Report of the Air Ambulance Reference Group to the ACC and Health Ministers

28 February 2008
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Foreword

The Air Ambulance Reference Group (AARG) project was established to provide expert advice to the Minister for ACC and the Minister of Health on a framework for the provision of ‘air ambulance’ services for New Zealand that:¹

- is safe, sustainable, cost-effective, appropriate and efficient
- meets the reasonable expectations and needs of New Zealand’s diverse communities
- meets, as best as is possible, patient needs and targeted patient outcomes
- ensures that appropriate resources are reasonably available for the needs of communities, agencies and organisations involved in search and rescue and other non-medical emergencies.²

As explained more fully in the ‘Report Scope and Terminology’ section of this report:

- the focus of the AARG project is on ‘primary retrieval’ missions by emergency helicopters that provide ambulance services
- a separate, but closely aligned, project (the Inter-hospital Transfer: Air Ambulance Project) focusing on ‘secondary transfer’ missions is proceeding apace with the AARG project³
- accordingly, the term ‘emergency helicopters’ will predominate over the term ‘air ambulance’ throughout this report.

The AARG project is an opportunity to:

- contribute substantially to achieving the vision of ‘the best possible emergency helicopter services for New Zealanders’⁴
- provide decision-makers and stakeholders with advice and information that will, among other things, better enable them to determine the option/s that ought to be progressed and how best to make progress
- build, as appropriate, on previous work and the feedback on that work
- coordinate the ongoing and future development of emergency helicopter services with a range of other related services.

AARG has noted many positive aspects of the New Zealand emergency helicopter services and does not consider the services to be ‘broken’. To date the sector has maintained an excellent aviation safety record and good relationships with primary funders (community and corporate donors, sponsors and grant funding organisations) and service providers. These relationships have enabled the sector to

¹ Terms of reference and membership of AARG and its sub-groups are contained in the accompanying Resource Document.
² The framework must take account of the need to maintain contingent capacity for other services.
³ The Inter-hospital Transfer: Air Ambulance Project was commissioned through District Health Boards New Zealand (DHBNZ) by the 21 District Health Board (DHB) Chief Executives. While there are regional variations, nationally, inter-hospital transfer missions are most commonly undertaken by fixed-wing aircraft.
⁴ Hon Ruth Dyson proposed the vision at the 19 April 2006 meeting of AARG. In developing this project plan, the phrase ‘best possible’ has been interpreted in the context of patient needs and outcomes being a prime consideration in the course of AARG information gathering and the development of evidence-based advice for Ministers.
secure the significant funding needed for the aircraft, equipment, personnel and other aspects of the services that are not fully funded by the Crown.

AARG has, however, also identified a wide range of issues that need to be addressed to ensure that all New Zealanders have reasonable access to quality, fully integrated ambulance services (including emergency helicopter services) that are integrated with wider emergency services. As indicated in the body of this report, there are mixed views among AARG members about the overall clinical quality of the current emergency helicopter services, cost-effectiveness and efficiency.

Issues that AARG has identified as warranting further consideration (discussed in more detail in the body of the report) include:

- the current mix of standards, contract requirements, service guidelines and protocols do not provide clarity about desired outcomes, or the flexibility, needed to ensure appropriate and cost-effective emergency helicopter services throughout New Zealand
- the range of stakeholders, funders, service provider structures, multiple roles of aircraft and the lack of any over-arching strategy for emergency helicopter and related ambulance services constrains the Government and sector’s ability to adequately plan for the future capability and capacity needs to meet the needs of communities throughout New Zealand
- the short-term nature of the funding and contracting environment, variability of cost structures and funding mechanisms, and the absence of any over-arching funding strategy for both government and non-government funding has the potential to increase costs and reduce the sustainability of the services
- despite previous reviews and studies of the sector, there is still an absence of consistent and reliable data on which to base long-term planning, investment and service specification decisions.

While the AARG terms of reference demand that proposals in this report focus on emergency helicopters, AARG notes that there would be significant benefits in adopting a whole-of-sector approach to funding, planning and policy processes for all ambulance services. AARG’s discussions have highlighted that many of the issues faced by the emergency helicopter services are also faced by the wider ambulance sector.

The level and nature of public and sector interest, and the importance of ‘getting it right first time’, mean that AARG has genuinely attempted to gather and analyse clear evidence (where evidence is available) to support its recommendations. Where evidence is not available, AARG drew on expert opinion – including, in some cases, opinion drawn from within the AARG membership.

While a relatively lengthy document, this report cannot fully illustrate the depth and breadth of AARG’s 18 months of deliberations (primarily during the 2007 calendar year) over many, varied, complex and multi-faceted issues. An accompanying resource document provides some further detail, including information about the project membership, terms of reference, and background materials that informed the development of some of the proposals in this report.

I wish to acknowledge, with enormous gratitude, the participation and expertise of the more than 50 AARG participants, many of whom have contributed tirelessly, since AARG’s inception in mid-2006. The final report is a tribute to those individuals, and
to all who have taken the time to attend meetings and to provide feedback on discussion papers and earlier drafts of this report.

I must also acknowledge the excellent support of ACC and the Ministry of Health. The value of the ‘free and frank’ inputs by ACC and Ministry staff whose knowledge of the sector and substantial financial support for the AARG project cannot be overstated. In particular, their support for the systematic review report by New Zealand Health Technology Assessment, the CRA International survey and updated report on sector statistics, and overall project management services provided by Monarch Consulting Limited.

The AARG project has not delivered an ‘ultimate solution’ for emergency helicopter services or ambulance services generally. Given the history of previous reviews, the large number of AARG participants, the diverse interests of participants, and the fact that AARG is not a decision-making body, an ultimate solution would not be a realistic expectation. AARG has clarified many of the issues and much of what needs to be done to ensure future success. Such success will require strong leadership (by the Crown and from within the sector), and a continuation of the open, inclusive and collaborative processes employed by AARG.

This AARG report establishes a solid foundation for continuous improvement. The report contains practical, achievable and constructive proposals that are supported by the broad majority of the AARG members. Of particular moment are the proposals relating to:

- establishing a lead Crown funder and a representative sector advisory group.
- the funding partnership between government and communities
- a medium to long-term funding needs analysis and a long-term funding plan for both government and community funding streams
- parallel contracting arrangements for primary retrievals and inter-hospital transfers as the first step to fully coordinated Crown (including DHB) contracts for all emergency helicopters and fixed wing air ambulance services.

Other proposals support the development of a national framework with a clear purpose and principles that reflect AARG’s interpretation of reasonable service expectations. AARG’s proposals also confirm the place of national standards and specifications and dispatch protocols and how they can be further developed. Initiatives required to improve the evidence base for future policy, funding and purchasing decisions are also identified.

It is important that the momentum developed through the AARG process is maintained and implementation activities are aligned with the outcomes of other relevant ambulance sector reviews. Subject to Minister’s approval, I suggest that a reasonable timeframe to establish the lead Crown funder and sector advisory group would be within three months of such approval. The lead Crown funder could then lead other implementation activities.

Accordingly, I believe that AARG has substantially fulfilled its purpose and that the AARG proposals will indeed make a substantial contribution to ensuring that emergency helicopter services in New Zealand will:

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5 Transportation of emergency patients. R. Weir. (NZHTA Technical Brief 2007: 6(4)
6 Air Ambulance Statistics (CRA International, 7 November 2007)
be safe, sustainable, cost-effective, appropriate and efficient
meet the reasonable expectations and needs of New Zealand’s diverse communities
meet, as best as is possible, patient needs and targeted patient outcomes
ensure that appropriate resources are reasonably available for the needs of communities, agencies and organisations involved in search and rescue and other non-medical emergencies.

M P (Mel) Smith CNZM
Independent Chair
Air Ambulance Reference Group
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Key points and summary of proposals

Introduction

As recorded in the foreword to this report, AARG has noted many positive aspects of the New Zealand emergency helicopter services and does not consider the services to be ‘broken’. AARG has, however, also acknowledged that there is room for improvement and further development of emergency helicopter services as part of the development of fully integrated ambulance services for all of New Zealand.

Specifically AARG identified the need to address issues relating to:

- consistency of standards and service specifications
- national oversight, planning and advice on diverse local and strategic interests
- medium and long-term funding and contracting to manage costs and ensure sustainability
- data collection and analysis to inform future policy and investment decisions.

This AARG report should be considered along with outcomes from:

- the District Health Boards New Zealand Inter-hospital Transfer: Air Ambulance Project
- the Health Select Committee Inquiry into the Provision of Ambulance Services
- ACC and Ministry of Health inter-agency work on joint funding of ambulance services
- the review of New Zealand Standard 8156.

For consistency with the body of this report the following terms are used in the following summary of proposals:

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<tr>
<td>air ambulance</td>
<td>refers to both helicopters and fixed wing aircraft that operate as ambulances</td>
</tr>
<tr>
<td>emergency helicopters</td>
<td>refers to helicopters that provide emergency ambulance services</td>
</tr>
<tr>
<td>Crown</td>
<td>Unless otherwise stated, is intended to include both the ACC and the Ministry of Health</td>
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AARG makes no proposals about the location of emergency helicopter bases or whether aircraft should be dedicated to ambulance and/or other emergency services. Provided that outcome-focused Crown service specifications are met through an open tender process, AARG considers that these issues are more appropriately determined by service providers.

AARG also concluded that until further research is undertaken, it is not necessary or appropriate to choose either the ‘stay and treat’ or the ‘scoop and run’ emergency
The NZHTA review did not provide conclusive evidence supporting one of these service methods over the other, but the evidence trend was towards benefit from the presence of a doctor.
Proposals

_Service purpose, principles and ‘reasonable expectations’_

AARG proposes that the purpose of emergency helicopter services (as part of fully integrated ambulance services) be defined as:

*To help to ensure the best practicable health outcomes by providing an efficient 24 hour service that:*

- responds in a timely manner to calls for assistance
- provides appropriate care, treatment and (where necessary) transportation and other logistical support, to people requiring assistance as a result of injury, or requiring medical or maternity assistance
- is integrated and coordinated with other pre-hospital, emergency and health care services.

AARG proposes that the following principles are used to guide emergency helicopter service design and delivery, and the ongoing implementation of the other proposals:

- **Equitable** – service provision is fair, reasonable and impartial in all circumstances.
- **Safe** – patients, clinical staff and aircrew are safe throughout the service from medical, workplace and transport perspective.
- **Consistent** – all organisations and personnel involved in the service apply the agreed minimum standards and follow agreed operating procedures to ensure national consistency, recognising issues with particular operating environments affected by geography, distance, climate, etc.
- **Auditable** – data is identified, collected and available centrally to support and inform a quality management framework that enables funders, purchasers and service providers to monitor the service against agreed standards and ensure continuous improvement
- **Interoperable** – through the use of common techniques, and, where appropriate equipment, to enable emergency helicopters to work effectively with other air and road ambulances, hospitals, PRIME practitioners and other emergency service organisations.
- **Sustainable** – governance, funding and service delivery model are operationally sustainable for the medium to long term (15–20 years).
- **Transparent** – funding and purchasing responsibilities are clear and enable accountability for the outcomes of the specified service against requirements through the governance process.
- **Cost-effective** – the ability to deliver outcomes expected of the service while also providing value for money.
- **Efficient** – the service meets the operational and clinical goals using the minimum of resources required.

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8 Air ambulance services must integrate with PRIME, Emergency Ambulance Coordination Centre, Emergency Care Coordination Teams, road ambulances, DHBs, air navigation service providers, Rescue Coordination Centre New Zealand, other functions of emergency helicopters and other emergency services.
AARG proposes that it is reasonable to expect that arrangements for the purchase and delivery of emergency helicopter services will ensure that:

- the clinical needs of the patients are paramount
- adequate resources are available to meet those needs (while recognising that resources are not unlimited and there will be competing priorities)
- the services contribute to optimising the development and use of all ambulance transport and clinical resources in New Zealand.

AARG proposes that it is reasonable for the public to expect the following of emergency helicopter services in New Zealand:

- **Timely Retrieval** – emergency helicopters located and available throughout New Zealand so as to arrive at the scene and provide treatment and/or transportation to definitive care generally within minutes rather than hours.\(^9\)

- **Coordinated Service Response** – a single point of contact will initiate a process that will ensure appropriate resources and personnel are dispatched to meet the patient’s needs as part of a continuum of service (ie, from call receipt through to delivery and care at the appropriate health facility).\(^10\)

- **Appropriate Clinical Care** – suitably qualified, trained and competent clinical crew will be on the aircraft, or otherwise readily available, in sufficient numbers to attend to their clinical needs.

- **Suitable Transport and Equipment** – transport and equipment are fit for purpose relative to the clinical needs of the patient and the operating environment.

- **Safe Practices and Processes** – risks are appropriately managed.

- **Quality Assurance** – independent verification that all parts of the service continuously meet recognised Standards and performance criteria.

- **Effective Monitoring** – consistent reporting to, and monitoring by, the purchaser on the overall performance and continuing adequacy of the services, and a purchaser who will intervene directly where problems are identified

**National, strategic integration**

AARG proposes that an over-arching strategic direction for the ambulance sector be developed to achieve safe, sustainable, cost-effective, appropriate and efficient ambulance services for New Zealand.

AARG proposes that Ministers consider the new national arrangements, outlined in this report in respect of emergency helicopters, as an option for fully integrated ambulance services (ie, incorporating road, air and sea).

AARG proposes that a lead Crown funder be responsible for the national, strategic integration of Crown funded emergency helicopter services and other Crown assets (eg, New Zealand Defence Force aircraft) with other rescue and non-medical emergency services (see later proposals for further detail).

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\(^9\) The phrase ‘minutes rather than hours’ used here and elsewhere in the report should be read as an expression of relative expectations rather than a literal requirement. For example, a period of time up to 90 minutes would be much more likely to meet expectations than a period of 2 or more hours.

\(^10\) In articulating this expectation, AARG is not suggesting that the existing, comprehensive ambulance communications arrangements should be duplicated or replaced.
AARG proposes that the lead Crown funder be supported by a representative sector advisory body (see later proposals for further detail).

**Standards and service specifications**

AARG proposes, subject to any relevant legal requirements, that:

- NZS 8156 should be the primary Standard for emergency helicopter services in New Zealand, particularly for clinical requirements
- the Aviation Industry Association Air Ambulance/Air Rescue Division Standards Manual (if referenced in NZS 8156) should be the primary standard for aviation requirements relating to emergency helicopters, provided that the Crown (including the Civil Aviation Authority) agrees to the contents of the Manual prior to publication.  

AARG proposes, in light of Civil Aviation Authority (CAA) advice provided to the independent AARG Chair, that:

- Crown service specifications for the tendering of emergency helicopter services confirm that:
  - the minimum acceptable aviation safety requirements are the relevant, generic CAA Rules
  - subject to pricing and other criteria, preference may be given to emergency helicopter operations that meet CAA advice about what CAA considers to be ‘prudent’ and/or ‘desirable’ (ie, in addition to compliance with generic CAA Rules)
- the Minister of Transport is invited to direct CAA to develop specific Rules for all aircraft that provide ambulance services.  

