Bundaberg Flood Response – A Pilot's Perspective

Andrew McCole – Pilot 'Rescue 521'

Emergency Management EMQ Queensland

Introduction

Background

- Swinburne B. Tech (Aviation) ’94 –’96
- Royal Australian Navy Pilot ’97 – Present
- 4400 hours, 2400 hours helicopter experience
- ATPL (Aeroplane) and ATPL (Helicopter)

Bundaberg Flood Response – A Pilot's Perspective

Pilatus PC-9/A

Aerospatiale AS350BA Squirrel

Bundaberg Flood Response – A Pilot's Perspective

Sikorsky S-70B-2 Seahawk

Bundaberg Flood Response – A Pilot's Perspective

PAC CT4B

Beechcraft Super Kingair 350

Bundaberg Flood Response – A Pilot's Perspective

NHI MRH-90 Taipan

Introduction

EMS Experience:

- 2009/2010: Single Pilot IFR EMS on Bell 412EP (HEMS 4/5) with Australian Helicopters at Essendon & Warrnambool, Vic.

- Nov 2012 – Present: Casual Pilot with EMQ Helicopter Rescue, Townsville, Qld on Bell 412EP.

- Jun 2013 – Present: Casual Pilot with Australian Helicopters at CQ Rescue Mackay and Capricorn Rescue Rockhampton.

Bundaberg Flood Response – A Pilot's Perspective

HEMS 5 Bell 412 EP

Why are we here?

- Late Jan 2013 Tropical Cyclone ‘Oswald’ developed in the Gulf of Carpentaria and produced significant rainfall as it weakened and moved down the Queensland coast.
- Extensive flooding in several areas.
- Worst hit area was the Bundaberg region.
- Emergency Management Queensland tasked ‘Rescue 521’, the Townsville based Bell 412EP to the area in order to assist.

Bundaberg Flood Response – A Pilot's Perspective

Specifically, we'll look at:

- A brief overview of the EMQ:
  - Organisational structure
  - Tasking system
  - Aircraft and crewing structure
- A chronology of events
- The concepts of Situational Awareness, Airmanship, Crew Resource Management and Risk Management and their application in this context.
- Analysis of tasking, prioritisation and utilisation of Rescue 521.
- Discussion of recommendations made to Queensland Government.
- Questions at the end.

Department of Community Safety Organisational Structure

Source: DCS website: www.dcs.qld.gov.au

Department of Community Safety

Emergency Management Queensland

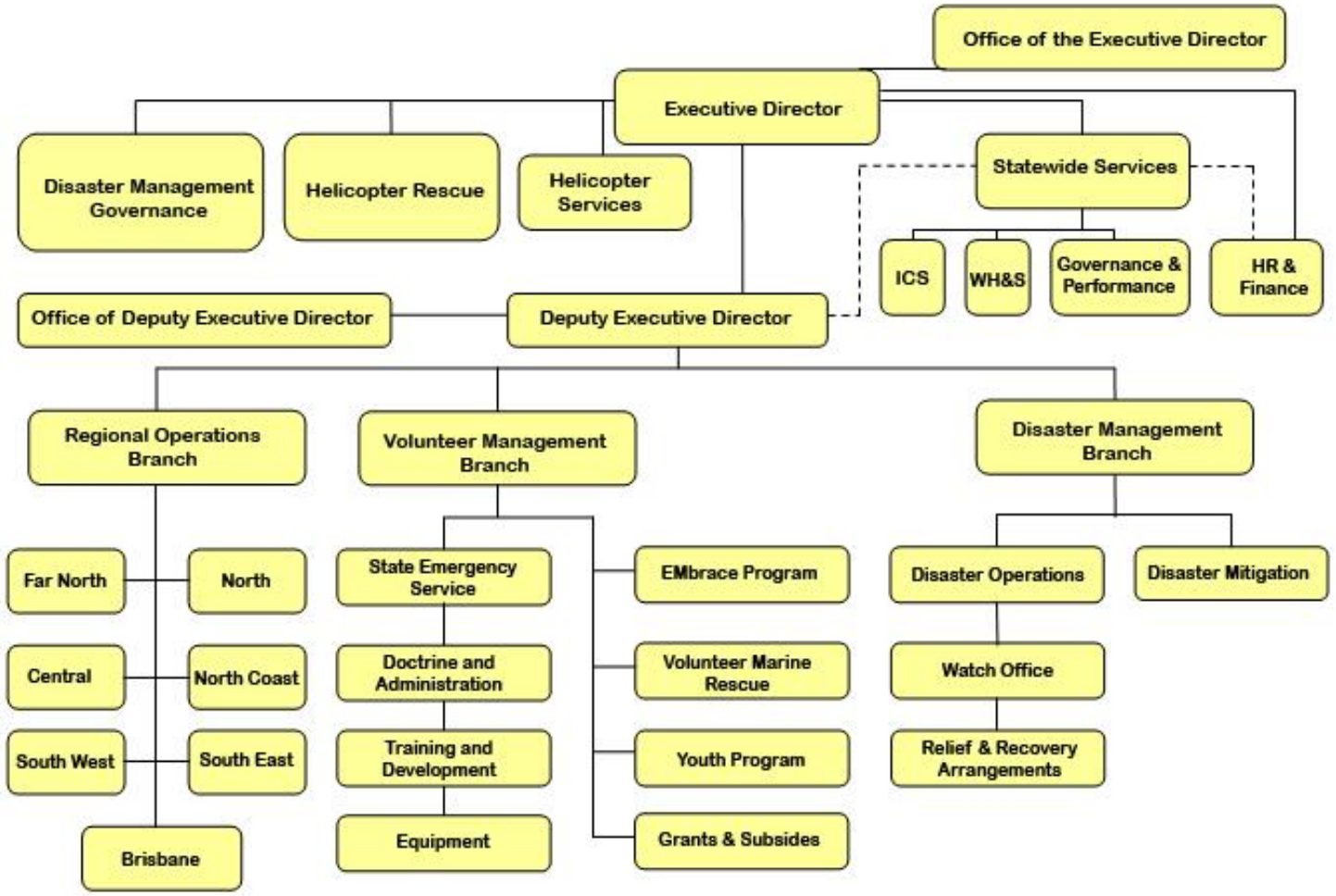
Responsibilities:

Emergency Management Queensland is responsible for Queensland's disaster management arrangements, the core staffing of the State Counter Disaster Organisation*, the State Emergency Service (SES), chemical management services, emergency helicopter services, supports community helicopter providers and manages Government support to Volunteer Marine Rescue (VMR) Associations.*

Source: DCS website: www.dcs.qld.gov.au

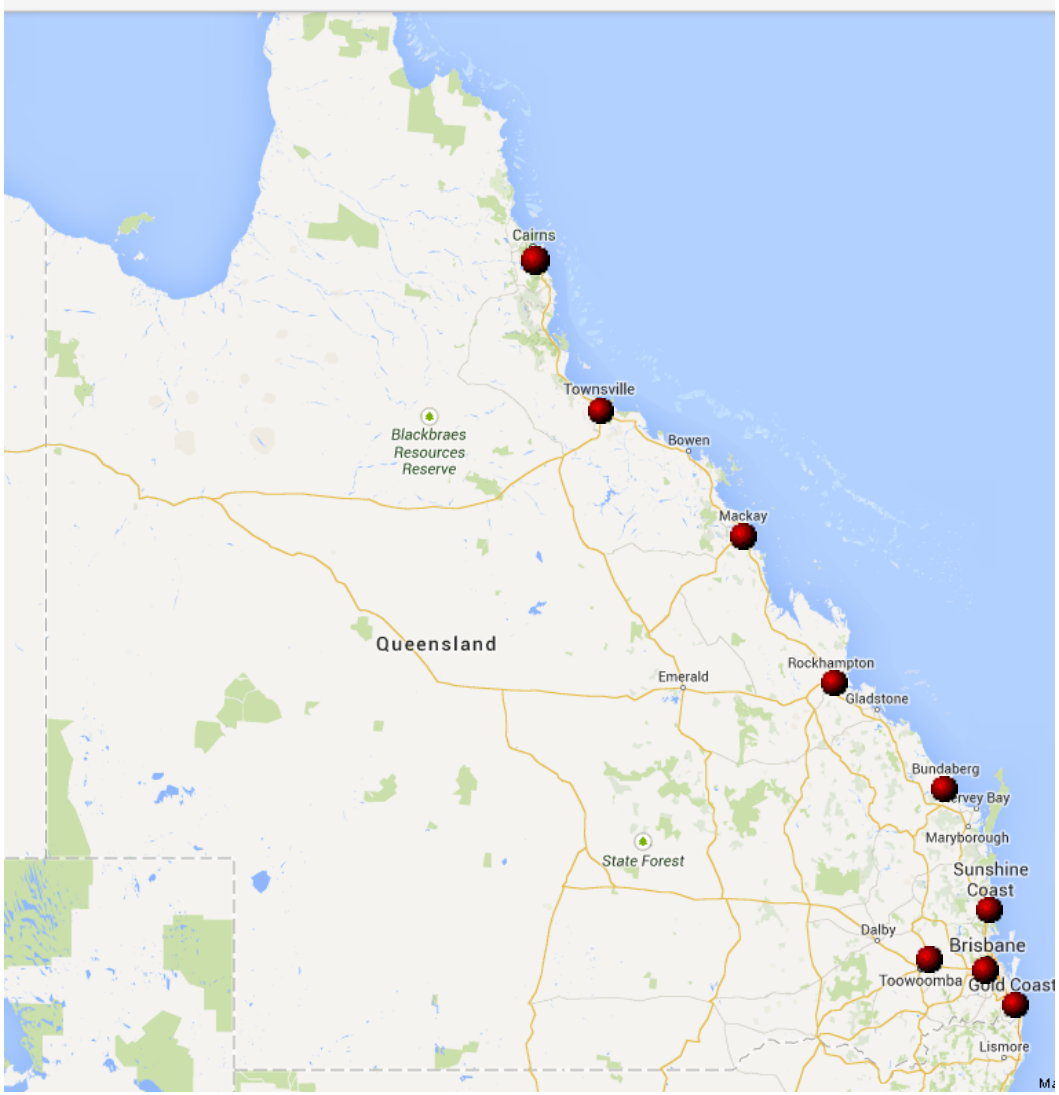
Bundaberg Flood Response – A Pilot's Perspective

