Guideline for Helicopter Landing Sites
Planning, Implementation and Management

1. Purpose

This guideline outlines mandatory requirements and recommendations regarding best practice for the management of Helicopter Landing Sites (HLS) owned or operated by Hospital and Health Services throughout their life cycle.

2. Scope

This guideline provides information for all Hospital and Health Service (HHS) and Department of Health (DOH) employees (permanent, temporary and casual) and all organisations and individuals acting as its agents (including Visiting Medical Officers and other partners, contractors, consultants and volunteers).

3. Related documents

Standards, procedures, guidelines

- CAAP 92-2(2) Guidelines for the establishment and operation of onshore Helicopter Landing Sites (HLS) February 2014, CASA
- Civil Aviation Regulation (CAR) 92, 1988, Commonwealth
- HLS Maintenance Task Specification
- ICAO Heliport Manual, Doc. No. 9261-AN/903 (not current)
- ICAO SARPS, Annex 14 to the Convention on International Civil Aviation - Aerodromes – Vol II Heliports (July 2009)
- Manual of Standards Part 139 – Aerodromes, Commonwealth
- Occupational Health and Safety Alert SA02/10, Safe Operations – Helicopter Landing Sites, 30/03/2010
- Queensland Health Capital Infrastructure Minimum Requirements, 2012
- Transport Safety Investigations Regulation 2003, Commonwealth

Forms, templates

- Helicopter Landing Site Register
4. Guideline for the management of HLS from planning phase through to decommissioning

The lifecycle of a HLS must be managed in accordance with this guideline.

A HLS is a defined area used wholly or in part for the arrival, departure and surface movement of helicopters and refers to all HLS used by HHS including those approved HLS located on non-HHS owned land.

HLS are a key link in providing equitable access to emergency specialist care through strategic location and ongoing availability, allowing safe and clinically effective patient transport. The lifecycle for HLS infrastructure consists of planning; implementation; management and decommissioning. Each stage of the life cycle has specific requirements as outlined in Appendix 1.

This Guideline is based on the International Civil Aviation Organisation (ICAO) Standards and Recommended Practices (SARPS); Civil Aviation Advisory Publication 92-2(2) Guidelines for the establishment and operation of onshore Helicopter Landing Sites; HLS Guidelines for Queensland Government, March 2006 (not formally endorsed); and reflect current best practice. It is not intended these guidelines provide definitive requirements for all circumstances during the life cycle of a HLS. Suitable expert advice shall be sought when applying this guideline.

4.1. General Requirements

4.1.1. Consultation and Reporting

All relevant stakeholders shall be consulted during all stages of the life cycle of the HLS as dictated by the circumstances involved. Stakeholders include HHS personnel (operation and clinical), HHS agency partners (such as Queensland Ambulance Service), helicopter service providers who utilise the HLS, and Retrieval Services Queensland (RSQ).

HHSs should advise Aeromedical Retrieval and Disaster Management Branch of any issues or plans that may impact on the availability and safety of their HLS.

4.1.2. Future Proofing

The future requirements for HLS shall be considered to support the long-term suitability of HLS for continued use by helicopter service providers to ensure ongoing rapid and clinically effective transfers. The following factors are relevant in determining requirements:

- Helicopters utilised within the Queensland Emergency Helicopter Network (EHN) and beyond may potentially be utilised at any HLS. Helicopter performance, size, flight manual requirements and requirements of individual helicopter service providers may influence HLS requirements.
- Future helicopters that may be used by helicopter service providers. The trend is for larger and more capable aircraft to be used for aeromedical purposes.
- Future developments in best practice or regulatory requirements. Regulatory requirements include the interrelated issues of HLS infrastructure and helicopter operational requirements (for example, helicopter performance class requirements).

4.1.3. Maximising Availability

HLSs shall be planned, implemented and managed to maximise availability for a range of conditions. The following factors shall be taken into account:

- HLSs available for continuous day and night operation. For sites where personnel resources are limited, this may dictate additional infrastructure requirements (for example, security fencing).
- HLSs available for a broad range of wind conditions. The approach and departure paths of
helicopers are dependent on wind direction and strength.

