

Technical Report P

Aviation Assessment

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Redvale Landfill Aviation Assessment Report

Report to WM New Zealand

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1 Summary

WM New Zealand (WMNZ) engaged Mike Haines Aviation to provide technical aviation assessments to understand the effects from a proposal to re-consent Redvale Landfill, north of Auckland. This report presents the findings of the aviation assessment which, in short, reaches the following key findings and conclusions:

- (1) The landfill location is within the Airport Approach Surface Overlay – North Shore Airport in the Auckland Unitary Plan Operative in Part (AUP), with published heights and dimensions that appear to reflect the Obstacle Limitation Surface (OLS) dimensions for the current aerodrome operations.
- (2) In regard to the published Airport Approach Surface Overlay the landfill is located outside of the approach and take-off fans but beneath the horizontal surface.
- (3) The landfill location is not within an area where an aircraft would normally operate to or from the aerodrome.
- (4) The location is approximately 2 kilometres from the aerodrome so almost at the extremity of the horizontal surface area.
- (5) There is a 100 metre contour mapped just beyond the landfill. With a horizontal surface height of 106 m above mean sea level (AMSL), the surrounding terrain is already very close to the horizontal surface. Pilots would be operating much higher noting they must be at least 1,000 feet above ground level unless on the approach or departure tracks.
- (6) The rising ground from the landfill area to the west also restricts aircraft operations to a higher height. As can be seen in Figure 3 in section 6.3 and supported by the aerodrome Aeronautical Information Publication New Zealand arrival and departure requirements, aircraft on runway 03/21 would normally operate north and south clear of the site. For the cross runway 09/27 aircraft would be operated east and west away from the terrain surrounding the landfill location.
- (7) The instrument procedure tracks are clear of the landfill site with a minimum sector altitude of 2,700 ft AMSL.
- (8) The Visual Flight Rules flight paths operate north and south of the location with the circuit pattern clear of the landfill for both runways.
- (9) A pilot on a VFR track would not normally operate directly overhead the site, and if they do, they must be at 1,000 feet above ground level as it is would be deemed a congested area.
- (10) There does not appear to be any current wildlife issues, particularly birds, and there is no evidence of bird strike issues as per data provided by the Civil Aviation Authority (CAA) of New Zealand.
- (11) It would be appropriate to meet with the aerodrome operator and discuss the intended changes and our assessment. This consultative approach would be the best option and possibly provide some support from the aerodrome operator.
- (12) The new area to the southwest is further from the aerodrome and is no higher than the current landfill areas.

Overall, the report concludes that no additional aviation effects are identified from the proposed expansion of Redvale landfill. Based on specialist knowledge of aviation regulations and aerodrome requirements, Redvale Landfill does not present significant obstacles or safety concerns to aerodrome operations at North Shore Airport, nor does it contribute to wildlife risks.

2 Overview

WMNZ operates Redvale Landfill & Energy Park located near Dairy Flat northwest of Auckland city. The site is located within the Airport Approach Surface Overlay as detailed in section D23 of the published AUP. Table D23.6.1.1 details the height specifications for the North Shore Airport. Properties are subject to height controls within the overlay (which at Redvale is at 106.7 metres (m) AMSL) and any activity above the height control is a prohibited activity.

Redvale Landfill is currently consented to a level of 120 m AMSL. WMNZ is proposing to extend the operation of Redvale Landfill to the end of 2036 and develop 4.56 million cubic metres (Mm³) of additional airspace at the existing facility. This includes approximately 3.13 Mm³ in additional Class 1 Landfill expansion on top of the existing Class 1 refuse placement area and 1.43 Mm³ of Class 2 Landfill extension.

As part of the development of additional airspace the following works are proposed:

- **Class 1 landfill expansion:** placement of waste within the existing landfill footprint, involving the removal of final cover and steepening of the final cap slope to accommodate additional waste.
- **Class 2 footprint extension:** extension of the existing landfill to the southwest to accommodate disposal of waste meeting Class 2 landfill waste acceptance criteria (WAC).
- **Relocation of ancillary activities:** the relocation of ancillary activities to allow for the placement of waste.
- **Sediment Retention Ponds:** The removal and filling in of Sediment Retention Pond 6 and the Office Pond while enlarging Pond 1 to capture and treat the stormwater from these catchments.

The proposed Class 1 landfill expansion and the Class 2 extension would have the same maximum post-settlement cap elevation of 106.7 m which complies with the Airport Approach Surface Overlay.

3 Landfill area

Redvale Landfill managed by WMNZ covers an area of 59 hectares close to Dairy Flat north of Auckland. As part of a solution to managing Auckland's waste management needs from 2029-2036 the Redvale Landfill needs to expand the current landfill area.

The vertical height of the landfill will not exceed the current consented maximum height of 120 m AMSL, but the site coverage increases. An additional area of Class 2 extension is proposed with both the Class 1 reprofiling and the Class 2 extension complying with the 106.7 AMSL limit. The new area is on the south and southwest of the Redvale site (see Figure 1) and is identified by the yellow circle.

The proposed area is further away from the North Shore Aerodrome and will be no higher than the current landfill height. Based on the height and location the proposed area poses no additional hazard or risk to the North Shore aerodrome.

Figure 1 shows the proposed Class 2 footprint with Appendix A having the detailed the proposed Class 2 extension and the new proposed post settlement cap contours.

