



SCG Statement of Intent
Regional Response to Climate Change
May 2009
Updated March 2012
Reaffirmed November 2012

Southern Councils Group represents the Councils of Bega Valley, Eurobodalla, Kiama, Shellharbour, Shoalhaven, Wingecarribee and Wollongong.

At their Board Meetings of 08 May 2009 and 9th March 2012 SCG delegates agreed the following:

"We need to display leadership, develop community resilience and plan for environmental and economic sustainability in response to climate change"

We agree:

- ▶ that climate change is a reality that will impact on communities across our region
- ▶ to demonstrate leadership to our community through a coordinated approach in addressing the predicted climate change challenges.

We agree:

On the need to adopt a risk management approach in the consideration of climate change impacts, by

- ▶ integrating climate change adaptation and mitigation measures into everyday operations and strategic planning of our organisations
- ▶ ensuring that our actions, decisions and policy response to climate change remain current and reflect organisational capacity, community desires and the rapidly changing science and policy sectors

We agree:

To work to gain a better understanding of how different climate change scenarios impact on

- ▶ Existing assets and infrastructure
- ▶ Environmental resilience
- ▶ Regional business sectors and their levels of vulnerability.
- ▶ Community well being and transition opportunities

We agree:

On the need to

- ▶ work with our communities and businesses in the development of **local** solutions

- ▶ ensure that we are positioned to take advantage of the opportunities that arise through the development of alternative industry and technologies

At the SCG Board Meeting of November 2012, SCG delegates reaffirmed the commitment of the organisation to the above and new signatories appear below.



City Administrative Centre
Bridge Road (PO Box 42), Nowra NSW Australia 2541 - DX 5323 Nowra
Phone: (02) 4429 3111 - Fax: (02) 4422 1816

Southern District Office
Deering Street, Ulladulla - Phone: (02) 4429 8999 – Fax: (02) 4429 8939

Email: council@shoalhaven.nsw.gov.au

Website: www.shoalhaven.nsw.gov.au

For more information contact the Human Resources

DEFENCE FORCE TRAINING AND SERVICE LEAVE

Policy Number: POL12/150 • **Adopted:** 20/09/2005 • **Reaffirmed:** 16/12/2008 • **Minute Number:** MIN05.1224, MIN08.1726 • **File:** 32401E • **Produced By:** Assistant General Manager (Human Resources) • **Review Date:** 1/12/2016

1. PURPOSE

Paid leave is granted to employees who are part-time members of the Australian Defence Reserves for the purpose of serving the Navy, Army or Air Force. This policy provides guidelines for the granting of that leave.

2. STATEMENT

This policy is applicable to all staff members of Council who are entitled to leave provisions.

3. PROVISIONS

A staff member may be granted paid leave of up to 20 days per annum for routine or special purpose defence force training or defence service activities on the basis that:

- a) the leave is subject to the operational needs of Council
- b) applications for defence force leave must be accompanied by evidence of the purpose and necessity for that leave
- c) a certificate of attendance at the training camp or school must be forwarded to the Pay Office on return to normal duties
- d) the period of paid defence force service will be recognised as service for the purposes of accrual of long service leave, sick leave and annual leave
- e) a “make-up” pay system will apply, whereby the staff member will be paid the difference between their ordinary rate of pay and monies received from the reservists
- f) monies received from part-time services to the Defence Force Reserves are retained by the staff member.

4. IMPLEMENTATION

Supervisors able to approve leave are responsible for this policy, in consultation with Human Resources and the Pay Office.

5. REVIEW

This policy will be reviewed every four years, or earlier should circumstances arise that warrant a review.

6. APPLICATION OF ESD PRINCIPLES

None applicable.



BUSINESS CASE

Two Way Radio Network Replacement

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Two Way Radio Network Replacement

Business Case

Date: 14 February 2013

Version History

Version	Date	Author	Summary of Changes
1	17/1/13	GW	Final

Distribution

This document is to be distributed to:

Name	Title	Date of Issue	Version
Rob Donaldson	AGM		
John Lenehan	IT Manager		
Brian Shearing	Electrical & Comms Mng		

Two Way Radio Network Replacement

Business Case

Date: 14 February 2013

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2 Purpose

This Business Case provides an outline for the replacement of Council's two way radio network. This replacement is required to meet Council's obligations to provide a safe and efficient work environment for its staff in day to day work activities and in its role as a support agency (in an emergency event).

The project involves replacement of existing functionality, using current digital technology that would inherently improve a number of facets of the two way radio network.

Whilst mobile phones have taken over many of the day to day communications functions during normal work periods, the mobile phone network is extremely unreliable outside urban areas and in many areas in emergency events. Mobile phone coverage cannot be relied upon for day to day communications to staff when working in remote locations.

The replacement of the existing radio network with the latest generation of two way radio infrastructure will result in a reliable voice communications network covering an estimated 80% of the Shoalhaven City Council local government area, including 95% of town and village areas. Comparatively the mobile phone network covers approximately 40% of the LGA and 75% of town and village areas. The use of a new digital radio network will reduce 'Black Spots' and dependency on mobile phones.

It is considered that the only technology currently available to meet these communications service obligations is a digital two way radio network. The favoured form of this digital radio network is Digital Mobile Radio (DMR), as determined by the GHD Digital Radio Review (Appendix B).

The digital radio network will allow for telephone call routing through the Council's VoIP network. Apart from much wider coverage, call costs are likely to be lower than those made from mobile phones. There is scope for integration of new digital data technology within the DMR, with the possibility of job/tasking data and paging being available live to remote staff. Safety functionality extends to GPS capability, 'man down' and panic alarming.

The estimated cost is \$723,301 including a contingency of 15%, over 3 years.

Ongoing annual operational costs are estimated at between \$110,000 - \$136,000 against current annual two way radio costs of \$183,095.

3 Reasons

Council's existing analogue two way radio network was installed in 1998, consisting at the time of 200 vehicle mounted units and 25 hand held units. Since this time, the uptake of mobile phones has impacted on the total number of two way units in service. As of December 2012 this stood at 180 vehicle mounted units and 25 hand held units.

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As with any electronic equipment, the mobile units and base stations that make up the network have a finite life span. It was identified in 2009 that this network was reaching the end of what could reasonably be expected to be its functional life. This has since been reflected in the increasing need for unscheduled maintenance on base and mobile units and the cessation of support by the supply company for much of the installed fleet infrastructure.

It is now considered that the network is no longer operating at a level of reliability that is sufficient to guarantee normal day to day operations or the ability of Council to meet its emergency response obligations.

This decreased reliability is further accelerating the move, by staff away from the use of two way radios towards mobile phones, which in itself is presenting issues with field staff not having access to a communications system that allows maximum contact within the broader Shoalhaven City Council local government area.

It is envisaged that the new two way network will utilise the latest digital communications systems. This will potentially allow leveraging of Council's existing IP backbone for inter site connectivity, providing potential savings via way of network integration, license cost sharing and converged hardware support.

Industry experience points to greater clarity of audio and expanded coverage footprints along with improved functionality and network administration, again leading to greater efficiencies in ongoing network support.

The Project is in direct support of some of Shoalhaven City Council's Strategic Plans. By directly supporting these strategic plans, this project will allow Council to fully meet its ongoing business continuity, emergency response obligations and efficiency plans.

Plan	Goals/Objectives	Relationship to Project
DISPLAN	Provide a reliable and broad coverage two way communications network in order for Council and Council staff to support the community and other emergency agencies in time of emergency or disaster.	Radio links and networks operated by Emergency Service and Functional Area Organisations (including Council Staff) are to be used in accordance with their internal procedures and as a BACK UP system for communication between the Local Emergency Operations Centre and all other Emergency Operations and Co-Ordination Centres

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Plan	Goals/Objectives	Relationship to Project
IT Business Continuity and Disaster Recovery Plan	Provide business continuity for Councils core businesses in times of catastrophic failure of day to day infrastructure.	The two way radio network would be used in a situation where all other methods of voice communications have failed.
CSP	Strategic implementation	Support emergency services/DISPLAN communications

4 Options

The following alternative options were considered in order to address the business problem. These alternatives were not selected for a number of reasons which are explained below.

No Project (Status Quo)	Reasons For Not Selecting Alternative
Keep the existing Network in place	<ul style="list-style-type: none"> Increased expenditure required in order to keep the network viable Continued occurrence of a high number of faults Unreliable supply of parts Support software will not run on new PCs. No longer supported
Alternative Option	Reasons For Not Selecting Alternative
Shut down network and rely on Carrier mobile phone or satellite networks	<ul style="list-style-type: none"> High running costs Does not meet day to day operational needs of work groups Very poor coverage footprint Extreme unreliability especially in times of Emergencies. Does not meet DISPLAN obligations Does not meet project requirements
Alternative Option	Reasons For Not Selecting Alternative

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No Project (Status Quo)	Reasons For Not Selecting Alternative
Government Radio Network (GRN)	<ul style="list-style-type: none"> This option has been ruled out due to indications of coverage and network access. This network does not meet with Council's requirements.

5 Benefits Expected

The following table lists the business goals and objectives that the Two Way Radio Network Replacement Project supports and how it supports them:

Business Goal/Objective	Description
Two Way Communications over maximum area.	Provide sufficient base stations and backbone infrastructure to provision reliable coverage to 80% of Councils Local Government area and 95% of towns and village areas.
Improve staff efficiency	Provide staff with greater flexibility with their day to day communications requirements and integration with phone systems.
Provide improved staff safety systems.	Provisioning of basic alarm functionality in association with GPS tracking abilities in order to quickly identify staff in distress.
DISPLAN	Provide interoperability with the radio networks of other agencies and support staff in performing support functions in times of emergency or disaster
Reduce running costs	Leverage off existing IP infrastructure and digital networks where feasible.
Reduction of Base Stations	Reduce current 8 base stations to 6 (implementation of Kings Point and removal of Budawang, Saddle Back and Red Rocks base stations)
Digital capability	Possible implementation of task/job data capability
VoIP	Ability to make phone calls over DMR network

The following table lists the key resources, processes, or services and their anticipated business outcomes in measuring the performance of the project. These performance measures will be quantified and further defined in the detailed project plan.

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Key Resource/Process/Service	Performance Measure
Network Usage	Provision of more flexible communications options for staff will result in greater utilisation of the network on a day to day basis (Air Time Usage)
Staff Resources	New equipment and warranties will reduce the number of man hours required by Shoalcom staff to support the network.
Staff Availability	Supervisors will have less instances of having staff working in, or passing through areas with no voice communications services.
Reduced dependence on Carrier Services	Greater uptake by staff will reduce Council's reliance on mobile carrier services and provide greater surety in supporting emergency response requirements.

The replacement of the existing network with the latest generation of two way radio infrastructure will result in a reliable voice communications network covering an estimated 80% of the Shoalhaven City Council local government area, including 95% of town and village areas. Comparatively the mobile phone network covers approximately 40% of the LGA and 75% of town and village areas.

It will provide a level of functionality sufficient for Council to meet its support obligations under Emergency Response scenarios.

Importantly there will be sufficient functionality to support Council field staff in performing their day to day work functions in an efficient manner.

Increased reliability and functionality may also reduce the uptake of mobile phones for certain sections of the organisation.

The new DMR network will allow reduction of user fees from \$60/month to \$45/month.

6 Risks

The greatest risk in this project is not implementing the upgrade in a timely manner. The existing infrastructure has exceeded its expected life and has become a risk in itself.

The system is now reporting above acceptable levels of equipment failure and the supply company no longer supports repair or upgrade to much of the installed hardware. This is leading to a situation where there is no longer confidence in the ability of the system to meet key performance measures of reliability. Mobile phones are being relied on to a level that may jeopardise Councils' emergency response abilities.

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A new digital radio network (DMR) is backwardly compatible with the existing analogue network and can therefore be phased in over the project life.

Further roll out of mobile phones increases cost and reliance with limited access outside town areas, also increasing the risk of misuse of voice and data services. Mobile phones do not offer effective communications to staff working in remote locations. Mobile phones are also adversely affected by high demand, resulting in poor or no coverage during peak tourist times which often coincide with the summer fire season.

Figure 1. Risk Table

Scenario	Old Network		New Network		Comments
	Likelihood of Occurrence	Consequence /Impact on Network	Likelihood of Occurrence	Consequence /Impact on Network	
Major equip. failure in next 2 years	Almost Certain	Extreme (major)	Rare	Medium (major)	Old network unsupported
Major system failure in an emergency situation	Likely	Extreme (catastrophic)	Rare	High (catastrophic)	
Multiple Equipment failures	Likely	High (major)	Rare	Medium (major)	Old network unsupported
Reduction of Network Footprint	Likely	High (major)	Unlikely	Medium (major)	Old equip. Becoming inefficient
Fire - Loss of one repeater	Unlikely	Low (minor)	Unlikely	Low (minor)	
Fire - Loss of several repeaters	Rare	High (catastrophic)	Rare	Medium (major)	
Ineffective remote communications	Likely	High (moderate)	Possible	Medium (minor)	Old network not reliable, unsafe
Emergency event radio traffic - high load.	Almost Certain	Extreme (major)	Almost Certain	High (moderate)	Old network prone to fail under load
Hand held; poor battery life	Almost Certain	High (moderate)	Unlikely	Low (minor)	DMR, better battery life
Poor fringe reception	Almost Certain	High (moderate)	Possible	Medium (minor)	DMR, gives better fringe reception

RISK RANKING CHART

E = EXTREME H = HIGH M = MEDIUM L = LOW

LIKELIHOOD How likely is it to happen? ↓	← CONSEQUENCES - How severely could it affect health and safety? →				
	CATASTROPHIC <i>Kill or cause Permanent Disability</i>	MAJOR <i>Serious Illness or Injury</i>	MODERATE <i>Medical Attention, Time off work</i>	MINOR <i>First Aid required</i>	INSIGNIFICANT <i>No injuries</i>
ALMOST CERTAIN <i>Is expected to occur</i>	E	E	H	H	M
LIKELY <i>Will probably occur</i>	E	H	H	M	M
POSSIBLE <i>Might occur</i>	H	H	H	M	L
UNLIKELY <i>Could occur</i>	H	M	M	L	L
RARE <i>May occur only in exceptional circumstances</i>	H	M	M	L	L

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7 Cost

The following table summarises the cost and savings actions associated with the Project. This represents the 'Shoaltech proposal' section of Appendix B.

Radio Network upgrade to DMR		One repeater option		Second repeater option	
		Materials	Labour	Materials	Labour
Bases	Cambewarra upgrade	\$4,289.38	\$2,684.55	\$6,375.31	\$1,301.60
	Vincentia upgrade	\$4,326.88	\$2,196.45	\$4,326.88	\$1,382.95
	Fishermans upgrade	\$4,289.38	\$1,464.30	\$6,375.31	\$1,382.95
	Boyne upgrade	\$20,477.73	\$6,101.25	\$6,375.31	\$1,382.95
	Kingspoint upgrade	\$11,001.75	\$4,474.25	\$6,412.81	\$1,382.95
	Sassafras upgrade	\$23,319.13	\$4,636.95	\$6,375.31	\$1,382.95
Handhelds	Handheld upgrade quantity 30	\$32,103.23	\$894.85		
Mobiles	Mobiles upgrade quantity 180	\$160,489.35	\$33,353.50		
Fixed stations	Fixed station upgrade quantity 4	\$5,280.03	\$813.50		
Sub totals		\$265,576.83	\$56,619.60	\$36,240.94	\$8,216.35
Total one repeater option		\$322,196.43			
Network setup costs		\$262,303.75			
Contingency 15%		\$87,675.03			
Total cost one repeater		\$672,175.21			
Total one repeater option		\$322,196.43			
Total second repeater option		\$44,457.29			
Network setup costs		\$262,303.75			
Contingency 15%		\$94,343.62			
Total cost two repeater		\$723,301.09			
Proposed DMR annual costs		1 Repeater Option		2 Repeater Option	
Proposed annual site rental costs		\$42,366.27		\$64,654.14	
Proposed audit costs			\$5,694.50		\$7,646.90
Predicted maintenance cost		\$12,000.00	\$15,000.00	\$15,000.00	\$14,000.00
Admin of system and user training			\$35,000.00		\$35,000.00
			\$110,060.77		\$136,301.04
Existing Network annual costs					
Current annual site rental costs		\$76,472.12			
Current audit costs			\$8,623.10		
Maintenance costs		\$28,000.00	\$35,000.00		
Admin of system and user training			\$35,000.00		
			\$183,095.22		

Projected annual maintenance cost savings (Current vs. DMR 2 repeater) network - **\$46,794**

The Second repeater (4 channel) option is preferred for effective VoIP phone functionality.

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A Request for Information (or Expressions of Interest) document will be produced to seek vendor information on systems that are immediately available to meet Council's network criteria.

It is likely that procurement would be by selective tendering process for the supply and installation of the most appropriate technology.

Equipment costs have been prepared based on nominal values available from a supplier. It is expected that the tender process will reduce these costs.

8 Timescales

The following are the major project milestones identified at this time. As the project planning moves forward and the schedule is developed, the milestones and their target completion dates will be modified, adjusted, and finalised as necessary to establish the baseline schedule.

