

Queensland Ambulance Service Audit Report

December 2007

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Abbreviations

ACE	Ambulance Cover Extra
ACEIM	Aged Care Early Intervention and Management
ACTAS	Australian Capital Territory Ambulance Services
ADAS	Alexandria & District Ambulance Services
AHCA	Australian Health Care Agreement
AIFT	Aerial Inter-facility Transfer
AIMs	Ambulance Information Management system
AMAT	Aerial Medically Authorised Transport
AMPDS	Advanced Medical Priority Dispatch System
ANSW	Ambulance Service of New South Wales
BSS	Business Support Services
CAA	Council of Ambulance Authorities
CAC	Community Ambulance Cover
CAD	Computer Aided Dispatch
CHIP	Community Health Interface Programme
CMS	Careflight Medical Service
COAG	Council of Australian Governments
CPI	Consumer Price Index
DES	Department of Emergency Services
DHHS	Department of Health and Human Services
DOV	Drug Overdose Visitation
DPC	Department of the Premier and Cabinet
DVA	Department of Veterans' Affairs
eARF	Electronic Ambulance Report Form
ECG	Electrocardiogram
ECHO	Emergency Capacity for Hospitals
ED	Emergency Department
EDIS	Emergency Department Information System
EMQ	Emergency Management Queensland
EMT	Emergency Medical Technician
EPA	Enterprise Partnership Agreement
ESA	Emergency Services Authority
ESCAD	Emergency Services Computer Aided Dispatch
FTE	Full-Time Equivalent
GP	General Practitioner
HAC	Health Access Coordination
HACC	Home And Community Care
HBACS	Home Based Acute Care Service
HES	Hospital and Emergency Services
HEWS	Hospital Early Warning System
HLS	Helicopter Landing Site
ICT	Information Communication Technology
IFT	Inter-facility Transfer
LHMU	Liquor, Hospitality and Miscellaneous Workers' Union
MAIC	Motor Accident Insurance Commission
MAS	Metropolitan Ambulance Service (Victoria)
MAT	Medically Authorised Transport
MBS	Medical Benefits Scheme
MDRC	Medical Dispatch Review Committee
MIU	Minor Injury Unit
MPDS	Medical Priority Dispatch System
MPS	Ministerial Portfolio Statement

NoC	Nurse on Call
OPSC	Office of the Public Service Commissioner
PBT	Public Benefit Test
PTO	Patient Transport Officer
PTS	Patient Transport Service
PwC	PricewaterhouseCoopers
QACIR	Queensland Ambulance Case Information Reporting
QAS	Queensland Ambulance Service
QCC	Queensland Clinical Coordination
QDIS	Queensland Health Discharges
QEMS	Queensland Emergency Medical System
QEMSAC	Queensland Emergency Medical System Advisory Council
QFRS	Queensland Fire and Rescue Service
QH	Queensland Health
QIFT	Queensland Inter-facility Transport
QLAC	Queensland Local Ambulance Committee
QMAT	Queensland Medically Authorised Transport
QMTB	Queensland Medical Transport Board
QUT	Queensland University of Technology
R/I	Response to Incident
RACF	Residential Aged Care Facility
RAM	Resource Allocation Model
RAV	Rural Ambulance Victoria
RCA	Root Cause Analysis
RFDS	Royal Flying Doctor Service
ROGS	Report on Government Services
SAAS	South Australian Ambulance Service
SAC	Sydney Ambulance Centre
SAFTE	Sub Acute Fast Track Elderly
SBAC	Strategic and Business Advisory Committee
SP&ES	Strategic Policy & Executive Services
SSP	Shared Service Provider
TAS	Tasmanian Ambulance Service
VF	Ventricular Fibrillation
VT	Ventricular Tachycardia

Introduction/Scope of Audit

On 17 September 2007, the Government announced that a comprehensive audit of the Queensland Ambulance Service (QAS) would be undertaken. This arose from concerns about the pressures on the QAS associated with escalating demand for ambulance services and the need to ensure that as many resources as possible were being directed to front line service delivery.

The audit has been undertaken by a dedicated team of officers from Queensland Treasury, the Department of the Premier and Cabinet and Queensland Health with the assistance of staff from the Queensland Ambulance Service. PricewaterhouseCoopers were engaged to provide specific economic modelling expertise on the factors driving ambulance demand and financial advice on budget and resource allocation issues.

The Terms of Reference for the Audit were approved by the Premier, Treasurer and Minister for Emergency Services and tabled in the Parliament on 9 October 2007. A full copy of the Terms of Reference can be found at Appendix 1.

The following key areas have been the subject of examination under the Audit:

- Trends in the demand for ambulance services and the factors driving increasing demand;
- Budget and resource allocation including the level of corporate overhead;
- Workforce management systems;
- Organisational effectiveness and the appropriateness of the current service delivery model; and
- Intersection with the health system more generally.

The Audit Team has focussed on gathering and analysing data on the overall efficiency and effectiveness of the QAS and undertaking extensive research on different service delivery models and funding arrangements both interstate and overseas.

The Audit Team has completed its task and this report outlines the findings and recommendations of the Audit of the Queensland Ambulance Service.

The Audit Team wishes to acknowledge the efforts of staff in the Department of Emergency Services, particularly the Queensland Ambulance Service, and Queensland Health in providing detailed information and advice to support the Team's work.

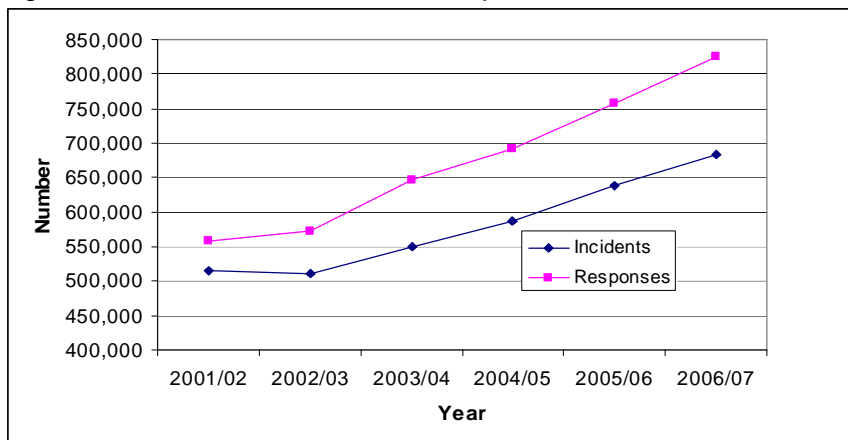
Overview of Key Findings

Chapter 1 - Demand Analysis

The QAS is operating in an environment of escalating demand for services and this is placing considerable pressure on the organisation and its staff.

The growth in demand for ambulance services in recent years has been unprecedented and the service is now responding to roughly 2000 incidents per day. The total number of ambulance responses increased to 824,700 in 2006-07 and is expected to reach close to 900,000 in 2007-08. The graph below shows the steadily increasing demand on the QAS.

Figure 1: Ambulance Incidents and Responses – 2001-02 to 2006-07



Source: QAS Data – data up to 2003-04 is sourced from the Ambulance Information Management System (AIMS) and data from 2003-04 is sourced from the new Queensland Ambulance Case Reporting (QACIR) system.

While other States are also experiencing increasing demand for services, the level of demand is much higher in Queensland and is continuing to grow at rates faster than any other jurisdiction. Queensland now provides almost the same number of ambulance responses as Victoria and is only just behind New South Wales.

Factors Impacting on Demand

The Audit has spent considerable time examining the factors driving the increasing demand for ambulance services in Queensland. It found it is not possible to identify one single major contributing factor. Instead, there are a range of variables influencing the level of demand, many of which are interrelated.

Demographic factors such as the State's growing and ageing population are clearly playing a key part. Queensland continues to have the fastest population growth of any State or Territory with an average annual growth in excess of 85,000 per annum. While Queensland has a relatively younger profile than other States, the population is ageing and older people use more health services including ambulance services than younger people. The incidence of chronic disease is also increasing placing demands on both health and ambulance services.

However, there is a significant portion of ambulance demand growth which cannot be accounted for by demographic and health related factors. Supply factors such as the wide availability of ambulance services across the State, the lack of availability of alternative

providers and the emergency dispatch system which is designed to respond with an emergency ambulance regardless of the patient's condition, are also playing a role.

Another important factor in explaining demand in the Queensland context is the Community Ambulance Cover levy which was introduced in 2003. As shown in the graph above, there was a spike in demand for total incidents and responses the year the CAC was introduced. While there was a change in reporting systems around this time, a similar spike in demand occurred in the number of ambulance transports to public hospitals in that year as reported separately by Queensland Health.

Regional Profile

The analysis shows that demand for ambulance services is greatest in the Brisbane and the South East regions, which accounted for almost half of all ambulance incidents occurring in Queensland in 2006-07 as follows:

- Brisbane - 38%
- South East - 20%
- North Coast - 14%
- Northern - 7%
- Central - 8%
- Far Northern - 7%
- South West - 6%

Emergency and Non-Emergency Growth

Code 1 and 2 emergency responses have shown the most growth increasing by an average of 12.5% per annum (from 2001-02 to 2006-07) while non-emergency cases have declined over the same period. This is likely to reflect crowding out of non-emergency cases by the more urgent Code 1 and 2 cases rather than a decline in the community's demand for non-emergency services generally. Unlike Code 1 and 2 emergency ambulance responses, non-emergency Code 3 and 4 ambulance responses must be medically authorised. The Audit found there may be a level of unmet need for Code 4 ambulance transports in particular.

The main cases found in Code 1 responses are breathing problems, chest pain, falls and the general category of "sick person". Growth in Code 1 responses is largely associated with increasing numbers of breathing and chest pain problems. The category of "sick person" makes up the largest proportion of Code 2 cases followed by falls and traumatic injuries. Major drivers of growth in the Code 2 cases are falls and "sick" person cases.

Market Profiles

The audit has undertaken a detailed analysis of the different markets for ambulance services and the behaviour of those markets in driving demand. Consumer driven demand through calls to "000" has been the most significant factor in explaining the growth in ambulance responses, increasing by 23% over the two year period 2004-05 to 2006-07. Demand from Queensland Health for inter-facility transfers and discharges and other medical related transports has also grown at around 13% over the same period with significant growth in the Central, South West, North Coast and Brisbane regions. Private sector demand from private hospitals and general practitioners has grown at a lesser rate of around 9% over the same period.

Dispatching and Reporting System

In assessing the demand for ambulance services, a number of measures are usually employed including incidents (which are recorded when a call is made to the ambulance), responses (which count the number of vehicles sent to an incident) and patients (which count the actual number of patients treated and transported as well as those patients who are treated but not transported).

Analysis of this data has been complicated by a change in reporting systems in QAS in 2003-04. Responses and incidents are now recorded out of the communications/dispatching system linked to the new Queensland Ambulance Case Information Reporting (QACIR) system while data on patients and transports is sourced from a different database fed by new electronic ambulance reporting forms (eARFs). Previously, QAS used a paper based system filled in by ambulance officers which aligned with its Ambulance Information Management System (AIMs) from which incidents and responses were recorded.

The Audit has found there is an increasing gap between the number of responses, the number of incidents and the actual number of patients recorded by QAS under the new system and that responses in particular are not a reliable indicator of demand for services. In 2006-07, there were an estimated 144,500 ambulance attendances, or 17% of ambulance responses, that were not associated with any patients including cancellations, hoaxes, multiple responses, back-ups and standbys.

The Audit found the policy of providing multiple responses to single incidents (as evidenced by the increasing response to incident ratio) and the dispatching system which counts all responses including those units which are redirected en route without actually arriving at an incident or transporting a patient, are key factors contributing to increased response rates.

Chapter 2 - Demand Management Options

It is important to emphasise that there are no quick fixes to the demand challenges confronting the ambulance service. However, it is clear that immediate action to address the problem is required. Despite record budget increases, response times have been below the 68% target of Code 1 cases seen in less than 10 minutes for the last several months, and are showing no signs of improvement.

The Audit has examined service delivery models in other jurisdictions and undertaken extensive research on alternative approaches. It is worth noting that other States which are also coping with growing demand (but not as high as in Queensland) have already put in place different strategies to manage demand and reduce pressure on services.

The Audit has considered a range of strategies, both short term as well as medium to longer term. Essentially, there are three points along the ambulance health care continuum where demand management strategies could be activated:

- 1) before the call is made to "000";
- 2) after the call is made but before an ambulance is dispatched; and
- 3) after the ambulance has been dispatched but before the patient is transported to a hospital emergency department.

Strategy 1 - Community Education Campaign

It would be expected that most people would call "000" only in potentially life-threatening emergency situations. While the Audit found the majority of calls are genuine emergency cases, people are also calling ambulances for relatively minor complaints. Around 15% of

attendances do not result in a transport to hospital and of those who are transported to an emergency department more than half are not ultimately admitted.

This suggests there is scope for a community education campaign to encourage people to only call “000” in a genuine emergency. This approach was adopted in the United Kingdom in response to escalating demand and was reported as reducing inappropriate usage from 23% to 21%. Concerns have been raised that such campaigns can have the unintended effect of further stimulating demand for ambulance services. This could be a risk, especially in the Queensland context of “free” access to services. On the other hand, the capacity for further demand increases would be expected to be limited given the unprecedented growth already experienced. Any public campaign could be accompanied by reminders to the general public that it is an offence to make prank or hoax calls to the ambulance services and penalties apply.

Strategy 2 - Improved Clinical Triage and Referral Processes

The current ambulance dispatching system used by the QAS is based on an internationally recognised standard and is employed in most Australian jurisdictions. The system is designed, rightly so, to provide an emergency ambulance response as quickly as possible. However, the problem is that even those patients with trivial complaints will be assigned an emergency response. There is no capacity to offer an alternative service or even to refer to QAS’s own non-emergency transport service.

To get around this problem, other jurisdictions have introduced a greater level of clinical input into the assessment of “000” calls and alternative referral systems. New South Wales uses a clinician in its Communication Centre to screen “000” calls, who can downgrade or even cancel cases with referral to appropriate assistance. Victoria has recently introduced an alternative referral process which is run by nurses and paramedics out of the ambulance communications centre to refer lower acuity cases to other providers including general practitioners, community health providers and other health transport providers.

Strategy 3 - Alternative Response Options and Treatment at Scene

Greater flexibility is also required in terms of the type of ambulance response that is dispatched and the treatment provided. Currently, the QAS transports most patients it attends to a public hospital emergency department. Additionally, it transports a higher proportion to hospital than other ambulance services elsewhere. New South Wales, in particular, is increasingly providing care and treatment at the patient’s home, thus avoiding unnecessary and expensive transport to a hospital emergency department. For this strategy to be effective, the ambulance needs to adopt an expanded role for paramedics operating out of single vehicles.

Price Signals

Price Signals for Consumers

The lack of a price signal at the point of accessing the service has clearly contributed to demand pressures on the QAS. Should other strategies to reduce demand not be successful, the Government may need to consider alternative funding strategies for the QAS.

Under a co-payment model, a relatively modest contribution of \$100 for emergency cases, \$50 for non-emergency case and \$25 for attendance only could be introduced with a corresponding reduction in the levy. Abolishing the levy altogether would result in user

charges ranging from \$320 to \$888 for an emergency transport depending on whether these were based on full cost recovery, or subsidised by the Government.

The Audit considers that any co-payment or user charge should be applied across all users but with discounted rates for pensioners and concession card holders. A safety net could be provided such that no-one would be expected to pay more than \$500 per year on emergency ambulance services under the co-payment model. This issue is discussed further in the alternative funding strategies section of the report.

Price Signals for Other Purchasers

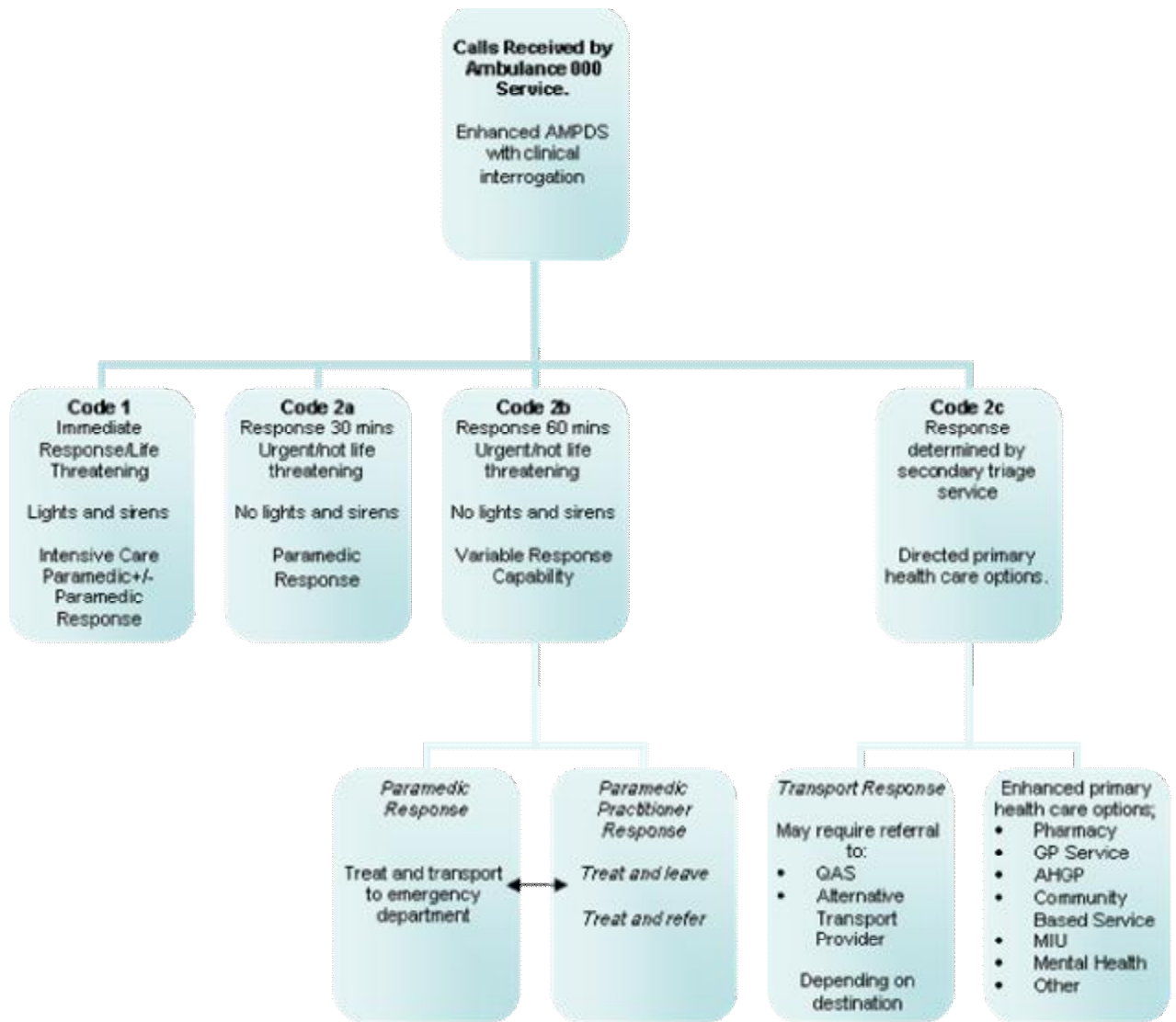
There is a need to provide greater price signals for other users of ambulance services. The Inter-facility Transfer (IFT) agreement between Queensland Health and the QAS provides the basis for full cost charging for ambulance transports used by Queensland Health. The fact the budget is not devolved to those people making the decision to use the service is inhibiting its ability to act as an effective demand management tool.

Other medical transports authorised by Queensland Health, including discharges, are not covered by the IFT and are not subject to any price signals. Establishing a service level agreement, transferring the budget for these services to Queensland Health, and devolving the management of those budgets to clinicians would also assist in managing demand for these services.

The Government may wish to consider implementation of these options either now or after having had an opportunity to assess the impact of the demand management strategies and changes to the service delivery system which have been identified.

An overview of an enhanced ambulance service delivery model with greater clinical triaging and alternative referral paths is provided below.

Figure 2: Proposed Enhanced Ambulance Service Delivery Model



Chapter 3 - Budget and Resourcing

The QAS has enjoyed significant budget growth over the last several years. Since 2001-02, the budget has increased by an average of 10.4% each year in excess of the growth in general government outlays over the same period. Based on the latest available data, expenditure on ambulance services in Queensland is now 18.5% higher than the national average with expenditure of \$81,505 per person compared with \$68,765 nationally (Report on Government Services, 2007).

General Budget Position

Despite the increasing demand for services, the QAS continues to maintain a positive budget position. The QAS budget has been in surplus for a number of years with the level of surplus continuing to increase each year from \$1M in 2001-02 to a projected \$5M in 2007-08. The QAS deliberately plans for a surplus budget result which it then uses to fund capital items.

Revenue Sources

The QAS derives the majority of its revenue from government sources, including around one third of its revenue from the Community Ambulance Cover (CAC) levy. Prior to introduction of the CAC levy, QAS received revenue from the subscription scheme and user charges.

The levy is collected via electricity accounts and is currently set at \$98 per household. Pensioners, concession and seniors card holders are exempt from payment of the levy. In the year the levy was introduced it was estimated to raise around \$99M replacing revenue from the subscription scheme and transport charges for non-subscribers.

Since then, the levy has grown by around 4% per annum in line with movements in CPI and growth in the number of electricity accounts. This falls short of the level of growth in QAS expenditure of around 10.4% per annum with the resultant gap increasingly being met from general government sources. The QAS also receives around 21% of its revenue from various third parties and charges full cost recovery for patients not covered by the levy including overseas clients. The QAS has generally under-estimated the amount of own-source revenue which is contributing to it recording higher than estimated surplus budget positions.

Expenditure and Resource Allocation

Staffing and Supplies & Services Costs

The majority of the QAS budget is spent on salaries and wages for staff with staffing costs comprising roughly 70% of the total budget. Staffing costs have grown at an average of 8.7% per annum since 2001-02 reflecting increases in staffing numbers and increased wages costs associated with enterprise bargaining outcomes and rising overtime costs.

Expenditure on supplies and services including motor vehicles expenses and equipment purchases makes up around 22% of the overall QAS budget. This category of expenditure has been increasing at a faster rate with average annual growth of around 11.5% per annum. The Audit has been advised this is mainly attributable to rising fuel and oil prices and vehicle maintenance costs, as well as additional spending on patient consumables associated with increasing transports and demand. The rest of the budget is allocated to depreciation, grants and subsidies and other miscellaneous expenses.

Cost Allocation

For the purposes of public reporting, QAS breaks its expenditure on services down into two sub-output categories as shown in State budget papers:

- Ambulance response services (89% of the budget or \$358.09M in 2007-08)
- Ambulance community and business services (11% of the budget or \$46.36M in 2007-08)

The Audit considers that the level of public reporting on the allocation of tax funded revenues could be improved. In particular, the current level of reporting does not provide a sufficient breakdown on the level of resources consumed for discrete services such as emergency ambulance transports, non-emergency transports, and inter-hospital transfers.

Analysis of 2006-07 data on actual expenses used for internal reporting purposes shows a similar overemphasis on ancillary services, as shown in Table 1 below.

Table 1: Cost Allocation by Service Type (2006-07)

Service Type	Total Service Expense (\$'000)	Expense as a Proportion of Total Expense
Other Operational	291,047	80.25%
Corporate Services	31,802	8.77%
Communication Centres	24,032	6.63%
Community & Baby Capsules Services	10,967	3.02%
Mining Contracts	3,027	0.83%
Sports/Special Events	1,696	0.47%
Other Commercial Contracts	126	0.03%
Total	362,697	100%

Source: Internal corporate service allocation data supplied by QAS

Corporate Overhead Costs

A key issue the Audit was asked to examine was the level of resourcing allocated to corporate overheads in the QAS. This task has been complicated by variable reporting in different forums about the level of overhead.

The table above shows that corporate services account for around 8.7% of the QAS's total expenditure, which is equivalent to QAS's share of the whole of the Department of Emergency Services corporate service costs. These are roughly similar to the corporate overhead costs for the Queensland Fire and Rescue Service which is also part of DES. Each entity's share of costs is calculated using an activity based costing methodology.

However, this does not take into account the level of corporate overhead in the QAS itself, which is estimated to be around \$20.6M in 2007-08. This comprises administrative, management, marketing, human resource, ICT and other support staff. When both overheads are considered, the total level of overhead for QAS in 2007-08 is estimated at \$58.7M which is 14.4% of the QAS budget for 2007-08.

The Audit considers that the level of corporate overhead in the QAS to be unreasonably high particularly when compared with ambulance services in other States. ROGS data shows that in 2005-06, Queensland had more than twice the level of corporate staff than New South Wales, with 453 Queensland corporate staff compared with 218 in New South Wales.

Sharing whole of departmental overhead costs is an inevitable feature of QAS being located in DES and it would be difficult to argue that QAS should not contribute to the department's costs. At the same time, however, it would be expected that QAS's own overheads would be kept to a minimum if the majority of administrative functions are undertaken centrally.

Included in the number of corporate staff reported by Queensland in the ROGS report is staff employed to provide ancillary community services such as baby capsule hire and community education including first aid courses. While these services are strictly speaking not part of corporate activities, they add to the overall costs of service provision in the QAS.

Ancillary services are estimated to cost around \$12M (excluding the corporate services allocation) in 2007-08. Some of the services are provided on a full cost recovery basis but most are not. While there may be opportunities to increase revenue streams from these services, it is questionable whether they are core business and in the case of community education, there is likely to be overlap with Queensland Health activities on health prevention and promotion. Ceasing to operate these ancillary services would result in direct cost savings and the ability to direct more resources to front line emergency ambulance care.

Average Cost of Services

While Queensland spends more per capita than other ambulance services, based on standard efficiency measures of the costs of services, the Queensland Ambulance Service performs well compared with other jurisdictions. In 2005-06, the QAS had an average cost per ambulance response of \$434 compared with the national average of \$468 (this primarily reflects the large growth in the number of responses). Comparing costs per patients shows Queensland is still more efficient at \$540 per patient compared with \$575 nationally (ROGS 2007). This is largely as a result of the much higher level of activity being experienced in Queensland which results in fixed costs being spread across more and more services, thereby reducing the average unit cost.

Capital Costs

The capital budget has varied and there have been spikes in both equipment and capital expenses in the past four years. The impact of these purchases could be limited through forward expenditure planning and active asset management to ensure that expenditure is smoothed over time rather than large purchases being made in an ad hoc fashion as assets reach the end of their economic life.

Chapter 4 - Workforce Management Systems

Size and Composition of the Workforce

The QAS has the second largest ambulance workforce in the country with over 3,200 staff employed across the State.

The number of QAS employees has grown by 20% since 2004 which is well above growth of 13% in the Queensland public service as a whole over the same period.

Based on 2005-06 data (the latest available for comparison purposes), Queensland has more ambulance service personnel per person than any other State, with 76 salaried ambulance personnel per 100,000 persons compared with 55 salaried ambulance personnel per 100,000 persons nationally (ROGS 2007), a differential of 38%.

The ambulance workforce is made up of a range of different groups including paramedics, patient transport officers, communications staff, managers, and operational and support personnel. The breakdown between ambulance operatives and other support staff is shown in Table 2 below. It shows that Queensland has more corporate support personnel than any other jurisdiction and more ambulance operatives than Victoria in absolute terms.

Table 2: Salaried Personnel 2005-06

Salaried personnel for ambulance services in 2005-06										
	Unit	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Ambulance operatives	%	86.6	83.1	79.2	72.5	76.8	81.1	75.0	81.1	81.7
Ambulance operatives	FTE	3,066	2,040	2,402	504	720	188	107	188	9,111
Operational support personnel	FTE	257	152	178	72	81	28	14	28	797
Corporate support personnel	FTE	218	263	453	118	136	16	22	16	1,243
Total salaried personnel	FTE	3,541	2,455	3,033	695	937	232	143	232	11,152

Source: ROGS 2007

The majority of staff works in the Brisbane and South East regions. Volunteer staff or honorary ambulance staff play an important role in supporting ambulance services in rural and remote locations.

Most QAS staff work full-time and 96% of staff are permanent employees and the majority of the workforce are aged between 30 and 49 years of age. The ambulance workforce continues to be a male dominated profession, with women making up around 27% of the total workforce.

Workforce Health Indicators

The QAS performs poorly on a range of key workforce indicators which suggests the increasing demand for ambulance services is impacting adversely on staff.

QAS has the highest level of absenteeism and sick leave in the Queensland public sector. Absenteeism has increased from 4.5% in 2003-04 to 5.1% in 2006-07, and is above the public sector average of 3.7%. Staff are also performing more overtime. The costs and level of overtime in the QAS has increased steadily from around \$18.6M or 560,000 hours in 2003-04 to \$28.3M or 678,500 hours in 2006-07.

Separation rates are another recognised indicator of workplace health. Based on 2006-07 data, QAS has relatively low separation rates: 3.9% compared with the Queensland public sector average of 6.4%. However, separation rates have increased from 2.6% in 2003-04 and QAS now has higher rates than the Queensland Fire and Rescue Service (2.4%) and the Queensland Police Service (3.4%) (OPSC, 2007).

While the workforce is clearly under pressure and dealing with increasing workloads, the QAS is below the national average when it comes to labour force productivity. The QAS produces around 246 ambulance responses per staff member compared with the national average of 268 responses per staff. In terms of patient transports, the Australian average is 191 ambulance transports per staff member compared with 183 transports per staff member in Queensland (ROGS, 2007).

Enterprise Bargaining Framework

Ambulance workforce terms and conditions are governed by an Enterprise Partnership Agreement. By and large, the terms and conditions contained in the Agreement are consistent with those found across the public sector. However, certain provisions were identified as potentially inhibiting efficient and effective service provision in particular the need for managers to provide three months notification of rosters to staff.

QAS announced a proposed new rostering system during the course of the review in response to concerns from the Liquor, Hospitality and Miscellaneous Union and staff about the impact of the 10 hour shift based roster which had been introduced in 2005. In particular, concerns had been raised about the level of overtime associated with the 10 hour roster and associated staff fatigue and stress. The Audit has not been able to determine whether the new roster will be able to alleviate these concerns in full, particularly if demand for services continues at such high rates.

Training and Recruitment

An estimated 150 new ambulance officers are trained each year. The QAS is in the process of introducing a new training program based on a Bachelor level degree. This may have implications for supply of trained staff further down the track.

An additional 250 ambulance officers were funded in the 2007-08 budget. The QAS is on track in terms of recruitment of additional staff. It is also recruiting staff from overseas, in particular the United Kingdom, to augment its workforce. Should demand for services continue to rise at current rates, it is likely the services will need to increase the number of staff recruited from outside Queensland.

Chapter 5 - Organisational Effectiveness and Service Delivery Model

The Queensland Ambulance Service has changed considerably over the last fifteen years from a service delivery model based on 96 separate Queensland Ambulance Service Transport Brigades to a single State wide ambulance service. The QAS is now the second largest ambulance service in Australia and the fourth largest in the world.

QAS is part of the Department of Emergency Services. This is unlike most other interstate ambulance services which are attached to, or part of, their respective health departments. The Audit considers that in the longer term, QAS could be better located within the health portfolio. This issue is dealt with in Chapter 7- Intersection with the Health System.

Range of Services

The QAS is generally considered to be a world leader in providing out-of-hospital emergency care. It provides emergency treatment and transports, non-emergency transports, stand-by at special events, inter-hospital transfers, casualty room services and co-ordination of multi-casualty events. The QAS also provides a more extensive range of community and business services than other ambulance services including community education (first aid training and injury prevention); industry contracts; training and education; pre-hospital care research and a baby capsule hire service.

Service Delivery Model

The QAS operates a regional based service delivery model with centralised administrative and other corporate functions within the Department of Emergency Services. There are seven regions and 284 service locations including seven communication centres. The current service delivery model provides extensive coverage for the provision of ambulance services across the State. However, there is evidence of under-utilisation especially in smaller rural areas with over half of QAS's response locations performing two or fewer responses per day in 2006-07. To date, QAS has tended to focus on establishing additional ambulance stations as a means of enhancing service delivery to the community. Alternative approaches including the greater use of mobile ambulance resource units and co-location with Queensland Health facilities should be considered.

Head Office accounts for around 21% of the total budget of the QAS. It provides a range of functions including strategic planning, education and training, community education, ICT support and capital works management. While the Audit appreciates there are economies of scale in consolidating these types of functions within one area, there would appear to be scope to reduce the level of overheads within the QAS. This issue is discussed in detail in Chapter 3 – Budget and Resourcing which deals directly with the level of corporate overhead and the provision of ancillary services by QAS.

Legislative Framework

The QAS is established under the *Ambulance Service Act 1991*. The Act sets out its roles and responsibilities and preserves the provision of ambulance services to the QAS as the monopoly provider in the State.

The Audit has considered whether the current legislative restrictions on who can provide an ambulance service are in the best interests of the community. Given the demand pressures in the system, the Audit considers that the current provisions should be reviewed to ensure they allow for an alternative triaging and referral process to be established for “000” calls and for greater contestability in the provision of non-emergency transports. While the QAS had developed a lower cost Patient Transport System for non-emergency transports and has entered into arrangements with community providers, scope remains for other providers to offer similar services to the community.

The *Ambulance Service Act 1991* also establishes the membership, role and functions of the Local Ambulance Committees which are made up of community representatives. These committees play an important role in supporting their local ambulance services including providing financial support.

Chapter 6 - Performance Assessment and Performance Management Systems

The QAS reports on a range of indicators, but these are limited in terms of measuring the overall effectiveness of service delivery. When compared with services nationally, QAS performs favourably on a range of indicators including response times, cardiac arrest survival rates, costs of services and patient satisfaction (noting these are only available for 2005-06).

However, there is limited reporting in Queensland and elsewhere on quality service measures. Apart from the out-of-hospital cardiac arrest rate, no other measure is available to Government or the community which shows the impact of ambulance services on preventable deaths or health outcomes for patients.

The Audit found the QAS has an effective internal monthly monitoring system in place under which it regularly monitors financial, human resource, performance and other activity data including response times. However, analysis of data seems to occur primarily at the central level and greater ownership and accountability for results is required at the regional and local level in order to drive improved performance.

Chapter 7 - Intersection with the Health System

While the QAS is situated outside the health portfolio, it forms an integral part of the health system. Ambulances are the first point of contact for patients experiencing a health crisis and are used to transport patients to hospital emergency departments, between hospitals, and when patients are discharged out of hospital to other facilities or home.

Opportunities to Refer Emergency Calls to 13 HEALTH

One of the key issues the Audit was requested to examine was the potential for “000” calls to be transferred to 13 HEALTH, Queensland Health’s telephone health contact centre service, which was set up in 2006.

The Audit has found there is potential to refer a number of low acuity calls to an alternative provider, with 13 HEALTH being one alternative. The other is for QAS to establish its own triaging within the QAS communications centre, based on the Victorian model. In Victoria’s Metropolitan Ambulance Service, nurses and paramedics provide a secondary triage service and the ambulance services contracts with a range of alternative providers, including general practitioners and mental health services. It is estimated that up to 49,500 calls (per year) to the QAS may be suitable for referral to an alternative provider. Savings associated with this level of referral would be estimated at around \$21M per annum, noting this is an upper level estimate and it would very likely take considerable time before this level of calls or savings could be realised.

On balance, the Audit considers that QAS should trial establishing a referral service within the current communications “000” environment. While 13 HEALTH has the capacity to provide secondary triaging of patients, it has not long been in operation and has limited capacity to arrange for an alternative service to be provided to patients. Managing the service within QAS would allow for this to be integrated with greater clinical input into triaging at the point of call and clinical assessment of the types of cases that could appropriately be referred. At the end of the trial, an assessment could be made as to whether it would be feasible to transfer the service to 13 HEALTH. This issue is discussed further in Chapter 2 – Demand Management Strategies.

Service Impacts of Increasing Demand

Generally, the Audit found that QAS and Queensland Health have worked well together to ensure that patients receive an integrated and coordinated emergency response. The Queensland Emergency Medical System and the recently established Queensland Medical Transport Board are both positive examples of collaboration across the agencies in this regard.

However, with the steadily increasing demand for ambulance services, both organisations are coming under increasing pressure. Problems with waiting times for non-emergency transports for patients in hospital have emerged as emergency ambulance responses take precedence over non-urgent cases, causing patient inconvenience and delays.

Ramping

Ramping at public hospitals is becoming a major issue of concern where patients are unable to be handed over from ambulance staff to be triaged in hospital emergency departments. However, the Audit found that the problem is not systemic and that certain hospitals are better able to manage the flow of patients to reduce the potential for ramping, even in the face of high levels of demand. Strategies to address ramping must address issues with access block in hospitals where patients are seen in emergency departments but not able to be admitted due to the lack of available beds. Queensland Health and the QAS are currently working together with the Liquor, Hospitality and Miscellaneous Workers Union to develop strategies to address ramping across the State.

Inter-Facility Transfers

The demand for inter-facility transfers, that is the transport of patients primarily from either one hospital to another or from a hospital to a diagnostic facility, is also increasing at rates well in excess of population growth and public hospital admission rates. Inter-facility transfers are paid for by Queensland Health under a service level agreement with the QAS. Payments from Queensland Health to QAS increase in line with increasing activity.

There is currently little incentive for hospitals or clinicians to manage demand for services or seek out alternative means of transport as the budget for inter-facility transfers is managed centrally. There has also been growth in the use of ambulances for the discharge of patients from hospital and a range of other transports that fall outside the scope of the inter-facility transfer agreement and which are not charged directly to Queensland Health.

In examining the QAS service delivery model, the Audit considers there is scope for greater contestability in the provision on non-emergency ambulance transports, as occurs in other jurisdictions. This would provide Queensland Health with the opportunity to arrange for different purchasing arrangements with other providers for inter-facility transfers. It is recognised, however, that QAS would continue to be a key provider of non-emergency transports for seriously ill hospital patients.

Organisational Arrangements

In reviewing the various aspects of the interface between QAS and Queensland Health, the Audit has inevitably considered the question of where the QAS is best situated organisationally. Queensland is the only State (apart from the Australian Capital Territory) where ambulance services form part of the emergency services portfolio.

Having the QAS as part of the emergency services portfolio in Queensland recognises the synergies between ambulance, fire and emergency management, particularly in providing services to the community in emergency situations. There are also potential cost sharing and efficiencies to be gained by sharing emergency dispatch and communications infrastructure across the three entities.

The argument for having QAS part of Queensland Health rests on the fact that the ambulance primarily deals with individual patients, not events such as fires or disasters and that decisions made in the health system impact directly on demand and resources in the QAS. It would also avoid duplication of resources, the need for numerous coordinating committees/boards, and the potential for cost shifting between the two agencies.

On balance, the logic appears stronger for QAS to operate as part of the health system rather than as part of an emergency management system. Such a change would cause some disruption and may be better pursued in the medium term once demand pressures on the service have been moderated. In the meantime, improvements could be made in terms of better coordination and information sharing across the two agencies.

Chapter 8 - Future Funding Strategies

Projected Funding Requirements

The Audit has estimated that if the QAS budget continues growing as it has over the last two budgets, the amount spent on ambulance services will exceed \$1.4 billion in the next ten years.

Additional funding for the QAS in the short term will be required until demand pressures moderate.

The Audit has considered a number of different approaches to meeting QAS's future funding requirements, including output and population based funding models. Given the heavy reliance on government funding, it favours an approach which provides a forward funding path for the QAS linked to demographic factors such as the growing and ageing population and the increasing use of health services.

The Audit also considers that the QAS should receive indexation on the costs of supplies and services linked to health inflation and that a wages cost factor needs to be included in the overall funding formula. This would give the QAS greater certainty to plan for the recruitment of staff and enhancement of services to meet the growing demand for services.

Alternative Funding Strategies

The way in which services are funded can influence both the consumption of services and the capacity of the system to meet the demand for services.

The CAC levy essentially made the ambulance service “free” for everybody at the point they use the service. This provides a direct incentive for people to use the “free” service over other types of transport and can encourage excessive or inappropriate use.

Policy Objectives

The Audit has focussed its attention on examining the implications of a number of key alternative funding strategies for ambulance. The key policy objectives in assessing this particular aspect of the review have been:

- to ensure that funding and payment arrangements encourage the right type of service for people when and where they need it;
- that the capacity of people to pay for the service is taken into consideration; and
- that wasteful and unnecessary consumption of services is limited.

The options that have been considered by the Audit include:

- Option 1 – Continuing with the current arrangements
- Option 2 – Abolishing the CAC levy and funding through increase in Medicare levy;
- Option 3 – Abolishing the CAC levy and replacing with user charges covered by private health insurance; and
- Option 4 – Retaining and/or reducing the CAC levy and introducing a co-payment.

The Audit does not consider it is viable to continue with the current arrangements should demand for services not decline.

The option of funding ambulance through the Medicare levy has been canvassed in a number of forums. While the Audit considers this option has some merit, it is unlikely that agreement could be reached with the Commonwealth and all States and Territories to implement such an approach.

Analysis of Remaining Alternative Options

The two main alternative options which have been examined in more detail are the option of abolishing the CAC levy and replacing with user charges or retaining the CAC levy and introducing a co-payment. The advantage of these options is that they would act as a price signal and that revenue to the QAS would vary in line with changes in demand.

The Audit found that Queensland was the only State to have introduced a levy and universal entitlement to use ambulance services. Most other jurisdictions use a combination of subscription scheme payments and user charges to fund their ambulance services.

Abolish CAC Levy and Introduce User Charges

If the CAC was abolished, the QAS would need to implement user charging arrangements as occurs in other jurisdictions. People could then insure against these user charges with their private health funds (noting some States still operate their own insurance or subscription schemes) or choose to pay them out of their own pocket. Full cost-based user charges would be in the order of \$888 for an emergency transport, \$330 for a non-emergency transport and \$90.50 for an attendance.

Alternatively, the Government could subsidise these costs (based on the current level of general government funding to the QAS over and above the CAC levy) which would bring them down to around \$330 for an emergency service; \$110 for a non-emergency transport and \$50 for attendance only. To continue to provide services free of charge to pensioners/concession card holders and replace revenue lost from the levy, emergency transports would need to be charged at around \$570; non-emergency transports at \$300 and treatment with no transport at \$75.

Retain/Reduce CAC Levy and Introduce a Consumer Contribution

The second option of introducing a consumer contribution or co-payment recognises that the existing levy is essentially a compulsory form of insurance for ambulance. Unlike most insurance products, however, there is no excess or gap payment to discourage excessive usage and over-servicing. People who hold comprehensive private health insurance are still expected to meet some of the costs of their treatment out-of-pocket and similarly when people visit a GP, they make a small payment unless the GP bulkbills.

It is estimated that a relatively modest contribution of \$100 for an emergency service, \$50 for a non-emergency service and \$25 for an attendance could raise an estimated \$41.7M for the QAS and be accompanied by a reduction in the levy paid by households of about one-third. Alternatively, the levy could be retained and consumer payments used to provide an additional revenue stream for the QAS. If pensioners were excluded for these co-payments, the revenue would decrease to around \$22M per annum.

An alternative approach would be to retain the levy in full and only charge for non-emergency services and attendances where there is no ambulance transport required. Charges could be similar to above but the amount of revenue raised would be considerably less. This option could be argued on the basis that the levy should only cover the costs of emergency life threatening ambulance services, not non-urgent transports and other general attendances.

Summary of Recommendations

Chapter 2 - Demand Management Options

Recommendation 2.1

QAS implement an integrated demand management strategy to reduce demand pressures on the organisation and its staff.

As a first step, the QAS should instigate a community education campaign informing people about the importance of only ringing “000” for genuine life threatening emergencies so that ambulances are not being diverted to relatively minor cases.

To better match services with patient needs, the QAS is to:

- introduce a greater level of clinical input into the assessment of the type of response required when a person calls “000” to determine whether an emergency ambulance is necessary;
- put in place alternative referral paths for those callers who are identified as not requiring an emergency ambulance - a pilot of this approach should be adopted in the Brisbane Region to operate over a period of 12 months after which the service should be reviewed including consideration of whether it should be transferred to 13 HEALTH; and
- adopt an expanded scope of practice for paramedics that will enable greater assistance to be provided to patients who may be able to be treated in their own homes thus avoiding an ambulance transport to an emergency department.

Recommendation 2.2

QAS work with Queensland Health to develop a service level agreement for the provision of medical related transports (not covered by the existing inter-facility transfer agreement) and devolve the management of budgets for all health related transports to the District level to encourage more effective demand management.

Recommendation 2.3

QAS adapt:

- dispatching protocols to ensure that response to incident ratios meet national standards and promote the efficient use of resources; and
- recording procedures for incident and patient data to provide a more accurate picture of demand for services (noting the significant numbers of cancellations, multiple dispatches and back ups associated with the count of ambulance responses).

Chapter 3 - Budget and Resourcing

Recommendation 3.1

QAS adopt improved budget management and forecasting procedures including:

- revising its methods for forecasting own source revenue to provide a more realistic revenue outlook for the Service for the purposes of planning and budgeting;
- ceasing the practice of budgeting for surpluses to support the purchase of capital items with a view to freeing up recurrent funding to meet service delivery demand increases (funding for capital items should be sought as part of the annual budget process); and

- improving its level of debt recovery on user charges to ineligible clients and other parties.

Recommendation 3.2

An efficiency dividend of 1% is to be applied immediately to the Department's corporate overheads and that a similar dividend be applied to the QAS's own corporate overhead to free up funds for service delivery. The Department of Emergency Services is to further reduce the level of overhead such that it aligns with other State ambulance services within the next two years.

Recommendation 3.3

QAS review the provision of ancillary services including community education services noting an estimated \$12M in reduced expenses (with a net saving to the budget of \$7.75M after taking into account revenue) could be realised if QAS was to focus on its core business.

In the event that the Government wishes to retain these services within the QAS, then it is recommended the QAS review these services to ensure there is no duplication with other agencies such as Queensland Health, and move the services progressively towards full cost recovery.

Recommendation 3.4

QAS move all its third party funding arrangements to full cost recovery including payments from the Motor Accident Insurance Commission (raised by the hospital and emergency services levy attached to vehicle registrations).

Chapter 4 - Workforce Management Systems

Recommendation 4.1

QAS increase the proportion of its operational workforce to the national average within the next two years.

Recommendation 4.2

QAS is to:

- take immediate steps to reduce its levels of absenteeism, separation rates and overtime, building on the work already underway in the organisation;
- implement procedures which will allow full-time ambulance officers to complete their shifts with the transfer of a patient at hospital as a means of reducing overtime and fatigue;
- continue its focus on the safety and health of the workforce and maintain reductions in the level of grievances reported;
- pursue further productivity improvements in the next enterprise partnership agreement consistent with best practice; and
- monitor and report to Government on the impact of the new rostering system on its workforce (in particular overtime rates), coverage and ambulance response times after the new arrangements have been in operation for six months.

Recommendation 4.3

In terms of its future workforce, QAS is to:

- continue to transition to pre-service education models in line with the capacity of the university sector, but retain in-service training for professional development.
- further refine its projections of future workforce requirements noting it is likely to have to rely on overseas recruits to augment the local workforce if there is no reduction in demand pressures.

Chapter 5 - Organisational Effectiveness and Service Delivery Model

Recommendation 5.1

QAS move towards deploying additional resources via mobile resource units rather than establishing additional ambulance stations across the State and that QAS work with Queensland Health to facilitate the co-location of ambulance with Queensland Health facilities in rural and remote areas.

Recommendation 5.2

Non-emergency services to be made contestable in Queensland recognising that a certain level of service will need to continue to be provided by the QAS.

Recommendation 5.3

Government amend the *Ambulance Service Act 1991* and associated legislation/regulations to ensure there are no barriers to establishing alternative referral paths and an expanded scope of practice for paramedics to deal with “000” callers, or barriers to introducing greater contestability in the provision of non-emergency ambulance services.

Chapter 6 - Performance Assessment and Performance Management Systems

Recommendation 6.1

QAS is to:

- improve its public reporting on the allocation of tax payer funded revenues to provide greater transparency including reporting on the number of incidents, patients and transports broken down into emergency and non-emergency services as well as information on inter-facility transfers; costs of services; and timeliness of responses;
- continue working with other ambulance services to improve the level of reporting on health outcomes for patients; and
- align its reporting with directions outlined in the Department’s Strategic Plan.

Recommendation 6.2

QAS is to introduce an improved performance management and accountability framework within the organisation to drive performance at the regional level and hold managers accountable for performance and results.

Chapter 7 – Intersection with the Health System

Recommendation 7.1

QAS and Queensland Health implement improved data collection, information sharing and coordination systems to:

- monitor the level of inter-facility transfers provided under the service level agreement with Queensland Health;
- establish better clinical coordination processes for all urgent inter-facility transfers both road and aero-medical including coordination of clinical escorts;
- provide QAS with information on emergency workloads and inpatient capacity as early as possible when transporting patients to public emergency departments;
- implement an enhanced clinical governance system for all patient transports addressing patient satisfaction, complaints, clinical audit, and safety and quality measures; and
- report on a quarterly basis to the Government on key indicators including off-stretcher time, access block targets and treatment time in emergency departments.

Recommendation 7.2

Queensland Health is to introduce improved processes for managing patient flows, in particular access block in emergency departments, including better alignment of staffing with need, mapping tasks and workflow, implementing fast track treatment programs where appropriate, streamlining and improving discharge systems, and enhancing referral and transfer arrangements.

Recommendation 7.3

The option of having the QAS integrated organisationally with Queensland Health be considered in the medium to longer term in the event demand management and QAS/Health services integration measures do not deliver appropriate results.

Chapter 8 - Future Funding Strategies

Recommendation 8.1

That additional funding to meet increased demand be considered for the 2008-09 Budget and that for future years, the Government adopt a growth factor to apply to the QAS budget which accounts for increasing costs and demand pressures and provides greater certainty for the QAS in planning for service enhancements.

Recommendation 8.2

QAS review its economic unit of supply concept such that escalation for corporate services overheads is not automatically applied when additional funding for services is obtained, noting this would also require review of overheads for the Department of Emergency Services and the shared service provider.

Recommendation 8.3

Government consider introducing a payment for ambulance services either in the form of a co-payment (accompanied by a reduction in the CAC levy) or by abolishing the CAC levy and introducing user charges which could then be insured against with health funds if demand management measures do not deliver appropriate results.

Chapter 1 – Demand Analysis

This section of the report provides an analysis of the trends in demand for ambulance services and the factors driving ambulance demand. It provides a profile of demand by region and by code as well as a detailed analysis of the types of ambulance cases that are being dealt with by the QAS.

Measuring Demand for Ambulance Services

Demand for ambulance services can be considered in terms of *incidents*, *responses*, *patients* and *transports*.

QAS receives calls for ambulance response services in two broad categories. The first are calls of a life threatening or urgent nature, codes 1 and 2, via the community triple zero (000) emergency network. The second are calls for medically authorised transport, codes 3 and 4, generally through the non-urgent 13 11 26 ambulance contact number.

An *incident* is generated when a member of the public dials the “000” number and speaks with an ambulance service emergency “000” telephonist, or alternatively when a general practitioner, hospital or other health service dials either the “000” facility, or dials the ‘13 11 26’ number. A “000” telephonist identifies the location and nature of the incident using electronically generated questions under the AMPDS (Advanced Medical Priority Dispatch System), and in particular with “000” calls, checks that the call has not been called in previously. Once the AMPDS identifies a priority code for the incident, the telephonist transfers the incident to the relevant dispatcher for a response to be initiated. Incidents are indicative of the level of demand for ambulance services by the Queensland population.

A *response* is generated when the dispatcher determines the most appropriate response to the incident based on the priority code generated and the location of the incident. The dispatcher can identify the nearest ambulance to the incident and whether multiple responses are recommended by the system’s response matrix. Thus there can be more than one ambulance unit responding to a single incident (for example, a fully equipped ambulance unit with two paramedics, plus a sedan and equipment carried by an intensive care paramedic). In addition, an ambulance unit which has previously been dispatched to a lower priority incident can be redirected to a new higher priority incident raising the need to generate a further response to the lower priority incident. Responses are therefore indicative of the level of supply of ambulance services that is available to meet demand, in addition to the need to juggle resources to ensure the most critical incidents receive the fastest response times.

The number of *patients* and *transports* are counted according to three sub-categories. The Queensland Ambulance Service (QAS) counts patients treated and transported, treated and not transported, and patients not treated and not transported. The number of patients and transports is indicative of the level of direct service utilisation of ambulance services by Queenslanders.

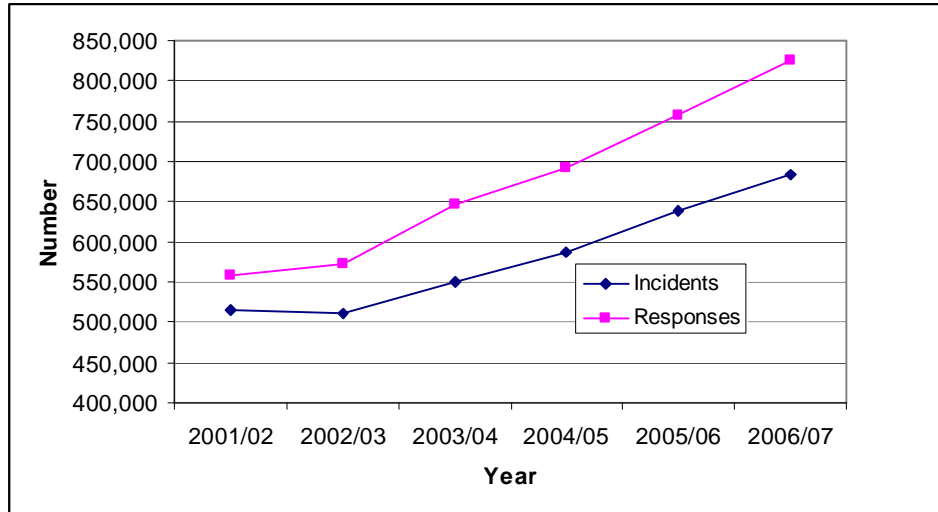
Notably there are also responses where there are no patients. These can relate to standby services at major events, or where patients have absconded, cannot be found, or the initial call was a hoax.

The QAS generally relies on the number of incidents and responses to reflect their resource utilisation, and argues that of the two, responses better reflect the level of resource utilisation required to provide an appropriate and responsive service to the Queensland population.

Trends in Incidents and Responses

The total number of ambulance responses in Queensland increased by 47.8% from 558,000 in 2001-02 to 824,700 in 2006-07 while the number of incidents increased by 32.7% from 515,000 to 683,200. Figure 1.1 shows the number of ambulance responses and incidents between 2001-02 and 2006-07.

Figure 1.1: QAS Responses and Incidents – 2001-02 to 2006-07¹



Source: QAS Internal data

Based on 2005-06 data, Queenslanders now use roughly 30% more ambulance services than the national average with 16,252 ambulance incidents per 100,000 persons compared to 12,530 incidents per 100,000 persons at the national level (ROGS 2007).

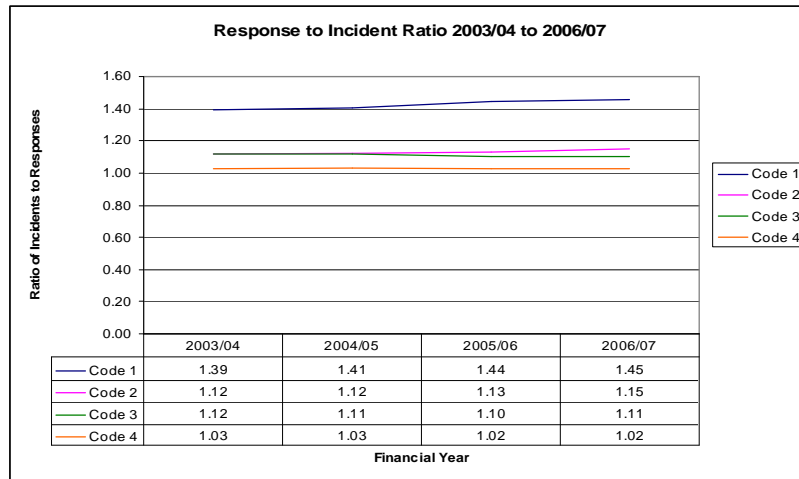
Although the *incidents* and *responses* measures are related, the number of responses usually exceeds the number of incidents, because as mentioned previously, multiple responses/vehicles may be sent to a single incident. Incidents are generally considered a better measure of demand as responses reflect both the 'demand' for a heightened level of response for multiple injury incidents, in addition to a potential availability of supply.

The widening gap between incidents and responses in the above graph reflects an increase in the response/incident (R/I) ratio from 1.08 responses per incident across all Codes 1-4 in 2001-02 to 1.21 across all Codes 1-4 in 2006-07. While this increase may be explained to some extent by a change in reporting in 2003, it should be noted that the gap between incidents and responses has increased in the years following the reporting change.² Figure 1.2 breaks down the data to demonstrate the response to incident ratio of each individual priority response code.

¹ Data for 2001/02 and 2002/03 from AIMS; data from QACIR.

² Reporting was changed from 1 July 2003 from a paper-based system, where data forms from paramedics were entered into the Ambulance Information Management System (AIMS) to form the basis of reporting on responses, to a fully automated system where responses are created directly onto the Queensland Ambulance Case Information Reporting (QACIR) system as the basis of reporting. The effect of this change is that it is argued that response data prior to 2003/04 reflects a level of under-reporting.

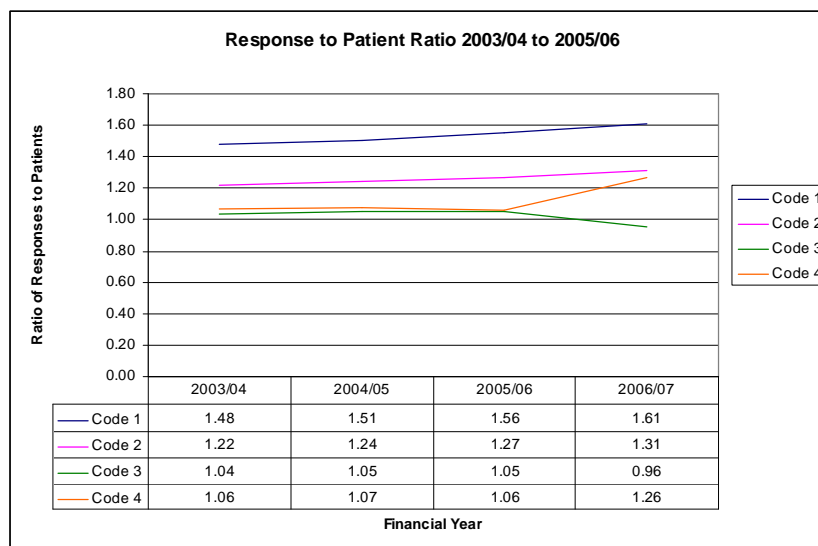
Figure 1.2: Response to Incident Ratio 2003-04 to 2006-07



Source: QAS Internal Data

The greatest increase in the response to incident ratio was in Code 1 responses which increased from 1.39 in 2003-04 to 1.45 in 2006-07 (change of 0.06). The Code 2 response to incident ratio also increased by 0.03 from 1.12 in 2003-04 to 1.15 in 2006-07. However, both Code 3 and 4 response to incident ratios decreased by 0.01 over the four year period. The response to incident ratio is indicative of the number of responses (supply) sent to the number of incidents (demand) in addition to the response priority pattern which relates to the priority and location of incidents. Remembering that lower priority responses may be redirected to higher priority incidents. Thus the response to patient ratio provides a better picture of how the supply satisfies the demand, or otherwise. Figure 1.3 demonstrates the response to patient ratio in Code 1 attendances is 1.61 in 2006-07, up from 1.48 in 2003-04 (change of 0.13).

Figure 1.3: Response to Patient Ratio 2003-04 to 2006-07



Source: QAS Internal Data

This pattern of increasing response to patient ratio in Code 2 is similar with an increase from 1.22 in 2003-04 to 1.31 in 2006-07 (change of 0.09). However, for Code 3 responses, there are more patients than responses. Code 3 responses are transports for non-urgent appointments, and are therefore considered to be time critical. The sharp decrease in the ratio in 2006-07 suggests a change in practice to transport multiple patients to appointments where appropriate and possible.

Whereas this is one possible explanation for the sharp decrease in response to patient ratio, there is another alternative picture which is suggested by the corresponding pattern of Code 4 responses.

Note also from Figure 1.3 that there is a significant concurrent increase in the response to patient ratio for Code 4 transports (non-urgent, non time critical). For this category, there were over 96,000 incidents, generating over 98,000 responses for only 78,000 patients transported. There were very few patients in this category treated and not transported, and in excess of 17,000 responses which remain unaccounted for in the data set, provided by the QAS in Table 1.1. It may be possible that the higher response to patient ratios in the Code 4 category represents the diversions in this category of ambulance resources to higher level incidents. However, there are 14,000 responses with no treatment and no patient in the Code 3 category. These on top of the higher number of patients to responses in Code 3 suggest that the extent of multiple-patient transports is higher than suggested by the data, and thus, that there are many Code 3 responses that are also being diverted to higher priority incidents. The lower number of Code 4 patients to incidents than in previous years suggests therefore, that the current service delivery model is delivering a significant level of unmet demand in the Code 4 category.

Table 1.1 is the data provided by the QAS outlining incidents, responses, patients, transports, treated not transported and other (no patient) numbers.

Table 1.1: Incidents, Responses, Patients, Transports, Treated Not Transported, and Other (No Patient) Numbers by Year (2003-04 – 2006-07)

INCIDENTS				
	2003/04	2004/05	2005/06	2006/07
Code 1	144,098	149,785	163,914	187,362
Code 2	221,148	245,777	265,625	284,705
Code 3	103,148	97,831	102,614	105,009
Code 4	82,174	89,601	94,872	96,542
Cas	0	3,895	10,536	9,589
TOTAL	550,568	586,889	637,561	683,207
RESPONSES				
	2003/04	2004/05	2005/06	2006/07
Code 1	200,748	210,653	236,254	272,517
Code 2	246,912	275,658	299,754	327,394
Code 3	115,345	109,021	112,970	116,105
Code 4	84,330	92,607	97,076	98,888
Cas	0	3,478	10,671	9,797
TOTAL	647,335	691,417	756,725	824,701
PATIENTS				
	2003/04	2004/05	2005/06	2006/07
Code 1	135,284	139,859	151,858	169,757
Code 2	202,447	222,145	236,904	249,131
Code 3	111,183	103,720	107,146	121,377
Code 4	79,304	86,217	91,351	78,244
NA/Service Purposes/Cas Room	5,659	6,945	6,977	2,617
TOTAL	533,877	558,886	594,236	621,126
TRANSPORTS				
	2003/04	2004/05	2005/06	2006/07
Code 1	122,741	127,036	137,166	150,703
Code 2	181,705	199,223	211,242	218,538
Code 3	110,916	103,074	106,173	119,959
Code 4	79,267	86,164	91,279	78,220
NA/Service Purposes/Cas Room	1,584	3,608	4,199	1,483
TOTAL	496,213	519,105	550,059	568,903
TREATED, NOT TRANSPORTED				
	2003/04	2004/05	2005/06	2006/07
Code 1	12,543	12,823	14,692	19,054
Code 2	20,742	22,922	25,662	30,593
Code 3	267	646	973	1,418
Code 4	37	53	72	24
NA/Service Purposes/Cas Room	4,075	3,337	2,778	1,134
TOTAL	37,664	39,781	44,177	52,223
OTHER - NOT TRANSPORTED (NO PATIENT)				
	2003/04	2004/05	2005/06	2006/07
Code 1	46,535	49,261	56,478	55,959
Code 2	39,290	46,685	54,570	68,471
Code 3	8,727	8,985	9,595	14,719
Code 4	2,698	3,479	3,738	3,236
NA/Service Purposes/Cas Room	2,878	3,645	4,653	2,122
TOTAL	100,128	112,055	129,034	144,507

Source: QAS Internal Data

A further anomaly in the QAS reporting process is the gaps in reporting that result from amalgamating the data from two data collection systems, QACIR and AIMS ARF (paper-based) and EARF (electronic) systems. The final column in Table 1.2 indicates that there are 46,801 Code 1 responses where there is no data regarding whether or not a patient was present, or if they were transported or treated. In total, for Codes 1,2 and 4 (not including Code 3 because of

potential multiple-patient transports) there were over 79,000 responses where there was no documentation of a patient or a transport, or that there was no patient. Anecdotally, the Audit Team has been told that these responses represent the extent to which ambulance officers do not fill in either a paper based AIMS form or the electronic version of this form (ARF or EARF), but the response data is collected on the QACIR system. Thus the amalgamated data set under-represents the number of patients that the ambulance system is dealing with each year. However, an alternative theory is that these unaccounted-for responses (with the exception of the Code 3 number which is a negative possibly due to multiple-patient responses) represent the extent to which ambulances are diverted to alternative higher priority jobs, and for which filling in a form would be a waste of ambulance officer time and effort, particularly in those cases where they are diverted prior to reaching the incident.

Including both the 79,059 (59068+19991) unaccounted-for responses and the approximately 144,507 Other Responses – Not Transported (No Patient), in 2006-07 there were a grand total of 223,566 responses for which there was no patient and no transport documented. Correcting for the exclusion of Code 3s, there is a total of approximately 25% of all responses which, arguably, do not relate to a patient. Table 1.2 provides the figures which underpin this analysis.

Table 1.2: Analysis to identify the Undocumented Responses in 2006-07

	Incidents 2006/07	Responses 2006/07	Patients 2006/07	Transports 2006/07	Treated Not Transported 2006/07	Other - Not transported (No Patient) 2006/07	Total Patient and No Patient Responses 2006/07	Total Responses Less Responses reported with and without Patient 2006/07
Code 1	187362	272517	169757	150703	19054	55959	225716	46801
Code 2	284705	327394	249131	218538	30593	68471	317602	9792
Code 3	105009	116105	121377	119959	1418	14719	136096	-19991
Code 4	96542	98888	78244	78220	24	3236	81480	17408
NA/Service Purpos	9589	9797	2617	1483	1134	2122	4739	5058
TOTAL	683207	824701	621126	568903	52223	144507	765633	59068

Source: QAS Internal Data

Responses and Incidents by Code

Disaggregating response and incident growth into codes 1 and 2 (life threatening and urgent) and non-urgent codes 3 and 4 (medically authorised transport) calls demonstrates the growth in demand has been at the high acuity (ie code 1 and 2) end of the spectrum.

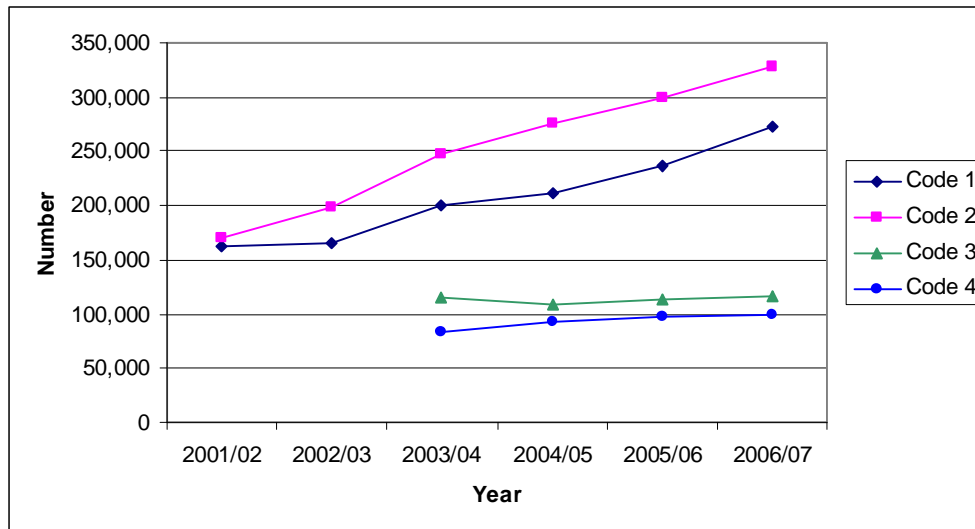
Figure 1.4 shows responses by code from 2001-02 to 2006-07. The chart is incomplete for 2001-02 and 2003-04 as response data for 2001-02 and 2002-03 was not disaggregated between codes 3 and 4.

Figure 1.4 indicates stable movement in code 3 and 4 responses from the QAS over the six years to 2006-07 but compounding average annual increases in code 1 and 2 responses of 12.5% per annum. In actual terms, growth in code 1 and 2 responses has been as follows:

- 9.7% (32,366) in 2002-03;
- 22.8% (83,036) in 2003-04³;
- 8.6% (38,651) in 2004-05;
- 10.2% (49,697) in 2005-06; and
- 11.9% (63,903) in 2006-07.

³ 13.7% is the growth figure using AIMS data for 2002/03 and 2003/04.

Figure 1.4: QAS Responses by Code – 2001-02 to 2006-07⁴

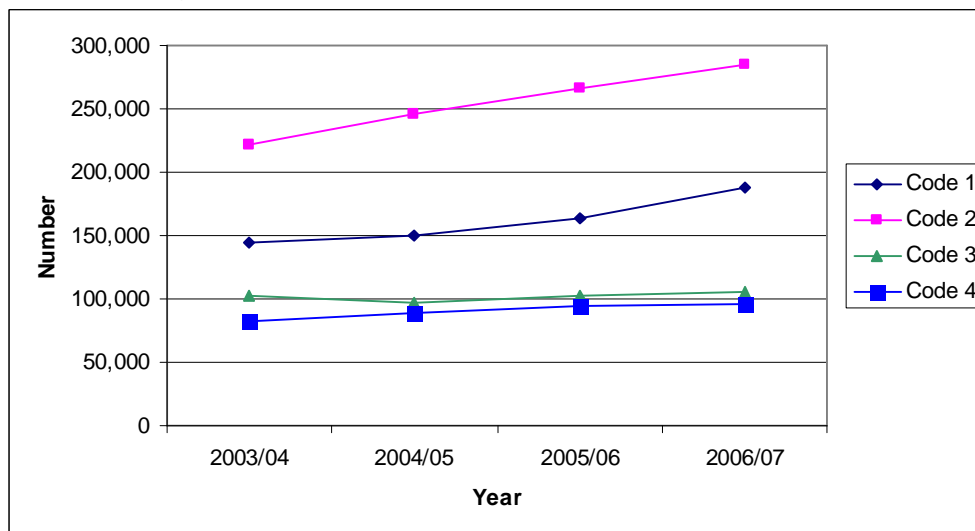


Source: QAS Internal Data

Note that the increase in Code 1 and 2 responses in the financial year following the introduction of the Community Ambulance Cover (2003-04) was significant, and has been followed up with large increases in each subsequent year.

Figure 1.5 shows incidents by code from 2003-04 to 2006-07. Incident data by code for 2001-02 and 2002-03 is not available.

Figure 1.5: QAS Incidents by Code – 2001-02 to 2006-07



Source: QAS Internal Data

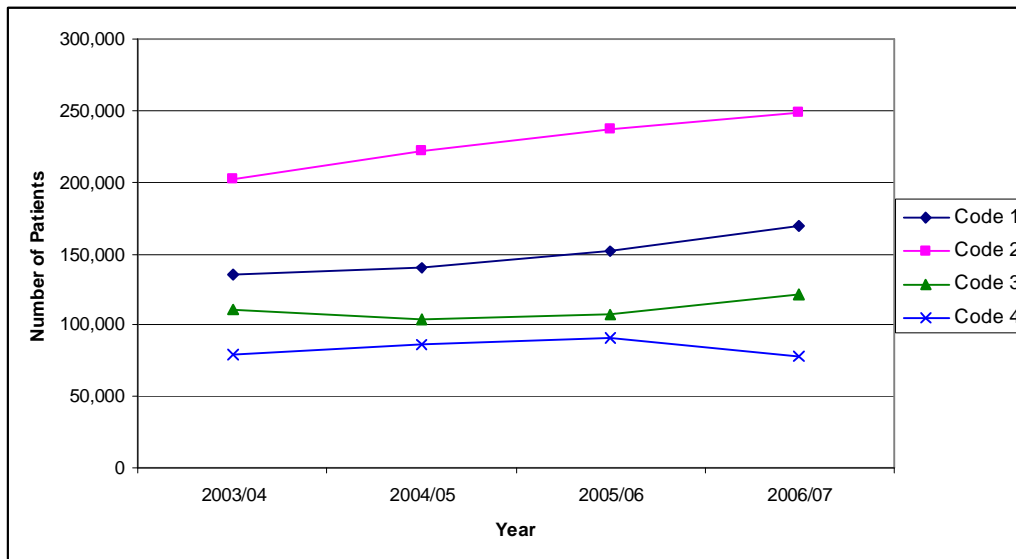
Since the introduction of Community Ambulance Cover (CAC) in July 2003, growth in code 1 and 2 incidents has been as follows:

- 8.3% (30,316) in 2004-05;
- 8.6% (33,977) in 2005-06; and
- 9.9% (42,528) in 2006-07.

⁴ Data for 2001/02 and 2002/03 from AIMS; data from QACIR.

Figure 1.6 shows the number of patients by code from 2003-04 to 2006-07.

Figure 1.6: Number of Patients 2003-04 to 2006-07



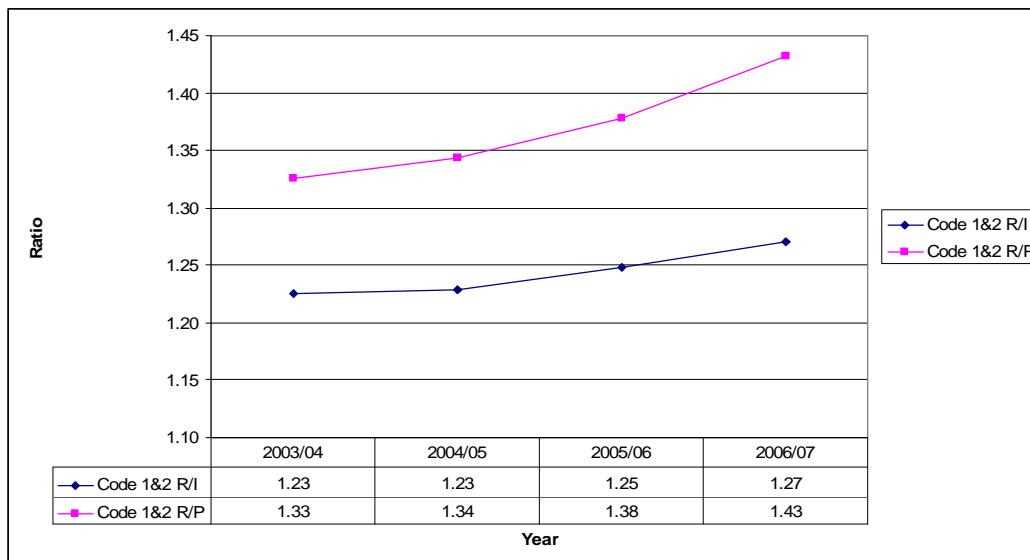
Source: QAS Internal Data

Since the introduction of Community Ambulance Cover (CAC) in July 2003, growth in code 1 and 2 patients has been as follows:

- 7.19% (24,273) in 2004-05;
- 7.39% (26,758) in 2005-06; and
- 7.75% (30,126) in 2006-07.

The larger percentage increases in responses compared to incidents and patients is mirrored in the increase in the R/I and R/P ratio over the four years to 2006-07 for code 1 and 2 responses demonstrated in Figure 1.7.

