

2.7

2.7

A healthy environment

The Master Plan demonstrates the Ville de Montréal's desire to adopt a planning approach that is sensitive to the requirements of a healthy environment. It establishes a close relationship between urban form, land use, green spaces, transportation and the quality of the urban environment. It also introduces a set of development criteria related to environmental quality, including the optimum management of resources.

The Ville de Montréal has also undertaken the development of a Plan stratégique de développement durable (Strategic Plan for Sustainable Development), which is reflected in the Master Plan.

THE STRATEGIC PLAN FOR SUSTAINABLE DEVELOPMENT

The Ville de Montréal has undertaken the development of a Plan stratégique de développement durable (Strategic Plan for Sustainable Development), to be adopted at the beginning of 2005. It will be implemented over a five-year span. This plan is based on the Déclaration de principe de la collectivité montréalaise en matière de développement durable (Montreal Declaration of Principles Relating to Sustainable Development), which was adopted by City Council on September 22, 2003 and signed by more than 80 representatives from various organizations.

The development and implementation of the plan is based on a partnership between the City and organizations such as the Conférence régionale des élus de Montréal, the Conseil régional de l'environnement de Montréal and numerous partners from the private sector, the academic community and various community associations. The plan is based on a knowledge of the state of the environment and prioritizes action in several areas related to sustainable development.

The Master Plan has three objectives relating to the environment:

17 Ensure the optimal management of resources in an urban context.

18 Mitigate the nuisances caused by urban activities.

19 Control development in areas with environmental constraints.



objective

Ensure the optimal
management of resources in
an urban context

From the standpoint of sustainable development, the management of resources such as air, water and land is particularly challenging in a metropolitan area like Montréal. In this regard, the Master Plan supports measures to ensure healthier urban development by reducing paved areas and decreasing the impact of heat islands.

By endorsing the Kyoto Protocol, the City has made a firm commitment to reduce greenhouse gases. It supports transportation alternatives to the automobile. The City is also committed to upgrading its water and wastewater infrastructure as well as its water and sewage treatment plants.

Waste management represents one of this society's most pressing challenges for the coming years. Significant efforts in recovering and recycling materials must lead to a substantial reduction in the volume of waste that ends up in landfill sites.

Moreover, with government aid, the Ville de Montréal is prepared to continue rehabilitating contaminated sites. This will contribute to the consolidation of the urban fabric and help maximize existing infrastructure, especially given the Plan's proposals to rebuild in certain areas and to change the vocation of other areas.

action 17.1

Support healthier urban development

HEAT ISLANDS

The term “heat island” designates an urban area where the temperature of the air and the ground surface is higher than that in rural areas or neighbouring natural areas. In some cities, this difference in temperature can exceed 5°C.

The formation of heat islands is due to a higher concentration of concrete and masonry in cities (buildings, roads, parking lots), a lower concentration of natural elements and vegetation as well as the heat created by vehicles, industry and air conditioning systems. The intensity of heat islands also depends on the climate and the temperature of the urban region, its topography and the presence or absence of water bodies.

The primary measures to counter the heat island effect are the planting of trees and vegetation, the installation of green roofs and the use of construction materials or road surfaces with high solar reflectance, which reduces the amount of heat they capture.

Several objectives and implementation measures in this Plan aim to ensure a healthier environment in Montréal. The planning approach described in Chapter 1 supports the densification of built form to maximize the use of existing infrastructure and offer services close to residential areas. The City seeks to both increase the use of public transportation and reduce the use of automobiles (see Objective 3). In addition, the Plan aims to protect and enhance natural elements (see Objective 16) and implement the Politique de l’arbre (Tree Policy, see Objective 11). Other measures support urban form and building design that promote greater energy efficiency, along with high-quality architecture that is ecologically sound (see Objectives 11 and 12).

Current practices give a great deal of space to paved areas such as parking lots, some very wide roadways or tarred roofs. The concentration of these paved surfaces increases the ambient temperature and creates what are known as heat islands. During heat waves, the combined effects of smog and heat islands create health risks for children and those with cardiovascular diseases or respiratory problems.

Significantly large impermeable asphalt-covered surfaces increase the volume of runoff flowing to the sewer network, which in turn increases the quantity of water to be treated. This runoff picks up dust, de-icing salt and oil residue found on the surface of parking lots and roads. Consequently, the Ville de Montréal will encourage a reduction in the total area of paved surfaces and take action to counter the effects of heat islands, which are found in greater concentrations in industrial and commercial areas.

Various measures may be considered, such as tree planting and partially or completely “greening” the roofs of commercial, industrial and public buildings. Embellishing the City with rich vegetation benefits the urban environment while beautifying it. Other advantages include the absorption of pollutants, the capture of dust and the absorption and retention of rainwater, which reduces the quantity of rain in storm sewers. Green roofs absorb heat, helping to reduce the temperature of the urban environment during the summer and contribute to energy efficiency by reducing the use of air conditioners.





