

**From:** [Karen Hamilton \(Brodies Solicitors\)](#)  
**To:** [HornseaProjectThree@pins.gsi.gov.uk](mailto:HornseaProjectThree@pins.gsi.gov.uk)  
**Subject:** Hornsea 3 - Post ISH 8 SUBMISSION - Spirit Energy [BRO-D.FID4510105]  
**Date:** 14 March 2019 23:51:46  
**Attachments:** [image002.png](#)  
[image004.png](#)  
[image006.png](#)  
[image008.png](#)  
[image010.png](#)  
[image012.png](#)  
[APPENDIX 4 - AVIATION SLIDES 45157377 1.pdf](#)

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**CONFIDENTIAL MESSAGE - INTENDED RECIPIENT ONLY**

Dear Sirs

As per my earlier email, the second Appendix is attached (Appendix 4).

Yours sincerely

**Karen Hamilton**  
Partner  
On behalf of Brodies LLP  
Queen Street, UK  
[www.brodies.com](http://www.brodies.com)

Direct Line +44(0) 141 245 6225  
Mobile [REDACTED]



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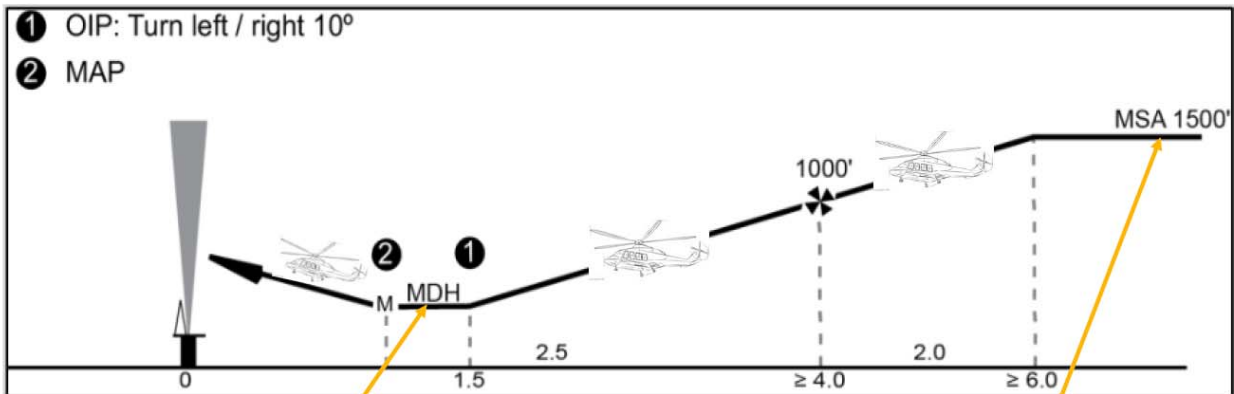
Aviation Slides



**Presentation Slides**

- Airborne Radar Approaches to Offshore Locations in Poor Weather Conditions – Vertical Profile
- Airborne Radar Approaches to Offshore Locations in Poor Weather Conditions – Horizontal Profile
- ARA to Chiswick superimposed on Obstructed Environment to the West
- Alternative ARA Approach to ARA Missed Approach Point – Downwind and Crosswind
- Alternative ARA Approach Limitations
- HeliOffshore: Approach Management Guidance and Visual Gate Approaches
- Helicopter Take Off from Chiswick, Engine Failure during the take off and distances travelled

## Vertical Profile: Airborne Radar Approach to Offshore Locations in Poor Weather Conditions



Minimum Safe Altitude: 1,500ft over the sea in unobstructed environment increasing to 2,100ft with turbines

The Minimum Descent Height (MDH) should not be less than 50ft above the elevation of the helideck but not lower than: 200ft by day or 300ft by night.

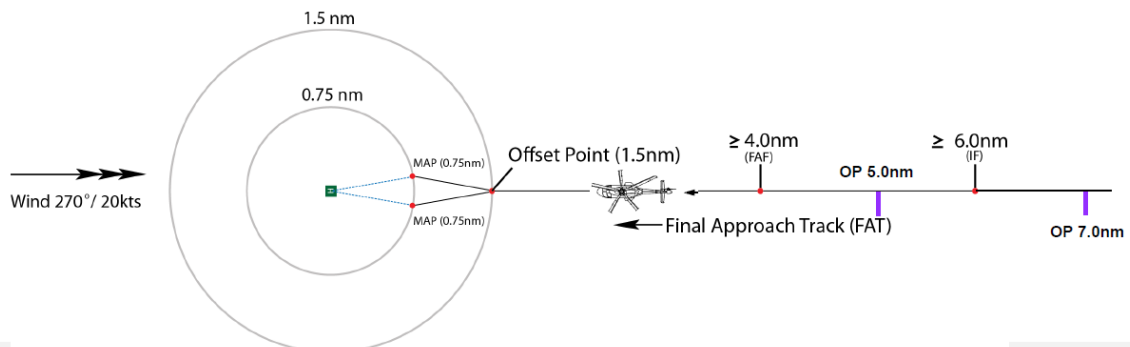


**SPIRIT ENERGY**

EASA Guideline MDH = 1.5nm point. Current service provider MDH is at 2nm point.