Emergency Management Queensland Organisational Structure



Source: EMQ website: www.emergency.qld.gov.au/emq

The Queensland Emergency Helicopter Network (EHN)

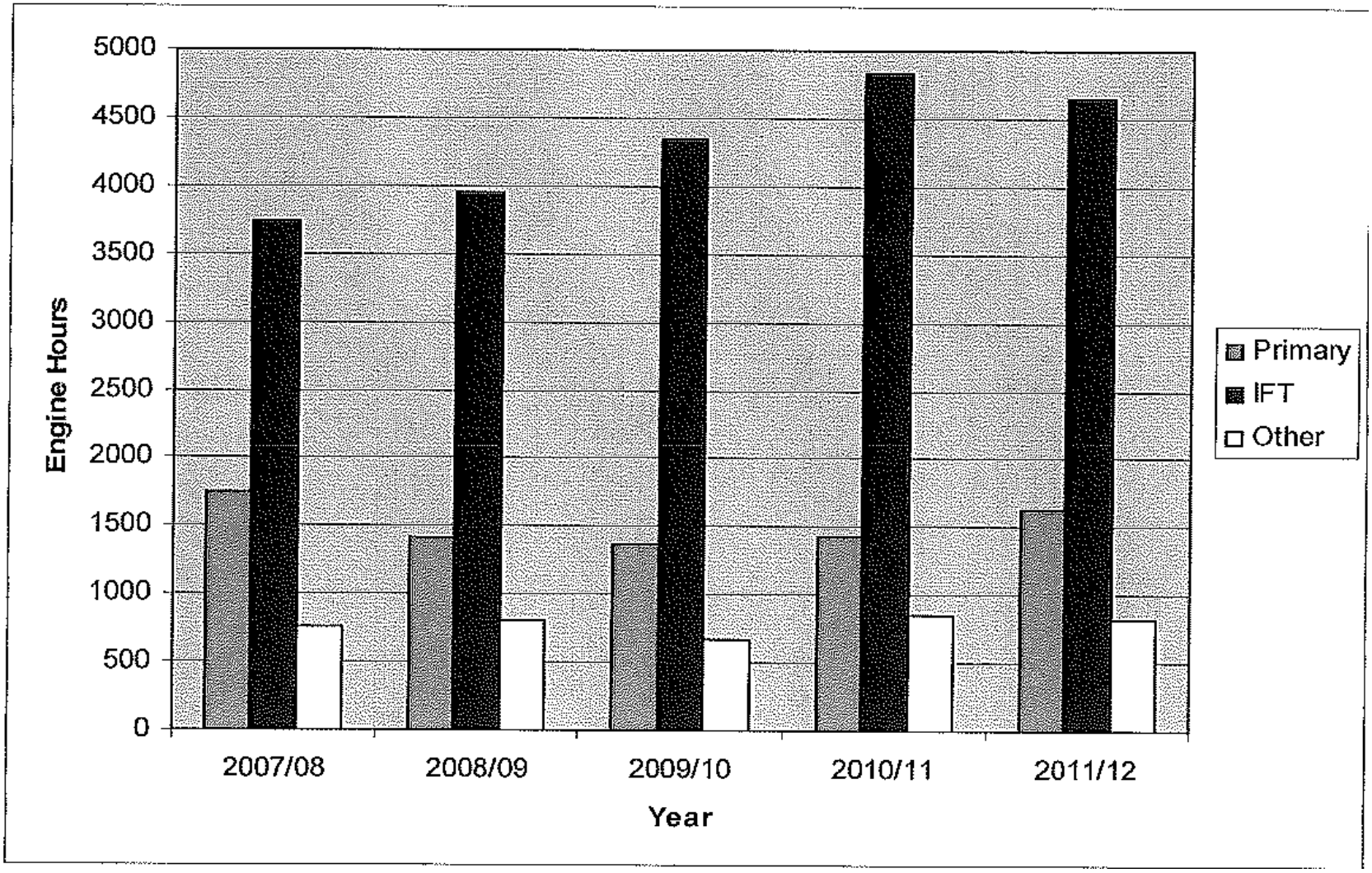


EHN Composition

- EMQHR
- Contracted Services: Horn Island (AHPL) EMS & Customs / Coastwatch
- Community Helicopter Providers:
  - Gold Coast
  - Toowoomba
  - Sunshine Coast*
  - Bundaberg*
  - CHRS Rockhampton*
  - CQ Rescue Mackay*

Bundaberg Flood Response – A Pilot's Perspective

Figure 2 - EHN Service Delivery Engine Hours 2007/08 – 2011/12



Source: Summary Report of Aeromedical Helicopter Services in Queensland Dec 2012

EHN Tasking and Co-ordination

- All tasking and co-ordination by Queensland Emergency Medical System Co-ordination Centre (QCC).
- Joint arrangement between Queensland Health and Queensland Ambulance Service (QAS).
- Clinical leadership and co-ordination through Retrieval Services Queensland (ARV equivalent).

EHN Tasking and Co-ordination

- QCC evolution.
- **Queensland Flood Commission of Inquiry recommended QCC as the 'single point tasking authority for deployment of all EHN helicopters'.***
- Single point tasking protocol implemented on 1 Nov 2011.

* Source: Summary Report of Aeromedical Helicopter Services in Queensland Dec 2012

Bundaberg Flood Response – A Pilot's Perspective

Queensland Emergency Medical System, Coordination Centre.

- Centralised statewide access point for all aeromedical requests (pre-hospital and inter-facility, RW & FW)
- Clinical Coordination; Specialised RSQ Nursing and Medical Coordinators partnering QAS Emergency Medical Dispatcher logistic support.
- Average of 54 tasks per 24 hours (>20,000 per year)
- 26% of tasks require retrieval physician

All aeromedical tasks in Queensland are authorised, tasked and tracked via QCC.

Retrieval Services & Counter Disaster

Source: Balancing the Costs; Retrieval against Survival, Dr Mark Elcock, State Medical Director, RSQ

QCC responsibilities

Clinical Co-ordination

Approx 85%

External request Co-ordination

Approx 15%

External Request Co-ordination

- Queensland Police Service (urgent support / local SAR)
- AusSAR / AMSA (SAR)
- Queensland Fire and Rescue (Fire spotting and fighting)
- State Disaster Co-ordination Centre (Disaster relief / evacuation / resupply)
- Other

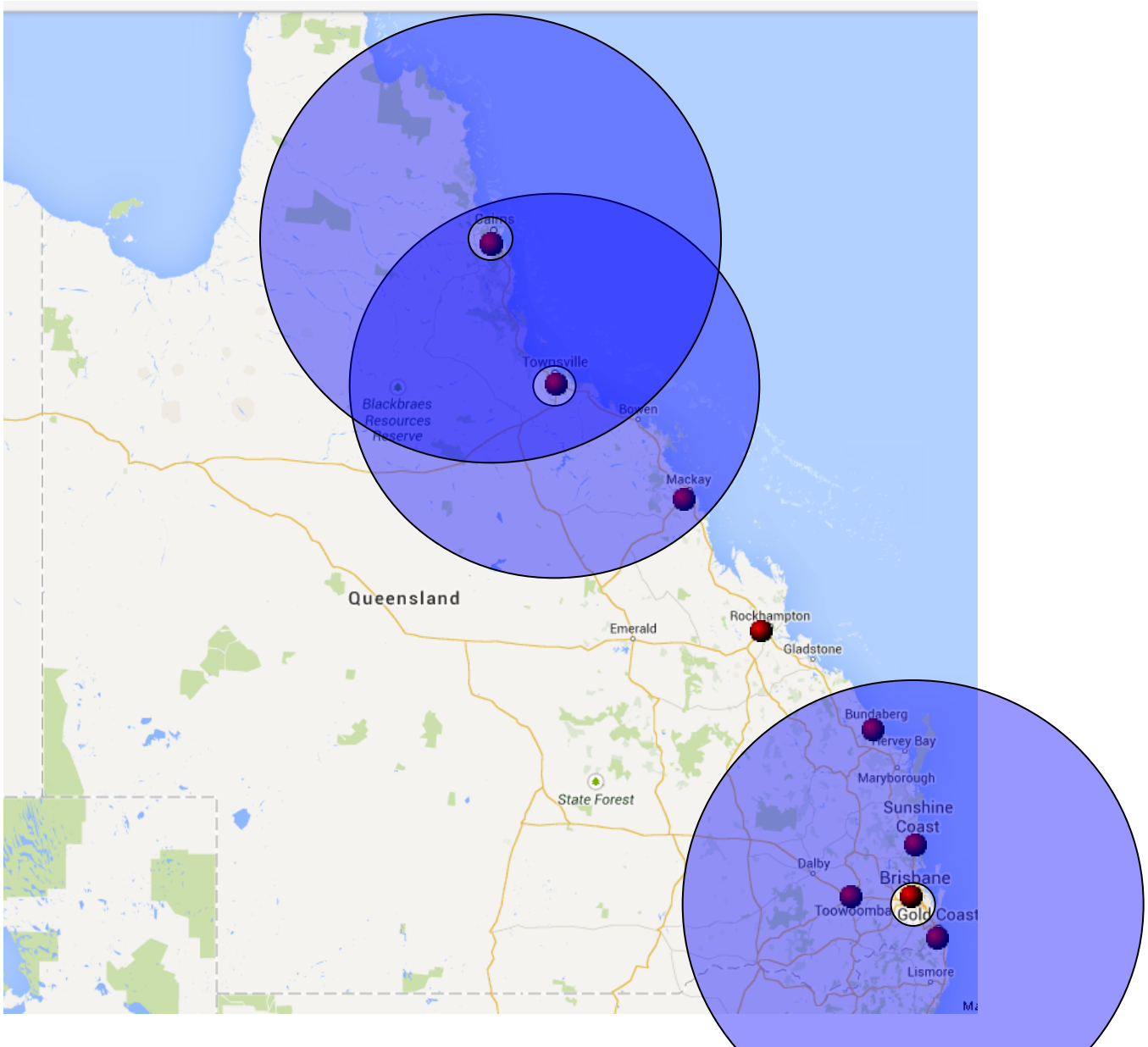
EMQ Helicopter Rescue

- Three bases in Brisbane, Townsville and Cairns
- Five aircraft: 3 x AW139, 2 x Bell 412EP

Roles:

- Search and rescue over sea and land
- Air evacuations of critically ill patients
- Transporting medical teams to accident scenes
- Transferring patients between hospitals
- Evacuation of people in times of disaster
- Resupplying communities isolated by natural disasters
- Fire fighting
- Fire spotting
- Containing oil spills with chemical sprays
- Urgent police support

Bundaberg Flood Response – A Pilot's Perspective



Aircraft

- Bell 412EP
- Single Pilot IFR
- Range: 360nm with IFR fuel reserves (long range fuel tank)
- Cruise Speed: 120 KIAS
- Capacity in EMS Configuration: 2 cockpit crew, stretcher patient plus five seats.
- Equipment: EFIS, Weather Radar, GPS navigation, Satphone, 3G iPhone, iPad, 4 axis autopilot. 270kg winch load capacity
- NVG capable?