Implementation measures

- Make tree planting a priority in residential areas lacking in this regard, in accordance with the Tree Policy (see Action 11.3).
- Reduce the area of off-street parking lots, while applying landscape design and adding green areas.
- Encourage rooftop greening for commercial, industrial, institutional and municipal buildings.
- Develop partnerships between the City and school boards to facilitate the greening of school yards and the development of new school-parks (see Action 11.3).
- As part of road rebuilding projects, reduce the width of roads and include landscaping and the planting of trees (see Actions 13.2 and 14.1).
- In large areas to be transformed, favour the use of street grids and building orientations that allow maximum sunlight and protection from prevailing winds in order to optimize energy efficiency (see Action 11.5).
- Develop and implement incentives to implement energy efficiency standards and apply innovative techniques such as green roofs for new construction and existing buildings (see Action 12.1).

action 17.2

Reduce air pollutants and greenhouse gas emissions

GREENHOUSE GASES AND GLOBAL WARMING

The accumulation of greenhouse gases in the atmosphere contributes to global warming. This phenomenon could cause a series of major weather disturbances, such as floods, tornadoes, ice storms, etc.

A foreseeable drop in the water level of the Great Lakes, as a result of a higher rate of evaporation, may reduce the flow in the St. Lawrence River and thereby create problems for Port of Montréal operations and the water supply. Adverse ecological impacts on aquatic environments and wetlands are also possible in the short and medium terms.

A decrease in flow hinders the self-cleaning capacity of the St. Lawrence River and other waterways. Consequently, the productivity of treatment plants may have to be increased and the discharge of contaminants into the sewer system further reduced.

Global warming increases the frequency and intensity of heat waves. The impact of high heat on the health of the population can be considerable. In addition, higher temperatures are likely to increase the demand for air conditioning in buildings.

Over the past 30 years, Montréal's air quality has improved noticeably. This is partly due to a reduction in atmospheric emissions from industrial sources, which have been regulated since 1970 and the introduction of emission-control devices in automobiles.

Nonetheless, air quality is still adversely affected by a number of pollutants, especially ozone and fine airborne particles. Up to 70% of these contaminants come from southern Ontario and the United States, especially in summer and depending on wind conditions. Programs involving the various national, regional and local governments throughout North America are required in order to correct this situation.

By endorsing the Kyoto Protocol, the Ville de Montréal has made a firm commitment to help reduce greenhouse gases. Two major sources of atmospheric pollutants contribute to the formation of ozone and greenhouse gases: motor vehicles and certain types of industries. Therefore, the City intends to reduce automobile use on its territory and to advocate that industry be required to comply with the most stringent clean-air standards.

With a view to improving air quality in Montréal, the City takes a firm stand in favour of public transportation. In order to reduce automobile use, it intends to support land development that facilitates the use of transportation modes other than automobiles (see Objectives 3 and 14).

The City supports other measures, such as carpooling and the creation of parking areas for bicycles. It encourages the use of active forms of transportation such as cycling, walking and in-line skating as well as the implementation of a self-service bicycle system for institutions and companies (see Objective 3).



URBAN SMOG

The main components of urban smog are ozone and fine airborne particles. Ground-level ozone is mainly formed by photochemical reactions on hot sunny days. Emissions from vehicles and factories are the leading sources of ozone formation.

Many studies have indicated that these pollutants can have a harmful effect on human health, especially in the case of children, seniors and those with cardiopulmonary diseases or respiratory problems.

These pollutants also slow the growth of plants and trees and cause various materials, such as concrete and masonry, to deteriorate.

In recent years, Montréal has experienced episodes of smog during the summer. Occasionally, smog has even occurred in the winter.

Several events, organized by various organizations, aim to heighten public awareness and to encourage citizens to take part in efforts to reduce greenhouse gases. These include, notably, Pure Air Day, Earth Day, Car-Free Day and Operation Bike-to-Work.

The City also encourages the use of electric, hybrid and fuel-efficient vehicles. It intends to favour the purchase of those types of vehicles when renewing its fleet. In addition, the City offers municipal employees a training program that aims to decrease fuel consumption.

The Société de transport de Montréal (STM) also supports the research and development of alternative sources of energy by participating in the Biobus project, which is experimenting with the use of biodiesel as an alternative, less polluting fuel. The STM is also considering the use of vehicles powered by electrical or hybrid systems.

