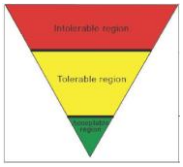
RISK ASSESSMENT AND MITIGATION SIGNAL HILL AND LION'S HEAD

VERSION 2.0



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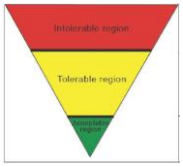


Foreword

The Glen Paragliding Club is the custodian of the take-off sites on Signal Hill and Lion's Head in the Table Mountain National Park ("TMNP"), As agreed with TMNP, anyone flying from these two sites must be a member of the Glen Paragliding Club.

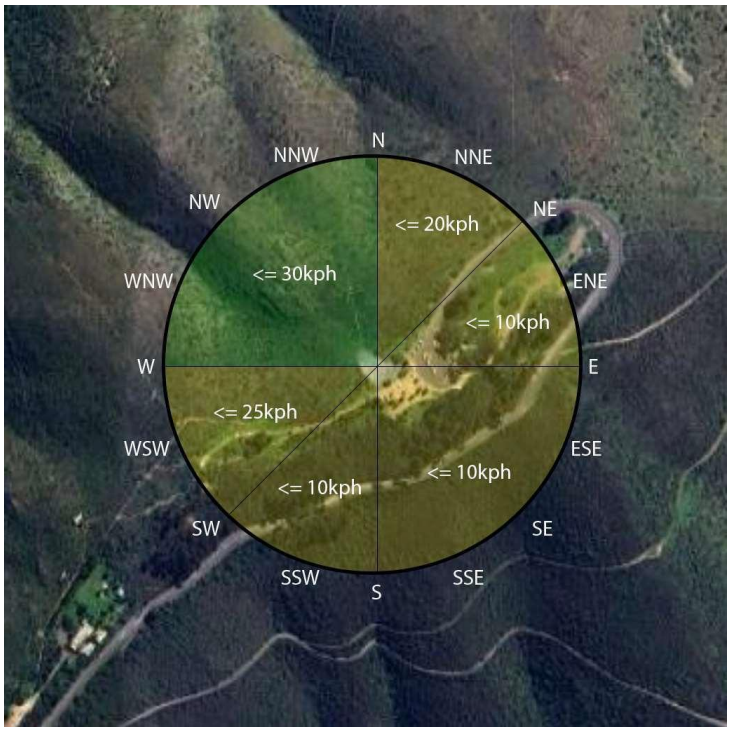
This document outlines the risk assessment, the potential mitigations and the related rules of flying from Signal Hill and Lion's Head, and landing on the Sea Point Promenade and on the Glen landing field, respectively. The methodology used is described in the appendix.

The rules outlined in this document are to be adhered to by all authorized Tandem Flight Instructors and serve as recommended guidance for solo pilots.

Non-compliance with the terms of this document will trigger the Glen Paragliding Club disciplinary process and may result in a temporary or permanent suspension of the Club membership, which implies the prohibition of flying from these two sites.

Note: Signal Hill is a Sport rated site. Pilots with a Basic license or an IPPI 4 or equivalent are not allowed in any circumstances to take off from Signal Hill.

Signal Hill – Take-Off



1. Green Zone - R001 (Low Risk of Launch Related Incidents).
   - Wind Direction: West to North.
   - Wind speed not exceeding 30kph

   Caution advised: Strong NW forecast with high wind gradients.
2. Yellow Zone - R002 (Intermediate Risk of Take-Off Related Incidents)
   - Wind Direction: South-West to West
   - Wind speed not exceeding 25kph

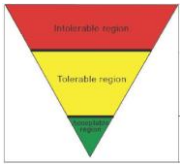
   Caution advised: Increased turbulence due to the left side spur.

   Increased possibility of being "flushed" down the left side gully as wind speed increases.
3. Yellow Zone - R003 (Intermediate Risk of Take-Off Related Incidents)
   - Wind Direction: North to North-East
   - Wind speed not exceeding 20kph

   Caution advised: Prefrontal forecasts that could produce above average "sinky" conditions.
4. Yellow Zone - R004 (Internediate Risk of Take-Off Related Incidents)
   - Wind Direction: North-East to South-West
   - Wind Speed not exceeding10kph (*Talker readings based on the Signal Hill iWeathar mast reading)*

   Mitigation

   If wind speed on the iWeather station on launch is showing a positive anabatic flow of

