

1. TNPA “MARINE PILOT HELICOPTER” SCOPE OF WORKS:

1.1. EXTERNAL DIMENSIONS

FUSELAGE	METERS	Compliance to Spec (yes) or NO	Comments
Length	Range 12-13m		
Width (at cabin doors)	Range 2-3m		
Width (elevator)	Range 3-4m		
Height (tail fin)	Range 3-4m		
Fuselage minimum clearance	>0.40m		
ROTORS			
Main rotor diameter	Range 12-13m		
LANDING GEAR			
Tricycle landing gear			
OVERALL DIMENSIONS			
Length (rotors turning)	Range 13-15m		

1.2. WEIGHTS

Weights	KG	Compliance to Spec (yes) or NO	Comments
Max Gross Weight	Between 3200kg & 5000kg		

1.3. OPERATIONAL ENVELOPE

Maximum operational flight speed – ISA sea level	KNOTS	Compliance to Spec (yes) or NO	Comments
Never exceed speed V_{NE}	Above 160kts		
Slope landing	DEGREES		
Ship landing sloped deck	360°		

1.4. MINIMUM MANDATORY AIRCRAFT REQUIREMENTS

Maximum operational flight speed – ISA sea level	Compliance to Spec (yes) or NO	Comments
The helicopter <u>must</u> be EASA/FAA certified to operate under Category A, Performance Class 1, Single/Dual Pilot Day/Night Visual Flight Rules (VFRs) and Day/Night Instrument Flight Rules (IFR)		
The helicopter <u>must</u> be in the weight class with a Maximum All Up Mass between 3200kg and 5000kg.		
The helicopter must have a wheeled tricycle landing gear		

The rescue hoist must be mounted on the starboard side of the helicopter.		
The passenger cabin must be able to accommodate 10 passengers.		
The passenger cabin must be able to accommodate a maximum of 6 passengers and one stretcher at the same time with doors closed		
The passenger cabin must also be able to accommodate a minimum of 2 passengers and Hoist Operator with two stretchers at the same time with doors closed.		
The helicopter Main Transmission Gearbox must have a run dry capability of a minimum of 30 minutes or more.		
The floatation gear on the helicopter must be compliant to function properly under sea state 6 conditions.		
Auxiliary Fuel Tank to increase range without compromising pax seating.		
Bubble windows for vertical referencing with ventilation e.g air scoops or hinged windows		
Environmental Control System		
Obstacle Proximity System (System to detect distance between main rotor blade tips and nearest obstacle)		

Note: the above all relates directly to safety and/or mission capability.

1.5. SINGLE/DUAL PILOT VFR/IFR AVIONIC PACKAGE

Requirements	Compliance to Spec (yes) or NO	Comments
Cockpit Avionics: <ul style="list-style-type: none">• Full Glass Cockpit capability• Independent screen to display Maps and Instrument Approach charts• Aircraft management and monitoring system• HUMS• Dual channel Four axis autopilot system, each channel to have full authority over auto-pilot system• Auto Hover		
Radio Comm and Navigation System: <ul style="list-style-type: none">• Two VHF-AM radios• Two Radio VHF/FM-H Maritime• Two NAV (VOR/ILS/MB) receivers• Performance Based Navigation• One ADF• One DME• One Transponder with Enhanced Surveillance Mode (Mode S)• First GNSS (GPS)• Second GNSS (GPS)• TCAS II• Two Weather radars		
Interphone Communication System:		

<ul style="list-style-type: none"> • Three Audio Control Panels (Pilot and Co-pilot stations and Hoist Operator) • One Audio Management Unit interfacing external transceivers • One Passenger Intercom Amplifier 		
Primary Flight Instruments: <ul style="list-style-type: none"> • Fibre Optic gyros • Pilot Clock • Co-Pilot Clock • Standby magnetic Compass • Moving map 		

1.6. POWER PLANT AND FUEL SYSTEM

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none"> • Twin Engine capable of Category A, Performance Class 1 • APU mode will be added advantage • Two anti-icing fuel systems • Two independent dual-channel FADEC systems (one per engine) • Fire detection system • Fire extinguisher system • Crashworthy fuel cells • Filler port for gravity refuelling 		

1.7. INTERIOR

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none">• Cockpit panel sun-glare shields• Pilot/ Co-pilot crashworthy seats (with inertial reels and separate 5 points safety belts)• Hoist Operator crashworthy adjustable seat with capability to rotate 360 degrees (with inertial reels and separate 5 points safety belts)• 28V DC / 10A cockpit/cabin utility power socket• Baggage compartment with extender• Baggage smoke sensor• Pilot / co-pilot/Hoist Operator headsets (David Clarke) x 3• Floor rail installation• Jepperson/Electronic Flight Bag mounts on either side of consol• Additional RFM holder/Storage		