Implementation measures

- Favour a more compact urban form and encourage mixed uses.
- Establish new public transportation routes in order to facilitate trips between different areas of the City (see Action 3.1).
- Increase building density around targeted public transportation stations (see Action 3.2).
- Reduce the supply of parking spaces, especially in the Centre (see Actions 3.5 and 7.2).
- Develop new bikeways to serve major activity areas, as well as parking areas for bicycles (see Action 3.4).
- Design comfortable and safe on- and off-street pedestrian networks, especially around metro or train stations and bus stops (see Action 14.2).
- Establish measures to ease traffic flow, such as reducing speed limits, widening sidewalks and designating crosswalks (see Action 18.1).
- For industries and vehicle owners, strictly apply the clean air regulations established by the Communauté métropolitaine de Montréal and managed by the Ville de Montréal.
- Upon renewal of the municipal vehicle fleet, favour the purchase of electric, hybrid or fuel-efficient vehicles.



action 17.3

Ensure efficient management of the water and wastewater infrastructure



From the standpoint of sustainable development, the Master Plan favours the consolidation of existing urbanized areas that are already served by water and sewer systems. However, the current condition of these networks requires major restoration work. More specifically, in many places, the deterioration of the water infrastructure has led to leaks and breaks in the network. As a result, water must be treated in quantities much greater than the actual demand.

In 2003, the City released its Politique de gestion de l'eau (Water Management Policy), whose main measures aim to restore the water infrastructure and reorganize water systems and their financing. Among other efforts, the policy calls for bringing water treatment plants up to specific standards and, by 2022, upgrading roughly 3,000 kilometres of the City's 5,000-kilometre network.



Wastewater interception and treatment, which began 30 years ago, has substantially improved water quality in Montréal. In Lac Saint-Louis, Bassin de La Prairie, the Port of Montréal and more recently Rivière des Prairies, the improvement is so great that recreational uses are possible once again.

However, problems of a more technical nature will require substantial investments by the City in the years ahead. These are partly related to the current condition of the storm and sanitary sewer systems, including:

- Collector sewers overflowing during heavy rain;
- Sanitary sewers connected to the storm sewer collector in some buildings;
- The absence of connections between sanitary sewers and the treatment plant in some areas;
- Discharges of industrial contaminants that cannot be treated by the City's wastewater treatment plant;
- The absence of wastewater disinfection.



THE WATER MANAGEMENT POLICY

Montréal's Politique de gestion de l'eau (Water Management Policy) establishes a series of measures aimed at improving the infrastructure network, namely:

- Creating a program for upgrading infrastructure and reorganizing water services;
- Introducing a phased approach to consolidating water budgets and rebalancing rates to include all water-related costs;
- Establishing meter-based rates for industrial, commercial and institutional buildings;
- Introducing management systems and tools for structuring all aspects of water services.

A number of major projects for upgrading and renovating water infrastructure are required. In addition, work on the storm and sanitary sewer systems will also be necessary in order to solve technical problems. Various measures will ensure a longer life for underground pipes, such as the regular emptying of catch basins and the reduced use of salt and other de-icing compounds.

Implementation measures

- Bring water treatment plants up to standard and upgrade the wastewater treatment plant.
- Upgrade approximately 3,000 kilometres of the water infrastructure by 2022, in keeping with the Water Management Policy.
- Take the following corrective actions with respect to the storm and sanitary sewer systems:
 - Construct retention basins in areas where collector sewers overflow during heavy rains;
 - Fix improper (or crossed) connections of sanitary sewer pipes;
 - Complete the few missing connections of sanitary sewers to interceptors;
 - Reduce the discharges of problematic industrial contaminants into the sewers at their source;
 - Disinfect wastewater at the treatment plant.
- Plan the maintenance and regular emptying of catch basins in streets, alleys and parks so as to improve the stormwater network.
- Reduce the use of salt and other de-icing compounds given their impact on water quality, the durability of underground pipes and the growth of vegetation.



ILLUSTRATION 2.7.1 THE QUALITY OF LAKE AND RIVER WATER



action 17.4

Ensure the recovery and re-use of waste

THE OBJECTIVES REGARDING RECOVERY AND REUSE OUTLINED IN THE QUEBEC WASTE MANAGEMENT POLICY 1998-2008

The Politique québécoise sur la gestion des matières résiduelles 1998-2008 (Québec Waste Management Policy 1998-2008) has established a general objective to reuse 67% of the 7.1 million tonnes of recoverable waste generated each year across Québec. This Policy determines more specific objectives regarding waste recovery and reuse according to the materials involved and the organizations responsible for managing them.

Thus municipalities, which are responsible for waste management in residential areas and for small businesses, have an overall objective of a 60% recovery rate, which varies depending on the type of materials involved.

Industry, large-scale businesses and institutions, whose waste removal is contracted out to specialized private companies, have an overall recovery objective of 80%. They already recover two-thirds of their potentially reusable waste each year.

The recovery of construction, renovation and demolition wastes represents an even greater challenge, as a significant quantity of potentially renewable material is eliminated. The policy determines an overall recovery objective of 60% of the waste. Similarly, new regulations will no longer allow the establishment or expansion of non-putrescible waste disposal sites.

