity and vehicle movement will be small in magnitude and short-term in duration, and will be subject to standard environmental protection practices for construction. Regulations pertaining to land use such as load and bridge height restrictions will be observed. Equipment and materials for the project will be delivered on existing municipal roads. During construction, the workforce is estimated to average about 40 workers with a peak of 75. Effects are anticipated to be negative, but are small in magnitude, short-term in duration, and therefore not significant.

Several companies have lease agreements with Manitoba Hydro to use parts of Hydro's existing right-of-way between Portage Avenue and the new station site for parking. Construction of the

approximately 1.5 km of underground line is anticipated to temporarily affect parking along the west side of the right-of-way. During construction, parking on the right-of-way will likely not be permitted because of safety concerns. The construction period that could affect various parking areas could be as long as one month. During construction, effects are anticipated to be negative, but are small in magnitude, short-term in duration, and therefore not significant.

Between St. Matthews and Ness Avenues, a back lane will be used to access the existing right-of-way to construct the new 115 kV underground line. Access along the back lane will not be impeded but some minor disturbances to traffic will occur. Construction activities will be short-term in duration (approximately two to three weeks). Temporary interruption of traffic along Madison Street will also be required in order to construct the 24 kV underground duct line. Closures will be staged along Madison Street. Construction of the duct line will be short-term in duration (approximately three to five weeks) and will likely extend one week per section. In order to minimize effects, area residents and businesses will be advised regarding construction schedules. Effects are anticipated to be negative, but are short-term in duration, small in magnitude, study area in geographic extent, and therefore not significant.

After the 24 kV duct line is in place and cabling has been installed, splicing will be required at Ness Avenue to connect existing feeders to the new station. Traffic disruptions at Ness Avenue will occur and will be approximately one week in duration. In addition, splicing may also be required south of St. James Station along the sidewalk on Portage Avenue to connect the new underground line to the existing YX48 underground line. If splicing is required outside of St. James Station, there may be some minor traffic disruptions at Portage Avenue because one lane immediately south of the station may need to be closed for approximately one week. In addition, the sidewalk directly south of St. James Station may need to be closed for approximately two to three weeks. If the sidewalk needs to be closed, signage will be placed to alert pedestrians that the sidewalk is closed. Effects are anticipated to be negative, but are short-term in duration, small in magnitude and regional in area, and hence not significant.

In addition to the above mitigative measures, Manitoba Hydro will continue to liaise with the City of Winnipeg Public Works Department with respect to traffic issues.

The environmental assessment process identified five residual environmental impacts associated with the proposed project. As outlined below, all are expected to be minor or negligible.

Risk of Contingency Events due to Accidents and Malfunctions: Although unlikely, there will be a residual increase in the potential risk of contingency events relating to the construction, and operation and maintenance of Madison Station. The risk of related effects (i.e., oil spills, fires, etc.) will be mitigated through design, compliance with government regulations, and institution of appropriate environmental construction practices, operating procedures and emergency response plans. All activities conducted on-site will be undertaken in compliance with current Workplace, Safety and Health requirements and Manitoba Hydro standards. Regular inspection of the station will be undertaken to ensure potential problems are identified and rectified in advance of equipment failure or malfunction. As such, the associated risks are considered to be mitigable, manageable and insignificant.

Increased Stress on Infrastructure and Services: During construction of the project, there will be increased stress on infrastructure and services (traffic, parking and community services). Residual effects are considered to be negative, small in magnitude, regional in geographic extent, short-term and intermittent in duration, and therefore not significant.

Public Safety: There is a small risk to public safety during construction of the project, and operations and maintenance of the station. Given Manitoba Hydro's and contractors adherence to safe work procedures, effects are expected to be small in magnitude, project site in geographic extent, and short to medium-term in duration, and therefore not significant.

Nuisance Effects: There will be unavoidable residual effects in terms of noise, vibration and dust during construction of the project, and noise and lighting in the vicinity of the station during operations. Effects are anticipated to be small in magnitude, study area is geographic extent, short-term and intermittent in duration during construction, and medium-term during operations and maintenance. Given the short-term and intermittent nature of effects during construction, effects are considered to be not significant. Given the location of the station in a commercial/light industrial area, effects during operations and maintenance are also considered to be not significant.

Physical Presence of the Station: The presence and appearance of Madison Station will alter the site's landscape for as long as the facility is in operation. The current use of the site, its location away from residential development, and installation of architectural fencing will reduce effects. No residual aesthetic effects are anticipated from the 115 kV underground line, 24 kV underground duct line, and splices. With respect to the station, effects are anticipated to be medium-term in magnitude, study area in geographic extent, and therefore not significant.

In summary, the construction of the Madison 115 – 24 kV Station Project will ensure a reliable electrical supply to customers in the St. James area, address load growth, as well as safety and reliability issues associated with the aging St. James Station. The project will make a positive contribution to the area's socio-economic environment with no significant residual adverse effects.

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1.0 INTRODUCTION

Manitoba Hydro is proposing to construct a new 115 – 24 kilovolt (kV) station (Madison Station) at 555 Madison Street, south of Ellice Avenue, near Century Street, in the City of Winnipeg (Figure 1). The proposed site for the new station is owned by Manitoba Hydro. The project will also involve construction of 24 kV feeder lines exterior to the station, but which will extend underground from the station. In addition, the project includes termination of three existing 115 kV transmission line circuits into the new station. The anticipated in-service date for the project is 2015 with construction activities planned to commence in 2013.

Development of the proposed Madison 115 – 24 kV Station Project will require a Class 2 Licence under *The Environment Act* (Manitoba). The environmental impact assessment for the project, including the process of public consultation/notification, is documented in this report. This environmental assessment report, together with an Environment Act Proposal Form (EAPF) is being submitted to Manitoba Conservation as application for an Environment Act Licence.

The proposed Madison Station Project is typical of other existing facilities developed by Manitoba Hydro. These facilities will be constructed and operated using industry standard procedures, and measures to minimize or eliminate environmental effects. Similarly, salvage of the existing building and parking lot at 555 Madison Street will be conducted using established procedures to minimize or eliminate environmental effects.

2.0 PROJECT NEED AND JUSTIFICATION

The purpose of the new Madison 115 – 24 kV Station is to ensure reliable electrical supply to customers, address load growth, as well as safety and reliability issues associated with the aging St. James Station (located south of the proposed station site on St. James Street at Portage Avenue) [Photo 1]. The proposed station site is located at 555 Madison Street, south of Ellice Avenue, near Century Avenue, in the City of Winnipeg along an existing Manitoba Hydro right-of-way (Figure 1). The existing building and parking lot at 555 Madison Street will be decommissioned and demolished as part of the project.

In order to provide power to the new station, three existing 115 kV transmission lines will be terminated at the station. Termination of one of the existing 115 kV lines will involve constructing approximately 1.5 km of new underground line between the existing St. James Station and the new station on existing Manitoba Hydro right-of-way. In addition, the project will require connecting existing 24 kV distribution feeders currently fed from St. James Station to the new station. Additional information is provided in Section 6.0, Description of Proposed Development.

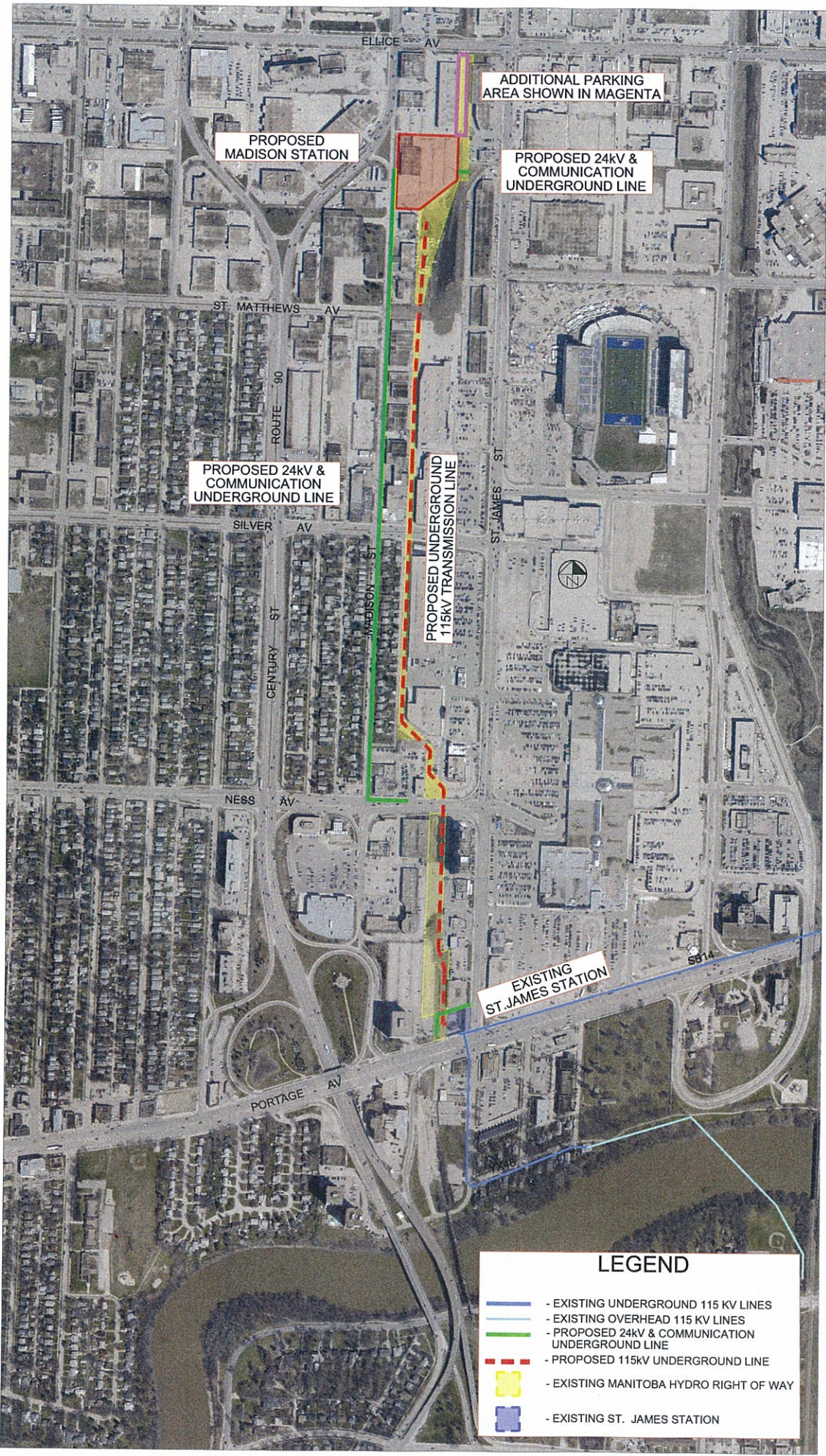


FIGURE 1 MADISON 115-24kV STATION PROJECT



Photo 1: Existing St. James Station

3.0 PREVIOUS STUDIES

The requirement for the proposed Madison 115 – 24 kV Station Project is identified in Manitoba Hydro system planning studies entitled “Study of the 115 kV Transmission System Supply to St. James and Sherbrook Station” (Manitoba Hydro, March 2007) and “City of Winnipeg Multi-Station Capacity Enhancement Report” (Manitoba Hydro, November 2011).

4.0 ASSESSMENT APPROACH

The Madison 115 – 24 kV Station Project environmental assessment report describes the Project’s environmental impact assessment and provides information required by government agencies pursuant to *The Environment Act* (Manitoba). The environmental assessment report and the Environmental Act Proposal Form (EAPF) are being submitted to Manitoba Conservation as application for the Environment Act Licence.

The intent and scope of the assessment is to describe for regulatory authorities the expected construction and operational effects of the Project and other matters as set out in the EAPF. The assessment approach has been structured to address categories and types of environmental effects (i.e., effects at distinct phases of the Project [construction, and operations and maintenance], and effects on distinct socio-economic (e.g., land use, infrastructure, heritage resources) and biophysical (e.g., air quality, aquatics, wildlife) components of the environment.

In accordance with standard environmental assessment practice, the assessment framework for the environmental assessment for the Project included the following:

- **Scoping** – this involved identifying issues of concern related to the Project, selecting environmental components to be examined, identifying potential interactions between the Project and each environmental component, identifying spatial and temporal boundaries for assessing effects and identifying other projects (i.e., as part of the cumulative effects assessment) that may affect the same environmental components. Public consultation was also used to focus assessment of specific environmental components and to define effects.

For the purposes of assessing the environmental effects of the Project, the existing environment within a study area for the project was used as the baseline. The study area was characterized on the basis of a broad range of established environmental and land use planning considerations. Potential effects of the Project on the existing environment were then assessed and documented in this report.

- **Analysis of Effects** – this involved the collection of baseline setting information for each of the environmental components (i.e., the existing environment) and assessing the effects of the Project on the selected components at distinct phases of the Project (i.e., construction, operations and maintenance).
- **Identification of Mitigation Measures** – this involves identifying recommended mitigation measures as part of the effects analysis, and includes finding practical ways to reduce potential negative effect and enhance benefits during all phases of Project development.
- **Evaluation of Residual and Cumulative Effects** – this involves describing the nature and extent of any residual effects (i.e., adverse effects remaining after mitigation measures), including their significance likely to result from the Project. The evaluation was then extended to include a description of the cumulative effects of the Project when considered in combination with other projects and activities specifically identified as part of the Cumulative Effects Assessment (CEA). This is further described in Sections 4.1 and 4.2.