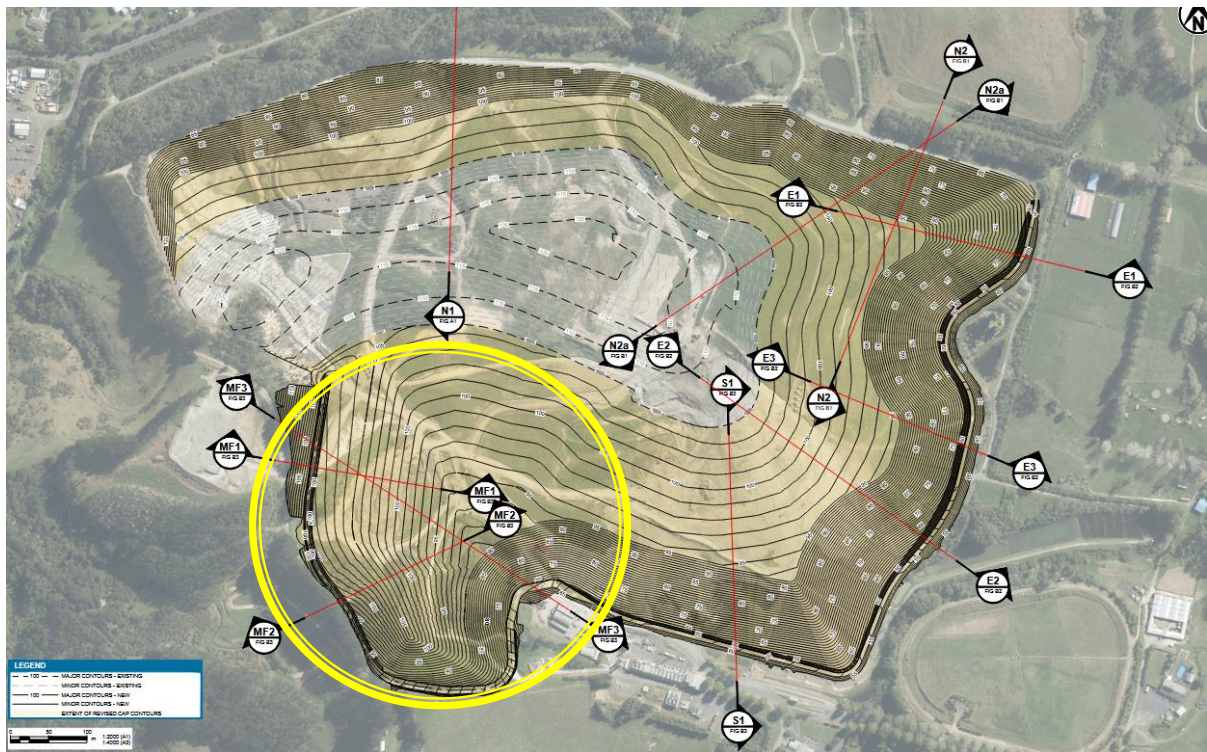


Figure 1 - Redvale landfill site map with additional area

4 North Shore Aerodrome

The North Shore Aerodrome is published in the Aeronautical Information Publication New Zealand (AIPNZ) as a non-Certificated Aerodrome two nautical miles south south-west of Silverdale with an aerodrome code of NZNE. There are two runways: RWY 03/21 which has an instrument approach and departure, and RWY 09/27 which is published for day visual operations.



Figure 2 - Redvale Landfill location relative to North Shore Airport

The aerodrome has a wide mix of aircraft activities including both fixed wing and rotary general aviation and commercial operations, as well as rotary and fixed wing flight training.

The aerodrome has instrument approach procedures to runway 03 and runway 21, with published arrival and departure procedures including for both aeroplanes and helicopters.

5 Aerodrome obstacle surfaces

5.1 Obstacle Limitation Surfaces

Obstacle Limitation Surfaces (OLS) are internationally accepted areas to protect aircraft operations in and around an aerodrome. The surfaces are primarily intended to protect for the arrival and departure of aircraft using a runway in the critical areas of flight.

The areas to the side of the runway protect aircraft if overflying the runway when carrying out a missed approach. The areas further outside the lateral sides of the aerodrome, called the Inner Horizontal Surface and the Conical Surface, are designed to protect aircraft circling to land, or that are further away from the aerodrome and manoeuvring to the approach areas.

The approach and take-off areas originate from the ends and edges of the defined runway strip area. The runway strip is a protection area surrounding the runway on the aerodrome surface.

The North Shore Airport information published is in Chapter D23, Airport Approach Surface, Overlay of the AUP. The AUP information is used to manage obstructions, such as buildings and trees, so that they do not protrude into airport approach surfaces and impact aircraft operations.

Appendix B to this report shows the North Shore Airport Height Restrictions as published in the AUP and the landfill location. These height restrictions seem to be based on CAA New Zealand OLS guidance in Advisory Circular (AC) 139-6. However, based on the runway length and airfield operations it is unclear exactly what specific aerodrome OLS dimensions and slopes are being applied.

The Redvale Landfill is not located in the approach and take-off fan for either runway but is located in the horizontal surface defined in Table D23.6.1.1 with a height specification of 106.7 metres AMSL.

5.2 Aviation Regulations

The International Civil Aviation Organisation (ICAO) sets international standards and recommended practices for aviation. ICAO Annex 14 Volume I applies to aerodromes open for public use and includes the OLS requirements. ICAO Annex 14 also has a range of supporting documents providing more details, technical standards and explanations.

The New Zealand Civil Aviation Rules (CAR) and Advisory Circulars are based on ICAO Annexes.

CAR Part 139 relates to certificated aerodromes that have aircraft operations using aircraft that have a certified seating capacity of 30 passenger seats or greater. While North Shore Aerodrome is not currently certificated under CAR Part 139, as a public aerodrome it should apply appropriate obstacle limitation surfaces to protect aircraft operations.

CAA ACs provide acceptable means of compliance and guidance material for aerodrome operators. The relevant guidance material ACs for North Shore Aerodrome are:

- AC139-7 & AC91-15 Aerodrome Standards and Requirements—Aeroplanes at or below 5700 kg MCTOW—Non-Air Transport Operations
- AC139-6 Aerodrome Design Requirements:
 - All Aeroplanes Conducting Air Transport Operations.
 - All Aeroplanes above 5700 kg MCTOW.
- AC 139-10 Control of Obstacles.

