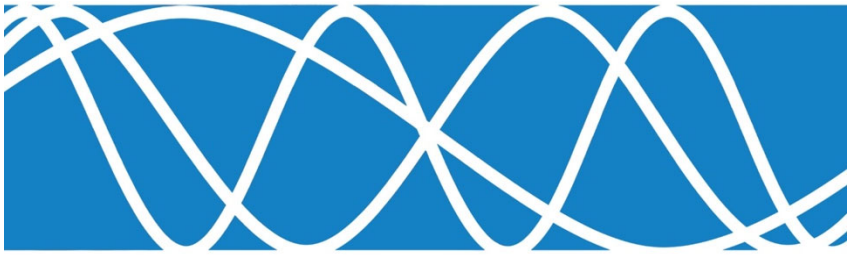
Proposed Official Plan Amendment to Noise Related Policies

For UBE for Elfrida Community Area, Hamilton, Ontario

November 19, 2024
HGC Project #: 02300510



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Proposed Official Plan Amendment to Noise Related Policies, Elfrida Community Area, Hamilton, Ontario

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Table of Contents

1 INTRODUCTION AND SUMMARY

HGC Engineering was retained by Elfrida Community Builders Group Inc. c/o Delta Urban Inc. to conduct to conduct a review of the current policies for the purposes of amending specific OPA policies and schedules related to NEF contours used in the City of Hamilton. This report is not in support of a specific development, but this report will facilitate the development of the Urban Expansion Area (UEA) lands. New development lands (Elfrida Community Area) are located to the northeast of the John C. Munro Hamilton International Airport. There are existing residential homes closer to the airport and it's runways than the subject lands. Numerous new residential developments have been approved to the south of the airport in the last few years.

None of the subject lands are located above the NEF-28 contour of the airport. Further this document will assist to amend the Noise Exposure Forecast mapping contained in Appendix "D" of the Urban and Rural Hamilton Official Plans to reflect the 2025 Noise Exposure Projection mapping for the John C. Munro International Airport. Currently, the Official Plan Appendices reflect the 2010 Noise Exposure Projection mapping. Lastly, this document will assist to amend the Airport Influence Area mapping contained in Appendix "F" of the Rural Hamilton Official Plan to remove the whitebelt parcels (i.e. lands designated "Rural" fronting on Twenty Road West between Upper James and Glancaster) from the Airport Influence Area.

The proposed amendment relates to reflecting the policies as set out in the Provincial Policy Statement (2024). The proposed amendment also relates to updating the policies to be reflective of the latest noise exposure contours, as depicted in the Airport Master Plan (May 2011) document.

The study prepared in 2011 as part of the Airport Master Plan makes a recommendation that new residential development should not occur above NEF 28 which applies to a small portion of the subject site. Using the 2025 Noise Exposure Projection for the airport, the lands fall outside any of the NEF/NEP contours.

Road traffic noise is within a range that can be addressed through the use of typical mitigation as allowed within NPC-300 for all the proposed dwellings in the UEA such as air conditioning for dwellings closest to major roadways or provision to install air conditioning by the occupant at the discretion of the occupant for some of the lots/blocks with some exposure to the roadways in the UEA. Since a portion of the lands are located within the NEF-25 to NEF 28 contours, the provision to install air conditioning by the occupant at their discretion are required for those lands. Noise warning clauses should be used to inform future residents of the road and air traffic sound level excesses. A detailed noise study at the time of Draft Plan of Subdivision application should be prepared for each applicant. The document should include:

- a review of architectural drawings taking into account traffic noise (both air and road traffic),
- sizes of the windows and floor areas should be conducted and
- upgraded glazing constructions should be recommended where required

to achieve the required indoor sound level limits as per the MECP noise guidelines, NPC-300 for both air traffic noise and road traffic noise.

The results of the preliminary land use compatibility investigation indicate that the proposed development is feasible with some constraints imposed on the intensification hubs/corridors or on the residential lands. When siting information is known along with permitted uses, individual noise studies should be completed for the residential lands (in phases) or for the commercial lands as development applications proceed through the process by their developers. Some recommendations which may result from the detailed noise studies may include: a minimum distance setback (20 m for example for residential lands near a Class I type industry), design of the site plan to consider commercial uses or parks or schools as buffer areas between residential and industrial uses, mitigation in the form of acoustic barriers if residential and industrial lands share a mutual property line. The distance setback may be increased to 70 m depending on the classification of the proposed industry (Class I or II) or a technical study such as a noise study may be conducted to determine

appropriate mitigation with decreased setbacks that are less than the minimum recommended setbacks. Noise mitigation in the form of berms or acoustic barriers may also be used to decrease distance setbacks. The setbacks or required mitigation may be controlled through Zoning By-Law and municipal approvals. Noise barriers and source noise controls may be required in addition to the recommended minimum distance setbacks as a result of future noise studies prepared in support of municipal approvals or Environmental Compliance Approval (ECA) applications made by individual industries under the Environmental Protection Act (EPA) or commercial facilities through municipal approval application processes. Individual noise studies for municipal approval applications must be conducted when siting information and permitted uses for the commercial sites are known to verify the need for the distance setback, potentially requiring increased distance setbacks and additional noise mitigation to achieve compliance with MECP guidelines. This is typically performed by the developer of the commercial uses.

HGC has provided the following information to support the amendment to reflect the Provincial Policy Statement and support residential development. Technical reviews of architectural design of residential dwellings or noise sensitive uses are currently utilized to achieve indoor sound level targets consistent with NPC-300.

2 SITE DESCRIPTION AND NOISE SOURCES

Figure 1 is a key plan indicating the general area of the subject site. The site is situated south of Mud Street East, east and west of Upper Centennial Parkway, west of Second Road West/Hendershot Road, north of Golf Club Road, and east of Trinity Church Road, in the City of Hamilton, Ontario. Figure 2 shows the proposed concept plan prepared by Bousfields Inc. dated November 13, 2024. The proposed development will consist of residential lands, natural heritage system area, potential intensification hubs, and potential intensification corridors.

There is an existing east to west hydro corridor located through the middle of the proposed lands. Trinity Church Road, Golf Club Road, Fletcher Road, Highway 56, Hendershot Road/Second Road East, First Road East, Highland Road East, and Mud Street East are two lane roadways (one lane in each direction). Upper Centennial Parkway and Rymal Road East are four lane roadways (2 lanes in each direction) with a centre turning lane at the intersections. The grade on the roadways are fairly flat. There are existing residences fronting onto all of the existing roadways in the study area. The lands are primarily existing residential/agricultural lands. Along Hendershot Road there are some existing industrial uses in addition to residential/agricultural lands. On the west side of Upper Centennial Parkway and Highway 56 there are several commercial uses. To the northeast of the intersection of Mud Street East and Upper Centennial Parkway is the GFL Stoney Creek Regional Facility landfill. Approximately 7 km to the west of the site is the John C. Munro Hamilton International Airport. A portion of the lands at the southwest corner is located between the 25 and 28 Noise Exposure Forecast/Noise Exposure Projection (NEF/NEP) contours (see Figure 3a). If the 2025 Noise Exposure Projection contours of the John C. Munro Airport are used in the assessment, the subject site falls outside of any of the noise contours (Figure 3b). Figure 3c shows the approximate location of the 2011 NEF contours on the proposed plan. Air traffic is expected to have an impact on the UEA development site and is considered in the following analysis. There are no other major existing stationary industrial sources of sound within 500 m of the site.

3 TRAFFIC NOISE ASSESSMENT

3.1 Traffic Noise Criteria

3.1.1 Road Traffic Noise Criteria

Guidelines for acceptable levels of road traffic noise impacting residential developments are given in the MECP publication NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", Part C release date October 21, 2013 and are listed in Table 1 below. The values in

Table 1 are energy equivalent (average) sound levels [L_{EQ}] in units of A weighted decibels [dBA].

Table 1: Road Traffic Noise Criteria

Space	Daytime $L_{EQ(16\ hour)}$ Road	Nighttime $L_{EQ(8\ hour)}$ Road
Outdoor Living Areas	55 dBA	--
Inside Living/Dining Rooms	45 dBA	45 dBA
Inside Bedrooms	45 dBA	40 dBA

Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace or other area where passive recreation is expected to occur. Balconies that are less than 4 m in depth are not considered to be outdoor living areas under MECP guidelines.

The MECP guidelines allow the daytime sound levels in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA, physical mitigation is recommended to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where nighttime sound levels outside bedroom or living/dining room windows exceed 60 dBA or daytime sound levels outside bedroom or living/dining room windows exceed 65 dBA. If the sound level at the facade is greater than 55 dBA and less than or equal to 65 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant’s discretion.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of window nighttime sound

level is greater than 60 dBA or the daytime sound level is greater than 65 dBA due to road traffic noise.

Warning clauses to notify future residents of possible excesses are also required when nighttime sound levels exceed 50 dBA at the plane of the bedroom window and daytime sound levels exceed 55 dBA in the outdoor living area and at the plane of the living/dining room window due to road traffic.

3.1.2 Air Traffic Noise Criteria

Indoor sound limits due to air traffic are also defined in the MECP in publication NPC-300. The maximum allowable Noise Exposure Forecast (NEF) limits are summarized in Table 2.

Table 2: Air Traffic Noise Criterion

Area	Daytime NEF	Nighttime NEF
Living/Dining Room (indoor)	5	--
Bedroom (indoor)	--	0

The living/dining/family rooms, dens and bedrooms of the proposed dwelling units are the sensitive receptor locations. Typically, washrooms and kitchens are considered noise insensitive areas. There are no outdoor noise criteria for aircraft noise because there is no effective means of mitigation.

For residential dwellings located between the NEF 25 and 30, the MECP requires that the dwelling be designed with the provision for central air conditioning. This requirement usually implies forced air ventilation systems with the ducts sized for future installation of central air conditioning. In addition, building components including windows, doors, walls and ceiling/roof must be designed to achieve the indoor sound level criteria. A warning clause is also required in property and tenancy agreements.

For residential dwellings located between the NEF 30 and 35, the MECP requires that central air conditioning is mandatory with warning clauses in the property

and tenancy agreements. In addition, building components including windows, doors, walls and ceiling/roof must be designed to achieve the indoor sound level criteria in Table 2.

According to MECP guidelines, redevelopment of existing residential uses and other sensitive land uses or infilling of residential and other sensitive land uses may be considered above 30 NEF/NEF if it has been demonstrated that there will be no negative impacts on the long term function of the airport. This is subject to implementation of appropriate control measures including a Warning Clause.

There are no specific requirements if the dwellings are located in the area where the NEF/NEP contours are less than 25.

3.2 Discussion and Recommendations

The predictions indicate that the future traffic sound levels from the adjacent roadways (Trinity Church Road, Fletcher Road, Regional Road 56/Upper Centennial Parkway, Hendershot Road/Second Road East, First Road East, Highland Road East, Regional Road 20, and Golf Club Road, along with interior collector roads) are likely to exceed the MECP guidelines. Air traffic does impact the residential portions of the site along the southwest corner of the lands using the 2011 NEF contour map for the airport. This lcoations is used as a worst case in the current report. Recommendations to address the excesses are discussed below.

Potential Intensification Hubs/Corridors

If large commercial business establishments such as grocery stores or large hardware stores, car washes or auto maintenance garages, individual noise studies should be required by the individual parcel owners, when siting information is available, to ensure that the noise emissions from these facilities complies with MECP guideline limits contained in NPC-300 at the closest sensitive receptors and appropriate mitigation is provided.

3.2.1 Outdoor Living Areas

If dwellings are designed such that they are situated with backing or flanking exposure to the major roadways or interior collector roads, acoustic barriers may be required. Alternatively, if the dwellings are designed with fronting exposure to the major roadways or interior collector roads, the dwellings themselves will provide shielding for the amenity spaces, reducing the acoustic barrier requirements for the proposed development

Further Work

When detailed siting and grading information is available for the dwellings closest to Tremaine Road are available, the acoustic barrier requirements should be refined.

3.2.2 Ventilation Requirements

Air conditioning

The predicted daytime sound levels may be greater than 65 dBA and/or nighttime sound levels greater than 60 dBA at the façades of the buildings directly adjacent to the major roadways. Central air conditioning will be required for these dwellings so that the windows can remain closed.

Provision for the Future Installation of Air Conditioning

The predicted nighttime sound levels outside the second storey bedroom windows of the lots/blocks with some exposure to major roadways or interior collector road may have nighttime sound levels at the façades between 51 and 60 dBA and the daytime sound levels at the façade may be between 56 and 65 dBA. These lots/blocks will require the provision for the future installation of central air conditioning systems. This requirement is typically satisfied through the installation of forced air ventilation systems with the ductwork sized for the future installation of central air conditioning by the occupant.

In addition, the dwellings located between 25 to 28 NEF contour for John C. Munro Hamilton International Airport and will be impacted by aircraft noise. The

future residential lots/blocks between NEF 25 to 28, as a minimum, the guidelines recommend a provision for adding central air conditioning by the occupant be provided for all buildings on the site. Since the location of the NEF contours are approximate, it is recommended that all residential lots north of Golf Club Road, west of Fletcher Road, east of Trinity Church Road, and south of the east/west collector road include forced air ventilation systems with ductwork sized for the future installation of central air conditioning by the occupant.

3.2.3 Building Façade Constructions

a) Lots/Blocks between NEF 25-28

Glazing Requirements

The minimum specification for the walls, windows, roofs and doors is Acoustical Insulation Factor, AIF-36 for bedrooms and AIF-32 for living/dining/family rooms. Sample glazing constructions for bedrooms are 3/13/3 or 4/6/4 based on a window to floor area ratio of 6% for bedrooms and 20% for living/dining rooms.

Exterior Wall Construction

Any exterior wall construction meeting the Ontario Building Code (OBC) will be acceptable for the dwellings on lots in the remainder of the development, as long as the exterior wall area to room floor area ratio does not exceed 100% for living/dining rooms and does not exceed 32% for bedrooms.

Exterior Doors

Any insulated metal exterior door meeting OBC requirements will be sufficient to provide noise insulation. If patio doors are to be used in the dwellings, they must be included in the window area.

Ceiling/Roof System

Sloped roofs with ventilated attics are recommended above all noise sensitive rooms in the dwelling units. Cathedral ceilings or vaulted ceilings are not

recommended. If such constructions are desirable, HGC Engineering should be contacted to provide recommendations.

Further Analysis

An acoustical consultant should review the plans for the different types of dwellings to be located in the development to ensure that these components will provide adequate sound insulation for the dwelling units from road and air traffic noise.

As a general note, for dwellings within the NEF-25 to 28 contours, if brick exterior facades are used and sloped roofs with ventilated attics are located above all rooms in the dwelling units, the window requirements will be less stringent.

4 WARNING CLAUSES

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements for all lots and blocks with anticipated traffic sound level excesses. Examples are provided below.

A suggested wording for future dwellings with sound level excesses of the MECP criteria but do not require physical mitigation measures is given below.

Type A:

> Purchasers/tenants are advised that sound levels due to increasing road traffic and air traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment.

A suggested wording for future dwellings for which physical mitigation has been provide is given below.

Type B:

> Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic and air traffic may on occasion interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment.

Suitable wording for future dwellings requiring the provision for adding central air conditioning at the occupant's discretion is given below.

Type C:

> This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound limits of the Municipality and the Ministry of the Environment.

A suggested wording for future dwellings requiring central air conditioning systems is given below.

Type D:

> This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment.

A suggested wording for dwellings adjacent to an industry, facility, or utility where sound levels will at times be audible is given below.

Type E:

> Purchasers/tenants are advised that due to the proximity of the adjacent industry, facility, or utility, noise from the industry, facility, or utility may at times be audible.

These sample clauses are provided by the MECP as examples and can be modified by the Municipality as required.

5 THE POLICY AND REGULATORY CONTEXT

There are several regulations, policies and agreements which should be considered in addressing issues of compatibility and noise impact in the context of this residential and commercial development plan.

5.1 The Environmental Protection Act and the Planning Act

The overriding legislation which applies to industrial/commercial uses is the EPA. Under this legislation, sound is considered as a contaminant, and is thereby subject to the provision that "no person shall discharge a contaminant... into the natural environment that causes or is likely to cause an adverse effect". Unless specifically exempt, industries are required to apply for Environmental Compliance Approvals for their operations under this act. The Ontario MECP has published certain criteria and guidelines for sound used by industry to obtain approvals under the EPA. Similarly, the MECP has produced guidelines to assist municipalities and developers in preparing applications under the Planning Act which these authorities implement by providing comments when they are circulated. These are discussed below.

5.2 MECP Guidelines for Land Use Compatibility Between Industrial/Commercial Facilities and Sensitive Land Uses

MECP Guidelines D-1, 'Land Use Compatibility' and D-6 'Compatibility Between Industrial/Commercial Facilities and Sensitive Land Uses' were prepared to address the potential incompatibility of industrial land uses and noise sensitive land uses in relation to land use approvals under the Planning Act. They

recommend that studies be conducted to investigate the feasibility of providing sufficient mitigation when noise sensitive land uses are proposed within the potential zone of influence of an existing industry/commercial facility. The mitigation can be provided at the source, or can be incorporated on the development lands where the industrial/commercial facility is operating in compliance with legislated Ministry requirements.

In planning a sensitive land use near an existing industrial/commercial area, guideline D-6 suggests certain potential zones of influence for the industry, depending on the characterization of that industry. Three classes of industry are defined, as follows:

Class I Industrial Facility

A place of business for a small scale, self-contained plant or building which produces/stores a product which is contained in a package and has a low probability of fugitive emissions. Outputs are infrequent and could be point source or fugitive emissions for any of the following: noise, odour, dust and/or vibration. There are daytime operations only, with infrequent movement of products and/or heavy trucks and no outside storage.

Class II Industrial Facility

A place of business for medium scale processing and manufacturing with outdoor storage of wastes or materials (i.e. it has an open process) and/or there are periodic outputs of minor annoyance. There are occasional outputs of either point source or fugitive emissions for any of the following: noise, odour, dust and/or vibration, and low probability of fugitive emissions. Shift operations are permitted and there is frequent movement of products and/or heavy trucks during daytime hours.

Class III Industrial Facility

A place of business for large scale manufacturing or processing, characterized by: large physical size, outside storage of raw and finished products, large

production volumes and continuous movement of products and employees during daily shift operation. It has frequent outputs of major annoyance and there is high probability of fugitive emissions.

For screening purposes, guideline D-6 outlines some potential influence areas for the different classes of industry, as follows. Outside these potential influence areas, it is unlikely that an industry which has been appropriately classified will have significant impact.

Class I – 70 metres

Class II – 300 metres

Class III – 1000 metres

Guideline D-6 acknowledges that the actual influence areas may be less, subject to site specific studies performed in accordance with guideline NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning". Notwithstanding the actual influence area of an industry, in order to minimize the potential for future land use conflicts, the MECP recommends that certain minimum separation distances be respected, as follows:

Class I – 20 metres

Class II – 70 metres

Class III – 300 metres

The MECP recognizes that these minimum separation distances may not always be viable in certain cases, particularly in those cases of redevelopment, infilling and mixed-use areas, where the zoning or official plan has left no available land buffer. In those instances, the overall feasibility of the proposal is based on the anticipated adverse effects from the industrial/commercial use, including any mitigative measures that might be applied to address anticipated impacts.

The potential zone of influence may be greater than these minimum separation distances; however, it is assumed that any industrial noise impact can be

mitigated through the implementation of reasonable site specific control measures given the existence of these minimum buffer zones (parks, buffer areas, on-site mitigation in the form of noise berms/barriers, use of parking lots, roadways or locating noisy areas such as loading areas to the shielded side of buildings). The guidelines allow for some reductions in the minimum setback distances, based on the results of supporting technical studies for infill developments or "lands in transition", such as a noise impact study. Mitigation in the form of acoustic barriers or berms may be used to decrease distance setbacks through analysis in a technical noise study.

5.3 Adjacent Industrial and Commercial Facilities

According to the UEA, there are potential intensification hubs on the north and south side of Rymal Road East, and potential intensification corridors along First Road East, Regional Road 56, Upper Centennial Parkway, and the east/west interior collector road. These areas could potentially include commercial/retail/ uses. Furthermore, there is an existing landfill located to the northwest of the intersection of Mud Street West and Upper Centennial Parkway (GFL Stoney Creek Regional Facility).

Commercial/retail uses are often situated near major roads, and the lands can accommodate buffering from sensitive land uses. The uses may include: automotive repair service, transportation terminals, retail, office, restaurants, fitness centres, and other similar uses.

The majority of the uses listed above can be designated as Class I or Class II facilities and minimum distance setbacks of 20 m and 70 m can easily be accommodated with buffer spaces or buffer uses, such as commercial.

A minimum 20 m buffer zone is recommended on the employment lands adjacent to the residential lands that are Class I type uses and a 70 m buffer zone is recommended for Class II type uses. These should be controlled through Zoning By-Law and municipal approvals. Noise barriers and source noise controls may be required in addition to the recommended minimum distance

setbacks as a result of future noise studies prepared in support of municipal approvals or Environmental Compliance Approval (ECA) applications made by individual industries under the Environmental Protection Act (EPA) or commercial or light industrial facilities through municipal approval application processes. Individual noise studies for municipal approval applications must be conducted when siting information and permitted uses for the commercial sites are known to verify the need for the distance setback, potentially requiring increased distance setbacks and additional noise mitigation to achieve compliance with MECP guidelines.

Since the commercial uses are not yet designed, there is an opportunity to appropriately design the sites (or the residential site) taking into consideration minimum separation distances between sensitive land uses and industrial uses for land use compatibility. Parking lots, walking trails or a park, natural lands or stormwater ponds, large earth berms or commercial uses may be used as a buffer between residential and commercial uses. Loading/unloading areas which involve significant trucking activities may require noise mitigation depending on the frequency of trucks, impulsive noise and distance to proposed or existing sensitive uses. A noise barrier may be needed for the commerical lands to shield the second or third floor residential windows. Alternatively, lower barriers shielding ground level windows and bungalows may also work in this scenario. Barriers may be included for the residential portions of the development by incorporating berms/barriers and/or lower number of storeys to reduce potential noise intrusions.

MECP Guidelines for Stationary and Transportation Sources MECP Publication NPC-300, entitled "Environmental Noise Guideline, Stationary and Transportation sources – Approval and Planning" establishes sound level limits for stationary sources of sound. Stationary sources of sound can be individual facilities or pieces of equipment or the cumulative sound of activity or conveyances operating on industrial property such as trucking yards or loading areas. NPC-300 is used by industry to determine the impact of their operations at neighbouring noise sensitive receptors to demonstrate compliance for the

purpose of obtaining approvals. It is also used by the development industry to determine if there may be significant noise impacts on lands considered for the development of noise sensitive uses. Given the presence of the roadways in the area, much of the lands would be considered to be in Class 2 area for any noise assessments. NPC-300 recommends sound level limits as a function of the background sound levels due to road traffic and other industry. The objective of the guidelines is to establish a sound level limit at each noise sensitive receptor on the basis of "predictable worst case" impact. In general, the sound level limit must represent the minimum background sound level that occurs during an hour of the day in which the stationary source may operate, subject to exclusionary minima of 45 to 50 dBA, depending upon time of day (daytime, evening or night time) and proximity to the roadways. In this case, the minimum daytime criterion of 50 dBA and 45 dBA at night at the dwelling; along with a 50 dBA during the day and 45 dBA during the evening in the outdoor living area (OLA) would likely apply to the future residential dwellings.

The Municipal Noise By-Law generally follows the MECP noise guidelines. Municipal Bylaw Enforcement staff is responsible for investigating complaints concerning commercial occupancies which may be proposed.

As an overview of the above regulations, policies and agreements, the commercial developer or developers and the future proposed industries and/or commercial uses are obliged to provide a suitable distance setback and any additional mitigation for any noise impact on the existing (or proposed) noise sensitive land uses in accordance with the Municipal Noise Control Bylaw and the requirements of the EPA through the Certificate of Approval process as per MECP D1, D6 and NPC-300 Guidelines and related documents.

Consideration of Worst-Case Commercial Activities Cursory calculations based on HGC Engineering’s experience with the permitted uses indicate that there is a possibility that there could be excesses of the MECP daytime sound level limit of 50 dBA and nighttime limit of 45 dBA near the residences at the south end of the development, if the uses on the employment areas were located in close

proximity along the northern boundary, depending on the intensity of the operations and numbers of truck movements etc. In order to reduce the amount of potential mitigation for these blocks, consideration should be given to the location of the loading areas, trucking routes, repair bay doors, etc. to the south side of the buildings on the employment lands, so that the buildings may function as barriers themselves. Alternatively, mitigation measures in the form of wing walls or enclosed loading areas may be required depending on the type of commercial use.

The results of the investigation indicate that the proposed residential development adjacent to the existing commercial/industrial uses and intensification hubs/corridors which may have Class I or Class II commercial developments are feasible on this site.

6 SUMMARY OF RECOMMENDATIONS

The following list summarizes the recommendations made in this report.

Road and Air Traffic Noise

1. Road traffic noise may be mitigated through noise barriers for rear yards, as required, air conditioning, or the provision to install air conditionnig by the occupant in the future. Upgraded building constructions may be recommended with a detailed review of architectural drawings considering both air traffic and combining with road traffic noise. Interior sound level targets may be achieved with upgraded glazing constructions.

2. Warning clauses should be used to inform future residents of the traffic noise issues including air traffic.

D6 Guidelines

3. The proposed development is feasible with some constraints imposed on the areas near existing commercial/industrial uses, and along the potential intensification hubs/corridors or on the residential lands. When

siting information is known along with permitted uses, individual noise studies should be completed for the residential lands (in phases) or for the commercials lands as development applications proceed through the development process.

Some recommendations which may result from the detailed noise studies may include: a minimum distance setback (20 m for example for residential lands near a Class I type industry), design of the site plan to consider commercial uses or parks or schools as buffer areas between residential and industrial uses, mitigation in the form of acoustic barrier if residential and industrial lands share a mutual property line. The distance setback may be increased to 70 m depending on the classification of the proposed industry (Class I or II) or a technical study such as a noise study may be conducted to determine appropriate mitigation with decreased setbacks that are less than the minimum recommended setbacks. The setbacks or required mitigation may be controlled through Zoning By-Law and municipal approvals. Noise barriers and source noise controls may be required in addition to the recommended minimum distance setbacks as a result of future noise studies prepared in support of municipal approvals or Environmental Compliance Approval (ECA) applications made by individual industries under the Environmental Protection Act (EPA) or commercial or light industrial facilities through municipal approval application processes. Individual noise studies for municipal approval applications must be conducted when siting information and permitted uses for the commercial sites are known to verify the need for the distance setback, potentially requiring increased distance setbacks and additional noise mitigation to achieve compliance with MECP guidelines.

The reader is referred to the previous sections of the report where these recommendations are discussed in more detail.

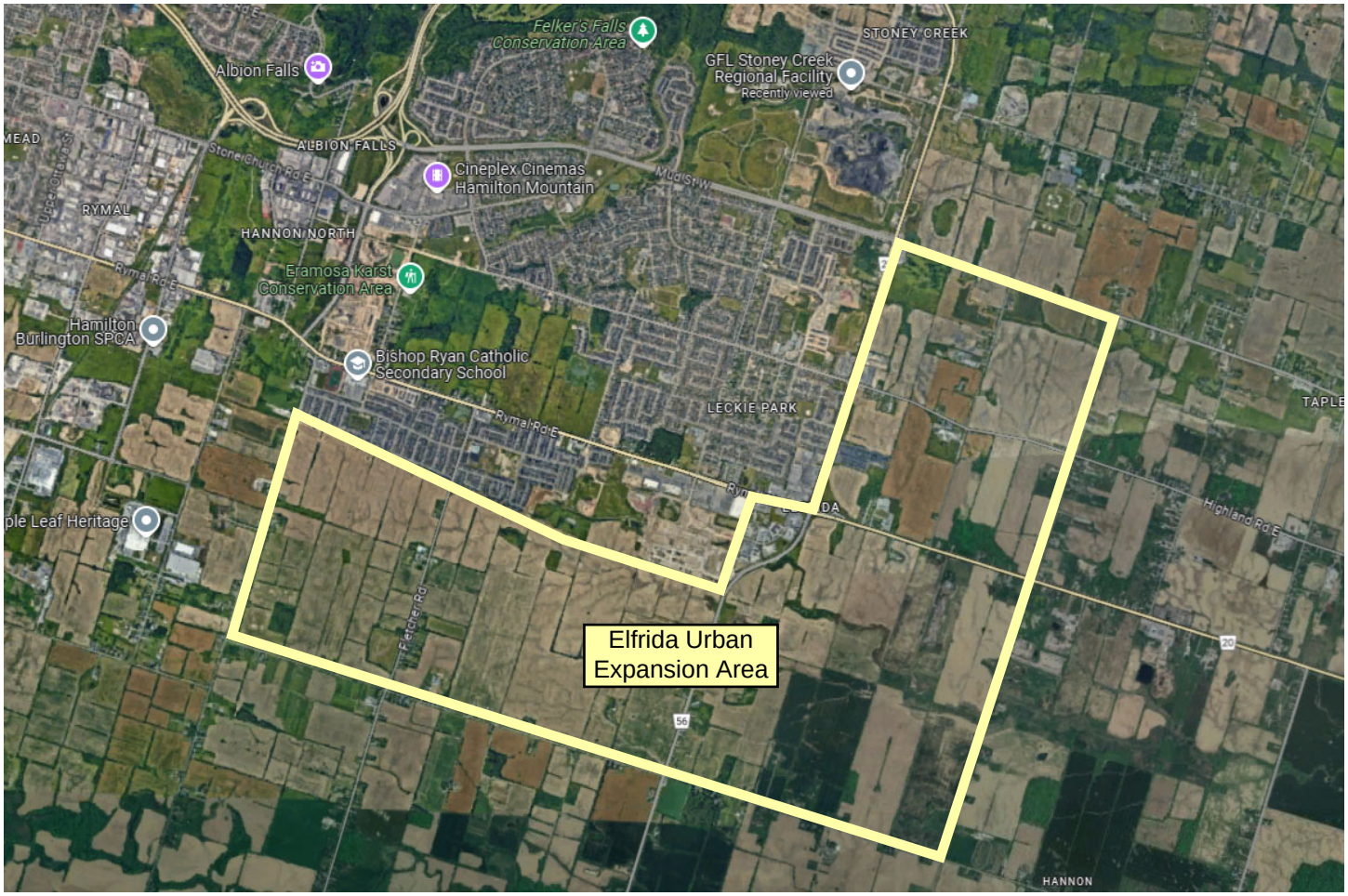


Figure 1 - Key Plan

ELFRIDA
URBAN EXPANSION AREA

CITY OF HAMILTON

LEGEND:

