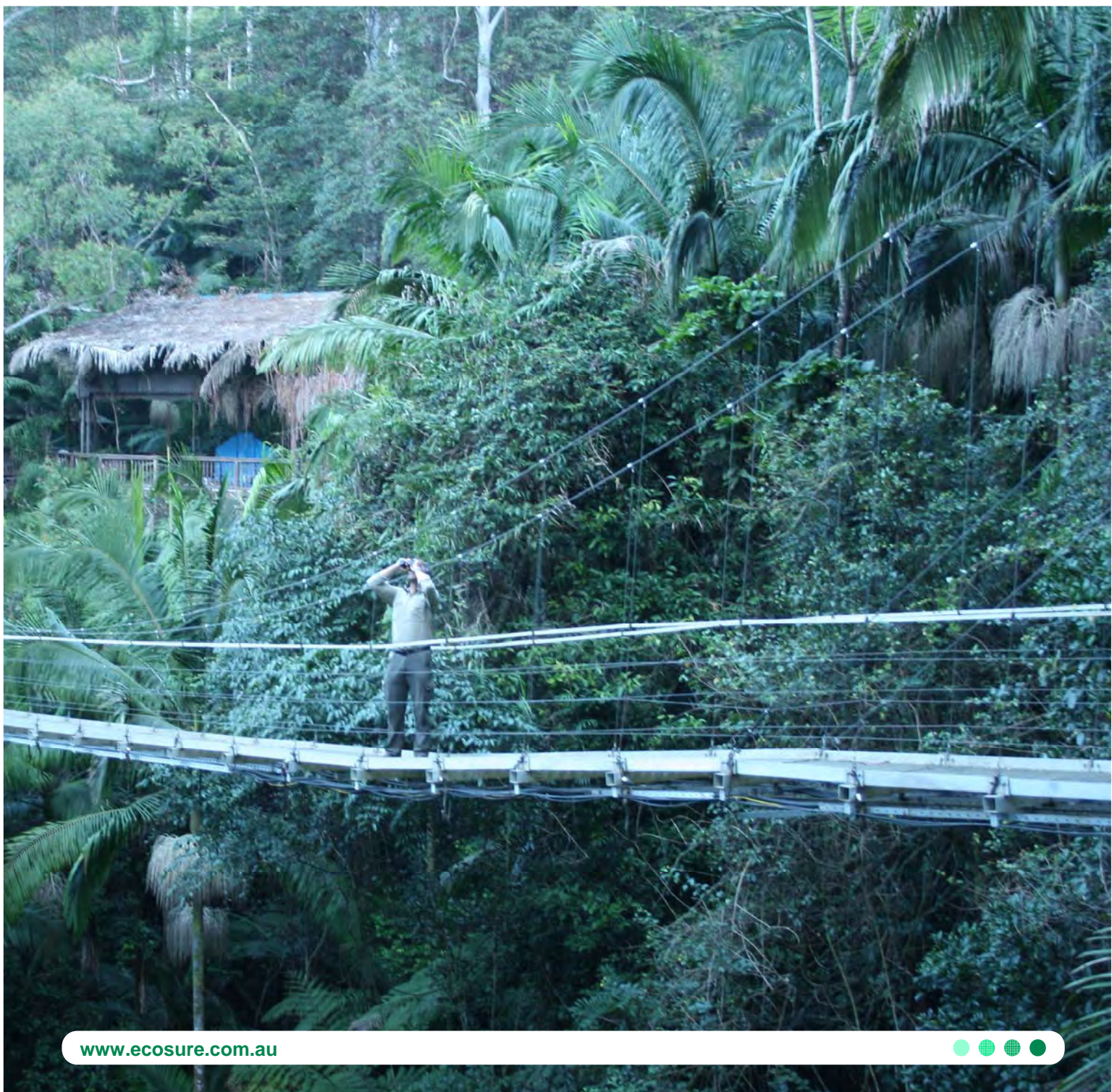


# Dungay Creek Road Environmental Management Plan REPORT September 2013

Granada Productions



## Glossary, acronyms and abbreviations

ANZECC	Australian and New Zealand Environment Conservation Council
EMP	Environmental Management Plan
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
Hibernation Period	This is the time period between series, when the site is visited periodically for maintenance by a limited crew.
Non-Production Period	For the purposes of this EMP, the non-production period is defined as the pre-production period, wrap-up period and hibernation period.
Pre-production Period	This time period involves the installation of temporary structures, setting up of trials, sets and filming equipment, catering and staff facilities etc.
Production Period	This time period is when filming and subsequent production activity occurs on the site.
TSC Act	<i>Threatened Species Conservation Act 1995</i>
Wrap-up Period	This time period is when many of the structures and facilities on-site are dismantled and de-rigged at the completion of the Production Period.

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# 1 Introduction

In December 2007, Granada Productions engaged Ecosure Pty Ltd to prepare an environmental management plan (EMP) for Granada Production's filming location situated on part of Lots 74, 77 and 93 on DP 755715, Dungay Creek Road, Dungay ("the site"). This EMP is a site specific plan that highlights key environmental issues and provides mitigation measures to minimise any environmental impacts to the site as a result of Granada Productions' activities. As part of the amendment to Tweed Shire Council's Development Consent DA02/1983, this EMP was updated in 2013 with relevant information from the Flora and Fauna Assessment Report (Ecosure 2013a) and Habitat Restoration Plan (Ecosure 2013b).

## 1.1 Aims and objectives

The overall aim is to reduce the environmental impact of the filming, production and associated activities on the natural values of the site and its surrounds.

The objectives of this project are to:

- highlight environmental risks associated with the project and provide measures to mitigate against any potential environmental impacts
- provide environmental guidelines for all personnel on-site to work within
- provide Tweed Shire Council with a document to ensure that potential environmental impacts are addressed.

## 1.2 Background

Granada Productions have produced live television programmes at this location since 2002. For each television series that is filmed at the site, associated activities include a pre-production period, production period and wrap-up period, which in total usually extends for around six months. The pre-production period involves the installation of temporary structures, setting up of trials, sets and filming equipment, catering and staff facilities etc. This period usually occurs for around 3 months prior to the commencement of filming. The production period is when filming occurs on the site and as many as 600 staff members can be involved in the 24 hours per day production period requiring catering, waste disposal and transport to, from and throughout the site. The production period can extend for up to three months for each series. The filming of celebrities occurs for a period of approximately 22 days, during which they are living, eating, sleeping and performing trials within the site. Trials consist of physical and mental challenges that involve the use of native and exotic fauna and flora. They take place in sets that are constructed on land and water within the natural surroundings. At the completion of filming, many of the structures and facilities on-site are dismantled and de-rigged which usually takes about one month. Between each series (i.e. hibernation period), the site is visited periodically for maintenance by a limited crew. For the purposes of this EMP, the non-production period is defined as the pre-production period, wrap-up period and hibernation period.

As part of a development application for this site, Peter Parker Environmental Consultants Pty Ltd conducted a flora and fauna assessment in 2002. They concluded that “no viable populations of threatened species were likely to be placed at risk of extinction by the development proposal” (Peter Parker Environmental Consultants 2002). In February 2008, Peter Parker Environmental Consultants prepared an updated flora and fauna assessment for the site. In 2011, Ecosure prepared a Flora and Fauna Assessment Report and a Habitat Restoration Plan for the site (Ecosure 2013a, 2013b). The findings from these reports have been incorporated into this updated EMP where required.

### 1.3 Site description

The site is located on part of Lots 74, 77 and 93 on DP 755715, Dungay Creek Road, Dungay, in northern New South Wales (NSW) (Figure 1). The site is situated on freehold land and the landowners reside on the same parcel of land. Previous and current land uses include grazing, banana farming, a homestead, forested land and Granada Productions filming activities.

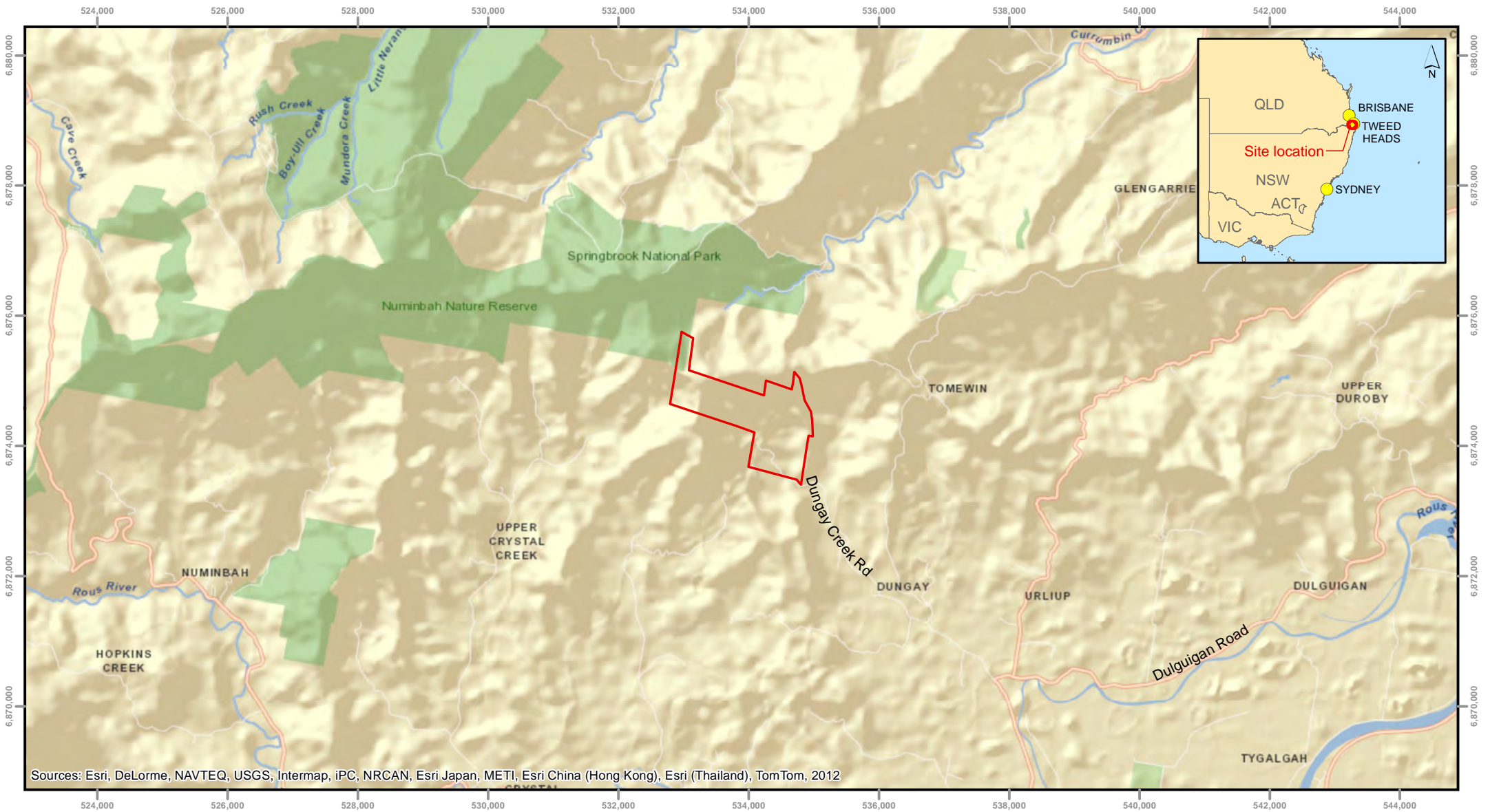
The site supports lowland subtropical rainforest, a mixture of rainforest and wet sclerophyll forest and areas that have been previously cleared of native vegetation for rural purposes (Peter Parker Environmental Consultants 2002). There are large infestations of environmental and exotic weeds such as Lantana (*Lantana camara*).

Figure 2 provides an overview of the Granada Production site including the location of the helipads, the Tech Base, Social Base and Art Department.

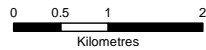
### 1.4 Key environmental issues

The filming and associated activities are considered to have a relatively low environmental impact. Nonetheless, environmental issues pertinent to the filming activity reside within the following key areas, and are subsequently considered in Section 2 when assessing the potential environmental impacts associated with the filming. The key environmental issues include:

- flora
- fauna
- water quality
- sediment and erosion control
- waste and resource use
- fuels, oils and chemicals
- noise
- lighting
- traffic management
- cultural heritage
- mosquito and biting midge management.



Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012



Scale: 1:80,000 when printed at A4

Coordinate System:  
GDA 1994 MGA Zone 56  
Projection: Transverse Mercator  
Datum: GDA 1994  
Units: Metre

Property boundary

Data Sources:

- Granada Productions  
- © Copyright Commonwealth of Australia (Geoscience Australia) 2012 The Commonwealth gives no warranty regarding the accuracy, completeness, currency or suitability for any particular purpose.

