



BAANZ Health and Safety Guidelines

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Introduction

BAANZ Health and Safety Guidelines.

The Health and Safety Act 2015 has requirements that are relevant to everyone in New Zealand. BAANZ members must recognise the requirements of the Act. Like all activities within Aviation, Hot Air Ballooning has inherent Risks associated with the activity. Due to the dynamic environment created on the ground and in the air, Operators must be made aware of Health and Safety requirements to ensure protection of the Public, Passengers, Crew and themselves.

The following matrix determines a score from the Consequences (severity) of a Hazard verses the Likelihood the risk of the Hazard occurring.

Workplace Injury and/or Occupational Illness		Consequences - Severity				
		Insignificant	Minor	Moderate	Major	Critical
		Negligible injury. Slight pain and/or discomfort.	Superficial injury / illness that may require First Aid and/or medical assessment. Not affecting work performance or causing long term effect. Not a significant injury or serious harm injury.	Injury / illness causing temporary disability including reversible health effects. May require medical treatment and/or alternate work duties or may result in one or more work days lost.	Injury / illness causing permanent or temporary severe disability including serious health damage and/or needing hospitalisation.	Death or serious injury/illness to one or more people causing permanent disability, including irreversible health damage.
Negligible risk to Plant, Property		Minor damage to Plant or Property not requiring a repair.	Moderate Damage to Plant or Property requiring some repair.	Major Damage to Plant and Property where there is a major repair required.	Critical Damage to Plant and Property where there is complete hull loss.	
		Potential Significant Hazard		Significant Hazard		
Likelihood	Almost Certain Happens (or is expected to occur) daily or weekly, in this location	Medium (10)	High (15)	High (17)	Extreme (23)	Extreme (25)
	Likely Happens (or is expected to occur) weekly or monthly in this location	Medium (7)	High (11)	High (16)	Extreme (21)	Extreme (24)
	Possible Will occur in some circumstances and has happened before.	Low (4)	Medium (8)	High (13)	Extreme (18)	Extreme (22)
	Unlikely Could occur in some circumstances and is known in the aviation industry.	Low (2)	Low (5)	Medium (9)	High (14)	Extreme (20)
	Rare Could occur but only in exceptional circumstances, possible in the aviation industry.	Low (1)	Low (3)	Medium (6)	High (12)	Extreme (19)

Risk: likelihood that exposure to a hazard will lead to a negative consequence.

Hazard: any agent that can cause harm or damage to humans, property or environment

Harm: physical injury/damage, especially that which is deliberately inflicted.