1.8. ADDITIONAL EQUIPMENT

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none">• Steps for cockpit / cabin access• Rotor brake system• Second radar altimeter• One solid state Cockpit and Voice Flight Data Recorder		

<ul style="list-style-type: none"> • One Emergency Locator Transmitter (ELT – 3 frequencies) • Overhead cockpit windows sun shades • First aid kit • One cockpit and one cabin fire extinguisher • USB Inter seat Console Socket/EFB • Health and Usage Monitoring System • Flight Data Monitoring system • Helicopter Terrain Avoidance and Warning System • Hardwire installation for Helitune system • EMS kit and all installation provisions to be provided e.g Roof Rails and hooks • Cargo Hook • Seat Belt cutters x 8 		
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1.9. INTERIOR

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none"> • Durable finished cabin walls • Durable leather seat finishing 		

1.10. PAINTING

Requirements	Compliance to Spec (yes) or NO	Comments

<ul style="list-style-type: none"> • TNPA approved paint scheme • Main rotor and tail rotor blades high visibility painting 		
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1.11. HPS (HARBOUR PILOT SHUTTLE) PACKAGE

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none"> • Pax Transport Layout – Crashworthy comfortable passenger seats • (Total Qty 10 seats). • Utility Soft Liners • Passenger cabin ambient LED lights, with reading lights and ventilation/AC outlets, emergency lights, emergency exit signs, passenger advisory lights (safety belt chimes) and Passenger Addressing Loudspeakers. • 12 x Headsets ANR type (David Clarke) with holders • Baggage compartment extension • Sliding Door windows to have sliding windows for ventilation • Approach plates chart holders with lights for pilot and co-pilot (USB power outlet included). • Tablet cradle for chart holders • ADELT with GPS NAV interface and GPS integrated • TCAS II • Weather Radar with MultiScan • Emergency Floatation Gear with life rafts included • Helicopter Emergency Egress Light System (HEELS) • Maritime anti-corrosion protection • Strobe lights 		

<ul style="list-style-type: none"> • Rescue hoist – Dual type will be advantageous, located on right hand side of helicopter with light • Wireless ICS System for hoist operator • Internal vertical tracks (Roof rails) and grab handle • Search Light • Right landing light control for hoist operator • Camera on the tail fin • Cargo hook monitoring cameras (Qty 2) • Hoist Camera • Sliding door fastener mechanism • Lightweight manual cable cutter with safety line installed with quick release. • Lightweight cabin fire axe • Handheld search light - One million candle power installed with safety line. • Cockpit and cabin camera installation • Right hand trooping step installation • Horizontal Hand rail installation on the right hand side of fuselage for hoisting operations 		
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1.12. UTILITY EQUIPMENT

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none"> • Extension Headset • Covers and flags for engines, pitot and connectors • Tie-down assemblies for main rotor blades • Tail rotor blades flapping block (1) 		

<ul style="list-style-type: none"> • Main rotor blades sock pole (1) • Main landing gear wheel chocks (2) • Landing gear handle locking pin (1) • Tow bar (1) • Loose equipment bag (1) • Baggage compartment cargo net • Canopy, main rotor and tail rotor covers • All Weather Cover Kit 		
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1.13. SUPPORT, TOOLING AND EQUIPMENT

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none"> • Complete set of airframe; engines, maintenance tracking systems and vendor technical publications, revised, up to date, with update subscriptions for 10 years • Ground support and tooling to enable first line maintenance for three bases. • One OEM Field Technical representative on-site with SACAA Licence for each base for 12 months to support initial release to service of the helicopters. 		

1.14. SPARE PARTS

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none"> The OEM is to recommend and Initial Provisioning List (IPL) of critical spare parts for consideration by TNPA. 1 x spare rescue hoist assembly to be included per helicopter All special tooling to be included and for hoist 		

1.15. SERVICE PLANS

The OEM to propose various service plans to cover the airframe, engines and hoist for consideration by TNPA.

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none"> The OEM to propose various service plans to cover the airframe, engines and hoist for consideration by TNPA. 		

1.16. WARRANTY

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none"> The OEM to provide their warranty option programs for consideration by TNPA. 		

1.17. DELIVERY

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none">No more than 12 months		

1.18. ADDITIONAL TRAINING (OEM to discuss options with regards to Training of additional crew, e.g onsite training)

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none">8 x Helicopter Pilot's conversion to type training (Per Helicopter)8 x Helicopter Airframe Engineer training (Per Helicopter)6 x Helicopter Avionic Engineer training (Per Helicopter)6 x Maintenance Instructor Course (OEM Approved)5 x Overhaul Maintenance Course7 x Type Rating Instructor Course (OEM Approved)5 x Hoist Operator Training (Per Helicopter)5 x Hoist Maintenance Training (Per Helicopter)		

1.19. SHIPMENT

Requirements	Compliance to Spec (yes) or NO	Comments
Shipment of the Helicopters from the OEM's factory to South Africa including packaging, insurance, sea freight, re-assembly, customs clearance by OEM and final test flight in South Africa. The final base/location will be determined by TNPA. •		

NOTE

Supplier to provide all available options in the above mentioned categories over and above the standard equipment installed for TNPA's consideration.