AC139-6¹ details obstacle restriction and removal in Chapter 4, and AC139-7 details OLS requirements in Chapter 3. Both are based on CAR Part 139 Appendix D:

D.1 Obstacle limitation surfaces

(a) The following obstacle limitation surfaces must be established for a runway—

- (1) conical surface; and*
- (2) inner horizontal surface; and*
- (3) approach surface; and*
- (4) transitional surfaces.*

AC139-6 Chapter 4 provides guidance material for the construction or establishment of an object within the horizontal surface.

4.2.5 New objects or extensions of existing objects should not be permitted above a conical surface or inner horizontal surface except when the object would be shielded by an existing immovable object, or an aeronautical study determines that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes.

This report assesses the extension of the existing landfill further to the south and the reprofiling of the remainder of the landfill.

6 Aircraft Operations

6.1 Minimum Operating Heights

The OLS is for protection of aircraft and aerodrome operations which contemplates a relatively terrain free environment. In reality, terrain impinges several New Zealand aerodrome OLS areas, and for the North Shore this is the case as the area to the west of the aerodrome has rising ground at various levels.

Pilots operate under two distinct operating rules in regard to aircraft operations and requirements:

VFR - Visual Flight Rules: means a flight in visual conditions where the pilot uses external visuals to navigate and avoid terrain or obstacles.

IFR - Instrument Flight Rules: means flight during which an aircraft is piloted solely by reference to instruments and without external reference points.

6.2 IFR Operations

For IFR operations at an aerodrome the instrument flight procedures are designed to protect the pilot and the aircraft with set tracks, altitudes and requirements to follow. These tracks and altitudes include obstacle assessments around and below the instrument procedure and adjustment to minimum altitudes for terrain and obstacles.

The published instrument approach and departures are designed using specific international design criteria. In this case the instrument procedure design published in the AIPNZ for RWY 03, and the missed approach track for Runway 21, are away from the landfill and designed to be clear of terrain.

Appendix C shows the Dairy Flat area airspace², and the instrument track operational areas are highlighted. It also shows high ground at 512 feet above mean sea level (AMSL) in close proximity to the landfill.

¹ AC139-6 - Aerodrome Design Requirements (All Aeroplanes Conducting Air Transport Operations, All Aeroplanes above 5700 kg MCTOW). Published date: 10 July 2025.

² Visual Navigation Chart 1:250,000. Effective 27 November 2025

The IFR aircraft Minimum Sector Altitude (MSA) published in the AIPNZ³ is 2,700 feet AMSL in the area. The MSA area is a 25 nautical mile circle based on the aerodrome reference point. The MSA provides at least 1,000 feet of obstacle clearance for an aircraft which would imply that there is currently an obstacle (terrain or object) at 1,700 feet AMSL in the area.

In regard to the proposed landfill changes aircraft safety on instrument approach and departure procedures would not be adversely affected, and the regularity of operations of aeroplanes would not be affected.

6.3 VFR Operations

Pilots operating under VFR must remain clear of terrain and obstacles as detailed in CAR 91.311. Even on approach to the aerodrome to commence a landing, the pilot must maintain a minimum height above the terrain.

CAR 91.311 *Minimum heights for VFR flights*

- (a) *A pilot-in-command of an aircraft must not operate the aircraft under VFR—*
- (1) *over any congested⁴ area of a city, town, or settlement, or over any open air assembly of persons at a height of less than 1000 feet above the surface or any obstacle that is within a horizontal radius of 600 metres from the point immediately below the aircraft; or*
 - (2) *over any other area—*
 - (i) *at a height of less than 500 feet above the surface; or*
 - (ii) *at a height of less than 500 feet above any obstacle, person, vehicle, vessel, or structure that is within a horizontal radius of 150 metres from the point immediately below the aircraft; and*
 - (3) *for any operation, at a height less than that required to execute an emergency landing in the event of engine failure without hazard to persons or property on the surface.*
- (b) *Paragraph (a) does not apply to a pilot-in-command of an aircraft—*
- (1) *conducting a take-off or landing; or*
 - (2) *conducting a balked landing or discontinued approach; or*
 - (3) *taxiing.*

The standard joining direction for a runway is left hand and all North Shore Aerodrome circuits are left hand. Therefore, aircraft in the circuit for RWY 03 would be joining base leg before the landfill site and aircraft on RWY 27 would be turning cross wind well before the landfill.

It is noted the fixed wing circuit height is 1200 feet AMSL and the helicopter circuit is 800 feet AMSL in the downwind section. At North Shore Aerodrome, helicopters also have preferred arrival and departure routes⁵ which are runway aligned and keep helicopters away from the landfill site – see Appendix D.

Fixed wing aircraft would follow a standard circuit pattern, and this is reinforced in the North Shore aerodrome arrival and departure procedures⁶ published in the AIPNZ as shown on the next page.

³ AIPNZ NZNE AD 2 – 45.1 and 45.2. Effective 30 November 2023.

⁴ CAR Part 1 Definitions - Congested area in relation to a city, town, or settlement means any area which is substantially in use for residential, industrial, commercial, or recreational purposes:

⁵ AIPNZ NZNE AD 2 – 35.1 and 35.2. Effective 22 February 2024.

⁶ AIPNZ NZNE AD 2 – 31.1 and 31.2. Effective 10 August 2023.

Arriving Aircraft — Fixed Wing

- Monitor the AWIB.
- Change to 118.0 MHz early to ascertain runway-in-use and the position of aircraft operating.
- **Join using Standard Overhead Joining procedures (preferred).**
- Straight-in approaches for any runway are not permitted, except aircraft engaged on the instrument approach.
- Aircraft joining downwind or base leg must be established on the extension of the leg prior to entering the vicinity of the aerodrome.
- Give way to aircraft ahead and aircraft established in the circuit.