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## Horizontal Profile: Helicopter Airborne Radar Approach (ARA) from the EAST & into Wind Based on EASA Guidance & Showing Operator Actual Distances.



The helicopter ARA procedure may have as many as **five separate segments**: the arrival, initial, intermediate, final approach, and missed approach segment.

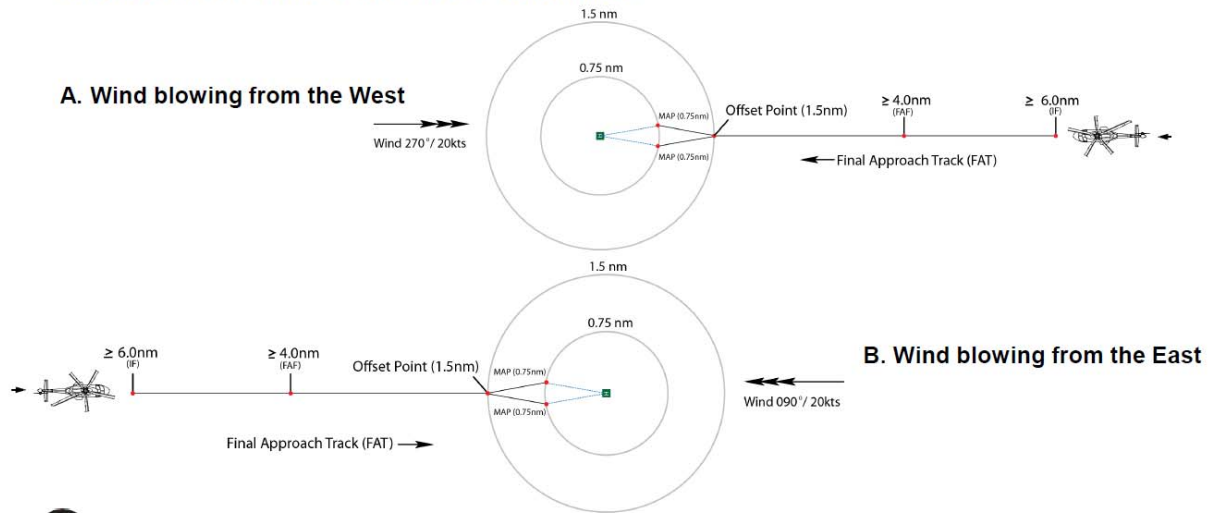
The **final approach track**, which should be orientated so as to be **substantially into the wind**, is the most critical of all the segments.



**SPIRIT ENERGY**

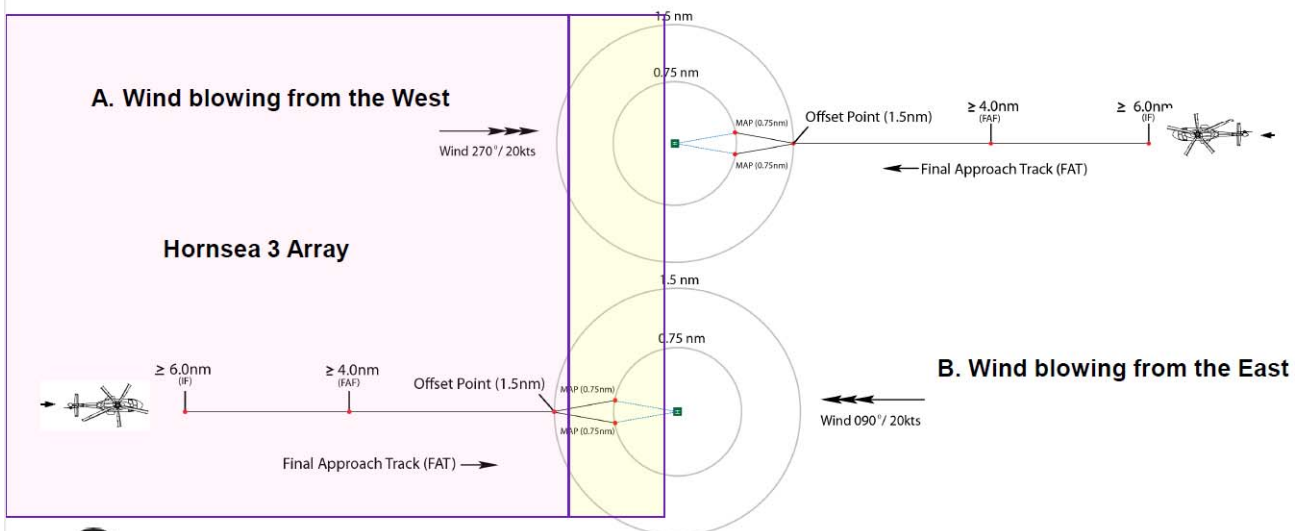
The Missed Approach Point (decision range) is not to be less than 0.75nm : to provide adequate obstacle clearance in the missed approach.