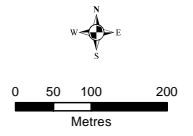
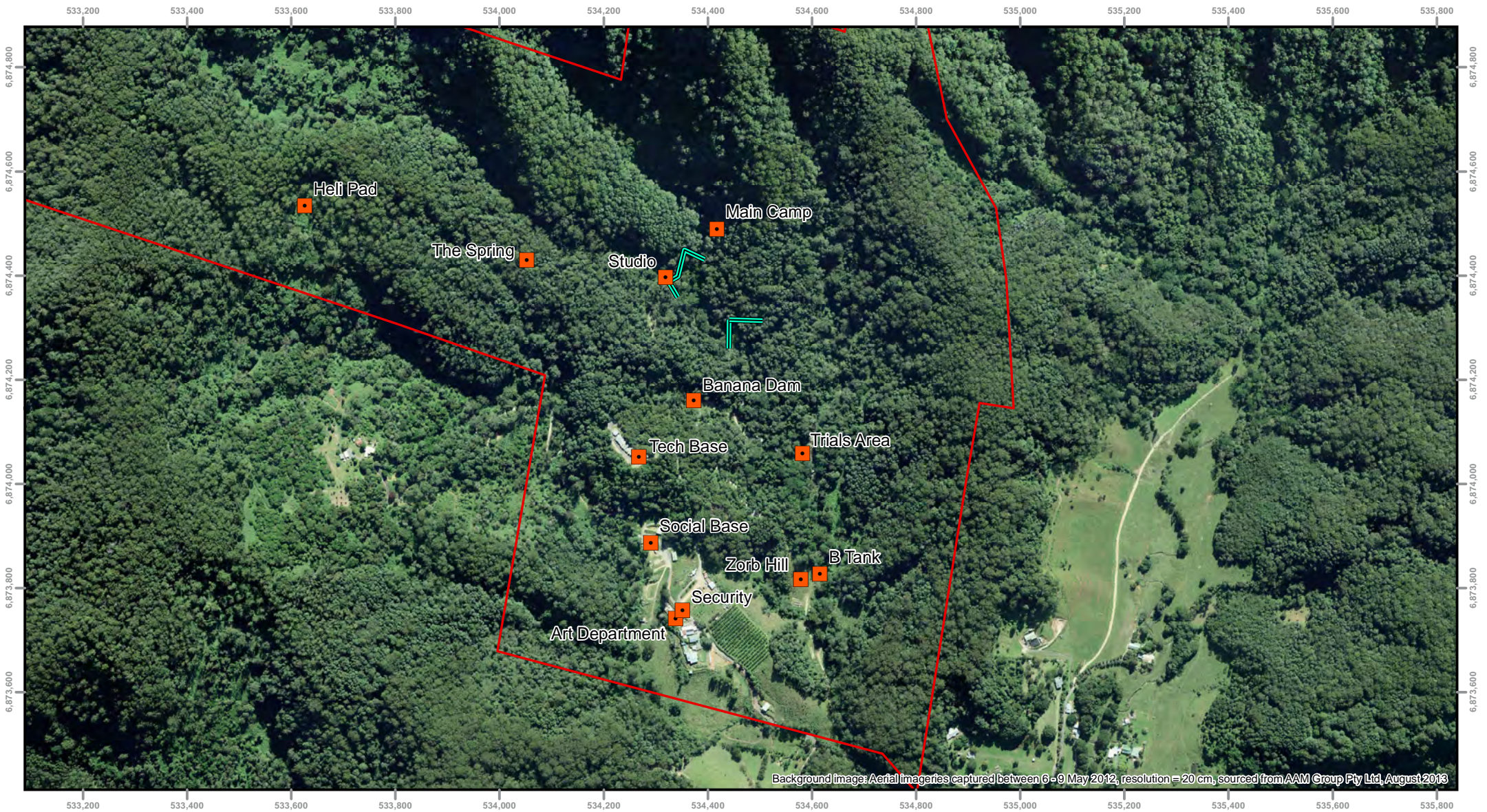
### Figure 1: Site locality

*Granada Productions*

**Environmental Management Plan**

**Tweed Shire, NSW**





- General locations
- Trials bridges
- Property boundary

Scale: 1:10,000 when printed at A4

Coordinate System:  
GDA 1994 MGA Zone 56  
Projection: Transverse Mercator  
Datum: GDA 1994  
Units: Metre

Data Sources:  
- Granada Productions  
- © Ecosure Pty Ltd, 2013

Document:  
GE257\_MP\_Fig2\_ProjectSite

Job Number: GE257

Approved GIS Team Leader	BN	19/09/2013		
R0	MD	JW	ISSUED TO CLIENT	19/09/2013
REV	BY	CHK	DESCRIPTION	DATE

**Map 2: Project site**

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**Granada Productions**

**Environmental Management Plan**

**Tweed Shire, NSW**

## 2 Potential environmental impacts and mitigation actions

The following sections provide background information on key environmental issues and identify environmental objectives and mitigation measures to minimise potential environmental impacts.

### 2.1 Flora

Ecosure's flora surveys focused on high use areas around the site and revealed a diverse array of terrestrial flora species (Ecosure 2013a). In total, 182 flora species were recorded including seven flora species of legislative significance and one vegetation community listed as an endangered ecological community under the NSW *Threatened Species Conservation Act 1995* (TSC Act) This community is 'Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions'. Within the site, this significant community was recorded in the area around main camp and a small pocket of rainforest occurs around the trials area. The majority of the areas assessed supported flooded gum (*Eucalyptus grandis*) and brush box (*Lophostemon confertus*) dominated tall open forest. The Flora and Fauna Assessment Report provides a flora species list for the site, including recorded significant flora species (Ecosure 2013a). Field surveys identified four weeds of significance pursuant to the NSW *Noxious Weeds Act 1993* (Ecosure 2013a).

Appendix A provides maps illustrating the location of recorded significant flora species.

Table 1 Flora objectives and mitigation measures to minimise potential environmental impacts.

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
Minimise, as far as is practicable, any adverse impacts on the site's native vegetation	Degradation of vegetation through trampling	Only established tracks and paths will be used, where practicable. Pathways difficult to discern will be identified, (where practicable) with markers (e.g. tape or signage).	No evidence of trampled vegetation throughout site	Crew, Production Manager
	Significant removal of native vegetation	No existing native vegetation will be removed without prior approval from your Head of Department. The Location Manager is to investigate if any approvals/permits are required prior to the removal of vegetation.	Production Manager aware of all vegetation clearance and permits obtained where required	Crew, Production Manager
	Degradation of significant plant species	Significant plant species within high use areas have been flagged with bright coloured tape and an inconspicuous identifier (string tied loosely around base of tree) and mapped. Crew will be informed as to their location and importance during site	No damage to significant plants	Production Manager, Environmental Liaison Officer

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
		<p>inductions.            Filming and associated activities will avoid the area surrounding the species where practicable. If activities must occur within the vicinity of the significant plant species, care will be taken to ensure the plants are not damaged. The bright coloured tape can be removed if required for filming purposes. The inconspicuous identifier must remain.            Immediately after filming (during wrap –up phase) the bright coloured tape must be replaced by Granada. At the next compliance visit, the environmental consultant must check that all bright coloured tape has been replaced on appropriate species.</p>		
	Removal of ecologically important vegetation	Any removal of ecologically important vegetation (i.e. vegetation from within the endangered ecological community, vegetation in the vicinity of a threatened flora species or vegetation providing habitat for a threatened fauna species) must only be done following advice from a qualified ecologist. Any removed plants must be compensated on a 2:1 replacement ratio within the same vegetation community.	<p>No removal of ecologically important vegetation</p> <p>Replacement for essential removal of ecologically important vegetation is compensated at a 2:1 ratio</p>	Production Manager, Environmental Liaison Officer
	Damage to native flora	<p>Tree protection devices/materials required where rigging (temporary or permanent) is to be attached to trees.            Native vegetation should not be used in dressing sets if it requires the plant to be killed or taken from its natural surrounds.</p>	<p>Minimal damage to trees due to rigging.</p> <p>No native vegetation destroyed for set dressing</p>	Production Manager
	Degradation of tree health	<p>A qualified arborist will inspect trees for occupational, health and safety reasons and to maintain health of trees surrounding filming and associated activities.            The arborist inspections will include assessments of tree health where rigging is attached to trees, such as the suspension bridges.</p>	No degradation of tree health	Production Manager, Arborist
	Invasion and expansion of exotic and environmental weeds	Set dressings are only to use local, native species sourced from a reputable nursery. The Habitat Restoration Plan (Ecosure 2013b) provides	No evidence of trampled vegetation throughout site	Production Manager, Art Director /Construction Manager

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
		<p>details of suitable native species previously recorded on-site.</p> <p>Where weeds are removed from the site in the preparation of sets, they should be treated with appropriate chemicals by suitably qualified personnel to prevent their regrowth.</p> <p>Weed species that have previously been planted in the camp sites will be removed and replaced with native species.</p> <p>Only designated tracks will be used to move around the site, where practicable, to prevent the spread of weed species.</p>	<p>Weeds treated where practicable</p> <p>No exotic species planted throughout site</p>	
<p>Restore the site after the completion of filming activities and ensure creation of sustainable native vegetation communities</p>	<p>Degradation of ecological values within the site and surrounding area</p>	<p>The Habitat Restoration Plan (Ecosure 2013b) targets nine management zones for weed control and maintenance. This plan will reduce weed cover in all management zones by the end of the development consent period and remove planted exotics used for set dressing.</p> <p>The plan also targets natural recruitment and successful establishment of native vegetation, including establishment of planted suitable local species where required.</p>	<p>No woody weeds greater than 2 m in height remaining in the management zones at the end of the consent period. No planted exotics used for set dressing remaining in management zones.</p> <p>Mosaic lantana (<i>Lantana camara</i>) removal has occurred during the hibernation periods with the remaining lantana removed in a sensitive manner at the end of the consent period.</p> <p>Native vegetation cover in treated management zones sufficient to prevent or delay weed re-infestation.</p>	<p>Production Manager, Art Director</p>

## 2.2 Fauna

The forest communities and disturbed open grassland areas within the site provide habitat for a range of wildlife. Ecosure recorded 82 fauna species on-site, which included seven species of legislative significance during field surveys (Ecosure 2013a). Additional sightings from Granada staff and Ecosure restoration and compliance teams have been included, resulting in a total of 114 fauna species. The Flora and Fauna Assessment Report provides a fauna species list for the site, including recorded significant fauna species (Ecosure 2013a). Significant species include marbled frogmouth (*Podargus ocellatus*), pouched frog (*Assa darlingtoni*) and little bent-wing bat (*Miniopterus australis*).

Appendix A provides maps illustrating the location of recorded significant fauna species.

Table 2 Fauna objectives and mitigation measures to minimise potential environmental impacts

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
To minimise the impact of filming and associated activities on native fauna and to ensure that no significant fauna species are harmed.	Loss of habitat and harm to fauna through vegetation clearing	Prior to any vegetation clearing occurring, a qualified ecologist is to be consulted and an assessment carried out on the vegetation as potential fauna habitat. An assessment will be made whether a fauna spotter catcher is required to be present while vegetation clearing is carried out. If required, a certified fauna spotter catcher must assess the areas to be cleared prior to the commencement of vegetation clearing.	Fauna spotter catcher involved in vegetation clearance process, if required	Production Manager
	Wildlife attractants	All structures and facilities created for the trials are to be dismantled, covered over, secured or emptied immediately after completion of trials/filming.	Trial clean up is complete	Unit Manager, Art Director / Construction Manager, Production Manager
	Habitat trampling	Only established tracks and paths will be used, where practicable. Pathways difficult to discern will be identified (where practicable) with markers (e.g. tape or signage).	No evidence of trampled vegetation throughout site	Production Manager
	Risk of mortality through vehicle movements	Vehicles will be kept on designated tracks. Vehicles will adhere to internal speed limit of 10 km/hr.	No native fauna injured through vehicle movements	Production Manager, Transport Manager
	Introduction of exotic fauna	Any introduced fauna used in the trials will be collected and removed from the site after use. Any domestic dogs brought onto the site by Granada will be kept on a lead.	No evidence of exotic species on-site due to trials	Production Manager, Art Director / Construction Manager
	Introduction of diseases	All fauna brought onto site for use in the trials are to be free from diseases or infection to avoid infecting native wildlife.	All fauna are disease free	Production Manager, Art Director / Construction Manager

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
	Harm to the pouched frog through weed control	The use of herbicide is to be avoided or managed to minimise the risk of harming the threatened pouched frog. Bush regenerators will be provided with maps of locations where the pouched frog was recorded. Restoration and weed control works will be diversified to suit local fauna.	No harm to the pouched frog	Production Manager, Environmental Liaison Officer

## 2.3 Water quality

Filming and associated activities have the potential to impact upon surface water and groundwater quality within and downstream of the site. Waterways traverse the site as illustrated in Appendix B and water-based activities often form part of the trials. This includes large pools, dams and ponds such as 'B Tank' and the 'Banana Dam'. All care and appropriate mitigation measures must be taken to ensure that surface water quality and groundwater quality is maintained.