Departing Aircraft — Fixed Wing

- Monitor the AWIB.
- Monitor 118.0 MHz to ascertain runway in use and the position of aircraft operating.
- Call 118.0 MHz prior to taxi.
- **Depart the circuit in accordance with standard procedures — aircraft must not make a right turn until clear of the vicinity of the circuit, or above 1700 ft AMSL.**
- To remain clear of aircraft joining overhead, maintain circuit altitude until clear of the vicinity of the aerodrome unless departing straight-out.

A pilot operating over the landfill should be at least 1,000 feet above the ground level as the landfill area would be considered to be a congested area with over 100 people onsite as well as the nearby Dairy Flat school and the Dairy Flat village. Appendix E shows a Google Earth image of the aerodrome, landfill and surrounding area showing the school, village, and other residential areas.

Information on VFR and IFR flight paths for North Shore Aerodrome are available in the AIPNZ at www.qip.net.nz under Aerodrome Charts.

The following diagram shows the indicative circuit patterns for runway 03 and 27. Only the circuits towards the landfill are shown for clarity.



Figure 3 - Aerodrome Circuits toward Redvale

7 CAR Part 77

CAR Part 77, Objects and Activities Affecting Navigable Airspace⁷, prescribes rules for a person proposing to:

- (1) to construct or alter a structure that could constitute a hazard in navigable airspace; or
- (2) the use of a structure, lights, lasers, weapons, or pyrotechnics, that could constitute a hazard in navigable airspace.

Notification to the Director of Civil Aviation is required for a structure that is to be built, or altered, that is:

- 60 m (200 ft) or higher, or
- within a Low Flying Zone (LFZ Locations), or
- within an aerodrome/heliport obstacle notification area, or
- penetrates an OLS as defined in Part 77, specified in CAR Part 139 or defined in the local District Plan.

Under Part 77 the Director must conduct an aeronautical study to determine whether the specific proposal, if executed, will constitute a hazard in navigable airspace. CAR 77.19(h) states that the Director may determine a structure to be a hazard if among other things it protrudes through an OLS.

A structure that is a hazard may need to be marked or lit or other such conditions as required. Such marking or lighting is not required if an aeronautical study shows the obstacle not to be of operational significance.

The proposed Class 1 landfill expansion and Class 2 extension are below the highest point of the landfill with no increase in height proposed. No Part 77 notification is required.

8 Terrain

For Redvale Landfill, the existing terrain to the west of the site is higher than the proposed landfill expansion and extension, especially the ridge to the west with trees on it. See the topographic map at Appendix F.

An onsite visit was conducted on Monday 22nd January 2024, and it was evident that the site is well clear of the aerodrome operational areas and there was extensive rising or high ground in the area surrounding the landfill. See Appendix G.

During the onsite visit, several light aircraft were seen arriving and departing runway 03/21 and were observed to be well away and at a much higher height than the landfill site. A helicopter was observed doing a VFR arrival from the west using the arrival route north of the landfill site.

From the North Shore Aerodrome AIPNZ information, aircraft operate well clear of the landfill site for both runways, for IFR and VFR operations, and also the instrument procedures and circuit patterns ensure they remain clear of terrain.

As noted above, pilots must remain clear of terrain both vertically and horizontally. Therefore, aircraft will be well clear of the proposed Class 1 and Class 2 changes.

The area to the west of the aerodrome and in which the landfill is located has natural terrain and some of which is higher than the landfill at its location. This is the main or controlling obstacle for the area.

The current landfill and proposed changes would not be of immediate significance to the safety and efficiency of aircraft operations.

⁷ CAR Part 77, Objects and Activities Affecting Navigable Airspace, 5 April 2025

9 Risk Assessment

9.1 Aircraft safety

Appendix H contains a standard aviation risk matrix and then a risk assessment of the landfill site.

The risk assessment has assessed the landfill in regard to hazard to aviation:

- Aircraft collision – VFR Day.
- Aircraft collision – VFR Night.
- Aircraft collision – IFR.

All the hazards are risk assessed for likelihood and consequence to produce the risk.

In all three cases the risk is low and has no direct impact on aviation safety, with existing controls in place appropriate.

9.2 Bird hazard

9.2.1 Overview

The other risk that could occur is bird related in regard to possible bird strike of the aircraft. WMNZ has a comprehensive wildlife and bird management plan in place to deter birds from the site as much as practicable.

The current site has been operating since 1993 and in 2000 an analysis study was undertaken on the site and the community effects⁸.

Birds and bird strike:

Four respondents mentioned birds - seagulls and mynah birds - but only one expressed a definite association with the landfill, the others commenting that there was nothing exceptional "because we live in the countryside" and "there are lots more trees now". No negative impacts were reported.

The landfill manager described their policy of applying adequate cover material to prevent birds from being attracted to scavenge, and the use of coloured streamers overhead as another deterrent. Since the few gulls which do visit are not a protected variety, shooting them is an option as well.

Interviews at the nearby airfield revealed that "even though we did object at the time because of the perceived risk, it has turned out to be a non event. No members have ever reported flocks of birds near their planes and they regularly pass over the landfill at one thousand feet." Both fixed wing and helicopter interests indicated that bird strike problems which occurred at the airfield are from birds on the grassed areas around the runway itself, mainly plovers.

⁸ Host Communities: siting and effects of facilities. An analysis of host community experience of the Redvale Landfill (Auckland Region) James Baines and Brigid Buchenham, Taylor Baines & Associates, Working Paper FS8, Public Good Science Fund Contract TBA 802, August 2000 http://www.tba.co.nz/pdf_papers/FS08_Redvale.pdf

9.2.2 North Shore Aerodrome

A December 2017 report by Auckland Council which assessed the North Shore Airport⁹, noted:

In relation to Wildlife Hazard Management, an aerodrome operator must establish an environmental management programme to minimise or eliminate any wildlife hazard that presents a hazard to aircraft operations at their aerodrome in areas within their authority. The management of wildlife, especially birds, is critical for aircraft operational safety. Bird strikes put the lives of aircraft crew members and their passengers at risk.