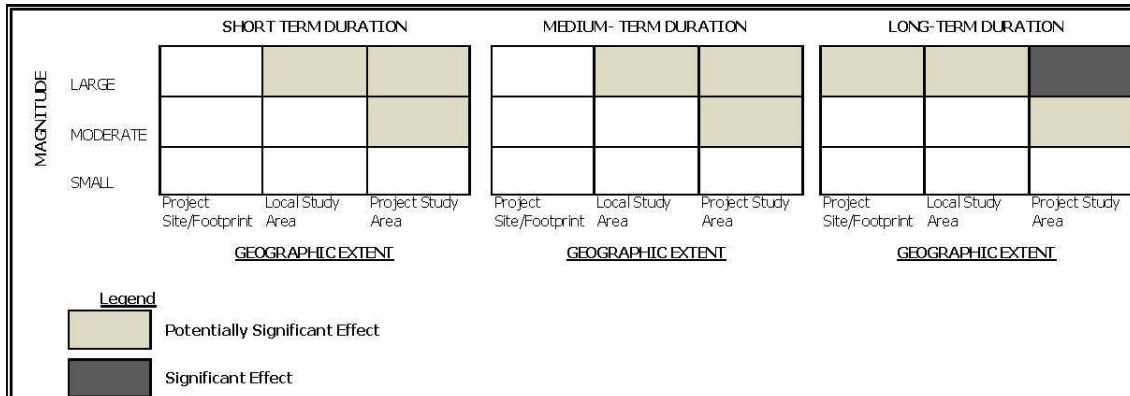
4.1 Residual Effects Significance Evaluation

The significance approach framework for the Project was guided by the Canadian Environmental Assessment Agency Practitioners Guide. Significance was understood to be a determination about whether adverse environmental effects are likely to be significant taking into account the implementation of mitigation measures. Significance was evaluated for any residual effect of the

Project on each environmental and socio-economic component and included the following:

- **Direction or Nature of the Effect** – describes the difference or the trend of the effect compared with the existing baseline. Direction is described as:
 - Positive – a beneficial or desirable change;
 - Negligible – no measureable change; or
 - Negative – an adverse or undesirable change.
- **Magnitude** – the predicted degree of disturbance the effect has on a component of the biophysical and socio-economic environment. Magnitude is described as:
 - Small – No definable or measureable effect or below established thresholds of acceptable change;
 - Moderate – Effects that could be measured and could be determined with a well designed monitoring program or are generally below established thresholds of acceptable change; or
 - Large – Effects that are easily observable, measured and described and outside normal range of variation, or exceeds established thresholds of acceptable change.
- **Geographic Extent** – the spatial boundary within which the residual environmental effect is expected to occur. Geographic extent is described as:
 - Project Site – Confined to the area where direct effects would occur (e.g., station site or rights-of-way);
 - Local Study Area – Extends into the area beyond the project site into the local surrounding areas where direct and indirect Project effects can occur (as described in Section 12 and on Figure 8); or
 - Regional (Project) Study Area – Extends into the wider regional area where indirect or cumulative effects may occur.
- **Duration** – the length of time that the predicted residual effect would last. Duration is described as:
 - Short-term – Low level effects that occur once or are limited to the construction phase of the project;
 - Medium-term – Medium terms effects that are extended throughout the construction and operations phase; or
 - Long-term – High level effects that extend greater than 50 years or are permanent.

The graphic below illustrates how the Project could have a potentially significant or significant effect based on the criteria.



4.2 Cumulative Effects Assessment (CEA)

CEA is an integral part of the environmental assessment process. The CEA includes information with respect to the potential changes to the environment and socio-economic conditions caused by a project in combination with other past, present and future projects or activities.

Past and current projects (that are not expected to change) and activities (i.e., actions that have been carried out) were considered to form an integral part of the existing environment against which predicted effects arising from the proposed project were assessed. As such, these past and current projects and activities are accounted for in the assessment of project effects as the baseline without the proposed project. This approach is consistent with the CEA Practitioners Guide which states the following.

The CEA Practitioners Guide suggests the application of a five-step framework for CEA: scoping, analysis of effects, identification of mitigation, evaluation of significance, and follow-up.

The first step, scoping, is comprised of the following five general components:

- Issues of concern identification;
- Appropriate Valued Ecosystem (or Environmental) Component (VEC)^a selection;
- Spatial and temporal boundary identification;
- Included projects/activities identification; and

^a Based in part on prior environmental assessment experience for other transmission facilities, the approach and findings have addressed the potential effects in the context of established issues and concerns as part of the baseline setting. Although not explicitly presented as a VEC based approach, the result is the characterization of potential effects in the context of both environmental and socio-economic component concerns and issues of importance.

-
- Potential impacts due to actions.

Potential effects of existing and future expected projects and activities in the study area were analyzed with respect to assessing whether the effects of those project and activities would have a cumulative effect on the assessed project effects.

For the purposes of the CEA, reasonably foreseeable future projects and activities are those which have been approved, officially announced, are identified in an approved development plan, are currently in a government approvals process, or for which there is a strong indication that they will start or be carried out before the completion of the Project's construction phase (i.e., between 2013 and 2015) and are expected to have effects that potentially overlap with the effects of the Project.

The following list of reasonably foreseeable future projects and activities are those that are considered likely to proceed and therefore are considered in the CEA for the Project:

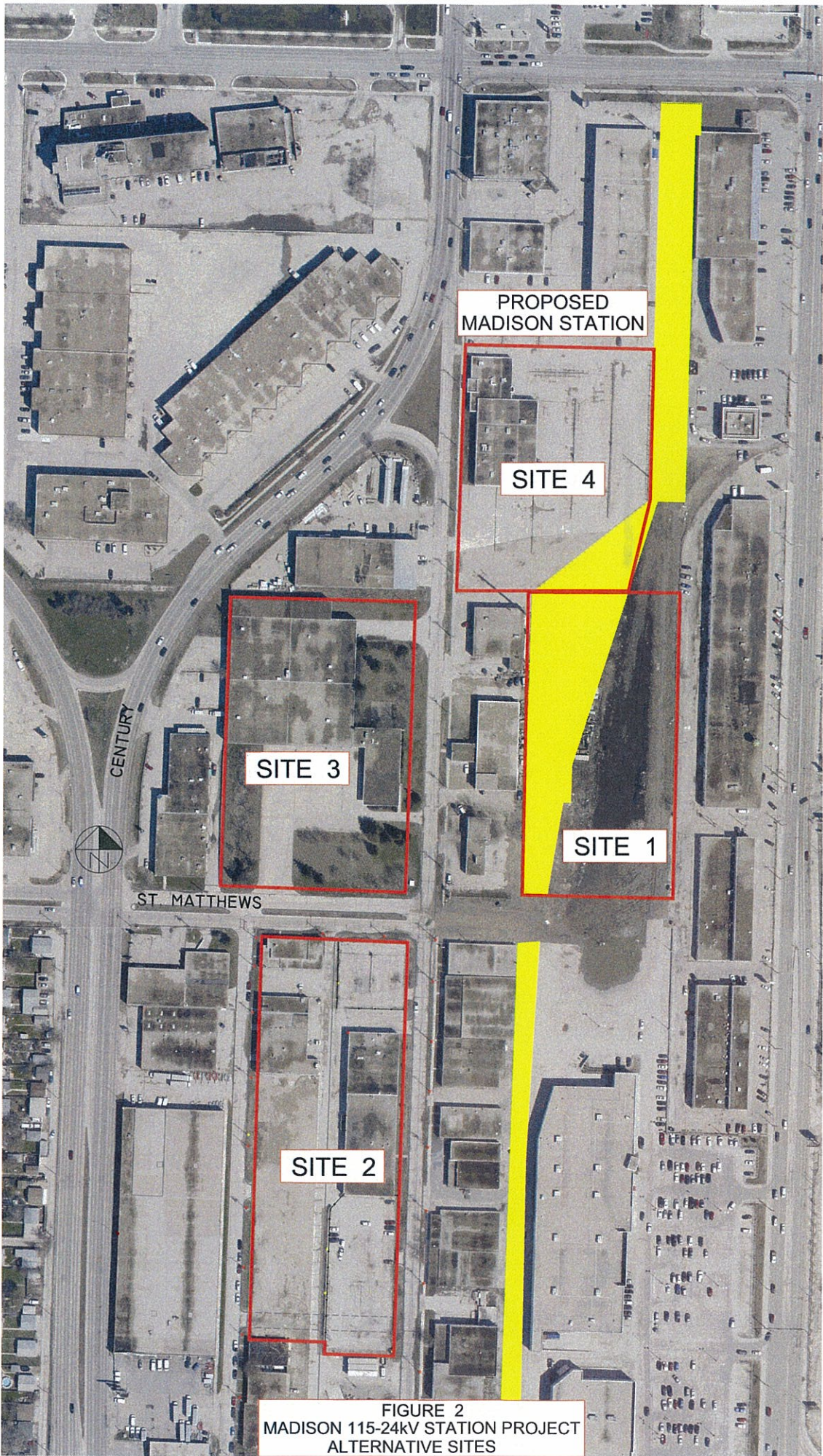
- Redevelopment of the former Canad Inns Stadium site for Target, as well as additional retail and office developments;
- Traffic infrastructure improvements in the vicinity of St. James Street;
- Possible expansion of Kenaston Boulevard between Ness and Taylor Avenues to six lanes; and
- A possible gas bar and office complex at 480 Madison Street.

The consideration of any relevant cumulative effects as a result of other projects and activities are described in Section 13.6.

5.0 STATION SITE SELECTION

As part of the project planning process, four preliminary station sites were identified and investigated for the new station (Figure 2). All sites were selected on the basis that the new Madison Station would be constructed as close as possible to the load centre it would supply (i.e., St. James area), would be in close proximity to the existing 115 – 24 kV St. James Station and would be sited close to the existing Rosser to St. James Stations (RS51) 115 kV transmission line right-of-way to allow for sectionalization of the line into the new station.

Activities to find a site for the proposed station were initiated in 2009 and involved a review of the four alternative sites based on a combination of technical (engineering), land use and cost considerations. The following provides a general description of the four alternative sites.



Site #1 (Alternative #1):

This site is approximately 1.1 km north of the existing St. James Station along an existing Manitoba Hydro right-of-way which contains the RS51 115 kV transmission line. Site #1 is situated to the west of St. James Street and would be accessed from St. Matthews Avenue. The fenced area for the station would need to extend past St. Matthews Avenue and hence, would interfere with a possible future extension of the street. Under the City of Winnipeg Zoning-By-Law 200/06, the site is zoned “M1, Light Industrial”. The site encompasses the existing Manitoba Hydro right-of-way containing the 115 kV transmission line RS51. Lands to the west of the right-of-way are being used as parking/storage for businesses along Madison Avenue. There are no residences in proximity to the site, but it is located to the west of and behind businesses along St. James Street. Manitoba Hydro owns the easterly half of the site. However, it was determined that even with the purchase of additional property, the site would not be large enough to accommodate the new station.

Site #2 (Alternative #2):

This site location is approximately 1.0 km north of the existing St. James Station at 480 Madison Street. Site #2 is located south of St. Matthews Avenue and on the west side of Madison Street. Access to the site is from Madison Street. The site was previously owned by Manitoba Hydro and was used as a metering shop. It was sold in 1997 and currently houses Yellowquill College. Under the City of Winnipeg Zoning-By-Law 200/06, the site is zoned “M1, Light Industrial”. There are no residences in proximity to the site. There are businesses on the east side of Madison Street between the site and the right-of-way containing the RS51 115 kV transmission line.

Site #3 (Alternative #3):

This site is located approximately 1.1 km north of the existing St. James Station at 500 Madison Street. It is located north of St. Matthews Avenue and Site #2. Site #3 is located on the west side of Madison Street and access to the site is from Madison Street. The site currently houses Versatech Industries Inc. Under the City of Winnipeg Zoning-By-Law 200/06, the site is zoned “M1, Light Industrial”. There are no residences in proximity to the site. There are businesses on the east side of Madison Street between the site and the right-of-way containing the RS51 115 kV transmission line.

Site #4 (Proposed Station Site):

This site is located approximately 1.2 km north of the existing St. James Station at 555 Madison Street. It is located west of and adjacent to an existing Manitoba Hydro owned right-of-way which contains the RS51 115 kV transmission line. Manitoba Hydro owns the site for the new

station. Currently, the site is occupied by a building and parking lot. The building was previously leased to tenants by Manitoba Hydro but is now vacant. The site is removed from residential development; however, there are businesses located in proximity to the site. Access to the site is off of Madison Street although access can also be obtained from Century Street (Route 90). Under The City of Winnipeg Zoning-By-Law, the site is zoned “M1, Light Industrial”.

5.1 Summary of Alternative Station Site Analysis

All four alternative sites are similar from a land use perspective. All of the sites are zoned “M1, Light Industrial” and are situated close to the existing St. James Station and the load centre the new station is required to service. Because of its location along the existing RS 51 right-of-way, Site #4 was seen as the most favorable from a technical (engineering) perspective when compared to Sites # 2 and #3. Sites #2 and #3 are further west than the two other alternatives, and hence would require longer connections from the station to the existing RS 51 115 kV transmission line. Sites #2 and #3 are also being used for Yellowquill College along with other businesses. Site #1, although also located in proximity to the existing right-of-way, was not large enough to accommodate the new station. Based on the review of alternative sites considering land use and technical factors, Site #4 was identified and is considered the most favorable location for the proposed Madison Station.

6.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

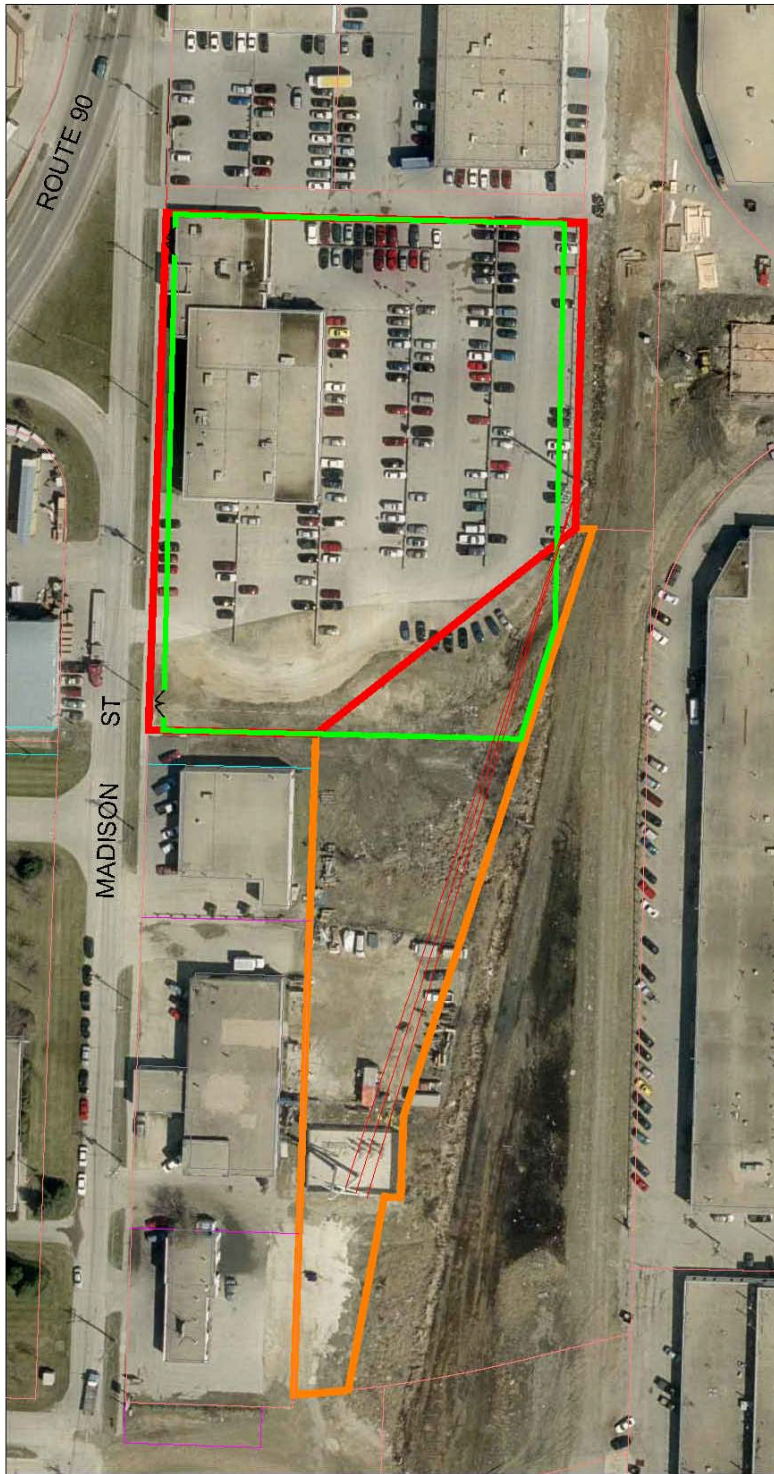
6.1 Basic Development Concept

The new Madison Station is required to replace aging equipment at the existing St. James 115 – 24 kV Station and provide additional capacity to the St. James area in Winnipeg. The proposed site for the new station is located at 555 Madison Street, west of an existing Manitoba Hydro owned transmission line right-of-way (Photo 2). In 2008, Manitoba Hydro had a Phase I and II Environmental Site Assessment conducted for the station site along with a property condition survey (Pinchin Environmental, 2008a, 2008b and 2008c). The Phase II report was recommended as some potential issues were raised with respect to soils in during the Phase I study. The Phase II study concluded that soils and the property were deemed to be in compliance with applicable guidelines and standards, and no additional follow-up was needed.

