



Squamish Municipal Airport – Don Patrick Field

Interim Recommendations

Spring 2023 Update

Final Report | July 10, 2023

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1 INTRODUCTION

1.1 Background

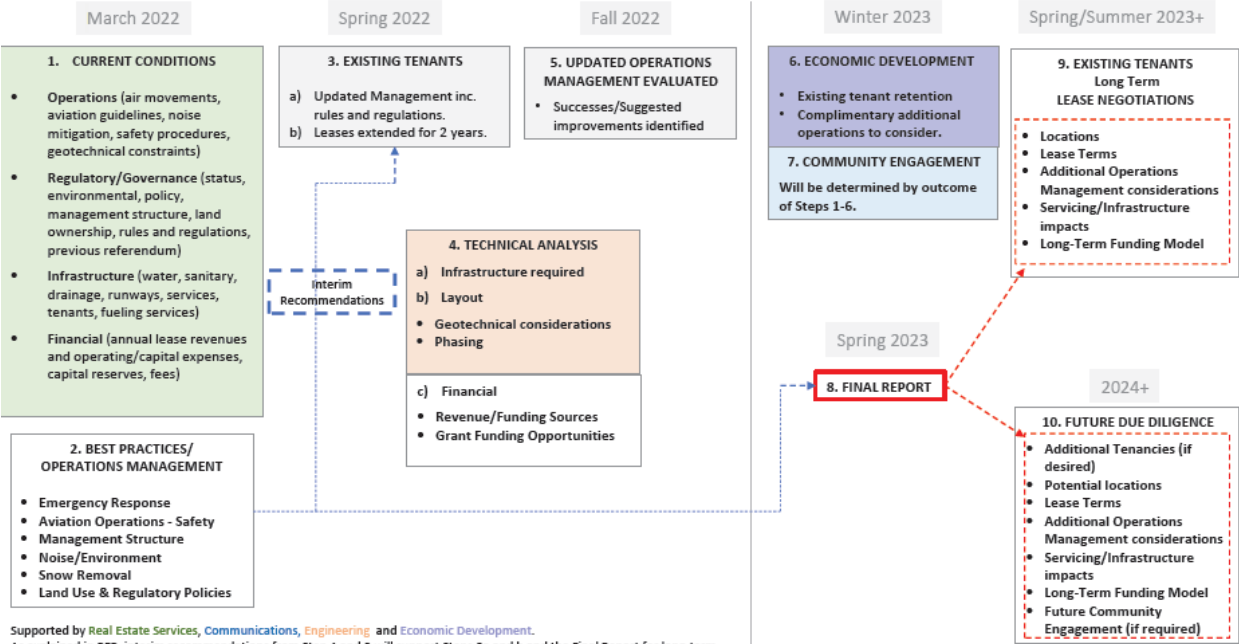
Squamish Municipal Airport – Don Patrick Field (the “Airport”) is owned and operated by the District of Squamish (the “District”). In December 2021, District Council approved the scope for the preparation of the Squamish Airport Strategic Plan (the “Strategic Plan”). HM Aero Aviation Consulting (“HM Aero”) was subsequently retained by the District in March 2022 to prepare the Strategic Plan in alignment with Council’s approved direction.

The scope outlined by the District for the Strategic Plan follows a four-phased approach:

1. Interim Recommendations Report;
2. Draft Strategic Plan;
3. Community Engagement; and
4. Final Strategic Plan.

The District Council-approved pathway for the development of the Strategic Plan is shown in Figure 1.1.

Figure 1.1 - Airport Strategy Overview



1.2 Interim Recommendations Report

The Interim Recommendations Report provided recommended action items for planning and implementation in 2022 and 2023 to address priority items identified by the District and HM Aero. The objectives for the Interim Recommendations Report were to:

1. Articulate a clear and transparent profile of the Airport based on its current conditions, including its regulatory context; governance, administration, and operations; tenants; social and economic benefits; and financial performance;
2. Supported by a research and evidence-based approach, provide recommendations for areas of focus identified by the District including matters of aircraft noise; ambient air quality; apron operations; administration and operations; rules and regulations (other than those matters addressed pursuant to federal jurisdiction); and tenant lease rates; and
3. Combine all recommendations into a practical implementation strategy.

On June 21, 2022, Squamish District Council considered District Staff's *Report to Council (RTC) – Airport Strategic Plan June 21, 2022* and HM Aero's accompanying *June 16, 2022 Draft Interim Recommendations Report*. The Interim Recommendations Report was endorsed by District Council pursuant to the following motion:

THAT District of Squamish endorse the Squamish Municipal Airport - Don Patrick Field Strategic Plan Interim Recommendations attached to the report from Corporate Services dated June 21, 2022.

Based on comments shared at District Council, the Interim Recommendations Report was revised, and the Final Report dated June 27, 2022. With reference to the process shown in Figure 1.1, the Interim Recommendations Report represented the completion of Steps 1 and 2 of the planning process.

1.3 Spring 2023 Update Objectives

Following District Council's endorsement of the Interim Recommendations Report, District Staff, HM Aero, and external contractors commenced work on implementing the approved action items. District Staff have deemed it advantageous to provide an update to District Council, Airport stakeholders, and the community on the status of the Strategic Plan; accordingly, the objectives of the Spring 2023 Update Report are to:

1. Provide an update on the status of the action items provided in the Interim Recommendations Report;
2. Outline the information gathered and lessons learned from the 2022 peak operational season at the Airport (May – September);
3. Identify the next steps recommended for implementation during the 2023 peak operational season; and
4. Provide updated and additional context to the original process scope (shown in Figure 1.1) to advance the completion of the Long-Term Strategic Plan.

Referring to Figure 1.1, the Spring 2023 Update advances the Strategic Planning process through Step 5.

2 INTERIM RECOMMENDATIONS REPORT IMPLEMENTATION STATUS

The Interim Recommendations Report provided a series of targeted action items for implementation in 2022 and 2023 across the following seven categories:

1. Apron Management;
2. Airport Administration;
3. Airport Operations;
4. Rules and Regulations (other than those matters addressed pursuant to federal jurisdiction);
5. Other Recommended Initiatives;
6. Airport Noise Management; and
7. Tenant Lease Agreements.

The status of the recommendations made for each of the seven categories is summarized in Table 2.1 and explained in detail in the following sections. Recommendations brought forward from this status review are addressed in Section 5.

Table 2.1 - Interim Recommendations Status

Recommendation	Planned Implementation	Status
Apron Management		
Apron Management and Itinerant Parking Improvements	Q3 2022	Completed
Airport Administration		
Airport Ambassador Services Provider	Q3 2022	Ongoing
Contracted Aviation Subject Matter Expertise	As Required	Ongoing
Airport Operations		
Airport Processes and Procedures Manual	2024	Upcoming
Winter Maintenance Level of Service Improvements	Q4 2022 / Q1 2023	Revised Implementation
Rules and Regulations		
Preparation of Airport Bylaw	Q2 2023	Completed
Other Recommended Initiatives		
Obstacle Limitation Surface Surveying and Clearing	Q3 2023	In Progress
Airport Webpage Updates	Q3 2022	Completed
Aircraft Movement Logging System Implementation	Q3 2022	Ongoing
Airside Signage Replacements	Q3 2023	In Progress
Taxiway Strip Clearing	Q2 2022	In Progress
Pilot Acknowledgement Form	-	In Progress
Noise Management		
Noise Concern Tracking, Analysis, and Reporting	Q3 / Q4 2022	In Progress
Voluntary Noise Mitigation Procedure Updates	Q4 2022	Completed
Community Noise Management Communication	Q3 2022	Ongoing
Land Use Planning Review	Q4 2023	Paused
Tenant Lease Agreements		
Short-Term Tenant Lease Agreements	Q1 2023	Paused

2.1 Apron Management

Overview

The Interim Recommendations Report identified several opportunities for improvement with respect to the configuration and aircraft operations on the apron, including unmarked aircraft parking positions, conflicts between fixed-wing and rotary-wing users, chokepoints at the intersections of Taxiway A with Runway 15-33 and the apron, and challenges with accommodating rotary-wing air ambulance operations by British Columbia Emergency Health Services (BCEHS). Accordingly, an apron management plan was recommended for implementation that included dedicated tenant and itinerant aircraft parking, two apron taxi-lanes, and a reserved air ambulance parking position.