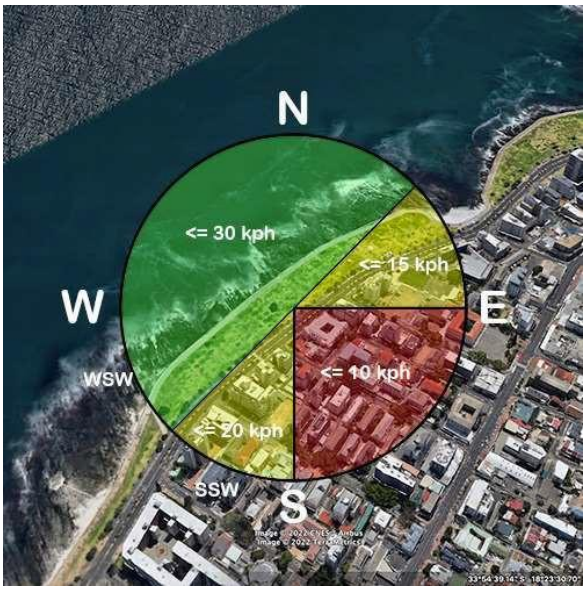


5kph or more, it will be in the Green Zone.

Porters will be used to assist take-off of tandems.

Risk No.	Safety Risk	Probability	Severity	Rating	Mitigation Action
R001	West- North Conditions flyable from a wind direction perspective but caution is required in terms of strength.	Improbable	Minor	2D Green	Mitigating action comprises assessment of pre-frontal forecasts and monitoring of wind strength and wind gradient.
R002	South West - West Increased risk of turbulence from left side spur and possibility of being flushed down the gully.	Occasional	Major	4C Yellow	Flyable in lower wind strengths.
R003	North - North East Increased risk of high sink rates in pre-frontal conditions, particularly over Sea Point	Remote	Minor	3D Yellow	Flyable in lower wind strengths
R004	North East - South West Wind is primarily over the back, but positive flow up the TO is still possible at low wind speeds.	Frequent	Major	4C Yellow	Mandatory 3-system vote is to take place.

Sea Point Promenade - Landing



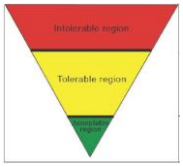
1. Green Zone – R005 (Low Risk of Landing Related Incidents).
   - Wind Direction: South-West to North-East.
   - Wind speed not exceeding 30kph.

   Caution advised: Be careful of strong NW forecasts with high wind gradients. Consider visual aids such as white caps on the ocean as well as low approaching clouds/fog. No flying permitted unless VFR in VMC conditions.
2. Yellow Zone - R006 (Intermediate Risk of Landing Related Incidents).
   - Wind Direction: North-East to East
   - Wind speed not exceeding lSkph

   Caution advised: Increased Turbulence due to residential housing/hotels. May experience high sink rate on landing approach.
3. Yellow Zone - R007 (Intermediate Risk of Landing Related Incidents)
   - Wind Direction: South to South-West
   - Wind speed not exceeding 20 kph

   Caution advised: Increased Turbulence due to residential housing/hotels May experience high sink rate on landing approach.
4. Red Zone - R008 (High Risk of Landing Related Incidents)
   - -Wind Direction: East to South
   - -Wind Speed not exceeding 10kph (as recorded by Promenade wind-talker or hand held anemometer)

   Extreme Caution advised: Recommendation to not fly.



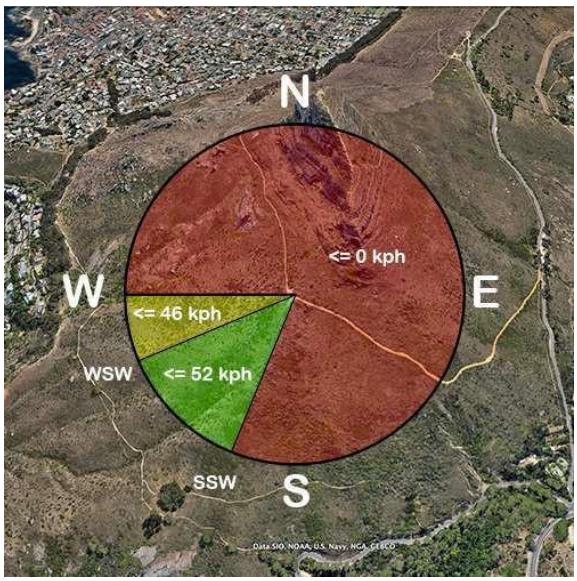
Risk No.	Safety Risk	Probability	Severity	Rating	Mitigation Action
R005	South West - North East Unobstructed wind direction although risk of variability or strong wind.	Improbable	Minor	2D Green	Unobstructed wind direction, caution required regarding wind strength, visibility of white caps, ground staff and wind meters.
R006	North East - East Increased risk of turbulence from buildings with possibility of high sink rates.	Remote	Minor	3D Yellow	Flyable in lower wind strengths.
R007	South - South West Increased risk of turbulence from buildings with possibility of high sink rates.	Remote	Minor	3D Yellow	Flyable in lower wind strengths.
R008	East- South High risk of wind rotor off the buildings	Frequent	Major	SC Red	No flying in these conditions.