Aircraft

- Strengths
  - Stable, reliable platform
  - Good working area and patient access in EMS configuration
  - Good power reserves in cooler climates / lower gross weights
  - Cost effective
  - Used extensively worldwide
- Weaknesses
  - Poor power reserves in warmer climates / high gross weights
  - Limited range and cabin volume compared to modern alternatives
  - Limited Cat Á' performance envelope

Crewing structure and composition

- '4 Crew roster'
  - 2 x 10 hour day shift
  - 2 x 14 hour night shift
  - 4 days off

- 'Standard' crew:
  - 1 x Pilot
  - 1 x FLS Air Crew Officer (ACO - winch operator)
  - 1 x rear seat Rescue Crew Officer (RCO – wireman)
  - 1x Intensive Care Paramedic (ICP)

- Supplemented by a contracted Careflight Qld Doctor when tasked by QCC

- High entry standards for EMQ aircrew (non – medical) by industry standards. Very high fitness standard for RCO aircrew.

Crewing structure and composition on the day

Crewing structure and composition on the day

Martin Dahlstrom RCO

- Qualified only 3 weeks beforehand
- Trainee paramedic
- Surf Lifesaver
- No previous flying experience
- No operational winch experience

Crewing structure and composition on the day

Andrew McCole Pilot

- Casual employee
- Checked to line mid Nov 12
- 2 months full time line experience with EMQ
- New:
  - Operating area
  - Crew composition
  - Policies and procedures

Crewing structure and composition on the day

Dan Hoare ACO

- Ex –Army 15 years
- 11 years flying experience
- 2900 hours, 900 hours front seat
- 1500 hours EMS, various locations
- NVG Instructor

Crewing structure and composition on the day

Chris O' Connor ICP

- 23 years paramedic experience
- 12 years flying experience
- USAR
- Special Ops

Chronology of events

- 21 Jan 13: Tropical cyclone ‘Oswald’ formed in the Gulf of Carpentaria and began tracking down QLD coast.

- Severe storms, tornadoes, heavy rainfall and flooding as system moved slowly south, blocked by a large high pressure system in the Tasman Sea.

Chronology of events

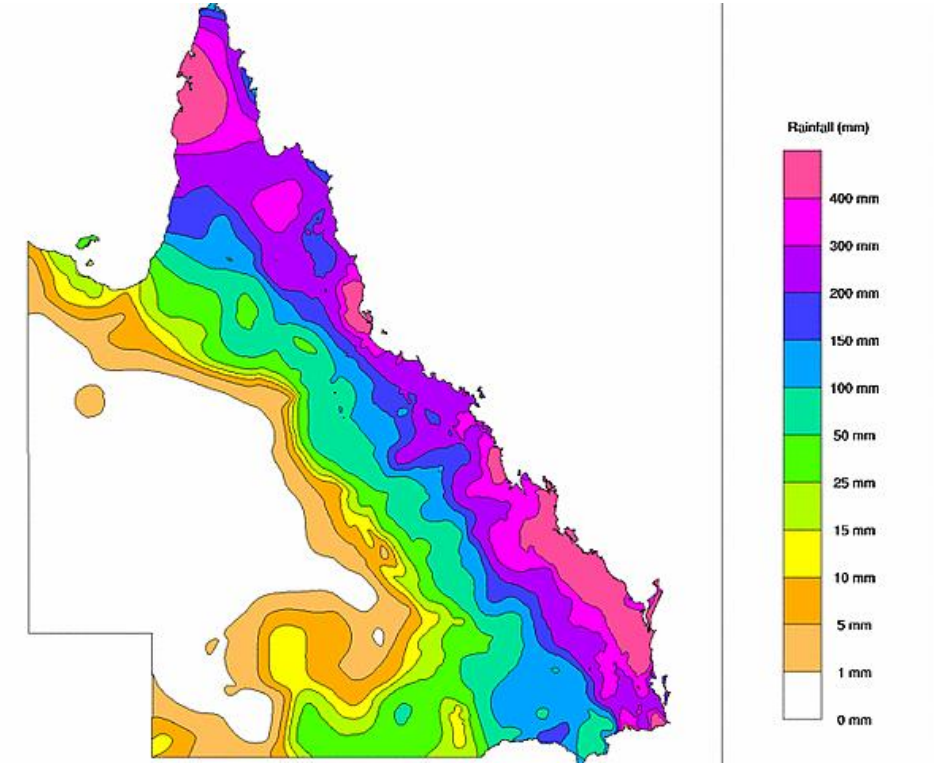
- Worst hit areas included Mundubbera, Eidsvold, Gayndah and Bundaberg.

- 632mm in 48 hours at Tully.

Emergency Management EMQ Queensland

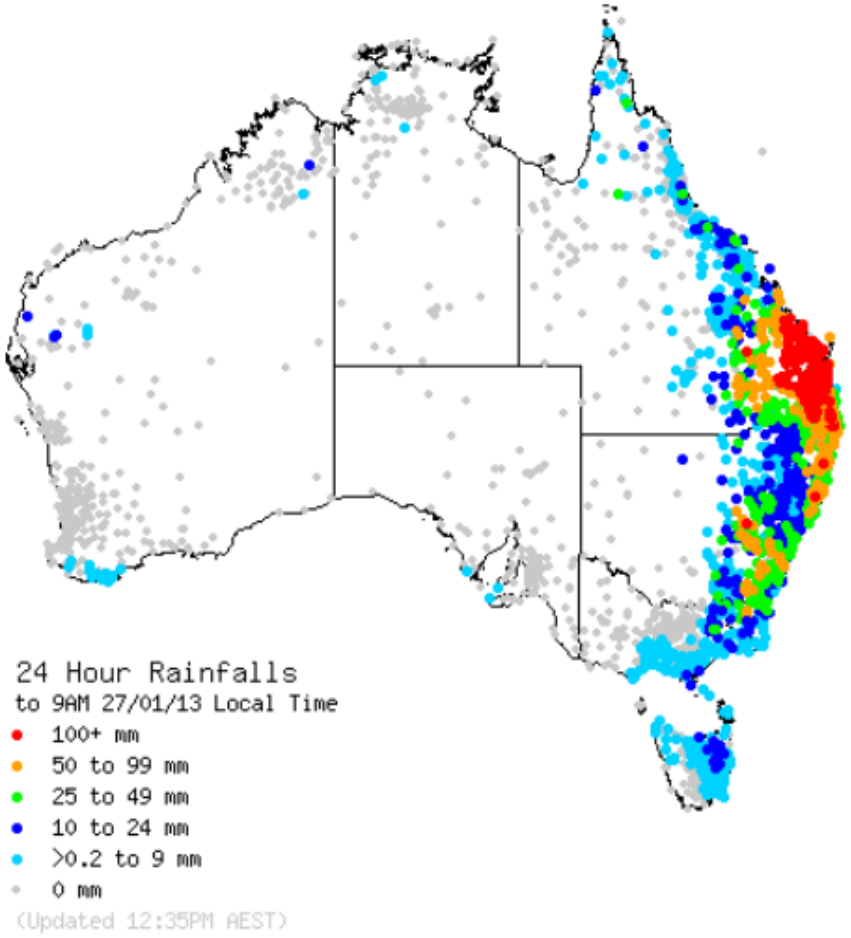
Four day rainfall total to 28 January 2013 (mm)

Upper Springbrook	1,453
Gladstone	819.8
Rockhampton	545.4
Bundaberg	484
Innisfail	392.2
Gayndah	364.4
Brisbane	260.4
Townsville	197.2