Implementation

The Interim Recommendations Report targeted the completion of all apron management works for July 2022. The following steps were completed by District Staff, HM Aero, and external contractors:

1. Consultations were completed with BCEHS and tenants that operate from the apron in July and August 2022 to confirm the suitability of the proposed layout;
2. HM Aero finalized the paint marking and parking position improvements plan in August 2022;
3. In September 2022, District Staff solicited quotes for the application of paint markings and the installation of barriers to delineate fixed-wing and rotary-wing itinerant parking positions; and
4. Painting, parking position improvement, and barrier installation work was completed in September and October 2022. Select works were completed in December 2022, including the removal of trees in the vicinity of the itinerant rotary-wing parking position.

Notice to pilots has also been provided on the new apron parking configuration through updates to the CFS.

Evaluation

The Airport Ambassador monitored activity on the apron both before and after the implementation of the apron management improvements. The Airport Ambassador noted that the apron management improvements achieved their objectives of:

- Improving aircraft circulation;
- Providing dedicated facilities for BCEHS and deconflicting ground ambulances from aircraft;
- Moving itinerant aircraft to assigned positions;
- Protecting the reserved spaces of Squamish Flying Club and Sea to Sky Air;
- Separating itinerant fixed-wing and rotary-wing aircraft; and
- Moving parked aircraft from the obstacle-free strip of Taxiway A.

The gravel itinerant parking positions have degraded over the winter from snow clearing and will require repairs, highlighting the temporary nature of these improvements.

Recommendations

No further changes are recommended to apron management in 2023. Repairs to the gravel parking positions that have degraded over the winter are recommended to ensure their usability during 2023 peak season operations.

Permanent requirements for the apron will be identified through the Long-Term Strategic Plan, such as improvements to address apron congestion and unmet demand for parking.

- 1 – New Air Ambulance Parking Position
- 2 – New Apron Taxilanes
- 3 – New Itinerant Rotary-Wing Parking Position
- 4 – New Itinerant Fixed-Wing Parking Positions
- 5 – Improved Flying Club Parking Positions



Completed apron management improvements (Photo courtesy of Sea to Sky Air)

2.2 Airport Administration

The Interim Recommendations Report reviewed the short-term administration of the Airport by District Staff and identified two primary opportunities for improvement:

- That a new contracted role (the Airport Ambassador) be created for the Airport; and
- The resumed availability of aviation subject matter expertise on an as-required basis when specialized advice is required by District Staff.

2.2.1 Airport Ambassador Services Provider

Overview

The Interim Recommendations Report did not identify the requirement for a full-time Airport Manager as an employee of the District in the short-term. The Report recommended the retention of third-party services to handle routine queries and requests and to support the implementation of other priorities articulated in the Interim Recommendations Report, such as improved awareness of noise abatement procedures and apron management. Services provided by the Airport Ambassador include, but are not limited to:

- Completing daily airfield inspections;
- Serving as a point of contact for the Airport;
- Informing itinerant pilots of local noise mitigation procedures;
- Directing itinerant aircraft to parking areas;
- Notifying residents requesting email updates of upcoming events that could generate increased noise; and
- Administering the aircraft movement logging system and submitting activity reports.

Implementation

The Interim Recommendations Report provided a timeline for June to July 2022 for the Request for Proposals (RFP) and the commencement of Airport Ambassador services in August 2022. The implementation of this action item is summarized as follows:

1. In June 2022, HM Aero and District Staff prepared an RFP for contracted Airport Ambassador services. Proposals were due on July 18, 2022 with one response received from Sea to Sky Air, an existing tenant of the Airport;
2. Services by Sea to Sky Air under the contract commenced on July 23, 2022; and
3. The original services contract ended on October 31, 2023. District Staff chose to retain the continued services of Sea to Sky Air with a reduced scope on an ongoing basis to support the tracking of aircraft movements (Section 2.7.3).

In a typical week, the Airport Ambassador logged 32 hours of billable hours under the initial contract.

Evaluation

HM Aero convened meetings with the Airport Ambassador and District Staff to gather observations on the success of the services provided, and the project team also offered its commentary based on its cooperation on numerous projects at the Airport with the Airport Ambassador. The following is observed:

- Daily inspections of the airfield were completed. On numerous occasions, the Airport Ambassador retrieved Foreign Object Debris (e.g., gravel, screws, metal fragments) that could cause damage to aircraft, improving safety at the Airport;
- A small number of visiting pilot inquiries were processed by the Airport Ambassador. The Airport Ambassador provided on-site guidance to itinerant pilots on aircraft parking, and also addressed questions by local pilots on the noise mitigation procedures;
- The Airport Ambassador was integral to the collection of aircraft movement data (Section 2.7.3). The success of this initiative would not have been possible without the on-site services provided by the Airport Ambassador;
- The Airport Ambassador provided Airport-specific advice to both District Staff and HM Aero in the planning and implementation of numerous action items, strengthening the success of these projects;
- During snowfall events, the Airport Ambassador monitored accumulations and provided advice on appropriate timing for winter maintenance activities; and
- The Airport Ambassador fielded two calls from local residents about noise concerns and aircraft activity. The Airport Ambassador was able to explain the respective causes of increased activity to both inquiring residents.

Consultations with District Staff confirmed that the services provided by the Airport Ambassador assisted the Real Estate Services Division in their administration of the facility as intended. In the opinion of HM Aero, the Airport Ambassador services provided through the 2022 pilot project fulfilled the objectives expressed in the Interim Recommendations Report and RFP and was a valuable source of on-site operational expertise and presence.

Recommendations

It is recommended that the Airport Ambassador services agreement be extended to cover the 2023 peak operational season (May – September). This role will continue to be required to support the implementation of the action items identified in the Interim Recommendations Report and 2023 Spring Update Report. Ahead of the 2023 peak operational season, it is recommended that the contact phone for the Airport Ambassador be listed in the CFS to improve pilot awareness.

Revisions to the services of the agreement are not recommended in 2023. The Long-Term Strategic Plan will consider whether the Airport Ambassador role should be continued as the preferred approach in subsequent years.

2.2.2 Contracted Aviation Subject Matter Expertise

Overview

The Interim Recommendations Report recommended that the District retain the services of an aviation consultancy to provide advisory services on an as-required basis when specialized knowledge is required that is not held within the municipality. This service was historically provided by Avcon Consultants Ltd. prior to the retirement of this individual.

Implementation

District Staff, through the Real Estate Services Division, have solicited the services of HM Aero on an as-required basis since the endorsement of the Interim Recommendations Report by District Council in June 2022.

Evaluation

As this section pertains to the services provided by the authoring consultancy of this report, commentary on the performance of HM Aero is not provided. It is observed by the project team that given the volume and complexity of the tasks completed on behalf of the District by the consultancy, the importance of this contracted subject matter expertise is confirmed.

Recommendations

Recommendations are not offered in this respect. It is anticipated that District Staff will continue to solicit external subject matter expertise on an as-required basis.

2.3 Airport Operations

Two recommendations were made through the Interim Recommendations Report on opportunities for improvements to Airport operations in the short-term:

- The preparation of an Airport Processes and Procedures Manual; and
- The improvement in the winter maintenance level of service to support enhanced access by BCEHS.

2.3.1 Procedural Documentation

Overview

The Interim Recommendations Report advised that the District establish an Airport Processes and Procedures Manual to address Airport operations, winter maintenance, emergency responses, wildlife management, and safety management in the interest of ensuring safety and effective maintenance.

Implementation

The Airport Processes and Procedures Manual was recommended for preparation in 2024. Accordingly, work has not commenced.

Evaluation

Not applicable.

Recommendations

This recommendation continues to be applicable for 2024 and should be integrated as part of budget deliberation processes.

2.3.2 Winter Maintenance

Overview

The Interim Recommendations Report identified that the current arrangement for winter maintenance at the Airport, whereby District Staff clear the facility when resources permit, is comparable to that of other similarly sized airports in British Columbia and Canada more broadly. However, challenges were identified in ensuring year-round access for BCEHS air ambulance operations and meeting the needs of the tenants of the Airport more broadly.

The recommendation was made that revised procedures be implemented for clearing the Airport on an as-required basis to support BCEHS operations. It was recommended that the District initiate a Requests for Proposals process in advance of the 2022-23 winter season for a standby private contractor to provide services during the heaviest snowfall months (e.g., December, January, and February) and to assess the feasibility of this model upon the receipt of proposals.

