

Canadian Brownfields Case Study

Brownfield Remediation of the former North West Smelting and Refining Property



Source: Dillon Consulting Ltd. (2019)

Figure 1: Satellite Image outlining the boundaries of the former North West Smelting and Refining property located within Winnipeg's Omand's Creek Industrial Park prior to remediation.

PROJECT SUMMARY

The former North West Smelting and Refining property at 2185 Logan Avenue, within Winnipeg's Omand's Creek Industrial Park, required extensive remediation due to contamination from historical lead smelting and battery recycling activities¹. The site was heavily impacted by metals such as lead, cadmium, and arsenic.

In 2017, remediation efforts began through a partnership between the Province of Manitoba's Orphaned Sites Program, the City of Winnipeg, and private sector partners. The project aimed to mitigate environmental risks, safeguard Omand's Creek, and restore the site for future commercial use, critical for supporting the area's role as a key industrial and employment hub³.

Acting under a Director's Order from Manitoba Sustainable Development (now Manitoba Ministry of Environment and Climate Change), a cost-effective hybrid remediation strategy was implemented. Smelter foundations were demolished, contaminated soils excavated, and much of the material consolidated beneath an engineered cap on-site, minimizing costly off-site disposal⁴.

Collaboration among the Manitoba Ministry of Environment and Climate Change, Dillon Consulting Ltd., Tervita Corporation, Colliers International, Thompson Dorfman Sweatman LLP, and the City of Winnipeg was central to the project's success.

Recognized as a 2023 Brownie Awards Finalist in the Reinvest: Financing, Risk Management and Partnerships category, the project stands as a model for remediating orphaned brownfield sites through effective public-private collaboration. The remediation returned the property to productive commercial use, supporting continued economic growth and employment opportunities within Omand's Creek Industrial Park and the broader City of Winnipeg⁹.

Quick Facts

Location

Winnipeg, Manitoba

Project type

Financing, Risk Management and Partnership

Site size

1.85 hectares / 4.5 acres

Land uses

Industrial, Commercial, Manufacturing

Keywords/special features

North West Smelting and Refining, Orphaned, Partnership, Remediation, Risk Management, Excavation, Cap

Website

<https://www.dillon.ca/projects/remediation-of-north-west-smelting-and-refining-winnipeg-mb/>

Project address

2185 Logan Ave. Winnipeg, MB

Brownfield Awards

2023 Brownie Award Finalist: Reinvest, Partnership and Risk Management

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Case studies were prepared as a course assignment by students enrolled in PL8312/PLE845: Brownfields & Sustainable Development, School of Urban and Regional Planning, Toronto Metropolitan University (Winter 2025). Information for the case studies was obtained from online sources, available reports, and, in some cases, site visits and direct communication with stakeholders. If you are aware of any errors or updates to the case studies, please contact chris.desousa@torontomu.ca. The opinions expressed in this case study are those of the authors only and do not represent the opinions and views of either Toronto Metropolitan University, the School of Urban and Regional Planning, or the Canadian Brownfields Network.



Site Characteristics & History

The former North West Smelting and Refining property is located at 2185 Logan Avenue, within the Omand's Creek Industrial Park in northwestern Winnipeg, approximately seven kilometres from the downtown core (Portage & Main). The site is zoned M2 – Manufacturing Heavy Industrial. Historically, it operated as a lead smelting and battery recycling facility, activities that resulted in significant soil and groundwater contamination. Environmental investigations beginning in 1991 identified elevated concentrations of heavy metals, including lead, cadmium, and arsenic, along with a historical waste disposal area containing battery casings and metal debris⁶.

By 2010, the Province of Manitoba formally designated the site as contaminated under The *Contaminated Sites Remediation Act*, recognizing the severity of environmental impacts. Following decommissioning and abandonment, the smelting and refining buildings were demolished by 2012, leaving concrete foundations and residual contamination. The southern portion of the site had accommodated smelting operations, while the northern section contained storage areas and a historical landfill where battery debris was buried beneath grass cover⁷.

Due to the site's limited property value, high remediation costs, and significant environmental liabilities, private sale or redevelopment was not feasible. Consequently, North West Smelting and Refining Ltd. (NWSR) effectively orphaned the property, leaving responsibility for remediation to the Province of Manitoba⁹.