Milestones/Deliverables	Target Date
Staff Consultation Complete	23/03/2012
Project Plan Review and Completion (Consultant)	30/06/2012
Business Case to Council	21/01/2013
Install bases and 1/3 of fleet	01/06/2014
Second third of Fleet	01/06/2015
Last Third of Fleet – completed by	01/06/2016
Training	2013 - 2016
Hand held radios	2014
Closeout/Project Completion	2016

Projected yearly capital costs:

Year	1 Repeater	2 Repeater
2013	\$134,435.04	\$144,660.22
2014	\$235,261.32	\$253,155.38
2015	\$201,652.56	\$216,990.33
2016	\$100,826.28	\$108,495.16

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9 Stakeholders

Stakeholder	Responsibility	Contact Details
AGM	Rob Donaldson	
Shoalcom	Andy Depree, David Warwick	
Communications and Electrical	Brian Shearing	
Asset Owner	Tim Rigney	
IT Network Support	Andrew Perry	
SCC Users		
Community Users		

10 Project Resources

Role	Description	Name/Title
Executive Sponsor	Provide executive support for the project	Rob Donaldson
Radio Technology Support	Provides all technology support for the project	Andy Depree, David Warwick
Process Improvement	Advises team on process improvement techniques	GHD Consulting
Project Manager	Manages the business case and project team	Brian Shearing
Network Support	Provides all data network support for the project	Andrew Perry
Business Case	Coordinate business case and assist implementation	Grant Weyman

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11 Appendix A

Spreadsheet with full network cost and implementation costs

[Radio Network Upgrade to DMR.xlsx](#)

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12 Appendix B

GHD Digital Radio Review

[181514 Rev 2.pdf](#)



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Shoalhaven City Council

Digital Radio Review Findings and Recommendations Report

July 2012



This Report on Digital Radio Review – Findings and Recommendations (“Report”):

- 1. has been prepared by GHD Pty Ltd for Shoalhaven City Council (“Council”);*
- 2. may only be used and relied on by Shoalhaven City Council;*
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- 4. may only be used for the purpose of a review of Council’s digital radio upgrade requirements.*

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The services undertaken by GHD in connection with preparing this Report were limited to those specifically detailed in Section 1.4 of this Report;

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Appendices

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- B Network Architecture
- C Digital PMR Technology Review



Executive Summary

In December 2011, Shoalhaven City Council ("Council") commissioned GHD to prepare a review of the two-way radio network, facilitate a workshop with key stakeholders to re-validate user requirements identified in the 2009 investigations, provide an update on current radio technology, concepts and trends, and recommend upgrade options for a digital radio network.

The main conclusions of this review are:

- ▶ The radio network is a key means of communication for Council field staff as it is able to cover a large geographical area. It is also a key safety system to support Council's Health, Safety and Environment (HSE) obligations and responsibilities, in particular, in lone and remote worker situations. Therefore the network should be retained for both operational and emergency functions.
- ▶ The current analogue radio network has reached or is reaching technological obsolescence and needs to be upgraded.
- ▶ The upgrade and migration of the existing radio network to digital technology would introduce features and functions considered essential by Council staff in a number of operational roles. A key finding from the discussion workshops was that users would be supportive of the radio network if it had mobile phone features, familiarity and privacy of conversations (inherent in digital radio system).
- ▶ Three options have been presented:
 - Option 1 – Full network equipment replacement (DMR technology) - **Recommended**
 - Option 2 – Partial network replacement (digital ready) - alternative
 - Option 3 – Operate and Maintain Existing Network (no change) – not recommended
- ▶ The Digital Mobile Radio (DMR) standard is recommended on the basis of relative lower costs and lower complexity compared to TETRA and P25. DMR will meet the identified business needs of Council (that is, a key aim is for mobile radio to be a backup to mobile phones especially in times of emergency or lack of coverage). DMR offers backward compatible technologies to the existing system which supports a staged rollout.
- ▶ The concept for the upgrade will be to plan for a network that is scalable and staged. Features that should be considered or specified include the following:
 - portable repeater
 - VoIP interconnect
 - PSTN interconnect
 - GPS tracking
- ▶ The staged approach toward the upgrade will allow Council to evaluate the culture change in the workforce in the use of the mobile network/PSTN interconnect features prior to committing additional funds to increase the coverage or sophistication of the radio network (e.g. additional channels or move to trunked network with the aim of reducing the number of mobile phones in

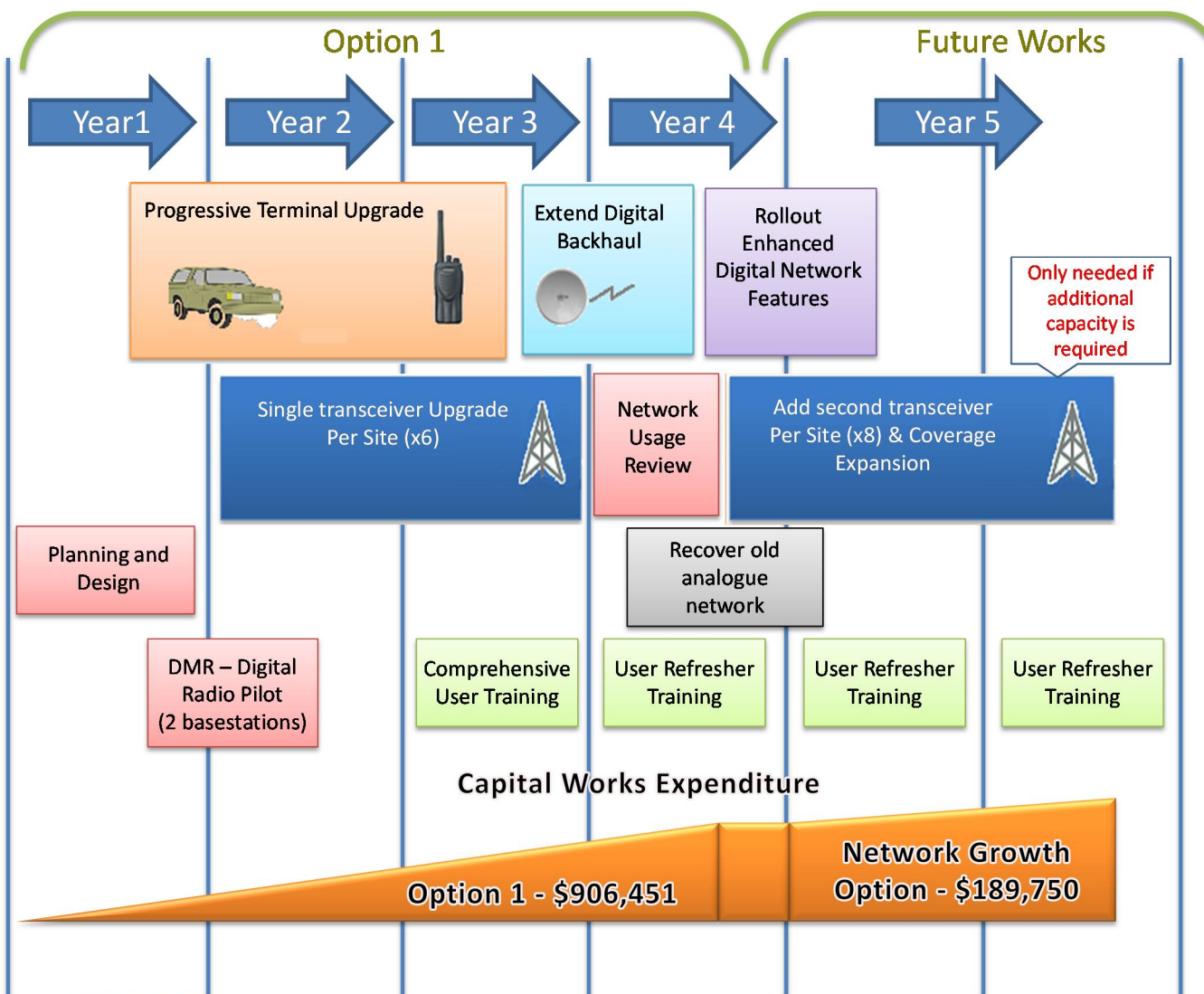


the field). The ability to increase network capacity with additional base stations (repeaters) and potential move to trunking could offer other opportunities to sell or offer free services to community and the Shoalhaven local industry.

- ▶ A network upgrade will provide the potential for long term options to allow network sharing by commercial users (after network growth/full trunking is implemented). This can supplement network operational costs and/or co-fund network expansion.
- ▶ Both Option 1 and Option 2 provide opportunities for optimisation of overall network topology which could lead to reduction in operational expenditure through:
 - Minimising occupied equipment space (rental fees)
 - Optimising proactive and reactive maintenance costs
 - Reduced maintenance and network operational expenditure which could in turn translate to lower radio terminal service fee (current set at \$60 per month)
- ▶ Trends in DMR technology developments are seeing the development of a wide range of user applications to integrate with other corporate information systems (GIS, telemetry, asset tracking, smartphone application), including
 - GIS – Integrate radio use with operation tracking (w.g. weed spraying & mowing)
 - Telemetry – Environmental monitoring (e.g. flood monitoring, gate monitoring)
 - Asset Tracking – Vehicle movement, after hours use (theft), vehicle roll-over reporting
 - Smartphone Applications – Direct radio call from iPhone to radio (use iPhone just like radio function. Can save iPhone users having both a phone and radio)
- ▶ Radio technologies are inherently robust with a 10+ year service life (unlike mobile phones). Digital radio technologies incorporate phone-like features with private conversations, public telephone network calls, short messaging services, broadcast messaging.
- ▶ Outcomes of the radio network discussion workshops highlighted a need for regular radio user training to maintain familiarity and confidence in network functionality (every 1-2 years).
- ▶ Cost Summary (based on unit rates and no rounding up)
 - Option 1 (Full DMR network implementation)
 - Minimum cost for two channel system: \$906,451 (ex. GST)
 - Recommended budget for four channel system: \$1,096,201(ex.GST)
 - Option 2 (Partial DMR network implementation – digital ready)
 - Minimum Cost for two channel system: \$746,601 (ex.GST)
 - Recommended Budget for four channel system: \$ 901,851 (ex.GST)
 - Option 3 – Maintain Existing Network
 - No cost estimates provided



Figure 1 Indicative Project Program





1. Introduction

1.1 Background

In 2009, Shoalhaven City Council ("Council") embarked on investigations into their field communication networks in view of an increasing trend in the use of mobile telephones in preference over two-way radios. A discussion paper on field communication networks was prepared by Council in November 2009, which had a number of recommendations including, inter alia:

- ▶ Maintaining the two-way radio network as a support or back up to the mobile phone network in case of emergency events or in areas where there is no mobile phone coverage;
- ▶ Rationalising the number of two-way radio networks.

In December 2011, Council commissioned GHD to prepare a review of the two-way radio network, facilitate a workshop with key stakeholders to re-validate user requirements identified in the 2009 investigations, to provide an update on current radio technology, concepts and trends, and finally to provide upgrade options for a digital radio network.

1.2 Purpose of Report

The purpose of this report is to:

- ▶ Provide a review of Council's radio-based field communication networks as currently installed with reference to the November 2009 Discussion Paper prepared by Council;
- ▶ Document the key outcomes (user requirements) of the stakeholder workshop held at Council's offices on 21 February 2012; and
- ▶ Provide recommendations, for Council's considerations, on options to upgrade to digital radio network technology to meet Council's user requirements.

1.3 Scope of Report

The scope of the report provides commentary on digital radio technologies and recommendations for upgrade of existing field communications. The report covers the following:

- ▶ A summary of the existing radio communications network and its use
- ▶ A review of user requirements and their application
- ▶ A summary of the proposed network functions to meet the user requirements
- ▶ High level review of digital radio technologies which could be used
- ▶ Recommendation of technology
- ▶ High level cost assessment
- ▶ High level implementation plan



1.4 Report Limitations

This report is limited to the scope described in Section 1.3 and does not include the following project information which will need to be developed for project implementation:

- ▶ Detailed project implementation plan
- ▶ Detailed coverage analysis
- ▶ Fully itemised cost estimates
- ▶ Final selection of product or vendor
- ▶ Detailed radio link network design
- ▶ Detailed assessment of Council's existing infrastructure
- ▶ Tender documentation including technical specifications

1.5 Abbreviations

APCO	The Association of Public-Safety Communications Officials
CB	Citizens band
DMR	Digital mobile radio
GPS	Global positioning system
GRN	Government radio network
HSE	Health Safety and Environment
NPWS	National Parks and Wildlife Service
PSTN	Public switched telephone network
RFS	Rural fire service
SCC	Shoalhaven City Council
SES	State emergency service
TETRA	Terrestrial Trunked Radio
UHF	Ultra high frequency
VHF	Very high frequency
VOIP	Voice over internet protocol



2. Existing Council Radio Network

2.1 General

The existing network provides voice call functionality across four separate networks for general Council operations. The radio network is utilised by Council personnel and community groups such as Hanson Concrete, community bus, etc. Wide area coverage within Council administrative area is provided from eight base station sites (refer Figure 2 at the end of this section).

As identified in November 2009 Discussion Paper, the network is under-utilised with base stations/channels duplicated for the purpose of traffic segregation only. Currently, the predominant user preference is the use of mobile telephones instead of the radio network. This attitude would appear to reflect a preference of enhanced mobile phone features whilst sacrificing service area coverage and communications network availability. This may be attributed to the following:

- ▶ Ability of mobile phone to make *private calls* (not provided by existing network)
- ▶ Ability to place call to the public telephone network (no longer supported by existing network)
- ▶ Use of mobile phone calls for personal matters
- ▶ Mobile handset is smaller than radio
- ▶ Ability for short messaging services (text messaging)
- ▶ Lack of familiarity with radio network features and operation (lack of regular training)

2.2 Condition of Network

Although the network has been regularly maintained, it was identified by Shoalcom that both the radio network equipment (hilltop sites) and the radio terminal equipment (handsets and vehicle radios) are aging, and reaching technological obsolescence.

2.2.1 Base stations

The typical radio base station technology is RF Technology Eclipse Series I. It is estimated that the current base stations have a service life expectancy for operation till 2017. The Eclipse I range of equipment has been superseded by the manufacturer.

2.2.2 Radio Terminals

The typical radio terminal (handsets and mobile/vehicle radios) are Simoco 8030 series. This equipment has been superseded by at least two generations of equipment. Shoalcom has identified that the equipment is becoming impractical and/or uneconomical to repair.



2.3 Network Configuration

2.3.1 Wide Area Communications

The four networks allow voice traffic to be segregated to match four types of work group / functional requirements across Council operations:

- ▶ Network 1 - provides coverage for engineering staff in the Northern and central areas.
- ▶ Network 2 - provides coverage for water staff and associated teams like the pump fitters in the Northern and Central areas
- ▶ Network 3 - provides coverage from Vincentia to Durras for the Southern teams.
- ▶ Network 4 - has coverage over the entire city and beyond and was originally set up for staff required to work anywhere in the city. Network 4 is made up of 6 base sites covering the entire Shoalhaven area. All sites are linked together to allow users to communicate with other users on the network at most locations across the city and in some areas beyond. Network 4 was designed to meet the requirements of council workers whose job involved travel to all parts of the Shoalhaven.

The networks are identified in Figure 2 and Table 1 follows:

Table 1 Radio Networks – Channel Table

Network	Base Station Code
1	11,12
2	21,22
3	31,32,33
4	41,42,43,44,45,46,47

2.3.2 Local Communications

Local radio communications between users at worksites is provided using licenced single “simplex” channels or the “citizens band” which provide direct radio to radio communications (without the need for a base station).

2.3.3 Modes of Operation

The respective wide area and local modes of operation are shown in Table 3 at the end of this section.



2.4 Telephone Functions

The existing four networks incorporate PSTN interconnect features which were widely utilised during initial years of network operation, with utilisation diminishing to all but nothing with the deployment of mobile phone networks. Council noted at the 21 February 2012 workshop that the current PSTN interconnect feature functionality is no longer maintained and is not relied upon for critical applications.

2.5 Network Interoperability (with other networks)

The existing network is not known to be currently utilised for interoperability with complimentary agencies (SES, RFS, and Town Fire Brigade). It is understood that in the event of emergency situations requiring co-ordinated response or communications at *command and control* level, the co-located radio services at the Shoalhaven Emergency Management Centre are used.

It is understood that a limited number of Council vehicles and plant equipment are fitted with RFS radios to allow communications at the fire ground (typically Section 44 fires) with the RFS coordinators.

