





# Risk Assessment & Method Statement – Rope Access on a Wind Turbine

Document Number: AT RAM 004  
Issue Date: 09/04/2023  
Review Date: 08/04/2026

Revision: 4  
Complied by: Alex Mountain  
Reviewed/Authorised by: Peter King

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Purpose:	This document details the method by which rope access is carried out on wind turbines. The document lists; steps carried out and documents/procedures/regulations followed. A risk assessment of the task is found in Appendix A.		
Summary of Changes	Rev 0	18/02/20	First Issue
	Rev 1	15/06/20	Formatting
	Rev 2	29/05/21	Offshore rescue plan amended
	Rev 3	03/02/22	Risk Ratings Reviewed
	Rev 4	09/04/23	Correct spelling of 'immersion'

Complied by:	Alex Mountain	09/04/23	
Authorised by:	Peter King	09/04/23	

## 1.Task Description/Sequence of the works

1. Prior to work commencing a daily tool box talk/prestart brief is carried out by team leader and briefed to team members.
2. Radio and equipment checks are carried out.
3. Turbine isolations will be applied by an Authorised Technician in accordance with the correct AWP – refer to turbine isolation RAMs. No exterior work until isolations are in place.
4. Wind speed limit for work is 12m/s. However, the L3 will use his/her discretion to determine whether lower speeds are affecting the work and/or safety of the team. For example, dependant on the task and blade type lower wind speeds may be required to work on the tip of the blade. See section '7' for more information on weather.
5. Ropes will be rigged on anchors of un-questionable soundness. The working line and back up line will be independently anchored. Lower ropes to ground/Transition Piece (TP).

**Note- independent anchoring does not refer to the attachment point of the strops, slings or carabiners but the actual strops, slings and/or carabiners.**

### Example nacelle rigging set up:

Rope set 1

Anchor points – gear box housing

Rope Set 2



6. Prior to abseiling;
  - Establish an exclusion zone around the base of the turbine.
  - Carry out buddy checks between technicians to ensure PPE is the correct order.
  - Ensure adequate edge protection is in place.
7. Attach back up device and descender before climbing out of the nacelle, ensuring there are no twists present between the two ropes.
8. Once over the spinner connect a ring rope between the technicians on either side of the blade. The ring rope keeps the technicians in the correct work position and prevents an uncontrolled swing towards the tower.

9. Suckers are used in conjunction with a ring rope to further allow technicians to move into work positions on the blade.
10. When the task is complete, the ring rope is used to lower technicians off the blade and towards the tower, until they are directly below where the ropes pass over the spinner. Decent to the ground can then take place.
11. De-rig ropes by hauling them back up to the nacelle. If leaving ropes overnight, ensure they are bagged to prevent any contamination.
12. Authorised Technician Team Leader to return the WTG to service

### Onshore Specific Information

- Exclusion zone- block turbine access road with cones, chain and 'men working at height' signs
- Ropes can be lowered to the ground – excess rope left on the ground

**Note: Take care not to leave too much excess rope on the ground – this can become entangled on parts of the turbine, vehicles, trees etc...**

### Offshore Specific Information

- Lower the ropes to a technician on the TP.  
**Note: The turbine may need to be yawed in windy conditions to collect the ropes on the TP.**
- Technician on the TP to tie the tails of the rope to the TP hand rail. Ensure there is enough slack in the ropes to create a loop big enough for the technicians to reach the tip of the blade.  
**Note: Before tying off the ropes, ensure the turbine is yawed in the optimum position to prevent the ropes becoming entangled on the tower.**
- When working in a 2-man team extra care is required to prevent rope entanglement. Consider bagging ropes in windspeeds over 8 m/s.
- A 200m exclusion zone is to be established with the marine co-ordinator primarily to prevent vessels causing damage to the ropes.
- Life Jackets to be worn when working over water.

## 2. Plant and Equipment

n/a

## 3. Personal Protective Equipment (PPE)

Rope Access equipment & PPE including rigging equipment:

- Petzl full body harness EN361, EN358, EN813
- Hardware for ascending EN12841 type B
- Hardware for descending EN341 Class A EN12841 type C
- Back up device EN12841
- Climbing helmet EN397
- Karabiners EN362
- Twin fall arrest lanyards EN355, ANSI Z359.13 12 feet, ANSI Z359.12
- 10.5 and 11mm Semi static Rope EN1891 type A

- Anchor Strops EN795B
- Ring ropes
- Grillons EN358
- Fall arrest device (turbine specific EN353)
- Rope protectors

Offshore:

- Life Jacket
- PLB
- Immersion Suit

All PPE equipment used for rope access is inspected by a competent person every 6 months as per LOLER. Equipment manifest/inspection record supplied. Prior to abseiling, pre-use checks are carried out

**Site Mandatory PPE**

Boots  
Safety Glasses/Goggles  
Gloves  
Harness  
Helmet

**4. Hazardous Substances**

N/a

**5. Simultaneous Operations**

Simultaneous operations never permitted whilst rope access work is going ahead.

