

WARWICK LANDFILL EXPANSION

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Draft Discussion Paper # review and comment. This d
 • existing baseline environ
 • the future environmental
 The purpose of Discussion # environmental conditions to expansion.

Background Reports provid #5 have also been prepared The Background Reports ar

NEW HOURS CENTRE IN

WHAT'S INSID

The existing and future condition as described by the disciplines...

- Agriculture
- Air Quality
- Archaeology and Heritage
- Economics
- Hydrogeology
- Visual
- Natural Environment and Resources
- Surface Water
- Noise
- Transportation
- Social
- Land Use Planning
- What is in Draft Discussion Paper #5
- Landfill Closure and End Use
- Now Available: Final Discussion Paper #3: Comparative Evaluation Alternatives (September 2002)
- Next Steps
- Status of the Discussion Papers
- New Hours for CWS Information Centre
- Who to Contact

NEXT STEPS

The baseline conditions information in Discussion Paper #5 will be used in conjunction with proposed site design and operating characteristics in Discussion Paper #6 to perform the detailed impact assessment that will be described in Discussion Paper #7 - Detailed Impact Assessment.

WHAT WILL BE IN DISCUSSION PAPER #7 - DETAILED IMPACT ASSESSMENT?

This paper will present the results of the detailed impact assessment from the perspectives of each discipline. The discussion paper will predict environmental effects, taking into account mitigation measures that could be put in place if the expansion of the landfill site were to be approved.

STATUS OF THE DISCUSSION PAPERS			
Discussion Paper #1: Proposed Public Consultation Program Addendum #1	Finalized September 2001 November 22, 2001	Discussion Paper #6: Facility Characteristics Assumptions	Currently being reviewed
Discussion Paper #2: Proposed Criteria and Indicators for the Assessment of Alternatives	Finalized January 2002	Discussion Paper #7: Detailed Impact Assessment	To be developed
Discussion Paper #3: Comparative Evaluation of Alternatives - The Preferred Alternative Addendum #1	Finalized September 2002 October 16, 2002	Discussion Paper #8: Conceptual Design and Operations Plan	To be developed
Discussion Paper #4: Impact Assessment Process	Being Finalized	Discussion Paper # 9: Impact Management Plan	To be developed
Discussion Paper #5: Baseline Conditions	Currently being reviewed		

WHO TO CONTACT...

If you would like more information on the proposed expansion, please call the toll-free Warwick landfill information line at 1-800-555-3561 or send a written request to:

Peter Homenuck,
 IER Planning, Research and Management Services
 7501 Keele St., Suite 300
 Concord, ON L4K 1Y2
 Fax: (905) 660-7812
 E-mail: phomenuck@dpra.com

To discuss CWS' proposed landfill expansion, you may also wish to contact:

Kevin Bechard, Area Senior Manager
 Facilities Development
 Canadian Waste Services Inc.
 550 Bowes Road
 Vaughan, ON L4K 1K2
 Phone: (905) 669-7195 • Fax: (905) 669-7173
 E-mail: kbechard@wm.com

If you have questions or comments on the day-to-day operations of the Warwick landfill site, contact:

Reid Cleland,
 Landfill Manager Warwick Landfill
 RR#4, 8039 Zion Line
 Watford, ON
 N0M 2S0
 Phone: (519) 849-5810 • Fax: (519) 849-5811
 E-mail: rcleland@wm.com

Discussion papers may be obtained by calling 1-800-555-3561.

- Or you may pick up a copy at:
- Township of Warwick Municipal Office
 - Watford Library
 - Warwick Landfill Office
 - CWS Information Centre

Comments on all discussion papers are to be provided to:

IER Planning, Research and Management Services
 7501 Keele St., Suite 300, Concord, ON L4K 1Y2
 Fax: (905) 660-7812, E-mail: phomenuck@dpra.com

NEW HOURS FOR CWS INFORMATION CENTRE IN WATFORD

Drop in to the CWS Information Centre to ask questions and receive updates on the environmental assessment process to expand the Warwick Landfill Site. At the Information Centre you will also find copies of current discussion papers, newsletters, display panels, and Peer Review Team reports.