All options to be presented to TNPA must take into consideration the following mission applications:

- Harbour Pilot Shuttle
- Offshore (Oil & Gas)
- SAR
- EMS
- Aerial work operations

2. TNPA "MARINE PILOT HELICOPTER" SCOPE OF WORKS:

2.1. EXTERNAL DIMENSIONS

FUSELAGE	METERS	Compliance to Spec (yes) or NO	Comments
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Length	Range 12-13m		
Width (at cabin doors)	Range 2-3m		
Width (elevator)	Range 3-4m		
Height (tail fin)	Range 3-4m		
Fuselage minimum clearance	>0.40m		
ROTORS			
Main rotor diameter	Range 12-13m		
LANDING GEAR			
Tricycle landing gear			
OVERALL DIMENSIONS			
Length (rotors turning)	Range 13-15m		

2.2. WEIGHTS

Weights	KG	Compliance to Spec (yes) or NO	Comments
Max Gross Weight	Between 3200kg & 5000kg		

2.3. OPERATIONAL ENVELOPE

Maximum operational flight speed – ISA sea level	KNOTS	Compliance to Spec (yes) or NO	Comments
Never exceed speed V_{NE}	Above 160kts		
Slope landing	DEGREES		
Ship landing sloped deck	360°		

2.4. MINIMUM MANDATORY AIRCRAFT REQUIREMENTS

Maximum operational flight speed – ISA sea level	Compliance to Spec (yes) or NO	Comments
The helicopter <u>must</u> be EASA/FAA certified to operate under Category A, Performance Class 1, Single/Dual Pilot Day/Night Visual Flight Rules (VFRs) and Day/Night Instrument Flight Rules (IFR)		
The helicopter <u>must</u> be in the weight class with a Maximum All Up Mass between 3200kg and 5000kg.		
The helicopter must have a wheeled tricycle landing gear		
The rescue hoist must be mounted on the starboard side of the helicopter.		
The passenger cabin must be able to accommodate 10 passengers.		
The passenger cabin must be able to accommodate a maximum of 6 passengers and one stretcher at the same time with doors closed		
The passenger cabin must also be able to accommodate a minimum of 2 passengers and Hoist Operator with two stretchers at the same time with doors closed.		

The helicopter Main Transmission Gearbox must have a run dry capability of a minimum of 30 minutes or more.		
The floatation gear on the helicopter must be compliant to function properly under sea state 6 conditions.		
Auxiliary Fuel Tank to increase range without compromising pax seating.		
Bubble windows for vertical referencing with ventilation e.g air scoops or hinged windows		
Environmental Control System		
Obstacle Proximity System (System to detect distance between main rotor blade tips and nearest obstacle)		

Note: the above all relates directly to safety and/or mission capability.

2.5. SINGLE/DUAL PILOT VFR/IFR AVIONIC PACKAGE

Requirements	Compliance to Spec (yes) or NO	Comments
Cockpit Avionics: <ul style="list-style-type: none"> Full Glass Cockpit capability Independent screen to display Maps and Instrument Approach charts 		

<ul style="list-style-type: none"> • Aircraft management and monitoring system • HUMS • Dual channel Four axis autopilot system, each channel to have full authority over auto-pilot system • Auto Hover 		
Radio Comm and Navigation System: <ul style="list-style-type: none"> • Two VHF-AM radios • Two Radio VHF/FM-H Maritime • Two NAV (VOR/ILS/MB) receivers • Performance Based Navigation • One ADF • One DME • One Transponder with Enhanced Surveillance Mode (Mode S) • First GNSS (GPS) • Second GNSS (GPS) • TCAS II • Two Weather radars 		
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Primary Flight Instruments: <ul style="list-style-type: none"> • Fibre Optic gyros • Pilot Clock • Co-Pilot Clock 		

<ul style="list-style-type: none"> Standby magnetic Compass Moving map 		
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2.6. POWER PLANT AND FUEL SYSTEM

Requirements	Compliance to Spec (yes) or NO	Comments
<ul style="list-style-type: none"> Twin Engine capable of Category A, Performance Class 1 APU mode will be added advantage Two anti-icing fuel systems Two independent dual-channel FADEC systems (one per engine) Fire detection system Fire extinguisher system Crashworthy fuel cells Filler port for gravity refuelling 		

2.7. INTERIOR

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<ul style="list-style-type: none"> • 5 x Hoist Operator Training (Per Helicopter) • 5 x Hoist Maintenance Training (Per Helicopter) 		
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