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**FINAL REPORT**  
**LAND USE AND DEVELOPMENT PLAN**

**HALIBURTON-STANHOPE AIRPORT**

January 27, 2014

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# 1. Introduction

Explorer Solutions services were retained by the Township of Algonquin Highlands, to work on a Land Use and Development Plan and Marketing Strategy for the Haliburton – Stanhope Airport (HSA) located in Central Ontario (Haliburton County). This project comes in the mix of an important study completed back in 2010, to plan the construction of a 4,000-foot crosswind runway at the airport.

The willingness of the Township Council at the time to build such a crosswind runway was very controversial within the community and was generally opposed. At the time, the Township was approved for funding under the Build Canada Fund – Community Capacities Component being a 1/3 cost share between the Federal, Provincial and Municipal governments, enabling the project to move forward.

To date, however, construction has yet to be initiated due to the election of a new Council. Council has commissioned this study to better understand the growth and development perspectives for the airport, as well as the associated opportunities and limitations. The mandate review section below will provide a more complete understanding of the objective and deliverables.

Even though the construction project has not been initiated, the approved Build Canada Funding remains available until 2016. The funding could also be used for other airport development projects pending approval for a Scope Change to the application from the Federal/Provincial Government. In the preparation of this Land Use and Development Plan, Explorer Solutions did not consider the construction of the 4,000-foot crosswind runway as a short or mid-term alternative as indicated in the Request for Proposal (RFP) and mandate (“...the 4,000-foot runway is not being considered at this time; however, the footprint of it will be incorporated into the plan.” RFP 2012-005).

To achieve this mandate, Explorer Solutions partnered with EBA, a unit of the Tetra Tech Group, specialized in airport planning and engineering. Explorer Solutions concentrated its efforts on the research, study and analysis of the development opportunities that could potentially match the airport assets, land and location, along with an assessment of the community assets, strengths and weaknesses. EBA focused its work on airport infrastructures and land uses.

## 1.1 Airport Data

HALIBURTON-STANHOPE AIRPORT DATA	
Airport Type	Public
Owner/ Operator	Township of Algonquin Highlands
Airport Codes	CND4
Type	local airport (light traffic)
Scheduled airline service	None
Location	Haliburton, Ontario, Canada
Runway	08(084°)/26(264°) // 2500X60 Asphalt
Lighting	08(TE LO), 26-AS(TE LO) ARCAL-123.2 Type J (all A/D lighting including rotating beacon)

Latitude/Longitude	N45 06 39 W78 38 24 6.9NW 12°W
Field elevation - UTC-5(4)	1066 ft./ 325m ASL
Procedures	Municipal policy restricts operations during 04-12Z. Northerly winds may cause wind shear during approach/departure for Runway 26. Wildlife in vicinity of runway.

## 1.2 Mandate review

The Township of Algonquin Highlands issued this Request for Proposal intending for the preparation of a Land Use and Development Plan and Marketing Strategy, specifically for the Haliburton-Stanhope Airport.

The Land Use and Development Plan should provide a guide for Council regarding the future development of aviation, and other industries at the Haliburton-Stanhope Airport. The plan should include:

1. Airport facility details
2. Community profile
3. A land use and development plan
4. A market analysis of potential industries, including commercial development opportunities
5. Recommended land uses for specific areas of the airport, based on the services provided
6. Recommended commercial development and lease fees
7. A marketing strategy, to attract the identified development, and to increase revenue opportunities

The goal of Council is to establish a plan that provides (within the appropriate operational requirements), rules and obligations, for a full and efficient utilization of the land at the airport; in a way that benefits the Township, and optimizes commercial development revenue opportunities, as well as outlines a viable marketing plan.

## 1.3 Community Profile

Known as the “Haliburton Highlands,” Haliburton County is a rural community known for its dramatic Canadian landscapes, forest covered hills, and hundreds of beautiful clear lakes. Bounded on the south by the Victoria and Peterborough Counties, on the North by the Algonquin Park, the West by the District of Muskoka, and on the East by Nipissing and Hastings Counties; the region covers an area of more than 4,000 square kilometres, and comprises the Townships of Algonquin Highlands and Minden Hills, as well as the Municipalities of Highlands East, and Dysart (et al).

The Township of Algonquin Highlands is a lower tier municipality located on the western side of the Haliburton Highlands. Algonquin Highlands includes the geographic townships of Sherborne, McClintock, Livingstone, Lawrence, Nightingale and Stanhope.

## **Population**

Haliburton County is home to a total population of 17,026 (Statistics Canada 2011), with an estimated seasonal population of more than 48,000. The population is highly dispersed, and averages only 4.2 persons per square kilometre; as compared to the provincial average of 14.1 per square kilometre. The largest population centres are the villages of Haliburton, and Minden.

The County supports a growing, aging population, considerably older than the province's average. More than 59% of the population is over the age of 50, and more than 25% is over the age of 65 (significantly higher than Ontario averages of 32% over 50, and 14% over 65 (Statistics Canada 2006)). A high percentage of seniors depend on fixed incomes, or rely on their Old Age Security Pensions. A minimal 15.6% of the population is 0-19 years of age. Haliburton County recorded to have the lowest average family income in all of Ontario back in 2009, with an average family earning of \$47,242.

According to the 2013 County of Haliburton Housing Study, the Township of Algonquin Highlands has a population of 2,156, representing 12.7% of the total population in the County. It has the largest share of seniors, where seniors made up 32.0% of the total population in the municipality in 2011. The Township of Algonquin Highlands had 992 households in 2011, the smallest number in the County (13.0% of total households in the County). Almost half (47.7%) of these households were couples without children, the largest proportion in the County. According to 2012 property assessment data, the Township has approximately 3,578 seasonal dwellings and 931 primary dwellings.

## **Education and Employment**

Based on Statistics Canada Census data from 2001 and 2006, education and income levels in Haliburton County are below those for Ontario. In 2006, 52% of 25-64 year olds completed their post-secondary education, lower than the provincial proportion of 62%. While a smaller proportion of individuals in the Haliburton County (14%) have completed university, comparable to the province's 31%, a larger proportion has received education at a collegiate or apprenticeship level (38%, versus 31% respectively). This may be a mere reflection of the type of industry available within the county. Haliburton County is home to a satellite campus of Fleming College, and the Haliburton School of the Arts, dedicated to innovative arts, and sustainable design programming.

## **Labour Force**

Although mines and forest-product industries exist, the county remains primarily a center of recreation, cottage ownership, and tourism; with only a modest industrial base present. A large proportion of Haliburton County's labour force is employed by service-related industries. According to the Haliburton County Housing Study (Phase 1 – Housing Demand and Supply Analysis), retail trade in 2006 represented the largest number of jobs in the county, at 16.5%, followed by 16.1% in the construction industry, 10.8% in accommodation and food services, and 9.7% in health care and social assistance. In all cases, these sectors employ a higher percentage of the labour force, than the province as a whole. Arts, entertainment and recreation (4.1%), also account for a higher proportion of the labour force, than that of the province in its entirety (2.1%). This is similar to the information presented in the Haliburton County Business Retention



and Expansion Report 2011, which states that most employed persons in Haliburton County are employed in construction (18%), business services (15%), or retail trade (15%). (The Haliburton County Business Retention and Expansion Project was spearheaded by the Haliburton Highlands Chamber of Commerce, and funded through the Haliburton County Development Corporation. The committee overseeing the project included the Haliburton Highlands Chamber of Commerce, Haliburton County Development Corporation, the County of Haliburton, and U-Links).

According to the 2013 County of Haliburton Housing Study, households in the Township of Algonquin Highlands reported the second highest average income in the County at \$56,309 in 2005.

Looking to province-wide statistics, the majority of employment growth in Ontario between the years 2011 and 2012, occurred in the Toronto economic region, with an increase of 46,000 jobs (+1.5%); followed by Ottawa, with an increase of 16,100 (+2.4%). The Northwest economic region was another area of strength in 2012, with an employment growth of 2.6%. Conversely, the Muskoka-Kawarths region was the third worst performing region in the province, with a negative (-2.4%) growth. (*Statistics Canada, Labour Force Survey - HRSDC Table-055*).

In Haliburton County, only 41% of the individuals working in 2006 had a year-round job. (Statistics Canada 2011). Unemployment rates are significantly lower during the summer (approximately 8.4%), and jump to 30-35% during the winter season. Accommodation and food services, as well as arts, entertainment and recreation also employ a large proportion of the labour force in the county, due to the fact that it is a popular cottage and recreation destination.

The labour force participation rate in the county steadily increased from 50.1% in 1996, to 54.5% in 2006; although these participation rates were still significantly lower than provincial recordings. In contrast, the unemployment rate in the county has traditionally been higher than that for the province as a whole.

Although key stakeholders in the county have noted a lack of employment opportunities, the report on business retention and expansion shows, that approximately 40% of businesses have difficulty recruiting qualified employees, and 17% of businesses have difficulty retaining employees. This suggests that employees may be available, but may not have the skills required by many of the businesses in the region. This labour gap may also relate to the aging population resulting in a decreasing labour force. The low turn-over rate may be due to the high unemployment rates in the area, at approximately 9.5% in reference to the 2011 report.

According to the report, the largest identified obstacles for growth within the business community are: availability of skilled laborers, labour attraction and training, financial support, information accessibility, marketing and infrastructure. Of those surveyed, the largest hurdles for currently expanding businesses are financing, labour and real estate (buildings) availability.

The businesses surveyed indicated that they require employees with diversified skill-sets, and professional qualifications. The majority of businesses require literacy, basic computer skills, sales expertise, and management abilities. Less than a quarter of the

businesses consider a college diploma to be important for the position, followed by technical trades at under 20%, and a university degree at 13%.

Sources: *Community Profile Summary for Haliburton County (Aug. 2012)*; *Haliburton County Fact Sheet*; *Haliburton County Community Picture 2011*; *County of Haliburton Housing Study (2012)*; *Statistics Canada*; *Haliburton County Business Retention and Expansion Report 2011*; *Human Resources and Skills Development Canada. Labour Market Bulletins – Ontario- Summer 2012*; *Haliburton Highlands Stewardship Council*.

## 2. Airport Strengths and Weaknesses

To provide the Township of Algonquin Highlands with a Land Use and Development Plan ensuring long-term sustainability for the airport, along with growth opportunities, we initiated this mandate by completing a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of the airport. This activity served as the basis for interviews, research, and overall plan development.

### 2.1 Airport Strengths

2.1.1	Popular airport	Location and surroundings are positively mentioned. Some residents fly in with their aircraft, or via a charter. Tourism is a main driver at the airport.
2.1.2	MNR development	The Ontario Ministry of Natural Resources is planning to relocate its Haliburton base to the HSA. Confirmation of the relocation of the fire base to the airport has been received by Township officials, and the discussions continue. This opportunity brings with it the possibility of future development and activity; including helicopter and bird dog (Aerocommander) operations, with associated fuel sales down the road.
2.1.3	Land to build a new runway	Land is available to build a 4,000-foot crosswind runway; studies exist for future reference.
2.1.4	Industrial land available	The airport can offer airside and landside parcels of land for immediate construction. Future development is a viable option.
2.1.5	Government funding	The Township received approval for government funding to support runway extension, or crosswind development of which, Phase 1 being the rehabilitation of the existing runway, has been completed; however, a project scope change is being pursued by the Township for Phase 2, to use the grant funds for MNR development and relocation.
2.1.6	Potential Fly-in community site	A project of this nature could help expand the general aviation hub, and generate more FBO based revenues for the Township.

2.1.7	Funding from HCDC	The Haliburton County Development Council can access and offer various grants or funding programs, to help support investment within the county.
2.1.8	Approved installation of a Dry Hydrant in Gull River	The Dry Hydrant will provide fire suppression services to commercial entities at the Airport and surrounding area.

## 2.2 Airport Weaknesses

2.2.1	Airport website	Website lacks information regarding airport fees and amenities; also, airport events and fly-ins should be posted on the web as a site attractor. Weather information (listed as Automated Weather Information System) may be misinterpreted.
2.2.2	Present length of the runway	The runway is suitable for small, general aviation aircraft; however, of all of the survey airports, HSA has the shortest and narrowest runway, including direct competing airports such as Muskoka (6,000 x 1,000) and Parry Sound (4,000 x 1,000) HSA cannot accommodate (most) twin engines, and larger single engine general aviation aircraft, or business jets. Most charter outfits will avoid the airport because of the runway length. Future bird dog aircraft and larger tanker activity are a possibility due to MNR presence; however, the current runway length is unsuitable for that kind of activity.
2.2.3	No available hangars	The airport is at maximum capacity, with no current hangar availability; both for general aviation purposes, and maintenance activities.
2.2.4	Infrastructure	Currently, there is no water or sewer system at the airport. Also, there is no 3 phase electricity, as required by most industries; however, it is proposed to be installed as part of the MNR relocation project.
2.2.5	Wind shear	When the wind is blowing from the north, pilots can experience a sizable wind shear on final approach to runway 26. This wind shear is cited by numerous pilots and a flight school as a challenge the pilots face when landing at the airport.
2.2.6	Appearance	The general layout of the airport, the overall appearance of some of the buildings, and the surrounding field require upgrades.
2.2.7	No active investment attraction agency	There seems to be no one driving investment attraction within the County, and for the airport.
2.2.8	Labour availability	The County comprises mostly a senior population, which limits the pool of labour that companies can access. It also limits the skill set and competency spectrum.

2.2.9	Transportation	The airport is a registered aerodrome, and has no charter operators on-site; most operators use aircraft too large for the runway. By road, the region has a few provincial highways leading into the County, but no major expressways.
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**\*Note:** A few pilots we interviewed reported experiencing trouble with the ARCAL in the past. We were unable to confirm this with the airport manager or local leaders, but this may be an item worth investigating and possibly rectifying.

## 2.3 Business Opportunities

2.3.1	Hangar Development Potential	Hangar availability is scarce to non-existent at the airport. The Airport manager maintains there is a waiting list of pilots and aircraft owners interested to rent and/or build a hangar. The Airport should look at adding new hangars to meet the market demand. This is a financially sound decision that would also support fuel sales and maintenance activities at the airport
2.3.2	Situations at other Ontario airports - of which HSA could benefit	The impending closure of the Buttonville Airport will cause nearly 300 aircraft, and some businesses to relocate. GA airports closer to Toronto do not have the capacity to host the total volume of flights (161 000) exiting the Buttonville Airport. Also, the Toronto Island Port Authority has significantly raised its fee structure – thus creating pressure on GA operators to vacate the airport.
2.3.3	Aviation Maintenance	The Ontario aviation market lacks engine shops for general aviation aircraft. Multiple times through our various interviews, the notion of a general aviation maintenance center was mentioned. To coordinate the development of such a center, with MNR activities could provide enough business to render this opportunity viable.
2.3.4	Tourism Hub and lifestyle center	The long-term vision would be to potentially create a “lifestyle” general aviation airport, where people can live from, work at, and be entertained.
2.3.5	CanPass certification	A CanPass certification may attract more US customers; (Airport of entry designated for CanPass permit holders only).