In developing the following proposals AARG noted the paucity of evidence, in relation to patient outcomes and cost-effectiveness, to inform decisions about service methods, clinical skill mix and response times.

AARG proposes that a pragmatic, but proactive approach to emergency helicopter crewing and service arrangements, in conjunction with road ambulance providers as the primary source of paramedics, is implemented to ensure:

- Advanced Life Support (ALS) paramedics continue to predominate as the minimum level of clinical care on all primary retrievals
- participation by suitably qualified and experienced doctors in primary retrievals where information received indicates that the patient’s condition means that the patient may benefit from the skills such a doctor would bring
- response times that are consistent with the expectation that emergency helicopters undertaking primary retrievals will generally arrive at the scene and

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11 The current version of the AIA standards accepted by ACC and the Crown is version 8, though version 9 has been released. The next version (v10) of the AAVAR Standards Manual will not include the clinical requirements in previous versions.

12 AARG noted the view of some members that the CAA’s advice does not take into account the cost implications of the additional requirements, while other members note that operators already appear to be meeting some or all of the additional requirements.
provide treatment and/or transportation to definitive care within minutes rather than hours.

AARG also proposes:

- the commencement of a workforce development programme to:
  - increase the number of ALS paramedics available to emergency helicopter services
  - increase the skill range of ALS paramedics used by emergency helicopter services
- the inclusion of paramedics under Health Practitioners Competence Assurance Act 2003 is treated as a matter of priority by the Ministry of Health.  

**Dispatch protocols**

AARG proposes that:

- standard dispatch protocols continue to be developed and consistently implemented to ensure dispatch decisions are objective and based on a relatively ‘permissive’ assessment of the clinical and logistical justifications for sending an emergency helicopter
- the Emergency Ambulance Communication Centres (EACC) Clinical Advisory Committee form an expanded review group with an independent Chair and membership including medical directors from both road ambulance and emergency helicopter services, to continue the development and monitoring of the effectiveness of the dispatch protocols
- the current dispatch protocols and EACC practices are reviewed by the expanded EACC Clinical Advisory Committee, with external clinical peer review, to:
  - ensure that the patient’s clinical need and situation are the primary determinants of the transport and clinical resources that are dispatched
  - ensure that the dispatch protocols are standardised and applied equally in practice for both accident and medical primary retrievals
  - ensure an appropriate level of cautionary triaging (ie, to err on the side of caution in dispatch decisions)
- the reviewed dispatch protocol is discussed with the lead Crown funder prior to being finalised and, when finalised, is incorporated (with due consideration of any cost/funding implications) into the national service specification (ie, as the protocol directly affects the volume of missions and type of activation, such as sole response, dual response or standby). 

AARG proposes that there is further investigation of, and advice about how specialist clinical input can better be incorporated in dispatch decisions.

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13 AARG noted that workforce issues cannot be considered in isolation from the wider ambulance sector. Further, the Ministry of Health has announced a review of the Health Practitioners Competence Assurance Act 2003, with a discussion document due in mid-2008 and no applications are being accepted until the review process is completed.

14 The proposed body would replace the current Clinical Advisory Group and is separate from the EACC Oversight Committee.

15 The process of reviewing the dispatch protocols with the Crown funder will provide an opportunity for cost and budget implications arising from the proposed protocols to be considered.
AARG proposes that the lead Crown funder works with the EACC Clinical Advisory Committee to:

- determine how a combinations of factors (such as multiple patients or multiple competing and life threatening clinical priorities) warranting further specialist clinical advice could be included in existing decision support systems
- review existing decision support systems to ensure that all conditions and situations that would benefit from an emergency helicopter response are identified\textsuperscript{16}
- develop a system and the means to:
  - roster, on an on-call 24/7 basis, an appropriate clinical specialist who is accessible by all EACC dispatchers\textsuperscript{17}
  - enable immediate communication between the EACC and the specialist (eg, voice and computer links).\textsuperscript{18}

AARG proposes, in association with or additional to the dispatch protocol review, that the utilisation rates of all emergency helicopters are calculated and opportunities, if any, are taken to ensure that dispatch decisions help to ensure the most cost-effective use of all available ambulance resources.

\textit{National oversight, planning and advice}

AARG proposes that Ministers direct their respective agencies to establish, as soon as practicable, coordinated Crown funding arrangements for emergency helicopter services with a lead Crown funder and a representative sector advisory group.

AARG proposes that the lead Crown funder has the following functions:

- Establish and maintain national oversight of the ongoing delivery of safe, cost-effective, sustainable and efficient emergency helicopter services that meet the reasonable expectations and needs of New Zealand’s diverse communities.
- Develop and implement a coordinated Crown and ACC purchasing policy to achieve a cost-effective emergency helicopter sector.
- Develop, monitor and review national service specifications for primary retrievals that align, as appropriate, with service specifications for inter-hospital transfers by emergency helicopter.
- Monitor and report to the government on the performance of all emergency helicopter services by reference to common performance measures, audit arrangements, and national data collection processes.
- In liaison with the sector advisory group, identify the need for, and arrange the development of, new or amended Standards and service specifications to ensure continuous improvement of the quality of emergency helicopter services.

\textsuperscript{16} ProQA does identify conditions such as severe head injury and assigns a high priority to these, which is then factored into the dispatch decisions. A current project is to link ProQA with the Computer-Aided Despatch system to do an ‘initial assign’ of the appropriate transport and clinical resources based on the ProQA determinants.
\textsuperscript{17} The appropriate specialist skills include intensive care medicine and emergency medicine.
\textsuperscript{18} The question of accessing 24/7 clinical advice is already being examined for road ambulance crews. Expanding this to include air would be appropriate.
• Consult with providers of road ambulance services and other funders of emergency services to ensure national integration across the ambulance and emergency services sectors.

AARG proposes that the representative sector advisory body be established to provide advice to Ministers, the lead Crown funder and other relevant Crown agencies (eg, Maritime New Zealand).

The advisory body would provide advice on matters such as:

• implications of proposed changes to Standards and service specifications
• aeromedical and trauma/emergency medicine
• emergency transport
• aircraft safety and technological developments
• operations in developments in wider emergency services in New Zealand

AARG proposes that the membership of the proposed advisory body comprise of:

• wider health sector funding, purchasing and service delivery interests (ie, DHBs)
• other funders such as road ambulance and emergency helicopter charitable trusts
• the collective interests of road, air and sea service providers (eg, pre-hospital care and treatment/transport/incident coordination specialists – possibly through the independent Chair or Chief Executive of Ambulance New Zealand)
• aviation and clinical expertise
• search and rescue (including New Zealand Police and New Zealand Defence Force)
• wider community and consumer interests (such as emergency management and civil defence) – possibly through territorial and/or regional government.

AARG proposes that Ministers appoint an independent chair for the advisory group to help ensure the advisory group is seen, and acts, as a public interest driven group rather than a vested interest group.

Funding and contracting

AARG proposes that:

• emergency helicopter services continue to be funded by both government and non-government funders
• the government funding be centrally pooled or, at least, be much better coordinated
• non-government funders consider how they too can better coordinate their funding activities
• government funding be provided on the basis of partial capacity and full activity funding for the agreed minimum service level
that the lead Crown funder commissions a medium to long-term funding needs analysis that:
  - sets the criteria determining the proportion of Crown capacity funding
  - provides capital expenditure projections over a 15 year time frame

on completion of the analysis, the lead Crown funder develops a medium to long-term funding plan to inform government and non-government organisations’ budget setting processes, which includes anticipated cost increases due to:
  - advances in aviation technology and safety requirements
  - any necessary upgrading of the aircraft fleet used as emergency helicopters

the medium to long-term government funding plan should:
  - specify the proportion of capacity funding to be provided by the government and non-government funders
  - specify the contributions to be made by different parts of government
  - indicate the level of increases (if any) of those contributions over time necessary to meet anticipated cost increases
  - be in place and ready for implementation as soon as practicable.

AARG proposes that:

- Crown (including DHBs) purchasing and contracting for emergency helicopter services be consolidated and streamlined to reduce transaction costs for all parties
- that arrangements be established, as quickly as possible, to enable fully coordinated Crown contracting for all emergency helicopter and fixed wing air ambulance services
- a ‘parallel contracting approach’ is considered as the first phase of moving to fully coordinated Crown contracting (ie, separate funding and purchasing streams for primary retrievals and inter-hospital transfers)\(^\text{19}\)
- the Crown purchaser should require mandatory disclosure of relevant financial information and conflicts of interest in tender documents.

**Sustainability**

AARG proposes that the lead Crown funder treat sustainability of emergency helicopter services throughout New Zealand as a primary consideration in the development of the medium to long-term funding needs analysis and funding plan.\(^\text{20}\)

**Improving the evidence base**

AARG proposes a timely and collaborative approach between the Crown, DHBs and the wider emergency helicopter sector to:

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\(^{19}\) Government’s mandatory procurement rules and guidelines require an open tender process for the procurement of Crown funded emergency helicopter services.

\(^{20}\) While a lack of data has prevented AARG from forming a view on the sustainability of the current service, AARG considers that its proposals will provide the framework and data to inform a future assessment.
• identify key evidence and data gaps
• identify readily accessible data sources
• prioritise and fund data gathering and analysis, research and other initiatives that will contribute to the evidence base needed to inform future policy and operational decisions.

AARG proposes that:

• consideration be given to how the research gaps identified in the NZHTA systematic review can best be addressed
• the lead Crown funder gives early consideration to the Auckland Rescue Helicopter Trust’s research proposal ‘Review of helicopter emergency medical services for patients with head injuries’
• greater emphasis is given to qualitative measures and utilisation rates to inform future decisions about cost-effectiveness and service design.

Further consultation

AARG proposes, after Ministers have determined their preferred approach in light of this report and other advice and information that Ministers consider:

• directing Crown agencies responsible for funding and purchasing emergency helicopter services to consult with existing and potential providers on draft service specifications before incorporating the final specifications in tender documents
• the need for public consultation after tenders have been evaluated and preferred service providers have been identified (ie, in the event of significant changes in the nature or location of services or discontinuation of a contract with a charitable trust)

Potential implementation timeline

The proposed timeline maintains the momentum that has developed through the AARG process and is expected to align with the outcomes of other related ambulance sector reviews.

<table>
<thead>
<tr>
<th>Proposal</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish lead Crown funder – builds on inter-agency work; enables funding needs analysis to progress to inform next budget year (likely to be 2009/10); clarify timing for parallel, coordinated tender process</td>
<td>Within 3 months of approval</td>
</tr>
<tr>
<td>Establish sector advisory body – to provide input to lead Crown funder, eg service specifications; review research proposals to enable budget bids to be progressed</td>
<td>Within 3 months of approval</td>
</tr>
<tr>
<td>Service specifications and tender process – confirming specifications and alignment with other processes</td>
<td>Ready for January 2009</td>
</tr>
<tr>
<td>Establish parallel contracting process – lead Crown purchaser and DHB purchasing body to lead coordinated tenders</td>
<td>Ready for January 2009</td>
</tr>
</tbody>
</table>
• Extend membership of the EACC Clinical Advisory Committee and appoint an independent Chair – led by EACC Oversight Committee, in liaison with lead Crown funder
• Review of current dispatch protocols, led by EACC Clinical Advisory Committee. Once completed, other proposals can proceed (specialist clinical input and review of utilisation rates)
• Within 3 months of lead Crown funder establishment
• Within 6 months of appointment of independent Chair and extended EACC Clinical Advisory Committee

Scope and Terminology

AARG’s terms of reference requires that the development of a framework for the provision of air ambulance services takes account of other forms of ambulance services, inter-hospital transfers and the provision of air services for search and rescue and other non-medical emergencies.

The term ‘air ambulance’ refers to both helicopters and fixed wing aircraft that operate as ambulances. As ‘ambulances’ these aircraft undertake either primary missions (ie, responding directly to an accident or medical emergency), or secondary ‘inter-hospital transfer’ missions where an admitted patient is transferred from one hospital to another.

This report focuses on primary emergency ambulance missions undertaken by helicopters as opposed to fixed-wing aircraft which are used almost exclusively for inter-hospital transfer missions. The term ‘emergency helicopters’ is used to refer to helicopters that provide emergency ambulance services.

Helicopters also undertake other emergency missions, such as search and rescue and non-medical related emergencies. For example, missions initiated by Maritime New Zealand, New Zealand Police, New Zealand Fire Service and Civil Defence Emergency Management Groups. This report uses the term ‘rescue and non-medical emergencies’ to refer to wider activities undertaken by emergency helicopters. For example to show relevant links with primary missions, provide comparisons and context.

As noted by the independent Chair in the foreword to this report, care has been taken to coordinate and align AARG’s activities with those of the DHBNZ Inter-hospital Transfer: Air Ambulance Project (and vice versa). A number of AARG members participate in both projects, the same project management resource has been used by AARG and DHBNZ, and information from each project has informed the other.

This report is necessarily focused on aspects of emergency helicopter services that receive Government funding, mainly via ACC and Vote Health. The term ‘Crown’ is used throughout the report and, unless the context requires otherwise, is intended to include both ACC and the Ministry of Health.
Overview of New Zealand emergency helicopter and other air ambulance services

Initial development

Over the last three decades aircraft have increasingly been used to complement the largely road-based ambulance sector. Clinical crew continue to be provided primarily by road ambulance services, in particular the Order of St John. The use of aircraft to deliver emergency ambulance services built on the development of community-based rescue helicopter services, which also undertake search and rescue missions and assist in other non-medical emergency situations.

Community initiatives were often driven by passionate individuals who saw a need for the service, often in response to a particular incident, and set about raising the funds to establish and operate the service. Consequently, there is a high level of community 'ownership', with community donors, and corporate and grant funders being key stakeholders.

Aircraft and aircraft operators

Based on responses from 11 operators to the survey undertaken by CRA International, there are at least 41 helicopters and 13 fixed-wing aircraft providing ambulance services throughout New Zealand. Of the 41 helicopters, 18 are ‘dedicated’ emergency helicopters. The term ‘dedicated’ means that the aircraft is available solely for ambulance or other emergency response work.

The map diagram on the following page shows the number and location of dedicated emergency helicopters based on regional council boundaries. Information is also provided on the region’s population and average flying time for primary missions within the region. Details of the aircraft are contained in the Resource Document.

The following charitable trusts and private organisations operate emergency helicopters and/or fixed wing aircraft to deliver ambulance services throughout New Zealand. Of these, ten operate emergency helicopters.