Place: 5306 Nauvoo Road, Watford
New Hours*: Monday to Thursday 8 am - 5 pm
 Friday - Closed
 Saturday - 9 am - 3 pm (first Saturday of each month)
Telephone: (519) 876-3475
Fax: (519) 876-3476
E-Mail: cdnwasteinfo@bellnet.ca

*Alternate meeting times are available upon request

WE LOOK FORWARD TO SEEING YOU AT THE INFORMATION CENTRE!

The existing and future conditions as described by the disciplines ...

AGRICULTURE

The Agriculture section documents current soil conditions and agricultural practices in the vicinity of the landfill site. Some highlights:

- Most of the lands in the regional area are associated with crop production in frequent rotation, including corn, alfalfa, wheat and soybeans.
- A concentration of swine and poultry operations is found west of County Road 79.
- Beef, dairy cattle and horse operations are found around County Road 39 and Underpass Road.
- Most of the lands owned by CWS are currently in agricultural production.
- There are 6 commercial farms and 4 properties with retired agricultural facilities within the 1 km study area.
- There are 4 farmland and/or field entrances along the existing haul route.



Agricultural Operation

FUTURE CONDITIONS

The soil resources and climatic conditions characterizing the study area will remain largely unchanged over time. It is not expected that future agricultural conditions will be substantially different from current conditions.

AIR QUALITY

The Air Quality section includes data on the baseline air quality conditions during active landfilling operations. Highlights include:

- A background dust monitoring study (focusing on the very fine particles [PM10], the most relevant portion of dust with respect to human health), determined upwind background levels to be typical of a rural setting during summer.
- Background odours are generally associated with agricultural activity in the vicinity.
- There have not been any complaints made about odour to the Warwick Landfill Office nor to the Ministry of the Environment.
- There are infrequent complaints about blowing litter. The landfill staff generally clean up any litter in the vicinity before complaints are made.

FUTURE CONDITIONS

- The future background dust impacts at the site should not change significantly in the 2001 to 2026 period.
- The future Volatile Organic Compound (VOC) background levels in the Township will likely decrease in the period from 2001 to 2026 due to regulatory and economic controls on VOC emissions.
- It is likely that the odour impact from existing farm operations may be reduced due to regulations for less odorous methods of applying manure to agricultural lands.

LANDFILL

Closure of a landfill generally requires modifications to access roads.

- Two options for end use -
- Private Open Space -
- Public Open Space -

Community involvement

FINAL COMPACTED ALTERNATIVE

Discussion Paper # 1
e
preferred alternative
tr

LANDFILL FOOTPRINT

- Four landfill footprint alternatives (IA, West IB, Central 2A, and 2B)
- The overall ranking results are as follows:

THE KEY REASONS

- A larger separation from residential areas reduces impact on residents, businesses, and schools.
- The footprint location near the preferred footprint does not cross a natural habitat corridor.

PREFERRED ALTERNATIVE

The three preferred alternatives

PREFERRED ALTERNATIVE

- Three haul route alternatives (existing haul route, New Road to Zion Line and Road to Zion Line and

LEACHATE TREATMENT ALTERNATIVES

There are three leachate treatment alternatives described in draft Discussion Paper #6 that will be considered in the detailed impact assessment. A decision on the preferred alternative will be provided in Discussion Paper #7.

1. Full on-site treatment with effluent discharge to surface water

This alternative involves:

- Ensuring Ministry of the Environment requirements for effluent discharge into streams are met; and
- Selecting the type(s) of leachate treatment technology to be used (e.g. anaerobic biological treatment, aerobic biological polishing and solids/liquid separation).

2. Full on-site treatment with no liquid effluent discharge

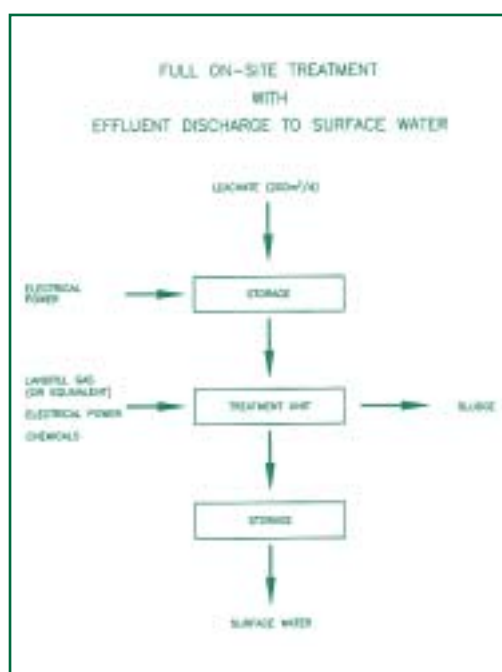
Two types of technology will be reviewed:

- Evaporation/incineration technology (applying heat, vapourizing the leachate and incinerating the vapour in the landfill gas flare); and
- Poplar plantation technology (treating leachate on-site and applying leachate to growing hybrid poplars). A poplar plantation pilot project is being undertaken for the existing landfill.