The site for the station is shown in Figure 3. The station concept is for the 115 and 24 kV station components to be air insulated. Photo 3 is an example of 115 kV air insulated switchgear, while Photo 4 provide an example of 24 kV outdoor equipment and structures. There is a potential that the footprint for the actual station site could be smaller if either or both of the 115 and 24 kV components are gas insulated. In either case, the new station will be contained within the



Photo 2: Existing Building at 555 Madison Street



PROPOSED MADISON STATION

- MANTOBA HYDRO PROPERTY
- MHI PURCHASED PROPERTY
- APPROXIMATE FENCE LINE

FIGURE 3

Figure 3: Madison 115 – 24 kV Station Concept



Photo 3: Example of 115 kV Air Insulated Switchgear



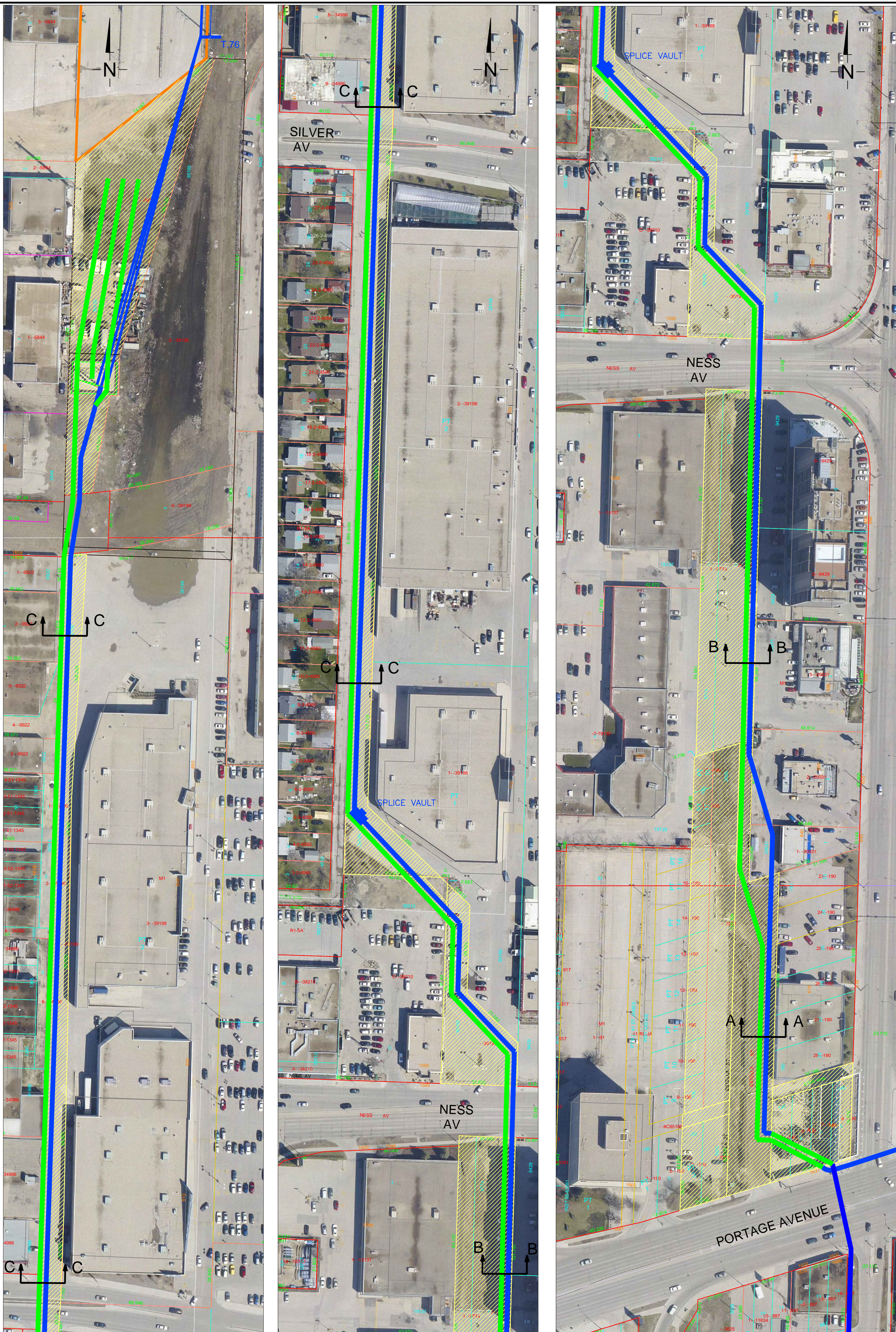
Photo 4: Example of 24 kV Outdoor Equipment and Structures

property owned by Manitoba Hydro at 555 Madison Street. The decision regarding gas versus air insulated switchgear will be made at the detailed design stage for the project.

Three existing 115 kV transmission lines — St James to Sherbrook Stations (SB14), Rosser to St. James Stations (RS51) and LaVerendrye to Mohawk Stations (YX48) will be terminated at the proposed station as follows:

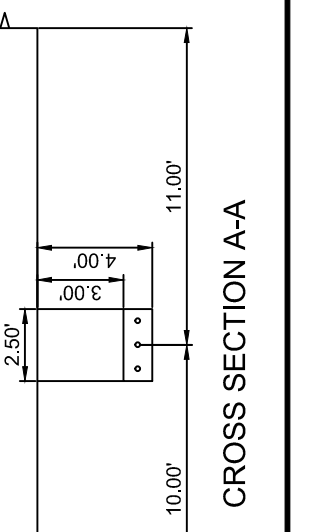
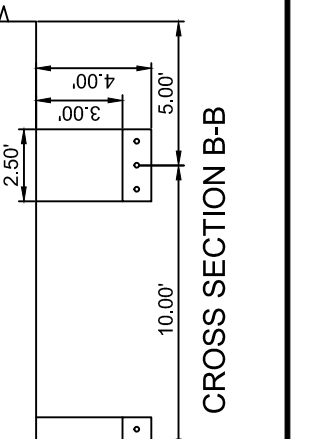
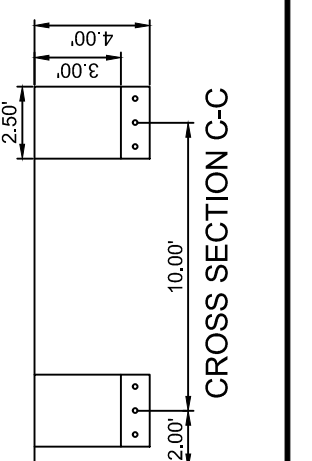
- The existing 115 kV underground line from St. James to Sherbrook Stations (SB14) will be spliced south of the existing St. James Station, and will be extended to the new station with approximately 1.5 km of new 115 kV underground transmission cabling. The underground cabling will be in an existing Manitoba Hydro owned right-of-way (Figure 4). Splicing will require excavation of part of the sidewalk to expose the conductors entering the existing station. A concrete splice chamber will be constructed to house the splices between the existing conductor and new conductor to be installed.
- The existing 115 kV transmission line from Rosser Station (RS51), which runs overhead to the east of the new station site and dips underground at St. Matthew's Avenue to terminate at the existing St. James Station, will be sectionalized at the new station (Photo 5). This will create two transmission lines — one running from the north and one running from the south.
- The line running from the south will be re-used to extend the existing 115 kV underground transmission line (LaVerendrye to Mohawk Stations [YX48]) from the existing St. James Station to the new station. YX48 will be extended to the new station via an underground splice south of the existing St. James Station. To terminate YX48 underground into the new Madison Station, additional underground terminating structures will be installed at the St. James to St. Matthews Terminating Structure (Photo 6). The existing chain link fence will be extended north to accommodate the additional underground structures. The St. James to St. Matthews Terminating Structure is located on existing Manitoba Hydro property as will the extension of the chain link fence. To terminate the transmission line running from the north into the new station, RS51 will be swung over to the other side of an existing deadend structure and then terminated underground to the new station. Termination of the lines into the new station will require installation of three 115 kV arresters, foundations and a ground grid, all of which will be on existing Manitoba Hydro property.

The project will also require connecting the existing 24 kV distribution feeders currently fed from St. James Station to the new station. These existing feeders provide electrical supply to local residences and businesses. Eighteen 24 kV feeder lines will egress underground from the new station. Once the feeders leave the station, most will be routed towards the existing St. James Station to tie into the existing feeders in proximity to the station, while others will likely



St. James Station - Madison Station
 115kV Transmission Lines
 Existing and Future Alignment
 FIGURE 4

0 25 50m
 SCALE 1:1000
 CROSS SECTIONS
 DIMENSIONED IN IMPERIAL



- Existing Manitoba Hydro Property
- Existing U/G Cable
- Proposed U/G Cable



Photo 5: Existing RS51 115 kV Transmission Line



Photo 6: St. James to St. Matthews Terminating Structure

tie into existing feeders around the new station. This transfer over of feeders from the existing St. James Station to the new station will be planned and coordinated to ensure minimal disturbances and outage times. Whenever possible, feeder transfers will not result in an outage to customers. However, there may be instances where Manitoba Hydro will have to momentarily interrupt customers to change over to the new station.

The new 24 kV feeders that will tie into the existing feeders will egress the new station underground from all sides of the station with the majority from the west and south. The feeders that egress north and/or east sides will interconnect to existing feeders that are in the immediate vicinity of the new station, on St. James Street and on Ellice Avenue. Very minimal overhead works will be required with the majority being underground. Overhead work would include minor upgrades or enhancements.

In order to interconnect the new station feeders to the existing feeders, a new duct line will need to be constructed. The duct line will be constructed of conduit embedded in concrete with related manholes. Manitoba Hydro is planning to construct the duct line along Madison Street to Ness Avenue. Along Madison Street, the duct line will likely be located under the sidewalk or on non finished surfaces. The sidewalks will be replaced and new sidewalks built to current City of Winnipeg standards. In addition, an underground communications line will be required from the new station to tie into an existing manhole on St. James Street (Figure 1).

Manitoba Hydro is the registered owner of 555 Madison Street (Part of Lot 3, Plan 5844 WLTO and Plan 6402 in R.L. 40 and 41, Parish of St. James, City of Winnipeg), which is the site for the proposed station. This is indicated by the Certificate of Title Numbers 2448063/1 and 2448067/1 (Roll number 07002273000).

The proposed station facilities will be contained in an irregular area approximately 87 m x 115 m (approximately 2.35 acres labeled Parcel "A") that will incorporate the station footprint. The supporting structural facilities in the station will be primarily steel construction comprised of concrete foundations and steel structures. The station will be contained within a fence/wall that will minimize views of the station equipment and blend in with the commercial/light industrial nature of the area. A control building will likely be required outside of the fenced area which will be located on existing Manitoba Hydro property. An example of this type of fencing around the station is found in Figure 5.

In terms of site preparation, the existing 18,462 square foot building at 555 Madison Street will be demolished along with the existing surface parking lot. Existing sewer and water services will be capped as per City of Winnipeg requirements. The area will be graded and surfaced with clear fill.

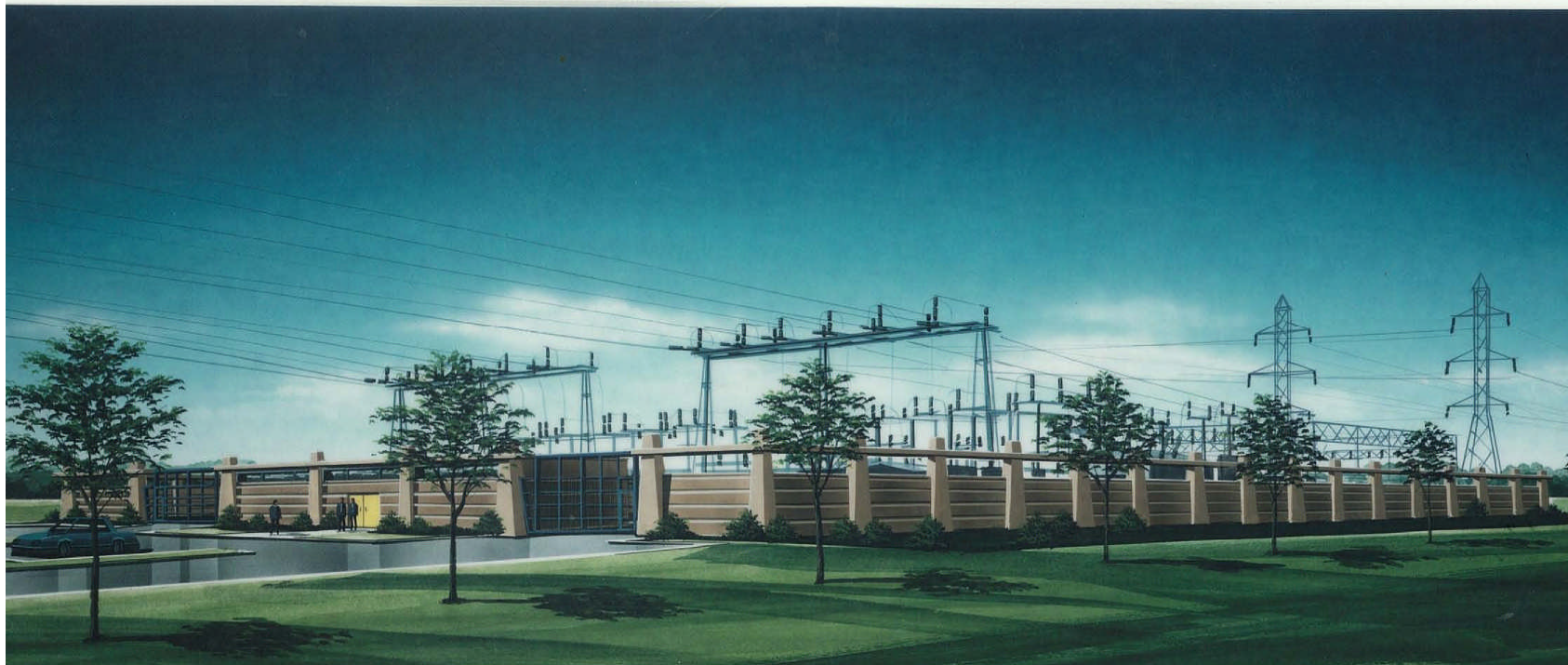


Figure 5: Possible Types of Fencing for the Station

The station will be fully automated including control of remote distribution automation equipment, and will be remotely controlled and monitored from a Manitoba Hydro System Control Center. Local control of the station will be housed in the control building.