<table>
<thead>
<tr>
<th>Charitable Trusts</th>
<th>Private Operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Auckland Rescue Helicopter Trust</td>
<td>• Air Hawkes Bay Ltd</td>
</tr>
<tr>
<td>• Canterbury West Coast Helicopter Rescue Trust</td>
<td>• Air Wanganui (IHT only)</td>
</tr>
<tr>
<td>• Eastland Helicopter Rescue Trust</td>
<td>• Garden City Helicopters Ltd</td>
</tr>
<tr>
<td>• Hawkes Bay Helicopter Rescue Trust</td>
<td>• Glacier Southern Lakes Helicopters</td>
</tr>
<tr>
<td>• Life Flight Trust</td>
<td>• Helicopters Otago</td>
</tr>
<tr>
<td>• Lakes District Air Rescue Trust</td>
<td>• Heliworks Ltd</td>
</tr>
<tr>
<td>• Northland Emergency Services Trust</td>
<td>• Skyline Aviation (IHT only)</td>
</tr>
<tr>
<td>• Otago Rescue Helicopter Trust</td>
<td>• South West Helicopters</td>
</tr>
<tr>
<td>• Phillips Search and Rescue Trust (Hamilton, Tauranga, Rotorua, Taupo, Palmerston North)</td>
<td>• Southern Lakes</td>
</tr>
<tr>
<td>• Taranaki Rescue Helicopter Trust</td>
<td>• The Helicopter Line</td>
</tr>
</tbody>
</table>

A summary of previous reviews is included in the Resource Document. A full list of current contract holders and sub-contracted operators is contained in the Resource Document.
Diagram 1: Number and Location of Emergency Helicopters

Northland
Pop: 148,470
2 dedicated helicopters
Av flying time: 84 mins

Auckland
Pop: 1,303,068
2 dedicated helicopters
Av flying time: 41.5 mins

Bay of Plenty
Pop: 257,379
2 dedicated helicopters
Av flying time: 55.5 mins
Tauranga; 65 mins Rotorua

Gisborne
Pop: 44,496
1 dedicated helicopter
Av flying time: na

Hawke’s Bay
Pop: 147,783
1 dedicated helicopter;
1 non-dedicated helicopter
Av flying time: 54.2 mins

Wellington
Pop: 448,956
1 dedicated helicopter
Av flying time: 55 mins

Canterbury
Pop: 521,832
1 dedicated helicopter
1 non-dedicated helicopter
Av flying time: 53.4 mins

Otago
Pop: 193,800
1 dedicated helicopter; 1 non-dedicated - Dunedin
1 dedicated helicopter from pool of 8 – Queenstown+
Av flying time: 90.2 mins Dunedin; na Queenstown

Southland+
Pop: 90,873
1 dedicated helicopter from pool of 4 – Te Anau
Av flying time: 53.4 mins

Notes:
• * Tasman, Nelson and Marlborough have been combined as one region. Populations from 2006 Census
Mission numbers, retrieval locations and times

By reference to the most recent 12-month period reported by each of the 11 respondents to the CRA International survey commissioned for the AARG project, the annualised mission total is 8,095, of which: 23

- 1,750 are primary missions (32 percent of the total)
- 4,107 are secondary inter-hospital transfer missions (51 percent of the total)
- 411 ‘other emergency’ missions (5 percent of the total)
- 933 ‘other’ missions, eg, training, private hire (12 percent of the total).

Missions undertaken solely by emergency helicopters account for approximately 0.5 percent of all air and road ambulance missions. 24 The majority of missions involving emergency helicopters are dual response, when a road ambulance or another pre-hospital care service is activated along with the emergency helicopter.

It is not possible to provide an accurate comparison with similar data collected in 2004, as only a small group of operators responded to both the 2004 and 2007 surveys. A comparison of this small group would not be representative of the current operating environment. 25

The analysis undertaken by CRA International has identified the following key patterns.

- both Islands have a pattern of missions following main roads
- the North Island has high concentrations of missions in Taranaki and in the Central Plateau; the reason for the Taranaki concentration is unclear, while the Central Plateau concentration appear to be due to the ski fields, other recreation-related activities as well as road accidents
- Northland missions numbers, over 500, are relatively high
- the Gulf Islands account for 52 percent of all missions in Auckland, with 40 percent from Waiheke Island 26
- the South Island has a concentration of missions around Canterbury (centred around Christchurch)
- there are a significant number of missions in the southwest corner of the South Island, but apart from some concentrations around Queenstown, Wanaka and the

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23 Air ambulance statistics (CRA International, November 2007). The 2007 statistics referred to reflect responses to survey undertaken by CRA International. One charitable trust provider did not respond to the survey. These figures include missions undertaken by fixed wing aircraft for inter-hospital transfers, other emergencies and ‘other’ missions. The Resource Document includes the executive summary of the 2007 report. Annual data reflects a recent 12 month period over 2006 or 2007, but not all respondents covered the same period.

24 This is an annualised figure based on seven months of data that is available from the EACCs.

25 Based on the data collected in 2004, there were 7,193 missions.

26 This point differs from the CRA report due to feedback received from the Auckland Rescue Helicopter Trust.
ski fields, the patient locations are widely dispersed and variable between years

An analysis of the destination locations (ie the hospital) for primary retrievals shows that in the majority of regions, the local tertiary and/or secondary hospitals are the primary destinations. For emergency helicopters based in Tauranga, Rotorua and Taupo, there were more out-of-region destinations, accounting for 28, 31 and 40 percent of missions, respectively.

Maps reproduced from the CRA International report on following pages show the pick-up locations for primary helicopter missions.

Based on the flying hours and mission volume data provided by 11 operators to CRA International, the average flying time for the bulk of operators is below 60 minutes (between 41.5 and 57 minutes), with two operators just over at 63.3 and 65 minutes. Four operators had longer average flying times: Northland (84 min), Taupo (76.4 mins), Otago (90.2 mins) and Southland (77.1 mins).\(^{27}\)

These flying times are likely to be a factor of geography: long, narrow and hilly; mountains and lakes; large, sparsely populated areas.

\(^{27}\) It was not possible to calculate the average mission time (ie, including activation, response, at scene and retrieval to medical care) as most operators were not able to provide the necessary data.
Diagram 2: Pickup Locations for Primary Helicopter Missions, North Island
Diagram 3: Pickup Locations for Primary Helicopter Missions, South Island
Air ambulance funding and service costs

Funding for emergency helicopters and fixed wing aircraft providing ambulance services comes from the range of sources shown in the table below. The total annual revenue reported by the 11 operators that responded to the 2007 CRA survey is $34.7 million. As reported by the 11 survey respondents, revenue from the Crown (ACC, Ministry of Health, DHBs and other government sources) is 45 percent of the total.

<table>
<thead>
<tr>
<th>Source</th>
<th>Combined Revenue</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sponsorships and Grants*</td>
<td>8.7</td>
<td>25%</td>
</tr>
<tr>
<td>Donations*</td>
<td>8.5</td>
<td>25%</td>
</tr>
<tr>
<td>DHBs</td>
<td>8.8</td>
<td>25%</td>
</tr>
<tr>
<td>ACC</td>
<td>5.4</td>
<td>16%</td>
</tr>
<tr>
<td>MOH/St John</td>
<td>0.8</td>
<td>2%</td>
</tr>
<tr>
<td>Other Government</td>
<td>0.8</td>
<td>2%</td>
</tr>
<tr>
<td>Commercial</td>
<td>0.5</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>1.2</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>$34.7</td>
<td>100%</td>
</tr>
</tbody>
</table>

* Only applies to emergency helicopters

**Revenue for emergency helicopters**

The bulk of revenue for emergency helicopters is from donations, grants and sponsorships (59 percent, $17.25 million), followed by Crown at 17 percent (($0.84 million for medical primary missions and $4.01 million for DHB inter-hospital transfers) and ACC (accident primary missions and inter-hospital transfers within 24 hours) at 17 percent ($4.84 million). Other government, commercial and ‘other’ account for the remaining seven percent.

The proportion of total revenue for helicopters by mission category for the most recent 12-month period is:

- primary missions: 20 percent
- inter-hospital transfers: 14 percent
- other emergencies: 3 percent

By comparison, the bulk of revenue for fixed wing aircraft is from DHBs for inter-hospital transfers (82 percent), followed by ACC (10 percent) for inter-hospital transfers made within 24 hours.

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28 The Auckland Regional Amenities Funding Bill proposes a statutory framework for 11 regional cultural, entertainment or emergency organisations, including the Auckland Regional Helicopter Trust (ARHT). The organisations have proposed the bill to provide more certainty for local government funding and reduce the administrative costs of fundraising. If the Bill became legislation ARHT would receive $1.5 million in the first financial year, through a levy met collectively by the territorial authorities in the Auckland region. The Bill is not intended to provide a substitute for any other funding that is provided through central government, arts trusts or any other sources and the organisations must continue to maximise their revenue from other sources.

29 Based on the data collected in 2004, total revenue was $21.7 million, with the Crown (including DHBs) contribution being 21 percent.

30 ‘Other government’ is rescue and non-medical emergencies.
AARG has not been able to accurately determine all the costs of emergency helicopter services from the results of the survey undertaken by CRA International. This is due to the mix of funding and charging arrangements, variable cost structures and data reporting formats for the services, and incomplete data.

AARG has endeavoured to cost elements of emergency helicopter services based on publicly available data and indications from the commercial sector. The table below shows fixed and variable costs, hourly rates and capital costs for two models of helicopter that are widely used for emergency helicopter operations.

<table>
<thead>
<tr>
<th>Model</th>
<th>Public Data</th>
<th>Commercial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Based on 500 hours</strong></td>
<td><strong>Fixed</strong></td>
</tr>
<tr>
<td>AS 350 B2 (Squirrel)</td>
<td>$985,337</td>
<td>$593,667</td>
</tr>
<tr>
<td>BK 117 B2 (VFR)</td>
<td>$1,496,625</td>
<td>$941,187</td>
</tr>
<tr>
<td><strong>Hourly rates (based on 500 hours)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS 350 B2 (Squirrel)</td>
<td>$3,158</td>
<td></td>
</tr>
<tr>
<td>BK 117 B2 (VFR)</td>
<td>$4,876</td>
<td></td>
</tr>
<tr>
<td><strong>Capital Costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS 350 B2 (Squirrel)</td>
<td>$2,446,154</td>
<td></td>
</tr>
<tr>
<td>BK 117 B2 (VFR)</td>
<td>$4,150,000</td>
<td></td>
</tr>
</tbody>
</table>

The hourly rates provided by each operator shows that accident primary retrievals are charged at a higher hourly rate than other categories, for most but not all providers. The ACC average hourly rate is $2,500.\textsuperscript{31} Medical primary retrievals have the lowest hourly rate of all the categories for most, but not all providers.

Indicative commercial hourly rates for an emergency helicopter service are slightly lower than the median hourly rate paid for accident primary missions, but considerably higher than the hourly rates paid for medical primary missions.

Given the wide variability in the figures currently available, an open tender would appear to be the best option of determining what the true cost to the Crown ought to be.

\textsuperscript{31} ACC is not able to release detailed rates. Hourly rates take into account the type and size of aircraft.
AARG’s assessment of the issues

Introduction: It’s not broken but we can do better

AARG has noted many positive aspects of the New Zealand emergency helicopter services and does not consider the services to be ‘broken’.

To date the sector has maintained an excellent aviation safety record\footnote{The Civil Aviation Authority is aware of just four accidents since 1980 (Nov 1980, Sep 1985, Jan 2002, Jan 2003). Brief descriptions of these accidents are included in the Resource Document.} and good relationships with primary funders (community and corporate donors, sponsors and grant funding organisations) and service providers. These relationships have enabled the sector to secure the significant funding needed for the aircraft, equipment, personnel and other aspects of the services that are not fully funded by the Crown.

AARG has, however, identified a wide range of issues that need to be addressed to ensure that, as appropriate, all New Zealanders have reasonable access to quality, fully integrated ambulance services (ie, including emergency helicopter services) that are integrated with wider emergency services.

An evidence-based clinical safety record cannot be provided as information is not consistently collected. The Health and Disability Commissioner does not specifically collect statistics on air ambulance services, but Commission staff do not recall any complaints in the last seven years. There are, however, mixed views among AARG members about the clinical quality of the service and its cost-effectiveness and efficiency.

Many of the issues, summarised in the statements below, need to be considered in the context of fully integrated ambulance services. Parts of this report discuss AARG’s thinking about the need to consider a ‘whole-of-sector’ approach.

Services must focus on patients’ needs

The overarching goal of service provision is focused on obtaining the best medical outcome for the patient. AARG considers, however, that the existing mix of Standards, contract requirements, service guidelines and protocols do not yet provide clarity about desired outcomes, or the flexibility, needed to ensure appropriate and cost-effective air ambulance services throughout New Zealand.

Issues identified by AARG include:

- a tendency to develop or promote ‘prescriptive’ rather than ‘descriptive’ service requirements, sometimes as relatively inflexible ‘absolutes’ or ‘one size fits all’ (for example, in relation to the location and types of aircraft used as emergency helicopters). While perhaps easier for planning and costing purposes, this relatively rigid approach may be less effective and efficient than, for example, an outcome-based approach that ensures operational decision-making utilises transport and clinical resources, as appropriate and necessary, to best respond to a specific patient’s needs.
a number of standards, guidelines and service requirements have been developed by different organisations, with potential for their particular perspectives or interests to detract from consideration of patients’ needs and/or wider sector interests. Better coordination and agreement is needed to ensure a more integrated approach to the development of standards and service requirements for incorporation in service specifications and contracts.

the dispatch protocols developed and applied as a result of the establishment of the three Emergency Ambulance Communication Centres are seen as an improvement, but are viewed by air ambulance operators and some clinicians as too inflexible with too much reliance on a prescriptive information system.

as summarised in the diagram below, there is a need for agreed national Standards, service specifications, dispatch protocols, and guidelines in a number of areas to ensure the most appropriate service response based on the clinical needs and other reasonable expectations of patients and their families. This approach is consistent with the goal of the Roadside to Bedside strategy of ‘the right care at the right time in the right place from the right people’.

National oversight, planning and coordination

From AARG discussions and the findings of earlier reviews, the need to establish effective mechanisms for national oversight, planning and coordination is indicated by the following (in no particular order):

- the range of stakeholders and funders (eg, trusts, companies, government agencies, Crown entities, and communities) whose different interests and needs must somehow be weighed and balanced to meet both local and national needs and expectations
- variable service structures, standards and levels throughout New Zealand
- multiple health and emergency services relying on the same air ambulance resources, but not always coordinating planning, contracting and other service arrangements

33 Clinicians on AARG and other clinicians they spoke over the duration of AARG.
• uncertainty about which sector is the logical ‘home’ for ambulance services as there are split views among AARG members about whether they are primarily health or emergency services

• the lack of any permanent national forum or over-arching strategy for the whole ambulance sector, or for the air ambulance part of the sector (eg, to discuss and determine national issues relating to future capacity and capability requirements, sustainable funding etc)

• the potential impacts of regional decisions on other parts of the air ambulance sector and/or communities

• the significant costs of air ambulance services and the potential for cost savings if local and regional purchase decisions are made in a wider national context

• the likely future increase in capital costs to upgrade aircraft to keep up with technological advances in aviation and aviation safety

• potential for increased operating costs arising from decisions to purchase bigger aircraft

• uncertainty about the ongoing sustainability of corporate, community and government funding.