In accordance with the Loi sur la qualité de l'environnement (Law respecting the Quality of the Environment), in June 2004, the Communauté métropolitaine de Montréal (CMM) adopted a Plan métropolitain de gestion des matières résiduelles (Metropolitan Waste Management Plan or PMGMR). This plan must be approved by the Government of Québec before it is implemented by the CMM and the municipalities. Subsequently, the Ville de Montréal will develop a Plan municipal de gestion des matières résiduelles (Municipal Waste Management Plan).

The PMGMR is in line with the direction and objectives of the Politique québécoise sur la gestion des matières résiduelles 1998-2008 (Québec Waste Management Policy 1998-2008) and adheres to the hierarchy of principles outlined in that Policy, which include reduction at the source, recovery, reuse and disposal, along with increased responsibility for producers and citizen participation. It aims to recover and reuse 60% of the waste managed by the municipalities. In order to reach that overall objective, it proposes a series of measures that must be implemented by the CMM and the municipalities by 2008.

Even with the implementation of various measures to increase waste reuse, close to half of the waste produced in the Montréal metropolitan area requires disposal. According to the PMGMR, each of the five geographical areas of the CMM (the cities of Montréal, Longueuil and Laval and the North and South Shores) must evaluate the establishment of new waste disposal infrastructure within their boundaries.

The Plan municipal de gestion des matières résiduelles will determine the location of waste elimination facilities. In addition, the plan will locate éco-centres, recovery centres, composting centres and waste transfer stations. All of this infrastructure will be established in industrial employment areas.

Implementation measures

- Develop and implement the Plan municipal de gestion des matières résiduelles, according to the principles and objectives outlined in the Politique québécoise sur la gestion des matières résiduelles and the Plan métropolitain de gestion des matières résiduelles developed by the CMM.
- Locate, in industrial employment areas, all waste management infrastructure including éco-centres, recovery centres, composting centres, waste transfer stations and disposal sites.

THE MUNICIPAL WASTE MANAGEMENT PLAN

The Ville de Montréal has undertaken the development of a Plan municipal de gestion des matières résiduelles (Municipal Waste Management Plan). The City adheres to the principles, objectives and measures outlined in the Politique québécoise de gestion des matières résiduelles (Québec Waste Management Policy). Many of the planned measures have been already implemented in Montréal over the past several years, including selective collection, the recovery of hazardous household waste and the reuse and recovery of materials.

The City owns and operates a landfill site, the Saint-Michel Environmental Complex, which receives non-putrescible waste. At the site, the City also manages a composting centre for organic matter. A recovery centre, owned by the City and operated by a private company, is located at the same site. The residual sludge from the Montréal wastewater treatment plant is incinerated and the ashes are buried in the former Demix quarry, which is also owned by the City.

In view of the objectives outlined in the PMGMR, the Municipal Waste Management Plan will implement the following measures:

- Ensure the selective collection of recyclable material for all housing units in Montréal by the end of 2005;
- Ensure the collection of putrescible matter for buildings containing 8 or fewer housing units by the end of 2007;
- Implement pilot projects for the collection of putrescible matter for buildings containing more than 9 housing units;
- Develop eight more éco-centres by 2010 in order to recover and reuse hazardous household waste;
- Continue existing measures for the reuse and recovery of textiles and bulky waste (furniture, electrical appliances, computer equipment, etc.);
- Conduct studies to find uses for the sludge produced by the wastewater treatment plant;
- Develop and implement a plan regarding the recovery of waste related to activities conducted by the municipal administration, such as paper and construction materials and develop and implement a selective collection plan for Montréal parks.



action 17.5

Pursue the rehabilitation of
contaminated sites with
government funding

The impacts of soil contamination in Montréal are primarily economic and financial. The high cost of decontamination hinders reconstruction and favours the development of land with little or no contamination, which is mostly located outside of Montréal.

Soil contamination is a major challenge in light of the City's desire to consolidate the urbanized territory by building on vacant lots and rehabilitating certain sites. Many of these lots are located in former industrial areas and are subject to varying degrees of contamination, which increases reconstruction costs. Rehabilitation costs are even higher for former industrial sites to be converted to residential use, as the Plan calls for in certain areas.

Information concerning soil contamination in Montréal is still incomplete. The City intends to create a database of contaminated or possibly contaminated sites.

The funding provided by the Québec government through its Revi-Sols program has been essential. Under the program, approximately half of the rehabilitation costs borne by private developers and the Ville de Montréal in the course of their real-estate projects were reimbursed. The City considers government funding to be essential for rehabilitating contaminated sites in order to consolidate the urban fabric.



THE CONTAMINATED LAND REHABILITATION PROGRAM (REVI-SOLS)

The Revi-Sols program was initiated by the Québec government in 1998. The Ville de Montréal administers the program on its territory on behalf of Québec's Ministère de l'Environnement.

From 1998 to 2003, Revi-Sols funded 132 projects in Montréal. A total of 60 million dollars in subsidies were used to rehabilitate 206 hectares of contaminated land. The affected real estate projects had a total value of approximately 1.9 billion dollars and included the construction of 5,600 housing units. The program has been extended to March 2005, with the injection of an additional 15 million dollars.



