



# EXPLORATION OPERATIONS

## MINING MANAGEMENT PLAN AND PUBLIC REPORT

### CENTRAL BATTEN PROJECT

### MCARTHUR RIVER REGION, NT

**Operator: MMG Exploration Pty Ltd**

**Authorisation Number: 0997-01**

**MMP Reporting Year: 2018**

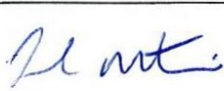
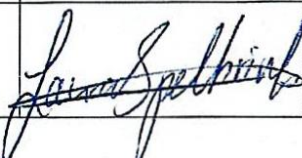
**Author:** Luke Mortimer

**Date:** 16/08/2018

**MMG Report No.:** MMR 7716

**Distribution:**

NT DPIR  
MMG Exploration Pty Ltd

	Author	Reviewed by	Approved by
Date	16/08/2018	16/08/2018	16/08/2018
Name	Luke Mortimer	Laura Spelbrink	David Wallace
Signature			

I David Wallace, Exploration Manager – Australia, declare that to the best of my knowledge the information contained in this mining management plan is true and correct and commit to undertake the works detailed in this plan in accordance with all the relevant Local, Northern Territory and Commonwealth Government legislation.

SIGNATURE:   
DATE: 16/08/18

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## AMENDMENTS

Section	Amendment

# MINE MANAGEMENT PLAN

## 1 OPERATOR DETAILS

### Company Details

MMG Exploration Pty Ltd  
ABN: 96 119 136 659  
Hong Kong Stock Exchange code: 1208  
Australian Stock Exchange code: MMG

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Southbank Victoria Australia 3006

<http://www.mmg.com>  
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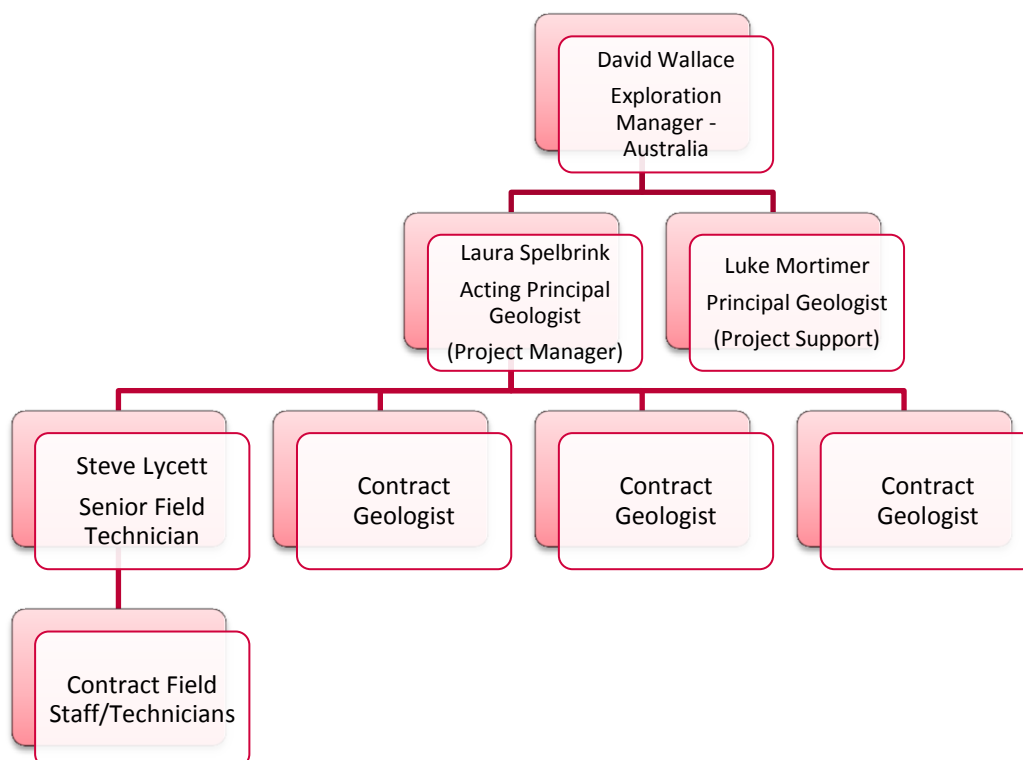
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### 1.1 ORGANISATIONAL STRUCTURE



## 1.2 WORKFORCE

It is expected that the program will require:

- Up to 8 MMG personnel (Geologists, Field Supervisors & Support Staff)
- Up to 4 contract Field Technicians and earthworks contractors
- Up to 12-14 Drilling Contractors

The above numbers are based on the planned programme utilising up to two drill rigs on site. Contract field staff and earthworks contractors will be locally sourced as available.

## 2 IDENTIFIED STAKEHOLDERS AND CONSULTATION

The following affected Pastoral Leaseholders (“Landowners”) have been duly consulted (Appendix 5):

1. McArthur River Station – David Kerr (Glencore – Legal Counsel; Station Owner representative) and Station Managers.  
Signed proposed exploration activity plans and locations - Pending.

Native Title Holders/Claimants (see also to Section 4.4 Native Title):

MMG are currently negotiating land access agreements through the NLC and conducting heritage clearance surveys through the AAPA. The NLC are also involved in the engagement of on-site Cultural Monitors (Traditional Owners).

Ongoing Stakeholder Consultations are achieved through the following:

1. Regular contact via phone and email.
2. Minimum 14 day written Notices of Entry and exploration activity plans and schedules are provided to all affected Stakeholders.

The Northern Territory Geological Survey and DPIR are consulted and informed of our activities as per statutory reporting requirements.

## 3 PROJECT DETAILS

Table 1: Project Details

Project Name:	Central Batten
Authorisation No.	TBA
Location	North-eastern NT; McArthur River region
Site Access	From Darwin: Stuart Hwy and Carpentaria Hwy; From Cape Crawford and Borroloola: Carpentaria Hwy
Exploration Licence Holder	MMG Exploration Pty Ltd
Project Operator	MMG Exploration Pty Ltd
Group Report	GR478; Central Batten - NT

The Central Batten Project is 100% wholly owned and operated by MMG Exploration Ltd comprising five granted Exploration Licenses and one Exploration Licence application for a total of approx. 459 sq km (Figures 1 & 2; Table 2 & 3). MMG’s principal exploration target is Zn-Pb-Ag mineralisation of SEDEX/HYC-style and MVT/replacement-style.