Implementation

The Interim Recommendations Report targeted the completion of working sessions with BCEHS to identify their needs in Q2 2022 and the RFP process for contracted winter maintenance services in Q3 2022, ahead of the 2022-23 winter season. The following summarizes the implementation of this action item:

1. BCEHS was consulted in September and October 2022 to identify their operational requirements and inform winter maintenance standards;
2. A Request for Quotations (RFQ) was prepared by HM Aero and District Staff in October and November 2022;
3. The RFQ was released on November 15, 2022 and closed on November 30, 2022;
4. One bid was received from an external contractor through the RFQ process. However, the proposed costs exceeded the operating funds reserved for this purpose; and
5. As a result of the RFQ process, the District's Public Works Division continued to be responsible for winter maintenance throughout the 2022-23 season.

Evaluation

The model foreseen in the Interim Recommendations Report whereby priority snow clearing at the Airport would be completed by a private contractor was not successfully implemented, owing to a lack of bids received that would align with the District's financial capacity.

Winter maintenance was provided by the District's Public Works Division pursuant to the municipality's snow clearing prioritization policy. Through this process, the Airport Ambassador submitted requests to the District for snow clearing which generally were completed in a timely manner by District Staff.

Recommendations

Based on the results of the 2022 process, initiating another RFQ is not recommended ahead of the 2023-24 winter season. The continued responsibility for winter maintenance by the District's Public Works division in the 2023-24 season, with condition observations and support from the Airport Ambassador, is advised. Recommendations for winter maintenance past the 2023-24 season will be made through the Long-Term Strategic Plan.

2.4 Rules and Regulations

Overview

The preparation of a bylaw specific to the Airport was recommended to clarify the District's expectations regarding user conduct and ensure that rates and fees are clearly communicated and applied. This would include rules pertaining to the use of the Airport lands by commercial operators, aircraft parking, and other areas of interest to the District acting within its authority as the landowner.

Implementation

The Interim Recommendations Report targeted the drafting of the Airport Bylaw in Q2 2023 and its enactment by District Council in June 2023. The following summarizes the progress made on the implementation of this action item:

1. HM Aero prepared an initial draft on behalf of the District in October 2022, with updates made in November and December 2022 based on inputs from District Staff and HM Aero;
2. Transport Canada was consulted in December 2022 to explore the division of responsibilities and jurisdictional matters between the federal and municipal levels of government;
3. District Council gave first, second, and third readings to the bylaw matters pertaining to the Airport at its January 10, 2023 Special Business Meeting.

The rules and regulations process culminated in the enactment of the new *District of Squamish Municipal Airport - Don Patrick Field Regulations Bylaw No. 2953, 2023* and amendments to three implementing bylaws:

- District of Squamish Fees and Charges Bylaw No. 2012, 2007 Amendment (Airport) Bylaw No. 2952, 2023;
- District of Squamish Bylaw Notice Enforcement Bylaw No. 2418, 2015 Amendment (Airport) Bylaw No. 2949, 2023; and
- District of Squamish Municipal Ticket Information Bylaw No. 1832, 2004 Amendment (Airport) Bylaw No. 2950, 2023.

Evaluation

The Squamish Municipal Airport Regulations Bylaw was successfully enacted in Q1 2023, approximately six months ahead of the timeline targeted in the Interim Recommendations Report.

The regulations integrated as part of the bylaw address areas of concern identified by District Staff and Airport stakeholders. Notice, ticketing, or other enforcement activities have not been initiated to-date by District Staff.

Recommendations

New signage is recommended to be erected in a publicly viewable place notifying operators of the bylaw; this is planned as part of the airside signage replacement project described in Section 2.7.4.

2.5 Other Recommended Initiatives

Six additional matters were identified by HM Aero in the Interim Recommendations Report to reduce observed safety concerns or hazards; achieve compliance with applicable provisions of the Canadian Aviation Regulations; and facilitate the successful implementation of other recommendations.

1. Obstacle Limitation Surface surveying and clearing;
2. Airport webpage updates;
3. Aircraft movement logging system;
4. Airside signage replacements;
5. Taxiway strip clearing; and
6. Pilot acknowledgement form.

2.5.1 Obstacle Limitation Surface Surveying and Clearing

Overview

During HM Aero's site visit, several stands of trees were identified as areas of potential concern, given their height and proximity to Runway 15-33. Concerns regarding the proximity of trees to Runway 15-33 were also noted during consultations with aircraft operators. The Interim Recommendations Report recommended that a LiDAR survey be completed of the Airport's obstacle environment in 2023 and that penetrations be assessed and identified for trimming or removal.

Implementation

The Interim Recommendations Report recommended that the LiDAR aerial survey be completed in Q2 2023 and that subsequent analysis, obstacle identification, and trimming / removal be completed in Q3 2023. The following progress has been made as of June 15, 2023:

1. In December 2022, HM Aero prepared a survey area of interest and solicited a preliminary quote from a prospective supplier;
2. In December 2022, HM Aero prepared an application to the BCAAP on behalf of the District. Authorization was provided by District Council on December 7, 2022 for District Staff to apply to BCAAP for grant funding;
3. In March 2023, the District was notified that its BCAAP would provide 85% grant funding for the project (\$55,250);
4. An RFP for LiDAR survey services was issued in April 2023, resulting in the successful selection of a qualified company in May 2023; and
5. The LiDAR aerial survey was flown in May 2023.

Analysis of the survey data is planned to occur in the summer of 2023, with tree clearing to follow. This project is targeted for completion in December 2023.

Evaluation

This action item remains in progress and is proceeding as planned per the Interim Recommendations Report to-date. The success in attaining BCAAP funding will decrease the District's financial obligations associated with the implementation of this project.

Recommendations

This action item remains in progress and is targeted for completion in December 2023.

2.5.2 Airport Webpage Updates

Overview

The recommendation was made through the Interim Recommendations Report that the Airport webpage be improved for the benefit of pilots and residents through the inclusion of information pertaining to:

- The social and economic benefits of the Airport;
- The tenants of the Airport and the services that they provide
- Local noise mitigation procedures;
- The availability and location of fuel, services, and itinerant parking;
- Rates and fees;
- The process for submitting noise concerns;
- The process for reporting safety concerns; and
- The use of Remotely Piloted Aircraft Systems near the Airport.

Implementation

The Airport webpage updates were targeted for completion in Q2 2022. District Staff led the updating of the webpage, with work completed in July 2022.

Evaluation

The updated webpage provides a significant amount of information pertaining to the Airport. While specific feedback has not been received on these updates, the information provided is consistent with resident and pilot awareness of key topics of interest identified in the Interim Recommendations Report.

Recommendations

Periodic updates to the Airport webpage may be required in the coming months as new information becomes available; however, specific needs have not been identified.

It is recommended that District Staff explore whether their existing web hosting system includes the functionality for the collection of aeronautical fees that have been published with the bylaw process (Section 2.5). Currently, fees can only be paid through a cash box near the apron.

2.5.3 Aircraft Movement Logging System Implementation

Overview

A key constraint of planning efforts pertaining to the Airport identified in the Interim Recommendations Report was the lack of aircraft movement data. Recording aircraft movement activity at the Airport is an important exercise to inform the effective administration of the facility, provide information to the public, and to support grant applications. The recommendation was made for a radio recording system to be developed and monitored by the Airport Ambassador to support improved data collection, including the detailed analysis of aircraft movements provided in Section 3.

Implementation

The Interim Recommendations Report targeted the implementation of the aircraft movement logging system for Q3 2022. On behalf of the District, HM Aero developed a radio-based recording system that was provided to the Airport Ambassador. Radio transmission recording and logging commenced in August 2022.

Evaluation

The implementation of the aircraft movement logging system has enabled detailed data collection on activity at the Airport, as explored in depth in Section 3. HM Aero, the Airport Ambassador, and District Staff have worked collaboratively to maximize the accuracy of this system, and it is estimated that over 95% accuracy is being achieved – a significant improvement from efforts in past years.

The primary constraint with the radio-based aircraft movement logging system is the billable hours required of the Airport Ambassador in reviewing, interpreting, and logging recorded transmissions. As a semi-automated system, a human interpreter continues to be required and the level of effort increases proportionately with aircraft movements. On busy days, over 1,000 radio calls have to be interpreted and filtered for relevance for tracking, and daily inspections are required of the hardware and software. Between 23 and 28 hours were typically dedicated by the Airport Ambassador to the aircraft movement logging system in a typical week given the increased operations during the peak season.

Recommendations

It is recommended that the aircraft movement logging system and the associated oversight of the Airport Ambassador be continued through the upcoming summer season to provide the District with a full 12-month dataset for analysis purposes and to align with the recommended extension of the Airport Ambassador services contract. It is expected that this dataset will support further analysis in the Long-Term Strategic Plan, and consideration may be given to the continued operation of this system or its replacement or decommissioning at that time.