Exclusion zones to be established around the base of the turbine with no access to the Turbine by third parties allowed without confirming with the team lead that it is safe to enter.

**6. Technical Content of Job (SSOW)**

- All RAMS must be reviewed by the customer prior to deployment – any points requiring clarification will be addressed prior to the work commencing.
- Work carried out in accordance with:
  - o BS 7985: 2009 Code of practice for the use of rope access methods for industrial purpose
  - o IRATA Code of Practice- latest edition
  - o LOLER 1998
  - o PUWER 1999
  - o Work at height regulation 2005
- IRATA L3 to be responsible for all rope access work and setting up an exclusion zone.

## 7. Safety Risk Assessment

AccessTec's risk assessment for this work is detailed in Appendix A. This details the hazards identified by AccessTec for its employees, that are relevant to this particular task and includes details of how the hazards are to be minimised/managed. The supervisor must ensure that all personnel involved in the work are aware of the possible dangers and precautions they must take to ensure that the identified risk is minimised.

The main risks that have been identified for the elements of work covered by the method statement are listed below together with relevant mitigation measures.

**Working at Height:** The principle hazard associated with this activity is falling. All work to be carried out using principles laid out in the IRATA Code of Practice and AccessTec Safe Working & Operating procedure. Establish exclusion zone and secure tools and equipment that could be dropped from height.

**Weather:**

The weather forecast that is to be used for the site in question will be agreed prior to work commencing. It is important that all parties involved in the task understand who has been nominated to check and monitor any risk from the weather. The nominated person could be; lead technician on site, site lead, AccessTec PM/PSO support and or client representative.

- **Wind**

The table below shows the maximum safe working wind speeds for the areas of the WTG that rope access technicians will perform works in. The values below are 10-minute average wind speeds.

WTG Location	Spinner, Blade and Tower	Internal Nacelle	Internal Hub / Blade	Internal Tower	Craning Operations
Maximum average wind speed	12m/s	24m/s	18m/s	24m/s	12m/s

The work party may suspend works at lower wind speeds if they feel conditions compromise their safety at any point.

- **Gusting Wind Speeds**

Postponement or suspension of work should occur if any regular, repeated gusting in excess of 25% of the maximum average wind speed occurs or if the team deem the gusting conditions compromise the safety of the task.

- **Visibility**

Without continuous visibility between the nacelle and ground / sea level or vice-versa external rope access works must be postponed or suspended until the correct conditions are assured.

- **Precipitation (rain, snow, hail etc..)**

Precipitation should only be considered a safety concern for external rope access works if:

- Adequate clothing for the conditions has not been provided.
- Electrical equipment is being used for the task.
- The precipitation contributes to the deterioration of visibility to below safe values stated above.

- The precipitation contributes to the deterioration of general safety.

If any of these criteria are met then rope access works should be postponed or suspended until a suitable safe solution can be arranged or conditions improve.

## - High Temperatures

Due to the physical nature of rope access work, when working in high temperatures ensure adequate rest breaks and hydration of the team.

Adequate skin protection should be provided and used to prevent over exposure to the sun.

During periods of high temperatures, the teams should be regularly briefed on the hazards of working in extreme heat, including the symptoms and treatment of heat exhaustion.

Regular buddy checks to be performed while working to ensure the wellbeing of the work party.

## - Cold Temperatures

Suitable cold weather clothing should be provided and worn.

During periods of low temperatures, the teams should be regularly briefed on the hazards of working in extreme cold including the symptoms and treatment of hypothermia.

Regular buddy checks to be performed while working to ensure the wellbeing of the work party.

## - Lightning storm procedure.

Before work starts, the local weather forecast will be checked. The forecast will determine whether the risk is:

**Green:** Low risk, no action required.

**Amber:** Medium risk, lightning should be monitored throughout the day by designated support staff

**Red:** High risk, No rope access works are to take place until prediction returns to low risk and no strikes have been observed within 50 miles in the past hour. Monitoring is to take place for the remainder of the day.