Additional Mitigation

1. Steep turns/aerobatics /acro as allowed/recommended by the paraglider manufacturer
2. Wingovers at not more than 60 degrees bank.
3. No aerobatics/wingovers/spirals/steep turns over the landing approach zone (yellow area).
4. No aerobatics/wingovers/spirals/steep turns below 100m ASL.
5. Hook knives fit for purpose and affixed to the harness in a position to allow immediate use by the pilot, are mandatory for Pilots flying from Signal Hill.
6. **Landing approach** Downwind Base Final - right hand turns in anything southerly, left hand turns in anything northerly.
7. All wind readings are based on the Signal Hill Mast iWeather station or the Promenade wind talker unless otherwise stipulated.
8. In the event that all the available wind stations are not operational, then it will be the responsibility of the Club Safety Officers or a CFI or nominated person of each school to assess and perform a new risk assessment with a handheld anemometer for a period of 2 minutes

No wingovers, spirals, steep turns are allowed in yellow area

Lions Head – Take - Off



1. Green Zone - R009 (Low Risk of Launch Related Incidents).
   - Wind Direction: South-South-West to West-South-West.
   - Wind speed not exceeding 52 kph (Lions Head Talker - Situated in the venturi).

   Caution advised: *Strong SW forecast with high wind gradients. Consider visual aids such as white caps/streaks on the ocean as well as low approaching clouds/fog. No flying permitted unless VFR in VMC conditions. Strong South can cause no forward speed at the boulder. Compression areas on left and right-hand sides of the mountain.*

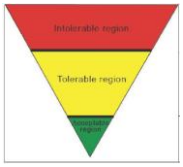
2. Yellow Zone – R010 (Intermediate Risk of Launch Related Incidents).
   - Wind Direction: West-South-West to West
   - Wind speed not exceeding 46 kph (As displayed or recorded Lions Head Talker - Situated in the venturi).

   Caution advised: *Increased Turbulence on launch due to the rotor from the right side falling away.*
   Increased Turbulence due to wind flowing across big boulders.

3. Red Zone - R011 (High Risk ofTake-off Related Incidents)
   - Wind Direction: West to South-South-West via the North

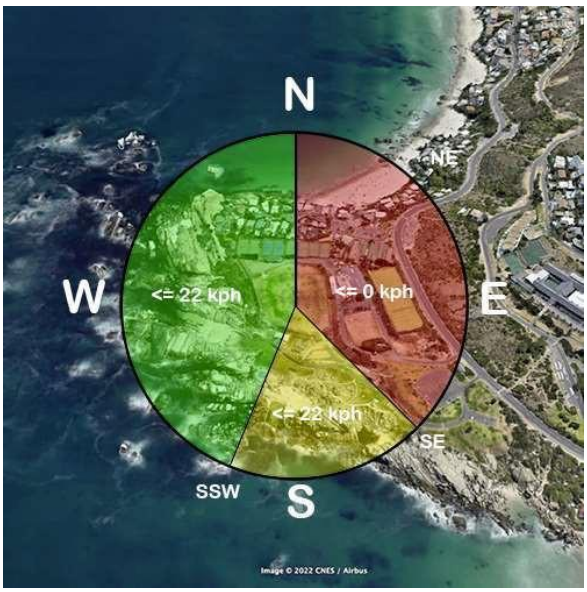
   Extreme Caution advised: No flying permitted.
   Increased Turbulence due to rotor from wind flowing over the Twelve Apostles.
   Possible Increased Turbulence during flight from flying in the lee.

General: Gust factor to be less than 15 kph
(Talker readings based on the iWeathar Lion's Head wind talker located in the venturi)



Risk No.	Safety Risk	Probability	Severity	Rating	Mitigation Action
R009	South South West - Wet South West Conditions flyable from a wind direction perspective but caution is required in terms of strength.	Improbable	Minor	2D Green	Mitigating action comprises assessment of pre-frontal forecasts and monitoring of wind strength and wind gradient.
R010	West South West - West Increased risk of turbulence on launch from ridge/fall away to the right	Occasional	Major	4C Yellow	Flyable in lower wind strengths.
R011	West - South South West High risk of backwind and rotor on launch with high turbulence in the air from 12 Apostles and flying in the lee	Occasional	Hazardous	4B Red	No tandem flying in these conditions.