2.5.4 Airside Signage Replacements

Overview

The Interim Recommendations Report identified that the three mandatory instruction and information signs located near Taxiway A and Runway 15-33 do not meet the standards described in TP312 – Aerodrome Standards and Recommended Practices for frangibility. Although TP312 is not binding on the Airport as a registered aerodrome, the location of these signs within the runway strip presents a potential hazard to aircraft. It was recommended that the existing signage units be remounted on frangible bases in 2023.

Implementation

The Interim Recommendations Report provided a timeline for implementation of Q2 2023 for this action item. The following progress has been made as of April 21, 2023:

1. In December 2022, HM Aero prepared a signage siting plan including sign faces and solicited preliminary quotes from prospective suppliers;
2. In December 2022, HM Aero prepared an application to the BCAAP on behalf of the District. Authorization was provided by District Council on December 7, 2022 for District Staff to apply to BCAAP for grant funding;
3. In March 2023, the District was notified that BCAAP would provide 85% grant funding for the signage project (\$8,000).

Evaluation

This action item remains in progress and is proceeding as planned per the Interim Recommendations Report to-date. The success in attaining BCAAP funding will decrease the District's financial obligations associated with the implementation of this project.

Recommendations

This action item remains in progress and is planned for completion in July 2023.

2.5.5 Taxiway Strip Clearing

Overview

The Interim Recommendations Report identified concerns with the presence of low-lying vegetation and small boulders in the Taxiway A strip near the Runway 15-33 holding position. The protection of the 31 m wide taxiway strip was recommended to limit obstacles that could damage aircraft, and HM Aero also recommended that this area be cleared.

Implementation

The Interim Recommendations Report targeted the completion of the taxiway strip clearing in Q2 2022. The removal of vegetation in this area has been delayed due to the identification of invasive species that require specialized removal practices. In December 2022, Sea to Sky Invasive Species Council (SSISC) provided District Staff with a report that included a map with the locations of invasive species as well as recommendations on their management. Since then, District Staff have given the approval to SSISC to proceed with the recommended treatment methods in high priority areas in Q2 2023.

Evaluation

This action item remains in progress.

Recommendations

This action item remains in progress and is planned for completion in the summer of 2023.

2.5.6 Pilot Acknowledgement Form

Overview

The Interim Recommendations Report considered the use of a pilot acknowledgement form for operators based at the Airport to acknowledge their awareness of the voluntary noise mitigation procedures and the community concerns regarding aircraft noise.

Implementation

A timeline was not provided in the Interim Recommendations Report for this action item. District Staff have drafted the acknowledgement form but it has not been finalized yet and distributed to the operators based at the Airport.

Evaluation

This action item remains in progress.

Recommendations

This action item remains in progress. It is recommended that the acknowledgement form be distributed to the tenants of the Airport ahead of the 2023 peak operational season, concurrent with the start of season briefing in July 2023 described in Section 2.6.2.

2.6 Airport Noise Management

The Interim Recommendations Report examined historical resident noise concerns, the application of the Airport's voluntary noise mitigation procedures, and tenant lease clauses and examined the approaches taken at 19 airports in British Columbia and recommended practices for noise management. Four action items were identified through the Interim Recommendations Report:

1. Improved noise concern tracking, analysis, and reporting;
2. Updates to the voluntary noise mitigation procedures;
3. A new approach to community noise management communication; and

4. The completion of a land use planning review.

2.6.1 Noise Concern Tracking, Analysis, and Reporting

Overview

The Interim Recommendations Report identified a gap in the availability of noise concern data which limited the ability of HM Aero and District Staff to reliably track, analyze, and report the extent and severity of community concerns. Accordingly, it was recommended that a noise concern feedback and tracking system be implemented by the District and that subsequent reporting to District Council occur.

Implementation

The target timeline for implementation of the online noise concern feedback and tracking system was July 2022, with subsequent evaluation to occur following the 2022 peak operational season in Q4-2022. The following was completed by District Staff and HM Aero in the implementation of this action item:

1. In late June 2022, HM Aero researched noise concern systems at other airports in Canada and provided a submission to District Staff outlining the requested fields for data reporting;
2. District Staff completed research on required disclaimers with respect to personal information collection; and
3. The Squamish Airport Online Noise Concern Submission Form went live in July 2022 on squamish.ca/our-services/airport/noise-mitigation.

Evaluation

From an implementation perspective, the development of the Online Noise Concern Submission Form was completed. In the opinion of District Staff and HM Aero, the data collection fields of the Form will enable detailed analysis of noise concerns pending the receipt of inputs from residents.

Between August 21, 2022 and April 21, 2023, a total of four responses have been received through the Online Noise Concern Submission Form.

Recommendations

The number of standardized noise concerns received between August 21, 2022 and April 21, 2023 limits the ability of HM Aero to analyze the extent and characteristics of noise concerns in neighbourhoods surrounding the Airport. It is recommended that the availability of the Online Noise Concern Submission Form be advertised ahead of the 2023 peak operational season to improve community-level awareness.

As all fields are optional and noise concern data is of value for future analysis, changes to the Form inputs are not recommended.

2.6.2 Voluntary Noise Mitigation Procedure Updates

Overview

The Interim Recommendations Report identified two additional voluntary noise mitigation procedures recommended for inclusion in the Canada Flight Supplement (CFS) with the intent of reducing the frequency of overflights during operational hours and in the mornings and evenings:

1. That departures would voluntarily be restricted before 8:00 AM and after 8:00 PM unless approved by the District, with the exception of air ambulance and emergency missions. Arrivals would be permitted outside of these hours to limit unsafe pilot decision-making that may result from rushing to return to the Airport (e.g., flying through inclement weather); and
2. That continuous circuit training flights by visiting aircraft would be limited except where approved by the District. The intent would be that authorization would not be provided unless occurrences are at a time that will minimize noise impacts. The existing Airport tenants would be excepted from this voluntary restriction.

The first procedure was modified following the June 21, 2022 District Council meeting as operators based at the Airport expressed concern that departure restrictions would significantly impact their operations. This procedure was modified to restrict circuit training during the noted hours.

Implementation

The target timeline for the submission of the voluntary noise mitigation procedures was June 2022, with their publishing in the CFS by NAV CANADA to occur in November 2022. The following was completed by District Staff and HM Aero in the implementation of this action item:

1. In June and July 2022, HM Aero and District Staff completed a review of the Airport's CFS entry and identified additional areas to be updated, including the voluntary noise mitigation procedures;
2. On August 4, 2022, HM Aero submitted the requested CFS updates to NAV CANADA. A Notice to Air Missions (NOTAM) was published by NAV CANADA advising pilots of the publication changes in the interim; and
3. NAV CANADA published the CFS updates through its December 29, 2022 revision and the NOTAM was subsequently closed.

Evaluation

The publishing of the voluntary noise mitigation procedure updates is complete, having gone live within approximately 1.5 months of the June 2022 target and been published by NAV CANADA within 1 month of the November 2022 timeline. Further, the interim NOTAM communicated this voluntary restriction in advance of the CFS update.

Operators at the Airport have accepted the new voluntary procedures and, to HM Aero's knowledge, have not expressed significant concerns since their implementation. Feedback has not been received from the community as to the effectiveness / impacts of the new voluntary procedures.

Recommendations

No further voluntary noise mitigation procedure updates are recommended at this time.

It is recommended that a briefing and / or operations bulletin be provided to the tenants of the Airport ahead of the 2023 peak season in July to provide information to local pilots on the voluntary noise mitigation procedures, their intentions with respect to community noise concerns, and address questions.

2.6.3 Community Noise Management Communication

Overview

The Interim Recommendations Report identified an opportunity for proactive communication and information sharing to become components of the District's overall approach to noise management. A two-part approach was recommended:

1. That noise management information be added to the District's webpage, including the voluntary noise abatement procedures, the intent of the current lease language regarding noise, the role of Transport Canada, guidance on how noise concerns are handled, and overviews of each of the Airport tenants and common aircraft operators. The intent was to provide a clear source of information to proactively address common questions and concerns;
2. That an email-based resident mailing list be used to proactively inform residents of anticipated heightened periods of activity at the Airport, or abnormal operations that may generate interest or concern in the community. Examples of situations that would trigger an email notification could include spring training for Search and Rescue crews, high intensity rotary-wing wildfire suppression operations, and filming.