Table 2: Tenement Details

Lease	Status	Grant Date	Expiry Date	Area (sub-blocks)
EL30868	Granted	24/03/2016	23/03/2022	4
EL31426	Granted	18/07/2017	17/07/2023	18
EL31596	Granted	17/01/2018	16/01/2024	44
EL31597	Granted	17/01/2018	16/01/2024	52
*EL31687	Granted	02/07/2018	02/07/2024	46

The granted tenements listed above in Table 2 all belong to the NT DPIR Group Report GR478 Central Batten – NT. The tenements specific to this MMP are denoted in \*blue.

Table 3: Tenement Application Details

Lease	Status	Application Date	Application Area (sub-blocks)
EL31875	Application	03/04/2018	5

The project is located in the McArthur River district in the north-east area of the Northern Territory, approximately 500 km south-east of Katherine and approximately 100 km south-west of the township of Borroloola (Figures 1 & 2). The project area is accessible from Darwin via the sealed Stuart Highway and Carpentaria Highway, or the Tablelands Highway via Mt Isa/Barkley and from the McArthur River Mine airport via the Carpentaria Highway (55 km). There are few station tracks which provide four-wheel drive access to the project area.

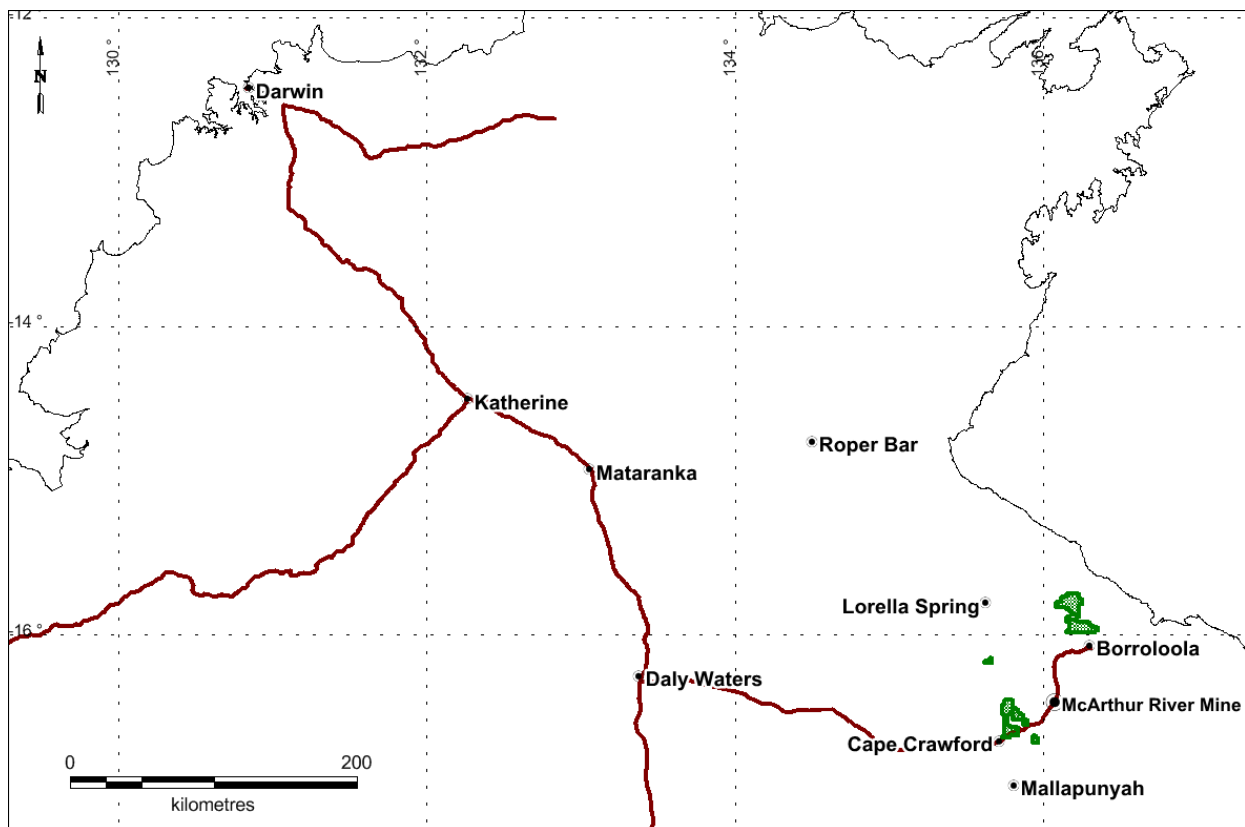


Figure 1: Regional location of the Central Batten Project tenements (solid green) and application (green hash).