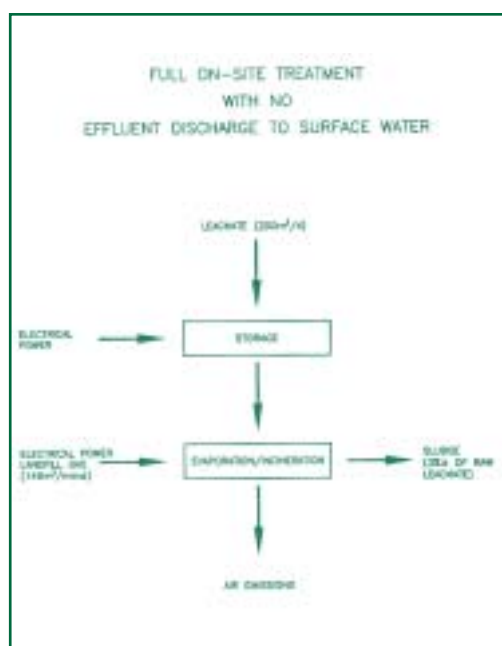
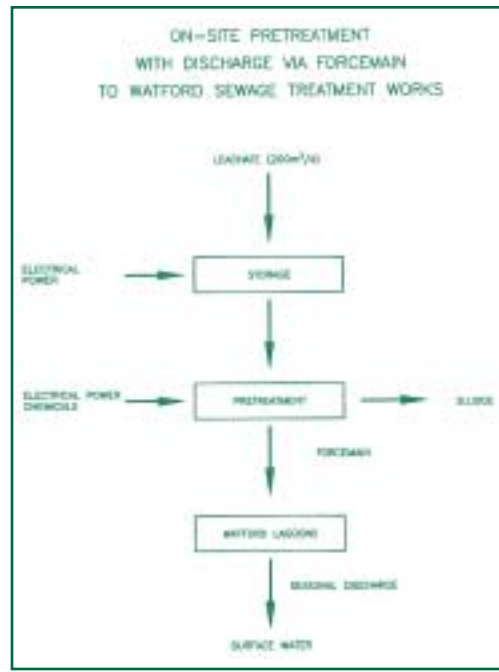
3. On-site pre-treatment with discharge to Watford Sewage Lagoons via forcemain

- The Watford Sewage Lagoon System will be reviewed to determine its potential for accommodating pre-treated leachate from the expansion. Under review will be factors such as operating mode, design capacity, average daily flows, discharge to watershed and compliance with effluent requirements.

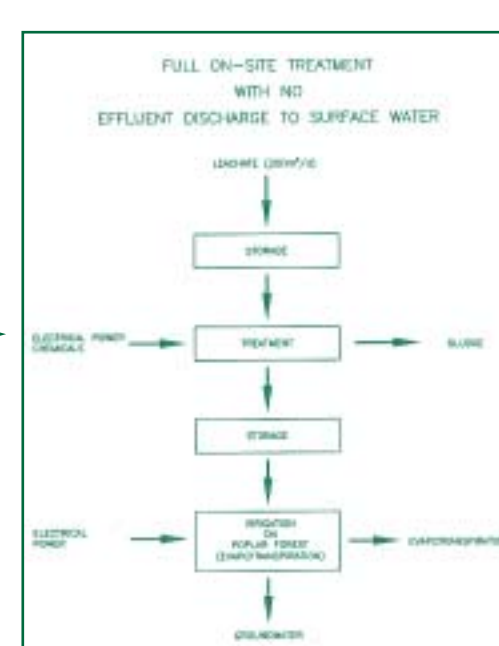
ALTERNATIVE 1



ALTERNATIVE 3



ALTERNATIVE 2



ARCHAEOLOGY

Archaeological sites, built

ARCHAEOLOGY

- Background research
- Results of the field survey
- 7 pre-contact Aboriginal significant archaeological sites
- Some artifacts were found during further archaeological work