Implementation measures

- Create a database listing contaminated or possibly contaminated sites.
- Develop new funding mechanisms to promote the rehabilitation of contaminated sites.
- Facilitate the use of a risk-analysis approach for managing contaminated soil and consider adjusting regulations, especially in the case of high-density projects and the rehabilitation of certain industrial sites.
- Establish a program to support research on and the use of innovative techniques for managing contaminated soils, particularly to substantially reduce the volume of contaminated material to be removed from a site:
 - Make greater use of lightly contaminated soils as landfill or for building noise-abatement berms;
 - Consider establishing a disposal and redistribution centre in Montréal for excavated soils that are not heavily contaminated;
 - Promote the reuse of excavated materials such as construction lumber, concrete and asphalt, in order to keep them out of landfill sites.
- Foster the development of affordable and efficient biological and physiochemical treatment technologies for contaminated soil.

action 17.6

Give priority to rehabilitating contaminated sites in the vicinity of certain metro and commuter train stations, as well as in areas to be transformed

Urban consolidation and the increased use of public transportation are among the Master Plan's fundamental objectives. In light of this, the City is putting forward certain measures to encourage the construction of housing and the rehabilitation of employment areas on vacant lots (see Objectives 2 and 8). The City also supports increased construction near certain metro and commuter train stations (see Objective 3). Some of the lots and areas targeted by these measures are likely to have a degree of contamination. The Master Plan suggests the creation of assistance programs for implementing these proposals and rehabilitating the contaminated sites concerned.

The City recommends that priority funding for rehabilitating contaminated land be provided to areas near metro and commuter train stations where the Plan recommends the diversification and intensification of activities as well as in areas to be transformed (see Maps 1.1 and 2.2.2).

Implementation measures

- Provide additional assistance in the case of contaminated land, as part of a program that promotes the intensification of urban activities in the vicinity of certain metro or commuter train stations.
- Establish a program to support the rehabilitation of contaminated sites in areas to be transformed for residential or employment purposes.



objective

Mitigate the nuisances
caused by urban activities

Residential areas can be disturbed by various types of nuisance, such as noise, odours, dust, smoke or heavy traffic. The City intends to minimize the negative impact of these nuisances on the public and to avoid creating new conflicts.



action 18.1

Control the impact of nuisances

Many residential areas are located near transportation infrastructure (expressways, railyards, the airport), exposing inhabitants to significant levels of noise. Some situations are getting worse, especially along existing road corridors, due to increased automobile use and heavy truck traffic. Highways 15, 20, 25 and 40 are among the most noise-polluting corridors in Montréal. The congestion on the main expressways and thoroughfares can also result in heavier use of the local road network, which creates nuisances in some residential areas.

In other cases, trucking operations at landfill sites and during snow removal generate noise and dust nuisances for some residential areas.

Some industrial enterprises generate odour nuisances. Many firms have already brought their facilities into line with the environmental standards set by the Communauté métropolitaine de Montréal's (CMM) by-law, which is enforced by the Ville de Montréal. The CMM gives priority to assisting non-compliant firms that generate air emissions. This aims to speed the adaptation of their manufacturing processes in order to reduce and even eliminate these sources of industrial pollution. In some cases, the City may consider moving a firm whose operations seriously affect the quality of neighbouring residential areas.

The Ville de Montréal will also develop a Plan municipal de gestion des matières résiduelles (Municipal Plan for Waste Management, see action 17.4). This plan will determine the new waste management infrastructure required for its application, notably landfill sites and waste transfer stations. These will be located in industrial areas, so as not to create nuisances for residential areas.

Power transformer stations can also be a source of nuisances. The size and operation of some of these stations, as well as maintenance vehicle traffic, can cause aesthetic and noise pollution.



Implementation measures

- Develop and implement the Politique d'atténuation du bruit en milieu urbain (Noise Mitigation Policy for Urban Environments).
- Set up a coordinating committee with the Ministère des Transports du Québec and the various organizations and firms involved in freight transportation, including Canadian Pacific, Canadian National, the Port of Montréal and Montréal – Pierre Elliott Trudeau International Airport, in order to limit noise pollution in residential areas.
- Mitigate noise along expressways and rail corridors in residential areas, in partnership with the Ministère des Transports and railway companies.
- Mitigate nuisances related to noise, odours and dust around waste management infrastructure and around snow disposal chutes and sites.
- Concentrate traffic on main arteries and establish measures to reduce traffic in residential areas.
- Require developers who undertake residential projects adjacent to known nuisances to take appropriate mitigating measures at their own expense, in accordance with the nature and intensity of the nuisance.
- Locate waste management and snow disposal sites, along with businesses that are likely to generate environmental nuisances, in industrial employment areas.
- Establish a program that encourages firms whose operations produce odour nuisances to modify their manufacturing processes in order to bring their air emissions into compliance with existing environmental standards.
- Establish a program that provides relocation assistance to firms whose operations create serious nuisances for living environments.