- HLSs available for a broad range of dry and wet conditions. This may dictate specialist surface preparation, drainage, oversized sealed surfaces or management measures (for example, maintenance of a grassed surface during drought or wetting of HLS surface prior to landing in dry conditions).
- HLSs available in disaster situations. This may dictate infrastructure requirements and management practices (for example, provision of backup portable lighting and associated procedures).

4.1.4. Maximising Safety

Consideration shall be given to exceeding minimum requirements in order to maximise the safety of a HLS. Options to be considered (and not necessarily limited to) shall include:

- providing larger than required HLS components or HLS overall
- meeting a range of helicopter performance class requirements (for example, provision of safe forced landing areas) when not necessarily required
- installation of additional HLS infrastructure, for example, the ICAO SARPS covers both minimum standards and recommendations for infrastructure
- the scheduling of more frequent operational and maintenance inspections.

It should be noted the ICAO SARPS reference helicopter flight manual requirements in specific circumstances and Civil Aviation Regulation (CAR) 92 places the onus on pilots to determine the suitability of a HLS. Determining minimum requirements may be subject to the operating requirements of individual helicopter service providers and interpretation of helicopter flight manuals against current requirements.

4.1.5. Site Specific Solutions

Each HLS is unique and site specific solutions shall be individually tailored for each site. The infrastructure installed at a HLS may not necessarily be suitable for another site or taken to reflect the range of options available.

4.1.6. Risk Assessment

Where full compliance with documentation, minimum infrastructure or management requirements is not feasible, a documented risk assessment shall be conducted to establish the appropriate risk mitigations required for continued use, establishment, or upgrade of a HLS. Risk mitigations may include the development of unique infrastructure solutions, management procedures, or usage limitations (for example, day only operations).

Risk assessment outcomes shall be recorded in HLS Operations Manuals and HLS Registers (or equivalent). Risk assessment outcomes shall also be recorded in HLS plans and documented procedures, as appropriate.

4.1.7. Cost Benefit Analysis

A formal assessment of costs and benefits shall be applied at a minimum for:

- determining the extent to which future requirements are covered
- exceeding minimum requirements
- maximising availability
- level to which risks are mitigated.

Costs and benefits may be impacted throughout the HLS life cycle. An assessment of costs and benefits should always take into account planned HLS upgrades or replacement.
4.2. Planning of HLS

The development of new HLS, major HLS upgrades, and/or the decommissioning of sites shall occur only after a formal planning process has been carried out. Planning may be instigated by regular reviews, the establishment of new health facilities, major ongoing issues identified during the management of existing HLS, changes in the HLS requirements or nearby activities (for example, neighbouring building construction) that impact on the HLS operations (for example, noise, rotor downwash and flight path issues).

4.2.1. High level activities

Planning shall include the following high level activities:

- Needs analysis. This is dependent on actual or predicted frequency of use, availability of HHS and HHS agency partner personnel, availability of suitable medical transport (rotary wing, fixed wing, road, marine) and disaster planning requirements.
- Identification of potential sites (preferably on campus).
- Conceptual design and site selection.
- Recording details of proposed HLS or major upgrades in facility Master Plans.
- Where protection of flight paths and stipulation of surrounding infrastructure requirements (for example, noise mitigation measures) is required to extend beyond Queensland Health controlled land, the appropriate planning instruments (such as council neighbourhood plans, council zoning and state planning policies) shall be investigated and instigated as appropriate.
  Implementation of these measures may need to continue throughout the other life cycle stages. The need for these measures may also be identified during the other life cycle stages and be included in any further planning undertaken.
- Consideration for the removal of protection measures relating to flight path and surrounding infrastructure stipulations in place when investigating permanent decommissioning.