2.6 Digital Radio Backbone

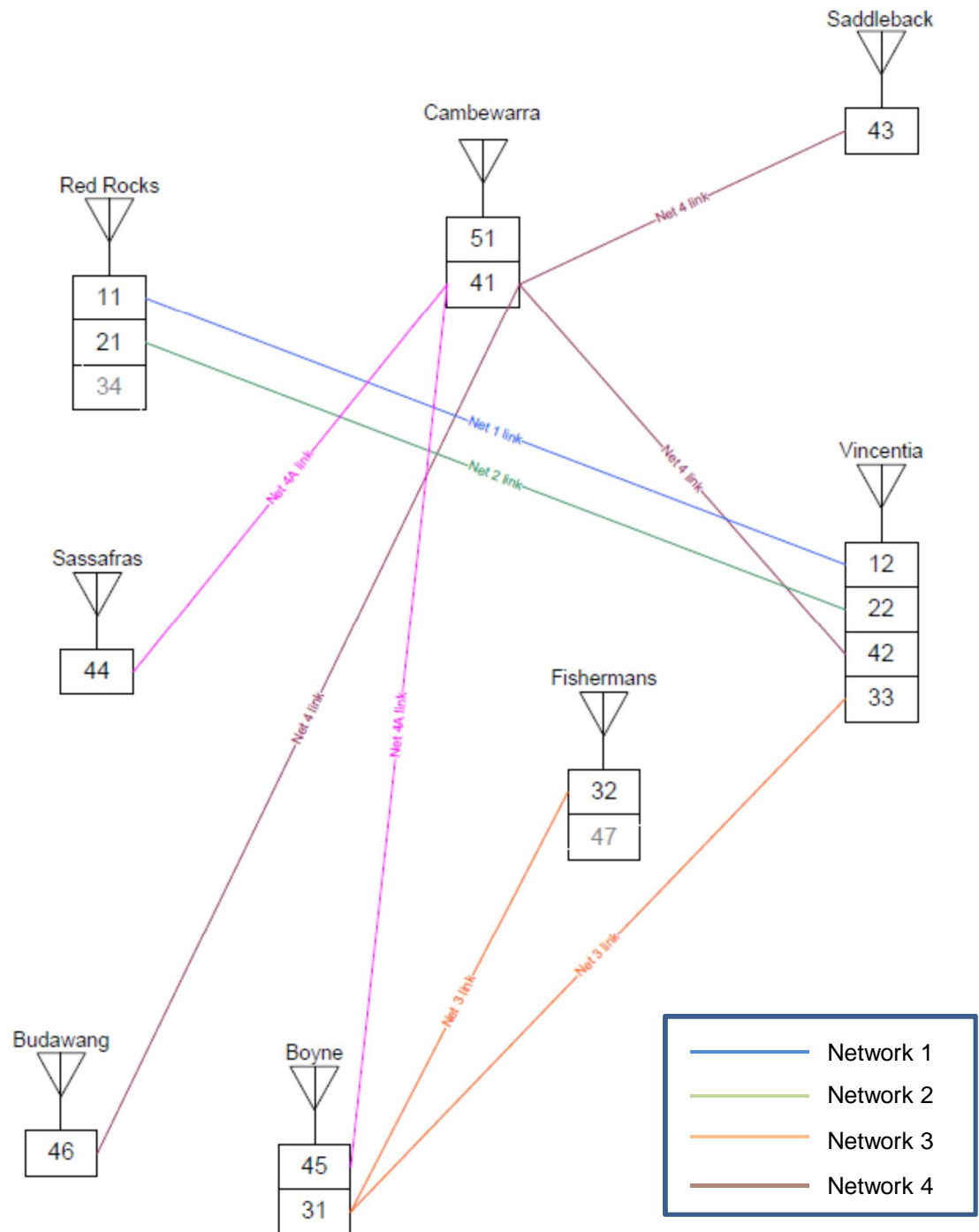
The existing radio base station sites are interconnected by a series of radio links. Traditionally the radio links adopted analogue technologies. Of recent years, Council has implemented a number of high capacity microwave data links to service both the radio communications networks and the corporate data needs (including internet, intranet and VoIP). The existing digital links operate between sites as listed in Table 2 below.

Table 2 Digital Radio Links

Site A	Site B
Cambewarra Mtn	Red Rocks
Cambewarra Mtn	Vincentia
Cambewarra Mtn	Saddleback Mtn



Figure 2 Council – Existing Radio Network Topology



**Table 3 Council Radio Communications Modes – Simplified illustration**

Mode of Operation	Illustration
<p>Wide Area</p> <p>Person-to-person, person-to-vehicle, vehicle to vehicle via a hilltop radio base station (repeater).</p> <p>(Duplex)</p>	
<p>Wide Area</p> <p>Person-to-workshop via a hilltop base station (repeater).</p> <p>(Duplex)</p>	
<p>Local</p> <p>Person-to-person</p> <p>(Simplex)</p>	
<p>Local</p> <p>Person-to-vehicle</p> <p>(Simplex)</p>	



3. User Requirements - Assessment

3.1 General

The workshop held on 21 February was convened to refine the findings of the November 2009 Discussion Paper and define two-way radio field communications requirements with respect to:

- ▶ Emergency usage requirements
- ▶ Operational requirements
- ▶ Overlap with mobile phone usage
- ▶ Functions available in current generation digital radio networks which could be used to enhance safety and operations.

3.2 User Requirements

3.2.1 Radio Network for Emergency/Disaster Management Responsibilities

The role of Council in emergency management is defined in Council's Management Plan, the Shoalhaven DISPLAN and the Shoalhaven Water Supply Network Emergency Response Plan. In particular, Council supports the SES in activities such as road closures and the RFS through a Service Level Agreement.

In the November 2009 Discussion Paper, it was noted that a two-way radio network will continue to play a major role during emergency events based on experiences during such events in recent times (e.g. Victorian bush fire events of early 2009).

Communications with agencies such as NPWS, SES and RFS are understood to be as follows:

- ▶ At operational level, via physical co-location of agencies at Shoalhaven Emergency Management Centre without network interoperability;
- ▶ At field level, water tanker and graders have RFS radio installed (e.g. for Section 44 fires).







3.2.2 Specific Requirements for Operations

Operations-specific requirements are summarised in the following table. The table includes a comparison between the use of the digital radio network and the mobile telephone network against each requirement.













**Table 4 List of Identified User Requirements and Assessment**

Legend:

Suitable  **Limited Suitability**  **Unsuitable** 

Requirement	Operational / Emergency	Description	Two-way Radio suitability	Mobile telephone Suitability
Signal Coverage				
General Requirement - Area of Operation	Operational	Council field staff requires communications to large geographic area. Council noted probably 20% coverage of Shoalhaven by Telstra. Mobile Phone: Usable coverage around metro area Two-way radio signal potentially cover up to 40-60% of general operational areas from current network footprint.		
Temporary Worksite (Roadworks / Weed spraying)	Operational	Local radio network with or without a base station/ repeater		
Fixed Worksite (West Nowra Waste Depot, Workshops)	Operational	Local radio network with or without a base station/ repeater		









Requirement	Operational / Emergency	Description	Two-way Radio suitability	Mobile telephone Suitability
Bushfire Response	Emergency	Personnel communications (Safety) Personnel and asset tracking (efficient coordination of incident)		
Flood Response	Emergency	Personnel communications (Safety) Personnel and asset tracking (efficient coordination of incident)		
Call Functions				
Emergency Call	Emergency	Sends alarm to all radios		
Open channel – Broadcast Call (all informed)	Emergency / Operational	Situations can call for broadcast voice messaging to all personnel for incident awareness and response, for example “bush fire approaching Sassafras from South-west”		
Open channel - Group Call	Emergency / Operational	Team Leader / Manager requirements to call entire group		
One to one - Private call	Operational	Call between team members. Allows private conversation. Limits nuisance traffic to non-essential personnel.		



Requirement	Operational / Emergency	Description	Two-way Radio suitability	Mobile telephone Suitability
Internal Telephone Call	Operational	Opportunity to call directly between Council internal phone network and radio network. Opportunity to limit operational costs (phone bills)		
External Telephone Call	Operational	Opportunity to call directly between Council radio network and public telephone network. Could substitute requirement for phone issue to low-use operators. Radio could offer phone call feature to certain personnel without phone.		
Short Text Messaging Functions				
Workforce Notification	Emergency / Operational	Situations can call for broadcast voice messaging to all personnel for incident awareness and response, e.g. "bush fire approaching Sassafras from South-west" Available on mobile phone at a cost Free with radio network		
Workforce management	Operational	General notification to field staff. Paging service for on-call staff. Available on mobile phone at a cost, limited coverage. Free with radio network, wide area coverage		



Requirement	Operational / Emergency	Description	Two-way Radio suitability	Mobile telephone Suitability
GPS Tracking				
Asset Tracking	Emergency / Operational	Personnel and asset tracking (efficient coordination of incident)		
Weed Spraying	Operational	Tracking of weed spraying activities. Field staff and toggle tracking on and off for weed spraying activities for integration into Council GIS		
General Network Reliability				
Mobile Phones	Emergency / Operational	No Service Level Agreement from the Telecommunications Carrier. No reliability of service or call access during emergency events.	N/A	
Two-way radio	Emergency / Operational	High availability if correctly maintained		N/A



3.3 Summary of Key Requirements

3.3.1 Key requirements

Table 5 lists the key requirements determined from the user workshop, in order of importance:

Table 5 Key User Requirements (Workshop Outcomes)

Priority	Details
1	Reliable network to meet communication operational and emergency needs
2	Radio terminal interface that is simple and encourages frequent use and matches the needs of all work groups and community groups: <ul style="list-style-type: none"> • Small, compact and simple portable radios • Mobile (vehicle) radios of similar or smaller form-factor to existing • Suitable battery life vs. unit weight
3	Scalable network topology with flexibility to meet Council's daily needs now and for the next 10-15 years: <ul style="list-style-type: none"> • Longevity in technology selection (P25 or DMR). Market support and maintenance • Open Standard: Multi-vendor / cross-vendor support • Backward compatibility for transition period to new topology • Easy to add new channels / call group
4	Scalable network design that allows staged network upgrade with initial backward compatibility to the existing network
5	Technology selection that matches the level of importance commensurate with Council needs: <ul style="list-style-type: none"> • Daily requirements: Commercial and Industrial Grade Equipment/ Reliability • Emergency situations: Essential Service Grade Equipment / Reliability
6	Radio Network Coverage: <ul style="list-style-type: none"> • Equivalent or similar signal coverage to existing radio network with the same or less number of radio base stations (and physical sites) • Improved network coverage and/or voice intelligibility
7	Multi-level call functions: <ul style="list-style-type: none"> • Private Calls (One-to-one). This appears to have been the main driver for users to use mobile as preference to two-way • Group Calls (One-to-many). Ability to segregate calls to a select workgroup. Options for 50+ call groups. Isolates speaker noise / nuisance traffic from personnel outside the call group. User more likely to listen to radio traffic (not turn-down/turn-off) when they know traffic is for their group only.



Priority	Details
	<ul style="list-style-type: none"> Broadcast Calls (One-to-All). Key function for incident notification. Allows (key) operators to send voice or text message to all radio terminals simultaneously
8	<p>Public Telephone Network Access:</p> <ul style="list-style-type: none"> Relieve reliance on mobile phones for low phone call users Optional relief of mobile phones for high phone call users (where network supports higher levels of phone call traffic). Improved phone network access in remote Shoalhaven areas

3.3.2 Enhanced Radio Features/Functions

Table 6 lists additional requirements determined from the user workshop.

Table 6 Enhanced Radio Features and Functions

Feature/Function	Details
Priority Calling	Network to provide priority network access for certain call groups or emergency calls
GPS -Tracking	GPS tracking of personnel (e.g. weed sprayers), local job tracking (road crew to flag location of future works while travelling), and worker log on and log off for lone worker situation.
GPS - Automatic Vehicle Location	GPS tracking of vehicles for theft or roll-over
GPS - Information Security (subject to Privacy Issues):	GPS personnel location data storage on secure PC/Server with limited/restricted access to limit Team Leader tracking of personnel, technical isolation of GPS information on terminals (user activation of GPS function from terminals rather than Team Leader control)
Man-down alarm with GPS	<p>The mobile radio can activate critical issue (man-down) alarm. Man-down alarm can be activated by:</p> <ul style="list-style-type: none"> Alarm button on the radio A timer in the radio which requires resetting at regular intervals Tilt sensor. <p>The mobile radio position and/or text message/email can be broadcast on alarm (and/or other actions i.e. open radio microphone, priority call on network call 000 can be implemented).</p>
Internal Phone Network interconnect	Opportunity to direct connect radio network to existing internal VoIP telephony network. Radio terminals can become a natural extension of phone network with one-to-one calling.



Feature/Function	Details
In-vehicle repeater	Provision of temporary / retro-fittable vehicle repeaters to extend radio coverage at temporary worksites (e.g. remote roadworks, weed-spraying, worker-in-isolation). Portable radio operating range much less than mobile (vehicle). Typical range of 2km from vehicle. This option has some radiofrequency interference limitations which need to be addressed with the equipment vendors.
Portable repeaters (radio-in-a-box).	Provision of temporary radio repeaters to extend radio coverage at temporary worksites (e.g. remote roadworks). Not dependent on vehicle mounting. Can be located on a nearby prominent hill-top. Typical local area coverage of 10-20km radius. . This option has some radiofrequency interference limitations which need to be addressed with the equipment vendors.
Short Text Messaging And paging	Provision for field personnel to send and receive short text messages from handset. This function would also support paging.
Roaming Mobile Radio	Option for a quick-fit radio network for portable to be used in vehicle rather than dedicated radio in vehicle (limitation is portable 'transmit' (TX) power (operational range). Need for external microphone and speaker in vehicle. Optional external antenna. Saves work-group renting two radios for a person working in a vehicle.
Cross-band repeater	Allow connectivity at radio level between to networks. E.g. Council VHF network to UHF CB, Council VHF network to GRN



4. Technology Review

4.1 Technologies

Digital radio technologies which could be considered are APCO P25 Phase 1, DMR Tier II, DMR Tier III and TETRA. All technologies are currently deployed, supplied and serviced in Australia. Table 7 provides a simple summary of each technology. A detailed technology comparison is attached in Appendix A.

Table 7 Current Digital PMR Technologies

APCO 25	<p>APCO 25 is a North American Standard for digital radio networks intended for mission critical /emergency services applications. It has become the default standard for emergency services agencies in Australia , for example, the police and government radio networks.</p> <p>Note: APCO 25 compliant equipment has inherent backward compatibility with conventional analogue systems and has capability to work in mixed mode form (digital or analogue, on a call by call basis)</p>
DMR (Tier II)	<p>DMR is a European ETSI standard for digital radio networks intended for operations critical and commercial/industrial applications. It is being deployed by some emergency services agencies (in developing countries) and a diverse range of local government and commercial users. In Australia networks have been implemented by Motorola in capital cities for use by transport operators and other commercial users.</p> <p>Note: DMR compliant equipment has inherent backward compatibility with conventional analogue systems and has capability to work in mixed mode form (digital or analogue, on a call by call basis)</p>
DMR (Tier III)	<p>DMR III is an extension of DMR II to provide a trunking facility. Trunking is an architecture suited to networks with a medium to large user base or a user base with complex working group relationships. Trunking allows improved network utilisation by minimising the quantity of installed base stations whilst maximising the number of allowable users. Trunking allows for improved caller or call group prioritisation (in terms of access to network).</p> <p>(Example: The public telephone system uses trunking methods to allow over subscription of users to the network whilst maintaining a limited number of fixed telephone lines between two locations)</p>
TETRA	<p>TETRA is a European ETSI standard for digital radio networks intended for mission and operations critical applications. It is widely deployed in Europe. In Australia, it is most commonly used in the mining industry.</p>



4.2 Advantages and Disadvantages

4.2.1 Technical Comparison

Key technical items for digital radio communications are compared in the following table:

Table 8 Digital Radio – Key Item Technical Comparison

Item	Description	APCO P25	DMR	Tetra
1	Open and Mature Standard	✓	✓	✓
2	Multi-vendor Support in Australia	✓	✓	✓
3	Product commensurate with essential service and commercial/industrial grade	✓	✓	✓
4	Digital Voice Intelligibility	✓	✓	✓
		IMBE or AMBE+ vocoders		
5	Radio Repeater Performance: Equivalent or better than existing system (Note 1)	✓	✓	✓
6	Simple Radio Terminal Usage	✓	✓	✓
7	Operation in the VHF and UHF frequency bands.(APCO 25 Dual band equipment is available)	✓	✓	Proposed
8	Scalable Conventional Architecture	✓	✓	✓
9	Backward compatibility with existing system (operation in both analogue and digital mode)	✓	✓	X
10	Scalable to Trunking System	✓	(Note 2)	✓
11	Multi-level voice call control (private, group, broadcast)	✓	✓	✓
12	Public phone network interconnect	✓	✓	✓
13	Internal VoIP phone system integration	✓	✓	✓
14	Enhanced features (GPS, Man-down, short-messaging)	✓	✓	✓

Note 1 – Digital radio technologies generally have theoretical coverage radius from repeaters level at 90% of the analogue equivalent but generally present a higher intelligible signal in fringe areas than analogue.

Note 2 – Pseudo trunking available. Full trunking pending release of DMR Tier III compliant products (circa 2013-14)



4.2.2 Discussion

General

As indicated in Table 3 all three digital technologies support the key technical functions required for Council operations.

APCO 25 and DMR

APCO P25 Phase 1 and DMR Tier II are the main radio technology contenders. Both standards are mature to relevant international standards.

APCO P25 is mature with wide variety of vendors, with mature products in the market place. It is the technology deployed for emergency services applications.