Figure 1.7: Comparison of Response to Incident and Response to Patient Ratios for Code 1&2 Responses – 2003-04 to 2006-07



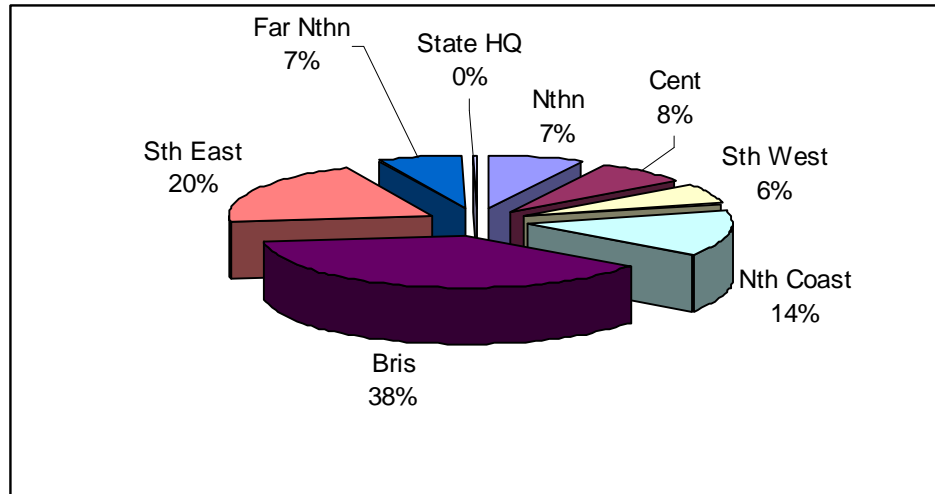
Source: QAS Internal Data

The code 1 and 2 Response to Incident (R/I) ratio has increased from 1.23 in 2003-04 to 1.27 (change of 0.04) in 2006-07 while in comparison, the Code 1 and 2 Response to Patient (R/P) ratio has increased from 1.33 to 1.43 (change of 0.10). This suggests that on a patient by patient basis (those treated and transported, or treated and not transported) the QAS may be becoming more resource intensive.

Responses and Incidents by Code Across Regions

Figure 1.8 below shows the proportion of responses across each region in 2006-07.

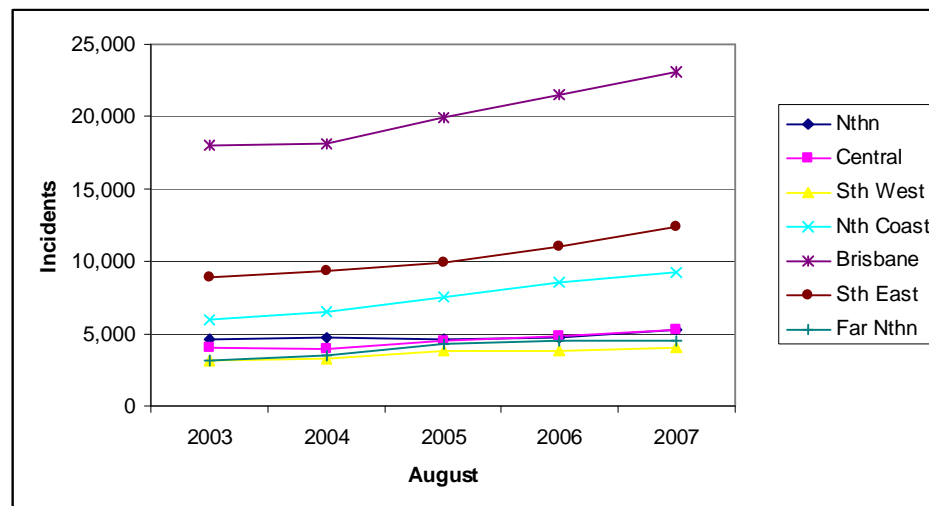
Figure 1.8: Responses by Region: 2006-07



Source: QAS Internal Data

Figure 1.9 shows that Brisbane, South East and North Coast regions have the highest levels of incidents across various regions in August of each year from 2003 to 2007.⁵

Figure 1.9: QAS Incidents by Region (All Codes)



Source: QAS Internal Data

The average R/I ratio for each of the regions and for the state, based on August monthly data for 2003 to 2007, is tabled below.

⁵ The data series includes incidents and responses in August of each year from 2003 to 2007, meaning change from August to August is the most useful application of the data as absolute numbers relate to one month only.

Table 1.3: Average R/I Ratios Across Regions and for the State

Region	Average R/I Ratio
Northern Region	1.12
Central Region	1.12
South Western Region	1.14
North Coast Region	1.16
Brisbane Region	1.23
South Eastern Region	1.25
Far Northern Region	1.15
STATE	1.17

Source: QAS Internal Data

Table 1.3 clearly shows Brisbane and the South East Queensland regions have significantly higher R/I ratios than other parts of the state. The high R/I ratio suggests there may be a greater supply of ambulance resources, and/or a higher level of service provided, in Brisbane and the South East than in other parts of Queensland.

Shift in Codes 1 and 2 Versus Codes 3 and 4 Over The Last Decade (Statewide)

The sharp increase in demand for code 1 and 2 responses is reflected in a shift in the proportion of code 1 and 2 responses compared to code 3 and 4 non-urgent responses over the decade to 2006-07 shown in Figures 1.10 and 1.11. In 1996-97, Non-urgent Code 3&4 responses accounted for 45% of all responses in Queensland with Code 1 and 2 responses comprising 55% of all transports (Figure 1.10). However, Figure 1.11 demonstrates that a decade later in 2006-07 the Code 1 and 2 responses account for 74% of all responses in Queensland.

Figure 1.10: QAS Responses 1996-97 (Statewide)

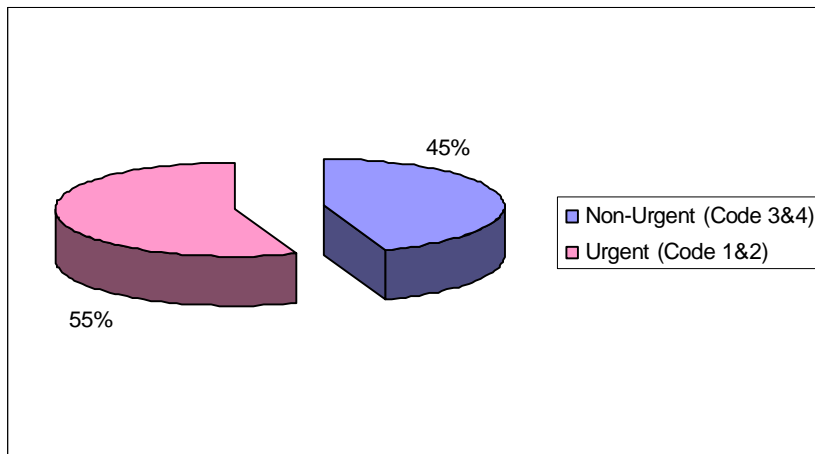
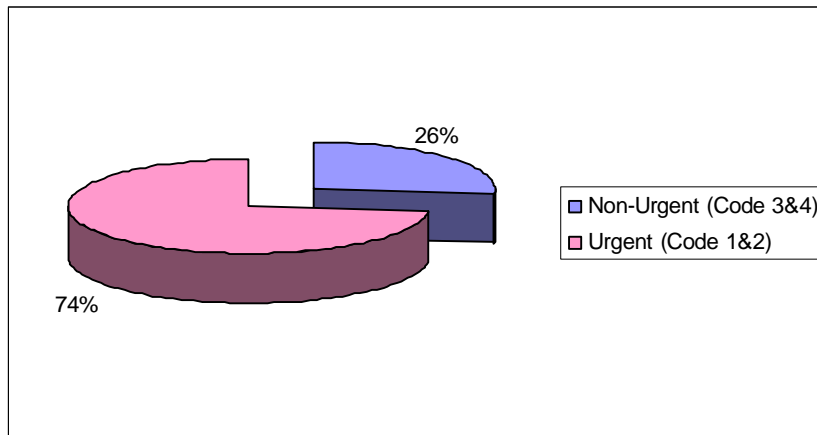


Figure 1.11: QAS Responses 2006-07 (Statewide)



Source: QAS Internal Data

Factors Driving Ambulance Demand

PricewaterhouseCoopers (PwC) were engaged by Queensland Treasury to provide an independent assessment of the factors driving ambulance demand. The following is reproduced from the PwC report provided for the purposes of the Audit.

PwC reviewed a number of studies which sought to identify the factors that drive demand for ambulance services. From these studies a range of possible explanatory factors emerge, including:

- population growth;
- age;
- acuity of illness;
- health of the community;
- distance from hospital;
- need for admission upon arrival at the emergency department;
- availability of alternative health care options;
- price;
- changes in medical practice and patient management;
- accessibility of other forms of transport;
- quality of service and fast response times;
- socio-economic status; and
- community expectations, including awareness of the benefits of early intervention.

Data regarding demographic change is relatively easily available. Assessing the impact of other factors presents a challenge as there is little data available that allows the estimation of the relative impact that each factor may have on demand. However, some effort is required as it has been estimated that demographic change may only account for approximately one fifth of increased demand for ambulance services (Australian Institute for Primary Care, 2007:9).

Population Growth

Queensland has been the fastest growing state or territory for the past five years. In 2006, it had an annual population growth rate of 2.3 %, compared to the national average of 1.5 %. In the period 1986 to 2006, Queensland's population increased by over one million people. In 2006, Queensland accounted for 29.3% of Australia's population growth.

Ageing Population

Demographic change is an important factor in the determination of demand for ambulance services as demand for services increases with age. This is a consequence of the relationship between age and a number of diseases, particularly chronic disease. While people are now living longer than ever before they are doing so with a greater incidence of serious or chronic disease. Older age groups represent the majority of ambulance users, therefore as the number of older people increases so will the demand for ambulance services.

Similar to the broader Australian population, Queensland's population is ageing, although the median age in Queensland is lower than the national median and forecasts indicate that this will continue to be the case. Population growth in Queensland will mostly be the older age groups for the next 20 years. The proportion of Queensland's population growth in the age group 15-44 years has fallen from 51 % between 1971 and 1996 to 27 % between 1997 and 2005. Conversely, the proportion of growth in the age group 45-64 has increased from 22 % to 44 % for the same time periods (Department of Local Government and Planning, 2006:26).

This shift in the age structure of Queensland's population will continue into the future. Large increases in Queensland are projected by the ABS for the 44-64 age group out to 2011. Beyond 2011 the age group of 65 and over is likely to increase in size more than other age groups. When combined with the data on ambulance responses by age it is clear that this ageing population will have a significant impact on the demand for ambulance services going forward.

Health of the community and the incidence of chronic disease

One way of determining the health status of Queensland's population is to look at the burden of disease within the population, that is, the gap between the current health of the population and the ideal, where everyone lives to an old age free of disease and disability.

Chronic disease accounts for 87.6 % of the total burden of disease in Queensland, with the major contributing conditions being coronary heart disease, stroke, heart failure, type 2 diabetes, renal disease, asthma and chronic obstructive pulmonary disease (Queensland Health, 2006:viii).

Total burden of disease is expected to increase by 4 % in the period 2003 to 2023. Type 2 diabetes is projected to become the largest cause of disease burden in Australia over this time period, this is due to substantial increases in obesity prevalence (Queensland Health, 2006:viii).

Pricing

Price was not often considered in previous studies of demand determinants; presumably because ambulance services are typically largely funded by governments and do not necessarily involve a direct cost for the patient. To the extent that a direct charge is payable it would be anticipated that this may have some impact on the level of demand, particularly for less urgent cases.

If individuals are faced with a fee-for-service arrangement they may be more likely to seek alternative transport. The extent to which individuals utilise alternative modes, particularly in less serious cases, could also be influenced by the price of these services compared to the price of the ambulance service.

As discussed previously Queensland implemented the CAC levy to assist in meeting the costs of the QAS. Theoretically, this is likely to have an impact on demand as individuals are aware that they have already paid for the service and are therefore more inclined to use it. In addition, households receive a quarterly reminder that they are paying the levy when they receive their electricity bill, which maintains awareness of the levy. An analysis of attendances at the Royal Brisbane Hospital pre and post-CAC levy shows there was a statistically significant increase in the number of patients travelling by ambulance following the introduction of the CAC levy and a statistically significant increase in the proportion of ambulance users who were classified as non-

urgent when they arrived at hospital. This indicates that while the hospital was dealing with proportionally more urgent cases, ambulance was being used by proportionally less urgent cases. Information about the study can be found at Appendix 2.

Availability of alternative health care and changes in health system practices

Changing health system practices may reduce the incidence of diseases requiring emergency ambulance transport and reduce demand. Alternatively demand may increase as a more integrated health system increases demand for inter-hospital transfers, transport to hospital of the chronically ill living at home and patients discharged early from hospital.

Individuals with chronic illness are increasingly cared for in the community, which has the potential to place greater demand on ambulance services in the management of these conditions. In fact, many of the key trends in Australia's health system impact on the level of reliance on ambulance service provision. Factors at work in the broader health system include:

- Increased hospital throughputs;
- Shorter lengths of stay in hospital;
- Increased rate of day surgery, day and outpatient treatment;
- Developments in diagnostic and treatment technologies that often are associated with identification of increased numbers of ailments plus the centralisation of higher cost services due to cost and efficacy of treatment;
- Increasing specialisation of various components of the health care system at both the institutional and health care professional level;
- De-institutionalisation of individuals with a mental illness and intellectual disabilities; and
- Increased incidence of community care

It is also possible that declining access to non-hospital medical services may have an impact on demand for emergency transport services.

These factors are largely changes in the way that health care services are provided. It is also possible that declining access to non-hospital medical services, such as GPs or community nurses, will lead to an increased use of hospital services which in turn will influence the level of demand for ambulance services.

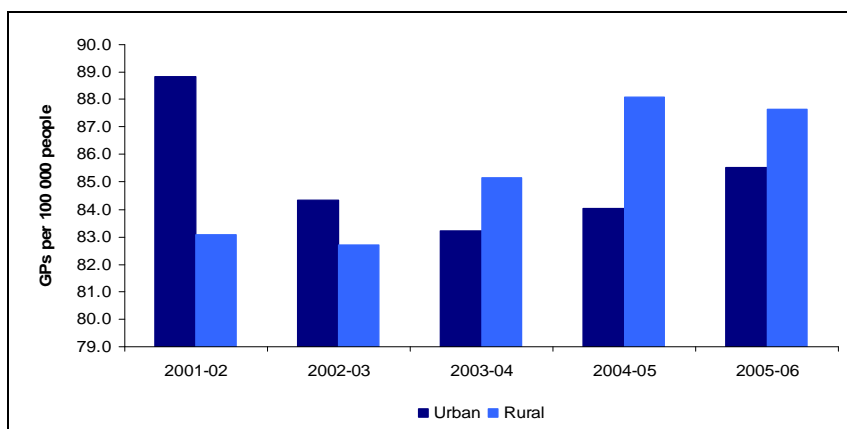
A lack of early or timely medical interventions attributable to reduced accessibility of medical services could lead to otherwise avoidable serious health outcomes. Poor or mismanagement of an emerging chronic or other serious condition is a more likely driver of an increased demand for ambulance services rather than simple substitution of hospital services for GP type services.

Factors that will influence availability of non-hospital services are:

- the extent to which GPs bulk bill patients;
- increasing average out-of-pocket expenses associated with GP services;
- availability of GPs after hours; and
- availability of community nursing, palliative care services, mental health service teams.

Access to GPs in Queensland has increased in rural areas but over the last five years there has been a decline in urban areas. This is demonstrated in Figure 1.12 below.

Figure 1.12: Number of GPs in Queensland per 100,000 people 2000-01 to 2005-06



Source: Productivity Commission

Population dispersion and availability of alternative forms of transport

An increasingly dispersed population and the extent to which individuals live further away from hospitals providing emergency care will affect demand for ambulance services. Furthermore, individuals living in outlying and relatively new suburbs may not have viable alternative modes of transport available to them, particularly for the most urgent cases.

Population growth has tended to be concentrated in south-east Queensland, with the two Local Government Areas (LGAs) in Queensland experiencing the largest increases in population, over the period 2001-2006, being Brisbane and the Gold Coast. However, regional areas of Queensland are also growing, over the same period the LGAs of Cairns and Mackay were in the top 10 LGAs with the largest growth in population (ABS, 2007:Cat No. 3218).

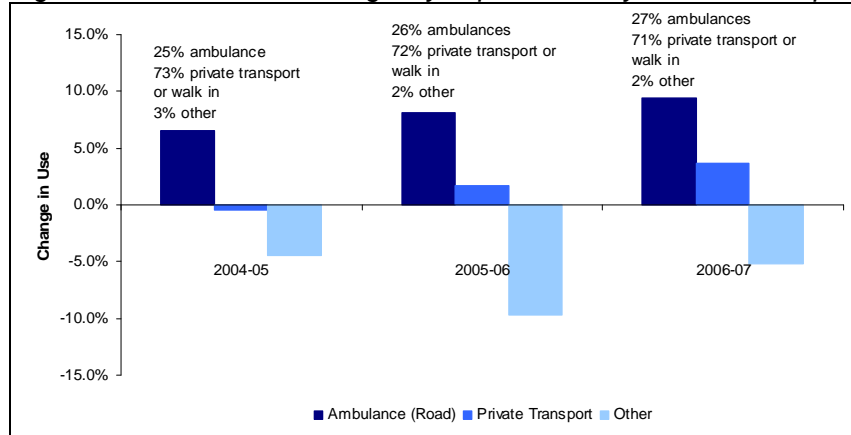
However, it is areas outside the south-east that tend to be growing faster, only one of the top five fastest growing LGAs was in the south-east, indicating that while Queensland's population will remain concentrated in the south-east corner, the population is increasingly dispersed across the state (Department of Local Government and Planning, 2006:6).

The impact of an increasingly dispersed population is likely to be compounded by the extent to which there are few, if any, alternative modes of transport available. While distance may cause individual to increasingly favour ambulance transport, this will be particularly true if the alternative modes of transport are in limited supply or do not exist.

Problems associated with lack of alternative modes of transport is just as likely to affect those living in inner city locations, even though the distance to the nearest emergency hospital is considerably less. If no alternative is available, particularly in circumstances of one person households, these individuals will call an ambulance.

The most common alternative mode of transport for getting to hospital is private car and available data indicates that in recent years there has been growth in the use of private vehicles to transport individuals to emergency departments as well as growth in ambulance usage. This is demonstrated in Figure 1.13. It is likely that private car is used for less urgent cases and it would follow that private car use would be increasing as more ambulances are required for Code 1 and 2 responses.

Figure 1.13: Arrivals at emergency departments by mode of transport



Source: Queensland Health unpublished

Apart from private vehicles there are few other options for transport to hospital, especially for more urgent cases. However, it may be possible that there are factors that are preventing more people from using private transport, such as:

- increased traffic congestion;
- increased transit times;
- proportion of people living alone or in residential care facilities; and
- lack of, and affordability of, parking at hospitals.

Changing public attitudes

Public expectations and perception of the ambulance service also play a role. Individuals are more likely to use an ambulance service if they consider that they will be treated professionally and appropriately by the service.

It is possible that individuals also consider that they will receive priority care upon arrival at the emergency department if they arrive in an ambulance.

Public expectations of what constitutes an emergency situation may have changed over time, and that people now expect to be transported by ambulance in a range of situations where other transport and/or treatment options may previously have been acceptable.

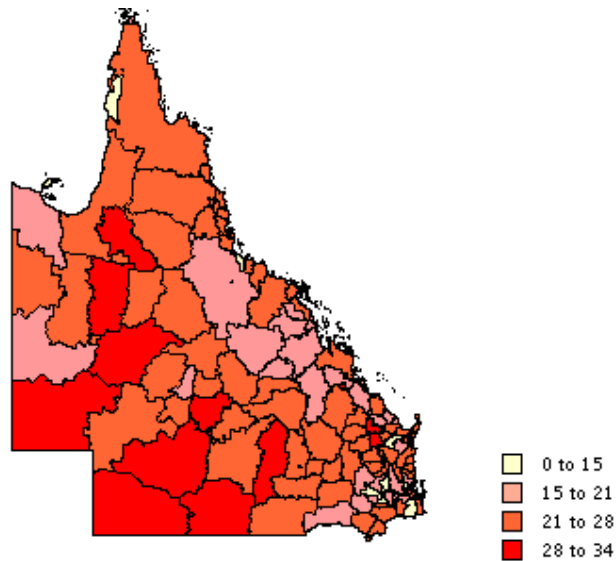
In recent years individuals may also have become less willing to risk either providing transport or taking transport other than an ambulance in situations that are perceived to be serious. As people become increasingly aware of the need to receive proper treatment and also the reluctance of others to expose themselves to risks that could be associated with providing private transport to injured or ill individuals.

Socio-economic factors

Socio-economic circumstances have an impact on many factors that in turn may influence demand for emergency medical care. For example, socio-economic status impacts on health outcomes and is correlated with the likelihood of many disease types, including major chronic diseases.

Socio-economic circumstances may also determine access to a range of goods and services such as private transport, medical treatment prior to conditions deteriorating and risk of injury. In addition, an increasing proportion of the population are now living alone with little or no family support. The proportion of lone person households in Queensland is demonstrated in Figure 1.14. This increased social isolation could result in greater dependence on ambulance services, in substitution of transport that may have been provided by family members of other co-habitants.

Figure 1.14: Proportion of single-person households by Local Government Area 2001



Source: Queensland Office of Economic and Statistical Research

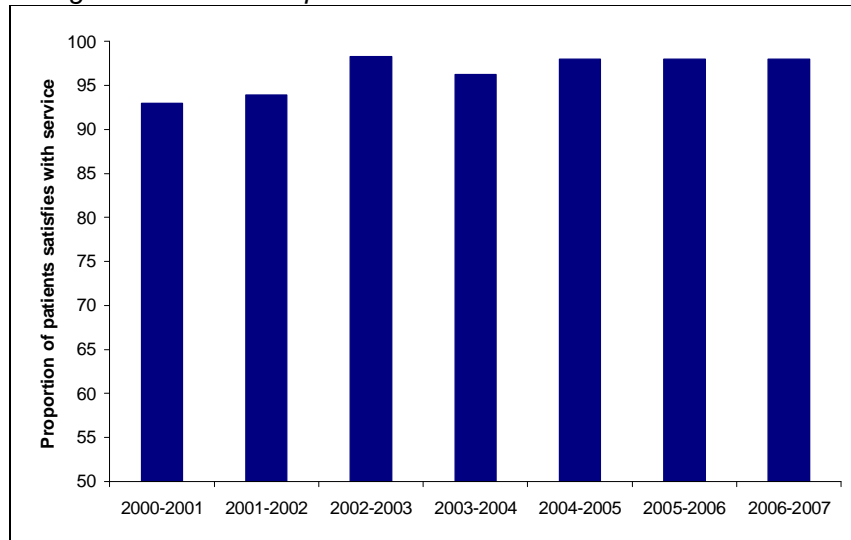
Supply side factors

The experienced growth in demand for ambulance services is demonstrated in the increase in ambulance responses. Thus far we have focused on the demand-side factors that are likely to be contributing to rapid increase in responses in recent years. However, the number of responses will also be somewhat influenced by supply-side factors.

The number of recorded responses will be affected by the service delivery model employed by QAS. That is, how they respond to each incident – the protocol for the dispatch of ambulances and how incidents are categorised prior to ambulance dispatch. As discussed previously, in the Queensland context, the current reporting and dispatching system has a tendency to over count responses with all responses counted including those that for one reason or another never arrive at an incident or transport a patient. Chapter 5 discusses the extensive coverage provided by the QAS across the State under its current service delivery which enables QAS to generate increasing ambulance responses.

Quality of services will also influence the level of demand. To the extent that the QAS is perceived as providing a quality service this will encourage the public to use the services. Annual customer surveys indicate that those who have used the ambulance service are very satisfied with the service provided. This is illustrated in Figure 1.15.

Figure 1.15: Level of patient satisfaction with ambulance service



Source: Ministerial Portfolio Statements, Department of Emergency Services, 2001-02 to 2007-08

Expected Levels of Future Demand

Based on these findings, PwC projected growth in demand for responses modelling the impact of the three most significant variables thrown up by an assessment of the literature including population growth, ageing and the incidence of chronic disease. Their analysis showed that ambulance demand was positively correlated with each of these variables: Model 1 (showing the relationship between demand and population growth); Model 2 (showing the relationship between demand and the chronic burden of diseases) and Model 3 (showing the relationship between demand and ageing). Despite data limitations, the simple regressions indicate that the expected growth rate in ambulance responses would range between 5% and 6% compared with over 8% as exhibited by the historical data. Each of the three models shows that Queensland Ambulance Service responses will reach in excess of 1 million by as early as 2009-10.

Table 1.4: Projection of Ambulance Demand

	Model 1	Model 2	Model 3
2007-08	873,001	885,011	896,299
2008-09	934,441	954,997	970,055
2009-10	997,276	1,029,260	1,019,226
2010-11	1,061,534	1,108,063	1,068,397
2011-12	1,121,368	1,191,683	1,142,153
CAGR (2007-08-2011-12)	5.1%	6.1%	5.0%

Source: PricewaterhouseCoopers

However, PwC note that in the absence of any significant change in pricing policy, the actual future demand levels are likely to exceed these forecasts. PwC also note that these forecasts are strategic in nature. The small number of observations prohibited the conduct of multiple

regressions. There is likely to be a multitude of additional drivers, some un-quantified, which may continue to drive the demand for ambulance services in the future at levels above the projections in this study.

Key Findings

- Demand for Queensland Ambulance Service transports, as measured by reported patients treated and transported, or treated and not transported is considerably lower than the supply side of the equation which is measured according to the response to a particular incident. There is a growing gap between the response to incident ratio and the response to patient ratio, with the latter increasing sharply in the 2006-07 financial year. This suggests that on a patient by patient basis, the Queensland Ambulance Service is becoming more resource intensive. Consequently, the increasing response to incident / response to patient ratios may reflect any combination of the following:
 - Increasing multiple responses to emergency incidents;
 - Increasing redirections of ambulances to higher priority incidents, thereby generating additional responses to lower priority incidents; and/or
 - Increasing number of responses related to hoaxes and cancellations. The number of standby responses, however, appears to be decreasing.
- There are a number of factors impacting on demand including population growth, health status, and the availability of services. Population, ageing and the chronic burden of disease are significant positively correlated factors in explaining ambulance demand. Using projections based on these factors results in demand growth of around 5% to 6% per annum which is significantly less than the growth witnessed over the last few years. This will mean that ambulance responses are likely to exceed 1 million responses per annum as early as 2009-10.
- Brisbane and the South East Regions have the highest response to incident ratio across all Regions, which most likely reflects the availability of resources in these areas of the State.
- The growth trends in Brisbane and the South East similarly reflect a significant level of growth in responses particularly in emergency Codes 1B, 2A and 2C response categories.
- Whereas the North Coast Region also shows strong growth in response data, the response to incident ratio for this Region is below the State average. Thus it appears that growth in this region is more directly related to an increase in the number of incidents.
- In fact, 25% of all responses in the State arguably do not relate to a patient transport or a patient treatment. These responses may however be related to a standby presence at a major event, or to a hoax, a patient leaving the scene or a diversion of an ambulance unit to a higher priority incident. It may also be the case that multiple responders do not record a treatment or transport if their backup is cancelled, or the treatment/transport is handled by another team.
- There may be a level of unmet demand in the Code 4 response category. This is suggested by the sharp increase in 2006-07 in response to patient ratio. This reflects an increasing number of responses for a lower number of Code 4 patients transported and-or treated. It may be that because there are a higher number of units responding to low priority cases being redirected to higher priority cases, Code 4 incidents (non-urgent, non-time critical), being the least urgent transports, are reflecting a similar number of responses to the incidents, but fewer people are actually being transported. Hence there may be a level of unmet demand in the lower priority responses.

The Market for Ambulance Services

There are various ways a consumer of ambulance services can gain access to ambulance transports, hence, the source of demand for ambulance services is recorded by the QAS across various categories. These include:

- Medically Authorised Transports (MATs) and Aerial Medical Authorised Transports (AMATs) – Medically authorised transports initiated from sources other than Queensland Health. These transports are either authorised by private or public medical practitioners;
- Queensland Inter-Facility Transports (QIFTs) – these are Queensland Inter-Facility Transports authorised by Queensland Health for the transport of Queensland Health patients between Queensland Health facilities.
- Queensland Medically Authorised Transports (QMAT) and Queensland Health Discharges (QDIS) – these are medically authorised transports originating from Queensland Health. These may be discharges, or transfers of patients to facilities other than Queensland Health facilities for continuing care.

For the purpose of this Audit, markets for accessing ambulance transport services are defined as:

- The “000” service (consumer driven demand);
- Referral by a private practitioner, such as the general practitioner or private health facility (private sector driven demand);
- Referral by a Queensland Health service for either inter facility transfer (QIFT), or medically authorised transport (QMAT, QDIS) (Queensland Health driven demand); and
- Some transports are not coded to any of these categories, and are coded as either miscellaneous, not coded, or casualty room attendances / CAS transports (Other Demand).

Overall Trends in Demand for Ambulance Services

As noted previously, demand for ambulance transport services continues to increase beyond the levels of population growth in Queensland. This section focuses on analysing the growth in demand over the period 2003-04 to 2006-07. Over that time, total responses managed by the QAS rose from 647,335 in 2003-04 to 824,701 in 2006-07. Overall, demand for ambulance services, as measured by the increase in responses, has risen by 27.4% (177,366 responses) between 2003-04 and 2006-07 (Table 1.5).

Table 1.5: Growth in Total Ambulance Responses 2003-04 to 2006-07

	<i>Total</i>
Sum of FY 2003/04	647,335
Sum of FY 2004/05	691,417
Sum of FY 2005/06	756,725
Sum of FY 2006/07	824,701
Growth 03/04 to 06/07	177,366
Growth 03/04 to 06/07 (%)	27.4%

Source: QAS Internal Data

Overwhelmingly, consumer driven demand generated through the “000” facility has contributed most significantly to the increase of responses over the period 2003-04 – 2006-07, with a growth in this sector of 32% (119,509 responses) and over the period 2004-05 to 2006-07 a growth of 23% (91,481 responses). This is in comparison to an increase from 2004-05 to 2006-07 of 13% (18,617 responses) related to Queensland Health demand, and 9% (10,162 responses) related to

private practitioner demand (Table 1.6). Demand related to the “Other” category has also increased significantly by 51% or 13,024 responses⁶.

Table 1.6: Growth in Total Ambulance Responses by Demand Market 2003-04 to 2006-07

	<i>Total Consumer Driven Demand ('000' Calls)</i>	<i>Total Queensland Health Demand</i>	<i>Total Private Health Sector Demand</i>	<i>Total Other Demand</i>
2003/04	375070			17926
2004/05	403098	145263	117713	25342
2005/06	441394	156555	123591	35185
2006/07	494579	163881	127875	38366
Growth 03/04 to 06/07	119509			20440
Growth 03/04 to 06/07 (%)	32%			114%
Growth 04/05 to 06/07	91481	18618	10162	13024
Growth 04/05 to 06/07 (%)	23%	13%	9%	51%

Source: QAS Internal Data

Prioritising Incidents and Responses

All ambulance incidents initiate an ambulance service response across priority categories 1-4 and sub-priority categories A – C as follows:

- a) Category 1 – Emergency Transports (time critical levels A,B,C)
- b) Category 2 – Urgent Transports (time critical levels A,B,C)
- c) Category 3 – Non-Urgent Transports (Time Critical)
- d) Category 4 – Non-Urgent Transports (Non-time Critical)

The source of demand for ambulance services is divided into four categories. Each category has a sub-code that identifies the urgency of the case and the appropriate level of clinical response. Response codes are allocated for medical emergencies using the Medical Priority Dispatch System (MPDS). Response codes combined with the Computer Aided Dispatch (CAD) system are used to determine the way QAS responds to various categories of emergencies. The most serious and life threatening conditions always have priority over less serious conditions or injuries. The questioning in the MPDS system determines the nature and urgency of the incident and results in the allocation of a response code.

Table 1.7: QAS Response Codes

Response Code	Criteria
1A	Probable cardiac/respiratory arrest (definitely unconscious, undetermined breathing status)
1B	Unknown condition, definitely breathing, unknown conscious state or altered conscious state
1C	Life threatening condition, definitely conscious and breathing i.e. walking or talking
2A	Patient’s condition requires immediate response – no lights and siren, Ambulance to patient with no delays
2B	Patient’s condition requires Ambulance on scene within 30 minutes of receipt of call.
2C	Patient’s condition requires Ambulance on scene within 60 minutes of call, Contact patient and reassess if response time >60 minutes

⁶ Note, the analysis of demand markets will be undertaken over the period 2004/05 to 2006/07 as a change in reporting categories in 2004/05 means that prior to this year Queensland Health demand and Private Health Sector Demand cannot be identified on the same basis. This is due to the separate identification of QMATs from MATs from 2004/05 onwards.

3A	Time critical non-emergency response, Paramedic required – e.g. All transports to Hospitals and Medical Facilities with a defined appointment time requested at time of booking. Code 3 status also refers to Hospital discharges or transports involving aerial leg departures
3B	Time critical non-emergency response, Patient Transport Officer required –e.g. All transports to Hospitals and Medical Facilities with a defined appointment time requested at time of booking. Code 3 status also refers to Hospital discharges or transports involving aerial leg departures.
4A	Routine transport – not time critical – Paramedic required – e.g. All post treatment transports, negotiated Hospital discharges (excluding aerial) etc.
4B	Routine Transport – not time critical – Patient Transport Officer required - e.g. All post treatment transports, negotiated Hospital discharges (excluding aerial) etc.

With Code 3 and 4 cases "A" indicates the patient may require attendance by a paramedic for assessment or treatment enroute. "B" - Treatment/assessment not required and can be transported by a Patient Transport Officer (PTO). Many Code 3 and 4 "B" cases will be done by paramedics depending on the availability of PTOs. Table 1.8 below demonstrates the volume of responses by Priority and Sub-Priority in the 2006-07 year.

Table 1.8: Total Responses by Priority and Sub-Priority 2006-07⁷

Priority	Sub Priority	Total All Determinants 2006/07	As % of All Determinants 2006/07
1	A	10294	1.25%
	B	120865	14.66%
	C	141358	17.14%
1 Total		272517	33.04%
2	A	176611	21.42%
	B	68936	8.36%
	C	81847	9.92%
2 Total		327394	39.70%
3	A	35545	4.31%
	B	80550	9.77%
	C	10	0.00%
3 Total		116105	14.08%
4	A	12149	1.47%
	B	86739	10.52%
	C	0	0.00%
4 Total		98888	11.99%
CAS	A	9650	1.17%
	B	122	0.01%
	C	25	0.00%
CAS Total		9797	1.19%
Grand Total		824701	100.00%

Source: QAS Internal Data

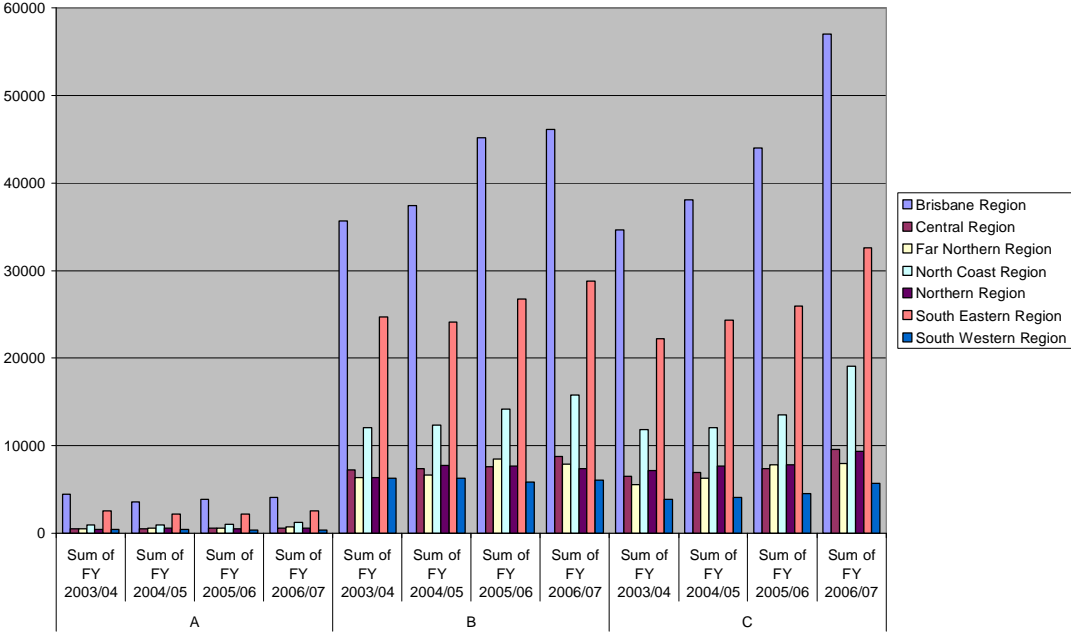
Demand for Category 1 and 2 transports

The following chart (Figure 1.16) shows the pattern of demand across categories 1A, 1B and 1C for all MPDS categories including activity in response to "000" calls, the private health sector, Queensland Health and other demand. The chart demonstrates that there has been strong growth, particularly in 1B and 1C responses from the 2003-04 financial year to the 2006-07 financial year. The regions primarily contributing to the growth in category 1 responses over this period are the Brisbane, South East and North Coast Regions. Note there is relatively little

⁷ Note that this table excludes activity under the State Headquarters Region. This includes the Special Operations Response Team (SORT) established within the QAS. State Headquarters data is included in the Market Analysis Section later in this report.

growth in the category 1A responses over the same period, and the significant spike in demand for 1C responses across the three high growth Regions in the 2006-07 financial year.

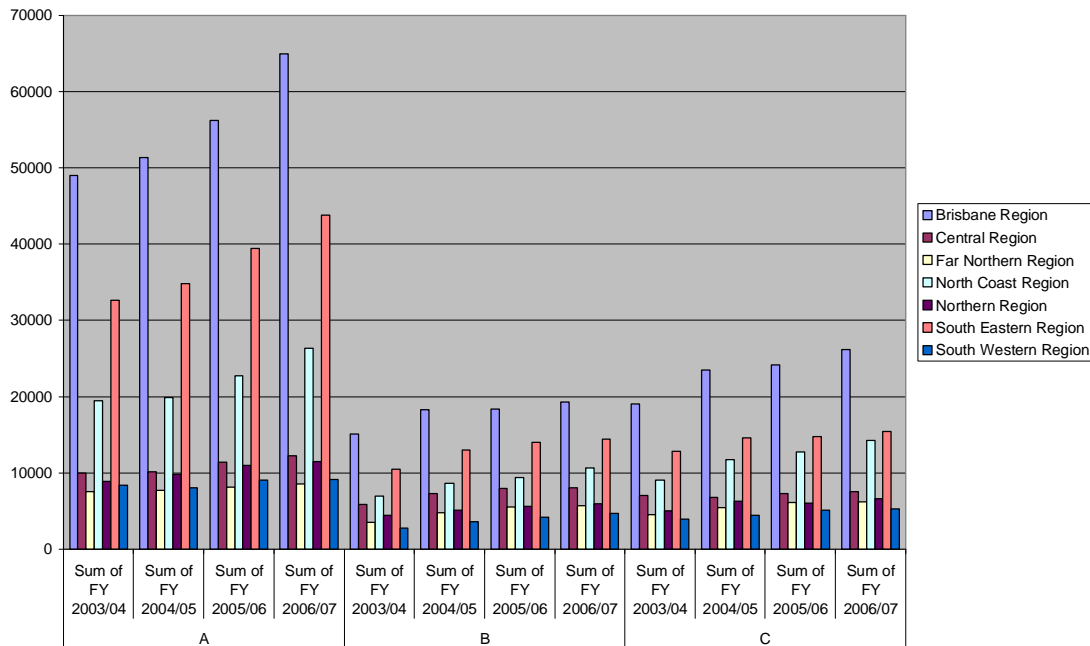
Figure 1.16: Category 1A, 1B and 1C responses for all categories of demand over the period 2003-04 to 2004-05 by Region.



Source: QAS Internal Data

Figure 1.17 demonstrates the increased growth over the four year period in category 2A, 2B and 2C responses for all demand categories. While there has been strong growth in demand across all Category 2 response codes, the most significant level of growth has been in response code 2A particularly in the 2006-07 year. Note again the strong growth in all categories across all Regions, but particularly in the Brisbane, South Eastern and North Coast Regions.

Figure 1.17: Category 2A, 2B and 2C responses for all categories of demand over the period 2003-04 to 2004-05 by Region.



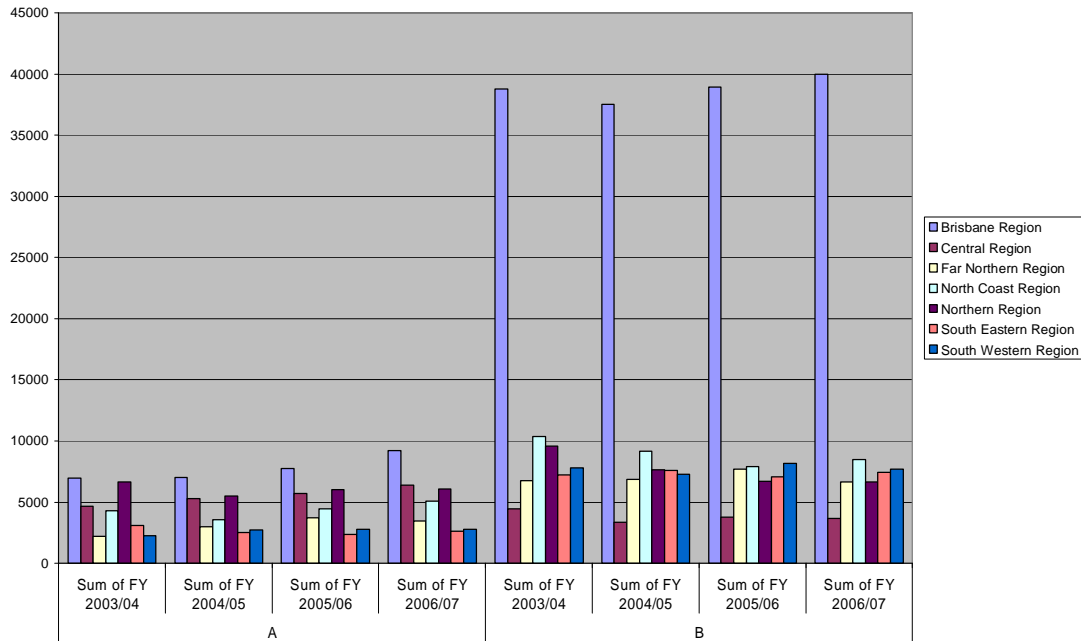
Source: QAS Internal Data

Demand for Category 3 and 4 transports

The following chart (Figure 1.18) shows the pattern of demand across non-emergency categories 3A and 3B for all demand categories including demand contributed by calls to the “000” facility, the private health sector, Queensland Health and other demand. The chart demonstrates there has been some growth in 3A responses from the 2003-04 financial year to the 2006-07 financial year. 3A responses are time critical transports (eg. Appointments) requiring a paramedic escort. In contrast, there has been a softening of demand for 3B transports (time critical requiring a patient transport officer) over the 4 year period.

The regions primarily contributing to the growth in category 3A responses over this period are the Brisbane, Central and North Coast Regions. While there has been an overall softening of demand for Patient Transport services, the Brisbane Region has been experiencing some growth in demand for these services. This growth has been offset by reduced demand in regional areas such that the overall picture for the State shows a no-growth scenario. Importantly, the resource implications of growth in the Brisbane region cannot be similarly offset.

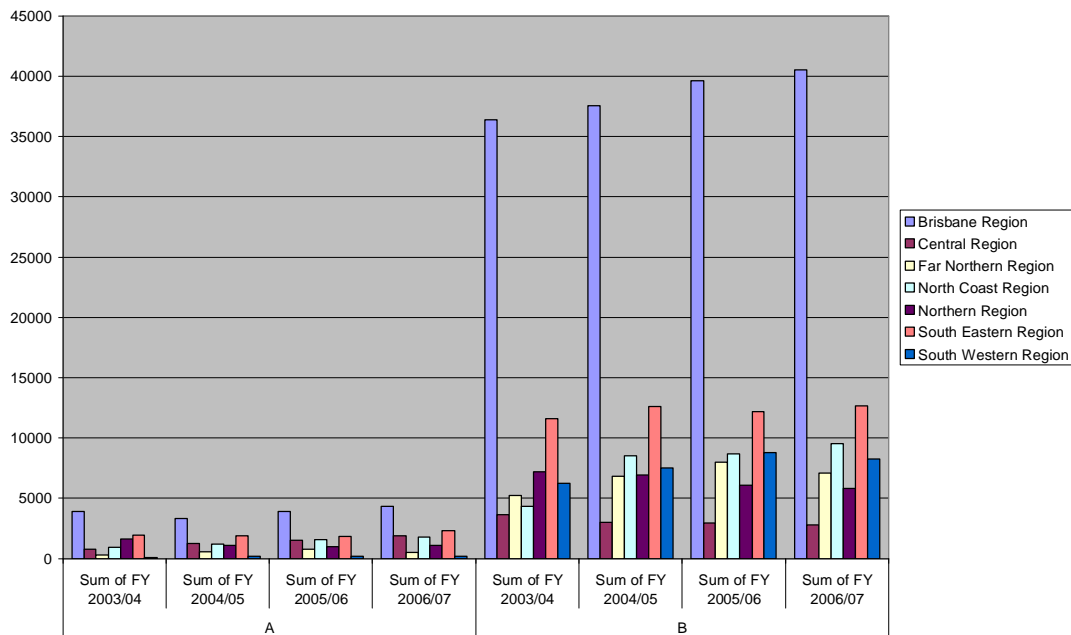
Figure 1.18: Category 3A and 3B responses for all categories of demand over the period 2003-04 to 2004-05 by Region.



Source: QAS Internal Data

In contrast to category 3 responses, category 4A and 4B responses (non time-critical transports) have been growing over the four year period from 2003-04 to 2006-07. The most significant growth in the 4B (non-paramedic, non-time critical) category has been in the North Coast Region, particularly between the 2003-04 and 2004-05 financial years (Figure 1.19).

Figure 1.19: Category 4A and 4B responses for all categories of demand over the period 2003-04 to 2004-05 by Region.



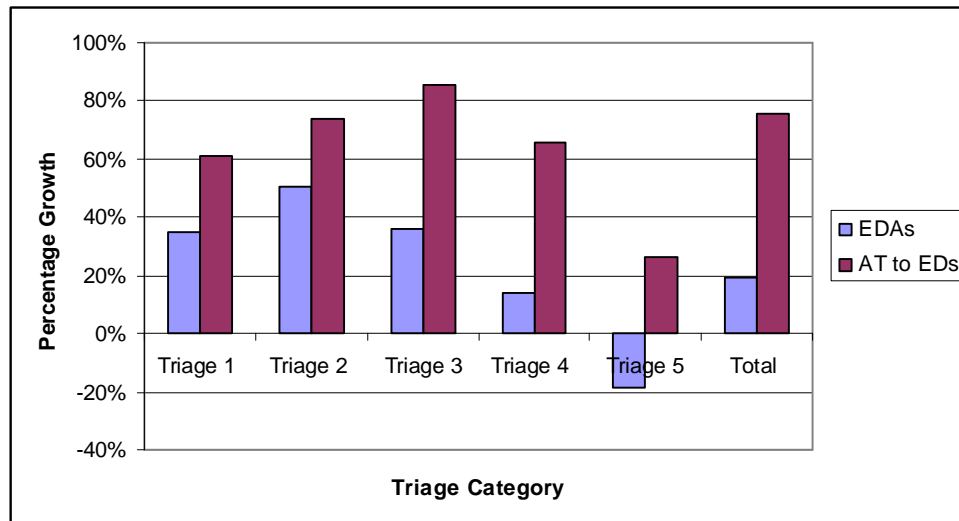
Source: QAS Internal Data

Emergency Department Presentations and Ambulance Transports to Emergency Departments

Patients presenting to emergency departments are assessed using the Australian Triage Scale. The scale ranges from triage category one, for patients requiring immediate resuscitation, to triage category five for those who would be considered appropriate for an urgent GP consultation. Patients in triage categories one to four require emergency medical care at a hospital.

Figure 1.20 below shows the growth in emergency department attendances and ambulance transports to emergency departments over the six years to 2006-07.

Figure 1.20: Emergency Department Presentations and Ambulance Transports to Emergency Departments: 2001-02 to 2006-07



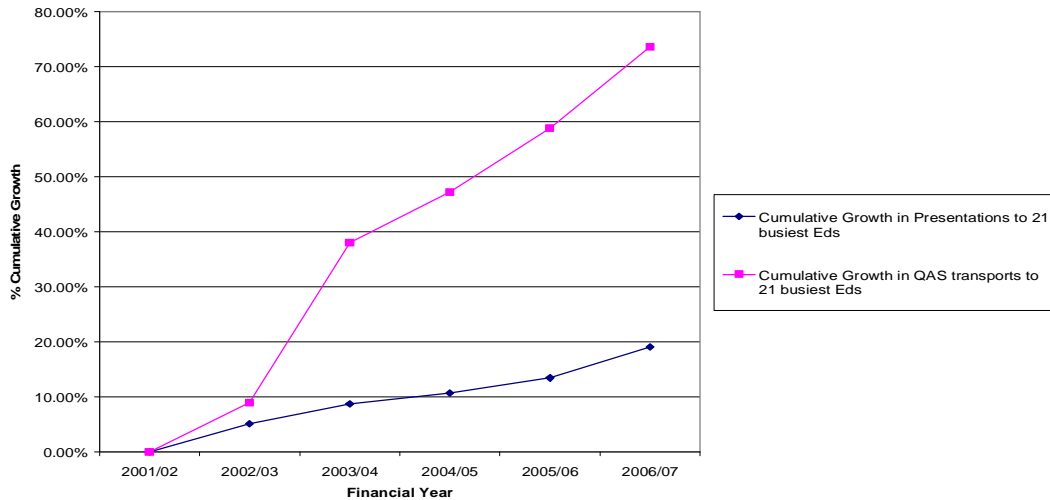
Source: Internal Queensland Health Data

The increase in numbers in the higher acuity triage categories (one to three) is significant to the QAS as the service transports almost 70% of patients in these categories. However, the growth in ambulance transports for lower acuity patients, and overall, is significant when compared to growth in emergency department attendances. Figure 1.20 shows that in all triage categories growth in the number of people being transported to Emergency Departments by ambulance outstrips the corresponding growth in Emergency Department attendances. In triage category 5, growth in attendances has decreased, and yet the number of people being transported to the Emergency Department in this category has increased. This demonstrates clearly that people are choosing to access ambulance transports more often in 2006-07, as an alternative to other modes of transport including private car, public transport or taxis.

Cumulative Growth in QAS Transports Compared to Queensland Health Presentations

Figure 1.21 shows the cumulative growth in QAS transports to the 21 busiest emergency departments from 2001-02 to 2006-07 has far exceeded the cumulative growth in presentations to the same emergency departments. There is a significant spike between the 2002-03 and 2003-04 financial years. This was the period of the introduction of the Community Ambulance Cover (CAC). While it is noted that there was a change in QAS reporting systems at the same time as introduction of the CAC, data on transport rates to hospital by ambulance is collected by Queensland Health utilising an entirely different data set. The spike in arrivals at EDs by ambulance in 2003-04 is consistent with the spike in response growth that is evident in the QAS data. Therefore, it appears conclusive that the introduction of the Community Ambulance Cover at the beginning of the 2003-04 financial year has had a significant impact on demand for ambulance services.

Figure 1.21: Cumulative Growth in QAS Transports compared to Queensland Health Presentations: 2001-02 to 2005-06



Source: Internal QAS and Queensland Health data

Transport to Hospital

Over the six years to 2005-06 around 70% of total ambulance responses resulted in a patient being transported. The percentage varied only between 69.7% (2005-06) and 72.1% (2002-03). When the number of responses excludes cancellations, hoaxes, inter-facility transfers (IFTs), casualty room cases, standby responses and where part of the response was back-up, the percentage of patients transported was approximately 85% and also remained relatively constant over the six years.

Demand for Health Services

Demand for ambulance services should be closely linked with demand for emergency health services in the State's public hospital system. Clearly there is a link between the two, however, in the case of Queensland, there is not a strong link between the growth rates in ambulance demand as compared to emergency department demand. Table 1.9 below shows growth rates across various health related measures common to the QAS and Queensland Health (QH). These growth rates demonstrate that there appears to be a very loose link between the growth rates experienced in demand for ambulance transport services and demand for emergency department services across the 21 busiest EDs.

Table 1.9: Comparative Demand Growth Rates of QAS and Queensland Health: 2001-02 to 2005-06

Measure	QAS Growth Rate	QH Growth Rate
Growth in Emergency Department Presentations (21 busiest Public Hospital Emergency Departments) by Ambulance for QAS and Total for QH.	57.5%	13.4%
Presentation Rates by Ambulance at #21 busiest Public Hospital Emergency Departments for Triage Cat 1 (total for QH).	32.9%	13.3%
Presentation Rates by Ambulance at #21 busiest Public Hospital Emergency Departments for Triage Cat 2 (total for QH).	52.7%	34.1%
Presentation Rates by Ambulance at #21 busiest Public Hospital Emergency Departments for Triage Cat 3 (total for QH).	67.7%	25.9%
Presentation Rates by Ambulance at #21 busiest Public Hospital Emergency Departments for Triage Cat 4 (total for QH).	52.9%	10.0%
Presentation Rates by Ambulance at #21 busiest Public Hospital Emergency Departments for Triage Cat 5 (total for QH).	19.2%	-13.4%
Presentation Rates by Ambulance at #21 busiest Public Hospital Emergency Departments for Triage 1, 2 and 3 .	62.6%	27.0%

Source: Internal QAS and Queensland Health data

Table 1.9 shows that, across all triage categories, the number of patients transported to public hospital emergency departments by ambulances increased by 57.5% (approximately 80,000 in absolute terms) from 2001-02 to 2005-06, significantly higher than the 13.4% (approximately 100,000 in absolute terms) in emergency department presentations over the same period.

Key Findings

- Consumer driven growth through direct access to “000” is the most significant contributor to the growth in emergency ambulance responses.
- Code 2 cases overall have grown more than Code 1 cases. Within Code 1 cases, there has been strong growth in Code 1B and 1C categories while in Code 2 cases there has been strong growth in both 2A and 2B responses.
- There has been disproportionate growth in QAS ambulance transports compared to QH emergency department presentations demonstrating a higher propensity of Queenslanders to use ambulance services for transport to public hospital emergency departments in the post-CAC period as compared to the pre-CAC period.

PROFILE OF DEMAND FOR AMBULANCE SERVICES

As part of the Audit of ambulance services in Queensland, the Audit Team is examining in more detail the nature of ambulance cases in order to determine the user profile, in addition to the types of cases in which the ambulance service is experiencing growth.

Funding Profile of QAS Patients

The *Report on Government Services 2007* reported there were a total of 600,680 patients⁸ (ie, transported and treated, not transported) in 2005-06.⁹ Of these patients receiving either transport or treatment (or both) from the QAS nearly 82% of these patients were Queensland residents/pensioners who fall under the Community Ambulance Cover levy. The other 18% of patients were chargeable patients according to the variety of schemes highlighted in Table 1.10.

Table 1.10: Ambulance Utilisation – 2005-06

Patient Category	Number	Percentage
Queensland Health Inter-facility Transport	56,247	9.4%
Department of Veterans Affairs	28,801	4.8%
Motor Accident Insurance Commission	12,356	2.1%
Interstate / Overseas Visitor	8,698	1.4%
Workers Compensation	3,343	0.6%
Queensland Resident / Pensioner	491,235	81.8%
Total	600,680	100%

Source - Internal QAS data

Queensland residents and pensioners since 2003-04 have been covered for ambulance services by the Community Ambulance Cover which is levied on electricity accounts throughout the State. Pensioners and Seniors Card Holders are exempt from the levy. Prior to 2003-04, the Queensland Ambulance Service ran a subscription scheme and Private Health Insurers covered the portion of the Queensland population that had private health cover for emergency ambulance transport services.

Currently, the State is reimbursed by the Department of Veterans Affairs, the Workers Compensation Board and the Motor Accident Insurance Commission for ambulance services provided to Queenslanders that meet the criteria established within each of their jurisdictions. In addition, Queensland Health reimburses the QAS for all Inter facility transfers of Queensland Health patients under the current QIFT Service Agreement, in recognition of the costs associated with IFTs and their contribution to the efficient and effective management of Queensland's health infrastructure.

Interstate and Overseas visitors are charged for Queensland ambulance services at the gazetted rate of \$888 for an emergency transport and \$330 for a non emergency transport service. For attendances in which treatment, but no transport, is provided, the fee is \$90.50. An additional km rate also applies for transports over longer distances.

Age Profile of QAS Patients

The age profile of QAS patients is captured in the QAS data and is reported in Figures 1.22 and 1.23.

From 2000-01 to 2006-07, patients over the age of 75 have accounted for, on average, 26.1% of code 1 and 2 transports to hospital. The next largest age group is 0-17 year olds, averaging 12.4%. Figure 1.22 demonstrates, however, that there has been consistent growth in the six years from 200-01 to 2006-07 in the utilisation of ambulance services by all age groups.

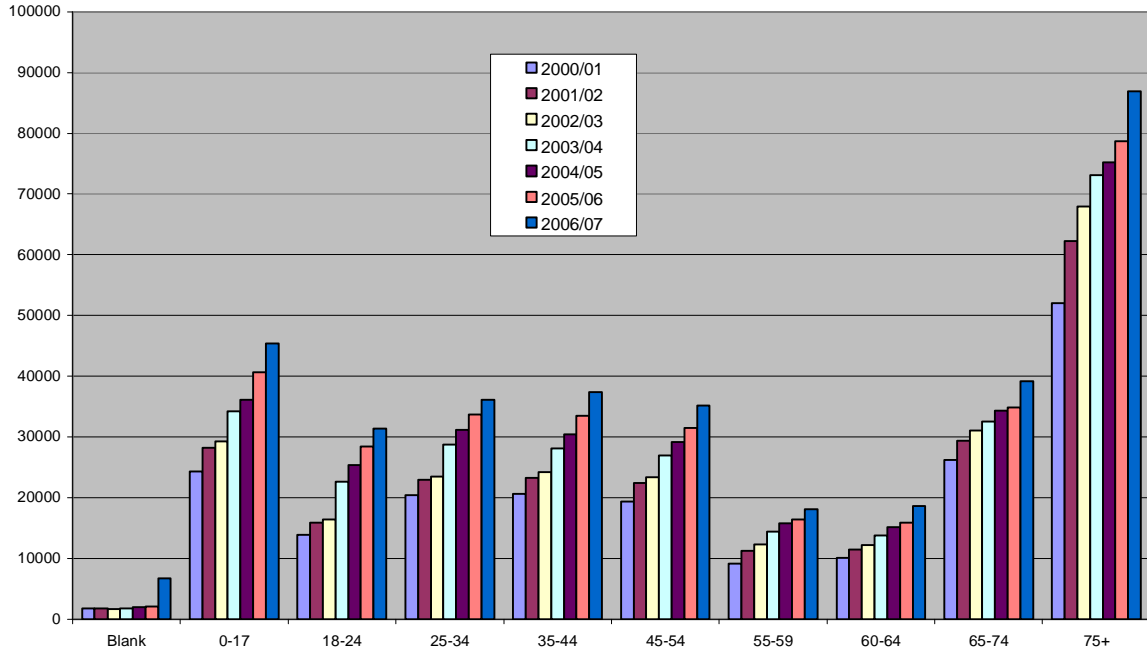
⁸ QAS data supplied on 2 November 2007 showed 594,236 patients for FY2006.

⁹ Steering Committee for the Review of Government Service Provision (SCRGSP). 2007. *Report on Government Services*. Commonwealth of Australia.

Figure 1.22: QAS Patients Transported to Hospital by Response Codes 1&2 by Age over the period FY 2000-01 to FY 2006-07

QAS Patients Transported to Hospital by Response Codes 1 & 2 by Age over the period FY 2000/01 to FY 2006/07

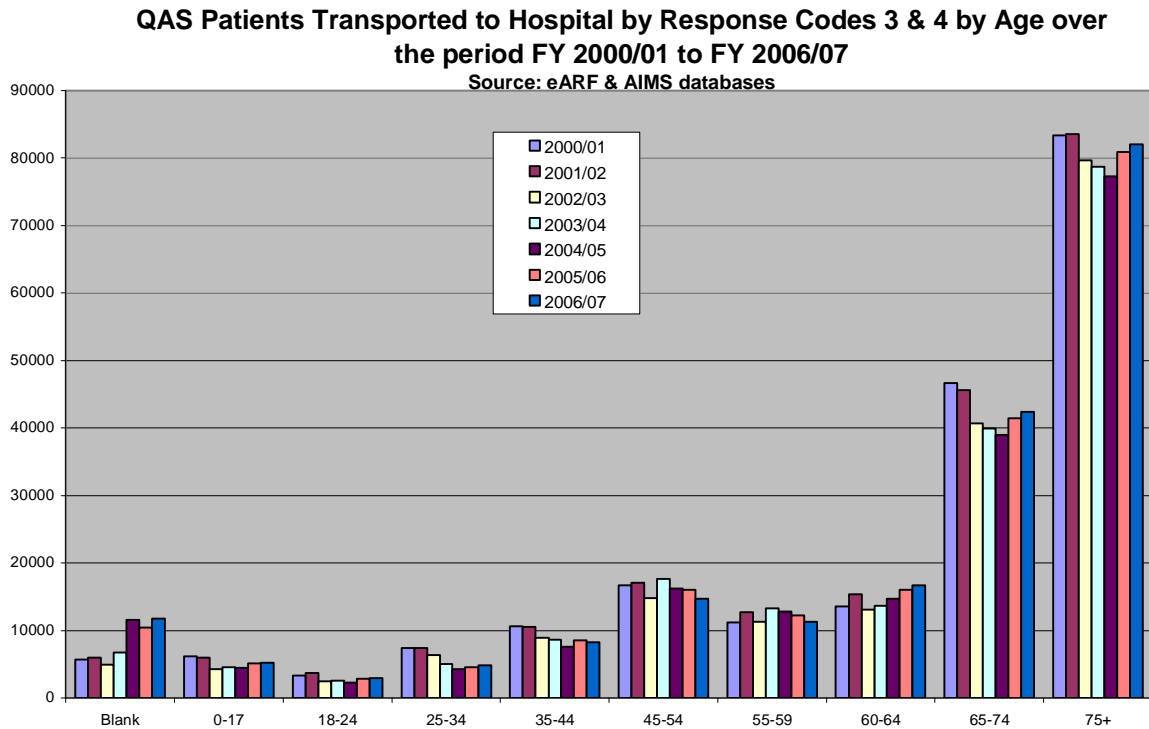
Source: eARF & AIMS databases



Source - Internal QAS data

There was a significant spike in utilisation of ambulance services in the 2003-04 financial year across the younger age groups (less than 60s), ranging from 38.09% growth in the 18-24 age group to 15.35% growth over the 2002-03 financial year in the 45-54 age group. Again, the 2003-04 financial year was the year in which the Community Ambulance Cover was introduced.

Figure 1.23: QAS Patients Transported to Hospital by Response Codes 3&4 by Age over the period FY 2000-01 to FY 2006-07



Source - Internal QAS data

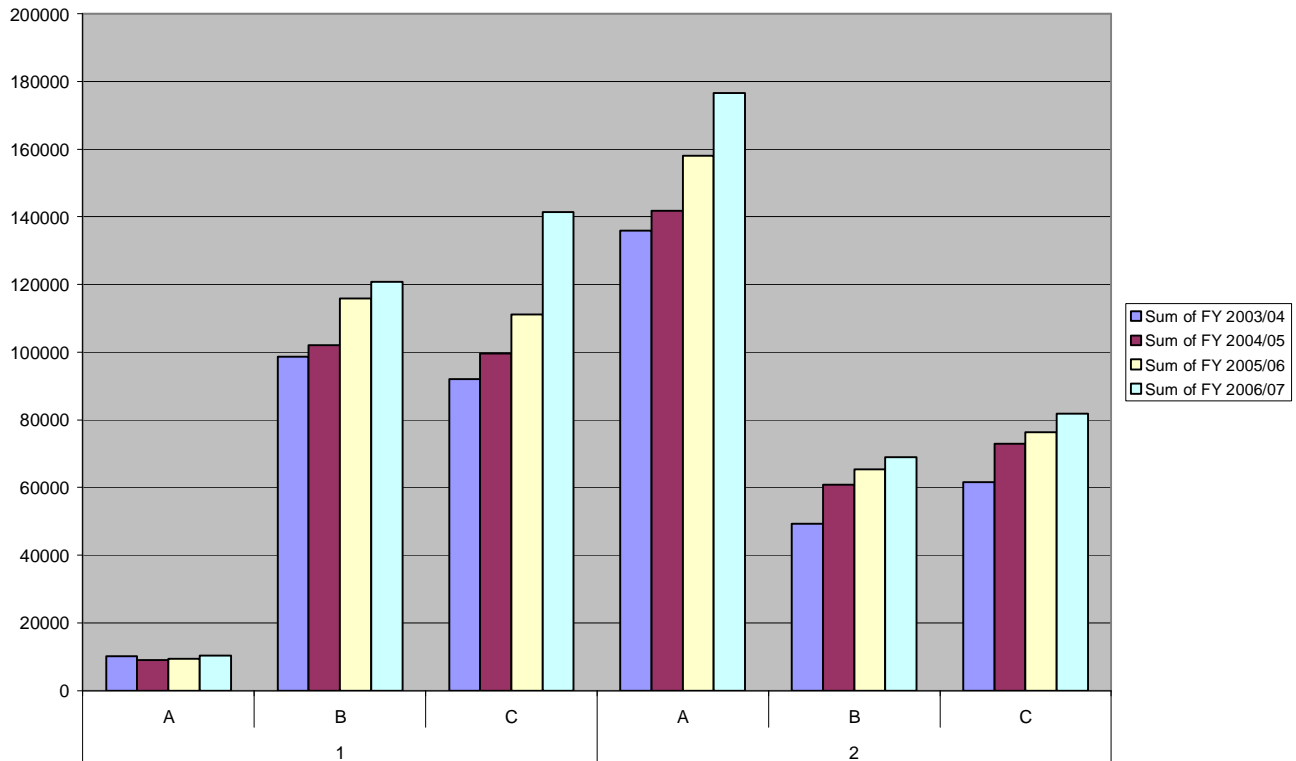
The age profile of category 3 and 4 responses is significantly different from the profile associated with category 1 and 2 responses. There is a greater dependency on category 3 and 4 transports in the age groups over 60 years of age. While the utilisation of many age groups has declined since the 2001-02 financial year, Category 3 and 4 responses have been increasing over the past 3 years again for all age groups over 60, and, notably also for the 0-17, 18-24 and 25-34 age groups. As category 3 and 4 transports represent largely the hospital/health sector utilisation of QAS services for appointments and other non-emergency transfers around the health system (including discharges), this increase in activity in recent years points towards a greater dependency of the health system to transport individuals between facilities for diagnostic and other health services. The volumes in the older age groups reflect both the dependency of the health system, and the frailty of the older person combined with a lack of transport options.

Dissection of Code 1 and 2 into Acuity Categories

The Medical Priority Dispatch System (MPDS) is used in more than 2500 locations worldwide, including the QAS, to aid emergency medical dispatching.¹⁰ The MPDS has enabled the QAS to develop six priority responses to life threatening and urgent cases (1A, 1B, 1C, 2A, 2B, 2C), allowing competing calls to be prioritised while maintaining safe coverage within available resources.

Figure 1.24 shows the breakdown of MPDS determinants over each of the life threatening and urgent response codes from 2003-04 to 2006-07.

Figure 1.24: MPDS Determinants by Acuity Code



Source: QAS Internal Data

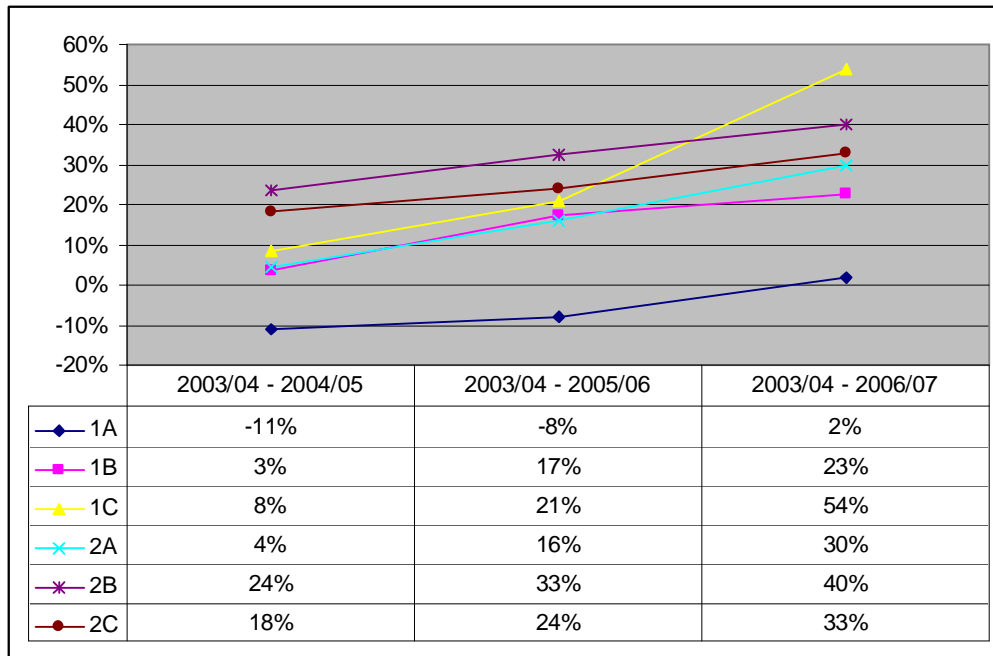
From 2003-04 to 2006-07 codes 1B, 1C and 2A grew strongly in absolute terms but, as a share of total MPDS Determinants, declined from 73.0% to 71.8% due to higher growth in codes 2B and 2C.

Figure 1.25 illustrates the compounded growth of each category from 2003-04 to 2006-07.

Growth in 1Cs has outstripped the growth in all other Priority categories with a significant spike in activity categorised as 1C in the 2006-07 financial year.

¹⁰ The MPDS directs the call taker to perform an initial assessment through "Case Entry" questions which determine, within 20-30 seconds, whether or not a life threatening condition exists and where the response is needed. The MPDS has 32 response categories with over 500 potential response permutations. The determination of which of the six priority response codes and associated resourcing level is based on clinical need and overseen and authorised by the QAS Medical Director.

Figure 1.25: Cumulative Growth in Responses over the period 2003-04 – 2006-07 by Priority Dispatch Code

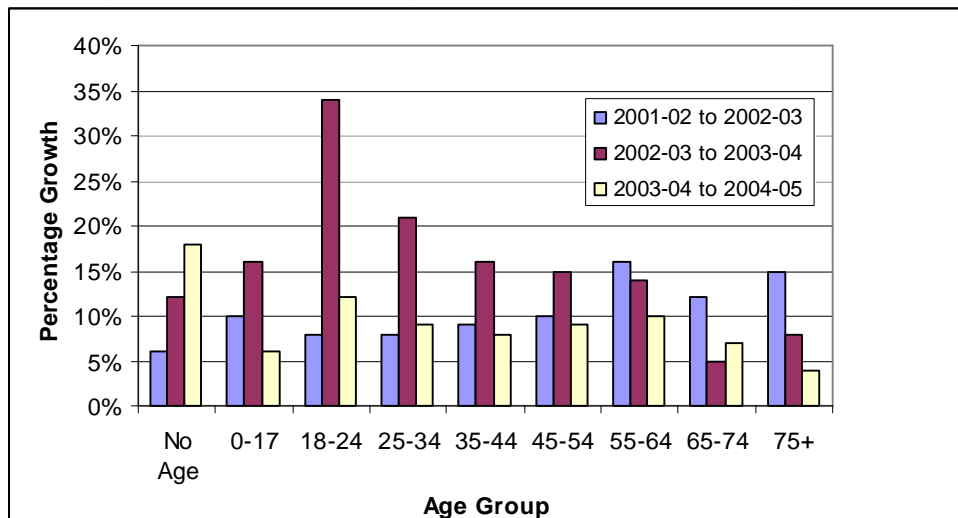


Source: QAS Internal Data

Growth in utilisation of Code 1 and 2 transports by Age

Figure 1.26 below shows the significant increase in growth in demand for ambulance services immediately following the introduction of the CAC levy in July 2003 in people aged 0-54, particularly in the 18-24 year old age group.

Figure 1.26: Growth in Usage of Ambulance Services by Age Group



Source: QAS Internal Data

The sharp increase in ambulance demand for 18-24 year olds, combined with the fact that the surge in ambulance demand has been in the higher acuity categories suggests demand management strategies need to be targeted to this component of service demand.

Figure 1.26 also illustrates that the ageing of the population (ie, the increase in the share of the population aged 65 and above) is not imposing disproportionate pressure on ambulance services. Prior to the introduction of the CAC, people in the over 65 age group were more likely to be paid members of the QAS subscription scheme or receive pensioner discounts (introduced 1 January 1999) for accessing QAS services, meaning the price signals to this demographic changed prior to July 2003.

Interestingly, growth in the non-reported age category trebled from 2002-03 to 2004-05. The reason for the increase in unreported age is not clear.

Relative Urgency of Ambulance Cases

The PricewaterhouseCoopers report *“Efficiency and Effectiveness of the Queensland Ambulance Service” (November 2007)* demonstrated, based on data from the Royal Brisbane Hospital Emergency Department, that since the introduction of the Community Ambulance Cover (CAC) at the end of the 2002-03 year there was a significant increase in the proportion of patients travelling to hospital by ambulance, and an increase in the proportion of patients (travelling by ambulance or alternative transport means) with higher priority Triage Scores at presentation to the hospital. However, the proportion of ambulance users who had less urgent Triage Scores increased significantly. They concluded that while the hospital was dealing with proportionally more urgent cases as measured by hospital triage scores (not ambulance codes), ambulances were being used by proportionally less urgent cases as measured by hospital triage scores.

The study also demonstrated a significant increase in the proportion of patients transported by ambulance during nights (between 8PM and 8AM) and during weekends. This is possibly the result of reduced availability of GP and other health services during these hours. There was no significant change between the pre-CAC and post-CAC figures for patients who did not travel by ambulance.

The results also indicated there was a significant increase in the proportion of ambulance travellers aged 18-54 years, however a less pronounced increase in the proportion of non-ambulance users in this age group. There was also a significant increase in the proportion of ambulance users who were male, but this was not reflected in overall presentations to hospital Emergency Departments.

The results of this study are presented fully in Appendix 2.

Key Findings

- The 75+ and the 0-17 age groups are the highest users of emergency ambulance services. However, the older age groups from 65-74 and 75+ are the highest users of non-emergency ambulance services. There is nevertheless some growth in non-emergency ambulance services in the younger age groupings, which most likely reflects the increasing dependence of the health system on non-urgent Code 3 and 4 ambulance services to assist in managing scarce health resources.
- There was a significant spike in utilisation data for Code 1 and 2 responses in the younger age groups in the period directly following the introduction of the Community Ambulance Cover. While significant growth was experienced in all younger age groups, the most significant growth was experienced in the 18-24 year group.
- The sharp increase in ambulance demand for 18-24 year olds, combined with the fact that the surge in ambulance demand has been in the higher acuity categories suggests demand management strategies need to be targeted to this component of service demand.
- The ageing of the population (ie the increase in the share of the population aged 65 and above) is not imposing disproportionate pressure on ambulance services. Prior to the introduction of the CAC, people in the over 65 age group were more likely to be paid

members of the QAS or receive pensioner discounts (introduced 1 January 1999) for accessing QAS services, meaning the price signals to this demographic have not changed substantially since July 2003.

- The PricewaterhouseCoopers (2007) study has shown that, based on presentations at the Royal Brisbane Hospital emergency department, while hospitals are dealing with proportionally more urgent cases, ambulances are being used by individuals with less urgent conditions.