Water is extracted on-site via a bore and a creek (known as 'the spring'), and stored on-site for general use, including catering. In total there are 16 water tanks on-site each with a 22,500 L capacity (including 2 tanks for the owners of the property). There is a limited amount of rainwater collected from the Tech Base area (see Figure 2). It is estimated that approximately 5-6 megalitres are used per show and approximately half of this is extracted from the bore with the balance collected from the spring. Water is transferred around the site via 2" (~5.1cm) water pipes. The water used for catering purposes is passed through various grades of cartridge filters and also treated using ultra-violet (UV) light. Water testing for coliform bacteria and pH is currently conducted by Granada on a weekly basis only in the Social Base during the pre-production period and in the Social Base, Tech Base and Art Department areas during the production period. On occasions where large volumes of water are required for trials, the water is sourced externally and is trucked in. Water supplied for human consumption must comply with the New South Wales Health Private Water Supply Guidelines (NSW Health 2008) and the Australian Drinking Water Guidelines (-NHMRC 2011) Registration of the premises shall be maintained with Tweed Shire Council's Public Health Register for Private Water Suppliers including payment of the associated fee.

The Australian and New Zealand Environment Conservation Council (ANZECC) Water Quality Guidelines for Fresh and Marine Waters (2000) provide limits for various water quality parameters to ensure that aquatic environments are protected. The results from any water quality monitoring performed within the site will be assessed against these guidelines to ensure compliance with the relevant standards.

It is assumed within this EMP that Granada Productions have obtained any relevant permits/licences for water extraction.

Table 3 Water quality objectives and mitigation measures to minimise potential environmental impacts.

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
To ensure that there is no detrimental impact to surface water quality (i.e. creeks, streams, water bodies) within site and downstream of the site.	Deterioration of surface water quality	No material or chemicals will be added to any streams, creeks or water bodies that will result in a deterioration of water quality within the site and downstream. For example, all soap and shampoo supplied to the contestants for use during the show must be biodegradable and suitable for use in waterways. If chemicals or materials have been added to water to be used for trials (i.e. in dams, water bodies, ponds, tanks), this water will be treated and tested accordingly before releasing water to aquatic environments. If rapid release of water is required, only biodegradable and non-toxic substances will be used. If chemicals or materials are toxic or cannot be treated accordingly, the water must be transported off-site for disposal.	No deterioration of surface water quality due to Granada Production activities	Unit Manager Production Manager Art Director / Construction Manager
	Sediment entering receiving waters	Appropriate sediment and erosion control measures are to be implemented to prevent sediment entering receiving aquatic environments. For example, the use of sediment fencing and hay bales for any area or trial likely to release water to an aquatic environment.	Sediment controls in place where appropriate	Unit Manager Art Director
	Monitoring for any adverse impacts	Surface water quality monitoring at designated surface water monitoring points for pH, electrical conductivity, dissolved oxygen, turbidity and temperature. Water quality monitoring to be conducted fortnightly during production, monthly during pre-production and wrap-up periods, and twice during hibernation. Frequency of monitoring can be reassessed by the Production Manager and Environmental Liaison Officer if deemed appropriate e.g. if there is little variation of results, monitoring may be scaled down. Any unacceptable water quality results will trigger further investigation to establish the cause and implement immediate remedial action (if necessary).	Water quality measurements in accordance with ANZECC (2000) guidelines for upland rivers in South East Australia	Unit Manager
Ensure that water collected from the spring is extracted at a sustainable level.	Deterioration of downstream water quality	Water extracted from the spring must be at a level where the spring still has sufficient flow below the collection point to prevent adverse effects on the local environment.	Local environment is not adversely affected by water extraction	Unit Manager
No net change of the local water table or degradation of groundwater quality as a result of filming and associated activities.	Deterioration of groundwater quality	Due care must be taken to ensure no chemicals or toxic materials enter the groundwater system as a result of filming or associated activities.	No deterioration of groundwater quality due to Granada Production activities	Unit Manager

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
	Unsustainable extraction of groundwater	Extraction of groundwater from the bore must be at a sustainable level and in accordance with any obtained extraction licence/permit.	Water removal is in accordance with extraction licence/permit	Unit Manager

## 2.4 Sediment and erosion control

Incorrect or inadequate sediment and erosion control can create a dust nuisance and can mobilise sediment which may pose a risk to the natural environment. Mobilised sediment can smother terrestrial vegetation and fine silt and coarse sand in waterways may impact on aquatic flora and fauna. Mobilised sediment may also have adverse impacts on downstream water users. Silt and sediment in waterways can also alter the flow regime and limit light penetration to organisms that require light for natural processes. The above points can also become an area of complaint for local residents.

Table 4 Sediment and erosion control objectives and mitigation measures to minimise potential environmental impacts.

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
To mitigate any potential impacts to soil and water as a result of filming and associated activities and ensure that erosion and sediment issues are adequately addressed.	Mobilised sediment	Appropriate measures employed to ensure that the environmental objective is met. These will include the confinement of sediment with appropriate sediment control measures such as sediment fences, hay bales, silt traps and revegetation of open areas as soon as practically possible. Erected silt fences to be maintained. Regular monitoring of sediment control devices.	Appropriate sediment control is in place	Production Manager Unit Manager
	Erosion resulting from discharge of waste water from trials	Waste water from trials to be discharged in a manner which minimises erosion, where practicable. For example, water may be piped to an appropriate location and diffused over a wide area to reduce the water velocity, or geofabric could be used to line channels to avoid erosion. If the water is not contaminated, it could be sprayed over adjacent vegetation.	No evidence of erosion due to trial water release. Sediment control is in place if required.	Unit Manager Art Director
	Inappropriate soil stockpiles	Soil stockpiles must be: located more than 15m from a waterway surrounded by an appropriately maintained silt fence remote from significant plant species away from bush land to	Stockpiles in appropriate locations	Production Manager



Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
		minimise damage to natural vegetation and trees placed to avoid loss due to steep slopes located so the stockpile material may be transported away at any time. Located so access (by vehicle or foot) does not cause any of the impacts mentioned above.		
	Erosion of soil substrate	Use of appropriate native grass and plant species to revegetate exposed soil surfaces.	No erosion of soil substrate	Production Manager
To minimise potential impacts from any imported fill	Contaminated imported fill or materials such as mulch	Imported fill is to be validated acid sulphate and contaminant free and imported mulch should be validated weed free prior to being brought onto site.	All imported soil or mulch is certified contaminant free	Production Manager

## 2.5 Waste and resource use

The activities on the site produce a variety of waste such as food scraps, sewage, general waste and recyclable waste. Waste is currently removed from site via a contractor. Sewage waste is stored in two 10,000 L holding tanks and during peak times these tanks are emptied on a daily basis. The locations of the sewage holding tanks are illustrated in Appendix B. Recycling bins for plastic and cardboard are currently provided on-site.

Table 5 Waste and resource use objectives and mitigation measures to minimise potential environmental impacts.

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
Ensure all waste is managed on-site and removed from the site on a regular basis.	Pollution via mismanagement of sewage waste	Sewage waste is contained in appropriate tanks away from waterways. Tanks will be emptied regularly to minimise risk of pollution.	No pollution due to mismanagement of sewage waste	Unit Manager
	Littering	Bins are to be provided for all rubbish. Smokers to be provided with 'Butt Bins'.	No litter on-site	Unit Manager
	Vermin and wildlife attractants	Bins, skips and other waste receptacles should be secured with lids to minimise litter and attraction of wildlife and vermin.	All bins and waste receptacles have lids	Unit Manager
	Waterway pollution	Bins, skips and other waste receptacles should be located away from waterways.	Waste receptacles located more than 15m from a waterway	Unit Manager
Minimise resource and energy wastage within the site.	Resource wastage	Recycling bins are provided where possible for recyclable materials i.e. paper/cardboard, plastic, metal and glass.	Appropriate recycling bins are provided	Unit Manager
		The use of environmentally friendly materials and consumables to be encouraged. Audits can be performed, as required, to ensure the most environmentally friendly materials and products are being used.	Use of environmentally friendly materials and consumables	Production Manager
		New electrical or high cost equipment is to be researched for environmental/energy efficiency prior to being purchased.	All new purchases are carefully researched	Production Manager
	Energy wastage	Lighting around the site is to be turned off when not in use. All equipment to be turned off when not in use.	Use of lighting and equipment is minimised where practicable	Unit Manager

## 2.6 Fuels, oils and chemicals

The presence of refuelling activities and storage of fuels, oils and chemicals on-site have the potential to be sources of leaks and or spills.

Within the site, there is a large fuel storage tank for the generators, small drums that store fuel for vehicles and forklift etc. and various stored chemicals for uses such as in the Art Department. There are a number of stationary and mobile equipment and vehicles that are refuelled on-site. Currently, the large fuel storage tank and generators are taken off-site over the hibernation period.

Table 6 Fuels, oils and chemical objectives and mitigation measures to minimise potential environmental impacts.

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
Ensure appropriate measures are in place to prevent fuel, oil and chemical spills and in the event there is a spill, to prevent its release to the natural environment which may result in environmental harm.	Leaks and spills resulting in environmental harm	All spillages are to be immediately contained in accordance with the Environmental Spill Management Procedures in Section 3.2 of the EMP. Any leaks or spills are to be immediately reported and then recorded using the form provided in Section 3.2.1 of this EMP. Regular monitoring of bunding around stored fuel, oil and chemicals.	Appropriate spill management implemented	Unit Manager Aggreko
		Any spillages resulting in release to the environment are to be appropriately investigated and rehabilitated in accordance with relevant regulatory requirements and to the satisfaction of the Production Manager. A spill kit and trained personnel are to be on-site during operational hours.	Spill kit in place. No environmental harm is caused by leaks or spills	Unit Manager Production Manager
	Inappropriate storage resulting in spills or leaks	Fuels, oils and chemicals are to be stored in accordance with the relevant standards, such as in a bunded or lined area. Fuels, oils and chemicals are to be stored at least 30m away from waterways. All waste fuels, oils and chemicals are to be taken off-site and disposed of appropriately. On-site storage of fuels, oils and chemicals over hibernation periods should be minimised.	All chemicals and fuels are stored in appropriate bunded areas and containers	Unit Manager Aggreko
	Leaks from mobile and stationary machinery, equipment and vehicles	Regular inspections of vehicles, containers and equipment to check for any leaks or spills. Where possible, major servicing of machinery/equipment will be carried out off-site. If servicing is required on-site it will only be undertaken at a designated bunded area away from waterways.	No leaks from machinery or vehicles	Unit Manager

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
	Spills from refuelling mobile and stationary machinery, equipment and vehicles	Mobile machinery, equipment and vehicles are to be refuelled at least 30 m away from waterways. Generators are to be stored at least 30 m away from waterways to minimise risk during refuelling.	All generators and refuelling points are located more than 30m from waterways	Unit Manager Aggreko

## 2.7 Noise

Noise pollution is a nuisance and a potential health hazard for sensitive receptors such as surrounding houses and the local community. Noise pollution can also have adverse impacts on local native fauna.

The major noise contributors for the filming and associated activities would be helicopters, trucks, buses, machinery and any loud vocalisations as a result of trials. Given the remote and forested nature of the site and its location within a rural area, noise issues are expected to be relatively minimal.

Table 7 Noise objectives and mitigation measures to minimise potential environmental impacts.

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
To minimise noise disturbance to adjoining residences	Noise pollution	In non-production periods, consideration will be given to surrounding residences to minimise noise pollution by limiting truck, bus and helicopter access to the site to Monday to Saturday between the hours of 7am to 7pm, where practicable. The use of equipment that may result in excessive noise is to be limited to Monday to Saturday between the hours of 7am to 7pm during non-production periods and where practicable during production periods.	Vehicle access and equipment use is limited to designated times periods	Production Manager Unit Manager Transport Manager
	Noise complaints	Complaints will be handled via the Production Manager and dealt with as per the Public Complaint Procedure outlined in Section 3.3 of this EMP.	All noise complaints dealt with appropriately	Production Manager

## 2.8 Lighting

Artificial lighting is required on-site to illuminate tracks and pathways and to provide lighting for facilities and filming. The use of artificial lighting can be minimised in pre-production and wrap-up periods however it may be required for use up to 24 hours a day in production periods.

Table 8 Lighting objectives and mitigation measures to minimise potential environmental impacts.