### System of monitoring lightning risk:

- Nominated person to check the agreed forecast.
- If a medium risk is identified, the designated person (identified on the project specific RAMs) will monitor any activity using [blitzortungLive](#) either on a laptop or a mobile phone. As a minimum, data should be checked half hourly.
- If a high risk is identified follow the [evacuation order \(see next page\)](#).
- Single team working on a remote site (no site support)- A portable lightning detector will be carried by each team.

If a strike occurs within 35 miles of the work party issue an immediate evacuation order to all rope access teams.

If the strike is between 35-50 miles from the work party, ascertain direction the storm is travelling. Once this is known and the location of the work team is within 180 degrees of the direction of the storm issue an immediate evacuation order to all rope access teams.

If the storm is travelling 180 degrees away from the work party issue a readiness warning to all rope access teams and continue to monitor closely for a minimum of 1 hour after lightning has left a 50-mile radius of the work location.

Evacuation Procedure if Lightning is Seen or Heard.

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**Rope Technicians:** If possible, make safe all works and descend to ground as quickly and safely as possible. Remove any suspended power cables and tie off ropes if lightning proximity permits. Proceed to the nearest safe zone (identified on the project specific RAMs)

Once all personnel are gathered in the safe zone contact the site lead; support staff or Blade Team Supervisor to report in. Once the site lead, support staff or Blade Team Supervisor knows the team is all present and correct the team should then wait for further instruction. One of the following courses of action will be issued;

**All Clear** – Normal work can resume.

**Wait in Safe zone** – Team to remain in safe zone until further instruction or all clear given.

**Return to base** – Team to immediately return to substation or base location.

Do not de-rig, remove isolations or crane equipment until the all clear is given or express permission is given by the site lead, support staff or Blade Team Supervisor to do so.

## 8. Safety Content

- All members of the working party are to be briefed and must have signed the Risk Assessment, method statement, toolbox talk form and rescue plan.
- Access work site via agreed route(s).
- Adhere to site and local inductions, use company best safe working practices and refer to customer for any restrictions.
- Be mindful of surroundings, if the job changes stop the job and reassess the impact on your works.
- Ensure good house-keeping is maintained..

**If in any doubt liaise with client representative**

Emergency/Escape Plan

All team members must sign the tool box talk to indicate that they understand what their role will be in the event of an emergency.

A mock rescue off the blade will be performed at the beginning of the project by each team to demonstrate the rope access rescue procedure.

A Rescue Kit will be present on site at all times as the primary rescue system, the responsibility for which lies with the Level 3 Supervisor.

A wind turbine rescue plan can be found in Appendix B. This should be reviewed and understood by all members of the working party.

First Aid

A first aid kit will be available at all times. All injuries and near misses, regardless of how minor are to be reported to customer and the AccessTec project manager.

9. Environmental Risk Assessment of Work			
Impact on the Environment	Y/N	Mechanism of Release – accidental spillage of fuel oil, waste not being contained, excavation - dust generation	Control Measures – bunds, skips.
Will the task generate waste? If yes then how will the waste be generated and disposed of?	N		
Is diesel / Oil / Grease being brought on site. If yes state quantity of fuel oil and method of storage.	N		
Are chemicals and other harmful materials being used during the project? If yes, how will they be contained or stored.	N		
Will the task create any emissions (dust or fume) to the atmosphere (air)? If yes, how will the emissions be produced & controlled.	N		
Will the task create any effluent? If yes, what effluent will be generated and how will it be disposed of?	N		
Is there a potential for noise to be generated from the task. If yes, how will it be assessed & managed.	N		
Is there a potential for the task to create an odour. If yes, how will it be assessed and managed?	N		





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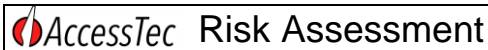
## Appendix A – Risk Assessment

# AccessTec Risk Assessment

Task:	Rope Access on a Wind Turbine	Initial assessment Date:	18/02/2020	Rev:	3	AT RAM 004
Location:	Wind Turbines	Date of last review:	03/02/2022			
Author:	Alex Mountain	Date of next review	02/02/2025	Designation:		
Activities	Hazards	Initial risk rate Likelihood x Severity =	Safety Controls	Residual risk rate Likelihood x Severity =	Y/N	Action required Remarks

