

**Advisory Publication
January 1996**

The information contained in this publication is advisory only. There is no legal requirement to observe the details as set out. The Civil Aviation Regulations detail the legal requirements that must be complied with in relation to use of areas for take-off and landing by a helicopter. While there may be a number of methods of ensuring that the requirements of the Civil Aviation Regulations are met, this CAAP sets out criteria which ensures compliance with the Regulations. The CAAP must be read in conjunction with the Civil Aviation Regulations.

Contents ...

| | |
|---|-----------|
| Definitions and other expressions | 2 |
| Factors that should be considered prior to the use of an HLS | 3 |
| Recommended criteria for a basic and standard HLS | 4 |
| Recommended criteria for offshore HLS | 7 |
| Recommended criteria for marine HLS | 10 |

Guidelines for the establishment and use of helicopter landing sites (HLS)

References

This CAAP should be read in conjunction with

- Civil Aviation Regulations 92, 93, 233 and 235
- Civil Aviation Orders
- Aeronautical Information Publication

Purpose of this CAAP

Civil Aviation Regulation 92 (1) states that: “An aircraft shall not land at, or take-off from, any place unless: ...(d) the place...is suitable for use as an aerodrome for the purposes of the landing and taking-off of aircraft; and, having regard to all the circumstances of the proposed landing or take-off (including the prevailing weather conditions), the aircraft can land at, or take-off from, the place in safety.”

Regulation 92 (1) does not specify the method of determining which “circumstances”, other than the prevailing weather conditions, should be considered in any particular case. These matters are the responsibility of the pilot in command and, in some circumstances, are shared with the aircraft operator.

These guidelines set out factors that may be used to determine the suitability of a place for the landing and taking-off of helicopters. Experience has shown that, in most cases, application of these guidelines will enable a take-off or landing to be completed safely, provided that the pilot in command:

- has sound piloting skills; and
- displays sound airmanship.

Status of this CAAP

This is the second issue of CAAP 92-2, CAAP 92-2(0) should be removed and destroyed.

Additional copies of this CAAP may be obtained from:

Airservices Australia
Publications Centre
715 Swanston Street
Carlton VIC 3053

Definitions and other expressions

The following definitions may be used in this CAAP:

‘Air Taxi’ means the airborne movement of a helicopter at low speeds and at heights normally associated with ground effect.

‘Air Transit’ means airborne movement of a helicopter that is:

- for the purpose of going from one place within a HLS to another place within the HLS;
- at or below 100 feet above the surface of the HLS; and
- at speeds greater than those used in air taxiing.

‘Approach and Departure Path’ means the track of a helicopter as it approaches or takes off and departs from the FATO of a HLS.

‘Basic HLS’ means a place that may be used as an aerodrome for infrequent, opportunity and short term basis for all types of operations, other than RPT, by day under helicopter VMC.

‘Building’ includes any elevated structure on land, whether or not fixed to land.

‘Final Approach and Take Off Area’ (FATO) in relation to a HLS, means an area of land or water over which the final phase of the approach to a hover or landing is completed and from which the take off manoeuvre is commenced.

‘Final Approach’ means the reduction of height and airspeed to arrive over a predetermined point above the FATO of a HLS.

‘Ground Effect Area’ (GEA) in relation to a HLS, means an area that provides ground effect for a helicopter rotor system.

‘Ground Taxiing’ means movement of a helicopter under its own power and on its undercarriage wheels.

‘Helicopter VMC’ means VMC in relation to helicopters as detailed in AIP.

‘Helicopter Landing Site’ (HLS) means a place that may be used as an aerodrome for the purposes of landing or taking off of helicopters.

‘Land’ in relation to a helicopter, means lower the helicopter to bring the undercarriage in contact with the surface.

‘Length’ (‘L’) in relation to a helicopter, means the total length of the helicopter including its rotor(s) when they are turning.

‘Licensed Aerodrome’ means a place that is licensed as an aerodrome under the Civil Aviation Regulations.

‘Lift Off’ in relation to a helicopter means raise the helicopter into the air.

‘Landing and Lift Off Area’ (LLA) in relation to a HLS, means an area within the HLS on which helicopters land and lift off.

‘Marine HLS’ means a place that may be used as an aerodrome on a ship other than an offshore resource ship.

‘Midship HLS’ means a marine HLS the centre of the FATO of which lies on the ship's longitudinal axis.

‘Movement’ means a landing or a lift off of a helicopter.