Health and Safety Control Sheet

Item	Hazard	Potential Outcome	Risk Level (Pre Control)				Control	Control	Risk Level (Post Control)				Responsibility	Review Frequency	
			Consequences	Significant Y/N	Likelihood	Level			Score	Eliminate Isolate Minimise	Consequences	Likelihood			Level
1	Fan	Failure of Fan, Ejection of Propeller, Fire, Tipping over, Burns, Lifting/moving injury, Items/Debris sucked through Fan (Hair, Scarves, loose clothing), Noise	Extreme	Y	Possible	Extreme	18	Briefing of Crew, Isolate 'Fan Zone' as No-Go area for public and passengers. One crew member only tasked with fan operation. No Kids. Identify Risks of upstream Debris including crew/PAX apparel. Annual checks of Fan condition and service Do Not move High Speed Fan – turn down to LOW – or OFF - then move	Isolate	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight
2	Burner	Fire, Gas Leaks, Burns, Noise	Moderate	Y	Possible	High	13	Pre-flight checks to determine nil leaks prior to Ignition, Awareness of what is hot and warn crew/Pax, Awareness of dry conditions and risk of Fire to site. Fire Extinguishers available and ready to use.	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight
3	Basket	Crushing, Strains	Minor	N	Possible	Medium	5	Communicate awareness of toes, and careful lifting	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight
4	Envelope	Heavy Lifting, Suffocation	Minor	N	Possible	Medium	5	Communication and careful lifting techniques to reduce likelihood of back strain. Keep helpers out from underside of Envelope.	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight
5	Launch Site	Downwind obstacles, Stock, Airspace Zone, Other Balloons	Moderate	Y	Possible	High	13	Permission to Launch PZ Maps, Airspace Navigation Charts – know your airspace	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight
6	Rigging	Heavy Lifting, Trips, Slips and Falls	Insignificant	N	Rare	Low	1	Crew actively Working together,	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight
7	Inflation	Fan, Burner, Wind increasing/Gusty Crown Line Tension	Moderate	Y	Possible	High	13	Ensure Quick Release/Tether connected to vehicle prior to Inflation. Vehicle 'In' gear and Handbrake 'On'. Keep good Tension on Crown-line during Hot Inflation. Short Burns rather than one long burn.	Minimise	Minor	Possible	Med	5	Pilot (Operator)	Each Flight
8	Pre-Flight	Distractions	Moderate	Y	Possible	High	13	Follow Pre-flight check list as per Flight Manual, Good Communication, Discipline Use a Check-list	Minimise	Insignificant	Possible	Low	4	Pilot (Operator)	Each Flight
9	Flight	PAX Medical emergency	Minor	Y	Possible	Medium	8	Have a plan, know your PAX requirements	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight
10	Landing Site	Land Owner and their Hazards	Moderate	Y	Possible	High	13	Realise there could be restrictive Landowner requirements	Minimise	Insignificant	Rare	Low	1	Crew Chief under direction of Pilot (Operator)	Each Flight
11	Pack up	Heavy Lifting, Trips slips and falls	Insignificant	N	Rare	Low	1	Crew actively Working together,	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight
12	Transportation and Storage of Balloon	Hazardous Gas,	Moderate	Y	Possible	High	9	Understand the composition of LPG, Do Not Store LPG in Enclosed Residential Space – Eliminate exposure to Ignition Sources	Eliminate	Insignificant	Rare	Low	1	Pilot (Operator)	Always
13	Chasing Balloon	Traffic and General Driving Hazards, Awareness of other road users and their distraction of Balloons in the Air.	Minor	Y	Possible	Medium	8	Follow Road Code - Indicate Intentions Early - Use Hazard Lights	Minimise	Insignificant	Rare	Low	1	Crew Chief under direction of Pilot (Operator)	Each Flight
14	Tethering	Working in close vicinity to Public, Inflating with Thermals in area, Gusty Winds,	Moderate	Y	Possible	High	13	Have a plan should it turn to custard, Brief the crew of plan, Be well supported by crew, Be aware of down-wind obstacles and risks, Ensure Tie-offs and Tethers are used, Vehicle hand-brakes on and in gear, (No Quick Releases)	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Inflation
15	Nightglows	Working in close vicinity to Public, Inflating with Thermals in area, Gusty Winds, Operating burner in darkness, Night-vision.	Moderate	Y	Possible	High	13	Have a plan should it turn to custard, Brief the crew of plan, Be well supported by crew, Be aware of down-wind obstacles and risks, Ensure Tie-offs and Tethers are used. Vehicle hand-brakes on and in gear, (No Quick Releases) Have torches handy, Carefully place and stow items so they are not lost in the darkness	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Inflation

Fan

Item	Hazard	Potential Outcome	Risk Level (Pre Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Hazard Minimise	Consequences	Likelihood	Level	Score		
1	Fan	Failure of Fan, Ejection of Propeller, Fire, Tipping over, Burns, Lifting/moving injury, Items/Debris sucked through Fan (Hair, Scarves, loose clothing), Noise	Extreme	Y	Possible	Extreme	18	Briefing of Crew, Isolate 'Fan Zone' as NO-Go area for public and passengers. One crew member only tasked with fan operation. No Kids. Identify Risks of upstream Debris including crew/PAX apparel. Annual checks of Fan condition and service Do Not move High Speed Fan – turn down to LOW – or OFF - then move	Isolate	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight	

Risk assessment: The Fan is considered a Extreme - Risk item where those untrained in its use can become injured due to: Entanglement, Ejection of Material due to Propeller Break up.

Fires and Burns.

Propellers Break-up - spewing high speed wood/carbon debris into people close by.

Serious Harm injuries (including death) due to entanglement of Scarves, Hair, Clothing.

Hazard: Fire, Propeller Break-up, Ingestion.

Cause –

Fire: Fuel leak, Fan tipped over and fuel leaking onto hot components.