In this context stormwater ponds are the main potential source of wildlife hazard.

Further to this, a review of the North Shore Aerodrome Hazards Register, which is available online at <https://my.nsac.co.nz/Hazards/Active>, made no mention of the landfill site¹⁰.

The only bird hazards identified were in regard to the airfield:

Aerodrome	Birds on airfield - Located mainly around NE end RWY 03/21 between tyres.	RISK: Aircraft could collide with one or more birds Groundsman to cull plovers on a regular basis. Propane Bird Gun installed. Uploaded to associations is an EASA SIB regarding bird strike risk mitigation for rotorcraft. The following points may be transferable - SMS (Consult bird control experts to identify and quantify bird threat within the area, Identify known areas of high bird concentration and incorporate this information into bulletins, NOTAM and any other operational alerting process, Consideration to how nearby development and change of land use to where birds will relocate) Inflight - If a bird strike has occurred or strongly suspected the aircraft should be landed as soon as practical and a full inspection carried out, engineering advice should be sought prior to RTS)
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From the information provided and review of the North Shore Airport Hazard Register, no current wildlife issues are identified related to the landfill.

9.2.3 Civil Aviation Authority Data

There is no evidence the landfill has increased bird hazards or caused any bird strike. Information was requested from the CAA on CAR Part 12 Bird Incident reports involving the North Shore aerodrome or within 3 Nautical Miles of the North Shore Aerodrome for the period 1 July 2019 to 30 June 2025.

The CAA provided a spreadsheet of occurrences and also a summary table as below. The resulting data identified no reported issues relating to the landfill for the date in that 6 year period.

Only one incident was “off aerodrome” and this was a “Near Strike” in the circuit. No details were provided on the exact location. However, the landfill is not located within any of the aerodrome circuits as per Figure 3 shown previously.

Table 1 - CAA Bird Incident Data - North Shore Aerodrome

Bird Incident Summary Table								
Year	2019	2020	2021	2022	2023	2024	2025	Total
Off-Aerodrome								
NEAR STRIKE			1					1
On-Aerodrome								
NEAR STRIKE		3	1					4
STRIKE	2	13	6	3	1	4	1	30
Total	2	16	8	3	1	4	1	35

⁹ North Shore Airport Topic Report - Silverdale West Dairy Flat Business Area Structure Plan, December 2017. Auckland Council. <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/place-based-plans/structure-plans/technical%20reports/north-shore-airport-topic-report.pdf>

¹⁰ North Shore Aerodrome Hazards Register accessed as at 30 January 2026.

10 Conclusion

We have assessed the relevant aviation aspects of the proposed increase in landfill footprint to the southwest and expansion of the current landfill area at Redvale Landfill. The changes would not have any additional aviation safety impact as the location would not affect aviation safety nor the regular movement of aircraft.

The increase in area to the southwest would have no additional impact as it is further away from the aerodrome and no higher than existing landfill heights, and complies with the current consent and has no effect on the Airport Approach Surface Overlay.

In our professional opinion, and with specialist knowledge of aviation regulations and aerodrome requirements, even though the landfill may intrude through the horizontal surface, the increase is no greater than the current landfill highest height.

Such intrusions are allowable if they do not have safety or efficiency implications as per ICAO or would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes as per CAA guidance.

Based on the location we also confirm, in our opinion, that the current terrain and other existing obstacles located within close proximity to the site may be considered as shielding the site as all aircraft operating in this area would already need to be at sufficient altitude to avoid the already existing terrain and development.

No other aviation requirements have been identified, and the proposal is in accordance with CAA guidance material regarding OLS intrusions.

The Class 1 landfill expansion and Class 2 extension will not generate an adverse safety effect to the operation of the North Shore Airport, or to aircraft operating in the vicinity of the aerodrome. It would not adversely affect the safety or significantly affect the regularity of operations of aircraft.

Consultation with North Shore Aerodrome is recommended and we understand this is in progress.



