BRIEFING NOTE

PEET AVIATION
CONSULTANTS TO THE AVIATION INDUSTRY

FROM: BRIAN WHELAN

SUBJECT: TE KOWHAI AERODROME 32A QUESTIONS

DATE: 21 JULY 2020

Scope

- Waikato District Council requires support for the Council Planning Team with assistance to respond to aviation related questions
- The existing environment
- Questions Raised

The Te Kowhai Aerodrome

The Proposed Waikato District Plan notified in 2018 included provisions allowing for development of Te Kowhai aerodrome (NZTE) and airpark, near Hamilton. Technical issues raised in submissions involve the obstacle limitation surface and aircraft noise, including the effects of aircraft operating under instrument flight rules. In June 2020 Variation 1 was notified amending the obstacle limitation surface. Public submissions on Variation 1 are currently open, closing in late July.

Figure 1: Te Kowhai Aerodrome

The Existing Environment

Te Kowhai Aerodrome

There is a single grass airstrip 983m x 15m with VFR daylight, light aircraft traffic movements. The Aerodrome is privately owned. There is currently no airfield lighting enabling night VFR operations.

NZTE is a non-certificated and uncontrolled with the airspace surrounding the aerodrome uncontrolled up to 2,500'. Above 2,500' the airspace is controlled to protect the departures and arrivals to Hamilton International Airport.

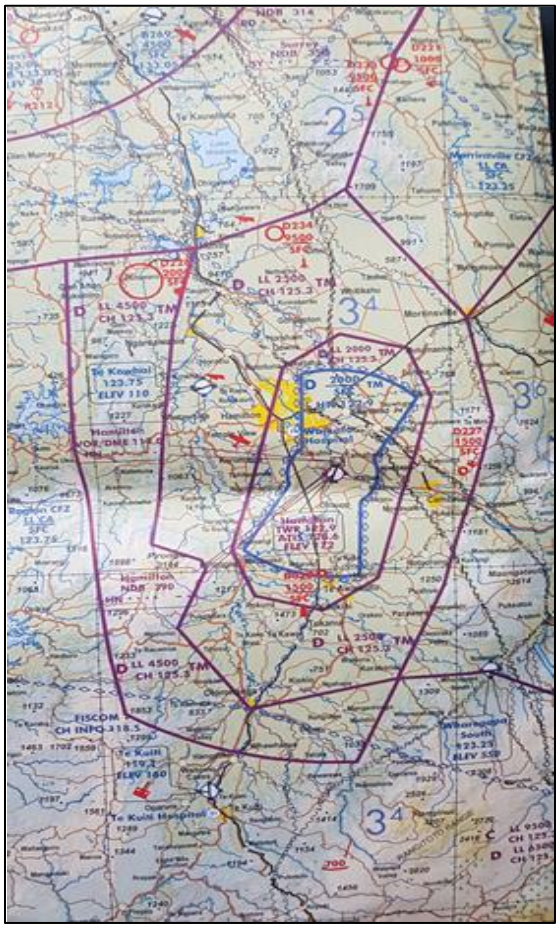

Figure 2: Airspace Hamilton region

Questions have been raised in respect to the District Plan, proposed Variation 1, where the aerodrome operator requests a change to allow for IFR (Instrument Flight Rules) activity. This Variation may necessitate the introduction of a new OLS (Obstacle Limitation Surface)[1] to enable IFR activity.

Current operations activity is through Part 91 General Operating and Flight Rules. The Current OLS is Aerodrome based, whereas the Variation 1 proposal is an OLS enabled for IFR operations.

Although objects may penetrate the 1.2 percent slope of the current OLS, there is no need to remove any which are beneath the aerodrome design take-off climb surface. However, all objects shown are accountable in the calculation of the aircraft take-off performance.

The IFR OLS is based on ICAO[2] PANS-OPS Surfaces. The PANS-OPS surfaces are used in the construction of instrument flight procedures. They are designed to safeguard an aeroplane from collision with obstacles

[1] CAANZ AC139-10-Control of Obstacles
[2] ICAO: International Civil Aviation Organisation

when flying on instruments. Pilots use minimum safe altitudes, established for each segment of the instrument procedures, which are based on obstacle clearances in the procedure areas.

Instrument flight procedure obstacle free surfaces sizes and dimensions do not usually coincide with the aerodrome design obstacle limitation surfaces.

In New Zealand, the PANS-OPS OLS surfaces are, in general, associated with Part 139 certified aerodromes.