Source: Bureau of Meteorology

Bundaberg Flood Response – A Pilot's Perspective



24 hr rainfall totals to 9am 27/1/13

Source: Bureau of Meteorology

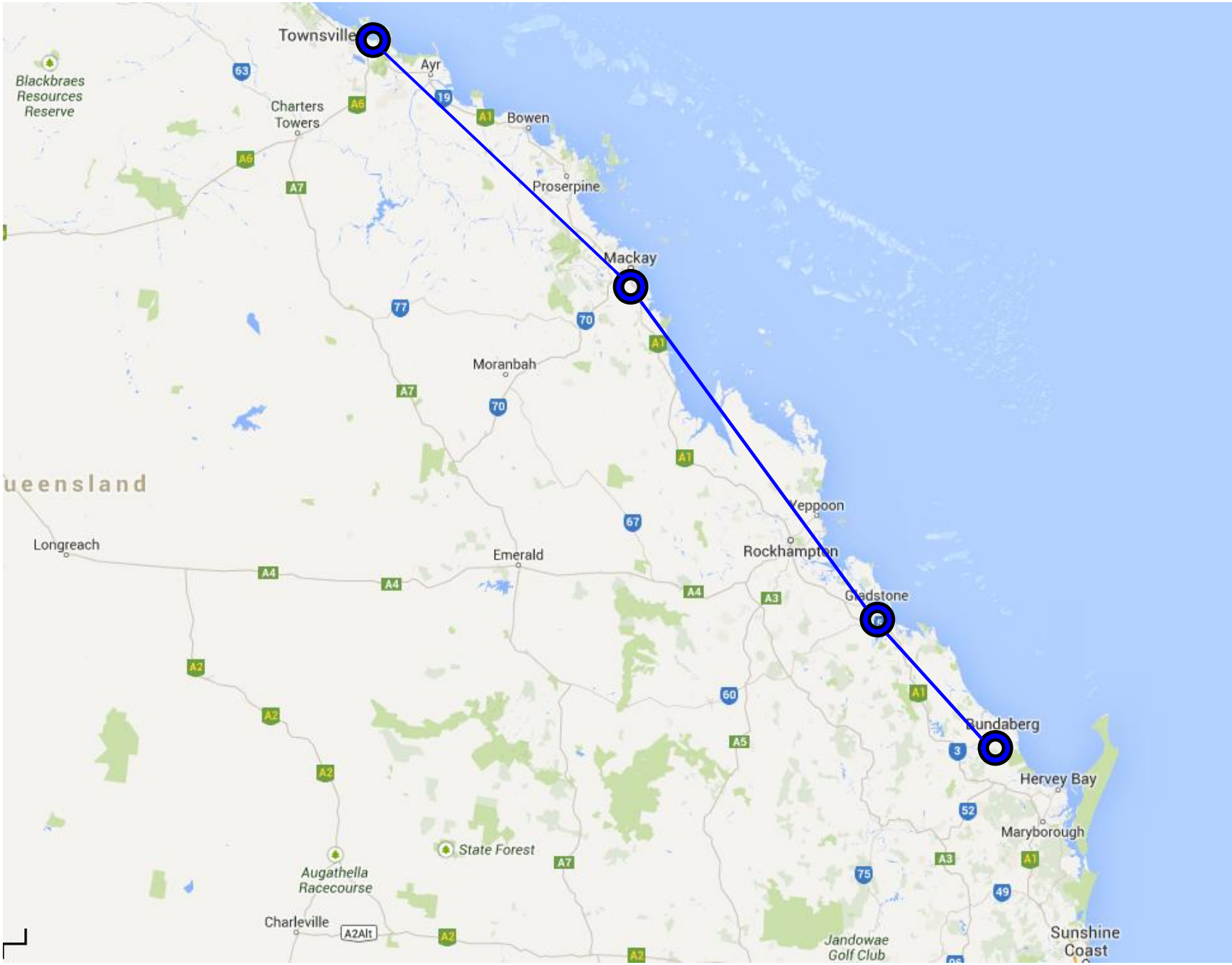
Chronology of events

Sun 27 Jan 13

- 1000hrs: RSCU 521 duty crew notified that urgent deployment to Bundaberg for anticipated flood relief operations was required.

- Flight planning, aircraft loading and collection of personal deployment baggage resulted in departure at approximately 1100 hrs.

- The duration of the deployment, and specifics of any tasking was unknown.


Townsville
Ayr
Blackbraes Resources Reserve
Charters Towers
Bowen
Proserpine
Mackay
Moranbah
Queensland
Longreach
Emerald
Rockhampton
Gladstone
Bundaberg
Hervey Bay
Maryborough
State Forest
Augathella Racecourse
Charleville
Jandowae Golf Club
Sunshine Coast
63
A6
19
A1
A7
77
70
67
A4
A3
A2
60
A5
3
52
75
49
A2Alt

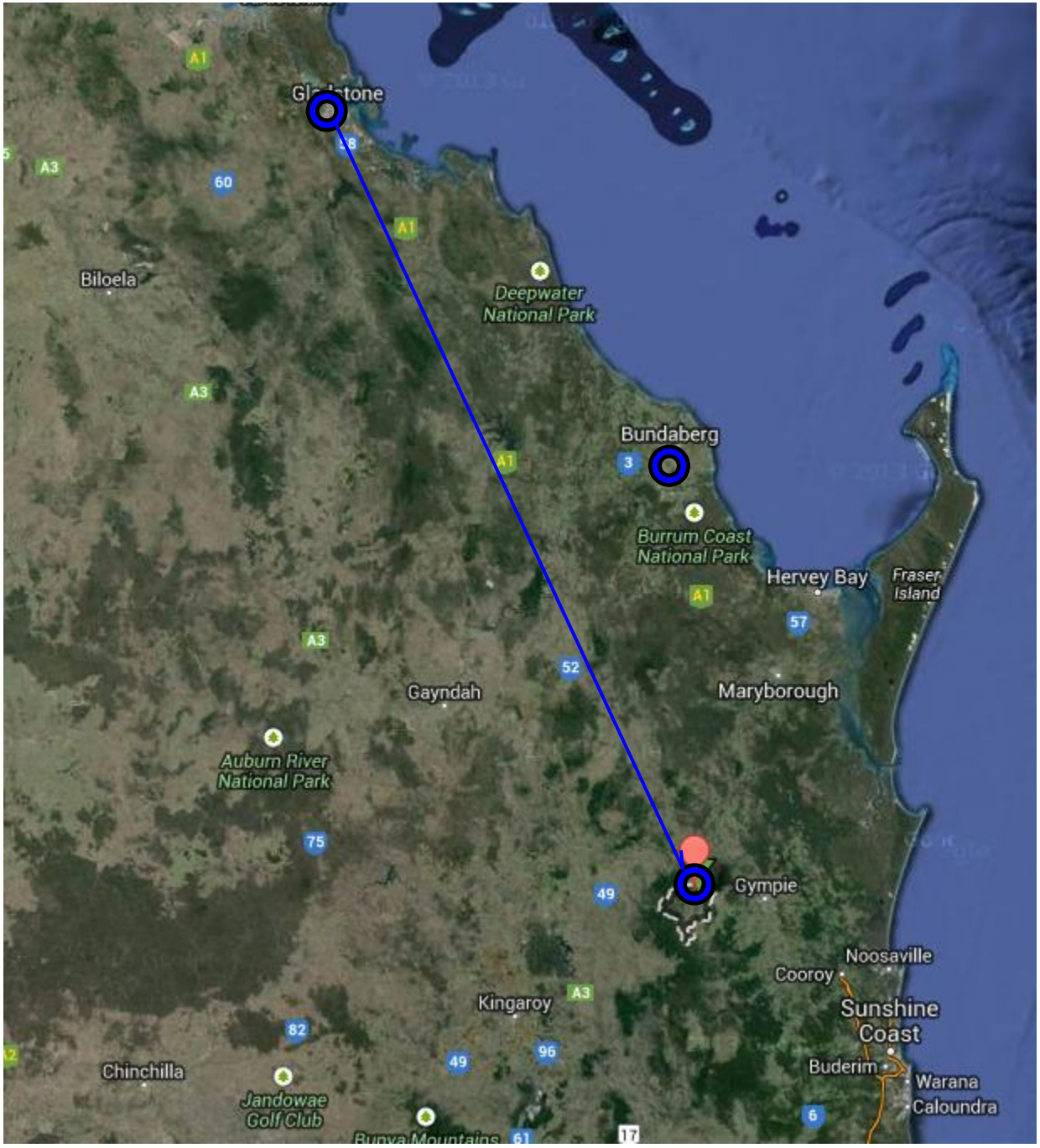
Bundaberg Flood Response – A Pilot's Perspective

Source: Bureau of Meteorology

Sun 27 Jan 13

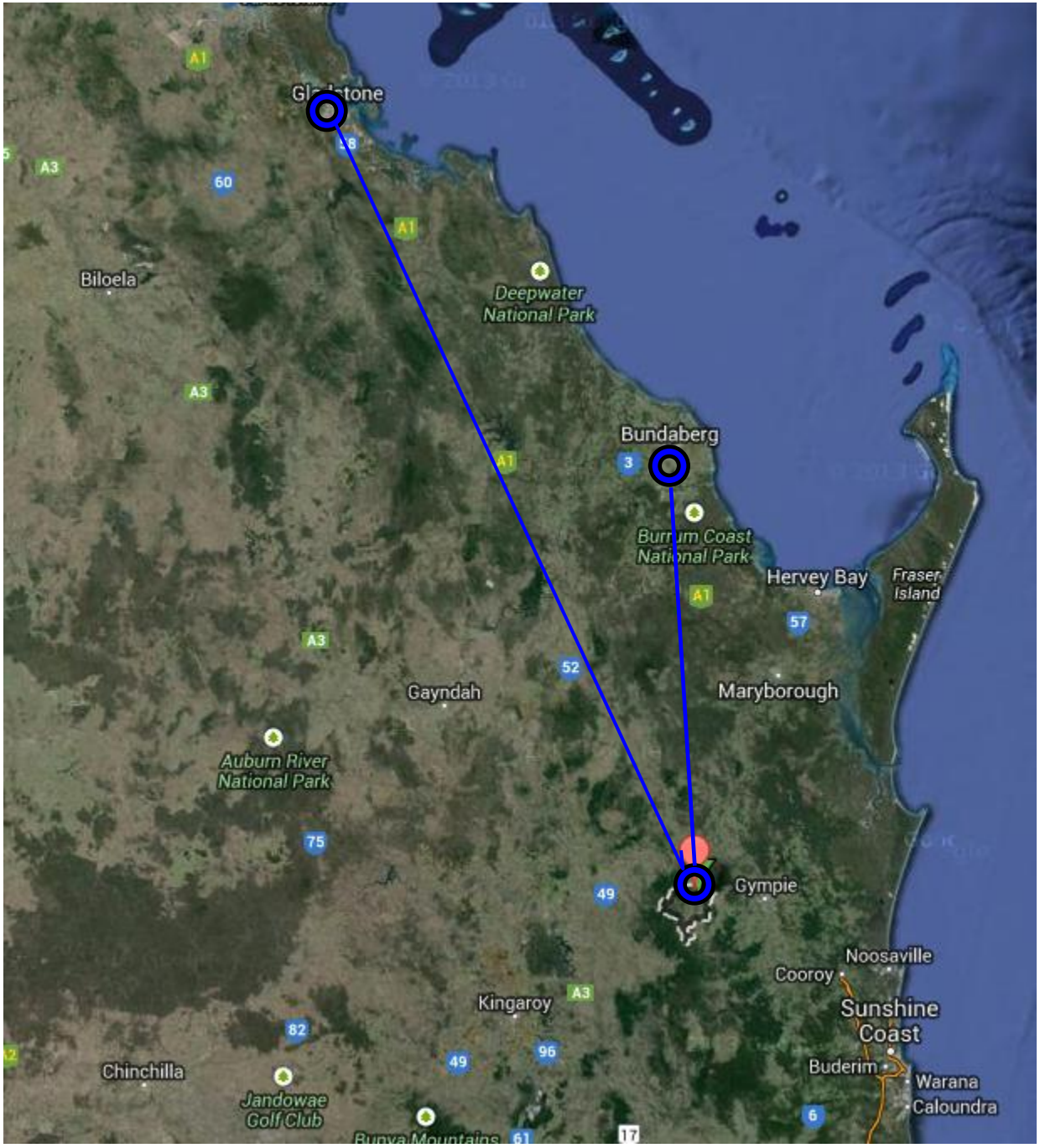
- 1530hrs: Refuelled at Gladstone, called QCC to update the estimated time of arrival at Bundaberg Airport (YBUD).