<b>Environmental objective</b>	<b>Potential impact</b>	<b>Mitigation measures</b>	<b>Performance criteria</b>	<b>Responsible</b>
To minimise adverse impacts to surrounding residents whilst maintaining safety on-site	Adverse impacts on surrounding residences	All unnecessary lighting to be turned off. Lighting to be directed away from adjoining residences.	Use of lighting is minimised where practicable and directed away from adjoining residences	Unit Manager Aggreko
Minimise resource and energy wastage within the site	Resource wastage	All lighting along tracks and pathways to be turned off in daylight hours, except where specifically required during production periods. Installation of sensor lighting to minimise energy consumption in areas while not in use.	Use of lighting is minimised where practicable	Unit Manager Aggreko
To minimise light interference with native wildlife	Affecting populations of native wildlife	Reduce the intensity of artificial lighting and minimise large areas of artificial lighting to avoid any impacts on native wildlife.	Use of lighting minimises impact on wildlife	Unit Manager Aggreko

## 2.9 Traffic management

During the pre-production, production and wrap-up periods, there is an increased level of traffic accessing the site, predominantly in the form of buses, truck and passenger vehicles. It is important to note that Dungay Creek Road used to be an unsealed road. Granada Productions in consultation with the council arranged for the road to be sealed which has benefits for the local community. In addition, Granada Productions have established an off-site carpark to reduce traffic on Dungay Creek Road.

The potential traffic related impacts associated with the filming activities include:

- trucks, buses and passenger vehicles posing a safety concern to pedestrian and local traffic
- congestion of public roads
- contamination of public roads with mud, dirt, fuels etc.
- deterioration of public roads resulting from extra vehicular traffic.

Table 9 Traffic management objectives and mitigation measures to minimise potential environmental impacts.

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
To maintain clean and safe public access roads with a minimum disruption to the natural environment	Degradation of public roads and pollution	All vehicles used to be mechanically sound (i.e. no oil leaks etc) and appropriately maintained as required.	Vehicles are appropriately maintained	Vehicle Drivers
	Traffic safety and risk of mortality to wildlife	All traffic is to observe the internal speed limit of 10 km/hr and Granada's in-house speed limits on external roads. These speed limits are 50 km/hr along Dungay Creek Road from Tomewin Road to Causeway 2 and 30 km/hr along Dungay Creek Road between Causeway 2 and the site.	Speed limits are observed	Vehicle Drivers Transport Manager
	Degradation of the natural environment	All vehicles will be required to adhere to the defined access routes and parking areas to avoid impacting on the natural environment.	No evidence of vehicle tracks outside of defined access routes and parking areas	Production Manager Unit Manager Transport Manager
	Introduction of weeds and diseases	Vehicles and machinery shall not be driven through or parked in areas outside the designated areas.	No evidence of vehicle tracks outside of defined access routes and parking areas	Production Manager
Manage traffic to minimise disturbance to surrounding local residents and the local community	Congestion of public roads	Vehicle deliveries and buses accessing the site will be minimised where possible to avoid congesting public roads and to minimise resource wastage (e.g. fuel).	No congestion of public roads from Granada Production's vehicles movements	Production Manager Entry security Unit Manager

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
		Where practicable, high vehicular movements relating to the Granada Productions site are to avoid busy periods in the local communities (i.e. school start and finish times).		
	Noise pollution	All vehicle deliveries are to occur within the hours of 7am to 7pm Monday to Saturday, where practicable, with the exception of buses carrying staff during the production period.	Vehicle access is limited to designated time periods	Production Manager Entry security
Manage roads to minimise dust and air quality issues	Air quality degradation	Treat road surfaces appropriately to minimise displacement of dust.	No issues relating to dust and air quality	Unit Manager

## 2.10 Cultural heritage

In NSW, objects and sites of cultural significance are protected by legislation including the *National Parks and Wildlife Act 1994*. Within the site, the majority of the infrastructure has been erected (i.e. Art Department, carpark, Social Base etc.) in areas that have been previously cleared and used for rural purposes. Other activities within areas of intact vegetation are relatively low impact and do not involve any excavation works which could potentially uncover any culturally significant objects. No known sites of cultural significance occur within the site. However, due care must be taken to ensure any objects or sites of cultural heritage significance that may potentially occur on the site are protected.

Table 10 Cultural heritage objectives and mitigation measures to minimise potential environmental impacts.

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
No sites of cultural significance to be disturbed	Desecration of culturally significant sites	During site inductions, staff will be made aware of the importance of objects and sites of cultural significance and the need to protect them.	No damage to sites of cultural significance	Production Manager
		If any items of cultural heritage significance are discovered, all activities within 50 m of the item will cease and further investigations will be carried out.		
		If required, liaise with indigenous elders to ensure significant sites (if any) are not compromised.	Indigenous elders are consulted, if required	Production Manager

## 2.11 Mosquito and biting midge management

Mosquitoes and biting midges can create a nuisance to humans and can be vectors of disease. Biting midges are predominantly found in coastal areas however the species *Lasiohelia townsvillensis* breeds in forested areas and is known to occur in areas such as Murwillumbah (Tweed Shire Council 2005). Mosquito species such as *Verrallina funerea* which breeds in fresh to brackish ponds may also occur within the site and surrounding areas. Within the region, mosquitoes are known to be vectors of insect borne diseases such as Ross River virus and Barmah Forest virus.

Table 11 Mosquito and biting midge objectives and mitigation measures to minimise potential environmental impacts.

Environmental objective	Potential impact	Mitigation measures	Performance criteria	Responsible
To minimise impacts from mosquito and biting midge	Increased numbers of mosquito and biting midge	All containers and vessels that could potentially capture and store water are to be covered or turned upside down to minimise breeding grounds for mosquito around the facilities.	Site is managed to limit breeding opportunities for mosquito and biting midge	Unit Manager
		Wheel ruts and any minor surface depressions which result in ponded water around the facilities to be filled in to minimise breeding grounds for mosquito.		Unit Manager
	Nuisance to staff	If required, all facilities, such as transportable offices, to have screens on doors and windows to minimise adverse impacts from mosquito and biting midge.	Screens on doors and windows	Production Manager
		Staff to be informed at site induction of potential mosquito and biting midge problems. Staff to be provided with information on ways to minimise mosquito and biting midge bites such as wearing long sleeved clothing. Environmentally sensitive insect repellent to be made available for staff.	Staff informed about mosquito and biting midge issues and biting prevention methods	Production Manager



## 3 EMP implementation

### 3.1 Emergency response and non-conformances

Environmental incidents which result in non-compliance with environmental requirements will be classified as an emergency for the purpose of this EMP and will trigger the implementation of the following chain of events:

1. Take necessary actions to avoid further environmental harm, provided that such actions do not compromise safety.
2. Notify Production Manager or Unit Manager on site. Production Manager/Unit Manager should notify senior management.
3. Head of Legal and Business Affairs to notify relevant bodies, as required, such as the Office of Environment and Heritage and Tweed Shire Council.
4. Advice is to be followed upon consultation with relevant Emergency Contacts.

Environmental incidents of a less severe nature, such as noise complaints are to be addressed as soon as possible and require the Production Manager to be notified within 24 hours of the incident occurring.

#### 3.1.1 Emergency Contacts

Table 12 Emergency contact personnel

Organisation	Environmental Emergency
Unit Manager, Granada Productions	All emergencies
Production Manager, Granada Productions	All emergencies
Head of Legal and Business Affairs, Granada Productions Sydney Office	All emergencies
Line Producer, ITV Productions UK Office	All emergencies
NSW Office of Environment and Heritage	Non-compliance with environmental requirements

### 3.2 Environmental spill management procedure

The environmental spill management procedure will be triggered following any accidental release of contaminated water to the receiving aquatic environments. Any accidental spills of chemicals, fuels, oils or other liquid will also trigger this procedure. Spillages resulting in release to the environment are to be appropriately investigated and rehabilitated in accordance with relevant regulatory requirements and to the satisfaction of the Unit Manager.

Table 13 Environmental Spill Management Procedure

No.	Mitigating action	Responsibility
1	Identify source and nature of the spill and if safe, control (stop) the source.	Person who discovers the spill
2	Immediately notify Unit Manager.	Person who discovers the spill
3	Unit Manager to inform Senior Management as appropriate.	Unit Manager
4	Spill flow to be immediately stopped and/or directed away from waterways through the construction of an earth bund or similar.	Unit Manager
5	Barrier to be formed around affected area using appropriate spill response equipment.	Unit Manager
6	Spill to be cleaned up and material appropriately disposed of.	Unit Manager
7	Address causal agent of spill – i.e. repair faulty sediment control device.	Unit Manager
8	Assess the environmental impact and implement remedial actions – i.e. apply buffering agent to affected waterways etc.	Unit Manager
9	Investigate causal agent and review effectiveness of management procedures.	Unit Manager
10	Improve system where required.	Unit Manager
11	All stages of the event must be formally recorded, using the Environmental Incident Response Form in Section 3.2.1 of this EMP. Include photographs where possible.	Unit Manager
12	The Granada Productions Sydney and UK offices are to be informed in writing of any spillages resulting in a release to the environment within 12 hours of the incident occurring.	Production Manager
13	The Office of Environment and Heritage is to be informed in writing of any spillages resulting in a release to the environment within 48 hours of the incident occurring, where required.	Head of Legal and Business Affairs

### 3.2.1 Environmental incident response form

#### PART A – INCIDENT DESCRIPTION

Date and time of incident	Date	Time
Name of person making report		
Name(s) of person(s) involved		
Contact details of person(s) involved		
Supervisor		
Witness		
<b>TAKE PHOTOS (IF POSSIBLE) AND CONTACT PRODUCTION MANAGER</b>		
Incident description		
Equipment involved		
Affected area		
What was the immediate response?		

#### PART B – SPILL DETAILS

Spill material	Quantity (L)	Area (m <sup>2</sup> )
Absorbent material used (type) and quantity (bags/rolls etc)		
Were Granada Production staff involved in clean up?	Yes	No
Surface of ground where spill occurred (i.e. sand, concrete, grass, asphalt)		
Was water contaminated?	Yes	No

## PART C – CONTRIBUTING FACTORS AND RECOMMENDATIONS

Root causes and contributing factors (i.e. faulty/ inappropriate equipment, person, environmental factors)		
Immediate action taken to prevent recurrence		
Recommendations to prevent recurrence (i.e. change to induction training, new work procedures, eliminate activity completely)		
Persons(s) involved in investigation	Name(s)	Signature(s)
Unit Manager's signature		
Production Manager's signature		

The Granada Production's Sydney and UK offices must be informed of any incident within 12 hours of it occurring. The Head of Legal and Business Affairs is responsible to inform in writing the Office of Environment and Heritage, if required, within 48 hours of the incident. Incident response forms must be completed as soon as possible after an incident has occurred and submitted to the Production Manager, who will provide a copy to the Unit Manager as well as keeping a copy on file. All staff on-site should be made aware of the reporting procedures for incidents on-site and their responsibilities.

### 3.3 Public complaint procedure

If crew are approached by a member of the public, relevant details are to be passed on to the Production Manager. From here, the Production Manager will document the complaint in the Public Complaint Form below. All staff should be made aware of the complaints procedure and should pass on details to the Production Manager.

Prior to the commencement of the production period, a handout will be distributed to the local community informing them of the filming period. Contact details for Production Manager and the Unit Manager will be provided on the handout.

### 3.3.1 Public Complaint Form

#### PART A – INITIAL COMMUNICATION (To be completed by the Production Manager)

Date and time of complaint	Date	Time
What is the complaint in relation to - please detail		
Name and address of complainant		
Phone number		
Type of communication (letter, phone call, visit etc)		
Person to whom complaint was made, and signature	Name	
	Signature	
Nature of complaint		
Frequency of occurrence		

#### PART B – ACTION REPORT (To be completed by the Production Manager or Environmental Liaison Officer)

Action taken to deal with complaint		
Visit to the complainant - please circle	Yes (date and time)	No
Findings of the visit		
Detailed inspection of the site to determine possible source of complaint - please circle	Yes	No

Result of investigation	
Action taken to eliminate cause	

**PART C – FINALISATION (To be completed by Production Manager or Environmental Liaison Officer)**

Was a report issued to the complainant?	Yes	No
Was cause of complaint eliminated?	Yes	No
Was the source of the complaint identified as being associated with other activities outside of the site?		
Remarks		

Part B and C completed by:

Name:

Signature:

Date:

### 3.4 Environmental liaison officer

Granada Productions have engaged Ecosure to provide a suitably qualified Environmental Liaison Officer to ensure that activities comply with requirements of this EMP. Ecosure will act in an advisory capacity to provide Granada Productions with the information required to minimise their impacts on the surrounding environment. This officer will visit the site on fortnightly basis during production, on a monthly basis during pre-production and wrap ups, and twice during hibernation to undertake compliance monitoring against the requirements of this EMP (i.e. in line with the water quality monitoring). The frequency of the visits may be assessed and revised in consultation with the Production Manager as the nature of the activities change.

### 3.4.1 Environmental compliance checklist

This checklist is intended to be used as a tool to ensure that the environmental objectives and performance criteria of this EMP are being met for each environmental aspect of ongoing filming activities. Completion of the checklist is the responsibility of the Environmental Liaison Officer. This checklist is to be completed during site visits at the frequencies detailed in Section 3.4. Where non-compliances are noted, the cause will be identified and possible solutions provided to prevent further breaches of the EMP.