DEMAND MARKET ANALYSIS

Drivers of Demand at the point of access to the Ambulance Service

As mentioned in the introduction to the Demand Analysis, there are various ways a consumer of ambulance services can gain access to ambulance transports, hence, the source of demand for ambulance services is recorded by the QAS across various categories. These include:

- MATs and AMATs – Medically authorised transports initiated from sources other than Queensland Health. These transports are either authorised by private practitioners, or originate from the general public through the emergency “000” response line;
- QIFTs – these are Queensland Inter-Facility Transports authorised by Queensland Health for the transport of Queensland Health patients between Queensland Health facilities; and
- QMAT and QDIS – these are medically authorised transports originating from Queensland Health. These may be discharges, or transfers of patients to facilities other than Queensland Health facilities for continuing care.

This section of the report will examine the various markets for access to ambulance services in Queensland in order to identify whether increased demand is linked specifically to any particular segment ambulance service clientele. The markets for accessing ambulance transport services are:

- The “000” service (consumer driven demand);
- Referral by a private practitioner, such as the general practitioner or private health facility (private sector driven demand);
- Referral by a Queensland Health service for either inter facility transfer (QIFT), or medically authorised transport (QMAT, QDIS) (Queensland Health driven demand); and
- Some transports are not coded to any of these categories, and are coded as either miscellaneous, not coded, or casualty room attendances / CAS transports (Other Demand).

The recurring theme within the analysis so far is that demand for ambulance transport services continues to increase beyond the levels of population growth in Queensland. The high level of demand over and above that anticipated from population factors appears to be linked to the introduction of the Community Ambulance Cover. There also appears to be an increasing tendency towards multiple responses in the higher acuity categories of transport and, potentially, a level of over-reporting of response data due to new reporting systems.

The following analysis will look at how responses are linked to the various demand markets as defined above, and according to the type of service provided (ie. by MPDS determinant). This section of the report will also look at the Regional impacts of the increasing demand to identify areas in which demand management strategies could be targeted.

Regional Demand Profiles

The growth patterns across each of the Ambulance Service Regions is characterised by an increase in consumer driven demand, Queensland Health demand and private sector demand. However, in the Northern region, over the period 2004-05 – 2006-07, Queensland Health demand has decreased by 12%. The following table (Table 1.11) demonstrates growth patterns from 2004-05 – 2006-07 across each of the ambulance service regions.

Table 1.11: Growth in Demand Profile by Ambulance Service Region 2004-05 to 2006-07

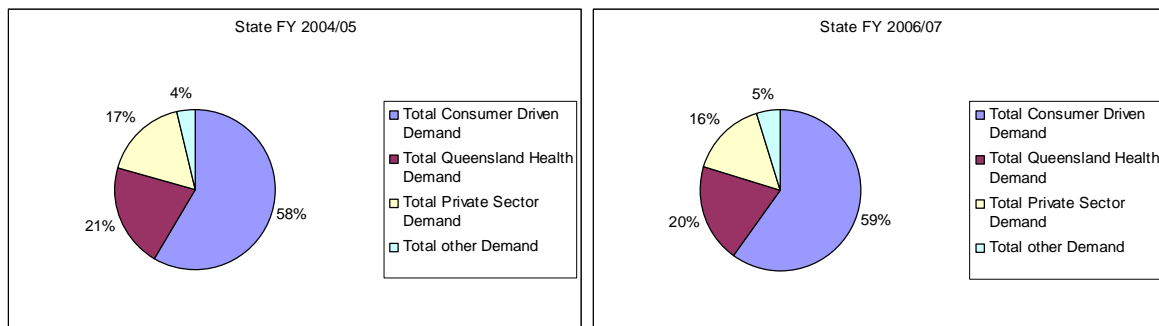
	Total Consumer Driven Demand	Total Queensland Health Demand	Total Private Sector Demand	Total other Demand
Northern Region	11%	-12%	13%	47%
	3813	-2135	685	585
Central Region	21%	18%	8%	107%
	7128	1922	400	5095
South West Region	21%	17%	6%	-19%
	4437	1245	812	-701
North Coast Region	31%	34%	6%	33%
	16096	5978	872	1141
Brisbane Region	26%	17%	7%	78%
	36406	10392	3464	3927
South East Region	19%	5%	15%	52%
	18521	917	3038	2582
Far Northern Region	19%	3%	17%	11%
	5080	456	890	238

Source: QAS Internal Data

Changes in Regional Demand Profiles

Figure 1.27 demonstrates, on a statewide basis, how the proportion of demand is shifting across each demand sector, including consumer driven demand, Queensland Health, and the private sector.

Figure 1.27: Shift in demand profile 2004-05 – 2006-07 - State



Source: QAS Internal Data

On a statewide basis, the above charts demonstrate a slight shift in the proportion of responses accounted for by consumer demand between the years 2004-05 and 2006-07. However, across the Regions, the shifts are more significant, demonstrating a shift towards increased consumer demand in some regions as a proportion of overall demand, a shift towards increased Queensland Health demand as a proportion of overall demand, and/or a shift towards private sector and/or other demand as a proportion of overall demand.

Regions with a shift in proportion towards Consumer Driven demand

Consumer driven demand, that is, the demand that is initiated through the “000” facility has increased across all Ambulance Service Regions. Consumer demand can represent different proportions of overall demand on a Region by Region basis. Overall, consumer demand represents 59% of all responses in Queensland. However, in the South West Region the

demand profile indicates that consumer demand in 2006-07 represented only 49% (up from 47% in 2004-05) of all responses in the Region (see Figure 1.28). In contrast, the proportion of responses relating to consumer demand South Eastern Region was 70% in 2006-07, up from 69% in 2004-05. Brisbane, South West, North Coast, Far Northern, South East and Northern Regions have experienced increases in levels of consumer driven demand which have altered the demand profile of the region, such that consumer driven demand represents a higher proportion of overall demand. The shift in the demand profile for the South East Region is demonstrated in Figure 1.29.

Figure 1.28: Shift in demand profile 2004-05 – 2006-07 – South West Region

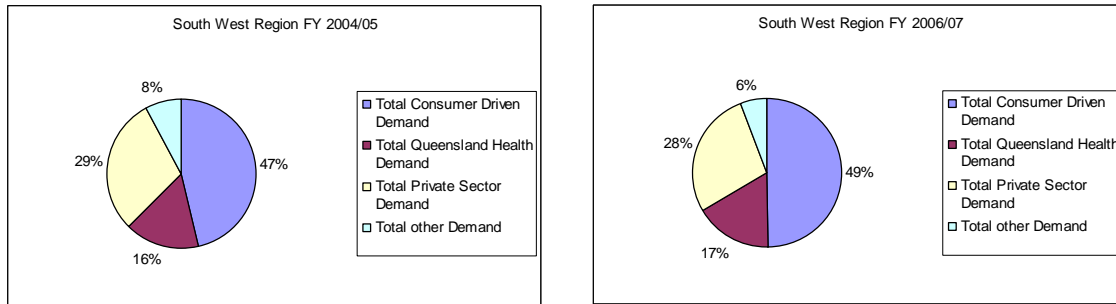
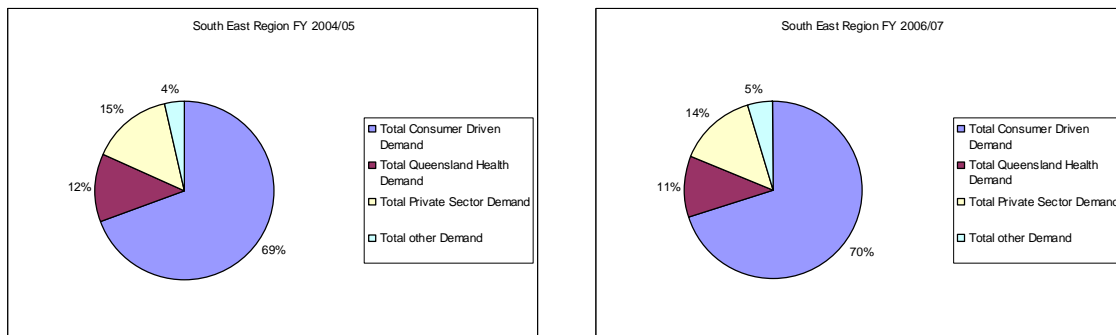


Figure 1.29: Shift in demand profile 2004-05 – 2006-07 – South East Region



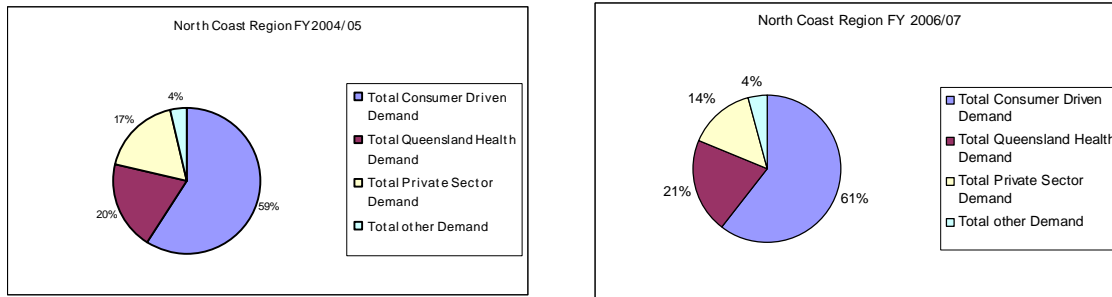
Source: QAS Internal Data

Regions with a shift in proportion towards Queensland Health demand

Again, it is important to note that all regions, with the exception of the Northern Region demonstrate a significant increase in demand from the Queensland Health Sector. In fact, as Table 1.11 (previous page) shows, the Brisbane Region had an increase in Queensland Health driven demand of 17% between 2004-05 and 2006-07. However, because of concurrent increases in consumer demand, the overall proportion of Queensland Health demand declined in Brisbane as a percent of overall demand.

However, in South West Region and North Coast Region, the demand profile of the Region shifted towards Queensland Health demand as a greater proportion of overall demand within those Regions.

Figure 1.30: Shift in demand profile 2004-05 – 2006-07 – North Coast Region



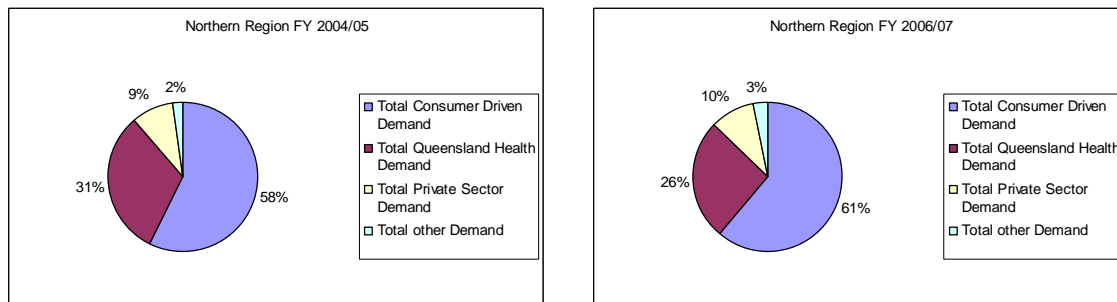
Source: QAS Internal Data

Regions with a shift in proportion towards Private Sector demand

Again, all Regions have experienced an increase in demand from the private sector, however, in the main, this growth is in line with the general increase in demand for ambulance services in Queensland. However, three Regions experienced higher increases in demand from the private sector over the period from 2004-05 to 2006-07. These were Far Northern Region, Northern Region and the South East Region.

In terms of proportion of overall services, only two Regions experienced a change in demand profile as a result of the increased demand from the private sector. These were Northern Region, with a small shift towards the private sector; and the South East Region, which experienced significant growth from both the consumer driven demand “000” sector and the private sector, but a relatively small increase in demand from the Queensland Health sector (5%) over the same period.

Figure 1.31: Shift in demand profile 2004-05 – 2006-07 – Northern Region



Source: QAS Internal Data

Regions with a shift in proportion towards other demand

Again, most Regions have experienced an increase in responses which have been categorised as “Other” demand. These include miscellaneous responses, responses which have not been coded, and responses related to casualty rooms. North Coast Region, South East Region and Central Region experienced the most significant increase in numbers related to these categories. However, again due to the effect of the decrease in Queensland Health related responses, Northern Region demonstrates a change in profile related to the “Other” demand category. In fact, the increase in responses related to this category in the Northern Region were low in number, but represented an increase over the previous year of 13%.

Central Region, Brisbane Region and the North Coast Region all experienced significant growth in responses to the “Other Category”. In Central Region and Brisbane Region, the growth in demand for “other” responses was significant enough to result in an associated change in response profile towards this sector. For the Central Region, this change was particularly significant, indicating that potentially, in this Region there has been a change in practice related to services provided in the “other” category. In fact, the significant increase in coding to this category of demand (107% increase in demand for this category since 2004-05) has overshadowed the increases in consumer driven demand (21% increase), Queensland Health demand (18% increase) and private sector demand (8% increase) for this region.

Figure 1.32: Shift in demand profile 2004-05 – 2006-07 – Central Region

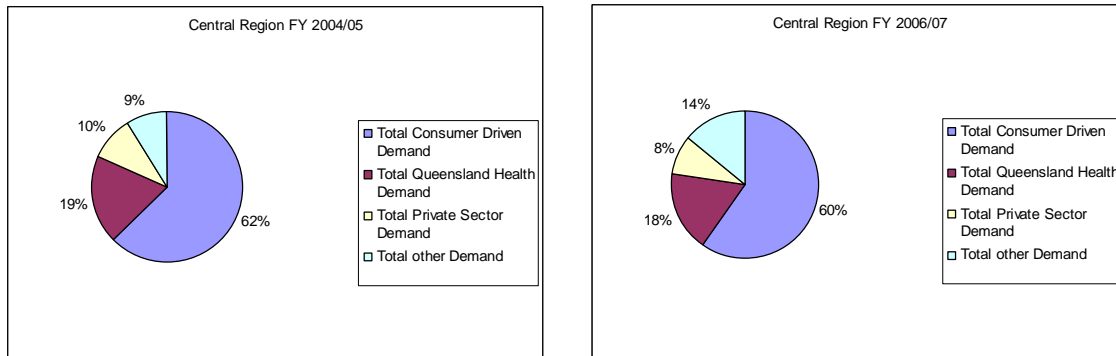
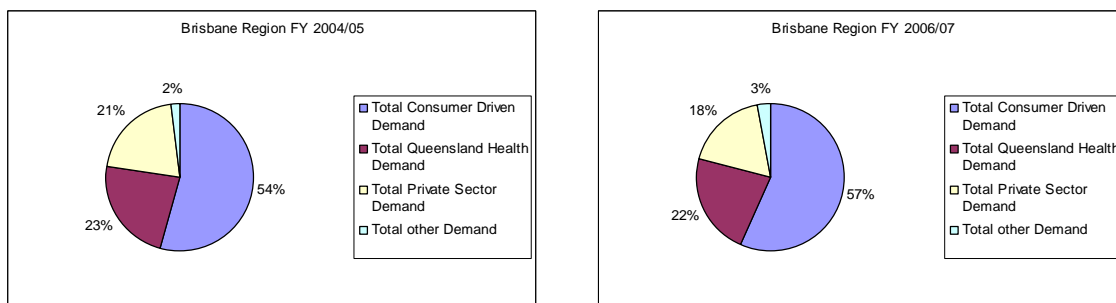


Figure 1.33: Shift in demand profile 2004-05 – 2006-07 – Brisbane Region



Source: QAS Internal Data

Key Findings

- All Ambulance Service Regions have experienced growth across all demand markets over the period between 2003-04 and 2006-07, with the exception of Northern Region which has experienced a significant decline in Queensland Health demand, and South West Region which has had a decrease in ‘Other’ demand.
- Overwhelmingly the growth has been consistently due to increasing demand from the consumer driven “000” demand market, closely followed by Queensland Health demand in Central, South West, North Coast and Brisbane Regions. Private sector demand growth has been highest in Northern Region and the South East Region.
- Significant levels of ‘Other Demand’ has been experienced in all Regions with the exception of South West Region. ‘Other’ Demand relates to responses not coded, miscellaneous responses and casualty room attendances. Casualty room attendances were minimal in most Regions as a growth driver, with the exception of Central Region in which casualty room attendances grew significantly.

Consumer Driven Demand

Source of Demand

Consumer driven demand has contributed most significantly to the increase in responses between the period between 2004-05 to 2006-07. Consumer driven demand is defined, for the purposes of this audit, as the activity categorised under MPDS 1-33. In the main, responses categorised under MPDS 1-33 have been initiated through the “000” facility.

“000” calls are answered by the Telstra “000” service. The emergency service required by the caller is identified by the Telstra operator and the call is then transferred to the appropriate emergency service communication centre. If the caller requires an ambulance service in Queensland, then the call is transferred to the closest QAS communication centre. The Computer Aided Dispatch (CAD) system used by QAS enables automatic transfer of caller identification data from the “000” system into the CAD system.

When the call is answered, the QAS communication officer uses the Advanced Medical Priority Dispatching System (AMPDS) to assist them and the dispatchers prioritise calls and determine resource requirements. This occurs via a predetermined clinical risk and response matrix which is integrated into the CAD system. The CAD system is programmed to recommend the closest ambulance vehicle.

AMPDS is an internationally acknowledged, scripted protocol based dispatch system to aid emergency medical dispatching. The system has been in use for over 20 years in more than 2500 locations throughout North America, Canada, the UK, Europe and Australia. The AMPDS system:

- provides a structured call-taking process
- provides clinically appropriate pre-arrival first aid instructions
- provides appropriate dispatch information and response priorities
- provides an audit and quality management tool for the communications centre and ambulance service.

The AMPDS is used to allocate a response code that will determine the priority of the case and the timeframe for ambulance dispatch. The ability to safely prioritise ambulance responses allows for the effective allocation of limited resources and ensures the availability of these resources for the most serious medical conditions that require short response times and the highest levels of care. Many systems have identified that certain conditions do not require a lights and sirens response and may be more appropriately managed by a lower level system response. In systems with limited resources and nonexistent or extended mutual-aid responses, the use of the AMPDS ensures that limited resources are optimised.

In Queensland, the QAS currently provides a highly effective *all or nothing* emergency response. When an emergency call is received via 000, AMPDS determines > 99 % of these calls to be Code 1 or Code 2 (life threatening or urgent) responses, leading to the subsequent dispatch of a timely and appropriately crewed ambulance vehicle (see Table 1.12 below).

Table 1.12: Prioritisation Schedule

Code	Response – life threatening and urgent
1	Immediate response/life threatening
1A	Probable cardiac/respiratory arrest Definitely unconscious, undetermined breathing status
1B	Unknown condition, definitely breathing, unknown conscious state or altered conscious state
1C	Life threatening condition, definitely conscious and breathing
2	Immediate response/ urgent/non life threatening
2A	Patient's condition requires immediate response – no lights and sirens, ambulance to patient with no delays
2B	Patient's condition requires ambulance on scene within 30 mins of receipt of call
2C	Patient's condition requires ambulance on scene within 1 hour of call. Contact patient and reassess if response time will be greater than 1 hour

This promotes a high degree of sensitivity (Nicholl, 1999) but relatively poor specificity, thus ensuring a risk adverse structure with minimal false negative immediate life threatening ambulance responses. The resulting QAS emergency response only has one of two outcomes; the patient is either transported to a hospital emergency department or declines transport.

As discussed previously, all Ambulance Service Regions have experienced a significant increase in demand related to responses coded to MPDS 1-33, or in consumer driven demand. As such, the Audit Team has analysed each MPDS code according to demand increases by Region, priority and subpriority. By analysing the data in this way, conclusions may be drawn as to whether increases in demand for a transport response to particular conditions are Region specific or statewide, whether they relate to specific triggers, or whether they are consumer driven, responses to social pressures, or changes in ambulance service practice.

Broad Analysis of Patterns of Demand

Analysis of responses related to MPDS 1-33 across category 1 and 2 response priorities demonstrates that the bulk of activity can be attributed to the higher priority response codes.

Table 1.13 presents the number of responses and their proportion across the MPDS codes for 2006-07 financial year.

Table 1.13: Total Responses in MPDS 1-33 for the 06-07 Financial Year by Priority and Sub-Priority.

Priority	Sub Priority	Total MPDS 1-33 FY 2006/07	As % of Total MPDS 1-33 FY 2006/07
1	A	9798	1.97%
1	B	120317	24.25%
1	C	131589	26.52%
1 Total		261704	52.75%
2	A	127199	25.64%
2	B	57537	11.60%
2	C	49503	9.98%
2 Total		234239	47.21%
3	A	133	0.03%
3	B	17	0.00%
3	C	4	0.00%
3 Total		154	0.03%
4	A	11	0.00%
4	B	28	0.01%
4	C	0	0.00%
4 Total		39	0.01%
Grand Total		496136	100.00%

Source: QAS Internal Data

Of the total MPDS 1-33 responses, Category 1 and 2 responses make up 99.96%. For this reason, only category 1 and 2 responses will be considered in the consumer driven demand analysis. Table 1.14 below demonstrates the contribution to activity of each of the 33 MPDS codes in the 06-07 financial year.

Table 1.14: Total Consumer Driven Activity Top Ten MPDS Codes 1-33 for 2006-07 Financial Year

MPDS 1-33 Code	Total 06/07	As % of all MPDS 1-33 Codes
6 Breathing Problems	54017	10.9%
10 Chest Pain	51823	10.4%
17 Falls	51424	10.4%
26 Sick Person (Specific Diagnoses)	50374	10.2%
31 Unconscious/Fainting (Near)	38178	7.7%
29 Traffic/Transportation Accidents	34333	6.9%
30 Traumatic Injuries	28187	5.7%
1 Abdo Pain/Problems	23717	4.8%
21 Haemorrhage/Lacerations	20912	4.2%
12 Convulsions/Fitting	19796	4.0%
Grand Total	372761	75.1%

Source: QAS Internal Data

For all priority codes, Table 1.14 demonstrates that the top ten codes account for 75.1% of the activity, while Table 1.15 and 1.16 demonstrate that the top ten codes account for approximately 83% of both Code 1 and 2 Responses.

Table 1.15: Consumer Driven Activity Top Ten Code 1 responses by MPDS Codes 1-33 for 2006-07 Financial Year

MPDS 1-33 Code	Total 06/07	As % of all MPDS 1-33 Codes
10 Chest Pain	50732	19.4%
6 Breathing Problems	49102	18.8%
29 Traffic/Transportation Accidents	33530	12.8%
31 Unconscious/Fainting (Near)	29536	11.3%
12 Convulsions/Fitting	14908	5.7%
17 Falls	11080	4.2%
19 Heart Problems/A.I.C.D.	7438	2.8%
23 Overdose/Poisoning (Ingestion)	7315	2.8%
9 Cardiac or Respiratory Arrest/Death	7180	2.7%
32 Unknown Problem (Collapse-3rd Party)	6377	2.4%
Grand Total	217198	83.0%

Source: QAS Internal Data

Table 1.16: Consumer Driven Activity Top Ten Code 2 responses by MPDS Codes 1-33 for 2006-07 Financial Year

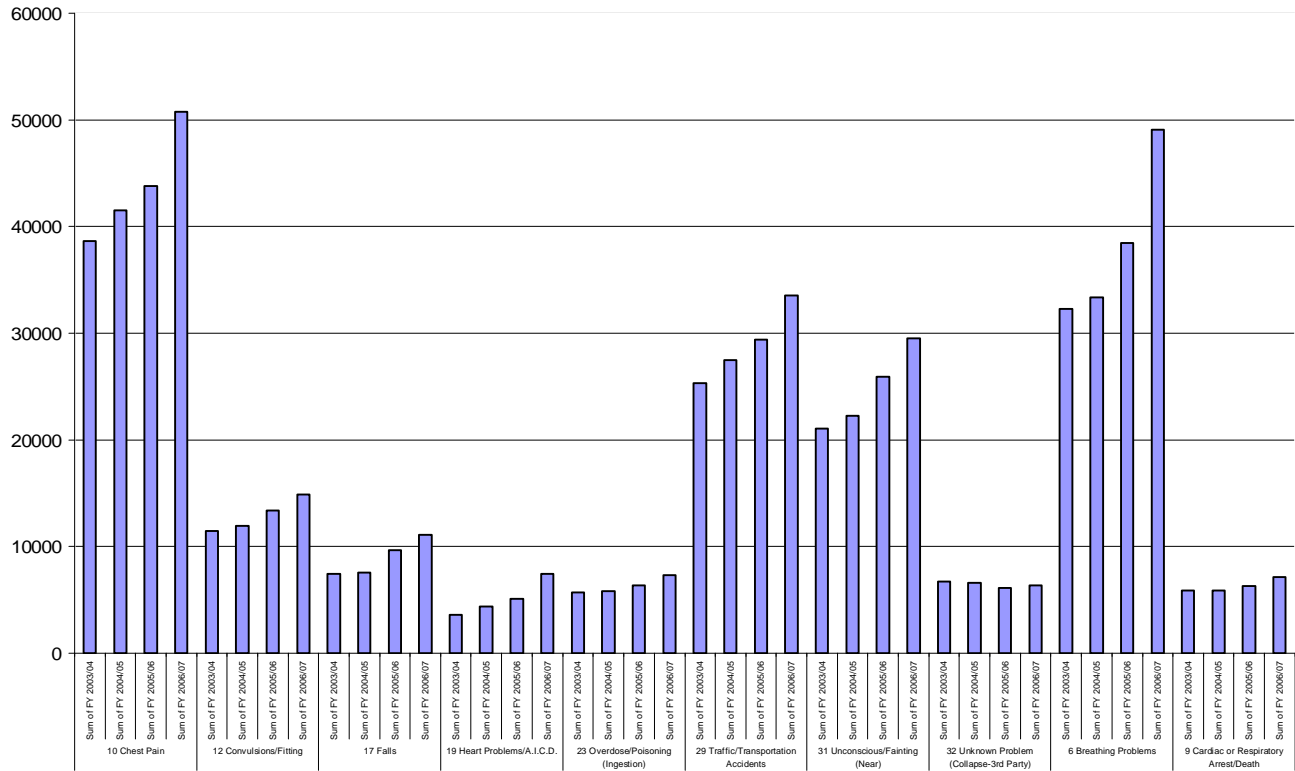
MPDS 1-33 Code	Total 06/07	As % of all MPDS 1-33 Codes
26 Sick Person (Specific Diagnoses)	46868	20.0%
17 Falls	40324	17.2%
30 Traumatic Injuries	23812	10.2%
1 Abdo Pain/Problems	20772	8.9%
21 Haemorrhage/Lacerations	15711	6.7%
25 Psychiatric/Abnormal Behaviour/Suicide Attempt	11181	4.8%
5 Back Pain (Non-Traumatic or Non Recent Trauma)	10237	4.4%
4 Assault/Sexual Assault	9284	4.0%
31 Unconscious/Fainting (Near)	8640	3.7%
32 Unknown Problem (Collapse-3rd Party)	7254	3.1%
Grand Total	194083	82.9%

Source: QAS Internal Data

Note that MPDS 17 (Falls), MPDS31 (Unconscious/Fainting (near)), and MPDS 32 (Unknown problem) are the only common MPDS codes in the top 10 codes for Priority 1 and Priority 2 responses. Otherwise the profile of Code 1 and 2 responses are quite different. These differences are depicted in diagrammatic form in Figures 1.34 and 1.35 below which demonstrate the growth in the top ten MPDS response codes in Code 1 and 2 responses.

Figure 1.34 demonstrates the significant growth in the primary drivers of Code 1 responses. The greatest growth has been in MPDS 10 Chest Pain, and MPDS 6 Breathing Problems.

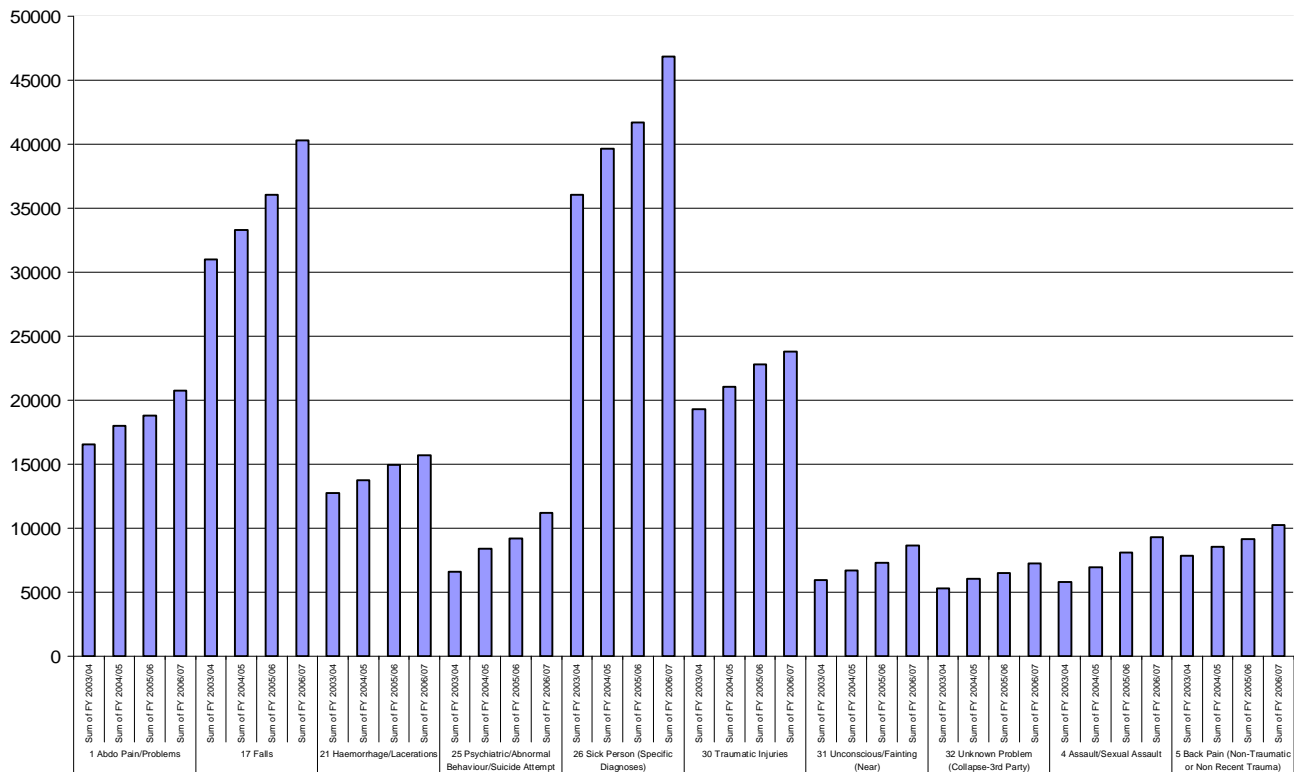
Figure 1.34: Analysis of Growth in the Top Ten Code 1 Responses 2004-05 – 2006-07



Source: QAS Internal Data

Figure 1.35 shows that growth has been consistent in the top ten Code 2 response codes, accounting for 82.9% of the total Code 2 responses in 2006-07. Notice the significant spike in demand for Code 2 MPDS 17 (Falls) and MPDS 26 (Sick Person) in the 2006-07 year.

Figure 1.35: Analysis of Growth in Top Ten Category 2 Responses 2003-04 – 2006-07



Source: QAS Internal Data

Table 1.17 provides a closer look at the two most significant drivers of Category 2 responses, 17 Falls and 26 Sick Person, demonstrates that 17 Falls drives the growth in 2As, whereas 26 Sick Person primarily drives the growth in 2Cs. Even so, there is considerable growth across all Sub-priority codes for both MPDS determinants, with the exception of Category 2B falls.

Table 1.17: Growth in Category 2 Responses to MPDS 17 (Falls) and MPDS 26 (Sick Person) 2003-04 to 2006-07

MPDS	Priority	Sub Priority	Sum of FY 2003/04	Sum of FY 2004/05	Sum of FY 2005/06	Sum of FY 2006/07	Growth
17 Falls	2	A	26024	27859	30335	33861	30.1%
		B	258	247	185	214	-17.1%
		C	4719	5191	5530	6249	32.4%
2 Total		31001	33297	36050	40324	30.1%	
26 Sick Person (Specific Diagnoses)	2	A	1762	1998	2382	3346	89.9%
		B	6645	7201	7617	8839	33.0%
		C	27673	30452	31691	34683	25.3%
2 Total		36080	39651	41690	46868	29.9%	
All MPDS Determinants	2	A	136004	141827	158057	176694	29.9%
		B	49302	60903	65369	68944	39.8%
		C	61633	72942	76343	81852	32.8%
All MPDS Determinants	2 Total	246939	275672	299769	327490	32.6%	

Source: QAS Internal Data

Growth across both category 1 and 2 responses can be the result of many factors, however, growth in some categories are more prone to be the result of a perception by the consumer of their need for an ambulance resource (for example, MPDS 26 Sick Person or MPDS 5 Back Pain). We would expect that growth in these codes would be consistent with external stimulus such as increase in population growth, policy shifts such as the CAC, social pressures, and socio-economic issues. Other codes, such as MPDS 14, (Drowning (Near)/Diving/SCUBA accident) or MPDS 20 (Heat or Cold exposure) would be less likely to demonstrate a steady rate of growth outside the parameters of population growth, as these codes depend less on consumer perceptions of need.

Detailed Analysis of Code 2 Responses

Code 2A responses are the most urgent of the Code 2 response category, with a response required within 20 minutes for a condition which is considered to be immediately life threatening. In the 2006-07 financial year, there were 121,277 Code 2A responses to MPDS determinants 1-33 (consumer related "000" demand categories) comprising 25.97% of the total call volume related to this demand market. In total, including all demand categories, there were 176,705 Code 2A responses in the 2006-07 financial year. Table 1.18 demonstrates the MPDS determinants that form the bulk of Code 2A responses, including growth for each determinant over the four year period between 2003-04 and 2006-07. As mentioned earlier, the most significant driver of Code 2A responses is the MPDS 17 (Falls) determinant.

MPDS 17 (Falls) includes elderly individuals who have fallen over and, through immobility, are unable to get up. In many cases, the response to these cases may require someone to assist the person to their feet, to ensure that no bones are broken, and that there is no resultant open wound. While there is no question in this case that an ambulance should attend these incidents, in some cases, a treat and leave option, or a treat and refer option would be a better solution than always transporting the individual to hospital. This issue is more fully discussed in the section which discusses the interrelationships with the Health Sector in Chapter 7 - Intersection with the Health System.

Table 1.18: Growth in the Major MPDS Drivers of Code 2A Responses 2003-04 – 2006-07

MPDS	Priority	Sub Priority	Sum of FY 2003/04	Sum of FY 2004/05	Sum of FY 2005/06	Sum of FY 2006/07	
1 Abdo Pain/Problems	2	A	4163	4568	4762	5510	32.4%
10 Chest Pain	2	A	1655	1782	1823	1045	-36.9%
12 Convulsions/Fitting	2	A	3959	4440	4533	4877	23.2%
17 Falls	2	A	26024	27859	30335	33861	30.1%
18 Headache	2	A	1604	1761	2196	2942	83.4%
23 Overdose/Poisoning (Ingestion)	2	A	1254	1481	1598	1866	48.8%
24 Pregnancy/Childbirth/Miscarriage	2	A	1180	1113	1213	1144	-3.1%
25 Psychiatric/Abnormal Behaviour/Sui	2	A	3594	4621	5272	7094	97.4%
26 Sick Person (Specific Diagnoses)	2	A	1762	1998	2382	3346	89.9%
30 Traumatic Injuries	2	A	6544	7577	8085	8620	31.7%
32 Unknown Problem (Collapse-3rd Par	2	A	5019	5951	6414	7182	43.1%
4 Assault/Sexual Assault	2	A	3728	4667	5737	7046	89.0%
5 Back Pain (Non-Traumatic or Non Rex	2	A	6383	7238	7713	8739	36.9%
6 Breathing Problems	2	A	8487	9187	9140	4852	-42.8%
MAT	2	A	22267	21122	25298	28052	32.8%
MISC	2	A	5058	7459	11271	16936	234.8%
RED	2	A	7	1323	1434	1819	37.5%
Grand Total			102688	114147	129206	144931	41.1%

Source: QAS Internal Data

The main growth in Code 2A responses has been in MPDS 18 (Headache) with a growth of 83.4% since 2003-04, MPDS 25 (Psychiatric/Abnormal Behaviour/Suicide Attempt) growing by 97.4% over the same period, MPDS 26 (Sick Person) 89.9%, MPDS 4 (Assault/Sexual Assault) 89.0%, and Miscellaneous 2A responses which has grown by a massive 234.8% and which accounts for 16,936 responses in 2006-07 or 9.6% of the total Code 2A responses. Miscellaneous 2A responses are discussed under the 'Other Demand' discussion within this section.

In terms of understanding what drives the growth in the Code 2A responses, MPDS 25 (Psychiatric/Abnormal Behaviour/Suicide Attempt) and MPDS 4 (Assault/Sexual Assault) can be considered to be driven by health, social, economic and demographic pressures, and are difficult to deal with using strategies of pure demand management.

However, given their associated growth, a closer investigation of 2A responses to MPDS 18 (Headache) and MPDS 26 (Sick Person), which are determinants that could be driven by consumer perceptions of the severity of their symptoms, may highlight whether alternative response strategies along the lines of those suggested in points 1-4 above, are viable and appropriate response options at the Code 2A response level. This is similarly the case with MPDS 17 (Falls) which, although experiencing a lower percentage growth, accounts for the highest volume of 2A responses.

Code 2B responses require an ambulance response within 30 minutes, and are considered to be potentially life threatening conditions. There were 54,790 Code 2B responses to MPDS determinants 1-33 (consumer related demand categories) comprising 11.73% of the total call volume related to this demand market. In total, including all demand categories, there were 68,965 Code 2B responses in the 2006-07 financial year. Table 1.19 demonstrates the MPDS determinants that form the bulk of Code 2B responses, including growth for each determinant over the four year period between 2003-04 and 2006-07.

Table 1.19: Growth in the Major MPDS Drivers of Code 2B Responses 2003-04 – 2006-07

MPDS	Priority	Sub Priority	Sum of FY 2003/04	Sum of FY 2004/05	Sum of FY 2005/06	Sum of FY 2006/07	
1 Abdo Pain/Problems	2	B	12308	13380	14025	15240	23.8%
13 Diabetic Problems	2	B	1132	1252	1198	1398	23.5%
2 Allergies (Reactions)/Envenomations	2	B	983	1172	1255	1285	30.7%
23 Overdose/Poisoning (Ingestion)	2	B	2774	2997	3468	3498	26.1%
25 Psychiatric/Abnormal Behaviour/Sui	2	B	857	1257	1665	1708	99.3%
26 Sick Person (Specific Diagnoses)	2	B	6645	7201	7617	8839	33.0%
30 Traumatic Injuries	2	B	11258	12083	13150	13498	19.9%
4 Assault/Sexual Assault	2	B	1849	2081	2195	1979	7.0%
MISC	2	B	3508	3943	4074	3836	9.4%
QMAT	2	B	0	1009	1058	1369	35.7%
RED	2	B	1	3881	4669	6016	55.0%
Grand Total			41315	50256	54374	58666	42.0%

Source: QAS Internal Data

The main volume of Code 2B responses is in MPDS 1 (Abdominal Pain/Problems) and MPDS 30 (Traumatic Injuries). While there has been strong growth in these categories, the highest percentage of growth in 2B responses has again been in MPDS 25 (Psychiatric/Abnormal Behaviour/Suicide Attempt) which, although low in volume of responses, has grown by 99.3% over the four year period since 2003-04.

Provision of advice on Abdominal Pain is in the top ten response categories of the Queensland Health call centre 13 HEALTH. Growth in ambulance responses in this MPDS category has been strong, with an increase of 23.8% over the period 2003-04 to 2006-07. Again, some investigation into the profile of Category 2B responses to MPDS 1 may highlight whether secondary triage of these calls through 13 HEALTH, or referral to a mobile GP service, would provide an appropriate alternative response strategy to these calls at the 2B priority response level.

Code 2C responses require an ambulance response within 1-2 hours, and are considered to be responses to stable patients. In the 2006-07 financial year, there were 49,503 Code 2C responses to MPDS determinants 1-33 (consumer related demand categories) comprising 9.89% of the total call volume related to this demand market. In total, including all demand categories, there were 81,852 Code 2C responses in the 2006-07 financial year.

Table 1.20 demonstrates the MPDS determinants that form the bulk of Code 2C responses, including growth for each determinant over the four year period between 2003-04 and 2006-07.

Table 1.20: Growth in the Major MPDS Drivers of Code 2C Responses 2003-04 – 2006-07

MPDS	Priority	Sub Priority	Sum of FY 2003/04	Sum of FY 2004/05	Sum of FY 2005/06	Sum of FY 2006/07	
16 Eye Problems/Injuries	2	C	174	152	189	230	32.2%
17 Falls	2	C	4719	5191	5530	6249	32.4%
18 Headache	2	C	17	9	9	1108	6417.6%
2 Allergies (Reactions)/Envenomations	2	C	413	294	315	346	-16.2%
21 Haemorrhage/Lacerations	2	C	2431	275	418	227	-90.7%
25 Psychiatric/Abnormal Behaviour/Sui	2	C	2181	2501	2285	2379	9.1%
26 Sick Person (Specific Diagnoses)	2	C	27673	30452	31691	34683	25.3%
30 Traumatic Injuries	2	C	1511	1406	1556	1694	12.1%
5 Back Pain (Non-Traumatic or Non Rex	2	C	1300	1152	1310	1430	10.0%
MAT	2	C	12733	10675	11490	11537	8.1%
QMAT	2	C	1	6383	6319	6660	4.3%
RED	2	C	4	11606	13437	13915	19.9%
Grand Total			53157	70096	74549	80458	51.4%

Source: QAS Internal Data

Over half the total Code 2C responses, but almost all of those associated with consumer driven demand categories (MPDS 1-33), relate to MPDS 17 (Falls) and MPDS 26 (Sick Person) with both these determinants demonstrating strong growth over the period between 2003-04 to 2006-07. There has also been a huge level of growth in MPDS 18 (Headache) categorised at the 2C priority response level.

While growth in MPDS 25 (Psychiatric/Abnormal Behaviour/Suicide Attempt) has been moderate, there are a significant proportion of calls in this determinant within the 2C response category. However, the growth in this determinant appears to be at the more acute level.

In order to alleviate demand on acute ambulance services, it is proposed that demand management strategies such as those outlined above, and expanded on in the following sections, be applied at the 2C priority response level. This would involve potentially identifying calls that may be appropriately diverted to 13 HEALTH for secondary triage, or which may be subjected to a second level of clinical triage within the ambulance call centre itself; identifying calls that may be referred on to a mobile/after hours GP practice; and identifying those cases for which treat and refer, and treat and leave alternatives may provide a more appropriate level of response for the individual.

While secondary triaging options, and treat and leave and treat and refer options have applicability state-wide, the availability of referral GP practices that operate mobile/after hours services may be available in major metropolitan areas / referral centres only. Nevertheless, the Regional analysis provided in Tables 1.21 and 1.22 for Code 2C responses to major volume and growth determinants demonstrates that there is a critical mass of clients in the southeast corner of Queensland which is within the catchment area for a GP-based referral service. The initial Family Care Medical Service proposal which was investigated by the QAS was based on a referral population of 15,000 clients. This critical mass of clients is evident just in MPDS 26 Code 2C responses for North Coast region, Brisbane Region and South Eastern Region (17,722 responses). This is likely to be the primary target population for any GP referral strategy, along with issues such as headache and back pain. Treat and leave, and treat and refer strategies are more likely to be applicable to MPDS 17 (Falls).

Table 1.21: Regional Breakdown of MPDS 26 (Sick Person)

Region	MPDS	Priority	Sub Priority	FY 2003/04	FY 2004/05	FY 2005/06	FY 2006/07	Growth since 04/05
Northern Region	26 Sick Person (Specific Diagnoses)	2	C	2851	3397	3409	3635	7%
Central Region	26 Sick Person (Specific Diagnoses)	2	C	3033	3343	3640	3961	18%
South Western Region	26 Sick Person (Specific Diagnoses)	2	C	1694	1840	2140	2165	18%
North Coast Region	26 Sick Person (Specific Diagnoses)	2	C	3831	4285	3828	4419	3%
Brisbane Region	26 Sick Person (Specific Diagnoses)	2	C	8048	8873	8614	10231	15%
South Eastern Region	26 Sick Person (Specific Diagnoses)	2	C	6046	6257	6898	7196	15%
Far Northern Region	26 Sick Person (Specific Diagnoses)	2	C	2168	2456	3162	3072	25%
State Headquarters	26 Sick Person (Specific Diagnoses)	2	C	2	1	0	4	0%

Table 1.22: Regional Breakdown of MPDS 17 (Falls)

Region	MPDS	Priority	Sub Priority	FY 2003/04	FY 2004/05	FY 2005/06	FY 2006/07	Growth since 04/05
Northern Region	17 Falls	2	C	261	302	364	437	45%
Central Region	17 Falls	2	C	335	339	430	521	54%
South Western Region	17 Falls	2	C	245	246	329	402	63%
North Coast Region	17 Falls	2	C	692	791	856	1006	27%
Brisbane Region	17 Falls	2	C	1954	2075	2082	2264	9%
South Eastern Region	17 Falls	2	C	1020	1222	1244	1322	8%
Far Northern Region	17 Falls	2	C	212	216	225	296	37%
State Headquarters	17 Falls	2	C	0	0	0	1	0%

Table 1.23: Regional Breakdown of MPDS 5 (Back Pain)

Region	MPDS	Priority	Sub Priority	FY 2003/04	FY 2004/05	FY 2005/06	FY 2006/07	Growth since 04/05
Northern Region	5 Back Pain (Non-Traumatic or Non Recent Trauma)	2	C	107	71	83	93	31%
Central Region	5 Back Pain (Non-Traumatic or Non Recent Trauma)	2	C	134	177	194	191	8%
South Western Region	5 Back Pain (Non-Traumatic or Non Recent Trauma)	2	C	41	43	83	92	114%
North Coast Region	5 Back Pain (Non-Traumatic or Non Recent Trauma)	2	C	214	181	181	216	19%
Brisbane Region	5 Back Pain (Non-Traumatic or Non Recent Trauma)	2	C	356	332	405	471	42%
South Eastern Region	5 Back Pain (Non-Traumatic or Non Recent Trauma)	2	C	382	289	285	297	3%
Far Northern Region	5 Back Pain (Non-Traumatic or Non Recent Trauma)	2	C	66	59	79	70	19%

Table 1.24: Regional Breakdown of MPDS 18 (Headache)

Region	MPDS	Priority	Sub Priority	FY 2003/04	FY 2004/05	FY 2005/06	FY 2006/07	Growth since 04/05
Northern Region	18 Headache	2	C	1	1	0	103	10200%
Central Region	18 Headache	2	C	3	0	4	129	3125%
South Western Region	18 Headache	2	C	0	0	0	60	100%
North Coast Region	18 Headache	2	C	0	2	0	151	7450%
Brisbane Region	18 Headache	2	C	8	5	1	323	6360%
South Eastern Region	18 Headache	2	C	3	1	4	271	27000%
Far Northern Region	18 Headache	2	C	2	0	0	71	0%

Source: QAS Internal Data

All relevant Code 2 Consumer Demand cases (234,239 in 2006-07) (Table 1.25) come through the "000" system to a QAS communications centre. Currently these cases are managed with a paramedic response. In the vast majority of cases, ambulance officers provide treatment and transport to hospital for these patients.

Table 1.25: Summary Data for Code 2 Responses under MPDS 1-33 Determinants 2003-04 to 2006-07

	Priority	Sub Priority	Sum of FY 2003/04	Sum of FY 2004/05	Sum of FY 2005/06	Sum of FY 2006/07	
All MPDS 1-33 Determinants	2	A	97253	108301	116993	127199	30.8%
		B	45211	51463	55223	57537	27.3%
		C	42217	42910	44736	49503	17.3%
All MPDS 1-33 Determinants			184681	202674	216952	234239	26.8%

Source: QAS Internal Data

However, Table 1.26 below demonstrates that for all Determinants (including MPDS 1-33 (Consumer Demand) and Queensland Health demand, Private Health Sector Demand and Other Demand), there were a total of 327,394 Code 2 responses in 2006-07. These responses related to 284,705 Code 2 incidents.

Of the 327,394 Code 2 responses, there were a total of 249,131 Code 2 Patients, and 218,538 Code 2 transports. 30,593 Code 2 patients were treated and not transported. Of the not transported reasons, 29% were reported that transport was not required, whereas in 10% of cases the patient refused transport against ambulance officer advice. Other reasons for non-transport were that the patient was transported by other crews, and that responses related to standby incidents only.

Also in the 2006-07 financial year, there were 68,471 Code 2 responses where there was no patient. In addition, in the 2006-07 financial year there were 56,593 responses relating to priority Codes 1 and 2 for which there is no patient/transport/treatment data.

Table 1.26: Relationship between Incidents, Responses Patients, Transports in the 2006-07 Financial Year

	Incidents 2006/07	Responses 2006/07	Patients 2006/07	Transports 2006/07	Treated Not Transported 2006/07	Other - Not transported (No Patient) 2006/07	Total Patient and No Patient Responses 2006/07	Total Responses Less Responses reported with and without Patient 2006/07
Code 1	187362	272517	169757	150703	19054	55959	225716	46801
Code 2	284705	327394	249131	218538	30593	68471	317602	9792
Code 3	105009	116105	121377	119959	1418	14719	136096	-19991
Code 4	96542	98888	78244	78220	24	3236	81480	17408
NA/Service Purposes/Cas Room	9589	9797	2617	1483	1134	2122	4739	5058
TOTAL	683207	824701	621126	568903	52223	144507	765633	59068

Source: QAS Internal Data

As reported earlier, Queensland Ambulance Service has a growing response to incident ratio. However, assuming the ratio of responses to incidents holds for MPDS 1-33 data, the critical mass of clients identified for Code 2C referrals to locum GP services above would hold, with the 17,722 responses in the single determinant, MPDS 26 (Sick Person) Code 2C, for the South East corner of Queensland relating to a (potential) incident base of 15,410 and a (potential) patient base of 13,528.

Table 1.27: Response to Incident ratio 2003-04 to 2006-07

RESPONSE / INCIDENT RATIO				
	2003/04	2004/05	2005/06	2006/07
Code 1	1.39	1.41	1.44	1.45
Code 2	1.12	1.12	1.13	1.15
Code 3	1.12	1.11	1.10	1.11
Code 4	1.03	1.03	1.02	1.02
Code 1&2	1.23	1.23	1.25	1.27
Code 3&4	1.08	1.08	1.06	1.07
All Codes	1.18	1.18	1.19	1.21

Source: QAS Internal Data

Table 1.28: Response to Patient Ratio 2003-04 to 2006-07

RESPONSE / PATIENT RATIO				
	2003/04	2004/05	2005/06	2006/07
Code 1	1.48	1.51	1.56	1.61
Code 2	1.22	1.24	1.27	1.31
Code 3	1.04	1.05	1.05	0.96
Code 4	1.06	1.07	1.06	1.26
Code 1&2	1.33	1.34	1.38	1.43
Code 3&4	1.05	1.06	1.06	1.08
All Codes	1.21	1.24	1.27	1.33

Source: QAS Internal Data

Key Findings

- The top ten Code 1 MPDS 1-33 response categories account for 83% of all Code 1 responses related to the consumer driven “000” facility. Similarly, the top ten Code 2 MPDS 1-33 response categories account for 82.9% of all Code 2 responses related to consumer driven response activity.
- Code 1 responses are characterised by cases involving chest pain, breathing problems, traffic accidents unconsciousness, convulsions, cardiac arrest and death. Code 2 responses are characterised by falls, ‘sick people’, abdominal pains, traumatic injuries, psychiatric behaviour, back pain, sexual assault, and haemorrhage/lacerations. Thus, the profile of Code 1 and 2 responses is quite different, with different associated demand drivers.
- Even within Code 2s the profile of each subpriority, A, B and C, is also quite different. Headaches, psychiatric and abnormal behaviour, sick people and assault/sexual assault drive the 2A responses, with a massive increase also in the miscellaneous response

category of 2As. Abdominal pains, psychiatric and abnormal behaviour and traumatic injuries characterise 2B growth in responses, and sick people, falls and headaches are the main drivers of growth in the 2C category.

Queensland Health Demand

Source of Demand

As identified earlier in this report, Queensland Health demand for ambulance services is increasing across all Regions with the exception of Northern Region in which Queensland Health demand has fallen over the period 2003-04 to 2006-07.

From 2004-05, Queensland Health initiated demand for ambulance services has been categorised as either an Inter-facility transfer (code Red, Gold, Lime, Blue, Grey), or a Medically Authorised Transfer (QMAT). Table 1.29 presents a summary of Queensland Health demand from 2003-04 to 2006-07.

Table 1.29: Summary of Queensland Health Demand 2003-04¹¹ to 2006-07

MPDS	Sum of FY 2003/04	Sum of FY 2004/05	Sum of FY 2005/06	Sum of FY 2006/07
RED	12	17113	19855	22104
GOLD	1	14282	15944	16841
LIME	13	12459	13279	15097
BLUE	3	7380	8238	9536
GREY	11	4996	5137	5770
QIFT	38295	0	0	0
Total IFT Activity	38335	56230	62453	69348
Growth		47%	11%	11%
QMAT	33	75759	81129	81344
QDIS	14	13276	12973	13192
Total QMAT Activity	47	89035	94102	94536
Growth			5.7%	0.5%
Grand Total	38382	145265	156555	163884

Source: QAS Internal Data

Inter Facility Transfers (IFTs)

An IFT is the provision of transport for moving a patient to another facility for the purposes of obtaining further assessment, diagnostic services or medical treatment not available at the initiating facility.

IFTs are made up from three transport categories: Queensland Health Inter Facility transports (QIFTs), a sub-set of Medically Authorised Transports (MATs) and a subset of Queensland Health Medically Authorised Transports (QMATs).

Transport can be provided by any combination of road, fixed wing or rotary aerial services. An inter facility transfer involving an aerial leg is referred to as an aerial inter facility transfer (AIFT.) The mode/s of transport used to move the patient does not effect the allocation of a transport category. In their simplest form, MATs and QMATs describe all pre, post and inter-health facility QAS transports (aerial and road) authorised by a doctor, that do not fall within the definition of a QIFT.

¹¹ Queensland Health demand in 2003/04 did not include the separation of Queensland Health initiated MATs. These were traditionally included in MAT activity with Private Health Sector MATs. The separation of ordering forms for IFTs and MATs in 2004 has enabled the identification of MAT ambulance services ordered by Queensland Health. In addition the IFT data was captured according to the colour coded priority system from 2004/05 onward. Previously IFTs were identified only as QIFTs in the data set.

Figure 1.36 defines Queensland Health Inter Facility Transports.

Figure 1.36: Definition of a Queensland Health Inter Facility Transport (QIFT)

A QIFT is the provision of transport for moving an eligible patient:

- in a Queensland Health facility to another Queensland Health facility for the purposes of obtaining further assessment, diagnostic services or medical treatment not currently available at the referring facility or for ongoing care; or
- in a Queensland Health facility to a private or public facility for the purposes of obtaining further assessment, diagnostic services or medical treatment not currently available at the referring facility and funded by Queensland Health provided the patient is returned to the facility on the same day.

A QIFT involving an aerial leg is referred to as an AQIFT. For example, the facility to airport/helipad and subsequent airport/helipad to facility transportation by ambulance, is to be considered as part of the inter facility transfer for patients who meet the eligibility criteria.

For the purpose of the QIFT arrangements, an eligible patient is:

- an inpatient of a Queensland Health facility, including private and compensable patients (MAIC, Q-COMP, DVA), transported to another Queensland Health facility for continuing inpatient care
- an inpatient of a Queensland Health facility including private and compensable patients (MAIC, Q-COMP, DVA), transported to another facility, public or private for assessment, diagnostic services or treatment funded by Queensland Health
- patients presenting to the Emergency Department of a Queensland Health facility and then transported to another facility, public or private for assessment, diagnostic services or treatment funded by Queensland Health
- transport of patients from other countries that have reciprocal health care policy arrangements with Australia, provided it is for a non-pre-existing clinical condition. Those claiming refugee status entitlements and interstate patients who meet the above criteria are eligible patients under the QIFT arrangement.

An inpatient is defined as, a person admitted to a Queensland Health facility for an episode of care, including private, compensable, MAIC, Q-COMP and Department of Veterans Affairs (DVA) patients.

QIFTs are ordered according to certain criteria, including patient condition and required response time. The matrix below demonstrates the criteria for categorisation of QIFTs into Code Red, Lime, Blue and Grey categories. Gold QIFTs relate to those inter-facility transfers requiring an aerial response. The Code Red responses will result in an urgent acute ambulance response, and Lime, Blue and Grey relate to non-emergency responses. Table 1.30 depicts the QIFT ordering guide.

Table 1.30: Queensland Inter-facility Transfer Ordering Guide

QIFT ORDERING GUIDE

		QAS Code	Patient Category	Vehicle/QAS Escort Required	ETA	Booking Time Frame	
Emergency		RED 1B	Immediately life threatening	Emergency Response Ambulance Paramedic	Code 1B Response	Immediate Dispatch of Closest Paramedic Unit	Use locally agreed Number. Default: 000
		RED 2A	Immediately life threatening	Emergency Response Ambulance Paramedic	Within 20 min	Immediate	
		RED 2B	Potentially life threatening	Emergency Response Ambulance Paramedic	Within 35 min	Immediate	
		RED 2C	Acute Care Stable Patient	Emergency Response Ambulance Paramedic	Within 2 hours	Ready now	
Non-Emergency Transports	Appointments	LIME 3A	Appointment: Service required by a pre-determined time	Emergency Response Ambulance Paramedic	In time for appointment	Minimum 4 hrs before specific appointment	Use locally agreed fax or phone number. Default: 13 12 33
		LIME 3B	Appointment: Service required by a pre-determined time	PTS Vehicle Patient Transport Officer	In time for appointment	Minimum 4 hrs before specific appointment	
	Returns	BLUE 4A	Return to in-patient facility after appointment	Emergency Response Ambulance Paramedic	Within 2 hours	Ready now Must be ready at time of booking	
		BLUE 4B	Return to in-patient facility after appointment	PTS Vehicle Patient Transport Officer	Within 2 hours	Ready now. Must be ready at time of booking	
	Step Down	GREY 4A	In-patient transfer to a lower level facility	Emergency Response Ambulance Paramedic	Negotiated within 24 hours	Ready at negotiated time	
		GREY 4B	In-patient transfer to a lower level facility	PTS Vehicle Patient Transport Officer	Negotiated within 24 hours	Ready at negotiated time	

Broad Analysis of Patterns of IFT Demand

QIFTs are an important mechanism to ensure equitable access to healthcare for all Queenslanders. As well, QIFTs are increasingly used as a bed management tool for Queensland Health, allowing the agency to address the mismatch between the demand for acute and elective in-patient services and the bed stock available to provide that service.

QIFTs are also a mechanism for ensuring that technologically advanced infrastructure and the scarce resource of highly skilled staff can be utilised to their maximum. Thus QIFTs are an important mechanism to achieve efficiencies across the health care system.

QIFTs are expensive, but they are also methods of cost containment when their role within the wider context of delivery of health care is considered. They minimise the need for capital expenditure on new infrastructure and allow existing staff and infrastructure to be used to their maximum potential.

When utilised appropriately, QIFTs are an effective means of delivering Health services while allowing containment of the total Health budget. Thus the rise in demand for QIFTs needs to be viewed in the broader context of changes in health care delivery and the important role they play in overall cost containment across Government.

The increasing demand for inter-facility transfers demonstrated in Table 1.31 is driven by:

- The increasing population base;
- High hospital bed occupancy, especially in major referral centres;
- Geographical mismatch between the demand for specific medical services and the localities where the service is provided;
- Increasing health workforce specialisation, in particular, the medical workforce;
- Technological advances in health care which result in an increasing reliance on specialised and expensive infrastructure;
- A need to centralise services to provide this infrastructure;
- The need to maintain a critical mass of patients to ensure best practice is maintained; and
- The decline in the available health workforce particularly in rural and remote areas.

Table 1.31: Growth in Queensland Health Inter-Facility Transfers 2004-05 – 2006-07.

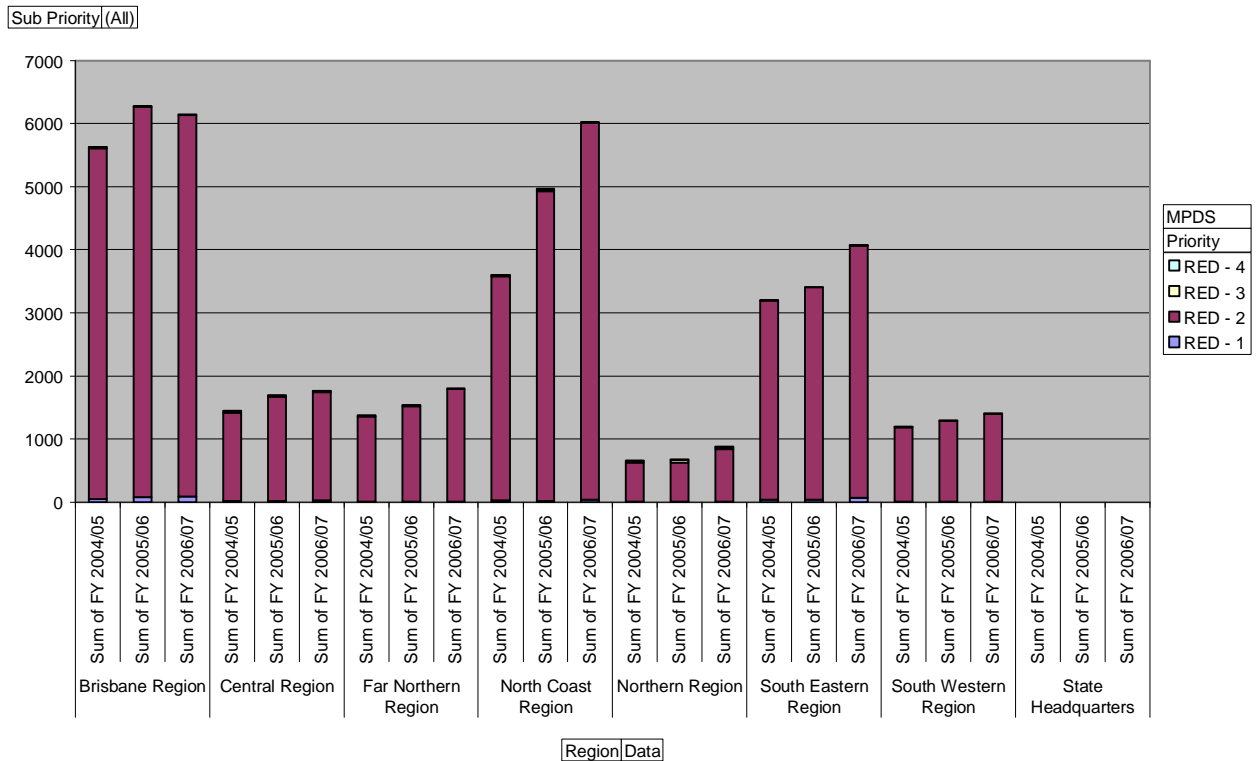
MPDS	Data	Grand Total	Growth
BLUE	Sum of FY 2004/05	7,380	
	Sum of FY 2005/06	8,238	
	Sum of FY 2006/07	9,536	29.2%
GOLD	Sum of FY 2004/05	14,282	
	Sum of FY 2005/06	15,944	
	Sum of FY 2006/07	16,841	17.9%
GREY	Sum of FY 2004/05	4,996	
	Sum of FY 2005/06	5,137	
	Sum of FY 2006/07	5,770	15.5%
LIME	Sum of FY 2004/05	12,459	
	Sum of FY 2005/06	13,279	
	Sum of FY 2006/07	15,097	21.2%
RED	Sum of FY 2004/05	17,113	
	Sum of FY 2005/06	19,855	
	Sum of FY 2006/07	22,104	29.2%
Total Sum of FY 2004/05		56,230	
Total Sum of FY 2005/06		62,453	
Total Sum of FY 2006/07		69,348	23.3%

Source: QAS Internal Data

Code Red responses are emergency Inter-facility transport responses, with four possible response codes available to Queensland Health Facilities. These are Code Red 1B for an emergency lights and sirens response from the nearest ambulance unit, and Codes Red 2A, Red 2B and Red 2C. Overall, Code Red responses have increased by 29.2% (4,991 responses) over the three year period from 2004-05 to 2006-07. Code Red responses represent step-up transfers within the Queensland Health System and might be the result of a patient being stabilised at a Regional Queensland Health Facility, but requiring transfer to a major referral centre.

There has been significant growth in Code Red responses in the North Coast Region particularly, as well as the South Eastern Ambulance Service Region. There has also been moderate, but sustained growth in Central, Far Northern, Northern and South Western Regions. As Figure 1.37 demonstrates, the Brisbane Region had sharp growth in Code Red responses between 2003-04 and 2004-05, with this growth easing into the 2006-07 financial year.

Figure 1.37: Regional Growth in Code Red Inter-Facility Transports 2004-05 to 2006-07



Source: QAS Internal Data

The Lime, Grey and Blue Inter-facility transports represent non-emergency services, requiring either a paramedic (A) or a patient transport officer (B). Lime transports are time critical and relate to appointments for individuals for diagnostic services or treatment in another health facility, Blue transports are non-time critical returns from appointments, and Grey transports relate to non-time critical step down transports to lower level Queensland Health facilities for ongoing lower level care and recovery. Gold Inter-facility transports are time critical transports for either step-up or step-down transports involving an aerial leg.

Across all Inter facility transport codes, growth has been significant for the North Coast and South Eastern Regions, as well as for Central Ambulance Service Region. Figures 1.38 to 1.41 demonstrate the level of growth attributable to each Region. There has been some growth in some codes in the Far Northern, South Western and Brisbane Regions. In general Northern Region has contained demand for Inter-facility transport services, with only moderate levels of growth in the Code Red and Lime categories in 2006-07.

There has been a lengthy process undertaken between Queensland Health and the Queensland Ambulance Service to review and refine the Queensland Inter Facility Transport system in order to streamline ambulance responses to meet the specific needs of Queensland Health. In addition, the system includes a price signal to ensure that only necessary transports are undertaken. However, it is the Audit Team's understanding that the Queensland Health budget for Inter Facility Transports is not devolved to Health Service Regions, and thus the effectiveness of the price signal may be limited to some extent.

Figure 1.38: Growth in Code Lime Inter-Facility Transports 2004-05 to 2006-07

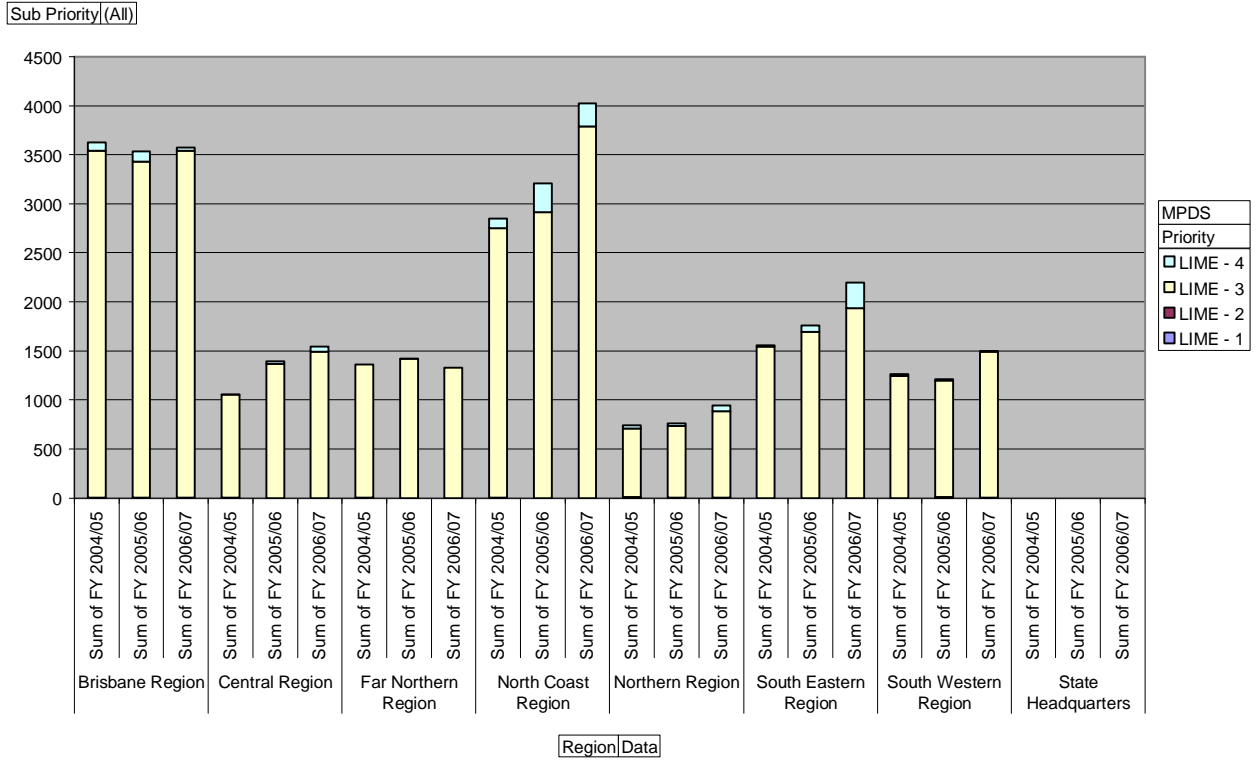


Figure 1.39: Growth in Code Gold Inter-Facility Transports 2004-05 to 2006-07

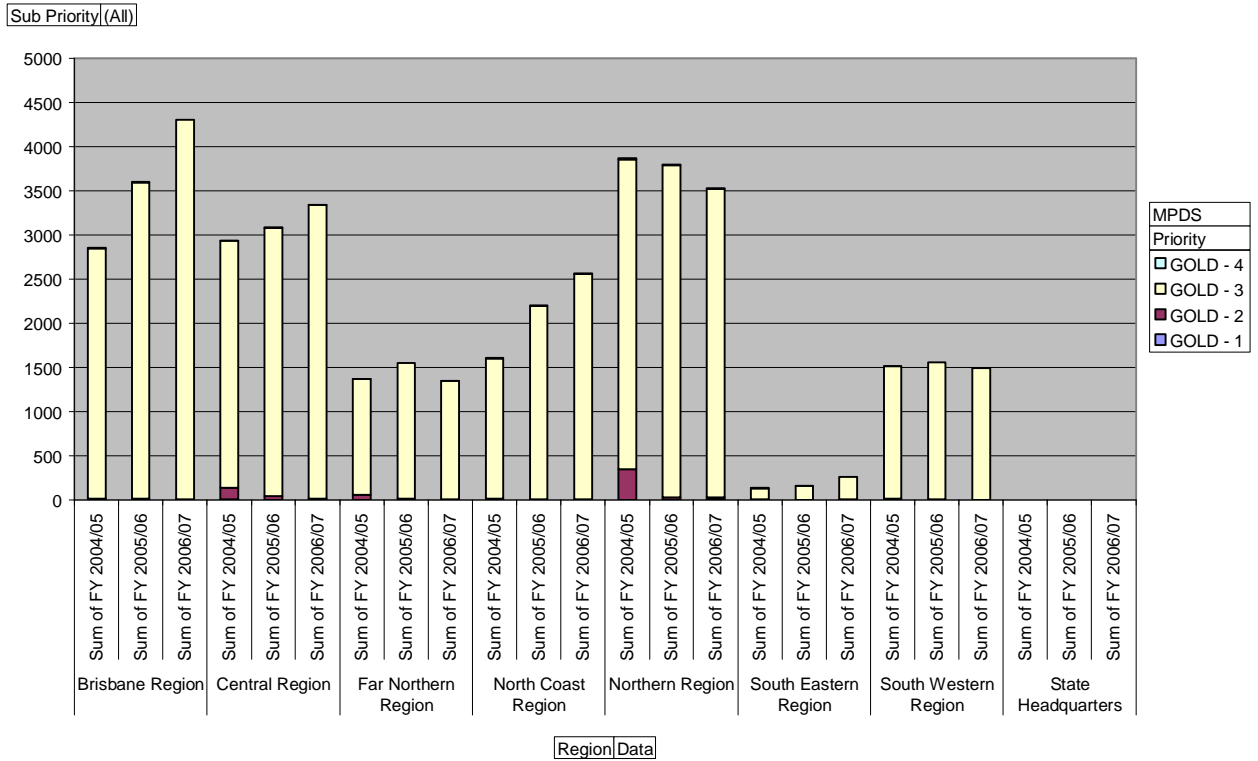


Figure 1.40: Growth in Code Blue Inter-Facility Transports 2004-05 to 2006-07

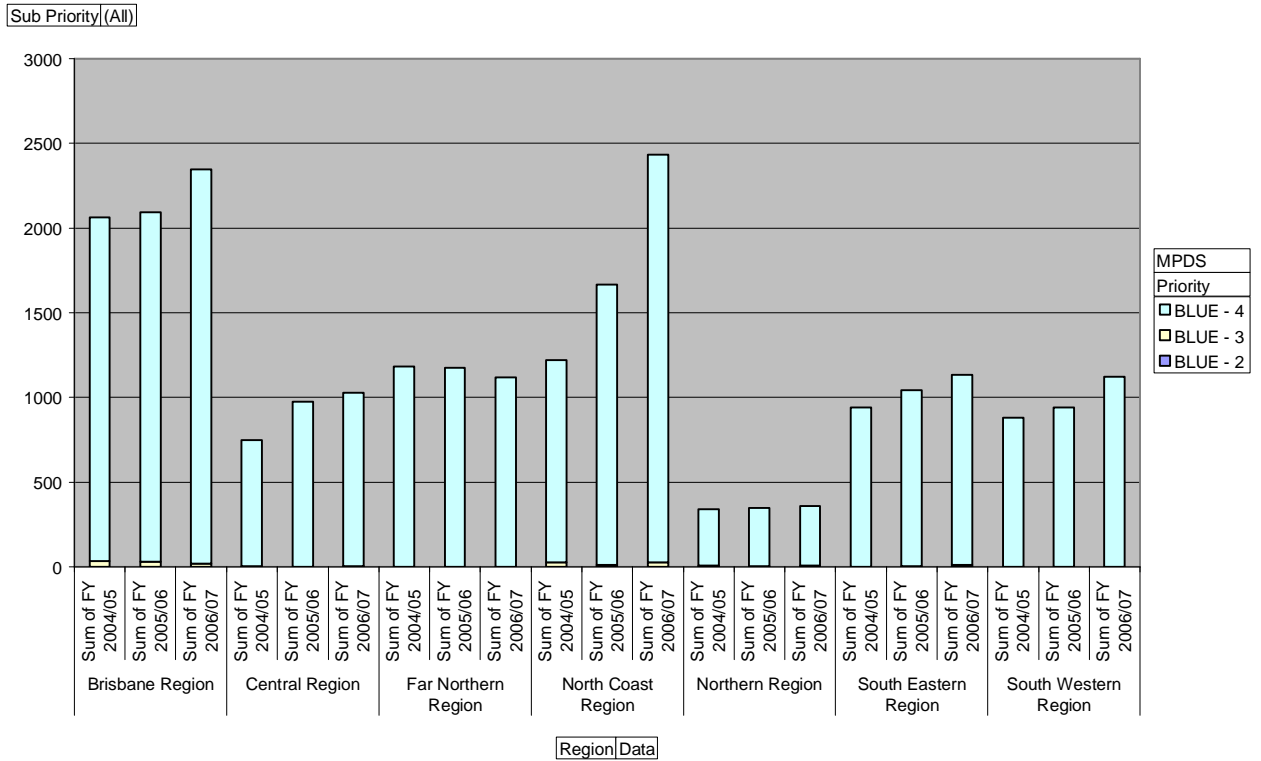
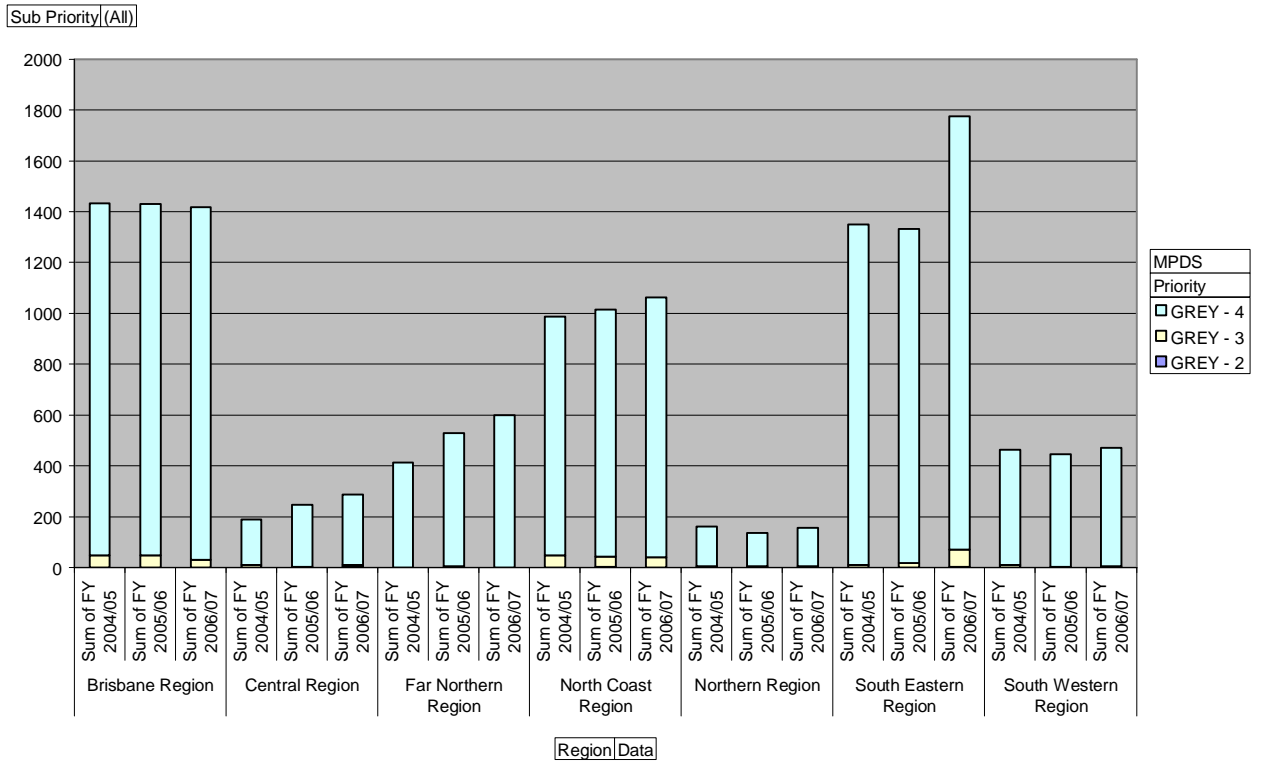


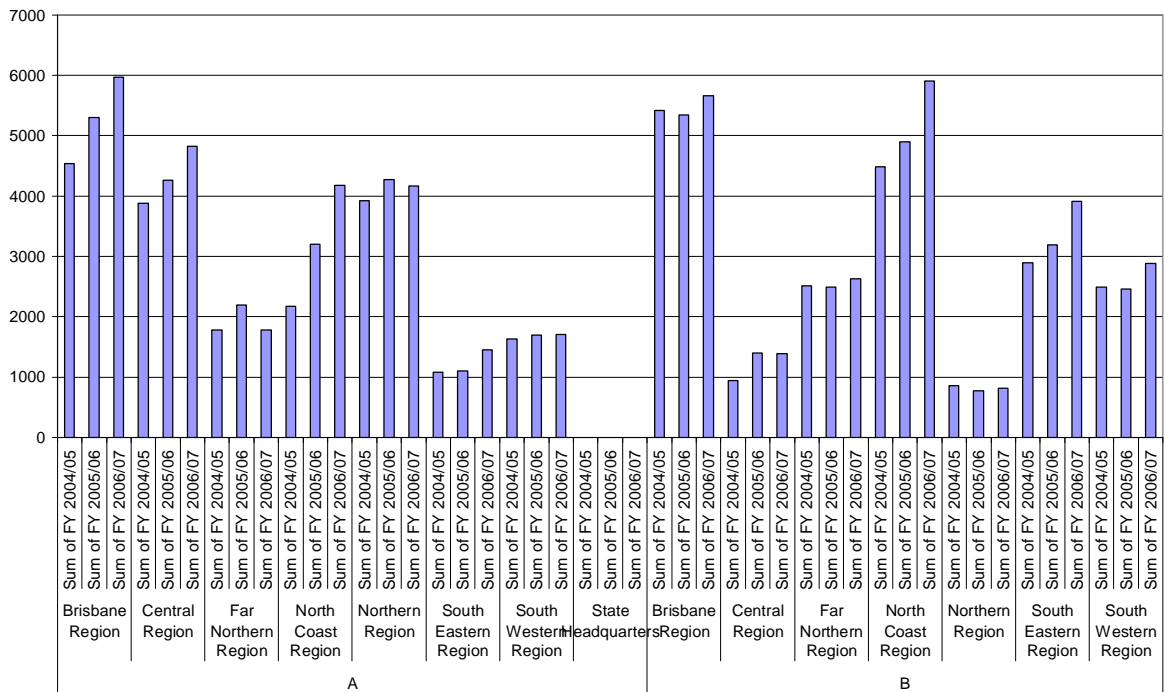
Figure 1.41: Growth in Code Grey Inter-Facility Transports 2004-05 to 2006-07



Source: QAS Internal Data

Further, the Queensland Inter Facility Transfer system is specific to the type of ambulance resource required. Where a transport requires only a patient transport officer, Queensland Health orders a category B transport. However, where a paramedic resource is required for the transport, a category A transport is ordered. Figure 1.42 demonstrates the relative split between the need for paramedic resources as opposed to non-paramedic resources on a Region by Region basis in 2006-07.