‘Offshore Resource Platform’ means a platform, whether fixed or floating, used in connection with the recovery of natural resources and that is operating in a part of the sea that is within Australian Territory.

‘Offshore Resource Ship’ means a ship used in connection with the recovery of natural resources and that is operating in a part of the sea that is within Australian Territory.

‘Place’ includes a place on land, on a building, on the surface of water, on a structure, whether fixed or floating, wholly or partly above the surface of water or on a ship.

‘Ship's Side HLS’ means a marine HLS that is located on the side of a ship.

‘Standard HLS’ means a place that may be used as an aerodrome for helicopter operations by day or night.

‘Take off’ in relation to a helicopter means accelerate to and commence climb at the relevant climb speed.

An expression that is defined in the Civil Aviation Act, the Civil Aviation Regulations or the AIP has, when used in this CAAP, the same meaning as it has in those publications.

Factors that should be considered prior to using an HLS

The pilot of a helicopter operating to, from or at an HLS should ensure that:

- the HLS is clear of all:
 - persons, other than persons essential to the helicopter operation; and
 - objects and animals likely to be a hazard to manoeuvring the helicopter, other than objects essential to the helicopter operation; and
- no person outside the helicopter, other than a person essential to the operation is within 30 metres of the helicopter; and
- appropriate permission from the owners and authorities has been given; and
- where a helicopter may be required to be operated with a rejected take off or landing capability, and the performance requirements of the particular flight manual detail greater or additional requirements concerning the FATO, GEA, LLA or the approach and departure paths than those set out in these guidelines, then the greater and/or additional requirements should be met.

A helicopter must not land at, or take-off from a HLS that is located within controlled airspace unless:

- helicopter VMC exists;
- two way VHF radio communications with the appropriate ATS unit are established; and
- the appropriate ATC clearances have been received.

If a proposed HLS is to be located near a city, town or populous area or any other area where noise or other environmental considerations make helicopter operations undesirable, such an HLS may be affected by the provisions of the *Commonwealth Environment*

Protection (Impact of Proposals) Act 1974 and parallel State legislation. There may be other local legislation affecting the siting of HLS's or aerodromes.

Recommended criteria for a basic and standard HLS

BASIC HLS

A basic HLS should:

- be large enough to accommodate the helicopter safely;
- have a surface capable of withstanding the static and dynamic loads imposed by the helicopter; and
- only be used for day operations under helicopter VMC.

STANDARD HLS

General. Since a standard HLS is intended to be used for all types of operations both day and night under helicopter VMC, it should satisfy the following guidelines:

- **The FATO**, at minimum, should have a circular area with a diameter equal to twice the length of the helicopter, when the rotor(s) are turning (2 x 'L'), which is free of obstacles likely to interfere with the manoeuvring of the helicopter.
- **The GEA**, at minimum, should have either a circular area with a diameter equal to the diameter of the main rotor of the helicopter; alternatively if the helicopter is of the tandem rotor type the GEA should be a rectangular area equal to the length of the helicopter and the width equal to the rotor diameter. Further, the GEA should be within the FATO with the overall slope not to exceed 7.5 degrees (1:8 vertical to horizontal).
- **The LLA**, at minimum, should have an area equal in size to the undercarriage contact points plus one metre on all sides; if the LLA is not within the FATO, an air taxiing route with a width equal to twice the main rotor diameter of the helicopter should be provided between the LLA and the FATO. The LLA should be a cleared and stable area capable of bearing twice the gross weight of the helicopter. If on a building, the LLA should also be capable of accepting the static and dynamic loads involved. Overall slope of the LLA, in any direction, should not exceed the

maximum slope landing capability of the helicopter.

- **The approach and departure path** should extend outwards from the edge of the FATO as indicated in Fig 1 and have an obstacle free gradient of 7.5 degrees (1:8 vertical to horizontal) measured from the edge of the FATO to a height of 500 feet above the LLA level. This path may be curved left or right to avoid obstacles or take advantage of a more advantageous approach or departure path.