4.3. Implementation of HLS

4.3.1. Design

In addition to the general requirements, a number of criteria shall be considered in the design of HLS:

- Clinical requirements for patient transfers.
- Aviation industry best practice.
- ICAO SARPS and associated manuals.
- Required helicopter performance class as required by CASA for specific sites.
- Operational requirements of helicopter service providers.
- Operational requirements of HHS and HHS agency partners.
- General infrastructure requirements as applicable (for example, Queensland Health Capital Infrastructure and relevant building codes).
- Environmental, safety and infrastructure condition impacts of helicopter operations (for example, noise, vibration and helicopter downwash).
- Impact of surrounding infrastructure, vegetation and topography on helicopter operations (for example, elevated sites may have reduced downwash impacts).
- Facilitating the requirement of helicopter pilots to ensure no unauthorised person approaches within 30m of the helicopter as per CAAP 92-2(2).

The ICAO SARPS set out international requirements for the safe conduct of civil aviation activities and as a signatory to the Convention on International Civil Aviation (Chicago, 1944), the Australian Government has undertaken to apply the ICAO SARPS through the Air Navigation Act 1920, except where specific differences have been notified to ICAO. The design of HLS against the current ICAO SARPS is an acceptable risk mitigation measure when undertaken in conjunction with suitable expert advice. However as CASA guidelines are updated, this will need to be reviewed.
4.3.2. Approval and Construction

The appropriate building, environmental and zoning requirements shall be obtained prior to the commencement of construction of HLS.

Endorsement by relevant stakeholders is recommended at key milestones throughout the construction phase in order to address any issues that may arise during construction.

4.3.3. Commissioning

Commissioning a HLS shall include the following activities with advice from a suitable expert:

- Development of HLS management procedures and documentation of management procedures in the HLS Operations Manual, Computerised Maintenance Management Systems and other relevant documentation systems.
- Endorsement by relevant stakeholders of the implemented infrastructure and management procedures as appropriate.
- Provision of the HLS information, procedures and operational status as appropriate to helicopter service providers, relevant HHS agency partners, RSQ and other stakeholders.
- Inclusion of the HLS in HLS Register (or equivalent) maintained by the HHS.
- Identification of the HHS officers responsible for the HLS.
- Training of personnel undertaking the different roles in the management of the HLS.

4.3.4. HLS Operations Manual

A HLS Operations Manual should be available at each HLS. The structure and content for a HLS Operations Manual is at the discretion of each HHS and it is recognised there are likely to be additional site-specific matters that need to be addressed. The HLS Operations Manual will typically contain the following details:

- Authorised HLS users.
- HLS usage limitations.
- HLS descriptive information including approved plans and photographs.
- Helicopter operating requirements.
- Normal management procedures.
- Emergency procedures.

In developing the HLS Operations Manual and associated procedures, any current and future relevant Occupational Health and Safety Alerts, Notices or Information shall be complied with such as the safety instructions stipulated in Occupation Health and Safety Alerts SA04/09 and SA02/10. The directory of all current Occupational Health and Safety Alerts, Notices and Information is available on the Occupational Health and Workplace Safety website on QHEPS.

4.3.5. HLS Register

HHSs shall maintain a HHS HLS Register (or equivalent) that contains a summary of the critical HLS information for each HHS HLS to enable the tracking and monitoring of HLS status (for example, availability, critical maintenance and audits), issues and compliance.

The HLS Register Template should be used and HHS shall take into account the following:

- The HLS Register Template provides a structure to capture the minimum details and is a guide for establishing individual HHS HLS Registers.
- Standard terminology to be used where possible to maximise the ability to search the HHS HLS Register.
- The issues log shall be used for the tracking of any incidents or issues where there is an associated safety risk for helicopter occupants and persons on the ground, actual or potential HLS and helicopter damage, and the continued availability of the helicopter or HLS for use.
4.4. **Management of HLS**

HHS shall ensure the management of a HLS is covered by operational and maintenance procedures tailored for individual HLS and are conducted by suitably qualified and trained personnel.