Located within the well-established Omand's Creek Industrial Park, the property benefits from proximity to Winnipeg James Armstrong Richardson International Airport and major transportation routes, making it an important industrial and employment area. However, its contamination and adjacency to Omand's Creek, a tributary of the Assiniboine River, posed serious risks to local waterways and nearby properties, necessitating environmental intervention².

In 2017, remediation efforts were initiated through a partnership between the Province of Manitoba's Orphaned Sites Program, the City of Winnipeg, and private partners. The goal was to reduce environmental risks, ensure public safety, and return the property to productive commercial use, supporting the continued economic vitality of Omand's Creek Industrial Park and the broader City of Winnipeg⁷.

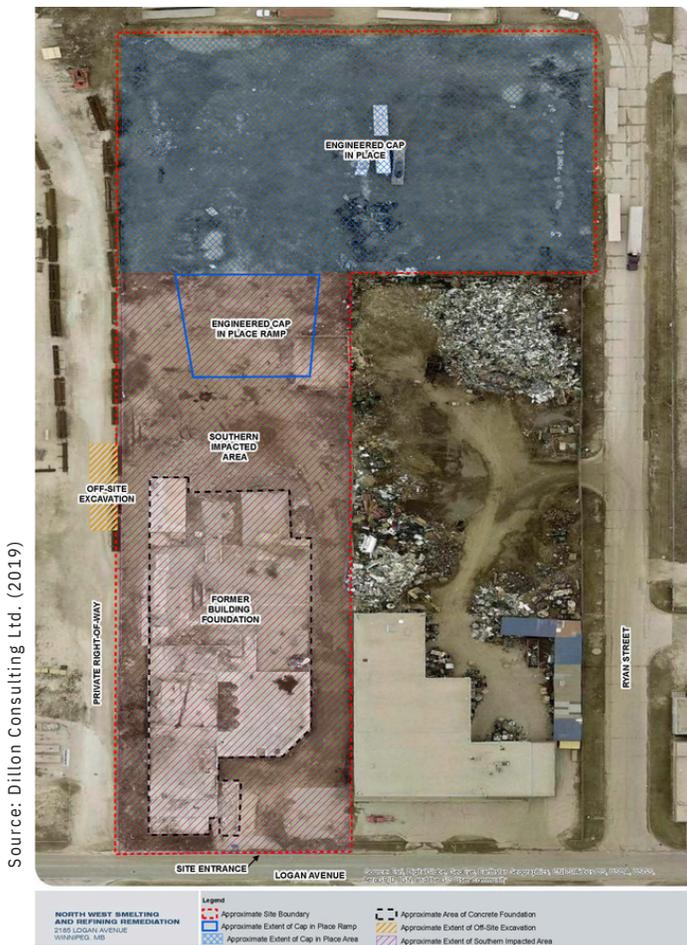


Figure 2: Site plan illustrating the remediation process, including the removal of former building foundations and contaminated soil in the southern portion of the site, and the construction of an elevated engineered cap in the northern portion, where much of the excavated soil was consolidated beneath using risk management techniques.



Figure 3: Excavation of contaminated soil on the southern portion of the property adjacent to Logan Ave.



Figure 4: Installation of geogrid over the engineered cap on the northern portion of the property. The geogrid reinforces the soil layers covering the underlying contaminated material, helping to prevent cap failure caused by settlement, erosion, or traffic loads, and reducing the risk of contaminant exposure.

Assessment & Cleanup

Following a 2017 Director's Order from Manitoba Sustainable Development (now the Manitoba Ministry of Environment and Climate Change), a comprehensive assessment and cleanup was undertaken to address the property's significant contamination from former smelting and battery recycling activities. This led to a Remedial Options Analysis, which recommended a hybrid remediation approach balancing effectiveness and cost-efficiency⁴.

The selected strategy involved stabilizing contaminated materials in place at the historical landfill in the northern portion of the site, covering it with an engineered cap. Contaminated soils from the southern portion were excavated and relocated beneath the cap, reducing the need for off-site disposal⁴. See *figures 2, 3, & 4* above.