If there are any incidents of non compliance the checklist will be reported to the Production Manager immediately following its completion.

The checklist will be used as an adaptive document that assesses and reports on relevant items determined by the activities at the time of monitoring. Additional issues can be added to the checklist as the site and activities change over time.

Table 14 Environmental compliance checklist

	Action	Responsibility	Compliant (initials/date)	Notes
1	All supervisors, crew and managers on-site inducted into this EMP.	Production Manager	Yes / No / NA (circle) Init: Date: / /	
2	Compliance with <b>Section 2.1 Flora</b> of this EMP (inc. minimising impact on species, etc).	Production Manager	Yes / No / NA (circle) Init: Date: / /	
3	Compliance with <b>Section 2.2 Fauna</b> of this EMP (inc. minimising impact on species, etc).	Production Manager	Yes / No / NA (circle) Init: Date: / /	
4	Compliance with <b>Section 2.3 Water Quality</b> of this EMP (inc. appropriate discharge of waste water from trials, sediment management, maintaining water quality etc).	Unit Manager Production Manager	Yes / No / NA (circle) Init: Date: / /	
5	Compliance with <b>Section 2.4 Sediment and Erosion Control</b> of this EMP (inc. appropriate sediment control measures, appropriate soil stockpiles, and procedure for importing fill etc).	Unit Manager Production Manager	Yes / No / NA (circle) Init: Date: / /	
6	Compliance with <b>Section 2.5 Waste and Resource Use</b> of this EMP (inc. avoidance of waste creation, re-use, recycling, and as a last resort, appropriate disposal).	Unit Manager	Yes / No / NA (circle) Init: Date: / /	
7	Compliance with <b>Section 2.6 Fuels, Oils, and Chemicals</b> of this EMP (inc. appropriate storage, servicing and refuelling etc).	Unit Manager	Yes / No / NA (circle) Init: Date: / /	
8	Compliance with <b>Section 2.7 Noise</b> of this EMP (inc. no noise complaints received, adherence to designated traffic movement time periods etc).	Production Manager	Yes / No / NA (circle) Init: Date: / /	
9	Compliance with <b>Section 2.8 Lighting</b> of the EMP (inc. minimising and turning off lighting where practicable etc).	Unit Manager	Yes / No / NA (circle) Init: Date: / /	



	Action	Responsibility	Compliant (initials/date)	Notes
10	Compliance with the <b>Section 2.9 Traffic Management</b> of this EMP (inc. public roads free from dust or sediment, minimal disruption to traffic flow on public roads, managing roads for dust suppression etc).	Production Manager	Yes / No / NA (circle) Init: Date: / /	
11	Compliance with <b>Section 2.10 Cultural Heritage Management</b> of this EMP, should suspected cultural heritage artefacts be uncovered.	Production Manager	Yes / No / NA (circle) Init: Date: / /	
12	Compliance with <b>Section 2.11 0 Mosquito and Biting Midge Management</b> of the EMP (inc. reducing breeding habitat and induction to crew).	Unit Manager Production Manager	Yes / No / NA (circle) Init: Date: / /	

Additional Comments

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Environmental Liaison Officer on duty:

Signature:

Date:

## 3.5 Reporting

### 3.5.1 Frequency of reporting

The completed environmental compliance checklist will be provided to Granada's Production Manager and Head of Legal and Business Affairs, and to Tweed Shire Council following each site visit, highlighting areas requiring attention.

A brief Environmental Compliance Report is to be prepared by the Environmental Liaison Officer and submitted to the Granada's Production Manager and Head of Legal and Business Affairs and to Tweed Shire Council following each compliance visit.

### 3.5.2 Content of the environmental compliance reports

The brief Environmental Compliance Report will be an overview of the results from the site visit and will include the following information:

- the outcomes of the compliance monitoring, including the environmental compliance checklist
- if any corrective actions were required and how they were implemented
- the results of any surface quality monitoring along with interpretation against the relevant schedules and guidelines
- any suggested improvements to the site and associated activities to minimise impacts on the environment
- photographs illustrating key points
- recommendations for implementation by Granada and Ecosure to ensure ongoing compliance with this EMP.

## 3.6 Documentation

Copies of the final EMP are to be issued to the Production Manager, Heads of Departments, Granada Productions Sydney and UK offices and the Tweed Shire Council. The Heads of Department are to sign a statement indicating that they have read and understood the requirements of this EMP. These signed statements are to be kept on file in the Production Office.

The key points of this EMP are summarised in a fact sheet for distribution to all crew during their induction process (Appendix C). This fact sheet includes the requirements and appropriate procedures for responding to incidents.

Additional ecological information resulting from the flora and fauna assessment will be displayed at Social Base and Tech Base to educate and inform the crew. This poster style display will include maps of recorded significant flora and fauna species and relevant photographs of significant species.

Before implementing any changes to the EMP, changes must be documented and approved by the Production Manager and authorised by relevant Senior Management.

The Production Manager will ensure that permanent records of the following will be kept in the Production Office:

- any obtained permit/approvals
- results of all surface and/or groundwater monitoring
- validation of fill brought on-site is contaminant and acid sulphate free
- any changes to management procedures
- any public complaints
- any incident reports.

## References

ANZECC (2000) *Australian and New Zealand Guidelines for Fresh Water and Marine Water Quality*. Report number 4. Australia and New Zealand Environmental and Conservation Council and the Agriculture and Resource Management Council of Australia and New Zealand.

Ecosure (2013a) Flora and Fauna Assessment Report. Prepared for Granada Productions, publication location – West Burleigh.

Ecosure (2013b) Habitat Restoration Plan. Prepared for Granada Productions, publication location – West Burleigh.

NHMRC (2011) Australian Drinking Water Guidelines 6, National and Medical Research Council, Commonwealth of Australia

NSW Health (2008) Health Private Water Supply Guidelines, Policy Manual, NSW Government

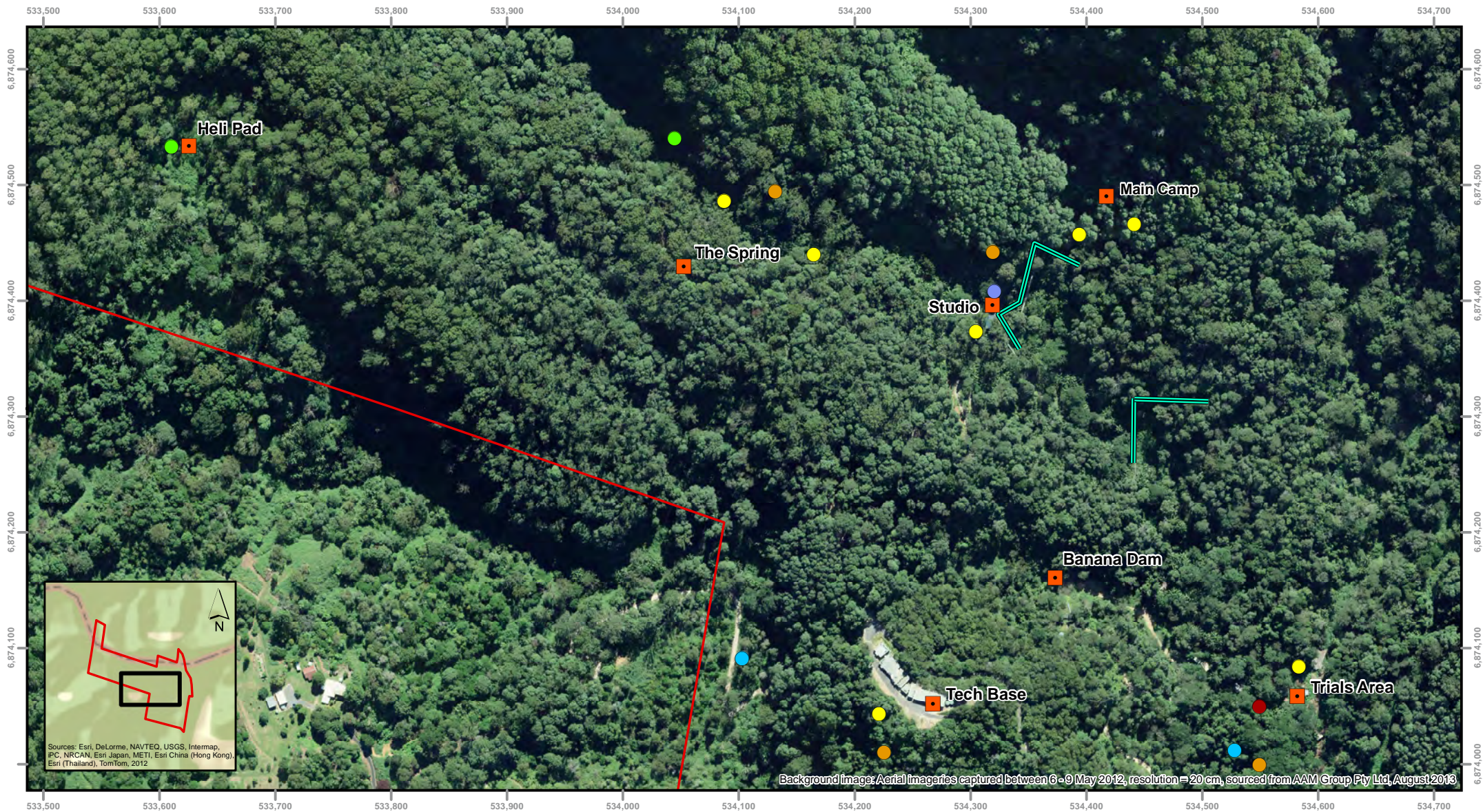
Peter Parker Environmental Consultants (2002). *A Flora and Fauna Survey of Lots 74, 77 and 93 in DP 755715 Dungay Creek Road, Dungay*. Prepared for Murray Boyd Film Pty Ltd in association with Jim Glazebrook and Associates, Murwillumbah.

Peter Parker Environmental Consultants (2008). *A Flora and Fauna Assessment of Lots 74, 77 and 93 in DP 755715 Dungay Creek Road, Dungay*. Prepared for Granada Productions Pty Ltd.

Tweed Shire Council (2005) *Mosquitoes and Biting Midges (Sandflies) in the Tweed Shire*. Tweed Shire Council Resource Centre – Environmental Health Series No. 1.

# Appendix A

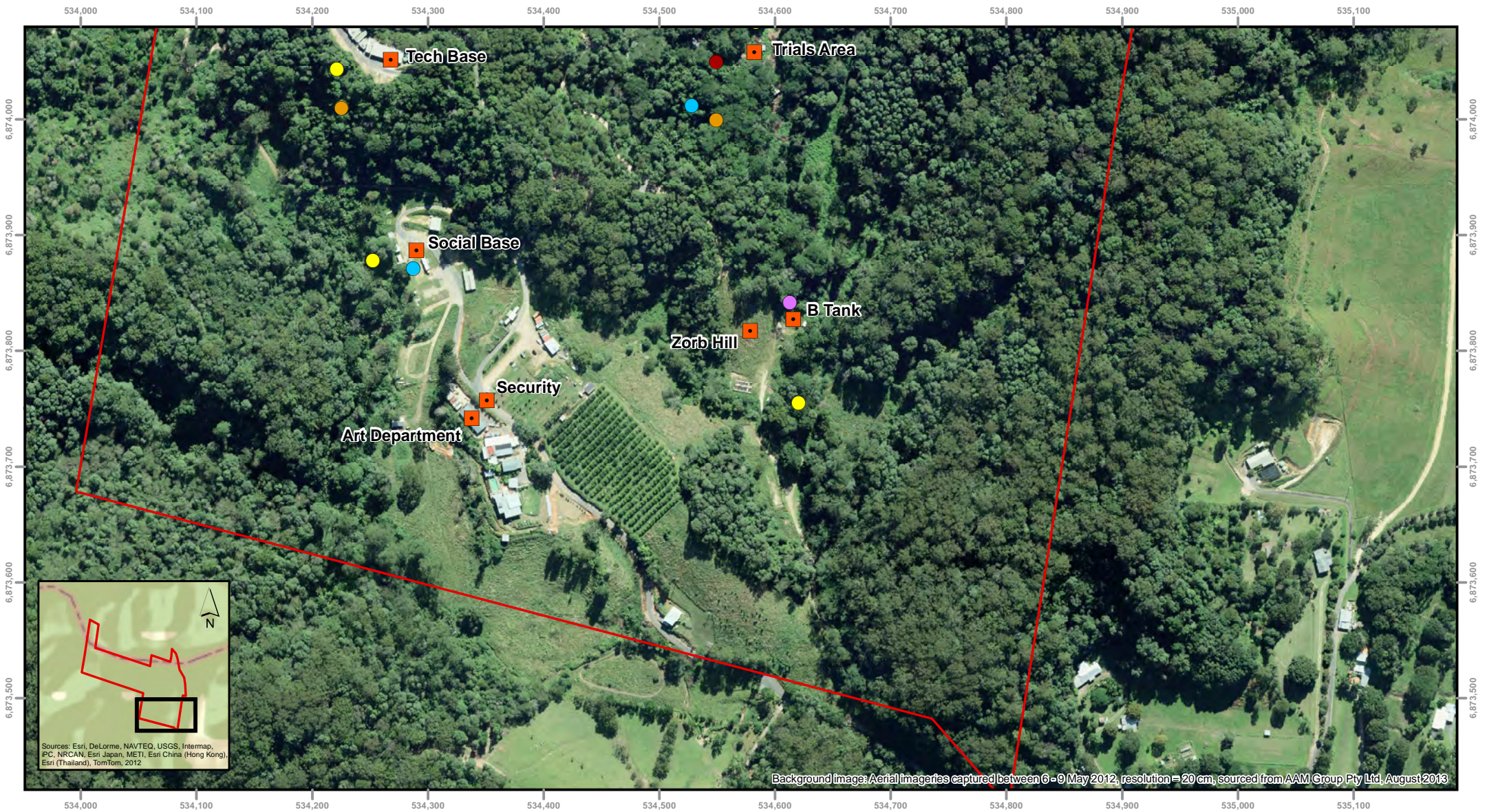

## Significant flora and fauna species maps



Background image: Aerial imageries captured between 6-9 May 2012, resolution = 20 cm, sourced from AAM Group Pty Ltd, August 2013