Mike Haines

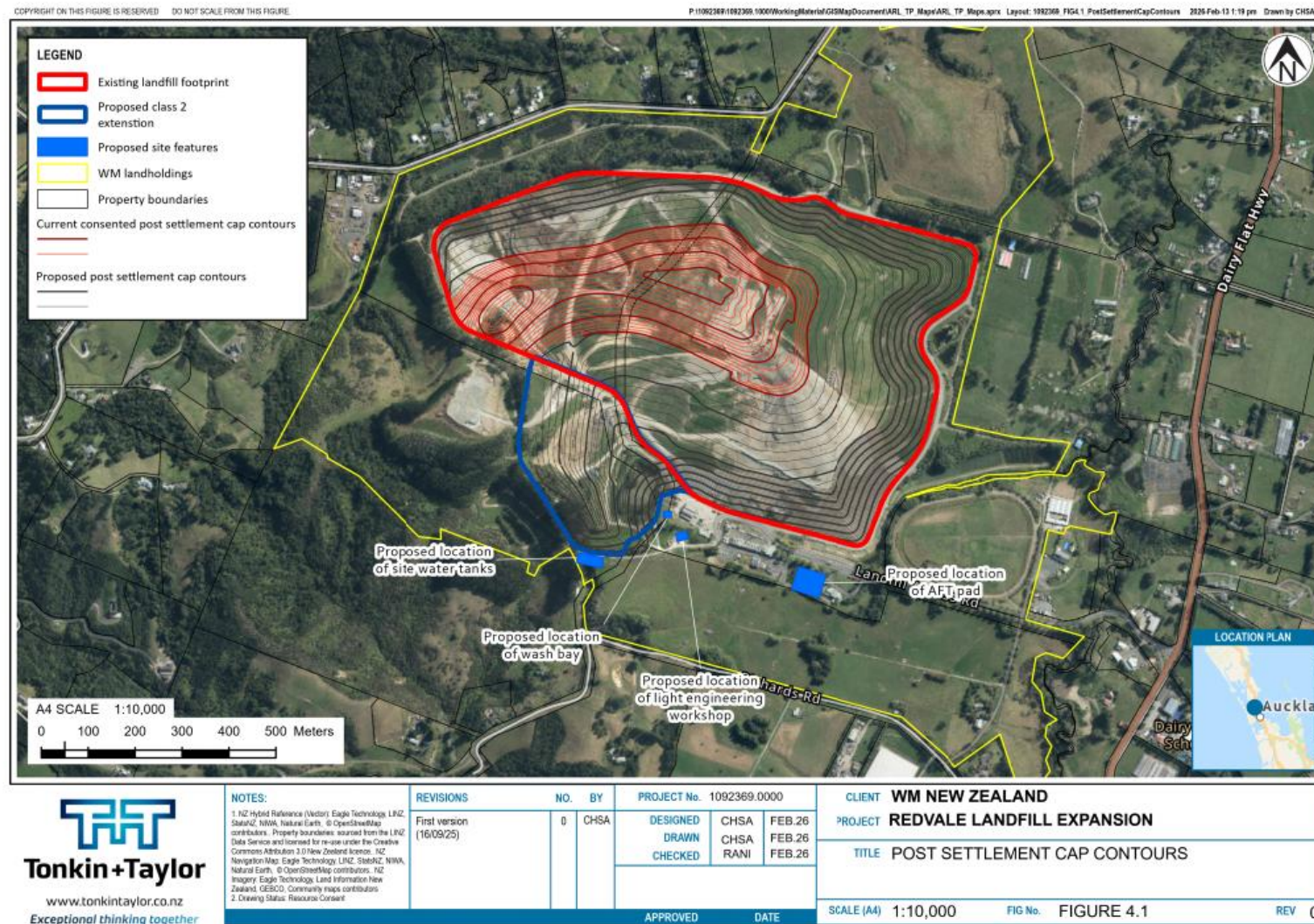


Max Evans

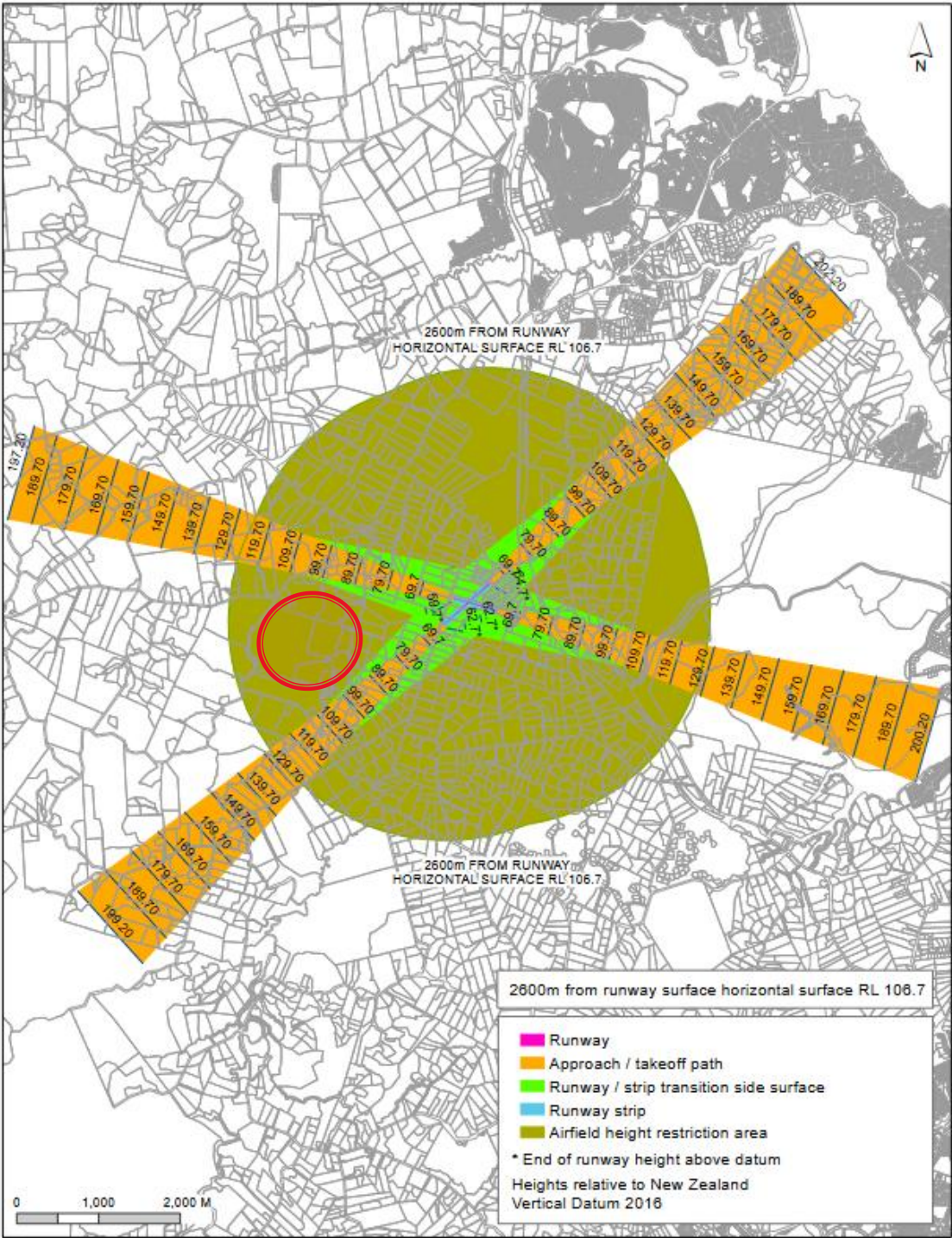
Aviation Consultants

2 February 2026