## 2.4 Airport Threats

2.4.1	Availability of the Government grant funding	At the time of writing this report, Government authorization to change the scope of work of the grant had not yet been received.
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2.4.2	Growth and vision of surrounding airports	Expansion plans at surroundings airports: Barrie-Simcoe (focus on BA), Brampton (T-Hangars), Burlington (Runway), and Oshawa (Runway – scheduled services, hangars), expansion of the runway and industrial park at Peterborough, Master plan study underway at Muskoka; Recent announcements: <ul style="list-style-type: none"> <li>• Kawartha Lakes – \$7 M investment attraction</li> <li>• Lake Simcoe – expansion plan + solar panel</li> <li>• Huronia – solar panel</li> <li>• Brantford – solar panel</li> </ul>
2.4.3	Maintenance of approaches	Tree lines on both approaches have been evaluated by the Township and have recently been cut; it is recommended that annual maintenance continue in this regard to ensure no issues arise
2.4.4	Image	The airport has developed a negative image from the strong differences of opinion between airport users / proponents and the local residents and Township. Such an image is not likely to favour investment attraction.

### 3. Lease Fee Survey

A survey was conducted to compare the fee structure at Haliburton-Stanhope Airport with similar airports in Central and Southern Ontario. All surveyed airports have general aviation as their core clientele and source of revenue. We have summarized the key results of this survey below.

#### 3.1 Lease fee survey summary

**3.1.1 Landing Fees:** The airports that do not host commercial scheduled flights have no landing fees for most general aviation aircraft (mainly those under 3000 kg). These same airports will usually charge a fee for charter aircraft, business aircraft or commercial use aircraft landing at the airport. This is a standard approach for most general aviation airports across North America. Airports hosting commercial flights will usually charge a landing fee per weight category with the average price for general aviation aircraft in the \$5 - \$10 range.

It is recommended that the airport maintain its landing fee policy at this stage. With the length of the present runway, very little commercial use aircraft can land at the airport. If the airport decides to expand the length of its runway or builds a longer one, it is suggested to add a flat landing fee for commercial use aircraft. A flat fee would reduce administrative work and facilitate accounting.

**3.1.2 Terminal Fees:** Terminal fees apply to airports hosting scheduled commercial flights. These types of flights will not apply to this airport.

**3.1.3 Ramp Fees (Luggage):** The same applies for this type of fee.

**3.1.4 Overnight Parking (Aircraft):** Average overnight parking fees at Southern Ontario airports is \$10. But closer airports, like Parry Sound and Muskoka, show the same price as Haliburton, set at \$8. It is not recommended to change this fee.

**3.1.5 Estate rental (Land) Lease:** The purpose of this fee is to generate revenue from land owned by the airport, on which a private company builds a hangar/building or any other type of infrastructure. Most airports have a land use fee. Average price is around \$0.28 per square feet annually (example: for a 10 000 sq. foot hangar with a 5 000 sq. ft. ramp, car parking and roadway around the hangar, the airport would charge an annual fee of  $\$0.28 \times 15\,000 = \$4,200$ )

**3.1.6. Estate rental (Space) Lease:** This category does not apply to the airport since the airport does not (yet) have office space to lease.

**3.1.7 T-Hangar rental:** The price of general aviation hangars varies according to the size of the hangar and the services included (electricity, water (seldom), heating (seldom)). For a closed T-Hangar (approx. 1400 sq. ft.) with no services, average price on the market is around \$250 per month or \$3000 per year. Square hangar, more modern hangar, or those with services, will average between \$350 and \$500 per month. We believe the airport presently charges a lower price than the market.

**3.1.8 Fuel prices:** The price of fuel at the airport was on average 10% to 15% higher than competing airports in the vicinity. The price of fuel is a strong attraction tool in the general aviation world. Pilots will fly to airports offering the best price for fuel, in order to fill up. The airport may want to evaluate its fuel pricing.

## 4. Market Analysis and Development Plan

### 4.1 Market Overview

With a population of close to 13 million people, the province of Ontario is well-equipped and serviced by airline companies and charter operators. Municipal airports in Ontario serve a multitude of communities and regional air transport needs. They also support a variety of general aviation activities. Some airports are more commercially focused, providing scheduled passenger service, while others are more oriented towards the private or corporate user. Haliburton-Stanhope Airport is a Registered Aerodrome and does not offer scheduled passenger service.

The following map shows the location of the eighty-five municipal airports in Ontario. Those marked in red represent municipal airports that are not eligible for Airport Capital Assistance Program (ACAP) funding. Those marked in green represent airports that are eligible for ACAP funding. National Airport System (NAS) and provincially owned airports are not shown on this map.



MAP 4.1 – ONTARIO AIRPORTS

The overall issues facing HSA are not unique. Similar issues are being faced by many municipal airports throughout Ontario and Canada.

Research indicates from the various activities undertaken throughout the course of this mandate, and in line with the benchmarking of central and southern Ontario airports, HSA's characteristics, assets, and SWOT position, it is clear that HSA is a general aviation and small charter airport. From the various comments we've received, we estimate the airport could attract additional tourism and aviation enthusiasts and could be poised for a certain growth. The following sections (4.1.1 to 4.1.7) cover various aviation and aerospace sub-sectors.

#### 4.1.1 General Aviation

From comments, interviews and desk research, an overwhelming amount of information was obtained that described HSA as a beautifully located general aviation airport. Our research indicated that general aviation and GA maintenance should be the targeted sector for the airport.

Ontario is home to the largest concentration of registered aircraft in Canada. Transport Canada shows 10,007 registered aircraft in Ontario of which 8,337 are privately owned, 1,508 are commercially registered, and 162 are state registered.

	Pacific	Prairie & Northern	Ontario	Quebec	Atlantic	National
Private	4472	8143	8337	5676	1050	27727
Commercial	1402	2298	1508	1334	413	6955
State	0	64	162	20	19	265
<b>Total</b>	<b>5874</b>	<b>10505</b>	<b>10007</b>	<b>7030</b>	<b>1482</b>	<b>34947</b>

As is the case with many types of businesses, developing an airport is often linked to timing and at present, HSA could profit from a few situations impacting southern and central Ontario's general aviation sector. The first situation is the widespread and growing concern over airspace safety and airport management around a few major airports in southern Ontario. Among these airports, London Airport was identified due to the flight training activities of international students who have poor English language skills and to a lesser degree, the volume of movement at the Region of Waterloo International Airport and Oshawa Airport are also becoming a concern for many pilots. During the surveys we conducted, a substantial number of pilots voiced their dissatisfaction with many other GA airports in southern Ontario. This opens the door for promoting the more accessible and lower cost HSA location.

The second situation is the upcoming closure of Buttonville Airport. In September, 2009, the Sifton family, who owns the airport, announced plans to redevelop the airport during the next seven years (2009-2016) into a mixed-use property for commercial, retail and residential development. In the meantime, the airport will continue to operate as pilots and businesses on site are looking to relocate. Presently, the Buttonville Flying Club has over 200 active members, and regularly organizes aviation-related activities such as monthly meetings with guest speakers, breakfasts, lunches, dinner fly-outs, 'Young Eagles' days, weekend trips, and an annual trip to the Bahamas.

To attract pilots from both neighbouring and more distant airports, HSA should structure a marketing effort centered on its range and availability of services, cost of operation, airport and airspace safety measures, availability of hangars, ambiance, events, activities, and flying club, and produce promotional tools to support this effort.

<b>AIRPLANE SHIPMENTS BY TYPE</b>							
Year	Total	Single-Engine	Multi-Engine	Total	Piston	Turboprop	Turbojet/Turbofan
Total							
2007	4,270	2,417	258	2,675	459	1,136	1,595
2008	3,967	1,943	176	2,119	535	1,313	1,848
2009	2,274	893	70	963	441	870	1,311
2010	2,015	781	108	889	363	763	1,126
2011	1,865	739	121	860	324	681	1,005

Source: GAMA

Overall, even though this market has suffered through the economic downturn, the total number of aircraft in operation is still growing. Our American neighbors suffered a much worse recession than we did in Canada. As such the aviation market in Canada has rebounded, while sales in the US are still weak.



*"The 2012 shipment report from the General Aviation Manufacturers Association, released on Feb 7 2013, was mixed, with deliveries of piston aircraft down by 2 percent compared to 2011, business jets down 3.4 percent, and turboprops up 10 percent, with growth of 0.6 percent overall for airplanes. GAMA chairman Brad Mottier said what the numbers don't show is the intense amount of development work now underway across the industry. "The general aviation segment is poised for resurgence in the next few years as these new technologies certify and enter the market."*

*The major general aviation manufacturers showed no dramatic changes over last year's numbers, for example, production at Cessna rose from 521 aircraft to 571 (including piston, jets, and turboprops), Cirrus kept almost level at 253 deliveries in 2012 compared to 255 the year before, and Diamond grew a bit, with 182 deliveries in 2012, up from 156". Source: GAMA*

#### **4.1.2 Business Aviation and Charters**

Research did not indicate a strong desire for business aviation and charters. Most of the companies we interviewed do not use a business aircraft, are already established at another airport, or are using charter services from another airport. Among the reasons offered by the latter, most comments indicated that the services were already in place, and that the other airports had better facilities and services to accommodate business aviation (longer runway, customs, on-site FBO and AMO...).

During the five-year period ending in the autumn of 2008, the BA sector had maintained an annual growth rate of over 17%, the best in the industry and their largest ever. However, business aviation is also the most vulnerable and volatile sub-sector of aerospace. BA suffered a huge blow during the following economic downturn with sales dropping by more than 22%. The small business jet segment was the worst hit of all with a 47% drop in sales. Today, business jet manufacturers are just beginning to experience a leveling off in their order books, and analysts don't foresee a new growth period before 2013-2014 or a return to the faster growth rate until around 2017-2018.

Given the above, HSA should not consider business aviation as a growth sub-sector at this time. As the market evolves, and smaller business jets enter the market (VLJ – Very Light Jet) later this decade, the overall growth potential may change and create opportunities. Investing in infrastructure and services catering to this category of aircraft would not create enough value and return on investment at this time. Even with a 4000-foot runway, HSA could only host the smaller business jet.

Looking ahead, if HSA wishes to attract additional small BA flights, it will have to better structure its operations and services in order to respond to BA requirements. Services for pilots include quality pilot lounges with many amenities (big-screen television, computers, high-speed internet, quality chairs, a resting area, beverages, light snacks), and depending on the duration of their stay, a car or rental car can be made available. FBOs also provide ramp services like customs, refueling, interior cleaning, catering, aircraft parking, de-icing, GPUs and heaters. HSA would also have to promote the airport, its advantages, in addition to its price structure to BA pilots and flight planning decision makers; from large BA operators like Netjets, FlexJets, FlightOptions and the corporate flight centers of Fortune 500 companies. The main event for reaching flight planning decision makers is the Annual Schedulers & Dispatchers Conference.

### **4.1.3 Air Cargo**

The possibility of developing air cargo activities at HSA was investigated. Based on the survey results, there is not a good potential for air cargo activities at HSA. The proximity of much larger logistic platforms leaves little room for any other air cargo activities. Air Cargo companies do use smaller aircrafts (Cessna Caravan) when flying to remote or less accessible areas, but their operational model revolves around centralized hubs located in major metropolitan centers, where they can reduce their delivery time and operating costs.

It would be very difficult to develop a profitable business model that could induce any air cargo company to modify this model. Such operations would also require IFR approaches which cannot be certified at this stage at HSA due to the hill on the southeast corner of the property.

### **4.1.4 Commercial Flights**

There are presently no commercial air services at HSA. This is not anticipated to change in the near future as HSA is not a certified airport and does not have the runway length to accommodate such a service; Also, Haliburton County and surrounding communities do not have the critical population mass to render any viable regular airline service.

### **4.1.5 Specialized Flights**

In the specialized flights category, there are four (4) types of operations that fit into the scope of opportunities at HSA – aerial work operations, SAR (search and rescue) operations, tourism flights and Forest Fire Fighting activities. Over the years, HSA has hosted OPP, SAR and Hydro One, and has been a base for MNR firefighting for the past 14 years.

Among some of the companies we spoke to, the aerial work category has some aircraft using HSA for fueling and operations. From the comments received, these activities could grow, but a longer runway would be desirable. SAR operations are also faced with the same challenges, unless helicopters are used. At this time, it seems that most fixed-wing SAR missions are flown by the Canadian Air Force out of 8 Wing Trenton, using the C-130, which cannot land at HSA due to length and weight capacity of the runway.

The MNR project is well underway. Due to the fact that negotiation and development of the project are being handled by the Township, this opportunity has not been pursued further. However, the MNR presence may bring with it expanded aviation opportunities down the road.

The last category (tourism and leisure flights) accounts for most of the flight activities at HSA. Most general aviation enthusiasts like to “fly around,” congregates, and attends events. We have proposed the airport pursue a marketing and outreach campaign that involves working with local tourism agencies and aviation associations to attract more GA aircraft to the airport (see Short-term strategies on page 34 - Market the airport as a Tourism Destination). In conjunction with this, the airport would also benefit from considering an operator to provide seasonal Sight-seeing flights from the airport.

The following chart presents the main usages of general aviation aircraft by their owners and pilots.

TABLE 4.2 – GA AIRCRAFT USE

Reasons why people fly a general aviation aircraft	
Personal	35.6 %
Instructional	18.6 %
Corporate	11.4 %
Business	11.3 %
Air Taxi	7.6 %
Aerial application	4.8 %
Aerial observation	3.9 %
Public	3.5 %
Others	3.3 %

Personal flights and leisure/tourism/flying-around flights are the main reasons GA owners and pilots use their aircraft. These pilots and owners should thus be targeted by HSA, but the question is how HSA will position itself against other airports with longer runways and more readily known tourist attractions.

#### 4.1.6 Commercial Aircraft

Prior to the economic downturn in 2008, Airbus and Boeing were each selling an average of 800 to 900 aircraft per annum. In 2010, they reached these levels of sales again and have kept surpassing them since then. In 2013, Boeing took in 1548 new orders. The company also delivered 648 airplanes (new record), ending the year with a strong backlog of 5,080 unfilled commercial orders. Airbus delivered 626 commercial aircraft and booked 1,619 net orders in 2013. Overall, the backlog is 5,559 aircraft.

The persistent resilience of air travel was expected to sustain 6 percent growth since 2011 and keep the growth rate at or above the historical trend through the middle of the decade. Mirroring the economic recovery, passenger traffic will be buoyed by growing demand in emerging markets and bolstered by low-cost carriers (see chart next page). These drivers will help keep worldwide demand for air transport at or above the historic five-percent growth trends.

Estimated commercial aircraft sales by type over a 20 year horizon (see Boeing charts next page).

Airplanes in service 2012 and 2032			Demand by size 2013 to 2032		
Size	2012	2032	Size	New airplanes	Value (\$B)
Large widebody	780	910	Large widebody	760	280
Medium widebody	1,520	3,610	Medium widebody	3,300	1,090
Small widebody	2,310	5,410	Small widebody	4,530	1,100
Single aisle	13,040	29,130	Single aisle	24,670	2,290
Regional jets	2,660	2,180	Regional jets	2,020	80
<b>Total</b>	<b>20,310</b>	<b>41,240</b>	<b>Total</b>	<b>35,280</b>	<b>4,840</b>

\*\$ values throughout the CMO are catalog prices.