## HAZARD CATEGORY – WHAT MIGHT GO WRONG

	Member of public	Operatives	Other		Member of public	Operatives	Other		Members of public	Operatives	Other
1	Fall from height (person)	✓		17	Exposure to vibration *				<b>Other Hazards</b>		
2	Trip / fall on same level	✓		18	Repetitive motion / action			34	Risk of Service Strike – OHL & U/G		
3	Fall down stairs/steps	✓		19	Collision – moving objects/vehicles			35	Trapped / Crushed body parts		
4	Struck by moving object			20	Fire / flammable Atmosphere	✓		36	Confined Spaces		
5	Struck by falling object	✓	✓	21	Explosion			37	Access / Egress		✓
6	Collapse / overturning			22	Drowning	✓		38	Struck / trapped by Vehicles/Mobile Plant Movements		
7	Trapped between objects			23	Asphyxiation			39	Stuck by Winch Bond		
8	Strike stationary object			24	Loss of containment – liquid/gas			40	Exposure at sea		
9	Manual handling	✓		25	Adverse weather	✓		41	Extreme working over water		
10	Contact with tools / equipment / etc	✓		26	Sharp objects			42			
11	Contact with projectiles			27	Radiation *			43			
12	Contact with electricity			29	Exposure to fumes / dust			<b>Other Considerations</b>			
13	Contact with air / water /pressure / pressurized gas / gas / liquid			30	Young persons			1	Pregnant women		
14	Contact with heat / cold			31	New or expectant mothers			2	Waste products		
15	Contact with hazardous substance			32	Environmental threat			3	Lone workers		
16	Exposure to noise			33	Asbestos *			4			



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Working at height on ropes	Falling	3x4 12 (Medium)	<ul style="list-style-type: none"> <li>Use of twin static rope system</li> <li>IRATA Code of Practice including associated annexes and BS 7985 Code of practice for the use of rope access methods for industrial purposes.</li> <li>Working in accordance with GWO working at height.</li> <li>IRATA Guidelines Working on Wind Turbines</li> </ul>	2x4 (8-Low)	N	
Working at height on ropes	Damage to anchor line from hot surface, sharp edge, power tool or corrosive substance.	3x4 12 (Medium)	<ul style="list-style-type: none"> <li>Ensure the Hierarchy for protection of anchor line as detailed in Annex P of the IRATA Code of Practice is followed.</li> <li>Ropes to be rigged outside of the nacelle with the use of long wire strops in case of fire when working in teams of two.</li> <li>Ensure power tools are in correct working order and use in accordance to manufacturer's instructions.</li> <li>Prevent corrosive substance coming into contact with ropes using adequate rope protection. Always refer to MSDS.</li> <li>Use of a Hard link when grinding</li> </ul>	2x4 (8-Low)	N	
Housekeeping	Slips/Trips/Falls/Fall down steps	3x3 9 (Medium)	<ul style="list-style-type: none"> <li>Worksite and access routes to be kept clear of any material as often as is practical with consideration given to removal. Ropes to be bagged in the nacelle when not in use.</li> <li>Suitable disposal areas to be identified and utilised for differing waste material. All waste material to be removed from Turbine and taken back to Office for disposal in appropriate containers. Technicians to be briefed at Tool Box Talks.</li> </ul>	2x3 6 (Low)	N	

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General Works at Height	Injury from dropped objects	4x4 16 (High)	<ul style="list-style-type: none"> <li>Ensure an 'Exclusion Zone' is established prior to work commencement, and no conflict of activities occurs. Team lead (L3) to be responsible for establishing exclusion zone.</li> <li>Signs and barriers to be erected at suitable locations taking into account the trajectory of falling objects.</li> <li>Frequent monitoring of Exclusion zones, ensuring that adequate exclusion zones are maintained throughout project progression.</li> <li>When working offshore a 200m exclusion zone to be set up with the marine co-ordinator.</li> </ul>	2x8 12 (Medium)	N	
General Works at Height	Damage to personnel, equipment or plant arising from dropped objects	4x3 12 (Medium)	<ul style="list-style-type: none"> <li>All tools and equipment to be attached to technician or other anchorage by the use of suitable lanyards. All tools and equipment must be attached at all times.</li> <li>Any tools/equipment weighing 8kg or more will need an independent suspension system in accordance with IRATA ICOP.</li> <li>Small waste material to be placed in suitable bags. Bags to be attached using suitable lanyards at all times.</li> </ul>	2x3 6 (Low)	N	
Hauling Ropes/Equipment. Carrying Tool Bags	Manual Handling Injury/Sprain/Muscular injury	3x2 6 (Low)	<ul style="list-style-type: none"> <li>Assessment of items to be made prior to physical lift/pull, where in doubt a Manual handling task risk assessment to be carried out. Technicians to have completed GWO manual handling.</li> <li>Wear gloves</li> </ul>	2x2 4 (Low)	N	
Using tools on the ropes	Injury to technician whilst working on ropes.	3x3 9 (Medium)	<ul style="list-style-type: none"> <li>Rescue plan to be developed onsite before any work commences and communicated to all personnel at toolbox talk.</li> <li>Consider 'rig to rescue' where appropriate. Ensure ring rope is in good working order and use adequate rope protection on the trailing edge to avoid and 'out of control swing'.</li> </ul>	2x3 6 (Low)	N	