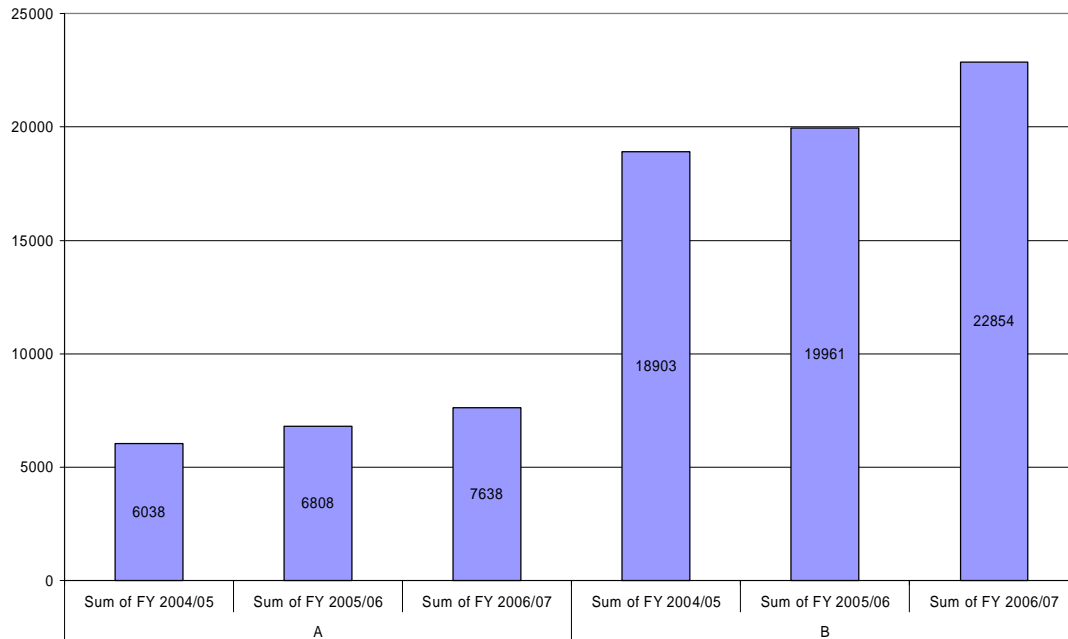
Figure 1.42: Regional split between Paramedic(A) and Non-Paramedic (B) Inter Facility Transports services for Code 3 and Code 4 non-urgent IFT services 2004-05 - 2006-07



Source: QAS Internal Data

It should be noted that, in many cases outside major metropolitan and provincial centres, paramedic resources will be utilised for Category B Inter-facility transports as not all Regions, and areas within Regions, use patient transport officers. Growth in demand for IFTs is strongest for paramedic services in the Brisbane, Central, and North Coast Regions. It should be noted that the strong growth in demand in Brisbane relates primarily to the Gold IFT category, being the aeromedical services. In the non-paramedic, non-emergency IFT demand market, growth has been strongest in the North Coast and South Eastern Regions, with some growth in the 2006-07 year in the South Western Region. The volume of IFT demand in the South East corner of the State (Brisbane, North Coast and South East Regions), along with the associated QMAT and MAT demand (to be discussed below) could potentially sustain the option of an alternative service provider operating in the non-paramedic patient transport market, and potentially also the paramedic market. Figure 1.43 demonstrates the number of IFTs in both the paramedic supply market and the non-paramedic supply (patient transport officer) market that would be available on a statewide basis. Figure 1.43 excludes GOLD IFT transports which relate to aeromedical transports.

Figure 1.43: Potential Queensland Market for IFT Services that would be potentially available to alternative transport service providers (Paramedic Market – As; Patient Transport Officer Market – Bs)



Source: QAS Internal Data

Queensland Health Medically Authorised Transports

Medically Authorised Transports (MATs) are transports that have been authorised by a medical practitioner using a Medically Authorised Transport Form and are distinct from “000” calls in that the call is not processed through the “000” facility and thus is not categorised into MPDS Determinants 1-33. These calls are categorised as either MATs, AMATs or QMATs. MATs originate from private practitioners or private health facilities whereas QMATs originate from within the Queensland Health System. AMATs (transports requiring an aerial leg) can originate from either a private practitioner or private facility, or from within Queensland Health.

MATS and QMATs are further defined in Figure 1.44 and the QMAT ordering guide depicted in Table 1.32.

Figure 1.44: Definition of Medically Authorised Transports (MATs) and Queensland Health Medically Authorised Transports (QMATs)

Patient transports that have been excluded from the definition of a QIFT are considered MATs and QMATs. A MAT or QMAT involving an aerial leg is referred to as an AMAT. QMAT (aerial or road) differs from MATs (aerial or road) in one regard only, that is, the approval initiating the transport process is given by a QH doctor.

MATs and QMATs meet the following criteria:

- Prehospital transport of patients, including transport by ambulance from residence, other private or public locations, or from the scene of an accident to a health facility including public hospitals.
- Patient transport after discharge from a Queensland Health facility by ambulance to a private health care facility for ongoing care, or to their place of residence.
- Private patients transported between private facilities.
- Patients discharged from private hospitals and transported to a public facility or their place of residence.
- Patients transferred between Queensland Health facilities and nursing homes, public or private.
- Queenslanders transferred from Interstate health facilities to a Queensland Health facility.
- Patients from interstate being returned to their home state.

Table 1.32: Queensland Health Medically Authorised Transports (QMATs) Ordering Guide

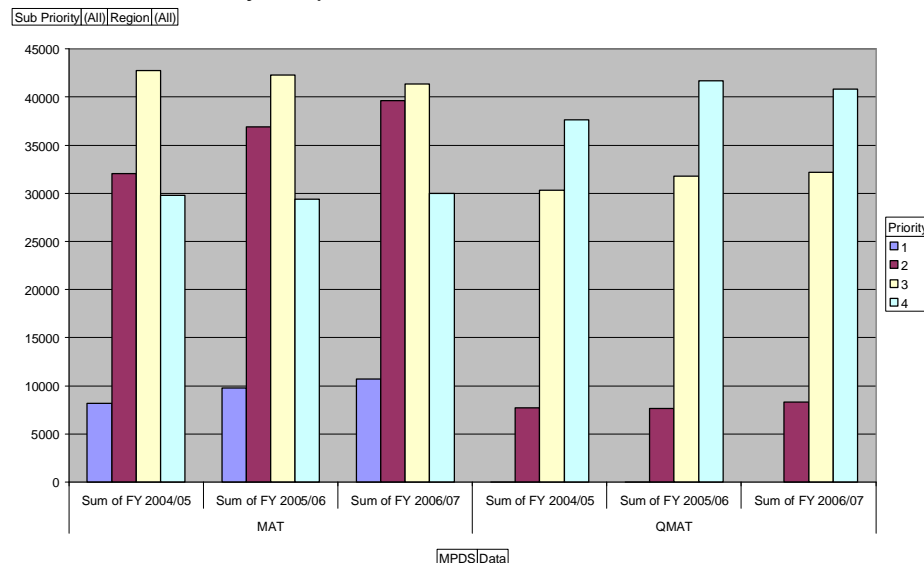
QMAT ORDERING GUIDE

	QAS Code	Patient Category	Vehicle/QAS Escort Required	ETA	Booking Time Frame	
Emergency	QMAT 2A	Immediately life threatening	Emergency Response Ambulance Paramedic	Within 20 min	Immediate	Use locally agreed Number. Default: 000
	QMAT 2B	Potentially life threatening	Emergency Response Ambulance Paramedic	Within 35 min	Immediate	
	QMAT 2C	Acute Care Stable Patient	Emergency Response Ambulance Paramedic	Within 2 hours	Must be ready at time of booking	
Non-Emergency Transports	QMAT 3A	Service required by a pre-determined time. Involves a patient's principal place of residence.	Emergency Response Ambulance Paramedic	In time for appointment	Minimum 24 hrs before specific appointment	Use locally agreed fax or phone number. Default: 13 12 33
	QMAT 3B	Service required by a pre-determined time. Involves a patient's principal place of residence.	PTS Vehicle Patient Transport Officer	In time for appointment	Minimum 24 hrs before specific appointment	
	QMAT 4A	Return to principal place of residence from an appointment/ E.D.	Emergency Response Ambulance Paramedic	Within 2 hours	Must be ready at time of booking	
	QMAT 4B	Return to principal place of residence from an appointment/ E.D.	PTS Vehicle PTO	Within 2 hours	Must be ready at time of booking	
	QDIS 4A QDIS 4B	Discharge of QH Inpatient Discharge of QH Inpatient	Emergency Response Ambulance Paramedic PTS Vehicle PTO	Negotiated within 24 hours Negotiated within 24 hours	Ready at negotiated time Ready at negotiated time	

Broad Analysis of Patterns of QMAT Demand

Figure 1.45 below demonstrates the different profiles of private sector generated MATs as opposed to the Queensland Health generated QMATs. QMATs primarily require a Code 3 or Code 4 response, with some urgent Code 2s. MATs, on the other hand, are characterised by a higher proportion of Code 2 and 3 responses, in addition to a large number of Code 1 responses.

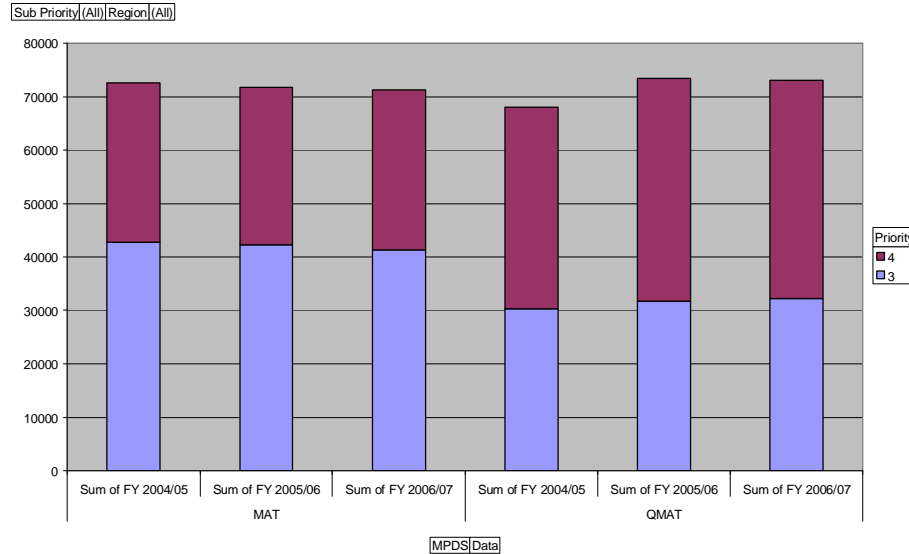
Figure 1.45: Increase in Private (MAT) and Public Sector (QMAT) Medically Authorised Transfers by Response Code 2004-05 to 2006-07



Source: QAS Internal Data

Queensland Health drives a considerable proportion of the non-urgent code 3 and code 4 activity throughout the State (see Figure 1.46 below). While, overall, volumes of Code 3 and Code 4 MAT and QMAT activity is similar between Queensland Health and Private Sector generated demand, MATs have a greater volume of Code 3s and QMATs have a greater volume of Code 4s. In addition, while the private sector reliance on Code 3 and 4 MATs is declining slightly, Queensland Health generated QMATs have increased substantially in 2005-06 prior to a slight softening in demand in 2006-07.

Figure 1.46: Code 3 and 4 MAT and QMAT responses 2004-05 to 2006-07



Source: QAS Internal Data

Regionally, however, Table 1.33 demonstrates that while in most Ambulance Service Regions, the demand for QMATs is in decline, or very low, demand for QMATs in the Brisbane Region and South Western Regions has risen sharply in the period between 2004-05 and 2006-07.

Table 1.33: Growth in Demand for QMAT and QDIS services by Region 2004-05 to 2006-07

Region	Sum of FY 2004/05	Sum of FY 2005/06	Sum of FY 2006/07	Growth
Brisbane Region	44177	49974	52388	19%
Central Region	4122	4543	4460	8%
Far Northern Region	9670	11547	9639	0%
North Coast Region	7124	7637	7257	2%
Northern Region	12430	10662	10203	-18%
South Eastern Region	9645	7774	8310	-14%
South Western Region	1866	1965	2278	22%
State Headquarters	1	0	1	0%
Grand Total	89035	94102	94536	6%

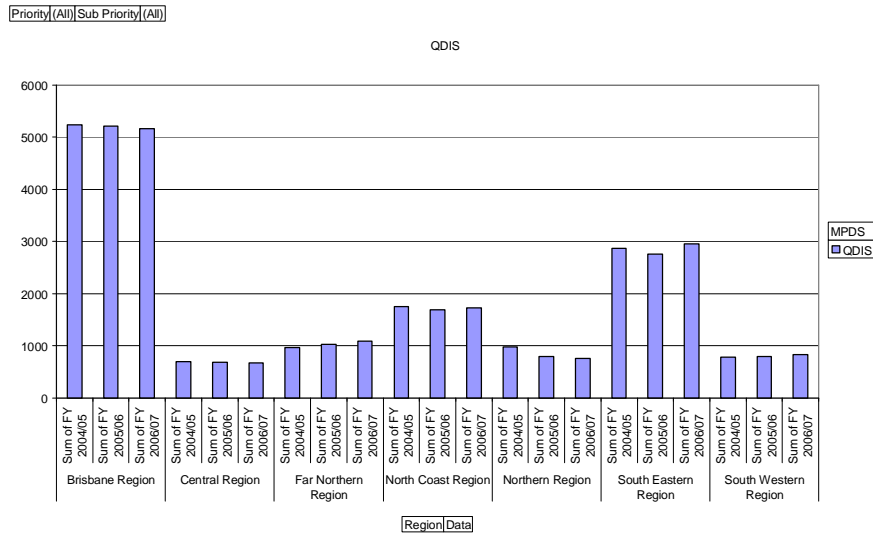
Source: QAS Internal Data

Currently, there is no price signal for Queensland Health in relation to their demand for QMAT services. Similarly to Inter-Facility Transports, Queensland Health relies on QMAT services to some extent in order to manage bed availability. MAT transfers cover all transports that do not fall within the definition of an Inter-facility transfer. This includes transfer of Queensland residents from Queensland Health facilities to private health care facilities for ongoing care, and also transfer of non-eligible interstate or overseas visitors between Queensland Health facilities.

In contrast to the pattern of growth for QMATs, the use of the Queensland Ambulance Service to discharge patients to their principal place of residence (QDIS) has remained relatively stable over the three year period from 2004-05 to 2006-07 (Figure 1.47). It is unclear to the Audit Team

whether all discharges are reflected in the QDIS figures or whether some hospitals utilise the QMAT ordering code for discharges also.

Figure 1.47: Regional Analysis of Queensland Health Discharges to an individual's principal place of residence.

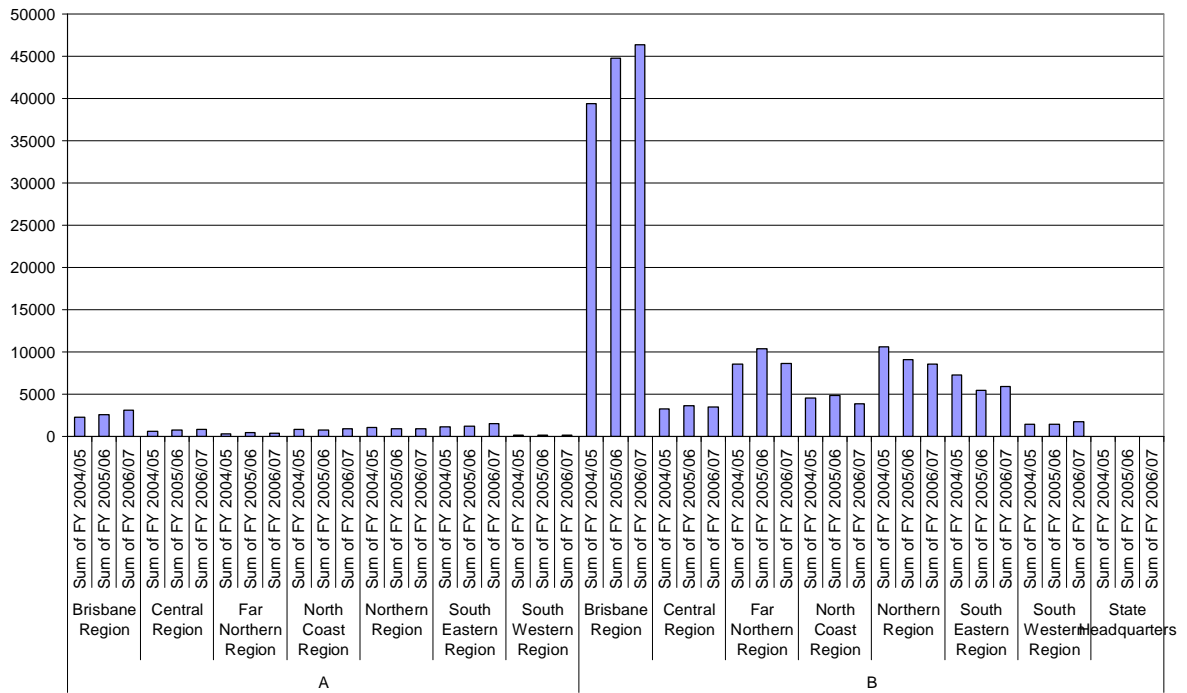


Source: QAS Internal Data

As mentioned previously, there are good reasons to transfer individuals by ambulance from within the Queensland Health system utilising any of the Inter Facility transfer, QMAT or QDIS codes available. Nevertheless, in many cases there are health system drivers for the increases in this demand, and health service planning and funding issues are likely to drive an increasing reliance on health-related transportation services. Queensland Health owns the budget for Inter-facility transfer services, however, the budget for QMAT and QDIS services remains within QAS. Thus there is no price signal to Queensland Health which assists in managing demand for these transportation services.

One option to rectify this, and impose a price signal on Queensland Health for QMAT and QDIS services would be to transfer the budget for these services to Queensland Health. Under a system in which there was an alternative provider of non-urgent non-paramedic transport services, the critical mass of demand for services in the Brisbane Region would provide an alternative option for Queensland Health to move patients around the health system in a more timely way. Should Queensland Health have management of their MAT budget, this would provide the opportunity to purchase these services from alternative providers. Figure 1.48 demonstrates the growth and critical mass of Queensland Health demand for MAT services in the Region.

Figure 1.48: Growth in Paramedic (As) and Non Paramedic (Bs) Queensland Health MAT demand by Region 2004-05 to 2006-07



Source: QAS Internal Data

Private Health Sector Demand

Source of Demand

Medically Authorised Transports generated from within the Private Health Sector reflects those MAT services authorised by General Practitioners, Private Practitioners, Private Hospitals, Private Nursing Homes and other authorised medical practitioners that do not operate from within the Queensland Health system. These practitioners can organise transport for their patients utilising the Queensland Ambulance Service utilising a telephone facility outside that of the "000" facility. These transports are captured in the QAS activity as MAT and AMAT services.

Table 1.34 shows the growth in MAT and AMAT transports across the priority codes from 2004-05 to 2006-07.

Table 1.34: Growth in MAT and AMAT Transports across Priority Codes 1 - 4 2004-05 to 2006-07

Priority	Sum of FY 2004/05		Sum of FY 2005/06		Sum of FY 2006/07		Growth	
	MAT	AMAT	MAT	AMAT	MAT	AMAT	MAT	AMAT
1	8185	4	9760	6	10708	2	31%	-50%
2	32046	146	36930	56	39664	50	24%	-66%
3	42746	4743	42324	5102	41335	6164	-3%	30%
4	29817	27	29408	9	29998	4	1%	-85%
Grand Total	112794	4920	118422	5173	121705	6220	8%	26%

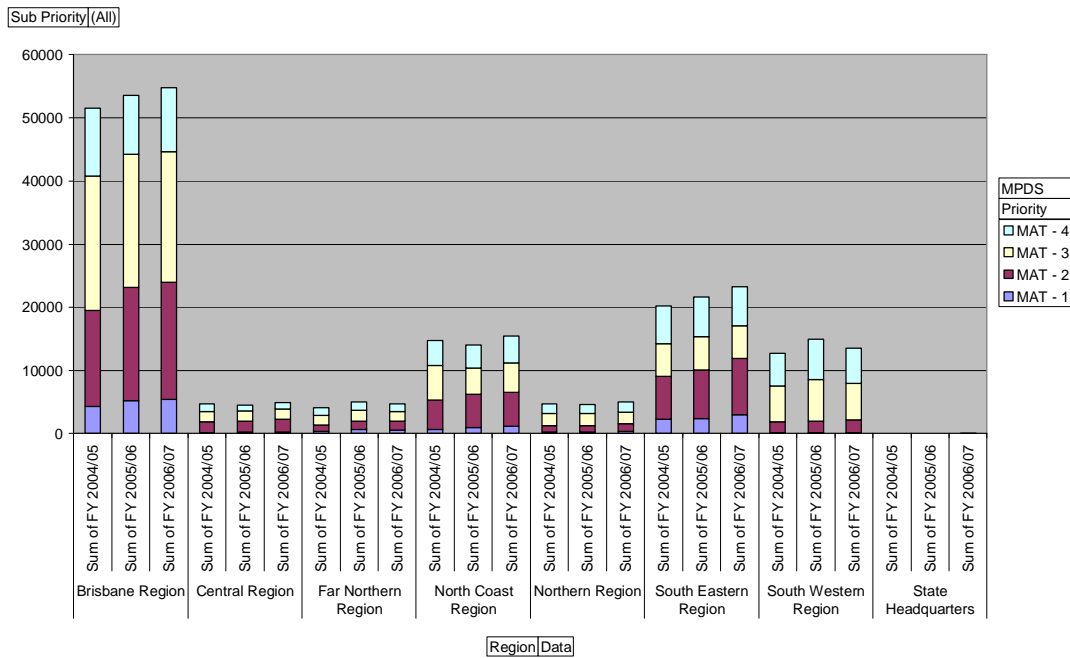
Source: QAS Internal Data

Overall, MAT transports have increased by 8% (8,911 responses) in the three year period from 2004-05 to 2006-07 and AMAT transports (involving an aerial leg) have increased by 26% (1300 responses) in the same period. Table 1.34 demonstrates that growth in MATs have been in the urgent Codes 1 and 2 responses, involving paramedic resources. Growth in AMAT transports has been overwhelmingly in the Code 3 transport category, relating to time critical non-urgent transports. All other categories of aerial transports (AMATs) have declined significantly in volume.

Broad Analysis of Patterns of Demand

The majority of growth in MAT responses is in the Brisbane Region, and South Eastern Region. North Coast Region has also demonstrated growth in the 2006-07 financial year, as have Central Region and Northern Region, albeit to a lesser extent. This is shown in Figure 1.49.

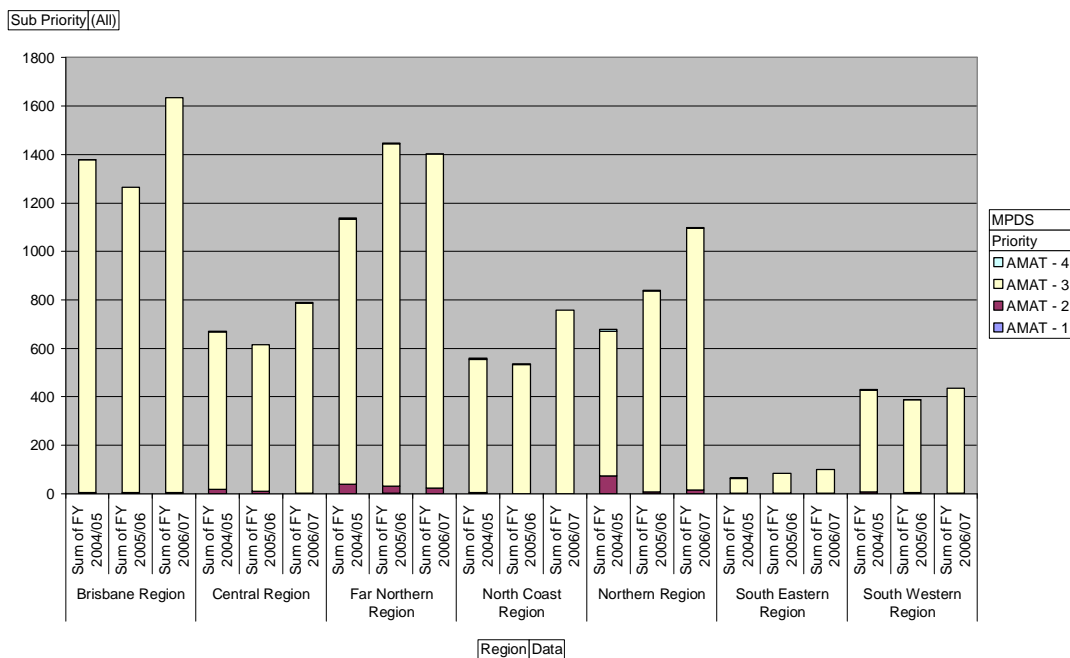
Figure 1.49: Regional analysis of MAT responses demonstrating growth over the Period 2004-05 to 2006-07.



Source: QAS Internal Data

The regional breakdown of AMAT responses is provided in Figure 1.50.

Figure 1.50: Regional analysis of AMAT responses demonstrating growth over the Period 2004-05 to 2006-07.



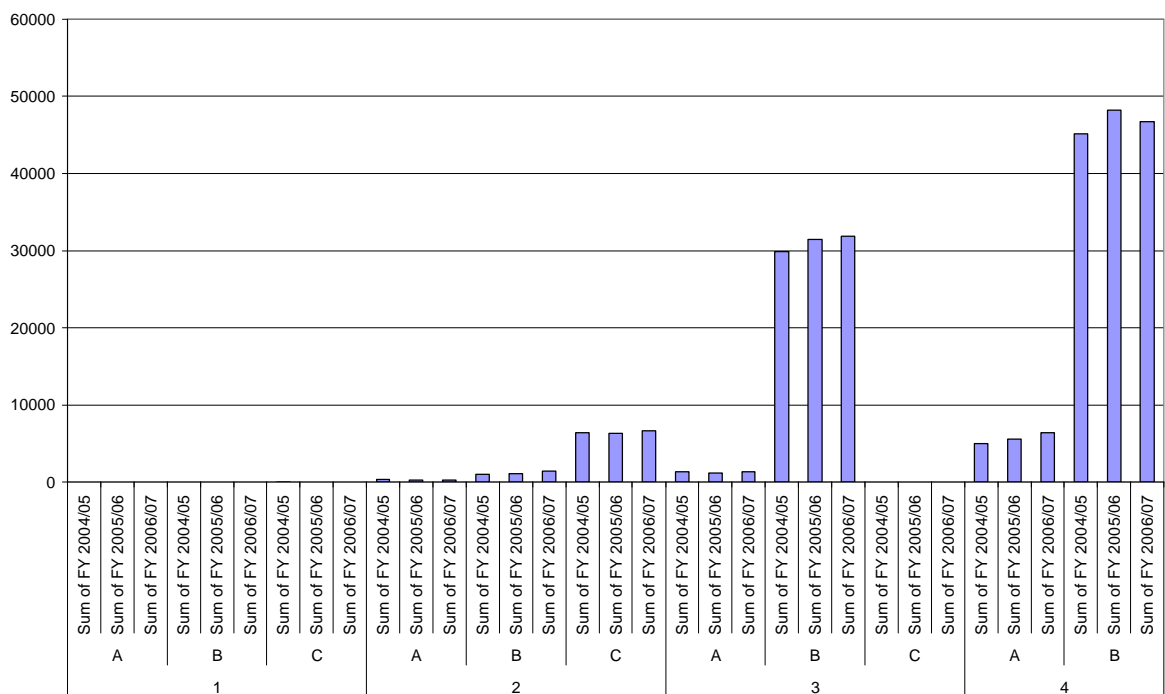
Source: QAS Internal Data

Brisbane Region, Central Region, North Coast Region, and Northern Region have demonstrated a significant level of growth in Aerial MATs (AMATs) in the 2006-07 financial year. For each of these Regions other than Northern Region, this significant growth followed a decline in activity in the previous 2005-06 year. There has also been a small growth in aerial MAT activity that can be attributed to South Eastern Ambulance Service Region.

Growth in MAT and AMAT activity overall has been moderate. However, it is again the Brisbane, North Coast and South Eastern regions that are contributing to the sustained levels of growth in these transports (see Figure 1.51). Currently, for MAT services and AMAT services there is no price signal which provides incentives to manage demand for these services. This is because, under the Community Ambulance Cover, all Queensland residents are fully covered for the costs of MAT transport services. In addition, the QAS is providing all MAT services across all priority Codes 1-4 thus with the high quantity of services delivered, this places significant pressure on ambulance service demand. The vast majority of cases are in the Code 3b and Code 4b categories which are the non-emergency cases requiring a Patient Transport Officer only.

Again, the opportunity exists to alleviate demand on the Queensland Ambulance Service by outsourcing the non-emergency, non-paramedic MAT transport services. Under such a model, QAS could potentially contract these services to a private provider, and implement a system of co-payments for these services in order to limit the growth in demand.

Figure 1.51: Pattern of Demand for Private Health Sector MAT and AMAT services by Priority and Sub Priority Response codes 2004-05 to 2006-07



Source: QAS Internal Data

Other Demand

Source of Demand

Other demand for Queensland Ambulance Services is defined as those responses which have been coded to the Categories MISC (Miscellaneous), Not coded or CAS (Casualty Room).

Casualty Room attendances have increased dramatically over the 4 year period from 2003-04 to 2006-07 (see Figure 1.35). These attendances have risen from 722 in 2003-04 to 11,341 in 2006-

07. Those responses which have not been coded to a category have also decreased by 50% over the four year period of analysis. However, miscellaneous responses have grown by 89% over the period. It has not been possible for the Audit Team to determine the reason for the significant increase in miscellaneous responses.

Table 1.35: Summary of Growth in Other Demand Categories MISC, Not coded and CAS 2003-04 to 2006-07

MPDS	Sum of FY 2003/04	Sum of FY 2004/05	Sum of FY 2005/06	Sum of FY 2006/07	Growth
MISC	13266	16019	19968	25096	89%
Not Coded	3941	4482	3057	1972	-50%
CAS	722	4844	12167	11341	1471%
Grand Total	17929	25345	35192	38409	114%

Source: QAS Internal Data

Broad Analysis of Patterns of Demand

The Regional analysis of the “Other Demand” category demonstrates a significant variance on a Region by Region basis in the growth patterns of these responses.

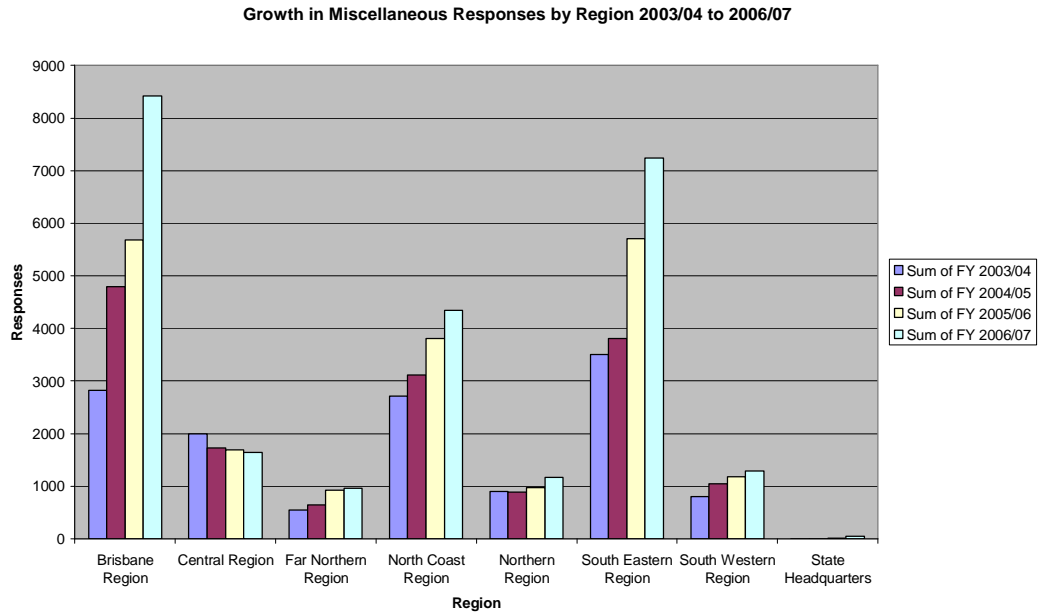
Table 1.36 presents a regional breakdown of growth in “other demand categories” and Figure 1.52, 1.53 and 1.54 breakdown further the “miscellaneous”, “not coded” and “casualty room” responses.

Table 1.36: Growth in Other Demand Categories, MISC, Not coded and CAS by Region 2003-04 to 2006-07

MPDS	Region	Sum of FY 2003/04	Sum of FY 2004/05	Sum of FY 2005/06	Sum of FY 2006/07	Growth
MISC	Brisbane Region	2821	4789	5686	8414	198%
	Central Region	1991	1731	1688	1642	-18%
	Far Northern Region	545	647	927	960	76%
	North Coast Region	2708	3116	3806	4339	60%
	Northern Region	896	883	971	1164	30%
	South Eastern Region	3504	3809	5706	7245	107%
	South Western Region	798	1041	1177	1290	62%
	State Headquarters	3	3	7	42	1300%
MISC Total		13266	16019	19968	25096	89%
Not Coded	Brisbane Region	31	14	18	9	-71%
	Central Region	376	239	188	94	-75%
	Far Northern Region	516	339	158	53	-90%
	North Coast Region	174	108	41	0	-100%
	Northern Region	192	202	102	135	-30%
	South Eastern Region	0	981	1	32	-97%
	South Western Region	2652	2599	2549	1649	-38%
Not Coded Total		3941	4482	3057	1972	-50%
CAS	Brisbane Region	50	249	426	556	1012%
	Central Region	141	2775	8427	8104	5648%
	Far Northern Region	253	1156	1651	1367	440%
	North Coast Region	127	242	292	268	111%
	Northern Region	17	156	757	527	3000%
	South Eastern Region	114	157	210	252	121%
	South Western Region	20	109	404	266	1230%
	State Headquarters	0	0	0	1	
CAS Total		722	4844	12167	11341	1471%
Grand Total		17929	25345	35192	38409	114%

Source: QAS Internal Data

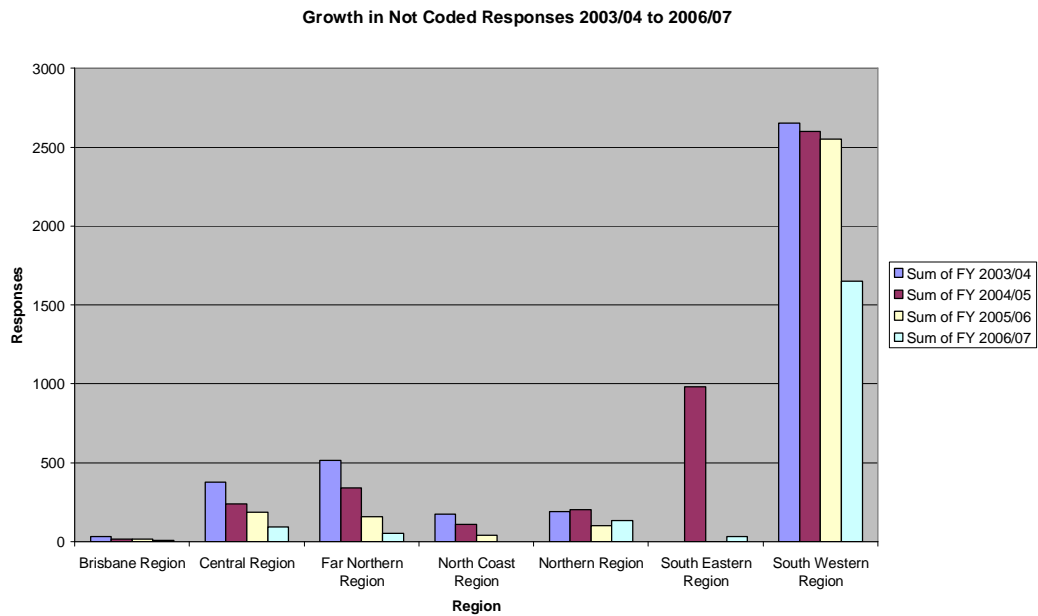
Figure 1.52: Growth in Miscellaneous Responses by region 2003-04 to 2006-07.



Source: QAS Internal Data

Miscellaneous responses have risen in most regions with the exception of Central Region. However, the greatest growth has been in Brisbane Region, North Coast Region and South Eastern Regions.

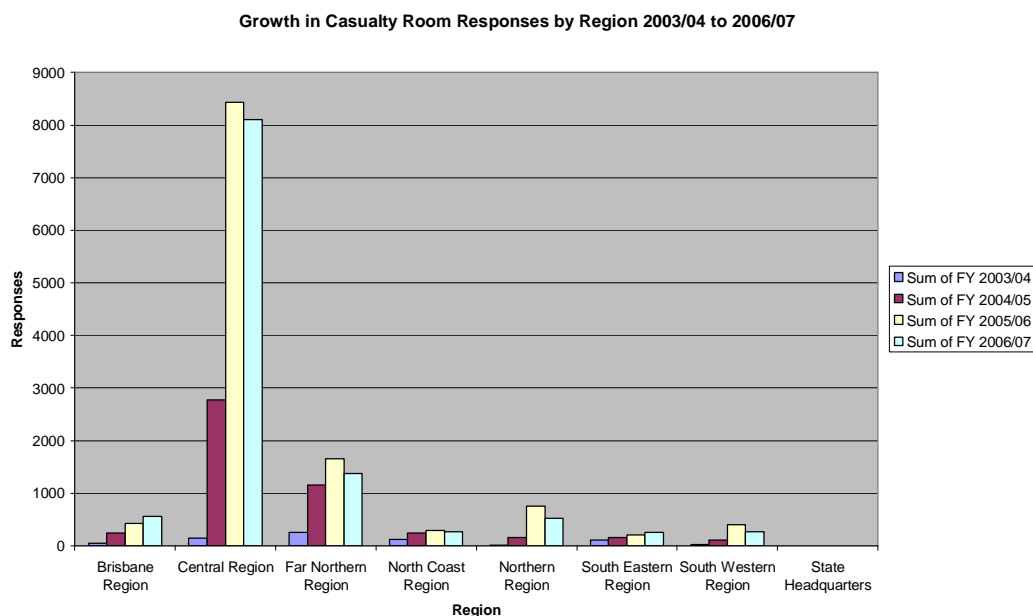
Figure 1.53: Growth in Not Coded Responses by region 2003-04 to 2006-07.



Source: QAS Internal Data

Most Regions have diminished their uncoded responses by a significant amount. However, South Western Region continues to demonstrate a significant volume of responses which have not been coded. The reasons for this pattern in the South Western Region are unclear.

Figure 1.54: Growth in Casualty Room Responses by Region 2003-04 to 2006-07.



Source: QAS Internal Data

Central Region relies to the greatest extent on Casualty Room responses with a significant increase in these responses in the 2005-06 financial year.

SUMMARY

Trends in Incidents and Responses

- Demand for Queensland Ambulance Service transports, as measured by reported patients treated and transported, or treated and not transported is considerably lower than the supply side of the equation which is measured according to the response to a particular incident.
- There is a growing gap between the response to incident ratio and the response to patient ratio, with the latter increasing sharply in the 2006-07 financial year. This suggests that on a patient by patient basis, the Queensland Ambulance Service is becoming more resource intensive.
- Brisbane and the South East Regions have the highest response to incident ratio across all Regions, which most likely reflects the availability of resources in these areas of the State.
- The growth trends in Brisbane and the South East similarly reflect a significant level of growth in responses particularly in emergency Codes 1B, 2A and 2C response categories.
- Whereas the North Coast Region also shows strong growth in response data, the response to incident ratio for this Region is below the State average. Thus it appears that growth in this region is more directly related to an increase in the number of incidents.
- In fact, 25% of all responses in the State arguably do not relate to a patient transport or a patient treatment. These responses may however be related to a standby presence at a major event, or to a hoax, abscondment or a diversion of an ambulance unit to a higher priority incident. It may also be the case that multiple responders do not record a treatment or transport if their backup is cancelled, or the treatment/transport is handled by another team.

- Given the number of standby responses, however, appears to be decreasing, the increasing response to incident / response to patient ratios may reflect any combination of the following:
 - Increasing multiple responses to emergency incidents;
 - Increasing redirections of ambulances to higher priority incidents, thereby generating additional responses to lower priority incidents; and/or
 - Increasing number of responses related to hoaxes and cancellations.
- There may be a level of unmet demand in the Code 4 response category. This is suggested by the sharp increase in 2006-07 in response to patient ratio. This reflects an increasing number of responses for a lower number of Code 4 patients transported and-or treated. It may be that because there are a higher number of units responding to low priority cases being redirected to higher priority cases, Code 4 incidents (non-urgent, non-time critical), being the least urgent transports, are reflecting a similar number of responses to the incidents, but fewer people are actually being transported. Hence there may be a level of unmet demand in the lower priority responses.
- The expected growth rate in ambulance responses between 2007-08 and 2011-12 range between 5% and 6% compared with over 8% which is exhibited by the historical data. This will mean that ambulance responses are likely to exceed 1 million responses per annum as early as 2009-10.

Linking Trends in Emergency Department Data

- Disproportionate growth in QAS ambulance transports compared to QH emergency department presentations demonstrates a higher propensity of Queenslanders to use ambulance services for transport to public hospital emergency departments in the post-CAC period as compared to the pre-CAC period.
- PricewaterhouseCoopers, in their report *"Efficiency and Effectiveness of the Queensland Ambulance Service"* (November 2007) have identified that one off changes in operations, pricing and reporting can help to explain a degree of growth in demand for ambulance services over the six year period from 2001-02 to 2006-07. Figure 1.18 outlines their discussion around the contributing factors, including the Community Ambulance Cover (CAC), changes to the Queensland Ambulance Case Information Reporting (QACIR) System and the introduction of the 13 HEALTH facility.

Consumer Profile

- The 75+ and the 0-17 age groups are the highest users of emergency ambulance services. However, the older age groups from 65 – 74 and 75+ are the highest users of non-emergency ambulance services. There is nevertheless some growth in non-emergency ambulance services in the younger age groupings, which most likely reflects the increasing dependence of the health system on non-urgent Code 3 and 4 ambulance services to assist in managing scarce health resources.
- There was a significant spike in utilisation data for Code 1 and 2 responses in the younger age groups in the period directly following the introduction of the Community Ambulance Cover. While significant growth was experienced in all younger age groups, the most significant growth was experienced in the 18-24 year group.
- The sharp increase in ambulance demand for 18-24 year olds, combined with the fact that the surge in ambulance demand has been in the higher acuity categories suggests demand management strategies need to be targeted to this component of service demand.
- The ageing of the population (ie the increase in the share of the population aged 65 and above) is not imposing disproportionate pressure on ambulance services. Prior to the introduction of the CAC, people in the over 65 age group were more likely to be paid members of the QAS or receive pensioner discounts (introduced 1 January 1999) for accessing QAS services, meaning the price signals to this demographic have not changed substantially since July 2003.

- The PricewaterhouseCoopers (2007) study has shown that, based on presentations at the Royal Brisbane Hospital emergency department, while hospitals are dealing with proportionally more urgent cases, ambulances are being used by individuals with less urgent conditions.

Regional Demand Profile

- All Ambulance Service Regions have experienced growth across all demand markets over the period between 2003-04 and 2006-07, with the exception of Northern Region which has experienced a significant decline in Queensland Health demand, and South West Region which has had a decrease in 'Other' demand.
- Overwhelmingly the growth has been consistently due to increasing demand from the consumer driven "000" demand market, closely followed by Queensland Health demand in Central, South West, North Coast and Brisbane Regions. Private sector demand growth has been highest in Northern Region and the South East Region.
- Significant levels of 'Other Demand' has been experienced in all Regions with the exception of South West Region. 'Other' Demand relates to responses not coded, miscellaneous responses and casualty room attendances. Casualty room attendances were minimal in most Regions as a growth driver, with the exception of Central Region in which casualty room attendances grew significantly.

Consumer Driven Demand "000" Facility

- The top ten Code 1 MPDS 1-33 response categories account for 83% of all Code 1 responses related to the consumer driven "000" facility. Similarly, the top ten Code 2 MPDS 1-33 response categories account for 82.9% of all Code 2 responses related to consumer driven response activity.
- Code 1 responses are characterised by cases involving chest pain, breathing problems, traffic accidents unconsciousness, convulsions, cardiac arrest and death. Code 2 responses are characterised by falls, 'sick people', abdominal pains, traumatic injuries, psychiatric behaviour, back pain, sexual assault, and haemorrhage/lacerations. Thus, the profile of Code 1 and 2 responses is quite different, with different associated demand drivers.
- Even within Code 2s the profile of each subpriority, A, B and C, is also quite different. Headaches, psychiatric and abnormal behaviour, sick people and assault/sexual assault drive the 2A responses, with a massive increase also in the miscellaneous response category of 2As. Abdominal pains, psychiatric and abnormal behaviour and traumatic injuries characterise 2B growth in responses, and sick people, falls and headaches are the main drivers of growth in the 2C category.

Queensland Health IFT Demand

- There has been a lengthy process undertaken between Queensland Health and the Queensland Ambulance Service to review and refine the Queensland Inter Facility Transport system in order to streamline ambulance responses to meet the specific needs of Queensland Health. In addition, the system includes a price signal to ensure that only necessary transports are undertaken. However, it is the Audit Team's understanding that the Queensland Health budget for Inter Facility Transports is not devolved to Health Service Regions, albeit that there is a process in place to implement a devolved IFT budget, and thus the current effectiveness of the price signal may be limited to some extent.
- There has been 23.3% growth in Queensland Health demand for IFT services in the period between 2004-05 to 2006-07. This demand growth has centred around the South East corner of the State in the Brisbane, South East and North Coast Regions. However, the growth in IFT demand in Brisbane relates more specifically to Gold IFT services

(aeromedical). Nonetheless, there is a significant volume of IFT demand in the south east of Queensland.

- The option of an alternative provider of non-emergency transport services (focusing on either the non-paramedic transports (Bs) or both paramedic and non-paramedic transports (As and Bs)) would potentially assist in improving the capacity of the Queensland Ambulance Service to respond to emergency Code 1 and 2 incidents. Any options for alternative providers would need to consider the volume of Code 3 and 4 activity in the Queensland Health IFT and MAT demand market, and the private sector MAT demand market.

Queensland Health MAT Demand

- Queensland Health MAT demand (QMATs) have increased substantially in the Brisbane Region, but have declined in most other Ambulance Service Regions.
- Currently there is no price signal which limits demand for QMAT and QDIS services.
- This could be rectified by devolving the budget for QMAT and QDIS services to Queensland Health.
- A further strategy to reduce the burden of providing non-emergency services on the QAS is to introduce a model which enables alternative providers of non-emergency patient transport services to enter the supply market.

Private Health Sector Demand

- Growth in Private Sector MAT demand has grown significantly for Category 1 (30%) and 2 (24%) responses, particularly in the Brisbane, South East and North Coast Ambulance Service Regions over the period from 2004-05 to 2006-07.
- Overall, Private Sector MAT demand has grown for all response Codes 1-4 by 8% in the three year period from 2004-05 to 2006-07.
- Code 3 AMATs (aerial MATs) have grown by 30% over the same period, but have declined in all other response codes, albeit these other response codes are less voluminous. Overall AMATs have grown by 26% over the three year period.
- Currently, for MAT services and AMAT services there is no price signal which provides incentives to manage demand for these services. This is because, under the Community Ambulance Cover, all Queensland residents are fully covered for the costs of MAT transport services.
- In addition, the QAS is providing all MAT services across all priority Codes 1-4 thus with the high quantity of services delivered, this places significant pressure on ambulance service demand. The vast majority of cases are in the Code 3B and Code 4B categories which are the non-emergency cases requiring a Patient Transport Officer only.
- Again, the opportunity exists to alleviate demand on the Queensland Ambulance Service by outsourcing the non-emergency, non-paramedic MAT transport services. Under such a model, QAS could potentially contract these services to a private provider, and implement a system of co-payments for these services in order to limit the growth in demand.

Other Demand

- Miscellaneous responses are growing significantly and the Queensland Ambulance Service needs to examine this growth with a view to providing greater specificity around the reasons for this growth and processes to manage it.
- South Western Region has a high proportion of Non-Coded responses in relation to both their overall activity, and in comparison to other regions. Although these are declining steps need to be taken to ensure non-coded responses are minimised across all Regions, particularly the South Western Region.

Chapter 2 – Demand Management Options

This section of the report outlines the various demand management strategies that could be considered for ambulance services. In particular, it provides an overview of models used in other jurisdictions and an assessment of their applicability in the Queensland context.

Ambulance services and hospital emergency departments, worldwide, are under significant pressure as the absolute number of emergency calls continues to increase. Mechanisms tailoring the clinical appropriateness of an emergency response are needed to provide rapid, targeted patient care for those most in need plus provide system efficiencies and benefits through more effective use of limited and expensive human and infrastructure resources.

As Table 2.1 shows, all Queensland Ambulance Service Regions have experienced dramatic growth in demand for ambulance services, well beyond that anticipated from population factors alone. The exception to this has been Northern Region which has experienced relatively normal growth over the four year period from 2003/04 to 2006/07 consistent with population growth over the period.

The greatest volume of growth has been experienced in the South East corner of the State, specifically in Brisbane Region, South Eastern Region and the North Coast Region. On a percentage growth basis, the greatest level of growth has been in the North Coast Region (40%), Central Region (36%) and Far Northern Region (31%).

Table 2.1: Summary of Growth in Responses by Region 2003/04 to 2006/07

Region	Sum of FY 2003/04	Sum of FY 2004/05	Sum of FY 2005/06	Sum of FY 2006/07	Growth %	Growth #
Brisbane Region	244,191	257,806	282,283	311,995	28%	67,804
South Eastern Region	129,414	137,728	146,742	162,786	26%	33,372
North Coast Region	80,387	88,317	96,386	112,404	40%	32,017
Central Region	50,837	54,758	64,306	69,303	36%	18,466
Far Northern Region	42,731	49,407	58,437	56,071	31%	13,340
South Western Region	42,285	44,803	49,368	50,596	20%	8,311
Northern Region	57,490	58,598	59,203	61,546	7%	4,056
State Headquarters	191	134	221	1,653	765%	1,462
Grand Total	647,526	691,551	756,946	826,354	28%	178,828

Source: QAS Internal Data

There has been considerable background work undertaken within the Department of Emergency Services to identify options for managing the increasing demand for ambulance services. Primarily, options identified revolve around managing less acute cases using alternative response strategies in order to deliver effective ambulance service responses to those that most need them, in addition to delivering a more appropriate service response to less acute cases. In addition, the Audit Team has identified additional options which could be targeted at the increasing demand for ambulance services.

Strategies to Manage Demand for “000” Services

1. Providing additional clinical triaging of cases in either within the Ambulance Call Centre; or within 13 HEALTH, in order to limit cases that QAS responds to because of a lack of consumer awareness of alternative care options, and because of heightened consumer perceptions about their need for an ambulance resource. As part of this strategy it would be necessary to enhance referral systems within Queensland to provide alternative care pathways for individuals, including the engagement of mobile GP services which provide both a home visit and after hours service to patients, referral to community nurses and mental health services, or referral to health advice and counselling lines.
2. Changing the response options for ambulance officers to encompass non-transport options such as treat and refer and treat and leave, and enhanced clinical practice for rural

areas. This would limit the cases that end up at Queensland Health emergency departments to those that actually need to be there.

Strategies to Manage Demand for Queensland Health Services

3. Devolving the QMAT and QDIS budget to Queensland Health and ensuring the devolution of the IFT, QMAT and QDIS budgets to regional levels within Queensland Health.

The following strategies will also assist in managing ambulance service demand, but relate to funding or organisational arrangements within the QAS. These strategies are fully developed in other sections of this Audit Report:

Strategies to Manage Demand from “000” Services, and the Private Health Sector

4. Introducing a co-payment at the point of service delivery in order to introduce a price signal to patients that use ambulance services to access health care, rather than utilising private or public transport alternatives; (Chapter 8 – Future Funding Strategies).
5. Opening up the non-emergency, non-paramedic transport market to private providers of ambulance services; (Chapter 5 - Organisational Effectiveness and Service Delivery Model).

Integrated Approach to Demand Management

STRATEGY 1 – PUBLIC EDUCATION AND AWARENESS CAMPAIGN ABOUT THE APPROPRIATE USE OF AMBULANCE SERVICES

Public education campaigns have been used in other jurisdictions as means of managing the demand for ambulance services. The National Health Service in the UK has embarked on a number of campaigns to encourage the public to use the ambulance for emergencies only and to consider alternative health care options for non-urgent illness and injury.

These campaigns are reported to have mixed results with the risk that promoting the ambulance service could have the unintended consequence of further stimulating demand. However, the evaluation of the London “*Only one of these is a taxi service*” campaign which was conducted in 2001 reported that it had reduced inappropriate usage from around 23% to 21%. Given the level of demand already being experienced in Queensland, the potential for further increases would appear to be limited.

Such a campaign would need to be carefully crafted to avoid discouraging people who may genuinely need an ambulance from calling. It should focus on providing the public with examples of what constitutes inappropriate use and the alternative services available to them. It should also emphasise that arrival by an ambulance at a public hospital will not result in quicker treatment at a hospital emergency department and remind the general public that it is an offence to make prank or hoax calls to the ambulance service and that fines/penalties apply.

STRATEGY 2: IMPROVED CLINICAL TRIAGING AT THE POINT OF THE “000” CALL EITHER WITHIN THE AMBULANCE COMMUNICATIONS CENTRE OR BY 13 HEALTH, AND ESTABLISHMENT OF REFERRAL PROTOCOLS AND SERVICES.

There are three identifiable junctions along the QAS emergency response continuum where resource allocation decisions and response capabilities are considered:

- a) *On receipt of the “000” call utilising the AMPDS algorithm;*
- b) *On scene where treatment occurs and transport options are examined; and*
- c) *On transport, where destination is determined.*

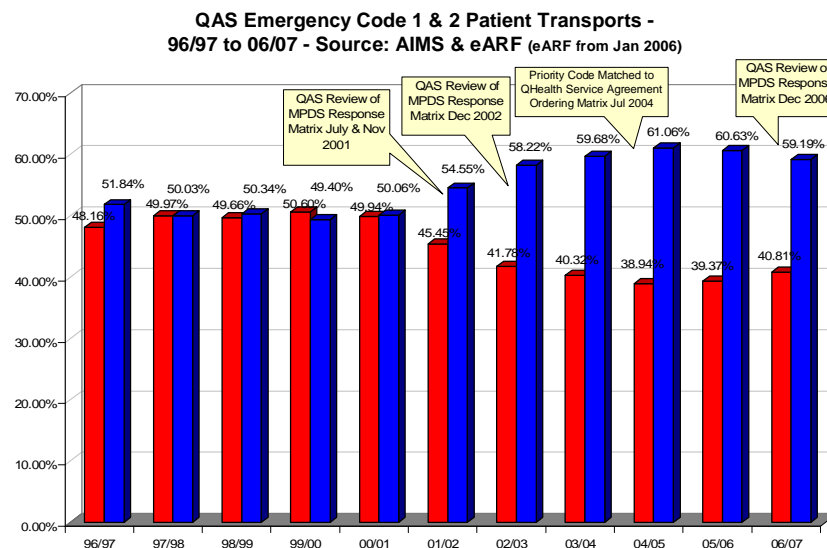
Strategy 1 operates at the first junction, on receipt of the “000” call and involves utilising the AMPDS algorithm to alter the response strategy for pre-identified MPDS codes.

There are currently no options available to QAS, other than respond, treat and transport, once they have assumed the duty of care in responding to any received “000” call and have allocated a Response Code.

The Medical Director, QAS has responsibility for governance around the establishment, operation, and maintenance of MPDS within QAS, including quality assurance and reviewing and updating the MPDS response grid. To assist the Medical Director to ensure MPDS governance QAS has in place the Medical Dispatch Review Committee (MDRC). This advisory committee is part of the Clinical Governance Framework and provides authoritative advice and recommendations to the Commissioner, through the Medical Director, on strategic direction and policy relating to the MPDS. This includes EMD education and training (including in-service education and training), procedures, call triaging and communications performance indicators and standards in relation to the application of MPDS. The MDRC also submits proposals to the Australasian Standards Council which is responsible for changes to the Australian (AUE) Version of MPDS. This allows for enhanced prioritising of the response matrix that allocates Code 1 and Code 2 responses to AMPDS determinants. The MDRC has reviewed the MPDS V 11.1 response matrix on 5 occasions, in 2001, 2002, 2004, 2006 and 2007. The reason for a review of the response matrix in the majority of cases has been due to either a planned review, changes in scope of practice by paramedics, changes trends in QA or following an adverse clinical event. The MDRC has a structured process for reviewing the MPDS response matrix which includes data gathering, data analysis, risk analysis and cause and effect analysis.

The effects of this regular review are seen in the Figure 2.1 below (QAS Emergency Code 1 and 2 Patient Transports; 96/97 to 06/07).

Figure 2.1: QAS Emergency Code 1&2 Patient Transports 1996/97 to 2006/07



Source: QAS Internal Data

Despite this process of optimising response categories, without alternative capabilities, particularly referral options or primary models of care, the overall demand profile is unaltered, as every request still requires a definitive ambulance vehicle response. Furthermore, the resulting ambulance response currently only has one of two outcomes; the patient is both treated and transported to a hospital ED, or declines transport. QAS paramedics are limited by their current scope of practice to treat and discharge/refer patients on scene.

To increase the specificity of allocated response Codes and provide optimal triage, there is a need to provide clinical interrogation of “000” calls to allow the appropriate identification of non urgent calls. Then, dependant on the callers health care requirements, the options of 13 HEALTH or alternative non emergency ambulance response (extended care paramedic) would be offered. AMPDS would require significant alteration to incorporate appropriate referral pathways to allow these enhanced patient care options. However, this model works well in other jurisdictions within Australia and overseas.

The Victorian Model

In Victoria, the Metropolitan Ambulance Service (MAS) has its own Referral Service. This is its key strategy for managing emergency demand (i.e. demand from 000). This involves initial identification of lower priority calls (via AMPDS) and transfer of suitable calls to another call taker (a health professional) who undertakes further questioning (based on McKesson CECC software) to determine whether an alternative to emergency ambulance dispatch is suitable. The MAS currently has agreements with locum GPs, nursing services, a number of hospital response teams and Crisis Assessment & Treatment Service teams to accept referrals; these agreements specify the required minimum time for response by the agency. Callers may also receive self-care advice or a non-emergency ambulance response from one of the MAS non-emergency contractors. At present about 6% of all “000” cases do not receive an emergency ambulance response. However, 30 to 50% of referred calls result in an emergency ambulance dispatch.

The Victorian health advice line is Nurse on Call (NoC), operated by McKesson under contract to the Department of Human Services. Unlike the MAS Referral Service, NoC is not able to make formal referrals i.e. it provides advice only. Given the existence of the MAS Referral Service, MAS does not refer any callers to NoC. A protocol for the transfer of calls from NoC to MAS has however been established. As the MAS Referral Service and NoC are using the same triaging software, any callers transferred to MAS by NoC are given an ambulance dispatch (even if they are classified as suitable for the referral Service). At present about 20 calls per day are transferred from NoC to ambulance, and about 15% of these would normally be considered as low priority and suitable for referral. The MAS is currently reviewing cases in consultation with NoC/McKesson with the aim of improving the current arrangements.

MAS currently has two referral service operators within their Ambulance Communications Centre. These operators are set up on the AMPDS system as two pseudo-ambulance responder units. In this way, the AMPDS system can trigger the referral response based on pre-determined MPDS codes. Once the referral response is initiated the “000” call taker switches the call through to one of the referral operators. Should both the referral operators be busy with other calls, the default action of the “000” call taker is to dispatch an emergency ambulance response.

Data from the AMPDS system does not automatically transfer through to the referral operator under the Victorian model. This is because the McKesson software system used is not compatible with the AMPDS system. The referral operators must therefore start again with the questioning process. The strength of the MAS system is that the referral operators actually organise an alternative response, which could be any of a locum GP, community-based nurse, or community mental health service, or alternatively switch the caller through to a health advice line, poisons information centre, or other telephone based counseling or information service.

The Ambulance Service of NSW (ANSW) is trialling, a Health Access Coordination (HAC) pilot. This is designed to safely identify non-urgent, non-serious requests for emergency ambulance assistance through the “000” emergency call system and provide a dedicated health advisory service that advises the caller/patient on immediate self care and/or refers the patient to appropriate other Health Services. These calls are transferred from the Sydney Ambulance Centre (SAC) to the HAC unit for further interrogation and advice by a Registered Nurse, while simultaneously receiving an ambulance response. The process is an optional one for the patient, as the patient is asked if they still want an ambulance to be responded. In the vast majority of

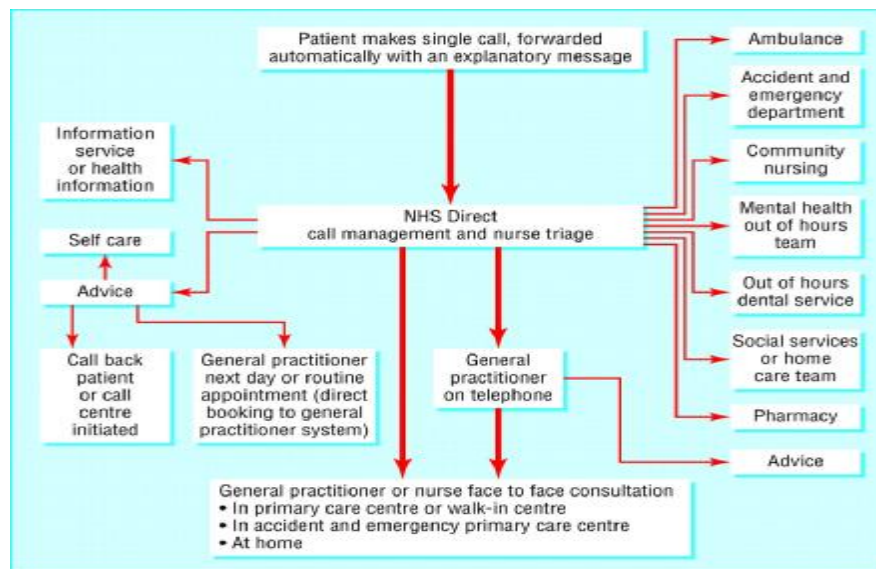
cases, the patient will elect to have an ambulance despatched to attend. The ambulance will only be cancelled if the caller states that the ambulance is no longer required.

The ANSW also utilises a clinician in the Communications Centre who can further screen “000” calls for actual ambulance response requirements. They can downgrade or even cancel cases with referral to appropriate assistance. The South Australian Ambulance Service is planning to introduce a Clinical Support/Advisor in the emergency operations centre to ensure appropriate response to case types that can be downgraded/upgraded/sent alternative service as required. The Metropolitan Ambulance Service in Melbourne is continuing to refine call prioritisation to enable better matching of resources with patient condition. St John in New Zealand is also moving towards a secondary triage model.

The NHS Direct Model

NHS Direct was established in 1998 and implemented in different stages across England and Wales over a period of 2 years. There has since been a move to integrate after-hours health care services with NHS Direct being the first point of contact for callers, providing advice, making referrals and coordinating services (see NHS model Figure 2.2 below). This system operates in a similar way to the Victorian Model.

Figure 2.2: NHS Model



NHS Direct handled 5,180,000 calls during its first 3 years of service. It is the worlds largest provider of health care advice, costing GBP 80M per year to run in 2000-01. Analysis of the data indicates a concomitant reduction in calls to after-hours general practice. There was an immediate drop of approximately 3% which is now almost 8% per annum (Munro, 2005). There was no statistically significant change in adult or paediatric emergency department attendances, or demand for emergency ambulance services (Munro, 2000; Lattimer, 2005).

The Health Call Centre Models

Alternatively health call centres such as 13 HEALTH in Queensland, HealthDirect in Western Australia and Healthline in New Zealand provide health information, triage and referral to members of the public seeking assistance with a health related issue. The majority of health call centre staff are registered nurses and in some jurisdictions the call centre names reflect this e.g. Nurse-on-Call in Victoria.

Health call centres generally operate 24 hours a day, seven days a week and take their largest number of calls outside normal business hours. Calls to Queensland's 13 HEALTH peak between 5pm and 8pm and Saturday and Sunday are the busiest days, which reflect the difficulty in accessing other health care providers at these times. In NZ, 69% of calls to Healthline were made out of hours (St George, 2003). This is the same demographic noted in the UK with NHS Direct. The caller demographic for health call centres is similar with the majority of callers being women, younger than 35 years and calling about a child, usually a preschool aged child. Older people are under-represented in most call centre demographic data, as this population's preference is for face to face consultation.

The NZ Healthline was established in 2000 covering a total population base of 627,500. In the first two years of operation Healthline received 79,254 calls which represented a 6% to 7% utilisation rate by the pilot area population. There was a high level of satisfaction with the service provided with 99% of callers indicating they would recommend Healthline to others (New Zealand Ministry of Health, 2002).

There appears to be good compliance with the advice provided by health call centres, the above evaluation of the NZ Healthline identified 69% of callers followed the advice provided and a study in the UK demonstrated that 64.2% of callers advised to attend an emergency department followed the advice provided by NHS Direct (Foster, 2003b). The data from 13 HEALTH in Queensland suggests that of the 7% of calls recommended to call an emergency ambulance response, between 50% to 60% followed this advice (Chalmers, 2007).

Telephone consultation and advice provided by health call centres is considered safe and effective for non-urgent medical conditions and is highly acceptable to the public (Lattimer, 1998; O'Cathain, 2000, NHS Direct in England, 2002). In the UK, it is now national policy that NHS Direct will in future triage emergency calls that are prioritised as being of a non urgent nature (UK Department of Health, 2001).

National Health Call Centre

In February 2006, the Council of Australian Governments (COAG) issued a communiqué stating their intent to establish a National Health Call Centre Network by July 2007. The call centre commenced operation on 24 July 2007 as HealthDirect Australia with an 1800 number. The intent was that existing state based call centres would become part of this national network. All states and territories agreed in principle to participate as part of a phased implementation process. At the commencement date callers to the state based call centres in Western Australia, the Northern Territory, Australian Capital Territory and to the hospital based call centres in South Australia would be redirected to HealthDirect Australia. A staged implementation is planned to eventually provide national coverage by 2011 (Abbot, 2007).

It is intended that the Network will provide the following services:

- Triage of health problems with advice on the most appropriate action to take and a recommended time frame for treatment
- Advice on self care and prevention of illness
- General health information
- Information about availability and location of services
- Referral connection to emergency services
- Specialised mental health services
- A local response to health emergencies such as disease outbreaks, natural disasters, terrorist incidents or other emergency situations

Queensland Health, 13 HEALTH

Queensland Health, via the Health Contact Centre Business Unit, is responsible for the operation of 13 HEALTH, a 24 hour, seven-day-a-week statewide service providing access to health information, nursing triage and referral options to the people of Queensland. The service is based

on a partnership model with Smart Service Queensland, the Queensland Government contact centre environment, and involves the provision of clinical human resources from the Southside Health Service District. The service has been available in all parts of Queensland since 24 April 2006. 13 HEALTH provides health information, referral and teletriage services to the public in all parts of Queensland for the cost of a local call. Teletriage is a safe and effective way of providing health related advice delivered by health care professionals via the telephone. In general, telephone triage may include health care information, disease management, symptom assessment, referral time frame, home treatment advice and crisis intervention.

13 HEALTH is able currently to provide two levels of service;

- *General health information and advice on self care and prevention of illness*
- *Triage of health problems by a Registered Nurse with advice on the most appropriate action to take and a recommended time frame for treatment.*

Registered Nurses utilise a computerised clinical decision support system which uses clinically proven protocols to assist the nurses in undertaking the triage component of the service which provides callers with the most appropriate time and place for care. The protocols have been reviewed by an established Clinical Advisory Panel which includes metropolitan, rural and remote general practitioners, dentists and pharmacists. A health service provider directory is used to provide callers with details about public and private health services in Queensland including general practitioners, dental clinics, mental health services and pharmacies

The Health Contact Centre is also responsible for the development and integration of existing or future health care services which are/can be delivered through contact centre management practices.

OPTIONS FOR QUEENSLAND

Option 1: Integrate a Secondary Triage Service through 13 HEALTH, with enhancement of the referral capacity of this Agency

This option would involve some modification to the AMPDS system to enable certain calls to be identified as low-acuity and suitable for referral, and to then be switched through to 13 HEALTH for secondary triage and onward referral.

13 HEALTH utilises Nurse triaging software that is compatible with the AMPDS system, and was built by the same software manufacturer. Although data transfer capability has not yet been established to allow the seamless transfer of patient information between QAS and 13 HEALTH, the Audit Team have been informed that the data systems are capable of this function. This is a benefit to this option as the secondary triage officer does not need to repeat the questioning already undertaken within the ambulance communication centre, and the secondary triaging software will be populated with the caller's information. This does not happen under the Victorian MAS model, under which the secondary triaging officer must repeat many of the questions already asked by the emergency service operator, including taking the patients name and location details. Under the 13 HEALTH model, the additional questions asked of the individual will be to specifically identify the appropriate referral response, assuming an emergency ambulance is not required. Nevertheless, should an appropriate referral response not be definitive, the default position will be to switch the call back to the ambulance communications centre for an emergency ambulance dispatch.