Implementation

The action items identified above were targeted for July 2022:

1. A webpage dedicated to noise management at the Airport (squamish.ca/our-services/airport/noise-mitigation/) was launched by District Staff in July 2022; and
2. The resident email sign-up list was launched in July 2022.

Evaluation

The noise management webpage updates provide a clear source of information on a range of matters in this subject matter area. Evaluating whether the proactive communication of this information to residents has achieved its intended outcomes is not possible.

No updates have been sent by the District through the email-based resident mailing list.

Recommendations

The need for further updates to the noise management webpage have not been identified at the time of this report's preparation.

The resident email notification system is a tool to proactively address resident noise concerns during heightened periods of activity at the Airport. The following steps are recommended for implementation ahead of the 2023 peak operational season to increase the success for this tool:

- That the resident notification system be advertised concurrent with recommended communication about the noise concern system through the District's various modes (Section 2.1.1);
- That District Staff proactively communicate with the tenants of the Airport to explain the intent of the notification system and request their voluntary participation through the provision of updates from tenants to the Airport Ambassador; and
- That the Airport Ambassador be assigned the responsibility for coordinating this program on a go-forward basis for the duration of their contract.

2.6.4 Land Use Planning Review

Overview

The Interim Recommendations Report supported the completion of a land use planning review led by the District's Planning Department to explore the use of notification tools to inform future owners and residents of the potential for aircraft noise.

Implementation

The Implementation Strategy anticipated the completion of this action item in the first quarter of 2023. Work on this task has not commenced as of June 2023 due to District Staff capacity challenges.

Evaluation

Not applicable.

Recommendations

Based on further consideration by District Staff and HM Aero, it is recommended that this action item be moved to the scope of work for the Long-Term Strategic Plan scheduled for completion in Q4 2023.

2.7 Tenant Lease Agreements

Overview

Referring to Step 3 of the strategic planning process shown in Figure 1.1, the original intention of the District was to execute short-term (two-year) lease extension agreements with the Airport's existing tenants following the completion of the Interim Recommendations Report. Accordingly, the Interim Recommendations Report evaluated the recreational and commercial lease rates currently paid by tenants at the Airport and recommended that modest increases be charged based on historical inflation since the current rates were adopted in 2009.

Implementation

District Staff's June 21, 2022 Report to Council that accompanied the Interim Recommendations Report noted the following:

Although the initial Airport Strategic Plan scope endorsed by Council in 2021 contemplated the District extending the current month-to-month leases on a short-term basis (2 years), pending completion of the Final Strategic Plan and while the longer-term lease extensions for the existing tenants were analyzed and evaluated, it is recommended not to extend the leases of the existing tenants on a short-term basis at this time until the District has:

- *Reviewed the impacts of the Interim Recommendations this summer; and*
- *Determined clearly how the results from the summer season effectively support noise mitigation measures throughout future lease negotiations.*

It is contemplated that the short-term lease renewal process originally contemplated for this summer will occur later this fall [of 2022].

The Interim Recommendations Report therefore provided a timeline for short-term lease negotiations to begin in Q4 2022 and end in Q1 2023, with approval by District Council targeted at the end of Q1 2023. This action item was paused following the completion of the Interim Recommendations Report to allow for the collection on aircraft movement data and the implementation / evaluation of the Interim Recommendations Report to support informed decision-making. All tenants continue to operate at the Airport on month-to-month lease agreements at their original lease rates.

Evaluation

This action item has been paused.

Recommendations

It is recommended that consideration be given to preparing for the negotiation and execution of long-term lease agreements with the tenants of the Airport in Q1 2024, pending the findings and recommendations of the Long-Term Strategic Plan.

3 2022 PEAK SEASON AIRCRAFT ACTIVITY REVIEW

Following the completion of the Interim Recommendations Report in June 2022, District Staff, HM Aero, and the Airport Ambassador worked collaboratively to implement an aircraft movement tracking system to amass a dataset that could be used to support more detailed analyses of activity at the Airport, inform long-term lease negotiations, and assist in noise management tracking efforts and data-driven mitigation measures. At the time of this report's preparation, aircraft movement data was available from August 5, 2022 to March 8, 2023. The partial month data for March has not been included in the discussions below. While technical errors may occur during the logging of aircraft activity, overall accuracy is estimated at approximately 95%.

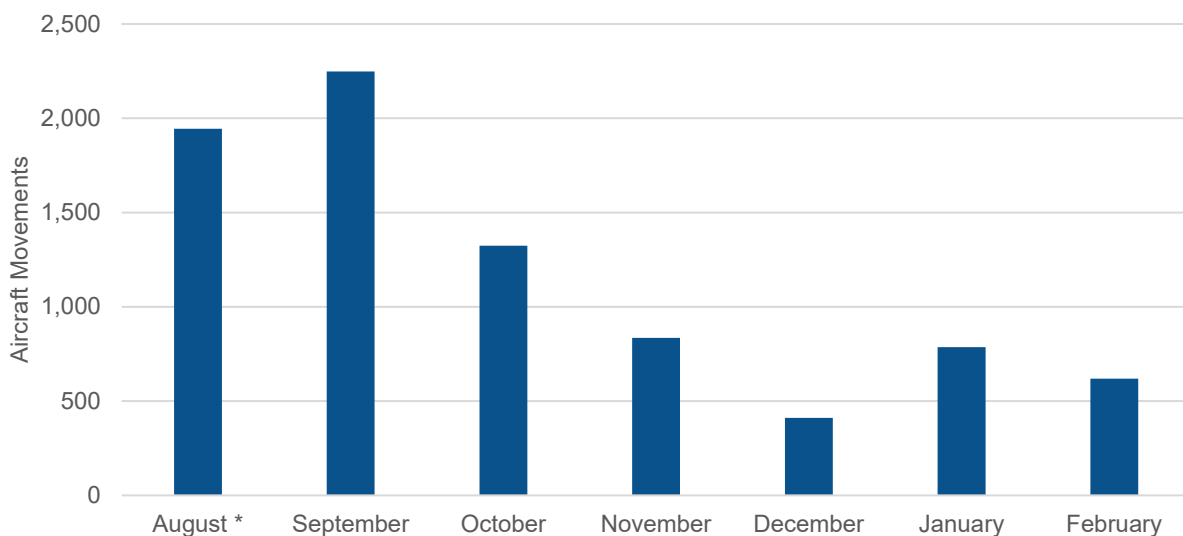
A single record is logged for each of the following types of aircraft movements:

- Landings;
- Take-offs;
- Aborted Take-offs;
- Touch and Go's / Stop and Go's;
- Overshoots / Missed Approaches; and
- Other.

3.1 Distribution of Activity by Month, Day, and Time

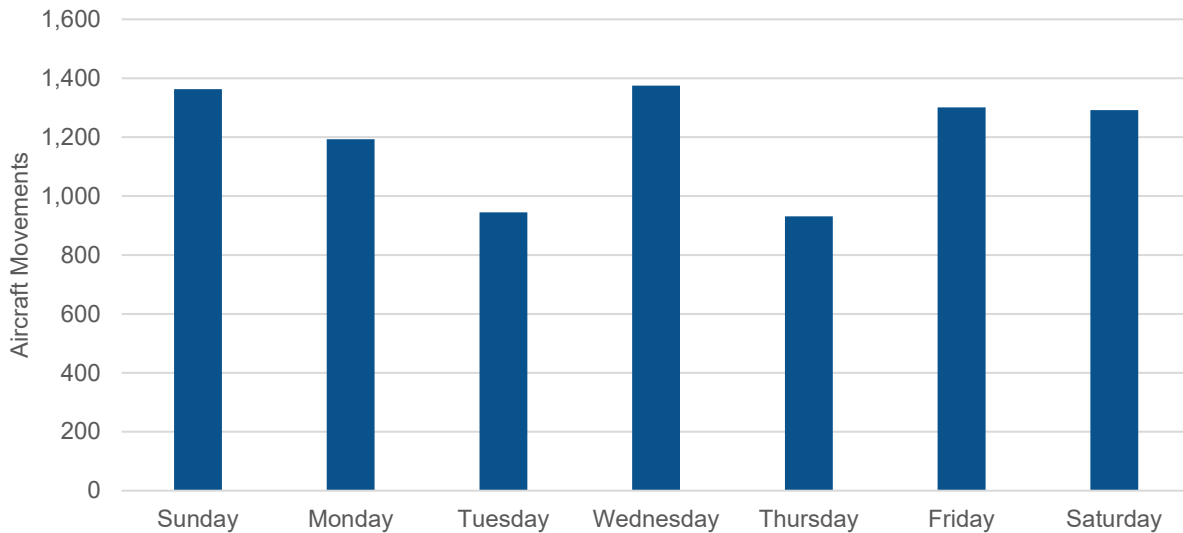
Reference has been made through the Spring 2023 Update Report and preceding documents on the seasonal peak in operations experienced at the Airport from May to October. A total of approximately 1,900, 2,200, and 1,300 movements were recorded in August, September, and October, respectively (Figure 3.1). Activity decreased to 800 movements in November, 400 in December, 800 in January, and 600 in February. Based on this data, activity levels in peak months are approximately 177% busier than off-peak months, highlighting the seasonality of aircraft operations.