Three banks, each containing one 115 – 24 kV power transformer, will be installed. The proposed project, which is anticipated to be in-service in 2015, will include the following major equipment:

- Three 115 – 24 kV, 60 MVA (megavolt-amperes) power transformers, each containing approximately 27,100 litres of insulating oil, for a total of approximately 81,300 litres;
- The 115 kV switchyard will be air insulated and located outdoors. The 115 kV equipment will consist of six 115 kV circuit breakers (approximately 36 kg of Sulphur Hexafluoride [SF₆] and 21 kg of Carbon Tetrafluoride [CF₄]), three 3 phase 115 kV voltage transformers containing 450 litres of insulating oil, six 3 phase 115 kV current transformers, and eighteen 115 kV disconnect switches (If at the detailed design stage, a decision is made to proceed with Gas Insulated Switchgear (GIS), the volumes would be substantially more in terms of SF₆ (approximately 800 kg), but would not contain SF₄ or the include the 450 litres of insulating oil);
- Twenty 24 kV circuit breakers, each containing 7 kg of SF₆ and 5 kg of CF₄, for a total of 140 kg of SF₆ and 100 kg of CF₄. If at the detailed design stage a decision is made to proceed with switchgear for the 24 kV components, no SF₆ or CF₄ would be required;
- Three 24 kV three phase circuit switchers, each containing 1.9 kg of SF₆, for a total of 5.7 kg;
- Three 24 kV, 8.4 MVAR capacitor banks, each containing 336 litres of dielectrol fluid, for a total of 1,008 litres, and 42-200 KVAR capacitor cans for a total of 8 litres; and
- Fifteen 3 phase air cooled reactors.

Oil containment provisions for station equipment (e.g., power transformers) shall be installed at the proposed station site in accordance with Manitoba Hydro's Transformer Oil Assessment Manual (1993).

Within the proposed station site, there is provision for a future bank which would include one 115 – 24 kV power transformer, a future 115 kV transmission line and six 24 kV feeders. Similar equipment described above would be required for the future development resulting in approximately 25 percent increase in the volumes of oil and gases at the station. Development of

the fourth bank is contingent on future load growth in the area and is not anticipated to occur within the next five year planning horizon.

Once Madison Station is commissioned (including connection of the 115 kV transmission lines and 24 kV feeder lines to the station), some electrical equipment at the existing St. James Station will be salvaged. The existing building at St. James Station will be heated via a new electrical service from a transformer located within the existing station property. The transformer will be feed from the new station. In addition, the existing station property will house outdoor equipment (interchange transformers and switchgear cubicles) to enable connection of older lower voltage feeds currently from St. James Station to be feed from the new station.

6.2 Construction, Operation and Maintenance

The proposed Madison Station Project, including communication and protection systems, is anticipated to be in-service by 2015. Table 1 illustrates the proposed construction schedule.

Table 1: Proposed Construction Schedule

Task	Proposed Schedule
Construction Commencement	Summer 2013
Site Preparation	Fall 2013 to Spring 2014
Foundations	Spring to Summer 2014
Buildings	Summer to Fall 2014
Installation of Steel Structures	Fall to Winter 2014
Installation of Electrical Equipment	Winter 2014 to Spring 2015
Installation of 115kV and 24kV Circuits	Spring to Fall 2015
Construction and Commissioning Complete	Fall/Winter 2015

Subject to receipt of environmental approvals, demolition of the existing building and parking lot, and site preparation activities are expected to occur from early 2013 to the fall of 2013. Detailed station design is expected to occur in parallel from mid to late 2013. Station construction is expected to occur from late 2013 to the fall/winter of 2015. Demolition and construction will be carried out by contractors. Manitoba Hydro inspectors will be on-site to supervise all construction activities.

Other components, including the 115 kV transmission lines and 24 kV feeder lines, will be staged are planned to begin and be completed in 2015. Construction will be carried out either by Manitoba Hydro employees and/or contractors.

Proposed station construction will include site improvements (installation of ground grid, adding inorganic fill materials and compacting them, and the construction of internal drainage ditches). Concrete will be poured for equipment pads and foundation installation. The ground grid will be

installed along with oil containment systems. Other project activities will include structure framing and raising, phase conductor stringing, installation of the transformers and other station equipment components, filling the transformers with insulating oil, and construction clean-up. The site drainage system shall be installed in accordance to City of Winnipeg Water and Waste Department requirements. Temporary fencing around the station site will be installed in 2013 with permanent fencing installed in 2015.

Vehicle traffic in the area may consist of both rubber tired or track mounted vehicles. Any temporary noise generated by construction vehicles will be subject to compliance with all relevant by-laws and regulations and will be limited to construction working hours only. Existing municipal roads will be used to access the station site. Regulations pertaining to such use, including load and bridge height restrictions, will be observed. Construction activity shall be subject to established environmental protection measures associated with standard Manitoba Hydro station construction practices.

The station site will be cleaned-up and left in standard operating condition as soon as possible after completion of construction on-site. All non-toxic waste materials will be disposed of using appropriate local licensed disposal facilities. All waste disposal and hazardous materials handling will be conducted according to Manitoba Hydro's protocols and relevant government legislation.

Once the construction of the station has been completed, the station will operate 24 hours a day, year round and will be visited regularly by Manitoba Hydro personnel performing inspections and maintenance. Although the station will not have a permanent on-site staff, all critical equipment shall be electronically monitored 24 hours per day, year round for current status to detect any failures. In the event of a failure, Manitoba Hydro on-call personnel shall be immediately dispatched to correct any problems or related environmental effects.

Additionally, qualified operators and maintenance personnel will visit the facility routinely to inspect and maintain it and, in the case of contingencies, correct any problems or related environmental effects. Maintenance and repair routines are subject to standard Manitoba Hydro procedures. Any emergency repairs may involve repair or replacement resulting from equipment failure.

Impacts will be minimized to the extent possible by the application of environmentally sound construction practices. Manitoba Hydro's general practices for the design and construction will be adhered to for the proposed project. Given the conventional nature of the proposed development, these standard protocols and environmental protection measures should adequately address any related issues or concerns.

7.0 OWNERS OF THE LAND

The registered owner of 555 Madison Street (Part of Lot 3, Plan 5844 WLTO and Plan 6402 in R.L. 40 and 41, Parish of St. James, City of Winnipeg), which is the site for the proposed station, is Manitoba Hydro. This is indicated by the Certificate of Title Numbers 2448063/1 and 2448067/1 (Roll number 07002273000). A copy of the Certificate of Title is found in Appendix A.

8.0 OWNER OF THE MINERAL RIGHTS

Mineral rights for parcels of land to be acquired for the proposed project are owned by the Crown. Manitoba Hydro will not acquire mineral rights.

9.0 FUNDING

Manitoba Hydro will fund the project.

10.0 ENVIRONMENTAL SETTING

This section characterizes the biophysical and socio-economic setting in the general area of the project. The project is located in the St. James area of the City of Winnipeg. The setting for the proposed project and, in particular, the biophysical setting, has been altered by the development of the City of Winnipeg.

10.1 Biophysical Environment

10.1.1 Physiography and Soils

The proposed project is situated in the Winnipeg Ecodistrict within the Lake Manitoba Plain Ecoregion of the Prairies Ecozone. The Winnipeg Ecodistrict lies in the central lowland of the Red River Plain. Geology, surface and subsurface hydrology for the region was determined through glaciers that covered the region.

The region is characterized as having a smooth, level to very gently sloping (0 – 2%), clayey glaciolacustrine plain with a mean elevation of about 236 meters above sea level (masl) [Smith, *et. al.*, 1998]. The Red River meanders through the centre of the plain and empties into Lake Winnipeg. Relief from south to north through the basin is about 0.3 m per km. Some stronger relief of about 5 to 10 m occurs along the Red and its major tributaries (i.e., La Salle, Assiniboine, and Seine rivers). The northwestern part of the ecodistrict is part of the Assiniboine River drainage division, while the remainder is part of the Red River drainage division, both of

which are part of the Nelson River drainage system.

Soils typical of the region consist of imperfectly drained Gleyed Humic Vertisols and Gleyed Vertic Black Chernozems, and poorly drained Gleysolic Humic Vertisols and Humic Gleysols developed on calcareous, clayey glaciolacustrine sediments. These sediments range in thickness from more than 60 m near the United States border to less than 1 m locally in the northern part of the basin. Gleyed Rego Black Chernozemic and Gleysolic soils also occur on shallow, extremely calcareous, loamy to silty sediments, some of which occur as intersecting bars and spits that were formed during the latter stages of Lake Agassiz.

10.1.2 Air Quality

Winnipeg's air quality is good compared to other Canadian cities of a similar size. The air quality index measured in downtown Winnipeg in 2004 and 2005 was good, which is the best rating, over 95% of the time (Krawchuck and Snitowski, 2008).

10.1.3 Climate

In terms of climate, the Winnipeg Ecodistrict is in the most humid subdivision of the Grassland Transitional Ecoclimatic Region in southern Manitoba and is characterized by short, warm summers and long, cold winters (Smith *et al.*, 1998). The mean annual temperature is 2.4° Celcius (C) and the average growing season is 183 days. The mean annual precipitation is about 515 mm, about which less than one-quarter falls as snow. Precipitation varies greatly on a yearly basis and is highest from late spring through summer.

Climate data for the Winnipeg International Airport from 1990 to 2011 is provided in Table 2. Between these years, the average annual temperature ranged from 0.6 °C to 5.3 °C. Total annual precipitation, consisting of both snow and rain, ranged from 357.03 mm to 763.52 mm.

10.1.4 Terrestrial Setting

The native vegetation in the Winnipeg Ecodistrict originally consisted of tall prairie grass, meadow prairie grass and meadow grass communities subject to natural drainage conditions. As a result of cultivation and the development of an extensive network of drainage ditches, the natural vegetation has largely disappeared. Only local pockets remain in some poorly drained locales or other smaller portions of land not broken.

Although tree cover was never very extensive in most of the ecodistrict, trees do grow naturally as a fringe along stream channels. On the better-drained sites above and some distance away from the channels, bur oak and trembling aspen with an undergrowth of snow berry, hazelnut and red-osier dogwood commonly occur. On the alluvial floodplain deposits and lower river

terraces, white elm, basswood, cottonwood, Manitoba maple and green ash with an undergrowth of willow, ferns and associated herbaceous plants are found. Shrubs such as Saskatoon, high bush cranberry and nannyberry are found on both the higher terraces and floodplain (Smith *et. al.*, 1998).

Table 2: Climate Data for Winnipeg International Airport 1990 – 2011

Year	Average Annual Temperature (°C)	Total Annual Precipitation (mm)	Total Days of Snow	Total Days of Rain
1990	3.5	417.02	93	107
1991	3.8	706.34	105	115
1992	2.9	486.83	108	132
1993	2.4	611.62	79	129
1994	3.3	763.52	74	110
1995	2.4	433.09	117	108
1996	0.6	601.42	99	89
1997	2.9	586.09	116	98
1998	5.3	618.16	80	115
1999	4.8	-	59	116
2000	3.2	472.57	80	105
2001	4.2	451.26	83	111
2002	-	-	119	95
2003	3.5	466.81	85	104
2004	2.3	758.13	106	137
2005	-	-	-	-
2006	5.2	357.03	111	128
2007	3.4	529.80	111	130
2008	2.1	626.27	105	115
2009	2.6	526.96	84	124
2010	4.8	725.24	78	123
2011	4.3	415.48	96	116

Note: The symbol – indicates there was insufficient data to calculate means.

Source: www.tutiempo.net/en/Climate/Winnipeg_Int_Airport/718520htm

Characteristic wildlife in the Winnipeg Ecodistrict white-tailed deer, coyote, rabbits, ground squirrels and waterfowl. White-tailed deer is well established in the ecodistrict, thriving in the mixture of cultivated fields, pastures and aspen-oak bluffs. Bird species characteristic of the ecoregion include ferruginous hawk, black-billed magpie, Baltimore oriole, and veery and brown thrasher. Where favourable conditions exist (i.e., wetlands in drainage channels), suitable nesting and staging habitat for ducks, geese and other waterfowl and shorebirds remains.

The proposed station site is paved and hence does not provide habitat for wildlife. Most of the

existing right-of-way between St. James Station and the proposed station site is also paved – an area to the east of the proposed station site and immediately west of St. James Station are not paved.

Flora and Fauna Species of Concern

A review of the Manitoba Conservation Data Centre (MBCDC) database indicated that there were no known occurrences of species of concern in the vicinity of the project.

10.1.5 Surface Water Resources

The Winnipeg Ecodistrict is part of the Red River and Assiniboine River drainage divisions. Both drainage divisions are part of the Nelson River drainage system. The Red River crosses north through the City of Winnipeg and empties into Lake Winnipeg, where it joins the Nelson River and discharges into Hudson's Bay. The Assiniboine River, which also crosses through Winnipeg, is a major tributary of the Red River.

There are no rivers in proximity to the proposed project. The closest is the Assiniboine River which is located south of Portage Avenue and the existing St. James Station.

10.2 Socio-Economic Environment

10.2.1 Population

The project is located in the City of Winnipeg which is the largest city in the Province of Manitoba. The City of Winnipeg had a population of 663,617 in 2011 consisting of 51.4% females and 48.6% males (Statistics Canada, 2011). The median age of the population was 39 years of age. The median age of females was 40.3 years compared to 37.6 years for males.

The population density in 2011 was 1,430 individuals per km² compared to 1365.2 individuals per km² in 2006. The total land area of Winnipeg was 464.08 km² compared to 464.01 km² in 2006. Between 2001 and 2011, the population of Winnipeg has increased by 7.1%, while between 2006 and 2011 the population has increased by 4.8% (Statistics Canada, 2006 and 2011). The total number of private dwellings increased from 269,586 in 2006 to 280,489 in 2011.

10.2.2 Economy

The City of Winnipeg has one of the most diverse economies of any major city in Canada (Economic Development Winnipeg Inc., 2012). Industries include aerospace, finance, transportation, agri-business, information technology, as well as furniture and apparel. The city

has a diversified manufacturing sector which includes food/beverages, farm equipment, buses, aerospace components, and chemicals.

Table 3 presents data on the labour force for major industries (people 15 years and older) for the City of Winnipeg (Statistics Canada, 2006).