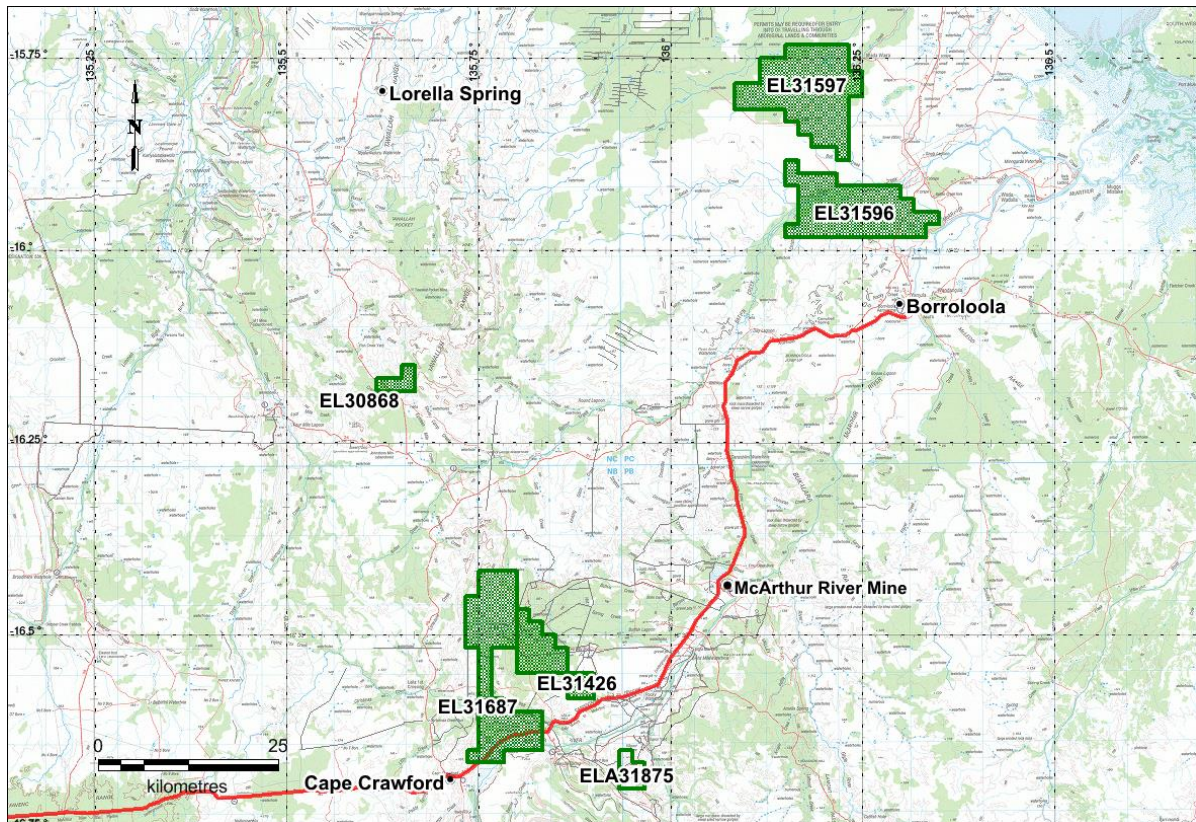


Figure 2: Local-scale map of Central Batten Project tenements and application.

### 3.1 PREVIOUS ACTIVITIES AND CURRENT STATUS

There is minimal development/infrastructure in place within the project area with cattle grazing the main land use. The closest localities are Cape Crawford and the township of Borroloola.

Previous exploration in the Central Batten project area has been focussed on zinc-lead, copper and diamonds. Following the discovery of the nearby McArthur River deposit in the 1950s, there has been extensive exploration for similar Zn-Pb-Ag deposits. Diamond exploration activities through the 1980s and 1990s led to the discovery of the nearby Merlin diamondiferous kimberlite field. Work by previous explorers has mainly consisted of mapping, rock chip, stream sediment and soil sampling, airborne and ground geophysical surveys and limited drilling.

#### 2016

Desktop studies and an initial field reconnaissance programme by MMG commenced in 2016 to assess access into areas for proposed drilling and program. None of the above activities involved any ground disturbing activities.

#### 2017

Desktop studies continued including reinterpretation of regional geophysical surveys which have yielded a number of targets that will be investigated in 2018.

### 3.2 PROPOSED ACTIVITIES

MMG's principal target is Zn-Pb-Ag mineralisation of SEDEX/Sedimentary-hosted style. At this stage the 2018 program involves geological mapping, reconnaissance stream sediment and soil sampling and a diamond drilling programme. With the exception of the diamond drilling program the reconnaissance mapping, sampling and geophysical surveys are all considered "low impact" with negligible to no ground disturbance.

Within the Central Batten Project MMG are planning in 2018 to complete two (2) diamond drill holes and one IP line (Tables 4 & 5; Figure 3). The proposed drill holes and IP survey are located within McArthur River Station.



All drill pads and tracks will be constructed in accordance with industry best practice. MMG has internal procedures which govern how drill pads and tracks are constructed to maintain the lowest possible impact to the environment. All proposed access tracks and drill pads will be heritage surveyed by Traditional Owners/Cultural Monitors prior to any disturbance to ensure that any significant cultural sites or flora-fauna habitats are recognised, recorded and avoided during any proposed earthworks.

Note that MMG have nominated a track clearance width of 5m (max.), however, this is a nominal contingency width only. MMG standard practice is for newly created tracks to be cleared to one standard truck width for single lane traffic only. However, past experience has shown that some sections of new tracks can quickly deteriorate with the development of deep ruts and/or become "boggy" sand. Ongoing regular track maintenance by MMG (e.g. grading and watering) mitigates this problem but declaring a nominal 5m clearance width allows for the contingency to later widen problematic track sections to allow two vehicles to pass.

For the two truck-mounted rig sites drill pads of up to 50m x 50m (max.) will be cleared to accommodate a UDR1200 (or equivalent) drill rig, including work areas and two sumps. Sumps will be constructed as poly-film lined approx. 2m x 2m x 1.5m pits, with final depth dependent on the soil profile. Topsoil from each sump will be stockpiled separately to ensure that it is returned to the top of the site upon completion of the rehabilitation. All sumps will have animal egress ramps inbuilt and will be barricaded during all stages until rehabilitated.

MMG have nominated a maximum drill pad site size of 50m x 50m as a nominal contingency size only due to the problematic ground conditions mentioned above. MMG standard practice is for minimalist size drill pads but have allowed for a maximum 50m x 50m due to past experiences with deterioration of drill pad sites during their use. Declaring a large 50m x 50m pad size allows for the contingency to later expand a drill pad if site conditions deteriorate to the point that vehicles become bogged and truck turning circles are required.

One remote field camp have been allowed for in the 2018 MMP and associated ground disturbance and security calculations. Though at the time of writing the exact location of these camps sites are unknown as that will be contingent on cultural heritage clearances to be conducted by the Cultural Monitors prior to the start of drilling. However, these camps will be utilised by the drilling crews and some MMG staff and will be positioned close to the drilling areas.

Whether groundwater will be encountered is currently unknown given the "grassroots" nature and wide geographical spread of the proposed drill holes. However, it is MMG's standard operating procedure to ensure that the drilling contractor carry sufficient supplies of cement and other drilling consumables to immediately cement and plug any drill holes that intersect artesian groundwater flows.

In regards to this 2018 MMP, applications have been made to the AAPA to complete the requisite cultural heritage clearance for all proposed 2018 ground disturbed sites including the drill pads and access tracks as listed in this MMP (see Section 4.4 Native Title).

Table 4: Proposed 2018 diamond drilling program (see Appendix 2 for coordinates).