THE IMPLEMENTATION OF TRAFFIC CALMING MEASURES

The increased use of local streets and high speeds by some drivers jeopardize security, well-being and peacefulness in residential areas. Traffic calming measures will limit these detrimental effects. Their implementation is the responsibility of each borough.

Directing traffic from side streets to the main arteries will reduce the volume of vehicles on residential streets. In addition, traffic calming measures include:

- Installing appropriate signage;
- Reducing road widths and widening sidewalks;
- Landscaping roads or sidewalks;
- Modifying road surfaces;
- Eliminating certain one-way streets; and
- Modifying the direction of traffic on certain streets in order to break up continuous traffic flow.

THE NOISE MITIGATION POLICY FOR URBAN ENVIRONMENTS

In urban areas, noise contributes to reducing the quality of life. Noise represents a considerable nuisance that can have negative effects on the health of the population, disturbing sleep and increasing stress. Two major categories of constant or intermittent noise require attention: mobile noise (street and air traffic) and stationary noise (from industrial, commercial or residential sources).

The City plans to define appropriate measures as part of a noise mitigation policy, particularly in densely populated areas and close to schools and hospitals.

Some frequently-applied measures are:

- Employing adequate insulation and window design;
- Favouring the reduction of speed limits with suitable signage, reduce road width, implement high-quality landscaping and modified road surfaces;
- Creating a buffer zone (trees or noise-abatement berms);
- Setting up noise screens or noise-abatement walls;
- Incorporating noise-absorbing screens into the retaining walls of thoroughfares or expressways built below ground level;
- Determining proper building orientation and room layout in relation to sources of noise.

The City plans to develop this policy in cooperation with the Ministère des Transports du Québec and various freight transportation companies, including Canadian Pacific, Canadian National, the Port of Montréal and Montréal – Pierre Elliott Trudeau International Airport.



objective

Control development in areas with environmental constraints

The Master Plan takes into account certain environmental constraints on land use. Some stem from natural phenomena, such as flood-prone areas, or morphological characteristics, such as the Saint-Jacques escarpment. Other restrictions are related to intense urban activities that are often incompatible with housing, as in the case of airports, quarries and overhead power lines. The Master Plan calls for action to control construction in light of these constraints.



action 19.1

Control construction in areas with environmental constraints

THE PERCEIVED NOISE LEVEL AND ITS MEASUREMENT (NEF CONTOURS)

Transport Canada uses a method known as the “Noise Exposure Forecast” (NEF) which determines noise contours according to the level of use of air corridors, take-off and landing procedures, types of aircraft, direction of the runways, weather conditions and period of use (day or night).

The louder the perceived noise, the higher the NEF. A level of 40 indicates a very high noise area and is normally located in the immediate vicinity of the airport. A level of 25 indicates an area where aircraft-generated noise is generally perceived as being not as loud. In addition, Transport Canada considers areas that have a NEF greater than 30 as less compatible with residential uses.

According to the 2003-2023 Montréal-Dorval International Airport Plan a gradual decrease in noise levels has been recorded since the beginning of the 1980s despite an increase in air traffic density, which can be explained by the implementation of specific operational measures by the airport and by the technological improvements made to aircraft.

Sources: Transport Canada and Aéroports de Montréal

Montréal – Pierre Elliott Trudeau International Airport

Montréal – Pierre Elliott Trudeau International Airport is the primary international port of entry to Montréal and is one of the fundamental components of the freight transportation network. In June 2003, Aéroports de Montréal (ADM) tabled its 2003-2023 Montréal-Dorval International Airport Plan, which presents the overall vision for the development of the airport.