Table 3: Major Industry Categories for the City of Winnipeg

Major Industry (Labour force 15 years and over)	Total
Agriculture and other resource-based industries	5,975 (1.7%)
Manufacturing and construction industries	54,270 (15.8%)
Wholesale and retail trade	54,045 (15.7%)
Finance and real estate	22,480 (6.5%)
Health and education	70,495 (20.4%)
Business services	64,595 (18.7%)
Other services	73,195 (21.2%)

Source: Statistics Canada, 2006

The predominant employment sectors in Winnipeg are health and education services, followed by other services and business services.

10.2.3 Existing Land Use

The proposed station site is located east of Madison Street, adjacent and immediately west of an existing Manitoba Hydro right-of-way (Figure 6). The land for the proposed station is owned by Manitoba Hydro and is currently occupied by a vacant office building and parking lot.

The area around the station site is a mixture of commercial and light industrial uses, and is removed from residential development. Immediately north of the site, there are two strip malls with commercial and office developments. To the south of the site, there are businesses such as Windsor Plywood and Yellowquill College which front onto Madison Street. Businesses and light industrial uses along Madison Street occur from south of the station site to Silver Avenue.

Between Silver and Ness Avenues, there is residential development on both sides of Madison Street. Residences to the east of Madison Street in this area are separated from the existing Manitoba Hydro right-of-way by a back lane. Between Ness and Portage Avenues, lands adjacent to the existing right-of-way are in retail and commercial use.

To the east of the station site and existing right-of-way, there are businesses which front onto St. James Street. There are businesses all along the west side of St. James Street south to Portage Avenue. St. James Street is a major retail area in the City of Winnipeg and includes the Polo Park Shopping Centre.

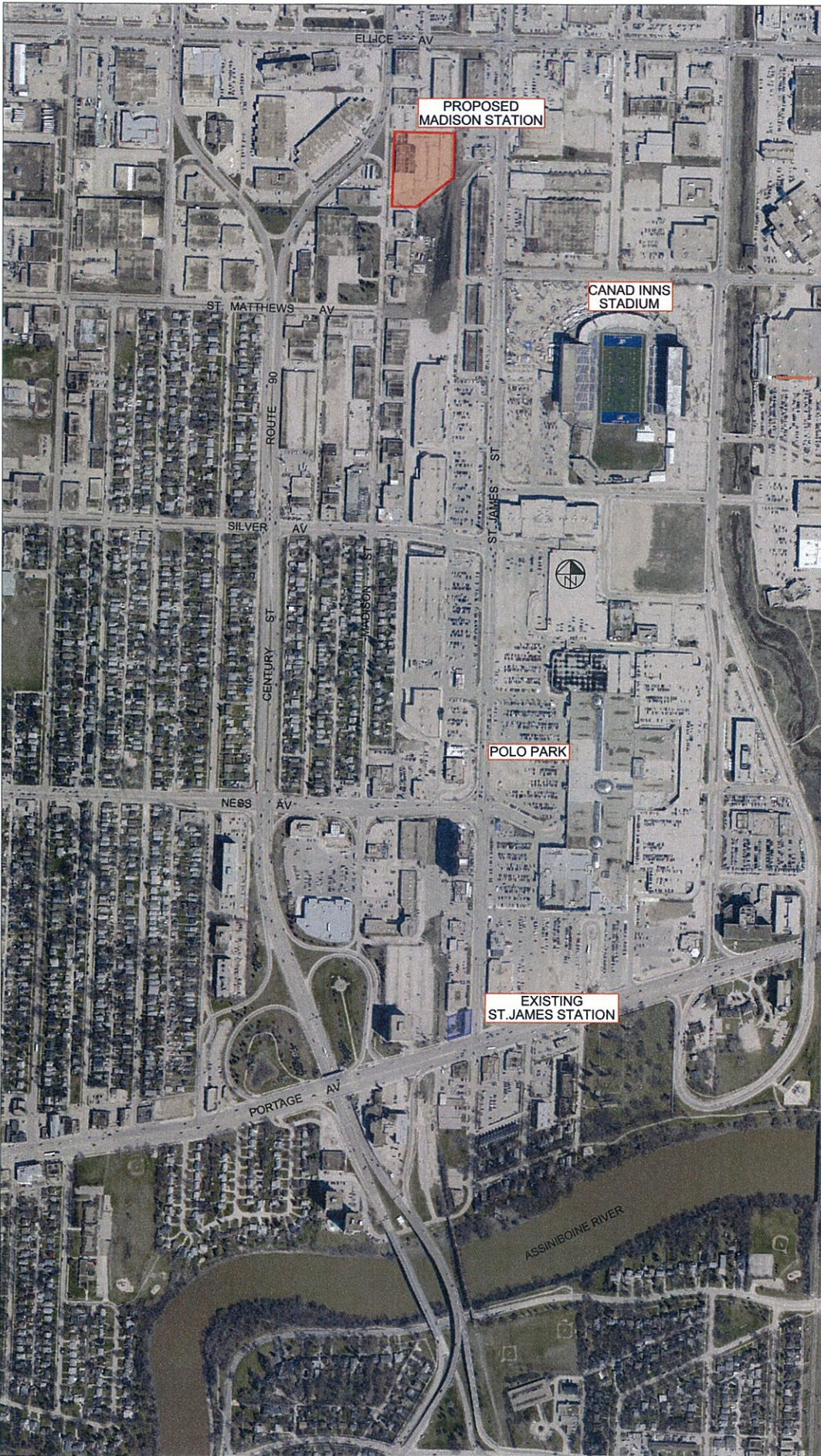


FIGURE 6 LAND USE

10.2.3 Mineral Resources

There are no mineral resources or active quarries in the vicinity of the project.

10.2.4 Infrastructure and Services

The study area includes several infrastructure installations and networks. The infrastructure network includes linear rights-of-way for roadways, transmission and distribution lines, and telephone lines. Infrastructure installations include a Manitoba Telecom Services (MTS) communications tower to the east of Madison Street, which is located on Manitoba Hydro property, James Richardson International Airport and the existing St. James Station.

The existing St. James Station is located north of Portage Avenue on St. James Street (Figure 6). The existing RS 51 115 kV transmission line runs overhead from Rosser Station, to the north of Winnipeg, to St. James Station. Southeast of Madison Street, RS51 changes from an overhead to underground line. Other transmission lines in the area include the 115 kV underground lines from St. James to Sherbrook Stations (SB14), and from LaVerendrye to Mohawk Stations (YX48).

Major roads in the immediate vicinity include Century Street (Kenaston Boulevard, Route 90), a major thoroughfare in Winnipeg, Portage Avenue (Route 85) to the south of the existing St. James Station, Ness and Ellice Avenues, and St. James Street. All are designated as truck routes.

The City of Winnipeg has compiled traffic flow information for major roads in Winnipeg (City of Winnipeg 2009 Traffic Flow Map) which shows average weekday 24 hour traffic flows). According to the map, the average along Portage Avenue (Route 85) south of St. James and Century (Route 90) Streets ranges between approximately 51,000 to 60,000 vehicles. Traffic along St. James Street between Ellice and Portage (Route 85) Avenues ranges between approximately 15,000 to 29,000 vehicles. Traffic along Ness Avenue at Century Street (Route 90) averages approximately 25,600 to 26,300 vehicles. Traffic along Century Street (Route 90) between Portage Avenue and Ness Avenues ranges between approximately 24,800 and 54,100 vehicles.

Traffic along Century Street (Kenaston Boulevard, Route 90) is anticipated to increase with the development of new retail developments in southern Winnipeg. A study conducted for the new retail development indicated that traffic along the road ranges between 55,000 and 60,000 vehicles per day (MMM Group Ltd., 2009). With the new retail development, traffic is estimated to increase by an additional 29,000 trips on a weekday.

In terms of emergency services, new fire and paramedic station (Station 11) is being constructed

north of Portage Avenue to the west of St. James Station and Kenaston Boulevard. This will replace the existing Station 11 which is aging fire station located further west along Berry Street, north of Portage Avenue. There are a number of additional fire stations in Winnipeg, including a fire station and paramedic station located east of Kenaston Boulevard, to the south of the project, on Taylor Avenue. The nearest hospital is located north of Portage Avenue in the western part of Winnipeg.

10.2.5 Recreation and Tourism

There are no recreational facilities in the immediate vicinity of the project. The closest facility is Canad Inns Stadium which is located to the east of the study area. Canad Inns Stadium is planned to be demolished prior to the start of construction of the proposed project, and replaced by a retail development.

10.3 Heritage Resources

A search of the Province of Manitoba Culture, Heritage and Tourism Department (Historic Resources Branch) Provincial Registry indicated that five registered archaeological sites are in the general vicinity of the proposed project (Figure 7). Four of these sites, DILh-06, 18, 19 & 30, contain a Pre-European Contact component, ranging from the Archaic to Terminal Woodland period (*ca.* 7,000 to 350 YA). South of Portage Avenue, on a bicycle trail along Wellington Crescent in proximity to the Assiniboine River, Blackduck ceramic sherds were found associated with a possible hearth, uncovered by human bicycle traffic over many years of use.

Two archaeological sites, DILh-09 & 18, contain a Post-European Contact component dating from the Late Historic Period (*ca.* 1870-1930 A.D.). DILh-09, known colloquially as ‘Garbage Hill’, is a Late Historic garbage dump that at one time serviced the City of St. James. The religious pendant found at DILh-18 could not be assigned to a specific time frame within the Post-European Contact Period.

The St. James Hotel, located to at 1719 Portage Avenue to the west of St. James Station, and St. James Anglican Church and Cemetery, located south of Portage Avenue at 525 Tylehurst Street, are both historic buildings (Figure 7).

11.0 LAND USE DESIGNATION

Development within the City of Winnipeg is subject to a zoning by-law (City of Winnipeg Zoning By-Law No. 200/06). The proposed project does not conflict or require amendment to the zoning by-law. Under the zoning by-law, the proposed station site is zoned M1 – Light Industrial. Lands immediately north and south of the site are also zoned M1 – Light Manufacturing. Lands to the east of the station site and the Manitoba Hydro’s existing right-of-way are zoned C3 – Commercial Corridor. These lands front onto St. James Street while the

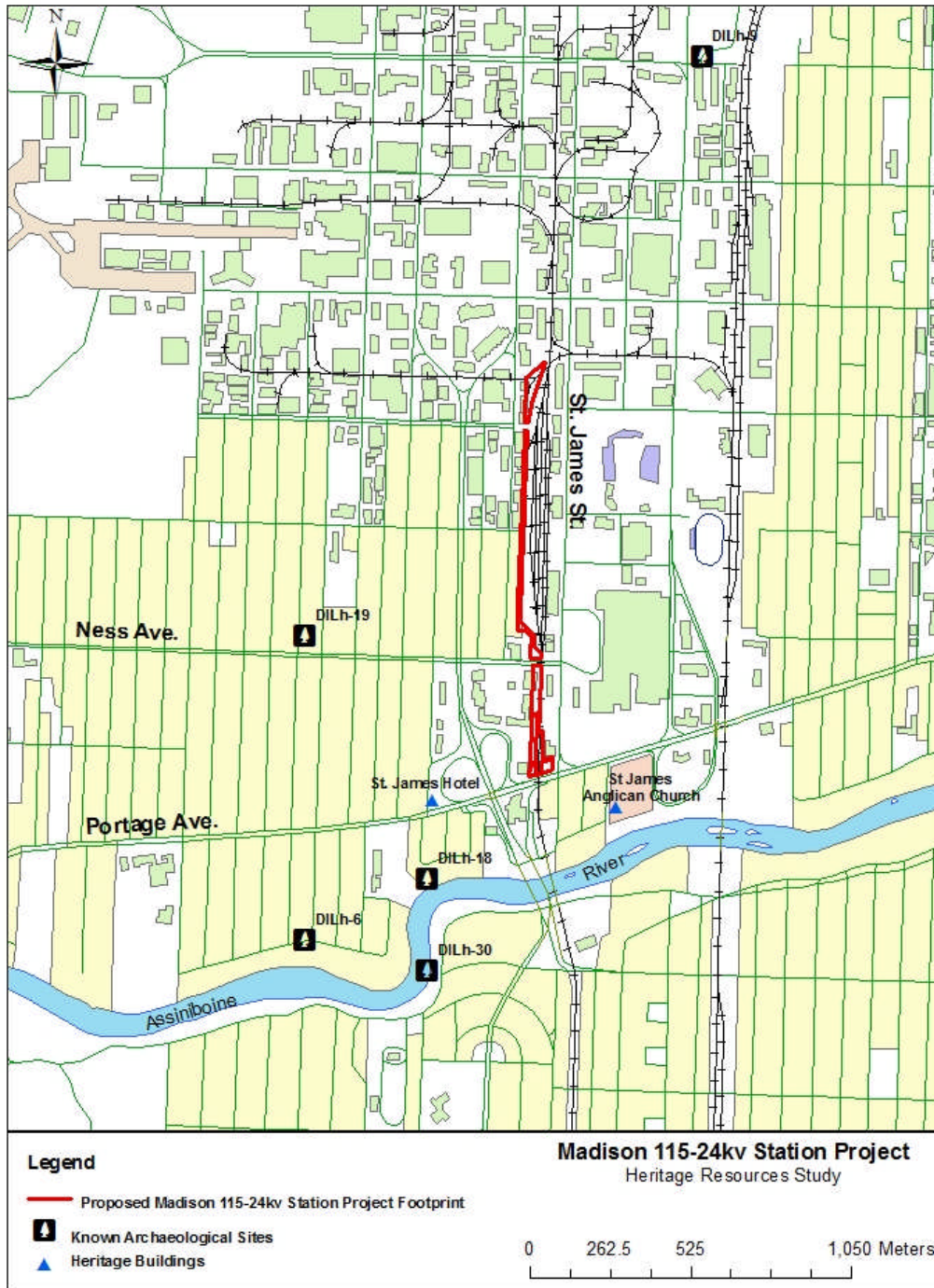


Figure 7: Known Archaeological Resources and Heritage Buildings

station site and lands immediately north and south front onto Madison Street and Century Street (Route 90).

Between St. Matthews and Silver Avenues, lands to the west of Madison Street are also zoned M1. Through this area, lands to the east of Madison Street are zoned C2 – Commercial Community. Between Silver and Ness Avenues, lands to the east and west of Madison Street are zoned R1-M – Residential Single Family. South of the station site and between St. Matthews and Ness Avenues, lands adjacent and east of the existing Manitoba Hydro right-of-way are zoned C3 – Commercial Corridor. Lands to the west between St. Matthews and Silver Avenues are zoned C2 – Commercial Community. South of Silver Avenue, lands to the west of the right-of-way are zoned R1-M. These residences front onto Madison Street so the right-of-way is located behind them. From Ness to Portage Avenues, lands to the east and west of the right-of-way are zoned C2, C3 and C4 – Commercial Regional. The existing St. James Station is zoned M1.