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Ropes rigged in the nacelle – left unsupervised	Fire in the nacelle – resulting in rope failure	2x5 10 (Medium)	<ul style="list-style-type: none"> <li>Team members to be briefed on site emergency procedures in client induction prior to commencement of work.</li> <li>Where possible, use long strops used in order to rig ropes outside of the nacelle.</li> </ul>	1x5 5 (Low)	N	
Working Above Water (offshore)	Drowning	3x4 12 (Medium)	<ul style="list-style-type: none"> <li>Ensure correct PPE is worn. Life jacket with PLB to be worn when working on the ropes. Immersion suit to be worn when water temperature is &lt;12°C.</li> <li>Rescue Boat on standby</li> </ul>	1x4 4 (Low)	N	
Working in exposed locations	Weather-Wind Conditions / Fatigue	3x3 9 (Medium)	<ul style="list-style-type: none"> <li>Take regular breaks and carry out buddy checks.</li> </ul>	2x3 6 (Low)	N	

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General work and rope access work	Weather- Lightning- Electrocution and Burns Damage to WTG	2x5 10 (Medium)	<ul style="list-style-type: none"> <li>Weather forecast assessed each day and communicated to on site personnel.</li> <li>Nominated person to check/monitor the agreed forecast.</li> <li>The forecast will determine whether the risk is:</li> <li><b>Green:</b> Low risk, no action required.</li> <li><b>Amber:</b> Medium risk, lightning should be monitored throughout the day by designated support staff</li> <li><b>Red:</b> High risk, No rope access works are to take place until prediction returns to low risk and no strikes have been observed within 50 miles in the past hour. Monitoring is to take place for the remainder of the day.</li> <li>Personnel ensure aware of changing conditions.</li> <li>Know and understand the adverse weather procedure.</li> <li>Know and understand the tower evacuation procedure/safe zones.</li> <li>At the first signs of lightning ie. thunder, make the job safe, leave the tower and go to a safe place as per local instructions.</li> <li>All plant and equipment shall be earthed to the base of the tower.</li> </ul>	1x5 5 (Low)	N	
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General work and rope access work	Weather - Extreme wind Wind pressure Gusts	3x4 12 (Medium)	<ul style="list-style-type: none"> <li>Wind speeds shall be assessed prior to work being carried out. Work tasks shall be prohibited when wind speed limits for the turbine type are exceeded-see RAMs summary doc.</li> <li>Care shall be taken when opening all external doors. Nacelle doors shall not be opened when wind speed limits for that machine size are exceeded. Carry anemometers</li> <li>Assess the wind conditions throughout the operation and maintain contact with the nominated weather forecast checker for weather updates and follow local instructions.</li> <li>Windspeed limit for external blade/tower work is 12m/s.</li> <li>Ropes tied off at the base of the turbine/TP.</li> </ul>	1x4 4 (Low)	N	
General work and rope access work	Weather - Poor visibility. Compromised rescue	3x3 9 (Medium)	<ul style="list-style-type: none"> <li>Good communications shall be kept with all members of the team.</li> <li>Hi-Viz vests shall be worn when working outside WTG in reduced visibility.</li> <li>No work to be carried out if line of sight cannot be maintained between the nacelle and the ground/TP.</li> </ul>	1x3 3 (Low)	N	
General work and rope access work	Weather- Extreme cold- Frost bite and hypothermia Cold burns	3x3 9 (Medium)	<ul style="list-style-type: none"> <li>Personnel shall be informed of the signs and indications of hypothermia.</li> <li>Duration of work shall be controlled depending on temperature.</li> <li>Personnel are provided with cold weather clothing, gloves, head protection</li> <li>Ensure survival kits if used in service vehicles or turbines are intact</li> <li>Buddy check colleagues' condition during the carrying out of the works</li> </ul>	1x3 3 (Low)	N	