The ongoing development of air ambulance services continues to be driven largely by local and regional expectations, in an environment where there is not yet universal agreement about:

• service or safety standards

• the most appropriate funding and contracting arrangements

• the best options to achieve patient-related outcomes

• a sector-wide approach to effective utilisation of all ambulance resources (ie, air, road and sea).

Although clearly a well established component of ambulance services nationally, air ambulance services lack a national direction and structure. This leads to continual debate about matters such as the general suitability, cost, utilisation and cost-effectiveness of different regional service arrangements. These debates are often fruitless due to a lack of evidence or readily available data of the quality needed to inform decision-making (see below for more on the data issues).

Without some collective action to address these issues, it is possible that safe, cost-effective, appropriate and efficient emergency helicopters will not be sustainable throughout New Zealand in the medium and long-term.

**Funding, contracting and sustainability**

Funding, contracting and sustainability issues for air ambulance services identified by AARG are grouped in key themes (in no particular order):

**Community and corporate funding**

• most of the capacity funding is provided through donations, grants and sponsorship, but the longer-term sustainability and adequacy of corporate sponsorship and community donations is uncertain. This can be demonstrated by a very recent decision by the Lion Foundation to withdraw from sponsorship in
two regions. Reliance on gambling income is another avenue subject to possible change

- local fundraising drives that leverage off the high profile of emergency helicopter services and community 'ownership' derived from concerns that the service may not be available when they need it, mean that the relatively large sums of money are no longer available for other lower profile, but no less worthy causes, and may raise unrealistic expectations of the service; there is not consensus among AARG members that this is a real issue
- grant funding is often tagged to activities that provide regional benefits, which may restrict options when considering the services from a national perspective

**Costing**

- there is a lack of transparency about the costs of fund raising and corporate sponsorship, and how public donations are being used
- there is a lack of transparency in respect of the contract prices set by funders, the costs and cost structures for some air ambulance services, and the level of cross-subsidisation with other activities
- the total economic cost and the efficiency or otherwise of the current model cannot be determined due to the inconsistent and incomplete data available
- some operators, already relatively efficient, may be adversely impacted by attempts to improve efficiencies elsewhere, particularly if regional realities are not taken into account

**Contracting**

- potential for conflicts of interest arise where individuals or companies are in a position to influence the decisions of a charitable trust where they may benefit financially from that decision.
- annual contracts and the absence of assured capacity funding do not provide sufficient certainty for the capital investment decisions that must be made by providers if they are to maintain and enhance service levels and standards
- there are significant transaction costs for all parties created by multiple contracts and other service arrangements – all for the use of the same resource (primary retrievals, search and rescue, inter-hospital transfers)
- geographic locations and community size needs to be reflected in any national funding model to ensure viability of services
- ACC contracts define geographic boundaries, which is inconsistent with EACC's approach of dispatching the nearest available and appropriate air ambulance to the patient's location
- transaction costs created by variable payment practices for search and rescue missions that result in a patient being transported, although practices are now being aligned through joint service level agreements

**Crown funding**

- there are inconsistent funding mechanisms for accident (fee for service) and medical (bulk funding) primary retrievals that leads to different dispatch approval processes

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34 ACC’s current contracts with emergency helicopter operators include regional boundaries. However, operators do undertake missions outside contracted regional boundaries when activated by an Emergency Ambulance Communication Centres (EACC). ACC have indicated that this requirement would be reviewed in future contracts.
• the Crown and ACC approach to purchasing does not fully factor in buying contingent capability, and relies on communities and corporate sponsors to fund the capacity, i.e., the capital costs of purchase and upgrades

• view that the ACC price under-funds accident retrievals; ACC use a top-down price process of all components in the service and observe that operator costs include components not related to provision of air ambulance services

• bulk funding by the Ministry of Health, via third parties, does not cover the actual cost of medical air ambulance work

• the relatively small contribution of the Crown and ACC to total revenue gives the sector good grounds to resist Crown and ACC attempts to direct or influence the development of air ambulance services that may lead to cost increases.

• ACC legislation currently precludes payment for missions, dispatched in response to an accident, that do not result in a live patient being transported

Lack of evidence and data

Despite previous reviews and studies on the sector, there is still an absence of consistent and reliable data on which to base long-term planning, investment and service specification decisions.

AARG has found that:

• there is anecdotal support for both positive and negative aspects of the current air ambulance service

• there is limited New Zealand research evidence to inform AARG's work on clinical matters

• international literature available is limited and does not provide conclusive evidence (discussed further below)

• a single source of detailed quantitative information on missions is in its infancy following the implementation of the EACCs

• the variability of air operators' cost and charging structures and reporting methods makes it very difficult to accurately establish total costs or cost-effectiveness of the current services nationally.
Service purpose, principles and ‘reasonable expectations’

Purpose

AARG proposes that the purpose of emergency helicopter services (as part of fully integrated ambulance services) be defined as follows:\textsuperscript{35}

To help to ensure the best practicable health outcomes by providing an efficient 24 hour service that:

\begin{itemize}
  \item responds in a timely manner to calls for assistance
  \item provides appropriate care, treatment and (where necessary) transportation and other logistical support, to people requiring assistance as a result of injury, or requiring medical or maternity assistance
  \item is integrated and coordinated with other pre-hospital, emergency and health care services.\textsuperscript{36}
\end{itemize}

Service principles

AARG proposes that the following principles be used to guide emergency helicopter service design and delivery, and the ongoing implementation of other proposals in this report.

\begin{itemize}
  \item \textit{Equitable} – service provision is fair, reasonable and impartial in all circumstances.
  \item \textit{Safe} – patients, clinical staff and aircrew are safe throughout the service from medical, workplace and transport perspective.
  \item \textit{Consistent} – all organisations and personnel involved in the service apply the agreed minimum standards and follow agreed operating procedures to ensure national consistency, recognising issues with particular operating environments affected by geography, distance, climate, etc.
  \item \textit{Auditable} – data is identified, collected and available centrally to support and inform a quality management framework that enables funders, purchasers and service providers to monitor the service against agreed standards and ensure continuous improvement
  \item \textit{Interoperable} – through the use of common techniques, and, where appropriate equipment, to enable emergency helicopters to work effectively with other air and road ambulances, hospitals, PRIME doctors and other emergency service organisations.
  \item \textit{Sustainable} – governance, funding and service delivery model are operationally sustainable for the medium to long term (15–20 years).
\end{itemize}

\textsuperscript{35} The Roadside to Bedside goal of ‘right care, at the right time, in the right place, from the right person’ has been taken into account when developing the purpose and service principles.

\textsuperscript{36} Air ambulance services must integrate with PRIME, Emergency Ambulance Coordination Centre, Emergency Care Coordination Teams, road ambulances, DHBs, air navigation service providers, Rescue Coordination Centre New Zealand, other functions of emergency helicopters and other emergency services.
• **Transparent** – funding and purchasing responsibilities are clear and enable accountability for the outcomes of the specified service against requirements through the governance process.

• **Cost-effective** – the ability to deliver outcomes expected of the service while also providing value for money.

• **Efficient** – the service meets the operational and clinical goals using the minimum of resources required.

### Reasonable expectations and needs

The AARG terms of reference required AARG to ‘provide expert advice on a …framework for the provision air ambulance services … to meet the reasonable expectations and needs of New Zealand’s diverse communities’.

AARG proposes, in addition to the proposed emergency helicopter purpose and principles, that in arranging for the purchase and delivery of emergency helicopter services it is reasonable to expect that:

• the clinical needs of the patients will be paramount

• adequate resources will be available to meet those needs in all but exceptional circumstances

• the services will contribute to optimising the development and use of all ambulance transport and clinical resources in New Zealand.

AARG did not undertake a public survey or random sampling of communities to establish reasonable service expectations from a patient's perspective. Rather, the earlier diagrammatic summation of patients' needs is used as the basis for describing AARG’s view of what ‘reasonable expectations’ ought to be.

While recognising that there is some overlap with the service principles proposed above, AARG proposes that it is reasonable for the public to expect the following of emergency helicopter services in New Zealand:

• **Timely Retrieval** – emergency helicopters located and available throughout New Zealand so as to arrive at the scene and provide treatment and/or transportation to definitive care generally within minutes rather than hours.

• **Coordinated Service Response** – a single point of contact will initiate a process that will ensure appropriate resources and personnel are dispatched to meet the patient’s needs as part of a continuum of service (ie, from call receipt through to delivery and care at the appropriate health facility).

• **Appropriate Clinical Care** – suitably qualified, trained and competent clinical crew will be on the aircraft, or otherwise readily available, in sufficient numbers attend to their clinical needs.

• **Suitable Transport and Equipment** – transport and equipment are fit for purpose relative to the clinical needs of the patient and the operating environment.

• **Safe Practices and Processes** – risks are appropriately managed.

• **Quality Assurance** – independent verification that all parts of the service continuously meet recognised Standards and performance criteria.
• **Effective Monitoring** – consistent reporting to, and monitoring by, the purchaser on the overall performance and continuing adequacy of the services, and a purchaser who will intervene directly where problems are identified.

The ability to meet some or all of the ‘reasonable expectations’ is of course governed to a large extent by the funds available to pay for the service.
Alignment with other ambulance reviews

Introduction

AARG notes that Ministers will need to consider the outcomes of the following ‘in progress’ reviews of the wider ambulance sector along with AARG’s proposals. The timing of the reports from each of these reviews in early 2008 will, however, enable all the outcomes to be considered simultaneously.

DHBNZ Inter-hospital Transfer: Air Ambulance Project

This project has completed its first phase. Recommendations include centralising the purchase and coordination of all inter-hospital transfers by air, rather than the current approach where 13 DHBs arrange separately the transfers for their own population and neighbouring DHBs.

DHB Chief Executives have accepted the recommendations in principle, including an implementation goal of July 2009, at the latest, to enable further work, coordination with AARG proposals and discussion with Ministers. Accordingly, final decisions will not be taken until mid-2008 after further work is completed on clinical, financial, and consultation and risk matters.

Existing DHB contracts with operators are being rolled over or extended pending final reports from the project and AARG; and the subsequent decisions of Ministers and DHB Chief Executives.

Select Committee Inquiry into the Provision of Ambulance Services

The Health Select Committee Inquiry does not have a specific reporting date. Advice from the Clerk’s Office indicates that the final report is likely to be tabled in early 2008. This inquiry is much broader than emergency helicopters, but is likely to have findings and/or recommendations that will need to be taken into consideration.

ACC and Ministry of Health inter-agency work on joint funding

This work, which covers all ambulance funding for primary missions, including inter-hospital funding, was expected to be completed in December 2007. AARG understands, however, that this work is currently ‘on hold’.

ACC has advised operators that the proposed tender round for primary missions and ACC-funded inter-hospital transfers by air, due to start in January 2008, will be deferred to January 2009, with a start date of 1 July 2009. The process has been deferred to enable ACC to consider the final AARG proposals before proceeding with future service arrangements.
The location of emergency helicopter bases

AARG notes how previous reviews, most recently the proposed National Air Ambulance Strategy, foundered due to community concerns about the Strategy indicating where emergency helicopters should, or should not, be based. AARG has concluded that it is unnecessary and inappropriate for AARG, or the Crown/ACC to specify where emergency helicopter bases must be located or which model of helicopter should be used.

AARG’s conclusion recognises that potential service providers, when preparing their proposals, should refer to Standards and outcome-focused service specifications and determine the most cost-effective location of their emergency helicopter bases and the appropriate aircraft.

In determining locations for emergency helicopter bases, providers should be provided with appropriate guidance and direction on how best to account for matters such as:

- geography, weather patterns, population density and other likely environmental influences on their day-to-day operations
- the location and availability of road ambulance resources (ie, as they provide most of the clinical crew that make an aircraft an ambulance)
- locations of hospitals and any other places of definitive care that patients must be taken to
- how the placement of emergency helicopters impacts on planning and implementing the coordination and integration of all ambulance and related emergency resources.

Potential providers will also expect sufficient quantitative data to make an informed proposal (e.g., patient/mission volumes, past patterns of pick-up locations and destinations, time of day of activation, and patients’ clinical conditions).

The CRA International report and the DHBNZ Inter-hospital Transfer: Air Ambulance Project collated some of the necessary data. More information is beginning to be collated centrally with the establishment of the EACC’s data collection processes, but the difficulties AARG has experienced in obtaining data for its consideration indicates that there is some way to go.37

The Crown should be satisfied that the service will continuously deliver what the Standards and specifications require at a reasonable cost no matter where the aircraft take-off from. Providers and the Crown must also consider the role emergency helicopters play in rescue and non-medical emergency missions when making decisions on national service provision.

AARG also considers that it is not necessary to propose whether all or some emergency helicopters should be dedicated. Again, this is a matter that can be left, initially at least, to potential providers. With the exception of the Queenstown and Te

37 As a comparison, the Scottish Ambulance Service did not specify locations in its 2004 tender process. The service provided respondents with a CD containing detailed mission data for the previous four years.
Anau areas, all other respondents to the CRA survey stated that they have at least one dedicated emergency helicopter. Any changes to this situation would be made by service providers based on the circumstances of their particular locations.

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36 Dedicated is interpreted as providing air ambulance and other emergency services. Te Anau and Queenstown helicopters undertake air ambulance duties on a rostered basis.
Integration with other emergency helicopter users

AARG’s terms of reference require consideration of emergency helicopter’s role in search and rescue and other non-medical services.

AARG proposes that the national, strategic integration of Crown funded emergency helicopter services with other emergency services and Crown assets (eg, New Zealand Defence Force aircraft) is managed through a single Crown funder and an associated sector advisory body (see later proposal for further detail). The Crown funder would, as appropriate, consult with affected parties and be informed by appropriate representatives on the proposed sector advisory group.

The emergency helicopter national service specification and any tender evaluation processes will need to be cognisant of the other rescue and non-medical emergency roles undertaken by some providers, in particular recognising:

- the original ‘rescue’ driver behind the establishment of current community funded emergency helicopter services
- funding contributions by other emergency services that use the community emergency helicopters, including via Police, Fire Service, Rescue Coordination Centre, and Civil Defence Emergency Management Groups
- the need to ensure effective management and coordination of different service demands.

The New Zealand Association of Community Emergency Helicopter Trusts’ made a submission to the independent AARG Chair. The submission placed considerable emphasis on the role of emergency helicopters in maintaining community resilience. During informal discussions with the Search and Rescue Council, however, the Council indicated that emergency helicopters funded by charitable trusts are just one of many helicopter resources that are used for rescue and non-medical emergency roles.