HERITAGE

- Two parcels of agricultural land are considered to have heritage value
- The landscape around the site shows a pattern of small farmsteads and outbuildings.
- West of the proposed site is the Watford Cemetery, which dates back to the 18th century
- Two built heritage features (a house and a barn) are located on the site

FUTURE CONDITIONS

The archaeological map

ECONOMICS

The Economics section of the impact assessment discusses the financial conditions. Some of the key findings are:

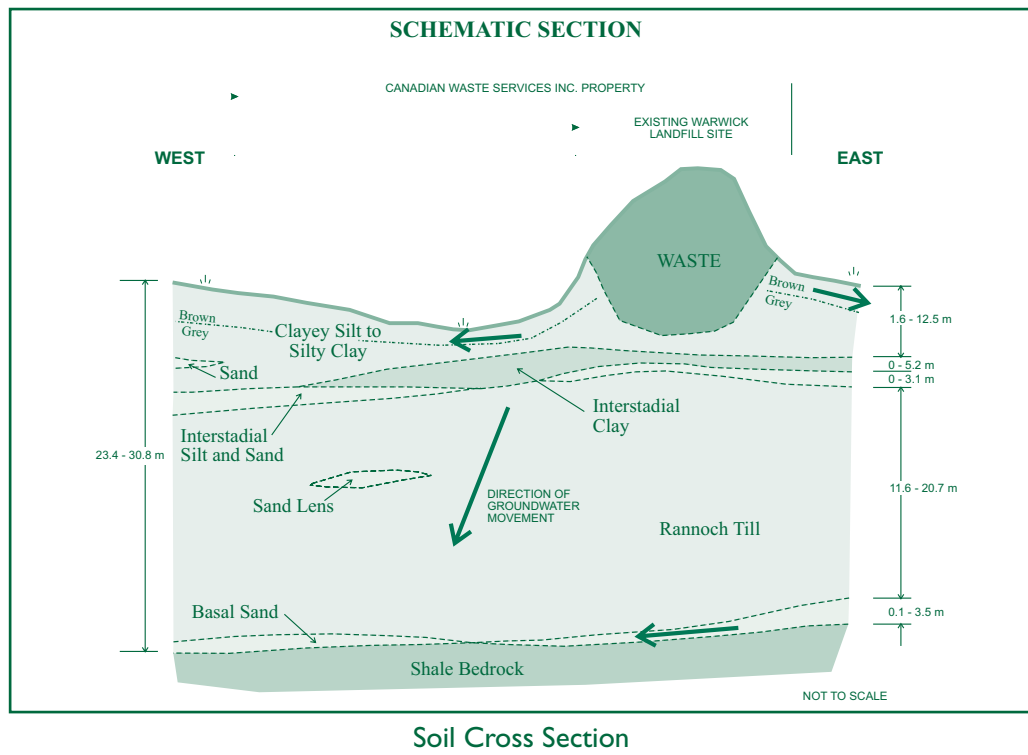
- The Village of Watford is a key economic center
- Based on the 1996 Census, the village has a high level of construction, retail trade and services
- In addition to revenue generated from the landfill, the landfill are generated



HYDROGEOLOGY / GEOLOGY

The existing hydrogeology and geology of the Region and the landfill site are described in Discussion Paper #5. Some highlights:

- A cross section of the geology below the site and vicinity indicates the following main units: (The Figure below shows the soil cross section.)
 - Clayey Silt to Silty Clay
 - Interstadial Deposits
 - Rannoch Till
 - Basal Sand
 - Shale Bedrock



Soil Cross Section

FUTURE CONDITIONS

- Groundwater demands in the local area should be reduced as the piped municipal water distribution system is expanded.
- The approved leachate management system for the existing landfill will control leachate levels within the waste.
- Groundwater and surface water quality at the boundaries of the existing landfill site will continue to be acceptable.

VISUAL

The existing visual environment is described in Discussion Paper #5. Some highlights:

- The lands owned by CWS consist of landfilled property (active and closed), flat agricultural lands and a significant woodland area at mid-point.
- The existing landfill operation is visible from portions of Zion Line and County Road 79. Closed landfill cells and vegetation provide screening from other surrounding locations.
- Visual conditions adjacent to these roads consist of a mixture of scrub/tree hedgerows and field crops/pastures.