**Horizontal Profiles: Final Approach Track Distances relative to Airborne Radar Approaches to the Chiswick Platform in an Unobstructed Environment Based on EASA Guidance**



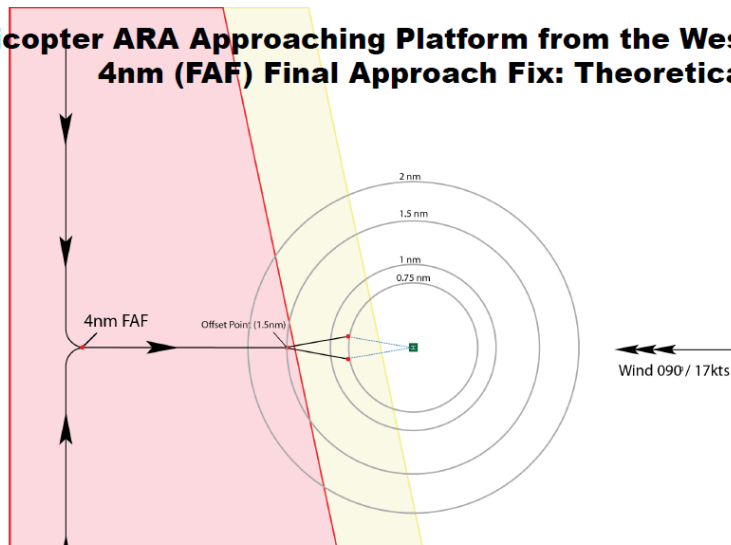
An unobstructed environment allows ARA approaches into wind from any direction 5

**Horizontal Profiles: Final Approach Track Distances relative to Airborne Radar Approaches to the Chiswick Platform with an Obstructed Environment to the West**



ARA approaches in an Obstructed environment not possible

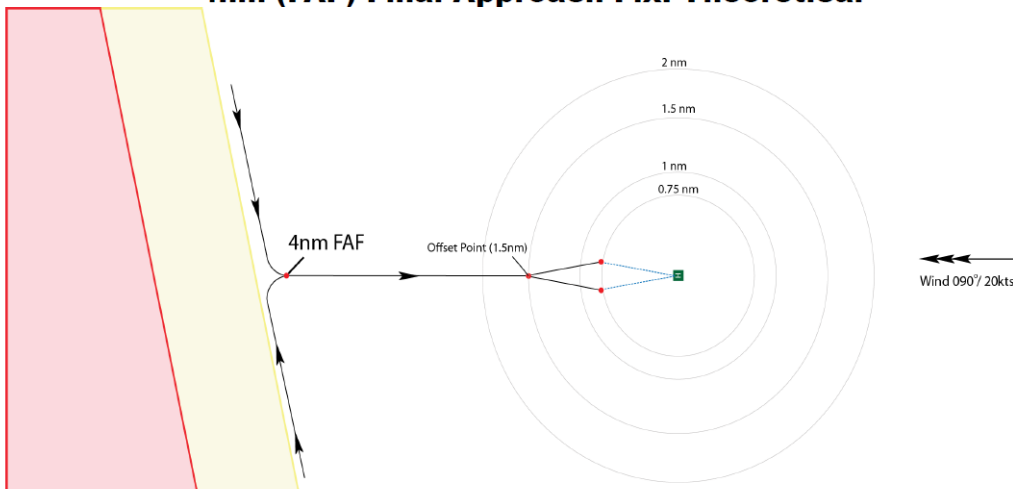
**Helicopter ARA Approaching Platform from the West joining at 4nm (FAF) Final Approach Fix: Theoretical**



ARA inbound from the West to the Chiswick superimposed over the proposed Hornsea 3. The helicopter joins the ARA at right angles at the 4 nm Final Approach Fix



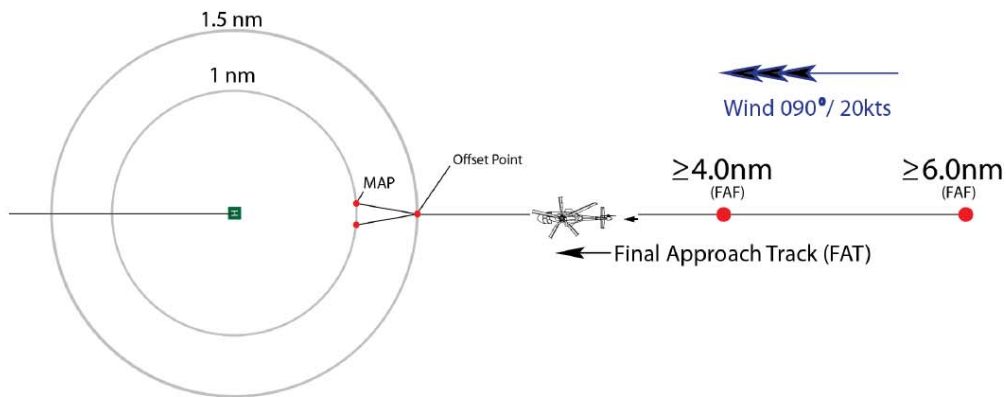
**Helicopter ARA Approaching Platform from the West joining at 4nm (FAF) Final Approach Fix: Theoretical**