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General work and rope access work	Weather- Sunny conditions or high humidity	3x3 9 (Medium)	<ul style="list-style-type: none"> <li>Personnel shall be informed of the signs and indications of skin damage.</li> <li>Duration of work shall be controlled dependent on exposure.</li> <li>Drink water regularly.</li> <li>High factor barrier cream shall be made available to technicians.</li> <li>UV eye protection to be used when required.</li> <li>Spot check colleagues' condition during the carrying out of the works</li> </ul>	1x3 3 (Low)	N	
Lack of egress due to rope tangles	Exposure to changing weather. Unable to emergency descend/rescue	4x3 12 (medium)	<ul style="list-style-type: none"> <li>Onshore- ensure there isn't an excessive amount of rope on the ground. Bag ropes to prevent entanglement. Ensure a spare set of ropes are available on site in case a rescue is needed.</li> <li>Offshore – ensure turbine is yawed in the optimum direction to prevent tangles on the tower. Bag/carry ropes if required.</li> </ul>	2x3 6 (Low)	N	



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RISK RATING TABLE							
INCREASING LIKELIHOOD		➔					
INCREASING SEVERITY		Very Unlikely 1	Unlikely 2	Possible 3	Likely 4	Very Likely 5	
		Little or no chance of occurrence	Conceivable but would require multiple failure of systems & controls	Could happen when additional factors are present but unlikely to occur	Not certain to happen but additional factors may result in an accident	Almost inevitable that an accident would occur	
↓	Negligible 1	No Disruption to operations	1 LOW	2 LOW	3 LOW	4 LOW	5 LOW
		Potential for slight injury					
		Potential for slight effect					
	Slight 2	Potential for slight damage	2 LOW	4 LOW	6 LOW	8 MED	10 MED
		Brief Disruption to operations					
		Potential for minor injury					
	Moderate 3	Potential for minor effect	3 LOW	6 LOW	9 MED	12 MED	15 HIGH
		Potential for minor damage					
		Partial Shutdown					
	High 4	Potential for major injury	4 LOW	8 MED	12 MED	16 HIGH	20 HIGH
		Potential for local effect					
		Potential for local damage					
	V High 5	Disruption to operations	5 LOW	10 MED	15 HIGH	20 HIGH	25 HIGH
		Potential for single fatality					
		Potential for major effect					
	Potential for local damage						
	Major Disruption to operations						
	Potential for multiple fatalities						
	Potential for massive effect						
	Potential for extensive damage						

\*HUMAN FACTORS MUST BE CONSIDERED IN ALL TASKS, BUT THE RISK POTENTIAL IS NOT QUANTIFIABLE\* CARRY OUT SITE SPECIFIC RA BEFORE WORK COMMENCES.

<b>Risk</b>	= the likelihood of the harm being realised	<b>Rating</b>	<b>Key to risk rating:</b>
<b>Hazard</b>	= something with the potential to cause harm	1-6	= Low
<b>L</b>	Likelihood/probability	8 - 12	= Significant / Medium
<b>S</b>	Severity	15-25	= Unacceptable / HIGH
<b>R</b>	Risk		
<b>RR</b>	Residual Risk Rating		

## Appendix B – Wind Turbine Rescue Plan

Keep the rescue plan specific to the task, as stated in the RAMS. If the task changes then so might the type of rescue. Ensure it is as detailed as possible. Relay to all team members and others that might be called upon to participate in the rescue. If “No”, task cannot proceed; Requires Rope Access Program Manager approval – task must be planned in advance and appropriate assessments in place, identified in RAMS

ACCESS & Egress (Tick the relevant boxes and enter further detail where appropriate)
<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> <b>Appropriate Equipment available</b></li> <li><input checked="" type="checkbox"/> <b>Abseil in / Abseil out</b></li> <li><input type="checkbox"/> <b>Abseil in / Climb out</b></li> <li><input type="checkbox"/> <b>Rope Transfers</b></li> <li><input type="checkbox"/> <b>Deviation / ReAnchors / Knots to pass</b></li> <li><input type="checkbox"/> <b>Climbing with Cows Tails</b></li> <li><input type="checkbox"/> <b>Suspended Aid Climbing</b></li> <li><input type="checkbox"/> <b>Lead Climbing</b></li> <li><input type="checkbox"/> <b>Fall Arrest Climbing</b></li> <li><input type="checkbox"/> <b>Other:</b></li> </ul>
<p><b>Additional Information:</b></p> <p>Access to the blade will be gained by ropes rigged either side of the spinner. Once on the ropes it would be difficult for a technician to get on to the same ropes as a casualty from the top, this would be possible from bottom. The rescue will be carried out from ropes rigged beside the casualties.</p>