- Elfrida Study Area (Urban Boundary Expansion Lands)
- Urban Boundary *(UHOP - Schedule E)*
- Existing Roads
- Proposed Roads
- Planned ROW *(RHOP / UHOP)*
- Potential Linear Greenway
- Preliminary Natural Heritage System Area *(Stantec)*
- Greenbelt Plan Area
- Hydro Corridor (Utility) *(RHOP - Schedule B)*
- Existing Developed Industrial / Commercial Uses
- Potential Residential
- Potential Intensification Hub
- Potential Intensification Corridor
- Potential Higher Order Transit *(UHOP - Appendix B)*
- Planned Elfrida Gateway Station *(As per "(Re)envision the HSR" Concept Network Plan)*

Image source: First Base Solutions

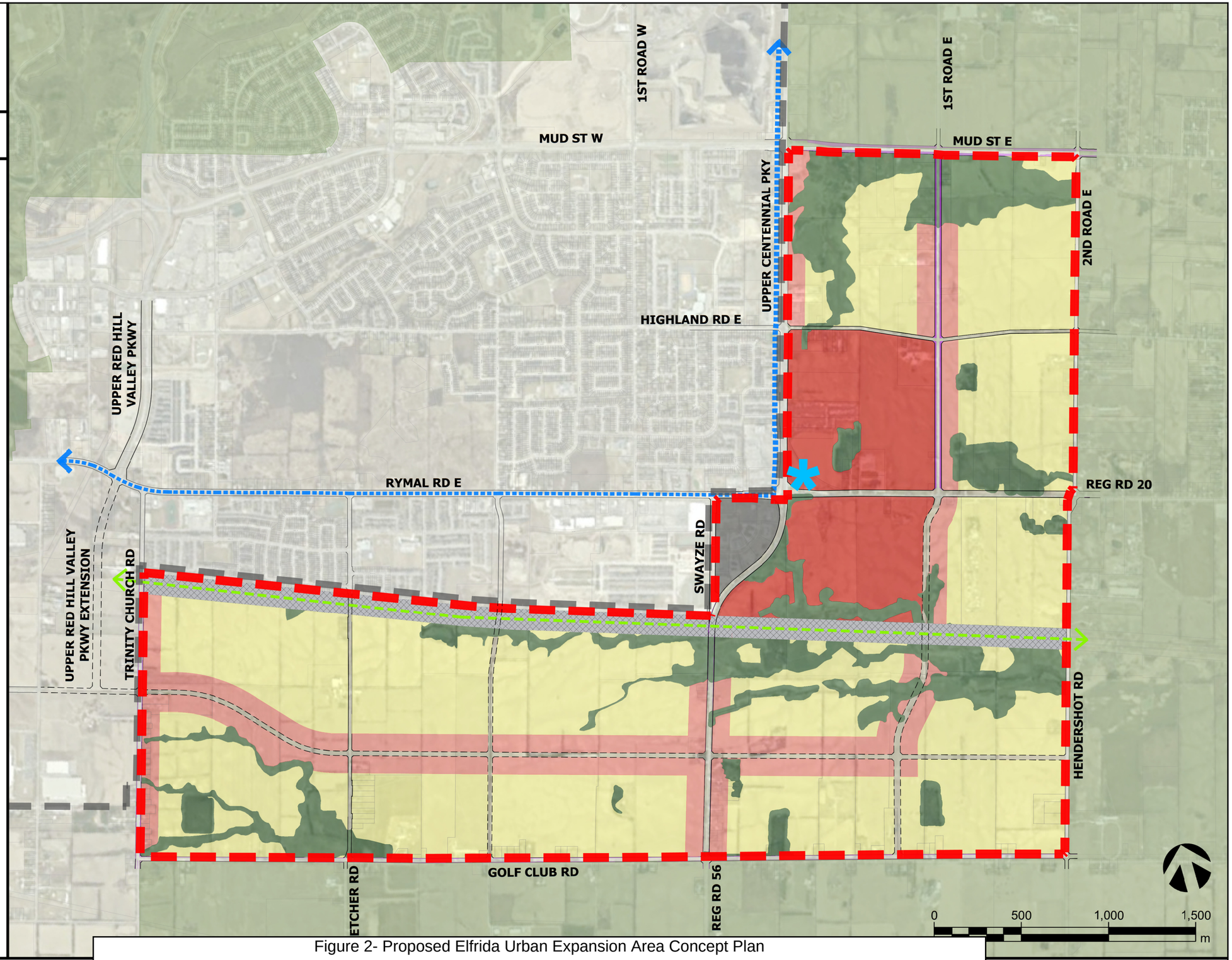


Figure 2- Proposed Elfrida Urban Expansion Area Concept Plan