Propeller Breakup: Poor Propeller condition due to age and insufficient maintenance (Bolts - Fatigue, Propeller – Delamination/Damage), Moving Fan while at high speed (Precession and Centripetal Forces) – bending Prop into Cage, Ingestion of material into Fan

Ingestion: Upstream debris sucked in, loose clothing/hair.

BAANZ Guideline:

Care must be taken to;

1. Have a Fire Extinguisher handy.
2. Assign a crew member to the Fan – taking care to explain how it operates, how to move, and what the dangers are. A crew member must be on the Fan during Gusty conditions.
3. Isolate the Fan from the Public and minors (use the assigned crew member and other items such as safety cones and barriers to keep people away) - create a NO-GO area.
4. Only move the Fan when it is 'OFF' or when at lowest RPM to lessen the likelihood of the Fan tipping over due to precession and centrifugal motion. Fans moved at high speed will effectively try to bend the Propeller and this creates a possibility for the Propeller to break up.
5. Prior to Inflation - check upstream of the Fan for possible debris that could get sucked into the fan and foul it.
6. During Cold Inflation the 'OFF' switch must be within reach of the Pilot when at the Burner Controls. Be ready to switch the Fan 'OFF' and move to a new position in Gusty conditions (Fan tip over due to Balloon dragging into Fan has caused ejection of Propeller) – assigned crew member must be ready to move Fan quickly.
7. At completion of Hot Inflation direct the assigned crew member to move Fan away from Basket area (up wind). Remember Fan will stay hot for some time. Switch must be off and Fuel-Cock selected OFF.
8. Ensure crew tiedown Fan onto Trailer so it does not tip over or fall off during chase.
9. The Inflation Fan is an important piece of equipment and must be maintained regularly. Consider Maintenance in the off season, change the oil, clean the fuel filter, replace the Propeller bolts, ensure the cage is in good condition.

Risk Summary: Fans well maintained and operated correctly with care will pose little threat. Operators must consider and keep aware of the risk that a Fan has during Ballooning operations.

Burner

Item	Hazard	Potential Outcome	Risk Level (Pre-Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Isolate Minimise	Consequences	Likelihood	Level	Score		
2	Burner	Fire, Gas Leaks, Burns, Noise	Moderate	Y	Possible	High	13	Pre-flight checks to determine nil leaks prior to ignition, Awareness of what is hot and warn crew/Pax, Awareness of dry conditions and risk of Fire to site. Fire Extinguishers available and ready to use.	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight	

Risk assessment: The Burner is considered a Moderate - Risk item where those untrained in its use can become injured due to: Fire and Burns. Damage to other Balloon Equipment such as the Envelope can also occur.

Fires and Burns (hot and cold).
 Fuel Leaks have the potential for a large Fire.
 Noise can cause hearing damage long term.

Hazard: Fire, Fuel Leakage, Hot Components.

Cause –

Fire: Fuel leak, Valve Failure, excess unburnt fuel in can.

Fuel Leakage: Fuel Hose failure, Fuel Coupling seals failure, Burner Valve Failure, Low Pressure Fuel and Low Temperature Butane pooling in Can.

Hot Components: due to burner operation – burner can and coils can be hot for some time after operation.

BAANZ Guideline:

Care must be taken to;

1. Have a Fire Extinguisher handy.
2. Ensure correct orientation of Fuel Cylinders during Inflation so the Burner will only supply Liquid to Burner – follow the Flight Manual.
3. Ensure there are no leaks on Fuel Couplings, Hoses and Burner prior to Ignition of burner.
4. Continually monitor fuel system during inflation especially in Gusty conditions when the Balloon can drag into the Inflation Fan.
5. After Hot Inflation, as a pre-flight item, check burner for full function and nil leaks prior to take off.
6. Ensure Passengers are made aware of the dangers of the Fuel System including the Fuel Hoses and the Burner.
7. During Landing the Hot Burner can come into contact with Envelope – be aware and try to protect.
8. After Landing ensure all Fuel is released from Burner Fuel Lines and manifolds.
9. During Pack up, be aware that burner can be hot for some time and can offer a Fire risk especially in a Trailer near Fuel Cylinders.

Risk Summary: Burners well maintained, operated correctly and with care, will pose little threat. Operators must consider and keep aware of the risk that a Burner has during Ballooning operations. Follow the Manufacturer Flight Manual in all situations especially with regard to Crew and passenger Briefings.