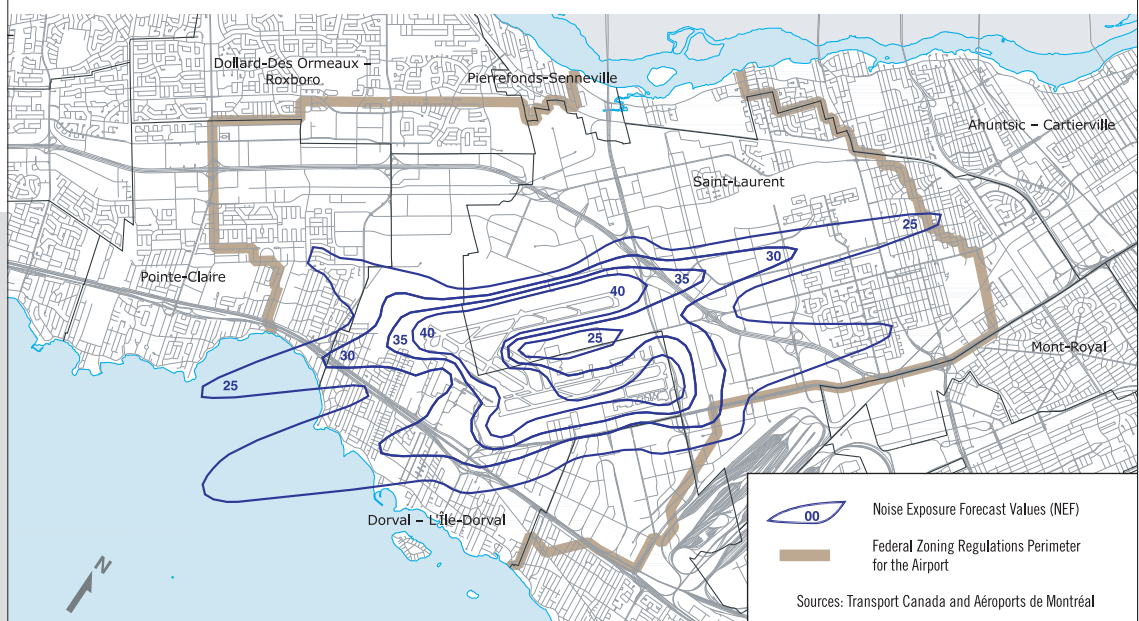
The Master Plan also considers the environmental constraints on urban development produced by an airport of this size, particularly in terms of land use and the management of nuisances, such as noise.

The airport is subject to the various rules established by Transport Canada, particularly those presented in the federal zoning by-law for Montréal – Pierre Elliott Trudeau International Airport. The by-law sets restrictions on building heights in specific air corridors. The zoning territory appears in Illustration 2.7.2. This by-law is scheduled for an update in 2006.

Similarly, Transport Canada has established Noise Exposure Forecasts (NEF), which are measured as contours from 25 to 40 and which also appear in Illustration 2.7.2. Consequently, the City has planned to implement the following measures:

- Prohibit residential and institutional land use in areas where the NEF is greater than 35;
- Require soundproofing for residential and institutional construction in areas where the NEF is greater than 30.

ILLUSTRATION 2.7.2 LAND USE CONSTRAINTS RELATED TO THE AIRPORT



Flood-prone areas and streams

In 1996, the Government of Québec revised its Politique de protection des rives, du littoral et des plaines inondables (Policy on Lakeshores, Riverbanks, Littoral Zones and Floodplains), by virtue of the conditions outlined in the Loi sur la qualité de l'environnement (Law governing the Quality of the Environment). The policy focuses, among other things, on maintaining and improving the quality of lakes and waterways by granting baseline protection for shorelines and littoral zones and ensuring the security of people and property by establishing restrictions on construction and other work carried out in flood-prone areas and on riverbanks.



The measures and standards included in Québec's policy may be integrated into the Communauté métropolitaine de Montréal's (CMM) Metropolitan Land Use Planning and Development Plan. As a result, borough planning by-laws will be brought into conformity with these standards. In the meantime, the protective measures appearing in the complementary document of the Development Plan drawn up by the former Communauté urbaine de Montréal (Montréal Urban Community) remain in effect across Montréal.

In addition, the City's Politique de protection et de mise en valeur des milieux naturels (Policy respecting the Protection and Enhancement of the Natural Environment) will also determine the ecological value of all wetlands and aquatic environments within Montréal's territory (see Objective 16). The City will then determine various protection and enhancement measures, along with implementation priorities.

ILLUSTRATION 2.7.3 FLOOD-PRONE AREAS



According to mapping done by the federal and Québec governments, parts of six of Montréal's boroughs are subject to flood risks.

Sources: Governments of Canada and Québec, 1978 and 1995.

THE SAINT-MICHEL ENVIRONMENTAL COMPLEX

The former Miron quarry was used as a landfill site for almost 30 years and was then considered to be the second largest of its kind in North America.

The Ville de Montréal terminated landfill operations at the quarry in 1994 and created the Saint-Michel Environmental Complex which is organized around three major purposes: the headquarters of the Cirque du Soleil and facilities and the big top for the Cité des arts du cirque, the development of an applied environmental rehabilitation research laboratory and the establishment of a large urban park.

To this end, the City has invested nearly \$8.5 million since 1995 for the establishment of the large 192-hectare park. The City is currently continuing environmental rehabilitation work at the site in order to create spaces for recreational activities.

Quarries

Out of a total of six quarries in Montréal's territory, the Lafarge quarry is the only one remaining in operation. The quarry and its surroundings have been subjected to a number of plans and measures to mitigate nuisances. The other five quarries are now used for other purposes.

The former Meloche quarry in the Borough of Pierrefonds-Senneville is used as a waste disposal site. The quarry in the Borough of Kirkland is currently split between a western half used for industrial purposes and an eastern half used as a recreational site.