The remediation plan included detailed technical specifications, design drawings, and obtained all necessary development permits from the City of Winnipeg. Construction activities were carefully managed, with continuous soil sampling to ensure compliance with environmental standards. Demolition work included the removal of building foundations, railway tracks, and lead-containing materials. A robust material management plan ensured the proper handling of all waste streams, including landfilling non-recyclable materials, recycling concrete and metal, and transporting hazardous waste to licensed facilities⁴.

Excavation proceeded in phases, utilizing X-Ray Fluorescence (XRF) technology for real-time detection of heavy metals. During the process, unforeseen materials such as kilns beneath building foundations were uncovered, prompting a redesign to expand and raise the engineered cap. In total, approximately 8,500 m³ of contaminated soil was relocated beneath the cap, and about 500 m³ of hazardous granular material was removed⁴.

Planning & Regulatory Context (including Community Involvement)

The remediation of the former North West Smelting and Refining property involved navigating complex land-use planning and regulatory frameworks. The 2017 Director's Order issued by Manitoba Sustainable Development (now the Manitoba Ministry of Environment and Climate Change) highlighted the essential role of regulatory oversight in addressing legacy contamination and enabling the property's return to productive use.

Close coordination among the Ministry, Dillon Consulting Ltd., and remediation contractor Tervita was crucial to ensuring compliance with relevant environmental regulations, including the Canadian Council of Ministers of the Environment (CCME) Soil Quality Guidelines. The site's location within the Omand's Creek Industrial Park, zoned M2 - Manufacturing Heavy Industrial, further informed the remediation approach. Additionally, securing a development permit from the City of Winnipeg was necessary, particularly regarding the design and integration of the engineered cap with the city's land drainage system and existing infrastructure. The successful completion of the remediation and regulatory process was confirmed with the issuance of a closure letter, clearing the southern portion of the site for unrestricted development and designating the northern portion for storage or parking⁹.

In Manitoba, brownfield remediation is governed by The *Contaminated Sites Remediation Act*, which outlines procedures for identifying, assessing, and remediating contaminated properties. However, the *Act* does not explicitly require community consultation as part of the remediation process. Similarly, the City of Winnipeg does not have specific policies mandating public involvement in brownfield projects⁹. For the remediation of the former North West Smelting and Refining property, available records do not indicate any formal community consultation initiatives during the remediation. The project primarily focused on technical components such as demolition, excavation, soil management, and regulatory compliance. While formal public engagement was not required, it is standard practice in projects of this nature to maintain communication with nearby businesses and property owners, particularly regarding safety measures and project timelines. Strict adherence to health and safety protocols, including regular inspections and site meetings, would have supported public confidence throughout the remediation process².

Building Development

This case study of the former North West Smelting and Refining property focuses on publicly-led remediation effort (public-private partnership) through a provincial program led by the Government of Manitoba to address extensive soil and groundwater contamination resulting from historical lead smelting and battery recycling activities. The project's goal was to transform the contaminated site into a safe and commercially viable property for future commercial or manufacturing use⁸. Since the completion of the remediation and implementation of risk management measures (capping), the site has not been sold post-cleanup, and to the date of writing this case study date there has been no new building development. Future building development is likely (and predicted) to take form as future commercial buildings in line with the land-use destination and zoning of this property and the Omand's Creek Industrial Park area at large.

Financial Information

The total cost of the remediation contractor's work for the North West Smelting and Refining site was approximately \$1.4 million, with engineering and consulting fees adding an additional 10% to that amount. These figures are based on the findings detailed in the 2017 Remediation Plan, the subsequent 2019 Closure Report, and direct email correspondence with personnel at Dillon Consulting Ltd., the firm retained to oversee the remediation⁴.

The selected remediation strategy utilized a hybrid approach, combining on-site stabilization with selective excavation. This method prioritized cost control while ensuring the site's safety for future commercial, industrial, and manufacturing uses⁶. Specifically:

- For the Northern portion of the site (Historical Landfill), a compacted granular surface cap was implemented to manage contamination in a cost-effective manner while limiting exposure risks.
- For the Southern portion of the site (Surficial Impacts), contaminated materials were excavated and relocated to the northern portion, where they were placed beneath the engineered cap. Any remaining hazardous materials were transported off-site to a licensed disposal facility.