AARG has also noted developments in New Zealand Defence Force aeromedical capacity and capabilities, including potential for civilian tasks. In particular the development of two Boeing 757 aircraft that significantly enhance aeromedical evacuation capabilities, including for multiple, high dependency patients. Senior Air force staff have also indicated that the acquisition of new NH90 and A109 helicopters means that they will be looking to civilian emergency helicopter operators for joint opportunities and support (eg, in relation to training of search and rescue and clinical crew in different helicopter operating environments).

AARG considers that a detailed understanding of the relationship between community resilience, civilian emergency helicopter services, and New Zealand’s defence assets requires, amongst other things, an analysis of the emergency

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39 There is a view among some AARG members that the search and non-medical emergency work is necessary to maintain the viability of the emergency helicopter operator. However, mission volumes (5 percent of total missions) and revenue (3 percent of total revenue) from these activities account for a small proportion of the overall work.

40 A working group representing the majority of charitable emergency helicopter trusts has progressed the establishment of the charitable trust to be the representative body for most of the community emergency helicopter trusts. A summary of its submission is included in the Resource Document.
management plans that have been established by regional Civil Defence Emergency Management Groups. This analysis was not possible within AARG’s timeframe.

While acknowledging the multi-purpose roles of many of the emergency helicopters, AARG concluded that the best overall fit for the services is within the health sector. Mission data supports this view as, even excluding inter-hospital transfers, the majority of the missions relate to accident or medical retrievals.

Some AARG members consider that there would be merit in further investigating the merits of a combined funding and purchasing arrangement for all ambulance and emergency services. Such a model operates in Queensland, where the ambulance services are part of the Department of Emergency Services, with close coordination with the Department of Health on clinical and performance issues.

The Queensland model would be a significant change for New Zealand. Reference to the model here is simply as an example of close integration between two emergency services sectors. The informal discussions with the Search and Rescue Council found no appetite for including search and rescue in AARG’s proposals for more joined-up Crown funding and purchasing arrangements.

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Standards and service specifications

The review of the New Zealand Ambulance Sector Standard NZS 8156:2002 (NZS 8156)

AARG’s work on skills and standards has been affected by significant delays with the Standards New Zealand review of NZS 8156. The review of NZS 8156 was already underway when AARG was established. AARG saw no value in duplicating the tried and tested Standards process which is an independently managed, consensus-based mechanism, involving representatives from across the ambulance sector.

The Standards process is also an opportunity to periodically make amendments, incorporate new requirements or to develop new standards.\textsuperscript{42}

AARG members were invited to contribute to the development of an AARG submission during the public consultation phase of the review of NZS 8156. Members preferred to make submissions and to otherwise participate in the Standards review on their own behalf.

National service specifications

AARG has noted that a number of different ‘standards’ have been developed by Standards New Zealand, the Aviation Industry Association of New Zealand, ACC and Ministry of Health (in the form of joint service specifications), DHBs, the Joint Faculty of Intensive Care Medicine, the Australasian College of Anaesthetists, and service providers themselves.

In addition to completing the NZS 8156 review, AARG supports the maintenance and further development of joint service specifications for emergency helicopter services whereby:

- NZS 8156 sets the minimum requirements for ‘higher order’ matters, including but not limited to:
  - patient rights and record keeping
  - corporate governance and management
  - clinical governance and competencies
  - different configurations of aircraft, crews and equipment to meet the range of patient needs that will arise
  - verification and other quality assurance measures.

- joint service specifications set out the detail of Crown requirements that will enable open, fair and competitive tendering that is compliant with the Commerce Act 1986, Injury Prevention, Rehabilitation and Compensation Act 2001 (in particular section 305), and government mandatory procurement rules.\textsuperscript{43}

\textsuperscript{42} AARG members have highlighted a need for a standard for hospital helipads, which is not in the current draft New Zealand Standard. AARG’s proposed approach to national oversight, planning and advice, however, provides a channel to raise and progress such issues.

\textsuperscript{43} Rules endorsed by Cabinet in April 2006, setting out mandatory standards and procedural requirements for the conduct of procurement by government departments (defined for this purpose as the “public service departments” listed in the Schedule to the State Sector Act 1988, plus NZ Defence Force and NZ Police). The Rules reflect and reinforce New Zealand’s established policy of openness and transparency in government procurement. The Rules are to be applied by departments in their procurement globally to facilitate competitive participation by domestic and foreign suppliers in New Zealand’s government procurement market.
• specifications, as far as practicable, take a descriptive, outcome-focused approach rather than a prescriptive ‘one size fits all’ approach.

AARG proposes, subject to any relevant legal requirements, that:

• NZS 8156 should be the primary Standard for emergency helicopter services in New Zealand, particularly for clinical requirements

• the Aviation Industry Association Air Ambulance/Air Rescue Division Standards Manual (if referenced in NZS 8156) should be the primary standard for aviation requirements relating to emergency helicopters, provided that the Crown (including the Civil Aviation Authority) agrees to the contents of the Manual prior to publication.44

Aircraft safety

Aircraft safety is not part of the NZS 8156 review and, although generic Civil Aviation Authority (CAA) Rules apply, there are, perhaps surprisingly, no government aviation safety requirements specific to emergency helicopters. To assist AARG’s deliberations, the AARG independent Chair requested advice from the Civil Aviation Authority (CAA), the Crown agency responsible for aviation safety.45

The Chair requested advice from CAA on matters such as pilot numbers, experience levels, safety equipment, and the suitability or otherwise of emergency helicopter operations under daytime Visual Flight Rules; day/night under Visual Flight Rules, and day/night under Instrument Flight Rules.

The CAA advice that was provided to the Chair included additional requirements that CAA considered to be ‘prudent’ or ‘desirable’ for emergency helicopters operating in different environments. These requirements exceed the requirements of the generic CAA Rules that apply to emergency helicopters.

AARG proposes, in light of the CAA advice provided to the independent AARG Chair, that:

• the joint Crown service specifications for the tendering of emergency helicopter services confirm that:
  – the minimum acceptable aviation safety requirements are the relevant CAA generic Rules
  – subject to pricing and other criteria, preference may be given to emergency helicopter operations that meet CAA advice about what CAA considers to ‘prudent’ and/or ‘desirable’ (ie, in addition to compliance with generic CAA Rules)

• the Minister of Transport is invited to direct CAA to develop specific Civil Aviation Rules for all aircraft that provide ambulance services.

Some AARG members are concerned that, given the existing safety record in the sector, the CAA’s advice was made without taking fully into account the costs of

44 The current version of the AIA standards accepted by ACC and the Crown is version 8, though version 9 has been released. The next version (v10) of the AIA standards will not include the clinical requirements in previous versions.
45 The Chair’s letter and CAA’s full response is included in the Resource Document.
implementation. Others note, however, that some operators already appear to be meeting some or all of the advice.\footnote{The Resource Document contains a summary of information provided by current operators about the current fleet’s ability to deliver on the CAA prudent and desirable requirements.}

CAA has confirmed that in developing its advice careful account was taken of European, American and Australian practices. CAA referred to various safety recommendations published by the United States National Transportation Safety Board (NSTB). Particular note was taken of NTSB recommendations involving night operations and also single pilot versus two pilot operations.

CAA also advised that the issues associated with night vision goggles have been thoroughly researched and consulted on with New Zealand operators and Australian, Canadian, and United States regulatory authorities, as well as approved training providers in the United States.

Overall AARG members agree that it remains important that the Crown and the sector continually look at how emergency helicopter services’ safety can be maintained and improved at an acceptable cost.

**Clinical skills and response times**

As outlined below, there is a paucity of evidence to inform decisions about service methods, clinical skill mix and response times in relation to patient outcomes and cost-effectiveness.

AARG therefore, on the basis of the limited evidence available, proposes a pragmatic, but proactive approach to emergency helicopter crewing and service arrangements that will ensure:

- Advanced Life Support (ALS) paramedics continue to predominate as the minimum level of clinical care on all primary retrievals
- the commencement of a workforce development programme to:
  - increase the number of ALS paramedics available to emergency helicopter services
  - increase the skill range of ALS paramedics used by emergency helicopter services
- participation by suitably qualified and experienced doctors in primary retrievals where information received indicates that the patient’s condition means that the patient may benefit from the skills such a doctor would bring
- response times that are consistent with the expectation that emergency helicopters undertaking primary retrievals will generally arrive at the scene and provide treatment and/or transportation to definitive care within minutes rather than hours.

These AARG proposals are derived largely from the findings of the New Zealand Health Technology Assessment (NZHTA) systematic review commissioned, at AARG’s request, by the Ministry of Health. The NZHTA review looked at the best
available evidence to inform AARG’s consideration of service methods, clinical skill mix and response times.  

The following questions provided the scope for the systematic review:

1. In adults and children with a medical or trauma related emergency, does the presence of a medical doctor on emergency helicopter services improve health outcome when compared with transportation by emergency helicopter without a medical doctor?

2. In adults and children with a medical or trauma related emergency, does the presence of a medical doctor on a road ambulance service improve health outcome when compared with transportation by a road ambulance service without a medical doctor?

3. In adults and children with a medical or trauma related emergency, does the presence of a medical crew able to perform rapid sequence intubation and/or thoracostomy improve health outcome when compared with a medical crew unable to perform rapid sequence intubation and/or tube thoracostomy and/or thoracotomy?

4. In adults and children with a medical or trauma related emergency how does variation in the time from callout to arrival at a medical facility with definitive care influence health outcome?

Regrettably, despite the thoroughness of the review, the evidence is not conclusive. Overall there is some weak evidence supporting the inclusion of doctors on emergency helicopters and no evidence to suggest that doctors should not be included as part of the clinical crew.

Clinicians in AARG emphasised the importance of doctors being appropriately trained and experienced in both emergency helicopter environments and in advanced level acute or trauma care.

There is inconsistent evidence on the association between pre-hospital time and patient outcomes. Most evidence, however, indicates improved outcomes in association with shorter pre-hospital times. The review did not identify a clear time threshold time to aim for.

The NZHTA review highlighted the need for more research on:

- the association between pre-hospital time and improved patient outcomes
- the benefits of non-doctor groups being trained in enhanced procedures (such as rapid sequence intubation) and clinical assessment procedures used by doctors
- the relative cost-effectiveness of the ‘stay and treat’ and ‘scoop and run’ service methods.

AARG has noted other structural and operational models for overseas emergency helicopter services. While generally informative, AARG concluded that it is not appropriate to consider ‘transplanting’ any such models to New Zealand. Overseas

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47 Transportation of emergency patients.  R. Weir.  (NZHTA Technical Brief 2007: 6(4).  The aims of the study, key results and conclusions have been reproduced in the Resource Document.

48 The term ‘the golden hour’ is sometimes used in relation to the capability of emergency helicopters in shortening retrieval times.  The NZHTA review findings clearly suggest that referring to a specific time period is inappropriate as it is misleading and may generate unrealistic expectations.
models are influenced by different legislative frameworks, funding and health service policies, politics, environments, populations and operational arrangements.

Internationally there are moves to include doctors on all primary retrievals by some services. In New South Wales, Australia, AARG understands that doctors are included on all primary retrieval missions. In Victoria, however, emergency helicopter services use ALS paramedics with enhanced training. In the United Kingdom, a number (five out of 16 emergency helicopter services) currently include doctors on all missions or are moving in that direction.

While it is certainly open to emergency helicopter service purchasers, such as the Crown, to require doctors on all missions, this will increase costs without necessarily providing improved health outcomes. Some AARG members have suggested that this would also likely create workforce development and resourcing issues for the wider health sector.49

AARG did note that there are some conditions, such as some forms of head injury, where the earliest possible intervention by a doctor is very likely to result in better health and rehabilitation outcomes for the patient; and the potential to significantly reduce rehabilitation and other ongoing costs to ACC. These conditions are well known and are recognised by the EACC triaging systems.50

ACC estimates that if a person sustains a brain injury and effective trauma management results in that brain injury being moderate rather than severe, the patient’s outcomes are improved and ACC would, on average, save $1.32 million on that one person’s total claim liability. This information indicates there is the potential for cost savings where the philosophy of right care, right time, right place and right skills is effectively applied. Unfortunately AARG was not able to obtain specific data on the number of air primary retrievals of patients with head injuries to quantify any potential savings and was not included in the scope of the NZHTA review.

**Workforce development implications**

AARG’s discussions have highlighted a number of emergency helicopter workforce issues that cannot be considered in isolation from the wider ambulance sector as the same pool of paramedics are used for both road ambulances and emergency helicopter services. Currently most (85 percent) of paramedics in the wider ambulance sector are part of the Order of St John road ambulance service.

AARG proposals for national oversight and planning, discussed in the next section, provide a vehicle to progress the resolution of these issues in conjunction with other initiatives that may be underway and the road service operators, as the primary source of paramedics.

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49 The joint Ministry of Health and ACC service specification for emergency helicopters requires that air primary retrievals include an ALS paramedic and medical consultant or registrar on all missions. ACC has waived its requirement for a medical consultant or registrar pending the outcome of AARG’s recommendations and finalising New Zealand Standard 8156.

50 A three-year Australian Head Injury Research Trial is currently underway. The outcomes of this trial will provide more evidence for future discussions.
In summary, the issues are:

- the limited number and availability of Advanced Life Support (ALS) paramedics (203, 5% of the total paramedic workforce) and doctors skilled in advanced level trauma care and able to maintain currency

- a desire to continue to recognise the value of the volunteer workforce, while noting the increasing pressures on the availability of volunteer resources and increasing use of paid resources to ensure availability

- the structure of the workforce has developed without a pathway for career paramedics as for other health professionals, such as flight nurses

- paramedics are not covered by the Health Practitioners’ Competence Assurance Act 2003, which is inconsistent with requirements for other health practitioners who treat patients, and the exclusion of paramedics limits ACC’s ability to pay directly for treatment by paramedics

- competency requirements for paramedics operating at a particular level (eg, ALS) are determined by each ambulance service provider which creates potential for variable standards, practices and quality

- maintaining currency of clinical crews in emergency helicopters where there are low mission volumes

- the option of upskilling ALS paramedics to increase skill levels on all missions needs to be carefully researched.

Following a recent workforce survey, Ambulance New Zealand, ambulance services and other ambulance sector stakeholders are developing responses to workforce issues identified in the survey. Ambulance New Zealand is developing an application for paramedics to be included under Health Practitioners’ Competence Assurance Act 2003.

AARG proposes that the inclusion of paramedics under Health Practitioners Competence Assurance Act 2003 be treated as a matter of priority by the Ministry of Health.

AARGH notes, however, that:

- the Ministry of Health has announced a review of the Health Practitioners Competence Assurance Act 2003, with a discussion document due in mid-2008

- no applications are being accepted until the review process is completed.