There is currently no capability within 13 HEALTH to switch callers directly through to specific health care providers. There are several reasons for this. Firstly, the system referral pathways in Queensland are not as advanced as in other jurisdictions e.g. Victoria and NHS Direct (UK Department of Health, 2000), particularly around a consistent system of referral to, and treatment by, after hours primary medical care programs. There are also no structured referral pathways or patient care agencies for 13 HEALTH to coordinate responses with e.g. pharmacies, after-hours

general practitioners, community services, mental health services etc, especially that would provide an at-home service in lieu of an ambulance response. Nevertheless, the MAS referral system has been established over time, and continues to develop with new service providers coming on line in a staged way.

Secondly, 13 HEALTH has been established as a health call centre, with provision of advice and information, rather than coordination of response, as its primary function. There is the opportunity to develop the 13 HEALTH model along the same lines as the NHS model in the UK which both acts as an information/advice service, in addition to referral and coordination of ambulatory and primary health care responses. However, this would require coordination of a joint-Agency project across Queensland Health and the Queensland Ambulance Service which may grey the boundaries of responsibility and slow progress in terms of the development of referral pathways that specifically address the demand issues faced by ambulance rather than Queensland Health.

Option 2: Integrate a Secondary Triage Service within the Ambulance Communications Centre, with associated referral protocols and pathways

This option would follow the Victorian MAS model which places secondary triage clinicians in the Ambulance Communications Centre. As with option 1, a predefined set of MPDS codes would trigger a referral response rather than an ambulance transport response, and would require implementation of the latest version of AMPDS (V 11.3 AUE) to enable certain calls to be identified as low-acuity and suitable for referral. Calls would be triaged by the referral operators, and then an onward referral would be coordinated within the Ambulance Communication Centre. Onward referrals would include:

- having a locum GP attend patients' homes during business hours within certain pre-agreed and contracted timeframes;
- having an after-hours GP service attend patients' homes during the after hours periods;
- having a community nurse service attend patients' homes to perform simple clinical tasks (ie. Changing catheters etc);
- having a community mental health service attend where appropriate;
- referring the patient onto 13 HEALTH where necessary and appropriate (although in Victoria, because the same software is used in both their Ambulance Referral Service and their Nurse-on-Call service, referral from the ambulance referral officers to Nurse-on-Call do not often happen);
- connecting the patient to the poisons information line, kids help line etc; and also
- referring the patient to attend their normal GP within certain timeframes.

Other primary care areas that could also be explored, and are included in other jurisdictions models, include dental care, and pharmaceutical services.

Under this model, it would be preferable to have software implemented within the Ambulance Communication Centre for the referral officers to use that limits the duplication between questions asked by the "000" call taker, and the referral officers. Thus the software already being used successfully in 13 HEALTH would be the preferred option, if shown to be appropriate for the dual functions of onward referral and coordination of response. An alternative to this software would be the McKesson software utilised within the MAS ambulance service. The drawback to this software would be the inability to transfer data seamlessly between operators.

It is estimated that up to 49,500 calls (per year) to the QAS may be suitable for referral to an alternative provider. Savings associated with this level of referral would be estimated at around \$21M per annum, noting this is an upper level estimate and it would very likely take considerable time before this level of calls or savings could be realised.

Queensland does not currently have the same access to levels of after-hour primary care services studied in other countries. It could be argued that as the only consistent option to Queenslanders, specifically out of hours, is to either call an ambulance or go to a hospital emergency department.

It is envisaged that referral under the current limited system could reduce QAS responses by up to 5%. Preliminary discussions between QAS and Priority Solutions, the providers of the software suggest that this figure of 5% is a conservative forecast based on the experience of other jurisdictions.

In Queensland, there are a number of opportunities to add to the services already provided by health call centre systems by building on existing information on service providers, and where possible, existing system platforms. There is the potential to provide features such as case management support for people living with chronic health conditions, maintenance and storage of electronic health records and information to support “treat and refer” practices which are discussed under Strategy 2 below.

From analysing other jurisdictions and overseas experience, the optimal model would be to have enhanced AMPDS clinical interrogation within the QAS Communications Centres allowing enhanced decision making to identify:

1. Patients suitable to be referred to secondary triage services, for onward referral and coordination of alternative non-ambulance responses; and
2. Patients suitable for alternative urgent ambulance models of primary care (treat and leave, treat and refer, expanded clinical practice for rural areas) (See Strategy 2 below).

STRATEGY 3: CHANGING THE RESPONSE OPTIONS FOR AMBULANCE OFFICERS: EXPANDED ROLE FOR EMERGENCY CARE PRACTITIONERS IN URBAN, RURAL AND REMOTE AREAS - TREAT AND LEAVE AND TREAT AND REFER

This option targets the second junction of the Emergency response continuum, where the officer is on scene and treatment / transport options are being considered. Traditionally, all attendances to “000” incidents, where there is a patient, have resulted in treatment and transfer to hospital, except in instances where the patient refuses transfer. Queensland currently transports a greater proportion of patients than other jurisdictions (ROGS, 2007). As with Strategy 1, Strategy 2 again targets the growth related to the “000” consumer driven demand market. Under this option, the role of paramedics will be expanded to allow officers alternative response options under the Emergency Care Practitioner model.

Emergency Care Practitioners for urban, rural and remote areas

Development of the Emergency Care Practitioner role will allow the extended care practitioner to undertake a broader range of clinical support for patients in areas where there is limited access to expert clinical services. The role of the Emergency Care Practitioner (or Extended Care Practitioner) in rural and remote settings in Queensland is currently being developed and implemented. In the longer term, development of the urban extended care practitioner could assist in minimising the need for ambulance transports, with these officers able to triage patients away from emergency transport and emergency departments and/or re-triage cases to lower acuity transport options where available.

A recent publication by the Department of Emergency Services in September 2006 specifically explores the potential of extended paramedic healthcare roles for Queensland (Raven, 2006). This document reviews the historical development of overseas paramedic expanded scope models, details the various models and critically examines their effectiveness.

The common themes articulated and evidenced are:

- The UK NHS is taking a national approach to creating the Emergency Care Practitioner (ECP) model.
- The ECP role was developed with the intention of providing assessment and treatment of minor illness and injury within the community without necessarily transporting the patient to a hospital ED.

- The ECP role needs to be able to take a detailed history, perform physical examinations, manage minor injuries and illnesses, request further investigations such as X-rays, administer medications within set guidelines and have the ability to refer patients to other health care professionals and services.
- The ECP role functions autonomously as a single responder with the following disposition pathways used;
 - § Treat and Leave at Home
 - § Treat and Leave at Home with referral to another care pathway such as a General practitioner (Snooks, 2002)
 - § Treat and Convey to Hospital ED
 - § Treat and Convey to a non Hospital ED pathway.

Emergency Care Practitioners in the United Kingdom have enhanced skills in physical assessment and decision-making, and are increasingly responding to patients with minor illnesses or injuries, or chronic conditions such as asthma and diabetes. In most cases, these patients are treated in their own homes and not transported to a medical facility.

ECPs utilise a car to attend patients with non-life-threatening, but sometimes complex conditions for whom an emergency ambulance response and automatic transfer to hospital is unlikely to be necessary. Progression towards this type of service has significant potential to reduce the growing demand on both ambulance services and public hospital emergency departments.

UK National evaluations of the ECP scheme (Mason, 2005; Mason, 2006) have shown that when compared to conventional methods of paramedic dispatch and subsequent transport to, and treatment at, a hospital ED:

- Most pilot sites reported typical reduction in patients transported to hospital ED by 50% with more patients discharged to their own place of residence. One ambulance service reported that only 14% of patients required transport to ED, 14% referred to another health or social care service and 64% were treated at scene (JK Department of Health, 2005)
- Reductions in hospital admissions by 10% and in some sites up to 14%.
- Patient satisfaction rates indicated very high satisfaction with their consultation, in part related to the reduced conveyance to hospital ED (Halter, 2006). 77% indicated that they would prefer ECP treatment in the future rather than seeing a doctor or other health professional.
- Cost analysis revealed that ECP staff costs were less than paramedic treated patients.
- ECP lower per minute costs offset the longer on scene times associated with on scene treatments and disposition.
- Total health system costs for ECP treated patients were 40% less than conventional management.
- These evaluations suggest that the ECP schemes are moving forward in line with their original objectives and that they could be having a significant impact on the whole emergency system workload.

Of crucial importance in the success of these schemes, the following were consistently identified (Woollard, 2006);

- Flexibility of AMPDS to accommodate alternative responses (Squires, 2004)
- Adequate education and training (Hauswald, 1996): standardised practice based clinical guidelines with a move to higher education institutions.
- Integrated clinical governance structures
- Development of relationships with other healthcare providers
- Formal establishment of clinical referral pathways for suitable patients.
- Ambulance personnel were open to practice development that would benefit patients, crews and health services, but required backing and support from their service (Ball, 2005).
- The recognition that these are complex clinical and service developments requiring structured implementation (Snooks, 2005) supported by legislative and policy frameworks.

- Careful consideration is also required in communicating the implementation of these schemes to all ambulance staff to ensure a common understanding of, and commitment to, the desired outcomes.

The South Australian Ambulance Service, St John Ambulance in New Zealand and the Ambulance Service of New South Wales are all exploring, and are at various stages in development of, the ECP model and extended decision making concepts.

To maximise these enhanced patient care options, significant collaboration and integration would be required with Queensland Health, private and non government sectors to ensure optimal referral pathways to alternative community and primary models of care. These new roles require fundamental changes to create a system that is fully integrated and clinically supportive of the role (Scott, 2004). These changes require breaking down of the barriers, both professionally and at a government departmental level, to create functional clinical and operational teams that are supportive of each other and focused on coordinating patient care requirements.

There may also be some legislative and policy impacts associated with this option, related to the authority of ambulance officers to commence expanded treatment models and determine the referral pathway for patients.

Clinical governance for paramedics is overseen by the QAS Commissioner, following specialist advice from the QAS Medical Director. All clinical procedures are reviewed by the Medical Advisory Council - a multi-disciplinary group comprising stakeholder medical specialist colleges representatives, the Australian Medical Association, Queensland Health and senior QAS educational staff and executive managers. Following review by the Medical Advisory Council a recommendation for any change in practice is made by the QAS Medical Director to the QAS Commissioner. Any change in drug therapy would require amendment to the *Health (Drugs and Poisons) Regulation 1996*, which is administered by Queensland Health.

Amendments to the *Health (Drugs and Poisons) Regulation 1996* can take significant periods of time to process within Queensland Health, despite clinical support at all levels within the medical community. Examples of delays greater than eight months have occurred. Streamlining the current process could occur by encompassing the authority for paramedic drug therapy within the *Ambulance Service Act 1991*. This issue should be considered within the context of the review of this Act.

Summary

Greater flexibility is required in terms of the type of ambulance response that is dispatched and the treatment provided. Currently, the QAS transports most patients it attends to a public hospital emergency department and it transports a much greater proportion to hospital than other ambulance services. The ambulance service in New South Wales (NSW) in particular, is increasingly providing care and treatment at the patient's home thus avoiding unnecessary and expensive transport to a hospital emergency department. For this strategy to be effective, the ambulance needs to adopt an expanded role for paramedics operating out of single vehicles.

STRATEGY 4: TRANSFERRING THE QMAT AND QDIS BUDGET TO QUEENSLAND HEALTH AND DEVOLUTION OF THE IFT, QMAT AND QDIS BUDGETS TO REGIONAL LEVELS WITHIN QUEENSLAND HEALTH

This strategy is targeted at containing Queensland Health demand for medically authorised transfer (QMAT) and discharge (QDIS) services and in doing so, ensuring that the costs associated with managing the Health system are explicitly linked to the need to transport patients to and from the health system, and within the health system, in a timely and efficient way. Under this option the budget for QMAT services would be transferred to Queensland Health consistent with the arrangements for the Queensland Inter-Facility Transfer (QIFT) budget.

This arrangement would work in a manner very similar to the current QIFT arrangements already established between Queensland Health and QAS. The difference would be that there would not be a requirement that an individual be transferred from a Queensland Health facility to another Queensland Health facility. This arrangement would cover all Queensland Health initiated transports to destinations across the State.

It would be important to ensure that an appropriate budget transfer is made that reflects the resource commitment for the service being delivered. Thus because most QMAT and QDIS services ordered by Queensland Health are non-urgent, non-paramedic services, the relevant budget transferred would reflect this level of need.

The risk for QAS under this option would arise in circumstances where alternative private providers of non-urgent transport services are introduced into the market and that the full budget transferred to Queensland Health is applied by that Agency to the new service provider. The current price allocated to Queensland Health for QIFT services is derived to reflect the costs associated with QIFTs. It includes a component that is related to overhead QAS costs and the costs associated with communication centre coordination. Should alternative providers enter the market, pricing structures and payment mechanisms would need to be reviewed to segregate the costs associated with the actual transport from the communications costs.

The risk under this option for Queensland Health is that demand for ambulance services outstrips the capacity of the health system to pay. There needs to be an active commitment from both QAS and Queensland Health in order to manage demand for both ambulance and health services. This includes establishing and developing alternative response strategies as discussed above for “000” services to alleviate demand within the hospital system.

Key Findings

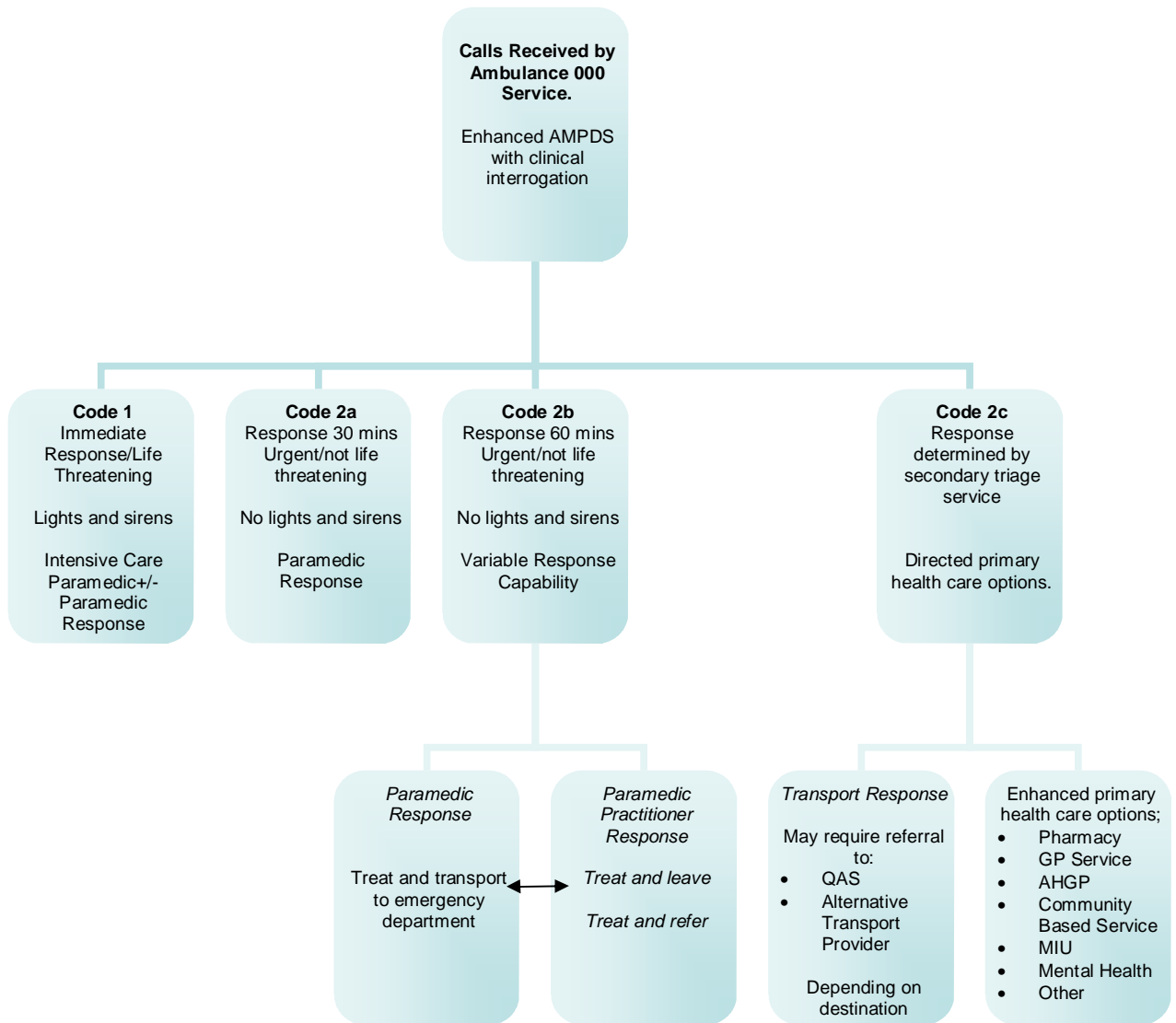
1. Ambulance services and hospital emergency departments, worldwide, are under significant pressure as the absolute number of emergency calls continues to increase.
2. Mechanisms better tailoring the clinical appropriateness of an emergency response provide rapid, targeted patient care for those most in need plus provide system efficiencies and benefits through more effective use of limited and expensive human and infrastructure resources.
3. In Queensland, the QAS currently provides a highly effective *all or nothing* emergency response. For all “000” calls received by QAS, an immediate ambulance response must be dispatched.
4. The current AMPDS promotes a high degree of sensitivity, but relatively poor specificity, thus ensuring a risk adverse structure with minimal false negative immediate life threatening ambulance responses
5. Computer assisted assessment and advice for non serious ambulance service callers could lead to significant reduction in emergency ambulance dispatch.
6. Evidence suggests that unnecessary use of emergency ambulances would decline if alternative transport options were offered.
7. Telephone consultation and advice provided by health call centres is considered safe and cost effective for non-urgent medical conditions and is highly acceptable to the public. In the UK, it is now national policy that NHS Direct will in future triage emergency calls that are prioritised as being of a non urgent nature.
8. Utilisation of health call centres has not been proven to reduce emergency ambulance demand or attendances to hospital emergency departments, however does reduce calls to after-hours general practitioners.
9. There are currently no structured referral pathways or patient care agencies for a secondary triage service to forward or refer callers to e.g. pharmacies, after hours general practitioners, community services, mental health services, minor injury clinics, models of care associated with residential aged care facilities or community nurses compared to that seen in other states or internationally. The fundamental structures are in place to expand and further develop; allowing enhanced clinically focused advice and treatment options.

10. ANSW and MAS are developing secondary triage models internally with the capability to refer and transport patients by other means noting their efficacy is yet to be determined.
11. The direction and supporting evidence, nationally and internationally, is towards a focus on the on-scene clinical management of less serious, non life threatening calls.
12. The implementation of paramedic expanded practice models (specifically ECP) in the UK has shown that they have the potential to significantly reduce the number of ambulance transports and hospital ED attendances. This has been shown to be cost effective, safe and highly acceptable to the public.

The development of pre-hospital expanded care roles and new health provision models requires simultaneous progression and integration with new clinically supported dispatch prioritisation systems and provision of a secondary triage call centre functionality.

Queensland Health and QAS require engaging more collaboratively, or integrating as one, to fully realise the potential system benefits to staff, communities and patients of these significant enhancements to emergency health services. Figure 2.3 overleaf represents the Audit Team's recommended enhanced ambulance service delivery model.

Figure 2.3: Recommended Enhanced Ambulance Service Delivery Model



Chapter 2 – Demand Management Recommendations

Recommendation 2.1

QAS implement an integrated demand management strategy to reduce demand pressures on the organisation and its staff. As a first step, the QAS should instigate a community education campaign informing people about the importance of only ringing “000” for genuine life threatening emergencies so that ambulances are not being diverted to relatively minor cases.

To better match services with patient needs, the QAS is to:

- introduce a greater level of clinical input into the assessment of the type of response required when a person calls “000” to determine whether an emergency ambulance is necessary;
- put in place alternative referral paths for those callers who are identified as not requiring an emergency ambulance - a pilot of this approach should be adopted in the Brisbane Region to operate over a period of 12 months after which the service should be reviewed including consideration of whether it should be transferred to 13 HEALTH; and
- adopt an expanded scope of practice for paramedics that will enable greater assistance to be provided to patients who may be able to be treated in their own homes thus avoiding an ambulance transport to an emergency department.

Recommendation 2.2

QAS work with Queensland Health to develop a service level agreement for the provision of medical related transports (not covered by the existing inter-facility transfer agreement) and devolve the management of budgets for all health related transports to the District level to encourage more effective demand management.

Recommendation 2.3

QAS adapt:

- dispatching protocols to ensure that response to incident ratios meet national standards and promote the efficient use of resources; and
- recording procedures for incident and patient data to provide a more accurate picture of demand for services (noting the significant numbers of cancellations, multiple dispatches and back ups associated with the count of ambulance responses).

Chapter 3 – Budget and Resourcing

This section of the Report deals with budgetary and resource allocation in the QAS. It undertakes a detailed examination of historical trends in the QAS budget to determine the growth in the amount of resources dedicated to ambulance services. The section also examines the various funding sources which make up the ambulance budget including an analysis of the proportion of government and own source revenue.

Key Facts

- The QAS recurrent budget, now exceeds \$400M per annum, with an allocated budget of \$404M in 2007-08. The budget has experienced significant growth, increasing by \$157M over the past five financial years, which equates to an average annual growth of around 10.4%.
- QAS relies heavily on Queensland Government funding, with approximately 85% of revenue generated from the Consolidated Fund, the Community Ambulance Cover (CAC) levy and the Queensland Health Inter-facility Transfer (IFT) grants.
- The abolition of the ambulance subscription scheme and introduction of the CAC levy, in 2003-04, resulted in a notable shift from user charge revenue to output revenue.
- 'Staffing costs' are the largest expense category for QAS, representing 70.1% of the Service's total expenses, and have grown by \$86.61M over the past five years to \$253.37M.
- QAS has \$586.71M of capital stock primarily made up of ambulance stations and associated land, ambulance vehicles and medical equipment.
- QAS contributes to the costs of the DES whole-of-department corporate service areas as well as employing corporate support personnel within the division for QAS specific corporate support.
- In 2007-08, QAS allocated \$58.67M to corporate services and support with \$38.11M to whole-of-department corporate services (9.3% of the total revised QAS budget) and \$20.56M to divisional corporate services (5.0% of the total revised QAS budget).
- QAS provides more ancillary (non-ambulance transport related) services to the community than other ambulance services in Australian jurisdictions, including baby capsule hire /fitting services and community education services.

Note: Growth trends in the following section have been established using various time frames depending on availability of data. The most current data available was utilised to measure resource allocation levels, therefore actual revenues and expenditures reflect 2006-07 data, budgets reflect data up to 2007-08 and Report on Government Service comparisons reflect 2005-06 data.

Overview of Existing Arrangements

Budget

The audit has reviewed the growth in the QAS Budget over the last five financial years to establish the change in the level of resources the organisation is able to dedicate to ambulance services. Furthermore, the audit examined whether operational revenues are at a sufficient level to meet operational expenses.

For 2007-08, the published QAS budget (estimated total expenditure as published in the Ministerial Portfolio Statement (MPS)) is \$404.45M and represents 47.6% of the total DES budget of \$849.35M.

The published ambulance budget has grown at an average rate of 10.4% per annum over the past five years, from \$247.03M in 2002-03 to \$404.45M in 2007-08 (Table 3.1). This is slightly in excess of the growth in the Queensland Government's general budget outlays over the same period (9.9% per annum). In 2007-08, the Queensland Government enhanced ambulance services by allocating additional funding for 250 extra ambulance officers and 140 new ambulance vehicles across the state.

Table 3.1: QAS Published Budget

	Year					
	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Published Budget (MPS)	\$247.03M*	\$266.01M*	\$289.21M	\$313.28M	\$355.74M	\$404.45M

Source: Department of Emergency Services Ministerial Portfolio Statements 2002-03 to 2007-08

*The 2002-03 and 2003-04 budgets have been adjusted to exclude equity return expense for comparison purposes.

Operating Position

On average, QAS annual total revenue has grown at a faster rate than QAS total expenses, resulting in a growth in the operating surplus. As shown in Table 3.2, the operating surplus has increased from \$1.36M in 2001-02 to \$9.13M in 2006-07. The end of year position in 2006-07 was \$7.26M greater than the estimated operating position of \$1.87M. QAS has traditionally budgeted for a surplus position with the excess funds retained by the agency and invested in capital assets through the QAS building and vehicle replacement programs.

Table 3.2: Budget Position QAS

	Year					
	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
QAS Actual Surplus(Deficit)	\$1.36M	\$2.53M	\$0.70M	\$3.76M	\$6.82M	\$9.13M

Source: The Department of Emergency Services Financial Statements 2001-02 to 2006-07

Before 2003-04, QAS own source revenue constituted a higher proportion of total revenue, therefore retention and use of surplus funds for capital investment was considered a reasonable method of budgeting. However, since the introduction of the Community Ambulance Cover (CAC) levy, own source revenue has declined significantly and surplus funds are a result of unspent appropriation from the Government's Consolidated Fund.

For the purpose of transparency and accountability, it may be more appropriate for QAS to allocate the recurrent budget fully to meet service delivery requirements and seek capital

funding as part of the budget process in line with the practice in other agencies. This would allow the Government to prioritise capital needs at the whole-of-government level.

Revenue Components

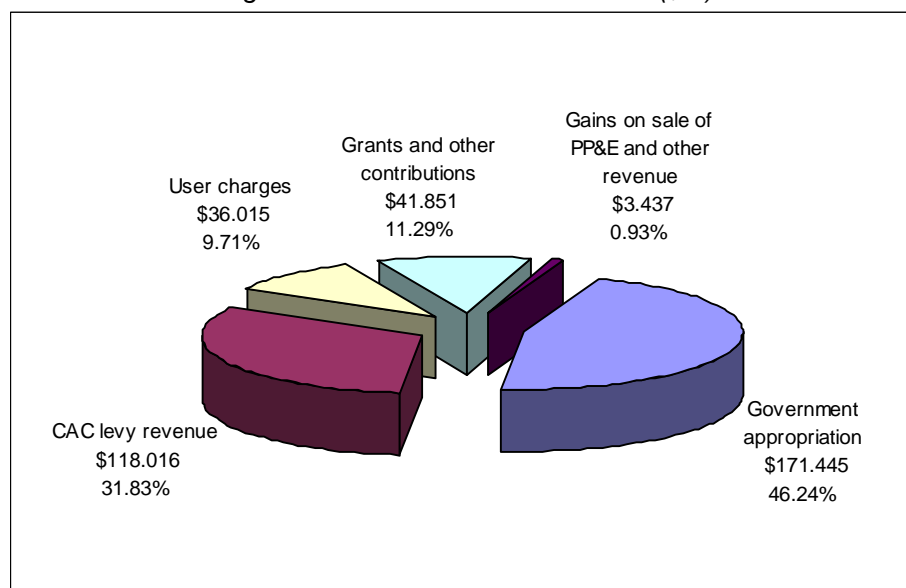
The audit has examined the revenue sources of the ambulance service to establish QAS's level of reliance on government funding and the capacity of the service to generate own source revenue.

In 2006-07, QAS had total revenues of \$370.76M, which represents an average per annum growth of 8.8% since 2001-02. QAS revenues consist of:

- § Government appropriation (including the Community Ambulance Cover (CAC) levy revenue)
- § User charges
- § Grants and other contributions
- § Gains on sale of property plant and equipment
- § Other revenues

Figure 3.1 illustrates the proportion of QAS total revenue from each source.

Figure 3.1: QAS Revenues 2006-07(\$M)



Source: Queensland Treasury

Government Funding/Output Revenue

The QAS receives Queensland Government appropriation through DES-Controlled appropriation. The appropriation is a mixture of approximately three-fifth Consolidated Fund revenue and two-fifth CAC levy revenue.

Replacement of the ambulance subscription scheme with the CAC levy, between 2002-03 and 2003-04, caused a significant shift from user charge revenue to general government revenue. For this reason, growth in output revenue is examined from 2003-04 onwards, to provide a more meaningful growth figure.

In 2006-07, QAS received \$289.46M in output funding which included \$118.02M revenue from the CAC levy. From 2003-04 to 2006-07, general output revenue increased at a

growing rate, with average per annum growth of 8.5% and total growth of 27.8%. While per annum government revenue growth is 8.5%, the CAC levy part of the revenue only grows by an indexation factor combining CPI and growth in non-exempt households. These two growth factors equate to a per annum growth of between 4% and 5%.

What is the Community Ambulance Cover Levy?

The CAC levy is a levy paid by households on their electricity bills which entitles Queensland residents to use ambulance services free of charge at the point of delivery.

The levy is currently set as a daily amount of 26.773 cents, or \$97.99 per annum per household.

Each household pays the same amount of levy. Pensioners (Pensioner Concession/Senior/Gold Card holders) are exempt from payment of the levy. Special electricity sale arrangement exemption categories also exist, such as multiple accounts and religious bodies and other institutions, which are clearly outlined in the *Community Ambulance Cover Act 2003*.

Since its introduction in July 2003, the levy has been adjusted annually on the first day of the financial year in line with movements in the Australian Bureau of Statistics Capital Cities Consumer Price Index (CPI) for Brisbane, for the year to 31 March. The rate of \$97.99 for the financial year commencing 1 July 2007, reflects a 2.9% increase in the CPI.

Electricity retailers and suppliers collect the levy on behalf of the Queensland Government through retailers' billing arrangements.

Community Ambulance Cover Revenue

In 2006-07, the CAC levy raised \$123.04M, resulting in \$118.02M of revenue to QAS net of administration costs. The levy increases each year in line with increases in CPI and increases in the number of eligible households.

Growth in the CAC revenue of between 4% and 5% is significantly below the annual escalation in the QAS total revenue of 12.7% leading to:

- § A declining share of CAC revenue as a portion of total QAS income. In 2003-04, CAC revenue accounted for 37.3% of the total published budget decreasing to only 30.5% in 2007-08.
- § A need for increased government appropriation from the Consolidated Fund to close the funding gap arising from the difference in growth rates.

User charges

The move away from the ambulance subscription scheme to a universal levy caused a shift from user charges revenue to output revenue. In its last year of operation (2002-03), the QAS subscription scheme raised an estimated \$55.53M. The abolition of the scheme saw user charge revenue decrease from \$90.71M in 2002-03 to \$28.20M in 2003-04. The decrease is attributable not only to the elimination of subscription scheme revenue, but also transport fees charged to non-subscribing individuals. Currently, transport fees are paid only by users not eligible for cover under the CAC, such as overseas and interstate residents.

The audit has found that since 2003-04, user charge revenue has increased on average 8.5% per annum to \$36.0M in 2006-07. User charges now mainly consist of ambulance transport charges. Ambulance transport charges raised \$22.53M in 2006-07, which includes fees charged to the Department of Veterans' Affairs (DVA) and Workers' Compensation. Other major user charge revenues are commercial contract revenues and public education revenues, respectively raising \$5.77M and \$5.10M in 2006-07. (Note that Queensland Health Inter-Facility Transfer (IFT) charges are not included in this revenue category.)

A detailed assessment of the fee recovery from invoices raised for individual, private ambulance use highlighted a low level of debt recovery by QAS. The organisation collects on approximately half of the invoices raised on transport charges for residents of other states, territories and overseas. In 2006-07, the outstanding debt level was 53.0%, which equates to \$3.50M uncollected revenue.

Ambulance Transport Charges

Fees for the provision of ambulance service to non-exempt persons are found in the *Ambulance Service Regulation 2003 Section 5 Fees for Ambulance Services*.

SERVICE	FEE PER SERVICE (as at 1 July 2007)
Ambulance Transport	
Emergency Transport Code 1 and 2 (Flat Rate)	\$888
Non Emergency Transport Code 3 and 4 – first 50 km	\$330
Each km or part of a kilometre in excess of 50 km	\$1.38 per km
Treatment No Transport (Callout)	
the greater of:	
Minimum Fee	\$90.50
Each km or part thereof travelled by the ambulance	\$12.50
Maximum fee of	\$888
Casualty Room Consultation	\$15.70
Aerial Ambulance	
Minimum Fee	\$298.00
Each km or part thereof	\$6.30
Special Events Rates (Includes 10% GST)	
Commercially	\$63.14
Non – Commercial Events	\$0.00 - \$63.14
Preparation of Vehicle 1 hour charge only per vehicle	\$63.14
Administrative access to Health Records – Fee	37.00

10% Commonwealth GST is charged on the total cost incurred for Special Events only. All other transactions are GST exempt.

Grants and other contributions

The main components of this revenue type are the IFT grant and the Motor Accident Insurance Commission (MAIC) contribution, which account for approximately 70.8% and 22.2% of the grants and other contribution revenues, respectively.

In 2006-07, contributions from Local Ambulance Committees raised \$1.17M for QAS. This represents approximately 0.3% of total revenue. The donations are dedicated to general service provision (\$0.51M) and to capital investments for the local ambulance service (\$0.66M).

Grants and Commercial User Charge Arrangements

Queensland Health Inter-Facility Transfers

In 2006-07, IFTs accounted for \$29.22M (7.9%) of total QAS revenue. Queensland Health and QAS have a Service Agreement governing inter-facility road transports. IFTs are categorised as a 'Grant' and according to the Service Agreement the annual quantum of the grant is based on actual cost and activity and adjusted quarterly to reflect actual service provision. From 2003-04 to 2006-07, total IFT grants increased by 39.1%.

Motor Accident Insurance Commission

In 2006-07, MAIC contributions accounted for \$9.16M (2.5%) of total QAS revenue. The contributions are based on revenue raised through the Hospital and Emergency Services (HES) levy. The HES Levy is collected through Compulsory Third Party Insurance Premiums to contribute to the cost of emergency attendance and medical care at road accidents. This levy is paid to Queensland Health and DES by MAIC, with DES receiving a percentage of the levy collected. The MAIC contributions to the ambulance service are based on activity levels in relation to motor vehicle accident attendance. The contributions only partially cover the cost of road accident attendance involving MAIC claims and QAS bears the cost of emergency services personnel attending roadside accidents that do not involve a claim.

The Department of Veterans' Affairs and Workers' Compensation

In 2006-07, DVA fees accounted for \$14.52M (3.9%) and Workers' Compensation fees accounted for \$2.75M (0.7%) of total QAS revenue. The DVA and Workers' Compensation have agreements in place with QAS for the provision of ambulance transport services to entitled persons (as defined under each agreement). QAS is paid a fee for these services which is recorded as an ambulance transport charge under user charge revenue. DES estimate that revenue from DVA user charges is likely to decline in future years, due to the gradual passing of DVA members.

User charges and grants and contributions account for 21% of total QAS revenue. Since 2003-04, user charges revenue and grant revenue have increased by an average of 8.5% and 11.6% per annum respectively. The audit has found that QAS has tended to under estimate its income from these sources with actual revenues being \$6.17M to \$16.72M more than the published estimates per annum. This indicates that there is potential to utilise more own source revenue to meet core service delivery expenses, especially if all services provided to third parties based on activity levels were to move towards full cost recovery.

Other Revenues

The quantum of other revenue collected is fairly insignificant and is comprised of minor adjustments, interest revenue, rent and lease revenue, and recoveries.

Expenditure Components

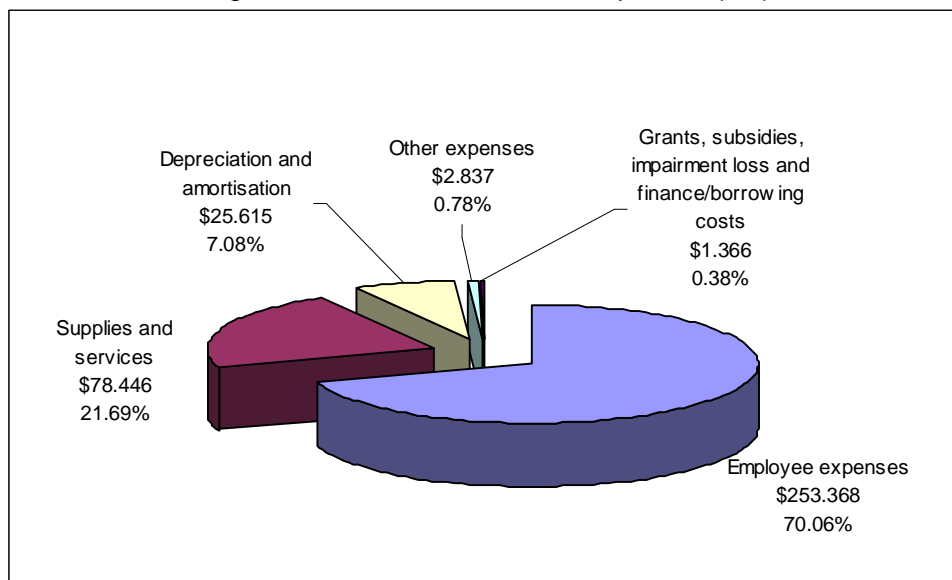
The audit examined in detail the main components of expenditure for the organisation to highlight major cost drivers for service delivery and to understand which expenditure components are likely to place pressure on service delivery in the future.

In 2006-07, QAS total expenses were \$361.63M, which represents an average per annum growth of 8.5% since 2001-02 (adjusted for equity return and borrowing expenses for comparison purposes). QAS expenses consist of:

- § Employee expenses
- § Supplies and Services
- § Grants and subsidies
- § Depreciation and amortisation
- § Impairment loss
- § Finance/borrowing costs
- § Other expenses

Figure 3.2 illustrates the proportion of QAS total expenses for each expense category.

Figure 3.2: Breakdown of QAS Expenses (\$M)



Source: Queensland Treasury

Employee Expenses

Employee expenses are clearly the largest component of QAS expenses representing 70.1% of the Service's entire spending at a cost of \$253.37M in 2006-07. The majority of the costs associated with this category are salaries and wages, but also include superannuation contributions, WorkCover insurance, leave provisions and other staff related expenses.

Staffing costs have grown at an average of 8.7% per annum since 2001-02. This growth factor is well in excess of the growth factored into the Enterprise Partnership Agreements (EPA) (3% in 2001-02, 3.8% per annum 2002-03 to 2004-05, 4% per annum 2005-06 to 2006-07). Some growth in expenses over and above the EPA growth is attributable to the increased use of overtime in rostering. However, staffing costs are generally explained by an increase in the number of staff, 772 additional FTEs recruited between 2001-02 and 2006-

07. Employee expenses relating to corporate services are included in the above-mentioned figure, as QAS's divisional corporate support staff and QAS's share of the whole-of-department corporate service staff expenses.

In 2006-07, the number of FTE staff was 3197, which equates to staff costs of \$79,252 of per FTE personnel (overhead costs not included).

Supplies and Services Expenses

'Supplies and services' is the second largest expense category accounting for 21.7% or \$78.45M of total expenses in 2006-07. This category encompasses a wide range of costs incurred by QAS, with the most significant components being motor vehicle expenses and operational and other equipment purchases.

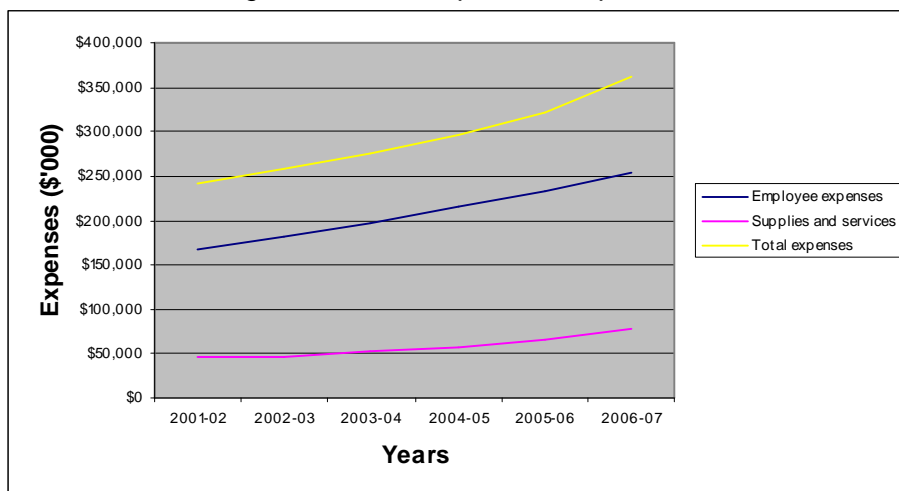
The growth in the supplies and services expense since 2001-02 is significant, increasing 72.1% over the five year period, or 11.5% on average per annum. Furthermore, every consecutive financial year has seen supplies and services expense progressively increase to constitute a larger portion of overall costs, from 19.0% in 2001-02 to 21.7% in 2006-07.

The audit considers the increase in supplies and services costs high, however has identified several key factors, some outside of QAS's control, which impact on this expense component. Key factors driving the increase in supplies and service costs include the following:

- § Motor vehicle expenses have been particularly affected by the rise in fuel and oil prices and the aging fleet of operational vehicles requiring increased maintenance and repair.
- § The increase in spending on patient consumables is a direct result of the increased demand resulting in more patient transports.
- § The increase in equipment expenses is related to increasing repairs and maintenance of defibrillators and stretchers and new operational and communication equipment purchases.

Figure 3.3 illustrates how the growth in the major components of expense is driving total costs up rapidly.

Figure 3.3: QAS Expense Components



Source: Queensland Treasury

Depreciation and Amortisation

Details on the depreciation and amortisation expenses of QAS can be found in the following sub-section titled *Capital Budget Arrangements* of the Audit Report.

Grants, subsidies, impairment loss, finance/borrowing expenses and other expenses

The quantum of other costs associated with grants, subsidies, impairment losses, finance/borrowing expenses and other expenses is fairly insignificant as they comprise a minor portion of total expenses (1.2%).

Capital Budget Arrangements

Current Asset Base

QAS total capital stock has a current value of \$586.71M and a book value of \$311.81M. The assets are divided into four categories: Buildings, Land, Motor Vehicles and Other. The assets classified in the 'Other' category include computer and communication technologies, air-conditioning, training and medical equipment, marine transport and security systems. Table 3.3 shows a comprehensive summary of the QAS asset base as of 5 October 2007.

Table 3.3: QAS Asset Base

Capital Asset Group Type	Total Current Value (\$'000)	Depreciation or Amortisation (\$'000)	Total Net Book Value (\$'000)	Number of Assets
Buildings	350,492	181,328	169,164	491
Land	76,392	Not depreciated	76,392	284
Motor Vehicles	94,801	50,280	44,520	1057
Other	65,021	43,283	21,738	2858
Total	586,706	274,892	311,814	N/A

Source: Internal asset data supplied by QAS

The largest class of capital stock for QAS is 'Buildings' including all the ambulance stations and associated building structures/components. QAS also has a large stock of motor vehicle assets, due to service provision centring on road transport. The vehicle assets are managed through a replacement program spanning five to eight years depending on vehicle workload.

The audit found that QAS has employed sound financial management and accounting practices in relation to capital investment, with no financial Audit qualifications received by the agency over the last several years. The organisation records and reports assets in accordance with Queensland Treasury's *Non-Current Asset Accounting Policies for the Queensland Public Sector* and *AASB 116 Property, Plant and Equipment*.

Capital Acquisitions

QAS capital acquisitions have seen a considerable increase over the past four years to meet increased demand for ambulance services. Table 3.4 shows capital acquisition by categories from 2003-04 to 2006-07.

Table 3.4: Capital Acquisition Summary

Category	Year			
	2003-04 (\$'000)	2004-05 (\$'000)	2005-06 (\$'000)	2006-07 (\$'000)
Land	890	1,171	1,484	1,369
Buildings	12,044	8,012	14,039	16,043
Major Plant and Equipment	0	0	0	0
Transport Equipment	11,531	8,277	15,924	10,437
Other Plant and Equipment	3,879	5,115	8,585	10,371
Intangibles and Computer Software	-4	1,151	2,043	2,932
Total Capital Acquisitions	28,340	23,726	42,075	41,152

Source: Internal capital acquisition documents supplied by QAS

The QAS has a comprehensive capital program focusing on replacement and redevelopment of ambulance stations, commissioning of new ambulance stations, strategic land purchases, vehicle replacement, and operational and communications equipment replacement/improvement.

In addition to the QAS exclusive capital initiatives, QAS invests heavily in joint initiatives with QFRS. For example, the Queensland Combined Emergency Services Academy, Emergency Services Computer Aided Dispatch and joint fire and ambulance facilities in Palm Island, North Mackay and Roma Street.

The capital budget has varied and there has been a spike in capital expenditure in the past four years. These impacts could be limited through forward expenditure planning and active asset management to ensure that expenditure is smoothed over time rather than large purchases being made in an ad hoc fashion as assets reach the end of their economic life

QAS has experienced capital acquisition difficulties such as construction labour skill shortage and building material cost escalation resulting in rescheduling and delays on certain projects, but overall the audit has found that these difficulties do not appear to have seriously impacted on the ability of QAS to provide the community with ambulance services.

Corporate Services Allocation

Corporate services allocation has specifically been identified as a key area for investigation by the audit to ascertain how much of the organisation's resources are dedicated to front-line service delivery as opposed to the corporate support of organisational activities and processes. The QAS dual corporate service allocation, on both a whole-of-department and the divisional level, has been examined specifically as the publicly available information on detailing corporate service allocation is limited.

Corporate Service Structure

Whole of Department Corporate Services

Whole-of-department corporate services utilised by the entire agency are allocated to the three divisions of the department (QAS, QFRS and EMQ) on an Activity-Based Costing (ABC) methodology. DES has advised that based on minor adjustment to the ABC methodology following the most recent ABC review, QAS corporate service allocation for 2007-08 is a 44.74% share. Whole-of-department corporate services comprise Strategic Policy and Executive Services (SP&ES), incorporating the Office of the Director-General and Internal Audit, Business Support Services (BSS) and the Shared Service Providers (SSPs).

BSS	SP&ES	SSPs
Provides QAS, QFRS, EMQ and SP&ES with services and advice related to human resources, industrial relations, finance and acquisitions, logistics, asset and facilities management, corporate governance, library and records, and information systems and networks to the Kedron Park complex and regions.	Provides organisation-wide strategic management, strategic policy co-ordination, legal services, legislative and Cabinet services, corporate initiatives, public affairs and communication services, community engagement, indigenous co-ordination services, and executive support to the Director-General and the Minister's office.	PartnerOne and Corptech provide a standard suite of corporate services including finance and procurement, human resources, document management and mail services.

QAS Divisional Corporate Services

QAS also employs staff within the division to undertake corporate type activities specific to QAS. These employees are classed as corporate support personnel and fall into the following sub-categories: administration, community services, executives, human resource, information technology, marketing and medical director.

Corporate Service Overheads

In 2007-08, QAS allocated \$58.67M in total to corporate type activities to support the core operations and ancillary service provision of the organisation. This figure represents 14.4% of the revised QAS budget, which can be categorised as:

- § **\$38.11M** - QAS's portion of the whole-of-department corporate allocation. This constitutes 9.3% of the QAS revised estimated budget.
- § **\$20.56M** – allocation to corporate support services internal to QAS, representing 5.0% of the QAS revised estimated budget.

The audit has found that the dual corporate service allocation on both a whole-of-department and the divisional level masks the true level of spending on non-frontline services (ie.

corporate and operational services). The true aggregate figure of \$58.67M is significantly greater than the published corporate service allocation estimated figure of \$35.46M for QAS, evident in the DES 2007-08 Ministerial Portfolio Statement.

Whole-of-Department Corporate Services Allocation

DES calculates whole-of-department corporate service allocation to each division per annum using the ABC model. Table 3.5 contains the QAS corporate services allocation from 2003-04 to 2007-08, itemised by corporate service areas.

Table 3.5: Corporate Service Allocation

	Year				
	2003-04 (\$'000)	2004-05 (\$'000)	2005-06 (\$'000)	2006-07 (\$'000)	2007-08 (\$'000)
Strategic Policy & Executive Services	4,508	5,931	6,809	8,602	8,926
Business Support Services	11,838	11,711	16,080	17,277	20,549
Shared Service Providers	3,849	4,288	4,956	5,923	6,094
Total Corporate Services	20,195	21,931	27,845	31,802	35,570

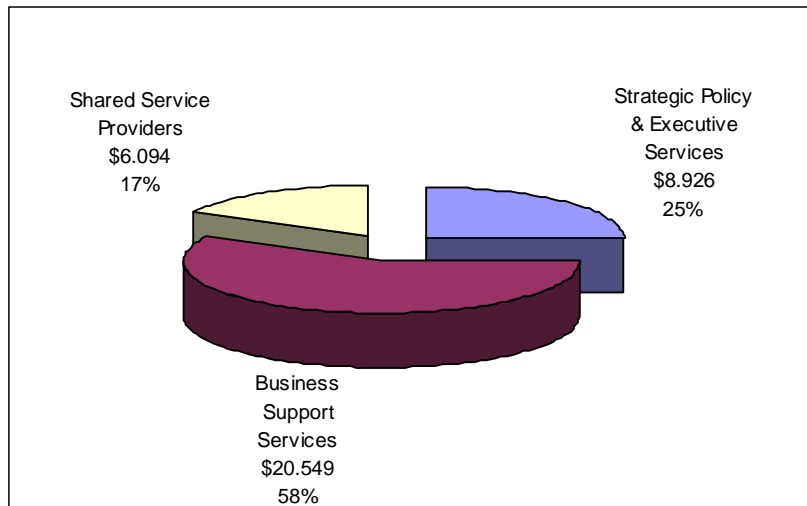
Source: Internal corporate service allocation data supplied by QAS

For disclosure purposes, in the audited financial statements, actual corporate service revenues and expenses are allocated according to the ABC model to each division, including surpluses and deficits. For this reason, QAS actual corporate service expenses do not fully align with the total corporate service allocation figures in Table 3.5. The whole-of-department corporate service operating surpluses, which range from \$0.92M to \$1.39M in the past five years, account for the variance.

Between 2003-04 and 2007-08, the whole-of-department corporate service allocation borne by the QAS increased by 76.1%. The BSS and SSPs cost allocations increased by 73.6 % and 58.3% respectively, while the increase in the SP&ES allocation over the same period was considerably greater with a 98.0% growth exhibited. The audit acknowledges that some of the growth in whole-of-department corporate allocation is attributable to transfers of functions and new initiatives.

The proportional allocation to SP&ES, BSS and SSPs in 2007-08 is illustrated in Figure 3.4.

Figure 3.4: Corporate Service Cost Allocation (\$M)



Source: QAS Internal Documents

QAS Divisional Corporate Support Allocation

QAS corporate support allocation in 2007-08 was \$20.56M. This allocation can be further broken down into Head Office corporate support (\$10.05M), regional corporate support (\$9.48M) and regional administration (\$1.02M). No growth trend could be established for QAS divisional corporate support allocation, as no historical data has been made available relating to these costs.

The audit findings reveal that the true corporate overhead of QAS is sizeable and arguably excessive at 14.4% of the total revised budget. It appears from the corporate service allocation analysis that some duplication may exist between whole-of-department corporate services and QAS division specific corporate services.

Duplication of activities seems to arise specifically in areas such as administration, marketing, human resources and information technology where activities are undertaken at both a divisional and whole-of-department level. In the opinion of the audit, an internal review of corporate overhead and the possible introduction of an efficiency dividend would be useful to encourage both QAS and DES to streamline corporate services. The department and the division should be encouraged to jointly identify synergies and eliminate duplication of tasks and activities between the whole-of-department and the divisional levels. Resources saved as a result of efficiencies identified and implemented could be transferred to core ambulance activities, to assist in meeting expense pressures on the front-line.

Cost Allocation to Services

Resource allocation to services has been examined to further highlight the service areas consuming the majority QAS resources. In this cost-by-service analysis the audit attempted to determine the proportion of resource allocation to core services (ambulance response services) and contrast it with allocation to ancillary services (community education and safety).

Publicly Reported Allocation to Services

For the purposes of public reporting, QAS breaks its expenditure on services down into two sub-output categories as shown in the Ministerial Portfolio Statements:

- Ambulance response services (89% of the budget or \$358.09M in 2007-08)
- Ambulance community and business services (11% of the budget or \$46.36M in 2007-08)

Internally Reported Allocation to Services

Further information has been made available by the Department on the allocation of resources for internal reporting purposes contained in Table 3.6.

Table 3.6: Cost Allocation by Service Type (2006-07)

Service Type	Total Service Expense (\$'000)	Expense as a Proportion of Total Expense
Other Operational	291,047	80.25%
Corporate Services (BSS, SP&ES, SSPs)	31,802	8.77%
Communication Centres	24,032	6.63%
Community & Baby Capsules Services	10,967	3.02%
Mining Contracts	3,027	0.83%
Sports/Special Events	1,696	0.47%
Other Commercial Contracts	126	0.03%
Total	362,697	100%

Source: Internal corporate service allocation data supplied by QAS

Examining this breakdown, 80% of funding in 2006-07 was dedicated to the 'Other Operational' category, which includes ambulance responses. This would seem to indicate that the majority of funding is allocated appropriately to core business. However, costing emergency and non-emergency patient transport would provide a more informative indicator of allocation to core services. Furthermore it would eliminate any ambiguity about what other smaller subsidiary service activities are classified under 'other operational', which are not suitable for inclusion in other categories.

Concerning resource allocation to specific services, the audit has found that the public reporting is limited in identifying the true level of spending on discrete services, such as emergency ambulance transports, non-emergency transports and inter-hospital transfers. Furthermore, internal reporting of cost allocation to services shows a similarly limited approach with an overemphasis on ancillary services.

Allocation to Ancillary Services

QAS provides more ancillary (non-ambulance transport related) services to the community than any other ambulance service in an Australian jurisdiction. These include baby capsule hire and fitting, community education and training, the CPR for Life program and the PrimeSafe program. These types of community and business services are mostly offered by private providers and not-for-profit organisations, such as St John Ambulance, in other states and territories.

Baby Capsule Hire and Fitting

QAS provides baby capsule hire services for a fee and private restraint fitting/checking services for free. In 2007-08, allocation to these services is \$1.37M and revenues of \$0.62M are expected to be generated.

The increasing demand for baby capsule related services is clearly evident in Table 3.7. Figures show a 55.6% growth in the number of hires and a 120.8% growth in private restraint services provided per annum from 2003-04 to 2006-07.

Table 3.7: Number of Baby Capsule Services Provided

	Year			
	2003-04	2004-05	2005-06	2006-07
Hire	8,055	9,239	11,226	12,530
Private Restraints	3,668	5,827	6,445	8,100

Source: Baby Capsule Hire Booking System data provided by QAS

The audit has found that, in 2006-07, 34.9% of baby capsule service expenses were covered by service revenue, which is not dissimilar to cost recovery figures for the service in recent years. This results in QAS continuing to show a net deficit in the provision of baby capsule services. The inability of QAS to recover the expenses associated with baby capsules is arguable due to the provision of free installation and checking services. The net deficit from baby capsule services was \$1.30M in 2006-07.

The audit findings do not dispute the merit of child safety restraints in reducing injury to children in vehicle accidents and support the notion that such baby capsule fitting services should be available to the Queensland public. However, the findings of the audit bring into question the appropriateness of QAS providing these services and contend that private sector organisations, or other Queensland Government agencies may be more suited to providing such a service.

Community Services

In 2006-07, community service provision (both community education and community safety) resulted in \$9.69M expenses and \$5.10M of revenues, resulting in a \$4.59M deficit.

QAS is a Queensland Registered Training Organisation and offers a variety of patient care training courses including First Aid courses and courses on use of medical equipment and administering emergency medical treatment. Table 3.8 contains information on the number of courses and certificates provided per annum between 2003-04 to 2006-07.

Table 3.8: Number of Community Education Courses/Certificates Provided

	Year			
	2003-04	2004-05	2005-06	2006-07
Courses	8,712	8,650	8,219	8,330
Certificates	73,447	72,512	63,092	65,550

Source: Ambulance Community Education System (ACES) data provided by QAS

The figures show that there has been a decrease in demand of 4.4% for courses and 10.8% for certificates since 2003-04. A commercial market exists for these types of community education services and there are several private providers in Queensland offering similar courses/certificates, which may go toward explaining the decrease in QAS's demand for education services.

While the cost-by-service breakdown provided by the Department in Table 3.6, does not distinguish between community education and community safety services, additional advice provided by the agency states that the community education component operates as full cost recovery. This is due to a one-off escalation above CPI in course/certificate fees approved by CBRC. The audit analysis would argue annual escalation utilising CPI indexation only going forward will result in QAS being unable to maintain full cost recovery on this service in future years.

The community services category also encompasses community safety services, which is a suite of programs supported by QAS to build the community's capacity to respond to injury and illness. These services generate no revenue and are estimated to cost \$6.39M in 2007-08. Safety programs include childhood injury prevention, drug overdose visitation and PrimeSafe, a prevention and response program aimed at primary school students. In the opinion of the audit, Queensland Health is arguably better suited to provide these types of health related intervention and prevention programs instead of QAS.

Ambulance Response Subsidiary Services

Mining and Other Commercial Contracts

Contracts for the exclusive provision of ambulance/paramedic/training services are negotiated independently, depending on the procurer's requirements. The majority of commercial contracts are associated with mine sites, though QAS does enter into a limited number of ad hoc and regular contracts with other commercial entities (for example, Indycar Australia), for the exclusive provision of ambulance services. Mining contracts exist only in the Northern and Central ambulance regions.

Mining and other commercial contracts recover all associated expenses and generate a net profit for QAS (\$2.62M in 2006-07).

Sports and Special Events

In 2006-07, sport/special event attendance utilised \$1.70M of QAS's budget. An organiser of a special event in Queensland has a legal duty of care to provide appropriate levels of health care for people attending the event. If the event has a high likelihood of injury, the organiser may need to contract QAS dedicated services to fulfil terms of public liability insurance including pre-arranged stand-by and dedicated ambulance services to an event. Information from the Department indicates that Sports/Special Events services are designed and costed to attain full cost recovery (100%).

The audit has found that commercial contracted ambulance services for the private sector entities and special events are financially viable, as full cost recovery is attained and net revenue is generated in some cases.

Allocation to Core Services

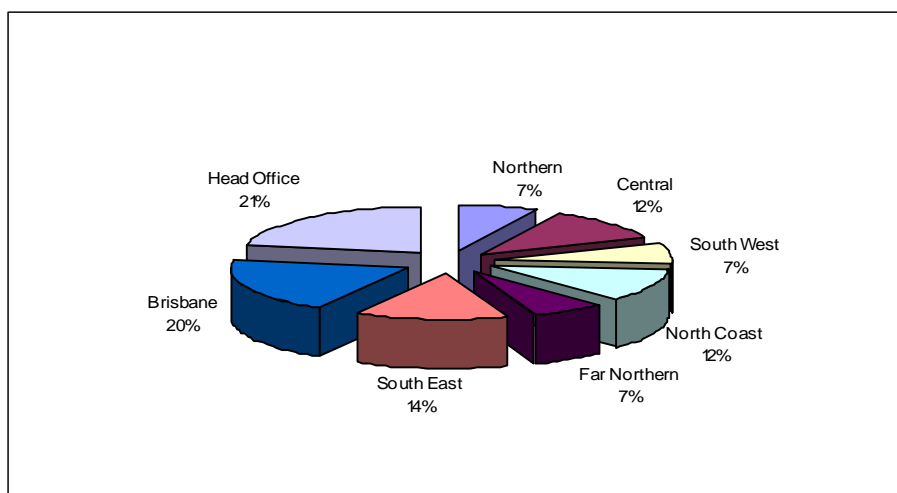
A projection of allocation to core services has been done using the regulated ambulance fees currently charged to non-exempt individuals. Minimum travel has been assumed for all transports, therefore emergency (Code 1 and 2) transports were calculated at \$888, non-emergency (Code 3 and 4) transports were calculated at a flat rate of \$330 and treat-no-transport services were calculated at \$90.50. In 2006-07, there were 366,242 emergency transports, 198,179 non-emergency transports and 51,089 treat-no-transport cases. Using these figures a total expenditure for service has been calculated at \$397.91M. In reality this figure would be reduced due to discounting of IFTs and fixed fee arrangements with DVA and Workers' Compensation.

Internal Reporting of Allocation to Ambulance Regions

The audit has also examined budget allocation to ambulance regions to highlight where resources are being utilised in the state and to attempt to match spending with population patterns in the State. This analysis was undertaken using further information on cost allocation to regions made available by the Department which the agency uses for internal reporting purposes.

Note that all BSS, SP&ES and SSPs costs are allocated to Head Office, therefore the expenses of each region appear proportionately lower and may not be fully indicative of corporate service resourcing. Figure 3.5 shows the cost allocation to each ambulance service region.

Figure 3.5: Budget Allocation by Region 2006-07



Source: Internal QAS Documents

As evident from Figure 3.5, Head Office is allocated the most resources out of all the regions. As well as the whole-of-department corporate allocation, a large proportion of divisional corporate support, community services and baby capsule services are also allocated to Head Office, substantially increasing the resource consumption of this ambulance region. The proportion of the budget allocated to Head Office appears high relative to the regions where the majority of service delivery costs are incurred.

Forward Estimates

Budget Development

The QAS Budget is developed on a no-change policy basis using a top-down approach. The organisation maintains a budget planning tool to manage the allocation of funding across regions, called the Resource Allocation Model (RAM).

QAS estimates that total revenue will continue to exceed total expenses, with a surplus of \$5.12M to \$5.81M per annum. Total revenue is estimated to climb to \$450.56M and total expenses to \$445.40M by 2010-11. This implies an expected growth of approximately 2.5% per annum in revenue and in expenses over four years. This is considerably below the latest per annum growth figures of 12.7% and 12.2% respectively.

The audit findings on the historical growth trends of the budget illustrate that the methodology used by QAS to estimate future budgets appears overly conservative and may not provide an accurate forward projection of revenues and expenses. For example, user charges escalated by CPI alone understate future user charge revenue, as it fails to factor in the growth in demand for ambulance transport services.

Other Australian Jurisdictions

In order to perform a comparison of the budgetary and resource allocation of ambulance services in other jurisdictions, the audit has undertaken research on the funding structures and mechanisms in other states and territories. The objective of the research was to allow for analysis of the various funding structures to ascertain which methods were most suitable in ensuring a sustainable funding base for ambulance services.

All states and territories have various governance structures and revenue raising methods to assist in providing ambulance services to the community. *Appendix 3* contains a detailed report on the governance structure of ambulance services in each Australian jurisdiction. The report also explores the level of funding for ambulance services and the various funding mechanisms utilised.

Governance Structure

Queensland and the ACT are the only jurisdictions where the ambulance service is part of the Department of Emergency Services. In NSW, Victoria, SA and Tasmania the ambulance service is part of the Department of Health, as a division, statutory government owned corporation, incorporated association and a division, respectively. In WA and the NT ambulance services are provided by non-profit organisations.

Ambulance Levies

Queensland is the only jurisdiction that has a universal ambulance levy. NSW and the ACT have health insurance levies in place, which raise approximately 25% and 40% of their entire revenue respectively. Health insurance levies are collected through private health insurance providers, with the cost of the levy built into the insurance premiums. Transport fees for individuals who are covered by private health insurance are charged directly to the insurance provider.

Subscription Schemes

Victoria, SA, WA, the ACT and the NT offer subscription schemes, which provide various levels of cover for subscribers. Some schemes provide cover for only emergency services, while others cover non-emergency services also. Certain schemes require a co-contribution by the patient in non-emergency cases.

Contract Transport Fees and Charges

All major Australian ambulance services receive income from transport fees charged to large organisations and private sector entities. These transport fees are usually charged under a bulk agreement, which is individually negotiated between the service provider and service recipient.

Government Funding

All ambulance services receive government funding in some manner, through appropriation, grant or contractual agreements. The proportion of funding provided by the government varies greatly depending on the nature of the ambulance service and its ability to gain support from the community in the form of donations and volunteer labour. Excluding any levy revenues appropriated through government, Tasmania has the highest level of government funding at 87% and WA the lowest at 34%.

NSW, Victoria and Tasmania are currently reviewing the operations and/or funding of their state's ambulance service providers to ensure adequate service provision can be maintained for the community.

Table 3.9 is a summary of income sources for each state and territory's ambulance service in Australia.

Table 3.9: Funding Source Summary Other States

Funding Source	Qld	NSW	Vic	SA	WA	Tas	ACT	NT
Government	ü	ü	ü	ü	ü	ü	ü	ü
<i>Universal Levy</i>	ü	ü	ü	ü ^a	ü	ü ^b	ü	ü
<i>Private Health Insurance Levy</i>	ü	ü	ü	ü	ü	ü	ü	ü
Subscription Scheme	ü	ü	ü	ü	ü	ü	ü	ü
Private Transport Fees	ü	ü	ü	ü	ü	ü	ü	ü
<i>Residents</i>	ü	ü	ü	ü	ü	ü	ü	ü
<i>Non-Residents</i>	ü	ü	ü	ü	ü	ü	ü	ü
Contract Transport Fees (For example: hospitals, WorkCover, Motor Accident, DVA)	ü	ü	ü	ü	ü	ü	ü	ü
Donations and Other	ü	ü	ü	ü	ü	ü	ü	ü

a) An Emergency Service levy is charged in the state of which SAAS receives a small portion

b) A levy exists that is applicable in Oatlands only, where the local government has imposed an ambulance levy on rate-payers.

Interstate Comparison of Funding and Benchmarking

One of the key issues the audit was set up to examine was the corporate overheads of QAS, in order to determine whether the organisation has an appropriate ratio of corporate/operation support personnel to front-line ambulance operatives. The audit utilised several benchmarking methodologies to ascertain whether the level of QAS corporate overhead was appropriate in comparison to other Queensland Government departments, other DES operational divisions and ambulance services in other Australian Jurisdictions.

Benchmarking Corporate Service Allocation

Comparison with other Queensland Government Departments

Analysis has been undertaken attempting to benchmark DES corporate service expenses against corporate service expenses of other Queensland Government Departments (as disclosed by agencies in the audited financial statements and in Ministerial Portfolio Statements).

Corporate service allocation as a percentage of total budget shows an extremely large variation, ranging from 1.2% to 30.8%. The factors generating such a large variance include: differentiated services; human resource intensive vs. capital resource intensive service delivery models; economies of scale; and other types of efficiencies achievable by each agency. Furthermore, this corporate allocation figure may not be fully indicative of spending on corporate type activities within the agency. For examples, as with DES, the figure may fail to capture various corporate support activities at divisional and/or regional levels. For this reason, benchmarking across other Queensland Government departments is unlikely to result in a meaningful comparison.

Comparison with QFRS and EMQ

QAS corporate services allocation has been compared with the other two operational divisions of the agency, QFRS and EMQ in terms of their share of whole of department overheads.

Results of the comparison of whole-of-department corporate service allocation only are shown in Table 3.10.

Table 3.10: Whole-of-Department Corporate Service Allocation as a Proportion of Total Expenses

	Years			
	2003-04	2004-05	2005-06	2006-07
Queensland Ambulance Services	7.04%	7.39%	8.62%	8.77%
Queensland Fire and Rescue Services	7.04%	7.39%	8.57%	9.06%
Emergency Management Queensland	8.02%	8.37%	8.73%	8.33%

Source: Internal QAS Data

As expected, the proportions for QFRS and EMQ are not vastly different from that of QAS, due to the other divisions also operating under the same operational model and sharing the same whole-of-department corporate service delivery areas. However, it is interesting to note that overall all three divisions have increased their proportional corporate service allocation since 2003-04, with QFRS exhibiting the largest growth.

As the whole-of-department corporate allocation above fails to capture the total corporate overhead costs, this type of benchmarking is unlikely to provide a meaningful comparison for the purpose of the audit. Furthermore, as total corporate overhead for QFRS and EMQ are underestimated by not accounting for divisional corporate support, the comparisons will not assist in determining whether the QAS level of corporate allocation is appropriate.

Comparison with Ambulance Services in Other Jurisdictions

To provide a meaningful comparison of corporate support allocation with similar services the audit has utilised ROGS data on the number of staff allocated to corporate services functions in ambulance organisation in all Australian states and territories. This provides a non-financial comparison of corporate service allocation with other ambulance services. As ROGS data is based on mandatory disclosure with regulated reporting requirements, it offers an acceptable level of comparability and accuracy.

The comparison shows that QAS has a much higher level of overhead compared with other similar jurisdictions, as Table 3.11 and Table 3.11 illustrate.

Table 3.11: Ambulance Service Organisations' Human Resources (2005-06)

	Unit	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Ambulance operatives	FTE	3 066	2 040	2 402	504	720	188	107	84	9 111
Operational support personnel	FTE	257	152	178	72	81	28	14	15	797
Corporate support personnel	FTE	218	263	453	118	136	16	22	16	1 243
Total salaried personnel	FTE	3 541	2 455	3 033	695	937	232	143	116	11 152

Source: Report on Government Services 2007

Table 3.12: Ambulance Service Organisations' Human Resources (2005-06)

	Unit	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Ambulance operatives	%	86.6%	83.1%	79.2%	72.5%	76.8%	81.1%	75.0%	72.9%	81.7%
Operational support personnel	%	7.3%	6.2%	5.9%	10.4%	8.7%	12.0%	9.5%	13.0%	7.1%
Corporate support personnel	%	6.2%	10.7%	14.9%	17.0%	14.5%	6.9%	15.5%	14.2%	11.1%
Total salaried personnel	%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Report on Government Services 2007

The QAS corporate support personnel figure is significantly higher than other states and territories. While some of the FTEs classified under corporate support personnel are in fact utilised in delivering ancillary services (i.e. community education and safety activities). The most recent data available for Queensland (2006-07) shows total FTEs at 3197 with 448 FTEs providing genuine corporate services. This illustrates that 14.0% of human resources are dedicated to corporate activities. Note that this percentage allocation closely aligns with the 14.4% corporate overhead share of the total budget calculated in the sub-section title 'Corporate Service Allocation', further validating the accuracy of this corporate overhead measure.

The audit has compared the 2006-07 Queensland human resource allocation of ambulance operatives and communication staff to operational and corporate personnel and has found that only 77.6% of the organisation's resources are utilised in providing core-ambulance services. This appears fairly low in comparison to the 2005-06 national average of 81.7%.

QAS maintains that it is restricted in its ability to reduce corporate service FTEs, due to being an operational division of a larger department, and therefore having to bear corporate service costs at both a divisional and whole-of-department level. This reinforces the argument that efficiencies are likely to result from streamlining corporate services and eliminating activity duplication between the whole-of-department and divisional corporate areas.

Benchmarking Funding of the Ambulance Service

The audit has also benchmarked overall resource allocation to ambulance services to determine how Queensland's ambulance service resource dedication compares with the resource commitments in other Australian jurisdictions. In 2005-06, expenditure on ambulance services in Queensland was \$81,505 per 1,000 people. This figure is significantly

higher (18.5%) than the national average of \$68,765 per 1,000 people, as shown in Table 3.13. The trend of Queensland continuing to spend more on ambulance services than any other state or territory has continued from 2001-02.

Table 3.13: Ambulance service organisations' expenditure per 1,000 people (2005-06)

	Unit	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Total	\$ million	434.9	394.9	324.1	77.1	104.4	30.1	20.4	12.9	1 398.7
Population	million	6.8	5.0	4.0	2.0	1.5	0.5	0.3	0.2	20.3
Per 1000 people	\$	64,250	78,614	81,505	38,332	67,679	61,899	62,484	63,214	68,765

Source: Report on Government Services 2007

Benchmarking Financial Performance and Efficiency

Expenditure on ambulance services by ambulance response/incident/patient/transport, contained in the Report on Government Services, has been compared as an indicator of service efficiency. Further details of performance indicators using ROGS data can be found in Chapter 6 – Performance Assessment and Performance Management Systems of the audit report. In summary, Table 3.14 shows that Queensland has a lower unit cost in each category than the national average. The lower cost is a direct result of the higher demand and quantum of service provided. Since a large proportion of the costs for ambulance services are fixed in the short term the higher number of responses / incidents / patients / transports allows the organisation to spread their fixed costs over more units, resulting in a smaller per unit cost.

Table 3.14: Ambulance Service Costs Per Response/Incident/Patient/Transport (2005-06)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Cost per Response	\$435	\$528	\$434	\$484	\$488	\$487	\$683	\$409	\$468
Cost per Incident	\$521	\$631	\$502	\$495	\$521	\$508	\$754	N/A	\$549
Cost per Patient	\$543	\$682	\$540	\$477	\$543	\$653	\$821	\$475	\$575
Cost per Transport	\$664	\$746	\$583	\$524	\$650	\$823	\$1,078	\$517	\$657

Source: Report on Government Services 2007

Chapter 3 - Budget and Resourcing Recommendations

Recommendation 3.1

QAS adopt improved budget management and forecasting procedures including:

- revising its methods for forecasting own source revenue to provide a more realistic revenue outlook for the Service for the purposes of planning and budgeting;
- ceasing the practice of budgeting for surpluses to support the purchase of capital items with a view to freeing up recurrent funding to meet service delivery demand increases (funding for capital items should be sought as part of the annual budget process); and
- improving its level of debt recovery on user charges to ineligible clients and other parties.

Recommendation 3.2

An efficiency dividend of 1% is to be applied immediately to the Department's corporate overheads and that a similar dividend be applied to the QAS's own corporate overhead to free up funds for service delivery. The Department of Emergency Services is to further reduce the level of overhead such that it aligns with other State ambulance services within the next two years.

Recommendation 3.3

QAS review the provision of ancillary services including community education services noting an estimated \$12M in reduced expenses (with a net saving to the budget of \$7.75M after taking into account revenue) could be realised if QAS was to focus on its core business.

In the event that the Government wishes to retain these services within the QAS, then it is recommended the QAS review these services to ensure there is no duplication with other agencies such as Queensland Health, and move the services progressively towards full cost recovery.

Recommendation 3.4

QAS move all its third party funding arrangements to full cost recovery including payments from the Motor Accident Insurance Commission (raised by the hospital and emergency services levy attached to vehicle registrations).

Chapter 4 – Workforce Management Systems

This section provides an overview of the QAS's workforce and the industrial framework in which it operates. It also considers a number of workforce indicators and makes a number of recommendations to improve workforce health, safety and effectiveness.

Workforce at a glance

The QAS is a highly trained and professional workforce with, at June 2007, 3,197 full-time equivalent (FTE) staff.

The number of QAS employees has grown by 20% since 2004 and Queensland now has the second largest ambulance workforce nationally.

Employees can be classified as ambulance operatives, operational support and corporate support staff. The number of ambulance operatives has increased but remained relatively stable as a proportion of the overall workforce while the number and proportion of corporate support staff has increased.

QAS employees are predominantly male, aged between 30 and 49 years of age. Over 95% of the workforce are permanent, full-time employees.

The base salary spread across the QAS is highly concentrated, with 55% of employees earning between \$40,000 and \$49,999. Taking into account other payments, the average salary per FTE in 2006-07 was \$79,252.

While the workforce has remained relatively stable, separation rates (which are still low) have been trending up over time, as has another key indicator of workforce health – absenteeism.

The QAS is an efficient service benchmarked against other jurisdictions. However, the QAS' basic labour productivity (that is ambulance services per employee) is below the national average.

Size of the Workforce

In Australia, health-related occupations account for around 5% of the total workforce and paramedics and ambulance officers comprise about 2% of this health workforce (Productivity Commission 2006, p333-5).

In June 2007, the QAS had 3,197 FTE employees. This comprised 2,913 FTE employees from within QAS and a corporate support allocation of 284 FTE employees (QAS 2007, unpublished data).

While engaged under the *Ambulance Service Act 1991*, QAS employees are a part of the Department of Emergency Services. The Department of Emergency Services is, by headcount, the fourth largest Queensland public sector agency (behind the Departments of Education, Training and the Arts, Queensland Health and the Queensland Police Service). The QAS comprises around two-fifths of the Department of Emergency Services' overall workforce.