FUTURE CONDITIONS

- It is not anticipated that there will be any significant change to the visual conditions within the community; minor changes will occur on-site and in the site vicinity.
- The landfill will be closed, capped, covered with topsoil and vegetated, thereby eliminating the visibility of the filling area.
- A poplar plantation is proposed on the south cell as part of the leachate management plan, and tree and shrub vegetation may be part of the final landscaping plan.

DESIGN OF L

Stormwater Manage

Waste Processing

Composting

Leachate Containme

Leachate Quantity

Leachate Re-circulati

Phasing of the Expan

Gas Management

WHAT IS IN DRAFT DISCUSSION PAPER #6?

Draft Discussion Paper #6 describes the proposed site operations and the design of the expanded landfill site.

SITE OPERATIONS

Service Area	The site service area will be the Province of Ontario. The waste received at the Warwick Landfill site will be generated primarily in Central and Western Ontario.
Waste Type	The landfill will accept residential, industrial, commercial and institutional (ICI) non-hazardous solid waste.
Anticipated Site Life	The site is expected to have an operating life of about twenty-five years.
Site Capacity	With a site life of 25 years and a maximum annual waste receipt of 750,000 tonnes, the site capacity would be 18.75 million tonnes for the proposed expansion.
Landfill Traffic	Approximately 180 vehicles per day would result from standard landfill operations, excluding the construction vehicles. Approximately 95% of the landfill truck traffic will come from Highway 402; 5% will come from County Road 39, north on County Road 79 and east on Zion Line.
Landfill Site Staff	It is anticipated that there will be approximately 22 to 32 staff for the landfill operation of the proposed size and 15 to 25 contracting and engineering staff during landfill cell construction.

DESIGN OF LANDFILL SITE

Landfill Footprint	<p>As presented in Final Discussion Paper #3, the preferred footprint is the West Alternative. (See Page 11 for map) The site plan includes:</p> <ul style="list-style-type: none"> · A 100 m buffer to external roads; · A 100 m buffer to adjacent properties, except for the west half of Lot 19, Concession 3, which has a 30 m buffer; and · A 30 m buffer to the existing landfill site. <p>The maximum site elevation will be approximately 39 m above existing ground. (The elevation of the existing landfill is 12 to 15 m above ground).</p> <p>The south part of the landfill expansion will be located a minimum of 1,450 m north of the southern CWS property limit.</p>
Screening Berms	Screening berms will be located at the property lines on Concession 4 and County Road 79. The majority of the existing woodlot located at the south part of the Concession 3 property will be maintained to provide a visual screen. The woodlot will form part of an almost continuous screen of trees across the south limit of the landfill.
Poplar Plantation	A poplar plantation is proposed as part of the leachate management plan for the existing site.
Landfill Roads	A system of landfill roads will encircle the existing landfill and the proposed landfill expansion. A section of paved road is anticipated near the entrance to control dust and mud tracking onto municipal roads. Other site roads are anticipated to have a granular surface.

NATURAL

The existing terrestrial a

TERRESTRIAL

- Vegetation in the site
- Observed on-site we
 - 36 potential breeding
 - 8 species of mamma
- No provincially vulner species have been rec

AQUATIC

- Aquatic habitat was o the year in Bear Cree
- 4 fish species were ca pumpkinseed, and bro
- In Brown Creek, habi flow is variable and re
- Although other speci Creek Chub were cap
- Several on-site draina property flow from th

FUTURE CONDITIO

- The diversity and richn site are expected to re
- It is assumed that the fi Creek and Brown Cree 2026.

SURFACE

The surface water secti resources). Some highl

- Surface water flows a
- Bear Creek flows sou
- Brown Creek's headw 37.5 km before joinin
- There is no evidence quality in Bear Cree upstream or downstr