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The long-range forecast starting in 2013 anticipates delivery of 35,280 new airplanes over the next 20 years, valued at more than \$4.8 trillion. Single-aisle airplanes account for the majority of deliveries over the next 20 years - 70 percent of the airplanes and 48 percent of the value. Rapidly expanding air service within China and other emerging economies and the spread of low-cost carrier (LCC) business models throughout the world drive this market segment. The twin-aisle market, which includes efficient long-range airplanes such as the Boeing 787 and 777, is the fastest-growing segment of the market, accounting for 22 percent of the delivery units and 43 percent of the delivery dollars.

This level of sales stretches the capabilities of the supply chain to provide the volume of parts and components needed to manufacture these aircrafts, and the 20 year outlook (Boeing) suggests an average of 1100 new orders per annum. What we also see, is the commercial aircraft market moving away from regional aircraft and purchasing more and more aircraft of 100 seats and up. This trend brings up multiple questions for the smaller markets in aviation, and may lead to major airlines cutting services to smaller communities. But as for the major manufacturers, they are presently (on a permanent base) streamlining their supply chain in order to sustain their production levels thus, transferring to integrators the task of finding qualified and certified manufacturers of parts and components. In terms of business opportunities, these integrators have

requirements for parts manufacturing and supply, which are being outsourced to companies which can meet their stringent quality.

#### **4.1.7 Helicopters**

The commercial and private helicopter market suffered a fate similar to what happened to the GA-BA aircraft market. The major companies were able to ride the downturn in most part due to military sales in 2008, 2009, and 2010. One positive note on the helicopter side is a trend that sees GA aircraft owners acquiring more and more helicopters. These aircraft owners seem to switch to helicopters for their more versatile landing possibilities, which bring them closer to the destination.

However, there is a major shortage of qualified pilots available in a field that is slated to grow as much as 60 percent in the next 10 years. A fair number of existing professionals are retiring, and there is short supply of pilots from the military. With a booming oil industry, offshore companies are facing a near critical shortage of rotorcraft pilots, which has led to an increase in demand for them. The lack of qualified rotorcraft maintenance technicians is further complicating matters.

In the new product lines, participants are introducing safety-enhancing technologies, including new methods of health and usage monitoring, improved situational awareness tools, workload-reducing automatic flight control systems, and maintenance-saving vibration reduction packages. Manufacturers such as Agusta Westland are also investing in advanced technologies as product differentiators. A key goal has been to develop technologies that will provide jet-like smoothness in helicopters with active vibration control of structural response.

Opportunities with the helicopter manufacturing sector reside with the electronics and avionics links to flight control, situational awareness and active vibration control systems. But there are also opportunities with helicopter maintenance to support the growing market.

#### **4.1.8 Flight schools, colleges and private aircraft owners**

During the survey, pilots from various airports, associations and Colleges throughout Ontario were interviewed to get feedback on the services and flying environment at the Haliburton-Stanhope Airport. The people we spoke with were from the following organizations: Cameron Air Service; Auriga Design, COPA Flight 28 Burlington; COPA Flight 73 Midland Penetanguishene; Bancroft Airport; Huronia Airport; Seneca College School of Aviation and Flight Technology; Canador College; University of Western Ontario School of Aviation and Georgian College.

The overall sentiment of the Airport is that it is a friendly and welcoming GA (General Aviation) airport that has been host to a variety of well-attended aviation events in the past. For some flying clubs, it is the preferred airport to fly into to experience the fall colours. However, research suggests the airport is perceived as low activity with not much to entice visitors. The airport needs to focus on changing this perception in conjunction with pursuing the many opportunities to entice additional visitors that the airport.

With respect to flying conditions, all of the pilots we spoke with were aware of the potential wind shear problems at the airport. Interviewees confirmed that varying degrees of wind shear and updrafts and downdrafts on approach to Runway 26 are common due to the nature of the terrain. Some pilots elected not to fly into the airport because of the winds, noting the wind shear can be severe at times and make landings very challenging. There is no recorded wind data for the airport.

The length of the runway is not a concern for the smaller GA aircraft owners. However, it is the biggest issue for airport users that fly bigger and faster aircraft that may need to restrict payload to use the airport on various occasions. The combination of possible wind shear and limited runway length presents unsuitable conditions on windy days for some aircraft.

Some of the major drawbacks with respect to airport infrastructure and services include lack of hangar space, lack of quality of wind and weather data, and inadequate fuel services. Several operators and pilots we spoke with would refuel at the airport if the fuel service was not self-serve, and would base their aircraft at the airport if they could secure hangar space, but are currently on a waiting list. The Township will be constructing additional hangars in 2014 which will help to accommodate the waiting list. It is recommended that the Township investigate a new weather system to enhance services.

## **5. New sources of revenue**

One of the main objectives of this mandate is to structure a development and marketing strategy. To best achieve this objective, an in-depth market survey and analysis of local /regional assets was conducted. These activities focus on identifying potential new sources of revenue for the airport and how these sources would impact airport infrastructure and property.

### **5.1 Hen Condo**

Among the opportunities we challenged, the development of hen condos was an idea that came up during our interviews with local agriculture groups. The County and region are suffering from an egg production deficit, and eggs need to be imported. At the same time, the region is without an egg grading station, which is mandatory to be able to sell eggs commercially. The closest grading facility is in Lindsay, approximately a 60-minute drive away.

Setting up an egg producing facility on the airport property would require compliance with agriculture by laws. The associated operational restrictions under the current airport model do not make it feasible to pursue this type of operation. In addition, research shows that gross revenues are somewhat marginal, unless a producer has a very large facility with several thousand hens. This activity is not a viable option for the airport property, where land value is high.

## 5.2 Agriculture

With the size of the airport property, we also studied developing agricultural activities on site. The main concern for the site was the quality of the soil, but as well the overall topography of the land which proved to contain multiple small hills not well suited for agriculture purposes. Various groups were interviewed that had undertaken soil and agricultural studies of the same nature.

These conversations lead to the identification of a few possibilities (not real opportunities for the airport). Among these, the development of an agro-food distribution center for produce that is grown in the County as well as a micro-brewery concept. The regional farmer's market was also discussed but the location of the airport (not on the main road arteries) did not favor such a facility.

Abbey Gardens' owners showed some interest in potentially renting a parcel of land to grow garlic, but again, the land is mostly covered with trees at this stage, and a lot work would be required to launch such a venture.

## 5.3 Solar Power

One of the most promising opportunities is the production of solar power energy through the development of a solar power array. This more lucrative venture would enable the airport and the solar power company to develop the airport property in the north-east quadrant. HSA would not be the first airport to welcome a solar array on its land.

### Thunder Bay Airport

Thunder Bay Airport Solar Park by Canadian Solar/SkyPower

The airport rents the land. This location was ideal since grounds had a low-bearing and could not be used. The airport has only received one complaint in the past two years from a pilot. The airport recruited and presented the official proposal to the promoter.



### Indianapolis International Airport solar farm

41,000 solar panels will generate 15 million kilowatt hours of electric energy - enough to power 1,200 average American homes for a year. It will be the largest solar farm ever to be built on a US airport - construction set for March 2013. The airport will receive \$315,000 in annual revenue from the land lease agreement.

## Brantford Airport

The Brantford Municipal Airport is considering installing solar panels on the roof of its two main hangars totaling 80 000 square feet. See press release in Annex C

To acquire better knowledge on this opportunity, Explorer Solutions retained the services of Haliburton Solar and Wind to conduct a preliminary analysis of the location, feasibility, cost and revenue estimates of installing a solar panel array on the airport property. Below are the main findings of this study (the full report can be found in Annex F).

### Solar Array Location and size

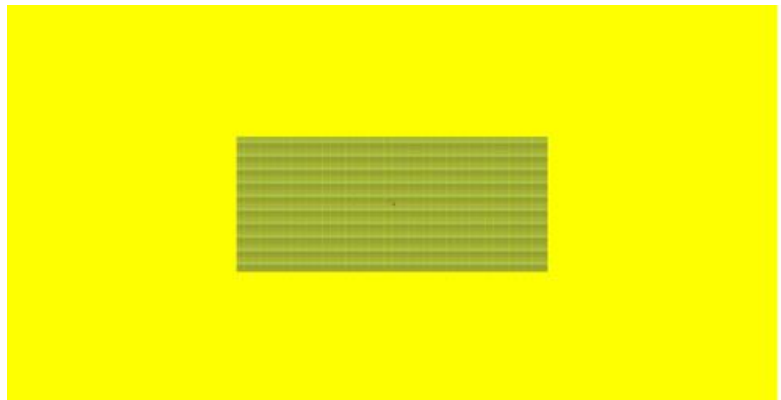


#### Solar Access

Annual:	97%
Summer:	98%
Winter:	95%

#### Array Properties

Length (ft):	170
Width (ft):	135
Azimuth:	180°
Tilt:	35°
Derate:	0.84



#### Module Layout

Rows:	10
Modules (/Row):	40

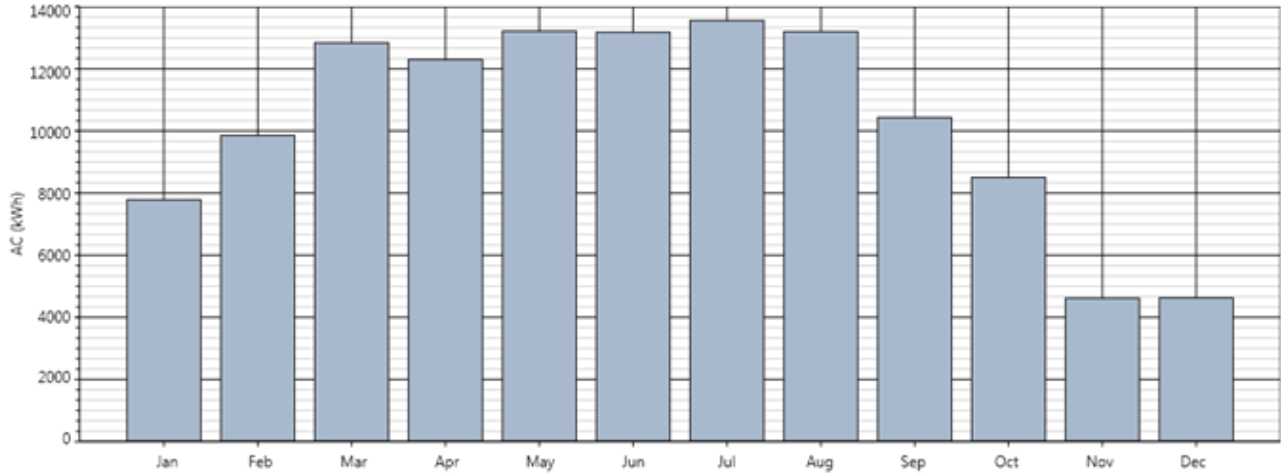
#### Usable Area of Location

Length (ft):	328
Width (ft):	164



## Solar power production

### 100kW Photovoltaic Ground Array



Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7806	9876	12860	12319	13236	13196	13575	13218	10450	8521	4635	4643

Estimated Annual Production (kWh):	124,335
Estimated Annual Gain in Production (kWh) - Tigo (15%):	18,650
	<u>142,985</u>
Feed-In-Tariff (v2.1) Rate:	\$0.388
Estimated Annual Income:	<u>\$55,475</u>

## Cost vs Revenues

Year	Value of Initial Investment	Estimated Annual Income Stream	Estimated Rolling ROI
Year 0	-\$450,000	-\$450,000	-100%
Year 1		\$55,475	-88%
Year 2		\$55,475	-75%
Year 3		\$55,475	-63%
Year 4		\$55,475	-51%
Year 5		\$55,475	-38%
Year 6		\$55,475	-26%
Year 7		\$55,475	-14%
Year 8		\$55,475	-1%
Year 9		\$55,475	11%
Year 10		\$55,475	23%
Year 11		\$55,475	36%
Year 12		\$55,475	48%
Year 13		\$55,475	60%
Year 14		\$55,475	73%
Year 15		\$55,475	85%
Year 16		\$55,475	97%
Year 17		\$55,475	110%
Year 18		\$55,475	122%
Year 19		\$55,475	134%
Year 20		\$55,475	147%
Net Income / Loss:		<u>\$1,109,500</u>	
		<u>\$659,500</u>	

## 5.4 Aircraft Hub and Maintenance

One of the genuine surprises of this study is the level of activity at the airport and the sustained interest from numerous pilots to fly to the region. Pilots were surveyed from various flying clubs across central Ontario, as well as in the greater Toronto region, and most were knowledgeable of the airport, in addition to the natural wonders of the region. Some pilots that were interviewed expressed reservations about the runway length.

Multiple comments were received expressing interest in locating aircraft at the airport and being able to obtain maintenance services. The central services required relate to general aircraft maintenance, for annual checks and more completed overhaul, along with engine maintenance capabilities, refurbishment and parts services.

According to the type of work required by the aircraft owners, such a shop would need an average of 75 aircraft per year to be profitable (less if the shop is specialized in heavier maintenance). The airport would need to attract such a shop and specialized technicians, or a team of individuals to start and operate the shop.

The airport intends to provide additional hangars to the potential tenants on the waiting list. This, combined with the aircraft already based at the airport, will help support a maintenance center. The airport will also generate extra revenues through additional fuel sales, hangar rental and maintenance hangar rental.

## 5.5 Ministry of Natural Resources (MNR)

The Ministry of Natural Resources was already working with the Township when Explorer Solutions came on board the project. This is a unique opportunity for the airport, and it is recommended that all efforts should continue to support such an investment. We did not pursue any specific activities, to avoid overlapping actions and leadership issues in the dossier.

## 5.6 GA Tourism Hub and Airpark

As shown in the results of the survey and interviews, there is a strong tourism attraction potential for the region. Numerous comments were received from pilots who look to the Haliburton-Stanhope Airport as their preferred fly-in destination. The long-term vision would be to potentially create a “lifestyle” general aviation airport where people can live, work and be entertained.

This niche opportunity would need to address multiple aspects of general and business aviation such as approach systems, fuel farm and fuel availability, tie down areas, daily hangar rental availability, year-round rental, FBO services (heater, deicing, tow, GPU), local transport (car rental, courtesy car, limousine services), concierge services and a higher-end terminal and pilot services (lounge, computer, weather services, showers and washrooms).

## **Airpark or Fly-In Community**

An airpark or fly-in community is defined as "a housing development connected to an airport via taxiways." This arrangement enables homeowners to taxi their planes between their homes and the airport while using their home lot to park and/or store the aircraft.

This "neighbourhood" would be designed to be a blend of various lot sizes within the airside accessible district, allowing multiple types of homes, from condos to townhouses and estate residences. In addition, planning for variation in parcel depth allows inclusions of both private hangars on the larger lots and communal hangars for the smaller lots, again emphasizing the flexibility and richness of diversity of homes in the community.

We recommend that a proposed airpark project be driven by private investors or real estate developers who have a good knowledge of housing and community trends. Looking at the bigger picture, some developers offer a full lifestyle environment, enabling tenants and owners to work, live, and play within the airport's perimeter. With the current runway, the airpark would be limited to owners/users of smaller aircraft. Parcels of land were already identified on the north-east portion of the airport property for such a project. The land is not serviced, and cost estimates would need to be considered.

There is one other fly-in community in Ontario being developed by West Capital Development at Carp Airport in Ontario. This project also includes a business park sector and a general aviation zone. There are no known fly-in communities in central and southern Ontario to our knowledge.



West Capital Airpark Land Use Plan



## 5.7 Industrial and Technology - Niche opportunities

Through various meetings, the results of the survey, and our research on Ontario aerospace trends, we identified three aerospace niche opportunities that pertain to technology, research and development and manufacturing opportunities. However, at present, the airport is not well suited for these opportunities, and as such, Township officials suggested that no further information is required.

## 6. Marketing and Business Development Strategy

In the following pages, we present a series of marketing actions to support the development of the most interesting opportunities previously identified. We separated the strategies into short-term, mid-term and long-term. The first two groups (short and mid-term) focus on opportunities that do not require the construction of a new runway. The third group (long-term) focuses on development opportunities associated with construction of a new crosswind runway.

### 6.1 The Vision

Haliburton-Stanhope Airport is a beautifully located general aviation destination. The airport wishes to maintain and grow its current tourism and aviation related activities, helping to attract more tourism, and facilitate accessibility to existing and future residents. The Airport also wishes to generate revenues from non-aviation parcels of land, by looking at high value activities that will blend with the tourism and natural setting of the region/township.

## 6.2 Short Term Strategy

		ORIENTATION	OBJECTIVES	ACTIONS	TIMELINE
<b>SHORT TERM 2013 - 2016</b>	1.1	Develop a general aviation hub ( <b>no runway requirements</b> )	1.1.1 Build five new GA hangars over the next 18 months (5 T-hangars))	<ul style="list-style-type: none"> <li>- Prepare marketing material and hangar design/costing to launch a marketing campaign to rent the new hangars</li> <li>- Consider creating a separate HSA web site - usually, websites not co-located with Cites/Townships generate more visits</li> <li>- Post the new project on the airport web site</li> <li>- Promote publicity in COPA newsletters, through Pilot Flight Clubs</li> <li>- Create/host events to promote the new hangars</li> <li>- Work with the existing tenant waiting list</li> <li>- Promote and Attract Buttonville aircraft owners and tenants</li> <li>- Investigate potential of offering food services (seasonal), throughout construction and beyond to entice pilots</li> </ul>	Launch campaign Summer 2013 for construction Spring 2014
			1.1.2 Plan to build five additional hangars in 5 years	<ul style="list-style-type: none"> <li>- Identical procedures</li> </ul>	Launch campaign Fall 2016 for construction Spring 2017
	1.2	Improvements to weather and wind reporting system and infrastructure	<p>Ensure current weather equipment is operational and adequate</p> <p>Invest in possible new weather system</p>	<ul style="list-style-type: none"> <li>- Ensure weather equipment and information is accurately reflected on website</li> <li>- Assess suitability and reliability of current equipment; ensure procedures are in place to check the accuracy of the weather data</li> <li>- Ensure the Township wants the weather information available; consider liability issues</li> <li>- Develop system to start accurately recording wind data at airport to support any future runway developments</li> <li>- Research accurate future weather systems</li> </ul>	2014
	1.3	Market the airport as a Tourism Destination	Develop strategy to work with local tourism agencies and aviation associations to increase airport exposure	<ul style="list-style-type: none"> <li>- Meet with local tourism operators/agencies including Adventure Haliburton, Ontario Highlands Tourism Association, The County of Haliburton Tourism Office, Yours Outdoors and Back Country Tours to discuss partnerships/marketing plan</li> <li>- Build on strengths of area and local attractions (Fall Colours, Haliburton Forest Wolf Centre, Abbey Gardens etc.) to attract more GA fly-in traffic</li> <li>- Work with local event organizers - COPA for Kids; fly-in organizers</li> <li>- Liaise with aviation associations; COPA – update airport information on “Places to Fly” section of COPA website</li> </ul>	Late 2014/Early 2015
	1.4	Development of a Solar Panel Farm	1.4.1 Develop solar panel farm on the airport property	<ul style="list-style-type: none"> <li>- Meet and discuss with energy companies their view of such a project</li> <li>- Introduce the data prepared on the HSA project and opportunity</li> <li>- Prepare and send to targeted energy companies a request for comments and letter of interest (LOI)</li> <li>- Conduct an environmental study if required</li> <li>- Estimate cost to the Township (if any)</li> <li>- Prepare a request for proposal addressed to all companies who signed the LOI</li> </ul>	2015
			1.4.2 Finalize decision on the RFP and evaluate how the electricity could help support investment at the airport	<ul style="list-style-type: none"> <li>- Launch project</li> <li>- Negotiate with Energy companies preferential rates for airport tenants</li> </ul>	2016

### 6.3 Mid Term Strategy

	ORIENTATION	OBJECTIVES	ACTIONS	TIMELINE
MID-TERM 2017 - 2020	2.1	Develop a general aviation hub ( <b>with no runway requirements</b> )	Pursue growth of the general aviation sector <ul style="list-style-type: none"> <li>- From the results of the hangar development campaign launched in 2016, pursue development</li> <li>- Launch a second five hangar marketing campaign</li> <li>- Use the same or adapted tools as previously described</li> </ul>	2020
	2.2	Develop a general aviation hub	Attract a general aviation maintenance and refurbishment shop, including helicopters <ul style="list-style-type: none"> <li>- Prepare hangar plans and design</li> <li>- Obtain proposal from construction companies</li> <li>- Ensure funding to build</li> <li>- Launch MRO recruitment</li> <li>- Prepare lease and rental documents to potential tenants;</li> <li>- Prepare an airport tour for potential tenants;</li> <li>- Sign MRO and build</li> </ul>	Summer 2020 with tentative start-up spring /summer of 2021
	2.3	Development of Solar Panel Farm	Continue development of solar panel farm on the airport property <ul style="list-style-type: none"> <li>- Based on request for proposal results from short-term</li> <li>- Negotiate with Energy companies preferential rates for airport tenants</li> </ul>	2017

## 6.4 Long Term Strategy

		ORIENTATION	OBJECTIVES	ACTIONS	TIMELINE
<b>LONG-TERM 2020 &amp; beyond</b>	3.1	3.1.1. Develop a general aviation hub <b>(with runway requirements)</b>	3.1.1 Construction of new crosswind runway (subject to available funding opportunities)	<ul style="list-style-type: none"> <li>- Decision by Township – engineering work ready and completed</li> <li>- Send RFPs out for construction</li> <li>- Begin construction</li> </ul>	2025
		3.1.2. Fly-In Community	3.1.2 Develop a fly-in community concept and attract a real estate promoter to take charge	<ul style="list-style-type: none"> <li>- Once decision is made to expand the runway:</li> <li>- Prepare a summary of the project</li> <li>- Introduce project to real estate groups and request letters of interest</li> <li>- Request concept and cost estimate from interested groups</li> <li>- Negotiate land and services cost</li> <li>- Negotiate airport access cost</li> <li>- Include rules and bylaws to protect airport and limit accessibility of airpark to non-aircraft owners</li> <li>- Include rules and bylaws on aviation security</li> </ul>	Summer 2025 – development over a 3 - 5 year period
	3.2	Aircraft Maintenance and Services (if the runway has not been built/extended but the number of GA hangars has increased)	Attraction of an MRO center	<ul style="list-style-type: none"> <li>- Prepare hangar plans and design</li> <li>- Obtain proposals from construction companies</li> <li>- Ensure funding to build</li> <li>- Launch MRO recruitment</li> <li>- Prepare lease and rental documents to potential tenants;</li> <li>- Prepare an airport tour for potential tenants;</li> <li>- Sign MRO and build</li> </ul>	2025
	3.3	3.3.1. Technology and Industry Park	3.3.1 Market the airport land located on Airport Road north of the terminal as a Technology and Industrial Park	<ul style="list-style-type: none"> <li>- Build a portfolio of potential clients, of the attraction radius of HSA, of potential partners/suppliers, the costs, budget and incentives;</li> <li>- Open a new section on the web site dedicated to the project with pictures, maps and the overall concept of the Technology and Industry Park;</li> <li>- Prepare a leaflet and marketing material: these should contain sales arguments, added value advantages to locate at HSA, list of airport and County advantages and incentives;</li> <li>- Prepare a power point presentation showcasing the sub-sector;</li> </ul>	2025
		3.3.2. Technology and Industry Park	3.3.2 Pursue development of the park	<ul style="list-style-type: none"> <li>- Pursue investment attraction action (phone calls, trade shows, trade mission and promotions);</li> <li>- Incentive programs to be developed.</li> </ul>	Beyond 2025; - development over a 3-5 year period



## 6.5 Budget

### HALIBURTON-STANHOPE AIRPORT

T-HANGARS - FINANCIAL ANALYSIS				Interest rate	5,0%	5,0%	5,0%	5,0%	
			Period / YR	5	10	15	20		
Work to be done	Quantity	Unit cost	Annual Rate	5	5	10	15		Total
			Growth	2,5%	2,5%	2,5%	2,5%		
			Inflation	2,0%	2,0%	2,0%	2,0%		
Construction of five (5) new T-hangars (1340 sq ft each- with electricity, no water) in Year 1	6 700	\$ 45	301 500 \$						
Construction of five (5) new hangars to be built and operational in Year 6	6 700	\$ 45	301 500 \$						
Improvement to the weather system	1	\$ 50 000	50 000 \$						
	Total infrastructure cost		653 000 \$						
Down payment (25%) on hangars	30%								
Balance to be financed - 1st group of 4 hangars			246 050 \$						
Balance to be financed - 2nd group of 4 hangars			211 050 \$						
<b>REVENUES</b>									
	T-hangars	surface	USD/sqft/year						
Annual Rent T-Hangar 1-5 - @ each \$350 per month	5	1 340	3,13 \$	23 148 \$	26 190 \$	29 631 \$	33 525 \$	\$	535 697
Annual Rent T-Hangar 6-10	5	1 340			26 190 \$	29 631 \$	33 525 \$	\$	425 467
Extra Fuel sales (profit margin 15% from 1,75\$)	10 000	0,26 \$		2 870 \$	3 247 \$	3 674 \$	4 156 \$	\$	66 416
Solar farm land lease (15% of estimated \$ 55 000 revenues)	15%	55 000,00 \$		8 884 \$	10 052 \$	11 373 \$	12 867 \$	\$	197 555
	TOTAL REV			34 902 \$	65 679 \$	74 309 \$	84 074 \$		1 225 134 \$
<b>EXPENSES</b>									
Insurance		1 500 \$		1 624 \$	3 585 \$	3 958 \$	4 370 \$	\$	65 086
Maintenance		2 500 \$		2 706 \$	5 975 \$	6 597 \$	7 284 \$	\$	108 477
Snow removal		1 000 \$		1 082 \$	1 195 \$	1 319 \$	1 457 \$	\$	24 297
	Initial Cost	Initial Loan							
Capital - left	653 000	246 050 \$	211 050 \$	217 563 \$	367 822 \$	290 235 \$	191 213 \$		
Mortgage - Loan Payment		Total YR		6 266 \$	13 373 \$	17 067 \$	21 783 \$	\$	265 887
Interest		25		11 191 \$	19 060 \$	15 365 \$	10 650 \$	\$	307 887
<b>Mortgage Total Payment</b>				17 458 \$	32 432 \$	32 432 \$	32 432 \$	\$	573 775
Publicity - first 3 years		7 500 \$						\$	22 500
RFP for solar energy group									
	TOTAL EXP			11 679 \$	24 128 \$	28 943 \$	34 894 \$	\$	491 248
<b>Earning Before Interest, Taxes and Amortization</b>	<b>EBITDA</b>			23 224 \$	41 550 \$	45 367 \$	49 180 \$	\$	733 887
	time	value							
Amortization - 1st group of T-Hangars	40	351 500 \$		8 788 \$	8 788 \$	8 788 \$	8 788 \$	\$	175 750
Amortization - 2nd group of T-Hangars	40	301 500 \$			7 538 \$	7 538 \$	7 538 \$	\$	113 063
	<b>EBIT</b>			14 436 \$	25 225 \$	29 042 \$	32 855 \$	\$	558 137
	<b>Interest</b>			11 191 \$	19 060 \$	15 365 \$	10 650 \$	\$	307 887
	<b>PRE-TAX INCOME</b>			3 245 \$	6 165 \$	13 677 \$	22 206 \$		137 187 \$

## 7. Land Use and Feasibility assessment

### 7.1 Existing Airport Services

Reference	N45 06 39 W78 38 24 6.9NW 12°W UTC-5(4) Elevation 1066´ A5000
Operator	Township of Algonquin Highlands
Services	Fuel (100 LL, JA), oil
Runway Data	08(084°)/26(264°) 2,500 ft. x 60 ft. (asphalt)
Lighting	08(TE LO), 26-AS(TE LO) ARCAL-123.2 Type J (all A/D lighting, including rotating beacon)
Procedures	Municipal policy restricts operations during the night-time period. Northerly winds may cause wind shear during approach/departure for Runway 26. Wildlife in vicinity of the runway.

The Haliburton-Stanhope Airport airfield includes one paved runway with a connecting taxiway to the air terminal building (ATB) apron and hangar areas. The runway, taxiway and apron were rehabilitated in 2010.

The types of aircraft using the runway are typically Short Takeoff Landing (STOL), general aviation type aircraft with a minimum Maximum Take-off Weight (MTOW) and therefore, the average pavement life cycle can be expected to range from 15 to 20 years plus.

Year 2004 and 2005 aircraft movement data suggests approximately 3,300 annual aircraft movements. Optimistic forecasts identified a three-fold increase in aircraft movements if the crosswind runway is constructed.

Figure 7-1-1 illustrates the type of aircrafts that can operate on a 2,500 ft. runway.

**Figure7-1-1: Airfield Length Requirement (2,500 ft. Runway)**

<b>Aircraft Field Length: Haliburton Stanhope Airport at 24 °C</b>							
No.	Aircraft Type	Passenger Seats	ICAO	Manu. Spec.	Reference Field Length (ft)	Adjusted Field Length (28°C)	Aircraft Type
1	Beechcraft Queen Air 65	9			1,400	1,672	Twin Engine Turboprop
2	Piper Navajo (PA-31)	5			1,450	1,731	Twin Engine Prop
3	Beechcraft C90	8	1601 (488)	2,261	1,600	1,910	Single Engine Piston
4	Cessna 310	4	1700 (518)	1,700	1,700	2,030	Twin Engine Piston
5	Cessna 401	8			1,700	2,030	Twin Engine Piston
6	Air Tractor 802	1			1,800	2,149	Single Engine Turboprop
7	Cessna Stationair	6	1782 (543)	1,860	1,860	2,221	Single Engine Piston
8	Cessna Caravan	11/14		2,053	2,053	2,451	Single Engine Turboprop
9	DHC-6 Twin Otter	13-18/20	2280 (695)	2,280	2,280	2,722	Multi Engine Piston
10	Cessna Caravan (Grand)	11/14		2,420	2,420	2,890	Single Engine Turboprop
11	Piper Seneca (PA-34)	5		2,510	2,510	2,997	Multi Engine Piston
12	Beechcraft King Air 200	7		2,579	2,579	3,079	Multi Engine Turboprop
13	Pilatus PC12	6/9		2,650	2,650	3,164	Single Engine Turboprop
14	DHC-8 Dash 8 - 100	37-40			3,100	3,701	Twin Engine Turboprop
15	Cessna Citation II	6/10		2,385	3,450	4,119	
16	Cessna Citation Encore	9/11		3,590	3,590	4,287	Twin Engine Business Jet
17	Cessna Citation XLS	10		3,560	3,590	4,287	Twin Engine Business Jet
<b>Runway correction coefficients</b>					<b>Calculation Coefficients</b>		
E=runway elevation	1.07	=>			Fe=	1.07	
G=runway gradient	0.00	=>			Fg=	1.00	
T=temperature	24.00	=>			Ft=	1.11	
	Denotes aircraft able to depart using a runway length of 2,500'.						
	Denotes aircraft requiring more than 2,500 feet to depart						
<b>Notes:</b>							
Calculations assume maximum takeoff weight							
Fuel is based on a requirement for the aircraft to be able to fly for 1 1/2 hours							
Accelerate Stop Distance Available (ASDA) assumes aircraft flying with one engine inoperative							
Balanced field length means the takeoff field length (TOFL) required and the one engine inoperative (OEI) accelerate stop distance are equal							
The 200' stopway can be used in ASDA calculations							

As noted in the Canada Flight Supplement (CFS), northerly winds can cause wind shear for aircraft arriving or departing the airport. This largely results from the rising topography east of the airport.

Runway 08-26 is equipped with low-intensity edge and threshold lighting. A rotating beacon is located at the ATB. A wind sock is located at the threshold to Runway 26.

## 7.2 Air Terminal Building and Other Township Owned Buildings

The existing Air Terminal Building (ATB) is approximately 1,000 ft<sup>2</sup> (93 m<sup>2</sup>) in size and requires relatively significant upgrades. A June 2003 study suggested expansion/modernization of the building, or replacement, including upgrading to public building standards and amenities, as required. No significant work has been completed since that time. The Township Business Vision (2006) suggested a 3,000 ft<sup>2</sup> (279 m<sup>2</sup>) building would meet the airport needs.

The Township also owns and operates a number of other buildings at the airport:

- Township owned ‘T’ Hangar” complex with a storage capacity of 16 aircraft. Township owned commercial/hangar building: 3,250 ft<sup>2</sup> (302 m<sup>2</sup>) for heated indoor maintenance and/or for storage up to 5 aircrafts.
- Two new Township owned hangars (one completed fall 2005, a second completed spring 2006), each with storage capacity for 3 aircrafts (4,100 ft<sup>2</sup> (381m<sup>2</sup>)).
- Airport vehicle maintenance/workshop/storage building: Two bays, 2,100 ft<sup>2</sup> (195 m<sup>2</sup>).
- A “portable” structure - 1,000 ft<sup>2</sup> (93 m<sup>2</sup>) - for office rental/lease purposes (for MNR).

## 7.3 Access Roads

The ATB is currently accessed via Airport Road located to the west of the airport property. The airport is bounded by Green Lake Road to the south and Barry Line Road to the north. The roads are maintained by the Township. The roads appear to be in fair condition.

## 7.4 Services

Water wells provide potable water to the airport. Sanitary sewage is discharged to an existing septic system field bed located near the ATB.

## 7.5 Utilities

Single phase electrical service is available at the airport and can be extended as required to new development areas. It is understood 3-phase electrical power is available at the corner of Green Lake Road and Airport Road.

## 7.6 Development Areas

The majority of development projects at the airport are located directly adjacent to Airport Road, north of the ATB, with some aircraft-related businesses along the north side of Green Lake Road, extending to the approximate mid-point of Runway 08-26.



## 8.2 Taxiways/ Aprons

As part of the overall airport development there will be a requirement to construct a series of connecting taxiways (Taxiways B, C, D and E). Taxiways C and D could function as partial or full-parallel taxiways in the future. (Refer to Drawing 8-1)

The existing apron was rehabilitated in 2010 however the apron will require expansion to accommodate aircraft-parking needs. The Business Vision (2006) prepared by the Township suggested the apron be expanded from 32,300 ft<sup>2</sup> (3,000 m<sup>2</sup>) to 80,000 ft<sup>2</sup> (7,432 m<sup>2</sup>).

## 8.3 Navigational Aids

As part of the long-term vision and development, the Township should contract the design and implementation of a Global Positioning System (GPS) based approach system that will allow aircraft to access the airport at reduced landing minima. This will substantially increase airport usability during certain weather conditions.

## 8.4 New Access Roads

The proposed development concepts show a new MNR complex north of the existing hangar buildings. A new access road would be constructed in the northwest quadrant of the airport. The road would enter airport property north of the proposed MNR site and then follow topographic contours east of the MNR site to proposed hangar development lots shown southeast of the MNR site (reference Drawing 8-1). The roads will also be extended to serve the proposed hangar development areas; and as required, roads will be constructed to serve future development areas. All-access roads will be constructed to meet the Townships' standards.

## 8.5 Services

Tenants in new development areas requiring water and sewer services will be required to install their own water wells and septic systems. As development areas expand the Township may wish to explore the potential for communal water well and septic system that would serve larger development areas that would include a large number of tenants, or residents. This may be particularly important if a fly-in community is considered.

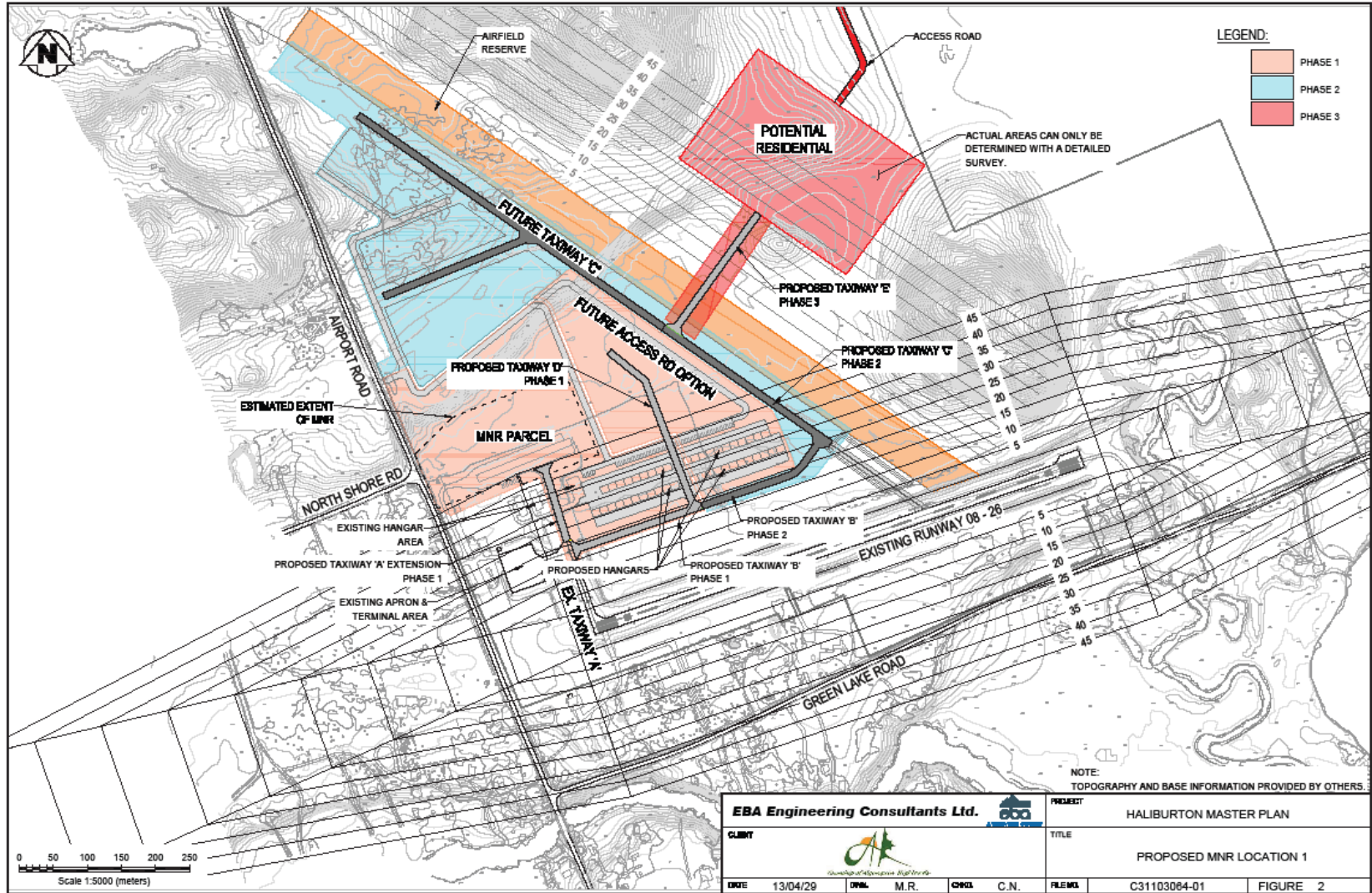
As development areas are developed, lot design will include storm-water retention strategies as part of the design so that the overall storm water drainage system is not compromised. The R.J Burnside and Associates airport concept shows a storm water pond at the south limit of the Airfield Reserve and Runway 08-26. All storm water from the airport will be diverted to the storm water management pond via a series of open ditches and culverts crossing access roads and taxiways.

## 8.6 Utilities

It is understood that 3-phase power is available at the intersection of Green Lake Road and Airport Road. As part of the MNR Relocation Project, 3-phase power will be brought to the MNR site.

It is understood that, as required, power can be extended from this location to the future development areas.

Drawing 8-1



## 9. New Development Areas

### 9.1 Development Concept

In this concept, a connecting Taxiway B would be constructed from the ATB apron. Existing hangars north of the ATB would be decommissioned and relocated to the new proposed hangar development area north of Taxiway B. Existing Taxiway A would be upgraded and extended to the proposed MNR property located north of the existing hangar line. The MNR and new hangars would be accessed via a new access road as shown on the drawing.

The proposed MNR site is approximately 3.0 ha in size, and the MNR will be the primary tenant at the airport.

In this concept, there is significant hangar development east of Taxiway A and further hangar development areas to the east of the first phase of hangar development. The first phase of the hangar development can accommodate 20 hangars. The concept also shows four development areas north of the hangar development area. The north development areas and the associated roadways and taxiways would be developed based on development demand.

As part of the development concept, a storm management pond would be located near the south end of the Airfield Reserve Area and Runway 08-26. The pond would be developed to minimize bird and other wildlife attraction.

### 9.2 Fly-in Community

Drawing 8-1 shows a proposed fly-in community located east of the existing development areas and AR in the northeast quadrant of the airport. The fly-in community would be accessed from Barry Line Road. Taxiway B would be extended from the existing hangar area to the fly-in community.

The exact location of the fly-in community and the layout of the associated infrastructure can only be determined with further detailed topographic survey information and geotechnical investigation.

## 10. Environmental Considerations

An environmental screening was prepared as part of the airport expansion funding application. The screening followed the Canadian Environmental Assessment Agency (CEAA) requirements that were in place at that time.

The final screening assessment stated, "...the project is not likely to cause significant adverse environmental effects taking into account the implementation of mitigation and environmental management measures specified in this screening report."

It is recommended the Township consider requiring contractors to prepare an Eco Plan as part of construction activities. The Eco Plan generally identifies all of the mitigation measures identified in the screening and includes a checklist that the contractor is required to maintain to ensure the specified measures have been implemented.



In general terms, in addition to standard construction-related mitigation measures, it is important that environmental protection strategies focus on areas where environmental impacts could be realised.

- Work adjacent to waterways – ensure buffer zones are protected;
- Tree clearing – survey areas prior to construction, so that potential species at risk are not impacted;
- Schedule construction activities to minimize impacts on nesting birds (e.g. clearing and grubbing in late March/early April);
- Develop an environmental management plan, and identify how certain operational activities (e.g. aircraft de-icing) will be managed so that there is no impact on the quality of the water.

## **10.1 The Township of Algonquin Highlands, Comprehensive Zoning By-Law, No. 03-22**

By-Law 03-22 provides definitions, general and zoning provisions for all lands within the Township. The zoning provisions are further defined for specific land uses within each zone. The Zone Symbols used on the Schedules refer to the zone categories and the use of land, activities, buildings structures, and excavations permitted by the By-law. Special Zone Symbols where the Zone Symbol designating certain lands is followed by a dash and a number (e.g. SR1-5), designates a special zone provision in addition to the normal Zone Provisions applying to the particular lands. Such special provisions are found by reference to Section 5.3 of the By-Law, “Exceptions to Zones”. Lands designated in this manner are subject to all the restrictions of the Zone, except as otherwise provided by the special provisions. Examples of Zone Symbols include:

EP: ENVIRONMENTAL PROTECTION

OS: OPEN SPACE

RU: RURAL

HR: HAMLET RESIDENTIAL

RR: RURAL RESIDENTIAL

SR1: SHORELINE RESIDENTIAL TYPE ONE

SR2: SHORELINE RESIDENTIAL TYPE TWO

CF: COMMUNITY FACILITY

C1: HIGHWAY COMMERCIAL

C2: GENERAL COMMERCIAL

C3: RECREATIONAL COMMERCIAL

C4: COMMERCIAL/INDUSTRIAL

M1: GENERAL INDUSTRIAL

M2: EXTRACTIVE INDUSTRIAL

M3: WASTE DISPOSAL INDUSTRIAL

## 10.2 Haliburton-Stanhope Airport Zoning

The Haliburton-Stanhope Airport is identified as Lot 31, Concession 5 in the Township of Algonquin Highlands and the airport and adjacent areas are divided into a number of specific zones.

- On-Airport: M1-4, M1-6, M1-7, RU and RU-4.
- Lands immediately adjacent to the airport are designated as: SR-1, RR, RU and EP.

In general under the Definitions Section 3.4, Airport, Municipal, is defined as, “Any land and associated buildings and structures, which is owned, operated or maintained by the Corporation of the Township of Algonquin Highlands for the landing and takeoff of aircraft, inclusive of facilities for the storage, maintenance and repair of aircraft, in accordance with the regulations of Transport Canada as may be amended from time to time.” The Haliburton Stanhope Airport does not have a formal Airport Zoning Regulation (AZR).

### 10.2.1 On-Airport

Specific designated zones definitions at the airport are as follows:

- M1 – General Industrial: The use of land, building or structures for the manufacturing, processing, fabricating or assembly of raw materials or goods, warehousing or bulk storage of goods, and related accessory uses. Such use shall not require a water supply other than that available from within the limits of the lot upon which the use is located. Any use requiring a Permit to Take Water from a Provincial agency shall be permitted only through site specific zoning amendment.
- M1-4 - General Industrial Exception Four, Zone Part of Lots 31 and 32, Concession 5, Stanhope (formerly M1-4, Stanhope). Within the General Industrial Exception Four (M1-4) Zone, the uses permitted shall be restricted to that of a municipal airport together with such other accessory uses, buildings and structures as are normally considered incidental and subordinate thereto. In all other respects the provisions of the General Industrial (M1) Zone shall apply and be complied with.
- M1-6 - General Industrial Exception Six (M1-6), Part of Lot 31, Concession 5, Stanhope (formerly M1-6 and RU-3 Stanhope) - For those lands zoned General Industrial Exception Six (M1-6), permitted uses shall be limited to an aircraft repair and refurbishing business and a small engine repair shop. In addition, those lands zoned Rural (RU) on the property may be utilized in calculating minimum lot frontage. In all other respects, the provisions of the By-law shall apply.
- M1-7 - General Industrial Exception Seven, Part of Lot 32, Concession 5, Stanhope (formerly M1-3, Stanhope) - The permitted uses shall be limited to the following:
  - A business or professional office, provided such use is accessory and incidental to a permitted non-residential use;
  - A manufacturing, processing, assembly or fabricating plant except any such use which, from its nature or the materials used, is declared to be offensive;
  - A storage facility for aircraft;
  - A warehouse or wholesale establishment;
  - A workshop.

- Rural – although there is no specific definition for rural in the by-law, rural would imply definitions relating to a farm, or farm produce outlet and any other RU references in the by-law.
- Rural Exception Four (RU-4), Part of Lot 31, Concession 5, Stanhope, Schedule “A” (By-law No. 05-05) - The lands described Part of Lot 32, Concession 5, Stanhope, zoned Rural Exception Four (RU-4), and shown on Schedule “A” of By-law 05-05, shall be subject to the following provisions:
  - The permitted uses shall be limited to a motel furnishing not more than four accommodation units and one airplane hangar containing not more than eight airplanes. A residential dwelling is permitted as an accessory use.

All airport lands should be re-designated as either: M1, M1-4 or M1-6. The municipality cannot control aviation-related activities e.g. departure and approach zones, transitional zones etc., therefore one option is to control on-airport development by enforcing development guidelines within lease agreements (e.g. lease with MNR). The lease gives the Township contractual authority and prospective developers would then have to consider all development requirements within the lease agreement prior to developing a property.

### **10.2.2 Off-Airport**

Lands adjacent to the airport are designated as either: Rural (RU), Rural Residential (RR) or Shoreline Residential (SR). Lands that are anticipated to be developed as part of the overall airport growth strategies include areas that are currently located within Lots 31 and 32, Concession 6 that are designated as RU. These included the potential MNR site, future airside development lots and the proposed residential airpark.

To provide development flexibility it would be advisable to change these designations to M1, M1-4 (MNR), M1-6 (Future Airport Development Areas) and M1-7 and perhaps an amended designation for the RR that would include provisions for aircraft storage and taxiways that would be associated with an airpark concept. Alternatively some areas of the airport may be designated as Commercial-Industrial (C4) with the proviso that an amendment would limit the list of approved land uses to airport appropriate land uses. The same lease controls identified in Section 1.2.1 would apply to Township owned lands.

## **10.3 Changing Land Use Designations**

Township Bylaws include provisions for zoning amendments and in addition the Provincial Planning Act includes a process for public consultation and as required Ontario Municipal Board hearings. Changes to adjacent land zoning would require compliance with all applicable planning processes for zoning amendments.

## **10.4 Airport Zoning Regulations (AZR)**

Part 1, Section 5.4 (1) and Section 5.5 and 5.81 of the Aeronautics Act permits Airport Zoning. The regulation is intended to protect an airport's obstacle limitation surfaces from obstructions (e.g. buildings, structures, natural tree growth etc.). In addition, Transport Canada publication Land Use in the Vicinity of Airports (TP1247) includes provisions to protect against disposal of waste that would be attractive to birds and protection against electronic interference with navigational aids. The AZR does not apply to actual airport

lands which are assumed to be under the control of the owner, rather the AZR is intended to protect the airfield infrastructure zoning (e.g. transitional and surface and approach surfaces). Case law within Canada (reference Airport Zoning Regulations, Pryde Schropp McComb Inc., 2004), “has established that municipal and provincial land use planning cannot regulate land in the interest of the safe operation of an airport or aircraft.” Land use that does not conflict with safe operations of an airport or aircraft is then considered within the municipal or provincial land use guidelines. TP 1247 specifically states, “Lands within an airport boundary are therefore not included in a Zoning Regulation, however, all structures within an airport boundary must nevertheless comply with obstacle limitation surface requirements unless such structures are essential for aircraft operations.” TP 1247 does provide guidance for land use in relation to aircraft noise. Based on the existing types of aircraft using the Haliburton Stanhope Airport and acceptable land uses defined under TP1247, there would not likely be any concerns relating to proposed land uses. It is important to consider that if at any time airport operations change significantly (e.g. a new runway) it would be advisable to evaluate noise exposure forecasts and assess impacts to adjacent land owners.

Proposed developments at the airport have been laid out with careful consideration of potential zoning impacts and as such as long as the proposed developments do not conflict with safe aircraft operations, attract birds and do not interfere with electronic interference with navigational aids most types of development would be acceptable.

It is important to note that the airport does not have a regulated AZR and as such, the airport may be vulnerable to developments off-site that may impact airport operations (e.g. a radio tower constructed on approach). The Township should carefully consider off-site development applications to protect safe airport operations.

## **10.5 Airport Development Guidelines**

The Comprehensive Zoning Bylaws includes specific criteria for developments within a particular zone. The Township may want to consider developing specific guidelines for the airport which would provide adequate controls. As an example, the Township could identify specific setbacks for hangars, identify a range of acceptable hangar colours, specify where septic fields and stormwater management facilities are constructed etc. A specific set of guidelines would then assist the Township in dealings with all prospective developers. The guidelines could subsequently be included with the lease agreement framework.

## **13. Ground mounted solar application**

The municipality of Dysart Et Al requires an application to be filled out for any ground mounted solar projects; the application is very similar to the zoning amendment. Some important pieces of information:

- Applications will only be accepted on property zoned for rural, commercial, institutional or industrial uses.
- The application does not need to go to council and will not have the same time constraints as outlined in a zoning amendment application.
- Plans are required that outline the proposed installation of the ground solar units.

## 14. Capital plan

The capital investment requirements relating to infrastructure improvements are identified in the following table:

**Figure 14.1: Construction Cost Table**

Development	Phase	Estimated Cost
<b>Taxiway Construction</b>		
Taxi A, B & D – construct new taxiways to the new tenant hangar areas	I	\$1,100,000
Taxi B & C – construct a new taxiway to service north development areas Taxiway to fly-in community	II	\$1,675,000
Construction of Taxiway D to the new development areas and fly-in community will be demand driven. When existing new development lots are 70% leased, the airport should consider extending the taxiway to accommodate new development.	III	\$250,000
<b>New Hangar Apron</b>		
Construct a series of aprons to accommodate the new hangar areas	I	\$1,300,000
<b>New Access Road</b>		
Access road construction for Phase I development areas	I	\$600,000
Access road construction of Phase II development areas	II	\$250,000
Access road construction of Phase III development areas	III	\$300,000
<b>Utility Extension</b>		
Provide 3 Phase Power & Poles to Developments	II	\$20,000
<b>Total Phase I Construction Costs (Includes misc. development costs)</b>		<b>\$3,490,000</b>
<b>Total Phase II Construction Costs (Includes misc. development costs)</b>		<b>\$2,220,000</b>
<b>Total Phase III Construction Costs (Includes misc. development costs)</b>		<b>\$860,000</b>

Note: all costs identified in the cost table include 10% engineering and 25% contingency.

**Figure 14.2: Haliburton Stanhope Class D Cost Estimate**

Item	Phase	Unit	Est. Quant	Est. Unit Price	Est. Total
<b>1,0</b>	<b>Phase 1</b>				
1,1	Clearing	ha	4	\$ 12 000	\$ 50 400
1,2	Airfield (Taxiway A, B & D) - Granular Sub Base - (500mm thick)	tonne	12 000	\$ 22	\$ 264 000
1,3	Airfield (Taxiway A, B & D) - Granular Base - (300 mm thick)	tonne	7 000	\$ 20	\$ 140 000
1,4	Airfield (Taxiway A, B & D) - HMAC Surface - (100 mm thick - 2 Lifts)	tonne	2 650	\$ 140	\$ 371 000
1,5	Hangar Aprons - Granular Sub Base - (500mm thick)	tonne	21 000	\$ 22	\$ 462 000
1,6	Hangar Aprons - Granular Base - (300 mm thick)	tonne	12 000	\$ 20	\$ 240 000
1,7	Hangar Aprons - HMAC Surface - (100 mm thick - 2 Lifts)	tonne	3 500	\$ 140	\$ 490 000
1,8	Access Road & Parking Lot - Granular Sub Base - (350mm thick)	tonne	8 800	\$ 22	\$ 193 600
1,9	Access Road & Parking Lot - Granular Base - (150mm thick)	tonne	3 600	\$ 20	\$ 72 000
1,10	Access Road & Parking Lot - HMAC Surface - (60 mm thick)	tonne	1 650	\$ 140	\$ 231 000
1,11	Misc. Electrical (Retro-reflective markers and Signs)	ls	1	\$ 10 000	\$ 10 000
1,12	Drainage Provision (MH's, Ditches, pipes)	ls	1	\$ 50 000	\$ 50 000
	<b>Total Section 1.0</b>				<b>\$ 2 574 000</b>
	<b>Total Including 10% Engineering and 25% Contingency</b>				<b>\$ 3 490 000</b>
<b>2,0</b>	<b>Phase 2</b>	<b>Unit</b>	<b>Est. Quant</b>	<b>Est. Unit Price</b>	<b>Est. Total</b>
2,1	Clearing	ha	11	\$ 12 000	\$ 132 000
2,1	Airfield (Taxiway B & C) - Granular Sub Base - (500mm thick)	tonne	20 000	\$ 22	\$ 440 000
2,2	Airfield (Taxiway B & C) - Granular Base - (300 mm thick)	tonne	11 400	\$ 20	\$ 228 000
2,3	Airfield (Taxiway B & C) - HMAC Surface - (100 mm thick - 2 Lifts)	tonne	4 400	\$ 140	\$ 616 000
2,4	Access Road - Granular Sub Base - (350mm thick)	tonne	3 400	\$ 22	\$ 74 800
2,5	Access Road - Granular Base - (150mm thick)	tonne	1 400	\$ 20	\$ 28 000
2,6	Access Road - HMAC Surface - (60 mm thick)	tonne	650	\$ 140	\$ 91 000
2,7	Misc. Electrical (Retro-reflective markers and Signs)	ls	1	\$ 10 000	\$ 10 000
2,8	Provide 3 Phase Power & Poles to Developments	ls	1	\$ 20 000	\$ 20 000

2,9	Drainage Provision (MH's, Ditches, pipes)	ls	1	\$ 50 000	\$ 50 000
	<b>Total Section 2.0</b>				\$ 1 639 800
	<b>Total Including 10% Engineering and 25% Contingency</b>				\$ 2 220 000
<b>3,0</b>	<b>Phase 3</b>	<b>Unit</b>	<b>Est. Quant</b>	<b>Est. Unit Price</b>	<b>Est. Total</b>
3,1	Grading	m <sup>3</sup>	7 500	\$ 14	\$ 105 000
3,2	Clearing	ha	7	\$ 12 000	\$ 84 000
3,3	Airfield (Taxiway E) - Granular Sub Base - (500mm thick)	tonne	2 600	\$ 20	\$ 52 000
3,4	Airfield (Taxiway E) - Granular Base - (300 mm thick)	tonne	1 500	\$ 18	\$ 27 000
3,5	Airfield (Taxiway E) - HMAC Surface - (100 mm thick - 2 Lifts)	tonne	570	\$ 200	\$ 114 000
3,6	Access Road - Granular Sub Base - (350mm thick)	tonne	5 000	\$ 20	\$ 100 000
3,7	Access Road - Granular Base - (150mm thick)	tonne	2 050	\$ 10	\$ 20 500
3,8	Access Road - HMAC Surface - (60 mm thick)	tonne	950	\$ 140	\$ 133 000
3,9	Drainage Provision (MH's, Ditches, pipes)	ls	1	\$ 50 000	\$ 50 000
	<b>Total Section 3.0</b>				\$ 635 500
	<b>Total Including 10% Engineering and 25% Contingency</b>				\$ 860 000

<b>Estimated Cost</b>	<b>Total</b>	<b>\$ 6 570 000</b>
-----------------------	--------------	---------------------

Notes:

1. Costs associated with environmental aspects and lake impacts in runway footprint are not included.
2. The forecast of construction costs is provided for budgetary purposes only. This is not to be interpreted as a guarantee by EBA of the actual project costs. The final cost of the project will be determined by the tendering and construction process.
3. "The forecast of construction costs is based on limited topographical and geotechnical information. We have been instructed to assume all existing earthworks are granular and suitable for sub base. The final cost of the project will be determined by the tendering and construction process. "
4. These estimates do not include GST/HST.

## **15. Recommendations**

The following section summarizes the seven main opportunities and actions we believe the airport and the Township should focus on over the next decade. An airport is first and foremost a business and must be operated with a vision that will drive sustainable growth by offering services that cater to market trends.

### **15.1 Build new general aviation hangars**

As previously stated, we strongly believe the airport should market as soon as possible the development of the new row of 5 – 10 hangars. (Sizes and types of hangars could vary according to tenants needs). The project could consist of five T-hangars with doors, with the plan to build an additional five hangars within a 5 year period.

From the report provided by Haliburton Solar and Wind, we suggest the airport prepares a request for comments and a request for letter of interest to locate a solar panel array of 100 kWh on airport land with the possibility of double/tripling the size of this facility over the next decade. The Airport could look to rent the land at a cost of approximately \$ 0.50 per sq ft or 18% of revenues generated by the array.

### **15.2 Attract a maintenance shop for general aviation aircraft and helicopters**

The growth of aircraft based at the airport (new hangars) along with a safer landing environment would create a win strategy to attract a maintenance and engine shop that could service three main clientele: MNR, HSA-based aircraft, transient traffic. According to the volume of work, the shop should create anywhere between 5 – 10 jobs. Tentative hangar size is estimated at 20 000 sq. ft.

### **15.3 Partner with local tourism business owners to create a fly-in tourist experience**

It is recommended that the Airport meet with local tourism operators/agencies to discuss possible partnerships and synergies. Organizations include: Adventure Haliburton, Ontario Highlands Tourism Association, The County of Haliburton Tourism Office, Yours Outdoors and Back Country Tours. The tourist experience should build on the strengths of the area (summer cottage experience; Fall colours), in addition to local attractions such as the Haliburton Forest Wolf Centre, Abbey Gardens and the Dorset Tower to attract more GA fly-in traffic.

The Airport should also continue to work with local event organizers to offer special events such as COPA for Kids events and pilot fly-ins.

In order to spread the word to the aviation community, it is recommended the Airport connect with aviation associations such as COPA (update airport information on the “Places to Fly” section of COPA’s website whenever there are new developments or changes at the airport). Press releases can be distributed to aviation associations and publications for inclusion in their magazines or to be posted in the Events section of their



websites. In addition to COPA's website and newsletter, trade publications include: Wings Magazine, Helicopters Magazine, Canadian Aviator, and Canadian Skies Magazine.

#### **15.4 Establish eating facilities to attract additional traffic**

GA pilots often seek out fly-in destinations that offer food services. The Airport has a small "cook shack" besides the terminal building which it currently uses to serve limited food in the summer months for fly-ins. Building on this, the Airport should investigate the possibility of tendering out a small food service for the summer months where it may increase its food offering. The addition of the MNR site will also provide a larger client base.

#### **15.5 Investigate establishing a rental vehicle service to accommodate the tourist experience**

The ability to access a rental vehicle would be an added value to pilots flying into the Airport. The Airport's client base and traffic cannot sustain a full time on site rental service operation; however, the Airport should pursue discussions with Car Rental companies to discuss partnerships and possible discounts for pilots.

#### **15.6 Provide solutions to reduce the impact of the wind shear on approach to Runway 26**

This recommendation addresses both the volume of activity at the airport and airport liability in case of accident (Note: through our surveys and one-on-one meetings, we were informed of numerous difficult landings and of a few incidents (minor accident or damage to aircraft). These incidents have not, on record, resulted in bodily injuries or death. We strongly recommend the airport acts to reduce the threat of such accident by:

- a) The airport could work to remove (reduce the height) of the hill that is creating that wind shear effect. Understanding the cost of such a venture, we believe this task should be undertaken at a time when land fill is required either for construction of the runway or for other infrastructure projects close by.
- b) Build the proposed crosswind runway to enable pilots to use this runway when the winds are blowing from the north.

#### **15.7 Build a fly-in Community**

An extended runway or a new crosswind runway is a mandatory condition for Halminen Homes to set up a fly-in community; we believe other real estate groups will request similar runway improvements with the vision of increasing the number of potential clients for the community. We believe the airport should again launch this opportunity through a request for comments and a letter of interest process. The airport should provide a set of conditions and incentives and asked proponents to provide residential concepts along with rules and regulations to permit access to the airport.

## Annexes

### Annex A - List of companies/individuals contacted for the Industry Survey

Interviewed companies	
Abbey Gardens	Halminen Homes
Auriga Design	Harvest Haliburton
Back Country Tours	HCDC - Haliburton County Development Corporation
Bancroft Airport	Heat-line
Cameron Air Service	Home Builders Association
Canador College - School of Aviation	Huronina Airport
COPA Flight 28 - Burlington	MNR (Ministry of Natural Resources)
COPA Flight Flight 73 - Midland Penetanguishene	Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)
Egg Farmers of Ontario	OPP (Ontario Provincial Police)-Haliburton detachment
Farmers Market	Haliburton, Kawartha, Pine Ridge District Health Unit
Georgian College - Aviation Management Program	Sea Bee Aircraft
Haliburton Creative Business Incubator (HCBI)	Seneca College - School of Aviation and Flight Technology
Haliburton Forest	The Land Between
Haliburton Solar & Wind	University of Western Ontario - Commercial Aviation Program - Diamond Flight Centre
Haliburton-Stanhope Airport	WAI Products
Haliburton-Stanhope Airport Tenant (Committee Member)	Yours Outdoors

# AmexB-Airport Fee Survey

Haliburton/Stanhope Airport Fee Survey										
AIRPORTS	Haliburton	Tillsonburg	Timmins	Sault Ste-Marie	Dryden -	Brantford	Goderich	Burlington	Muskoka	Parry Sound
<b>Landing Fees</b>	No landing fees	No landing fees	0-21,000 kgs = 8,80\$/1000 kg 21,001kg to 45,000kg = 11,13\$/ 1000 kg 45,001 kg and over = 13,23\$/1000 kg	Minimum Landing fee : 31,00\$ 0-12,000 kgs = 8,15\$/1000 kg 12,001kg to 70,000 kg = 10,35\$/ 1000 kg 70,001 kg + = 12,25\$/ 1000 kg	Minimum Landing fee (Domestic): 10,30\$ 0-21,000 kgs = 2,95\$/1000 kg 21,001kg to 45,000kg = 3,80\$/ 1000 kg 45,001 kg and over = 4,45\$/1000 kg	40\$ Flate rate/commercial turbine aircraft (turboprops or jets). Tiedown fees: 5\$ day / \$ 60 month / 136\$ year	Straight 40\$ fee. Commercial (all flight types)	n/a	No Charge for any aircraft less than 3,000 kg or under 5,000 kg but based at the airport Turboprop & Rotary Wing = \$42.00 // Jets = \$75.00 Itinerant Aircraft = No fee > 3,000 kg 3,000 – 4,000 kg = \$7,00/1,000 kg // 5,000 – 9,000 kg = \$8,00/1,000 kg 10,000 – 19,000 kg = \$9,00/1,000 kg // 20,000 – 44,000 kg = \$10,00/1,000 kg 45,000 kg < = \$11,00/1,000 kg	Commercial \$18.00
<b>Terminal Fees</b>	n/a	n/a	1-9 seats = 28,38\$ 10-15 seats = 56,75\$ 16-25 seats = 87,40\$ 26-45 seats = 153,20\$ 46-60 seats = 218,79\$	1-12 seats = 3,25\$ 13 + seats = 3,70\$	Less than 15 = 20,10\$ 16-25 seats = 30,90\$ 26-45 seats = 54,25\$ 46-60 seats = 77,40\$ 61-89 seats = 123,95\$	N/A	Do not have Too small of an airport	N/A	NO SUCH FEES (we only charge a landing fee and overnight parking fee)	n/a
<b>Ramp Fees (Luggage)</b>	n/a (our runway is 2500 ft and have no chartered flights!)	n/a	Fees through Air Creebec Clayton Richard (705) 264-9521 ext. 3116 Generally under contract, but attests the average is between 80-100\$ for smaller planes (ex King Air) and 300\$ for aircrafts with < 90 seats	Mara-Tch number is 705-779-3278 and the contact name is Carlo Briglio. <b>(Average per turnaround 75\$)</b> Goes b aircraft: example a Q-400 (200,40\$/turnaround) includes ground power and handlers	n/a: Dryden does not do turn arounds	None	Do not charge, passengers are usually business men with but abriefcase		Cargo Loading/Unloading (loader forklift service with operator to service aircraft):  \$100.00 for the first hour (one hour minimum) – plus \$2.00 per minute after the first hour	n/a
<b>Overnight Parking (Aircraft)</b>	Tiedown fees: Daily \$ 8.00 Weekly \$ 30.00 Monthly \$ 60.00 Yearly \$360.00  * Plus applicable taxes	42\$/month + HST or 6,00\$/night + HST	0-6000 kg = 10,00\$ 6001-15000 kg = 20,00\$ 15001-20,000 = 36,63\$ 20,001-30,000 kg = 67,75\$ 30,001-60,000 = 104,96\$ 60,001 - 99,999 kg = 158,40\$	0-000 kg = 9,80\$ (min) + 4,90\$ / 1000 kg 5001 - 20,000 kg = 24,50\$ (min) + 2,45 \$ / 1000 kg 20,00 + kg = 61,25\$ (min) + 1,20 \$ / 1000 kg	Note that during winter, an additional 6,00\$/rate is charged for heater, plus HST 2,000 kg or less = 9,00\$ 2,001-5,000 kg = 9,00\$ 5,001-10,000 kg = 14,40\$ 10,001-30,000 kg = 26,65\$ 30,001- 60,000 kg = 41,15\$ 60,001-100,000 kg = 62,15\$	N/A	Overnight: basic 10\$ Not enough volume to build a chart per weight size	Tiedown : 10\$ / night - 128\$/month	Minimum overnight parking fees: Jets = \$ 50,00 Tie-downs on Grass (May-Oct) only: \$8,00/night or \$100/month or \$300/ 6-months + HST Tie-downs on pavement : \$10,00/night or \$150/month or \$500/ 6-months + HST Less than 5,000 kg on Apron: \$15,00/night or \$250/month + HST 5,000-9,000 kg on Apron: \$30,00/night or \$500/month + HST 10,000-19,000 kg on Apron: \$60,00/night or \$1,000/month + HST 20,000-44,000 kg on Apron: \$120,00/night or \$2,000/month + HST 45,000 kg < on Apron: \$240,00/night or \$4,000/month + HST	Tie downs: daily \$8.50 Weekly \$50.00 Monthly \$120.00 Seasonal \$375.00 Annual \$550.00
<b>Estate rental (Land) Lease</b>	n/a	633 total acres, only 400 available for lease @ 0,29\$/Sq. Ft.	Set by the City council	1,200 acres available, we charge between \$1.55 and \$.83 per square meter for land rental	n/a	None at this time (have been leased for ,32 sq ft in the past)	n/a	4.50\$ + HST Sq ft. LEASED. None for sale	Land Lease = \$0.91/Sq metre/YR. RENT + \$0.80/Sq metre/YR. AMC (airport mtce. Fee)	
<b>Estate rental (Space) Lease</b>	90 sq m office space used annually by MNR for their forestry firefighting base		n/a	n/a	279,30\$/meter square/annum			n/a	Office lease = \$23.49/Sq metre/month	
<b>T-Hangar rental</b>	Open 38' Hangar (1-7, 11-13): \$1,032.06 Closed 38' Hangar (15,16,17): \$1,614.99 Open 41' Hangar (10): \$1,235.41 + HST Closed 40' Hangar (8 & 9): \$2,044.65 Closed 55' Hangar (D) \$7,651.43	Privately owned, not property of the airport; according to airport mgr, Annette Murray between 225-275\$/Month (excl. Utilities).	All T-hangars are privately owned, sold by the city of Timmins (confirmed by Mr. Gene Kuresky). He can not confirm the price as the airport no longer owns the right.	The fee is 245\$/ per square meter with an increase of 5 cents er year. This price includes municipal taxes but not utilities. The sizes for the T-Hangars are 139 square meters, 165 square meters and 191 square meters.	No T-Hangars at the airport	Manual Door, no electricity - \$275.00/month +HST Electricity+electric door/small-\$350 Electricity+electric door/large-\$500	T-Hangars are available to rent. Small are 170\$/month + HST (aprox 800sq.feet) and big are 210\$/month + HST (aprox 900-1,000 square feet)	Served by CANPASS : Tim Crawford. No rentals. Only sell. Future projects to build more & develop airport main terminal.	We do not own any hangars (they are all private)	Privately owned. 20 t-hangars available. Neil will attempt to get a leasing price/month. TBC
<b>Gas \$\$</b>	Avgas 100 LL @ 1,85\$/L Jet-A fuel @ 1,90\$/L + HST	Avgas 100LL \$1.64/Litre + HST Jet A1 \$ 1.42/Litre	The Timmins airport aviation fuel is provided through Air Creebec/Esso dealer.	Esso : 100 LL @ 1,81\$/L + HST Jet-A @ 1,60\$/L + HST	Av Gas - \$1.9039 + HST Jet Retail - \$1.6946 + HST	Jet fuel 100LL @ 1,75\$/L + HST Jet-A1 @ 1,60\$/L + HST	Aviation Fuel: 100LL, Jet A1, 7 days a week 8 am - 5 pm Local Time Cost 2,08\$ for 100LL and 1,62\$/jetfuel (incl. HST)	AVGAS 100 LL \$ 1.75 Lt plus HST Jet A/p \$1.59 Lt + HST	Jet Fuel (Jet A-1) @ 1,75\$/L Avgas (100LL) @ 1,62\$/L + HST	Jet A \$1.60+HST per litre 100LL \$1.72+HST per litre
<b>Runway length</b>	2500x60 (asphalt)	2348x75 (Turf) 5502x100 (Asphalt) 2258x75 (turf)	6000x150 (Asphalt) 4907x150 (Asphalt)	6000x200 (Asphalt) 6000x200 (Asphalt)	5996x150 (Asphalt) 2000x75 (Sand)	5036x100 (Asphalt) 2626x100 (Asphalt) 2626x100 (Asphalt)	5034x100 (Asphalt) 3003x50 (Asphalt) 1871x80 (Turf)	3763x75 (Asphalt/Turf) 2465x50 (Asphalt)	6000x150 (Asphalt)	4000x75 (Asphalt)

## Annex C – Press release Solar Power

### Harnessing solar power at Brantford's airport

J.P. Antonacci - BRANT NEWS

Sunny skies don't just make for great flying weather – harnessing solar energy could help the Brantford Municipal Airport generate revenue.

Greg Martin from the airport board told city council on Monday that installing rooftop solar panels on the airport's two largest hangars – a total surface area of 80,000 square feet – would generate funds that could be used to maintain and repair runways, ramps and facilities at the airport.



Council approved Martin's request to have city staff prepare an application to the Ontario Power Authority's microFIT program in early 2013. Through the feed-in tariff program, the province buys power produced using renewable sources such as solar and wind at above-market prices.

The city missed the opportunity to buy into the program when the microFIT rate was 80 cents per kilowatt hour, but decreasing equipment costs mean the city and airport would still benefit from the current rate of 56 cents per kilowatt hour, a rate Martin called "very generous."

"The interest in this program is very high," Martin said, though he cautioned the province has not given any signs that the microFIT offer will be extended beyond the next intake round, making the proposed solar panels for the airport a "now or never venture."

Using revenue from the sale of electricity to fund airport operations and pay back a loan from Infrastructure Ontario to buy the solar panels would take roughly nine years, Martin said. Once the capital investment was paid off, all subsequent revenue from the sale of solar power would flow into the airport's budget.

"The revenue will more than pay for the loan," Martin said. "There will be no impact whatsoever on the taxpayers."

Responding to questions from councillors, Martin confirmed that the roofs of the hangars are stable enough to support the panels and that, because the panels absorb rather than reflect light, there would be no issue of glare interfering with airplanes approaching the runway.