The number of QAS employees has grown by 20% since 2004 (from 2,662 FTE to 3,197 FTE), which is above the Queensland public service's growth of 13%, but has been required to manage the significant increase in demand for services.

Table 4.1: QAS and Queensland Public Sector Growth – June 2004 to June 2007

	June 2004	June 2005	June 2006	June 2007	% Change 2004 to 2007
QAS Total	2,662	2,891	3,033	3,197	20.1%
– QAS	2,489	2,671	2,774	2,913	17.0%
– Corporate service	173	220	259	284	64.2%
Public Sector	158,772	163,486	170,320	179,872	13.3%

Sources: QAS and OPSC unpublished data, ROGS 2007

Types of Employees

QAS employees operate across three categories – ambulance operatives, operational support and corporate support.

Ambulance operatives include patient transport officers, student paramedics and paramedics, call takers and dispatchers and a regional medical officer. Operational support includes additional clinical support provided by educators and quality assurance officers and infrastructure support, such as fleet and property maintenance. Corporate support staff include community service operatives and the Medical Director and more traditional corporate functions such as marketing, human resources, information technology, finance and administration, as well as the executive.

Volunteers play an important role in supporting QAS, particularly in rural communities in roles such as drivers, ambulance attendants and first responders. The number of volunteers fluctuates from year to year, but has exceeded 400 people each year from 2002-03.

First Responders are a recent development in ambulance services. They attend local accident and medical emergencies to provide life saving first aid treatment until the arrival of advanced medical care.

Volunteer drivers drive operational ambulance vehicles and provide physical support under the supervision of a qualified and authorised QAS paramedic. They undergo network driver training, must have a current senior first aid certificate and are familiar with basic QAS equipment and undergo a safe lift program.

These operational volunteers are used in many rural, remote and isolated communities, where demand for ambulance services is insufficient to warrant two paramedics during a shift or a local QAS presence, but where a capacity to provide basic life support and advanced first aid has the potential to improve patient outcomes.

Allocation of Staff by Service Category

The overall QAS workforce has increased by 20% since 2003-04. The vast majority of QAS employees deliver services – either as ambulance operatives or from the communications centres. As Table 4.2 shows, the proportion of QAS employees that are ambulance operatives has remained relatively stable, at around 78% of the workforce.

Table 4.2 also demonstrates that the number and proportion of operational support personnel has decreased (however, the number of FTE personnel did increase in 2006-07).

The number of corporate support personnel has increased by 19% over this time and the corporate service allocation has increased by 64%. Corporate support and corporate service FTEs now constitute 17% of the QAS workforce, whereas in 2003-04 corporate support and corporate service FTEs comprised 14% of the workforce. It should be noted that, over this time, there was a notional reallocation of some operational support personnel to corporate functions.

Table 4.2: QAS Staffing by Category – 2003-04 to 2006-07

QAS Staffing Full-time equivalents (FTE)				
Category	2003-04	2004-05	2005-06	2006-07
Ambulance Operatives*	2089	2289	2402	2481
Operational Support Personnel	194	175	163	186
Corporate Support Personnel	206	207	209	246
Corporate Service Allocation	173	220	259	284
TOTAL	2662	2891	3033	3197

Sources: QAS Annual Reports from 2003-04 to 2006-07. * Ambulance operatives include qualified ambulance operatives, students, patient transport officers, clinical officers and communications staff.

Interstate Comparisons

In 2005-06, the last year for which comparable data is available, Queensland was second only to New South Wales in terms of the size of the workforce. In terms of corporate support overheads, the QAS had a higher proportion of corporate support to total salaried personnel (14.9%) than the two larger population states – New South Wales (6.2%) and Victoria (10.7%) – and is comparable to South Australia (14.5%) and the Australian Capital Territory (15.5%) on this measure.

Table 4.3: Total salaried personnel – All states and territories: 2005-06

Salaried personnel for ambulance services in 2005-06										
	Unit	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Ambulance operatives	%	86.6	83.1	79.2	72.5	76.8	81.1	75.0	81.1	81.7
Ambulance operatives	FTE	3,066	2,040	2,402	504	720	188	107	188	9,111
Operational support personnel	FTE	257	152	178	72	81	28	14	28	797
Corporate support personnel	FTE	218	263	453	118	136	16	22	16	1,243
Total salaried personnel	FTE	3,541	2,455	3,033	695	937	232	143	232	11,152

Note: ROGS tables differ from Annual Report tables because job categories are specified and the corporate service allocation is split across operational and corporate support functions.

Source: ROGS 2007

In 2005-06 Queensland had the highest number of ambulance operatives and salaried personnel per capita (60 and 76 per 100,000 residents respectively) of all jurisdictions except the Northern Territory (93 and 114 respectively) (ROGS 2007).

Table 4.4: Ambulance operatives and salaried personnel per capita – all states and territories: 2005-06

	<i>Unit</i>	<i>NSW</i>	<i>Vic</i>	<i>Qld</i>	<i>WA</i>	<i>SA</i>	<i>Tas</i>	<i>ACT</i>	<i>NT</i>	<i>Aust</i>
Number of Ambulance Operatives per 100,000 persons in state/territory	FTE	45	41	60	25	47	39	33	93	45
Number of Salaried Personnel per 100,000 persons in state/territory	FTE	52	49	76	35	61	48	44	114	55

Source: ROGS 2007

Distribution and Profile of Staff

Close to 60% of staff work in three regions – Brisbane, South Eastern and North Coast, whereas just over 60% of stations are in Far Northern, Northern, Central and South Western Regions. This is not surprising given both the state’s geography and decentralised approach to service delivery combined with growing population density in the south east corner.

The majority of ambulance staff are aged between 30 and 49 years. Until the 1980s, the ambulance workforce was male dominated. The current gender composition of the workforce reflects the relatively recent entry of women to this workforce. At June 2007, women comprised 27% of the QAS workforce.

In line with the expectation of the Enterprise Partnership Certified Agreement 2005 (that the QAS is “committed to utilising permanent employment in those areas where workload and service delivery has demonstrated a need for regular and ongoing resourcing”), the vast majority of QAS employees (96%) are permanent employees and 97% of these are full-time employees.

Wage Costs

The base salary spread across the QAS is highly concentrated, with over 55% of employees earning between \$40,000 and \$49,999 (compared with around 25% for the Queensland public sector). However, actual staff costs averaged around \$79,250 per FTE. This reflects a range of factors including the payment of overtime.

Overtime is a tool used to assist in delivering this 24 hour, seven day a week service. It covers many different scenarios including:

- in rural and remote areas where, as a result of low call volume of work, paramedics provide on-call coverage and may be required to respond to incidents after hours;
- where an emergency response occurs close to a shift’s finishing time and paramedics are required to work overtime to finish the case;
- to ensure maintenance of full roster coverage, such as when another paramedic is sick or otherwise unavailable; and
- special events being held within the community where the QAS provides full- time coverage at the event. As this work is in addition to normal duties, officers can volunteer to work overtime to cover these events. Costs associated with such activities are fully recoverable as revenue.

The total financial cost of overtime and the total hours worked has increased by over 20% since 2003-04.

Table 4.5: Overtime expense and Total Hours: 2003-04 to 2006-07

Years	Overtime Total (Financial Cost)	Overtime Total (Hours)
2003-04	\$18,639,203	560,415
2004-05	\$22,299,332	635,390
2005-06	\$23,465,501	610,058
2006-07	\$28,304,414	678,525

Source: internal QAS document

Workforce Health Indicators

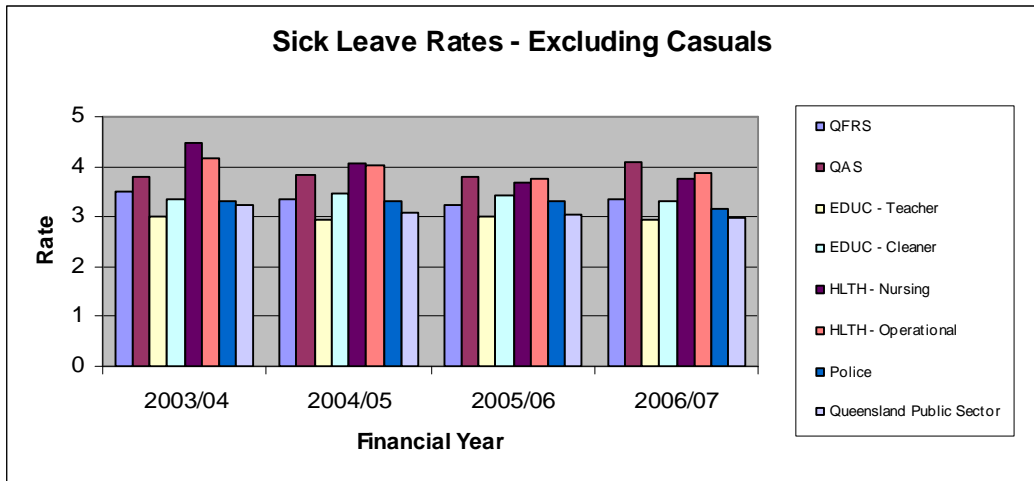
Key indicators of workforce health are absenteeism, separation rates, workers' compensation rates and grievances. The Audit has considered each of these indicators and found that the QAS is performing poorly on a number of counts. This suggests to the Audit that the increasing demand for ambulance services may be having an adverse impact on staff.

As the total number of hours overtime worked has increased, absenteeism rates have trended up, with a 2003-04 rate of 4.5% and a 2006-07 rate of 5.1%. Absenteeism rates for other like occupational groups have remained relatively stable or trended down over this time. The 2006-07 rate for firefighters was 3.7%, for nurses was 4.65% and for police was 4.5%. All of these groups have higher absenteeism rates than for the public sector as a whole, which has an average absenteeism rate of 3.7%.

While the QAS' 5.1% absenteeism rate includes sick leave, miscellaneous special leave, carers leave and workers' compensation leave, sick leave at 4.1% and workers compensation leave at 0.9% account for most of the increase.

While Queensland public sector sick leave rates have trended down over the last three years, sick leave rates within the QAS have trended up over this time. Sick leave rates in other like occupational groups and shift workers have either stayed relatively static or have trended down.

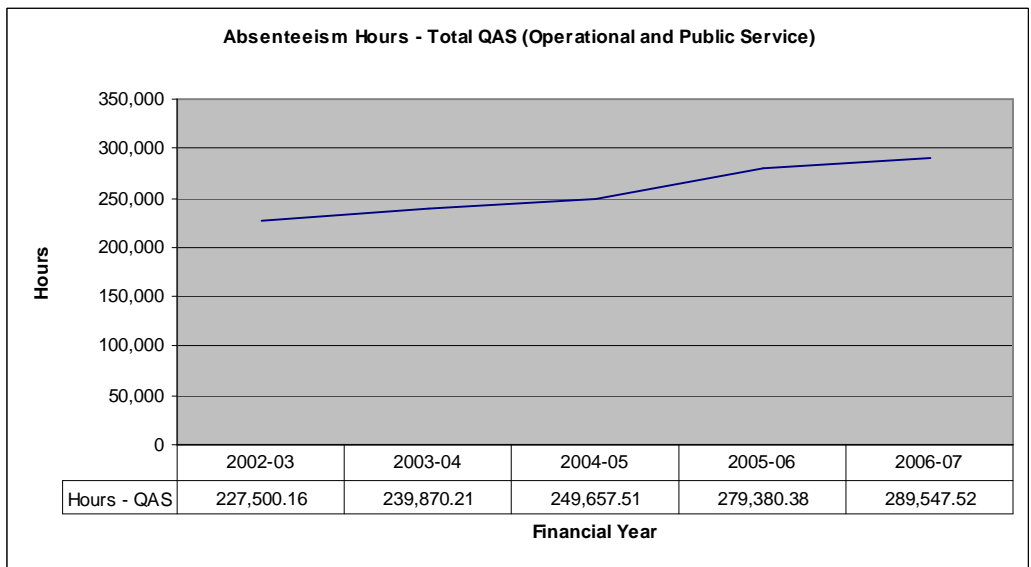
Figure 4.1: Sick leave rates – excluding casuals - Queensland Public Sector, selected employment groups, 2003-04 to 2006-07



Source: unpublished OPSC data (MOHRI)
 This data may differ from other published data due to the different datasets used.

Average hours absent across the QAS have also increased over time. The average number of hours absent per person per year was 85.3 hours in 2003-04 and has increased to 94.8 hours in 2006-07, which is a 27% increase.

Figure 4.2: Total hours absent – QAS operational and public service staff – 2002-03 to 2006-07



Source: unpublished QAS data

Over a third of operational employees have used greater than their yearly accrual of sick leave (which is 80 hours), while 8% of QAS public service employees have used greater than their yearly accrual of 72.5 hours.

The steady increases in demand for ambulance services would be expected to have a negative impact on absenteeism rates. However, there may be other factors contributing to these high absenteeism rates. The Commissioner recently issued a Memorandum in April 2007 and a revised policy and procedure for managers to deal with absenteeism. Both the

policy and the procedure note that “failure to address inappropriate attendance issues and manage absenteeism can and will result in significant harmful outcomes for DES including financial costs, lost productivity, reduced morale, lower employee satisfaction, higher turnover and a negative impact on service delivery and business outcomes.”

While absenteeism is one recognised indicator of workforce health, another is separation rates. Separation rates for permanent QAS employees have also increased over this time, from 2.6% (or 54 people) in 2003-04 to 3.9% (or 99 people) in 2006-07. These rates continue to be higher for the QAS than for the Queensland Fire and Rescue Service (2.4%) and the Queensland Police Service (3.4%). While the QAS separation rate remains well below the Queensland public sector average of 6.4%, QAS separation rates have increased at a higher rate than the Queensland public sector average over this time.

The increases in separation rates combined with the steady increases in absenteeism and people being absent for longer is suggestive of a workforce under increasing pressure and stress.

Two further indicators of workforce health are workers' compensation and grievances.

Workers Compensation

Given the nature of their work, it is unsurprising that the Department of Emergency Services and the Queensland Police Service have the highest rates of accepted worker's compensation claims across the Queensland public sector.

The incidence of work-related injuries for the Department of Emergency Services (which measures the growth in the number of claims relative to the number of employees covered by workers' compensation) peaked in 2003-04 and is now decreasing. However, as the workforce has grown, the total number of accepted claims has increased.

Within the Department of Emergency Services, ambulance service employees have had the highest number and incidence of accepted workers' compensation claims and the highest number and incidence of accepted work-related psychological injuries since 2002-03.

While the number of accepted workers' compensation claims has increased each year, the number of initiated and accepted psychological claims fluctuates from year to year.

Number of Grievances

Grievances can be lodged for a range of reasons, including administrative decisions, employee conduct, sexual harassment and workplace harassment and bullying.

Across the Queensland Public Sector the grievance rate has been in a steady downward trend over the last four years – from 2.73 grievances per 1,000 employees in 2003-04 to 1.12 per 1,000 employees in 2006-07. The largest fall occurred between 2005-06 and 2006-07, with the rate almost halving. This downward trend is in evident in the Department of Emergency Services also, with five grievances lodged in 2006-07, compared with 11 in 2005-06.

There are a number of simple measures which can support the workforce including but not limited to:

- a continuing focus on safe driving;
- a stronger focus on educating road users about what they should do as an emergency services vehicle with its sirens on and lights flashing approaches – this is particularly

important as urban congestion increases which may impact negatively on the ability for vehicles to respond within appropriate timeframes;

- a continuing focus on visible personal and vehicle livery and devices which reduce to the potential for strain injuries;
- a continuing focus on psychological support offered in an open and non-judgemental way; and
- developing agreements with a wider range of food businesses to provide greater choice in the food options available during subsidised meal breaks.

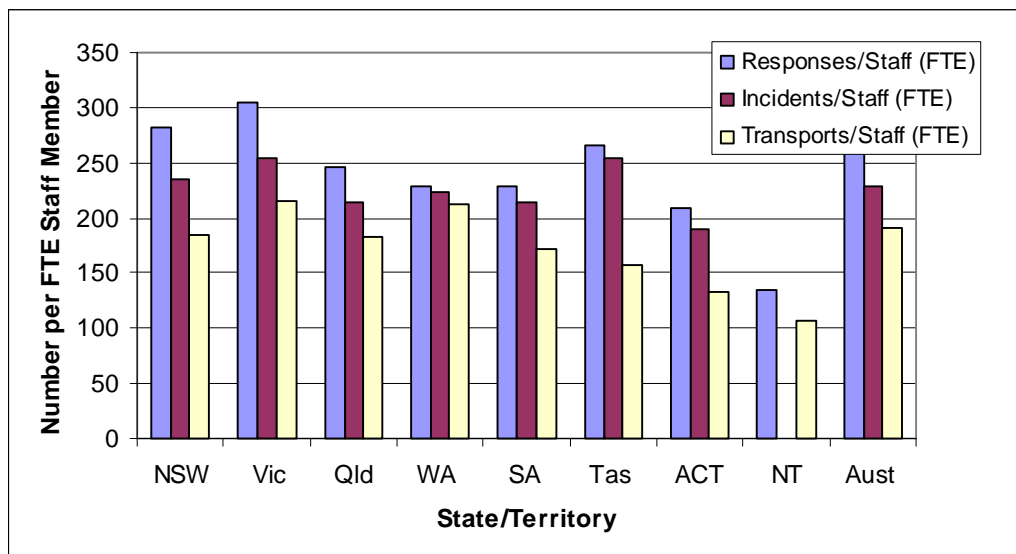
Labour Productivity

The Audit has benchmarked basic labour productivity (ambulance services per employee) and, while it is without question that QAS employees are working harder, the Audit has found that QAS provides fewer services per staff FTE than the national average.

Compared with New South Wales, Victoria and Tasmania (except for transports/staff member), Queensland performs fewer responses, has fewer incidents and transports per salaried staff member.

The Australian average for responses is 268 per staff member and Queensland has 246 responses per staff member. The Australian average for incidents is 229 per staff member and Queensland has 213 incidents per staff member. The Australian average for transports is 191 per staff member and Queensland transports 183 people per staff member.

Figure 4.3: Responses, Incidents and Transports per Salaried Personnel Member - 2005-06



Source: ROGS 2007

There may be several contributing factors to this, including that Queensland has more communications operatives than in other states and territories and that Queensland is a large and decentralised state (where staff are required to be present in rural and remote areas but where volumes of work are low). There may, however, be potential for productivity improvements, to be achieved through the next Enterprise Partnership Agreement.

Enterprise Partnership Agreements

The Audit has reviewed the QAS's Enterprise Partnership Agreements (EPA). The current Enterprise Partnership Agreement runs from 30 December 2006 to 30 December 2008. Negotiations for the next agreement are to commence half way through 2008 (that is, six months prior to the expiry of this agreement).

Since 1999, there has been a focus on identifying an appropriate staffing mix for each station through workforce analysis and workforce modelling – essentially seeking to match workforce supply with demand for services.

In 2002, this led to the EPA commitment to “Roster Reform” which committed to developing “a more efficient and effective Resource Allocation and Response Model addressing issues such as but not limited to: service delivery requirements, safe rostering practices, minimise fatigue, accommodate roster relief, training, and existing staffing resources”. All stations were to be reviewed and a suitable Resource Allocation and Response Model was to be developed to meet community service delivery needs.

The Audit notes that there are no specific productivity improvements identified in the agreement and that it contains a provision for three months notification of rosters.

The Audit considers that it would be appropriate to bring QAS rosters further into line with notice provided for other like shift work for Queensland Government employees. For example, Queensland Health nurses have one month's notice for the next month's work and members of the Queensland Police Service are provided with eight days notice for the next 28 days work.

However, the Audit notes while the notice provided for ambulance employees is more than for other like shift work for Queensland government employees, it is about mid-range in comparison with ambulance services in other jurisdictions. For example, New South Wales provides 14 days notice for an agreed period or 28 days, whereas Tasmania has a 63 week roster cycle.

The 2005 EPA is generally consistent with other Queensland public sector agreements. It contains provisions for:

- a wage increase of 4% (or \$30 per week, whichever is the greater) per annum;
- ceasing the 38 hour week allowance from 1 October 2007 (which was replaced by an increase to the base rate for those receiving the allowance); and
- the roster continuing to reflect a 40 hour week with the additional two hours per week “accrued time” being accumulated and taken in scheduled blocks.

Rostering Reform

In 2005, and in part to reduce fatigue in its workforce, the QAS introduced a rostering model based on a ten hour shift over five days. With the significant increases in demand, which has made it difficult for paramedics to finish work at the end of a scheduled shift, there has been increasing workforce disquiet in general.

On 7 October 2007, the Queensland Government announced it had accepted a recommendation for a new 12-hour roster system at the state's busiest ambulance stations and communication centres.

The proposed parameters of the new roster are:

- rosters must be aligned as closely as possible to the demand profile using existing resources;
- rosters must reflect an average 40-hour week over the roster cycle;
- rosters should reflect a pattern of forward rotation;
- ordinary rostered hours will not exceed 12-hours per shift;
- consecutive night shifts must not exceed two;
- rostered days should not exceed five consecutive 12-hour shifts;
- maximum number of rostered ordinary hours worked continuously will not exceed 60; and
- normal Award provisions in relation to minimum of two consecutive days off.

A critical factor in the success of any new approach to rostering will be ensuring staff are able to finish work as close as possible to a shift scheduled finishing time. This is regardless of the shift length. This may involve changes to work practices, such as changing shifts at hospitals or the Communications Centre noting that a car is no longer able to respond after the scheduled end of a shift and when a vehicle is required to return to its station.

The new roster will be rolled out in 2008. The Audit has not been able to determine whether the new roster will be able to alleviate fully the concerns of employees, particularly if the demand for services continues at such high rates. However, the new roster is being proposed in order to provide a better work life balance for ambulance officers. It should be noted also that, in combination with the implementation of the 38-hour week on 1 October 2007, the new roster system will mean ambulance officers will effectively receive nine weeks leave per year, made up of annual leave and accrued time off each year.

In order to ensure the new roster is having the desired effect, the Audit recommends the QAS monitor and report to Government on the impact of new rostering system on its workforce (in particular overtime rates), coverage and ambulance response times.

With women comprising an increasing proportion of the workforce, close to 55% of the workforce aged between 25 and 44, and with employees as a whole seeking to achieve a better work / life balance, the Audit considers it will be important for the QAS to make more use of contemporary employment practices such as working part-time and job sharing (split shifts).

Education and Training

The QAS trains about 150 new student paramedics a year and these students are soon to be supplemented by the graduates from the new Bachelor of Health Sciences (Paramedic) degree.

One of the tangible effects of a more highly trained workforce is the ability of paramedics to provide more advanced and sophisticated on scene advice, treatment and support. This is a result of very significant changes that have been made to ambulance officer / paramedic education in the almost 20 years since 96 individual Queensland Ambulance Service Transport Brigades were amalgamated into one organisation.

Ambulance services across Australia have extended the range of care and treatment interventions that suitably qualified paramedics are able to perform and drug and treatment protocols are under constant review and as one jurisdictions introduces, for example, a new drug for paramedics to use, the others will tend to follow to ensure comparability of services.

In July 1991, an Associate Diploma was introduced as the base qualification and ambulance officers were re-titled Qualified Ambulance Officers. The Associate Diploma was re-accredited as a Diploma of Health Science in 1996 and in 1999 officers who had completed this base qualification became paramedics. Also in 1996, the Advanced Life Support (Intensive Care Paramedic) program was introduced.

Currently, there are post-employment training programs (a 30 month Diploma of Paramedical Science (Ambulance) offered by the QAS in its capacity as a Registered Training Organisation) as well as pre-employment university courses (a three year, undergraduate or two year graduate entry Bachelor of Health Sciences (Paramedic).

The Queensland University of Technology (QUT) will graduate its first cohort of undergraduate students this year and the University of the Sunshine Coast (USC) had its first intake this year. Two other Queensland-based universities are understood to be investigating delivering programs.

Advanced Care, Intensive Care and Isolated Practice Paramedics

The diploma and bachelor students will begin working as advanced care paramedics. An Advanced Care Paramedic is qualified to manage an airway (through Laryngeal Mask Airway and laryngoscopy), give fluids intravenously, defibrillate and provide to a patient a range of drugs to counter the effects of angina / heart failure, hypoglycaemia, asthma and chronic obstructive pulmonary disease, as well as painkillers, sedatives and drugs which work to counter the effects of an overdose.

Many of the developments in emergency medicine are based on the premise that the sooner treatment is provided for the patient, the better the outcome is likely to be. Therefore, throughout 2007, approval was given for paramedics to provide and paramedics have trained to deliver an additional four drugs intravenously and use a 12 lead pre-hospital electrocardiogram (ECG).

Advanced Care Paramedics seeking to provide more comprehensive on-scene treatment can train to become Intensive Care Paramedics. In Queensland, following their initial three years of paramedic training, paramedics must have two years of field experience to be eligible to apply for Intensive Care paramedic training. A Graduate Diploma can be gained after completing a one year, full-time course that combines both academic and practical components (including in a hospital emergency department, operating theatres and in the field).

In addition to the treatments provided by an Advanced Care Paramedic, an Intensive Care Paramedic can do endotracheal intubation, transcutaneous pacing and cardioversion, pneumocath insertion, use a 12 lead ECG and undertake advanced cardiac life support interventions. Throughout 2007, Intensive Care Paramedics were given authority and trained to provide a range of other drugs intravenously, such as amiodarone and magnesium, as well as thrombolysis. Over the last six years, Intensive Care Paramedics responded to around 17.5% of Code 1 and 2 responses.

Whether Intensive Care Paramedics improve survival rates for out of hospital cardiac arrest is a contested issue academically, with evidence showing the model does work in Queensland. Given the significant investment that is made in the education and training of Intensive Care Paramedics, the Audit considers that this is an area that would benefit from further study, as is the development of performance measures which better reflect the range of activities undertaken by paramedics and their role in reducing preventable deaths.

Another recent development in paramedic education and training is the introduction of Isolated Practice Paramedics. The Isolated Practice Paramedic concept was developed in response to the shortage of specialist health care providers, particularly in regional and rural areas of Queensland. The QAS is currently training, in partnership with James Cook University, the first cohort of Isolated Practice Paramedics who will graduate in late 2007. They will have developed core skills and competencies in a range of basic health care management, chronic disease management, and minor medical interventions. These interventions will be provided in the context of medical support and consultation and in closer alliance with the existing and visiting health care services in rural and isolated communities.

Based on current increases in demand for services, using the existing service delivery standards and factoring in workforce attrition, QAS estimates it needs about 400 new employees a year. To some extent, this dual education model should assist the QAS to meet its workforce needs over the medium term: QUT's capacity is 100 students (however it has not achieved that yet), the USC course intake will be around 30 students per year and the diploma has six intakes of around 35 students per year.

The Audit notes that the QAS is recruiting from overseas, particularly the United Kingdom, to augment its current workforce. Should demand for services continue to rise at their current rate, it is likely the QAS will need to increase the number of staff recruited from outside Queensland.

The Audit notes that should measures to reduce demand and reduce separation rates have a positive effect, these workforce projections will need to be revisited.

Move to Pre-Service and In-Service Training

The QAS recognises the inefficiencies inherent in the dual education model, including its additional costs. Based on demand pressures and the nascent university sector, QAS advises it will take around 10 years to transition from this dual education model to entirely pre-employment training.

The Audit's view is that if measures are taken to reduce demand and more universities offer paramedic education (and consequently there are more graduates) that a shorter transition timeframe is possible.

As the diploma intake students are often older and looking for a career change, it will be important to ensure that a three year undergraduate / two year graduate degree is an attractive option for these people when this transition to pre-employment training occurs. This could include options such as bonded scholarships and greater opportunities for casual and part-time employment within the QAS.

QAS employees in the communications centres – emergency medical dispatchers – can start work after a six week training course. Areas covered in this initial training include call taking, dispatch coordination, advanced medical terminology, Advanced First Aid theory and training on the Medical Priority Dispatch System (MPDS) and Computer Aided Dispatch (CAD). In order to be able to progress through salary grades, dispatchers are required to undertake additional training.

Given the changes that occur year on year to the treatment that paramedics can provide, the Audit supports the strong focus the QAS has on ongoing professional and skills development. The Audit notes, for example, that failure to complete or maintain the requirements of an officer's level will result in adjustment to the employee's pay to reflect the appropriate education or clinical level.

Given the importance of preserving, if not enhancing, the skill level of paramedics the Audit supports maintaining this in-house training capability. However, the Audit notes the generally low level of staff satisfaction with the access to and quality of training programs (the 2006 target was >75% but only 38% was achieved). The QAS advises this is due to the changing method of training delivery, with staff expressing dissatisfaction with more courses being delivered online. It will be important that every effort is made to improve staff satisfaction with training.

Chapter 4 - Workforce Management Systems Recommendations

Recommendation 4.1

QAS increase the proportion of its operational workforce to the national average within the next two years.

Recommendation 4.2

QAS is to:

- take immediate steps to reduce its levels of absenteeism, separation rates and overtime, building on the work already underway in the organisation;
- implement procedures which will allow full-time ambulance officers to complete their shifts with the transfer of a patient at hospital as a means of reducing overtime and fatigue;
- continue its focus on the safety and health of the workforce and maintain reductions in the level of grievances reported;
- pursue further productivity improvements in the next enterprise partnership agreement consistent with best practice; and
- monitor and report to Government on the impact of the new rostering system on its workforce (in particular overtime rates), coverage and ambulance response times after the new arrangements have been in operation for six months.

Recommendation 4.3

In terms of its future workforce, QAS is to:

- continue to transition to pre-service education models in line with the capacity of the university sector, but retain in-service training for professional development.
- further refine its projections of future workforce requirements noting it is likely to have to rely on overseas recruits to augment the local workforce if there is no reduction in demand pressures.

Chapter 5 – Organisational Effectiveness and Service Delivery Model

This section considers a range of issues which are relevant to the QAS' approach to service delivery and its organisational effectiveness. Specifically it considers the QAS' functions, service delivery model, legislative framework, bodies that advise the QAS, and the functions of the QAS – emergency patient treatment and transport, non-emergency transport and ancillary services.

Operating framework

With 3,197 full-time equivalent employees, the QAS is the second largest ambulance service in Australia and, it is claimed, the fourth largest in the world. Its structure and functions have changed considerably since the 96 Ambulance Transport Brigades were amalgamated into a single, state-wide service in 1991.

The Queensland Ambulance Services (QAS) is one of five divisions of the Department of Emergency Services. The Department's other divisions are: the Queensland Fire and Rescue Service, Emergency Management Queensland, Business Support Services and Strategic Policy and Executive Services. The QAS reports through its Commissioner to the Director-General, Department of Emergency Services, through the Director-General to the Minister for Emergency Services and, through the Minister, to the Queensland Parliament and the community as a whole.

Having the QAS as part of the emergency services portfolio in Queensland recognises the synergies between ambulance, fire and emergency management, particularly in providing services to the community in emergency situations. There are also potential cost sharing and efficiencies to be gained by sharing emergency dispatch and communications infrastructure across the three entities.

The QAS' mission is to improve the health, safety and well being of the community and its vision is excellence and innovation in emergency medical services.

The QAS divides its activities into two categories: ambulance response services and community and business services. Ambulance response services include:

- emergency response to patients with sudden illness and injury;
- pre-hospital patient care;
- specialised transport services;
- stand-by at special events;
- coordination of aero-medical services;
- inter-hospital transfers;
- casualty room services; and
- in conjunction with other agencies, planning for and coordination of multi-casualty events and disasters.

Its community and business service activities include:

- community education, including first aid training and injury prevention;
- commercial activities, such as industry contracts;
- training and education of ambulance professionals;
- pre-hospital care research; and
- provision of a baby capsule hire service.

The QAS has established its own customer service standards and it is committed to:

- providing the highest possible quality care and service to the community;
- providing patient care in accordance with accepted clinical standards and the needs of the patient;
- ensuring that all services are delivered in a professional and courteous manner;
- ensuring response times for both emergency and non-emergency transport are within national standards;
- ensuring that patient's and customer's rights to privacy are respected; and
- honest and effective communication with patients and customers.

The emergency and non-emergency response functions of ambulance services in other Australian states and territories are relatively similar to that provided in Queensland. However, the Audit notes the QAS provides substantially more ancillary services than ambulance services elsewhere.

Structurally, placing the ambulance service in an agency which is responsible for other emergency responses is in contrast with the situation in most other Australian states and territories, where the ambulance service is part of, or attached to, a health portfolio. In New South Wales, Victoria, SA and Tasmania the ambulance service is part of the Department of Health, as a division, statutory government owned corporation, incorporated association and division, respectively. The Governments in Western Australia and the Northern Territory both contract for ambulance services. Only Queensland and the Australian Capital Territory (ACT) separate ambulance response and other health functions. (The ACT Ambulance Service is a statutory body and one of four operational agencies of the Emergency Services Authority, reporting directly to the ACT Minister for Police and Emergency Services.)

The placement of an ambulance service within a health portfolio recognises that paramedic services are provided as a response to a personal, and immediate, health need, rather than as a crisis response to a fire or natural disaster. Recognising this functional alignment, the Audit considers that in the longer term, the QAS would be more appropriately located within the health portfolio. This issue is considered in detail in Chapter 6 – Interface with the Health System.

Service delivery model

The QAS operates a regional-based service delivery model, with many administrative and other corporate functions centralised at its head office in Brisbane. There are 284 separate QAS service locations around Queensland comprising:

- 224 ambulance stations serviced by permanent employees;
- 49 ambulance stations and locations staffed by volunteers;
- 7 communications centres; and
- 4 field offices.

The Audit notes that the number of communication centres will reduce to six when the Brisbane and South Eastern centres merge. The Audit understands the QAS intention is to reduce the number of communications centres further.

In addition to this, there are:

- 3 Emergency Management Queensland Helicopter Rescue air bases;
- 5 community helicopter providers;
- 1 Special Operations Centre;
- 18 administration offices;

- 7 educational centres; and
- 7 fleet management centres.

The QAS also provides services at 14 mine sites around the state. These services are provided on a contractual basis and generally provide for 24 hour, on-site paramedic services. The QAS is also providing services at a construction site.

Stations are divided into five categories depending on their size and workload. Category 5 stations are the 24 hour stations. There are 77 Category 5 stations around the state. Category 4 stations run both day and afternoon shifts and provide on-call support after hours. There are 15 Category 4 stations. Category 3 stations have two paramedics working day shifts and provide on-call support after hours. There are 34 Category 3 stations. There are two types of Category 2 stations – Category 2A has one paramedic working an eight hour day shift who works on call after hours (46 stations) and Category 2B has one paramedic working a ten hour day shift who works on call after hours (52 stations). Category 1 are the Honorary stations. There are 29 Honorary stations, of which 14 are hospital based ambulance services.

Organisational Structure

The QAS' structure is hierarchical. The Commissioner is supported by a Deputy Commissioner, Assistant Commissioners for Strategic Development and Service Planning and Resourcing and the Medical Director. There are Assistant Commissioners for each of the QAS' seven regions – Far Northern, Northern, Central, South Western, North Coast, Brisbane and South Eastern. These Assistant Commissioners report through the Deputy Commissioner.

Other responsibilities of the Deputy Commissioner include: patient services (operations and communications); special operations and mass casualty planning; industrial relations; workplace health and safety; and the Queensland Emergency Medical Coordination Centre.

The Assistant Commissioners for Strategic Development and Service Planning and Resourcing and the QAS' Medical Director also report directly to the Commissioner.

The Assistant Commissioner Strategic Development is responsible for strategic planning, budgeting and projects; the community services unit, education and training, pre-hospital research, the Queensland Emergency Medical System Secretariat, Volunteer and Community Development Services and Risk and Management Services.

The Medical Director is responsible for Priority One, staff health, clinical governance and standards and medico legal.

The Assistant Commissioner Service Planning and Resourcing is responsible for operational service planning and strategy, information support and performance reporting, capital works (including fleet and equipment), information and communications technology and recruitment and workforce planning.

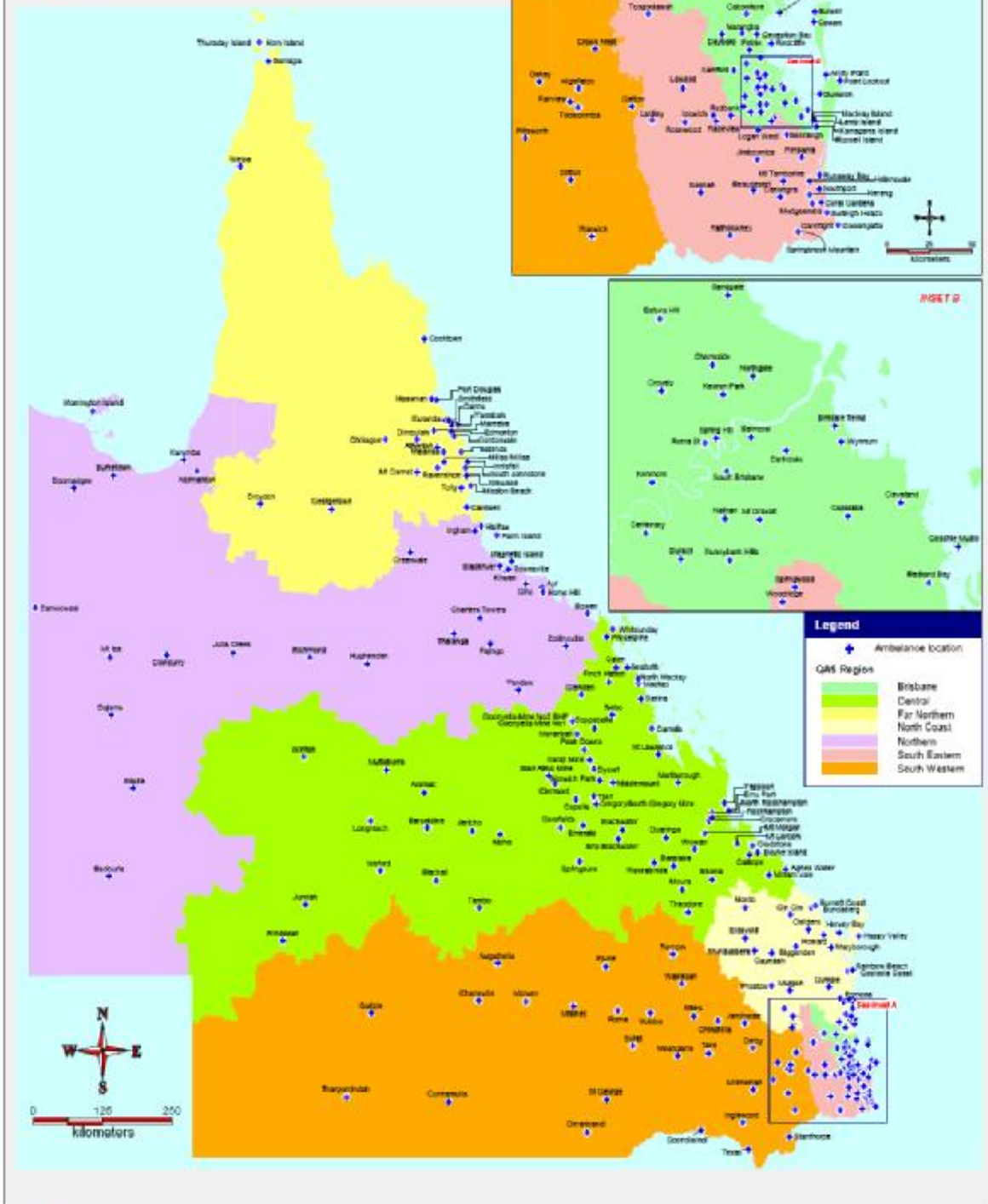
Within the regions, the Assistant Commissioner will have reporting to them, Area Directors, an Executive Officer and managers for the communications centre, community services, operational support, quality assurance and regional staff development. Depending on the region's size or attributes, there may be managers for patient transport (in South Eastern, Brisbane, South Western and North Coast regions), mine sites (in Central region) and mass casualty (in Brisbane region).

Each of the QAS' regions is divided into between two and four areas, each with an area director, and paramedics work from stations situated in these areas.

The QAS is also assisted by volunteers – honorary ambulance officers – and advisory bodies – such as the state-wide Queensland Local Ambulance Advisory Council, Local Ambulance Committees in many areas and the Queensland Emergency Medical System Advisory Committee.



**Department of Emergency Services
Queensland Ambulance Service
Region by location of ambulance station**



In brief, the Audit's analysis of these regions has found:

- while the majority of ambulance stations are outside the south east corner, the majority of services are provided and staff are located within the south east corner;
- there is a shortage of paramedics in some regional and rural areas although many regions are above their establishment;
- when employees take leave, it is easier to replace administrative support personnel than operational support or ambulance operatives;
- all regions, though not all areas, have experienced an increase in demand for services;
- by establishing Patient Transport Services, the QAS has sought to reduce the number of paramedics and acute ambulances that respond to non-emergency work.

For further information on the QAS' regions, see Appendix 4.

This regional approach provides a network of ambulance stations around the state. It also means investment has tended to focus on the facility (that is the station) rather than the function (that is the skills and mobile resource that a paramedic represents). This station-based approach to service delivery is, in many locations, inefficient. For example, over half of the QAS' response locations performed two or fewer responses a day in the 2006-07 financial year. The QAS seeks to deal with these inefficiencies through the number of paramedics it has at a station or the number of hours in a roster. The Audit has been advised of situations in some communities where nurses and paramedics effectively compete for work.

The Audit recognises that paramedics provide an essential service. However, decisions need to be made which ensure the best use is being made of scarce health resources.

Progress has been made through, for example, developments such as Isolated Practice Paramedics. These are paramedics who will have additional skills in basic health care management and will work in close alliance with the existing and visiting health care services in rural and isolated communities. This has the dual affect of ensuring communities have access to health services given increasing health workforce shortages and making effective use of an increasingly highly trained resource. Other models which may be appropriate include the development of mobile ambulance response units.

Another approach, evident since the QAS and the Queensland Fire and Rescue Service became part of the one organisation, is joint emergency service facilities and, in some locations, the QAS is located with a Queensland Health facility. There is significant potential for paramedics to play an important role in the delivery of other health services in many communities. It is the Audit's view this is most easily achieved by collocation of facilities.

While this is not a measure to reduce demand for ambulance services, it does seek to ensure that the most efficient use is being made of scarce health resources across the state. Any review would need to be undertaken jointly by the QAS and Queensland Health and would need to account for the varying health needs of communities and be informed by local consultation.

While the QAS' structure is regional, its decision making is centralised. A particular example of this is that a decision to establish a Patient Transport Service is made centrally rather than by that Region's Assistant Commissioner. The Head Office function is separate to the operations of the Brisbane Region. It functions include: strategic and operational service planning; performance reporting; education and training; volunteer and community development services; special operations and mass casualty planning; recruitment and workforce planning; capital works (including fleet, facilities and information and

communication technology); clinical governance and standards; medico legal and other organisational functions (such as workplace health and safety and industrial relations).

At June 2007, Head Office had 161.55 FTE personnel, of these 55% were corporate support personnel and a further 22% provide clinical support. Head Office accounts for around 21% of the total QAS budget.

The Audit appreciates there are economies of scale in consolidating these functions these types of functions within one area, there would appear to be scope to reduce the level of overheads within the QAS. This issue has been discussed in detail in Chapter 3 – Budget and Resourcing.

Legislative framework

The functions of the Queensland Ambulance Service are set out in a wide ranging piece of legislation – the *Ambulance Service Act 1991*.

The Act enables the QAS to provide services such as emergency treatment and pre-hospital care and transporting sick or injured people, as well as first aid and cardiopulmonary resuscitation education and identifying and marketing products and services.

Ambulance Service Act 1991

3D Service's Functions

The functions of the service are –

- (a) to provide, operate and maintain ambulance services; and
- (b) for ambulance services provided during rescue and other related activities – to protect persons from injury or death, whether or not the persons are sick or injured; and
- (c) to provide transport for persons requiring attention at medical or health care facilities; and
- (d) to participate with other emergency services in counter-disaster planning; and
- (e) to coordinate all volunteer first aid groups for major emergencies or disasters; and
- (f) to adopt and put into effect all necessary measures (including systems of planning, management and quality control) to best ensure the efficient and economic operation and use of its resources in providing ambulance services; and
- (g) to provide casualty room services; and
- (h) to provide community and workplace education in first aid, cardiopulmonary resuscitation and other related matters; and
- (j) to identify and market products and services incidental to its other functions; and
- (k) to perform other functions given to the service under this Act or another Act; and
- (l) to perform functions incidental to its other functions.

The Act outlines the role and governance arrangements for Local Ambulance Committees. Under Part 6 Offences, sections 43 and 48 prohibit the establishment of a service or the use of the term ambulance without the written authority of the Minister. Other offences include making a false calls and failing to give way to an ambulance.

The *Ambulance Service Act 1991* has been amended over time to reflect, for example, Community Ambulance Cover being introduced and the QAS and the Queensland Fire and Rescue Service becoming divisions of the Department of Emergency Services, rather than separate statutory authorities.

The Public Benefit Test Report of the National Competition Policy Review of the Queensland Ambulance Service Act 1991 and Ambulance Service Regulation 1991 noted that the Act “is essentially an Act for the Queensland Ambulance Service rather than for the provision of

Ambulance Services in Queensland” (Department of Emergency Services 2002-3). The Audit agrees with this assessment of the Act.

Advisory Bodies

Queensland Emergency Medical System Advisory Council

Queensland Emergency Medical System (QEMS) is the approach taken to planning for and delivering emergency health care services such as community preparedness and pre- and at hospital patient care. This encompasses health promotion and injury prevention measures, self-aid and community response capability, pre-hospital response coordination and patient care, inter-facility and retrieval services, and the interface with hospital based care through hospital emergency departments.

QEMS is designed to be an integrated and coordinated system of care for the acutely ill and injured. As its parties are all separate organisations, it focuses on the system, rather than an organisational approach to patient care services. (These organisations are public and private health care providers and emergency service agencies.)

The Queensland Emergency Medical System Advisory Council (QEMSAC) links the Department of Emergency Services and Queensland Health. QEMSAC has focused on improving the emergency medical response system by understanding and using data. It aims to streamline data collection, management, sharing and reporting and systems monitoring and reporting and develop emergency medical system service benchmarks. Specifically, QEMSAC is required to review and evaluate health indicators regarding measured quality, sentinel events and clinical audit. It recommended and is overseeing the introduction of Root Cause Analysis (RCA). RCA is a quality improvement technique that explores the chain of events responsible for adverse events in order to identify the factors which caused or contributed to the event, as well as measures that may be implemented to reduce or prevent recurrences of the same type of event.

As the next phase of its activity, QEMSAC will oversee the first detailed review of patient data in the EMS environment which will result in a comprehensive report on the quality of the Queensland Emergency Medical System. This is a strong indicator of the commitment of stakeholders to improving patient outcomes. As part of the Government’s ongoing commitment to making information about the quality of the health care system publicly available, the Audit would recommend the results of this report be published.

Medical Advisory Council

The Medical Advisory Committee supports the Commissioner in efforts to enhance pre-hospital patient care. It has four aims:

- to provide a forum for the two-way flow of information between the QAS and the medical profession about the medical aspects of pre-hospital care.
- to monitor and advise on the co-ordination, investigation and interpretation of the medical practices within the QAS.
- to make recommendations to the QAS on matters relating to the development and maintenance of pre-hospital patient care and first aid services.
- to obtain the services of representatives from all relevant medical specialities and other organisations to assist the MAC in its deliberations relating to the provision of pre-hospital care and first aid, including the equipment used.

Meetings are held quarterly and membership comprises four ambulance representatives (including a union representative), plus medical representatives from a range of specialties

including a representative from the Australian Medical Association and a nominee of the Director-General Queensland Health.

Queensland Local Ambulance Committee Advisory Council (QLAC)

QLAC is a high level, community-based, advisory committee which reports to the QAS Commissioner and plays four key roles. It assists the QAS to obtain community views about its standards, policy and strategies. It advocates to the QAS on behalf of the community. It seeks to ensure that equity of access to ambulance services exists across Queensland. And, it aims to build stronger partnerships between the QAS and the community to seek innovative solutions to service delivery issues. QLAC also acts as a conduit between Local Ambulance Committees and the QAS, as well as providing advice and support to Local Ambulance Committees.

QLAC comprises 14 Local Ambulance Committee members (which is two members from each Queensland Ambulance Service region). Committee members are nominated by their peers. The council meets with the QAS Commissioner and the QAS executive at least three times per year.

QLAC was established in 2002, following a review of the Commissioner's Local Ambulance Committee Reference Group. The Reference Group was established in 1995 to provide advice on QAS policy, standards and strategies.

Local Ambulance Committees

At October 2007, there were 183 Local Ambulance Committees, involving 1544 volunteers across the State.

Local Ambulance Committees were established on 1 July 1991 with the commencement of the *Ambulance Service Act 1991* and under this Act their functions are:

- to liaise between the community it represents and the QAS.
- to promote community participation in and awareness of ambulance services.
- to provide advice to the Commissioner in respect of ambulance services in the community it represents.
- to undertake fundraising activities for the benefit of ambulance services in the community it represents.
- to manage money held in trust for the benefit of ambulance services in the community it represents.
- such other functions, as the Minister agrees to.

Every Local Ambulance Committee is held accountable by the provisions of the Local Ambulance Committee Constitution and Part 4 of the *Ambulance Service Act 1991*. They are established as statutory bodies under the *Statutory Bodies Financial Arrangements Act 1982*.

The Local Ambulance Committees provide feedback and advice to the QAS about emergency medical service delivery in their community. In addition, they promote community safety initiatives (such as stinger awareness in the Far Northern Region), contribute to the delivery of quality services and to implement effective ways in which their community can promote injury prevention and preparedness.

The Local Ambulance Committees also raise funds within their communities and apply for grants through programs such as the Community Gambling Benefit Fund. These funds are used to enhance local services and have contributed to additional equipment, training

materials, resources for the station, training manikins, the purchase of vehicles, station enhancements and contributions towards further education for paramedics.

The QAS has a long history in engaging local communities in the delivery of its services. The Audit does not consider there is any need to alter this approach to engaging local communities.

Functions of the QAS

The functions of the QAS that are seen by the community can be divided into three basic categories: emergency patient treatment and transport; non-emergency patient transport and community education and support (including casualty room services, community and workplace education and marketing of products and services, such as the baby capsule hire service).

Emergency patient treatment and transport

Emergency patient treatment and transport are the services provided as the result of a call to Triple 0 – Ambulance (000). The QAS is the monopoly provider of ambulance services in Queensland. However, it is still possible for other providers to operate in Queensland with the approval of the Minister for Emergency Services. Under s43 of the *Ambulance Service Act 1991*, the Minister may licence an operator to run an ambulance service and under s48, the Minister can approve the operation calling itself an ambulance service. The Queensland Government committed to ambulance services tasked through “000” (Code 1 and 2 responses) being provided by the QAS when responding to the National Competition Policy Review of the *Ambulance Service Act 1991* and *Ambulance Service Regulation 1991* in June 2003 stating:

In considering the recommendations of the Public Benefit Test Report, the Government is strongly convinced of the need to maintain quality of, and access to, essential ambulance services and, in accordance with recommendations contained within the Public Benefit Test (PBT) Report, ambulance services tasked through the triple zero “000” facility will continue to be provided by the QAS. Consistent with the intent of the PBT Report, this will retain a single provider with the capacity to successfully deliver a State-wide response. This was a key outcome that was identified and unanimously supported throughout the targeted consultation process. (Queensland Government, 2003: p2.)

The Audit has proposed a range of alternatives for responding to “000” calls including referring to alternative providers, such as general practitioners, community health and other transport providers. The Act should be reviewed to ensure there are no impediments to this occurring. Further information on the alternative service delivery model for emergency ambulance is contained in Chapter 2 – Demand Management Strategies.

Non-emergency transport

In relation to non-emergency patient transport (Codes 3 and 4), there have been a range of developments over the last years. Non-emergency patient transport is a lessening proportion of QAS activity, but the number of non-emergency patients transported has been increasing. Members of the community cannot organise a non-emergency transport – they are authorised by general practitioners or hospitals calling 13 12 33. This call is directed to a Communications Centre and transports are provided an MPDS Code 3 or 4, (see Figure 5.1 for a breakdown of the MPDS – Medically Authorised Transport – categories).

Figure 5.1: Medical Priority Dispatch System Code 3 and 4 responses

MPDS Code 3 and 4 – Medically Authorised Transport	
3	Pre-booked on time
3A	Time critical non-emergency response, paramedic required – eg all transports to hospitals and medical facilities with a defined appointment time requested at time of booking
3B	Time critical non-emergency response, Patient Transport Officer required – eg all transports to hospitals and medical facilities with a defined appointment time requested at time of booking
4	Pre-booked clinic
4A	Routine transport – not time critical – paramedic required – eg all post treatment transports, negotiated hospital discharges (excluding aerial) etc
4B	Routine transport - not time critical – Patient Transport Officer required – eg all post treatment transports, negotiated hospital discharges (excluding aerial) etc

The National Competition Policy Review of the Queensland *Ambulance Service Act 1991* and *Ambulance Service Regulation 1991* Public Benefit Test Report made a range of recommendations which supported greater contestability in non-emergency patient transport. By implication, the Queensland Government's response (June 2003) acknowledged the interest of other parties in delivering non-emergency patient transport, and strongly supported the recommendation to retain a non-delegable authority of the Minister to approve alternative ambulance providers.

At that time, the Queensland Government did not consider it viable to develop a Regulation stating that "While a Regulation may enhance transparency of market entry, it also places a considerable compliance impost on supplier organisations, particularly those that have already gained Ministerial approval to operate in the Queensland ambulance transport market" (2003: p3).

Currently, there are fewer than 10 single operator services in Queensland who have been approved by the Minister to provide ambulance transport services. These include community helicopter providers, contracted private ambulance providers at mining and industrial sites and private hospital based non-emergency ambulance transport vehicles.

The absence of agreed criteria has acted as a further barrier to entry to the market for non-emergency patient transport. Recently the Minister for Emergency Services has been asked to approve an assessment process and assessment criteria to assist in assessing applications to provide ambulance transport services in Queensland. This follows applications from several businesses (some dating back to January 2005) to operate wider scale patient transport services. These applications have fallen into two categories – mine based work and transferring individuals between hospitals and diagnostic centres. In addition to these formal applications, taxi companies have expressed interest in providing dedicated non-emergency patient transport services.

While the QAS has not taken any steps to make non-emergency patient transport contestable, the Patient Transport Service (PTS) was introduced in the 2004-05 financial year. PTSs have succeeded in reducing the non-emergency patient transport load for paramedics. At a minimum, PTS officers have a Certificate III (Non-Emergency Patient Transport). PTS officers may respond to Code 1 and 2 responses; however, they are not authorised to undertake acute care, only advanced first aid in an emergency.

These dedicated, non-urgent services provide coverage from during daylight hours, Monday to Friday. After hours non-urgent services are generally provided by two paramedics in an acute vehicle.

Patient transport services have been established in many jurisdictions in response to increasing demand for acute ambulances. They generally use the same approach but, for example, hours of operation may differ. For example, the New South Wales Patient Transport Service operates from 6am to 10pm, Monday to Friday. In Victoria, non-emergency patient transport is a privatised industry regulated by the Department of Human Services.

From the data that has been provided to the Audit there appears to be potential to establish more PTSs, alter the operating hours of the PTSs, or to open the market to greater contestability through either contracting out of non-emergency services or outsourcing.

In South East region (headquartered at Beenleigh and also covering the Gold Coast and Ipswich) the QAS has worked with community organisations that provide community transport. Staff in these community organisations have undergone additional training to meet QAS requirements as part of a pilot project that provides Medical Practitioners with an additional transport option. Community Transport Operators in South East Region provided 31,249 transports in 2006-07 at a direct cost per transport of \$13.09. This compares with the South East Region PTS providing 25,040 stretcher vehicle transports at a direct cost per transport of \$103.77. This is an average cost of service delivery and includes overhead costs associated with the QAS administration and communications centre costs.

A reasonable argument can be made that non-emergency transport is not core business of the QAS, particularly in an environment where there is increasing demand for emergency transport and treatment options. With paramedics being an increasingly skilled profession, it can also be argued that using a paramedic for non-emergency transport, which can happen, is a waste of finite resources.

There is insufficient total demand in all areas of Queensland to contest all non-emergency patient transport. Therefore, any approach needs to recognise that existing models of service delivery will continue in some parts of the state. This includes using the Royal Flying Doctor Service and other similar services, using acute vehicles and crews for long-distance trips in isolated communities, and arrangements for handover of patients between regions for long-distance transports.

The Audit suggests focussing on the PTS and Code 3B and 4B responses – work which does not require paramedic support. Already PTS' undertake over 65% of Code 3 and close to 75% of Code 4 responses. There are two options to make these services contestable: either the QAS and / or Queensland Health contracts for non-emergency transport services on behalf of clients or outsources non-emergency transport services.

The positives and negatives of both models are relatively similar. Alternative transport providers are likely to be able to provide a more cost effective service by using different vehicles and having a lower overhead cost structure. However, clients may have to pay for a service that is currently free and this may require a reduction in the CAC levy. The interest of community operators and businesses is likely to be high, but their capacity is unknown. Both options free up financial resources to transfer to emergency support and transport options. And both options have industrial implications.

Contracting out of services could be done at the regional level, based on a needs analysis and through the running of a competitive tender process, with a focus on quality, timeliness and cost.

Outsourcing would devolve decisions about what the most appropriate transport option is to the individual and their general practitioner or the individual and their hospital and would lead

to multiple transport operators marketing themselves to hospitals and general practitioners. Outsourcing of services is likely to require legislation to establish a licensing system to ensure private providers have the clinical skills and equipment required to protect the patient's health and safety.

Clearly there are industrial implications as the QAS is committed through its latest Enterprise Partnership Agreement to maximum employment security for its employees. Further, at 2.3 Employment Security, the 2005 Enterprise Partnership Agreement, states:

- (c) Any organisational change undertaken by the Queensland Ambulance Service will demonstrate clear benefits and enhanced service delivery to the community. Such organisational change will not result in unemployment for permanent Queensland Ambulance Service employees other than in exceptional circumstances. Where changes to employment arrangements are necessary, there will be active pursuit of retraining and deployment opportunities. The Queensland Ambulance Service will advise the LHMU of any intention to implement changes that may affect the employment security of Queensland Ambulance Service employees prior to commencement of any planned changes.

This was a scaling back of the commitment in the 2002 Enterprise Partnership Agreement which stated that:

- (1) The QAS is committed to maximum employment security for its employees by remaining as the preferred provider of existing services to Government and the community.
- (2) It is the QAS intention that future organisational change and restructuring will be limited in scale. All organisational change will need to demonstrate clear benefits and enhanced service delivery to the community.
- (3) The QAS is also committed to providing stability to the QAS by limiting organisational restructuring and contracting out of services.

The aim of this process is to ensure cost effective non-emergency transport services and manage the effects of increasing demand for non-emergency services. There would need to be a review of the criteria on which general practitioners and hospitals determine the need for paramedic support for a non-emergency transport (that is the patient's mobility and clinical characteristics). Any process would need to ensure there is a thorough understanding of existing costs and what costs would be retained under a purchaser / provider model. The process should also seek to maximise the use of existing resources and have a clear understanding of the role of communication centres. To test the approach, outsourcing or contracting out could be piloted in a region.

Ancillary Services

The QAS provides a range of services which are specifically provided for or implied in the *Ambulance Service Act 1991*, which can be regarded as ancillary services. The include community education and community safety services, pre-hospital research and history and heritage services. In other Australian states and territories these services are generally provided by the non-government sector.

Community Education

The QAS delivers first aid instruction and other community health awareness programs.

First aid

The QAS offers a variety of first aid courses, from introductory first aid through to advanced resuscitation and automatic external defibrillation techniques. The QAS' approach to and

delivery of first aid training has changed over time. The QAS became a Registered Training Organisation in July 2001 and the most recent review of first aid training resulted in an upgrade of delivery and assessment resources and the transition, in July 2007, of first aid courses to a new Health Training Package. This training is delivered under the national first aid training standards which ensure consistency in competency standards, assessment guidelines and Australian Qualifications Framework qualifications for specific industry sectors or enterprises requiring first aid or emergency response training. The Audit understands the QAS intends to further develop these programs to provide online learning facilities.

In 2006-07, ran over 8,000 courses and issued over 65,000 first aid certificates. However, the QAS has a decreasing market share in this community education sector. The Audit recognises the role that education plays in assisting people to provide basic first aid or first aid before a paramedic arrives on a scene and recommends community education services remain full cost recovery.

CPR for Life

CPR for Life is a free program which seeks to increase the number of people trained in cardio-pulmonary resuscitation. This is done by training people to recognise the early signs and symptoms of heart attack, the importance of calling “000” quickly and also how and when to perform the single operator adult CPR. Over 40,000 people have been trained under the CPR for Life program since its inception.

Following a 2004 Queensland Government election commitment to ensure all state Year 12 school leavers had access to CPR training, a partnership with Education Queensland was developed under the CPR for Life in Schools initiative. In 2005 and 2006 over 42,000 Year 12 state high school students were trained in CPR awareness as part of the CPR for Life in Schools initiative.

Given the positive effect a bystander providing CPR can play in surviving a cardiac arrest, the Audit supports the continued provision of free CPR training.

Community Safety

Baby Capsule Hire Service

One of the most visible community safety services the QAS provides is the Baby Capsule Hire Service. The aim of the Baby Capsule Hire Service is to provide a low cost, affordable and accessible alternative to the purchase of capsules and there are three components to the program:

- capsule hire services (which is supported through revenue generation);
- private restraint fitting services (where there is no fee for service); and
- private restraint checking services (where there is no fee for service).

Clients access the hire and fitting services through Smart Services Queensland and the services are delivered across 29 dedicated fitting locations, mobile and emergency fittings by 249 trained fitters (239 of which are paramedics).

While the QAS is not the only organisation to hire baby capsules, other providers will advise clients to access the QAS’ restraint fitting and checking services.

Given the contribution of road accidents to childhood injury and fatality each year, the Audit does not question the importance of having affordable access for child car restraints. Prior to 2003, restraint fitting and checking services were provided on fee for service basis and the

Audit recommends the QAS seeks to recover the costs of fitting and checking services, and consider a subsidised rate for pension and concession card holders for equity reasons.

Injury and illness prevention

QAS delivers a number of targeted community safety programs by itself or in partnership with other government or non-government agencies.

PrimeSafe - developed to teach primary school students (Prep to Year Three) how to identify, prevent and respond to a medical emergency. The key PrimeSafe messages are in a medical emergency seek the assistance of an adult, and always call 000.

Prevent Heat Related Illness initiative – due to deaths resulting from the 2003-04 heatwave, the whole-of-government Queensland Heatwave Response Plan was developed. QAS's Prevent Heat Related Illness initiative provides targeted advice for babies and infants, outdoor workers, the elderly, and sports people with strategies for recognising and preventing heat related illness. The key priority is to ensure community members are educated and prepared to respond appropriately during a heatwave.

Childhood injury prevention programs - Queensland has one of the highest rates of injury in Australia and children in the 0-4 age group are particularly vulnerable to injuries, such as drowning, poisoning, burns and falls. The incidence of injury in young children is particularly high in rural and regional areas of Queensland and as such QAS has developed the One Step Ahead short course which aims to familiarise carers of children from 0-4 years with basic strategies to reduce the risk of injury occurring in and around residential settings.

Project DOV (Drug Overdose Visitation) - Project DOV is a collaborative project between QAS and Teen Challenge Queensland. Project DOV utilises a brief window of opportunity to assist those with a drug problem or those who have attempted suicide, make the steps forward in recovering their lives. A Project DOV Coordinator from Teen Challenge contacts the person within 48 hours of a paramedic referral to provide follow up support, arrange for counselling, drug detoxification, drug rehabilitation and or referral to other agencies as required.

The Audit recognises the QAS can improve health and safety outcomes in rural and remote communities where there is limited access by other providers due to high costs of program delivery in these locations. However, the Audit considers there is value in a more structured approach across the health services to delivering injury and illness prevention programs, a wider range of providers being involved and rigorous evaluation of the effectiveness of programs.

The Audit recommends a review of injury and illness prevention programs delivered across all agencies. The Audit recommends that programs be based on an analysis of regional priorities and needs and that every effort is made to work in partnership with non-government agencies and that formal evaluation occurs to ensure programs are having the anticipated effect.

The Australian Centre for Pre-hospital Research

The Australian Centre for Pre-hospital Research is a collaboration between the Queensland Ambulance Service and the School of Population Health, University of Queensland. It was established to provide a focal point for pre-hospital research and facilitate interaction between the profession and researchers to develop the evidence base for pre-hospital care. It manages a longitudinal research project which generates data for Key Performance Indicator reporting on survival from out-of-hospital cardiac arrest.

Since 2003-04, the Centre's clinical research program has focused on three priorities:

- cardiac outcomes;
- respiratory management; and
- trauma and injury.

The Centre is sustained by Queensland Ambulance Service funds (on average \$450,000 per annum) and secures grants for specific projects. The Centre has generated an additional research budget of \$2.5 million since 2003.

On 1 July 2007 new governance arrangements were established, with the stated aim of providing a stronger base for growth of the Centre, both in terms of its academic associations and the extent of its public sector / operational capacity. The Centre is now contained within the Queensland Ambulance Service, which has an academic partnership with the Faculty of Health Sciences, University of Queensland. The position of Director was established as a public sector position, with 20% of this person's salary contributed by the School of Population Health.

The Audit is supportive of the concept of the Australian Centre for Pre-hospital Research. It can provide independent analysis of efficacy of emergency treatment, analyse and develop new modes of practice and research improvements into the delivery of pre-hospital emergency medicine. However, the decision to house the Centre within the Queensland Ambulance Service is not supported. While not objecting to the Queensland Ambulance Service contributing funding to the Centre, the Audit would recommend the Centre be housed within a university, following a public tender.

The Audit notes the Centre has recently won an Australian Research Council Linkage Grant to consider factors driving demand for ambulance services. The Audit considers this will be a valuable contribution to the work in this area.

History and Heritage

Unlike many organisations, the QAS has had a strong focus on recording the contribution it has made to Queensland's social history. The QAS collection consists of two period buildings (the old Wynnum and Charters Towers Ambulance Stations), a part of the whole-of-Department of Emergency Services site established at the Australian Workers Heritage Centre in Barcaldine, 11 historic ambulance vehicles (the oldest is from 1926), over 6000 photographs, records, documents (including the minutes of the first Committee meeting in 1892), equipment and training artefacts and period uniforms.

Volunteers conduct tours of the Museum sites as well as prepare and maintain the museums for public visits. Ambulance vehicles and equipment are loaned by specific requests to film and theatrical interests.

Managing public access and supporting the ongoing preservation of these items has required an investment in resources, security and registration. Supporting the Heritage and History Committee, a QAS Manager, History and Heritage position was established to manage the collection and its supporting resources. An Honorary QAS Historian has been appointed to assist with the historical enquiries. The Historian also assists the History and Heritage Manager with requests for research services.

While clearly not a core service, the existence of the history and heritage function reflects the strong commitment that local communities have had to their ambulance services. The Audit recommends that responsibility for History and Heritage be transferred to the

Queensland Local Ambulance Committee Advisory Council and that it seek to become self-funding over time.

While all these services have merit, the Audit is concerned that they are not core business for the QAS. Savings that could be realised by reducing ancillary services have been outlined in Chapter 3 – Budget and Resourcing.

Chapter 5 – Organisational Effectiveness and Service Delivery Model Recommendations

Recommendation 5.1

QAS move towards deploying additional resources via mobile resource units rather than establishing additional ambulance stations across the State and that QAS work with Queensland Health to facilitate the co-location of ambulance with Queensland Health facilities in rural and remote areas.

Recommendation 5.2

Non-emergency services to be made contestable in Queensland recognising that a certain level of service will need to continue to be provided by the QAS.

Recommendation 5.3

Government amend the *Ambulance Service Act 1991* and associated legislation/regulations to ensure there are no barriers to establishing alternative referral paths and an expanded scope of practice for paramedics to deal with “000” callers, or barriers to introducing greater contestability in the provision of non-emergency ambulance services.

Chapter 6 – Performance Assessment and Performance Management Systems

This section of the report considers the level and nature of performance reporting by the QAS, both at the state level in terms of reporting to the Parliament and general public, and at the national level through the Australian Government's annual *Report on Government Services* (ROGS) publication. It also provides a brief assessment of performance management systems.

Performance Measures at the State Level

Through the Department of Emergency Services (DES), the QAS reports on performance in DES's Ministerial Portfolio Statements (MPS) and annual reports.

Ministerial Portfolio Statements

Under the *ambulance service* output, the Minister for Emergency Services reports on two sub-outputs – *Ambulance response services* and *Ambulance community and business services* – in annual MPS.

Table 6.1 shows performance measures for the ambulance response services sub-output from 2002-03 to 2007-08 (targets only) from MPS 2003-04 to 2007-08.

Table 6.1: MPS Ambulance Response Services Performance Measures

	2002/03 (est. actual)	2003/04 (est. actual)	2004/05 (est. actual)	2005/06 (est. actual)	2006/07 (est. actual)	2007/08 (target)
Quantity						
No. of code 1&2 responses attended per 1000 popn.	107	121	123	133	148	156-166
No. of code 1&2 responses	390,000	450,000	484,000	535,000	606,615	650,000-690,000
No. of code 3&4 responses attended per 1000 popn.	58	54	51	53	53	50-55
No. of code 3&4 responses	212,500	200,000	200,600	212,000	216,998	200,000-220,000
Quality						
Survival rate for out of hospital cardiac arrest	16%	21%	21%	23%	20%	>15%
Level of patient satisfaction (survey) with ambulance response services	98%	96%	98%	98%	98%	>90%
Proportion of operational fleet within economic life	85%	85%	83%	84%	85%	>85%
Timeliness						
% of code 1 responses attended in less than 10 minutes	68%	67%	68%	69%	67%	68%
Time within which 90% of code 1 responses are attended	<17 mins	<17 mins	16 mins	<16 mins	<17 mins	<17 mins
% of non-urgent responses attended to by the appointed time	...	...	72%	74%	72%	>70%
Location						
Ambulance service locations (total)	261	262	263	282	285	287
Cost (\$)						
Gross cost per response	\$370	\$377	\$381	\$387	\$391	\$398
Gross cost per response per head of popn.	\$61	\$63	\$66	\$72	\$79	\$86

Source: Ministerial Portfolio Statements, Minister for Emergency Services 2003-04 to 2007-08.

Table 6.1 shows that the QAS has maintained consistent performance against the reported measures over the five years to 2006-07 during which period demand for ambulance services increased considerably.

The cost/response indicator is different in value and trend to ROGS data (which shows a decline for Queensland from \$465 in 2001-02 to \$434 in 2005-06). The Audit has not been able to determine an explanation for the difference.

Table 6.2 shows performance measures for the ambulance community and business services sub-output from 2002-03 to 2007-08 (targets only) from MPS 2003-04 to 2007-08.

Table 6.2: MPS Ambulance Community and Business Services Performance Measures

	2002/03 (est. actual)	2003/04 (est. actual)	2004/05 (est. actual)	2005/06 (est. actual)	2006/07 (est. actual)	2007/08 (target)
Quantity						
No. of Community Education Certificates issued/year	63,000	69,000	69,500	66,000	64,100	65,000
No. of baby capsule hires/year	7,900	8,600	8,800	10,500	11,500	10,000
No. of education qualifications achieved by QAS staff	4,238	2,850	3,800	7,500	3,214	3,000
Quality						
Level of employee satisfaction (access to and quality of training programs - surveys)	...	...	38%	38%	38%	>75%
Level of satisfaction (survey) with community and workplace education programs	new measure	98%	97%	99%	99%	>90%
Cost						
% of total operating costs spent on staff education and development	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%
Total Community Education revenue as a % of Community Education costs	70%	62%	83%	94%	99%	100%
Total baby capsule revenue as a % of baby capsule hire service costs	34%	25%	29%	29%	28%	25.4%
Revenue from contracted services as a % of total operating revenue	\$3.2M (1.2%)	\$3.2M (1.1%)	\$3.2M (1.1%)	\$4.8M (1.5%)	\$5.5M (1.5%)	\$5.5M (1.3%)

Source: Ministerial Portfolio Statements, Minister for Emergency Services 2003-04 to 2007-08.

Each MPS from 2003-04 to 2007-08 listed the target level of employee satisfaction in terms of access to and quality of training programs, as above 75% for the year. However, actual performance has fallen considerably short of the target and has not trended upward.

Of note in Table 6.2 is the 45.6% increase in the number of baby capsule hires per year from 2002-03 to 2006-07 while, over the same period, baby capsule revenue as a percentage of associated costs has declined. More positively, the QAS has improved its cost recovery of community education activities. However, given the relatively low financial value of baby capsule and community education activities, it is arguable that more meaningful performance information could be provided through reporting on new measures of core QAS functions.

Department of Emergency Services Annual Reports

Through its corporate planning process, DES has developed five key result areas under which a range of strategies and key performance indicators are implemented and reported on.

Table 6.3 replicates the five year performance summary of the QAS as reported in DES's 2005-06 annual report.

Table 6.3: 2005-06 DES Annual Report Five Year Performance Summary

	2001/02 (actual)	2002/03 (actual)	2003/04 (actual)	2004/05 (actual)	2005/06 (target)	2005/06 (actual)
Level of patient satisfaction (survey) with ambulance response services	94%	96%	98%	98%	>90%	98%
% of code 1 responses attended in less than 10 minutes	67%	67%	67%	69%	>68%	69%
Survival rate for out of hospital cardiac arrest	16%	20%	21%	22%	>15%	21%
No. of ambulance community education first aid certificates issued/year	65,836	66,977	73,533	72,512	71,000-74,000	61,891
No. of ambulance cases attended (urgent code 1 and 2)	335,629	370,169	447,851	486,443	520,000-550,000	536,277
No. of ambulance cases attended (non-urgent code 3 and 4)	222,449	202,101	199,675	201,630	200,000-220,000	210,048

Source: Department of Emergency Services, Annual Reports 2005-06

The performance information in Table 6.3 is essentially a sub-set of measures reported in the MPS. Appendices to the annual reports include performance against the same measures per the MPS; however, the data in the annual report is *actuals* rather than *estimated actuals*.

The same measures as per Tables 6.1 and 6.2 above are also reported in DES annual reports from 2002-03 to 2005-06 and are replicated in Tables 6.4 and 6.5.