- Tasked to the township of Widgee to assist with locating a cerebral palsy patient who was last seen being swept from his father's arms in a flooded, fast flowing creek.


A1
A3
60
A1
Biloela
Deepwater
National Park
A3
Bundaberg
3
A1
Burrum Coast
National Park
Hervey Bay
Fraser
Island
A1
57
A3
52
Gayndah
Maryborough
Auburn River
National Park
75
49
Gympie
Noosaville
Cooroy
Kingaroy
A3
Sunshine
Coast
82
96
49
Buderim
Warana
Caloundra
Chinchilla
Jandowae
Golf Club
6
17

Sun 27 Jan 13

- 1630hrs: RSCU 521 arrived at the scene in low cloud and poor visibility conditions and commenced a thorough search of the creek.
- After a 40 minute search, RSCU 521 departed the search area for YBUD in order to arrive before last light with fuel reserves intact.
- RSCU 521 crew reported that no survivor had been located, and that no reported ground parties had been located. RSCU 521 were advised of incident report time.
- Met RSCU 512 crew on arrival.


A1
A3
60
Biloela
Deepwater National Park
Bundaberg
3
Burrum Coast National Park
Hervey Bay
Fraser Island
57
52
Gayndah
Maryborough
Auburn River National Park
75
49
Gympie
Noosaville
Cooroy
Kingaroy
82
96
Sunshine Coast
Buderim
Warana
Caloundra
6
Chinchilla
Jandowae Golf Club
17

Mon 28 Jan 13

- RSCU521 crew re-commenced duty at first light.
- 0630hrs: Tasked by QCC to become airborne and report on the situation.
- Immediately confronted by large areas of the Bundaberg township either inundated or submerged by the flooded Burnett River.
- Scene assessment passed to QCC.
- A search / reconnaissance of the northern and southern boundaries of the flooded area was conducted and the ‘high threat area’ was defined and priorities were assigned.

Bundaberg Flood Response – A Pilot's Perspective

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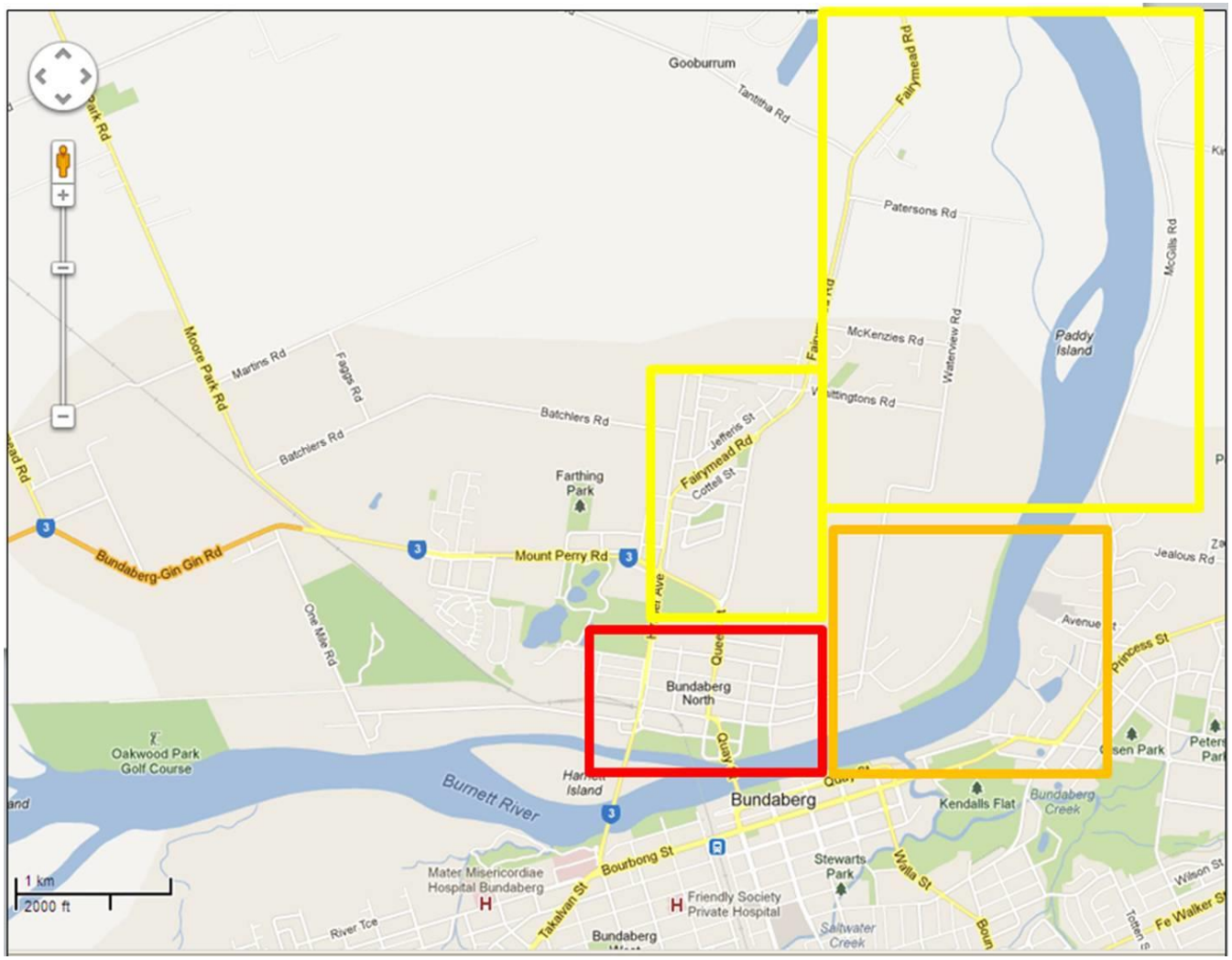
Bundaberg Flood Response – A Pilot's Perspective




Mount Perry Rd
Federation Park
Queen St
Hinkler Ave
Agnes St
Fagg St
Gavegan St
Thornhill St
Hinkler Park
Friendship Grove
Young St
Evodia Ct
Lakeview Drive
Park View Tce
Tallon St
Thornhill Ln
Wilmot St
Donald St
Steuart St
Kolan St
Gavin St
Station St
Wolca St
Gladwell St
Hanbury St
Perry St
Edna St
Burnett River
Harriett Island
Quay St
Alexandra Park
Barolin St
Bourbong St
Tantitha St
200 m
500 ft

Bundaberg Flood Response – A Pilot's Perspective

Bundaberg Flood Response – A Pilot's Perspective

Bundaberg Flood Response – A Pilot's Perspective

Bundaberg Flood Response – A Pilot's Perspective

- Assisted by the Bundaberg AGL Action Rescue Bell 206L (RSCU 512) and by VH-NAR (McDermott Aviation AS365C Dauphine – non winch equipped).
- Initially estimated 40 – 60 persons on rooftops.
- VH-NAR spotting, R512 / R521 conducted winch extractions.

Bundaberg Flood Response – A Pilot's Perspective

- B206L small groups (max 1-2 pax), RSCU 521 larger groups (up to 6), where safe to do so.

- Limited capacity initially due heavy fuel load.

- A discrete operating frequency (122.8MHz) was selected to reduce voice chatter on YBUD CTAF, with periodic broadcasts and inbound calls where necessary.

Bundaberg Flood Response – A Pilot's Perspective

- RSCU 521 worked predominantly in the red ‘high threat’ zone and conducted multiple winch extractions of people, mostly from rooftop locations.

- High workload, good crew co-ordination. Quickly established smooth process and operational flow.

- During the first sortie these people were then transported to the North Bundaberg High School.

- As the fuel load decreased, and available payload increased more people were able to be lifted from multiple rooftops prior to being delivered to the School.


Mount Perry Rd
Queen St
Hinkler Ave
Federation Park
Agnes St
Fagg St
Gavegan St
Thornhill St
Hinkler Park
Friendship Grove
Lakeview Drive
Park View Tce
Tallon St
Young St
Evodia Ct
Thornhill Ln
Wilmot St
Donald St
Station St
Kolan St
Steuart St
Gavin St
Wolca St
Gladwell St
Perry St
Edina St
Hanbury St
Burnett River
Harriett Island
Quay St
Barolin St
Bourbong St
Alexandra Park
Burrum St
Tantitha St
200 m
500 ft

Issues

- Communication
  - No communication with any local ground parties
  - No real time response capability
  - Requested DIRLNAUTH - NOGO
  - Relevant information passed back to QCC, with additional feedback to try and build their picture
  - Despite this, QCC did not have accurate or timely information.
  - They were not able to prioritise or co-ordinate effectively.

Bundaberg Flood Response – A Pilot's Perspective

- 1200 hours: At completion of second sortie, RSCU 521 had winched 26 survivors to safety.

- No additional aircraft support had arrived.

- RSCU 521 returned to Bundaberg airfield to refuel and communicate with EMQ management and QCC about the unfolding situation.

Bundaberg Flood Response – A Pilot's Perspective

- 1240 hours: RSCU 521 re-launched for third sortie. Multiple winch extractions and passenger pick ups.

- Most identified visually or tasked by QCC.

- QCC tasking during a winch rescue.