4.4.1. **Operation – readiness checks and procedures for HLS safety**

Operational procedures for HLS include regular HLS infrastructure readiness checks and procedures required for the safe conduct of helicopter movements to the HLS. Readiness checks shall be undertaken immediately prior to, during and between helicopter movements to ensure HLS are safe and ready for use. The suitable frequency of readiness checks undertaken between helicopter movements is dependent on a wide range of factors including:

- Frequency of use.
- Infrastructure installed. For example, installed equipment may be designed to fail in a predefined manner upon contact with a helicopter (so as to avoid helicopter damage or an accident) and subsequently be prone to vandalism.
- Accessibility by the general public (for example, vandalism risks).
- The likelihood of build-up of foreign debris (for example, windblown rubbish, branches, gravel).
- Ease of removing the expected foreign debris.
- Level of risk associated with the site.
- Availability of HHS personnel.
- Availability of backup procedures and equipment (e.g. portable lights).
- Ease of tracking readiness checks undertaken.

The inspections carried out during HLS readiness checks shall be designed so that for each helicopter movement, it is ensured:

- key infrastructure is functioning correctly (for example, HLS lighting and windsock)
- HLS surface is suitable for use
- the site is free of foreign debris
- no unplanned obstacles are present (for example, construction cranes on neighbouring properties).

Procedures required during helicopter operations include:

- pre-landing, pre-takeoff and post-takeoff infrastructure readiness checks
- security procedures for controlling HLS access prior, during and after helicopter movements (allowing sufficient time for emergency landings post-takeoff)
- fire fighting
- the safe movement of persons and equipment on the HLS. Hazards and issues shall be dealt with as they are identified via a risk management process and advised to helicopter service providers and relevant HHS stakeholders if unable to be immediately rectified.

Other operational procedures to be considered include:

- internal process for reporting of unauthorised landings in compliance with *Transport Safety Investigations Regulation 2003 – Part 2*
- procedures for obtaining permission to use
- site security between helicopter movements.

4.4.2. **Maintenance**

Maintenance of HLS shall be conducted at least annually or more frequently as determined by environmental conditions at the HLS (for example, a seaside HLS may require more frequent maintenance), manufacturer requirements or regulatory requirements for specialised equipment. Maintenance will typically involve:

- equipment operation checks
- equipment condition checks
- preventative maintenance tasks (for example, bulb replacement, greasing of windsock...
bearings).

Suitable expert advice should be sought for high risk sites dependent on the complexity of condition checks and expertise required.

4.4.3. Auditing

HHS shall ensure regular audits are undertaken and include:

- Onsite checks infrastructure and obstacles (for example, vegetation) in place in accordance with approved plans (minimum yearly). These checks may be suitable to be included as part of regular maintenance.
- Checks by a suitable expert (desktop or onsite audit as determined by a suitable expert) that infrastructure and obstacles complies with current requirements and documented risk mitigations are appropriate.
- Structural checks for high risk sites by a suitable expert (5 yearly or as identified by a suitable expert).

More frequent audits may be required (as identified by a suitable expert) as changes in HLS and helicopter requirements occur, as critical issues are identified, or dependent on specific site characteristics. Marginally compliant or high risk sites (for example, elevated HLS) may require more regular auditing.

It is recommended re-approval be sought from relevant stakeholders for sites when audited against requirements but signoff shall be obtained in the event of any changes.

There is no set HLS Compliance Audit template as audit tools should be adapted to reflect site specific issues or the audit process followed by the HHS (for example, the template is based on the assumption an initial desktop audit is undertaken).

4.4.4. Recording HLS Events

Relevant information on HLS events (for example, maintenance, audits, helicopter landings) shall be recorded in order that purpose, frequency duration and issues associated with events can be tracked. Logging of HLS events at a single location is recommended. HHS may elect to maintain different systems for recording the same information.

4.5. Decommissioning of HLS

The decommissioning of HLS shall only be undertaken after suitable planning (including consultation) has been undertaken and the appropriate approvals gained. The impact on service delivery shall be taken into account to determine the process (for example, required consultation) and determining whether decommissioning is warranted.

4.5.1. Formalising HLS decommissioning

The following shall be conducted to formalise the decommissioning of a HLS:

- Marking of the HLS as per the Manual of Standards, Part 139 – Aerodromes and ICAO SARPS.
- Isolation of lighting circuits.
- Removal of infrastructure as determined in the planning process.
- Updating of the HLS Register.
- Informing helicopter service providers and RSQ of the HLS status.