Table 6.4: Ambulance Response Services – Performance from 2001-02 to 2005-06

	2001/02 (actual)	2002/03 (actual)	2003/04 (actual)	2004/05 (actual)	2005/06 (target)	2005/06 (actual)
Quantity						
No. of code 1&2 responses attended per 1000 popn.	96	102	120	124	129-137	134
No. of code 1&2 responses	335,629	370,169	447,851	486,443	520,000-550,000	536,277
No. of code 3&4 responses attended per 1000 popn.	63	56	54	51	50-55	52
No. of code 3&4 responses	222,449	202,101	199,675	201,630	200,000-220,000	210,048
Quality						
Survival rate for out of hospital cardiac arrest	16%	20%	21%	22%	>15%	21%
Level of patient satisfaction (survey) with ambulance response services	94%	97%	98%	98%	>90%	98%
Proportion of operational fleet within economic life	86%	83%	84%	82%	85%	84%
Timeliness						
% of code 1 responses attended in less than 10 minutes	...	67%	67%	69%	>68%	69%
Time within which 90% of code 1 responses are attended	<16 mins	<17 mins	<17 mins	16 mins	<17 mins	16 mins
% of non-urgent responses attended to by the appointed time	...	...	71%	72%	>70%	74.10%
Location						
Ambulance service locations (total)	255	262	270	271	266	282
Cost (\$)						
Gross cost per response	\$361	\$397	\$375	\$365	\$372	\$383
Gross cost per response per head of popn.	\$58	\$62	\$65	\$64	\$69	\$71

Source: Department of Emergency Services, Annual Reports 2002-03 to 2005-06

Table 6.5: Ambulance Community and Business Services – Performance from 2001-02 to 2005-06

	2001/02 (actual)	2002/03 (actual)	2003/04 (actual)	2004/05 (actual)	2005/06 (target)	2005/06 (actual)
Quantity						
No. of Community Education Certificates issued/year	65,836	66,977	73,533	72,512	71,000-74,000	61,891
No. of baby capsule hires/year	8,443	8,599	8,067	9,239	7,000-8,000	11,226
No. of education qualifications achieved by QAS staff	6,730	4,957	3,060	4,111	3,000-3,500	8,741
Quality						
Level of employee satisfaction (access to and quality of training programs - surveys)	58%	...	38%	38%	>75%	38.10%
Level of satisfaction (survey) with community and workplace education programs	...	...	98%	96.5%*	>90%	98.80%
Cost						
% of total operating costs spent on staff education and development	10.0%	9.5%	9.5%	9.5%	9.5%	9.5%
Total Community Education revenue as a % Community Education costs	57%	71%	61%	83%	98%	83%
Total baby capsule revenue as a % of baby capsule hire service costs	22%	31%	25%	30%	23%	30.8%
Revenue from contracted services as a % of total operating revenue	\$2.5M-\$2.8M (1.1-1.3%)	\$3.4M (1.3%)	\$3.4M (1.2%)	\$4.2M (1.4%)	\$3.8M (1.2%)	\$5.2M (1.6%)

* Reported as 98.3% in 2005/06 Annual Report

Source: Department of Emergency Services, Annual Reports 2002-03 to 2005-06

Internal Performance Management

Further measures than those included in public reports to monitor ambulance service delivery are regularly reviewed internally by QAS senior management. In addition to detailed financial reporting the performance management and monitoring framework includes information from the Queensland Emergency Management System (QEMS) being developed by the QAS and Queensland Health. QEMS is designed to achieve an integrated and coordinated system of care for the acutely ill.

On regional and state levels, QAS management also assess operational data including the number of non-urgent responses attended to by the appropriate time, off-stretcher times, unfilled shift and other workforce reports, demand mapping, media and complaints details. A range of other measures are also reported in the communications, clinical, human resources, industrial relations, risk management and assets areas of the QAS.

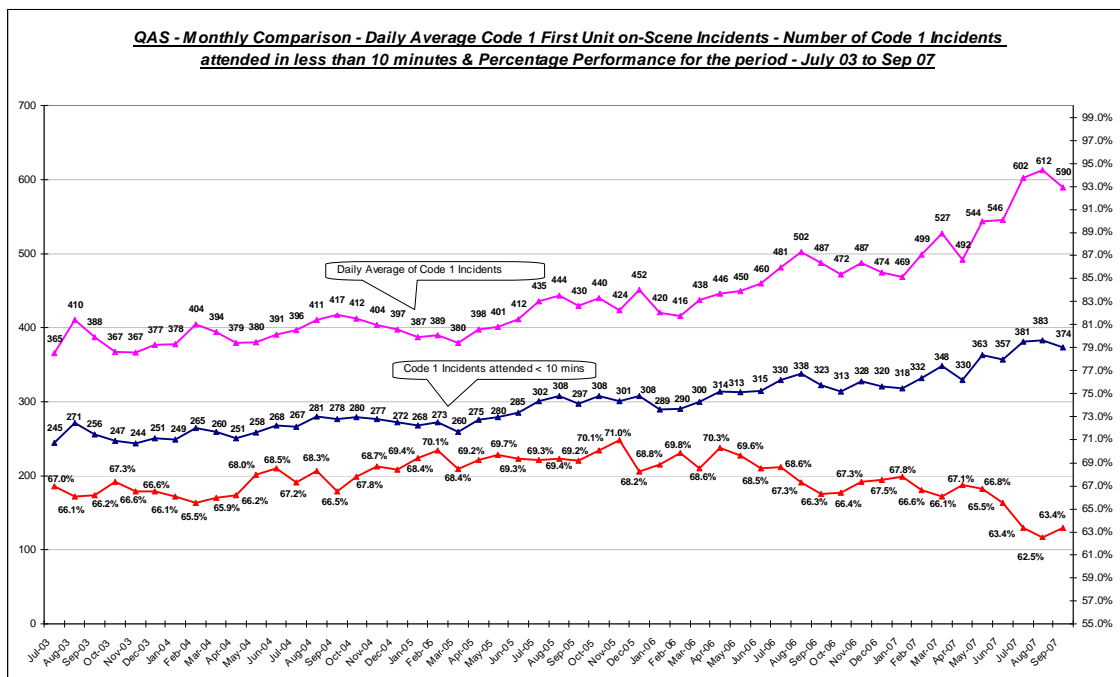
Generally, there seems to be greater scrutiny and ownership of activity and performance data at the central rather than regional level.

Response Times

Response times are the most critical indicator available of the organisation's effectiveness in responding to increasing demand for services at least for Code 1 indicators (noting there are no similar indicators for Code 2 responses).

While QAS has performed well in terms of MPS targets on response times and favourably with other jurisdictions (as discussed below), the latest internal data shows that response times have been declining since April 2006, when the percentage of Code 1 incidents responded to in less than 10 minutes reached 70.3% (as per the bottom (red) line in the figure below).

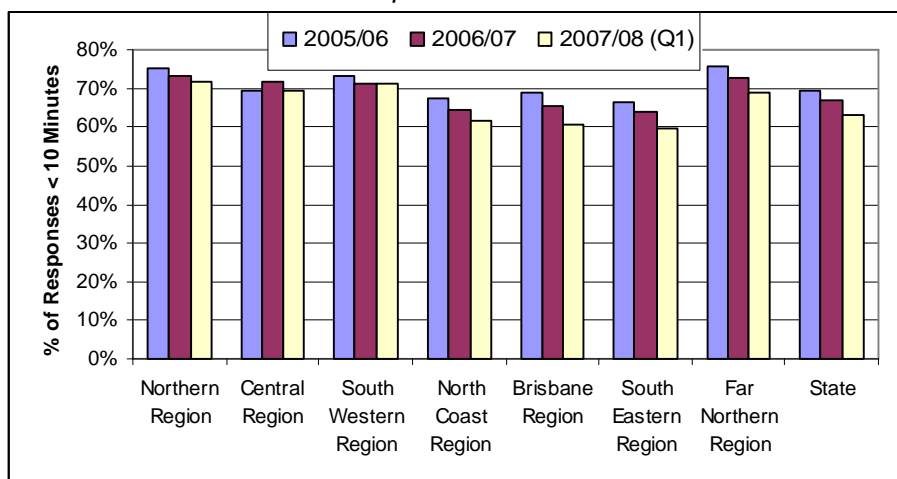
Figure 6.1: Monthly Comparison of Response Times to Code 1 Incidents – July 2003 to October 2007



Source: Internal QAS Data.

Figure 6.2 shows that, for the period 1 July 2005 to 30 September 2007, the North Coast, Brisbane and South Eastern Regions have experienced response time performance for code 1 incidents below the state average. Other regions have been above the state average in each of the reported periods.

Figure 6.2: Regional Breakdown of Response Times for Code 1 Incidents – July 2005 to September 2007



Source: Internal QAS Data.

Code 1 and 2 Case Cycle Times

The time taken for an ambulance to complete a full response cycle has a significant impact on the QAS to meet patient demand, provide quality service and manage its resources effectively.

Data from 2003-04 to 2006-07 in Table 6.6 shows that the time shows that average case cycle times have remained stable within regions and across the state as a whole.

Table 6.6: Code 1 and 2 Case Cycle Times (Dispatch to Clear) – 2003-04 to 2006-07

	2003/04*	2004/05*	2005/06	2006/07
Townsville Area	65	65	60	67
Rockhampton Area	55	60	57	57
Mackay Area	60	60	60	63
Toowoomba Area	60	60	60	65
Sunshine Coast South	60	60	60	67
Sunshine Coast North	65	65	67	70
Bundaberg Area	55	55	55	60
Hervey Bay	60	60	60	60
Maryborough	55	55	60	60
Central Area	55	60	59	60
Northern Area	60	60	66	60
South East Area	60	65	66	70
South West Area	55	55	59	62
Beenleigh Urban Area	60	60	67	69
Gold Coast Area	55	55	57	60
Ipswich Urban Area	55	55	65	65
Cairns Area	60	60	60	62
Average	59	59	61	63

* Rounded to the nearest five minute interval.

Source: Internal QAS Data.

QUEENSLAND AMBULANCE SERVICE STRATEGIC PLAN 2005-08

The *Queensland Ambulance Service Strategic Plan 2005-08* identifies the following five key result areas (KRAs) under which strategies are implemented to achieve outcomes:

1. Enhance community safety and prevention capability;
2. Enhance operational service delivery;
3. Develop, support and empower our people;
4. Contribute to the national, state and local policy agenda; and
5. Continuous business improvement (QAS 2005).

The list of outcomes sought under the KRAs (some apply to more than one KRA) is as follows:

1. Improved service delivery to Queensland communities;
2. Healthier and safer communities;
3. Children and young people protected from harm;
4. A higher rate of community first aid intervention to sudden illness and injury;
5. More relevant operational service delivery to rural and remote communities;
6. Improved patient outcomes;
7. Identifiable and practical clinical governance;
8. Effective clinical risk management;
9. A more substantial and relevant research base;
10. Improved response capability;
11. Improved access to health care for rural, remote and isolated communities;
12. Equitable access to opportunity;
13. Qualified, competent and confident staff;
14. Improved staff health and safety;
15. National leadership in ambulance education;
16. Improved clinical practices;
17. Culture of continuous learning;
18. Improved patient care;
19. Effective Local Ambulance Committee networks;
20. Multi-agency infrastructure planning;
21. Development of flexible response frameworks;
22. Improved knowledge management;
23. Improved decision-making based [sic]; and
24. Improved communication with staff (QAS 2005).

Of the QAS's 24 desired outcomes, very few are reported on through the suite of output measures included in the DES annual reports and MPSs. As shown in Tables 6.1, 6.2, 6.4 and 6.5, the objective of each of the QAS's output measures is defined in terms of quantity, quality, timeliness, location and unit cost. However, cost-efficiency and effectiveness output measures are not included in the published material.

The output measures in the MPS and annual report are well aligned and consistent with notes outlining data limitations and meanings. Relevant measures have also been reported on over several years. However, it is not clear whether cost measures are in nominal or real dollar terms, making trend analysis difficult.

Performance Measures at the National Level

Figure 6.3 outlines the performance indicator framework for ambulance events used to prepare ROGS 2007.

Figure 6.3: Performance Indicators for Ambulance Events (ROGS 2007)

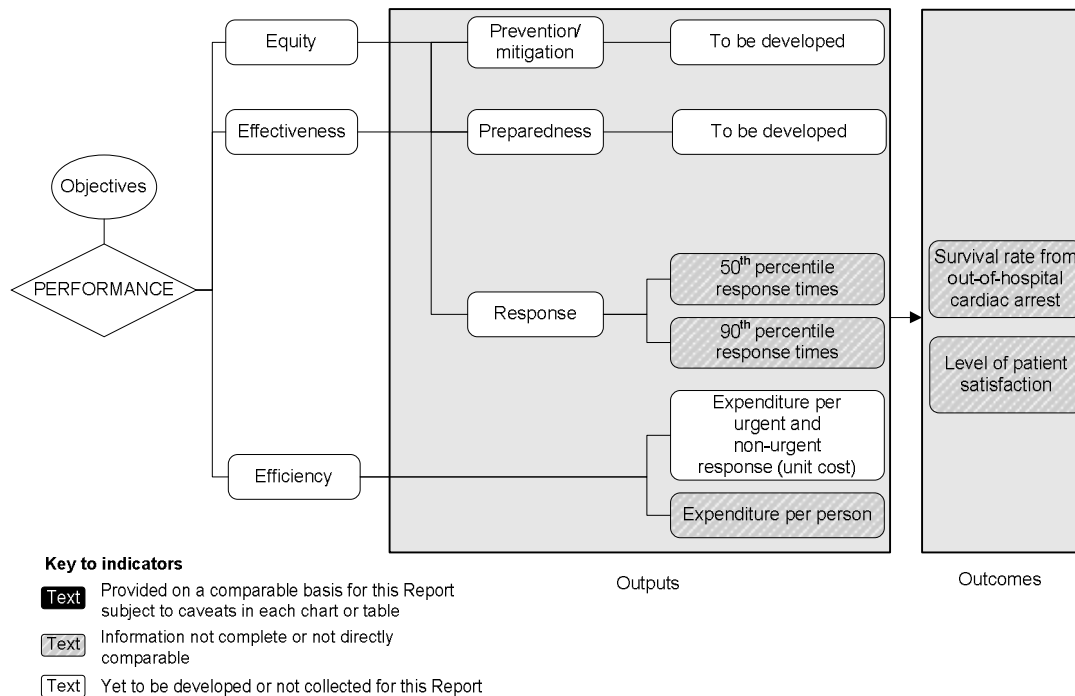


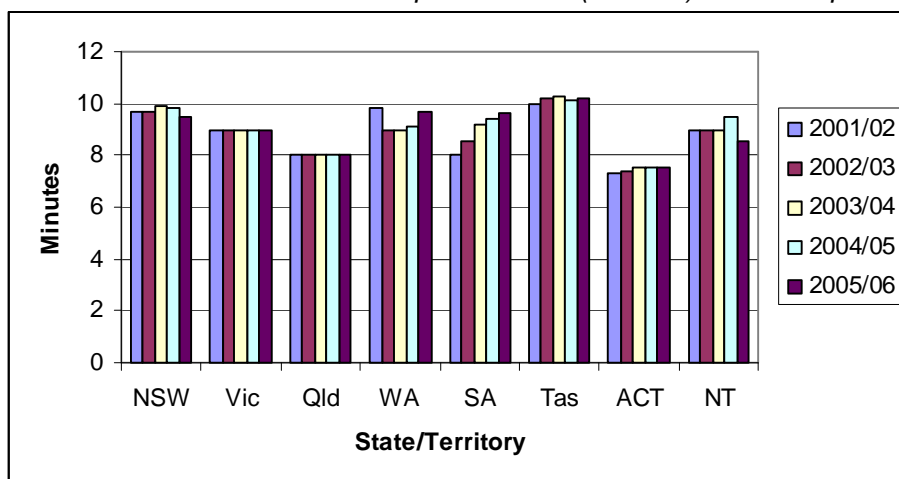
Figure 6.3 illustrates that no performance indicators are currently available at a national level to assess the equity and effectiveness of ambulance services at the output or outcome levels. There are also no measures of efficiency outcomes.

Response Time Indicators

Ambulance response times are a key indicator of the system's ability to cope with the demand for services. Indicators of response include the times during which 50% and 90% of first responding ambulance resources respond in code 1 situations. That is, the 50th and 90th percentile response times are the times within which 50% and 90% of first responding ambulance resources arrive at the scene of a code 1 emergency.

Drawing on data from ROGS 2007, Figure 6.4 shows that in the five years up to and including 2005-06, Queensland's 50th percentile response time was lower (ie, better) than all other jurisdictions with the exception of the Australian Capital Territory (ACT).

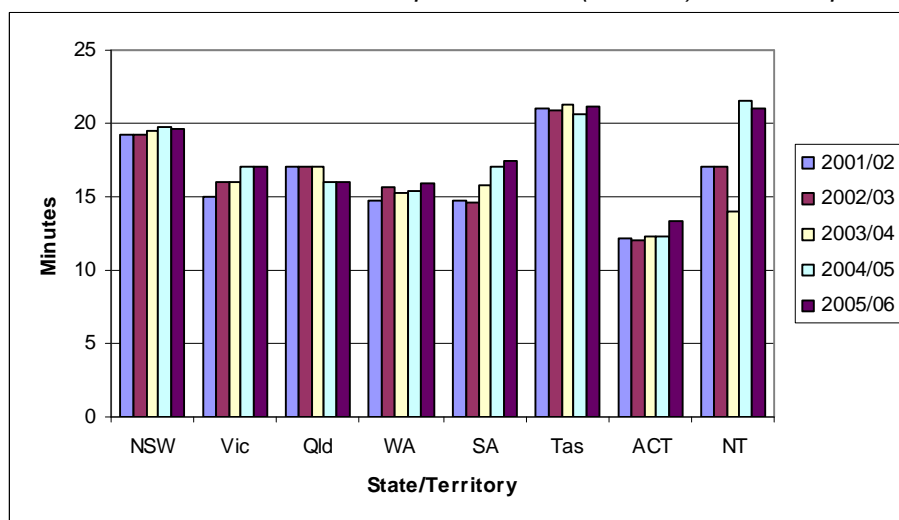
Figure 6.4: Statewide Ambulance Response Times (Minutes) in the 50th percentile¹²



Source: ROGS 2007

Figure 6.5 shows greater variability in response times to the 90th percentile; Queensland has been consistently out-performed by Western Australia and the ACT but has generally performed better than New South Wales and Victoria.

Figure 6.5: Statewide Ambulance Response Times (Minutes) in the 90th percentile¹³



Source: ROGS 2007

Figures 6.4 and 6.5 also show that response times within jurisdictions have remained fairly stable over the reported period.

In the absence of performance measures for prevention-mitigation and preparedness outputs and outcomes, and efficiency outcomes, ROGS is of limited value in terms of reporting on QAS's historic performance in comparison to other jurisdictions.

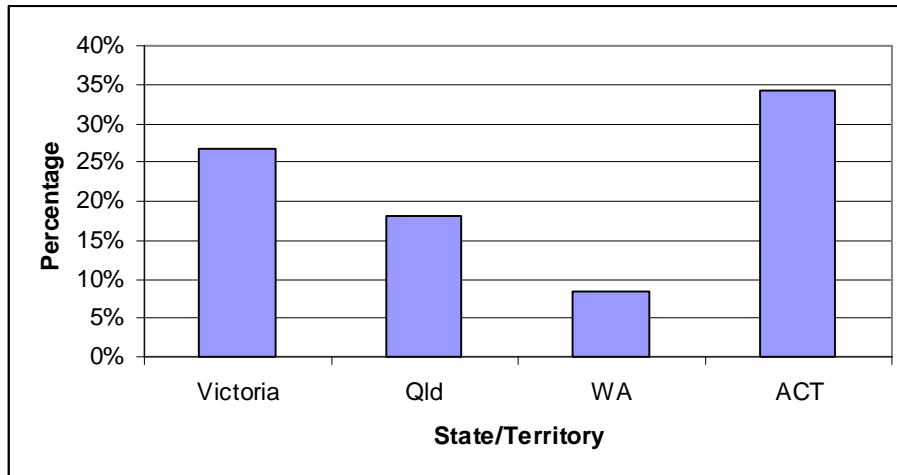
¹² ROGS 2007 notes that differences in response time definitions and data capturing affects interstate comparability on this measure.

¹³ ROGS 2007 notes that differences in response time definitions and data capturing affects interstate comparability on this measure.

Cardiac Arrest Survival Rate

Cardiac arrest survival rates are one measure of ambulance service quality and patient outcomes. ROGS 2007 reports on this measure; however, changes in definitions have led to many states being unable to report data for this measure. Figure 6.6 shows the survival rates for adult cardiac arrests in 2005-06 where resuscitation was attempted.¹⁴

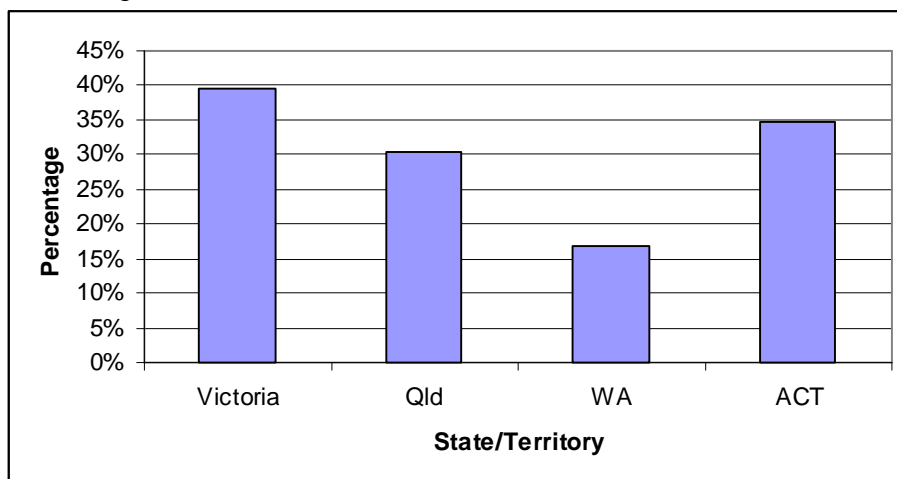
Figure 6.6: Cardiac Arrest Survival Rates: 2005-06



Source: ROGS 2007

Figure 6.7 shows the survival rates for adult ventricular fibrillation (VF) or ventricular tachycardia (VT) cardiac arrests in 2005-06.¹⁵

Figure 6.7: VF & VT Cardiac Arrest Survival Rates: 2005-06



Source: ROGS 2007

¹⁴ ROGS 2007 notes that this measure relates to patients aged 16 and over who were in out-of-hospital cardiac arrest (excluding paramedic witnessed) where any chest compressions and/or defibrillation was undertaken by ambulance/EMS personnel who have a return of spontaneous circulation (ROSC) on arrival at hospital.

¹⁵ ROGS 2007 notes this category is a further breakdown of cardiac arrest data defined as the percentage of patients aged 16 and over who were in out-of-hospital cardiac arrest (excluding paramedic witnessed) where the arrest rhythm on the first ECG assessment was either ventricular fibrillation or ventricular tachycardia who have a ROSC on arrival at hospital.

In 2004-05, Queensland's cardiac arrest survival rate was higher than New South Wales and Western Australia but lower than Victoria and South Australia (ROGS 2007).

Ambulance Expenditure per Ambulance Response

Expenditure on ambulance services by ambulance response is an indicator of service efficiency and is reported in all jurisdictions. Drawing on ROGS 2007 data, Table 6.7 shows Queensland is the only jurisdiction in Australia which has recorded a decrease (-1.7% compounding) in the cost/response ratio over the five years to and including 2005-06. In average terms, Queensland's (\$455) average cost/response was higher over the period than New South Wales (\$422 [excluding 2002-03 and 2003-04]) and the Northern Territory (\$398).¹⁶

Table 6.7: Ambulance Service Costs Per Response – 2001-02 to 2005-06

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
2001/02	\$395	\$457	\$465	\$415	\$442	\$405	\$500	\$384	\$432
2002/03		\$484	\$460	\$487	\$497	\$430	\$577	\$407	
2003/04		\$501	\$466	\$500	\$504	\$457	\$566	\$431	
2004/05	\$437	\$517	\$452	\$497	\$537	\$545	\$762	\$360	\$475
2005/06	\$435	\$528	\$434	\$484	\$488	\$487	\$683	\$409	\$468

Source: ROGS 2007

Ambulance Expenditure per Ambulance Incident

ROGS 2007 has very little incident data for jurisdictions prior to 2003-04. Table 6.8 shows Queensland has been more efficient than all other jurisdictions except Western Australia (no data for the Northern Territory) in terms of cost/incident in recent years.

Table 6.8: Ambulance Service Costs Per Incident – 2003-04 to 2005-06

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
2003/04			\$533	\$504	\$532	\$441	\$617		
2004/05	\$521	\$621	\$519	\$507	\$571	\$625	\$876		\$558
2005/06	\$521	\$631	\$502	\$495	\$521	\$508	\$754		\$549

Source: ROGS 2007

Ambulance Expenditure per Ambulance Patient

Queensland is the only jurisdiction which experienced negative growth in ambulance cost/patient from 2001-02 to 2005-06, as shown in Table 6.9 based on ROGS 2007 data.

Table 6.9: Ambulance Service Costs Per Patient – 2001-02 to 2005-06

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
2001/02	\$502	\$598	\$542	\$423	\$442	\$469	\$500	\$446	\$522
2002/03	\$515	\$637	\$536	\$480	\$497	\$525	\$625	\$468	\$546
2003/04	\$543	\$656	\$580	\$495	\$555	\$694	\$559	\$495	\$578
2004/05	\$542	\$678	\$568	\$492	\$596	\$749	\$901	\$418	\$587
2005/06	\$543	\$682	\$540	\$477	\$543	\$653	\$821	\$475	\$575

Source: ROGS 2007

Ambulance Expenditure per Ambulance Transport

In terms of ambulance expenditure relative to patients transported, only the Northern Territory has experienced negative growth – in compounding average per annum terms – over the period 2001-02 to 2005-06. However, Queensland has the lowest growth at 0.4%

¹⁶ ROGS 2007 notes that differences in asset-related costs between jurisdictions mean data are not fully comparable.

and New South Wales, Victoria, Western Australia and South Australia have experienced growth between 3.3% and 5.4% (ROGS 2007).

Table 6.10: Ambulance Service Costs Per Transport – 2001-02 to 2005-06

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
2001/02	\$568	\$656	\$574	\$425	\$556	\$542	\$737	\$522	\$578
2002/03	\$594	\$703	\$577	\$526	\$632	\$606	\$885	\$527	\$617
2003/04	\$664	\$723	\$615	\$542	\$659	\$694	\$878	\$557	\$658
2004/05	\$665	\$746	\$603	\$539	\$705	\$878	\$1,155	\$453	\$668
2005/06	\$664	\$746	\$583	\$524	\$650	\$823	\$1,078	\$517	\$657

Source: ROGS 2007

Clearly, the QAS is operating efficiently in comparison to other jurisdictions in terms of costs per unit of service.

Trends in Incidents and Responses

The ROGS report also includes information on the number of ambulance services provided across the various jurisdictions. It shows that Queensland has experienced the highest growth in the number of ambulance incidents and responses.

As shown in Table 6.11, from 2001-02 to 2005-06, Queensland's Code 1 and 2 ambulance incidents grew by 40.8% compared to 25.1% nationally.

Table 6.11: Code 1 and 2 Ambulance Incidents by State

Number ('000) of Code 1 and 2 Ambulance Incidents (All States and Australia)								
	NSW	Vic	Qld	WA	SA	Tas	ACT	Aust*
2001-02	491	292	306	79	124	34	18	1,344
2002-03	505	316	339	78	133	35	19	1,425
2003-04	515	327	367	82	136	42	19	1,488
2004-05	528	334	398	82	139	40	18	1,539
2005-06	590	358	431	84	149	47	22	1,681
% change	20.2%	22.6%	40.8%	6.3%	20.2%	38.2%	22.2%	25.1%

* Full data set not available for Northern Territory.

Source: ROGS 2007

A similar but more marked trend is shown in terms of ambulance responses. As shown in Table 6.12, since 2001-02, the number of Code 1 and 2 ambulance responses has grown by 59.5%, well above the national increase of 30.5%.

Table 6.12: Code 1 and 2 Ambulance Responses by State

Number ('000) of Code 1 and 2 Ambulance Responses (All States and Australia)									
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
2001-02	589	389	336	79	131	39	19	17	1,598
2002-03	610	420	370	79	141	41	21	17	1,700
2003-04	634	446	448	83	147	42	21	17	1,825
2004-05	657	442	487	84	151	46	23	21	1,910
2005-06	733	471	536	86	162	50	24	22	2,086
% Change	24.4%	21.1%	59.5%	8.9%	23.7%	28.2%	26.3%	29.4%	30.5%

Source: ROGS 2007

Proposed New Performance Indicator Framework for Ambulance Services

The Audit notes the Council of Ambulance Authorities (CAA) has agreed to develop an expanded set of performance measures for ROGS to enhance public reporting. The Audit understands the CAA is in the process of identifying appropriate output and outcome measures, addressing inter-jurisdictional data comparability issues and identifying existing data sets providing nationally comparable data.

The Audit understands this work is building on the aged care services and public hospitals framework and is considering measures around access, equity, appropriateness and quality. Workforce sustainability is also an indicator of potential relevance to ambulance services.

New measures could include equity of access by specific demographic groups, present quality indicators to enhance the focus on clinical and safety outcomes, highlight accreditation frameworks and focus on continuity of care and whether a coordinated emergency medicine response is provided.

Summary

- Through the Department of, and Minister for, Emergency Services, the QAS has reported solid performance against a set of performance measures over the last five years;
- Annual reports and Ministerial Portfolio Statements show that, in the face of sharp increases in demand, the QAS has achieved response time, survival rate and cost per response targets, although internal data show that Code 1 response times have declined below target over the last several months;
- While the QAS has maintained a consistent set of performance measures, they do not provide external stakeholders with sufficient information to evaluate performance against the 24 outcomes listed under the five key result areas of the QAS Strategic Plan 2005-08;
- The ROGS annual series provides broadly comparable inter-jurisdictional measures of ambulance response times, survival rates for out of hospital cardiac arrests and expenditure-based efficiency;
- Compared to other states and territories, Queensland has performed well in the available measures;
- However, ROGS contains no reporting on equity and effectiveness outputs or efficiency and equity outcomes; and
- The CAA is developing more comprehensive measures for the performance indicator framework for inclusion in future ROGS.

Chapter 6 - Performance Assessment and Performance Management Systems

Recommendation 6.1

QAS is to:

- improve its public reporting on the allocation of tax payer funded revenues to provide greater transparency including reporting on the number of incidents, patients and transports broken down into emergency and non-emergency services as well as information on inter-facility transfers; costs of services; and timeliness of responses;
- continue working with other ambulance services to improve the level of reporting on health outcomes for patients; and
- align its reporting with directions outlined in the Department's Strategic Plan.

Recommendation 6.2

QAS is to introduce an improved performance management and accountability framework within the organisation to drive performance at the regional level and hold managers accountable for performance and results.

Chapter 7 - Intersection with the Health System

This section of the report deals with issues related to the intersection of ambulance with the health system.

Ambulance services form an integral part of the health care continuum and the same broad health system demand drivers that impact on health are also the transforming forces reshaping demand for ambulance services.

Increasing demand for health services is not the result of just one or two drivers but a function of the interaction between a range of social, health and policy factors. The Australian Institute of Health and Welfare (Madden, undated) has identified the following as key drivers of demand for health services in Australia.

- ageing of the population
- incidence of major disease
- new technology and its spread
- impact of public health measures
- evidence based medicine
- better health information
- supplier induced demand

There is an increasing focus within health care systems to provide ambulatory and community based care. Whether requiring urgent or elective care, patients should increasingly receive advice, assessment, diagnosis, treatment and care as near to their homes as possible, particularly in rural and remote areas. As a component of the overall health care system, specifically as a mobile health resource, ambulance services should be transforming from a service focusing primarily on resuscitation, trauma and acute care, towards a wider integrated role of providing healthcare closer to the community.

The Wider Healthcare Role of the Queensland Ambulance Service

Ambulance services worldwide are increasingly playing a wider community healthcare role. In recent years the capacity for ambulance services, particularly in the USA, Canada and the UK, to make a significant contribution to improving health services by expanding their traditional role has been recognised. A closer coordination of ambulance services with the rest of the health care system enhances the patient care process and enables a more seamless provision of health care.

The efficacy of expanded practice models has been demonstrated by the successful implementation of the Nurse Practitioner model overseas and in most Australian states. Extensive national and international research provides evidence that the Nurse Practitioner role is safe, effective and highly acceptable to the patient population (NSW Health Department 1998). These models have been utilised successfully for > 30 years in Canada and the USA. This expanded role should be developed by paramedics to provide new models of health care. Recruitment to such programmes has been sourced from various health care disciplines including paramedics and nurses. These new models could be designed to articulate multiple career pathways and share common core education and training. The health sector will require restructuring to implement these proposed models (Duckett 2005).

A study by Schaefer (2002) developed and tested a protocol for Emergency Medical Technicians (EMT) in the USA to identify appropriate patients for transport and treatment to

urgent care clinics rather than a hospital ED. Retrospective medical review of all cases referred showed that referral was appropriate in 97% of cases and of those who required transfer on from the urgent care clinic to an ED, there was no delay in resolution of their condition.

In addition, a study in the UK (Snooks, 2004) looked at the effectiveness of triage and direct transportation of patients to a Minor Injury Unit (MIU) across two sites in the UK. It showed that despite participating crews only using MIU for a small proportion of eligible patients, when they were utilised as an option, the ambulance service and patients benefited in terms of reduced job cycle times, reduced distances travelled, reduced waiting time, high levels of satisfaction with care and no clinically adverse outcomes.

Queensland Health Area Health Services and Health Service Districts were contacted to identify any existing or future alternative primary care models that could be integrated both with an enhanced secondary triage service (QAS or 13 HEALTH) referral capacity and an expanded QAS Paramedic role as mentioned above.

The following pilots and projects show significant potential to become incorporated, with QAS, into a wider primary health care system;

1. *Minor Injury Units.*

Minor Injuries Units are specifically for less serious injuries and are led by highly qualified and experienced nurse practitioners. They can treat injuries such as cuts and grazes, broken bones, minor burns and scalds, bites and stings, strains and sprains, minor head injuries, and minor eye or ear problems. A MIU is anticipated to be functional within the North Lakes Pilot, see (7) below, by March 2009.

2. *Home Based Acute Care Service (HBACS)*

The HBACS will provide acute care to older persons deemed at high risk of re-presentation or unable to cope in their current environment without intervention in their home or Residential Aged Care Facility. The HBACS will be a responsive multi-disciplinary team which will include a geriatrician, nurse practitioner, nurses, physiotherapist, pharmacist, occupational therapist and social worker.

3. *Acute Care in the Residential Aged Care Facility (RACF)*

The aim is to reduce unnecessary presentation to ED of residents from a RACF. A Clinical Nurse provides a clinical in-reach/quick response service to the facilities. In one pilot this has demonstrated outcomes of reduced presentations to hospital ED of residents by 40% since commencement of program in 2006.

4. *Palliative Care in the RACF*

The aim is to reduce unnecessary presentations to ED of residents from a RACF who are palliative. The intention is for these residents to remain in the facility with the support of a Nurse Practitioner who provides a clinical palliative care in-reach service (service works very closely with GP's)

5. *Community Rehab/QAS Falls project*

The aim is to link people who have had a fall and been seen by the QAS and do not require transport to hospital. The QAS can directly refer these people to a Community Rehabilitation team who will follow up these people with regards to a falls management program.

6. *Community Mental Health Services*

There has been significant investment in the establishment of these services.

7. *Health Partnership Precincts: A New Model of Care.*

Queensland Health is developing a new model of service delivery for community and primary health care and ambulatory services, which will be used as the footprint for the future community based services.

The Ambulance Service of New South Wales initiated a Non Transport Special Project in November 2006. This allows paramedics to allocate specific patients, according to inclusion criteria, to the Sub Acute Fast Track Elderly (SAFTE) Care Project in supporting District Hospital Areas. These patients are referred to the SAFTE Care Team and do not require transport to Hospital.

Queensland Ambulance Service role in Supporting Specific Destinations within Queensland Health

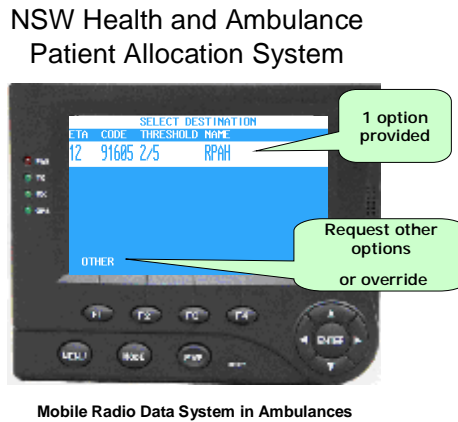
As mentioned previously, QAS will generally transport emergency patients to the nearest ED (the distribution of major trauma under the Queensland Trauma Plan is separate). Across the majority of Queensland this is the only option available.

In the Metropolitan South East corner of Queensland there are multiple hospitals, public and private, in relatively close proximity. A more integrated and responsive ambulance destination decision matrix is required to spread the patient load across the whole health care system, maximising efficiencies for both QAS and hospitals and providing more directed, quality patient care.

In NSW hospital diversions were proving increasingly problematic to the efficient and safe delivery of ambulance services. NSW Ambulance Service and the NSW State Health Department is making use of technology to deliver a number of strategies to better manage the spread of patients to hospitals. Introduction of Hospital Clinical Allocation Matrix, Ambulance Status Boards and ED Thresholds, means diversion is no longer an ED demand management strategy. This matrix allows for ebb and flow of demand and provides clinically appropriate destination choices to hospitals that are under threshold.

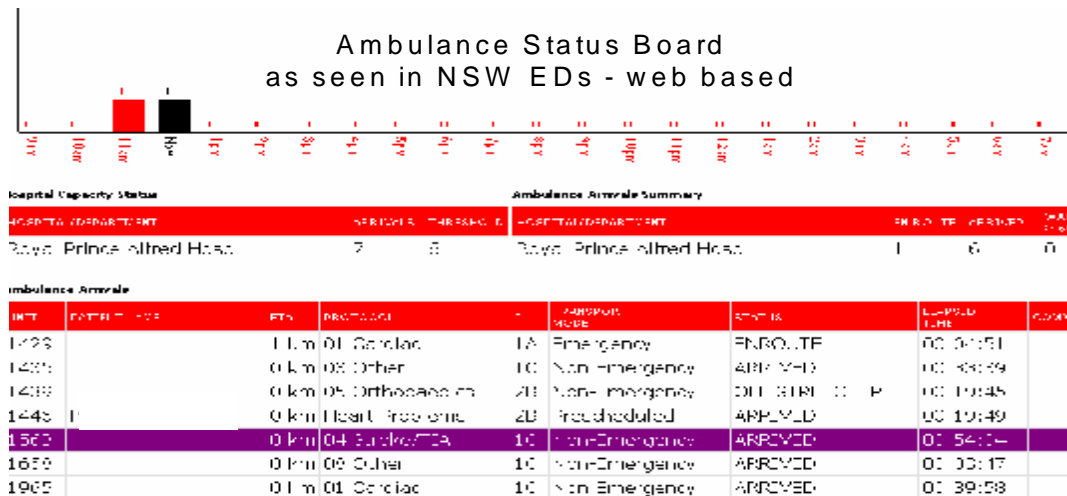
The design of this matrix allows recovery time for a facility that has experienced a surge in demand. This load sharing clinical matrix is linked to the CAD system to enable paramedics to be advised by mobile data terminal of the appropriate hospital for the patient's clinical condition by hour of day; and use of ambulance web based status boards at hospital emergency departments with information on ambulance capacity status, arrival details of incoming ambulance vehicles and their patients (see below). A Network Access Coordinator is located in the ambulance operations centre monitoring ambulance activity and unload/turn around times at all Sydney matrix hospitals. NSW is currently delivering best practice in this area in a high volume environment.

Figure 7.1: NSW Health and Ambulance Patient Allocation System



Source: New South Wales Ambulance Service

Figure 7.2: Ambulance Status Board as seen in NSW EDs



Source: New South Wales Ambulance Service

The NSW Health Department and Ambulance Service recently presented on some of these strategies to Queensland Health and QAS and there was overwhelming support to look at applicability for the South East corner of Queensland.

Queensland Health has been developing, in conjunction with QAS, diagnosis specific destinations for individual patients. An example would be the emergent QAS treatment and immediate transport of all acute myocardial infarcts in North Brisbane to The Prince Charles Hospital ED. A similar pathway exists for suspected fractured neck of femur fractures in North Brisbane to this ED.

In conjunction with the QAS ECP role, alternative patient destinations could be predetermined, allowing for further reductions in QAS emergency transports and presentations to hospital ED.

QAS and Queensland Health (Statewide ED Network and IT Services) have been working towards the development of shared patient information via the Emergency Department Information System (EDIS). Following implementation of the new ESCAD system, QAS has the opportunity to develop management tools that link QAS Communications Centres with an ED thus enabling the development of a network capacity matrix which, like NSW, could be shared with all QAS vehicles. This could be utilised in the QAS Communication centres allowing appropriate dispersal of emergency ambulance cases between a network of hospitals as determined by combined measures of QAS, ED and hospital capacities.

Summary

Ambulance services worldwide are increasingly playing a wider community healthcare role. In recent years the capacity for ambulance services, particularly in the USA, Canada and the UK, to make a significant contribution to improving health services by expanding their traditional role has been recognised.

QAS and its Paramedics require recognition of their expanding role within the health care system. To allow alternative models of care by expanded care paramedics, aligning of legislation and professional regulation for paramedics would be required and education models would require continuing transition to University models.

Alternative primary health care models require simultaneous development and integration into current health care services to reduce the number of QAS emergency transports as well as the number of patients transported to hospital emergency departments

Queensland Health and the private hospitals do not share contemporaneous emergency department activity or hospital occupancy figures with QAS. QAS generally transport patients to the nearest facility, which may contribute to the *ramping* of ambulance vehicles and overcrowding of individual emergency departments or transport of patients to hospitals with critical bed occupancy rates.

To maximise these enhanced patient care options, significant collaboration and integration would be required with Queensland Health, private and non government sectors to ensure optimal referral pathways to alternative community and primary models of care, enhancing the patient care process and enabling a more seamless provision of health care.

As a component of the overall health care system, specifically as a mobile health resource, ambulance services should be transforming from a service focusing primarily on resuscitation, trauma and acute care, towards a wider integrated role of providing healthcare closer to the community.

Inter-Facility Transfers

Inter-facility Transfers (IFTs) occur for two main reasons. The first is that the services that the patient requires are provided by another facility either because the services are not provided by the sending facility at all or because the services required are of a higher level. The second is that the patient requires return to the facility that provides lower level services when they no longer require higher level services.

Medically authorised transport occurs when the patients is thought to need assistance to attend or return from appointments. It also includes patients who are discharged from hospitals and need to return home.

Overview of Existing Arrangements

The IFT arrangements are detailed in the *Inter-facility Transports Operational Guidelines 2004* which was signed by Queensland Health (QH) and Queensland Ambulance Services (QAS) in June 2004. All road IFTs are provided by QAS and are managed by the *Service Agreement between QH and QAS for Inter Facility Road Transports 2005/2006 – 2007/2008*.

Road IFTs (with the exception of neonatal and paediatric cases in the South East Corner of Queensland) are coordinated locally between hospitals by telephoning or faxing the locally agreed number. Medical and nursing escorts for the patients are also coordinated locally. Reports from local hospitals indicate that given shortages of staff in some facilities, this causes additional resourcing issues. For these road IFTs, no data is collected in QAS or QH systems regarding the level of escort provided to the patient.

IFTs that have an aero-medical component are coordinated by a joint arrangement between QH and QAS at the Queensland Emergency Medical System (QEMS) Clinical Coordination (QCC) centres in Brisbane and Townsville. The airplane (fixed wing) component of aero-medical IFTs is provided by Royal Flying Doctors Service (RFDS) and managed by a service level agreement and by Careflight Medical Services (CMS) when a jet is chartered. All IFTs that have an airplane component also require a transfer of the patient by road transport provided by QAS, to and from the airport.

IFTs undertaken by helicopter are provided by Emergency Management Queensland (EMQ) and community helicopter providers and are funded by EMQ. There are no service level agreements to manage this arrangement. QH owns 61 helicopter landing sites (HLS) and accesses 10 other HLS.

IFTs are coded by QAS in the same way as “000” calls for urgent cases; however there are additional codes 3 and 4 for non-urgent cases. QAS have a minimum of 4 hours booking time frame for IFTs. However, it is reported that QMAT discharges are booked before 2 pm the day prior to transport being required and with 24 hour notice of transfer required.

QH collects minimal information regarding the transfer of patients between facilities. A recent review of data collected by QH was undertaken by Ernst and Young and indicated a difference in data collected between ‘from facility’ and ‘to facility’ fields. For 2006/2007 QAS reported a total of 69,000 IFTS, QH data report for the same period ‘to facility’ 52,000 and ‘from facility’ 37,000 IFTs. Therefore QH can not verify information provided by QAS in terms of numbers and does not collect data in relation to:

- timeliness
- appropriateness of transport
- level of escort provided
- numbers booked versus actual IFTs.

It is not possible to track movements of a patient during an episode of care since each transport undertaken by QAS is given a unique identifier and each individual hospital gives the patient a unique identifier. This can be complicated if aero-medical and road transport occurs for given patient.

QAS provides QH with monthly IFT activity reports. To date reports have not been provided to Health Service Districts in relation to their activity or trending their demand. QH does not

receive information regarding QMAT activity. QH will fund QAS approximately \$32M in 2007/2008 for IFTs.

IFTs undertaken by aero-medical transport are coordinated by the QCC in Brisbane and Townsville. IFTs undertaken by airplanes (fixed wing) are provided by the Royal Flying Doctor Service from sites at Charleville, Mt Isa, Cairns, Townsville, Rockhampton, Bundaberg and Brisbane. Currently, the activity for IFTs undertaken by planes located at Charleville, Mt Isa and Cairns is not known since these traditional sites are part funded by the Australian Government and until 1 January 2008, block funded by QH. RFDS provide both medical officers and nurses with these aircraft to escort the patients as required. Non-IFT activity undertaken by these aircraft is funded by the Australian Government. Non-IFT activity can be a primary response (that is pre-hospital work) or clinic work.

Activity undertaken by the other (non-traditional) sites is reported quarterly to QH in terms of numbers and hours of flights undertaken. In 2006/2007, over 10,000 hours of flights were utilised. This activity includes IFTs and non IFT activity. Medical escorts are provided on these flights by Queensland Health or under service agreement from Careflight Medical Services (CMS).

Helicopter services (rotary wing) are also used for IFTs and pre-hospital activity. Again Medical escorts are provided on these flights by Queensland Health or under service agreement from Careflight Medical Services (CMS). Hours of flight undertaken are reported monthly by EMQ per helicopter, however this activity is not reported by patient.

Most medical services provided in the Torres Straight have an aero-medical component. Helicopters are used to take medical staff to islands to conduct clinics and are also used to bring patients from the islands to the Hospital on Thursday Island. If the patient needs to be transferred to Cairns or other higher level hospitals, helicopters take the patients to Horne Island where an airplane provided by RFDS completes the transfer.

Delineation of core business

With road transport, QAS provides a primary response and provides inter-facility transport. With road transport however; the ability to advise transporters the most appropriate destination for a patient is not coordinated, on occasions resulting in a QAS vehicle arriving at a facility that is unable to provide the necessary service for the patient. Another scenario is when, due to capacity problems within a hospital, QAS vehicles are 'ramped'.

However aero-medical responses are coordinated by QCC which is a joint QH and QAS service. The delineation of roles between QH and QAS in relation to pre-hospital care varies dependent on the mode of transport. The QCC and QAS officers that coordinate "000" calls are collocated in the QAS Communications Centre. QCC and QAS jointly work to coordinate the destination for patients when aero-medical transport is required.

When a patient requires aero-medical transport, the coordination of the road leg with the air leg of the trip is often difficult. RFDS has reported significant delays with the airplane on the tarmac while waiting a QAS vehicle to move the patient to or from the aircraft. No data is currently reported on this by RFDS.

The unique identifier for the patient from the ambulance electronic record (eARF) will be provided to the Emergency Department and can be manually entered into QH information systems. A manual print out of the QAS record is included in the patient's medical record. The integration of the electronic records will need to be more fully explored.

Integration/coordination

The current divisions between the two departments causes on going coordination issues that are not responding to the population growth demands especially in the South-East corner of the State. While clinical coordination is undertaken for aero-medical services, coordination of road transport is left to local facilities. Urgent work identified to be undertaken is:

- Re-directing ambulances to deliver patients to the most appropriate facility for treatment.
- Providing QAS with access to emergency department capacity and live status of numbers of patients in the hospitals so that ambulances are not delivering patients to already full departments.
- Coordination of escorts and providing the most appropriate level of escort for patient needs that does not reduce the capacity of facilities to manage other patients.
- In the absence of road transport, the data relating to redirecting the transfer of the patient to other modes of transport needs to be collected.
- Matching QAS communication centre and QH boundaries would increase the ability to coordinate movements of patients to and from facilities within a district or area would integrate the planning and development of infrastructure and resources between the 2 departments which seems to be undertaken in relative isolation. This would also enhance the utilisation of bed stock across areas.

The management of non-urgent transport is also managed by local facilities. It is reported that several QH facilities are exploring having their own transport vehicles to move patients' especially non-urgent transfers. The reasons for seeking the development of these transport options are to improve access to services, discharge and improved bed utilisation. It is reported that in the absence of other easy to access, no-cost services, ambulances services remain the services of choice. QAS report that as part of a community funded project in the south east corner, 30,000 transports for provided for approximately \$500,000. This would indicate that the area of non-urgent transport is an area that would benefit from review and reform. Since transport subsidies are also by QH through the Patient Travel Subsidy Scheme, by Queensland Transport through Taxi Subsidies and through the HACC program, a clear analysis of gaps in the subsidies need to be undertaken in relation to health related transport. Coordination processes for this non-urgent transport also needs to be reviewed and improved.

Governance

A lack of coordination and governance of patient transport activities across Government recently resulted in the establishment of the Queensland Medical Transport Board (QMTB). This is a cross-agency Board Chaired by the Chief Health Officer with representatives from Queensland Transport; Department of Emergency Services; Queensland Treasury; Department of Premier and Cabinet, Disability Services Queensland, Department of Communities.

The management of patient transport is often occurring at a ward level which is putting undue pressure on many parts of the system that could be alleviated by lifting the management to a Hospital, Health Service District and Area Health Service level. The decision to transport a patient, where and how to transport is made based on clinical decision; the availability of a bed, suitable care and timely transport. A paucity of timely and relevant transport activity data at the local facility level is hindering appropriate management and decision-making by QH managers.

Oversight of quality and safety issues is provided by QEMS Quality Council which reports to the Chief Health Officer. This Council has a focus on aero-medical safety issues however

requests have been received to include road transport as well. The Council provides high level oversight and review, QH and QAS have processes based in each department.

QH is moving towards devolving funds associated with patient transport to a local level. The major reason for this devolving of funds is to provide a cost incentive to manage growth which has been reported at approximately 10% over the last few years. However, due to the aging population, staffing shortages, changes in service planning and increases in services provided by alternate models such as by advance nurse practitioners, it is possible that patient transport requirements will increase at a greater rate. The first step to developing the devolved funding model is to provide accurate and timely data to local decision makers in order map and track trends in transport requirements. It is necessary to develop an integrated patient transport data repository from information from QH and QAS.

Organisational Issues

The roles provided by QH and QAS to transport patients has a number of inefficiencies and duplicate activities resulting from separate information systems, business processes, staffing skills, terminologies and infrastructure. While QH and QAS work as collaborative as possible, efficiencies related to single information systems, single transport coordination processes and improvement in the continuum of care for patients can only result from an integrated single organisational structure that removes all barriers between QH and QAS. This combined with a wider range of transport options for non-urgent patient transport will improve access to services and ultimately the health outcomes of Queenslanders.

Summary

- Patient transport issues remain ill defined due to separate data systems, lack of integrated data and reports that provided meaningful information to QH decision makers
- Health services planning and patient transport planning needs to be fully integrated.
- The complexity of current provision of services from aero-medical transport, road transport, various points of clinical coordination and provision of escorts needs to be reduced and refined
- Patient focus across the continuum can only be improved with a reduction of barriers between when health care starts and emergency care finishes.
- Non-urgent transport options need to be explored and enhanced with a gap analysis of subsidy provision to increase the services to patients.
- Further enhanced integration of quality and safety processes are needed to ensure a patient outcomes focus across QH and QAS.
- While QH and QAS remain separate organisations, inefficiencies and barriers will remain despite best efforts.

Ramping and Access Block in Emergency Departments

The flow of patients through a hospital ED is a complex and fluid process, affected by multiple factors external to the ED. Increasing demand for ambulance services, and utilisation of public hospital EDs, is a consistent issue across Australia (AIWH 2007) as outlined earlier in this report. ED overcrowding is common in Australia, North America and the United Kingdom (Fatovich 2003, Schneider 2003).

The Audit Team undertook a detailed analysis of;

- The extent of the problem facing QAS in efficiently delivering patients to hospital EDs,
- The international and national literature surrounding the ambulance/ED nexus and patient ED flow issues.

- Current ED and hospital patient flow initiatives in Queensland.

The recommendations provided by the Audit team are realistic outcomes based on review of current best practice and Queensland Health’s capabilities.

Overview of Existing Arrangements

The Australasian College for Emergency Medicine (Australasian College for Emergency Medicine 2001) defines an emergency department as *the dedicated area in a hospital that is organised and administered to provide a high standard of emergency care to those in the community who perceive the need for, or are in need of acute or urgent care including hospital admission.*

Patients present to a hospital ED via a number of mechanisms; self presentation, via QAS, referral from another clinician or transferred from another hospital.

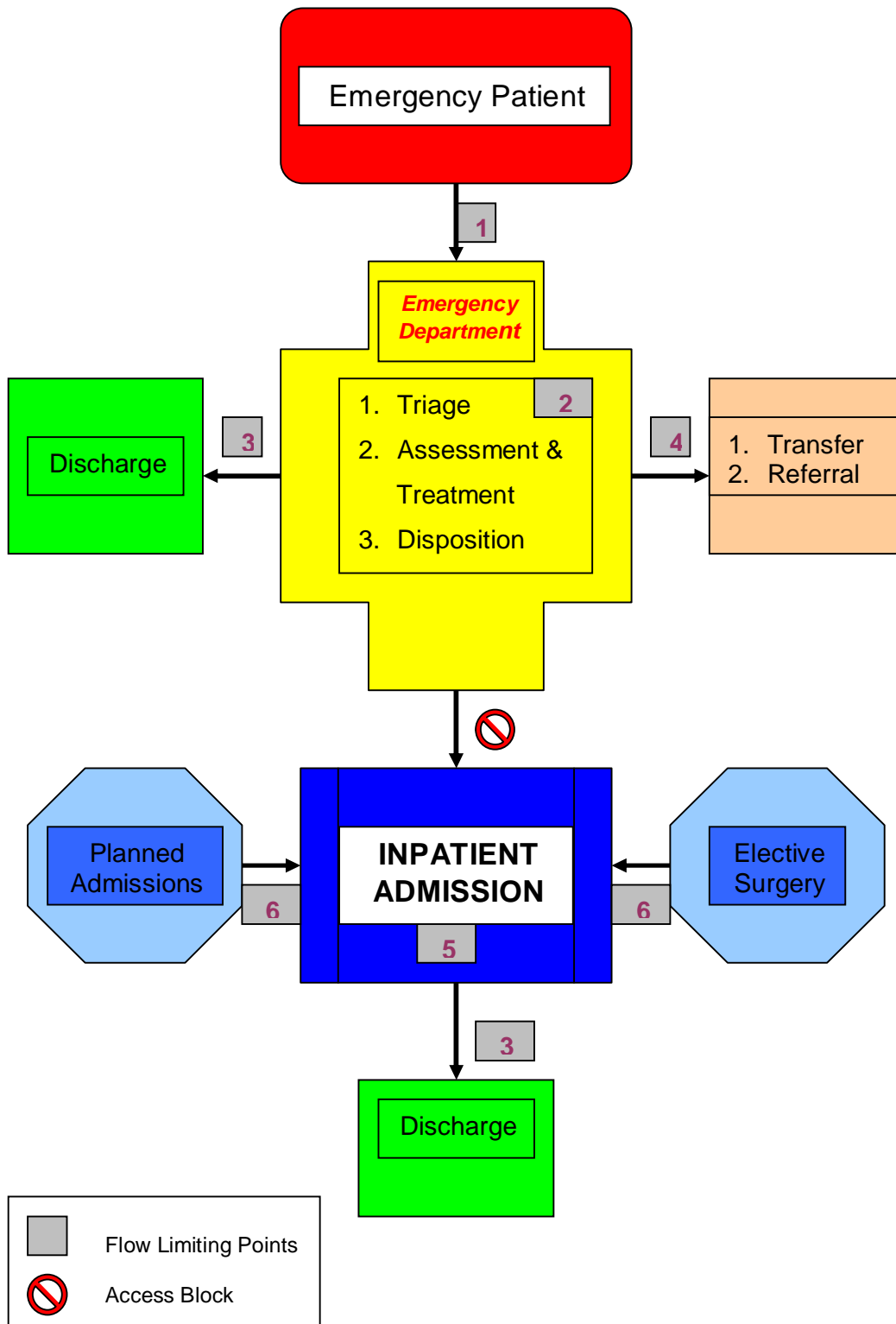
When a patient presents to a hospital ED they are triaged according the Australasian Triage Scale (see below). It is a scale for rating clinical urgency; primarily a clinical tool for ensuring that patients are seen in a timely manner, commensurate with their clinical urgency (Australasian College for Emergency Medicine 2006).

Figure 7.3: Australasian Triage Scale

ATS Category	Treatment Acuity. (Maximum Waiting Time)
ATS 1 (Resuscitation)	Immediate
ATS 2 (Emergency)	10 minutes
ATS 3 (Urgent)	30 minutes
ATS 4 (Semi-urgent)	60 minutes
ATS 5 (Non-urgent)	120 minutes

Patients present to, and progress through, the ED via a defined course involving assessment and treatment, and then proceed down a disposition pathway dependant on the diagnosis and subsequent management plan. This may involve admission to an inpatient bed, referral and transfer to another health care facility or discharge from the ED with or without support or follow up services. The diagram below articulates this process.


Figure 7.4: Patient Flow Diagram



Source: Ambulance Audit Queensland Treasury

ED overcrowding refers to the situation where ED function is impeded, primarily because the number of patients waiting to be seen, undergoing assessment and treatment, or waiting for departure, exceeds the physical or staffing capacity of the ED (Australasian College for Emergency Medicine 2001). This has been a serious issue internationally and nationally for many years and has been described as *the most serious issue confronting EDs in the developed world* (Fatovich 2002).

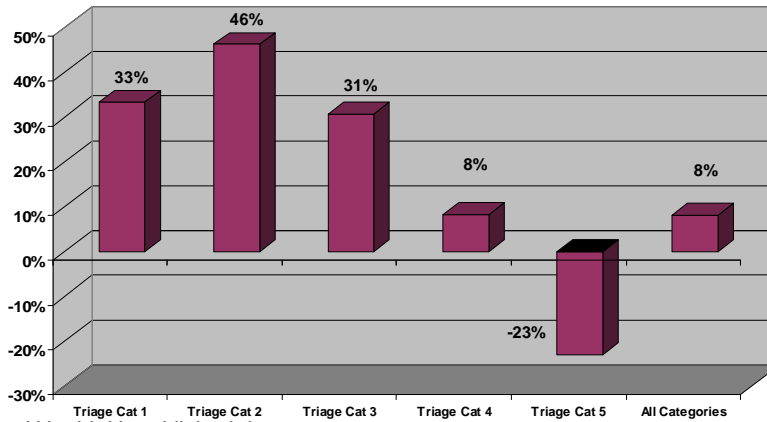
A patient's journey through the ED can become delayed or blocked because of difficulties in accessing inpatient hospital beds, community-based services or discharge transport. Where there are insufficient inpatient beds to accommodate the patient, the flow effectively stops. The patient remains in the ED until an inpatient bed can be allocated.

This *access block* (see  in the diagram above) is the main contributor to ED overcrowding (access block is the term that describes the delay patients who need hospital admission experience in the ED when their inpatient bed is unavailable and occurs once that delay exceeds 8 hours; Australasian College for Emergency Medicine 2007). This blockage in the flow of patients through the hospital, combined with increasing attendances and ambulance transports to hospital ED, contribute to the situation seen currently with ambulance bypass and *ramping* (this is the term used to describe the situation where QAS paramedics are unable to unload patients into the ED, effectively leaving the QAS vehicle, crew and patient on the ramp outside the ED), ED overcrowding, variable ED waiting times and significant stress on the emergency care system.

QAS data is showing that at some hospital EDs access block and the waiting times to unload patients (off-stretcher times) is increasing. This is putting pressure on QAS, reducing its ability to return to operational readiness to respond to community emergency "000" calls. This is a suboptimal situation leading to the potential for adverse patient outcomes both at the ED and in the community. It is also placing increasing stress on both QAS and Queensland Health operational and clinical staff.

Increased use of public hospital EDs is a consistent issue across all Australian jurisdictions. The graph below shows the growth for Queensland Health reporting hospital ED presentations by triage category between 2001/02 to 2006/07.

Figure 7.5: ED Presentations 20 Reporting QH Hospitals by Triage Category by Growth over 2001/02 to 2006/07(Excludes Redlands Hospital as not reported in 2001/02 n= 4,850,082)

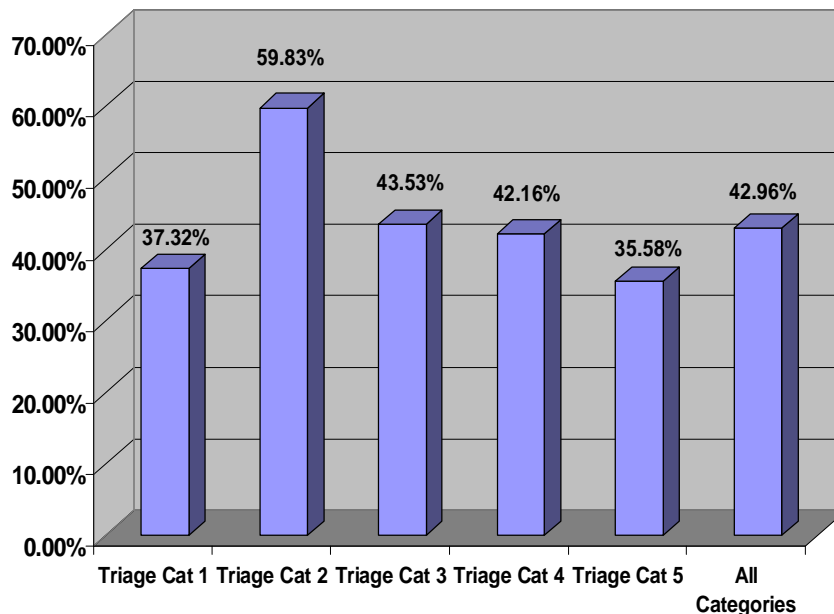


Source: Queensland Health Unpublished data

1. Queensland has witnessed a cumulative growth in ED attendances of 8.21% over this period.
2. Growth in attendances of ATS 1: 33%, ATS 2: 46%, ATS 3; 31%, ATS 4; 8% and ATS 5; -23% over this period.

While growth in emergency department demand is not unique to Queensland, the nature of the spread across the 5 triage categories is different in Queensland to the other states. See graph below for the growth in triage categories nationally, excluding Queensland.

Figure 7.6: Growth in Triage categories across Australia excluding Queensland in Reporting Public Hospital Emergency Department for the period 2001/02 to 2005/06 (Source AIHW 2006 n = 17,427,326)

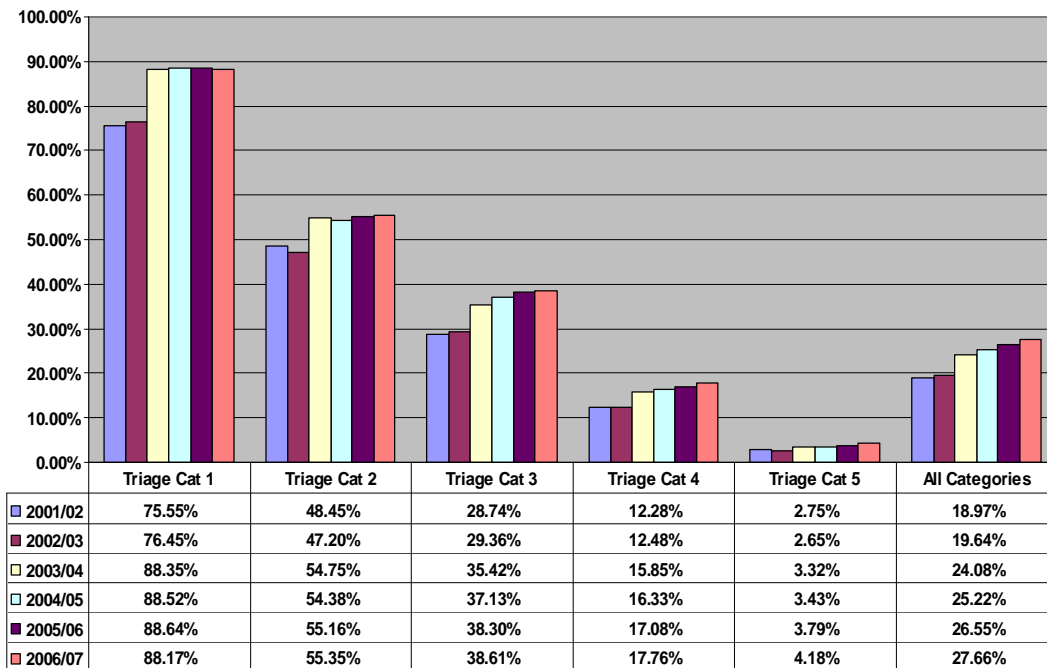


Source: AIHW 2006

In Queensland, the 8.21% growth in total presentations has been masked by the reduction in the lower acuity triage categories and significant growth in the higher acuity triage categories. The increase in numbers in the higher acuity triage categories is of particular significance for QAS in that the service is transporting almost 70% of patients in the top three triage categories and less than 5% of patients in triage category 5. The QAS presentation rates per triage category are shown in the graph below (*QAS Presentation Rates by Triage Category on Arrival at Queensland Health 21 Reporting ED for the period 2001/02 to 2006/7*).

In recognising Queensland's high ambulance transportation rates compared with other jurisdictions, consultation with the Queensland Health Statewide ED Network indicates that despite Queensland's comparatively high use of ambulance transport in the higher acuity triage categories, there are still reports of acutely ill patients arriving at hospital emergency departments by car or other transport. Of particular note, 44.65 % of ATS Category 2 patients (Emergency care required within 10 minutes) still arrive by their own means. These are groups of patients at high risk who should be entering the emergency health care system earlier.

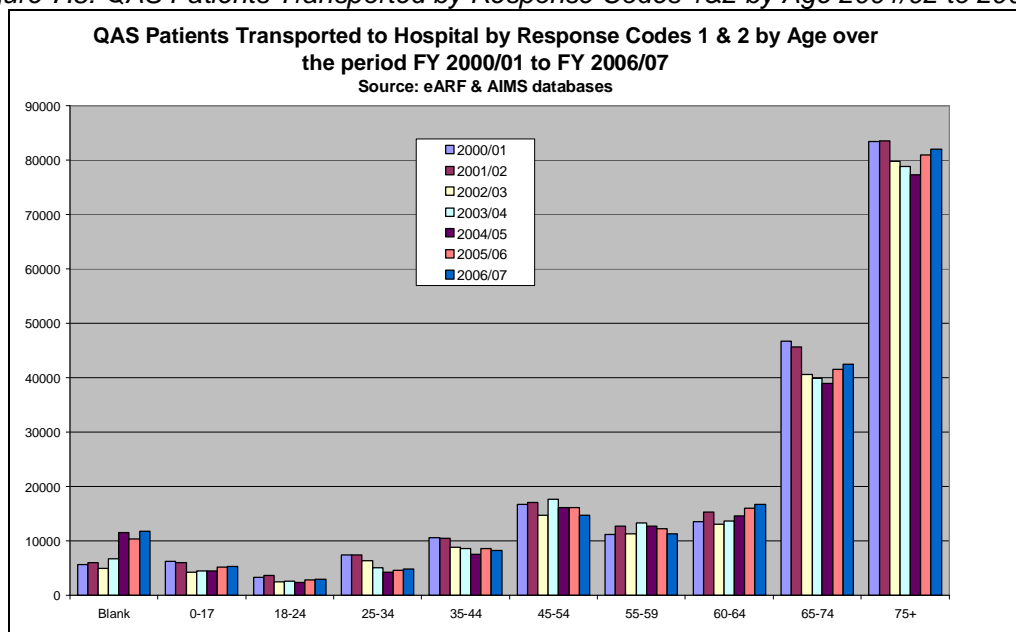
Figure 7.7: QAS Presentation Rates by Triage Category on Arrival at Queensland Health 21 Reporting ED for the period 2001/02 to 2006/7.
(Source: Queensland Health, Redlands commenced reporting 02/03 n=4,889,756)



Source: Queensland Health Unpublished data

QAS data for patients transported to hospital ED by response Codes 1 and 2 by age over the period FY 2000/01 to FY 2006/07 shows the breakdown in usage for various age groups (see below). Across the reporting Queensland Health EDs, presentation rates for all age groups report positive cumulative growth in attendances, with the highest in the 75+ age group. These show that the elderly are consuming large, and increasing, resources across the emergency care sector.

Figure 7.8: QAS Patients Transported by Response Codes 1&2 by Age 2001/02 to 2006/07



Source: QAS Internal Data

ED overcrowding first appeared in the metropolitan Sydney hospitals in the late 1980s and early 1990s. Progressively public hospital EDs in Melbourne, South Australia and then Western Australia became affected. It became an issue in Queensland from 2000 onwards. Overcrowding and access block initially showed seasonal variation, reflecting the demand for inpatient beds. These issues now affect the major Queensland EDs all year round.

The US General Accounting Office in 2003 published a report on ED overcrowding. This survey reviewed 1,700 US EDs, looking at overcrowding, boarding (access block) and ambulance bypass. The most significant causal link was the unavailability of inpatient beds (US Government Audit Office Report 2003).

Richardson (2001) and Dunn in 2003 demonstrated that access block leads directly to reduced ED performance, shown by increased waiting times. Richardson (2002) in Canberra, showed an association between access block and prolonged inpatient length of stay for patients admitted from the ED. Liew and colleagues (Liew 2003) in Melbourne showed that a prolonged ED length of stay was associated with excess inpatient length of stay (defined as exceeding the state benchmark for the relevant diagnosis-related group). A study in Western Australia in 2005 (Fatovich 2005) demonstrated that ambulance diversion and poor ED performance were related to poor inpatient flow, manifest in the ED as access block. Richardson in 2006 showed that patients presenting during high ED occupancy at The Canberra Hospital had increased 10 day in-hospital mortality. Sprivulis in 2006, in a study across all three of Perth's tertiary hospitals, demonstrated that hospital and ED overcrowding was associated with a 30% relative increase in mortality by Day 2 and Day 7 for patients requiring admission via the ED to an inpatient bed, independent of patient age, season, diagnosis or urgency. Caring for access block patients represents around 40% of ED workload in major Australian hospitals.

Total hospital inpatient bed occupancy of 90% or more, as measured by a midnight bed census, is correlated with access block (Bagust 1999, Forster 2003a and Australasian College for Emergency Medicine 2004). Some authors have suggested target hospital occupancies of 85% as the balance between unused bed capacity and efficient inpatient flow (Bagust 1999, Green 2003, Castille 2003).

Across Australia (Cameron 2003) and internationally (National Health Service Modernisation Agency), many attempts have been made to tackle access block. Governments have responded to the contributing factors driving growth in the health care system by increasing resources, developing indicators and initiatives to improve hospital performance and attempts to reduce hospital demand. Despite some traction there are still major difficulties across Australia in tempering access block and its associated issues for safe and quality patient care.

Access block is an ongoing issue for Queensland Health as outlined below, comparing a cross section of busy EDs during the FY 2006/2007. This shows the percentage of patients transferred to a ward within 4, 8 and 12 hours.

Table 7.1: Access Block

ACCESS BLOCK			
1st Qtr 2006 - 2007	within	4	within
Hospitals	hours		hours
		8	within
			hours
			12
Cairns Base	25%	63%	79%
Gold Coast	17%	59%	80%
Logan	32%	83%	95%
Nambour	25%	71%	88%
Princess Alexandra	16%	51%	75%
Royal Brisbane	27%	63%	85%
The Townsville	23%	53%	67%
4th Qtr 2006 - 2007			
Cairns Base	23%	57%	72%
Gold Coast	19%	62%	81%
Logan	31%	77%	93%
Nambour	25%	66%	83%
Princess Alexandra	15%	50%	73%
Royal Brisbane	32%	68%	86%
The Townsville	22%	56%	74%

Source: Queensland Health Unpublished data

Queensland Health is recognising that improving patient flow through the hospital system is not an ED specific management issue, but a whole of health care system issue. As such there are multiple patient flow initiatives occurring across the three Area Health Services, in various stages of evolution.

The following data provided by QAS shows the waiting times to offload patients from QAS vehicles to a suitable area within a hospital ED across the state. This can be broken down into specific hospitals and highlights hotspots of ramping, specific to individual institutions. The hospital EDs that are performing well have implemented various innovative ED flow practices and senior management processes to combat ramping. When a combined scorecard (Combined ED Clinical Network and QAS Performance Report Outcomes Subgroup) is reviewed, it can be seen which facilities have efficient ED practices and which have efficient hospital flow practices. Sharing these evolving models across the organisation is imperative.

Table 7.2: Off Stretcher Activity and Performance for QAS Code 1&2 Patient Presentations

"Off Stretcher" activity and performance for QAS Code 1 and 2 patient presentations to Queensland Health Public Hospitals by Month of Year by "Off Stretcher" time percentage under 15 and 30 minutes and lost productivity time in minutes greater than 15 and 30 minutes for April 2007 to September 2007 .						
	April	May	June	July	August	September
Number of QAS Patients	25943	28231	26727	29950	30634	27942
No. of Patients Off Stretcher < 15 mins	21496	22882	21713	22782	22790	21723
Off Stretcher Percentage < 15 mins	82.86%	81.05%	81.24%	76.07%	74.39%	77.74%
No. of Patients Off Stretcher < 30 mins	24931	26930	25567	27641	28061	26186
Off Stretcher Percentage < 30 mins	96.10%	95.39%	95.66%	92.29%	91.60%	93.72%
No. of Patients Off Stretcher >= 30 mins	1012	1301	1160	2309	2573	1756
Lost time in minutes when Off Stretcher > 15 mins	53919	66670	59972	124067	139550	95069
Lost time in minutes when Off Stretcher > 30 mins	23276	28241	25021	66234	74941	47757

Source: QAS unpublished data

In examining the potential solutions and initiatives directed at this area, it is convenient to break down the flow into a number of targeted flow limiting points as outlined in the above Patient Flow Diagram. A detailed review of national and Queensland programmes was performed.

1. *Reduced Hospital Demand/Reduction in patients presenting to hospital ED*
 - a. Within the context of QAS presentations, strategies to reduce this have been covered earlier.
 - b. Increased utilisation and development of community services
 - c. Prevention strategies and improved management of patients with chronic disease.

2. *Improved ED specific processes*

Aligning staff to emerging needs; Mapping tasks and workflow within ED.

 - a. Enhanced layout and space within ED-design supports implementation of emerging models of care and growth.
 - b. Application of lean thinking principles to health care processes (Ohno 1988 and Womack 1996); Utilisation of Streamlining (King 2006).
 - c. Fast track treatment programs.
 - d. Improved access to pathology/diagnostic imaging/Pharmacy
 - e. New ED models of care
 - i. Enhanced triage; Clinical Initiative Nurse, Nurse initiated X-rays and analgesia, mental health triage projects.
 - ii. Early pregnancy assessment centre in the ED.
 - iii. Short Stay Observation Units/Clinical decision making units
 - iv. Medical Assessment and planning units.

- v. ED care coordination for patients with complex needs.
- vi. Acute Mental Health Programs/collocated Units

The Queensland Health Combined ED Clinical Network is sharing data with QAS that affects the QAS/ED nexus. A Performance Report Outcomes Subgroup has recently been established to work collaboratively with QAS to provide expert advice and evaluation of data against key performance indicators and to propose quality initiatives to the Combined ED Network for endorsement

3. *Streamlined and Improved Discharge Systems*

This applies both to discharges from the ED and the hospital.

- a. ED discharge Initiative (early discharge of elderly patients requiring assistance)
- b. Community Health Interface Programme (CHIP).
- c. Hospital in the Home and Nursing Home
- d. Aged Care Early Intervention & Management in Emergency (ACEIM).
- e. Enhanced Discharge Planning; *Discharge by 12 noon* programme.
- f. Hospital Admission Risk Program
- g. Transition Care Services
- h. Electronic booking systems for non urgent ambulance transports home or to residential aged care facilities.
- i. Alternative and more responsive discharge transport models

4. *Enhanced Referral and Transfer arrangements*

Moving patients quickly from tertiary centres to more appropriate facilities (step-down) increases acute bed availability. Every effort should be made to facilitate this process with separation of acute ambulance services from these Inter-facility transfers.