Hornsea 3 Eastern boundary depicted at 4 nm removed from Chiswick but showing that the proposed boundary does not run directly North / South



## Helicopter Downwind ARA with Visual (Circling) Approach from the MAP

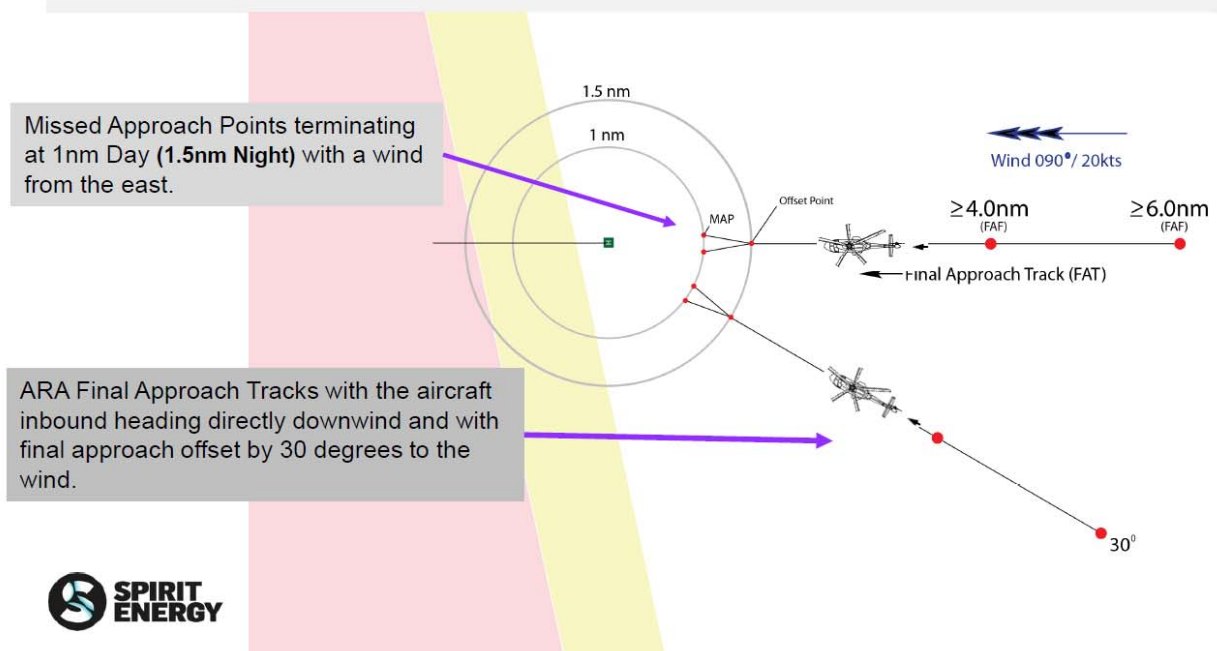


The MDH for an ARA leading to a **circling visual manoeuvre** should not be lower than:  
**300ft** by day; or  
**500ft** by night



**Note: the MAP for night is 1.5nm**

## Helicopter ARAs with Cross Wind Components and Visual to Helideck from the MAP and Stabilised on Approach

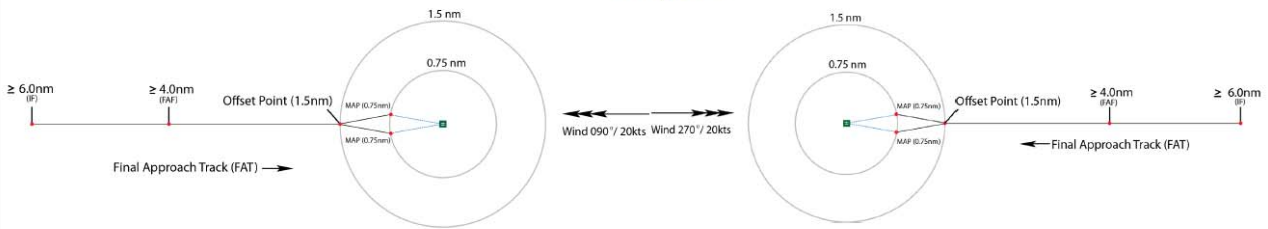


Missed Approach Points terminating at 1nm Day (1.5nm Night) with a wind from the east.

ARA Final Approach Tracks with the aircraft inbound heading directly downwind and with final approach offset by 30 degrees to the wind.