**Stay and treat’ versus ‘scoop and run’**

AARG proposes that:

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51 Only the Auckland Rescue Helicopter Trust employs its own clinical crew, with seconded clinical crew from the Order of St John. All other air ambulance operators have arrangements with the Order of St John or Wellington Free Ambulance to provide clinical crew for air missions. The same pool of clinical crew is used for both road and air missions.

52 Most emergency helicopter operators use paid clinical crew, though a small number do rely on volunteers. Northland Emergency Services Trust has recently moved to a paid workforce due to the lack of volunteers and restricted availability. Volunteers are also used where there is a rescue or extraction required in air ambulance missions.

53 Eighty-five percent of ambulance services are provided by the Order of St John, which reduces the impact of the variability.
it is not necessary or appropriate to choose either the 'stay and treat' or the 'scoop and run' emergency helicopter service methods.

it is preferable for emergency helicopter services, nationally, to maintain sufficient transport and clinical resources so that those resources are ready and available to respond in accordance with:

- the service principles and expectations proposed by AARG
- established national Standards and service specifications.

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54 The NZHTA review did not provide clear evidence supporting one of these service methods over the other.
Dispatch protocols

Emergency Ambulance Communication Centre dispatch roles

Primary emergency helicopter missions are dispatched and coordinated via the three regional Emergency Ambulance Communication Centres (EACCs). The EACCs, based in Auckland, Wellington and Christchurch, operate as a single, virtual centre.

Each EACC is able to action calls for other regions, which ensures continuity of service in the event of technical outages or peak demands. A description of the current dispatch process is included in the Resource Document.

DHBs arrange inter-hospital transfers by air directly with the aircraft operators. DHBs liaise with the EACCs to arrange any required road connections for inter-hospital transfers by air.

Development and implementation of standard dispatch protocols and cautionary triaging

Standard dispatch protocols

AARG sees the continued development and effective implementation of standard dispatch protocols as a vitally important component of emergency helicopter services. That is because protocols drive the actions of both the EACCs and emergency helicopter operators.

To determine whether a response should be by a road or emergency helicopter or both, dispatch protocols must take into account the patient’s clinical needs, location and other logistical considerations.

AARG proposes that:

- the Emergency Ambulance Communication Centres (EACC) Clinical Advisory Committee form an expanded review group with an independent Chair and membership including medical directors from both road ambulance and emergency helicopter services, to continue the development and monitoring of the effectiveness of the dispatch protocols

- the current dispatch protocols and EACC practices are reviewed by the expanded EACC Clinical Advisory Committee, with external clinical peer review.

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55 DHBNZ’s Inter-hospital Transfer: Air Ambulance Project covers matters associated with these missions.
56 Ambulance services’ operations managers and medical directors agree the response level (priority and clinical qualification – Advanced, Intermediate or Basic Life Support) for each clinical condition in ProQA. Resource variations have been agreed by ambulance services in each region to reflect the different skill sets of the ambulance clinical teams in the region and distances covered by emergency helicopters. The ProQA response and qualification determinant and regional resource plans are held in the EACC computer-aided despatch system.
57 The proposed body would replace the current Clinical Advisory Group and is separate from the EACC Oversight Committee.
58 Destination and delivery protocols were included within the scope of the Skills and Standards Sub-Group. Clinicians within AARG, in liaison with other clinical colleagues, developed a suggestion for how the dispatch protocols could be amended, in particular the inclusion of specialist clinical advice. This work is included at a high level in this report, and in detail in the Resource Document. A detailed review of the current dispatch protocols was not undertaken by AARG.
- ensure that the patient’s clinical need and situation are the primary
determinants of the transport and clinical resources that are dispatched
- ensure that the dispatch protocols are standardised and applied equally in
practice for both accident and medical primary retrievals
- ensure an appropriate level of cautionary triaging (ie, to err on the side of
cautions in dispatch decisions)

- the dispatch protocol is discussed with the Crown funder prior to being finalised
and, when finalised, it is incorporated (with due consideration of any cost/funding
implications) into the national service specification (ie, as it directly affects the
volume of missions and type of activation, such as sole response, dual response
or standby).

AARG considers that maintaining and consistently implementing a standard dispatch
protocol will reduce dispatch delays and will help to address perceptions of bias in
dispatch decisions (ie, where decisions may be influenced by funding mechanisms).
Those perceptions stem from the EACCs being owned and operated by companies
with road ambulance operators as the primary shareholders. The underlying issue
appears to be the road ambulance operator’s responsibility for managing the bulk
funding from the Ministry of Health for medical missions by both road and emergency
helicopter services.

The Order of St John has been clear that it considers these issues to be largely
historical and overstated; and that the issues have largely been remedied since the
introduction of the ambulance communications project with its new technologies.

AARG has noted the advice from St John and confirmed the view that dispatch
decisions must be based on an objective and relatively ‘permissive’ assessment of
the clinical and logistical justifications for sending an emergency helicopter. This
view is supported by other dispatch guidelines and the literature, which note that
some flexibility in dispatch decisions is essential as criteria, guidelines, or protocols
are unlikely to identify every possible situation that requires an emergency helicopter.

The costing mechanisms and payment provisions for emergency helicopter missions
will need to align with the dispatch protocols to ensure operators are compensated
for their role in any mission, be it standby, simultaneous activation and then stand-
down, treatment or transport of a patient. This may require a review of the ACC
legislation which AARG understands prevents payment for paramedics because they
are not recognised as health care providers under the Health Practitioners

**Cautionary triaging**

A United States 2003 report noted that a certain level (without specifying a number)
of over-triage is unavoidable given the often incomplete and sometimes inaccurate
information upon which to make a decision. If an emergency helicopter service has
zero over-triage, then it is almost certainly under-utilising the resource. This
approach is essential to ensure that an emergency helicopter is dispatched to all the
patients that actually require one. This view is supported by clinicians on AARG and
others who have provided input to AARG.

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59 Over-triage is not defined in the paper, but the context implies that it occurs where an air ambulance is correctly
dispatched, but following further investigation at the scene, the clinical condition did not warrant an air ambulance.
Medical Services Task Force of the National Association of Emergency Medical Service Physicians.
The challenge here is determining and monitoring the appropriate level of cautionary triage.\(^{61}\) While the operating costs of cautionary triaging may be marginal (ie, because the significant costs of an emergency helicopter service are the fixed costs), it is essential to maintain the availability of the emergency helicopter for priority calls.

### Specialist clinical input to dispatch decisions

AARG proposes that there is a further investigation of, and advice about how specialist clinical input can better be incorporated in dispatch decisions.

AARG considers that there is potential for improved patient outcomes in relatively infrequent situations (eg, involving multiple patients and complex trauma) if the dispatch decision process were informed by advice from a clinical retrieval specialist who has direct access to information about the incident and the patient(s), without extensive or unnecessary delays to the activation of the appropriate resource.

Accordingly, AARG proposes that the Crown funder works with the EACC Clinical Advisory Committee to:

- determine how a combinations of factors (such as multiple patients or multiple competing and life threatening clinical priorities) warranting further specialist clinical advice could be included in existing decision support systems
- review existing decision support systems to ensure that all conditions and situations that would benefit from an emergency helicopter response are identified\(^{62}\)
- develop a system and the means to:
  - roster, on an on-call 24/7 basis, an appropriate clinical specialist who is accessible by all EACC dispatchers\(^{63}\)
  - enable immediate communication between the EACC and the specialist (eg, voice and computer links).\(^{64}\)

AARG notes that clinical staff at Waikato Hospital are already actively developing a proposal to provide a 24/7 'immediate emergency specialist consultation' service for major trauma in the Midland region. The proposal is a DHB funded initiative and involves the hospital providing EACC dispatchers with access via a mobile phone to an identified emergency specialist.

In making these proposals, AARG notes that what may work in the Midland Region is not necessarily a solution for the entire country. Further work would be necessary to clarify what must be consistent nationally and what requires regional flexibility. For example, the focus on trauma by Waikato Hospital reflects the high volume of trauma within that region, but that may not be appropriate in another region. A case study from Waikato Hospital is included in the Resource Document.

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\(^{61}\) Information received during the final review process indicates that a full analysis of the dispatch of emergency helicopters for Status 3 and Status 4 patients by the EACC may provide an indicator of the extent of cautionary triaging.

\(^{62}\) ProQA does identify conditions such as severe head injury and assigns a high priority to these, which is then factored into the dispatch decisions. A current project is to link ProQA with the Computer-Aided Despatch system to do an 'initial assign' of the appropriate transport and clinical resources based on the ProQA determinants.

\(^{63}\) The appropriate specialist skills include intensive care medicine and emergency medicine.

\(^{64}\) The question of accessing 24/7 clinical advice is already being examined for road ambulance crews. Expanding this to include air would be appropriate.
Emergency helicopter utilisation rates

AARG proposes in association with, or additional to, the dispatch protocol review that the utilisation rates of all emergency helicopters are calculated and opportunities, if any, are taken to ensure that dispatch decisions help to ensure the most cost-effective use of all available ambulance resources.

The dispatch protocols and the application of cautionary triaging affect the utilisation rates and cost effectiveness of emergency helicopter services and, consequently, of all ambulance resources.

Data needs to be collected and analysed to determine the relative cost effectiveness of air and road ambulance responses in varying circumstances. The Crown funder should lead the development of the utilisation review process in association with the EACCs as part of its performance monitoring role.

There are different views in the sector and the literature on the cost-effectiveness of emergency helicopters compared to road ambulances. The critical factor in terms of cost-effectiveness should be whether the best practicable clinical outcomes for patients have been achieved economically. There is, however, limited data currently available on this aspect. The EACC User Forums and Emergency Care Coordination Teams review processes provide a mechanism to begin to capture this information. The purpose of these groups is to review processes, systems and training needs that could improve the work of the EACCs and operators.

The New South Wales emergency helicopter services work assumes a 15 – 20 percent utilisation rate to ensure cost-effectiveness while ensuring virtually continuous availability for priority calls. Beyond this level, a second aircraft would be required. Data available to AARG does not enable utilisation rates to be calculated for New Zealand emergency helicopters.

Examples of situations identified by AARG that would affect the overall cost-effectiveness and utilisation rates of the emergency helicopters are:

- an emergency helicopter returning empty from a primary retrieval delivery while an inter-hospital transfer patient traveled five hours from the delivery location in a road ambulance to the same hospital
- expectations of individuals or organisations that willingness to pay justifies the dispatch of an emergency helicopter regardless of the patients clinical needs
- managing clinical resources (e.g., emergency helicopters are used so the doctor can be quickly returned to the hospital; or extended road ambulance trips that adversely impact on volunteer clinical crew)
- use of standby, which may reduce the benefits of achieving a fast response time and delivery to hospital, but does ensure that the appropriate resources are dispatched quickly when they are confirmed as necessary
- operators flying training missions to maintain competencies and/or flying hours

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65 The EACC User Forums meet quarterly in seven locations across the country and review a minimum of four calls per quarter, 112 per annum. A balance of air and road retrievals will be necessary to provide a ‘whole of service’ perspective on the appropriateness of utilisation.

66 A review of the ambulance service in New South Wales in 2004, estimated an utilisation rate of between 12 and 19 percent for dedicated emergency helicopters, and between 7 and 12 percent for non-dedicated services.
because this is not being achieved through actual emergency missions.
National strategic integration of the ambulance sector

AARG proposes that an overarching strategic direction for the ambulance sector be developed to achieve safe, sustainable, cost-effective, appropriate and efficient ambulance services for New Zealand.

While AARG’s terms of reference clearly focus on emergency helicopter services, AARG is also required to consider the emergency helicopter framework in the broader context of other ambulance services operating in New Zealand. AARG members are concerned that continuing to address the emergency helicopter services, which is a small but essential part of the overall service, separately from road ambulance services is counter-productive to achieving a fully integrated ambulance service.

AARG has not undertaken a detailed analysis of the issues facing the road sector, but discussions have frequently highlighted that many of the issues facing the air sector also apply to road. Certainly, national oversight, planning and coordination must apply to the whole sector if a sustainable and integrated service is to be achieved.

The development of the New Zealand Defence Force aeromedical capacity and capabilities, including potential for civilian tasks, further highlights the potential efficiencies that could be achieved through an integrated, strategic approach to the whole sector.

While the proposals outlined in the next section are focused on the ‘air’ sector as per the terms of reference, they have been developed with a view that the structures could apply to the wider ambulance sector.

The Ministry of Health’s recent decision to draft a ‘pre-hospital emergency care strategy’, which includes ambulance services, is welcomed by AARG. An integrated view of the ambulance sector will be necessary to inform the development of the strategy.

Enabling progress

AARG proposes that Ministers consider the new national arrangements, outlined in this report in respect of emergency helicopters, as an option for fully integrated ambulance services (ie, incorporating road, air and sea).

AARG recognises that Ministers may prefer a phased introduction of national arrangements for ambulance services as a whole. If so, to prevent a loss of the momentum created by the AARG and the DHB inter-hospital transfer projects, emergency helicopter and fixed wing ambulance services could be the ‘first cab off the rank’.

The advantages and disadvantages of the phased approach compared to moving directly to a whole-of-sector approach are outlined in the table below.
<table>
<thead>
<tr>
<th>Model</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>Phased approach – emergency helicopter</td>
<td>Enables air sector specific complexities to be focused on, eg role of</td>
<td>Issues facing air sector are relevant to wider ambulance sector issues, eg</td>
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<td>and fixed wing ambulance services</td>
<td>charitable trusts and ratio of funding; multiple roles of emergency</td>
<td>Advanced Level Support capacity</td>
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<td>helicopters</td>
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<td></td>
<td>Allows other related initiatives to complete or consolidate, eg the DHBNZ</td>
<td>Phased implementation may complicate wider sector interests unless a strategic,</td>
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<td>IHT-AA project proposals</td>
<td>whole-of-sector, approach is taken at the outset</td>
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<td></td>
<td>Allows other parts of sector to focus on bedding down changes, eg EACC</td>
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<td></td>
<td>operations</td>
<td></td>
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<td></td>
<td>Proposed membership of advisory group ensures other activities are not</td>
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<td></td>
<td>excluded from consideration</td>
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<td></td>
<td>Provides a structure that could progress approved AARG recommendations in a</td>
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<td></td>
<td>timely manner</td>
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<tr>
<td>Directly to a whole-of-sector model</td>
<td>Would provide a holistic approach rather than a ‘silo’ approach based on</td>
<td>There are significant issues in each part of the sector that may become</td>
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<td></td>
<td>mode</td>
<td>more difficult to resolve due to the delays of establishing the oversight</td>
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<td></td>
<td>Avoids additional costs of an interim measures that may not be suitable for</td>
<td>structure</td>
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<td></td>
<td>the overall sector and a long-term role</td>
<td>Legislative mandate may be necessary to establish an appropriate structure</td>
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<td></td>
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<td>given the differences in funding structures between the air and road sectors</td>
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<td></td>
<td></td>
<td>Establishment of an operational and effective structure could take some time</td>
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National oversight, planning and advice

A lead Crown funder

AARG proposes that Ministers direct their respective agencies to establish, as soon as practicable, coordinated Crown funding arrangements with a lead Crown funder for emergency helicopter services.