Lands in the area of the project are within the Airport Vicinity Protection Area Planned Development Overlay District. This district is intended to minimize exposure of residential and other sensitive land uses to aircraft and their potential impacts, to minimize risks to public safety from aircraft accidents, and to discourage traffic congestion and incompatible land uses proximate to, and within, airport influence areas. The District is also intended to ensure that the operation of Winnipeg's airport continues to contribute to the economic vitality of the city and the region by avoiding or mitigating potential land use conflicts. The project falls within the Area Overlay District. In this area, no new residential development is permitted unless it is replacing existing residences.

12.0 PUBLIC CONSULTATION

On August 15, 2012, a meeting was held with Manitoba Conservation and Water Stewardship regarding the proposed project. An overview of the proposed project was provided including the plan for public consultation. On November 16, 2012, a meeting was held with representatives from the City of Winnipeg Public Works Department, Transportation Division regarding the proposed project. An overview of the proposed project was provided and there was general discussion regarding potential effects on traffic as a result of the project, including the splices required in the vicinity of Portage and Ness Avenues. It was agreed that Manitoba Hydro will continue to liaise with the Public Works Department regarding the project including possible disruptions to traffic. Other discussions regarding the project were held with the City of Winnipeg.

On November 23, 2012, a public notification describing the proposed project was sent to occupants of businesses and residents adjacent to the proposed project. This included businesses and residents along both sides of Madison Street, as well as businesses along the west side of St.

James Street from the area immediately east of the station site south to the existing St. James Station (Figure 8). The notices outlined project parameters, provided an invitation to the Public Open House and invited feedback on the proposed project. Invitation were also sent to the Manitoba Conservation and Stewardship Environmental Approvals Branch and the City of Winnipeg Public Works Department Transportation Division, as well as Manitoba Telecom Services (MTS) that leases land from Manitoba Hydro on the existing right-of-way for a communications tower. The notice is included as Appendix B.

Telephone calls and correspondence received as a result included the following:

- With respect to a question about whether or not the existing overhead portion of RS51 to the east of the new station would be decommissioned, Manitoba Hydro indicated that the existing line will remain in place to provide power to the station.
- Information was requested about the purpose and format for the Public Open House on December 5, 2012, as well as what information was going to be covered at the open house. In response, it was indicated that the open house would consist of a series of display boards and will be in a come-and-go format from 3 to 8 p.m., and that representatives from Manitoba Hydro will be available to answer questions. In addition, it was indicated that the purpose was notify property owners in the area about the project, and that feedback will be detailed in an environmental assessment report which will be submitted to regulatory authorities for approval.
- Information was requested from a representative for a commercial landowner with properties in the vicinity of the project and, in particular the existing right-of-way, as to whether or not the project might affect future development. A meeting to discuss the project was held on Thursday, December 13, 2012 at Manitoba Hydro offices at 820 Taylor Avenue. At the meeting, the conceptual design for the new 115 kV underground circuit from the existing St. James Station to Madison Station was reviewed. This included discussion of construction methods and splices required south of St. James Station and at Ness Avenue. The representative was advised that during construction, parking on Manitoba Hydro's right-of-way would likely not be permitted and that the construction period could affect various parking areas. The current schedule for the project was outlined and it was agreed that a follow-up meeting might be warranted prior to the commencement of construction.
- MTS indicated that there were no issues with the proposed project as long as they would be able to access their communications tower.

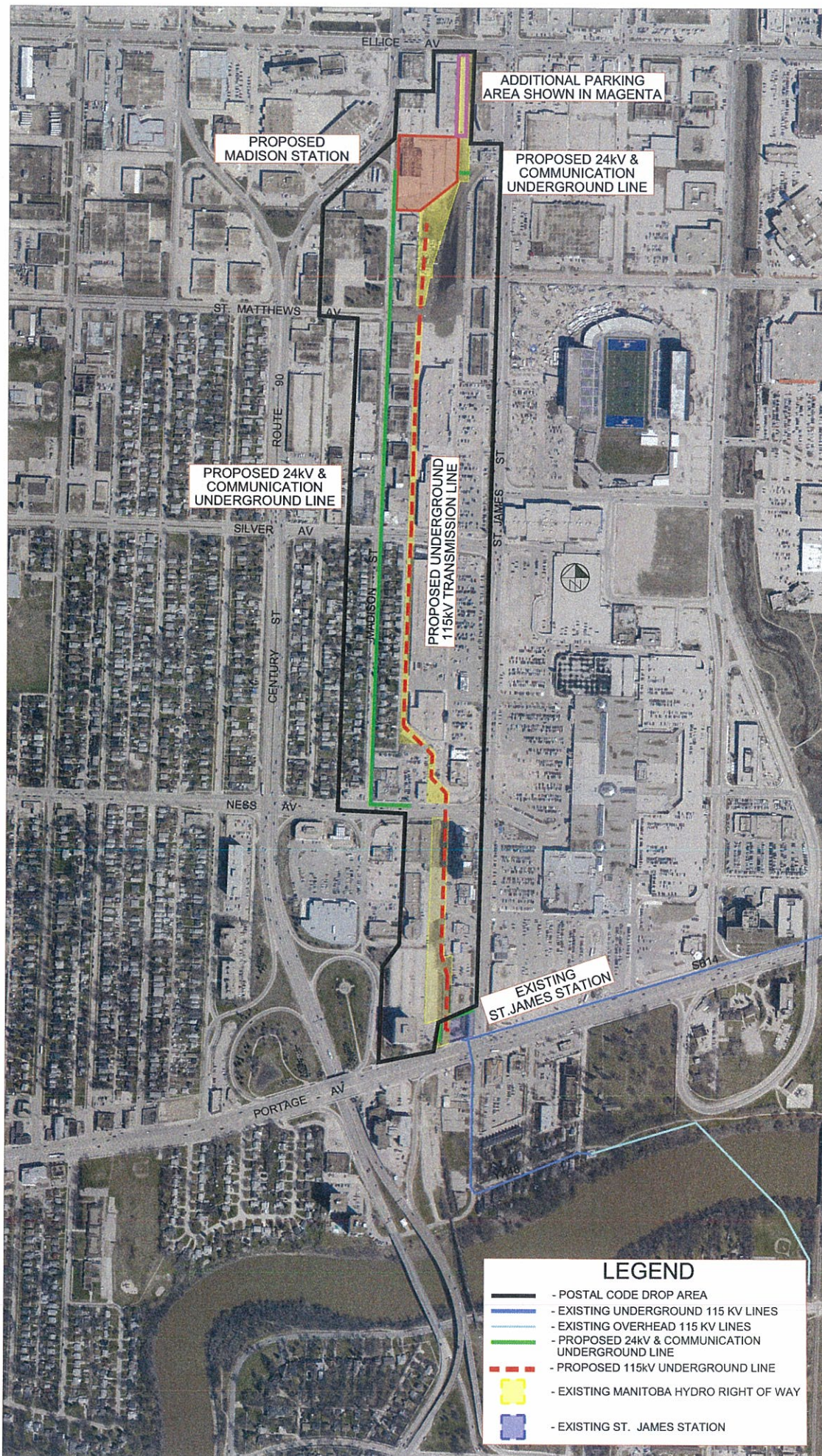


FIGURE 8 PUBLIC NOTIFICATION AREA

On December 5, 2012, a Public Open House was held at the Canad Inns Polo Park (1405 St. Matthews Avenue) from 3:00 to 8:00 p.m. The Open House was advertised in the Metro One newspaper on November 25 and December 5, 2012. A copy of the newspaper notification is found in Appendix B. The Public Open House presented information in written and graphic format on a series of self-standing displays. Manitoba Hydro representatives were available to explain or expand upon written information, answer questions and receive comments from the public in an informal come-and-go format. Displayed information included project details about the following topics:

- Project Need & Purpose
- Station Development Concept
- Station Fencing
- Transmission Line Components
- Sectionalization of Existing 115 kV Transmission Line
- 24 kV Feeder Lines
- 24 kV Duct Line
- Existing St. James Station
- Customer Outages
- Parking
- Traffic Effects – 115 kV Underground Line
- Traffic Effects – 24 kV Duct Line
- Traffic Effects – 115 kV Splices
- Proposed Construction Schedule
- Environmental Licensing

Mapped materials included maps illustrating the project components and the locations of the existing 115 kV transmission lines to be terminated into the new Madison Station.

In addition to general discussions with Manitoba Hydro representatives, attendees were invited to provide their comments in writing on a questionnaire (Appendix B). The questionnaire allowed respondents to offer comments and/or site-specific information to assist in mitigative decision-making. Provisions were made for the questionnaire to either be filled in and left at the open house or mailed to the address shown at the bottom of the questionnaire. Copies of the public notification were available at the Public Open House.

Fifteen people signed the open house guest book. One attendee asked questions about the environmental assessment process and requirements to receive an Environment Act Licence. This attendee was concerned about access to Madison Street and the back lane to the east of Madison Street during construction. In response, Manitoba Hydro indicated that construction would be staged and that access would be maintained to residences and buildings during construction. In addition, there was some discussion regarding health effects and Electric and

Magnetic Fields (EMFs). Representatives from the ALS Society of Manitoba, which operates from a building on Madison Street, expressed some concern about access to the building during construction because many individuals visiting the building are in wheelchairs. Manitoba Hydro representatives agreed to work with the ALS Society of Manitoba to maintain wheelchair access to the building during construction.

Examples of other issues raised included the visibility of the new transmission line. In response, it was advised that the new 115 kV line would be underground. Questions were also asked about possible damages to private property and fencing in which Manitoba Hydro responded that if any damages were to occur, they would be repaired and restored to their current condition. Other questions included the length of construction.

Five questionnaires were returned at the open house and none were subsequently received by mail. Most respondents indicated that they were satisfied with the information being conveyed at the open house. One respondent indicated that the Open House was very informative and that it provided excellent information about the project. Two respondents requested copies of the Open House boards and two large copies of the maps at the Open House. These were subsequently sent to the attendees.

13.0 IMPACT ASSESSMENT AND PROPOSED IMPACT MANAGEMENT

13.1 Overview

Manitoba Hydro's practice is to undertake project development in an environmentally responsible manner. Manitoba Hydro's general practices for the design and construction of stations will be adhered to for the proposed Madison Station Project. These practices are continuously updated and improved, and apply to all of Manitoba Hydro's stations. Given the conventional nature of the proposed development, Manitoba Hydro's standard protocols and generic environmental protection plan for stations, measures should adequately address any related concerns.

For the purpose of the following section, a distinction is made between potential impacts involving accidental release of pollutants and those involving non-pollutant effects associated with normal operation of the proposed station and associated facilities. In addition, the impact assessment and management aspect of the process for the proposed project on components of the biophysical and socio-economic environment are outlined for both construction, and operations and maintenance.

13.2 Potential Impacts from Accidental Release of Pollutants during Operations

Oil Spills

The proposed station will contain three power transformers and three voltage transformers, containing a total of approximately 81,750 litres of insulating oil. None of the oil on-site will contain polychlorinated biphenyls (PCBs). Although the probability of a transformer leak is extremely low, there is some possibility of an accidental oil spill occurring during periodic replacement of the oil during cleaning of the transformer units. Final design of the station will be subject to oil containment assessment procedures. Manitoba Hydro has developed a protocol to facilitate assessment of the potential impact of transformer oil release on surface and groundwater qualities. The guidelines consider risks of both groundwater and surface water contamination (dry or wet weather).

In addition, Manitoba Hydro has developed practices and protocols documented in the Hazardous Materials Management Handbook (2006) to ensure that if there is a spill, it is contained and remediated quickly. Manitoba Hydro further undertakes to have trained personnel in emergency spill response techniques available to respond in the event of an oil spill. The handbook contains guidelines for spill response, guidelines for hazardous waste management and managing specific hazardous materials, including PCB's. Staff and contractors will comply with all laws, by-laws, and regulations pertaining to the transportation and handling of hazardous waste established by federal, provincial and municipal authorities.

Fire

The principal source of fuel for station fires is transformer and cable insulating oil. The proposed station will be designed and operated in accordance with Manitoba Hydro's Fire Manual, prepared by Manitoba Hydro's Fire Prevention Engineer. Oil spill response procedures will help prevent the spread of fire in the unlikely event of a transformer fire.

Chemical Releases or Spills

Chemical use at the proposed station will be limited to materials required for station operation and maintenance, and related disposal of waste or spent materials. The storage, handling and disposal of these chemicals will be carried out in accordance with Manitoba Hydro guidelines, and relevant federal and provincial statutes. Manitoba Hydro has developed a Chemical Control Program that provides its workers with the information required for the safe use of chemicals. Manitoba Hydro also complies with the Federal Workplace Hazardous Materials Information System (WHMIS) regulation, as well as the Provincial Workplace Health Hazard Regulation. An inventory of materials covered by WHMIS will be maintained on-site and proper documentation will be available as required. Staff will receive WHMIS training in compliance

with all corporate policies, procedures and practices and external regulatory requirements. Related materials and sources include the following:

- Ozone – trace amounts can be produced by chemical reactions in periods of high humidity (i.e., air surrounding a conductor becomes electrically ionized [charged] producing a corona effect).
- Sulphur Hexafluoride (SF₆) – This is a gas used in the electrical industry because of its excellent insulating properties. The gas at room temperature is colourless, odourless, non-toxic and non-combustible and, as such, is used as an insulating medium in hermetically-sealed circuit breakers. Its health hazard is as an asphyxiant, a risk that is considered negligible because of the outdoor location of the circuit breakers.
- Carbon Tetrafluoride (CF₄) – This is also a gas used as an insulating medium in hermetically-sealed circuit breakers. As a compressed gas it is colourless, has a characteristic odour and is non-flammable. Principal associated health hazards are as an asphyxiant and as a source of toxic and corrosive vapours. The risk is considered negligible because of the hermetical sealing of the breakers and their outdoor location.
- Herbicides – a weed management program will be implemented along the wall surrounding the station. Herbicides will be used in keeping with established requirements and guidelines for a specific product, as approved/recommended by Manitoba Conservation. All herbicide use will be in accordance with a valid “Pesticide Use Permit” issued by Manitoba Conservation.
- Dry type chemical (portable) fire extinguishers (Type A, B and C) will be kept on-site but are used only in the event of a fire. No halon type fire extinguishers will be present.
- Solvent cleaners and household cleaners – Minor amounts will be used as required in maintenance activity. Solvent use will be subject to applicable Federal and Provincial regulations dealing with controlled products.
- Paint – Painting is a part of regular station maintenance activity. However, paints will not be stored on-site.

There will be no permanent storage of chemicals or gasoline and no use of materials containing PCBs at the proposed station site.

13.3 Non-pollutant Effects during Operations

Noise:

With respect to operations, the principal source of continuous noise from the station will be the operation of the transformer units themselves. The maximum noise level ratings of the new transformer units to be used on-site range from about 50 dBA to 83 dBA. The transformers will meet Canadian Standards Association (CSA) Standards. Other less significant sources of noise will include workers during regular inspection and maintenance once the station is in operation. Given the location of the proposed station site in a commercial/light industrial area, noise levels are not expected to be a concern during operations.

Lighting:

With respect to lighting, there will be continuous lighting at the station during operations. However, given that the proposed station site is located east of Route 90 (Century Street), a major thoroughfare in the City of Winnipeg, and removed from residential development, station lighting is not expected to be a concern. Effects during operations are anticipated to be negligible.