Clifton/Glen Country Club - Landing



1. Green Zone - R012 (Low Risk of Landing Related Incidents).
   - Wind Direction: South South-West to North.
   - Wind speed not exceeding 22 kph (Glen Country Club Wind Talker).
   - Wind speed exceeding 22 kph will upgrade the risk zone to yellow

   Caution advised: Be careful of strong SW forecasts with high wind gradients. Consider visual aids such as white caps/streaks on the ocean as well as low approaching cloud/fog and cloud coming over the Twelve Apostles.
   No flying permitted unless VFR in VMC conditions.

2. Yellow Zone - R013 (Intermediate Risk of Landing Related Incidents)
   - Wind Direction: South-South-West to South-East
   - Wind speed not exceeding 22 kph (Glen Country Club Wind Talker).

   Caution advised: Increased Turbulence due to rotor from Wind flowing over the Twelve Apostles Possible Increased Turbulence during landing approach and possible hard landings.

3. Red Zone - R014 (High Risk of Landing Related Incidents)
   - Wind Direction: North to South-East

   Extreme Caution advised: No flying permitted.

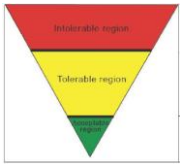
(Talker readings based on the Glen Club PWS weather reading)

Risk No.	Safety Risk	Probability	Severity	Rating	Mitigation Action

R012	South South West - North Risk of wind strength turbulence particularly with strong wind forecasts and gradients.	Improbable	Minor	2D Green	Unobstructed wind direction, caution required regarding wind strength, visibility of white caps, ground staff and wind meters. **Should wind speed exceed 22 kph,** mandatory 3- system voting is required.
R013	South South West - South East Increased risk of turbulence due to 12 Apostles. Increased risk of hard landings	Occasional	Major	4C Yellow	Land with speed to reduce effects of turbulence.
R014	North - South East High risk of incidents and accidents on landing due to rotor	Frequent	Major	SC Red	No tandem flying in these conditions.

Additional Mitigation

1. Steep turns/aerobatics /aero as allowed/recommended by the paraglider manufacturer.
2. No aerobatics/wingovers/spirals/steep turns over the landing approach zone (yellow area).
3. No aerobatics/wingovers/spirals/steep turns below 100m ASL.
4. Hook knives fit for purpose and affixed to the harness in a position to allow immediate use by the pilot, are mandatory for Tandem Pilots flying from Lions Head.
5. Landing approach: Downwind Base Final.
6. Avoid flying over the tennis courts when landing, lose height over the ocean.
7. In the event that all the available wind stations are not operational, then it will be the responsibility of the CFI or nominated person of each school to assess and perform a new risk assessment with a handheld anemometer for a period of 2 minutes.
8. All wind readings are based on the Lions head !weather upper launch wind station and the Glen Landing Field wind station.



3 System

A 3 system will be used when any Tandem pilot calls for a vote to reach consensus if it is safe to launch and land. The majority vote will stand. This vote can be redone in the event the conditions change and it becomes safe to launch or land. In the event a 3 is voted, the launch will be closed and any Tandem pilot who disregards this vote can face suspension from flying from Signal Hill or Lions Head if it is deemed appropriate by the Glen Paragliding Club Safety Officer or the Glen Club Committee.

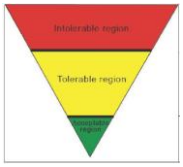
The 3 System is as follows:

1 Being flyable

2 Caution to be shown

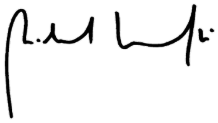
3 Launch and Landing Closed.

The 3 system can never override the safe parameters of this Risk Assessment & Mitigation when a vote is called.



Approvals

GLEN PARAGLIDING CLUB



Michele Lodi-Fè

Chairman

Chris Bond

Safety Officer

APPENDIX – Risk Assessment Methodology

RISK ASSESSMENT METHODOLOGY FOR TAKE-OFF AND LANDING SITES

VERSION 1.0 -January 2025

Risk Assessment Methodology for Paragliding Sites

Wind Strength and Direction with a Focus on Take-off and Landing Sites

Objective

To assess and mitigate the risks associated with the hazards of wind strength and direction specifically at paragliding take-off and landing sites, ensuring the safety of pilots and/or tandem passengers.