BOUSFIELDS inc.
Nov 13 - 24

Concept Plan

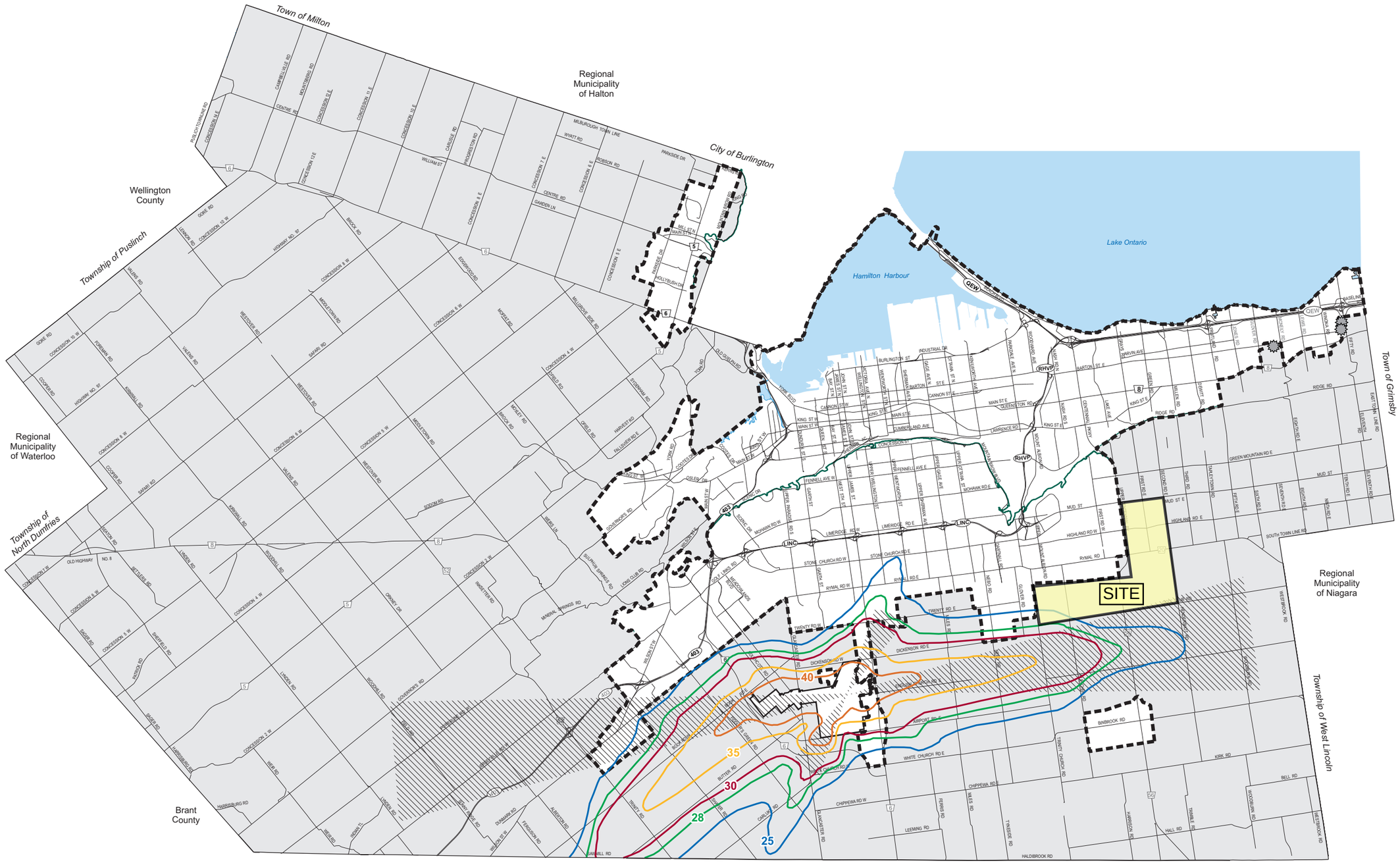
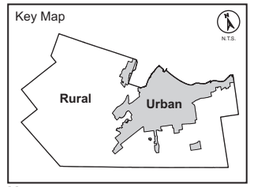


Figure 3a - Map Showing the 2011 Noise Contours for the John C. Munro Hamilton International Airport

Key Map



Note: For Rural Noise Exposure Forecast Contours and Primary Zoning Regulation Area Designations, refer to Appendix D of the Rural Hamilton Official Plan.

Legend

- 25 — 2010 NEF Contour
- 28 — 2010 NEF Contour
- 30 — 2010 NEF Contour
- 35 — 2010 NEF Contour
- 40 — 2010 NEF Contour
- Primary Airport Zoning Regulation Area

Other Features

- Rural Area
- John C. Munro Hamilton International Airport
- Niagara Escarpment
- Urban Boundary
- Municipal Boundary
- **Subject to Future OMB Hearing**