Radio/Television Interference:

During operations, electrical interference from a proposed station on radio and television equipment is not normally a problem. The most common cause of such interference is loose electrical hardware. Individual sources of such interference can be eliminated by proper construction and maintenance methods (i.e., tightening of hardware components). Manitoba Hydro will meet the requirements of *The Radio Communications Act* (R.S., 1985, c. R-2 [as amended to 2007-07-09]) and the Radio Communication Regulations (SOR/96-484, Registration 05 November 1996 [as amended to 2011-02-17]). Manitoba Hydro also meets the requirements of the Industry Canada's Interference-Causing Equipment Standard - ICES-004 Issue 3, December, 2001 - Alternating Current High Voltage Power Systems. Manitoba Hydro will attempt to resolve any radio or television interference problems traceable to the new station. No effects are anticipated during construction.

Electrostatic and Electromagnetic Induction Effects:

During operations, a station will produce electrostatic and electromagnetic induction effects, the consequence of voltage and current respectively. The risks of electrocution and shock are well known and documented. Safe methods, standards and codes of protection for both the public and employees have been established for many years and are routinely used by Manitoba Hydro.

The most common method of protecting against electrostatic induction shock hazard is to ensure that metal objects are adequately grounded. Manitoba Hydro will provide a station ground grid that connects all station metal objects to it (i.e., metal structures, equipment, etc.).

Electromagnetic induction is also a potential impact from the proposed station. This effect occurs when current produces a magnetic field in a metallic object, and depends on the strength of the current and separation distance. However, the physical separation between energized conductors in a station and the surrounding wall assures minimal electromagnetic induction effects.

Electric and Magnetic Fields:

Electric and Magnetic Fields (EMF) are invisible lines of force surrounding any wire carrying electricity, and are produced by all electric tools and appliances, household wiring, and power lines. A transmission line produces an electric field, a magnetic field and corona. Corona and an electric field can cause electrical effects, the most common of which are radio interference, television interference, audible noise, and induction on nearby metallic objects.

Many studies on electric and magnetic fields have been completed worldwide. The general consensus of the worldwide scientific community is that a public health risk from exposure to these fields has not been established. Position statements adopted by Federal and Provincial health agencies express the same view. A health and EMF expert's consensus statement on human health effects of EMFs (Manitoba Clean Environment Commission, March 2001) suggests that "the weight of scientific evidence does not support the conclusion that extremely low frequency EMFs such as those produced by power lines are a cause of adverse effects on human health". The consensus statement also notes "research to date has not confirmed any biophysical mechanisms that would link properties of power and frequency fields to the initiation or promotion of cancer or any other adverse effect on human health."

While Manitoba Hydro is sensitive to public concerns regarding potential health effects from electric and magnetic fields, there is at present no scientific evidence to justify modification of existing practices respecting facilities for the generation, transmission and distribution of electricity. Manitoba Hydro continues to undertake the following actions regarding the issue:

- monitoring of worldwide research programs on electric and magnetic fields;
- participation in and support of on-going health and safety research on the local, national and international levels; and

-
- maintenance of active communications and provision of technical information to interested parties, including the public and agencies responsible for public and occupational health and the environment.

Aesthetics:

In some instances, the physical appearance of stations may cause visual or aesthetic concerns in urban settings or in other sensitive circumstances. In the case of the proposed station site, which is located in a commercial/light industrial area, it is not located in proximity to residential properties. In addition, there is an existing transmission line right-of-way immediately east of the site. As noted above, Manitoba Hydro is planning to install an architectural wall/fence around the station to minimize views of equipment and blend in with the nature of development in the area. As such, in terms of aesthetics, effects are anticipated to be moderate in magnitude, study area in geographic extent, medium term in duration, and therefore not significant.

With respect to the 115 kV transmission lines, RS51, which is being sectionalized into the station, is an existing overhead line immediately south of the site. The existing structure will remain in place and RS51 will be sectionalized underground into the station. The third line will also terminate at the station are underground and hence will not have an aesthetic effect once construction is completed and the right-of-way cleaned up. Effects are anticipated to be minor.

The 24 kV feeders will egress the station underground and will tie into existing feeder lines to the extent possible. In addition, the 24 kV feeders will generally be routed using existing road allowances and existing Manitoba Hydro right-of-way in the area. The 24 kV duct line will be routed underground and hence, will not be visible. Effects are anticipated to be minor.

In summary, the following mitigative measures will be employed for the project:

- Manitoba Hydro will install an architectural wall/fence around the station.

13.4 Biophysical Environment

13.4.1 Air Quality

Construction

There will be a temporary increase in vehicular and equipment traffic during decommissioning of the existing building and parking lot at 555 Madison Street. Construction activities for the project will also result in higher vehicle emissions and potential dust. However, the impacts to air quality are not considered to be a concern given that they will be small in magnitude, study area in geographic extent, short-term in duration, and therefore not significant.

Operations

Effects on air quality during the operations and maintenance phase are expected to be negligible as operations activities are limited to periodic inspections of the facilities.

13.4.2 Terrain and Soils

Construction and Operations

The proposed station is located on lands that have been developed as a building and parking lot and therefore no effect is expected to occur. Similarly, the 24 kV duct line will be constructed under a sidewalk along Madison Street, and hence no effects are expected to occur. The splices for the 115 kV lines will also occur on lands which have been previously disturbed, either within the existing St. James Station site or on the sidewalks at Portage and Ness Avenues. The new approximately 1.5 km of new underground 115 kV transmission line will occur on lands which were formerly used for a railway line and are currently in use as a transmission line right-of-way an existing underground line. Hence, no effects on terrain and soils are anticipated to occur during construction, and operations and maintenance.

13.4.3 Surface and Groundwater

Construction and Operations

There is a potential for impacts on surface and groundwater through construction activities, and through accidental spills or leakage of oil once the station is in operation. The closest surface waterbody to the proposed project is the Assiniboine River which is located approximately 0.5 km to the south of the existing St. James Station and Portage Avenue. There are no effects anticipated on surface water as a result of construction, and operations and maintenance of the proposed project.

The City of Winnipeg obtains its drinking water from the Shoal Lake Aqueduct which is located close to the Manitoba – Ontario border. The potential for impacts on groundwater through station and line construction activity, and through accidental spills or leakage of oil once the station is in operation is considered negligible. The final design of the station will incorporate the results of an oil containment assessment (see Section 13.2, Potential Impact from the Accidental Release of Pollutants during Operations, Oil Spills). The station site drainage system will be constructed in accordance to City of Winnipeg Water and Waste Department requirements. All construction, and operations and maintenance activities associated with development of the proposed project will be subject to Manitoba Hydro's standard procedures for environmental

protection, and will be constructed in compliance with all relevant government legislation and regulations.

13.4.4 Aquatic Resources

Construction and Operations

There are no areas of importance to fisheries or aquatic resources in proximity to the proposed project. The nearest waterbody is the Assiniboine River which is located to the south of the existing St. James Station and Portage Avenue. No effects to the aquatic environment and fisheries associated with the construction, and operations and maintenance of the proposed project are anticipated to occur.

13.4.5 Vegetation

Construction and Operations

The proposed station, 24 kV duct line and splices for the approximately 1.5 km of new underground 115 kV transmission line will be constructed on lands which are developed. The station site has a building and the remainder of the property is paved. In the case of the 24 kV duct line, it will be routed under the sidewalk along Madison Street. In the case of the new underground line, lands in the right-of-way were formerly used for a railway line and currently contain the existing RS51 115 kV transmission line (consisting of both underground and overhead sections). For most of its length, the right-of-way is paved. Where it isn't paved (east of the proposed station site and immediately west of St. James Station), the right-of-way is being maintained as part of Manitoba Hydro's right-of-way maintenance program. With respect to the station site, vegetation management will be limited to the occasional use of approved mechanical and chemical measures to control weeds at the site. Given this, no effects are anticipated during construction, and operations and maintenance.

13.4.6 Wildlife and Habitat

Construction and Operations

The proposed project has limited potential for wildlife species due to the developed nature of the sites for the proposed facilities and its location in the City of Winnipeg. As with any station development or transmission development, there is a possibility for bird strikes to occur. However, given that the new 115 kV transmission line will be routed underground in an existing right-of-way which is largely paved, the potential effect is considered to be minor to negligible. Similarly, given the location of the proposed station, potential effects are considered to be minor.

Neither the station site or associated 115 kV and 24 kV line components are located near areas of high quality habitat.

13.5 Socio-Economic Environment

13.5.1 Population

Construction and Operations

Given that the workforce required to construct the project is on average 40 workers with a peak of 75 workers, no effects on population are anticipated.

Operations

Station operations will be limited to periodic routine inspection and maintenance activities, or in the case of an emergency. No effects on population are anticipated from the proposed project.

13.5.2 Economy

Construction

No adverse effects on existing economic activities are anticipated from the proposed project. There is the potential for the purchase/contract of local goods and services accessed as a result of the proposed project, which would be consistent with the relatively small size and scale of the project. Although positive, the benefits to the economy from project construction small and short-term in duration.

Operations

Benefits to the economy from operations in terms of the potential purchase/contract of local goods and services are anticipated to be negligible.

12.5.3 Property Ownership and Land Use

Property Ownership:

Construction and Operations

The site on which the proposed station will be situated is owned by Manitoba Hydro as is the right-of-way for the new approximately 1.5 km of underground 115 kV transmission line. The 24 kV duct line will be located underground along Madison Street on property owned by the City

of Winnipeg. Manitoba Hydro and the City of Winnipeg have an approvals process in place to obtain permission to locate the 24 kV duct line underground. Following construction, the sidewalks will be replaced and constructed to City of Winnipeg standards. No effects on property ownership are expected from construction and operations of the proposed project.

*Nuisance Effects:***Construction**

Construction related impacts on area residents and commercial developments will potentially involve nuisance effects include noise, lighting and dust. The proposed station site is not in proximity to residential development. The nearest residences are located along Madison Street, to the west of the existing Manitoba Hydro right-of-way for the new underground line. Through this area, there are residences immediately west of the right-of-way, on the east side of Madison Street, between Silver and Ness Avenues. A back lane separates the residences from the right-of-way, and the residences face away from the right-of-way. On the west side of Madison Street, there are also residences between Silver and Ness Avenues. The 24 kV duct line will run underground along Madison Street. During construction, there will be some impacts on residences and businesses in the area. Construction related nuisance effects will be small in magnitude, intermittent, short-term in duration, and therefore not significant.

Connecting the existing 24 kV distribution feeders from St. James Station to the new station will involve some power outages. The transfer of the feeders to the new station will be planned and coordinated to ensure minimal disturbances and outage times. Wherever possible, feeder transfers will not result in an outage to customers. However, there may be instances where Manitoba Hydro will have to momentarily interrupt customers to change over to the new station. Effects are anticipated to be small in magnitude, intermittent, short-term in duration, and therefore not significant.

Operations

Lighting, noise and nuisance effects during operations are addressed above in Section 13.3, Non-Pollutant Effects during Operations. Operations related nuisance effects are expected to be small in magnitude, intermittent, medium-term in duration, and therefore not significant.

*Public Safety:***Construction and Operations**

Temporary fencing will be installed around the proposed station site in 2013 following decommissioning of the existing building and parking lot. Permanent fencing will be installed in

2015 following the completion of construction of the station. With respect to all project components, the Contractor will be required to follow established safe work procedures to ensure public safety during construction. No effects are anticipated during construction and operations. In summary, the following mitigative measures will be employed to ensure public safety:

- Temporary fencing will be placed around the station site following decommissioning of the building and parking lot.
- Permanent fencing/wall will be placed around the station following construction.
- Manitoba Hydro and its Contractors will follow safe work procedures.

13.5.4 Mineral Resources

Construction and Operations

There are no mineral dispositions or quarry leases in the vicinity of the proposed project. No adverse effects on mineral resources are anticipated from the project.

13.5.5 Infrastructure and Services

Construction

MTS leases land along the existing Manitoba Hydro right-of-way to the east of the station site for a communications tower. The tower is located to the southeast of the station site. MTS representatives indicated that there were no issues with the proposed project as long as they would be able to access their communications tower. Manitoba Hydro will liaise with MTS representatives with respect to the construction schedule in order not to disrupt access to the communications tower. Effects are anticipated to be negligible.

Offices at 1680 Ellice Avenue have been using parking spots on Manitoba Hydro's property for the proposed station site. As part of the agreement to purchase the property, Manitoba Hydro agreed to provide 35 parking spaces for the offices. Prior to decommissioning of the parking lot at 555 Madison Street, Manitoba Hydro will construct the new parking spaces to the west of the office building with access off of Ellice Avenue. The land that the parking spaces will be constructed on land which is owned by Manitoba Hydro. Effects are anticipated to be negligible.

Towers Reality, the owners of the office building at 1661 Portage Avenue, have a lease agreement with Manitoba Hydro to use part of the west side of Hydro's existing right-of-way north of Portage Avenue for parking for its tenants. In addition, 57655 Manitoba Ltd. have a lease agreement to use part of the west side of Manitoba Hydro's existing right-of-way for parking for its commercial building at 1600 Ness Avenue. Construction of the approximately 1.5 km of underground 115 kV transmission line from SB14 115 kV underground line is anticipated

to temporarily affect parking. During construction, parking on the right-of-way will likely not be permitted because of safety concerns. The construction period that could affect various parking areas could be as long as one month. Manitoba Hydro has lease agreements with one apartment block owner and two commercial developments for parking on the east side of the existing right-of-way. These leases will not be affected by the construction of the new 115 kV underground line as these lands are located on the east side of the right-of-way and the new line will be constructed to the west of the existing RS51 115 kV transmission line. During construction, effects are anticipated to be negative, small in magnitude, short-term in duration, and therefore not significant.

Traffic impacts will result from the movement of equipment and people during construction of the project. Any construction activity and vehicle movement will be small in magnitude and short-term in duration, and will be subject to standard environmental protection practices for construction. Regulations pertaining to land use such as load and bridge height restrictions will be observed. Equipment and materials for the project will be delivered from contractor yards, vendor facilities, and Manitoba Hydro's distribution centres by Manitoba Hydro and contractors on existing municipal roads. During construction, the workforce is estimated to average about 40 workers with a peak of 75. Effects are anticipated to be negative, small in magnitude, short-term in duration, and therefore not significant.

Apart from vehicle and equipment road access during the construction period, the development of the proposed project will have little impact on area infrastructure. With respect to the approximately 1.5 km of underground 115 kV line, between St. Matthews and Ness Avenues, a back lane will be used to access the existing right-of-way. Access along the back lane will not be impeded but some minor disturbances to traffic will occur. Construction activities will be short-term in duration (approximately two to three weeks). Residents and businesses will be advised regarding construction schedules. Effects are anticipated to be negative, short-term in duration, small in magnitude, study area in geographic extent, and therefore not significant.