Basket

Item	Hazard	Potential Outcome	Risk Level (Pre Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Isolate Minimize	Consequences	Likelihood	Level	Score		
3	Basket	Crushing, Strains	Minor	N	Possible	Medium	5	Communicate awareness of toes, and careful lifting	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight	

Risk assessment: The Basket is considered a Minor - Risk item where those untrained in its use can become injured due to: Crushing and Strains.

Crew and Passengers who have had crushing injuries to Foot and Toes
Basket is heavy when fully laden and is difficult to move – lifting can cause strain injuries to your back.

Hazard: Serious Harm Injury – such as Broken Bones.

Cause –

Crushing: Basket moving quickly onto unsuspecting crew/passengers

Lifting: Basket is heavy and lifting incorrectly can cause strain injury to your Back.

BAANZ Guideline:

Care must be taken to;

1. Inform Crew and Passengers helping a Balloon inflate to be aware of the Balloons sudden movement and to keep feet clear of the Basket especially in Gusty conditions.
2. During Pack up, be aware that the basket can still be a risk during unloading/loading from/to the vehicle.

Risk Summary: A Basket well maintained and operated correctly with care will pose little threat. Operators must consider and keep aware of the risk that a Basket has during ballooning operations. Follow the Manufacturer Flight Manual in all situations especially with regard to Crew and passenger Briefings. Having good Trailer equipment, moving methodology and enough crew will help lessen risk.

Envelope

Item	Hazard	Potential Outcome	Risk Level (Pre-Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Isolate Minimise	Consequences	Likelihood	Level	Score		
4	Envelope	Heavy Lifting, Suffocation	Minor	N	Possible	Medium	5	Communication and careful lifting techniques to reduce likelihood of back strain. Keep helpers out from underside of Envelope.	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight	

Risk assessment: The Envelope is considered a Minor - Risk item where those untrained in its use can become injured due to: Strains.

Envelope is heavy when fully laden and is difficult to move – lifting can cause strain injuries to your back.

Hazard: Lifting, Suffocation.

Cause –

Lifting: Envelope is heavy and lifting incorrectly can cause strain injury to your Back.

Suffocation: Envelope in good repair is not porous – suffocation can occur if caught underneath fabric.

BAANZ Guideline:

Care must be taken;

1. During setup, manoeuvring Envelope in position can cause Strain injuries if not careful
2. During pack up, be aware that the Envelope can still be a risk during loading into the vehicle.
3. Anyone inside or under the Envelope could be suffocated – be aware of minors that are assisting.

Risk Summary: Envelope manoeuvred correctly with care will pose little threat. Operators must consider and keep aware of the risk that an Envelope has during ballooning operations. Follow the Manufacturer Flight Manual in all situations especially with regard to Crew and passenger Briefings. Having good Trailer equipment, moving methodology and enough crew will help lessen risk. Keep track of children when inflating/deflating.

Launch Site

Item	Hazard	Potential Outcome	Risk Level (Pre Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Reduce Mitigate	Consequences	Likelihood	Level	Score		
5	Launch Site	Downwind obstacles, Stock, Airspace Zone, Other Balloons	Moderate	Y	Possible	High	15	Permission to Launch PZ Maps, Airspace Navigation Charts – know your airspace	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight	

Risk assessment: The Launch Site is considered a Moderate - Risk item where there is much excitement/activity and once in the air must 'keep ones head' as the pilot flies up and out of the launch site.

Public experiencing a Balloon Inflating is exciting and a new experience. Except when the burner comes on – the activity doesn't appear dangerous. Expect the public to be distracted.

Hazard: Downwind Obstacles (Power-lines, Trees, Buildings, Vehicles, Other Balloons), Stock, Airspace Zone, False Lift, other Balloons.

Cause –

Downwind Obstacles: On take-off a Balloon must be able to safely climb above all downwind obstacles such as Powerlines, Trees, Buildings, Vehicles, Other Balloons.

Stock: Stock awareness down wind is critical to a successful flight. Up-to-date PZ maps for the flight area must obtained prior to flight.

Airspace Zone: All operators must be fully aware of NZ Airspace Zones that they plan to fly through prior to flight.

False Lift: climbing into a fast wind generating (false) Lift as the balloon is effectively sucked up into the faster air current and creating a false feeling of buoyancy.