APCO P25 Phase 1 (Conventional) and DMR Tier II also support operation in analogue mode enabling a staged transition to the digital network and interoperation with other agency analogue networks using the same frequency band, for example, the RFS fire ground network.

DMR Tier II is a mature technology given its implementation overseas. It is relatively new to the Australian market with well recognised vendors (e.g. Motorola, Tait, Comgroup, RF Technology) having recently released (or are soon to release) DMR Tier II product. The Hytera product distributed by Combined Communications is globally mature, but new to Australia.

The advantages of DMR Tier II over APCO P25 can be summarised as follows:

- ▶ Two time slots per radio 12.5 kHz channel (APCO P25 one time slot), i.e. two available voice channels
- ▶ Less than half cost per voice channel compared to APCO 25 because DMR supports two logical voice channels
- ▶ Based on industry understanding, radio terminals are typically 20% cheaper than APCO P25 equivalent
- ▶ Base station links have a lower data rate 200 Kbps, compared to typically 1 MBPS of APCO 25
- ▶ Standard/Architecture is tailored for commercial/industrial systems where future customisation is desired (i.e. allows integrator add-ons similar to iPhone applications applicable across multi-vendor platform). APCO P25 is architecture constrained.

DMR Tier II may be considered for long term implementation where Council finds a significant increase in use of the radio network or access is provided to the network for commercial users (network rental for third party users, e.g. taxi or bus services).



TETRA

TETRA can operate in digital mode only. Additionally TETRA is currently restricted to the UHF frequency band, and would not be suitable for use in the Shoalhaven area. This technology is generally not used by government agencies.

4.3 Use of the NSW GRN

This review has given consideration to the use of the NSW GRN. The GRN is an APCO 25 network available for use by all government agencies. Users are charged for the service (like a mobile telephone system). The monthly fee is approximately \$75 per month per mobile radio. This fee includes the call costs.

Coverage is provided in some parts of the Council administrative area, principally in Nowra and along the Princes Highway corridor. However the GRN does not meet the user requirements for the following reasons:

- Coverage – The GRN operates in the UHF band therefore coverage is not as extensive as the networks operating in the VHF frequency band
- Coverage expansion – There are no plans to increase the coverage at this stage. Any agency specific coverage extension may generally need to be funded by the respective agency.
- Telephone service – Telephone calls are not encouraged and are time limited (four minutes). Telephone calls to and from the network are routed by a server in Sydney and therefore incur long distance call costs.
- The mobile radio terminal unit costs are high compared to DMR devices (up to 50%).

4.4 Recommendation

DMR Tier II is the recommended digital technology for upgrading the Council network, for the following reasons:

- The features and functions will meet the user requirements
- It is cost effective compared with the other technologies.
- Radio frequency is spectrum efficient, with two logical channels in each assigned frequency. (This reduces the number of base station transceivers required)





5.3 Links

The data transmission capacity required would be in the order of 50-200kb/s per base station site depending on final network topology. The network links would be accommodated in the existing Council microwave backbone network where the base stations are co-located with the microwave links (refer Table 2 above). Subsidiary links would be required to base station sites which are not co-located with the Council microwave backbone.

Link technology selection should consider the following:

- ▶ Link topology (length and terrain)
- ▶ System perform objectives
- ▶ Licensed spectrum availability
- ▶ Unit price
- ▶ Structural capacity of tower to support links

The subsidiary links could be low/medium capacity microwave links involving thin UHF digital links (256kb/s, e.g. Aprisa 4RF) operating in the 900 MHz band.

Licensed links are recommended in preference to class /unlicensed links because of the higher availability achieved by:

- ▶ Managed frequency allocations which can be interference free (lower risk)
- ▶ Higher transmit power which enables increased fade margins (more flexibility in design)
- ▶ Proper planning and design which will align link selection with overall system performance objectives (provision of essential and emergency communications)

5.4 Base Stations

A staged rolled out would initially involve one transceiver at each base station providing two logical channels. If required, a second transceiver can be added providing two further logical channels. Hence, two transceivers would be required at each base station site to provide four channels if ultimately required by the Council. Refer to the information on channels and user groups in the sections below.

5.5 Radio Terminals

Radio terminals would comprise:

- ▶ Vehicle mobile - fitted to Council vehicles and road plant. (the quantity would be in the order of between 160 and 180 units).
- ▶ Hand portable units – these would be available at depots or assigned to users. Car kits would be provided in the vehicles of nominated users. (the quantity of portables appears to be in the order of 30 units)
- ▶ Fixed units – Installed at the Council Emergency Management Centre and depot, for direct communications with the mobile terminals as required or when the telephone system is unavailable.



5.6 Portable Base Station

Portable base stations for work site and wide area range extension could be considered, subject to resolution of potential interference issues with transmitters in close proximity. A trial is recommended.

5.7 Computer Application Servers

Dedicated computer servers with radio network applications software would support:

- ▶ Alarm management
- ▶ GPS tracking
- ▶ Text messaging
- ▶ Network management and monitoring
- ▶ DMR high level applications

5.8 Telephone interconnect

The radio network would be connected to the Council VOIP network so that the radio terminals appear to the user as telephone extensions. This would allow the following functionality:

- ▶ Direct call from office phone to single radio (private call) and vice versa
- ▶ Radio to public telephone network (private call) and vice versa
- ▶ Radio terminal could appear as a unique phone number in corporate phone directory (like mobile phone)

5.9 Frequency Band

5.9.1 General

The network would operate on VHF high band. The existing licensed frequencies would also be retained and amended where required.

5.9.2 Coverage

The coverage would be comparable to that achieved by the existing network. User experience with digital radio networks indicates that apparent coverage is increased because of the voice clarity. Coverage of black spots would need to be confirmed by field tests. Coverage enhancement can be cost effectively achieved using DMR technology.

5.9.3 Technology

DMR is the recommended digital technology of upgrading the Council radio network. This technology will support the Council user requirements.



5.9.4 Channels

Four channels would be provided. Each channel can be used for voice or data or a combination of both.

5.9.5 User Groups

User groups can be allocated to segregate unrelated voice calls, for example, water and roads. Implementation of user groups for call segregation lends itself to future sub-leasing of network access to third-party / commercial entities (note: third parties would not be able to hear Council conversations and vice versa)

5.9.6 Network Scaling and Future Growth

The DMR technology enables the network to be scaled according to the network traffic. The network can be configured for trunked operation. This increases the network capacity without necessarily adding base stations.

5.9.7 Culture Change to Promote Network Use

In considering the change management aspects of the roll-out of digital technology, the following are messages that can be communicated to stakeholders to promote user acceptance and encourage use of the digital network:

- ▶ Safety – the capability to initiate alarms in lone/ remote worker situations, plus the capability of being informed on the location of the person in distress.
- ▶ Coverage – Good coverage compared to the mobile telephone network.
- ▶ Ease of use /features and functions– similar to a mobile telephone
- ▶ Voice clarity – similar to a mobile telephone.



6. Options Review

6.1 Option 1 – Full Network Replacement

6.1.1 Implementation Plan

A staged implementation approach, structured as a four-year program, is recommended as follows:

- ▶ Stage 1 – Commence progressive upgrade of radio terminals to DMR technology in line with repair and maintenance regime (inherent backward compatibility to existing analogue network)
- ▶ Stage 2 - Demonstration/Development
 - Set up a new digital sub-network with two base stations to test network and user acceptance. The trial network would be used to test and demonstrate the system features, functions, and performance as well as gauge requirements for user and operational training requirements. It could also be used to manage the cultural change aspects with respect to radio use (implementation of new system with supportive work groups may assist in gaining momentum for support of radio system use for operational requirements (less requirement for mobile phones).
 - One base station is proposed to be in the Nowra area for technical management, and the second in an area where there is poor mobile coverage (Sassafras or Budawang)
 - The scope would also include configuration of a sample set of new DMR mobiles and portables to work on both the digital and analogue radio networks (single radio per user to use existing network and test old network).
- ▶ Stage 3a - Extend network further to the remainder of Council area (6 additional base station sites)
- ▶ Stage 3b - Extend network further key blackspot areas (typically 3 additional base station sites)
- ▶ Stage 4 – Upgrade digital backbone to all sites, VoIP telephony integration
- ▶ Stage 5 – Full user training on new digital network features

Subject to Council network usage and interest in commercial network leasing:

- ▶ Add full network features and functions
- ▶ Expand channel capacity with additional of base stations at existing sites
- ▶ Expand network coverage, further black-spot infill



6.1.2 Risks and Opportunities

Table 9 Option 1 - Risks

Risk	Mitigation
User acceptance – Users may not use the network frequently or take advantage of the features and function of DMR platform	<p>Diligent project/change management of Demonstration/Development Stages 1 and 2 to test the network operation and conduct user trials, with due attention to the change management/training aspects of this technology roll-out.</p> <p>Train the users in proficient use.</p>
Network reliability	<p>Scheduled maintenance program</p> <p>Ensure there is proper training for proficient use of the network management system to identify and respond to faults.</p>
High phone call usage – network congestion	<p>Where phone call usage is prominent (grows over time), add base station sites to network (only as required).</p> <p>The nomination of two base station transceivers per site (four channels) accounts for increased telephone usage.</p> <p>The initial deployment of a single transceiver per base station site (two channel) would support low to moderate call usage.</p> <p>VoIP system configuration could enforce call limit of 1-2 minutes to minimise network congestion but this is the least desirable measure.</p>

**Table 10 Option 1 - Opportunities**

Opportunity	Details
Reduced communications costs	Mobile telephone call costs may be reduced by the use of the radio network, especially for particular calls from radios to internal Council telephone extensions.
Optimisation of network topology with new digital system	Optimised network topology would typically lead to less operational and maintenance expenditure (less equipment to service, less equipment space occupied, less power consumption)
Field staff "automation"	The use of text messages to manage field work task allocation.
Asset management	Accurate location of road repair locations (e.g. pot holes) using the radio GPS and messaging functions.
Operational management	Future enhanced GPS-related functionality such as GPS tracking for theft, 'man-down' alarm features
Staged expenditure	Staged expenditure on base station deployment and backbone upgrade will allow Council to gauge user uptake of new digital radio platform in line with Council operation requirements. Possible to avoid over development of network (expenditure on base stations => Year 5+).
Commercial Leasing of Network	Opportunity to sell private network access to commercial operators. Network access fees may supplement network development and operational costs (bring forward Year 5+ works).



6.1.3 Budget Estimate

The table below indicates the budget estimate for the staged upgrade to DMR. These are preliminary high level estimates only as they are based on incomplete design and other information, hence GHD does not represent, warrant or guarantee that the full upgrade project can or will be undertaken at a cost which is the same or less than the budget indicated in the table. Estimate is based on a general review of vendor pricing as typically offered to Government entities. The pricing of equipment is largely dependent upon intended application, including:

- ▶ Operating environment (temperature, water/dust, ruggedness).
- ▶ Criticality of service (critical vs. non-critical service).
- ▶ Complexity of technology (channel density per radio repeater, trunking provisions, data and voice).

**Table 11 Option 1 - Indicative Costs**

Ref	Item	Cost over 4-year program ¹	Year 1	Year 2	Year 3-4	Year 5+ (Optional – Future Network Growth)
1	Vehicle mobile radio terminals ⁷	\$276,218	\$10,000	\$128,109	\$138,109	-
2	Hand portable radio terminals ⁷	\$24,000 ²	\$5,000	\$16,000	\$3,000	-
3	Fixed radio terminals	\$14,000	\$14,000	-		-
4	Base stations (transceivers) ⁸	\$135,000	\$50,000 ³	\$65,000	\$20,000	\$135,000
5	Links to network ¹⁰	\$160,000	\$31,000 ³	-	\$129,000	-
6	Network sub-systems ⁶	\$79,000	\$79,000			\$30,000
7	SCC project costs (Project management, in-house engineering, training and user evaluation) ⁴	\$100,000 ⁹	\$40,000 ⁵	\$60,000		(not estimated)
8	Contingency (15%)	\$118,233				\$24,750 ¹¹
	Total	\$906,451				\$189,750



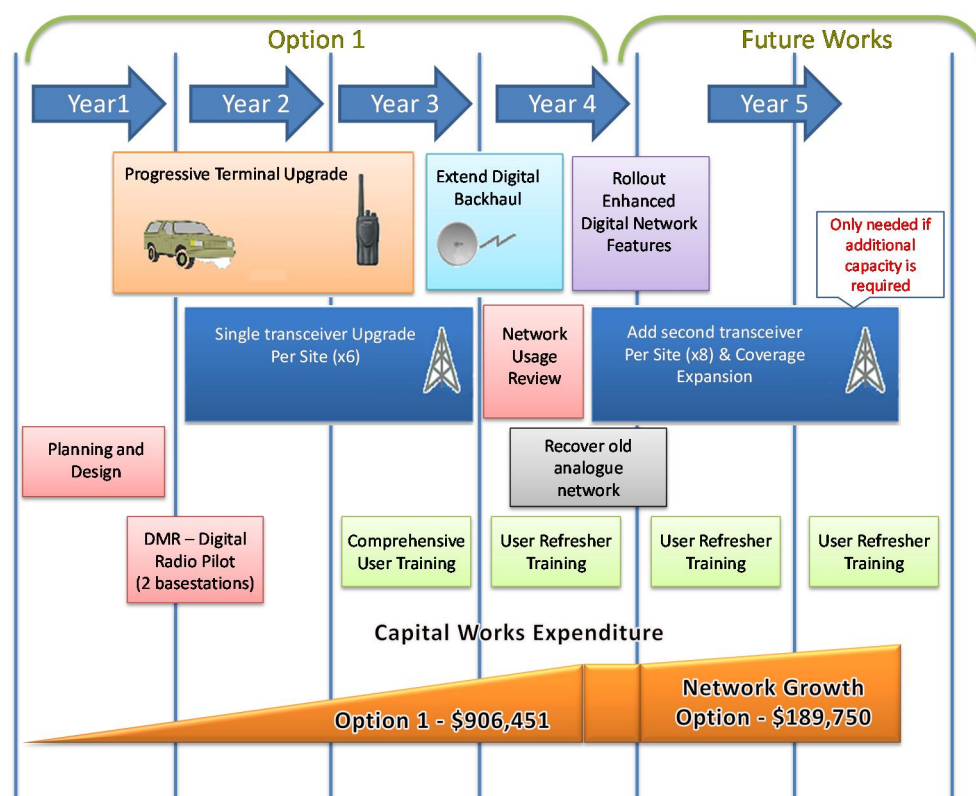
Notes:

1. Cost escalation over 4 years not included.
2. Full 30 unit replacement nominated
3. Year 1 – connection of 2 base station sites
4. Council to confirm in-house costs
5. Assume 40% in-house costs taken up in the first year of roll-out
6. Network subsystems comprise voting system, GPS logging system, network management system, gateways for VoIP and analogue-DMR (interface to existing network during changeover)
7. Assume 180 vehicle mobile radio terminals, 30 hand portable radio terminals (cost including charging stations and batteries) and 4 fixed radio terminals at the Emergency Management Centre, Waste Management Plant, Council Depot and Council Administration Centre.
8. Assume two base stations following 8 sites (staged installation):
 - Saddleback Mountain
 - Mt Cambewarra
 - Sassafras
 - Red Rocks
 - Vincentia STP
 - Yatteyatah
 - Boyne Trig
 - Mount Budawang
9. SCC project cost estimate nominated by Shoalcom
10. The links are assumed to be as per the table below
11. Allowance for project contingency of 15%

**Table 12 Proposed Radio Links**

Ref	From	To
L1	Nowra Administration Building	Mt Cambewarra
L2 (Existing Microwave)	Vincentia WT	Mt Cambewarra
L3 (Existing Microwave)	Redrocks	Mt Cambewarra
L4 (Existing Microwave)	Saddleback Mtn	Mt Cambewarra
L5	Sassafras	Mt Cambewarra
L6	Mt Budawang	Sassafras (or Mt Cambewarra)
L6	Yattheyattah (Fishermans)	Boyne Trig
L7	Boyne Trig	Ulladulla

6.1.4 Indicative Program

Figure 4 Option 1 - Indicative Project Program



6.2 Option 2 – Partial Network Replacement (Digital Ready)

6.2.1 General

As DMR technologies are backward compatible with the existing analogue network architecture, the future equipment replacement programme may consider purchase and deployment of both DMR radio terminals and base stations for items that are no longer serviceable or repairable. The new equipment items may be configured to work in analogue mode to maintain operability with the existing architecture. This option would limit functionality to that of the existing network and typically would not require a digital backbone upgrade or the DMR sub-systems.