Tenement	Hole ID	Prospect	Nominal Depth (m)
EL31687	plan18_10	Tawallah Fault	600
EL31687	plan18_18	Abner	600

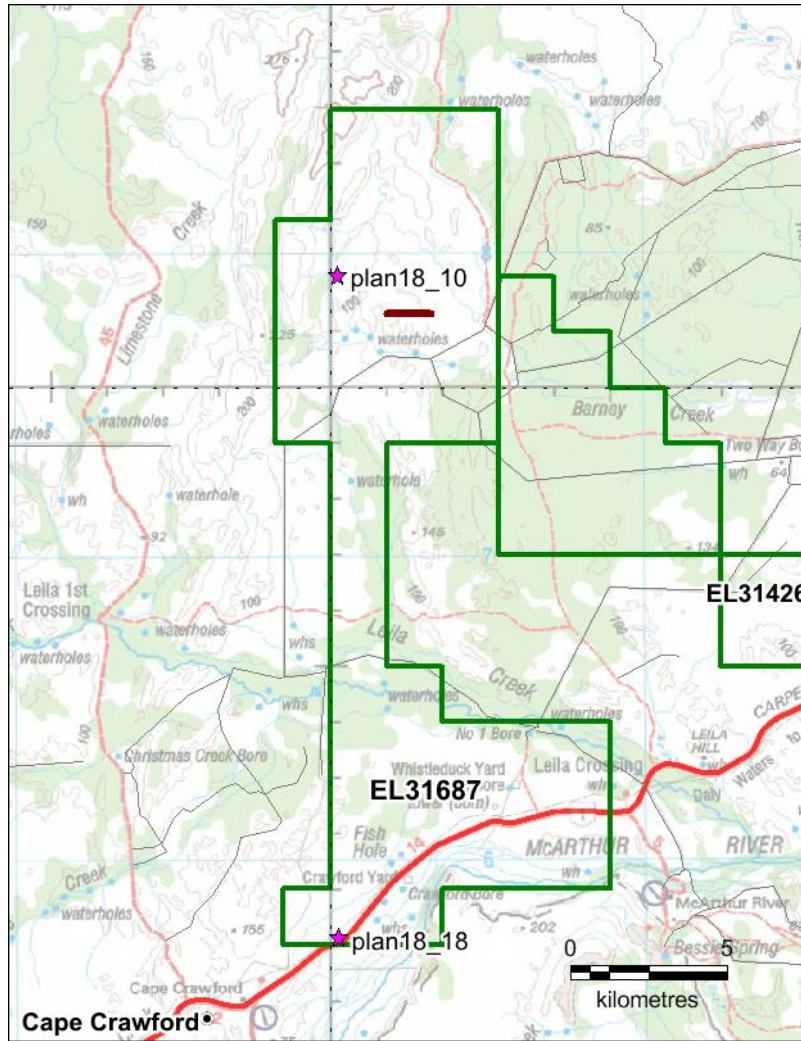


Figure 3: Proposed 2018 Central Batten diamond drill hole locations (pink stars) and IP line (brown) .

Table 5: Planned ground disturbance for drilling, camp and geophysical survey activities.

Mining Interests (i.e. titles)	EL31687
What time of the year will exploration occur?	July - December 2018
How long is exploration expected to occur?	6 months
Type of drilling (i.e. RAB, RC, Diamond, aircore)	diamond
Target commodity	Sedimentary Hosted Zn-Pb-Ag
Is drilling likely to encounter radioactive material?	No
Number of proposed drill holes	2
Maximum depth of holes	600m
Number of drill pads	2 truck-mounted rig pads (50 m x 50 m) = 0.5 ha
Is drilling likely to encounter groundwater?	Unknown
Number of sumps	2 sumps (2m x 2m x 1.5m) = 0.01 Ha

<b>Length of line / track clearing</b>	Total 10.2 km length x 5m width = 5.1 ha
<b>Number of costeans</b>	none
<b>Total bulk sample (tonnes)</b>	none
<b>Will topsoil be removed for rehabilitation purposes?</b>	Yes. All disturbed sites will have the topsoil separately stockpiled and subsequently returned to original site upon rehabilitation.
<b>Previous disturbance yet to be rehabilitated on title (ha) if known</b>	N/A (first year)
<b>Camp (Length:    x Width:    m)</b>	One camp; 50m x 50 m = 0.25 ha total
<b>Total area disturbed (hectares)</b>	5.86 ha (tracks, drill pads and camps as listed above)
<b>Other: Heritage Clearance Surveyed</b>	AAPA heritage surveys completed. Authority Certificate pending.

## 4 CURRENT PROJECT SITE CONDITIONS

### 4.1 LOCAL AND REGIONAL GEOLOGY

The McArthur Basin is a large sedimentary basin with an exposed area of about 180,000 km<sup>2</sup>. Most of it lies within the north-eastern Northern Territory, and it extends over the border into the state of Queensland. Thick marine and non-marine sedimentary rocks were deposited from the late Palaeoproterozoic to the early Mesoproterozoic (1800–1430 Ma). The tenements of the Central Batten project area lie within the Batten Fault Zone (BFZ) where sediments of the Tawallah, McArthur and Roper Groups rest unconformably on the Scrutton Volcanics, and are partially concealed by Cretaceous and Tertiary sediments.

As a base metals target, the McArthur Basin contains volcanic rocks and related intrusive igneous rocks and is a prime target area for SEDEX type economic sulphide deposits. This type of deposit holds 50% of the world's zinc and lead reserves, and make up around 25% of world zinc and lead production. In particular the McArthur Basin hosts the world-class McArthur River (HYC) zinc-lead-silver deposits in close proximity to the northerly trending Emu Fault Zone along the eastern margin of the Project area.

The Batten Fault Zone setting may also be considered prospective for "red-bed" and Mississippi Valley Tri-state (MVT) styles of base metal mineralisation. Around the margins of the Lorella Pocket the Mallapunyah/Masterton Formations contact may host red-beds style mineralisation within the Masterton Sandstone. There are some subtle EM features which probably correspond with black shales and may or may not have relevance to the conceptual target horizon. Within the McArthur Basin stratigraphic sequence, siltstone and dolomite lithologies may have provided hosts for replacement lead-zinc mineralisation analogous to the MVT deposition style.

Cainozoic sediment and soil covers a substantial proportion of the area. In some areas older deposits such as laterite, calcrete and old coastal sediments are now being incised, while other units are being actively deposited, for example alluvial sediments in channels and on flood plains. The vast majority of the soil is classified as either Tenosols-loams or Rudosols-loams with minor Kandosols-calcareous earths or vertosols-cracking clay.

### 4.2 HYDROLOGY-HYDROGEOLOGY

All major drainage is directed toward the coast including notably the McArthur, Glyde, Kilgour and Limmen Bight Rivers. The areas of highest relief are within the Yiyinti and Tawallah Ranges and the Bukalara Plateau, the main ridges of which reach or exceed 200m above sea level. The coastal plain rises steadily away from the coastline to

about 100m along the eastern edge of Tawallah Range. Rates of natural erosion in the tenement package are very slow to moderate and fall into various geomorphic provinces. In high level ridges and plateaus of resistant sandstones, erosion is slow (as rocks are resistant) but sediment removal is rapid (as slopes are steep). In areas between ridges, broad shallow valleys form where sediment accumulates. The coastal terraces are nearly flat and have very slow erosion rates and very slow sediment removal rates.