## Downwind and Crosswind Approaches: AW139 Minimum Indicated Airspeed in IMC and Maximum Correction Angles



Track (True)	Wind Angle	Wind Direction (True)	Wind Speed (kts.)	Max Tailwind Component 20 kts (Headwind speed (or tailwind) = wind speed * cos ( α ))	Heading (True)	Minimum IFR IAS 50 kts (AW139)	Max G/S 90 kts Rec. Max G/S by 2nm is 70 kts	Max Wind Correction Angle 15°
270	0	270	20	20	270	90	70	0
90	0	90	20	20	90	90	70	0



## Downwind and Crosswind Approaches: AW139 Minimum Indicated Airspeed in IMC and Maximum Correction Angles

	Track (True)	Wind Angle	Wind Direction (True)	Wind Speed (kts.)	Max Tailwind Component 20 kts (Headwind speed (or tailwind) = wind speed * cos ( α ))	Heading (True)	Minimum IFR IAS 50 kts (AW139)	Max G/S 90 kts Rec. Max G/S by 2nm is 70 kts	Max Wind Correction Angle 15°
	270	0	270	20	20	270	90	70	0
	90	0	90	20	20	90	90	70	0
	270	0	90	10	10	270	60	70	0
	270	0	90	20	20	270	50	70	0
1	270	0	90	30	30	270	40	70	0
	300	30	90	10	9	305	61	70	5
	300	30	90	20	17	311	52	70	11
2	300	30	90	30	26	319	43	69	19
	315	45	90	10	7	321	63	70	6
	315	45	90	20	14	329	56	70	14
3	315	45	90	30	21	339	49	70	24
	330	60	90	10	5	338	65	70	8
4	330	60	90	20	10	346	60	70	16
5	330	60	90	30	15	356	54	69	26
	360	90	90	10	0	368	69	69	8
6	360	90	90	20	0	377	67	67	17
7	360	90	90	30	0	385	63	63	25



# HeliOffshore: Approach Management Guidance



## 1. Stabilised approach:

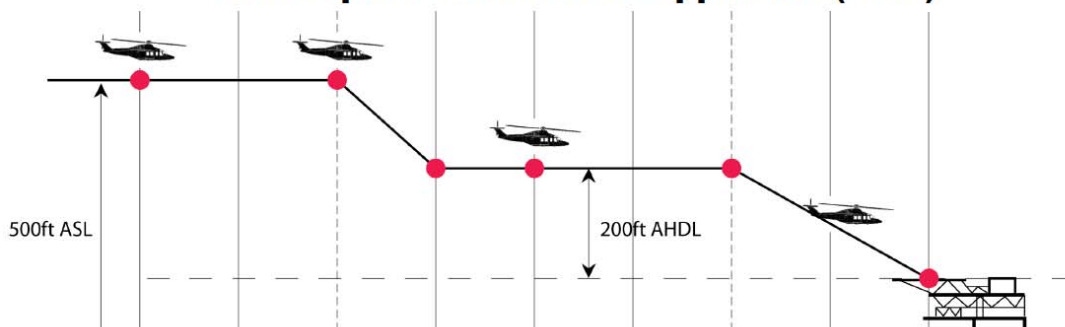
*“The purpose of a stabilised approach is to ensure the helicopter is in the correct configuration and on the correct flight path for landing, with gear down, and groundspeed at the correct value for the conditions*

.....

*The aim is to minimise pilot workload in the final approach segment down to the approach termination point”.*

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## Standardised approach profiles Helicopter Visual Gate Approach (VGA)



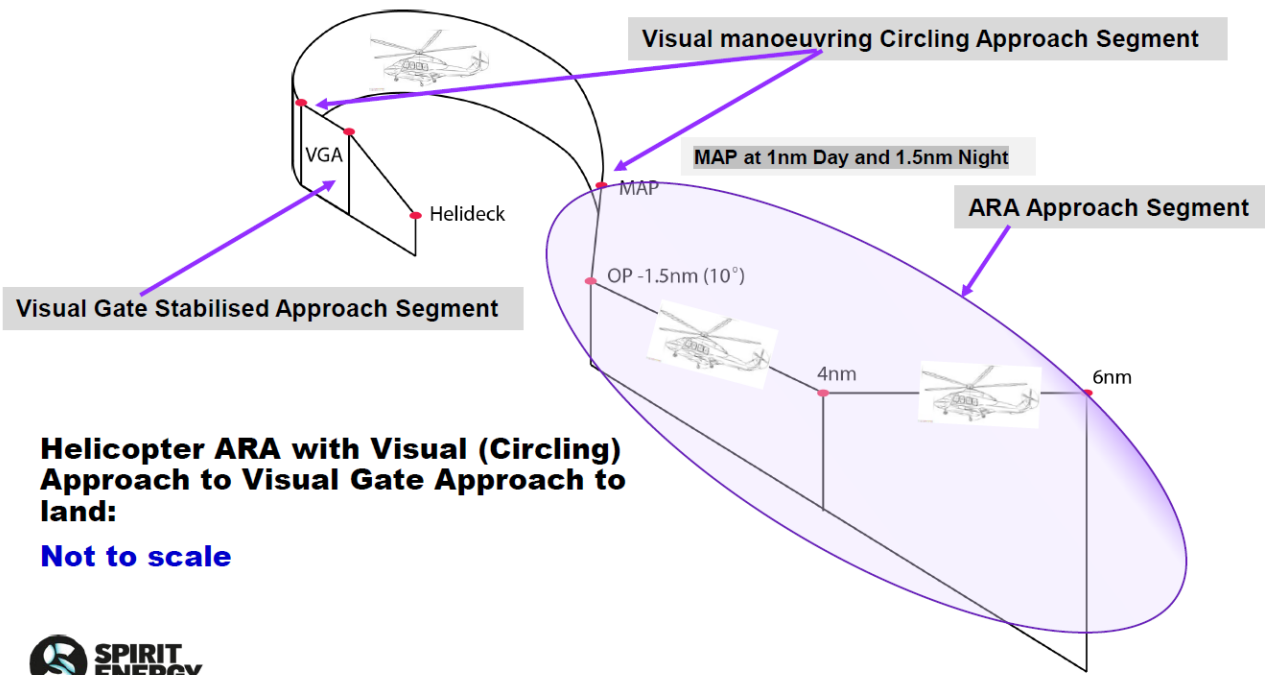
**AIM** : Approaches are always flown the same way to the same gates and airspeeds regardless of the platform being approached and regardless of day or night operations.