Figure 3.1 - Total Aircraft Movements by Month



Aircraft activity varies by the day of the week. As shown in Figure 3.2, activity is at its highest on Friday, Saturday, Sunday, and Wednesday, with between 1,300 and 1,400 movements recorded on these days of the week across the seven-month dataset. Activity decreases on Mondays to a cumulative total of 1,200 movements and on Tuesdays and Thursdays to a cumulative total of 900 movements.

Figure 3.2 - Total Aircraft Movements by Day of Week



The Airport is not equipped with the lighting infrastructure required to regularly support operations during hours of darkness; therefore, aircraft activity is concentrated during the hours of daylight. As shown in Figure 3.3, approximately 2% of all movements occurred before 8:00 AM. Activity increases past 8:00 AM, with 13% of all movements taking place between 8:00 and 10:00 AM. Aircraft movements are concentrated in the midday and afternoon (10:00 AM and 4:00 PM), comprising 62% of all activity. Activity in the late afternoon (4:00 PM to 6:00 PM) decreases and represents 16% of all movements, with the remaining 7% of all logged movements occurring after 6:00 PM. A total of 4 movements were recorded over the seven-month data period in the early morning (5:00 AM – 6:00 AM) and late evening (9:00 PM – 11:00 PM) hours.

Figure 3.3 - Total Aircraft Movements by Hour of Day

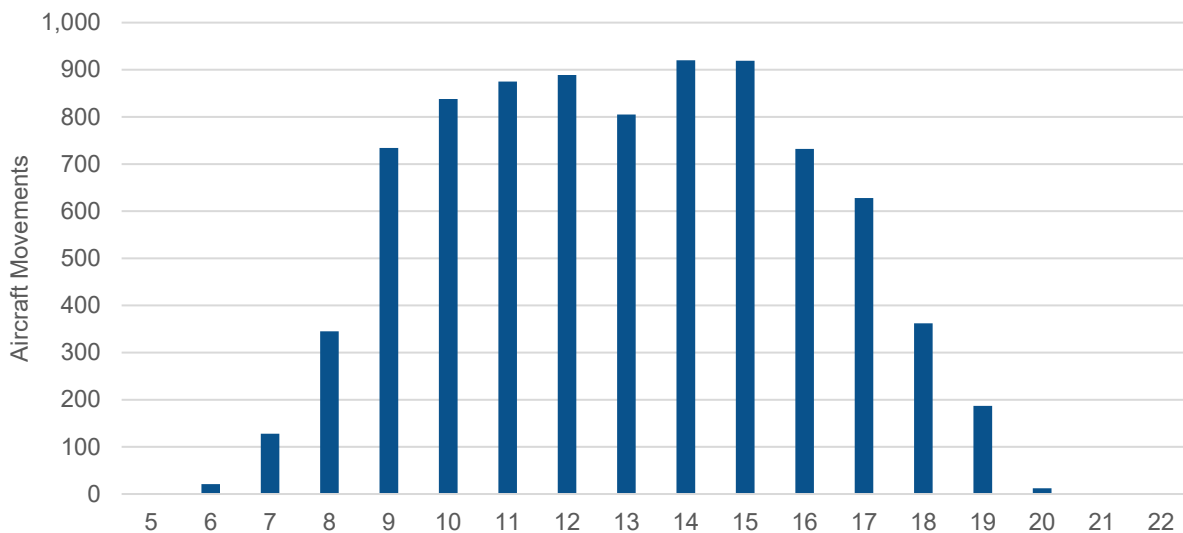


Table 3.1 illustrates how the distribution of aircraft activity by time of day varies throughout the year with the hours of daylight / darkness. Activity in the late summer and early fall is largely distributed between 7:00 AM and 8:00 PM. This incrementally decreases into the fall and winter; by December, activity is limited to between 8:00 AM and 5:00 PM. As noted previously, aircraft movement levels decrease from their May to October peak with the hours of daylight being one factor among others (e.g., business demand, prevalence of Visual Meteorological Conditions, etc.).

Table 3.1 - Distribution of Aircraft Movements by Hour of Day and Month

Hour	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Average
0600	1%							< 1%
0700	2%	2%	2%				1%	2%
0800	5%	5%	5%	2%	1%	2%	3%	4%
0900	11%	11%	10%	3%	7%	6%	4%	9%
1000	11%	9%	11%	11%	12%	9%	7%	10%
1100	11%	11%	9%	13%	10%	8%	7%	10%
1200	9%	8%	8%	19%	17%	13%	11%	11%
1300	9%	7%	9%	13%	16%	14%	7%	10%
1400	6%	7%	11%	15%	19%	18%	14%	11%
1500	8%	8%	10%	16%	11%	17%	20%	11%
1600	7%	8%	9%	6%	5%	11%	20%	9%
1700	9%	10%	12%	1%		1%	6%	7%
1800	5%	9%	4%					4%
1900	6%	3%						2%
2000	1%							< 1%
Total	100%	100%	100%	100%	100%	100%	100%	100%

3.2 Activity by Operator

Activity at the Airport can be classified according to:

1. The tenants permanently based at the Airport pursuant to a leasehold agreement established with the District (Blackcomb Aviation, Black Tusk Helicopter, Glacier Air, Sea to Sky Air, and Squamish Flying Club); and
2. Itinerant operators based at other airports and / or without leasehold agreements with the District that make use of the facility on a non-permanent basis.

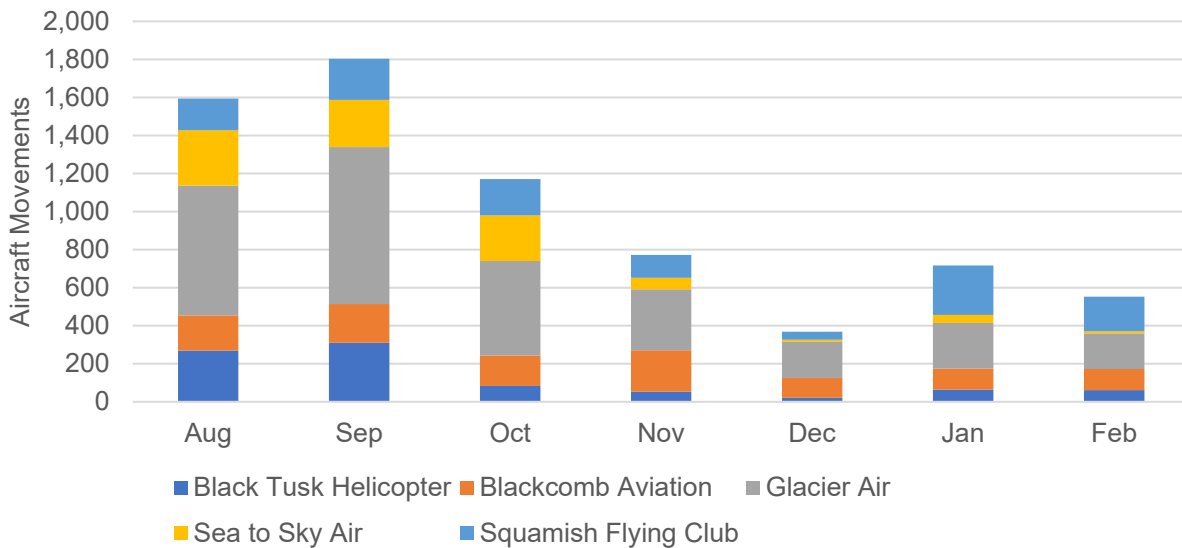
As shown in the 8,400 aircraft movements recorded across the seven-month dataset, approximately 7,000 (83%) were attributed to tenants of the Airport (Table 3.2). Approximately 800 movements were operated by itinerant users (9%), and a further 600 movements (8%) could not be accurately classified. The five tenants with leasehold agreements with the District therefore are responsible for the significant majority of the operations at the Airport.