Appendix A – New Redvale Landfill Area Contours



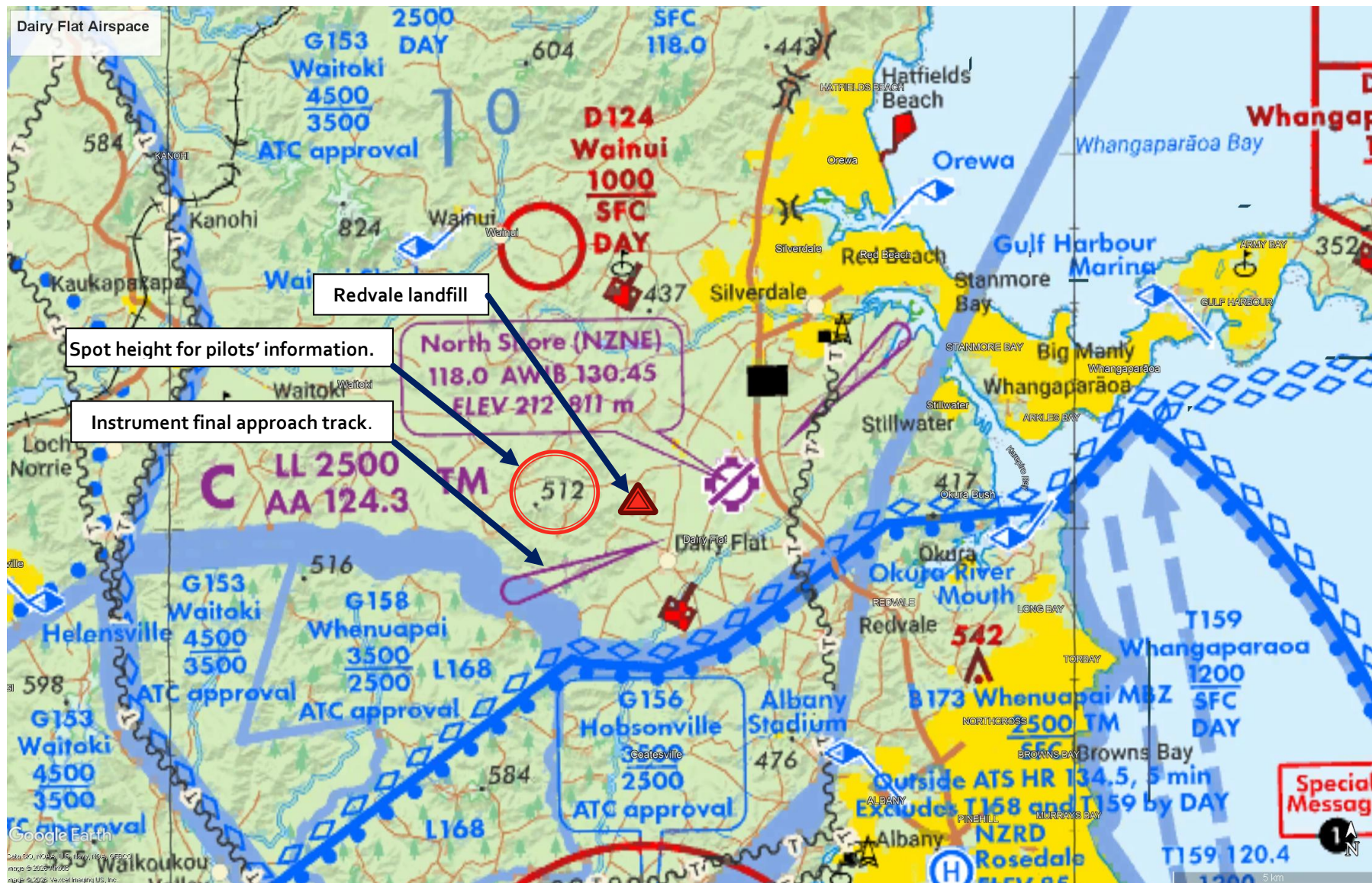
Appendix B – North Shore Airfield Height Restrictions