## Annex D – Abbreviations

ACAP – Airports Capital Assistance Program  
AIAC – Aerospace Industry Association of Canada  
AMCO – Airport Management Council of Ontario  
AMO – Approved Maintenance Organization  
AWOS – All weather operating system  
BA – Business aviation  
BEDO – Brantford Economic Development Office  
BMA – Brantford Municipal Airport  
BFC – Brantford Flying Club  
CBAA – Canadian Business Aviation Association  
CFS – Canada Flight Supplement  
COPA – Canadian Owners and Pilots Association  
FBO- Fixed base operators  
GA – General aviation  
GPS – Ground Positioning System  
GPU – Ground Power Unit  
IFR – Instrument Flight Rules  
ILS – Instrument Landing System  
MRO – Maintenance, repair and overhaul  
NAS – National Airport System  
NBAA – National Business Aviation Association  
OAC – Ontario Aerospace Council  
OPP – Ontario Provincial Police  
TC – Transport Canada  
VFR – Visual Flight Rules

## Annex E - Review of existing documents

The list below presents the various documents, studies and reports that were consulted during the present mandate:

- ACAD-Haliburton Airport Base Model  
February 2013
- Haliburton County : Local Food Infrastructure Report  
Prepared by Environmental commons - August 2011
- Airport General Lay-out plan  
Prepared by R.J Bernstein & Ass. – December 2012
- Airport Revenue & Expenditure report  
Prepared by the Corporation of the Township Algonquin Highlands – October 2012
- Corporation of the Township of Algonquin Highlands : By-Law 2011  
Prepared by Clerk Dawn Newhook – May 2011
- Community Profile Summary for Haliburton County  
Prepared by:
  - Mills, Mary Lou et al. Social Determinants of Health in Haliburton County: A Report Card.” (2009):1-12. Web.25 April 2012
  - Ontario Public Health Association, Food Security Working Group, Nutritious Food Basket Scenarios, May 2011. Source (2): Haliburton, Kawartha, Pine Ridge District Health Unit, Nutritious Food Basket, May 2011.
- Dryden Airport Fees report  
Prepared by : City of Dryden – December 2012
- Haliburton County Fact Sheet  
Prepared by Queen’s School of Business
- County of Haliburton Housing Study  
Prepared by SHS Consulting – December 2012
  - Haliburton County - Business Retention and Expansion Report; Final Report May 2011; Prepared by Shelley Hirstwood Consulting; Minden Ontario
- Lake Simcoe Regional Airport Commercial Development Opportunities  
Prepared by Micheal Drumm; Airport Manager
- Map Haliburton-Stanhope Municipal Airport - Airport Development Proposal 2010-2026  
Prepared by: The Corporation of the Township Algonquin Highlands – May 2006
- Environmental Screening Report - Background Information  
Prepared by: Industry Canada – May 2009
- Haliburton-Stanhope Airport Aeronautical Engineering Report  
Prepared by: The Corporation of the Township Algonquin Highlands – September 2008
- Haliburton-Stanhope Municipal Airport Business Vision Report  
Prepared by: The Corporation of the Township Algonquin Highlands -May 2006
- Haliburton-Stanhope Municipal Airport Business Vision Report  
Prepared by: The Corporation of the Township Algonquin Highlands - May 2007
- Haliburton-Stanhope Airport Financial Report  
Prepared by: Lorne Mitchell C.A.O. – October 2008
- Haliburton-Stanhope Airport Site Plan  
Prepared by: The Corporation of the Township Algonquin Highlands

## Annex F – Haliburton Solar & Wind Report



# FEASIBILITY ASSESSMENT REPORT



This report represents the opinion of Haliburton Solar and Wind (HSW) a division of 1390023 Ontario Inc. All figures are estimates only.

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# Overview: Production & Income

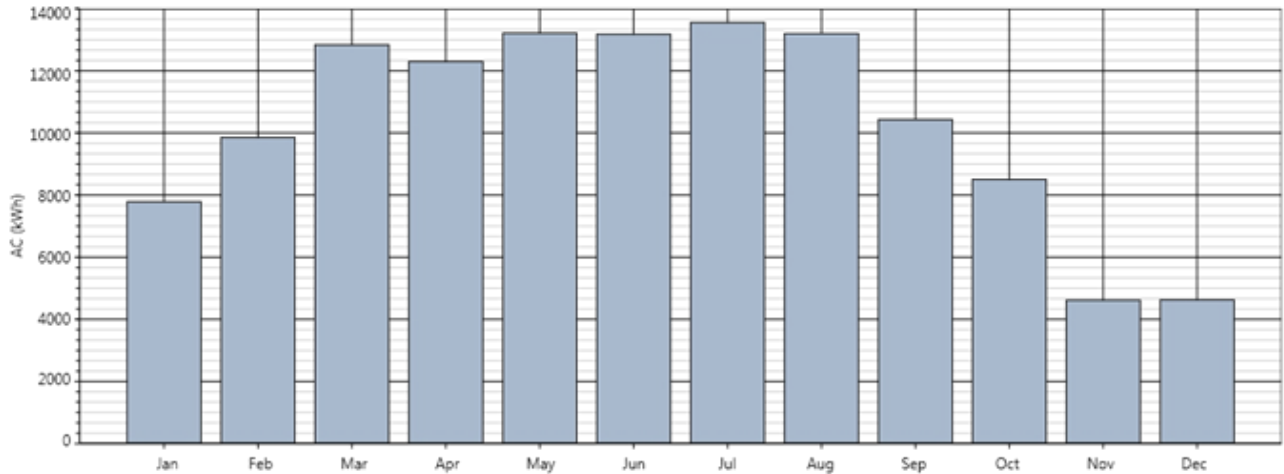
## Location Design Summary:

Name: Stanhope Airport  
 Location: 45.10 °N, 78.60 °W  
 Min. Temp.: -26.58 °C  
 Max Temp.: 31.03 °C

## Weather Properties:

Station Name: Meteornorm  
 Data Source: NASA  
 Location: 45.10 °N, 78.60 °W

## 100kW Photovoltaic Ground Array



Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7806	9876	12860	12319	13236	13196	13575	13218	10450	8521	4635	4643

Estimated Annual Production (kWh):	124,335
Estimated Annual Gain in Production (kWh) – Tigo (15%):	18,650
	<hr/>
	142,985
Feed-In-Tariff (v2.1) Rate:	\$0.388
Estimated Annual Income:	<hr/>
	<u>\$55,475</u>

# Site Assessment



It is the opinion of Haliburton Solar and Wind (HSW) that two potential installation locations exist to support a single 100kW (DC) ground-mount photovoltaic array. These include:

- Location No. 1: Within existing gravel pit.
- Location No. 2: East of the gravel pit.

The process of identifying these locations involved considering factors such as:

- Amount of solar access at location. Existing grid service.
- Ease of access to location. Scope of site preparation activities.
- Usable area of location.

Both locations share a single point of access to Barry Line Road, are expected to experience similar levels of solar access, and feature a usable area of approximately one (1) acre. Pending confirmation from Hydro One, grid service currently terminates where Barry Line Road meets the existing service road.

Location No. 1: Notable site preparation activities:

- Excavation services associated with leveling the usable area
- Extending existing grid service to the installation area

Location No. 2: Notable site preparation activities:

- Excavation services associated with leveling the usable area
- Extending existing grid service to the installation area
- Construction of an additional service road
- Tree removal

It is our opinion that the additional distance to extend grid service to Location No. 1 as well as the larger scope of excavation services required at that location will be material enough to exceed the cost of the additional site preparation activities required at Location No. 2.

In summary, it is the opinion of HSW that Location No. 2 represents the most ideal installation location due to lower estimated site preparation costs.

# Ground Design

## Recommended Equipment

Module Manufacturer: Heliene  
 Model: HSC-250-60P  
 Inverter Manufacturer: Fronius Canada  
 Model: IG Plus V 10.0kW

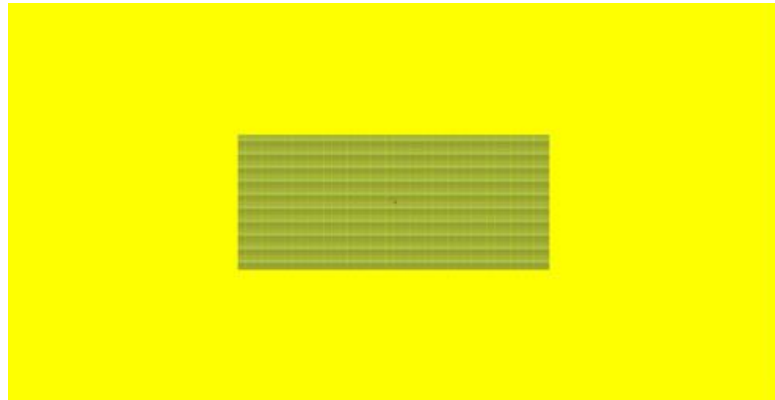
Optimizer Manufacturer: Tigo Energy  
 Models: MM-ES, MMU, and GTWY  
 Refer to Appendix for overview of Warranty information.

### Solar Access

Annual: 97%  
 Summer: 98%  
 Winter: 95%

### Array Properties

Length (ft): 170  
 Width (ft): 135  
 Azimuth: 180°  
 Tilt: 35°  
 Derate: 0.84



### Module Layout

Rows: 10  
 Modules (/Row): 40

### Usable Area of Location

Length (ft): 328  
 Width (ft): 164

## Considerations & Rationale

Any effectively designed photovoltaic system under the Feed-in-Tariff (FIT) program seeks to optimize performance while controlling cost, for the purpose of maximizing overall return on investment.

With this in mind:

- Proposed module layout allows array to be oriented true south.
- Use of Tigo optimizers results in several unique benefits, such as :
  - Producing up to 25% more power density.
  - Reduce operating and maintenance costs by up to 10%
  - Software platform allows module-level, system-level, and fleet-level assessment.
  - Arc, fire and safety risks are monitored with automatic module-level shut-offs.
- Fronius IG Plus V product line achieves one of the highest efficiency values for transformer inverters, with a maximum efficiency of 96.2%. In addition, Fronius' production method allows for ease of component replacement, if required, on site which results in minimal downtime of system.

# Financial Analysis

## Overview of Return

Payback Period (Years):	8.11	Net Present Value (NPV):	\$335,587
Return on Investment (ROI) w/o TVM:	147%	Internal Rate of Return (IRR):	10.72%
Return on Investment (ROI) w/ TVM:	75%		

	Value of Initial Investment: Year 0	Estimated Annual Income Stream	Estimated Rolling ROI	Value of Initial Investment: Year 0	Present Value (PV) of Estimated Annual Income Stream	Net Present Value (NPV)
	-\$450,000	-\$450,000	-100%	-\$450,000	-\$450,000	
		\$55,475	-88%		\$53,578	
		\$55,475	-75%		\$51,747	
		\$55,475	-63%		\$49,977	
		\$55,475	-51%		\$48,269	
		\$55,475	-38%		\$46,618	
		\$55,475	-26%		\$45,024	
		\$55,475	-14%		\$43,485	
		\$55,475	-1%		\$41,998	
		\$55,475	11%		\$40,562	
		\$55,475	23%		\$39,176	
		\$55,475	36%		\$37,836	
		\$55,475	48%		\$36,543	
		\$55,475	60%		\$35,293	
		\$55,475	73%		\$34,087	
		\$55,475	85%		\$32,921	
		\$55,475	97%		\$31,796	
		\$55,475	110%		\$30,708	
		\$55,475	122%		\$29,659	
		\$55,475	134%		\$28,645	
		\$55,475	147%		\$27,665	
Net Income / Loss:		<u>\$1,109,500</u>			<u>\$785,587</u>	<u>\$335,587</u>

## Notes

1. Provincial Bond Yield Rate: 3.54%
2. Term of Contract/Bond (years): 20

## Considerations & Rationale

### 1. Provincial Bond Yield Rate.

Used as the discount rate to estimate the present value of future cash flows. As provincial bonds and the Feed-in-Tariff (FIT) program are offered by the Government of Ontario, it is the opinion of Haliburton Solar and Wind (HSW) that the bond yield rate for a term of similar duration to that of the FIT contract term, provides a reasonable basis for comparison.

Province of Ontario bond with 2033 maturity. Ask Yield rate used as it offers a stronger representation of yield to maturity than coupon. Obtained from TDWaterhouse.ca on 22-Feb-2013.

### 2. FIT Rate.

Based on the price schedule for FIT v2.1.

As the small FIT window has closed, this rate is assumed to be constant.

### 3. Value of Initial Investment.

Estimated cost to install is based on a range of \$4 to \$5 per watt. Estimated site preparation costs have not been included in the determination of this range. In the event of a tendering process, it is our opinion that it may be in the municipality's best interest to separate those costs directly associated with site preparation from those costs directly associated with the installation of the photovoltaic system. Haliburton Solar and Wind (HSW) estimates the site preparation costs associated with Location No. 2 at \$70,000.

### 4. Operation & Maintenance (O&M).

Effectively designed photovoltaic systems should incur minimal O&M costs. Interaction by personnel is typically reflected in a monitoring capacity. Monitoring should be conducted primarily through the use of appropriate software followed by occasional visits to the location.

For example, environmental factors will require visits to the location. During the winter season, this could mean keeping the modules clear of snow and ice. During the fall season, this could mean clearing modules of fallen leaves.

## Methods of Performance Measurement

Payback Period:	Refers to the period of time required to recover the sum of the original investment.
Return on Investment (ROI):	Does not consider the impact of time on the value of money (TVM). A method used to measure the rate of return on invested capital by relating profits to invested capital. May be calculated to consider TVM or not. When the ROI of various projects are compared, projects are prioritized by those which offer the highest to the lowest.
Net Present Value (NPV):	Uses TVM to evaluate the return on long-term projects by summing the present values of all incoming and outgoing cash flows, taking inflation into account. The discount rate used was the rate of return for a comparable investment. Indicates how much value an investment adds to the owner. If the NPV is positive, the investment is considered acceptable.
Internal Rate of Return (IRR):	Measures and compares the profitability of investments without considering the impact of environmental factors (Ex. Interest rate or inflation). It acts as an indicator of investment yield and is compared against an established minimum acceptable rate of return (benchmark). If the IRR is greater than the benchmark, the investment is considered acceptable.

## Results

- The payback period for this project is 8.11 years on a 20 year contract.
- Whether TVM is considered or not, the ROI for this project appears strong.
- When this project is compared to a similar investment opportunity, this project provides \$335,587 in additional value.
- This approximate yield of this project (10.72%) is greater than the approximate yield of a comparable investment (3.54%).

# Appendix

## I. Data Sheets.

- Heliene HSC-250-60P Solar Module.
- Fronius Canada IG Plus V 10.0kW Inverter.
- Tigo Energy.
  - Module Maximizer ES (MM-ES).
  - Maximizer Management Unit (MMU).
  - Gateway (GTWY).

## II. Module Mounting System.

## III. Recommended Equipment.

Heliene, Fronius Canada, and Tigo Energy are reputable market leaders in the manufacturing of photovoltaic (PV) modules, inverters, and PV module maximizers, respectively.

Heliene feature a ten (10) year manufacturing or material defects guarantee, twenty-five (25) year power guarantee, and are UL 1703 compliant.

Fronius Canada feature a ten (10) year manufacturing or material defects guarantee which can be extended to fifteen (15) or twenty (20) years, and are UL 1741 compliant.

Tigo Energy feature a ten (10) year manufacturing or material defects guarantee, twenty (20) year power guarantee, and are UL 1741 compliant.

For more detailed information, we encourage you to contact the manufacturer directly.