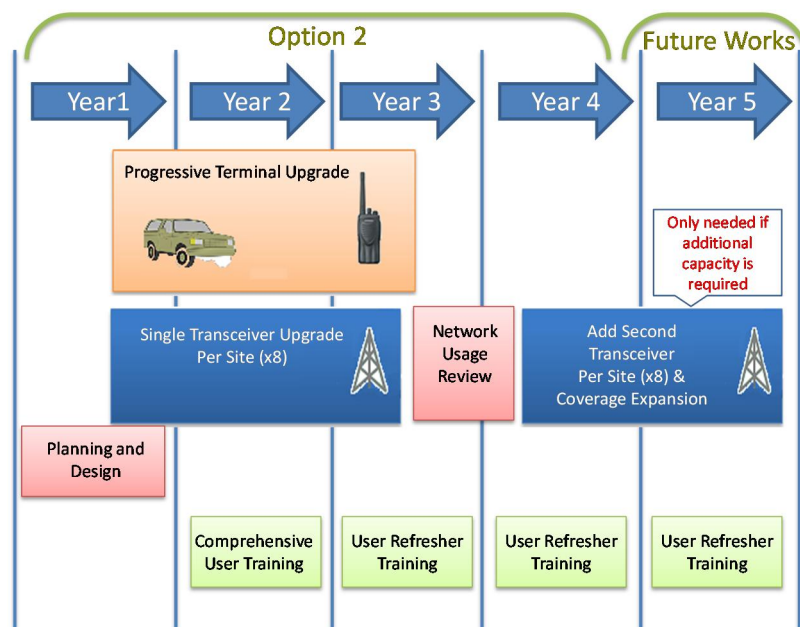
The new network architecture may incorporate quasi-trunking and private call groups to provide slightly enhanced features to that of the existing network.

This option may be considered as a first pass measure to bring the network to a 'digital ready' status.

6.2.2 Implementation Plan

This option would follow along a similar timeline to that nominated in Option 1 with works ending midway through Year 3.

Figure 5 Option 2 - Indicative Project Program





6.2.3 Risks and Opportunities

Table 13 Option 2 - Risks

Risk	Mitigation
User acceptance – Functionality typically the same as existing network, users may be reluctant to increase usage of network in lieu of mobile phones	Regular training and familiarisation programmes

Table 14 Option 2 - Opportunities

Opportunity	Details
Reduced communications costs	Lower cost of deployment
Staged outlay of funds	Becoming 'digital ready' is first step toward future proofing network with option to upgrade to additional features in future
Commercial Leasing of Network	Opportunity to sell private network access to commercial operators. Network access fees may supplement network development and operational

6.2.4 Budget Estimate

Table 15 below provides the indicative costs for Option 2 which are interpolated from figures provided in Table 11 (Option 1) above. It is assumed that the works can be undertaken at a cost which is the same or less than the budget indicated in the table. Pricing is based on a general review of vendor pricing as typically offered to Government entities. The pricing of equipment is largely dependent upon intended application, including:

- ▶ Operating environment (temperature, water/dust, ruggedness).
- ▶ Criticality of service (critical vs. non-critical service).
- ▶ Complexity of technology (channel density per radio repeater, trunking provisions, data and voice).

**Table 15 Option 2 - Indicative Costs**

Ref	Item	Cost over 3- year program ¹	Year 5+ (Optional – Future Network Growth)
1	Vehicle mobile radio terminals	\$276,218	-
2	Hand portable radio terminals	\$24,000 ²	-
3	Fixed radio terminals	\$14,000	-
4	Base stations	\$135,000	\$135,000
5	Links to network	\$90,000	-
6	Network sub-systems (Phone interconnects)	\$10,000	-
7	SCC project costs (Project management, in-house engineering, training and user evaluation)	\$100,000 ⁹	(not estimated)
8	Contingency (15%)	\$97,383	\$20,250
	Total	\$746,601	\$155,250



6.3 Option 3 – Maintain Existing Network

6.3.1 General

This option is provided for discussion only and not considered further for reasons of asset obsolescence and alignment with user requirements.

6.3.2 Implementation Plan

Maintaining current network equipment in line with existing practices.

6.3.3 Risks and Opportunities

Table 16 Option 3 - Risks

Risk	Mitigation
User acceptance – Functionality typically the same as existing network, users may be reluctant to increase usage of network in lieu of mobile phones	Regular training and familiarisation programmes
Current equipment has been superseded by manufacturers.	Seek alternative equipment to maintain existing network functionality and features

Table 17 Option 3 - Opportunities

Opportunity	Details
Third-party network	Engage the NSW Telco Authority to discuss future plans for GRN expansion in the Shoalhaven. Indicative monthly radio service fee is \$75 per terminal

6.3.4 Budget Estimate

No budget estimates were considered.



7. Conclusions and Recommendations

7.1 General

The general conclusions of this review are:

- ▶ The radio network is a key system in supporting Council's Health, Safety and Environment obligations and responsibilities, in particular, for lone and remote worker situations. Therefore it should be retained for this purpose.
- ▶ The current analogue radio network is life-expired and needs to be upgraded
- ▶ Upgrading and migrating to the proposed DMR network technology would provide the safety functions which the users consider essential.
- ▶ The radio network provides considerably more coverage compared to the mobile telephone network. Therefore in the more remote regions of Council's administrative area, it is the more cost effective means of mobile communications.
- ▶ Digital radio technology provides good voice clarity and mobile telephone like features and functions. Therefore the users could be encouraged to use the radio network in place of mobile telephone calls.
- ▶ The recommended digital technology is backwardly compatible with the existing analogue network. This enables progressive migration to digital technology which is typically cost neutral in terms of replacement cost of analogue only vs DMR technology (where DMR set to analogue functionality only)
- ▶ It is recommended to adopt Option 1 (Full Upgrade) as it is perceived that user uptake is likely to have higher probability for success than Option 2 (Digital Ready Upgrade) given the 'mobile phone like' features and functions of the new digital equipment.



Appendix A

Minutes of 21 February 2012 workshop



21 June 2012

Project	SCC Radio Network Review	From	M Ngui
Subject	Review of Field Communications	Tel	02 9239 7350
Venue/Date/Time	SCC Nowra Admin Bld. Committee Room 1-2	Job No	21/20538
Copies to	SCC: Brian Shearing (BS) GHD: May Ngui (MN) GHD: Joel Spurway (JS)		
Attendees	SCC: Brian Shearing (BS), David Warwick (DW), Tim Rigney (TR), Andy Depree (AD) + other field reps GHD: May Ngui (MN) GHD: Joel Spurway (JS)	Apologies	N/A

Minutes	Action
1. Introduction by BS <ul style="list-style-type: none"> a. History of existing network b. Review of 2009 report findings c. Intro to GHD 	
2. Introduction by MN <ul style="list-style-type: none"> a. Intent of meeting: work thru user requirements, field comments b. Comments from meeting will be used as input to pending radio network review c. Aim to streamline network topology and improve overall network utilisation d. Radio network to support DISPLAN, underlying mechanism for communications in event of mobile phone network unavailability 	
3. User Requirements Review <ul style="list-style-type: none"> a. Item 1 – Coverage – Call for general comments on coverage for wide area, hand portables, extended coverage for remote worksites, city coverage <ul style="list-style-type: none"> i. Workshop Group – Noted issues SW of Sassafras and remote bushland areas 	BS – Seek direction from GD for Parks Group BS/MN – circulate basic questionnaire: to include call for coverage commentary



Minutes	Action
<ul style="list-style-type: none"> ii. Parks Group – Don't use PMR radios. Most working around town. Use phones iii. Parks Group – noted that nature of work does not require radios. Only few plant/personnel ever called for emergency works. (Tree inspector/dozer driver). Would consider small pool of portables for adhoc/emergency requirements iv. Parks Group – Is satellite radio/phone an alternative? v. Park Group – Request directive from GD on requirement for group to have PMR radios. vi. TR (IT Group): Noted that recent mobile phone coverage review by SCC. Noted that only 10% of SCC work area/operational area service by carrier service. Particularly lacking in Southern Shoalhaven. vii. Parks Group: Would consider PMR where functionality similar to mobile phone (SMS, in-vehicle repeater) viii. TR (IT Group) – Noted that SCC did not intend to reduce comms tools / mobile phones / functionality.... Only enhancement by offer of PMR radios 	
<ul style="list-style-type: none"> b. Item 1.3 – Wide Area Coverage (Portable) – MN discussed options to temporarily extend coverage to portable black-spots 	
<ul style="list-style-type: none"> <ul style="list-style-type: none"> i. Mobile repeater – In vehicle ii. Radio-in-a-box – Hilltop temporary repeater (brochure presented) iii. JS gave indicative pricing 	
<ul style="list-style-type: none"> c. Item 1.3 – Wide Area Coverage (Portable) – BS commented that a coverage study is required. No records available on hand for predicted/measured coverage. AD confirmed. 	
<ul style="list-style-type: none"> <ul style="list-style-type: none"> i. BS – Request field groups to nominate key black spot areas with SCC 	



Minutes	Action
	operational area
	ii. AD – Coverage plots from original network design (circa 1995) may be available in hardcopy form
d. Item 1.3 – Wide Area Coverage (General) –	Group noted that PMR was key tool in 2009 wind storms
e. Item 1.3 – Wide Area Coverage (General) –	Group noted that capability for private, group and broadcast calls was crucial for general acceptable of PMR in-lieu of mobile phone
f. Blackspots	
	i. SW of Sassafrass
	ii. Bewley Gap
	iii. Shallow Crossing
	iv. Bendalong
g. Item 1.5 – Coverage (Local Worksite) –	Group noted that comms to external contractors on UHF CB is common. SCC plant / crews would need to retain CB
	i. Group requested feedback on whether dual-band portables available: VHF/UHF (SCC PMR / UHF CB) or (SCC PMR / RFS Fire Ground / RFS PMR)
	ii. RFS PMR not a key requirement for interop. Comms via command and control at Emergency Management Centres
h. Radio Terminal Theft –	Group request comment on ability for vehicle radio to be removed to eliminate theft.
	i. JS commented that ‘quick-fit’ cradles are available for mobile radios.
	ii. JS commented that ‘quick-fit’ cradles could suit requirement for mounting of temp vehicle repeater
i. Radio Terminal Theft / Portability –	Group requested comment on ability for portable radio to be used in vehicle cradle in-lieu of fitted mobile



Minutes	Action
<p>radio. Allows user to work between vehicle and worksite with only one radio (one radio/caller ID)</p> <p>j. Out of Hours Personnel – PMR radios need to be able to page personnel on-call (out of hours). Consideration for second charge at home, consideration for coverage at home (likely to be better than mobile phone in some cases). SMS feature.</p> <p>k. Interop – Group noted little need for general interop with RFS. Small sample of SCC vehicles (typ. 5-10) may need RFS radio installed for interop. Would be convenient to have interop with NPWS (channels in radio profile and permission to use)</p>	
4. Item 2.1 Safety functions	
<p>a. MN – discuss radio features as safety function for workers</p> <p>i. Vehicle rollover alert with GPS</p> <p>ii. Man-down/duress alert with GPS</p> <p>b. BS – commented on GPS options</p> <p>i. GPS report on PTT</p> <p>ii. GPS polling on demand</p> <p>iii. GPS always on</p> <p>iv. GPS on alarm/emergency</p> <p>c. Group asked if GPS function can map/link to other SCC GIS.</p> <p>i. JS – commented that interface at IT/server level can be provided to provide data inputs to SCC GIS team</p> <p>ii. Group suggestions for use: Fleet logging (fuel, maintenance, servicing), fleet logging (theft), Noxious weed (mapping/logging of weed spraying)</p> <p>iii. MN – Noted that it is key to understand demarcation between PMR voice/extended functions and other SCC applications (fleet management)</p>	



Minutes	Action
<p>5. Item 3.1 Emergency Functions</p> <p>a. Interop: Group noted the following:</p> <ul style="list-style-type: none"> i. NPWS for fire management (e.g. provision of tankers) ii. SES – On P25. No interop required iii. RFS – On P25. No interop required iv. RFS – ON VHF fireground – limited requirement. Typically install RFS radio in some SCC vehicles. Comms generally only required at fire staging areas... not fire front. <p>b. BS – Does GRN provide prioritisation of call group in high traffic demand? Would SCC on GRN take lower priority of network access than Emergency Services?</p> <p>c. BS – noted that PMR radios are more rugged than mobile phones and have a typical service life of 10-15 years (mobiles 2-3 years)</p>	<p>GHD to investigate GRN SLAs</p>
<p>6. Study Outlook</p> <p>a. BS noted that study will also review options including</p> <ul style="list-style-type: none"> i. SCC to replace and manage own network ii. Lease service from GRN 	
<p>7. Item 4.1-4.4 Call functions</p> <p>a. BS/TR – Review of current mobile phone trends</p> <p>b. BS/MN – consideration of PMR for PSTN/VOIP access to be considered in terms of users requirement/frequency to make calls => network capacity planning (how many channels required?)</p> <p>c. Group – Phone calls are typically between gang leader and manager or gang leader to contractor (concrete truck). Preference for private calls to managers => hence use of mobile phones to date.</p> <p>d. West Nowra Waste Depot – requested options for local call group, simplex (half-duplex) operation for depot only. Can they get away with local</p>	



Minutes	Action
repeater and weighbridge	
<ul style="list-style-type: none"> i. AD – noted need for team leader to talk to West Nowra when travelling to Ulladulla depot. ii. Mostly local access (simplex) for majority of operating time. iii. JS option to operate Waste Depot on local simplex channel to reduce network activity / free up network for wide area use. Roaming portable (1-2 for team leader) could have channel programmed to talk-over simplex channel via repeater network (Cambewarra). Team leader to instruct Waste Depot to go to wide-area channel temporarily for short conversation then revert to simplex mode. iv. DW / Waste Depot – noted requirement for IP67 rating for portables due to harsh environment 	
8. Item 5.1 – 5.3 Messaging Functions	
<ul style="list-style-type: none"> a. TR – Issue in reliance on mobile phones for out-of-hours SMS/call. <ul style="list-style-type: none"> i. Personal mobile phone blackspots ii. SCC currently rely on use of personnel land-lines iii. Radio may assist for SMS b. BS –noted that SMS on PMR may assist in issue of work-order but may not be fully compliant with internal processes <ul style="list-style-type: none"> i. Requirement for verbal briefings ii. Requirement for completion/submission of risk assessments before commencing work c. BS – noted that SCC has parallel process for investigating field laptops 	
9. Training	
a. BS – highlighted prior lack of regular training and	



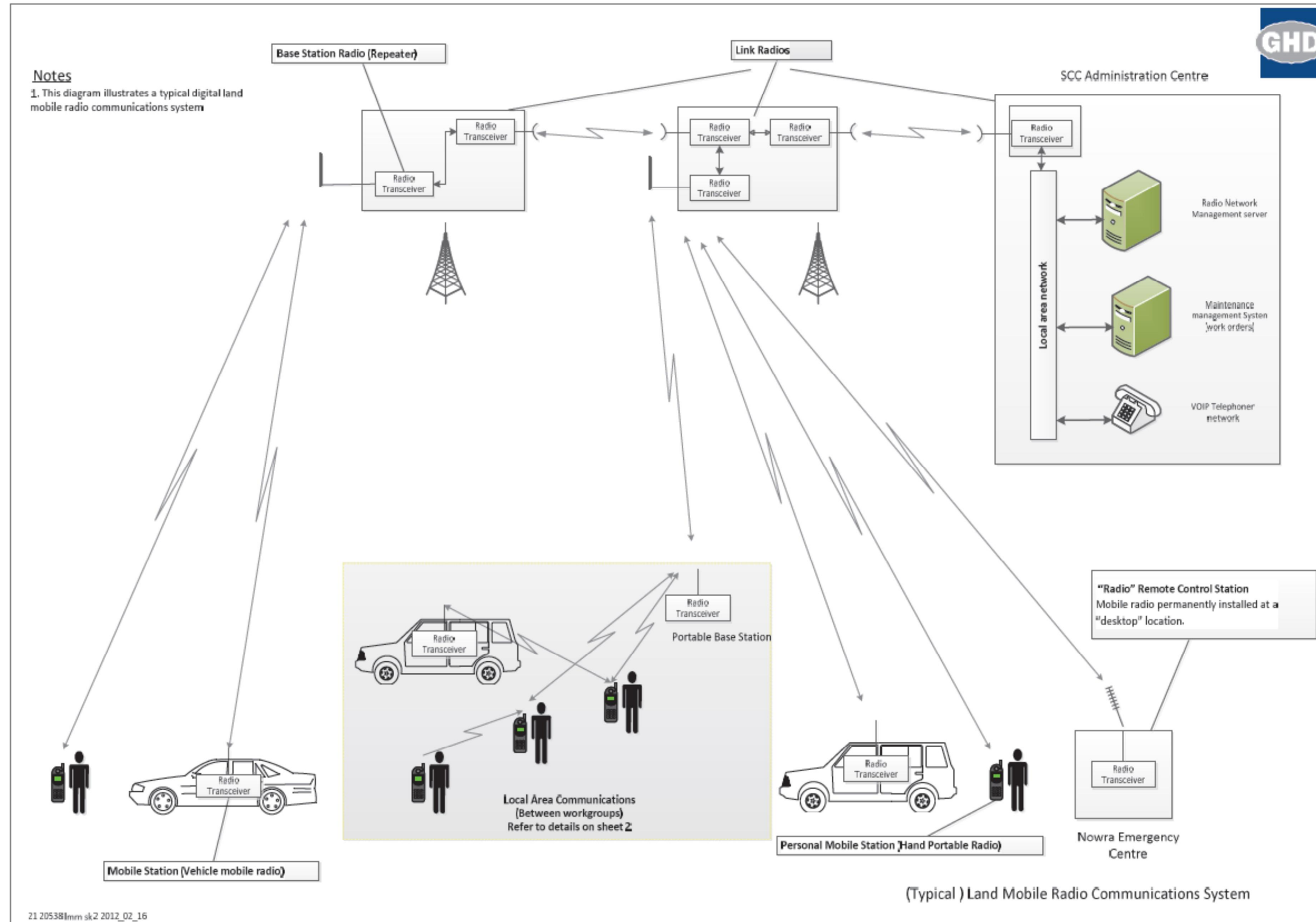
Minutes	Action
<p>personnel familiarity with PMR network</p> <p>b. BS – noted that future regime would consider 1-2 year training intervals</p>	
<p>10. Terminal Considerations</p> <p>a. Group RFI on battery capacity</p> <p>i. JS generally 8-hours, 12-hour options available</p> <p>b. Group request on unit size</p> <p>i. JS - discussion of various portable types. Screen/no screen, simple two know operation/key pad and screen</p> <p>ii. Group noted key to match worker requirements (generally simple interface) to radio features</p> <p>iii. JS – commented on portable size/battery weight to match OH&S / battery life required /time on hip / time on cradle</p> <p>c. AD – Commented on need for a number of RCS at depots and workshops</p> <p>d. DW – commented on options to include community groups in SCC radio study. SCC run second private network for community groups. (Hanson Concrete, community bus, others)</p> <p>e. DW – As at 2008 => typically 150-180 Mobile, 30 – portables</p>	<p>Shoalcom to provide a list of RCSs</p>
<p>11. General</p> <p>a. BS – noted that he is progressing options to fund radio network from corporate funding not work-group budgets given the PMR would be considered an underlying safety measure. This would assist in not penalising groups with very low access requirements (1-2 weeks a year) where a nominal monthly fee is applied.</p>	

May Ngui
GHD



Appendix B

Network Architecture





Appendix C

Digital PMR Technology Review

DMR vs. P25



INFORMATION BRIEF – RADIO STANDARDS

The three standards covered by this Brief are:

- ▶ Digital Mobile Radio (DMR),
- ▶ APCO-25 (P25), and
- ▶ Terrestrial Trunked Radio (TETRA).