AARG proposes that the lead Crown funder would have the following functions:

- Establish and maintain national oversight of the ongoing delivery of safe, cost-effective, sustainable and efficient emergency helicopter services that meet the reasonable expectations and needs of New Zealand’s diverse communities.
- Develop and implement a coordinated Crown and ACC purchasing policy to achieve a cost-effective emergency helicopter sector.
- Develop, monitor and review national service specifications for primary retrievals that align, as appropriate, with service specifications for inter-hospital transfers by emergency helicopter.
- Monitor and report to the government on the performance of all emergency helicopter services by reference to common performance measures, audit arrangements, and national data collection processes.
- In liaison with the advisory group, identify the need for, and arrange the development of, new or amended Standards and service specifications to ensure continuous improvement of the quality of emergency helicopter services.
- Consult with other funders of emergency services to ensure national integration across the ambulance and emergency services sectors.

AARG notes that there could be a separation between the funding and the purchasing functions. These two components of a service framework do not necessarily need to be delivered by the same organisation.67

An advisory body to support the lead Crown funder

AARG proposes a representative sector advisory body, with an independent Chair, to provide advice to Ministers, the lead Crown funder and other relevant Crown agencies (eg, Maritime New Zealand).

AARG proposes that the advisory body would have the function of providing advice on:

- implications of proposed changes to Standards and service specifications
- aeromedical and trauma/emergency medicine
- emergency transport

67 ACC or the Ministry of Health may undertake the coordinated purchasing function, or it could be contracted out to an external party.
• aircraft safety and technological developments
• operations and developments in wider emergency services in New Zealand

A fully representative advisory body does not currently exist, although there is a perception that Ambulance New Zealand fills that role. Ambulance New Zealand represents its members who are ambulance service providers, rather than being a sector body. The proposed advisory body would not replace existing working groups focused on operational issues such as communication and information technology, but would be a channel for these groups to provide input into strategic advice.

AARG proposes that the membership of the proposed advisory body comprise of:

• wider health sector funding, purchasing and service delivery interests (ie, DHBs)
• other funders such as road ambulance and emergency helicopter charitable trusts
• the collective interests of road, air and sea service providers (eg, pre-hospital care and treatment/transport/incident coordination specialists – possibly through the independent Chair or Chief Executive of Ambulance New Zealand)
• aviation and clinical expertise
• search and rescue, emergency management and civil defence, New Zealand Police
• wider community and consumer interests – possibly through territorial and/or regional government.

AARG proposes that the Ministers appoint an independent chair for the advisory group. It is important that the advisory group be seen, and act, as a public interest driven group, rather than a vested interest group. AARG expects that the various interests, outlined above, will establish their mechanisms to select a single representative.  

Where necessary additional expertise such as accounting, resource allocation, finance, law or general management, could be purchased to complement the skills and expertise on the advisory group.

Benefits and risks of the proposals

AARG’s national oversight, planning and advice proposals address the key issues listed earlier by:

• providing structures (lead Crown funder and sector advisory group) that enable coordinated and appropriate inputs to national planning by funders and other sector stakeholders
• enabling the effective implementation of a coordinated Crown purchasing policy that will streamline funding and purchasing processes and reduce transaction costs for all parties

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[68] For example, the DHBs would select a single representative. Possibly the Chair of a governance body established by DHBs for national inter-hospital transfer: air ambulance services.
• providing Crown agencies most closely aligned with emergency helicopter services with clear directions as to their responsibility for leading national planning and the development of joint service specifications
• providing Crown agencies access to an authoritative sector forum, with an independent Chair, that can inform thinking about long-term capacity and capability requirements and future funding and investment decisions

The proposals will:
• help to maintain the positive momentum developed by the AARG process, particularly as there are minimal establishment processes required to implement the proposals
• build upon existing goodwill through supporting the involvement of interested groups and by providing an effective forum where their views can be heard
• be a cost-effective option to achieve the national oversight and planning that has been absent from the sector
• be easily extended to all ambulance services if that is the wish of Ministers.

The following table summarises risks and mitigation options identified by AARG in relation to these proposals.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Mitigation</th>
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<tbody>
<tr>
<td>That the Ministry of Health and ACC will not progress the establishment of a lead Crown funder in a timely manner</td>
<td>The Ministry and ACC are progressing an inter-agency initiative to investigate joint funding and purchasing arrangements for ambulance services, which is not inconsistent with the proposals. If approved, the Ministers require a report-back from their respective agencies based on the proposed implementation schedule.</td>
</tr>
<tr>
<td>The Crown and ACC will exert more influence than is justified by the level of funding.</td>
<td>The Ministry of Health and ACC have the responsibility for the national overview of the sector and for specifying the service specifications. The advisory body will provide a forum for the sector to discuss the funding issues associated with proposed service specifications. Undertaking a funding needs analysis and long-term funding plan (proposed in the next section on Funding) based on the proposed funding principles will provide the long-term view that has been absent.</td>
</tr>
<tr>
<td>That the focus on emergency helicopter tendering will create risks for the existing integration with road ambulance providers.</td>
<td>Communication to all parts of the sector about the structure and tendering process will be necessary. Involvement of other key parts in the advisory group will maintain the links between parts of the sector. The proposed funding and purchasing arrangements establishes a single funder and purchaser for emergency ambulance primary mission services but does not necessarily change the arrangements that air operators have, or may establish, for the provision of clinical crew.</td>
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</tbody>
</table>
AARG expects the following outcomes should result once the national oversight and planning model is fully implemented:

- a point of focus for the national oversight and planning for emergency helicopter services
- ongoing input at a strategic level for the emergency helicopter service integrated with the wider ambulance sector, and other rescue and non-medical emergency services
- clarity on future service requirements, financial and workforce implications and implications on the sector

Other national oversight, planning and advice options considered by AARG

AARG considered a number of different options for ensuring effective national oversight, planning and advisory arrangements for emergency helicopter services in New Zealand.

In addition to the proposals above, those options included:

- continuing to undertake periodic reviews, such as the reviews that have preceded AARG, or projects such as that undertaken by AARG
- a Ministerial advisory committee
- handing responsibility to an existing, industry-led national body or establishing a new industry-led body
- establishing a new national 'oversight' body with a government mandate under existing legislation
- developing new ambulance sector legislation.

Reasons for AARG preferring the combined lead Crown funder and advisory body approach over other options included:

- a lead Crown funder, with a sector advisory group, would be cost-effective way of ensuring emergency helicopter services meet the reasonable needs and expectations of New Zealanders while ensuring direct accountability to Ministers
- a Ministerial Committee would be less cost-effective and could not have direct responsibility for Crown funding or contracting, which would reduce its authority and accountability
- the history of a series of relatively unsuccessful reviews and, despite the production of this report, the practical difficulties and expense of managing and sustaining a project such as AARG
- the inherent conflicts of interest if the sector were to be overseen by an industry-led body, potential for provider capture, and practical difficulties with managing and sustaining such a body

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69 The costs of establishing a Ministerial Committee under existing legislation, while less than other structural options considered, could be substantial and the body may become unwieldy in an effort to be sufficiently representative of the sector.
The following structural options were also identified, but were not preferred by AARG for a range of reasons including: high establishment costs, longer establishment and implementation timeframes, or potential for influence out of proportion to funding contributions.

- new Crown entity
- new unit in a government department or agency, or Crown entity
- a new statutory board
- an existing trust, company or incorporated society
- new trust, incorporated society or other entity
- a charitable company.

The advantages and disadvantages of these options that informed AARG’s conclusions are summarised more fully in the Resource Document.

**National coordination**

AARG was tasked to consider ‘regional and national coordination of service provision (including with DHBs), search and rescue and other emergency services’. At a strategic level, national coordination will be managed through consultation with other ambulance and emergency services providers by the lead Crown funder. Funding and contracting aspects of service provision are covered in other sections of this report.

At an operational level, the coordination and tasking of emergency helicopter missions to providers across the country will continue to be managed by the EACCs. Reviewing the structure and role of the EACC’s is not within the scope of AARG’s terms of reference.

Some members of AARG consider that there needs to be separation of the ‘coordination function’ undertaken by the EACCs due to road ambulance sector interests in the companies that operate the EACCs.

**An option for the future: Legislation for the ambulance sector**

Should the AARG proposals for national oversight, planning and advice not achieve the expected outcomes, AARG notes that the Crown has the option of legislating for the whole ambulance sector. This could be through the establishment of a statutory board under the New Zealand Public Health and Disability Act 2000, as was done for the New Zealand Blood Service, or a specific statute for the ambulance sector. Detailed policy work and consultation would be required should this option be considered.

In Australia, Victoria, New South Wales, Queensland, South Australia and Tasmania all have legislation. In Queensland the ambulance service is within the ambit of the Department of Emergency Services, with a formal link to the Department of Health and reporting to both Ministers.
In other Australian States, the ambulance services are part of the State health agencies. Western Australia and Northern Territory do not have legislation and the ambulance services are contracted out.
Funding and contracting

Funding

AARG has identified the following options for funding New Zealand emergency helicopter services.

- fully funded by the government (ie, largely from Vote Health and ACC levies and possibly with contributions from other Votes such as Police and Civil Defence)
- funding by both government and non-government funders, with the government share based on one of the following:
  - capacity only funding
  - partial capacity and full activity funding
  - activity funding only (essentially the status quo)

AARG proposes that:

- emergency helicopter services continue to be funded by both government and non-government funders
- the government funding be centrally pooled or, at least, be much better coordinated
- non-government funders consider how they too can better coordinate their funding activities
- government funding be provided on the basis of partial capacity and full activity funding for the agreed minimum service level
- that the lead Crown funder commissions a medium to long-term funding needs analysis that:
  - sets the criteria determining the proportion of Crown capacity funding
  - provides capital expenditure projections over a 15 year time frame
- on completion of the analysis, the lead Crown funder develops a medium to long-term funding plan to inform the government’s and non-government organisations’ budget setting processes, which includes anticipated cost increases due to:
  - advances in aviation technology and safety requirements
  - any necessary upgrading of the aircraft fleet used as emergency helicopters
- the medium to long-term government funding plan should:
  - specify the proportion of capacity funding to be provided by the government and non-government funders
  - specify the contributions to be made by different parts of government
  - indicate the level of increases (if any) of those contributions over time necessary to meet anticipated cost increases
  - be in place and ready for implementation as soon as practicable.
In addition to the service principles specified earlier in this paper, AARG also took into account the need to ensure that the preferred funding model:

- recognises the funding partnership between the government and local and regional communities
- distinguishes between capacity funding and activity funding
- provides funding and contracting arrangements that support long-term capital investment
- funds the minimum emergency helicopter service components for all communities from government funding
- allows communities, if they so choose, to specify and fund additional service components, and operational costs, above the core components, if they choose to
- maintains incentives to ensure the prudent use of emergency helicopter services.

Each of these matters is discussed in more detail below.

**Recognising the partnership between the government and communities**

AARG concluded that there should continue to be a mix of government and non-government funding for the foreseeable future. New Zealand’s emergency helicopter service began through the drive and passion of individuals and communities. Unless the government decides to take full funding responsibility and control of the service, the government/community funding partnership must continue, even though the ongoing level of community funding or corporate sponsorship cannot be guaranteed *ad infinitum*.

The funding partnership presents challenges for both parties. While the Crown contribution may only be around one-third of the total emergency helicopter revenue, the Crown rightly expects to have the final say on the standards and specifications for the services that it purchases.\(^{70}\)

Non-government organisations (eg, emergency helicopter trusts) can influence price structures and strategic decisions through their capital purchasing decisions and links with their communities. It is important that the total economic cost of emergency helicopter services is taken into account, including the administrative costs that charitable trusts incur, in raising community donations and corporate sponsorship.\(^{71}\)

**Distinguishing between capacity funding and activity funding**

To meet the minimum service requirements, the emergency helicopter services ‘system’ must have the capacity, nationally, to respond to emergencies as and where they occur. Significant capital investment is required to provide that capacity.

Fixed costs would best be funded via capacity funding and variable costs on a fee for service basis (ie, for primary retrievals and inter-hospital transfers). The fee for service would need to take into account the mix of aircraft required to provide a

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\(^{70}\) Comprised of DHB (17 percent, for inter-hospital transfers), ACC (17 percent) and Ministry of Health (three percent).

\(^{71}\) Fundraising costs were excluded from the cost information requested by CRA International.
national service. Some communities have already funded larger, more expensive aircraft, which may be necessary for overall national capacity and capability.

Capacity funding could be based on the population based funding approach used for other health services, which includes ‘adjusters’, for example, for smaller communities. Seasonal population variations and other service demand factors in some areas will need to be incorporated into the capacity planning process.

Any cross-subsidisation of emergency helicopter (medical and accident) services by other service users (eg search and rescue or commercial activity) or vice versa must be transparent. It was not possible to determine whether, or to what extent, this currently occurs based on the information collected.

**Supporting long-term capital investment**

Significant capital investment decisions are likely to be driven by a need to upgrade aircraft due to aviation safety requirements or technological advances to better achieve patient outcomes or deal with obsolescence. A collaborative approach by funders, purchasers and operators is required to ensure that cost-benefits of technology advances are assessed against future capacity and activity requirements.

To enable major capital investment decisions to be made, providers need to have some assurance about the work they will be expected to undertake and the income they will receive. Accordingly, contracting periods needs to be longer-term (up to 5 years) with periodic reviews of capacity and activity requirements that align with the contract renewal processes.

Air operators and road ambulance operators (who manage Ministry of Health bulk funding for road and emergency helicopter services) all indicate that current Ministry and ACC funding levels do not cover the costs of the services provided.

**Service requirements for all communities from government funding**

The Crown and ACC pay for full activity costs based on agreed minimum service levels. Service levels will inevitably vary across New Zealand due to variations in population, geography and distance to health facilities. However, all services must meet the equity principle of being fair, reasonable and impartial in all circumstances.

**Communities may specify and fund additional services**

Communities, through their charitable trusts and community donations and corporate sponsorship, could fund services additional to those in the national Crown service specification. Communities would, however, need to take responsibility for any higher capital and operational costs.

Some AARG members are concerned, however, that communities should not be able to unduly influence the setting of service specifications (eg, ‘gold-plating’) or the tasking of particular emergency helicopters (ie, as tasking should be according to agreed dispatch protocols).
**Maintaining incentives to ensure the prudent use of emergency helicopter services**

A robust performance management reporting and verification framework will be required to provide confidence to Crown funders and purchasers that the existence of long-term contracts are not leading to inefficiencies.