				<p><b>General locations</b></p> <ul style="list-style-type: none"> <li>Orange square: General locations</li> <li>Cyan lines: Trials bridges</li> <li>Red outline: Property boundary</li> </ul>		<p><b>Fauna records</b></p> <ul style="list-style-type: none"> <li>Yellow circle: <i>Assa darlingtoni</i></li> <li>Blue circle: <i>Phascolarctos cinereus</i> (indicative only)</li> <li>Orange circle: <i>Podargus ocellatus</i></li> <li>Green circle: <i>Menura albertii</i></li> </ul>		<ul style="list-style-type: none"> <li>Red circle: <i>Miniopterus australis</i></li> <li>Purple circle: <i>Rhipidura rufifrons</i></li> </ul>		<p><b>Map 1: Significant fauna species northern area</b></p> <p><b>Granada Productions</b></p> <p><b>Environmental Management Plan</b></p> <p><b>Tweed Shire, NSW</b></p>	
<p>Document: GE257_MP_001_Fauna_northern</p> <p>Job Number: GE257</p> <p>Approved GIS Team Leader: BN 19/09/2013</p>		<p>Scale: 1:4,500 when printed at A4</p> <p>Coordinate System: GDA 1994 MGA Zone 56</p> <p>Projection: Transverse Mercator</p> <p>Datum: GDA 1994</p> <p>Units: Metre</p>		<p>Data Sources:</p> <ul style="list-style-type: none"> <li>- Granada Productions</li> <li>- © Ecosure Pty Ltd, 2013</li> </ul>							
REV	BY	CHK	DESCRIPTION	DATE							
R0	MD	JW	ISSUED TO CLIENT	19/09/2013							

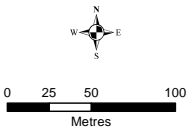
ECOSURE does not warrant the accuracy or completeness of information displayed in this map and any person using it does so at their own risk. ECOSURE shall bear no responsibility or liability for any errors, faults, defects, or omissions in the information.

Document:  
GE257\_MP\_002\_Fauna\_southern








Job Number: GE257

Approved GIS Team Leader	BN	19/09/2013		
R0	MD	JW	ISSUED TO CLIENT	19/09/2013
REV	BY	CHK	DESCRIPTION	DATE



Scale: 1:4,500 when printed at A4

Coordinate System:  
GDA 1994 MGA Zone 56  
Projection: Transverse Mercator  
Datum: GDA 1994  
Units: Metre

 General locations	<b>Fauna records</b>
 Property boundary	 <i>Assa darlingtoni</i>
	 <i>Phascolarctos cinereus</i> (indicative only)
	 <i>Podargus ocellatus</i>
	 <i>Merops ornatus</i>
	 <i>Minopterus australis</i>

Data Sources:  
- Granada Productions  
- © Ecosure Pty Ltd, 2013

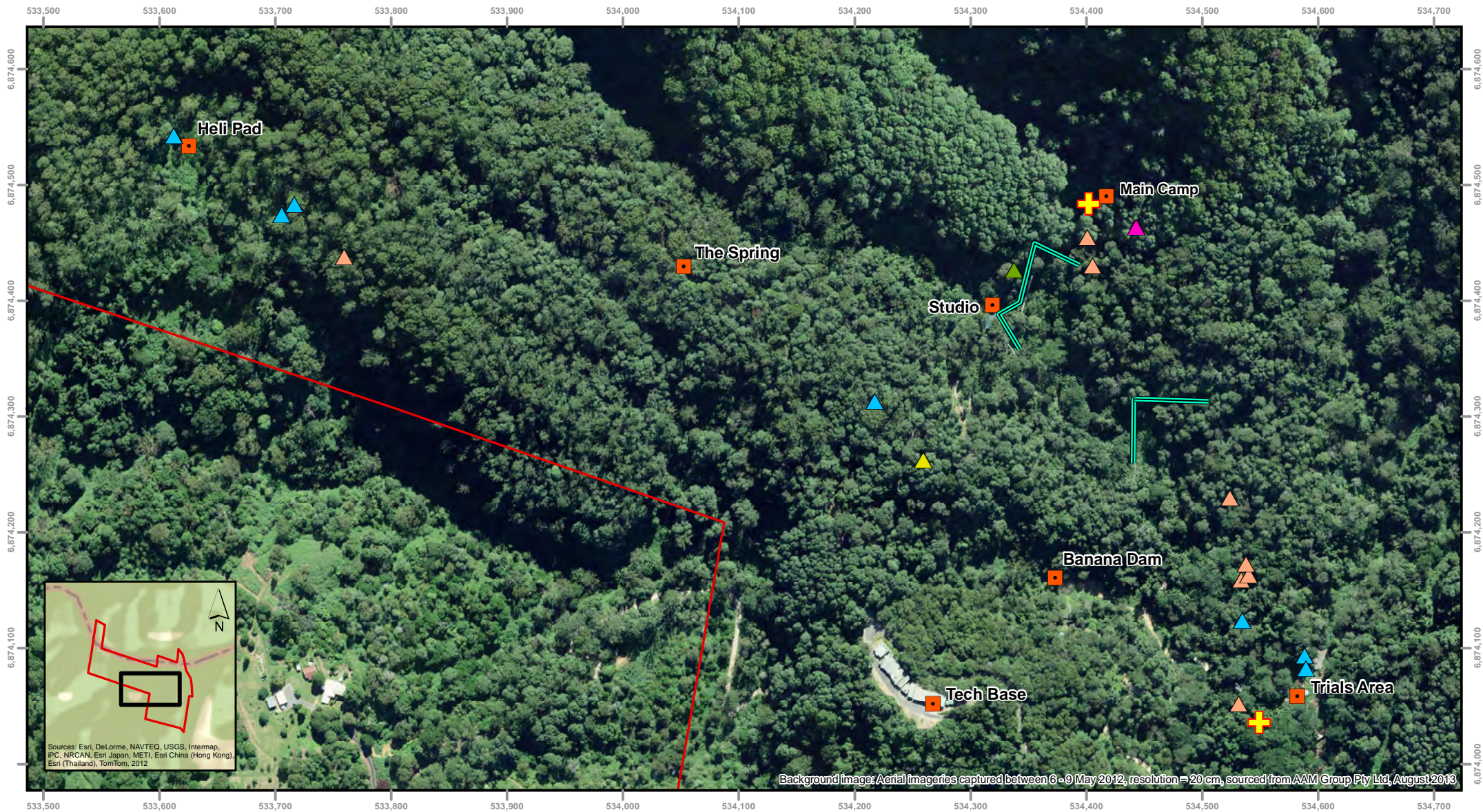
**Map 2: Significant fauna species southern area**

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**Granada Productions**

**Environmental Management Plan**

**Tweed Shire, NSW**



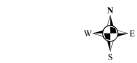
Document:  
GE257\_MP\_003\_Flora\_northern

Job Number: GE257

Approved GIS Team Leader	BN	19/09/2013
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REV	BY	CHK	DESCRIPTION	DATE



Scale: 1:4,500 when printed at A4

Coordinate System:  
GDA 1994 MGA Zone 56  
Projection: Transverse Mercator  
Datum: GDA 1994  
Units: Metre

- General locations
- + Lowland Rainforest Endangered Ecological Community present in this area
- Trials bridges
- Property boundary

Data Sources:  
- Granada Productions  
- © Ecosure Pty Ltd, 2013

#### Flora records

- ▲ *Cassia brewsteri* var. *marksiana*
- ▲ *Endiandra hayesii*
- ▲ *Hicksbeachia pinnatifolia*
- ▲ *Macadamia tetraphylla*
- ▲ *Syzygium moorei*

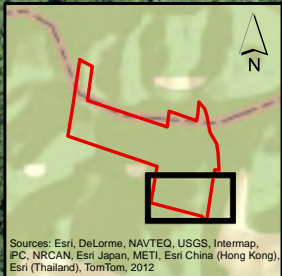
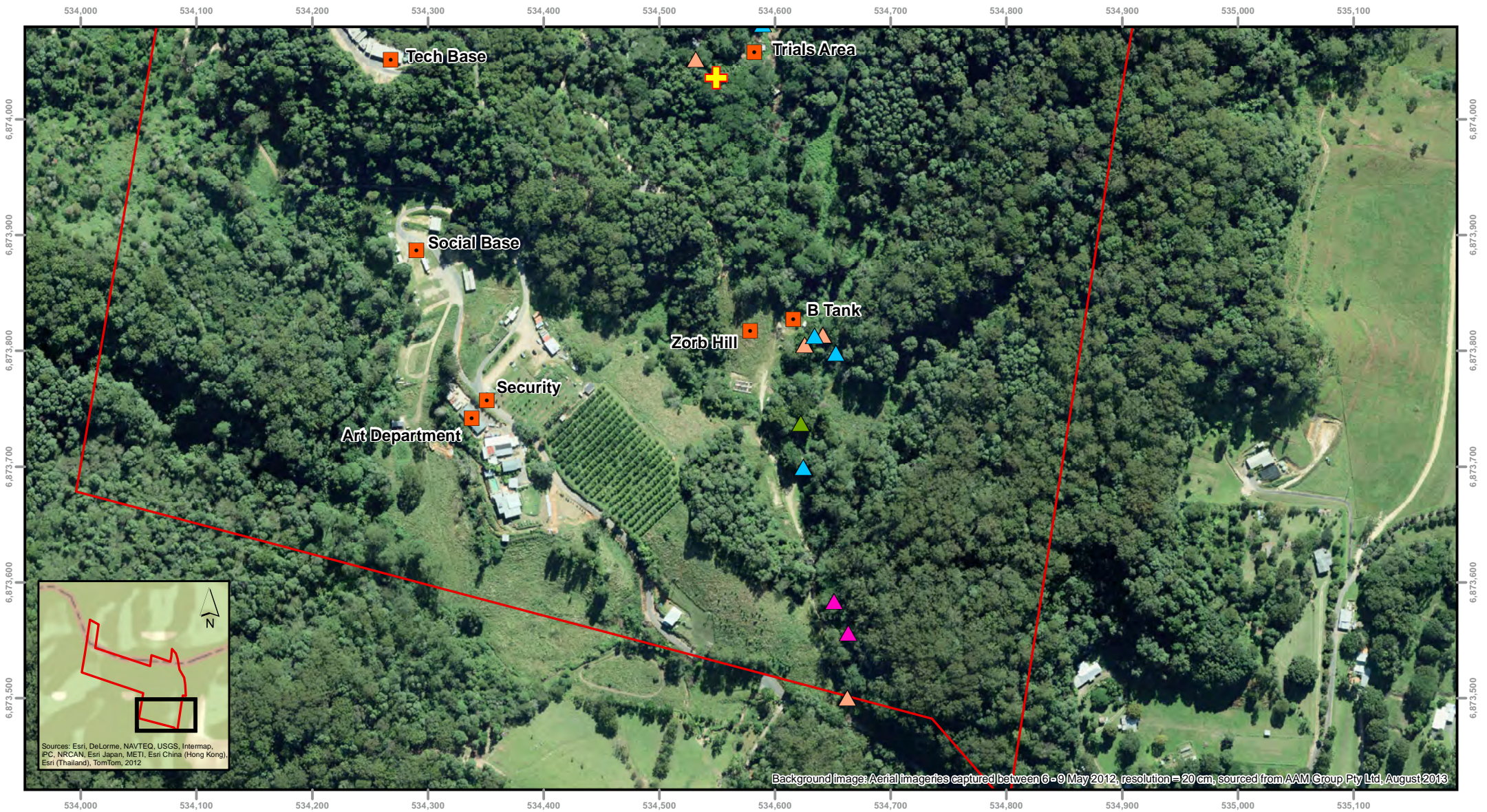
### Map 3: Significant flora species, northern area