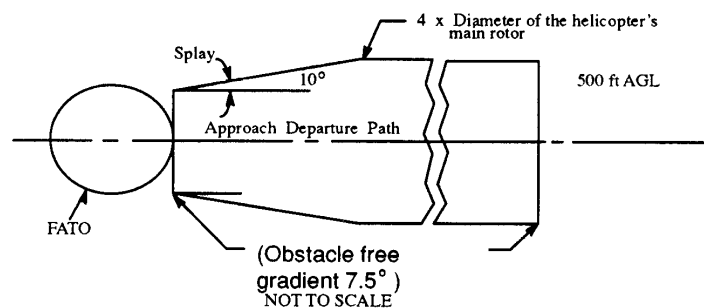


Figure 1

Buildings. For operations from a **standard HLS** that is located on a building the following additional guidelines are suggested:

- **Markings.** The HLS should be painted with markings indicating the undercarriage ground contact limit points on which the helicopter may be positioned without compromising clearance requirements.
- **The LLA** should be indicated by an aiming point painted on the HLS (this may take any form such as a circle, letter or logo).
- The **edge** of the FATO should be indicated by a 40 centimetre wide stripe painted on the HLS.
- A whole number (termed the **indicator number**) should be painted on the HLS with the helicopter's weight, expressed in Kg, calculated by multiplying the indicator number by 1000.
- **Drainage facilities** should be provided to prevent the collection, the spreading or falling of liquids onto other parts of the building.
- **Safety net.** As a means of avoiding risk of death or injury to passengers, crew and other personnel the outer edge of the HLS should be protected by a safety net, or similar device, that is at least 1.5 metres wide and does not project more than 25 centimetres above the HLS at its outer edge.

- **Access.** The HLS should be sited with separate primary and emergency personnel access routes with both routes located as far apart as practicable.
- **Fire extinguishers.** The HLS should be equipped with at least two carbon dioxide fire extinguishers each with a minimum capacity of 4.5 Kg; one extinguisher should be positioned at each of the primary and emergency personnel access routes.
- **A wind direction indicator** should be positioned on the HLS in an unobstructed area so that it is readily visible to helicopter pilots when approaching/departing the HLS.

Night Operations. For night operations the following additional guidelines are suggested:

- **Lighting.** The edge of the FATO should be defined by either omni directional white lights which project no more than 25 centimetres above the level of the HLS and are spaced no more than eight metres apart or by a combination of markings and floodlighting. However, where this is not practicable, the GEA should be so defined.
- **Wind velocity information.** An accurate means of assessing the HLS wind direction and speed should be provided. This may be accomplished either by an illuminated wind direction indicator located in an unobstructed area visible to approaching/departing helicopter pilots, or by any other suitable means such as radio communication with a responsible person located on or in proximity to the HLS.
- **Approach guidance.** When it is considered essential that an accurate approach path be achieved due to obstacles, the direction of approach should be indicated by at least two omni directional green lights, or by one white lead-in light positioned as indicated in Fig 2.
- Any **air taxiing route**, as recommended for day operations, should have a minimum width equal to three times the main rotor diameter of the helicopter, and depending on the operational demands be marked by either blue edge or green centre line lights spaced at 15 metre intervals, or be floodlit.
- **All lights**, except any air taxiing route lights, should be visible from at least 5 KM in clear conditions.

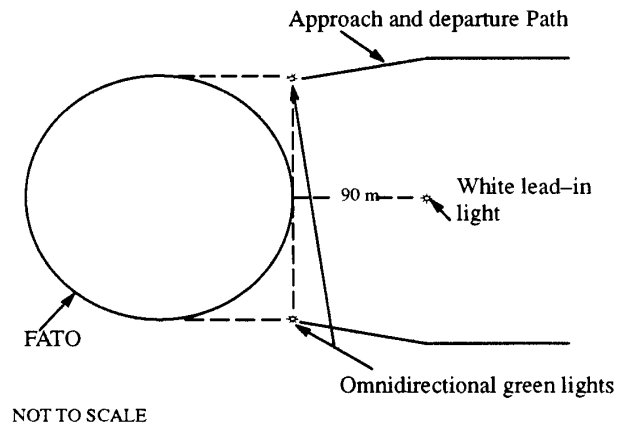


Figure 2

Recommended criteria for an offshore HLS

The landing area on either an offshore resource platform or offshore resource ship is generally referred to as an 'offshore HLS'.

General. Since an offshore HLS may be used for all types of operations both day and night under helicopter VMC, it should satisfy the following guidelines:

- **The FATO/GEA**, at minimum, should be a circular area equal to the overall length of the helicopter when the rotor(s) are turning ('L'). It should be capable of providing **ground effect** while the helicopter is hovering. Also the FATO should be capable of safely accepting the static and dynamic loads involved during the operation. Further, the FATO should be free of obstacles likely to interfere with the manoeuvring of the helicopter as well as having an obstacle limitation area. This obstacle limitation area should have an obstacle free gradient of 26.5 degrees (1:2 vertical to horizontal), see Figs 3 & 4.

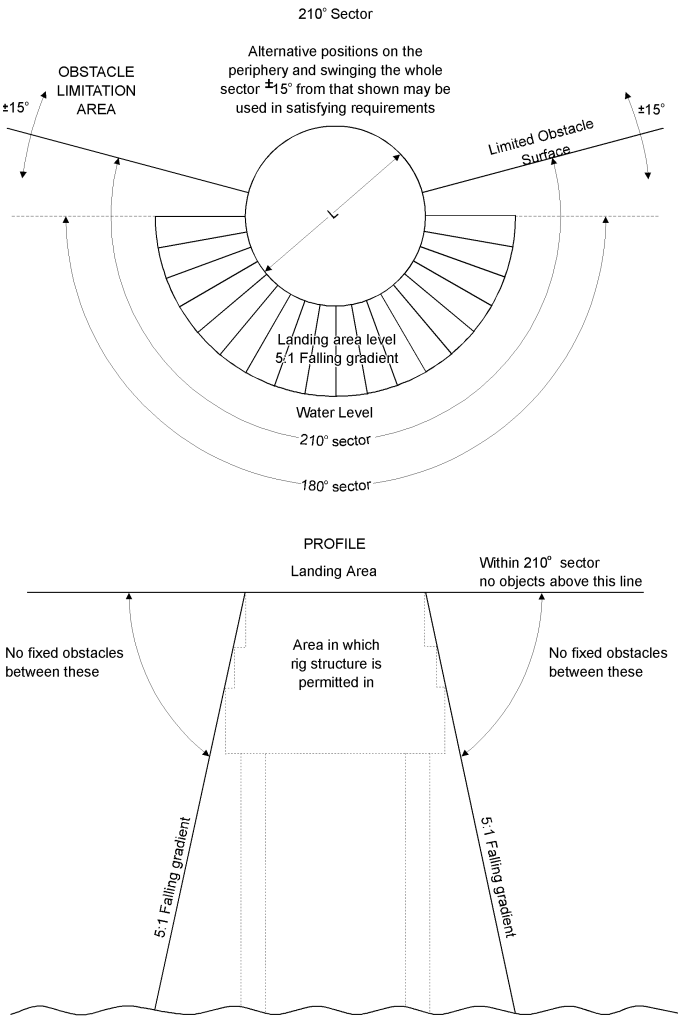


Figure 3

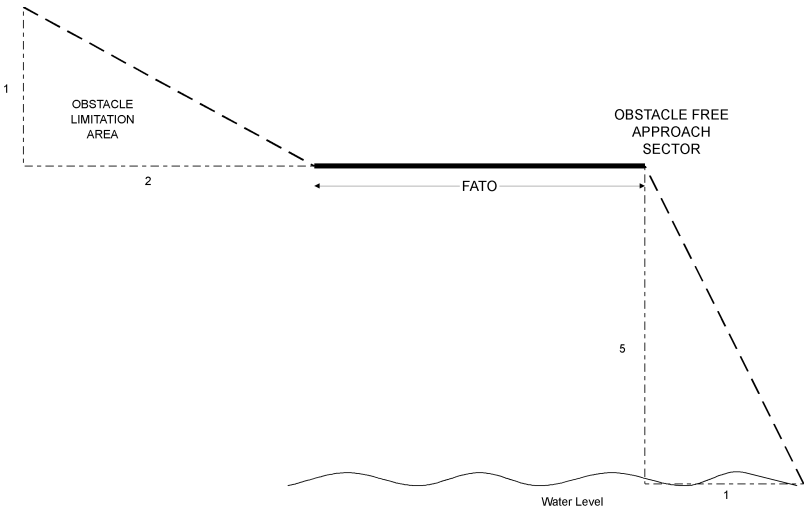


Figure 4

The **LLA**, at minimum, should be a circular area equal to 1.5 times the greatest dimension of the helicopter's undercarriage gear with the surface being non slip.

- **The approach and departure obstacle-free sector** should subtend an arc of 210 degrees centred on the rear or opposite edge of the FATO and extend outwards to a distance compatible with the one-engine inoperative capability of the most critical helicopter that the helideck is intended to serve. The surface should be a horizontal plane level with the elevation of the helideck. Over an arc of 180 degrees, passing through the centre of the FATO, the surface should descend outwards from the edge of the FATO with a gradient of five (5) units vertically to one (1) unit horizontally to the water level. At water level, the surface should then extend out at a distance compatible with the take-off space required for the most critical helicopter that is intended to use the helideck. See Figs 3 & 4.
- **Markings.** The HLS should be painted with 40 cm wide markings as follows:
 - to indicate the limits to which the undercarriage surface contact points may be positioned without compromising clearance requirements;
 - an aiming circle six metres in diameter; and
 - a stripe marking the edge of the FATO.
- **Drainage facilities** should be provided to prevent the collection, the spreading or falling of liquids onto other parts of the platform or vessel concerned.
- **Safety net.** As a means of avoiding risk of death or injury to passengers, crew and other personnel the outer edge of the HLS should be protected by a safety net, or a similar device, that is at least 1.5 metres wide and does not project more than 25 centimetres above the HLS at its outer edge.
- **Access.** The HLS should be sited with separate primary and emergency personnel access routes with both routes located as far apart as practicable.
- **Fire extinguishers.** The HLS should be equipped with at least two carbon dioxide fire extinguishers each with a minimum capacity of 4.5 Kg; one extinguisher should be positioned at each of the primary and emergency personnel access routes.

- **A wind direction indicator** should be positioned on the HLS in an unobstructed area so that it is readily visible to helicopter pilots approaching/departing the HLS.

Night Operations. For night operations to/from an off shore HLS the following additional guidelines are recommended:

- **Lighting.** The edge of the FATO should be marked by omni-directional white lights spaced no more than 5 metres apart, with a minimum of 10 lights. They should project not more than 25 centimetres above the level of the HLS;
- any obstructed sector should be marked by a row of red coloured omni directional lights;
- the HLS should be floodlit;
- any lights on the platform or vessel that may interfere with a helicopter pilot's vision during an approach/departure to/from the HLS should be adequately shielded.
- **Wind velocity information.** An accurate means of assessing the HLS wind direction and speed should be provided. This may be accomplished either by an illuminated wind direction indicator located in an unobstructed area visible to approaching/departing helicopter pilots, or by any other suitable means such as radio communication with a responsible person located on or in proximity to the HLS.

Recommended criteria for a marine HLS

Since a marine HLS may be used for all types of operations by day and night under helicopter VMC, it should generally conform to the following guidelines.

Midship HLS. For a midship located HLS:

- **The FATO**, at minimum, should be a circular area equal in diameter to the overall length of the helicopter when the rotor(s) are turning ('L'). Lines should be marked on the deck of the vessel as indicated by the lines A and B in Fig 5. There should be no obstacles in the area between these lines which protrude more than 25 centimetres above the surface of the vessel. Further, in front of and behind the FATO there should be obstacle limitation areas extending from these lines as shown in Fig 5. Each obstacle limitation area should have an obstacle free gradient of 11.5 degrees (1:5 vertical to horizontal) as shown in Fig 6.

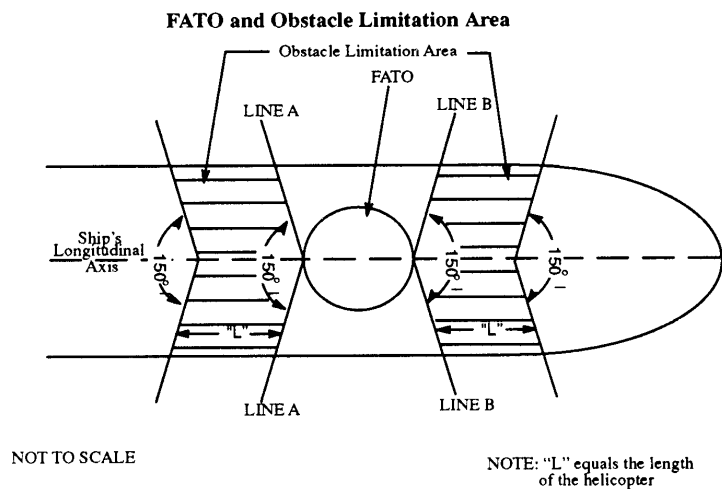


Figure 5

Vertical Cross-Section of FATO and Obstacle Limitation Area

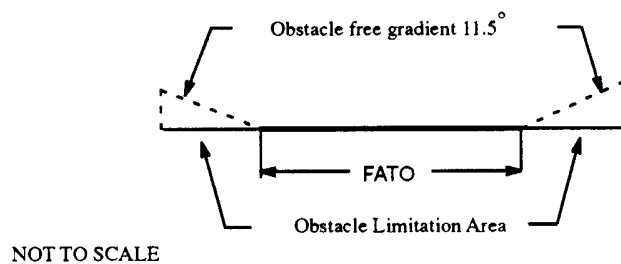


Figure 6

- **The GEA**, at minimum, should be a circular area with a diameter equal to the helicopter's main rotor diameter and is to be entirely within the FATO.
- **The LLA** should be entirely within the FATO and be capable of safely accepting the static and dynamic loads of the operation as well as have a non slip surface.