Questions Raised

Intrusions through the Airport OLS – Waikato District Council Planning Team

The Airport Obstacle Limitation Surface –

- Is it that obstacles (buildings, structures, trees and vegetation) should <u>never protrude</u> through the OLS under any circumstances?
- Is it that obstacles (buildings, structures, trees and vegetation) <u>may be able to</u> protrude through the OLS only in specific circumstances?
- Is it that obstacles (buildings, structures, trees and vegetation) may on <u>a general basis</u> be able to protrude through the OLS as long as they have some form of assessment (through a resource consent process)?

Response: The Aerodrome OLS is different to the IFR OLS. There is a grey area here as NZTE is a Part 91 operations non-certified aerodrome, however, introduction of IFR OLS is associated with Part 139 certified aerodromes through ICAO PANS-OPS Surfaces. CAANZ AC139-10-Surfaces[3] provides guidance.

With the aerodrome OLS, objects may penetrate the OLS, except the take-off climb surface remains clear provided an object is below the surface. With the IFR OLS, no objects may penetrate the OLS, therefore it is more restrictive.

Waikato Regional Airport Limited submission

Waikato Regional Airport Limited [664.1] who are the administering authority for Hamilton Airport advise that they are supportive of aspects of the proposal that facilitate recreational aviation in the region but they object to the proposal due to aeronautical safety considerations. Waikato Regional Airport Limited further advise the following:

Activities that have the potential to intensify aeronautical activity to a commercial scale in close proximity to Hamilton Airport and our airspace present a greatly increased threat to users of our airport. Our view is that modifying the obstacle limitation surface at Te Kowhai to permit traffic at night or under instrument flight rules further compromises safety in contrast to simply increasing the volume of the current types of air traffic known to operate at Te Kowhai by encouraging faster, more high performance aircraft to operate in vicinity of Hamilton Airport, without reference to our Air Traffic Control.

We have not been provided with the results of any aeronautical safety study that addresses, identifies and proposes any mitigation to increased air traffic in proximity to the airspace and approach paths flown by scheduled airline traffic at Hamilton Airport.

Response:

Night Flying: I am not aware Variation 1 allows for night flying. Night flying activity would necessitate the provision of a runway lighting system at NZTE. The current OLS is sufficient for night VFR operations, provided the runway has suitable runway lighting.

[3] AC: Advisory Circular, provides guidance for compliance

IFR OLS: This is more restrictive than the current OLS and provides protection to aircraft for IFR arrivals and departures, to NZTE if approved through Variation 1. WRAL are concerned the potential for IFR activity at NZTE would increase the risk of a compromise to safety for aircraft operations to and from Hamilton International Airport in airspace in the vicinity. NZTE would need to install suitable aerodrome lighting along the runway enabling night operations activity, either VFR or IFR.

Controlled airspace in the NZTE area commences at 2,500'. NZTE is a non-certified uncontrolled aerodrome. IFR procedures; approach, landing, takeoff and departure can be designed for non-certified aerodromes. New Required Navigation Performance (RNP)[4] procedures can be implemented at NZTE, either through the use of the current OLS, as operations at NZTE are through Part 91 General Operating Procedures and this would have the effect of a higher minimum descent altitude for an IFR approach, or the introduction of an IFR OLS and a lower minimum descent altitude. In either situation the design of the procedures would be contained within the current uncontrolled airspace surrounding NZTE and separation maintained with the controlled airspace for arrivals and departures to Hamilton International Airport.

The introduction of IFR operations at NZTE may or may not enable faster high-performance aircraft. Current Light Sport Aircraft (LSA) have IFR capability and some are high performance aircraft, these aircraft may currently operate to NZTE VFR. The limiting factor for aircraft operations, size and performance at NZTE, is the aerodrome dimensions, runway dimensions, runway surface and runway infrastructure.

Aircraft can operate inside and outside of controlled airspace. The airspace immediately surrounding NZTE is uncontrolled and at 2,500' controlled airspace commences and aircraft transiting into this airspace would be communicating with Airways Air Traffic Control. Closer to Hamilton International Airport aircraft would be in direct communication with Air Traffic Control Tower located at the airport when within the airport traffic zone. More detailed analysis would be required to establish if increased activity at NZTE, either VFR or IFR, would increase risk and compromise aviation safety for aircraft operations at Hamilton International Airport.

Aeronautical Study: An aeronautical study is a tool used to review aerodrome and airspace processes and procedures to ensure that safety is maintained, and risk managed. The study can be undertaken in a variety of ways using various analytical methods appropriate to the aeronautical study requirements.