5. Roles and Responsibilities

The following table lists the associated roles and responsibilities in relation to the planning, implementation, management and decommissioning of HHS HLS. HHSs may elect to adjust responsibilities in accordance with HHS requirements (for example, local HLS Operator responsible for multiple HLS, adjust or combine the responsibilities of HHS HLS Officer and local HLS Operator, or delegate responsibilities to multiple persons).
<table>
<thead>
<tr>
<th>Position/Organisation</th>
<th>Responsibility</th>
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<tbody>
<tr>
<td><strong>Health Service Chief Executive</strong></td>
<td>• Provide, within recognised legislation, directives and budget frameworks, the recommended resources, facilities and support necessary for the provision of appropriate HLS planning, implementation, management and decommissioning.</td>
</tr>
</tbody>
</table>
| **HHS HLS Officer** | • Act as a single point of contact for HLS issues for the HHS.  
• Maintain the HHS-wide HLS Register.  
• Monitor HLS issues across the HHS and ensure required actions are managed.  
• Coordinate and monitor the planning, implementation, management and decommissioning HLS activities across the HHS.  
• Coordinate and monitor the training of HHS staff in HLS activities.  
• Ensure the required management procedures are in place for each HHS HLS and are documented in individual HLS Operation Manuals.  
• Ensure each HLS has a nominated Local HLS Operator. |
| **Local HLS Operator** | • Maintain local HLS procedures and HLS Operations Manual.  
• Monitor HLS activities (for example, maintenance, audits, helicopter landings) and ensure local operational procedures are being followed, the required maintenance and auditing of HLS is undertaken, activities are being undertaken by suitably trained staff, and manage identified local HLS issues.  
• Provide HLS updates to the HHS HLS Officer on HLS status, issues and procedures.  
• Advise HHS HLS Officer, RSQ, helicopter service providers, and HHS agency partners of HLS availability and usage limitations.  
• Report issues as mandated by the *Transport Safety Investigations Regulation 2003*. |
| **HLS Controller (shift position)** | • Coordinating the arrival and departure of helicopters to ensure no conflicts arise in the use of the HLS.  
• Control of persons entering the HLS in conjunction with the helicopter crew.  
• Manage access to HLS at other times (for example, maintenance). |
| **Helicopter Service Provider** | • Helicopter pilots are responsible for determining the suitability of HLS prior to landing.  
• Provide feedback and endorsement of HLS infrastructure, issues and procedures as requested by HHS.  
• Report issues as mandated by the *Transport Safety Investigations Regulation 2003*.  
• Incorporate HHS advice on HLS into operating procedures. |
| **HHS agency partners** | • Provide feedback and endorsements of HLS infrastructure, issues and procedures as requested by HHS. |
| **Health Infrastructure Branch** | • Provide project management and infrastructure advice on HLS as engaged by HHS. |
6. **Definitions of terms used in the guideline**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition / Explanation / Details</th>
<th>Source</th>
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<tbody>
<tr>
<td>Best practice</td>
<td>Encompasses procedures or infrastructure developed by associated industries to meet gaps in standards and guidelines as they become apparent due to a range of issues (for example, advances in aviation technology such as night vision goggles).</td>
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<tr>
<td>Civil Aviation Safety Authority (CASA)</td>
<td>The Civil Aviation Safety Authority’s (CASA) primary function is to conduct the safety regulation of civil air operations in Australia and the operation of Australian aircraft overseas.</td>
<td>CASA</td>
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<tr>
<td>Emergency Helicopter Network (EHN)</td>
<td>The EHN is composed of government helicopter service providers and non-government helicopter service providers who provide services. Government agencies task the EHN with the aim to provide optimal asset utilisation, risk mitigation and safety in, delivering emergency helicopter responses across Queensland during both normal operations and a disaster response.</td>
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<tr>
<td>Foreign Debris</td>
<td>Foreign debris includes any loose items within the HLS that will present as danger to nearby persons and the helicopter by becoming wind born from rotor downwash.</td>
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<tr>
<td>Helicopter Service Provider</td>
<td>Helicopter service providers include EHN approved helicopter providers or operators permitted to utilise the HHS HLS.</td>
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<tr>
<td>HHS agency partner</td>
<td>HHS agency partners may include Regional Councils, Queensland Ambulance Service, Queensland Police Service, State Emergency Service, Queensland Fire and Emergency Service. These agencies may be involved in the normal operation of the HLS or have disaster planning requirements that will impact on the HLS.</td>
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<tr>
<td>High risk sites</td>
<td>High risk sites included elevated sites (including roof tops), sites where infrastructure is susceptible to damage from environmental factors or usage, sites where consequences of failure (equipment and process) are significant (for example, sites where significant hazards exist as identified in the risk management process).</td>
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<tr>
<td>Maintenance</td>
<td>Work on existing buildings and supporting infrastructure with the intent to: • re-instating physical condition to a specified standard; • preventing further deterioration or failure; • restoring correct operation within specified parameters; • replacing components at the end of their useful/economic life with modern engineering equivalents;</td>
<td>Maintenance Management Framework, 2011</td>
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<td>• making temporary repairs for immediate health, safety and security reasons; and • assessing buildings for maintenance requirements.</td>
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<td>Performance Class</td>
<td>Performance classes define the performance of helicopters in the event of an engine failure which impacts on the required HLS infrastructure. A helicopter may be able to operate within different performance class conditions dependent on the number of engines, helicopter performance, reliability, loaded weight and environmental conditions.</td>
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<tr>
<td>Rotor downwash</td>
<td>Winds generated by the helicopter due to action of the rotors.</td>
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<tr>
<td>Safe forced landing areas</td>
<td>Suitable controlled areas within departure and flight paths selected to permit suitably safe forced landings or one engine inoperative landings for performance class 2 and 3 operations.</td>
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<tr>
<td>Suitable expert</td>
<td>Individual appropriately qualified and experienced in the associated area of expertise (for example, pilots, structural engineers, maintenance engineers, aviation engineers, manufacturers, aviation consultants, government departments).</td>
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7. Document approval details