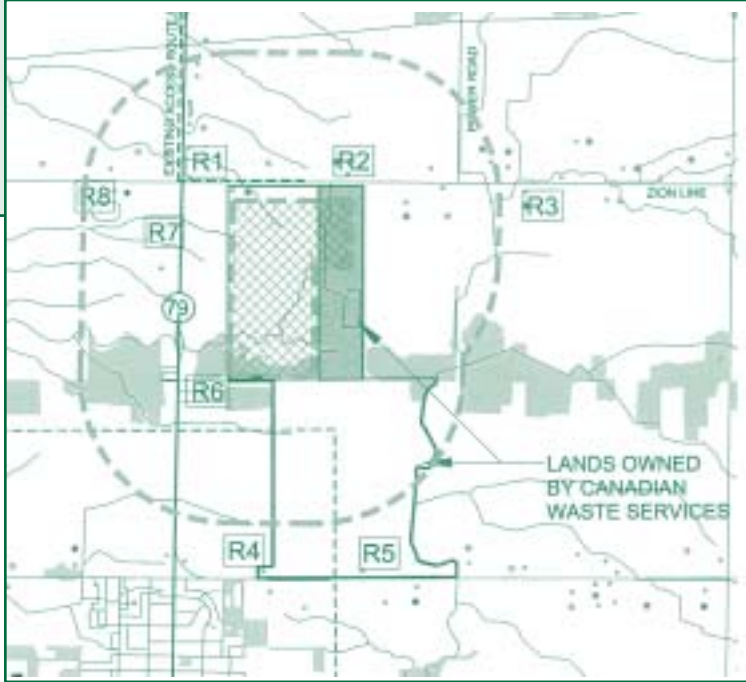
FUTURE CONDITIO

- Water quality in Bear a stable or even improve implementation of impr improvements.
- Surface water flow rate Watford as the area of and houses) increases.

NOISE

The Noise section describes noise sources and recorded noise levels in the vicinity of the landfill site. Some highlights:

- The Village of Watford has moderate daytime noise levels produced by local traffic, localized commercial and industrial activity, community services, and human activity.
- Sound levels are measured in decibels (dBA). As examples, a quiet whisper is 20 dBA, bird calls are 44 dBA, conversation is 60 dBA, a vacuum cleaner at 3 m is 70 dBA, internal car noise is 80 dBA, full symphony orchestra is 100 dBA, and a chainsaw is 120 dBA.
- The noise monitoring program provided a sample of the noise environment at four sample locations around the site. Figure 9 shows the locations of the noise monitoring stations.
- In areas represented by R4 the noise level exceeded the 55 dBA Day and 45 dBA Night Ministry of the Environment noise impact criteria throughout the monitoring period. In areas represented by locations R2, R1 and R5 the background noise was always below the 55/45 criteria, which defines the landfill noise limits for these receptors.



Locations of Noise Monitoring Stations

FUTURE CONDITIONS

- The termination of the existing landfill operation would have no significant effect on background noise in the regional study area.
- Increasing traffic volumes may increase background noise in the site vicinity.
- There may be additional residences or other noise sensitive receptors.

TRANSPORTATION

The baseline traffic conditions for the landfill facility are described in Discussion Paper #5, including: roadways within the defined haul route study areas; existing traffic volumes at the key intersections along the haul routes; and current traffic operations along the roads and intersections of the haul routes. Some highlights:

- The traffic data collected at the landfill site entrance indicates that heavy trucks comprised 23% (65 of 285) of the total weekday landfill traffic but only 4% (7 of 166) of the total Saturday traffic.
- All of the intersections along the haul route are currently operating at excellent levels of service with minimal delays to the minor street traffic.
- For the period from 1993 to 1997 inclusive, the Ministry of Transportation reported nine accidents at intersections and road sections along the haul route. No specific references to accidents involving waste vehicles or agricultural vehicles were reported.



Canadian Waste Services Landfill Trucks

FUTURE CONDITIONS

- The traffic volumes for 2026 are limited to background traffic growth (i.e. traffic not attributed to the landfill).
- The future annual growth estimates for local roads are: 2.5% for County Road 79, 1.5% for Zion Line and 0.7% for County Road 39.
- All of the intersections are expected to operate at good to excellent levels of services through to the year 2026.

SOCIAL

The Social section describes

- The character of the area as close-knit, neighbourly.
- Important features within the study area to the highway and other roads.
- There are 22 residences within the study area.
- The total estimated population of the study area in 2023; approximately 1,000.
- Three community and recreational facilities within the 0 to 1 km study area: Watford Cemetery and a Snowmobile Trail.



Community

FUTURE CONDITIONS

- Based on population and land use trends, the area is likely to maintain the same character.

LAND USE

Land Use Planning project

GROWTH ANALYSIS

- The Township of Watford is projected to experience growth.
- The focus of the growth is primarily residential.
- The projected annual growth rate is detailed in the table below: