

RISK ASSESSMENT

Work Scope:	Drone Port Montrose Operation											
RA Team Members:												
Location:						Date:						
Reviewed By:		Approved By:				Risk Assessment No:						
TASK	HAZARD	HAZARD CONSEQUENCE	INITIAL RISK			MITIGATIONS				RESIDUAL RISK		
			Severity	Probability	Risk	List those currently provided and those additionally required (add to action list)				Severity	Probability	Risk
1. Flight Operation	Mid-air collision with manned aircraft	Other air user may inadvertently enter segregated airspace and collide with UAV UAV inadvertently leaves segregated airspace	Catastrophic	Remote	H	* All flights will be conducted within the constraints defined in Drone Port Montrose's Operations Manual which will require: * UAV flights to be conducted as part of NOTAM * UAV to operate within designated area of segregated airspace * UAS operators will be demonstrably competent (exact requirements to be defined within operations manual following consultation * UAS pilots to participate in a pre-flight safety briefing by Drone Port Montrose to confirm both generic and flight specific hazards and actions on * 'STOP', loiter and return to home actions understood by all parties involved - Operations Manual - flight checklist * UAS operators will maintain constant monitoring of aircraft visually (within VLOS) or on flight management system screen * Communication to be available at all times for Air Traffic Control to inform Drone Port Montrose of any unplanned aircraft incursion into the segregated airspace. Consultation / Communication Plan * That if the UAV flight outside the planned activities Air Traffic Control will be informed by Drone Port Montrose in order to allow other air users within 'fly away' radius to be informed - Consultation / Communication Plan * The UAV operator will be required to have the necessary insurances in place to cover their flight operations. RS - Insurance plan (Bridging document) * Geo-fencing will be applied for all operations				Catastrophic	Improbable	M
2. Flight Operation	Onshore ground impact endangering humans	System failure of UAV, ground station or datalink Human error	Catastrophic	Remote	H	* Limited area of rough ground beneath UAV flight path prior to reaching the sea. Unpopulated, low use (i.e. dog-walkers etc) * During overflight any passers (e.g. dog walkers) by will be warned and requested to not pass beneath drone. Signs will also be erected. Operational Manual - site control * Flights will only be conducted within the operating weather envelope of each system. - Operational Manual - Weather provider - constraints of each weather type * Suitably sized exclusion zone in place beneath UAV based on size of system and stage of development. Consultation / Operations manual * All systems tested for each flight prior to moving beyond VLOS * Progressive approach to trials – VLOS, EVLOS (if pertinent) then BVLOS. Systems will be required to demonstrate previous flight history and competence of system prior to BVLOS taking place - Consultation / Operations Manual * Anyone has the authority to call 'STOP'. Clarify to avoid abuse. * The UAV operator will be required to have the necessary insurances in place to cover their flight operations. * Ensure the UAV meets Manufacturer standard.				Catastrophic	Extremely improbable	L
3. Flight Operation	Offshore impact endangering humans	System failure of UAV, ground station or datalink Human error	Catastrophic	Improbable	M	* As per above (Onshore ground impact) plus: * Very limited human presence offshore * Flights to vessels, windfarms and facilities will be subject to a separate risk assessment accepted by the vessel or facility owner * Avoidance of humans and facilities at sea during planning. - Planning / Communications Plan / Operations Manual * Drone Port Montrose will have phone and radio communications available to notify (not direct or control) any 'at risk' parties if required * If the situation arises where human life is imminently at risk, if possible, the UAV will be flown into the sea (Include in Ops Manual and Contract) * Return to home and/or pre-programmed loiter pattern in place prior to take off * Communications plan including redundancy levels and Actions on Lost Comms conducted as part of UAS operator's planning. - Range of comms systems / Geifencing / Return to Home * The UAV operator will be required to have the necessary insurances in place to cover their flight operations				Catastrophic	Extremely improbable	L
4. Flight Operation	UAV pilot incapacitated during flight / operations endangering humans or property (ONSHORE)	UAV Pilots Health Uncontrolled loss of UAV Damage to property/Equipment Resulting in Endangering humans (Pilot and Others)	Hazardous	Occasional	H	* UAS operator 'fit to fly' in accordance with PICO requirements. Operations Manual - Health Check Document * Secondary pilot capable of conducting emergency landing (requirements will be discussed as part of the consultation period and differ between systems) - Operations Manual - Health Check Document * Drone Port Montrose will have the necessary insurances in place to cover financial damages to adjacent property and people. Insurance Section * Specific considerations for increasingly autonomous flights in future - Operations Manual				Hazardous	Improbable	M

TASK	HAZARD	HAZARD CONSEQUENCE	INITIAL RISK			MITIGATIONS	RESIDUAL RISK		
			Severity	Probability	Risk		Severity	Probability	Risk
5. Flight Operation	UAV pilot incapacitated during flight / operations (OFFSHORE)	UAV Pilots Health Uncontrolled loss of UAV Damage to property/Equipment Resulting in Endangering humans (Pilot and Others)	Hazardous	Occasional	H	<ul style="list-style-type: none"> * UAS operator 'fit to fly' in accordance with PFCO requirements. RS - Operational Manual - Mike - to make Sign off Health Check Document * Secondary pilot capable of conducting emergency landing (requirements will be discussed as part of the consultation period and differ between systems) - Refer to Checklist for Take off and Landing * Drone Port Montrose will have the necessary insurances in place to cover financial damages to adjacent property and people. RS - Insurance Section * Drone will stop and continue hovering until intervention by human.(Include in Check list to ensure Drone have this capability). If this capabilities does not exist a different RA need to carry out. * Drone loses contact, it 'comes home' and lands at the GPS point registered when it first started. If this capabilities does not exist a different RA need to carry out. * Autonomous flight taking consideration in the future. * If the situation arises where human life is imminently at risk, if possible, the UAV will be crashed (flown) into the sea (Include in Ops Manual and Contract) 	Hazardous	Improbable	M
6. Flight Operation	Human Error	UAV Pilots Health Uncontrolled loss of UAV Damage to property/Equipment Resulting in Endangering humans (Pilot and Others)	Hazardous	Occasional	H	<ul style="list-style-type: none"> * UAS operator 'fit to fly' in accordance with PFCO requirements. Operational Manual - Health Check Document * Secondary pilot capable of conducting emergency landing (requirements will be discussed as part of the consultation period and differ between systems) - Operations manual - Checklist for Take off and Landing * Drone Port Montrose will have the necessary insurances in place to cover financial damages to adjacent property and people. Insurance Section * Autonomous flight taking consideration in the future * If the situation arises where human life is imminently at risk, if possible, the UAV will be flown into the sea Operations Manual - Flight procedures/check list * Personnel Competence - Consultation / Ops Manual * Drone Operator have to adhere to Operation Manual. - Flight outside constraints of the ops manual, to be covered by bespoke Risk Assessment / CAA approval if necessary 	Hazardous	Improbable	M
7. Flight Operation	Injury to trials or site personnel (non-UAV pilot) at Drone Port Montrose (Slips, trips and falls Illness)	Non Operational personnel entering restricted area Injury to Personnel	Major	Remote	M	<ul style="list-style-type: none"> * These issues will be addressed as part of the HSE Management Plan for Drone Port Montrose. * Drone Port Montrose and Thridparty Drone Operator will have the necessary insurances in place to cover financial damages to adjacent property and people * Induction for all parties attending Drone Port Montrose (Office Visit Only & Drone Launching/Landing site) * Risk Assessment reviewed and Toolbox Talk held prior to each operation * Announcement will be made prior to preflight check, take-off and landing of Drone 	Major	Improbable	L
8. Flight Operation	Privacy (photography, video etc)	Court Action (DMP and UAV Operator) Damage of Reputation Possible Financial Impact	Major	Remote	M	<ul style="list-style-type: none"> * These issues will be addressed as part of the HSE Management Plan for Drone Port Montrose. * Drone Port Montrose and Thridparty Drone Operator will have the necessary insurances in place to cover financial damages to adjacent property and people * All Drone operation will be conducted within the agreed Airspace 	Minor	Extremely improbable	L
9. Flight Operation	Loss of GPS Positioning	Loss of Drone Endangering Human or Property	Catastrophic	Remote	H	<ul style="list-style-type: none"> * Drone will go into ATTI Mode, and will be hover until the GPS signal is reconnect - Consultation / Operations Manual * Drone Positioning system will automatically adopt other Satellite constellation such as Galileo or Glonass to continue operation. * GPS Redundancy build in within the Drone * Minimum of two GPS system will be available - Consultation / Operations Manual 	Catastrophic	Improbable	M
10. Flight Operation	Weather/Environment Condition (Rain, Lightning, Wind, Snow, Low Visibility)	Damage to the Drone Loss of Drone Endangering person or Property	Hazardous	Occasional	H	<ul style="list-style-type: none"> * Review and Monitor Weather Forecast Prior and during the Operation. * Ensure the Drone are IP rated for existing and forthcoming weather forecast. 	Hazardous	Improbable	M
11. Flight Operation	Bird	Loss of Drone Damage to the Drone Endangering person, Wildlife or Property	Hazardous	Occasional	H	<ul style="list-style-type: none"> * Visual Awareness of Bird in close proximaty using Drone Camera * Emergency Landing Procedure * Audible Bird Scarer * Communication with local/nearby farmers - identify ploughing time 	Major	Occasional	M
12. Flight Operation	Crane Operation	Damage to Drone Damage to Third Party Assets Endangering person	Major	Occasional	M	<ul style="list-style-type: none"> * Establish clear line of communication between Drone Port Montrose, Drone Operator and site management/Crane Operator within the designation flight path. * If crane operations are taking place during take-off and landing and interfere, an agreed window of time will be arranged for take-off and landing * Geo-fencing will be applied for the operation 	Major	Extremely improbable	L

TASK	HAZARD	HAZARD CONSEQUENCE	INITIAL RISK			MITIGATIONS List those currently provided and those additionally required (add to action list)	RESIDUAL RISK		
			Severity	Probability	Risk		Severity	Probability	Risk
13. Flight Operation	Loss of Control (Equipment or Telemetry Failure)	Loss of Drone Damage to the Drone Endangering person or Property	Hazardous	Occasional	H	<ul style="list-style-type: none"> * Drone will go into ATTI Mode, and will be floating until the reconnect. * Drone loses contact, it 'comes home' and lands at the GPS point registered when it first started. If this capabilities does not exist a different RA need to carry out. * Redundancy telemetry link * GPS Redundancy build in within the Drone * Minimum of two GPS system will be available * If the situation arises where human life is imminently at risk, if possible, the UAV will be flown into the sea 	Hazardous	Remote	M
14. Flight Operation	Take off and landing	Injury to unauthorised personnel and equipment on the runway	Major	Remote	M	<ul style="list-style-type: none"> * Checklist for take off and landing (Drone Port) - Monitoring (CCTV, Co-Pilot, Remotely) * Co-Pilot to monitor take-off and landing area * Announcement will be made prior to preflight check, take-off and landing of Drone 	Major	Improbable	L
15. Flight Operation	Fire	Damage to the Drone Endangering person or Property	Major	Remote	M	<ul style="list-style-type: none"> * Availability of Fire Extinguisher * Refuelling Protocol * Battery Condition check * Pre-flight checklist 	Major	Improbable	L