### RIGGING & EDGE PROTECTION

<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> <b>Anchors assessed as 100% reliable, see below.</b></li> <li><input type="checkbox"/> <b>Rig to rescue</b> (i.e. rope through descending device)</li> <li><input type="checkbox"/> <b>Beam Clamps required</b></li> <li><input type="checkbox"/> <b>Basic Anchor System deployed</b> (straight drop – no contact with edges)</li> <li><input type="checkbox"/> <b>Small Y Hang</b> (required to prevent contact from edges)</li> <li><input type="checkbox"/> <b>Large Y Hang</b> (required to prevent contact from edges)</li> <li><input checked="" type="checkbox"/> <b>Path of ropes check for hazards</b></li> <li><input type="checkbox"/> <b>Deviation / ReAnchor / Knots to pass</b> (required to prevent contact from edges)</li> <li><input type="checkbox"/> <b>Tramway</b></li> <li><input checked="" type="checkbox"/> <b>Knots in end of ropes</b></li> <li><input type="checkbox"/> <b>Other:</b></li> </ul> <p><b>Additional Information if required; Justify anchor selection etc.</b></p> <p>Ropes rigged from the gearbox.</p>
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### PATH OF ROPE CHECKED FOR HAZARDS & CONTROL MEASURES IN PLACE TO MITIGATE RISKS

(Priority must be given to rigging ropes for avoidance of contact with sharp edges and hot surfaces)

- Rope Protection required (If yes, choose type)
- Rope protection fixed to structure
- Rope protection on structure
- Ropes pass through grating (consider grating removal, identified in RAMS or edgehog)
- Potential contact with cable tray or other fixtures (sharp edges)
- Contact with steelwork (take into account condition of steelwork)
- Ropes pass through a hatch (90 degree edge? Hatch securely tied back)
- Heat resistant ropes (should have been identified in RAMS)
- Canvas rope protection sleeves (not to be used on 90 degree edge)
- RopePro edge matt
- Edge rollers
- Protective edge plate
- Potential heat sources isolated
- Wire slings to protect edges
- Rope Protection secured properly

#### Additional Precautions/Information if required

Rope protection placed on individual ropes where ropes pass from nacelle over the hub. Additional rope protection may be required over the edge of the spinner where ropes may come into contact with bolt heads.

Long rope stretch to be taken into account- 2 descender rescue.

#### SITE

- Land Site / Refinery
- Wind turbine (working on long ropes)
- Working over water (lifejackets required)
- Offshore / Inboard /
- Offshore/Outboard (lifejackets required)
- Standby boat required
- Adequate Barriers/Signage in place
- Sentry required

Other:

#### COMMUNICATION METHOD

- Verbal
- Radio
- Telephone / Mobile Phone
- Hand Signals
- Emergency Contact established

Additional Precautions / Information if required

Contact with the vessel skipper will be establish prior to the rescue taking place

## OTHER FACTORS FOR CONSIDERATION

- Tools required** (use lanyards)
- Conflicting Activities** (detail below)
- Small Bore pipework** (detail below)
- Deluge** (detail below)
- Stop the job triggers** (detail below)
- Team Experience**
- Unstable / Fragile Surfaces**
- Risk to / From public interference**
- Weather / Light Conditions**
- Rope Transfer, ReAnchor, Deviation with casualty**
- Cross-Haul Casualty**
- Hauling systems** (state what MA)
- Lowering over edge** (See rope protection measures)
- Demonstrate / Practice rescue** (record on daily toolbox talk form)
- Working on long ropes**

Additional information if required

## RESCUE (be as detailed as possible)

- Appropriate Rescue Kit onsite** (Check the rescue bag contains what you need)
- All Personnel briefed on plan** (including none RA personnel if required to assist)
- Pre-rigged Lower**
- Pre-Rigged Haul**
- Rescue to safe platform**
- Rescue to ground**
- Additional First Aid requirements** (Detail below)
- Casualty transfer onto separate rescue ropes**
- Descent past deviation / ReAnchor / Knots**
- Rope Transfer with casualty**
- Cross-Haul casualty**
- Use tensioned lines** (tramways)
- Releasable Anchors** (e.g. ropes through descender)
- Casualty rescue from descender / Ascenders**

Other:

## Onshore Procedure

1. In the event of a rescue the rope access technician will put the emergency call over the radio, **RESCUE, RESCUE, RESCUE TURBINE NUMBER ...**
2. All rope access work will cease, and remaining rope access teams will descend to the ground and await further instructions. The site lead/ client representative will be made aware of the situation and will coordinate the rescue once the casualty is on the ground.
3. The rescuer will descend or ascend to the casualty.
4. The rescuer will carry out a primary survey of the casualty.
5. The rescuer will perform a snatch taking in to account stretch in the rope if required\*. The rescuer will always maintain two points of contact.
6. If attached to the blade with a ring rope, the rescuer (with casualty) will lower off the blade until directly below where the ropes pass over the spinner (vertical ropes).
7. Descend to the ground ensuring control is maintained using a friction carabiner.

### \*Long rope ascent rescue pick off procedures:

Use casualty's main line as back up and back up line as main and ascend to casualty, use two karabiners on rescuers descent device.

Reach casualty and establish 2 points of connection, 1 a short link. If casualty is in ascent mode, connect casualty's Descending device on their working line below ascender and lift casualty from his ascender using a foot loop.

Lower casualty to their descender and then lower onto rescuers system.

Descend in short distances in order to prevent back up line from having too much slack in it.

Attach second descender device to the backup line and descend slowly until all the slack is taken up, there is no slack on either line so should one fail there should be minimal rope stretch. The back-up device can remain in place if it does not interfere with the operation of the descending device.

The rescuer will descend down level with the access platform at the base of the turbine and make the decision to collect their ropes and descend to the boat or treat the casualty on the base of the turbine depending on the severity of the casualty's injuries or as conditions dictate.



Descend to the causality



Make 2 attachments



Lower off the blade until ropes are vertical



Descend to the ground

## Offshore Procedure

In addition to the above, when working offshore the following will be carried out.

1. After raising the alarm the rescue vessel captain will contact the vessel Skipper who will keep in contact with the emergency services depending on the severity of the casualty, all rope access work will cease and remaining rope access teams will descend to the platform at the base of the turbine and await further instructions, the boat will approach the tower and await further instructions.
2. The rescuer will descend down level with the access platform at the base of the turbine and make the decision to either collect their ropes and descend to the boat or treat the casualty on the base of the turbine depending on the severity of the casualty's injuries.
3. If descending to the vessel the skipper will position the vessel underneath the rescuer and casualty. The rescuer will remain in contact with the skipper when approaching the vessel. The deck hand will be passed the tail end of the ropes to control if required. The deck hand will give the final go ahead to descend to the boat. Once aboard the rescuer will detach from the system as soon as possible.

## Offshore



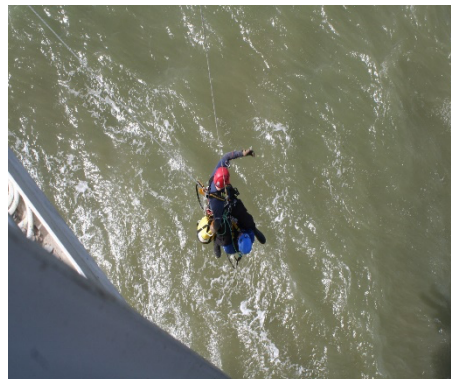
Establish contact with the vessel captain



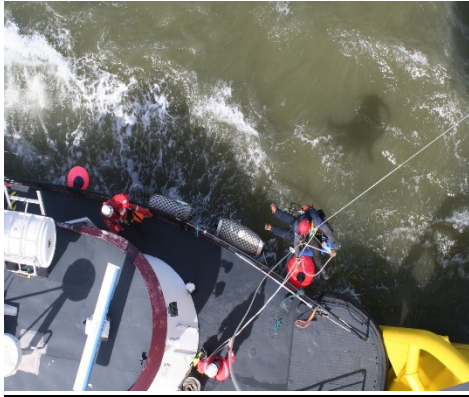
Vessel to standby 100m from the turbine until called in by rescuer



Retrieve ropes from the TP – if required place a deviation on the handrail to prevent any swing



Signal/radio the vessel into position below the rescuer/casualty



Descend towards the vessel – deck hand to retrieve ropes from the rescuer once they are 5m above the vessel. Deck hand to advise when to make the final decent to the vessel. This is dependent on the sea state. **DECK HAND MUST NOT APPLY ANY WEIGHT TO THE ROPES- THIS WILL PREVENT DESENT.**



Once on deck, remove devices from the ropes as quickly as possible.