Ship's Side HLS. For a ship's side located HLS:

- **The FATO**, at minimum, should have an 'L' value as prescribed for the midship HLS and be an area with a shape and size as shown in Fig 7. There should not be obstacles within the FATO that protrude more than 25 centimetres above the vessel's deck. Further, there should be an obstacle limitation area around the FATO with an obstacle free gradient of 20 degrees (1:3 vertical to horizontal) as shown in Fig 8.

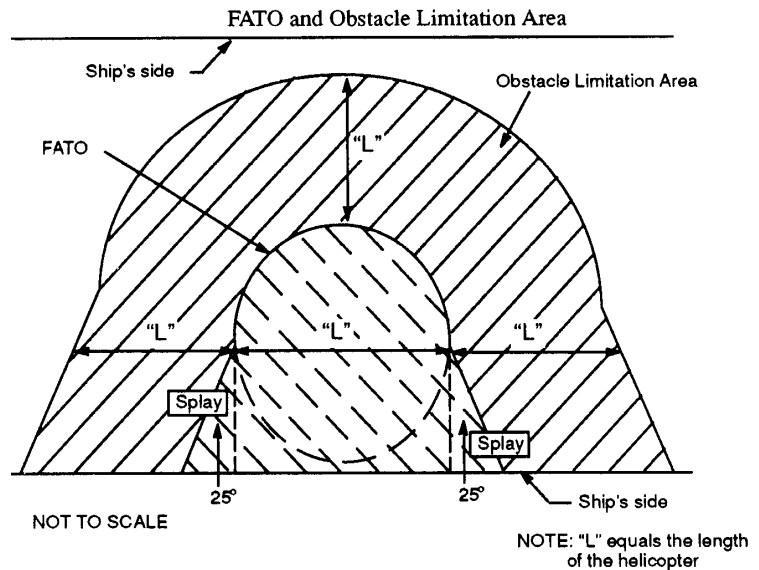


Figure 7

Vertical Cross-Section of FATO and Obstacle Limitation Area

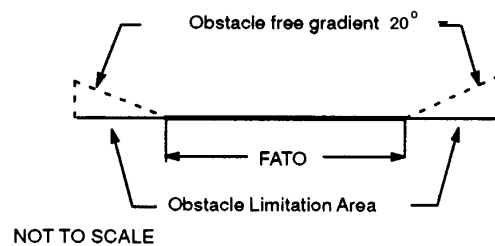


Figure 8

- **The GEA** , at minimum, should be a circular area with a diameter equal to the helicopter's main rotor diameter and is to be entirely within the FATO.
- **The LLA** should be entirely within the FATO and be capable of safely accepting the static and dynamic loads of the operation as well as have a non slip surface.
- **Approach and Departure Paths.** The 180 degree sector obstacle free surface profile, applicable to the Offshore HLS, is also recommended for the Marine HLS. The surface descent profile is to be taken from the edge of the ship's deck.
- **Markings.** In operations from a marine HLS, the following additional markings are recommended:
 - a white coloured painted circle, centred on the FATO, but broken in three places by the letter 'D' and followed by the figures (in metres) indicating the rotor diameter of the largest helicopter expected to use the HLS;

- a yellow aiming circle, centred on the FATO, with a diameter of six metres; and
- a white coloured painted letter 'H' in the centre of the aiming circle.
- **Wind velocity information.** An accurate means of assessing the HLS wind direction and speed should be provided. This may be accomplished either by a wind direction indicator located in an unobstructed area visible to approaching/departing helicopter pilots, or by any other suitable means such as radio communication with a responsible person located on or in proximity to the HLS.

Night Operations. For night operations from a marine HLS the following additional guidelines are recommended:

- the HLS should be floodlit; and
- any lights on the ship that may interfere with the helicopter pilot's vision during approach to or departure from the HLS, or during winching or sling loading operations should be adequately shielded.
- **Wind velocity information.** An accurate means of assessing the HLS wind direction and speed should be provided. This may be accomplished either by an illuminated wind direction indicator located in an unobstructed area visible to approaching/departing helicopter pilots, or by any other suitable means such as radio communication with a responsible person located on or in proximity to the HLS.