**Granada Productions**

**Environmental Management Plan**

**Tweed Shire, NSW**





Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

Document: GE257_MP_004_Flora_southern				
Job Number: GE257				
Approved GIS Team Leader	BN	19/09/2013		
R0	MD	JW	ISSUED TO CLIENT	19/09/2013
REV	BY	CHK	DESCRIPTION	DATE

Scale: 1:4,500 when printed at A4

Coordinate System: GDA 1994 MGA Zone 56  
 Projection: Transverse Mercator  
 Datum: GDA 1994  
 Units: Metre

- General locations
  - Lowland Rainforest Endangered Ecological Community present in this area
  - Property boundary
- Data Sources:
- Granada Productions
  - © Ecosure Pty Ltd, 2013

- Flora records**
- Endiandra hayesii*
  - Hicksbeachia pinnatifolia*
  - Macadamia tetraphylla*
  - Syzygium moorei*

**Map 4: Significant flora species, southern area**

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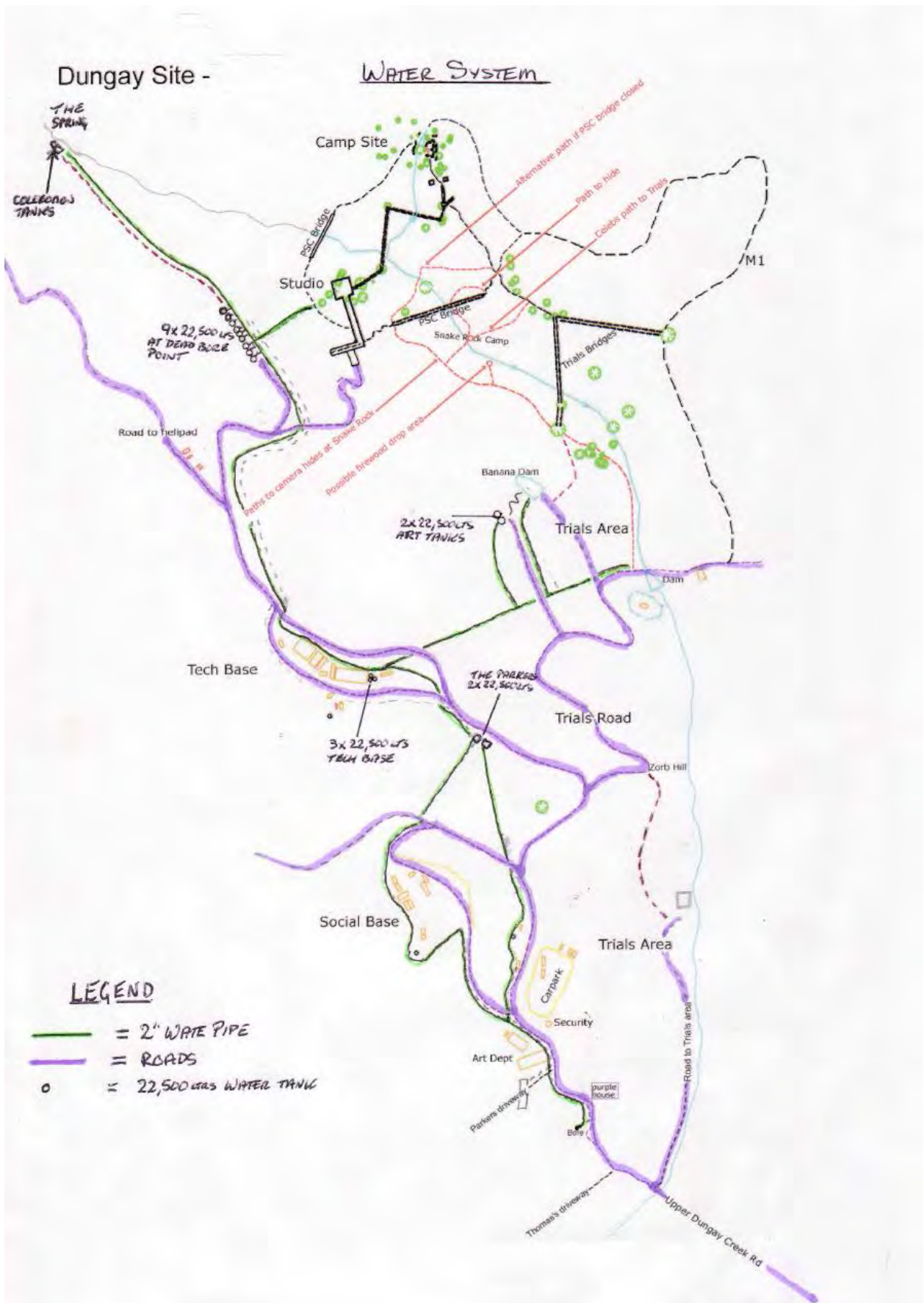
**Granada Productions**

**Environmental Mangement Plan**

**Tweed Shire, NSW**

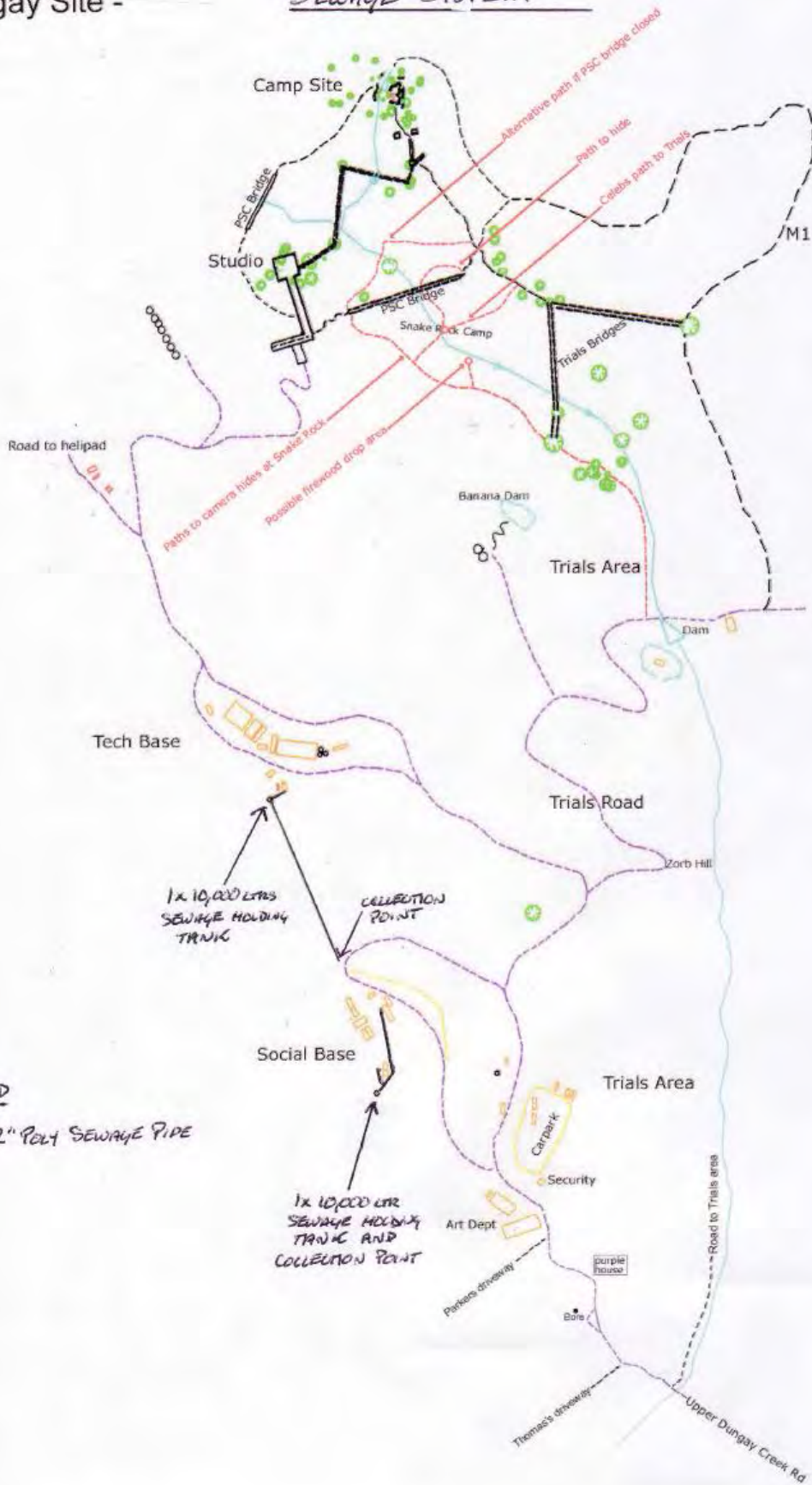
# Appendix B

## Diagrams of the water system and sewage system



Dungay Site -

SEWAGE SYSTEM



# Appendix C

## Summary of environmental management plan

## KEY ENVIRONMENTAL ISSUES

We are filming in a beautiful natural environment and while we want to take every measure to protect you from the elements, we also need to protect the environment from our presence. There are some very simple things we can all do to limit our impact on the surroundings and to make sure it is available for us and the resident plants and animals to use in the future. An Environmental Management Plan has been developed to try and reduce the impact of filming on the environment and the points below outline how you can help. The key environmental issues include:

## FLORA & FAUNA

The filming takes place in a mixture of rainforest, wet sclerophyll forest and lowland subtropical rainforest, and supports endangered and vulnerable plant species. Significant vegetation recorded on the site includes seven plant species of legislative significance and one vegetation community which is listed as an endangered ecological community under NSW legislation. This significant community occurs in the area around main camp and a small pocket of rainforest occurs around the trials area. There are also many wonderful animals that rely on this site for survival. We are sharing the rainforest with them and there are a few things we can do to reduce our effects on the environment:

- Use established tracks where practicable, this stops the vegetation from being trampled and reduces the spread of weeds around the site.
- Make sure that significant plants (tagged with pink flagging tape in high use areas) are not harmed.
- Do not destroy native vegetation; for example, some of the moss and lichens on site can take tens of years to grow and it is easy to remove threatened plants without realising. If you need to use native vegetation for set dressing ensure you get permission from your Head of Department first.
- Do not chop down any vegetation without prior approval from your Head of Department.
- Vehicles are to adhere to an internal speed limit of 10 km/hr, this reduces the likelihood of hitting something on the roads (including humans).
- Significant animals protected by legislation have been recorded on site. Refer to the poster at social base for maps identifying locations of significant animals and plants and photographs of these species.

## WATER QUALITY

During filming and associated activities we come into contact with the waterways throughout the site on a daily basis. The streams are used by the contestants in the camps, during trials and we cross many of them as we move around the site. Waterways are important ecosystems and any chemical or sediment added to the water can affect the organisms living within the streams, as well as our neighbours downstream. The things you can do to limit Granada's impact on water quality are:

- Ensure that no chemicals or materials enter the waterways. If you see a spill or accident resulting in something entering the waterway, try to contain and stop the flow, if it is safe to do so, and report this to the Unit Manager. They will then fill in an environmental incident response form to document all incidents on site.
- Care should be taken to ensure sediment and erosion control measures are implemented and maintained to prevent sediment entering the waterways.
- Waste water from trials is to be discharged in a way which minimises erosion, where practicable.

## WASTE & RESOURCE USE

The activities on the site produce a variety of waste such as food scraps, sewage, general waste and recyclable waste. The things you can do to limit Granada's impact on the environment are:

- Try to bring as little rubbish to the site as possible. Any rubbish must be thrown in a bin and separated for recycling where possible.
- Ensure lids are replaced on bins to discourage vermin.
- Cigarette butts must not be thrown on the ground as they contain chemicals that affect the waterways and affect the general appearance of the site.
- Smoking is only permitted at designated sites.
- Lighting and equipment must be turned off when not in use.

## FUELS, OILS & CHEMICALS

These are used around the site for transport, generating electricity, cooking and within the art department. The presence of refuelling activities and the storage of fuels, oils and chemicals on-site have the potential to be sources of leaks and/or spills.

If any vehicle, container or piece of machinery appears to be leaking, report this to the Unit Manager or Production Manager immediately. Your actions in limiting the quantity of spills can prevent an environmental incident.

Granada has a spills procedure that includes the clean-up and reporting of any incident. This is the responsibility of the Unit Manager, and all clean up and reporting has to be done to their satisfaction.

## NOISE

Noise pollution can be a nuisance and a potential health hazard for sensitive receptors such as surrounding houses. Noise can also have adverse impacts on local native fauna. Although activities on site are not expected to have a large environmental impact, it is important to be aware of noise, especially at night and over the weekend, this includes accessing the site along Dungay Creek Road.