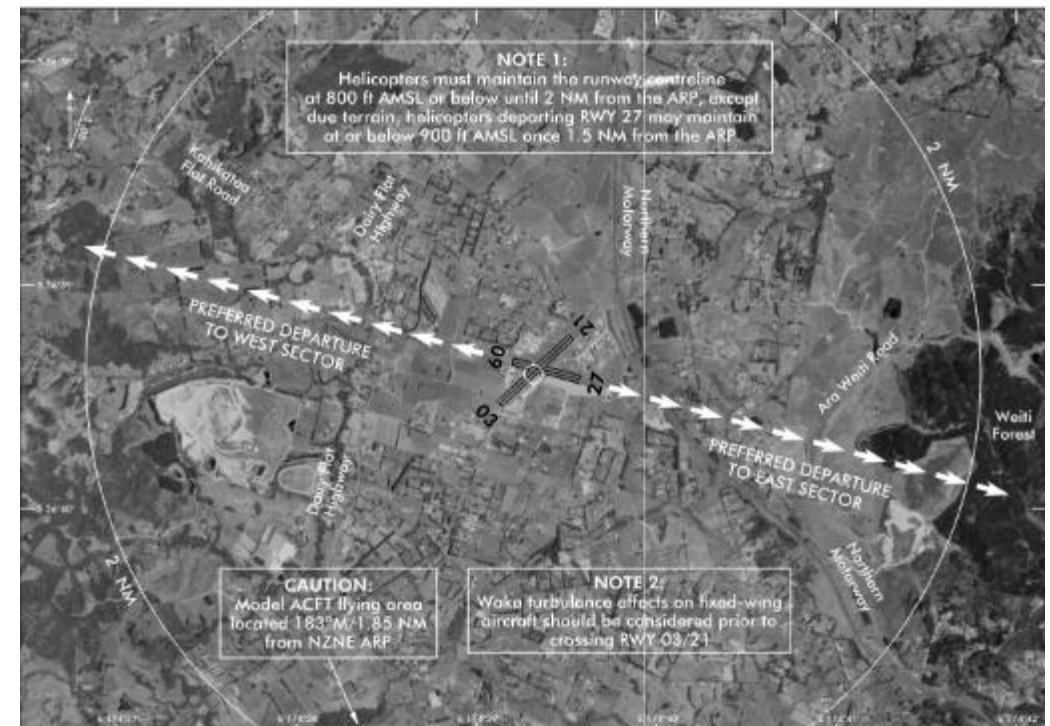
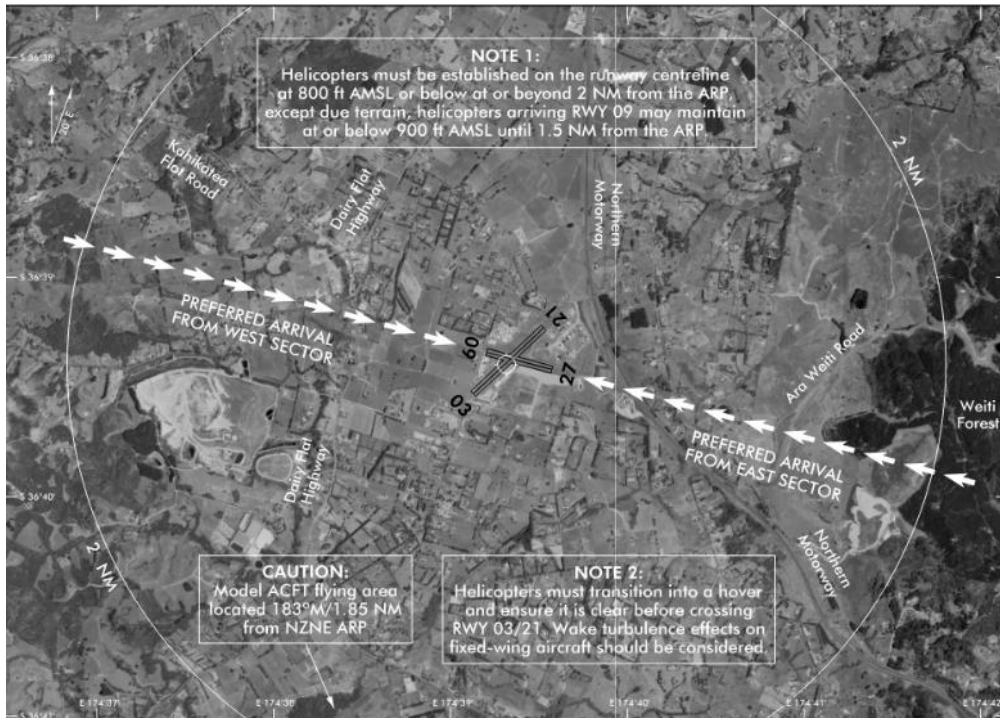
Airport approach path : North Shore Airfield height restriction

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Appendix C – Dairy Flat Airspace



Appendix D – Helicopter Arrival and Departure routes



Appendix E - Landfill and Aerodrome



Appendix F – Topographic Map



Appendix G – Onsite Photos



Views from Site office north to landfill





View to east from the western ridge

View to west from beside landfill



Appendix H – Risk assessment

Risk assessment matrix						
Risk = likelihood of the harm occurring x consequence of the harm						
Consequence - the severity of the potential injury/harm						
		Insignificant damage to property, equipment or minor injury	Non-reportable injury, minor loss of process or slight damage to property	Reportable injury, moderate loss of process or limited damage to property	Major injury, single fatality, critical loss of process / damage to property	Multiple fatalities, catastrophic loss of business
		Insignificant	Minor	Moderate	Major	Severe
Likelihood - the chances of the injury/harm occurring	Almost Certain	LOW	MEDIUM	HIGH	EXTREMELY HIGH	EXTREMELY HIGH
	Will probably occur	LOW	MEDIUM	HIGH	EXTREMELY HIGH	EXTREMELY HIGH
	Possibly occur	LOW	MEDIUM	MEDIUM	HIGH	HIGH
	Remote possibility	LOW	LOW	MEDIUM	MEDIUM	MEDIUM
	Extremely unlikely	LOW	LOW	LOW	LOW	LOW

Hazard	Outcome	Likelihood	Severity	Risk analysis	Commentary
Aircraft collision with landfill – VFR Day	- Damage to aircraft - Damage to equipment - Injury to pilot	Extremely unlikely	Moderate	Low	- Landfill is a large area of terrain and pilot will see the location. - There is already terrain higher in the area the pilot must avoid. - The area is a congested area so pilot must be 1000 feet above ground level.
Aircraft collision with landfill – VFR Night	- Damage to aircraft - Damage to equipment - Injury to pilot	Extremely unlikely	Moderate	Low	- Landfill general area is lit at night. - There is already terrain higher in the area the pilot must avoid.

Hazard	Outcome	Likelihood	Severity	Risk analysis	Commentary
					▪ The area is a congested so pilot must be 1000 feet above ground level. ▪ Only Runway 03-21 has night lighting, and the landfill is not close to approach, take-off or circuit areas.
Aircraft collision with landfill – IFR	• Damage to aircraft • Damage to equipment • Injury to pilot	Extremely unlikely	Moderate	Low	▪ Landfill is clear of Runway 03/21 instrument approach and departure area. ▪ IFR minimum safe altitude is 2,700 feet well above the landfill height.