The Ville de Montréal owns the Saint-Michel Environmental Complex, where certain non-putrescible landfill operations still take place. This site, whose edges are already a park, is being developed as a metropolitan park.

The Ville de Montréal also owns the former Francon and Demix quarries. The former, located in the Borough of Villeray – Saint-Michel – Parc-Extension serves as a snow disposal site. The latter, located in the Borough of Rivière-des-Prairies – Pointe-aux-Trembles – Montréal-Est, is used to bury ashes produced by sludge incineration at the City's wastewater treatment plant.

Areas in and around these former quarries present significant land-use restrictions. Once filled, they may cave in or experience other geotechnical problems.

ILLUSTRATION 2.7.4 THE LAFARGE QUARRY AND THE FORMER QUARRIES





In keeping with the regulations of Québec's Ministère de l'Environnement and the Communauté métropolitaine de Montréal, whether these quarries are in operation or used for other purposes, they are all subject to nuisance mitigation and environmental management measures. In the case of the two former quarries that served as landfill sites, these measures include biogas collection and recovery, as well as wastewater and leachate treatment (at the former Meloche quarry in the Borough of Kirkland and the Saint-Michel Environmental Complex).

Saint-Jacques Escarpment

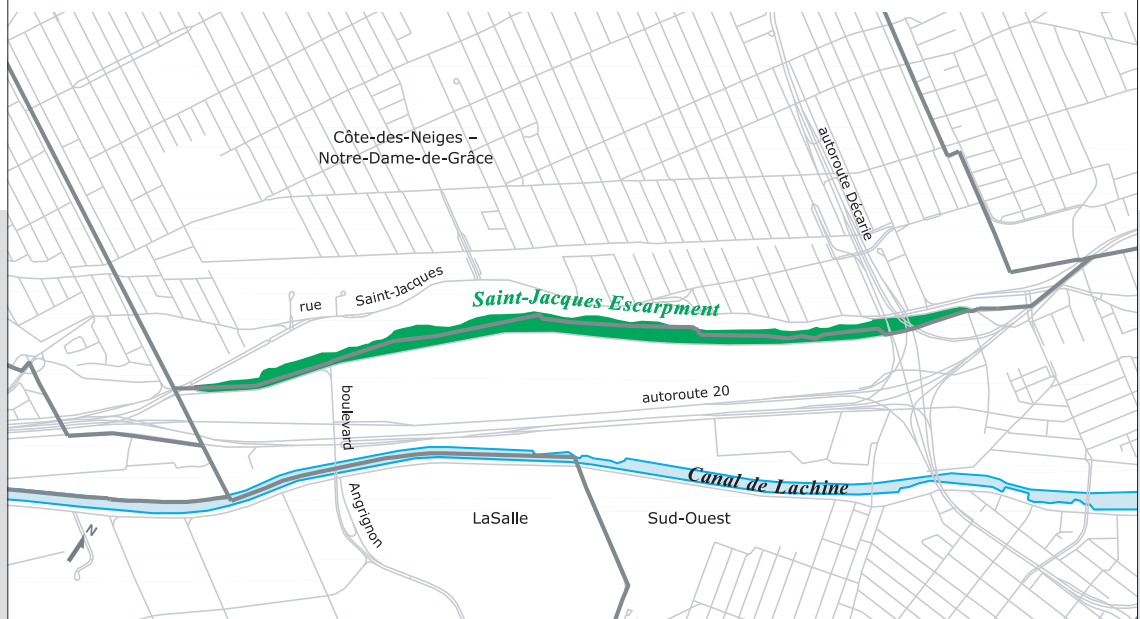
Located near the boundary between the boroughs of Côte-des-Neiges – Notre-Dame-de-Grâce and Le Sud-Ouest, the Saint-Jacques Escarpment is a steep slope, where no construction or other work is permitted.

In an effort to curb erosion of the escarpment, the City will provide maintenance of the existing plant cover. The Saint-Jacques Escarpment is one of the ten ecoterritories established under the City's Policy respecting the Protection and Enhancement of the Natural Environment (see Objective 16).



ILLUSTRATION 2.7.5

SAINT-JACQUES ESCARPMENT





Overhead power lines

Overhead power lines are a constraint on land use. The construction of buildings or swimming pools is prohibited in all power line rights-of-way. As a general rule, the rights-of-way for lines carrying a current of 735 kV or less can be used for gardening and horticulture. Some recreational uses, notably the construction of a bicycle or pedestrian path, can be considered, with Hydro-Québec's approval. However, no parking lots can be developed in the right-of-way of a power line carrying a current of 735 kV.

In addition, in association with Hydro-Québec, the City will evaluate the possibility of burying some of these power lines for aesthetic and practical reasons, as has been done with certain lines in the central part of the Island. This measure will be favoured particularly in more densely built areas and in areas to be densified.

ILLUSTRATION 2.7.6 OVERHEAD POWER LINES