Table 3.2 - Distribution of Aircraft Movements by Operator

Operator Classification	Total Movements	Proportion of Movements
Airport Tenants	6,968	86%
Glacier Air	3,015	36%
Squamish Flying Club	1,295	15%
Blackcomb Aviation	1,112	13%
Sea to Sky Air	917	11%
Black Tusk Helicopter	884	11%
Itinerant Operators	533	6%
Unclassified	647	8%
Total	8,400	100%

The distribution of movements by month across the Airport’s five tenants is shown in Figure 3.4. Descriptions are provided for each operator below.

Figure 3.4 - Tenant Aircraft Movements by Month



Glacier Air is the largest operator on the basis of the number of movements performed across the dataset, operating just over 3,000 movements representing 36% of all activity. Glacier Air is a Transport Canada-approved Flight Training Unit, aerial work / air taxi provider, and a registered institution with the Private Training Institution Branch of the Ministry of Advanced Education and Skills Training. While the specific purpose of each flight is not recorded, a significant proportion of the movements logged for Glacier Air is expected to be a result of their flight training operations. In August and September, approximately 700 and 800 movements were recorded, respectively. This decreased to 500 movements in October and 300 movements or less in the subsequent winter months.

The Squamish Flying Club's members operate smaller general aviation aircraft for pleasure and business-related purposes. Approximately 1,300 movements were attributed to members of the Squamish Flying Club across the seven-month data period, with an average of 200 to 300 movements recorded per month in August, September, October, January, and February and approximately 100 or fewer movements in November and December.

Blackcomb Aviation is a commercial rotary-wing operator and the third largest contributor to movement activity at the Airport during the data period, with approximately 1,100 movements recorded. Blackcomb Aviation operated an average of 200 movements per month from August to November, with activity decreasing to 100 movements per month from December to February.

Sea to Sky Air is a fixed-wing air taxi and aerial work provider that provides aerial sightseeing packages and charter services. Approximately 900 movements were logged for Sea to Sky Air, ranging between 200 and 300 per month from August to October and decreasing to less than 100 per month from November to February.

Black Tusk Helicopter is a multiservice commercial helicopter operator. Black Tusk generated the lowest number of movements (approximately 900) across the five Airport tenants in the seven-month data period. Approximately 300 movements were logged for Black Tusk Helicopter in August and September, decreasing to less than 100 movements per month in the following five months.

3.3 Runway Utilization

Runway 15-33 supports aircraft arrivals and departures at the Airport. Wind conditions influence pilot decision-making, as optimum performance and safety are achieved when departing into the wind:

- When Runway 15 is in use, aircraft approach from the northwest and depart to the southeast, overflying the Brackendale neighbourhood and Waiwakum Reserve at the highest power settings while climbing; and
- For Runway 33 operations, aircraft approach from the southeast and depart to the northwest. In calm wind conditions, Runway 33 is the preferred runway for use as it routes aircraft operating at their highest power settings away from residential areas to the south.

The choice of which runway to use is solely at the pilot's discretion, and a wind direction indicator is provided near the Runway 15-33 / Taxiway A to assist in pilot decision making.

Across the seven-month dataset, the utilization of Runways 15 and 33 was nearly equal, with the calm-wind preferred Runway 33 used for 48% of all aircraft movements (Table 3.3). When analyzing runway utilization data by month, trends emerge that demonstrate the changes throughout the year. During the peak operational months (August, September, and October), the utilization of the calm wind-preferred Runway 33 ranges between 24% and 41%. From November to January, utilization of Runway 33 increases significantly to between 84% and 89%, before declining again to 53% in February.

As described previously, activity in the peak operational months is at its highest when the utilization of Runway 33 is at its lowest.

Table 3.3 - Distribution of Aircraft Movements by Runway and Month

Runway	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Average
Proportion of Movements								
15	76%	66%	59%	16%	11%	12%	47%	52%
33	24%	34%	41%	84%	89%	88%	53%	48%
Total	100%	100%	100%	100%	100%	100%	100%	100%
Count of Movements								
15	1487	1471	783	132	44	91	288	4,398
33	457	774	541	703	367	692	331	3,996
Total	1,944	2,245	1,324	835	411	783	619	8,394

Historical weather data from a third-party source (WeatherSpark.com) provides a high-level overview of how wind conditions vary in Squamish over time using data from Environment and Climate Change Canada. As shown in Figure 3.5, wind speeds are generally at their lowest in the spring, summer, and fall (April until October). Wind speeds generally increase from November to March. However, wind directions also vary throughout the year; as shown in Figure 3.6, the prevailing wind direction from April to October is generally from the south, favouring Runway 15 operations despite the lower wind speeds during these months. From a noise exposure perspective, this creates a unique set of conditions:

- The number of aircraft movements peaks between May and October, maximizing the potential disturbance to nearby residents;
- Although wind speeds generally decrease during the peak season, their direction often favours the use of Runway 15 which maximizes the exposure to residents of aircraft operating at their highest power settings; and
- While the utilization of Runway 33 is very high in the winter months, activity at the Airport is at the lowest level during this period.

It should be noted that the discussion provided above is high-level in nature and actual wind conditions between August 2022 and February 2023 may vary from the historical averages from WeatherSpark.com that have been reported.

Figure 3.5 - Average Wind Speeds at Squamish Municipal Airport (© WeatherSpark.com)

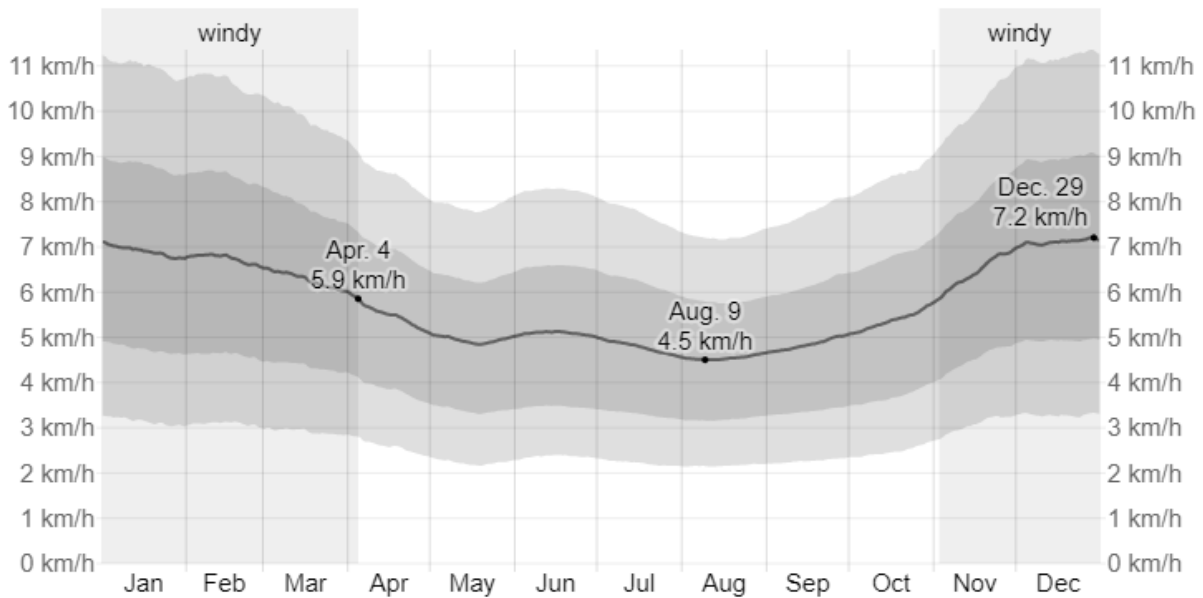
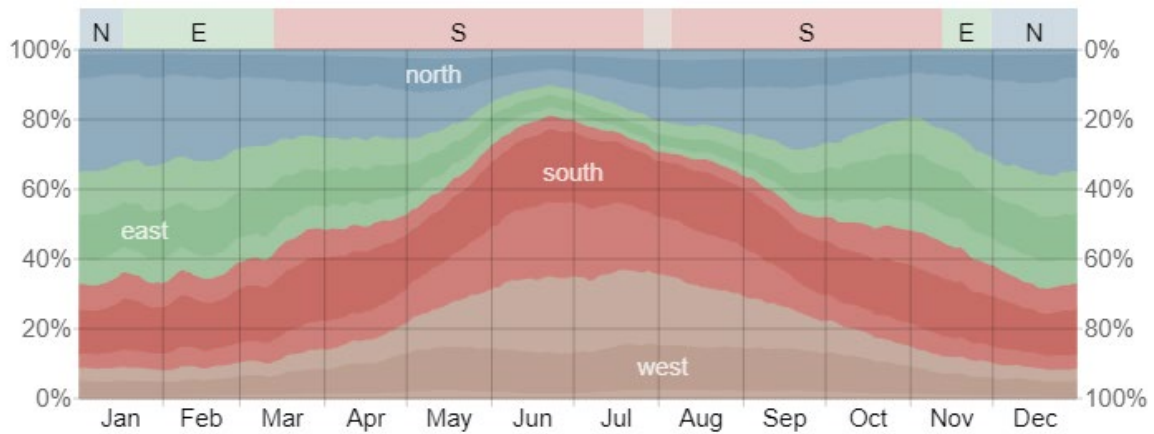