According to the NT DPIR database there are 4 water bores in the entire Central Batten Project Tenement package which are typically broadly spaced pastoral bores for stock purposes. Salinity levels vary widely across the project areas and are site specific. MMG does not source any potable water from any local water bores but may elect to use or install local water bores for drilling purposes dependent upon prior Landowner permission.

### 4.3 FLORA AND FAUNA

Coffey Services Australia (Coffey) were engaged by MMG Exploration to provide additional information regarding biodiversity to determine the likelihood for Northern Territory (NT) and/or Commonwealth listed threatened species to occur within the project area and the potential impacts on biodiversity resulting from the activities outlined in the South and Central Batten Mining Management Plans (MMP) (Appendix 2).

Flora and fauna, including weeds and pests potentially of relevance to the South and Central Batten Projects area have been identified from searches of the following databases (Appendix 2):

- Northern Territory (NT) Atlas and Spatial Data Directory (maintained by Department of Environment and Natural Resources (DENR)).
- Natural Resource (NR) Maps (including vegetation, land systems/units, surface drainage) (maintained by DENR).
- EPBC Protected Matters Search Tool (maintained by Department of the Environment and Energy (Cwth)).
- Flora Atlas NT (DENR).
- National Vegetation Information System (NVIS) Version 3.1, NT Data Compilation (DENR).
- Fauna Atlas NT (DENR).
- Northern Territory Weeds (DENR).
- InfoNet (<http://www.ntinonet.org.au/>).

These searches combined to identify species that have been recorded within the South and Central Batten Project area (flora and fauna atlas, weeds database), species whose habitat may occur in the area (Protected Matters Search) and species occurring in adjacent areas (Protected Matters Search and InfoNet). This combination of search properties means that a large number of species that occur in any significant habitats are likely to be identified by the searches. These species are not subject to any impacts of the project and are discussed further below (see also Appendix 2).

#### Vegetation

The NVIS level 2 classification of vegetation in the South and Central Batten project area includes:

- Open forest
- Woodland
- Tussock grassland
- Open woodland
- Mid closed forest

The majority of the tenements consists of open woodland vegetation communities including *Corymbia*, *Eucalyptus* and *Melaleuca* woodlands.

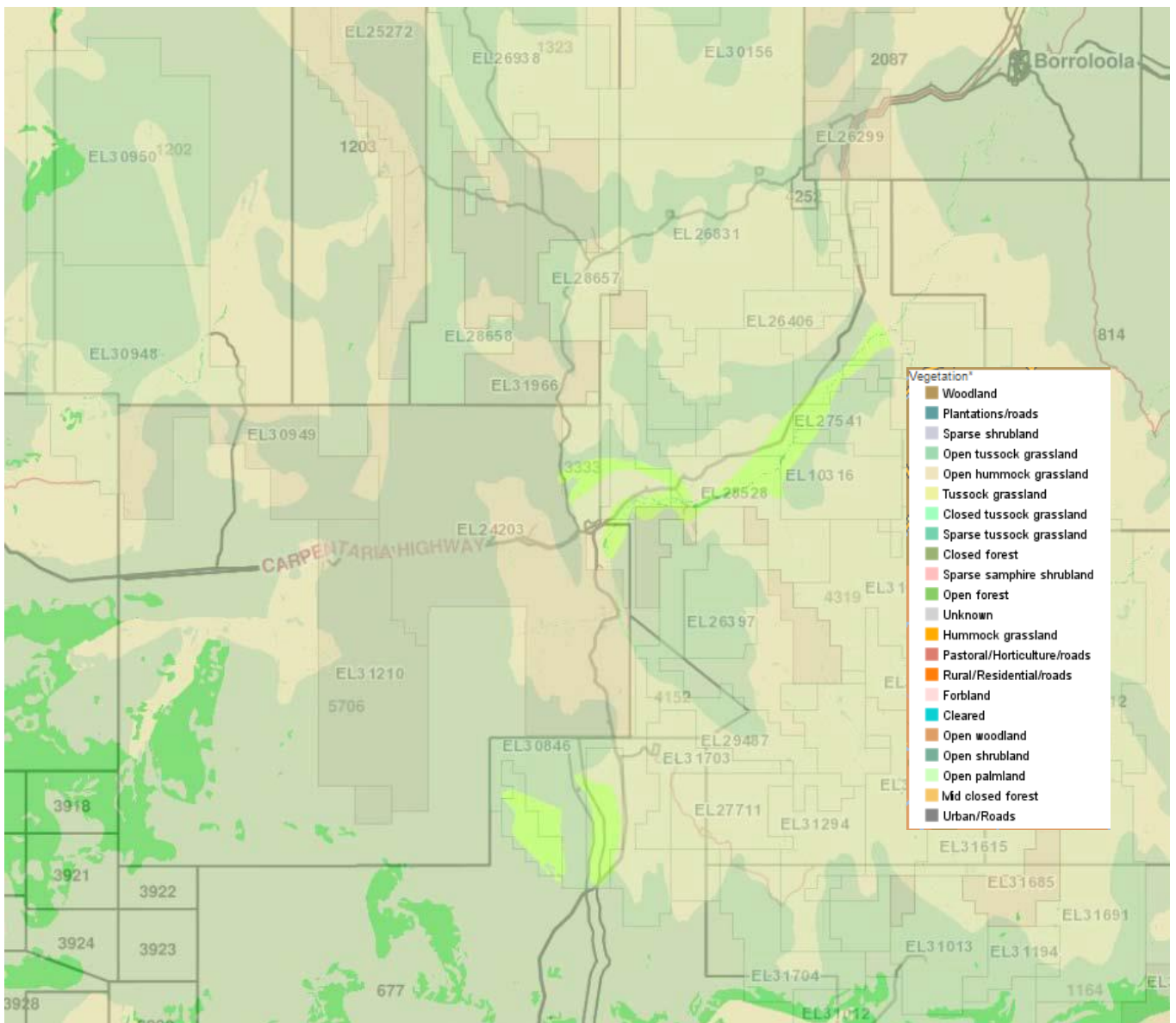


Figure 4: Vegetation communities (NR Maps, accessed 13/08/2018). See Appendix 2.

Threatened Flora

One flora species (*Solanum carduiforme*) listed as threatened under the Territory Parks and Wildlife Conservation Act (TPWC Act) was identified by the database searches as potentially occurring in the region. This species is also listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). However, this species is not considered likely to occur within the project area (Appendix 2).