## LIGHTING

Artificial lighting is required on-site to illuminate tracks and pathways and to provide lighting for facilities and filming. Light can disturb adjacent residences and native animals. To limit the effects of the lighting and also to reduce energy consumption on site:

- All lighting is to be turned off when not required.
- Lighting to be directed away from adjoining residences.

## TRAFFIC MANAGEMENT

During the pre-production, production and wrap-up periods, there is an increased level of traffic accessing the site, predominantly in the form of buses, truck and passenger vehicles. This can potentially pose a safety risk and increase the likelihood of road congestion and contamination of roads and the natural environment with fuel and mud. To reduce these risks, Granada asks that all staff ensure that:

- All vehicles are to be mechanically sound (i.e. no oil leaks etc.) and appropriately maintained as required.
- All traffic is to observe the internal speed limit of 10 km per hour and Granada's in-house speed limits on external roads. These speed limits are 50 km per hour along Dungay Creek Road from Tomewin Road to Causeway 2 and 30 km per hour along Dungay Creek Road between Causeway 2 and the site.
- All vehicles are required to stay within the defined access routes and parking areas to avoid impacting on the natural environment and to prevent the spread of weeds.

## CULTURAL HERITAGE

In NSW, objects and sites of cultural significance are protected by legislation. There are no known sites of cultural significance within the site; however there is the potential for objects or sites of significance to be found. These may be items such as stone tools, collections of shells/bones or markings cut into trees. If any item that may potentially be of cultural significance is found, activities should stop in the general vicinity and the finding must be reported to the Production Manager for further assessment.



## COMPLAINTS PROCEDURE

If a crew member is approached by a member of the public wishing to make a complaint, relevant details must be passed on to their Head of Department. The Head of Department will then pass the details of the complaint on to the Production Manager for action.

## MAIN POINTS TO REMEMBER

Be aware of your surroundings and report anything that could potentially impact on the environment to the Unit Manager (Dermot Leybourne) who in turn will report directly to the Production Management Team (Francesca Kybert). It is through the observations and actions of all of our crew that we can limit our impacts on the environment.

## Revision History

Revision No.	Revision date	Details	Prepared by	Reviewed by	Approved by
00	12/02/2008	Draft Environmental Management Plan	Julie Whelan Carla McKeivitt	Cheree Fenton	Phil Shaw Managing Director
01	25/06/2008	Environmental Management Plan	Julie Whelan	Carla McKeivitt	Phil Shaw Managing Director
02	30/06/2008	Environmental Management Plan	Julie Whelan	Carla McKeivitt	Phil Shaw Managing Director
03	20/09/2013	Updated Environmental Management Plan	Julie Whelan Senior Environmental Scientist	Trudy Thomson Catchment Consultant	Scott Hetherington Regional Manager
04	26/09/2013	Updated Environmental Management Plan	Julie Whelan Senior Environmental Scientist	Beth Kramer Gold Coast Manager	Beth Kramer Gold Coast Manager

## Distribution List

Copy #	Date	Type	Issued to	Name
1	26/09/2013	electronic	Granada Productions	Francesca Kybert
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# Flora and Fauna of the Dungay Creek Site

The Dungay Creek site has a diverse array of flora and fauna species, many of which are protected by state or federal environmental legislation. Known locations of significant species are shown on the attached map. It is important to be aware of these special plants and animals and take care around the site to reduce our impacts on them. Refer to the Crew Bible for information on how you can reduce your impacts. Photos of some of the species found on the site are provided below. Many websites provide more detailed photos and information on these special plants and animals. Some of these are listed below.



Rainbow bee-eater (*Merops ornatus*) recorded at B Tank



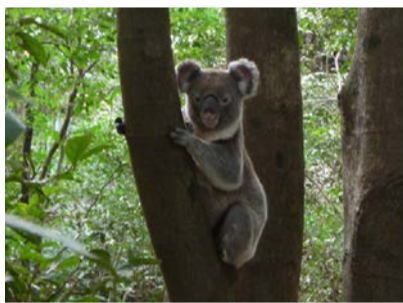
Pouched frog (*Assa darlingtoni*)  
Photo: Courtesy DDW Fauna



Great barred frog (*Mixophyes fasciolatus*) recorded at The Spring



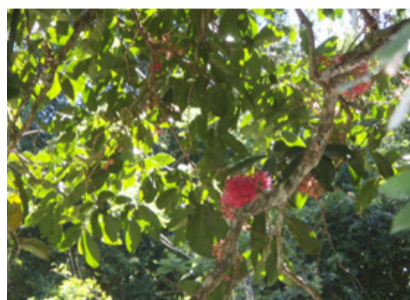
Coastal carpet python (*Morelia spilota mcdowelli*) recorded at The Spring



Koala (*Phascolarctos cinereus*) recorded at various locations on site



Rusty rose walnut (*Endiandra hayesii*)



Durobby (*Syzygium moorei*)



Rough-shelled bush nut (*Macadamia tetraphylla*)



Rough-shelled bush nut (*Macadamia tetraphylla*)



Red bopple nut (*Hicksbeachia pinnatifolia*)

## Interesting Fauna Facts

### Pouched frog (*Assa darlingtoni*)

A fascinating characteristic of this frog is the twin pouches in the male, one on each side of the body. These are used to carry tadpoles. Eggs are laid on the ground and then carried in the pouches after hatching. They can be found in damp leaf litter and under rocks and logs. This frog has been recorded at a number of areas throughout the site including Trials Area, B Tank and Main Camp.

### Coastal carpet python (*Morelia spilota mcdowelli*)

These snakes are active during the day and night and have a diverse diet including possums, birds and some frogs.

### Koala (*Phascolarctos cinereus*)

You may have heard that koalas sleep a great deal of the time. This is due to the large amount of energy needed to digest their diet which is low in nutrition, fibrous and toxic. This diet consists of eucalyptus species and although there are over 600 species of gum trees the koala may only feed on two or three of these, depending on where in Australia they live.

### Great barred frog (*Mixophyes fasciolatus*)

These frogs hide through the day and use the leaf litter as camouflage. They also burrow into loose soil. They are able to leap long distances into water to escape predators. They can then hide on the creek bed.

### Rainbow bee-eater (*Merops ornatus*)

This magnificently coloured bird has distinctive streamers that extend from the end of its tail. They are often seen on fence-posts or speeding through the air doing acrobatics to catch insects, which include bees, wasps, butterflies and beetles.

## Interesting Flora Facts

### Durobby (*Syzygium moorei*)

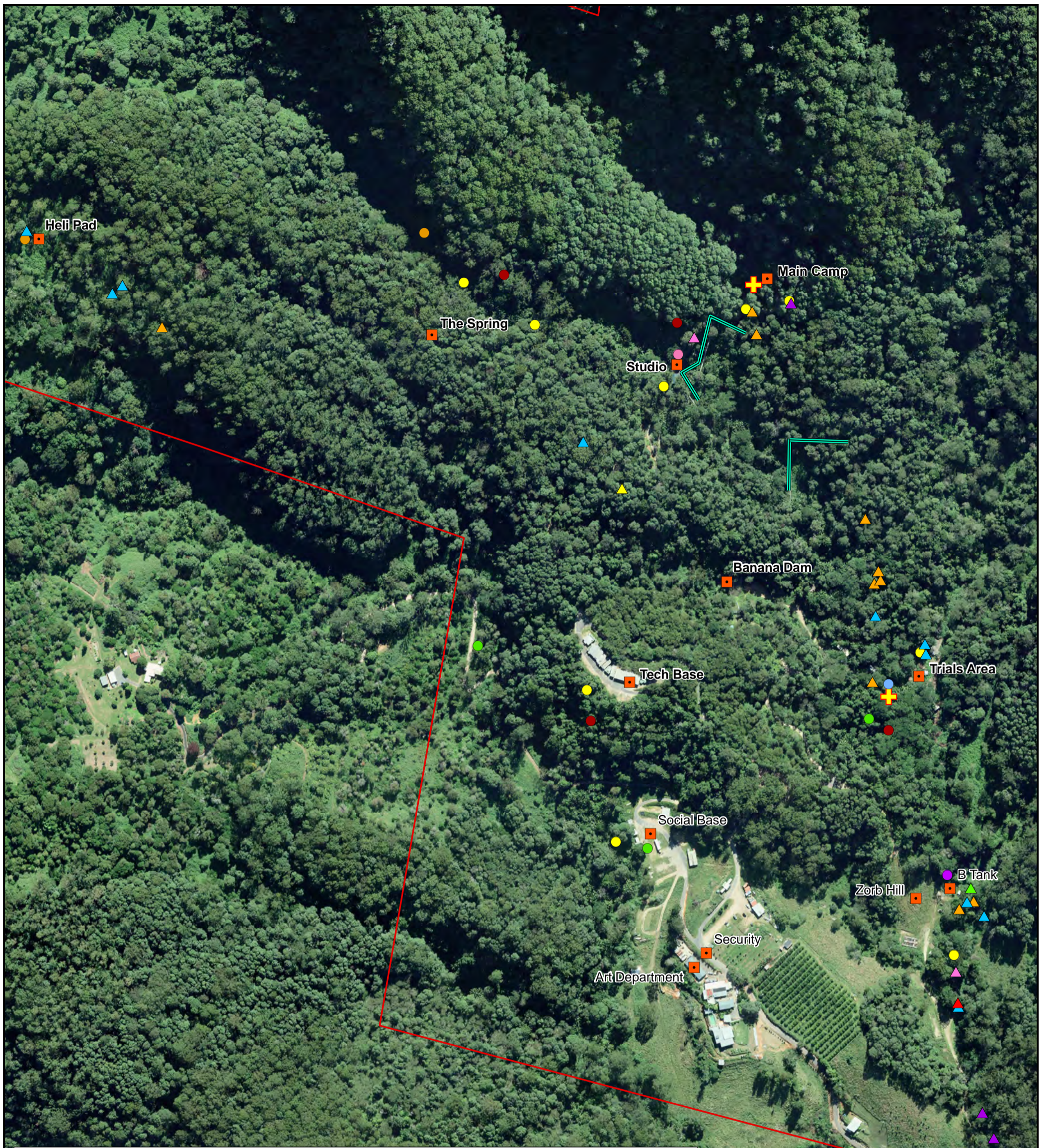
This magnificent tree can grow to 40m and can be seen adjacent to the suspension bridge between Studio and Main Camp. They are obvious with their bright pink/red fluffy flowers, usually between November and February. Also known as a coolamon tree, it is unusual as the flower and fruit form on the main stems and woody trunks, in comparison to the more common way of flowering from new growth and shoots.

### Rough-shelled bush nut (*Macadamia tetraphylla*)

This tree, also known as the Queensland Nut, grows to 15m. It has a life span of over 100 years. At the Dungay Creek site, you can see this tree on the path along the creek near B Tank, as well as other locations throughout the site (refer to the map). It flowers from August to October and fruits between January and April.

## Websites

- [www.plantnet.rbg Syd.nsw.gov.au](http://www.plantnet.rbg Syd.nsw.gov.au)
- [www.environment.nsw.gov.au/threatenedspeciesapp](http://www.environment.nsw.gov.au/threatenedspeciesapp)
- [www.australianmuseum.net.au](http://www.australianmuseum.net.au)
- [www.birdlife.org.au](http://www.birdlife.org.au)



Aerial imageries captured between 6 - 9 May 2012, resolution = 20 cm, sourced from AAM Group Pty Ltd, August 2013  
Data Sources: Granada Productions, Ecosure Pty Ltd

Plants	Animals
▲ brush cassia ( <i>Cassia brewsteri</i> var. <i>marksiana</i> )	● Albert's lyrebird ( <i>Menura albertii</i> )
▲ durobby ( <i>Syzygium moorei</i> )	● koala ( <i>Phascolarctos cinereus</i> ) (indicative only)
▲ red bopple nut ( <i>Hicksbeachia pinnatifolia</i> )	● little bentwing bat ( <i>Miniopterus australis</i> )
▲ red lillipilli ( <i>Syzygium hodgkinsoniae</i> )	● marbled frogmouth ( <i>Podargus ocellatus</i> )
▲ rough-shelled bush nut ( <i>Macadamia tetraphylla</i> )	● pouched frog ( <i>Assa darlingtoni</i> )
▲ rusty rose walnut ( <i>Endiandra hayesii</i> )	● rainbow bee-eater ( <i>Merops ornatus</i> )
▲ three-leaved bosistoa ( <i>Bosistoa transversa</i> )	● rufous fantail ( <i>Rhipidura rufifrons</i> )

**ecosure**

0 25 50 100 Metres

Coordinate System: GDA 1994 MGA Zone 56  
Projection: Transverse Mercator

- General locations
- ⊕ Lowland Rainforest Endangered Ecological Community present in this area
- Trials bridges
- Site boundary

**Locations of recorded significant plants and animals**

**Granada Productions**