The funding and purchasing model needs to ensure sustainability for the national service capability and capacity requirements at any point in time. However, this does not necessarily mean that there will not be future rationalising. This could occur if other accident prevention and health strategies reduce the number of primary missions required and changes to health practices and service delivery alter the demand for inter-hospital transfers.

**Crown purchasing and contracting**

Further to the proposal for a single Crown funder, AARG proposes that Crown (including DHBs) purchasing and contracting for emergency helicopter services be consolidated and streamlined to reduce transaction costs for all parties.

In making this proposal AARG has noted:

- concerns expressed by funders, purchasers and providers alike about the many and varied funding and contracting arrangements for emergency helicopter services
- transaction costs associated with those arrangements
- that Crown agencies (including DHBs) are already looking into options for rationalising and coordinating funding and purchasing of emergency helicopter services.

The diagram on the following page demonstrates the current funding and contractual arrangements for both primary and inter-hospital retrievals, which create a variety of transaction costs for the sector.
AARG considered a number of models for Crown purchase/contracting roles. There is strong support within AARG for fully coordinated Crown contracting for all emergency helicopter and fixed wing aircraft providing ambulance services (ie, for both primary retrievals and inter-hospital transfers) as shown in the diagram on the following page.

AARG therefore proposes that arrangements be established, as quickly as possible, to enable fully coordinated Crown contracting for all emergency helicopter and fixed wing air ambulance services. AARG considers that this approach will provide a more streamlined approach to contracting for all parties and support the maintenance of a clear national perspective for the Crown (including DHBs).

The potential for fully coordinated contracting has been enhanced by progress made by the Inter-hospital Transfer: Air Ambulance Project. The final project report, due in
April 2008, is expected to enable nationally coordinated inter-hospital transfer services to be in place by July 2009.

AARG also notes that ACC and the Ministry of Health are now working more closely than ever to align funding and purchasing arrangements for emergency ambulance services. For example, through joint service specifications; and the recent implementation of the EACCs to form a single dispatch and information collection network for ambulance services.

With the impending contract rounds, there are imperatives on all the Crown agencies to actively pursue an inter-agency work programme to establish a joint Crown funding and purchasing framework for all ambulance services.

Diagram: Fully coordinated Crown contracting

Note: the ‘single purchasing body’ could be undertaken by ACC, Ministry of Health or an organisation contracted for this purpose.

The diagram above recognises that the Ministry of Health, ACC and DHBs are not the sole funders or purchasers of emergency helicopter services (ie, by including separate funding streams from charitable trusts and Crown emergency services).

AARG notes that fully coordinated contracting would remove the need for DHBs to establish a separate inter-hospital transfer management service, but still enable DHBs to maintain their own national oversight arrangements for inter-hospital transfers.
Moving directly to fully coordinated Crown contracting would be a significant change. It would also require DHB inter-hospital transfer funding to be channelled through the lead Crown funder.

It would be possible to move directly to this fully coordinated model, but would require very careful management to ensure that:

- respective service specifications are aligned
- multiple parties remained committed to the new approach
- the transition does not create service disruptions or undue community concern.

Accordingly, to help mitigate the risks of change, AARG proposes that a ‘parallel contracting approach’ (outlined below) be considered as the first phase of moving to fully coordinated Crown contracting.

**Parallel contracting of primary retrieval and inter-hospital transfer services**

The parallel approach to contracting for primary retrieval and inter-hospital transfer services is illustrated in the following diagram.

**Diagram: Parallel contracting**

![Diagram: Parallel contracting](image)

**Notes**

- The ‘single purchasing body’ could be undertaken by ACC, Ministry of Health or an organisation contracted for this purpose.
- * ACC pay for IHT undertaken within 24 hours on a fee-for-service and bulk funded to DHBs through Public Health Acute Services.
Separate funding and purchasing streams for primary retrievals and inter-hospital transfers recognises that there are inherent differences between the two services. This separation would not, however, prevent the establishment of a lead Crown funder for primary retrievals or appropriate alignment of service specifications for primary retrievals and inter-hospital transfers (eg, to require compliance with NZS 8156).

This parallel approach involves DHBs establishing a national inter-hospital transfer management service that may not be required in the future. This approach would, however, establish a solid platform for the move to fully coordinated Crown contracting.

Section 305 of the Injury Prevention, Rehabilitation, and Compensation Act 2001 allows ACC to enter into a contract, arrangement or understanding with the Ministry of Health or a DHB to jointly purchase emergency transport services. This provision prevents the restrictive trade practices sections of the Commerce Act 1986 (other than sections 36 and 36A) from applying to any such arrangement. The contracting approaches proposed by AARG would fall under section 305.

**Selection process and financial disclosures by service providers**

AARG recognises the need for Crown purchasing to fully comply with the Government’s mandatory procurement rules and other government procurement guidelines such as *Procurement: A statement of good practice* (Office of the Auditor General, 2001).

The procurement rules and guidelines are clear that, given the range of potential emergency helicopter and other air ambulance service providers, an open tender is the required selection process. The AARG proposals for a longer-term funding strategy and contract terms of up to five years also mean that an open tender process is the appropriate means of selecting providers (ie, to ensure the Crown can commit to longer-term contracts confident that it is obtaining the most cost-effective service).

Open tendering is already the approach that is usually taken by the Crown (including DHBs). ACC has obtained approval to defer the next tender to January 2009 and has extended existing contracts pending the completion of AARG’s work. DHBs have taken a similar approach to inter-hospital transfer tenders so they may also take account of AARG’s work in completing the Inter-hospital Transfer: Air Ambulance Project.

Some AARG members have raised concerns that an open tender may result in a community losing its emergency helicopter service, and as a result, its rescue and non-medical emergency service. It is possible, perhaps even likely, that an open tender will result in new or different Crown service providers in one or more locations throughout New Zealand. The tender process must, however, ensure that communities are still provided with an effective emergency helicopter service that will deliver to the service principles described earlier. As noted previously, account must also be taken of other rescue and non-medical emergency service requirements in the tender evaluation and selection process.

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72 The ‘management service’ could be a separate entity or a lead DHB.
AARG notes that tendering will need to take account of the AARG proposal for partial capacity funding by the Crown. If approved, capacity funding will need to be implemented equitably between all service providers.

Some AARG members have suggested that tenders and service contracts require mandatory disclosure of financial information by emergency helicopter service providers, in particular by charitable trusts. AARG has noted the Charities Act 2005 requirement that charitable trusts, once registered, submit an annual return that includes details on staff numbers and employment basis, and a financial statement covering income, expenditure, assets and liabilities.  

The Crown purchaser must also ensure that any potential for conflicts of interests within service providers are clearly identified, understood and appropriately managed.

AARG proposes that the Crown purchaser should require mandatory disclosure of relevant financial information and disclosure of conflicts of interest, as is already often the case with Crown tenders and contracts. In the case of a trust registered under the Charities Act 2005, disclosures made under that Act may be adequate to meet the proposed disclosure requirement.

**Benefits and risks of the proposals**

AARG’s funding and contracting proposals address the key issues listed earlier by:

- consolidating and streamlining the funding and contracting processes for all parties
- reducing transaction costs
- building on initiatives, already under discussion, to rationalise these functions.

The proposals will:

- ensure national consistency in service specifications and alignment with other related initiatives (eg, the DHB inter-hospital air transfer service specification and tender process)
- enable future service costs to be identified and managed across the sector
- in conjunction with the lead Crown funder and sector advisory body proposals, provide a framework that will help to ensure the sustainability of emergency helicopter services as part of fully integrated ambulance services for New Zealand
- provide a phased approach to the long-term model of a fully coordinated contracting environment.

The following table summarises risks and mitigation options identified by AARG in relation to these proposals.

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73 There is likely to be some delay before this occurs for all charitable trusts due to the number of registration applications the Charities Commission will be processing come the application deadline of July 2008.
<table>
<thead>
<tr>
<th>Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The tendering process creates uncertainty in the sector, which impacts on their viability and participation in the tender round</td>
<td>Proposals for consultation with existing and potential providers on proposed service specifications are included in this report. This process should include an explanation of the background to the contracting model and the benefits for the Crown, non-government funders, providers and the public.</td>
</tr>
<tr>
<td>The tender process results in new or different operators in some regions, which reduces the operational knowledge and increases risks for crew and patients</td>
<td>The service specifications must include criteria that ensure providers are competent and knowledgeable to fly in contracted environments and conditions.</td>
</tr>
</tbody>
</table>
Sustainability

AARG considers that the Crown must regard emergency helicopter services, based on the reasonable expectations and principles described previously in this report, as part of the core health services for all New Zealand communities. The lack of comprehensive and robust data has prevented AARG from forming a view on the sustainability of the current service. AARG considers, however, that its proposals will provide the framework and data to inform a future assessment of sustainability.

Accordingly, AARG proposes that the lead Crown funder treat sustainability of emergency helicopter services throughout New Zealand as a primary consideration in the development of the proposed medium to long-term funding needs analysis and funding plan.

AARG defines a sustainable emergency helicopter service as ‘a service with governance, funding and service delivery arrangements that are operationally sustainable for the medium to long term (15-20 years)’. This does not mean that existing service providers must be sustained by Crown funding if they are in excess of what is needed to provide national coverage.

A sustainable service should also aim to use all ambulance assets (road, air and sea) in a manner that optimises the cost-effectiveness of all ambulance services and positive outcomes for the patient.

Factors impacting on sustainability

Factors that are likely to affect the sustainability of emergency helicopter services include:

Air sector

- new safety and configuration requirements for aircraft and equipment that result in higher purchase and maintenance costs
- competition between operators participating in tender processes
- operator(s) failing financially and/or exiting the sector leaving an area without cover
- service utilisation and/or working relationships with road ambulance services sufficient to maintain crew currency and competencies; and associated staff retention issues
- contract terms and values that provide sufficient certainty to make capital investment decisions.

Health services

- changes that reduce the number of accident and medical emergencies that require transfers by air (i.e., reduced mission numbers, utilisation, and efficiency)
- changing patterns of accidents and medical emergencies due to population and other changes
- numbers of appropriately skilled and experience clinical crew
• mission numbers needed to maintain clinical crew currency and capability

**Operational information**

• ability to effectively monitor the application of dispatch protocols and ongoing utilisation of all ambulance resources to ensure a cost-effective service

• ability to monitor the cost-effectiveness of air transport based on patients’ clinical conditions and outcomes.

**Community and corporate commitment**

• low numbers of volunteers for clinical teams in some areas and employer reluctance to release volunteers for long periods of time

• variable community and corporate sponsorship levels for some operators

• funding required to meet any new aircraft or equipment requirements.
Improving the evidence base

Coordinated national data collection and research

AARG proposes a timely and collaborative approach between the Crown, ACC, DHBs and the emergency helicopter sector to:

- identify key evidence and data gaps
- identify readily accessible data sources
- prioritise and fund data gathering and analysis, research and other initiatives that will contribute to the evidence base needed to inform future policy and operational decisions.

AARG proposes that consideration be given to how the following research gaps identified in the NZHTA systematic review can best be addressed:

- Is there some form of interaction between pre-hospital time and pre-hospital crew that has impact on patient outcomes? Linked to this is whether the same pre-hospital approach (time and crew) results in improved outcome in all emergency patients or whether the best approach is dependent on the clinical situation.
- Given differences in procedures performed and clinical assessment processes adopted by doctors compared to non-doctor pre-hospital personnel, to what extent would enhanced procedure training for non-doctor groups be helpful?
- There are cost differences between the 'scoop and run' and 'stay and treat' approaches, along with the crew mixes used that ideally should be examined in relation to cost effectiveness of different approaches. However, given current uncertainties in effectiveness of the different strategies, incremental cost effectiveness can not be robustly examined at this time.

In addition, AARG proposes that the proposed lead Crown funder gives early consideration to the Auckland Rescue Helicopter Trust's research proposal 'Review of helicopter emergency medical services for patients with head injuries'.

AARG notes that:

- continual reviews of the sector over the last decade may actually have interfered with data collection and research by creating an environment of uncertainty and deferred decision-making
- timely initiation of data collection and analysis and research is critical given that at least 3-5 years will be required to gather useful datasets and to complete research
- the proposed lead Crown funder should determine, in liaison with the sector advisory group, the ongoing and long-term evidence requirements for the emergency helicopter sector
- the EACCs are key to establishing a quantitative evidence base for the future, however, as the centres have only been fully operational since March 2007 it will be some time before sufficient data is available for meaningful trend analyses.

74 Text extracted from the study 'Transportation of emergency patients'. NZHTA Technical Brief 2007; 6(4)
in addition to initiatives already underway to improve the current situation, it is likely that further initiatives will also be required.

AARG also proposes that greater emphasis be given to qualitative measures and utilisation rates to inform future decisions about cost-effectiveness and service design. For example, AARG is aware of quarterly regional EACC user group meetings and the Emergency Care Coordination Team processes that review specific missions.  

A more structured approach is necessary to collect the necessary qualitative and quantitative data about matters such as:

- appropriateness of the response (transport and clinical skills) relative to the clinical needs of the patient
- integration between air and road services (eg dual response, sole response and standby utilisation)
- availability of emergency helicopter response (eg, the impacts of severe weather, competing service demands, etc)

AARG notes the efforts of the Ministry of Health and ACC in recent years to develop joint service specifications and more standardised information and reporting requirements. The focus of reporting requirements, however, is on performance indicators and quantitative measures. Further research is also required to establish appropriate outcome measures that will be consistently applied.

**Single national patient record**

The cost-effectiveness and appropriate utilisation of emergency helicopter services are closely linked to the clinical needs of patients and health outcomes. AARG supports the establishment of a single national patient record, an initiative that has been identified as a high priority for implementation.

Current paper-based systems result in minimal clinical information about the patient being entered in the EACC database. Improvements to these systems would make it easier to obtain medical outcome information on primary retrieval missions.

AARG is aware that there have been discussions for a National Trauma Database over the last 14 years. There is general agreement that such a database would provide useful information, but that it will only be effective if it is implemented within an overall trauma management system that ensures the information collected is analysed and used to inform improvements to the system and patient outcomes.

ACC and the Midland region are discussing a pilot involving the implementation of a regional trauma management system, building on the trauma unit in the Waikato Hospital. There are no timeframes for the pilot at this stage.

A national trauma database would collect outcome information for accident primary retrieval patients, but not for medical primary retrieval patients.

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75 The User Group meetings review at least four calls per meeting and covers call taking, dispatching, destination decision, scene management.
Further consultation

After Ministers have determined their preferred approach in light of this report and other advice and information they may wish to consider, AARG proposes that:

- Crown agencies responsible for funding and purchasing emergency helicopter services be directed to consult with existing and potential providers on draft service specifications before incorporating the final specifications in tender documents
- after tenders have been evaluated and preferred service providers have been identified, consideration be given to the need for public consultation (i.e., AARG suggests that such consultation would be required if there are to be significant changes in the nature or location of services or discontinuation of a contract with a community trust).