Threatened and Migratory Fauna

Database searches identified Sixteen birds, one fish, six mammals and four reptile species listed as threatened or migratory may occur under the EPBC Act and TPWC Act within terrestrial habitats within the South Batten project area. An assessment of the likelihood that each of these species occurs within the actual project footprint is presented in Table 3 of Appendix 2.

Given the small footprint of the South and Central Batten project (approx. 5200 km<sup>2</sup>), the low impact of accessing the sites, it's distance from significant coastal and wetland habitat, and the short duration of the works, it is considered unlikely that the project will have any direct or indirect impacts that would be considered 'significant impacts' according to the Department of the Environment and Energy's Significant Impact Guidelines (Department of the Environment, 2013).

## Weeds and Pests

Fifty-three weeds species were identified as potentially occurring within the project area, or threatening the project area are presented in Table 4 of Appendix 2. Bellyache Bush, Parthenium Weed, Mesquite, and Prickly Acacia are listed as a Weed of National Significance and are a declared Class A and Class C weed under the NT Weeds Management Act (to be eradicated, not to be introduced into the NT). Khaki Weed, Star Burr, Rubber Bush, Mossman River Grass, Mission Grass (perennial), Coffee Senna, Spiny-head Sida, Flannel Weed, Paddy's Lucerne, Cayenne Snakeweed, Caltrop and Hyptis are Declared class B and C weeds (growth and spread to be controlled, not to be introduced into the NT). The MMG standard operating procedure for weed management is for all vehicles to be washed down on entry and exit to the project area and between all work sites.

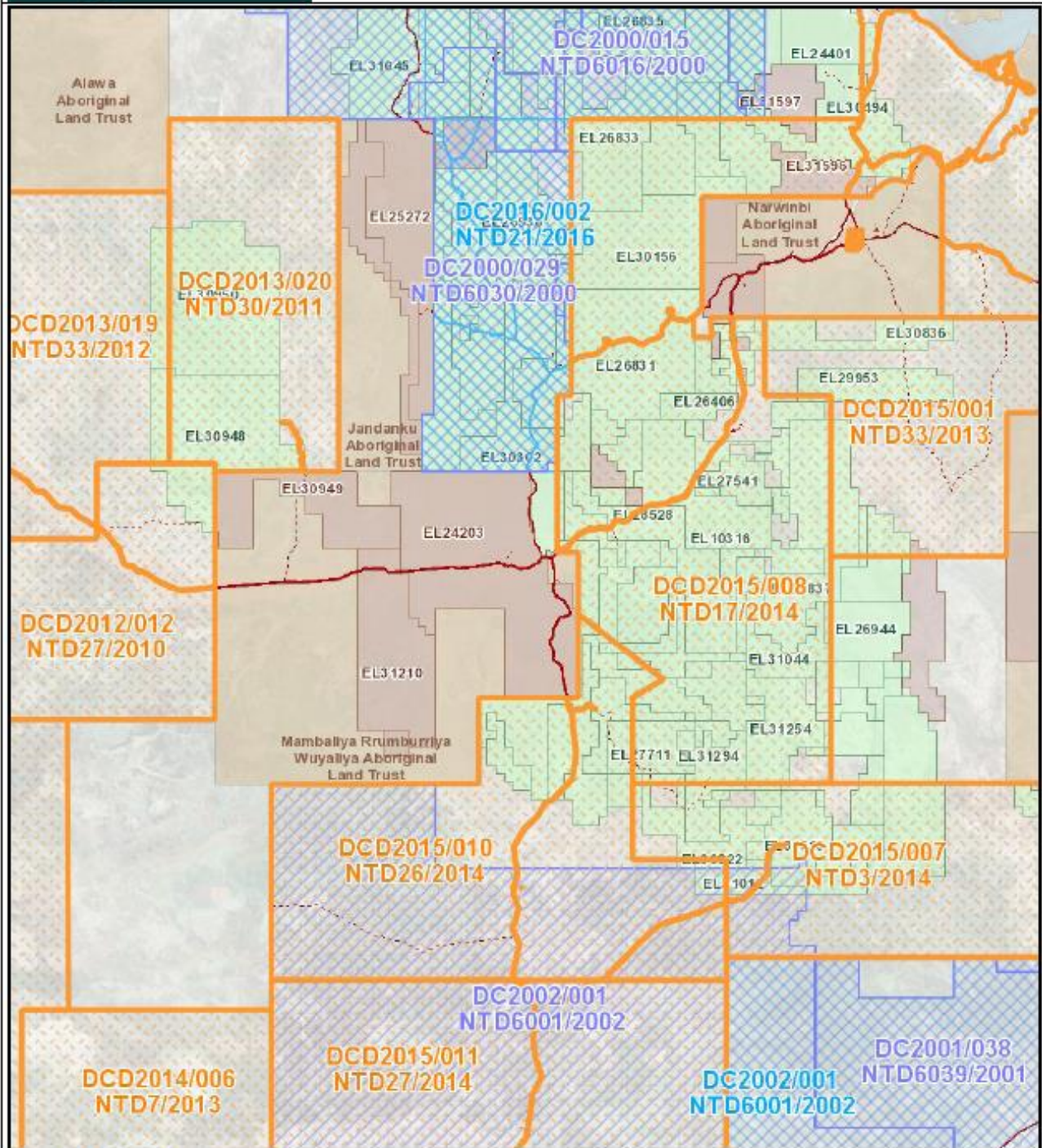
Fifteen animal pests species were identified as potentially occurring within the project area, or threatening the project area as presented in Table 5 of Appendix 2. Swamp Buffalo, pigs, donkey and cattle in particular are considered a key threat to the Borroloola Site of Conservation Significance.

## **4.4 NATIVE TITLE**

The Central Batten project area tenements are subject to several determined Native Title Claims. Native Title exists in all claim areas. The Native Title claim specific to this MMP (EL31687) is shown in Table 6 and Figure 5.

**Table 6: Native Title Claims over the Central Batten Project Area.**

Tribunal ID	Related NTDA	FC No	Name	Determination Date	Determination Type
DCD2015/008	DC2014/003	NTD17/2014	McArthur River Pastoral Lease	26-11-2015	In effect - Finalised



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Titles and Geoscience Information is sourced from the Northern Territory Government's Department of Primary Industry and Resources, Department of Infrastructure, Planning and Logistics and Department of Environment and Natural Resources

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Figure 5: STRIKE output of Native Title Claims over the broader Central Batten Project area (May 2018).

To ensure that no Cultural Heritage Sites are disturbed MMG have in place the following procedures:

- MMG maintains a current database of all known registered and recorded heritage sites and restricted work areas as well as previously heritage cleared areas which are used as a first pass filter against all proposed field activity locations.
- Cultural heritage surveys are conducted on all proposed land disturbance sites. Currently, MMG engage the AAPA to undertake these surveys (see also comments below).
- As a further measure MMG employ local Traditional Owners as on-site Cultural Monitors to oversee all land disturbing activities.