Bundaberg Flood Response – A Pilot's Perspective

- QCC medical tasking resulted in two patient transfers from evacuation centres to Bundaberg Hospital.

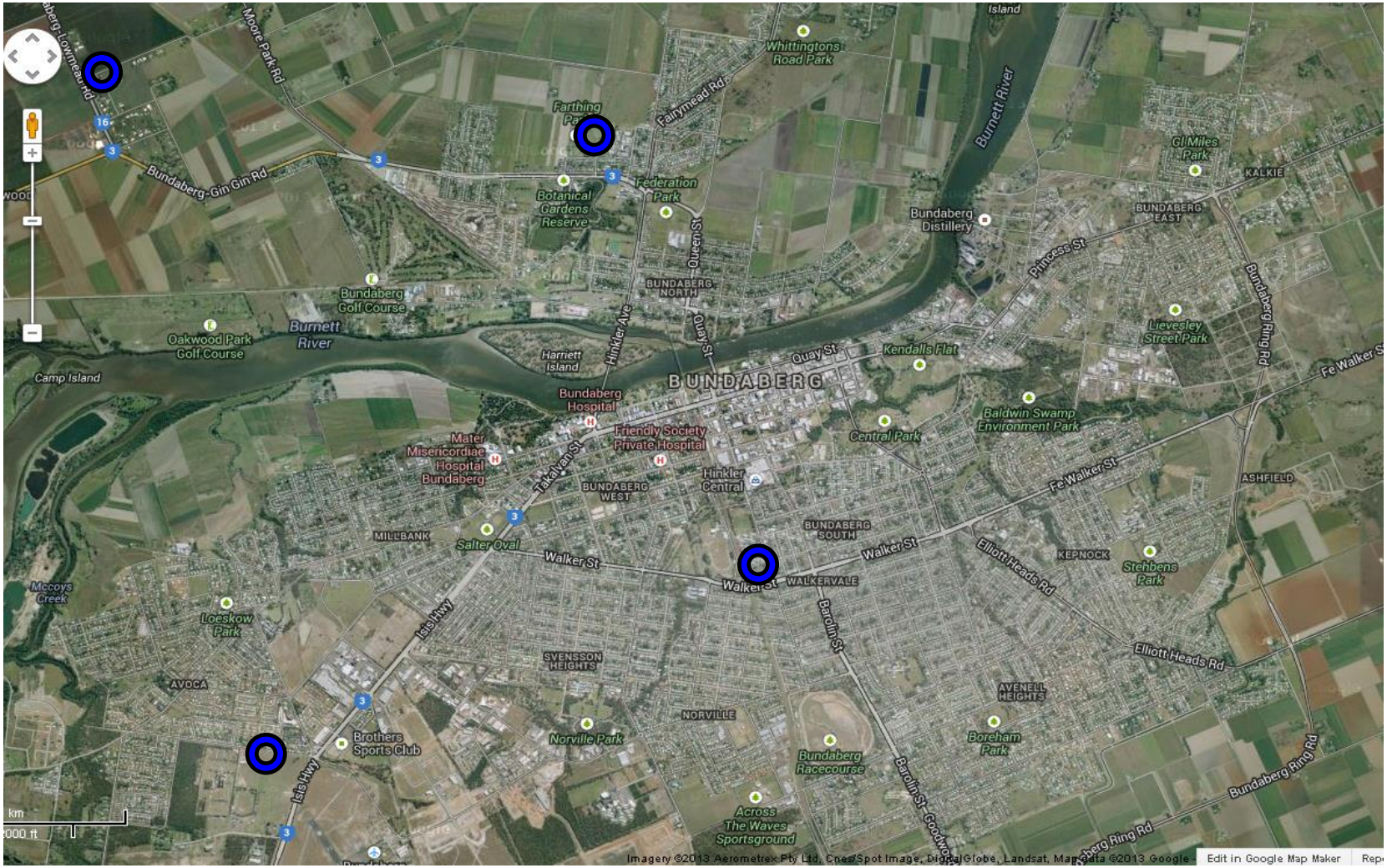
- Throughout the afternoon, several additional aircraft from multiple operators arrived including Army Blackhawks, AGL Action Rescue BK117, A109, Westpac Lifesaver EC135, multiple Becker B206, AS350, CHC S76A, and Careflight B412 and EMQ RSCU 500 (Brisbane AW139)

- The crew of RSCU 521 was informed that up to 26 helicopters were going to be operating in the area.

Bundaberg Flood Response – A Pilot's Perspective

- 1430hrs: Queensland Government decision.
- Significant impact on operations.
- Conflicting reports for the delivery point for these passengers persisted for approximately an hour.

Bundaberg Flood Response – A Pilot's Perspective



Bundaberg Flood Response – A Pilot's Perspective

- 1530 hours: Passengers to be diverted to the main tarmac area at YBUD airfield as Agro Trend not ready to receive.

- RSCU 521 re-tasked with rescue and recovery efforts due to an excessive number of aircraft conducting the passenger ferry work in the vicinity of the airfield.

Issues

- Communication
  - CTAF radio congestion caused confusion. Numerous aircraft unable to report their position and intentions. Numerous traffic separation breakdowns.
  - Multiple frequencies: Aircraft monitoring both frequencies were uncertain which frequency transmissions were originating from, and over-transmission was a frequent occurrence.
  - RPT IFR traffic.
  - Mobile phone management – tasking and navigation.

Bundaberg Flood Response – A Pilot's Perspective

- 1730 hours: RSCU 521 low on fuel, RTB.
- Crew endurance limit: 10.0 hours flown.
- 50 people winched from rooftops, 11 additional passengers from street landing and on a farm property being inundated.
- Handed over to relief crew from Brisbane.

Tues 29 Jan 13

- Started at first light.
- No local management of aviation operations.
- First aircraft airborne, yet tasked by QCC to SW.


18 mins
Lake Monduran
Bargara
Bundaberg
Childers
Goodnight Scrub National Park
Hervey Bay
Maryborough
Gayndah
Auburn River National Park
Murgon
Gympie
Great Sandy National Park
Pomona
Cooroy
Noosaville
Peregian Beach
A1
A3
3
52
57
75
12


15 mins
36 mins
Bundaberg
Bargara
Childers
Hervey Bay
Maryborough
Gympie
Murgon
Gayndah
Goodnight Scrub National Park
Auburn River National Park
Great Sandy National Park
Pomona
Cooroy
Noosaville
Peregian Beach
Lake Monduran
A3
A1
52
57
75
12

Bundaberg Flood Response – A Pilot's Perspective

- Arrived at Murgon – No flood water.
- Further tasking to Reid’s Creek.
- Requested confirmation.


15 mins
36 mins
34 mins
Bundaberg
Bargara
Childers
Hervey Bay
Maryborough
Gayndah
Gympie
Pomona
Cooroy
Noosaville
Peregian Beach
Great Sandy National Park
Goodnight Scrub National Park
Auburn River National Park
A3
A1
52
75

Bundaberg Flood Response – A Pilot's Perspective

- Refuelled at Hervey Bay, dwindling supply in Bundaberg.
- Confirmation that QCC remained the sole tasking authority.
- Raised concerns about tasking.


15 mins
36 mins
36 mins
34 mins
Bundaberg
Bargara
Childers
Hervey Bay
Maryborough
Gayndah
Auburn River National Park
Goodnight Scrub National Park
Gympie
Pomona
Cooroy
Noosaville
Peregian Beach
Great Sandy National Park
A3
A1
3
52
75
12

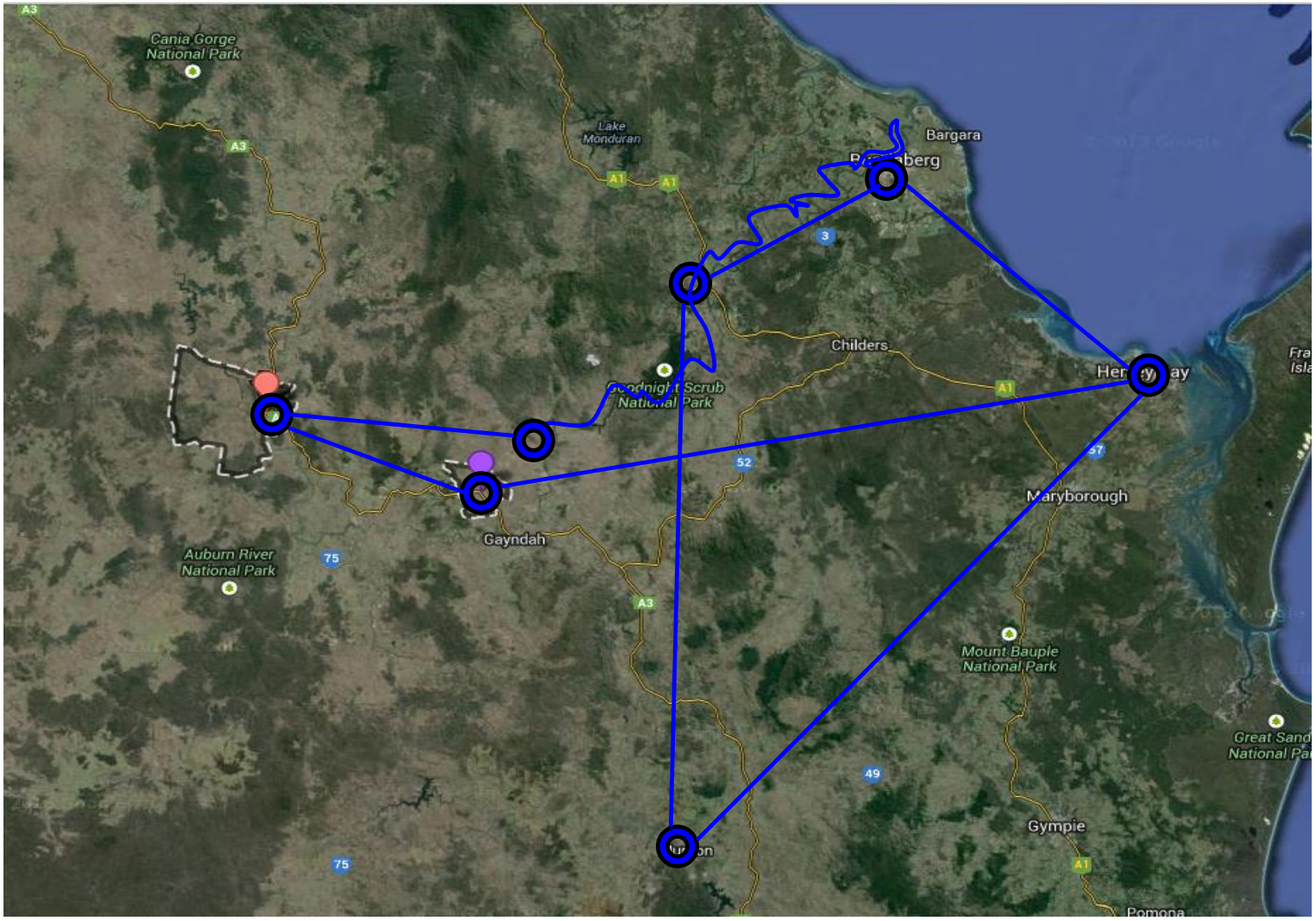
Bundaberg Flood Response – A Pilot's Perspective

- On arrival, reported no water or patients.
- Questioned timing of the report. 0400 hours on the previous day.
- At the time it was reported to RSCU 521, the report was almost 32 hours old.