A brief description is provided for each standard as well as a comparison using multiple characteristics to support the decision making process. However, as industry provides a wide range of radio networks across all three standards to cater for all users, GHD recommends narrowing the comparison field by limiting the grade of radio to be considered.

Radio Grades

Broadly speaking, the radio industry produces four (4) grades of equipment – Mission Critical, Operations Critical, Commercial and Domestic, as described below. These terms and definitions are not a standard across the market, but have been used by GHD to support the selection of options.

Table 18 Equipment Grades

Grade	Description	Target Market
Mission Critical	<ul style="list-style-type: none"> ▶ Highest grade, high cost ▶ Ruggedised, military spec, widest range of operating conditions ▶ Extremely low failure rates for all individual pieces of equipment, including critical infrastructure such as repeaters ▶ Significant consequences on failures 	<ul style="list-style-type: none"> ▶ Special Forces ▶ Non-cost sensitive ▶ Essential Service Organisations and Emergency Services ▶ Critical Networks
Operations Critical	<ul style="list-style-type: none"> ▶ High Grade ▶ Capable of operating in abnormal environments ▶ Low failure rates for individual pieces of equipment, such as handsets ▶ Networks with some resilience, lower consequence levels on failure 	<ul style="list-style-type: none"> ▶ Military ▶ Non-essential Service Organisations and Emergency Services ▶ Local Government
Commercial	<ul style="list-style-type: none"> ▶ Medium Grade 	<ul style="list-style-type: none"> ▶ Local Government



Grade	Description	Target Market
	<ul style="list-style-type: none"> Higher rates of equipment failure Minimal (non-life threatening) consequences on failure 	<ul style="list-style-type: none"> Commercial, non-government organisations Taxi fleets
Domestic	<ul style="list-style-type: none"> Lowest grade Wide range of quality and price 	<ul style="list-style-type: none"> Households Private individuals Short term usage

The Standards

P25. Released around 1995 as defined by the Telecommunications Industry Association (TIA). This USA standard was developed for large, national networks run by US Government agencies and used by US public safety organisations and the like. P25 Phase I provides a capability to service conventional analogue or digitised voice on a single radio channel per radio repeater (within a 12.5 kHz channel). The cost of network equipment is typically 1.5 to 2 times higher than DMR equivalents. The cost of handheld terminals is typically 20 to 30% greater than DMR (e.g. \$1100-1300 per terminal incl. GST). Standards development and implementation is underway for P25 Phase II to allow for two voice services per radio channel (similar to DMR Type II).

DMR. Released in 2005, as defined by ETSI DMR (Digital Mobile Radio). It was designed for business and professional users and aimed to make available digital networks with low complexity and low cost levels. Handheld radios => \$600-900, repeaters (2 timeslot) => \$3000-4500 (Government pricing). The standard defines three different tiers.

- DMR Tier I – Domestic low power services. Peer-to-peer (no repeaters).
- DMR Tier II – Conventional digital voice service, two time slot services with higher transmit power.
- DMR Tier III – Tier II network with trunking capability.

TETRA. Released around 1995 as defined by European Telecommunications Standards Institute (ETSI). This European standard is targeted for large, national networks run by government agencies and is used by public safety organisations. TETRA provides a dual function of voice and data services within a single network. Typically offers four radio channels per radio repeater within a 25 kHz channel. The cost of network equipment is typically 3 to 6 times higher per voice service (timeslot or channel) than P25 or DMR equivalents. The cost of handheld terminals is typically between that of P25 and DMR equivalents (e.g. \$900-1000 per terminal incl. GST). Provides trunked services only.

High level Comparative Cost

Table 2 below provides a summary of typical costs for equipment associated with the three radio standards. In general, TETRA and DMR user terminals (portable radios) are of similar price, typically 20% less expensive than P25. In terms of core network equipment (repeaters and supporting infrastructure), P25 is 50-100% more expensive than DMR, whereas TETRA is 500-600% more expensive than DMR (based on per voices service/timeslot basis). Scale of pricing is a reflection of technology complexity and target market (equipment criticality).

**Table 19 Indicative Cost Ranges**

Standard	Console, Fixed	Console, Hand-portable	Handset	Base Station/Repeater
DMR	\$800-1,150	\$750-1,250	\$600-1,100	\$3000-4,300 ¹
P25	\$1,500-1,700	\$1,300-1,650	\$1,150-\$1,450	\$6,000-17,000 ²
TETRA	\$1,000-1,150	\$1,000-1,250	\$900-1,100	\$40,000-50,000 ³

Notes:

¹ Two voice / data services per repeater.

² Higher price related to mission critical price for one vendor only. Repeater services one channel (voice service) only.

³ Four voice / data services per repeater. Includes mandatory trunking and traffic control interface.

Market Size / Technology Maturity

P25 (Phase I). Is well established in Australia in the essential / emergency services, mining (BHP and FMG) and utility sectors with offerings from multiple well recognised vendors.

DMR (Tier II). Has been available in Australia for 3 or 4 years with offerings by a limited pool for vendors (some well recognised). Offerings by some well recognised vendors typically contain proprietary developments which limit interoperability across market (e.g. limiting use of vendor #1 handset with vendor #2 repeaters). Also, these offerings are generally limited to a single site network where more than one channel (two timeslots) required per service area.

TETRA. Is well established in Australia in the mining and essential service sectors with offerings from multiple well recognised vendors.

**GHD**

133 Castlereagh St Sydney NSW 2000

T: 2 9239 7100 F: 2 9239 7199 E: sydmail@ghd.com.au

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Document Status

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		Name	Signature	Name	Signature	Date
Draft	G Mascord/Joel Spurway	M Ngui	<i>On file</i>	M Ngui	<i>On file</i>	16/05/12
1	G Mascord/Joel Spurway	M Ngui	<i>[Signature]</i>	M Ngui D. Benesh	<i>[Signature]</i>	27/7/12

Issued as Document 180100

ATTACHMENT

The following statements are cases that could be used in an argument FOR Wards

- Wards provide for strong and equal local representation for each particular area and ensure that Council hears specific knowledge about the area.
- Councillors are responsible to the whole City's interests as well as interests of the local area.
- Councillors are able to represent the interests of all wards including the ward in which they were elected
- Without wards, it is possible that a majority of Councillors could be elected from the one local area, or one particular interest group causing some parts of the LGA to be without local representation. A ward system prevents this by ensuring equal numbers of Councillors are elected from different areas of the LGA.
- Wards can be seen as the best way of ensuring a knowledge base of all parts of the Council's area exists.
- Wards promote common interests within geographical areas and enable residents to identify with specific councillors with a real interest in and knowledge of their area.
- It may be less daunting and expensive for candidates to seek election as a ward councillor than to seek election in the LGA as a whole.
- A system of wards reduces the administrative cost of bi-elections. If a sitting Councillor leaves office and a bi-election has to be held, only eligible voters in the Ward have to vote to fill the vacancy.
- Communication to constituents could be more effectively targeted to the issues that matter most in the Ward area.
- The Ward system has served Local Government well for many years and is well regarded, particularly in the rural areas.
- Councillors don't have to travel so far to visit constituents or to inspect problems.
- Councillors are more likely to possess a more intimate knowledge of issues relevant to their Ward.

The following statements are cases that could be used in an argument AGAINST Wards

- Electing Councillors from the whole of the City area helps ensure they are involved in all local issues and issues which not only affect their area and therefore represent all ratepayers.
- An undivided Council may facilitate whole of City strategic planning, and encourages broader thinking about issues which is significant in the development of the Community Strategic Plan as well as to ensure infrastructure and other strategic decisions being made for the whole City and its diverse villages.
- Councillors elected from the whole of the City area may be more likely to approach local issues in a fair, equitable and balanced way, free of influences which may face Councillors elected from wards.
- Constituents may feel they can only deal with their specific Ward Councillors, resulting in conflicts or pressure on those ward elected representatives.

- Mechanisms other than Ward representation can ensure local community interests are heard.
- Voters have a greater choice of candidates and councillors to represent them in an undivided council. With Wards, voters can only choose from their Ward candidates and may feel obliged to deal only with their specific Ward Councillors.
- In an undivided Council everyone has an equal vote, regardless of where they live and has an opportunity to contribute to the election of candidates. This is not guaranteed in a Ward system, as the number of voters in each Ward may become unequal over time.
- Ward boundaries will need adjustment periodically to ensure the prescribed 10% population variation is not exceeded with such boundary changes could lead to confusion, particularly in the Shoalhaven with a significant proportion of older residents.
- Voters have a greater choice of candidates in an undivided council regardless of where they live.



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Website: www.shoalhaven.nsw.gov.au

For more information contact the Finance & Corporate Services Group

Policies - Referral to Council

Policy Number: POL12/270 • **Adopted:** 27/07/2004 • **Amended:** 25/08/2009 • **Minute Number:** MIN04.855, MIN09.1139 • **File:** 27448E • **Produced By:** Finance & Corporate Services Group • **Review Date:** 01/12/2016

1. PURPOSE

- To articulate Council's policy and protocols with respect to the referral of policies to the elected Council for ratification, amendment, review or reaffirmation
- To ensure consistency in the way policy documents are created and presented to Council for consideration
- To provide each newly elected Council with an opportunity to familiarise itself with existing adopted policies and have input into determining whether policies should be reaffirmed, amended or rescinded
- To ensure that Council's policies are routinely and systematically reviewed and kept current in relation to legislation and other government directives, relevant standards and industry best practice, community expectations and internal procedures
- To align Council's miscellaneous policy review regime with the Local Approvals Policies provisions of the Local Government Act, in particular s.165 (4).

2. STATEMENT

~~This policy document is based on Council Minute 04.855 of 27 July 2004.~~

This policy sets out the Council position regarding the formatting reviewing and rescinding of Council Policy.

2.1. Related Documents

Process for the Production of Policy Documents (internal process)

User Notes – Creating a Policy Document Using Document Assembly (internal procedures)

User Notes – Amending a Finalised Policy Document (internal procedures)

3. PROVISIONS

- 3.1. All public policies, other than those adopted by the newly elected Council be reviewed and submitted to Council for readoption within 12 months of the election of every new Council.

3.2. All public policies are to use the appropriate template comprise of the following format:

- Purpose
- Statement (which can include subheadings like background, scope, definitions, relationship to other documents etc),
- Provisions (the actual details of the policy)
- Implementation
- Review
- Application of ESD principles

3.3. In relation to non-urgent policies that have not been previously referred to Council in the standard format, the General Manager be requested to produce a policy statement in the standard format and submit it to Council for adoption.

3.4. In relation to policies that have not been previously referred to Council in the standard format and have been adopted by Council due to their urgency, the General Manager be requested to produce a policy statement in the standard format and submit it to Council for endorsement.

3.5. In relation to policies that have become redundant, the General Manager is to provide a report to Council to facilitate a resolution to rescind that policy.

4. IMPLEMENTATION

In relation to provision 3.1, all Council Groups have the responsibility to ensure that public policies within their jurisdiction are reviewed, updated and referred to Council within 12 months of the election of every newly elected Council.

The Finance and Corporate Services Group has responsibility for the overall coordination of the policy review process and Internet/Intranet publication of policies upon adoption, amendment or reaffirmation.

In relation to provision 3.3, it is the responsibility of the officer assigned **in TRIM** to produce, amend or review a policy to ensure that it is presented to the elected Council in the standard policy format and in accordance with adopted internal processes and procedures.

With regard to provision 3.4, it is the responsibility of the relevant Group to ensure that any policy directive adopted by the Council is articulated within a policy document created in the standard format and such document referred back to the elected Council for endorsement.

5. REVIEW

This policy will be reviewed within 12 months of the election of every new Council, or earlier should circumstances arise to warrant revision.

6. APPLICATION OF ESD PRINCIPLES

To reduce paper usage, this policy will be communicated to staff electronically and made available for on-line viewing on Council's Intranet Policy Index.



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COUNCIL MEETINGS – STAFF PECUNIARY INTEREST – REPORTS TO COUNCIL – CONFLICT OF INTEREST OF STAFF REPORTING TO COUNCIL POLICY

Policy Number: POL12/147 • **Adopted:** 5/03/1991 • **Reaffirmed:** 31/08/2004 • **Amended:** 24/03/2009 • **Minute Number:** MIN91.483, MIN04.985, MIN09.339 • **File:** 4063E • **Produced By:** Finance & Corporate Services Group • **Review Date:** 1/12/2016

1. PURPOSE

To prevent prejudicial reporting, or the perception of prejudicial reporting, to Council by staff who may have a conflict of interest in the outcome of the report.

The intent of this policy is to also supplement the Code of Conduct in respect to staff when preparing reports to Council or its Committees.

2. STATEMENT

This policy statement is based on Council Minute 91.483 of 5th March 1991. Council reaffirmed this policy in its revised format by Minute 04.985 on 31st August 2004. Council is committed to avoiding a potential breach of the Code of Conduct where staff members are involved in the preparation of reports in which they have an actual or perceived Pecuniary Interest or Significant non Pecuniary Conflict of Interest.

Council requires all staff to comply with the spirit of the Code of Conduct in the event of a conflict of interest between their public duty and private interests.

The Local Government Act and Code of Conduct provide, the staff member shall disclose in writing to the supervisor or the general manager, the nature of any pecuniary interest in a matter as soon as practicable.

In the event of a Non-Pecuniary Interest the Local Government Act and Code of Conduct require staff to disclose the interest fully and in writing, even if the conflict is not significant, as soon as practicable.

3. PROVISIONS

As a matter of policy, staff shall not prepare reports to Council where they have a Pecuniary or Significant Non Pecuniary Conflict of Interest. In the event that the staff member is required to prepare the report (due to lack of available resources) the author shall declare the interest and the nature of that interest in the preface to the report.

4. IMPLEMENTATION

Group Directors have responsibility for ensuring compliance with this policy.

5. REVIEW

The Finance and Corporate Services Group will review this policy within one year of every election of a new Council.

6. APPLICATION OF ESD PRINCIPLES

None applicable



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For more information contact the Finance & Corporate Services Group

Complaints Referral to the Community Justice Centre - Administrative Policy and Procedure

Policy Number: POL12/247 • **Adopted:** 10/07/2001 • **Revised:** 30/10/2007, 28/04/2009 • **Minute Number:** MIN01.935, MIN07.1601, MIN09.487 • **File:** 22119E • **Produced By:** Finance & Corporate Services Group • **Review Date:** 1/12/2016

1. PURPOSE

The purpose of this Policy is to provide a means where complaints concerning third parties and those within Community Consultative Bodies that cannot be resolved by Council to the satisfaction of the parties are dealt with.

2. STATEMENT

This policy statement is based on Council Minute of 31 July 2001 and 30 October 2007 on the need for Council to establish a process for referring complaints to the Community Justice Centre, where matters cannot be resolved by Council alone.

3. PROVISIONS

Shoalhaven City Council has an arrangement with the Community Justice Centre to refer community members and groups to seek a mediated solution for disputes between members of the public, businesses, neighbours, community organisations etc.

The Community Justice Centre offers a free mediation service to help people solve their problems together. Mediation involves people coming together voluntarily, sitting down with mediators and settling their conflict in a fair and acceptable manner to all. Many complaints received by Council may be suitable for mediation. Research has shown that mediation results in better, more lasting solutions between the parties.

The role of Council will be to promote and encourage that process when the need arises.

4. IMPLEMENTATION

This policy shall apply to all complaints received by Council concerning between third parties, including community groups, that cannot (for whatever reason) be resolved within Council. Those cases shall be referred to the Community Justice Centre with a view to the following objectives:

- To achieve lasting resolutions to disputes between members of the community.
- To provide staff with appropriate training in making referrals to the Community Justice Centre
- To minimise cost to Council of dealing with disputes between community members

5. REVIEW

This policy will be reviewed within one year of the election of every new Council.

6. APPLICATION OF ESD PRINCIPLES

None Applicable

Procedure for making a referral to the Community Justice Centre

Disputes which may be suitable for referral include:

- Repeat complaints about the same neighbour for the same or different matters e.g. barking dogs, noise, rubbish, etc.
- Matters where Council has tried to assist in a resolution previously.
- Matters outside Council's jurisdiction.

Matters which should not be referred include:

- Complaints against Council where no resolution process has been attempted previously.
- Initial complaints against parties other than Council which are clearly in Council's jurisdiction, where Council has not yet investigated eg initial complaints about barking dogs etc.
- Matters involving domestic violence/abuse.

The following questions will help you determine the suitability of the issue for referral.

If the answer to any of these questions is "Yes", it may be suitable to refer to the Community Justice Centre.

- Is the complaint against a neighbour, community organisation, business, sports club, or management committee?
- Has the same complaint been made by this person before?
- Has Council attempted to resolve this matter before?
- Was an agreed outcome achieved on the earlier complaint?

To make a referral

1. Complete the attached referral slip.
2. Give the client a copy of the Community Justice Centre fact sheet.
3. Advise the client to contact the Community Justice Centre on the number located on the back of the fact sheet.
4. Fax the referral slip to the Community Justice Centre central office.

Please note: No person is obliged to use the service of the Community Justice Centre.



Community Justice Centres
Attorney General's
Department of NSW

REFERRAL FORM

Fax Referral Form to: (02) 4925 0300

or

Email Referral Form to: cjc_northern@agd.nsw.gov.au

Referrer Name:	Contact Referrer before contacting parties: <input type="checkbox"/>
Organisation:	
Address:	P/Code:
Phone:	Fax:

So that the Community Justice Centres (CJCs) can assist you in a timely manner, I need your consent to collect your personal details.

1. This information will be sent to the Community Justice Centres.
2. This information will be kept by us and the Community Justice Centres for auditing purposes only.
3. If you wish to access or amend your personal details you provide, you can contact us or the Community Justice Centres. By law we have to respond to your request.

NB: Only provide contact details for party/ies that consent.

Party A Details		
Name:		
Address:		P/Code:
Phone (H):	Phone (W):	Mobile:

Do you consent ☐ _____ signature

Party B Details (If Known)		
Name:		
Address:		P/Code:
Phone (H):	Phone (W):	Mobile:

Do you consent ☐ _____ signature

* Please provide additional party details on separate sheet

Dispute Type:

Please provide a brief description of the dispute:

Is there any current legal action? ☐ Yes ☐ No ☐ Unsure

If Yes, please provide details:



Contact CJCs On 1800 990 777

TTY 1800 671 964 – Website www.cjc.nsw.gov.au - Email: cjc_northern@agd.nsw.gov.au
Reply Paid Mail: Community Justice Centres, Reply Paid 61824, NEWCASTLE NSW 2000



Community Justice Centres
Attorney General's
department of nsw

FACT SHEET

Mediation at Community Justice Centres

What do Community Justice Centres do?

Community Justice Centres (CJCs) provide mediation and conflict management services to help people resolve their own disputes. Our service is FREE, voluntary, timely and easy to use.

What is mediation?

Mediation sessions at CJCs are conducted by two impartial, trained mediators who help people to understand each other's point of view and to work together to reach agreement acceptable to both parties.

What happens in mediation?

The mediators' role is to facilitate discussion so that people can reach their own common sense solution to their dispute.

The process typically takes between 2 and 4 hours and generally follows these steps:

- Mediators and the people involved introduce themselves and mediators explain the process and "ground rules" for the mediation.
- Each person in turn outlines their concerns and each person is listened to without interruption.
- Mediators encourage and facilitate discussion between the people on issues they have identified.
- Mediators see each person privately, while the other has time to think about their options.
- All participants are then brought back together and encouraged to negotiate future arrangements.
- If all agree, Mediators write up an agreement and give a copy to each person as a record of what was decided.

Why mediate?

Mediation provides a safe and informal environment for people to talk to each other to sort out problems.

Over 80% of mediations result in an agreement being reached. People are more committed to the outcome because they take part in the decision making.

Even if agreement cannot be reached there has been

The opportunity to clarify the issues and understand each other's point of view.

What disputes are suitable for mediation?

A wide range of disputes are suitable for mediation including

- neighbours
- families
- business
- civil and small claims matters
- workplace
- incorporated associations
- between and within communities

If you're not sure, please contact our staff.

When and where are the mediations held?

There are no waiting lists. Mediation sessions are arranged at times that suit everyone and are held at our offices or a place near you.

Who can come to a mediation?

All people involved must agree on who is attending the mediation before the session is held.

All people involved in the dispute should be encouraged to attend and participate.

People who are involved in making decisions should attend.

"Support people" may attend if required, though they do not participate in the session.

Witnesses are not necessary as the mediators are not there to assess the situation and make decisions.

Can my lawyer attend?

Lawyers and solicitors are not required as mediation is not a legal process, people involved should seek legal advice before mediation if necessary.

We ask that you do not bring children to mediation.

Is the agreement legally binding?

Agreements are made by both parties in "good faith". CJCs cannot enforce agreements which have been reached at mediation.



Community Justice Centres
Attorney General's
Department of NSW

CLIENT CHARTER

Community Justice Centres Information for Clients

Community Justice Centres (CJCs) provides mediation and conflict management services to the people of NSW. The services are free, impartial and culturally appropriate.

What you can expect from CJCs staff and mediators

You can expect our staff and mediators to be:

- Courteous, professional and confidential
- Culturally appropriate
- Respectful, honest and flexible

What we expect from you

We expect you to:

- Be courteous, honest and respectful
- Adopt a good faith approach to the service we provide you
- Inform CJCs staff of your intentions to attend or cancel any appointments
- To be unaffected by alcohol or drugs when using our services
- Read any letters and fact sheets we provide you (we can arrange for you to have access to an Interpreter for free if English is not your first language)
- Comply with any requirements for mediation
- If the information is not clear, please ask the staff for more information

Privacy

In order to assist CJCs staff will need to collect some personal details from you. Information collected is kept for auditing and statistical purposes and with your consent, may be provided to an organisation CJCs refers you to. Please contact CJCs to amend your personal details if required.

Confidentiality

Generally everything you say in mediation is confidential. However, there are occasions where our mediators might need to disclose something they have seen or heard. For example, if something happens or is said that makes the mediator fear for someone's safety, especially a child's safety, then that mediator might need raise those concerns with a Supervisor. A decision about how to proceed will then be made.

Feedback

We welcome your feedback and we encourage you to use our feedback form and complaints process.

If you want to register your feedback and/or complaint you may do so through the following procedure:

Contact CJCs on 1800 990 777 and ask to speak with the Supervisor. If calling is not an option you can also email or write to the Supervisor or fill out a "Have Your Say" form available on the CJC website.

If you are still not satisfied with the outcome you can contact the Director of CJCs.

Contact Details

Phone: 1800 990 777

Fax: (02) 49259300

Website: www.cjc.nsw.gov.au

TTY: 1800 671 964

Email: cjc_northern@agd.nsw.gov.au



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DONATIONS POLICY

Policy Number: POL12/299 • **Adopted:** 26/03/2002 • **Reaffirmed:** 28/09/2004 • **Amended:** 27/04/2010, 28/06/2011 • **Minute Number:** MIN02.282, MIN04.1165, MIN10.450, MIN11.609 • **File:** 4306E • **Produced By:** Finance & Corporate Services Group • **Review Date:** 1/12/2016

1. OBJECTIVES

The objectives of the policy are:

- To consider financial assistance by way of donation, sponsorship and subsidies to local service, cultural, sporting, charitable or non-profit organisations who operate within or provide benefit to the residents of Shoalhaven City or conduct quality cultural, sporting and community service programs and activities and who cannot attract sufficient funds from other sources;
- To address targets specified within the Community Strategic Plan or other Strategic Documents as well as objectives including access and usage of community resources, services and facilities, and equity of access for special needs groups;
- To consider funding to encourage and enable broad community participation in cultural, sporting and community service activities;
- Detail the principles whereby Council grants donations, sponsorships and subsidies to organisations;
- Establish an application process including guidelines and procedures for use by organisations in applying for donations, sponsorships or subsidies (including 'in kind' support).

2. STATEMENT

Council reaffirmed this policy in its revised format by Minute10.450 on 27 April 2010. Funding under this policy is subject to budget allocations each year.

2.1. Scope

This policy applies to applications for financial assistance and 'in kind' support by way of donations, sponsorships and subsidies granted by Council to organisations. It does not deal with Fee Waivers that are dealt with under the Fee Support Policy – Council Managed Public Reserves & Facilities Policy and the Fees – Waiving of Development Application and other Fees by Charitable Organisations and Community Groups.

2.2. Categories

Applications should be within one of the categories nominated below.

- community development projects – projects that meet an identified community need, have been developed in consultation with the community and encourage community participation in the development of the project.
- support for a locally based voluntary community service or program not funded from any other source – i.e. only source of income is fundraising.
- festivals and special activities which enhance community spirit.
- community, charity and not for profit activities on public open space/reserves (ie cost of ground hire only).
- community, charity and not for profit organisations' use of Council owned and controlled facilities including halls, School of Arts, meeting rooms, pavilions, change rooms and civic centres, etc.
- community development, training, education and awareness activities.

2.3. Guidelines and Procedures for Applicants

This policy must be read in conjunction with Council's adopted Guidelines and Procedures for Annual Donations, Sponsorships and Subsidies – Refer Annexure 1.

A written application form for applicants is appended to Council's adopted Guidelines and Procedures for Annual Donations, Sponsorships and Subsidies.

3. PROVISIONS

- The granting of all donations, sponsorships and subsidies are made pursuant to Section 356 of the Local Government Act, 1993 subject to the constraints outlined in Section 377 of the Act.
- The granting of all donations, sponsorships and subsidies will be subject to a fresh written application being lodged with Council each year.
- Generally applications may be submitted for consideration by Council for inclusion in the ensuing financial year's operational plan and budget.
- As a general rule where it is likely that entry fees or charges are to be imposed by an applicant to host a project/event or to use a Shoalhaven City Council facility, the following percentage of the scheduled fee or charge for the use of the facility **may** apply to cover Council's fixed costs:
 - a. where **no fee** is charged by the eligible applicant for entry – Council may recover 33% of the scheduled fee or charge for use of that Council controlled facility;
 - b. where a fee is charged by the eligible applicant for entry – Council may recover 50% of the scheduled fee or charge for the use of that Council controlled facility;

Shoalhaven City Council - Donations Policy

- c. unsuccessful (or ineligible) applicants will be charged 100% of the scheduled fee or charge for the use of that Council controlled facility.
- Applications which do not meet the enclosed guidelines shall be advised that the request is not eligible for consideration under this policy.
- Council reserves the right to assess any application (not fitting the criteria for assessment) on its merits according to Council's Policies and Procedures and Community Service Outcomes.
- Applications for financial assistance will generally not be considered where the application meets the criteria for grants/donations provided by the Shoalhaven Arts Board the Shoalhaven Tourism Board and/or the Shoalhaven Sports Board. In these cases, applications will be sent directly to these committees.

4. IMPLEMENTATION

Council's Finance and Corporate Services Group will receive, report to Council or Board (if appropriate) and respond to written requests for financial assistance.

5. REVIEW

This policy statement will be reviewed within one year of the election of every new Council.

6. APPLICATION OF ESD PRINCIPLES

None Applicable

Guidelines and Procedures for Financial Assistance, Sponsorships and Subsidies

Definition

These guidelines are designed to assist applicants in the preparation and Council in the assessment of requests for:

- General Donations which enhance the cultural, social, sporting or community services provision within the City.
- Sponsorship.

Persons making applications which do not meet these guidelines shall be advised that the request is not eligible for consideration.

These guidelines should be read in conjunction with Council's adopted Donations Policy.

Expressions of Interest for Funding

The attached application for financial assistance form should be submitted to Council at least three (3) months in advance of the date of the project or event to enable sufficient time for Council to consider the application.

If the form is not completed, or insufficient information is included in the application, an application form will be forwarded for completion and submission to Council.

Applicants may be required to provide additional information.

A financial statement for the organisation must accompany applications.

A project budget must accompany applications.

A copy of the applicant's constitution should accompany the application.

Upon receipt of the application, it will be either determined by staff or a report will be submitted to Council for consideration for inclusion in the current or ensuing financial year's budget, depending on the date of application.

Subject to funding available in the budget, Council will consider applications as they are received.

Funding Limitations

- Council resources are limited and not all applications will be funded.
- Council does not guarantee to fund any application and does not guarantee to fund any application to the full amount requested.
- Applicants are encouraged to seek further sources of funding.
- Where Council funding is approved, this is not to be taken as an on-going commitment to funding for any following years.

- Council will normally require consideration of any additional costs associated with the application including full or partial cost recovery of fixed costs such as lighting, wages, waste removal, cleaning costs and the like.

Projects/Events NOT Eligible for Funding

- where benefit is primarily to an individual
- duplication of service or project
- projects occurring outside the Shoalhaven Local Government Area
- projects that are retrospective
- projects which do not meet policy guidelines
- where applicants are in a position to self fund the project
- where a more applicable funding source is available
- where applicants are government departments or agencies
- where application is for capital funds (eg. building and building maintenance costs)
- where a project will financially benefit a profit making organisation, individual or a government department
- projects and facilities or services controlled through Council appointed management committees (where these projects, facilities or services are not under Council's direct care and control)
- where the proceeds or entry fee from a project or event is being donated to another organization
- where there is no direct benefit to Shoalhaven City residents

Criteria for Assessment

- Does the application meet the eligibility criteria?
- What policy objectives does the project/event meet?
- Who and how many benefit from the project/event (target group)?
- To what degree is the group/or project self financing?
- Has the need for the project/event been demonstrated?
- Has the need for funding or subsidy been demonstrated?

Donations Policy – Guidelines & Procedures for Annual Donations, Sponsorships and Subsidies

- Is the organisation able to make a contribution either in monetary funds or in kind, eg labour, materials, etc?
- What efforts have been made to seek funds from other sources?
- Who and how many will benefit from the donation?
- Who and how many use the facility?
- For what purpose is the facility used?
- Does the application have a broad community focus?
- Is it a 'one-off' request or likely to be a recurring request?
- If the project/event has a regional focus what benefit will occur for Shoalhaven residents?
- What effect would a donation/subsidy only to the project/event make to the outcome?
- Are there any other facilities or venues available or more suitable for the project/event?

Procedure

- The attached form must be completed and submitted to Council in accordance with the directions of any advertising. Late applications will not be accepted.
- An application form will be forwarded upon request for completion and lodgement with Council.
- Applicants may be invited to attend an interview as part of the application process.
- A financial statement for the organisation must accompany applications.
- A project budget must accompany applications.
- A copy of the applicant's constitution should accompany the application.
- Upon receipt of applications outside of advertising referred to above, assessment and reports will be submitted to Council for consideration for inclusion in the current or ensuing financial year's budget, depending on the date of application.
- An allocation for contingencies will be submitted for Council's consideration each financial year.
- Council may refer the application to a Board or other Committee as considered appropriate.

Conditions

Donations Policy – Guidelines & Procedures for Annual Donations, Sponsorships and Subsidies

- Funds should be expended within the financial year of the grant, sponsorship, donation or subsidy. Should the applicant not be in a position to expend the funds, the applicant should prepare a written explanation, and proposed time frame for the grant expenditure. This may allow those funds to be reallocated to another group in that year.
- If an organisation wishes to modify its request or alter the proposed project, or event, the applicant should make this request in writing. It is at the discretion of the General Manager that the intention of the modified project meets Council's objectives of the original grant made by Council.
- Recipient groups will be required to give public recognition to the donations, sponsorships and subsidies received from Council and acknowledge Council's financial assistance on any related promotional or other material. Failure to do so may result in the disqualification of the group or its affiliates from further funding.
- The failure of any group to comply with these conditions may disqualify them from consideration for funding, for the following year.
- Evidence (ie Certificate of Currency) of public liability insurance to a minimum value of \$10 Million, noting the interests of Council with an Insurer approved by the Australian Prudential Regulatory Authority. This provision is applicable where the activity or event is being conducted on Council owned and controlled land or facility.
- Council may impose an additional condition on grant recipients, which encourages links to major festivals or events, displays or performances.
- Impact of GST (refer Appendix A)

Delegation

In accordance with Section 377 of the Local Government Act, 1993 the General Manager may authorise payment of a donation, sponsorship or subsidy voted by Council, other than where it is a decision under Section 356(2) to contribute money or otherwise grant financial assistance to an individual. Payment to an individual must be authorised by a Council resolution and following a 28 day public exhibition period, if applicable.