Temporary interruption of traffic along Madison Street is required in order to construct the 24 kV underground duct line. Closures will be staged along Madison Street. Construction of the duct line will be short-term in duration (approximately three to five weeks) and will likely extend one week per section. Residents and businesses will be advised regarding construction schedules. Effects are anticipated to be negative, short-term in duration, small in magnitude, study area in geographic extent, and hence not significant.

After the 24 kV duct line is in place and cabling has been installed, splicing will be required at Ness Avenue to connect existing feeders to the new station. Traffic disruptions at Ness Avenue will occur and will be approximately one week in duration. In addition, splicing may also be required south of St. James Station along the sidewalk on Portage Avenue to connect the new 115 kV underground line to the existing LaVerendrye to Mohawk 115 kV underground line. If

splicing is required outside of St. James Station, there may be some minor traffic disruptions at Portage Avenue because one lane immediately south of the station may need to be closed for approximately one week. In addition, the sidewalk directly south of St. James Station may need to be closed for approximately two to three weeks. If the sidewalk needs to be closed, signage will be placed to alert pedestrians that the sidewalk is closed. Effects are anticipated to be negative, short-term in duration, small in magnitude and regional in area, and hence not significant.

Manitoba Hydro has consulted with the City of Winnipeg Public Works Department, Transportation Division and minor effects on traffic are anticipated from the proposed project during construction. Manitoba Hydro will continue to liaise with the Public Works Department regarding the project including possible disruptions to traffic.

With respect to community services (including emergency response), the average workforce for the project is expected to be 40 persons on average with a peak of 75 persons. Given the location of the proposed project in the City of Winnipeg, and the small workforce numbers, effects on community services from construction are anticipated to be small in magnitude, short-term in duration, and therefore not significant.

In summary, the following mitigative measures will be used to minimize potential effects on infrastructure and services:

- Manitoba Hydro will liaise with MTS representatives with respect to the construction schedule to ensure MTS has access to its communications tower.
- Prior to decommissioning of the building and parking lot at 555 Madison Street, 35 parking spaces will be created for tenants in the commercial building located at 1680 Ellice Avenue.
- In terms of traffic, Manitoba Hydro and its Contractors will adhere to regulations such as load and bridge height restrictions.
- Manitoba Hydro will continue to liaise with the City of Winnipeg Public Works Department regarding traffic.
- Directly affected residences and businesses (i.e., along Madison Street) will be notified regarding construction schedules to minimize disruption.
- If the sidewalks along Madison Street need to be closed during construction of the 24 kV duct line, signage will be placed to ensure public safety.

Operations

During operations, traffic generated will be limited to periodic routine inspection and maintenance activities, or in the case of an emergency. No mitigative measures are required. Effects during operations are expected to be negligible.

13.5.6 Recreation and Tourism

Construction and Operations

The development of the proposed project is not expected to adversely affect recreation as there are no facilities for recreation in the immediate area during construction and operations. The closest is Canad Inns Stadium which is located to the southeast of the proposed station site. Canad Inns Stadium is planned to be decommissioned prior to the start of construction of the proposed project and replaced with commercial development.

13.6 Heritage Resources

Construction

Although there are no heritage sites located in immediate vicinity of the project, caution should be taken during construction of the new underground line immediately west of St. James Station and in the vicinity of the station because of the proximity to the St. James Anglican Cemetery. Early church practice was to bury stillborns and suicides outside the registered cemetery. Further, because of the former Indian burial mound within the vicinity, caution is required during any subsurface construction.

Should burials or human remains be encountered during any activity related to construction of the Project, Manitoba's *Heritage Resources Act* (1986) and the *Policy Concerning the Reporting, Exhumation and Reburial of Found Human Remains* (1987) will take effect. At this point, work at the location will be stopped and Historic Resources Branch and the project archaeologist are to be contacted immediately.

Operations

No effects are anticipated during operations.

13.7 Residual Effects

Through the environmental assessment process, Manitoba Hydro has sought to avoid adverse effects and enhance positive benefits, wherever possible or practical. As outlined in the previous sections, the project is not expected to cause significant adverse effects. Residual effects from the project are described below and on Table 4.

Table 4: Residual Environmental Effects Summary

Phase	Residual Effect	Assessment¹
Construction & Operations	Risk of Contingency Events due to Accidents and Malfunctions (small risk which will be mitigated through design & compliance with government regulations, & institution of environmental construction practices, operating procedures & emergency response plans)	Direction – Negative Magnitude – Small Geographic Extent – Project Site Duration – Short to Medium-Term Overall – Not Significant
Construction	Increased Stress on Infrastructure and Services (traffic, parking and community services)	Direction – Negative Magnitude – Small Geographic Extent – Regional Duration – Short-Term Overall – Not Significant
Construction & Operations	Public Safety (considered a small risk given Manitoba Hydro’s and contractor’s adherence to safe work procedures)	Direction – Negative Magnitude – Small Geographic Extent – Project Site Duration – Short to Medium-Term Overall – Not Significant
Construction & Operations	Nuisance Effects (noise, vibration and dust during construction, and noise and lighting in the vicinity of the station during operations)	Direction – Negative Magnitude – Small Geographic Extent – Study Area Duration – Short to Medium-Term Overall – Not Significant
Operations	Physical Presence of the Station	Direction – Negative Magnitude – Small Geographic Extent – Study Area Duration – Medium-Term Overall – Not Significant

1. Expected residual effects (i.e., effects after mitigation) of the Project are assessed using the regulatory significance evaluation approach and methods defined in Section 4.0.

Risk of Contingency Events due to Accidents and Malfunctions: There will be a residual increase in the potential risk of contingency events relating to the construction, and operation and maintenance of Madison Station. The risk of related effects (i.e., oil spills, fires, etc.) will be mitigated to the maximum extent feasible through design, compliance with government regulations, and institution of appropriate environmental construction practices, operating procedures and emergency response plans. All activities conducted on-site will be undertaken in compliance with current Workplace, Safety and Health requirements and Manitoba Hydro standards. Regular inspection of the station will be undertaken to ensure potential problems are identified and rectified in advance of equipment failure or malfunction. As such, the associated risks are considered to be mitigable, manageable and insignificant.

Increased Stress on Infrastructure and Services: During construction of the project, there will be increased stress on infrastructure and services (traffic, parking and community services). Residual effects are considered to be negative, small in magnitude, regional in geographic extent, short-term and intermittent in duration, and therefore not significant.

Public Safety: There is a small risk to public safety during construction of the project, and operations and maintenance of the station. Given Manitoba Hydro's and contractors adherence to safe work procedures, effects are expected to be small in magnitude, project site in geographic extent, and short to medium-term in duration, and therefore not significant.

Nuisance Effects: There will be unavoidable residual effects in terms of noise, vibration and dust during construction of the project, and noise and lighting in the vicinity of the station during operations. Effects are anticipated to be small in magnitude, study area is geographic extent, short-term and intermittent in duration during construction, and medium-term during operations and maintenance. Given the short-term and intermittent nature of effects during construction, effects are considered to be not significant. Given the location of the station in a commercial/light industrial area, effects during operations and maintenance are also considered to be not significant.

Physical Presence of the Station: The presence and appearance of Madison Station will alter the site's landscape for as long as the facility is in operation. The current use of the site, its location away from residential development, and installation of architecturally fencing will reduce effects. No residual aesthetic effects are anticipated from the 115 kV underground line, 24 kV underground duct line, and splices. With respect to the station, effects are anticipated to be medium-term in magnitude, study area in geographic extent, and therefore not significant.

13.8 Cumulative Effects

The effects described in Sections 13.1 to 13.5 of this document range from small to negligible in nature. To the extent that certain of the identified impacts will entail some negative residual

effects (i.e., increased stress on services, physical presence of the facilities, risk of contingency events), these are essentially incremental in nature and not inconsistent with existing uses in the area of the proposed project. The effects identified are also not unusual in the context of the character of the general area in the vicinity of the proposed project. The residual project effects, in combination with the cumulative effect of other projects and activities are mitigable, manageable and not significant.

The potential for biophysical effects associated with the Madison Station Project are negligible. Accordingly, there is little prospect for potential related cumulative effects. In the case of socio-economic effects, particularly those relating to residual cumulative effects on neighbouring properties and land uses, there is some potential for cumulative effects. Because some of the effects (e.g., physical presence of the station, noise) are effectively limited to the immediate environs of Madison Station, the only real potential of a related cumulative effect would be in the event of further development adjacent or in close proximity to the project site.

The cumulative effect of other developments (i.e., redevelopment of the former Canad Inns Stadium for retail and office developments, traffic infrastructure improvements in the vicinity of St. James Street^b; the possible expansion of Kenaston Boulevard between Ness and Taylor Avenues^c to six lanes; and a gas bar and office complex at 480 Madison Street in combination with the proposed project will depend on timing of construction activities for the projects.

These projects are likely to generate at least some similar effects during construction (i.e., traffic, noise, dust) to those sited for development of the Madison Station Project. Although largely mitigable, depending on the timing, the cumulative residual impact of these effects may represent a short-term adverse effect. Mitigative measures will be applied to the Madison 115 – 24 kV Station Project, and reasonably foreseeable projects as they proceed. With respect to the possible extension of St. Matthews Avenue to St. James Street, installation of the 115 and 24 kV lines is anticipated to occur in the spring to fall of 2015. Traffic infrastructure improvements are anticipated to occur in 2013 and 2014. As noted, Manitoba Hydro is committed to continuing to liaise with the City of Winnipeg Public Works Department Transportation Division regarding the Madison Station Project.

Planned and possible future projects will also be subject their own approval processes. This will mitigate the potential for cumulative effects to occur. There is no reason to expect that the

^b The City of Winnipeg is expected to decide on traffic infrastructure improvements in early to mid 2013. This may include the extension of St. Matthews Avenue to St. James Street. The extension of St. Matthews Avenue would cross Manitoba Hydro's existing right-of-way to the southeast of the station. Improvements are anticipated to occur in 2013 and 2014.

^c Note: The City of Winnipeg Public Works Committee voted in favour of a preliminary design that would see Kenaston Boulevard expanded to six lanes between Ness and Taylor Avenues in January. The City of Winnipeg master transportation plan calls to Kenaston Avenue between Ness and Taylor Avenues to be widened by 2016.

addition of the new projects will themselves' contribute significantly to an increase in area development pressure.

The construction of the Madison 115 – 24 kV Station Project will ensure a reliable electrical supply to the St. James area. To the extent that the proposed project will address this issue, it will make a positive contribution to the area's socio-economic environment with no significant associated adverse effects.

13.9 Conclusions

The construction of the Madison 115 – 24 kV Station Project will ensure a reliable electrical supply to customers in the St. James area, address load growth, as well as safety and reliability issues associated with the aging St. James Station. As noted in the environmental report, Manitoba Hydro's practice is to undertake project development in an environmentally responsible manner. Manitoba Hydro has an Environmental Protection Program and a generic Environmental Protection Plan (EnvPP) in place for electrical sub-stations. The Environmental Protection Program provides a framework for the implementation, management and monitoring of environmental protection measures that satisfies corporate policies, regulatory requirements, environmental protection guidelines and best practices, and inputs from stakeholders and the public. The Program includes measures to ensure that unforeseen environmental effects are identified and addressed. Roles and responsibilities for Manitoba Hydro employees and contractors are defined, along with management, information, communications and reporting structures. Manitoba Hydro's generic EnvPP provides Manitoba Hydro project managers and construction supervisors, and construction contractors with detailed environmental protection measures which will be complied with for the Madison 115 – 24 kV Station Project. The Project will make a positive contribution to the area's socio-economic environment with no significant adverse effects.

14.0 REFERENCES

- Hegmann, et. al., *Canadian Environmental Assessment Practitioners Guide*. 1994.
- Industry Canada. Interference Causing Equipment Standard – ICES-004, Issue 3, December 2001. Alternating Current High Voltage Power Systems.
- Krawchuck, B.P. and A. Snitowski. *Manitoba Ambient Air Quality Annual Reports for 2003, 2004 and 2005*. January 2008 (Report No. 2008-01).
- Manitoba Clean Environment Commission. *Workshop Report: Review of Electric and Magnetic Fields (EMFs)*. March 2001.
- Manitoba Clean Environment Commission. *Electric and Magnetic Fields (EMFs) Health and EMF Expert's Consensus Statement*. March 2001.
- Manitoba Conservation Data Centre. 2012. *Natural Heritage Biological & Conservation Data System*. Manitoba Conservation, Biodiversity Conservation. Winnipeg.
- Manitoba Hydro. *March 2007. Study of the 115 kV Transmission Supply to St. James and Sherbrook Station*.
- Manitoba Hydro. *November 2011. City of Winnipeg Multi-Station Capacity Enhancement Report*.
- Manitoba Hydro. 2006. *Hazardous Materials Management Handbook Part 3: Managing PCBs*. Revision April 2006, Winnipeg.
- Michalyna, M., Wm. Gardiner and G. Podolsky. 1975. *Soils of the Winnipeg Region Study Area*. Canada-Manitoba Soil Survey, Canada Department of Agriculture, Manitoba Department of Agriculture, Manitoba Department of Mines and Natural Resources, and Department of Soil Science, University of Manitoba.
- MMM Group Ltd. *Former CN Intemodal Terminal Lands Redevelopment Kenaston Boulevard & Sterling Lyon Parkway PW 2/08 & DASZ 37/08, Traffic Impact Study*. February 27, 2009.
- National Energy Board Filing Manual. 2008. www.neb-one.gc.ca/clf-nsi/rplctn/ctsndrgltn/flngmnl/fmgdA-2-eng.html.

Pinchin Environmental. *Phase I Environmental Site Assessment 555 Madison Street*. August 2008a.

Pinchin Environmental. *Phase II Environmental Site Assessment 555 Madison Street*. August 2008b.

Pinchin Environmental. *Property Condition Survey 555 Madison Street*. August 2008c.

Smith, R.E., H. Veldhuis, G.F. Mills, R.G. Eilers, W.R. Fraser, and G.W. Lelyk. 1998. *Terrestrial Ecozones, Ecoregions and Ecodistricts of Manitoba, An Ecological Stratification of Manitoba's Natural Landscapes*. Agriculture and Agri-Food Canada, Research Branch, Brandon Research Center, Land Resources Unit, Winnipeg, Manitoba. Report and 1:1.5 M scale map.

Statistics Canada. *2006 Community Profiles for Winnipeg Census Subdivision*. www.statisticscanada.ca.

Statistics Canada. *2011 Census Profile for Winnipeg Census Subdivision*.

The City of Winnipeg Zoning By-Law 200/06. www.statisticscanada.ca.

The City of Winnipeg, *Winnipeg Transportation Master Plan*. October 2011.

The City of Winnipeg. *Traffic Flow Map*. 2009.

The Heritage Resources Act, S.M. 1986.

The Radio Communications Act (R.S. 1985, c R-2 [as amended 2007-07-09]).

The Radio Communications Regulation (SOR/96-484, Registration 05 November 1996 [as amended to 2011-02-17]).

www.economicdevelopment.winnipeg.com

www.tuitiempo.net/en/climate/Winnipeg_Int_Airport/718520htm.