Bundaberg Flood Response – A Pilot's Perspective

- Further tasking to a position west of Eidsvold, yet again - no flood water.
- Searched the Burnett River downstream towards Bundaberg, and overflew several inundated and submerged properties.
- Persons were located at a number of properties, but all indicated that they were safe and wished to remain with the property.
- To this point, 3.5 flying hours had been expended with no assistance rendered.

Bundaberg Flood Response – A Pilot's Perspective




Whittingtons Road Park
Farthing Park
Fairymead Rd
Burnett River
Gl Miles Park
KALKIE
Bundaberg-Gin Gin Rd
Botanical Gardens Reserve
Federation Park
Queen St
Bundaberg Distillery
BUNDABERG EAST
Princess St
Bundaberg Golf Course
BUNDABERG NORTH
Bundaberg Ring Rd
Oakwood Park Golf Course
Burnett River
Hinkler Ave
Quay St
Lievesley Street Park
Harriett Island
Quay St
Kendalls Flat
Camp Island
BUNDABERG
Bundaberg Hospital
Baldwin Swamp Environment Park
Mater Misericordiae Hospital Bundaberg
Friendly Society Private Hospital
Central Park
Takalvan St
Hinkler Central
Fe Walker St
ASHFIELD
BUNDABERG WEST
MILLBANK
Salter Oval
BUNDABERG SOUTH
Walker St
Elliott Heads Rd
KEPNOCK
Stehbens Park
Mccoys Creek
WALKERVALE
Loeskow Park
Isis Hwy
Barolin St
SVENSSON HEIGHTS
Elliott Heads Rd
AVOCA
AVENELL HEIGHTS
NORVILLE
Brothers Sports Club
Norville Park
Bundaberg Racecourse
Boreham Park
Bundaberg Ring Rd
Across The Waves Sportsground
Imagery ©2013 Aerometrex Pty Ltd, Cnes/Spot Image, DigitalGlobe, Landsat, Map data ©2013 Google
Edit in Google Map Maker

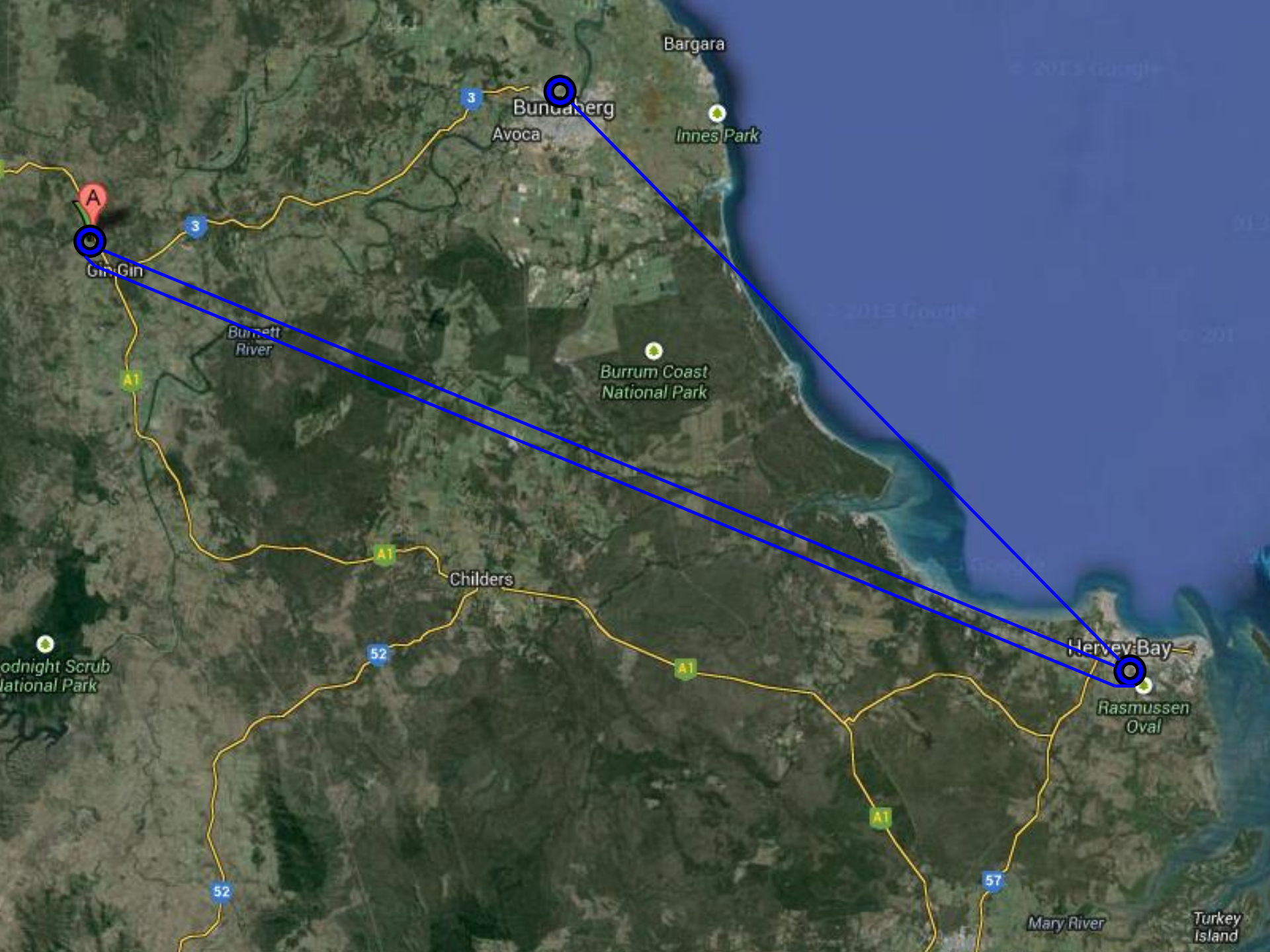
Bundaberg Flood Response – A Pilot's Perspective

- After refuelling, RSCU 521 was tasked to a property in the vicinity of Gin Gin to transfer a patient to Bundaberg hospital – which was being evacuated.

- Destination queried…

  – QCC were unaware!

- Patient transferred to YHBA and again refuelled prior to returning to YBUD for routine 25 hourly maintenance, landing at 1650 hrs.


Bargara
Bundaberg
Avoca
Innes Park
A
3
Gin Gin
Burnett River
A1
Burrum Coast National Park
Childers
52
Hervey Bay
Rasmussen Oval
Mary River
57
Turkey Island

Bundaberg Flood Response – A Pilot's Perspective

- Following maintenance and flight planning for a night IFR trip to Archerfield, a final ‘urgent’ tasking came from the Army detachment commander with a report of three adults and a child trapped on a rooftop 15nm southwest of the YBUD airfield.

- Despite last light approaching, RSCU 521 accepted the task and after a 15 minute search of the area determined that this report also was inaccurate or out dated.

Bundaberg Flood Response – A Pilot's Perspective

- RSCU 521 returned to YBUD, on-loaded EMQ staff passengers and flew to Archerfield, ending VH-ESB, and the original Townsville crew involvement in the incident.

- 26.3 hours flown in 3 days.

The concepts of:

- Situational Awareness
- Airmanship
- Crew Resource Management
- Aviation Risk Management

… and their application in this context

Situational Awareness (SA)

In the aviation context, situational SA encompasses several elements:

- **geographic awareness** – where are we? where are we going? where have we been? where is the nearest diversion aerodrome? where is home base?

- **climatic awareness** – weather, visibility, cloud base, forecast, holding?

- **temporal awareness** – what time is it? when am I due to arrive? how long would it take to divert to the nearest aerodrome? what time is last light? what endurance do I have?

- **systems awareness** – engine status, fuel, hydraulics, electrics, avionics.

- **self awareness** – fitness, health, fatigue, recent experience, skill (on that day, in that aircraft, in that situation), level of stress.

Situational Awareness (SA)

In addition, the pilot can only function effectively as the controller of the aircraft and, most importantly, as a decision-maker, if, along with the information, he or she possesses:

■ the knowledge, experience and perception to interpret and process the information;

■ the training, skill and recency to make the correct control inputs and to anticipate and assess the outcome;

■ the discipline and attitude to make further changes to achieve a safe, correct and accurate result; and

■ the time management skills to assign correct priorities.

Airmanship

Airmanship is a non-gender specific term that is used to summarise the characteristics of professional, safe and considerate behaviour as an airman and as a human, in the complex aviation environment. It entails a knowledge of self, the aircraft and the operating environment, together with the self discipline to exercise safe and respected standards.

Source: Professional Aviators Reference Manual

Crew Resource Management (CRM)

- The term used to describe the organisation and distribution of tasks associated with flight in a multi-crew cockpit environment.

- Recently it has come to include the complete crew. It has evolved and has been derived from human factors (HF) training, aircrew team management (ATM) and cockpit resource management (CRM).