Other Balloons: beware of those still on launch site and those climbing out.

BAANZ Guideline:

Care must be taken to;

1. Prior to flight, consider Stock downwind.
2. Consider downwind obstacles and method to clear them.
3. Consider Airspace Zone requirements.
4. Consider False Lift - during high wind launches.
5. Maintain a constant slow rate of climb, be aware of other balloons above and below.

Risk Summary: Managing Launch Site requirements comes down to preparation, knowledge of the flight area and active management of the Launch into Flight. The better preparation the less likely a mistake will cause an occurrence.

Rigging

Item	Hazard	Potential Outcome	Risk Level (Pre Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Isolate Minimise	Consequences	Likelihood	Level	Score		
6	Rigging	Heavy Lifting, Trips, Slips and Falls	Insignificant	N	Rare	Low	1	Crew actively Working together,	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight	

Risk assessment: Rigging the Balloon is considered an Insignificant Risk however to those new to setting up a Balloon there is a certain way of accomplishing the task so that steps are not missed.

Distraction can cause vital steps to be missed

Hazard: Heavy lifting, trips, slips and falls.

Cause –

Lifting: Envelope is heavy and lifting incorrectly can cause strain injury to your Back.

Trips Slips and Falls: attaching flying wires to the burner in the excitement can provide a trip hazard to those working around the balloon.

BAANZ Guideline:

Care must be taken to;

1. Take a slow and methodical approach to accomplishing the balloon rig so that steps are not missed and the crew do not un-necessary rush.
2. Crew must help one another

Risk Summary: Rigging the Balloon will pose little threat. Operators must consider and keep aware of the risk that an Envelope has during ballooning operations. Follow the Manufacturer Flight Manual in all situations. Having a good methodology and enough crew will help lessen any risk. Keep track of children when manoeuvring vehicles and equipment.

Inflation

Item	Hazard	Potential Outcome	Risk Level (Pre-Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Isolate Minimise	Consequences	Likelihood	Level	Score		
7	Cold Inflation	Fan, Burner, Wind increasing/Gusty Crown Line Tension	Moderate	Y	Possible	High	13	Ensure Quick Release/Tether connected to vehicle prior to Inflation. Vehicle 'In' gear and Handbrake 'On'. Keep good Tension on Crown-line during Hot Inflation. Short Burns rather than one long burn.	Minimise	Minor	Possible	Med	5	Pilot (Operator)	Each Flight	

Risk assessment: The Cold Inflation is considered a Moderate Risk however when well controlled with good methodology it can seamlessly occur.

Inflation is a busy and exciting time – stay focused!

Hazard: Fan, Burner, Wind increasing/ Gusty.

Cause –

Fan: Operation of the Fan is a Moderate Risk (see 1 - Fan).

Burner: LPG plus Fire is a Moderate Risk (see 2 – Burner)

Wind increasing/Gusty: can upset the launch moving the envelope and the rig back and forth, Inflation is made more dynamic and risky.

Crown Line tension: if there is not enough tension on the Crown Line then the inflation can be made difficult and risks the balloon over centring into the tie-off vehicle.

BAANZ Guideline:

Care must be taken to;

1. Ensure the Balloon is tied off to the Chase Vehicle prior to cold Inflation, Hand-brake 'On' and 'In' gear.
2. Fully brief assisting crew prior to Cold Inflation (- follow Flight Manual briefings).
3. Ensure the Fan is only attended by those trained in its use. No loose clothing, scarves, long hair, no children, no public.
4. Ensure there are no fuel leaks prior to lighting the burner.
5. Ensure the burner is only operated by the Pilot in Command.
6. Communicate effectively with the crew assisting at the mouth of the Balloon.
7. Use multiple short burns rather than one long burn.
8. When there is a change in wind, high wind inflation or gusty conditions, take care, stay focussed, slow down, don't fight the balloon, allow it to move – take it slow.

Risk Summary: Inflating the Balloon will pose little threat when well managed by an experienced Pilot and experienced Crew. Operators must consider and keep aware of the risk that Inflation has during ballooning operations. Follow the Manufacturer Flight Manual in all situations. Having a good methodology and enough crew will help lessen any risk.

Ensure no-one steps over the tether or quick release.

Ensure the public remain clear of the area between the Basket and the Tethering vehicle.

Pre-Flight

Item	Hazard	Potential Outcome	Risk Level (Pre-Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Isolate Minimise	Consequences	Likelihood	Level	Score		
8	Pre-Flight	Distractions	Moderate	Y	Possible	High	13	Follow Pre-flight check list as per Flight Manual, Good Communication, Discipline Use a Check-list	Minimise	Insignificant	Possible	Low	4	Pilot (Operator)	Each Flight	

Risk assessment: The Pre-flight is considered a Moderate Risk however when well controlled with good methodology can seamlessly occur.

Preparing the Balloon for flight is a busy time where distraction can affect the rest of the flight, stay disciplined and stay focused!

Hazard: Distractions

Cause –

Distractions: Crew, Passengers, Public, Sponsors, Regulators, Go-Pro, Mobile devices, Photo-Ops; there are so many opportunities to forget a simple step. Check-lists are a great way to get it right.

BAANZ Guideline:

Care must be taken to;

1. Follow the Flight Manual
2. Use a check-list
3. The Pilot should take a brief moment to reflect – ‘have I got everything?’
4. Keep Disciplined

Risk Summary: Well practiced methodology will reveal items that have been forgotten or are out of sequence unless the pilot is distracted or fatigued. BAANZ recommends using checklists to get it right.

Passenger Medical Emergency

Item	Hazard	Potential Outcome	Risk Level (Pre Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Isolate Mitigate	Consequences	Likelihood	Level	Score		
9	Flight	PAX Medical emergency	Minor	Y	Possible	Medium	8	Have a plan, know your PAX requirements	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight	

Risk assessment: Passenger Medical Emergency is considered a Minor Risk.

Passengers can have any number of Medical risks. Flying in a Balloon can increase the incidence of Medical events due to the excitement, stress and Altitude.

Hazard: Pax Medical Emergency

Cause –

Pax Medical Emergency: A plethora of Medical Conditions can occur. The worst to occur during flight include Heart Attacks, Strokes, Diabetic events, Fits and Seizures.

BAANZ Guideline:

Care must be taken to;

1. Know your Passengers – ask them if they have any Medical conditions that you should know about.
2. Have a plan (and plan within your flight plan an alternative landing zone).

Risk Summary: Most Passengers will have a delightful time and there will be little risk, however consider the ‘what if’s’ a passenger had an event and what would you do as a pilot. The Pilots first priority is to fly the aircraft, land at the first ‘safe’ opportunity and get help.

Landing Site

Item	Hazard	Potential Outcome	Risk Level (Pre-Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Reduce Mitigate	Consequences	Likelihood	Level	Score		
10	Landing Site	Land Owner and their Hazards	Moderate	Y	Possible	High	13	Realise there could be restrictive Landowner requirements	Minimise	Insignificant	Rare	Low	1	Crew Chief under direction of Pilot (Operator)	Each Flight	

Risk assessment: The Landing Site is considered a Moderate Risk.

Landing Sites for a Balloon can be anywhere and all have their individual requirements.

Hazard: Land-Owners and their Hazards

Cause –

Land-Owners and their Hazards: Consider the requirements on any location (PCBU, Farm, Worksite, etc) bound by Health and Safety (WorkSafe), you are an uninvited guest that hasn't been integrated into their system. Realise there could be restrictive Landowner requirements.

BAANZ Guideline:

Care must be taken to;

1. Approach the Landowner with the respect of their requirements
2. Be mindful of their stock and crop.

Risk Summary: Often the arrival of a Balloon on a Land-Owners property is one of joy and happiness, that doesn't mean that all will be the same. Take the time to discuss and communicate what your intentions are. Do not assume, ask permission first.

Pack-Up

Item	Hazard	Potential Outcome	Risk Level (Pre-Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Isolate Minimise	Consequences	Likelihood	Level	Score		
11	Pack up	Heavy Lifting, Trips slips and falls	Insignificant	N	Rare	Low	1	Crew actively Working together.	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Flight	

Risk assessment: Packing Up the Balloon is considered an Insignificant Risk however to those new to setting up a Balloon there is a certain way of accomplishing the task so that steps are not missed.

Distraction can cause vital steps to be missed

Hazard: Heavy lifting, trips, slips and falls.

Cause –

Lifting: Envelope and Basket are heavy and lifting incorrectly can cause strain injury to your Back.

Trips Slips and Falls: detaching flying wires to the burner or the endless amounts of envelope fabric can provide a trip hazard to those working around the balloon.

BAANZ Guideline:

Care must be taken to;

1. Take a slow and methodical approach to accomplishing the balloon pack-up so that steps are not missed and the crew do not un-necessary rush.
2. Crew must help one another

Risk Summary: Packing Up the Balloon will pose little threat. Operators must consider and keep aware of the risk that an Envelope and Basket has during ballooning operations. Follow the Manufacturer Flight Manual in all situations. Having a good methodology and enough crew will help lessen any risk. Keep track of children when manoeuvring vehicles and equipment.

Transportation and Storage of Balloon

Item	Hazard	Potential Outcome	Risk Level (Pre-Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Isolate Minimise	Consequences	Likelihood	Level	Score		
12	Transportation and Storage of Balloon	Hazardous Gas,	Moderate	Y	Possible	High	9	Understand the composition of LPG, Do Not Store LPG in Enclosed Residential Space – Eliminate exposure to Ignition Sources	Eliminate	Insignificant	Rare	Low	1	Pilot (Operator)	Always	

Risk assessment: Balloons use Liquid Petroleum Gas and it is a Class 2 Gas heavier than air and as such is considered a Moderate risk. In the correct ratio's it is both an asphyxiant and is explosive. A Balloon is an aircraft and as such has high value. The way an Operator cares for, transports and storage the Balloon directly results in maximisation of the Balloons life.

Hazard: Hazardous Gas

Cause –

Hazardous Gas: LPG is a heavier than Air Gas, it will flow to ground level. If it is in an enclosed area such as a trailer, garage it will provide an explosive fire risk. Because it also displaces air and therefore oxygen it can asphyxiate humans close by.

BAANZ Guideline:

Care must be taken to;

1. Be aware of the Stench Gas 'additive' smell (rotten onion and garlic) that indicates the presence of the gas.
2. Be aware of the potential for fuel leaks.
3. Eliminate exposure to Ignition sources.
4. Understand the composition of LPG gas.
5. Ensure that all Fuel Cylinder valves are checked closed.
6. Do not store Fuel Cylinders inside the home or adjoining garage, remove cylinders and store in a separate enclosure away from the home.
7. When transporting the Balloon – ensure the Fuel Cylinders are strapped in tight and remove the risk of any equipment from coming loose in a crash.
8. No Passengers in Trailers.

Risk Summary: Generally, there will be little risk in storing Fuel however a small leak could cause a major fire or asphyxiate one in their home. BAANZ recommends storing Fuel Cylinders outside and away from the residential Home.

Chasing the Balloon

Item	Hazard	Potential Outcome	Risk Level (Pre Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Isolate Mitigate	Consequences	Likelihood	Level	Score		
13	Chasing Balloon	Traffic and General Driving Hazards, Awareness of other road users and their distraction of Balloons in the Air.	Minor	Y	Possible	Medium	8	Follow Road Code - Indicate Intentions Early - Use Hazard Lights	Minimise	Insignificant	Rare	Low	1	Crew Chief under direction of Pilot (Operator)	Each Flight	

Risk assessment: Driving on Public roads is a very dynamic environment and when there is a Balloon in the air close by it is very distracting to other motorists and as such is considered a Minor risk.

Hazard: Traffic and General Driving Hazards, Awareness of other road users, and their distraction of Balloons in the air.

Cause –

Traffic and General Driving Hazards: Humans driving are a risk to themselves anyway

Awareness of other road users and their distraction of Balloons in the air: Balloons are an unusual sight for many and it is very distracting

BAANZ Guideline:

Care must be taken to;

1. Drive within the Law.
2. Be aware that most other Drivers will have no understanding nor comprehension as to what a crew vehicle will require and how it might act.
3. Indicate early and often, pull over and let others pass.
4. Use headlights and hazard lights
5. go slow, most public will be looking up not at the road

Risk Summary: Chasing a Balloon is fun however it is risky when there are plenty of Public also going about their daily lives on the road, do not under estimate the risk of an accident.

Drive First, Chase the Balloon Second.

Tethering

Item	Hazard	Potential Outcome	Risk Level (Pre Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate	Isolate	Minimise	Consequences	Likelihood		
14	Tethering	Working in close vicinity to Public, Inflating with Thermals in area, Gusty Winds,	Moderate	Y	Possible	High	13	Have a plan should it turn to custard, Brief the crew of plan, Be well supported by crew, Be aware of down-wind obstacles and risks, Ensure Tie-offs and Tethers are used, Vehicle hand-brakes on and in gear, (No Quick Releases)	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Inflation	

Risk assessment: Tethering may seem easier than Flying however it is not without its own risks and as such is considered a Moderate risk.

Hazard: Working in Close vicinity to the Public, Inflating with Thermals in the area, Gusty Winds

Cause –

Working in close vicinity to the Public: Tethering is often carried out to display a Balloon at time when it is not suitable for Flying – often in situations otherwise non-conductive to normal flying.

Inflating with Thermals in the area: often Tethering is carried out during the middle of the day when thermals are possible

Gusty Winds: Thermals and other Meteorological events

BAANZ Guideline:

Care must be taken to;

1. Consider all the risks, Tethering is not an easy activity.
2. Use the correct equipment – DO NOT use Quick Releases (use a tether Bridle and high load ropes or tapes).
3. Vehicle Hand Brakes 'On' and 'In' gear.
4. Brief your Crew and have sufficient numbers to be well supported.
5. Constantly monitor the weather, what is coming, what are the signs, what will you do if something happens – have a plan.
6. Be aware of down-wind obstacles, consider if the Balloon drags the tether vehicles where will they go and who is in the way

Risk Summary: Tethering is often a great way to show off a Balloon in close proximity of the public, however there have been many cases of it all going wrong with the Public at huge risk. Be prepared.

Nightglows

Item	Hazard	Potential Outcome	Risk Level (Pre Control)					Control	Control	Risk Level (Post Control)					Responsibility	Review Frequency
			Consequences	Significant Y/N	Likelihood	Level	Score			Eliminate Isolate Minimise	Consequences	Likelihood	Level	Score		
15	Nightglows	Working in close vicinity to Public, Inflating with Thermals in area, Gusty Winds, Operating burner in darkness, Night-vision.	Moderate	Y	Possible	High	13	Have a plan should it turn to custard, Brief the crew of plan, Be well supported by crew, Be aware of down-wind obstacles and risks, Ensure Tie-offs and Tethers are used, Vehicle hand-brakes on and in gear, (No Quick Releases) Have torches handy, Carefully place and stow items so they are not lost in the darkness	Minimise	Insignificant	Rare	Low	1	Pilot (Operator)	Each Inflation	

Risk assessment: Nightglows are similar to Tethering with the addition of often working in the dark and as such is considered a Moderate risk.

Hazard: Working in Close vicinity to the Public, Inflating with Thermals in the area, Gusty Winds, Darkness, Night-vision, operating burner in the darkness.

Cause –

- Working in close vicinity to the Public:** Tethering a Balloon for a Nightglow is often carried out to display a Balloon at time when it is not suitable for Flying
- Inflating with Thermals in the area:** often Tethering is carried out during the middle of the day when thermals are possible
- Gusty Winds:** Thermals and other Meteorological events
- Operating Burner in the Darkness:** Nightglows are most effective in the dark.
- Night-Vision:** hard to maintain when using the Burner (blinds the Pilot).

BAANZ Guideline:

Care must be taken to;

1. Consider all the risks, Tethering in a Nightglow is not an easy activity.
2. Use the correct equipment – DO NOT use Quick Releases (use a Tether Bridle and high load ropes or tapes).
3. Vehicle hand brakes 'On' and 'In' gear.
4. Brief your Crew and have sufficient numbers to be well supported.
5. Constantly monitor the weather, what is coming, what are the signs, what will you do if something happens – have a plan.
6. Be aware of down-wind obstacles, consider if the Balloon drags the tether vehicles - where will they go and who is in the way?
7. Have torches handy, head lamps work well.
8. Close one eye when burning.
9. Know your target when burning especially in windy conditions.
10. Carefully place and stow items so they are not lost in the darkness.

Risk Summary: Nightglows are often a great way to show off a Balloon in close proximity of the public at night, when it goes wrong it will be extremely hard to work out solutions in the darkness. Have a plan - be prepared.

**Prior
Preparation
Prevents
Piss
Poor
Performance**