Scope

This methodology addresses all paragliding activities, emphasizing risk assessments related to take-off and landing zones.

Risk Assessment Process

A. Hazard Identification
   a. Wind Strength: Assess conditions using the Beaufort scale, focusing on thresholds that affect take-off and landing (e.g., light, moderate, and strong winds).
   b. Wind Direction: Evaluate how various wind directions impact take-off trajectories and landing approaches.
   c. Turbulence: Identify potential turbulence caused by local terrain features, such as hills, cliffs, or buildings, particularly near take-off and landing zones.

B. Risk Analysis
   a. Data Collection:
      - Gather real-time weather data specific to take-off and landing areas.
      - Use wind talkers or handheld anemometers at designated sites.
      - Review meteorological forecasts and analyze local wind patterns affecting the specific zones.
   b. Risk Evaluation:
      - Likelihood: Determine the probability of encountering adverse wind conditions at take-off and landing.
      - Consequence: Assess potential impacts, including accidents during take-off or landing, pilot and/or passenger injuries.
      - Risk Rating: Categorize risks using a risk matrix, focusing on take-off and landing scenarios.

C. Control Measures
   a. Pre-Flight Procedures:
      - Establish specific wind strength thresholds for safe take-off and landing (e.g., maximum wind speed for each site).
      - Implement mandatory briefings that include detailed assessments of wind conditions at take-off and landing zones.
      - Use visual indicators (flags, streamers) at take-off and landing sites to

communicate real-time wind conditions.

b. Take-off Site Considerations:
   - Evaluate take-off zones for wind effects, including potential downdrafts and turbulence.

c. Landing Site Considerations:
   - Evaluate landing zones for wind effects, including potential downdrafts and turbulence.
   - Provide additional landing options for pilots in case of changing wind conditions or obstruction of normal landing sites.

D. Monitoring and Review
   - Continuous Monitoring: Implement ongoing weather monitoring specifically at take-off and landing sites.
   - Regular Reviews: Reassess the risk assessment methodology annually or after significant weather changes.
   - Stakeholder Feedback: Encourage input from pilots and instructors on the effectiveness of safety protocols at take-off and landing sites.

E. Documentation
   - Maintain comprehensive records of risk assessments, incidents, and training sessions focused on take-off and landing conditions.
   - Document changes to procedures and control measures based on continuous monitoring and stakeholder feedback.

Conclusion

This methodology aims to enhance safety in paragliding activities by focusing on the unique challenges presented by wind strength and direction during take-off and landing. By fostering regular updates, sharing of information, and stakeholder engagement, the risk management process can be effectively maintained and improved.

Risk Assessment Matrix

The Matrix provides an easy tool to objectively rate the risks of flying from paragliding sites based on their probability of occurrence and impact levels. The tables below provide a definition of both.

Likelihood

	Meaning	Value
Frequent	Likely to occur many times (has occurred frequently)	5
Occasional	Likely to occur sometimes (has occurred infrequently)	4
Remote	Unlikely to occur, but possible (has occurred rarely)	3
Improbable	Very unlikely to occur (not known to have occurred)	2
Extremely improbable	Almost inconceivable that the event will occur	1

Impact

Severity of occurrence	Meaning	Value
Catastrophic	One or more fatalities	A
Hazardous	Serious injury (requiring hospitalization)	B
Major	Serious incident Injury to persons	C
Minor	Nuisance Operating limitations Use of emergency procedures Minor incident	D
Negligible	Little or no consequences	E

Risk probability	*Risk severity*				
	Catastrophic A	**Hazardous B**	**Major C**	**Minor D**	**Negligible E**
Frequent 5	5A	5B	5C	5D	5E
Occasional 4	4A	4B	4C	4D	4E
Remote 3	3A	3B	3C	3D	3E
Improbable 2	2A	2B	2C	2D	2E
Extremely Improbable 1	1A	1B	1C	1D	1E

Suggested criteria	Assessment risk index	Suggested criteria
Intolerable region	**5A, 5B, 5C, 4A, 4B, 3A**	Unacceptable
Tolerable region	**5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C**	Acceptable with caution and based on risk mitigation.
Acceptable region	**3E, 2D, 2E, 1A, 1B ,1C, 1D, 1E**	Acceptable

This colour coding will be used to indicate the risk value in the sites risk assessment.

Approvals

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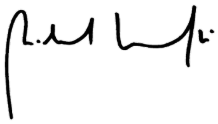

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