- It is not a particularly definitive term as it encompasses many facets of human interrelationships – and that is essentially what CRM is – personal interrelationships.

Crew Resource Management (CRM)

- Personality
- Motivation
- Performance
- Errors / Mistakes
- Communication
- Leadership / Followership

Aviation Risk Management (AVRM)

- ‘A thorough understanding of hazards in an organisation, the associated risks and, the development of robust strategies to mitigate those risks.’

- Managing risks involves identifying potential impacts upon objectives and being prepared for what may happen, rather than addressing consequences following an incident or accident and managing retrospectively: Proactive rather than reactive.

- Many forms:

  – Deliberate: (Qualitative)
  – Detailed: (Quantitative)
  – Immediate: Scene management

Source: Professional Aviators Reference Manual

Aviation Risk Management (AVRM)

- Deliberate: (Qualitative)
  - Used when developing OIP for new tasks:
    - MRP
    - RMP
    - Registers
  - 4 core steps:
    - Identify hazards
    - Assess risks
    - Control Risks
    - Review
- Detailed (Quantitative): Quantitative analysis process applied to above process

Aviation Risk Management (AVRM)

- Immediate: Scene management
- Enablers:
  - Application of Airmanship and CRM principles
  - Appropriate situational awareness
  - Risk acceptance at appropriate level
  - Knowledge and application of OIP

Issues

- **General Safety: AVRM, Airmanship**
  - Situational Awareness: Wind / weather / aircraft limits / organisational policy / traffic / radios / phones
  - Hazards – Bats / Cat A
  - Crew experience and integration: CRM
  - Fatigue – own performance: CRM
- **Winch Safety**
  - Priority of preserving wireman
  - People with pets
  - People with incapacities
  - People with fear
  - Small children / babies


FLOOD
EMERGENCY

Analysis of tasking, prioritisation and utilisation of RSCU 521

- Poor situational awareness within the QCC and SDCC.
- QCC decisions impacted directly on the capacity of RSCU 521 and other EMS aircraft to support the rescue effort.
- Despite the efforts of the RSCU 521 crew to provide feedback and to update the QCC of the situation, poor decisions continued to have a negative impact.
- Combination of Airmanship, CRM and AVRM to overcome lack of direction and support.

Sun 27 Jan 13

- **Decision to send RSCU 521 to Widgee**:
  - Early relocation of the Townsville based aircraft to Bundaberg was insightful.
  - Reduced risk in Townsville area due Cairns coverage. Left other SE Qld assets available to assist.
  - Within 30 minutes of the arrival of this resource, it was diverted some 100 nautical miles away to conduct a (probable) body recovery mission for a time expired task which was accessible from the ground.

Mon 28 Jan 13

Slow response to scale of crisis:

- Frequent reports during the morning of 28 Jan, with the first report within minutes of becoming airborne at 0630 hrs.
- Despite these reports, additional support did not arrive in Bundaberg until approximately midday.
- Other assets were available in the Brisbane / Toowoomba area. (Brisbane EMQ, AGL Action Rescue and Careflight)

Mon 28 Jan 13

Out dated and unconfirmed tasking:

- Frequent inaccurate or time expired tasking info from QCC.
- Dispatch of primary assets outside the main rescue area without confirmation of details or establishment of communication with other parties at the scene led to significant amounts of valuable time being wasted.

Mon 28 Jan 13

Lack of aircraft resource management on scene:

- From 1200 hours 28 Jan, the lack of management and co-ordination at the YBUD airfield began to impact on operations.
- No guidance or direction as to tasking, confusion and congestion increased.
- Increased risk to aircrew and evacuated passengers.

Mon 28 Jan 13

Relocation from North Bundaberg area to 'Agro Trend':

- Prime factor in the confusion during the afternoon of 28 Jan.

- Decision driven by insufficient resources on the northern side of the river (primarily at Oakwood School) for the number of people arriving.

- Alternatives? The engagement of contractor aircraft to move people who were already in a secure (if under resourced) area could have been delayed, and supplies flown to those persons if required, minimising the effort involved until completion of the rescue phase.

Mon 28 Jan 13

Relocation from North Bundaberg area to 'Agro Trend':

Premature decision for two key reasons:

1. Potentially life threatening rescue efforts were incomplete. RSCU 521 was tasked away from rescue work to assist with the 'ferry' of people from Oakwood, despite several non EMS contractor aircraft having been employed for that specific purpose.

2. The destination evacuation centre was not ready to accept them.

Mon 28 Jan 13

Decision making to transfer evacuated passengers to airfield:

- An uninformed decision with significant safety consequences.
- Continuous flow of people were delivered by multiple aircraft to the very busy tarmac area at Bundaberg airport.
  - Unescorted passengers walking without direction between operating helicopters on the very busy tarmac.
  - No plan for how to care for their needs, or indeed how to get them back to Agro Trend when it was deemed suitable. This dangerous situation persisted for a number of hours.

Mon 28 Jan 13

Request for RSCU 521 to deliver oxygen:

- Request during the conduct of a high priority, potentially life-saving winch indicated the very poor understanding that QCC, as the EMS aircraft tasking authority, had of the situation.

Tues 29 Jan 13

Immediate tasking of RSCU 521 away from Bundaberg area:

- RSCU 521 was the first aircraft airborne on Tues 29 Jan. Immediately tasked away from the primary area of operations.
- A situation report of the status of people in the North Bundaberg area would have been invaluable for the SDCC and the QCC.

Tues 29 Jan 13

Tasking of RSCU 521 to a hillside address / Duplication of listed task:

- A lack of basic background checking led to the aircraft being dispatched to hillside (obviously unflooded) areas
- Duplication of the task listings 4 Old Gayndah Rd Morganville vs 4 Gayndah Rd Murgon

Tues 29 Jan 13

Poor utilisation of geographically displaced aircraft:

- Once at the Murgon location RSCU 521 prompted QCC for any tasking in the immediate area, or south of Murgon, noting that all of Brisbane's EMS capacity was now located at Bundaberg.

- Had fears of significant flooding in the Lockyer Valley materialised, the advantage of proximity may have proven significant.

- Instead, RSCU 521 was sent to another unconfirmed, time expired task 70nm west of Hervey Bay – in the opposite direction to that suggested.

Tues 29 Jan 13

Lack of awareness of fuel scenario:

- QCC oblivious to the impact of the fuel shortage in YBUD, not recognising that all aircraft in that area would be grounded until the fuel supply was restored.

Lack of awareness of Bundaberg Hospital status:

- Pilot prompting for the paramedic to contact QCC to confirm the intended destination for the patient: QCC were seemingly unaware that the Bundaberg hospital was being evacuated and that RAAF C17A aircraft were relocating the patients to Brisbane.

Key Issues Summary

Poor Resource Allocation and Prioritisation:

- QCC appreciation of the number of aircraft in the area, the capabilities and limitations of those aircraft and crews (particularly where doctors or paramedics were available) was poor.

Poor situational awareness by tasking authority:

- QCC had poor SA with respect to the gravity of the situation, the capacity of assigned assets to manage the situation, and with respect to forward planning.

- Geographical displacement of co-ordinators and poor communication feedback loops with relevant agencies, and with the tasked assets themselves, was a key factor.

Key Issues Summary

Inappropriate application of current policy:

- Poor communication and prioritisation within the single point tasking authority created difficulties in this incident. Poor delineation of medical vs disaster priorities.

- The medical focus of QCC co-ordinators and poor SA meant that SDCC tasking requests were filtered and on occasion this resulted in inappropriate tasking requests.

- Prescribed policy with respect to regional and local scene command was not followed.

Key Issues Summary

Total lack of on scene co-ordination:

- Safety and efficiency could have been significantly enhanced with the addition of an on-scene Operations team, led by a suitable Scene Commander.
- During the morning of Tues 29 Jan a weather and flying operations brief including:
  - Direction / tasking for each aircraft
  - Parking and refuelling instructions (could have addressed the fuel shortage issue far earlier)
  - Traffic management system for both the dedicated rescue, and dedicated ferry aircraft.

Summary of recommendations to Queensland Government

- Review efficacy and efficiency of the current EHN tasking policy – both for day to day medical operations and disaster operations.
- Review implementation and performance of current policy framework during this incident.
- Suggested improvements based on observed deficiencies from aircrew perspective.

Appropriate tasking authority structure:

If QCC is to retain single point tasking authority:

- QCC must have appropriate tools to facilitate a high level of situational awareness in order to make appropriate decisions.
- Restructure: QCC Co-ordinator should be an experienced Operations Manager, who sits above the medical team and the communications / dispatch team with ‘global SA’.
- A ‘scoring system’ be developed to define the severity and urgency of tasking, which is based on the whole picture, not solely on the medical condition of the patient/s.
- This core ‘headquarters’ element could be added to in situations which required additional expertise, such as AusSAR / AMSA SES, Fire and rescue or QPS.

Appropriate tasking authority structure:

Or…

- Alternatively, a ‘disaster trigger’ could automatically transfer tasking responsibility for available EHN assets to SDCC when required.
- In this scenario, the QCC would become a customer of the SDCC and would bid for assets (with appropriate priority).
- The primary benefit of this option is that QCC would focus solely on it’s area of expertise, and the SDCC would be immediately boosted with the whole of the available EHN as soon as the situation is warranted. The SDCC could be supplemented by external agencies as in the previous example.
- Whole of capability approach.

Deployable Management Team:

- In either case, the tasking authority structure must have a deployable element such that the Operations Manager always has immediate access to all required information.
- The Operations Manager should have resources to not only conduct operations (SA), but also excess capacity to formulate contingency planning.
- Decision on location of Command would be dependent upon the assessment of the Operations Manager under each specific circumstance.

Emergency Management EMQ Queensland

Conclusion

- Extensive debriefing and analysis of the rescue response following the 2011 Queensland floods.
- Expectation that the ‘lessons learnt’ would have been applied in this incident response, but largely – from my perspective, they were not.
- Scale of disaster is directly proportional to the scale of the confusion.
- Changes which improve communication between all parties will ensure appropriate employment of assets, minimise delays in appropriate response, and will ultimately result in improved safety, improved efficiency and improved outcomes for those affected.

Bundaberg Flood Response – A Pilot's Perspective