**Repeatability is the key** to ensuring that the aircraft achieves the Landing Decision Point at the same criteria every time.

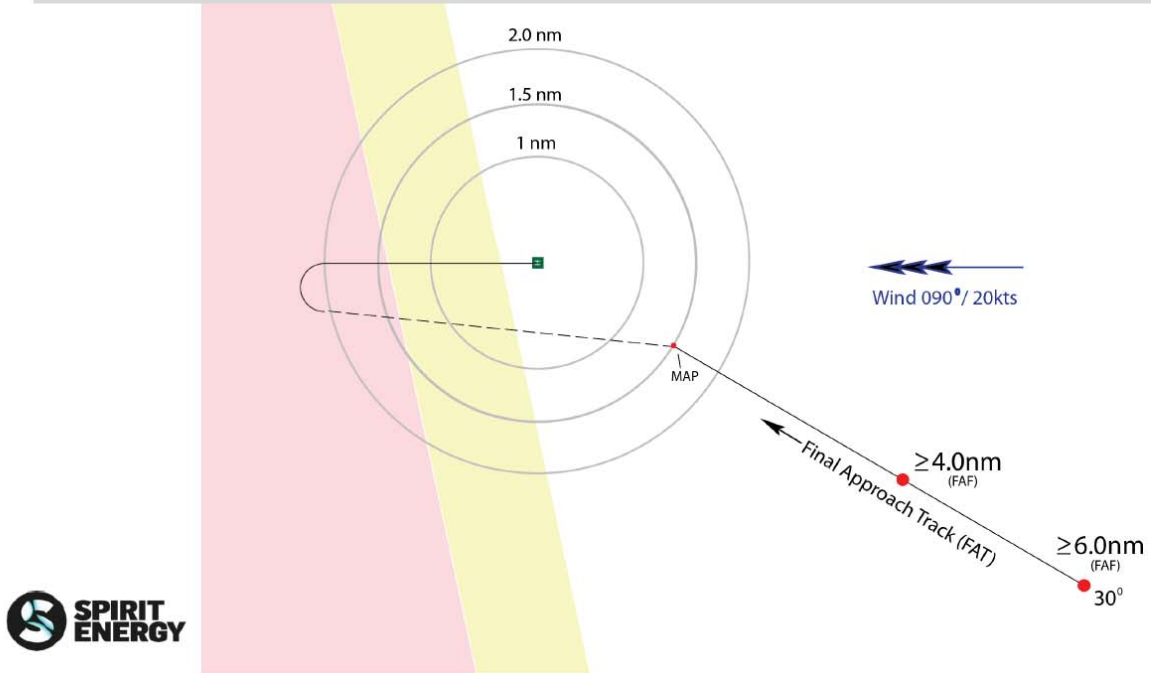


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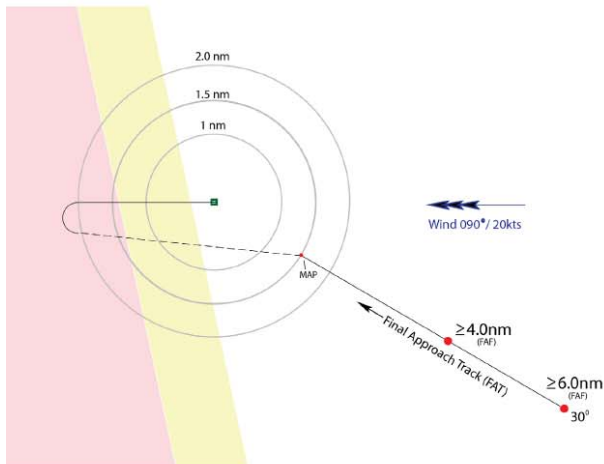