The estimated costs for this chosen remediation strategy were:

- Northern Portion (Risk Management & Engineered Cap): Between \$375,000 and \$1,035,000, depending on material classification and disposal requirements.
- Southern Portion (Excavation, Relocation, & Remediation): Between \$246,000 and \$942,000, primarily influenced by the volume of materials requiring off-site disposal.

This approach was significantly more cost-effective compared to full-scale excavation and disposal alternatives, which were estimated to cost between \$5 million and \$6.7 million, particularly when accounting for hazardous waste handling.

Regarding property value, the City of Winnipeg's Assessment and Taxation Department assessed the site's value at \$451,000 as of April 1st, 2023 (post-remediation). Although no pre-remediation land value is available, the assessed value after cleanup is clearly much lower than the approximately \$1.4 million remediation cost, not including additional associated expenses. This gap underscores that full remediation of the site was not economically feasible through market forces alone.

Without public sector leadership and financial support, the property likely would have remained a contaminated, orphaned site, posing continued risks to Omand's Creek and adjacent properties⁹. Instead, the public-private partnership successfully mitigated environmental hazards, safeguarded local water tributaries, and restored the site for future commercial use contributing to sustained economic development and employment opportunities within the Omand's Creek Industrial Park and the broader City of Winnipeg⁹.

Key Challenges

The remediation of the former North West Smelting and Refining property presented several significant challenges typical of legacy industrial sites, primarily due to extensive heavy metal contamination from historical lead smelting and battery recycling operations. Soil and groundwater were heavily impacted, compounded by the presence of metal debris, battery casings, and a historical waste disposal area.

Subsurface obstacles such as former building foundations and underground infrastructure complicated the remediation process. During excavation, additional contaminated materials, including kilns, buried beneath foundations were unexpectedly discovered. This resulted in approximately 3,000m³ of additional impacted material, requiring a redesign of the remediation plan. The engineered cap in the northern portion of the site was enlarged and raised, and a wider access ramp was constructed to accommodate the increased volume of relocated material⁴.

Effective material management was crucial, as the process generated a variety of materials, including metal-impacted soils, concrete, asphalt, and lead-containing scrap. Some of the excavated materials were classified as hazardous waste, which could not be compacted or left on-site, resulting in higher off-site disposal volumes and fees⁴.

These unforeseen conditions added both logistical complexity and cost to the project. Compliance with regulatory requirements further required close coordination with the Manitoba Ministry of Environment and Climate Change, ensuring all permits, environmental guidelines, and safety protocols were strictly followed throughout the remediation process⁷.

Benefits & Lessons Learned

The remediation and redevelopment of the former North West Smelting and Refining property in Winnipeg has yielded significant benefits. Environmental remediation and risk reduction were achieved by successfully removing and managing contaminated materials, thereby mitigating exposure risks to human health and the environment. Economically, the project transformed a contaminated property into a commercially viable site, spurring economic growth specifically in Omand's Creek Industrial Park. The (future) sale of a remediated site to a local commercial business can lead to job creation and additional business opportunities. The collaboration between the Province of Manitoba, City of Winnipeg, Thompson Dorfman Sweatman LLP, Tervita Corporation, Colliers International, and Dillon Consulting Limited was key in securing funding, managing risks, and implementing the remediation plan. Furthermore, the use of an X-Ray Fluorescence (XRF) analyzer for real-time field screening of metals concentrations proved cost-effective, reducing the need for extensive laboratory analyses. The robust engineered cap, constructed with a geogrid and turf reinforcement mat, ensured the site's continued safety for the long-term⁴.

Several important lessons were learned from this project. Thorough site characterization is crucial for accurately assessing the extent and nature of contamination, which in turn informs effective remediation planning. The project underscored the importance of flexibility and adaptive management strategies, particularly when unexpected conditions, such as the discovery of additional impacted material, arise. The effectiveness of collaboration among various stakeholders was also highlighted demonstrating how cooperative efforts can successfully remediate orphaned contaminated sites with low property and market values. These insights provide a valuable framework for planning and executing future brownfield remediation projects².

Endnotes

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