An aeronautical study should include the use of;

- ✈ current state review (baseline position)
- ✈ quantifiable data analysis
- ✈ stakeholder interviews
- ✈ safety/risk matrix

In general, an aeronautical study should be viewed as providing an overarching document giving a holistic view of an aerodrome's operational environment e.g. the macro perspective as compared to a safety case study which is a task specific document e.g. the micro view.

An aeronautical study may contain many elements; however, risk assessment, risk mitigation and risk elimination are key components. Additionally, there may be aviation system constraints.

The goal of risk management in an aeronautical study is to identify risks and take appropriate action to minimise risk as much as is reasonably practicable. Decisions made in respect of risks must balance the technical aspects of risk with the social and moral considerations that often accompany such issues.

These decisions may have significant impact on an aerodrome's operation and for an effective outcome there should be a level of consensus as to their acceptability among the key stakeholders.

[4] RNP: These procedures use satellite navigation for aircraft positioning currently through the GPS satellite constellation

WRAL appear to request a Safety Study, a micro view, rather than an overarching aeronautical study, clarification should be sought from WRAL on this.

Limiting aircraft traffic movement at NZTE may be an option to mitigate safety risk.

Activities

Mr G Metcalf has requested that Council control flight training school and circuit training in the District Plan. Mr Metcalf requested those terms be defined so it is clear what is being controlled.

Fight training school definition

The Civil Aviation Rules (document date 20 July 2018) defines "Flight Instruction" as the following:

"means instruction in the control of aircraft in basic and advanced flight manoeuvres; and includes instruction in respect of conversion from fixed-wing to rotary-wing aircraft or from rotary-wing to fixed-wing aircraft."

I propose that a definition for "flight training school" be as follows:

"Means land and / or buildings used for the instruction or training in the control of aircraft in flight manoeuvres."

- Is there any aspect of a flight training school that is missing / unclear from the definition above?
- What about training in the checks required before and after flight?
- What about training in how to maintain your aircraft?

Response: Is the definition for a flight training school? For example, these are ground based facilities such as hangars, classrooms, briefings rooms and administration area, whereas, flight instruction is airborne specific and directly related to control of the aircraft.

The proposed definition would appear to be attempting to define two separate issues, one being physical ground-based assets and the other airborne aircraft manoeuvres.

Recommendation: The proposed definition should not be used.

Physical ground-based assets, buildings etc. are assumed to be regulated through the District Plan as it is currently written and the applicable building code.

Airborne flight instruction definition should remain with the CAANZ definition, either through reference to the appropriate CAANZ document reference, or through inclusion into the District Plan as found in CAANZ documentation: *"Flight Instruction; the control of aircraft in basic and advanced flight manoeuvres; and includes instruction in respect of conversion from fixed-wing to rotary-wing aircraft or from rotary-wing to fixed-wing aircraft."*

Recommendation: Incorporate the CAANZ definition, for flight instruction, into the District Plan through reference to the applicable CAANZ Documentation.

Circuit training definition

The NZ CAA website advises that *"The circuit is an orderly pattern used to position the aeroplane for landing and minimise the risk of collision with other aircraft."*[5] Based on this, I consider an appropriate definition for circuit training would be as follows:

'Training in the pattern used to position the aeroplane for landing and take-off.'

- Is there any aspect of circuit training that is missing / unclear from the definition above?
- Is the above definition clear enough for people to easily understand?

Response: Incorporation of CAANZ definition should be by reference to the applicable CAANZ documentation. Alternatively, use the CAANZ definition as written; "Training in the circuit is an orderly pattern used to position the aeroplane for landing and take-off."

Email: 20 July 2020

The additional OLS submission is by SW Ranby submission number 369.

They state: "The extended Obstacle Limitation Surface will allow aircraft to fly lower over affected properties, which will exacerbate adverse noise effects."

Their submission is not clear but when they talk about "lower" they may be comparing it to the Operative District Plan OLS. I would also like you to address this too please in your response to me.

Response:

The IFR OLS is more restrictive for objects penetrating the surface and for aircraft operations. An IFR OLS will not enable aircraft to operate lower over affected properties, than aircraft currently operate.

Noise effects; this is separate to the OLS and is covered through the NZ Standard. I understand NZTE have used the "bucket" approach, circles around the aerodrome with defined noise limits, whereas a certified Part139 aerodrome has more detailed noise contour analysis, especially in the arrival and departure fans.