In early 2015 MMG entered into preliminary negotiations with the NLC in regards to formalising a Heritage and Access Agreement which would cover all proposed MMG exploration activities on all Central Batten Project tenements and applications. These negotiations are currently ongoing.

In the meantime, with the approval of the NLC all current proposed ground disturbing activities are being heritage clearance surveyed by the AAPA in addition to local Indigenous Cultural Monitors organised through the local NLC Borroloola office. As standard practice MMG engages local Cultural Monitors to heritage clear all proposed drill site access tracks and pads prior to commencing any ground disturbing activities.

In regards to our proposed 2018 drill sites and access tracks relating to this MMP, MMG has one heritage clearance application outstanding (Figure 6 & Appendix 7). At the time of writing the status of the AAPA Authority Certificate is as follows:

- 2018 drill sites, IP line and access tracks: Authority Certificate application 201800703 (on-site surveys completed; Authority Certificate pending).



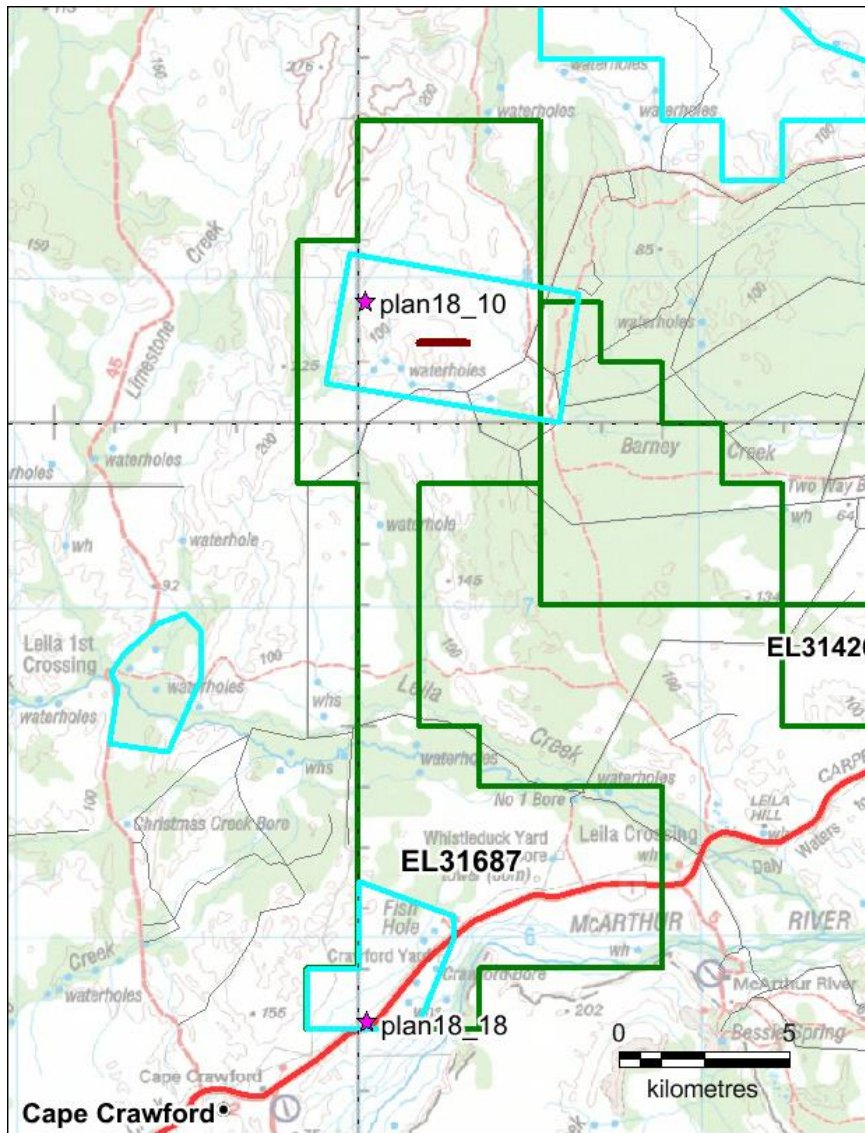


Figure 6: 2018 Central Batten Project AAPA heritage survey applications (blue polygons) plus proposed drill hole locations (pink stars) and IP line (brown).

#### 4.5 LAND USE

Landowners overlapping the granted exploration licence EL31687 pertaining to this MMP include McArthur River Station (Table 7 & Figure 7).

Refer to Section 2 and Appendix 6 for details of Landowner consultations.

Table 7: Landowners pertaining to the Central Batten Project EL31687 pertaining to this MMP.

LOCATION NAME	PARCEL	PROPERTY NAME	OWNER CATEGORY	TENURE REFERENCE DESCRIPTION	TENURE REFERENCE NUMBER
NT Portion	4319	MCARTHUR RIVER	Private	Perpetual Pastoral Lease	1051