**Document custodian**
Executive Director, Aeromedical Retrieval and Disaster Management Branch, Prevention Division

**Approval officer**
Chief Health Officer and Deputy Director-General, Prevention Division

**Approval date:** 29 May 2017

8. Version control

<table>
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<tr>
<th>Version</th>
<th>Date</th>
<th>Prepared by</th>
<th>Comments / reason for update</th>
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<tbody>
<tr>
<td>1.0</td>
<td>1 July 2013</td>
<td>D. Tincknell</td>
<td>Guide for Hospital and Health Services following devolution of health care</td>
</tr>
<tr>
<td>2.0</td>
<td>1 May 2017</td>
<td>C. Hindmarsh</td>
<td>Updated to better reflect role of Retrieval Services Queensland</td>
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HELIICOPTER LANDING SITE LIFE CYCLE

Planning
- Needs Analysis
  - Analysed
  - Site Identification
- Conceptual Design and Site Selection
  - Anatomy and other design constraints
  - Suitable sites
- Documentation
  - master plan
  - Master plans

Implementation
- Detailed Design
  - Appropriate analysis
  - Construction
  - Commissioning
- Documentation
  - Master plans
  - HSA Register

Management
- Operation
  - Maintenance
  - Audit
- Decommissioning
  - Permanent closure of HLS
  - Closure as result of a planning process

Whole of Life Cycle Consultation and Reporting
- Consultation and reporting of issues in HLS. Stakeholders should be consulted throughout the HLS life cycle to ensure the safe operation and availability of HLS to enable the rapid and efficient transfer of patients.
- Stakeholders include: Queensland Emergency Medical System Coordination Centre, Health Services and Counter Disaster Unit, helicopter providers, agency partners, local HLS personnel, clinicians, operational and maintenance, and all required stakeholders (e.g. councils of HLS).