The transport of patients between Queensland Health facilities is covered under a Inter-facility Transfer Agreement between Queensland Health and QAS. There is no effective oversight of bookings or data for road transports. Suggestions for enhancements are covered in the previous section on health related transport.

5. *Improved Hospital Flow Processes*

Across Victoria, NSW and Queensland there has been significant work on improving patient flows. Some examples are;

- a. Hospital Early Warning System (HEWS) in Victoria in 2002. This is an alert system designed to prevent hospital bypass by getting hospitals to identify the signs that ED are nearing their maximum safe capacity and to take steps to ease congestion before critical levels of overcrowding are reached.
- b. Emergency Capacity for Hospitals (ECHO); real time Queensland Health capacity warning system utilising live ED activity data. It is anticipated that this will commence within the next 6 months and has the capability to be shared with QAS.
- c. ED escalation policies. Ipswich Hospital has implemented an ED Staged Capacity Response Procedure which utilises trigger points to avoid occasions of access block, excessive waiting times, ambulance ramping and redirection. Other hospitals have similar processes.
- d. Princess Alexandra, Royal Brisbane and Women's and The Townsville Hospitals have undertaken significant work in uncovering, investigating and providing solutions to hospital patient flow issues.

- e. Queensland Health Winter Demand Strategy 2007. This has a wide ranging raft of demand management strategies as well as winter specific strategies;
 - § Maximise bed availability by increasing bed numbers
 - § Maximising staff availability
 - § Reducing avoidable hospital admissions through community and hospital-based programmes
 - § Reducing the number of nursing home-type patients through arrangements with nursing homes
 - § Improve patient flow, bed management practices and discharge facilitation
 - § Maintain existing service through collaboration with the private sector.
 - f. Queensland Health Clinical Practice Improvement Centre has established a Process Redesign Taskforce to identify strategies to improve patient flows within Queensland Health. The three Area Health Services have appointed Patient Flow Officers and funded Patient Flow Projects and Units.
 - g. Integrated Bed Management Systems. Victoria is exploring the feasibility of an integrated statewide bed management system that will provide the capability for live organisation wide monitoring and management of bed capacity. This information would ideally be shared and integrated to ambulance services (Victorian Government 2007)
 - h. In the UK, following the setting of ED Treatment Time key performance indicators, (patients must only remain in the ED for < 4 hours) with associated financial penalties, patient flow has markedly improved.
6. *Balancing Elective and Emergency Workload.*
 Emergency workload via the ED is highly predictable, specifically across metropolitan areas. An appropriate balance needs to be maintained to meet the demands of both emergency and elective services. Better ways of tailoring elective treatment with predicted emergency demand needs to be explored. Hospitals dealing specifically with elective surgery are one way of ensuring emergency capability within the acute sector.
 Funding models currently focus attention on elective surgical targets, not emergency care provision

It is highly evident from the examination of national and international literature that integrated immediate, short, medium and long term strategies for reform of the entire health system, including ambulance services, is required to improve the sustainable flow of patients from arrival at a hospital ED through to discharge.

Summary

Access block and now ramping are increasingly and consistently affecting Queensland Health major EDs and the QAS.

Access block is the main determinant of ED overcrowding and is associated with ambulance diversion and ramping, poor ED performance, patient adverse events, prolonged inpatient lengths of stay and increased patient mortality.

Reducing access block, by improving hospital inpatient flow, is the single most important strategy in better managing the flow of patient through the ED, reducing ambulance diversion and ramping, reducing overcrowding, improving ED waiting times, reducing staff and patient risks and ultimately improving patient care. Despite action by Queensland Health on recognising patient flow issues, a more coordinated state-wide policy direction is required. Integration of systems, processes and data is required

ED overcrowding is not solely a Queensland problem. It is a worldwide phenomenon in all westernised health care systems.

QAS are significant players in the arrival of patients to, and removal of patients from, hospitals. A more responsive discharge and transport system is needed. However, there are currently limited shared electronic data between Queensland Health and QAS regarding ED activity, hospital capacities, patient demographics or clinical records. Nor is there shared or compatible electronic data between Queensland Health and QAS surrounding the Inter-facility Transfer or discharge of patients by road.

Chapter 7 – Intersection with the Health System Recommendations

Recommendation 7.1

QAS and Queensland Health implement improved data collection, information sharing and coordination systems to:

- monitor the level of inter-facility transfers provided under the service level agreement with Queensland Health;
- establish better clinical coordination processes for all urgent inter-facility transfers both road and aero-medical including coordination of clinical escorts;
- provide QAS with information on emergency workloads and inpatient capacity as early as possible when transporting patients to public emergency departments;
- implement an enhanced clinical governance system for all patient transports addressing patient satisfaction, complaints, clinical audit, and safety and quality measures; and
- report on a quarterly basis to the Government on key indicators including off-stretcher time, access block targets and treatment time in emergency departments.

Recommendation 7.2

Queensland Health is to introduce improved processes for managing patient flows, in particular access block in emergency departments, including better alignment of staffing with need, mapping tasks and workflow, implementing fast track treatment programs where appropriate, streamlining and improving discharge systems, and enhancing referral and transfer arrangements.

Recommendation 7.3

The option of having the QAS integrated organisationally with Queensland Health be considered in the medium to longer term in the event demand management and QAS/Health services integration measures do not deliver appropriate results.

Chapter 8 – Future Funding Strategies

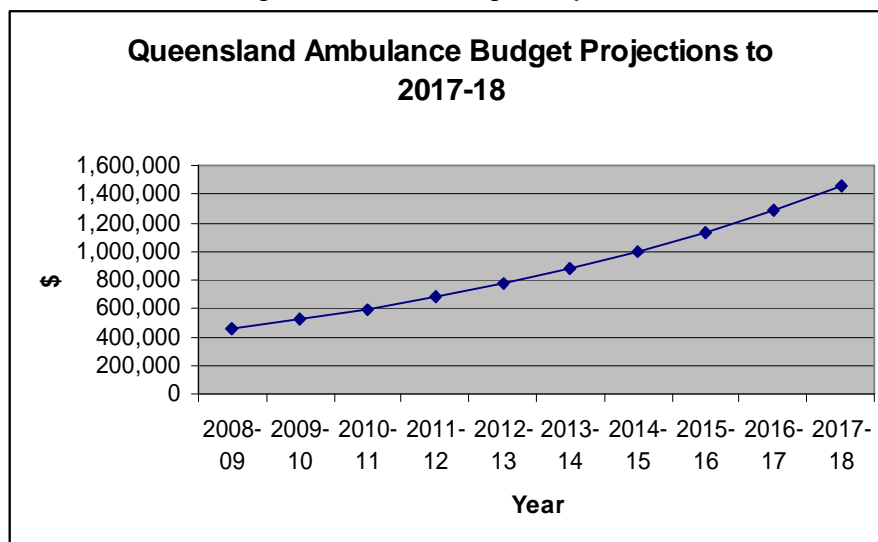
Future Funding Requirements

This section of the report deals with the future funding needs of the Queensland Ambulance Service. These have been assessed with reference to the level of projected demand for ambulance services as well as potential service delivery and efficiency improvements that have been identified by the Audit.

Projections of Future Requirements

As outlined in previous sections, the ambulance budget has grown by an average of 10% per annum for the last several years rising to around 14% per annum over the last couple of years. Projecting expenditure based on the last two year's budget growth results in the QAS budget almost tripling to more than \$1.4 billion in the next ten years as shown in the graph below.

Figure 8.1: QAS Budget Projections



Source: Queensland Treasury

As noted in previous sections of the report, the Community Ambulance Cover levy is providing a decreasing share of the overall ambulance budget as growth in the CAC levy fails to keep pace with increasing demand for services. Instead, the QAS is becoming increasingly reliant on government funding to meet its future funding needs. As a result, the QAS seeks enhancements to its budget as part of the annual budget process. To an extent, this limits its ability to forward plan to meet future service delivery requirements as budgets are adjusted each year and there is no longer term funding certainty.

Alternative Approaches

There are two main alternative approaches to calculating the level of growth funding to be provided to the ambulance service each year. The first approach can be referred to as a needs based funding approach. This approach involves assessing the perceived “need” of the community for ambulance services and developing a growth factor which reflects that need. For example, measuring growth in the population and the impact of changing structures such as the mix of young and old people can provide a broad indication of changes in the need for ambulance services. This is the general approach adopted by the Commonwealth for funding public hospital services.

The other main approach is to fund organisations based on the number of services they provide, the so-called output based funding approach. Under this approach, a service delivery agency's budget varies each year in line with changes in the number of services provided, with increased funding for additional services and reduced funding if service delivery levels fall. This approach has the advantage of providing a close linker between actual service delivery and the level of funding but has an in-built incentive for the organisation to simply produce more services to attract more funding regardless of community need.

The Queensland Ambulance Service had previously undertaken work on a funding methodology for ambulance consistent with an output based funding approach. This work centred on the concept of an economic unit of supply which comprised a mix of inputs including ambulance paramedics, communications staff, administrative support, vehicles and equipment rolled into one package. This concept is discussed in more detail later in this section.

In the Audit's view, it is preferable to fund the ambulance service on a basis which reflects the community's need for services rather than on the basis of the number of services supplied by the agency. This removes any incentive for the ambulance to over-service while at the same time recognising the need to provide adequate funding linked to the community's need for services.

Currently, the QAS has the following level of growth factored into its forward estimates.

Table 8.1: QAS Forward Estimates

Forward Estimates	Year				Growth
	2007-08	2008-09	2009-10	2010-11	
	(\$'000)	(\$'000)	(\$'000)	(\$'000)	
Total Revenue	409,676	426,448	436,782	450,563	10.0%
Total Expenses	404,561	420,684	430,970	445,401	10.1%
Operating result	5,115	5,764	5,812	5,162	

Source: Queensland Treasury

This provides for an increase of around 3.5% per annum or 10% over the next four years well short of the past level of growth in revenues and expenditure. As noted previously, the QAS has tended to underestimate its own source revenue particularly from user charges and grants.

In the Audit's view, it would be reasonable to apply a health type growth factor to funding for ambulance services as a means of providing greater funding certainty and a formula which provides incentives for the QAS to operate efficiently and effectively.

Queensland Health currently receives growth funding based on population growth adjusted for age and sex plus a utilisation factor which recognises people's increasing usage of hospital services. While this factor allows for increased demand for services, it does not take into account the increasing costs of providing ambulance services. The Audit considers that ambulance should receive a growth factor which accounts for increasing costs associated with wage rises and growth in supplies and services costs as well as demand growth costs. This would provide greater certainty and predictability and in particular allow the QAS to plan on a longer term basis for the training and recruitment of additional staff.

Currently, the government's enterprise bargaining framework allows for 4% per annum wage increases. This factor can be applied to the salaries and wages component of the

ambulance budget such that QAS then has the direct incentive to manage EB negotiations in the best interests of the organisation and its staff.

With respect to the supplies and services budget, this has experienced significant growth suggesting costs are in excess of general CPI movements. Given that ambulance is required to purchase medical equipment, drugs and other patient consumables as an essential part of service delivery, applying a health type CPI measure to this component of the budget would be a reasonable approach.

This would result in a composite cost and volume based index being applied to the relevant overall budget as follows:

Cost Factors

- Wages cost factor to wages expenditure (estimated 71% of total budget) plus
- Health CPI factor to supplies and services (estimated 20% of the budget)

Plus

Demand Factor

- Population growth and ageing factor to total budget excluding depreciation, loss on sale of assets (estimated 92% of total budget) plus
- Health usage factor to total budget excluding depreciation, loss on sale of assets (estimated 92% of total budget)

This would give an overall budget growth indexation factor of around 7.5% per annum which is reasonable given the level of population growth and other cost factors faced by the ambulance service.

How Should Funding Be Applied?

This type of funding approach presumes that the QAS is best placed to decide on where resources are allocated to meet service demands. This contrasts with the traditional input based budget approach where governments provide funding for a specified number of inputs such as ambulance officers and vehicles and the agency has limited flexibility to alter the mix of inputs to achieve service delivery outcomes.

The QAS has developed the concept of an economic unit of supply costs as the basis of resource allocation. One unit of supply costs around \$14.7M in recurrent costs. This provides a total of 118 additional staff as follows:

- 70 extra paramedics;
- 7 communications officers
- 12 clinical, supervisory and support staff; and
- 29 operational support positions to cover statutory relief.

It also covers the costs of supplies and services, vehicle running costs, some equipment and a contribution to corporate overhead costs.

The Audit considers it would be preferable for corporate overhead costs to be funded separately and that it is not appropriate to assume that these costs should increase proportionately in line with increasing staffing numbers. However, it also recognised that overheads will need to increase eventually if there is a continued increase in service delivery staffing numbers. It is therefore recommended that a stepped approach be adopted wherein corporate overheads are adjusted after a certain threshold level is reached.

Alternative Funding Approaches for the Queensland Ambulance Service

This section of the report deals with alternative approaches to funding for ambulance services which may be able to improve the financial viability of the service and reduce the funding pressures being experienced.

The Audit has canvassed a range of different funding options including maintaining and enhancing the current budget arrangements through to abolishing the CAC levy and introducing user charges which could potentially be covered by private health funds.

Impact of Funding Arrangements on Choice of Service

The type and level of financial support for ambulance services can influence both the consumption of services and the capacity of the system to meet demand for services. In particular, the way in which services are funded can have a major impact on decisions by consumers about what type of service they use and from whom they acquire those services.

The current funding arrangements for ambulance essentially mean that all ambulance services are free of charge at the point when people use the service. With a free service, there is an obvious incentive to use that service if faced with a decision to use another service for which there is an up-front cost. For instance, it is likely that a number of patients would choose to use a taxi service if this was also free of charge like ambulance services.

However, all non-urgent ambulance transports must be medically authorised and to an extent this assists in ensuring that these services are not over-used. Code 1 and 2 emergency ambulance responses, on the other hand, are sent whenever anyone rings "000". There is no clinical assessment of the patient at the point of call to determine whether they could be better treated by another health provider or referred to the non-emergency ambulance transport service.

Policy Challenges and Objectives

The fundamental challenge is to design a funding system that supports the most appropriate type of response to a person's health care needs. Given the demand pressures on the system, it is particularly important to ensure that ambulance services are available for people who are genuinely ill and that highly trained paramedics and fully equipped ambulances are not being diverted to deal with relatively minor complaints.

The Audit has focussed its attention on examining the implications of a number of key alternative funding strategies for ambulance. The key policy objectives in assessing this particular aspect of the review have been:

- to ensure that funding and payment arrangements encourage the right type of service for people when and where they need it;
- that the capacity of people to pay for the service is taken into consideration; and
- that wasteful and unnecessary consumption of services is limited.

Key Alternative Funding Options

The main options being considered are:

- Option 1 – Continue current arrangements
- Option 2 – Abolish CAC levy and fund through increase in Medicare levy
- Option 3 – Abolish CAC levy and replace with user charges covered by private health insurance
- Option 4 – Retain and/or reduce the CAC levy and introduce a co-payment

The remainder of this section of the report deals with the implications of each of the options being considered, their advantages and disadvantages and associated cost and revenue impacts.

Option 1 – Continue current arrangements

As noted in previous sections of the report, the current funding arrangements for the QAS involve a mix of funding from different sources including government funding from the general Consolidated Fund, funding raised by the CAC levy, and various user charges revenues associated with payments from third parties including Queensland Health, the Department of Veterans Affairs, private companies and individuals.

Rationale for Levy

The levy was introduced at a time when there was growing concern about the viability of the ambulance subscription scheme and its ability to support the ongoing funding of ambulance services. Membership of the scheme had been in decline for a number of years and private health funds were providing coverage for ambulance services as part of their overall products causing more and more people to leave the scheme. The service was also suffering from continued high levels of bad debts from charges levied on people who were not ambulance subscribers. At the time, the CAC levy was introduced, the level of bad debt in QAS had averaged around 20% to 30% per annum.

The levy was seen as an alternative funding source for ambulance services that would provide greater security and certainty of revenue than the previous arrangements. It essentially provided a universal mandatory ambulance subscription scheme for the Queensland population with the amount of the levy roughly approximating the cost of a family subscription to the ambulance service which was around \$90 at the time the CAC was introduced.

It is important to emphasise that the levy was never intended to cover the full cost of ambulance services. It essentially replaced the subscription scheme and a portion of user charges revenue and now covers about one third of the total costs of providing ambulance services to the general community.

The levy was also intended to provide a sustainable funding source for ambulance services based on the fact that it would grow in line with increasing numbers of households (as evidenced by increasing numbers of electricity account holders) and by the general costs of inflation. To date, the levy has grown by an average of 4% per annum while the ambulance budget has grown by roughly 10% per annum. The gap between the two is currently being met from general government sources and will need to continue to be met into the future given the Government's commitment that the levy will not increase by more than CPI.

Advantages/Disadvantages

The advantages of this option are that it provides an ongoing mix of funding for the service most of which is guaranteed by Government. The levy has now been in place for over four years and is accepted by the community as a legitimate funding mechanism which helps support ambulance services.

The combination of a specific purpose levy and general government funding also recognises the community wide benefits of having a level of preparedness of ambulance services available across the State. In this sense, ambulance services can be viewed as a merit good where the Government considers that the broader benefits of using the service are

such that it should not be left to individual consumer preferences but funded more broadly by the Government and taxpayers.

The main disadvantage of this option is that the absence of any price signal is clearly putting upward pressure on demand for ambulance services and leading to over-servicing and poor use of public resources. The levy is also a flat regressive tax with no link between payment of the levy and usage of ambulance services. For example, single households pay the same amount as families regardless of how many more services they may use. There are also anomalies with payments for the levy being attached to items such as billboards and people paying on their business as well as place of residence.

Option 2 – Abolish CAC levy and Fund through Increase in Medicare levy

This option would involve abolishing the CAC levy and having ambulance services funded via an increase in the Medicare levy.

Key Features

The Medicare levy is a Commonwealth tax on individuals which is collected via personal income tax payments. The current levy is set at the rate of 1.5% of a person's taxable income. Most people have to pay the levy although exemptions apply for people on very low incomes.

A Medicare surcharge is also applied to high income earners who do not have an appropriate level of private health insurance cover. This generally equates to an additional 1% of taxable income on top of the 1.5% base Medicare levy.

The Medicare levy does not currently cover the provision of ambulance services. Instead, it provides a funding base to support payments for medical and other services under the Medical Benefits Scheme (MBS) and funding for public hospital services under the Australian Health Care Agreements (AHCAs) with the States and Territories.

The main barrier to pursuing this option is that it would require a nationally agreed approach since the Medicare levy is a Commonwealth tax and any changes would need to apply across all jurisdictions. While this is likely to present difficulties and represents a fundamental shift in the current coverage arrangements for Medicare, as noted in the ACT report, this should not mitigate against it being seriously considered as an alternative funding option. This is especially the case since ambulance services across most jurisdictions are experiencing funding pressures and are an integral part of the overall health system.

However, it is worth noting that the Medicare levy does not meet the full costs of the services it already covers which would militate against it being extended beyond its current scope. Currently, Medicare levy revenue funds around 41% of Commonwealth health expenditure on medical services and benefits (2006-07), while it funds approximately 17% of total health expenditure at the Commonwealth level. Revenue is expected to grow from around \$6.56B in 2005-06 to \$8.33B in 2009-10, an increase of 27% over the forward estimate period (Source: 2006-07 Commonwealth Budget Paper No.1).

Total expenditure on ambulance services in 2005-06, as estimated in the latest Draft Report on Government Services 2007 from the Productivity Commission, was around \$1.4 billion (note the amount is likely to be understated due to reporting differences between jurisdictions). On the basis of the estimated Medicare levy revenue for 2006-07 and assuming that the current levy revenue is generated through the 1.5% general levy, an increase in the Medicare levy of around 0.3% would raise the \$1.4 billion required to fund ambulance services at this point of time.

Advantages/Disadvantages

The main advantage of this option is that it would provide an alternative funding source for ambulance services that was linked to a broad based progressive tax. In doing so, it would spread the burden of meeting the costs of ambulance services on a more equitable basis than the current CAC levy since the tax is paid by individuals (who are the users of ambulance services not households as is the case with the CAC levy) and is paid in proportion to the amount earned by individuals such that lower income people pay a lower amount than high income earners.

A relatively small increase in the levy would provide sufficient funding to replace funding for ambulance services across all States and Territories and provide them with access to a revenue stream which delivers relatively higher levels of growth than current revenue streams. Directing revenue from the Medicare levy to ambulance services also recognises that ambulance services form an integral part of the overall health system.

The key disadvantage is that as with the CAC levy, simply funding through the Medicare levy, would not of itself assist with ensuring that ambulance services were being used appropriately and avoid incentives for over-servicing unless it was accompanied by some kind of additional charge or consumer co-payment. This would be consistent with the manner in which the Medicare levy contributes to the costs of medical services but does not cover the full amount with patients being required to pay an out-of-pocket expense when they access general practitioner and medical specialist services in the community.

Option 3 – Abolish the CAC Levy and Replace with Coverage by Private Health Funds

Under this option, the CAC levy would be abolished and instead ambulance services would be covered by private health insurance or paid for directly by individuals who choose not to be insured. Private health funds provide coverage for ambulance services in all jurisdictions except Queensland and Tasmania.

Key Features

Currently, 41% of the Queensland population have private health insurance. When the CAC levy was introduced in Queensland, ambulance cover was no longer included in private health fund coverage either as part of a comprehensive health insurance package or as a stand-alone product. The Audit was not able to find any evidence that private health insurance premiums were reduced as a result.

Funding ambulance services through such an arrangement is consistent with the way various non-government health services are currently funded including private hospital services, dental and optometrical services. Its basic premise is that consumers are best placed to determine the most appropriate service to meet their needs and that people who are financially better off should contribute through their private health insurance or out of their own pockets to the costs of ambulance services.

This is the option currently under consideration in Tasmania. Tasmania is the only other State apart from Queensland which does not have some form of consumer payment either through a subscription or transport charge for the use of ambulance services. In the 2007-08 budget, the Tasmanian Government announced it would be introducing an ambulance fee for service.

Mechanisms for Payments from Private Health Funds

Private health funds could contribute to the costs of the QAS in a number of ways if ambulance services were covered by private health insurance. In NSW and the ACT, the Government raises a levy on private health funds linked to overall premium revenue rather than charging privately insured people directly when they use the ambulance service. Levies on private health funds raised around \$120M in annual revenue in those jurisdictions in 2005-06 (Private Health Insurance Administration Council, 2006). The costs are built into health insurance premiums and in the case of NSW equate to around \$54 for a single and \$107 for a family.

The alternative is for QAS to introduce user charges on the privately insured which they then insure against with their private health fund. Ambulance only cover was offered in Queensland prior to the levy and is still available in other States with costs ranging from around \$39 for cover for a single person to \$120 for family cover per annum (with the 30% Commonwealth rebate). Not all funds provide cover for non-emergency services and those that do generally charge a co-payment. Some funds also put limits on the number of services that can be claimed each year.

Full Cost Recovery or Subsidised Fees

The new charges could be based on full cost recovery or at a government subsidised rate. The QAS currently charges non-eligible clients for the use of ambulance services on a full cost recovery basis. These equate to \$888 for an emergency transport, \$330 for a non-emergency transport and \$90.50 for treatment with no transport. Additional kilometric charges are also involved.

Rather than basing the charge on full cost recovery, the charges could be linked to the amount of revenue needed to replace the revenue lost from abolishing the CAC levy. To fully replace estimated CAC revenue to QAS in 2007-08, a fee of around \$330 for emergency transports, \$110 for non-emergency transports and \$50 for attendance and treatment only, would need to be put in place. These lower costs may make providing ambulance coverage a more attractive proposition to health insurers.

If pensioners and concession card holders are excluded under a subsidised user charging arrangement, the fee would need to be much higher at \$570 for an emergency transport, \$300 for a non-emergency transport and \$75 for treatment and no transport. Note these are estimates only of the impacts of different arrangements – further detailed modelling of the charges would need to be undertaken if this option was to be seriously pursued

Rather than exempting pensioners altogether from user charges, the Government could consider subsidising the purchase of health insurance for particular groups under such an arrangement.

Advantages/Disadvantages

The main advantage of this option is that it provides a direct link between the usage of the service by the consumer and the payment received by QAS. As such, it would provide much greater incentives for efficiency and service quality improvements than the current arrangements where QAS receives revenue regardless of how many services it provides or the quality of the services provided. It would also assist in moderating demand as private health insurers would manage the payment of services in the same way they manage funding for other insured health services such as hospital, dental, and optometrical services to avoid excessive or over use.

The main disadvantage is that it requires the agreement of health funds to provide coverage for ambulance services in Queensland something which they ceased to do when the CAC levy was introduced. It also raises the potential problem of bad debts for those people who do not privately insure and for one reason or another do not pay ambulance charges. This was seen as a weakness under the previous arrangements.

Option 4 – Retain current arrangements and introduce a co-payment

Under this option, the current funding arrangements for ambulance services would be maintained but would be accompanied by a consumer co-payment paid by people whenever they use the service. This concept is consistent with the view that the levy is a universal insurance product. Most types of insurance require a financial contribution from the individual using the product or service whether it be the excess paid on a household and car insurance when a claim is made or out-of-pocket expenses for private hospital, dental and other general health services.

Key Features

Under this option, it would be possible to reduce the amount of the levy paid by consumers or the levy could be sustained at current levels and revenue raised by the consumer contribution could be introduced to provide an additional revenue stream for the QAS over and above the levy revenue and other sources.

This option recognises that the main challenge confronting the QAS is the unreasonably high level of demand for services seen over the last few years especially with regard to Code 1 and 2 emergency responses. The audit team has not been able to identify a funding base from general government sources that would match the level of growth in demand currently being experienced for ambulance services in Queensland. While the Medicare levy is a higher growth revenue stream than the CAC levy, both fall short of the actual and projected level of demand for ambulance services in Queensland and would require ongoing subsidy from other sources.

In terms of an amount for such a co-payment, there are a number of issues to consider. Firstly, it would need to be sufficient to ensure that people have an incentive to explore the use of alternative transports such as taxi services. At the same time, it should not be so high as to discourage people in genuine need of an emergency ambulance service from accessing the service.

The issue of whether the co-payment should be charged for all services also requires consideration. Western Australia is the only State that has a co-payment for services which operates in conjunction with its subscription scheme and in that State, the co-payment only applies to the use of non-urgent transports (i.e. Code 3 and 4 transports). Consumers, including those who are subscribers to the ambulance service in Western Australia, are currently charged \$50 for each non-urgent transport service they use.

In the Audit's view, any co-payment would need to operate across all services including emergency and non-emergency services. As noted in the demand analysis section of the report, the most significant growth in demand for ambulance services in Queensland has been in the Code 1 and 2 cases not in the non-urgent cases which are declining in real terms.

Should the co-payment cover all services, then the issue arises as to whether it should be differentiated between emergency and non-emergency services and which particular service should be associated with a higher charge. As noted in the financial section of the report,

the cost of providing emergency transports far exceed the costs of providing non-emergency transports. On this basis, it would be reasonable to charge more for an emergency transport than a non-emergency transport. Patients who are treated and not transported would also need to be considered and again would be expected to be associated with a lower charge as actual costs of these services are lower again.

A co-payment also raises considerations around whether any particular user groups should be exempt from the co-payment. From an economic perspective, it would be best if the co-payment was to apply across the board to all user groups to provide an incentive for appropriate usage. However, the Government may wish to provide a discounted rate for certain groups such as pensioners and health care card holders or exempt them altogether from any user charges.

It is estimated that a relatively modest contribution of \$100 for an emergency service, \$50 for a non-emergency service and \$25 for an attendance could raise an estimated \$41.7M for the QAS and be accompanied by a reduction in the levy paid by households of about one-third. Alternatively, the levy could be retained and consumer payments used to provide an additional revenue stream for the QAS. If pensioners were excluded for these co-payments, the revenue would decrease to around \$22M per annum.

An alternative approach would be to retain the levy in full and only charge for non-emergency services and attendances where there is no ambulance transport required. Charges could be similar to above but the amount of revenue raised would be considerably less. This option could be argued on the basis that the levy should only cover the costs of emergency life threatening ambulance services, not non-urgent transports and other general attendances.

Advantages/Disadvantages

The main advantages of a consumer co-payment or contribution are that it provides a price signal which will affect consumer purchasing decisions about the use of ambulance services. As such, it has the ability to discourage inappropriate or excessive usage of ambulance services. It would also provide a more direct link between the revenue earned by QAS and the level of services provided while at the same time preserving the levy revenue to provide certainty and security of funding.

The key disadvantage is that there would be the potential for bad debts associated with non-payment and the administrative costs associated with putting in place a collection mechanism. It would clearly not be desirable to be requiring patients in emergency situations to pay upfront. Payments would need to be levied on the patient after the service has been provided in the case of emergency ambulance services. However, there may be some flexibility to introduce up-front payments for non-emergency services.

Conclusion

There are a range of funding strategies that can be considered for the QAS going forward. This section has attempted to provide an outline of how each of these options might work conceptually and the advantages and disadvantages of each option. Further work would be required on developing any preferred option prior to implementation.

Chapter 8 - Future Funding Strategies Recommendations

Recommendation 8.1

It is recommended that additional funding to meet increased demand be considered for the 2008-09 Budget and that for future years, the Government adopt a growth factor to apply to the QAS budget which accounts for increasing costs and demand pressures and provides greater certainty for the QAS in planning for service enhancements.

Recommendation 8.2

It is recommended the QAS review its economic unit of supply concept such that escalation for corporate services overheads is not automatically applied when additional funding for services is obtained, noting this would also require review of overheads for the Department of Emergency Services and shared service providers.

Recommendation 8.3

It is recommended the Government consider introducing a payment for ambulance services either in the form of a co-payment (accompanied by a reduction in the CAC levy) or by abolishing the CAC levy altogether and introducing user charges which could then be insured against with health funds if demand measures do not deliver appropriate results.

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Appendices

Terms of Reference Queensland Ambulance Service Audit

Purpose

1. The purpose is to outline the scope of the audit to be undertaken of the Queensland Ambulance Service (QAS) that has recently been announced by the Government.

Background

2. The Queensland Ambulance Service is operating in an environment where the demand for ambulance services continues to escalate at rates well in excess of population growth and the demand for health services generally.
3. The number of urgent ambulance responses (Code 1 and 2) has increased by more than 65,000 responses or 12% over the period 2005-06 to 2006-07 compared to 10% growth the previous year. Early indications are that the level of growth in 2007-08 may be even higher.
4. The Government introduced the Community Ambulance Cover levy in July 2003 to provide greater certainty for the QAS in terms of funding. The CAC levy raises approximately one third of the total revenue provided to the QAS with the majority of revenue sourced from general government funds. The QAS budget has grown significantly from \$253M in 2002-03 to \$404M in 2007-08, an increase of \$151M or almost 60%.

Terms of Reference

5. Given the increasing demand pressures on the service and the significant increase in funding that has been provided, it is important to ensure the QAS is operating efficiently and effectively and that as many resources as possible are being deployed to front line service delivery.
6. A proper understanding of the factors driving the demand for ambulance services is also required to inform the development of options for managing the steadily increasing demand being experienced. These options should include consideration of funding models for the QAS to provide a sustainable funding base for the service.
7. The key tasks/activities to be undertaken as part of the review are summarised below.

Demand Analysis and Strategies for Managing Demand

- Examine trends in the demand for ambulance services in Queensland and identify all the factors driving demand;
- Undertake modelling of the relative impact of various demand factors and develop projections of the future demand for ambulance services;
- Undertake detailed benchmarking to compare Queensland's performance with other jurisdictions; and
- Develop a broad range of options to address and manage demand for Government's consideration.

Budgetary and Resource Allocation Assessment

- Undertake a detailed examination of the QAS budget and the various funding sources which make up the budget;
- Identify the specific services and activities undertaken by the QAS and the resources allocated to those services/activities;
- Assess trends in expenditure at the global level and across the various service delivery areas including salary and non-salary related expenditure;
- Undertake detailed benchmarking to compare Queensland's performance with other jurisdictions; and
- Develop strategies for improving the efficiency of service delivery and resource allocation.

Workforce Management Systems

- Analyse current workforce management systems including rostering and leave arrangements and identify opportunities for improvements;
- Assess industrial relations risks and develop strategies for addressing those risks;
- Examine methods for matching workload and staffing across the various service delivery areas and identify areas for improvement; and
- Undertake benchmarking with other jurisdictions including levels of staffing and labour productivity indicators.

Organisational and Service Delivery Model

- Across the State, assess the suitability of the current service delivery model and overall organisational effectiveness in responding to the increasing demand for services;
- Review administrative and overhead costs (including growth in non-front line costs) to ensure that as many resources as possible are being directed to operational service delivery;
- Analyse performance with respect to service quality and responsiveness; and
- Identify areas for improvement where necessary.

Intersection with the Health System

- Examine opportunities to refer inappropriate calls to 13 HEALTH;
- Explore alternative service delivery mechanisms for those patients who require attention, but who do not necessarily require an urgent ambulance response;
- Develop options to enhance the resources and coordination of patient transport services to provide more efficient and timely responses to health related transport including transfer of patients between hospitals; and
- Explore with Queensland Health a range of initiatives to better manage the flow of patients through hospital emergency departments.

Roles and Responsibilities

8. The audit will be undertaken by Queensland Treasury and the Department of the Premier and Cabinet with the assistance of the Acting Director-General of the Department of Emergency Services.

9. A dedicated project team will be established to conduct the audit within Queensland Treasury. The team will be led by a Senior Treasury officer. The project team will engage external consultants to provide technical advice and expertise especially with regard to financial/budgetary analysis, modelling expertise on the demand issues, benchmarking with other jurisdictions, and the development of alternative revenue/funding models.
10. The Acting Director-General will provide specific input to workforce management and industrial relations matters. A Senior Queensland Health Officer will assist the acting Director-General on the issues regarding the interface between the QAS and Queensland Health.

Timing

11. The audit is to commence immediately and to be completed by the end of November. Any funding implications arising from the review will be considered at Mid Year Review.

Governance

12. The audit will be overseen by a Steering Committee comprising the Director-General, the Department of the Premier and Cabinet, the Under-Treasurer, Queensland Treasury, the Acting Director-General, the Department of Emergency Services and the Director-General of Queensland Health.

Appendix 2

Profile of Patients attending Royal Brisbane Hospital - Pre and Post CAC Levy

The following has been reproduced from the PricewaterhouseCoopers (PwC) report prepared for Queensland Treasury as part of the QAS Audit. PwC replicated a recent study which analysed whether the abolition of direct patient fees in 2003 for ambulance transport led to increased ambulance use by patients with low illness acuity and admission rates (Ting and Chang, 2006).

The study by Ting and Chang assessed the influence of age, illness, acuity, and need for admission on ambulance use for 55,397 emergency department attendances to the Mater Adult Public Hospital in 2002 and 2004. Ambulance users were compared with non-users in both years and attendances for 2002 compared with 2004 using chi-square test for two groups.

Ting and Change (2006) concluded that ambulance use increased in 2004 after patient transport fees were abolished. Increased use was associated with decreased age, clinical acuity, and admission need. Abolishing direct patient cost stimulates ambulance use, potentially including inappropriate transport. Path analysis to assess the effect of changed funding on ambulance use could be used to the influence of other locally relevant factors contributing to ambulance use.

The study by Ting and Chang has been subject to critical review with the key issue being whether the admissions to the Mater Hospital are representative of the demand profile exhibited by other large tertiary hospitals in Queensland. Therefore, as part of this review, the Chi Squared Test methodology featured by Ting and Chang was replicated for a sample of admissions to the Royal Brisbane Hospital.

A sample of 65,535 cases was taken from admissions to the Royal Brisbane Hospital during the 2002-03 financial year and also during the 2004-05 financial year. The data are described in terms of:

- § mode of arrival (ambulance and non-ambulance);
- § day of arrival (weekday or weekend);
- § arrival time (day or night);
- § acuity - Australian Triage Score (1-5, with 5 being least urgent);
- § gender; and
- § age.

The table below shows the results of the Chi Squared test on the two samples. The Chi Squared test is used to examine changes to the distribution of patients traveling by ambulance and by other means. The test examines whether the distribution of data in 2002-03 was the same as in 2004-05. A high Chi-Square value is associated with a low P-value. Where a P-value is below 5% it can be concluded that the distribution in 2004-05 is different.

Variable		For all patients				For ambulance patients			
		Frequency		Chi Square	P-Value	Frequency		Chi Square	P-Value
		2002-2003	2004-2005			2002-2003	2004-2005		
Arrival Mode	Ambulance	24.6%	32.4%	983.3	0.00				
	Other	75.4%	67.6%						
Day	Weekday	73.6%	73.1%	3.8	0.05	71.4%	69.9%	10.6	0.00
	Weekend	26.4%	26.9%			28.6%	30.1%		
Arrival Time	Day	70.9%	69.2%	45.2	0.00	63.5%	61.7%	13.0	0.00
	Night	29.1%	30.8%			36.5%	38.3%		
ATS	Most Urgent 1	0.9%	1.3%	190.7	0.00	3.2%	3.7%	204.3	0.00
	2	11.2%	11.4%			22.9%	19.0%		
	3	42.4%	44.5%			60.1%	58.9%		
	4	29.2%	28.9%			13.2%	17.2%		
	Least Urgent 5	16.2%	13.9%			0.6%	1.2%		
	ATS 1-3	54.6%	57.2%	91.803	0.00	86.2%	81.6%	141.1	0.00
	ATS 4-5	45.4%	42.8%			13.8%	18.4%		
Gender	Male	52.7%	52.3%	2.3	0.13	49.1%	51.6%	23.3	0.00
	Female	47.3%	47.7%			50.9%	48.4%		
Age	0-17	4.1%	4.2%	43.5	0.00	3.5%	3.4%	189.4	
	18-24	18.2%	18.2%			11.5%	13.9%		
	25-34	22.9%	23.2%			14.2%	16.0%		
	35-44	15.5%	15.6%			12.2%	13.0%		
	45-54	11.9%	12.1%			11.2%	12.0%		

Variable		For all patients				For ambulance patients			
		Frequency		Chi Square	P-Value	Frequency		Chi Square	P-Value
		2002-2003	2004-2005			2002-2003	2004-2005		
	55-64	8.7%	9.3%			9.5%	10.2%		
	65-74	7.1%	6.7%			10.5%	9.0%		
	75+	11.5%	10.8%			27.5%	22.5%		
	0-54	72.6%	73.3%	6.852	0.01	52.6%	58.3%	124.1	
	55+	27.4%	26.7%			47.4%	41.7%		

Results

The results of the Chi Squared Test shown above indicates that there was a statistically significant increase in the proportion of patients traveling to hospital by ambulance and an increase in the proportion of patients with a low Triage Score (i.e. more urgent). However, the proportion of ambulance users who had a high Triage Score (i.e. less urgent) increased significantly. This indicates that while the hospital was dealing with proportionally more urgent cases, ambulances were being used by proportionally less urgent cases.

There was also a statistically significant increase in the proportions of patients admitted by ambulance during nights (between 8PM and 8AM) and during weekends. This is possibly as a result of reduced availability of GP and other health services during these hours. There was no significant change in the figures for patients who did not travel by ambulance.

The results also indicate there was a statistically significant increase in the proportion of ambulance travelers aged 18-54 years (there was a less pronounced increase in the proportion of non-ambulance users in this age group). There was also a statistically significant increase in the proportion of ambulance users who were male (not reflected in overall admissions to hospital).

Ambulance Service Structures and Funding Models in Other Jurisdictions

New South Wales

Structure/Governance

The Ambulance of New South Wales is a Public Health Organisation within the NSW Health system. The Ambulance Services Advisory Council provides advice to the Director-General of Health in relation to the provision of ambulance services. The governance functions of the former Board of Directors are now carried out by the Chief Executive.

The Service covers all urban areas and the majority of rural areas in NSW through its four main divisions: Sydney Division, Northern Division, Western Division and Southern Division.

Funding

The Service had revenues of \$425.468M in 2005-06 comprising:

Percentage	Funding Source
75.14%	NSW Government contributions
21.27%	Transport fees (Patient transport and bulk agreements with hospitals, accident authorities and other organisations)
1.94%	Other revenue (adjustments and bad debt recovery)
1.41%	Grants and contributions
0.25%	Investment income

Ambulance of New South Wales Annual Report 2005-06

Government Funding

The Service is a budget-dependant government entity and receives appropriation through NSW Health from consolidated funds for recurrent and capital purposes.

A Private Health Insurance Levy (HIL) is also channelled through government funding. The HIL is paid directly to NSW Treasury by health insurance providers. The cost of the levy is built into the health insurance premiums. The current HIL rate from 1 February 2007 is \$1.12 per week per single, which amounts to \$58.24 per annum. In 2005-06, the levy raised approximately \$108M for the Office of State Revenue NSW (Office of State Revenue NSW Annual Report 2005-06). The HIL system effectively replaced the previous Government Ambulance Subscription Scheme in 1982.

Transport Fees

This own source revenue is derived from transport of uninsured and non-exempt patients. Pensioners and welfare recipients are not charged for services and neither are insured individuals, as the HIL already provides for cover (as discussed above). Transport fees raised approximately \$90.5M for the Service in 2005-06.

Transport fees are based on a callout and distance travelled structure. For a NSW resident or residents of other states with reciprocal agreements with NSW the callout fee is \$256 and a \$2.31 per kilometre charge applies (maximum charge is \$4,601).

Bulk Agreements

The Service also derives revenue from individually negotiated bulk agreements for transport with a number of public organisations such as WorkCover, Motor Accident Authority, Department of Veteran Affairs (DVA) and some Area Health Services.

Victoria

Structure/Governance

Victoria is serviced by three ambulance service providers, each covering a distinct geographic area; Metropolitan Ambulance Services (MAS), Rural Ambulance Victoria (RAV) and Alexandra & District Ambulance Services (ADAS). The main providers are MAS and RAV, with ADAS providing only a marginal number of ambulance services.

MAS and RAV are statutory government owned corporations and are funded through three year Service Agreements with the Victorian Government. For both Services, organisational management is vested in the Chief Executive Officers and an executive team, the Board of Directors is accountable to the State Government through the Department of Human Services and Minister for Health for the overall performance.

ADAS is a self-funded organisation with minimal government support and covers a very small area of Victoria. ADAS relies heavily on volunteer labour and its main revenue source is donations.

The Metropolitan Ambulance Service & Rural Ambulance Victoria Funding

MAS had revenues of \$252.084M in 2005-06 comprising:

Percentage	Funding Source
60.65%	Government grants
18.82%	Subscription scheme revenue
18.31%	Transport fees
1.49%	Interest revenue
0.48%	Ancillary revenue (First Aid training and merchandise)
0.25%	Other income (primarily donations and bequests)

MAS Annual Report 2005-06

RAV had revenues of \$159.692M in 2005-06 comprising:

Percentage	Funding Source
59.89%	Government grants
19.41%	Transport fees
15.84%	Subscription scheme revenue
1.79%	Other income (primarily recoveries, donations and bequests)
1.58%	Interest and rental revenue
1.49%	Ancillary revenue (First Aid educational services)

RAV Annual Report 2005-06

Government Funding

The Services receive grants and indirect funding from the Victorian Government, primarily from the Department of Human Services Victoria.

Subscription Schemes

MAS and RAV both offer membership subscription schemes. In 2005-06, the MAS subscription scheme raised \$47.45M and the RAV subscription scheme raised \$25.29M.

MAS membership costs \$60 for singles or \$120 for families and provides cover for all emergency ambulance transport, including specialist services such as air ambulance transport, new-born emergency transport and the mobile intensive care paramedic service. RAV membership also costs \$60 or single or \$120 per family and subscribers are fully covered for the cost of ambulance treatment and transport costs.

Transport Fees

The Services also gain significant revenue from transport fees charged to non-member and non-exempt individuals. Pensioners and welfare recipients are not charged for the services. MAS and RAV both receive income from transportation agreements with hospitals, the Transport Accident Commission and WorkCover. In 2005-06, MAS and RAV had revenues from transport fees of \$46.16M and \$31.00M respectively.

The MAS transport charge structure is complex. The metropolitan attendance fee is \$249.17 and the metropolitan emergency-transport fee is \$825.73. Metropolitan non-emergency stretcher/clinical car transport fees are charged on to a base fee plus distance travelled basis. Fixed wing and helicopter transports are charged a base fee for the first hour then by each additional minute.

The RAV transport charge structure is also complex. The rural attendance fee is \$249.17 and the rural emergency road transport is charged at a flagfall of \$855.09 with additional charges calculated by distance and/or time travelled. Rural non-emergency stretcher/clinical car transport fees are charged on a base fee plus distance/time travelled basis.

South Australia

Structure/Governance

The South Australian Ambulance Service (SAAS) is an Incorporated Association, which has been part of the SA Government since 2003-04. SAAS reports through to the Department of Health and the Minister for Health.

Funding

The Service had revenues of \$111.798M in 2005-06 comprising:

Percentage	Funding Source
46.11%	SA Government contributions
35.07%	Transport fees
14.43%	Subscription scheme income
2.66%	Operating and other revenue (bad debt recovery, interest, donations)
1.73%	'Call Direct' (24-hour monitoring personal emergency service)

SAAS Annual Report 2005-06

Subscription Schemes

SAAS Ambulance Cover covers all ambulance transport costs, both emergency and non-emergency for subscribers. There is a concession subscription rate for pensioners, with the subscription scheme costing \$56.00 per single (\$35.25 for pensioners) and \$111.00 per family (\$70.50 for pensioners) per annum.

Ambulance Cover Extra (ACE) is available to those individuals who have private health insurance, but still require a cover for non-emergency transports, which is not covered under private health insurance policies. The ACE annual fee is \$14.60 per single or \$29.20 per family per annum.

The subscription scheme raised \$16.14M for the Service in 2005-06.

Transport Fees

Transport fees are charged to non-SAAS Ambulance Cover members and larger organisations such as hospitals, DVA and the Motor Accident Insurance (MIA), and resulted in \$39.20M revenue in 2005-06.

Transport fees are charged on a callout and a distance travelled structure. Code 1 emergency cases are \$688 per callout plus \$4 per kilometre travelled and Code 2 emergency cases are \$496 per callout plus \$4 per kilometre travelled. Various charges also apply to non-emergency, air ambulance and treat-without-transport services.

Community Emergency Services Fund

Before 2003-04, SAAS was part of the Department of Justice and received part of the Emergency Services levy collected from citizens. As part of the SA Government contribution, SAAS still receives a small portion of this levy revenue (approximately \$1M per annum) from the Community Emergency Services Fund.

Western Australia

Structure/Governance

St John Ambulance WA is a non-profit entity and is part of the international St John organisation. St John administers the ambulance service in the entire state and the WA Department of Health, on behalf of the WA Government, holds a five year contract with the Service.

The governing body of St John Ambulance WA is the St John Ambulance Council. The Service is divided into two divisions; the Perth Metropolitan Division and the Country Region Division, and makes use of volunteer labour.

Funding

The Perth Metropolitan Division had revenues of \$79.099M in 2005-06 comprising:

Percentage	Funding Source
38.89%	Ambulance service income
37.97%	Government funding
8.16%	Other (unspecified)
7.91%	Industrial Paramedics Service transport fees
7.07%	First Aid training revenue

St John Ambulance WA Annual Report 2005-06

The Country Region Division had revenues of \$20.388M in 2005-06 comprising:

Percentage	Funding Source
38.35%	Ambulance service income
18.97%	Government funding
13.34%	First Aid training revenue
10.57%	Grants
9.56%	Other (unspecified)
9.23%	Benefit Fund

St John Ambulance WA Annual Report 2005-06

Surpluses generated are applied to capital works, to ensure buildings, vehicles and equipment are maintained.

Government Funding

The Service holds a five year contract, including case related payments, with the WA Government. In 2005-06, free ambulance services were introduced for pensioners. This free

service is funded directly by the Government and resulted in \$13.6M revenue to St John WA in 2005-06.

Subscription Schemes

There are separate subscription schemes for metropolitan and rural areas.

The Metropolitan scheme is operated by the Health Benefit Fund and costs \$39 for singles and \$78 for families per annum. All services are covered by the scheme, however, a co-contribution of \$50 is charged for using services where the patient is not admitted to a hospital emergency department.

St John administers the country scheme, which is only available to residents in particular areas and information on the cost of membership is only available for residents in the relevant areas. All services are fully covered by the scheme.

Industrial Paramedics Service Transport Fees

The Service currently has seven industrial paramedic contracts covering 16 resource sites. The Service considers that there is considerable growth potential in this area due to the state's resource boom.

In 2005-06, Industrial Paramedics Service resulted in \$6.46M revenue, while the provision of other ambulance services to the general public generated income of approximately \$38.58M.

Tasmania

Structure/Governance

The Tasmanian Ambulance Services (TAS) is the main provider of ambulance services in the State. TAS is a division of the Department of Health and Human Services (DHHS) in Tasmania. TAS has three operational regions each headed by a Regional Superintendent. The Service utilises a high proportion of volunteer labour.

There are some alternative ambulance service providers in Tasmania in the form of independent and private ambulance services, such as Glamorgan Ambulance and St John.

Funding

The TAS had revenues of \$27.975M in 2005-06 comprising:

Percentage	Funding Source
87.20%	Government appropriation (recurrent and capital)
11.13%	Transport fees
1.66%	Other (predominantly recoveries)

DHHS Annual Report 2005-06

Ambulance Service Fee

The Tasmanian Government announced in its 2007-08 Budget, that it intends to implement a new Ambulance Service Fee, as of 1 July 2008, to meet additional funding needs resulting from a growing demand for services. To date there is no publicly available information about the collection method and magnitude of the proposed fees.

Transport Fees

Currently, there is no charge for ambulance services for Tasmanian residents and public hospitals, however, transport fees are charged to non-residents.

Bulk agreements

The service has individual bulk agreements for transport with larger organisations such as private hospitals, WorkCover, MAI and the DVA.

Ambulance Levy

In Oatlands, the local government has taken on the responsibility of providing ambulance services. These services are funded by an ambulance levy imposed on rate-payers with the Community and Rural Health Division of DHHS meeting any deficit.

Australian Capital Territory

Structure/Governance

The ACT Ambulance Service (ACTAS) is one of four operational agencies of the Emergency Services Authority (ESA) in ACT. The ESA is a statutory authority with responsibility for providing ambulance, fire (urban & rural) and state emergency services to the territory. The Commissioner of ESA reports directly to the ACT Minister for Police & Emergency Services.

Funding

The ACTAS had revenues of \$19.574M in 2005-06 comprising:

Percentage	Funding Source
94.33%	ACT Government grants
5.13%	Transport fees
0.54%	Miscellaneous (not specified)

Report on Government Services 2007, due to ACTAS financial statements being consolidated into ESA

Health Insurance Levy

Private health insurance holders are automatically covered for ambulance services by an ambulance levy charged to health insurance funds (the levy is built into premiums). From 1 January 2007, the levy is calculated at a rate of \$1.72 per person per week and \$3.44 per family per week. In 2005-06, the levy raised \$7.78M (The Department of Treasury ACT Annual Report 2005-06 (Volume 2)).

Pensioner Concession and Health Care Cardholders are entitled to free emergency and non-emergency ambulance services within the ACT.

Transport Fees

Transport fees are charged to uninsured and non-exempt individuals. In the event that the ambulance transport is a result of a road accident, ACT residents are covered for emergency ambulance services through the road rescue fee levied on vehicle registration. Ambulance transport fees raised \$0.88M in 2005-06.

The charges for ambulance transport are as follows; emergency ambulance service is \$696 plus \$10 per kilometre of travel outside ACT, treat-without-transport service is \$487, non-emergency ambulance services range from \$183-\$498 with an additional charge per kilometre of travel outside of ACT.

Subscription Scheme

The ACTAS subscription scheme is administered by the NIB Health Fund as an ambulance only cover for those who do not have private health insurance. The cost of the scheme is \$31.80 per single and \$63.60 per family per annum.

Bulk Agreement

The Service has bulk agreements for transport with public hospitals and DVA.

Northern Territory

Structure/Governance

St John Ambulance NT is a non-profit entity and is part of the international St John organisation. The Service, under contract with the NT Government, administers the ambulance service in NT. St John NT utilises primarily volunteer labour for service provision.

The organisation comprises essentially two separate entities, one delivering contracted ambulance and associated services, and the other operating the traditional St John volunteer, training and first aid kit sales activities.

Funding

The Service had revenues of \$15.895M in 2005-06 comprising:

Percentage	Funding Source
63.52%	NT Government grants
23.83%	Miscellaneous (not specified)
10.22%	Transport fees
2.43%	Subscription scheme revenue

Report on Government Services 2007, due to St John NT not reporting financial performance publicly

Funding information on the Service is limited due to the organisation being a non-profit entity and not making statements of financial performance publicly available.

From the data contained in the Report on Government Services 2007, the Service appears to receive government funding, subscription scheme revenue and transport fee revenue. Transport fees are charged to non-subscribing residents, non-residents and larger organisations such as WorkCover, MAI and DVA.

Funding Source Summary

Funding Source	Qld	NSW	Vic	SA	WA	Tas	ACT	NT
Government	ü	ü	ü	ü	ü	ü	ü	ü
<i>Universal Levy</i>	ü	ü	ü	üa	ü	üb	ü	ü
<i>Private Health Insurance Levy</i>	ü	ü	ü	ü	ü	ü	ü	ü
Subscription Scheme	ü	ü	ü	ü	ü	ü	ü	ü
Private Transport Fees	ü	ü	ü	ü	ü	ü	ü	ü
<i>Residents</i>	ü	ü	ü	ü	ü	ü	ü	ü
<i>Non-Residents</i>	ü	ü	ü	ü	ü	ü	ü	ü
Organisational Transport Fees (For example: hospitals, WorkCover, MIA, DVA)	ü	ü	ü	ü	ü	ü	ü	ü
Donations and Other	ü	ü	ü	ü	ü	ü	ü	ü

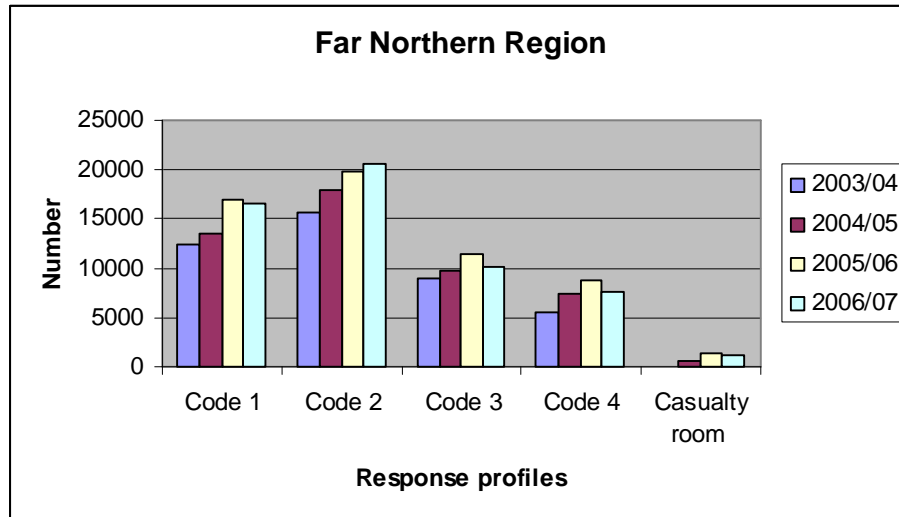
a) An Emergency Service levy is charged in the state of which SAAS receives a small portion

b) A levy exists that is applicable in Oatlands only, where the local government has imposed an ambulance levy on rate-payers.

Snapshot of the QAS Regions

Far Northern

Far Northern Region covers an area of approximately 289,000 square kilometres and a population of around 250,000. While the total number of responses has increased 28.67% since the introduction of Community Ambulance Cover, 2006-07 saw a decrease across all response profiles, excluding Code 2, in 2006-07. In 2006-07, the Queensland Ambulance Service undertook 42,731 responses, and there were 1,090 visits to casualty room facilities in Far Northern Region. The population has grown around 6.5%.



The region is serviced from 26 permanent stations of which seven operate 24 hours a day, seven days a week. There are 22 Queensland Ambulance Service Stations located within 200kms of Cairns and the remaining stations are located at Weipa, Bamaga, Cooktown and Thursday Island. There are three hospital based ambulance stations¹⁷ and Field Offices located at Kowanyama, Coen, Cooktown and Horn Island.

The region has its Headquarters in Cairns and is divided into two areas: Cairns and Coastal and Tablelands, Cape York and Torres Strait.

The Cairns and Coastal area saw strong growth in responses, with an increase since 2003-04 of 35.79%. Code 1 and 4 responses both increased by over 40%.

Growth in the Tablelands, Cape York and Torres Strait was more measured at 10.33% since 2003-04. This rate of growth was impacted significantly by a 19.56% decrease in Code 3 responses in this period.

At June 2007, there were 230.86 FTE staff¹⁸, of which 87% were ambulance or communications operatives. At this time, Far Northern Region was 1.16 positions above its

¹⁷ Hospital based ambulance services are usually associated with a remote area health facility, will be staffed by volunteers and operate under as an interagency services under a Memorandum of Agreement. They have been established as a flexible and efficient way of supplementing scarce emergency health care resources in remote or isolated communities.

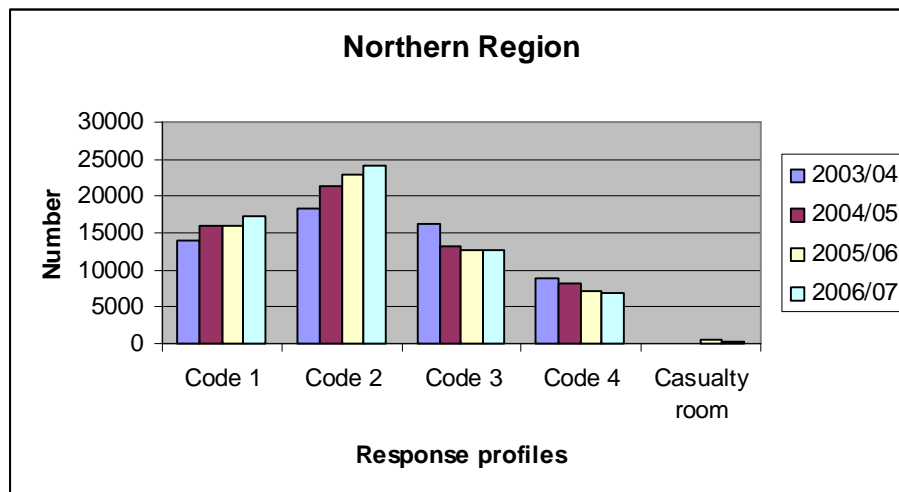
¹⁸ FTEs for all regions exclude the Corporate Services Allocation.

establishment. The region had -5.18 FTE ambulance and communication positions, two additional operational, clinical and infrastructure support personnel and 4.34 additional corporate support personnel.

Northern

Northern Region is the largest of Queensland's seven ambulance regions, covering approximately 1,252,000 square kilometres or over 70% of the state and services a population also of around 250,000. Its major population centre is Townsville, and it includes mining towns such as Mt Isa and Collinsville, several remote Indigenous and island communities and rural agricultural communities.

Total responses in the region have grown by 6.4% since the introduction of Community Ambulance Cover. This overall growth rate hides significant decreases in Code 3 and Code 4 responses and significant growth in Code 1 and 2 responses. In 2006-07, the Queensland Ambulance Service undertook 57,490 responses, and there were 373 visits to casualty rooms in Northern Region. Population has grown 5.5%.



The region has 29 permanent stations and two first responder groups. Three stations in the region operate 24 hours a day, seven days a week. Over a third of the stations operate a ten hour day shift, with officers on call after hours. There are seven hospital based stations.

The region has its Headquarters in Townsville and is divided into two areas: Western and Coastal.

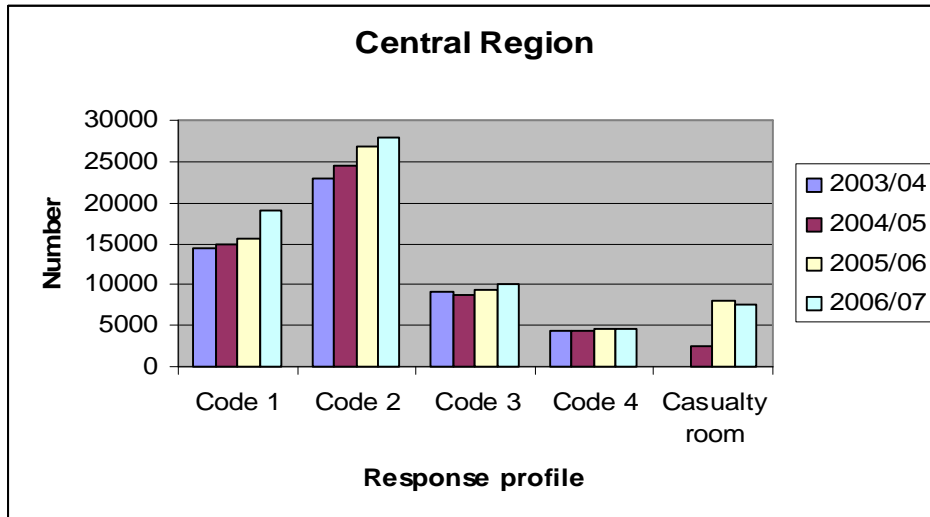
Western area has seen very little growth in its Code 1 and 2 responses; however, Code 3 and 4 responses have increased by 14.7%.

While overall growth in Coastal area was 6.72%, the last four years have seen a significant shift in response profiles. Code 1 and 2 responses have increased by 27.94% and 40.05% respectively, while Code 3 and 4 responses have decreased by 27.17% and 22.17%.

At June 2007, there were 233.7 FTE staff, of which 87% were ambulance or communications operatives. At this time, Northern Region was -6 positions below its establishment. The region had -13 FTE ambulance and communication positions, and seven additional corporate support personnel.

Central

Central region covers approximately 440,000 square kilometres and services a population of around 380,000 people. The majority of the population are based in Mackay, Rockhampton and Gladstone, and the region includes mining towns such as Moranbah and Moura, rural agricultural communities and the tourist destinations of the Whitsundays.



The region has 63 permanent stations and four first responder groups. Seven stations in the region operate 24 hours a day, seven days a week. Over half of the stations operate an eight or ten hour day shift with officers on call after hours. There is one station based at a hospital. In two towns the hospital clinic undertakes responses and in another town responses are undertaken by a nursing service.

There has been a 21.37% increase in responses in Central region since Community Ambulance Cover was introduced. The most significant growth was in Code 1 and 2 responses, while growth in Code 3 and 4 responses was more moderate. In 2006-07, the Queensland Ambulance Service undertook 61,702 responses, and there were 7,601 visits to casualty rooms in Central region. The population has increased by around 7.5%.

The region has its headquarters in Rockhampton and is divided into four regions: Capricornia, Central West, Whitsunday / Mackay and Port Curtis / Callide.

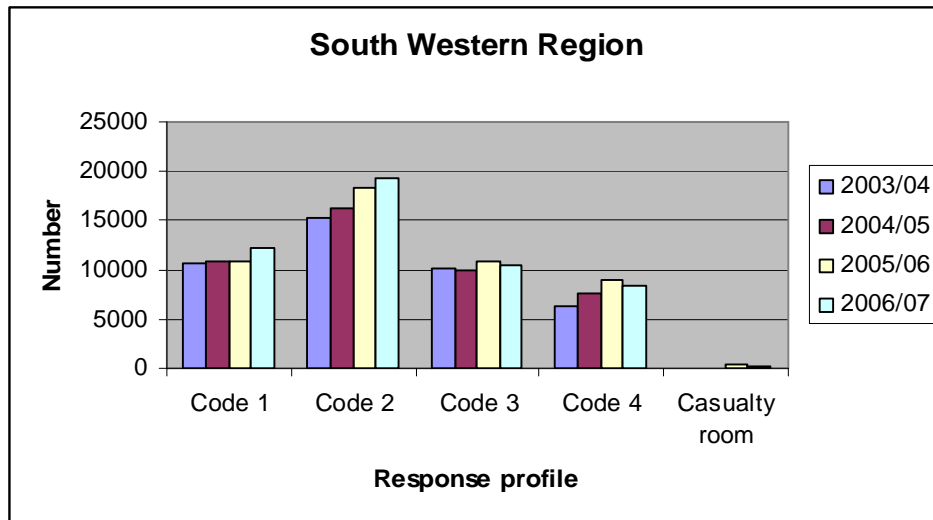
Capricornia has seen decreases across all response codes. Central West, Whitsunday / Mackay and Port Curtis / Callide have all seen increases in responses of around 20%. Code 3 and 4 responses have grown by 32.72% and 44.11% respectively in Central West area, albeit from a low numerical base. The Port Curtis / Callide area has seen a significant shift in its demand profile – with a 53.66% increase in its Code 1 responses and a 41.6% decrease in its Code 4 responses.

At June 2007, there were 346 FTE staff, of which 85% were ambulance or communications operatives. At this time, Central Region was 17.58 FTE positions above its establishment. The region had 5.14 additional FTE ambulance and communication positions, 1.6 additional operational, clinical and infrastructure support personnel and an additional 10.84 corporate support personnel.

South Western

South Western Region services an area of approximately 414,000 square kilometres, and an estimated population of 275,000. The region encompasses Gatton in its east to Quilpie and

Thargomindah in its west, Injune, Taroom and Crows Nest in its north and south to the New South Wales border.



The region has 33 permanent stations and 3 first responder groups. Three stations in the region operate 24 hours a day, seven days a week. Over a third of the region's stations operate an eight hour day shift with officers on call after hours. There are three stations based at a hospital.

Since Community Ambulance Cover was introduced there has been a 19% increase in the number of responses in South Western Region. Across the region, the most significant growth was seen in Code 2 (26.54%) and Code 4 (33.76%) responses. In 2006-07, the Queensland Ambulance Service undertook 50,402 responses, and there were 194 visits to casualty rooms in South Western region. The population has increased by close to 4.5% over this time.

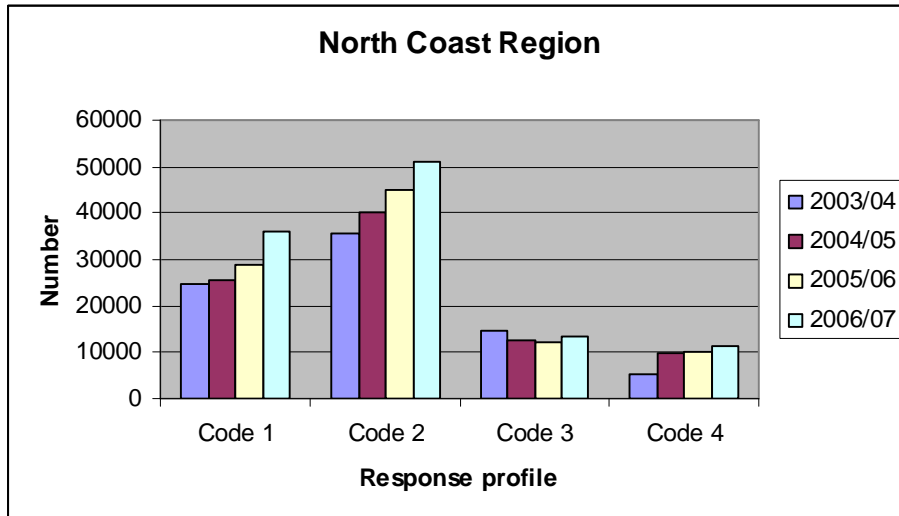
The region has its headquarters in Toowoomba and is divided into three areas: Eastern, Southern and Western.

Between 2003-04 and 2006-07, Southern area saw a significant increase in Code 2 responses (up 33.19%). Eastern area has seen Code 2 responses increase by 27% and Code 4 responses increase by 39.56%. Code 1 responses in Western area have increased by 17.79%.

At June 2007, there were 216.02 FTE staff, of which 85% were ambulance or communications operatives. At this time, South Western Region was 1.18 FTE positions below its establishment. The region had -7.55 ambulance and communications operatives, four additional operational, clinical and infrastructure support personnel and an additional 2.37 corporate support personnel.

North Coast

North Coast Region has an estimated population of 575,000. The North Coast Region covers the coastal areas from Bundaberg to the Sunshine Coast and inland to the North and South Burnett.



The region has 33 permanent stations and seven first responder groups. Fourteen stations in the region operate 24 hours a day, seven days a week. Two stations operate eight hour day shifts with officers on call after hours during peak holiday periods.

Since Community Ambulance Cover was introduced there has been a 39.64% increase in the number of responses in North Coast Region. Across the region, Code 1 and 2 responses increased by 44.88% and 44.35% respectively. There was an 8.6% decrease in Code 3 responses and a 114.49% increase in Code 4 responses. In 2006-07, the Queensland Ambulance Service undertook 112,254 responses, and there were 150 visits to casualty room facilities across North Coast region. Population increased by 9.4% over this period.

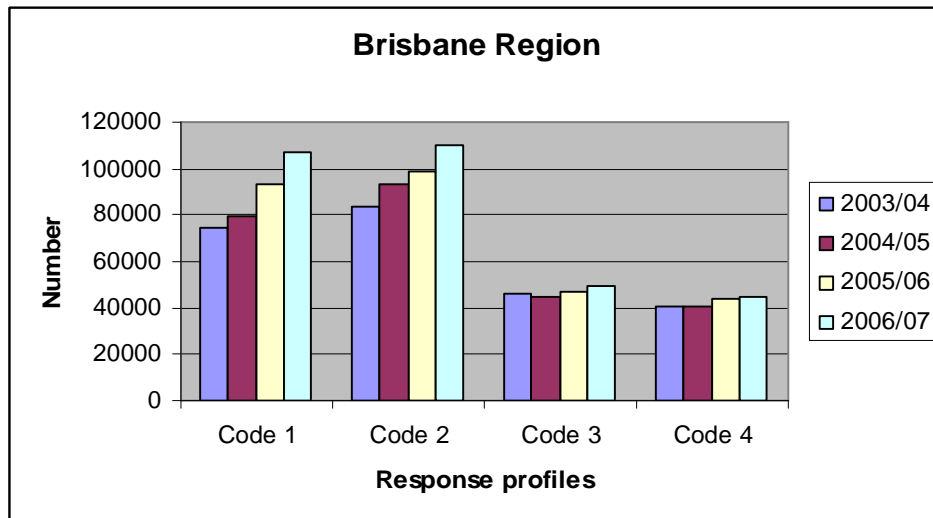
The region has its headquarters in Caloundra and is divided into two regions: Sunshine Coast and Wide Bay / Burnett.

Between 2003-04 and 2006-07, there was significant growth across all response codes, except for Code 3 responses in Sunshine Coast area which decreased by 24.83%. The most significant percentage growth was in Code 4 responses where responses more than doubled over the four years.

At June 2007, there were 418.14 FTE staff, of which 91% were ambulance or communications operatives. At this time, North Coast Region was 25.74 FTE positions above its establishment. The region had 16.78 additional ambulance and communications operatives, two additional operational, clinical and infrastructure support personnel and 6.96 additional corporate support personnel.

Brisbane

The Brisbane Region is the smallest geographically in the State, but with 1.5 million people its population is the largest. The region is centred on Brisbane, and stretches up the Brisbane River valley to Kilcoy and includes the Moreton Bay Islands from Bribie Island south to the Logan River.



The region has 37 permanent stations and two first responder groups. There are 26 stations in the region that operate 24 hours a day, seven days a week.

Since Community Ambulance Cover was introduced there has been a 27.65% increase in the number of responses in Brisbane Region. Across the region, Code 1 responses have increased by 43.34% and Code 2 responses have increased by 32.85%. Across the region, growth in Code 3 and 4 responses has been more moderate. In 2006-07, the Queensland Ambulance Service undertook 311,706 responses, and there were 289 visits to casualty room facilities across Brisbane region. The population increased by 6.4% over this time.

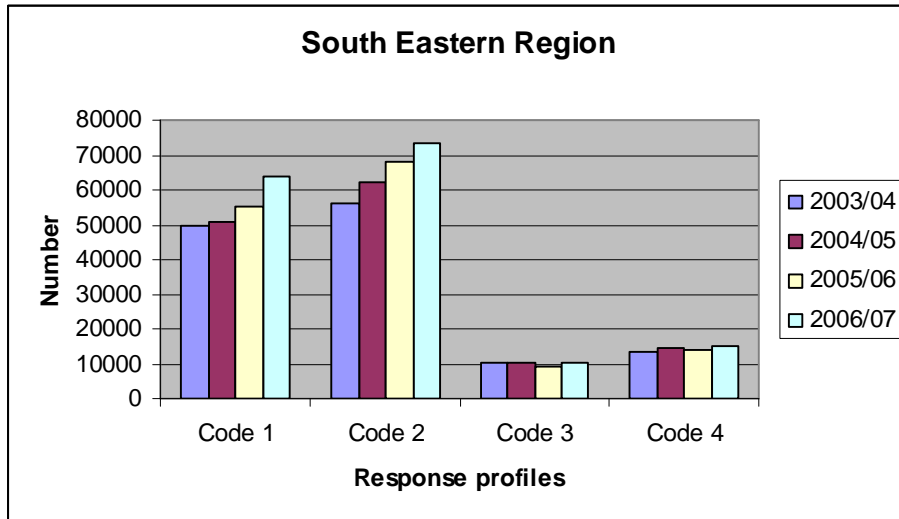
The region has its headquarters in Brisbane and is divided into four areas: Central, Northern, South East and South West.

While Brisbane area recorded 8.4% growth between 2003-04 and 2006-07, this does not reflect a significant change in the type of work. Code 1 and Code 2 responses increased by 35.00% and 17.69%, whereas Code 3 and 4 responses decreased by 19.75% and 25.39%. Northern area experienced between 66.18% and 97.13% growth across all codes. South West area saw between 14.27% and 35.93% growth across all codes. South East area had a 5.10% decrease in Code 3 responses, and a 46.11% and 39.35% increase in Code 1 and 2 responses.

At June 2007, there were 748.18 FTE staff, of which 91% were ambulance or communications operatives. At this time, the Brisbane Region was 28.03 FTE positions above its establishment. The region had 17.68 additional ambulance and communications operatives, 2 additional operational, clinical and infrastructure support personnel and 8.35 additional corporate support personnel.

South Eastern

The South Eastern region covers around 12,000 square kilometres and services a population of around 960,000. The region extends from the coastline along the New South Wales border, south west to Boonah, through to Laidley and across to the northern boundary at Toogoolawah.



The region has 29 permanent stations. There are 17 stations in the region that operate 24 hours a day, seven days a week.

Since Community Ambulance Cover was introduced there has been a 25.71% increase in the number of responses in South Eastern Region. Across the region, Code 1 and 2 responses have grown by 29.26% and 31.52% respectively. In 2006-07, the Queensland Ambulance Service undertook 162,686 responses to x incidents, and there were 100 visits to casualty room facilities across South Eastern region.

The region has its headquarters at Beenleigh and is divided into three areas: Beenleigh, Gold Coast and Ipswich.

Beenleigh area recorded increases across all response profiles of between 17% and 27%. Gold Coast had in excess of 30% growth over both Code 1 and 2 responses, 21% growth in Code 4 responses and 2% growth in Code 3 responses. Ipswich saw a significant shift in workload with decreases in Code 3 and 4 responses and increases of over 30% to Code 1 and 2 responses.

At June 2007, there were 520.3 FTE equivalent staff, of which 92% were ambulance and communication operatives. At this time, the South Eastern Region was 38.69 FTE positions above its establishment. The region had 28.73 additional ambulance and communications operatives, 4.24 additional operational, clinical and infrastructure support personnel and 5.72 additional corporate support personnel.