Urban Hamilton Official Plan Appendix D

Noise Exposure Forecast Contours and Primary Zoning Regulation Area

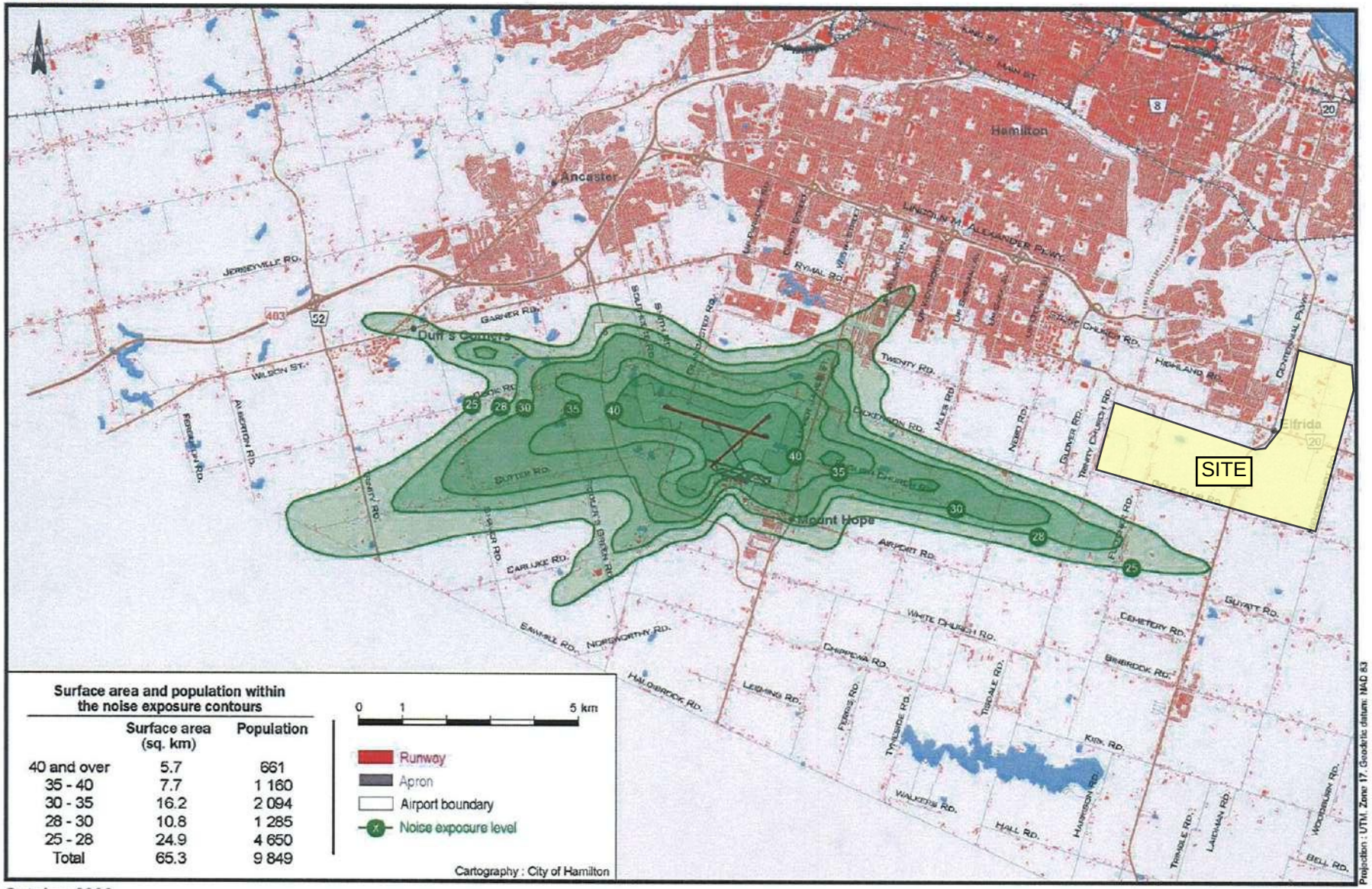
Not To Scale

Date: July 9, 2009

Hamilton

PLANNING & ECONOMIC DEVELOPMENT DEPARTMENT

Figure 12.
2025 Noise Exposure Projection
Extended Runway 06, Runway 12 displaced threshold removed
John C. Munro Hamilton International Airport



	Surface area (sq. km)	Population
40 and over	5.7	661
35 - 40	7.7	1 160
30 - 35	16.2	2 094
28 - 30	10.8	1 285
25 - 28	24.9	4 650
Total	65.3	9 849

October 2006

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Figure 3b - Map Showing the 2025 Noise Contours for the John C. Munro Hamilton International Airport

ELFRIDA
URBAN EXPANSION AREA

CITY OF HAMILTON

LEGEND:

- Elfrida Study Area (Urban Boundary Expansion Lands)
- Urban Boundary *(UHOP - Schedule E)*
- Existing Roads
- Proposed Roads
- Planned ROW *(RHOP / UHOP)*
- Potential Linear Greenway
- Preliminary Natural Heritage System Area *(Stantec)*
- Greenbelt Plan Area
- Hydro Corridor (Utility) *(RHOP - Schedule B)*
- Existing Developed Industrial / Commercial Uses
- Potential Residential
- Potential Intensification Hub
- Potential Intensification Corridor
- Potential Higher Order Transit *(UHOP - Appendix B)*
- Planned Elfrida Gateway Station *(As per "(Re)envision the HSR" Concept Network Plan)*

Image source: First Base Solutions

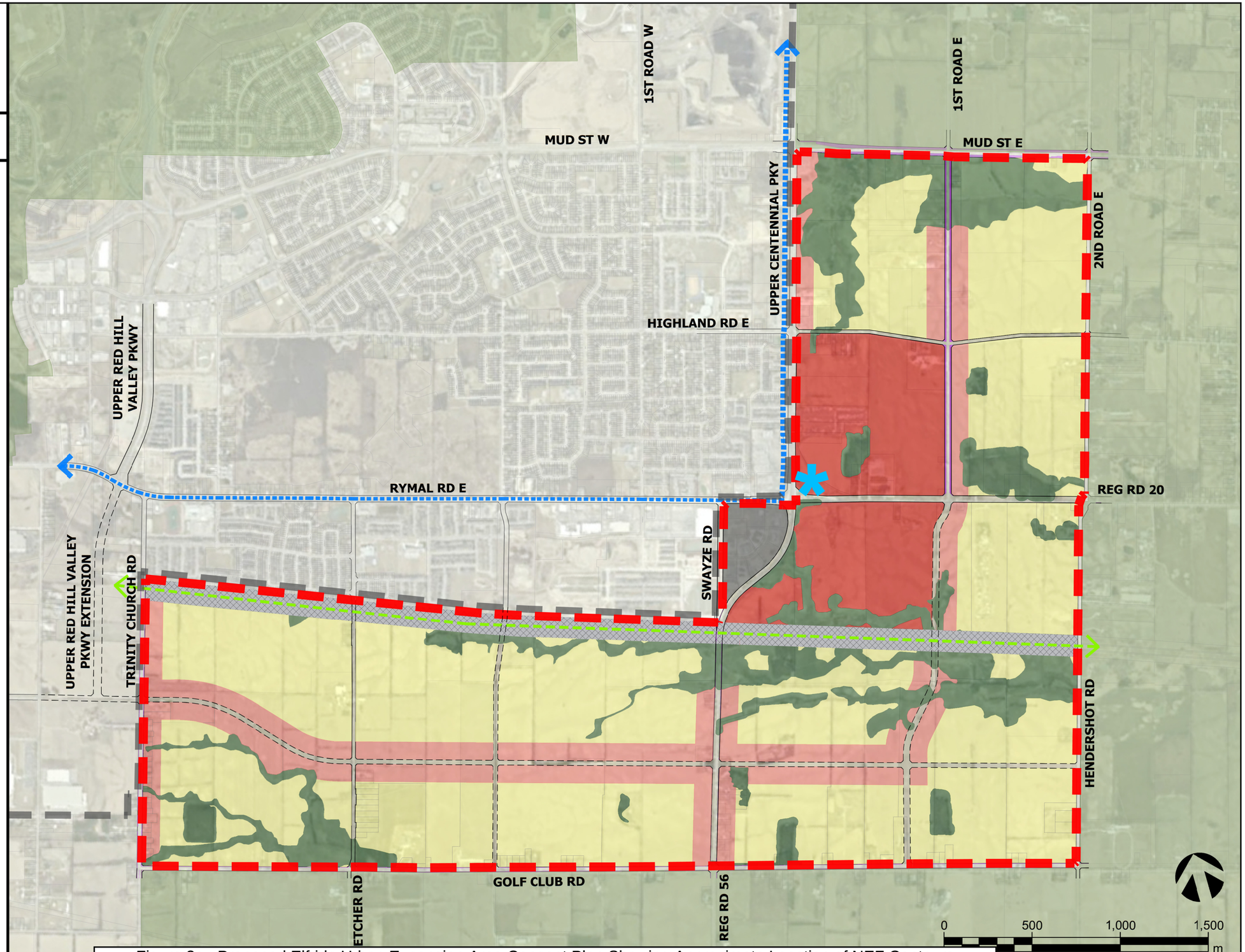

Figure 3c - Proposed Elfrida Urban Expansion Area Concept Plan Showing Approximate Location of NEF Contours

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Nov 13 - 24

Concept Plan