Preparation of Application

Applicants are required to complete a written application form entitled "Application for Financial Assistance/Donation" (Refer Appendix C)

Checklist of Documents to be Forwarded with Application

- For first time applicants, a copy of their organisation's constitution and if that constitution changes then an updated copy of it is to be forwarded with any subsequent application
- A copy of the project's proposed budget, detailing anticipated costs, with quotes if applicable
- A copy of the most recent annual report (including financial statements of income and expenditure) preferably audited

Donations Policy – Guidelines & Procedures for Annual Donations, Sponsorships and Subsidies

- Copy of notification of ABN No. and GST registration (if applicable) from the Australian Tax Office. (see Appendix A)
- Evidence of Incorporation
- A copy of the applicant's current liability insurance policy (ie Certificate of Currency)
- Where the applicant is a registered public charity, a copy of the registration certificate.

Appendices

Appendix A: Impact of GST

Appendix B: Statement by Supplier

Appendix C: Application for Financial Assistance/Donation

Appendix A

IMPACT OF THE GST

Unless recipients of grants after 1st July 2000 have an Australian Business Number (ABN), the supplier of the grants (ie Council) must remit 48.5% of the grant total in withholding tax to the Australian Tax Office. The recipient **may** receive part of this back when they submit their tax claim at the end of the year, but it is our understanding that most community organisations would not find half a grant to be a viable proposition. Although Council is not stating that you must have an ABN number, Council strongly recommends that your organisation have one.

Under the new Tax System, there will generally be three options available to your organisation. They are listed as follows:

OPTION ONE (the preferred option)

Your organisation has an ABN number and is registered for the GST. This means that if you are successful in gaining a grant the funds you receive will be “grossed up” to include the GST component. You will then pay the GST to the Federal Government. As Council is in effect paying the GST on your grant, Council will then claim back the GST through its monthly Business Activity Statement and will receive an Input Tax Credit.

Successful applicants who are registered for the Goods and Services Tax must supply Council with a tax invoice. Council will gross up the grants by 10 per cent for successful applicants who are Goods and Services Tax registered.

OPTION TWO

Your organisation has an ABN number but is not registered for the GST. This means that if you are successful in gaining a grant the funds you receive will not have a GST component included.

OPTION THREE

You do not have an ABN number and therefore if you were successful in receiving a grant, donation or subsidy Council have to remit 48.5 cents in every dollar as withholding tax to the ATO.

To avoid Council having to withhold 48.5% as withholding tax and remitting this to the ATO an exemption statement may be completed by the applicant (refer to “statement of supplier” form attached) and submitted to Council.

Council will then assess the application form in terms of whether it complies with the GST legislation particularly in respect of withholding tax.

Appendix C



Application for Financial Assistance/Donation

File 4771E

Financial Year ____/____

Please complete the following application form where assistance from Council is requested. This information is the minimum required for an application. Please attach additional information as requested within the Guidelines and Procedures for Annual Donations, Sponsorships and Subsidies document under "Checklist of documents to be forwarded with application".

Date:

Details of Organisation/Individual:

1. Name of Applicant/Organisation responsible for the event/activity:

Contact person Signature:

2. Mailing address:

3. Phone: (Home) (Business)

4. Amount of assistance being sought: \$

5. Organisation composition	Non Profit/Charity/Incorporated/other (<i>please circle</i>)	
	Commercial undertaking	YES/NO
	Do membership fees apply	YES/NO
	Amount charged for membership	\$ ____
	Number of people in organisation/members	_____

6. Office bearers of organisation (President, Secretary, Treasurer or Project Manager):

Title of Event/Project

1. Please give a brief description of the event/project for which assistance is sought:

2. Is this proposed to be an annual event/project? YES/NO

Donations Policy – Application for Financial Assistance/Donation

3. Date/s of the proposed event/project.....
4. Where will the event/project take place?
5. Name of Public Liability Insurer
6. Amount of insurance cover \$
7. Will the event/project support charities YES/NO
If YES, value of support \$

Funding

1. Cost of the total event/project \$
2. Funds available at present to go towards event \$
3. How are funds to be raised?.....
.....
.....
4. Has Council previously assisted your organisation? YES/NO
5. What was the amount (per annum) of the assistance from Council? \$
6. What were the dates for the assistance?
7. Is funding from Council for this activity likely to be ongoing? YES/NO
8. Have you applied for funding from other Sections of Council or other organisations? YES/NO
9. Was your application successful? YES/NO
If YES, what was the amount allocated \$
Name of Council Section or organisation
10. Will this event/project be self-funding in the future? YES/NO
If NO, will the event/project be dependent of future funding from Council? YES/NO
11. If Council assisted your event previously, please provide a cash flow statement of income and expenditure for the event.
12. How do you intend to give public recognition to the financial assistance received from Council and acknowledge Council's financial assistance on any related promotional or other material.....
.....
.....
.....

Please provide details of how this event/project will meet Council's objectives of the financial assistance/donations program:

Objective 1: To consider financial assistance by way of donations, sponsorships and subsidies to local service, cultural, sporting, charitable or non-profit organisations who operate within or provide benefit to the residents of Shoalhaven City.

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.....

Objective 2: To consider assistance to organisations to conduct quality cultural, sporting and community service programs or events who cannot attract sufficient funds from other sources.

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.....

Objective 3: To address targets specified within the Council's Community Strategic Plan or Shoalhaven City Council's Operational Plan objectives including access and usage of community resources, services and facilities, and equity of access for special needs groups.

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.....

Objective 4: To consider funding to encourage and enable broad community participation in cultural, sporting and community service programs.

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.....

Event/Project Budget Information

Expenditure		Amount
1.	Wages/Salaries/Contractors (give details)	
2.	(a) Other staff related costs:	
	On Costs	
	Travel	
	Other	
	(b) Value of voluntary labour	
3.	Administration	
	Accountant/Audit fees	
	Other	
4.	Hire of Hall/Venue	
5.	Equipment/Materials	
	Purchase	
	Hire	
6.	Advertising/Promotion	
7.	Other Project/Operating Costs (give details)	
	
TOTAL		

Income		Amount
1.	Sponsorship (nominate sponsor)	
2.	Donations	
3.	Sales	
4.	Admission Fees/Ticket Sales	
5.	Other Income (give details)	
	
TOTAL		

Checklist of documents to be forwarded with application:

1. For first time applicants, a copy of their organisation's constitution and if that constitution changes then an updated copy of it is to be forwarded with any subsequent application.
2. A copy of the most recent annual report (including financial statements of income and expenditure) – preferably audited.
3. Copy of notification of ABN No. and GST registration (if applicable) from the Australian Tax Office.
4. Evidence of incorporation.
5. A copy of the applicant's current public liability insurance policy (ie Certificate of Currency).
6. Where the applicant is a registered public charity, a copy of the registration certificate.



City Administrative Centre
Bridge Road (PO Box 42), Nowra NSW Australia 2541 - DX 5323 Nowra
Phone: (02) 4429 3111 - Fax: (02) 4422 1816

Southern District Office
Deering Street, Ulladulla - Phone: (02) 4429 8999 – Fax: (02) 4429 8939

Email: council@shoalhaven.nsw.gov.au

Website: www.shoalhaven.nsw.gov.au

For more information contact the City Services & Operations Group

Fee Support Policy – Council Managed Public Reserves & Facilities

Policy Number: POL10/9 • **Adopted:** 18/05/2010 • **Minute Number:** MIN10.581 • **File:** 6320E • **Produced By:** City Services & Operations Group • **Review Date:** 01/12/2012

1. PURPOSE

To define Council's criteria for the approval under delegation of fee waiving or support for the hire of Council managed public reserves and facilities, and apply consistency to consider requests for fee support.

2. STATEMENT

This Policy is based on the following Council Minutes:

- Minute No. 95.1982 - Public Reserves - Waiving of Fees (fund raising purposes)
- Minute No. 96.2638 - Public Reserves - Waiving of Fees (no profit expected from event)
- Minute No. 05.21 - Public Reserves - Waiving of Fees (for Not-For Profit Organisation)
- Minute No 06.1374 – Council Facilities – Rental or Fee Support – Non-Profit Organisations

Upon adoption of this Policy, the above Policies are rescinded.

2.1. Scope

This Policy applies to all applications for fee support for Council managed public reserves and facilities to be considered under Shoalhaven City Council's delegated authority for organisations meeting the eligibility criteria. The scope of this Policy includes:

- Public parks and reserves directly managed by Council or Council's 355/377 Management Committee
- Public facilities and buildings directly managed by Council or Council's 355/377 Management Committee

Which are available either for casual or regular hire.

2.2. Applications

Applications for fee support under this Policy should be made on the attached form “Application for Fee Support”.

2.3. Guidelines and Procedures for Applicants

This Policy must be read in conjunction with Council’s “Donations Policy” and “Use and Hire of Community Facilities for Commercial Activities”.

3. PROVISIONS

3.1. Eligibility

This Policy enables certain organisations to be eligible to apply for fee support associated with the use and hire of Council managed public reserves and facilities, provided that the applicant is a bona fide non-profit organisation which meets the following eligibility criteria:

- a) A registered charity and evidence of registration as a charity has been provided to Council, or
- b) A local community or sporting group which is recorded in Council’s Community Services Directory

Organisations that do not meet these criteria cannot be granted fee waiver or support under delegation.

3.2. Criteria

Fee support for the hire and use of public reserves and facilities may only be considered and approved by delegated authority for those activities which meet the following criteria. All requests for fee support shall be determined by the General Manager (Director, City Services & Operations) in accordance with 3.2 (a), (b) and (c) below unless otherwise determined by Council:

- a) The proposed use of the reserve or facility is consistent with the main purpose of the organisation and the event is open to the public, or
- b) The proposed use is a non-commercial community-based event, including for the purpose of community development, education and/or awareness activities.
- c) Requests for fee support for activities, including where all or part of the proceeds are to be on-donated to another charity or entity, shall not be supported.

- 3.3. In considering a request for (a), (b) and (c), the Council and/or the General Manager (Director, City Services & Operations) will take into consideration the impact of the decision on the operational budget required to manage the facility or group of facilities and any “hard” costs incurred as a result of the activity being staged. Fees associated with “hard” costs include (but are not limited to):

- Use of equipment

- Staff costs
- Waste services
- Electricity
- Water
- Traffic management

- 3.4. The extent of fee support approved under this Policy for an individual organisation will be limited to a maximum of \$1,000 within the same financial year.
- 3.5. The General Manager (Director, City Services & Operations) cannot waive fees under this Policy:
- a) For sportsgrounds and community facilities managed by a Management Committee. In this case, application needs to be made through Council's adopted Guidelines and Procedures for Annual Donations, Sponsorships and Subsidies in conjunction with Council's Donations Policy
 - b) If other Council assistance is provided for the event
 - c) For meetings of an organisation that are closed to the general public
 - d) For marketing, advertising or promotion of a commercial entity
 - e) Where the event/activity can be self funded
- 3.6. No request will be considered to waive:
- a) The requirement for a bond
 - b) The cost of additional garbage/waste services
 - c) The cost of cleaning associated with the event/activity and use of the facilities
- 3.7. Applications for fee support must be submitted in writing on the form attached to this Policy a minimum of three (3) months prior to the date of the booking.
- 3.8. No retrospective applications for fee support will be considered.
- 3.9. Applications which do not meet these provisions shall be advised that the request is not eligible for consideration under this Policy.
- 3.10. An annual report shall be submitted to Council detailing all fee support granted under this Policy.

4. IMPLEMENTATION

The City Services & Operations group will administer this procedure.

5. REVIEW

To be reviewed within one year of the election of a new Council.

6. APPLICATION OF ESD PRINCIPLES

None applicable.



Application for Fee Support

Financial Year ____/____

Please note – fee support is subject to budget constraints and may not be approved.

Please complete the following application form where assistance from Council is requested.

This information is the minimum required for an application.

Date: _____

Details of Organisation/Individual:

1. Name of Applicant/Organisation responsible for the event/activity:

.....

Contact person Signature:

2. Mailing address:

3. Phone: (Home) (Business)

4. Amount of assistance being sought: \$.....

5. Organisation composition Non Profit/Charity/Incorporated/other (*please circle*)
(*Attach documentation/certification for above*)

Commercial undertaking YES/NO

Do membership fees apply YES/NO

Amount charged for membership \$_____

Number of people in organisation/members _____

6. Office bearers of organisation (President, Secretary, Treasurer or Project Manager):

.....

.....

.....

7. Please provide a copy of applicant's/organisations financial statement for previous financial year.

Title of Event/Project

1. Please give a brief description of the event/project for which assistance is sought:

.....

2. Is this proposed to be an annual event/project? YES/NO

3. Date/s of the proposed event/project

4. Where will the event/project take place?

5. Is the event open to the community?

6. Will an entry fee be charged?.....

7. Name of Public Liability Insurer.....

8. Amount of insurance cover \$.....

9. Will the event/project support charities YES/NO

If YES, % events income \$.....

Funding

1. Cost of the total event/project \$.....

2. Funds available at present to go towards event \$.....

3. How are funds to be raised?

.....

4. Has Council previously assisted/sponsored your organisation? YES/NO

5. What was the amount (per annum) of the assistance from Council? \$.....

6. What were the dates for the assistance?

7. Is funding from Council for this activity likely to be ongoing? YES/NO

8. Have you applied for funding from other Groups of Council or other organisations
 YES/NO

9. If YES, how much has been sought \$.....

Name of Group or organisation.....

10. Will this event/project be self-funding in the future? YES/NO

If NO, will the event/project be dependent
 of future funding from Council? YES/NO

11. Detail the Benefit to Council arising from the fee support:

.....

Council Use Only

Fee as stated in the Fees & Charges.....

Is this request over \$1000 - Report to Council required?.....

Comments:

☐ OfficerDate.....

Comments.....

.....

☐ Officer.....Date.....

Comments.....

.....

☐ OfficerDate.....

Comments.....

.....

Comments:

Manager.....Date.....

Comments.....

Supported Yes / No

Section Manager.....Date.....

Comments.....

Supported Yes / No

Comments:

Director City Services & Operations.....Date.....

Comments.....

Approved / Declined

This form is for the purpose of Shoalhaven City Council sighting insurance requirements and for administrative purposes. The information will be used solely by Council officials for the purpose mentioned above. The applicant understands that this information is provided on a voluntary basis and they may apply to Council for access to, or amendment of, the information at any time.



City Administrative Centre
Bridge Road (PO Box 42), Nowra NSW Australia 2541 - DX 5323 Nowra
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Email: council@shoalhaven.nsw.gov.au

Website: www.shoalhaven.nsw.gov.au

For more information contact the Development & Environmental Services Group

FEES - WAIVING OF DEVELOPMENT APPLICATION AND OTHER FEES FOR CHARITABLE ORGANISATIONS & COMMUNITY GROUPS

Policy Number: POL11/74 • **Adopted:** 18/02/1997 • **Reaffirmed:** 21/12/2004 • **Amended:** 24/07/2007, 14/04/2009, 20/07/2011 • **Effective:** 8/08/2007 • **Minute Number:** MIN97.72, MIN04.1598, MIN07.1041, MIN09.429 • **File:** 23618E • **Produced By:** Development & Environmental Services Group • **Review Date:** 1/12/2012

1. PURPOSE

This policy exempts certain organisations from the payment of fees associated with Development Applications (DA) subject to certain exemption criteria

2. PROVISIONS

Council's policy exempts certain organisations from the payment of fees associated Development Applications subject to the following exemption criteria –

- (a) The applicant is a non-profit organisation which is either:
 - registered charity and evidence of registration as a charity has been provided to Council; or
 - a local community or sporting group which is recorded in Council's Community Services Directory; or
 - schools and Council projects of a "Community" nature.
- (b) The Development proposal does not involve an ongoing commercial or business type venture such as a nursing home or childcare centre.
- (c) The sum of all of the fees associated with either a development application or construction certificate application does not exceed \$1,000 or, in the case of a proposal requiring both development consent and construction certificate, the total of all fees does not exceed \$1,500.

Organisations which do not meet the exemption criteria must pay the scheduled fees upon lodgement of an application. If a refund of the fees is sought, a written request outlining the grounds for waiving the fees must be referred to Council's Resources and Reserves Committee for consideration on merit. Any donations determined by the Committee will be paid out of the 'unallocated donations' budget.

Shoalhaven City Council - FEES - WAIVING OF DEVELOPMENT APPLICATION AND OTHER FEES FOR CHARITABLE ORGANISATIONS & COMMUNITY GROUPS

3. IMPLEMENTATION

The Development and Environmental Services (DES) Group administers this policy. Eligibility for waiving of fees will be determined by Counter Services Staff at the time of lodgement of an application.

4. REVIEW

This policy statement will be reviewed annually by the DES Group as part of the overall annual review of Council's Delivery Program and Operational Plan.

5. APPLICATION OF ESD PRINCIPLES

None Applicable.