**Helicopter DAY ARA to Circling Approach Footprint with wind from East**



## Helicopter DAY ARA to Circling Approach Footprint with wind from East

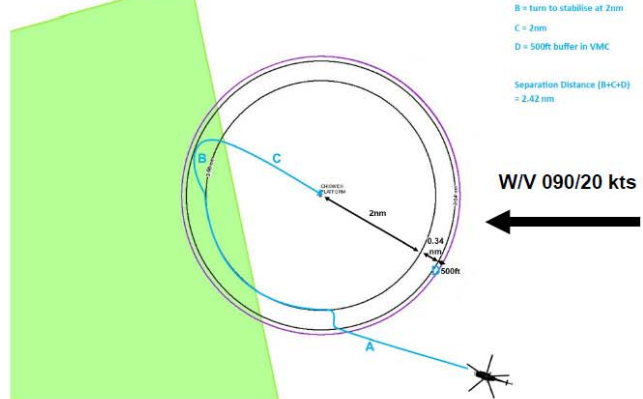


1. Distance to turn = 2nm
2. Turn inbound = 0.3nm
- 3.+ buffer = 1nm



Total 3.3nm

### CIRCLING ARA FOOTPRINT WITH HORNSEA THREE



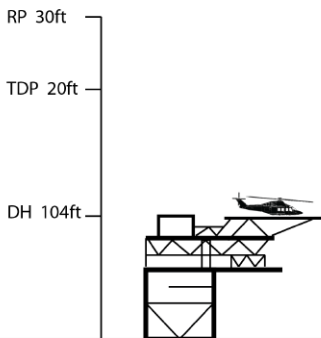
1. Distance to turn = 2nm
2. Turn inbound
3. 500 feet buffer

Total 2.42nm

A = ARA approach  
 B = turn to stabilise at 2nm  
 C = 2nm  
 D = 500ft buffer in VMC  
 Separation Distance (B+C+D)  
 = 2.42 nm

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## Chiswick Platform: Example of Helicopter Offshore Take-Off Profile with Engine Failure at/after TDP and Drop Down



Not to scale. For illustrative proposes only



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### Chiswick Platform: Example of Helicopter Offshore Take-Off Profile with Engine Failure at/after TDP and Drop Down



Not to scale. For illustrative proposes only



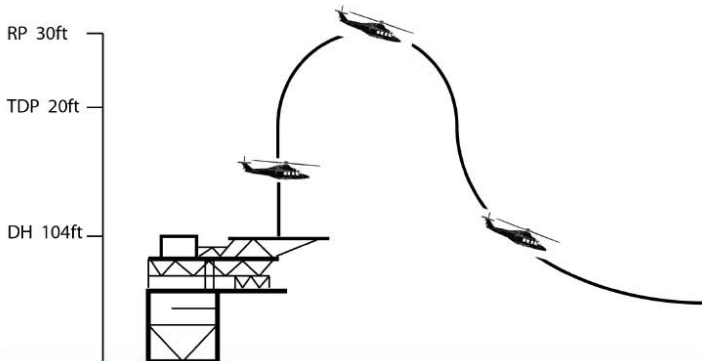
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Not to scale. For illustrative proposes only



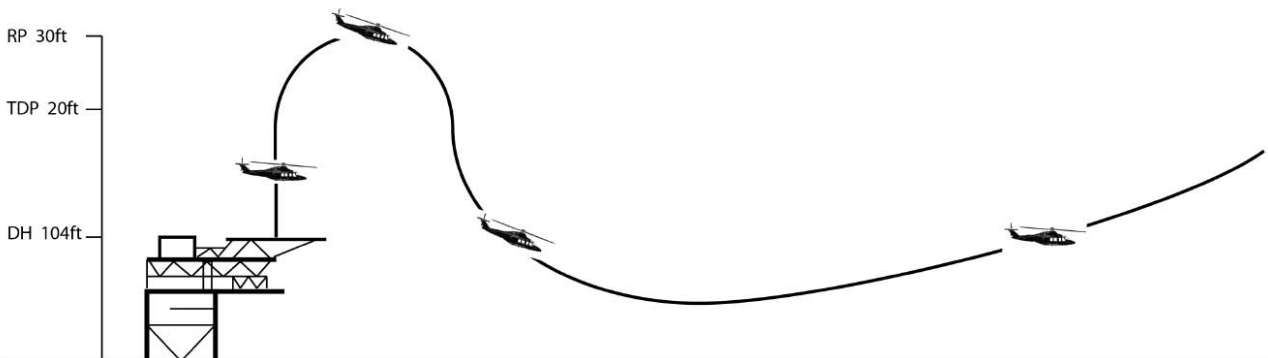
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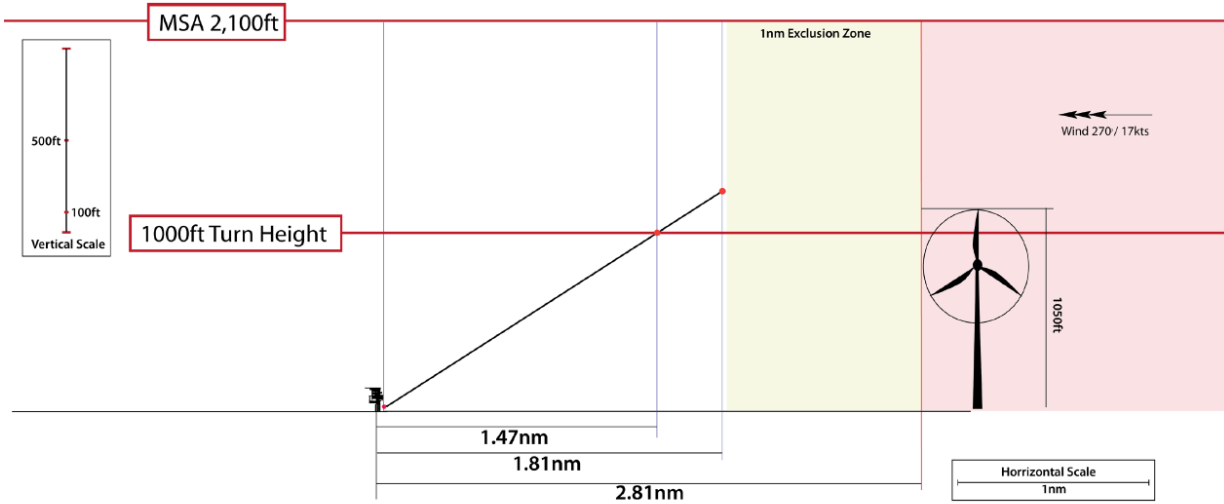
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Not to scale. For illustrative proposes only