Figure 3.6 - Average Wind Directions at Squamish Municipal Airport (© WeatherSpark.com)



When comparing runway utilization by the five aircraft operating tenants of the Airport, generally similar usage levels are observed as shown in Table 3.4. Average utilization levels across the seven-month dataset are consistent by tenant from the average across all operators, $\pm 6\%$. On a month-by-month basis, the utilization by tenant is again generally comparable across the dataset average with select exceptions that may be explained by other operational factors. This dataset represents a partial year and further analysis will be completed once a full 12-month dataset is available.

Table 3.4 - Distribution of Aircraft Movements by Runway, Month, and Tenant

Runway	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Average
All Operators								
15	76%	66%	59%	16%	11%	12%	47%	52%
33	24%	34%	41%	84%	89%	88%	53%	48%
Glacier Air (Fixed-Wing)								
15	76%	60%	49%	14%	6%	3%	39%	46%
33	24%	40%	51%	86%	94%	97%	61%	54%
Sea to Sky Air (Fixed-Wing)								
15	79%	67%	48%	18%	0%	0%	50%	58%
33	21%	33%	52%	82%	100%	100%	50%	42%
Squamish Flying Club (Fixed-Wing)								
15	79%	65%	79%	24%	24%	16%	59%	54%
33	21%	35%	21%	76%	76%	84%	41%	46%
Blackcomb Aviation (Rotary-Wing)								
15	78%	81%	75%	9%	3%	9%	53%	48%
33	22%	19%	25%	91%	97%	91%	47%	52%
Black Tusk Helicopter (Rotary-Wing)								
15	75%	61%	75%	17%	10%	23%	31%	57%
33	25%	39%	25%	83%	90%	77%	69%	43%

4 IMPLEMENTATION STRATEGY

As examined in Section 2, progress will continue to be required on implementing the action items provided in the Interim Recommendations Report, including on items previously scheduled for completion that have not been finalized. Updated timelines are provided in Table 4.1.

Table 4.1 - Interim Recommendations Report 2023 Action Items

Recommendation	Status (May 2023)	Target Completion
Apron Management		
Repairs to gravel itinerant parking positions	New Recommendation	Summer 2023
Airport Administration		
Third-party provision of Airport Ambassador services	Ongoing Initiative	Continuation during upcoming summer season
Airport Operations		
Winter maintenance by District Public Works Division	Ongoing Initiative, Future Options for Service Being Analyzed	2023-24: Continuation by Public Works Division 2025+: Future options being assessed in the Strategic Plan
Rules and Regulations		
Installation of rules and regulations signage	New Recommendation	July 2023
Airport bylaw enforcement	Ongoing Initiative	Ongoing
Other Recommended Initiatives		
Aircraft Movement Logging System	Ongoing Initiative	Continuation during upcoming summer season
Review of Online Aeronautical Fees Payment Functionality	New Recommendation	Summer 2023
Taxiway Strip Clearing	In Progress	Summer 2023
Pilot Acknowledgement Form	In Progress	Summer 2023
Airside Signage Replacements	In Progress	July 2023
Obstacle Limitation Surface Surveying and Clearing	In Progress	December 2023
Noise Management		
Start of peak season outreach to residents on the Airport noise program and concern submission system	New Recommendation	In Progress / Ongoing
Start of peak season noise program operational briefing / bulletin to Airport operators	New Recommendation	July 2023
Commencement of use of community noise update email notification system	Partial Implementation	Summer 2023
Land use planning review	Not Started	September 2023

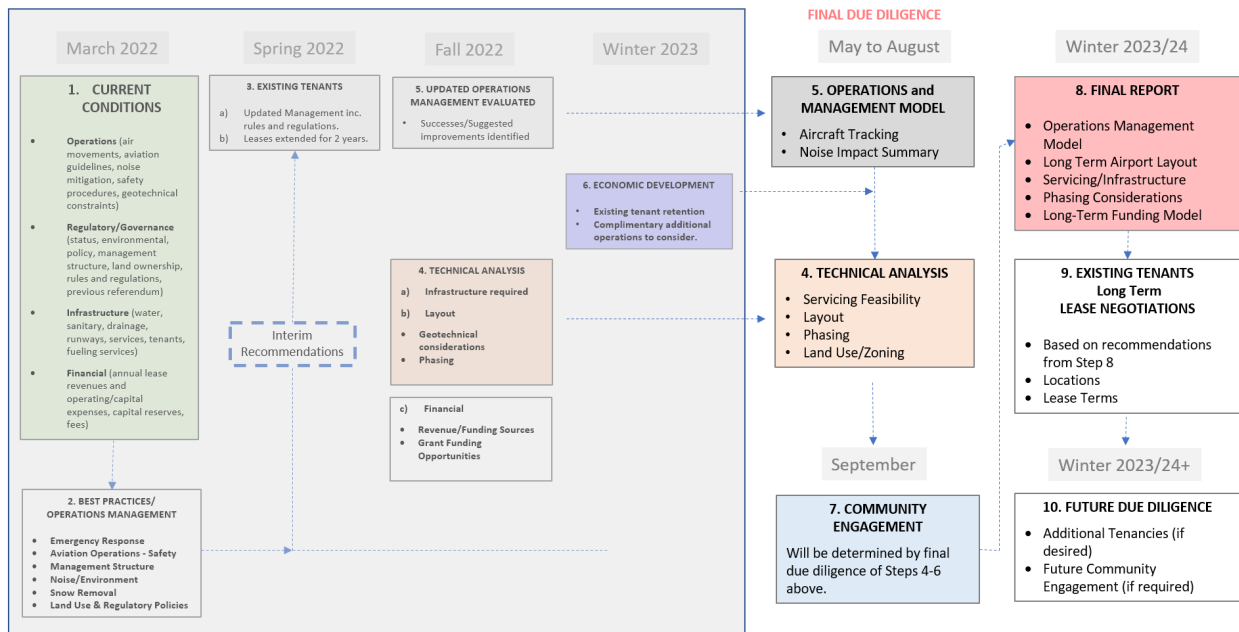
In addition to the progress on the spring 2022 interim operational recommendations, work is currently underway by District Staff and HM Aero on the Long-Term Strategic Plan. The grey area shown in Figure 4.1 identifies the categories of work that have been advanced on the Long-Term Strategic Plan to-date, including the:

- Site constraints analysis;
- Policy considerations analysis
- Review of landownership considerations;
- Preliminary identification of potential business opportunities;
- Preliminary Airport Layout Plan;
- Servicing requirements and cost estimates; and
- Capital funding models.

Steps 4 – Technical Analysis and 5 – Operations and Management Model are planned for continued due diligence between May and August 2023 prior to Step 7 – Community Engagement. The type and areas of focus of future community engagement will be informed based on the outcomes of the Long-Term Strategic Plan due diligence process.

Based on the work completed to-date, it is possible to provide further clarity on the next steps required to complete the Long-Term Strategic Plan and revised estimates for completion. After this report is reviewed and endorsed by District Council, HM Aero and District staff will advance the completion of the Long-Term Strategic Plan. The initial Airport Strategy Process Scope endorsed by District Council in December 2021 (Figure 1.1) is proposed to be updated as shown in Figure 4.1.

Figure 4.1 - Updated Airport Strategy Process Scope



Supported by Real Estate Services, Communications, Engineering and Economic Development.
As explained in RFP, interim recommendations from Step 1 and 2 will support Steps 3a and b and the Final Report for long-term airport operations.
Also the Final Report will provide recommendations to support Steps 9 and 10.



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