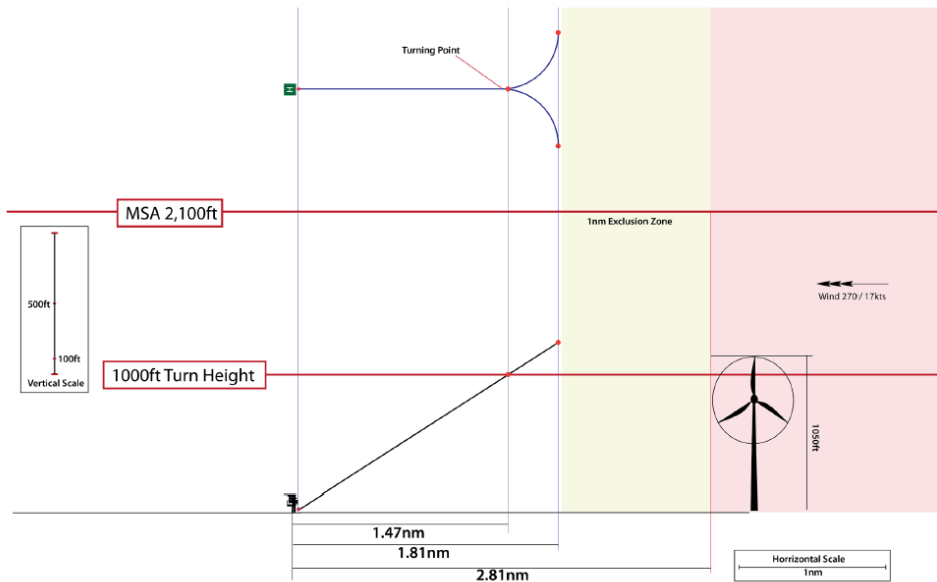


**Chiswick Platform: Example of AW139 Continued Take-Off OEI 2.5 Mins Power (1st sector) & Maximum Cont. Power (2nd sector) with Turn at 1000 feet**



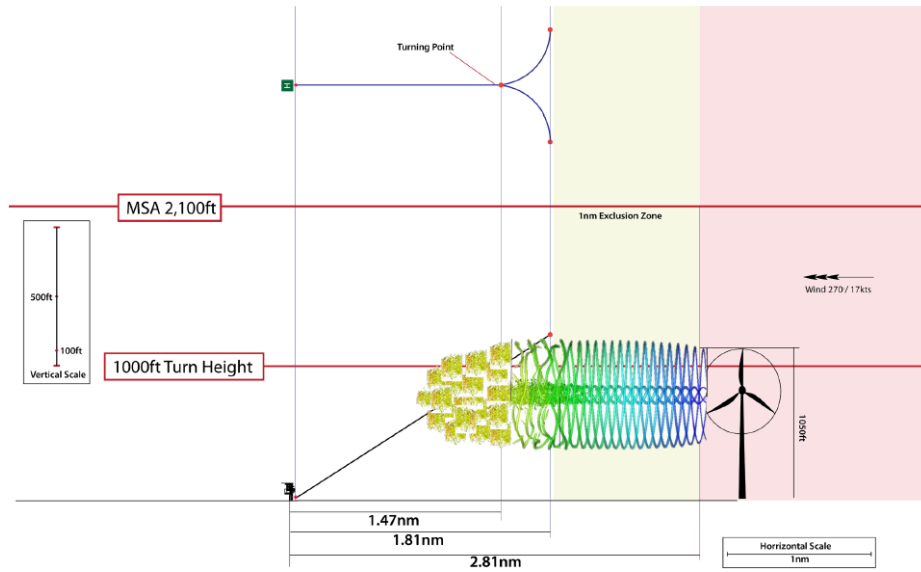
For illustrative proposes only

**Chiswick Platform: Example of AW139 Continued Take-Off OEI 2.5 Mins Power (1st sector) & Maximum Cont. Power (2nd sector) with Turn at 1000 feet**



For illustrative proposes only

**Chiswick Platform: Example of AW139 Continued Take-Off OEI 2.5 Mins Power (1st sector) & Maximum Cont. Power (2nd sector) with Turn at 1000 feet**



For illustrative purposes only

**Turbine Induced Weather**



## Simulated View of Wind Turbines



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## Helicopter Approaches & Departures Chiswick Platform



March 2019