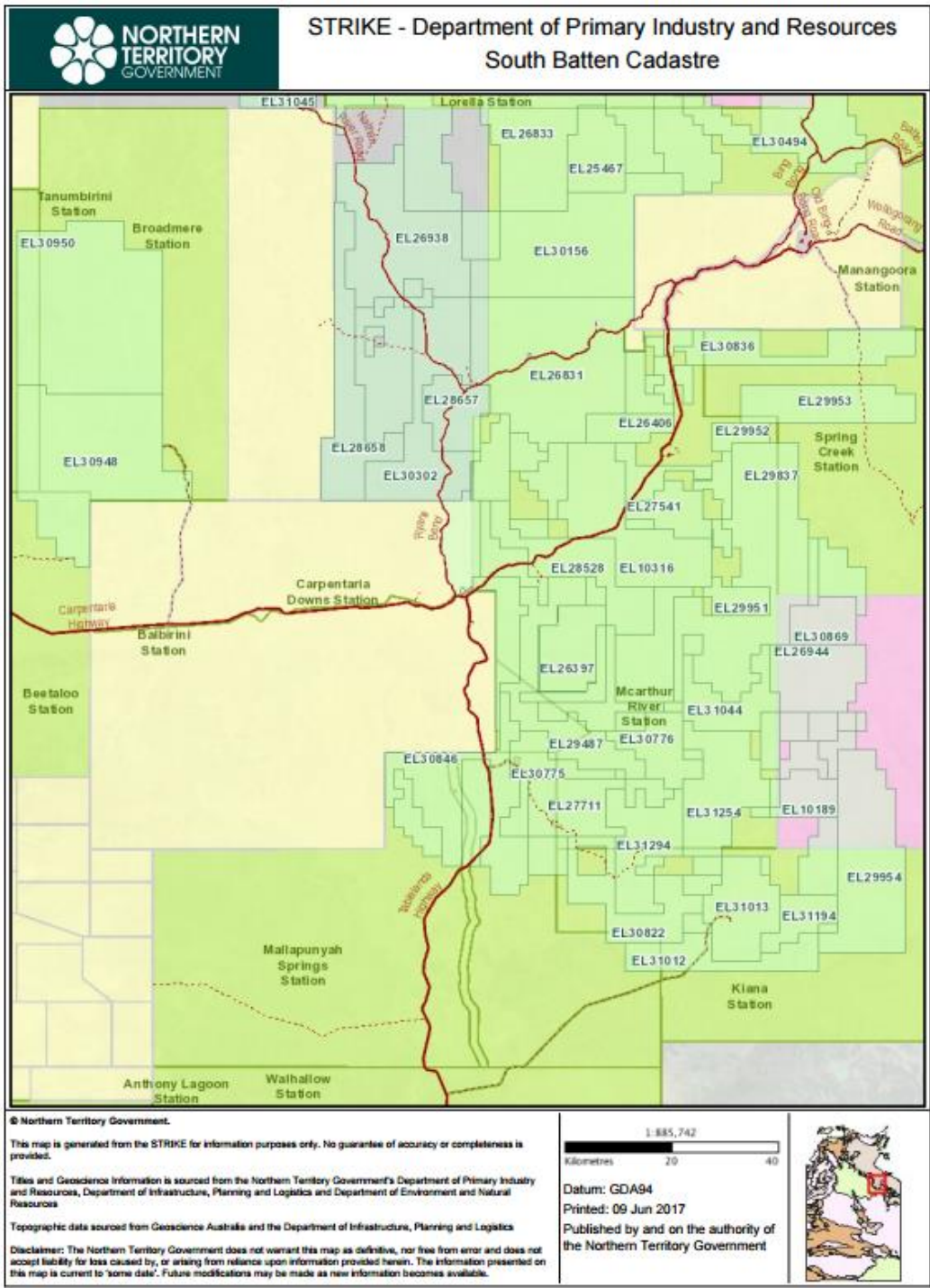


Figure 7: Central Batten Project Cadastral information (NT DPIR- STRIKE).

## 5 ENVIRONMENTAL MANAGEMENT SYSTEM / PLAN

### 5.1 ENVIRONMENTAL POLICY AND RESPONSIBILITIES

MMG's Safety, Health, Environment and Community (SHEC) and Sustainability Policies are outlined as follows (Figures 8 and 9).

# Safety, Security, Health, Environment and Community (SHEC) Policy



MMG is a mid-tier global resources company that aims to maximise returns by discovering, developing and sustainably operating base metal resource projects around the world.

In line with our belief, our values and our vision, MMG is committed to our SHEC principles of:

- Protecting the health, safety and wellbeing of our people;
- Minimising our impact on the environment; and
- Ensuring that relevant communities receive a real and sustainable benefit from our activities.

This Policy provides a framework which empowers our people to act on behalf of MMG.

MMG's Safety, Security, Health, Environment and Community Policy principles will be achieved by:

- Meeting applicable legal requirements and recognised standards, whilst respecting voluntary commitments;
- Identifying, assessing and mitigating factors to prevent injury and ill health to our people, minimising pollution to the environment and improve the livelihood of our relevant communities;
- Consulting with interested and affected parties in regards to SHEC impacts;
- Engaging with relevant communities to understand and effectively contribute to their social infrastructure needs;
- Promoting the responsible stewardship of our products and natural resources throughout their lifecycle and along the supply chain by minimising our environmental footprint, reducing waste and using energy, water and other raw materials more efficiently;
- Providing security management to protect our people and assets;
- Driving effective and integrated SHEC leadership and accountability;
- Building SHEC competence and capability and effectively supervising our people to prevent incidents;
- Setting realistic and measurable objectives and targets to drive continuous improvement in SHEC systems management and performance; and
- Providing recognition for positive SHEC performance and innovation.

This Policy will be supported by an integrated MMG management system that is maintained, audited and reviewed by Group SHEC.

A handwritten signature in black ink, appearing to read 'Andrew Michelmore'.

**ANDREW MICHELMORE**

Chief Executive Officer  
April 2013

Figure 8: MMG Safety, Health, Environment and Community Policy.

# Sustainability Policy



In line with our belief, our values and our vision, MMG is committed to aligning ourselves with the International Council on Mining and Metals (ICMM) sustainable development principles:

1. Implement and maintain ethical business practices and sound systems of corporate governance;
2. Integrate sustainable development considerations within the corporate decision-making process;
3. Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by our activities;
4. Implement risk management strategies based on valid data and sound science;
5. Seek continual improvement of our health and safety performance;
6. Seek continual improvement of our environmental performance;
7. Contribute to conservation of biodiversity and integrated approaches to land use planning;
8. Facilitate and encourage responsible product design, use, re-use, recycling and disposal of our products;
9. Contribute to the social, economic and institutional development of the communities in which we operate; and
10. Implement effective and transparent engagement, communication and independently verified reporting arrangements with our stakeholders.

This Policy provides a framework which empowers our people to act on behalf of MMG.

MMG's Sustainability Policy principles will be achieved by:

- Implementing and maintaining ethical and transparent business practices and sound systems of corporate governance;
- Integrating our sustainability objectives with all life of asset business planning and decision-making processes;
- Developing and implementing sound enterprise-wide risk management processes;
- Seeking continual improvement in safety, health and environmental performance through using robust management systems and effective assurance processes;
- Understanding, respecting and promoting fundamental human rights within our sphere of influence, respecting traditional rights and cultural heritage;
- Contributing to the long term economic, social and institutional development of our communities, including Indigenous Peoples;
- Building trusting relationships by engaging clearly, openly and honestly with our host communities and other key stakeholders;
- Contributing to the conservation of biodiversity and integrated approaches to land use planning in areas where we operate;
- Ensuring the responsible handling and transport of our materials and products from mine site to customer; and
- Integrating early closure planning into Life of Asset and ensure adequate financial provisions have been made.

This Policy will be supported by an integrated MMG management system that is maintained, audited and reviewed by Group SHEC. Performance against this policy will be published through our annual Sustainability Report.

A handwritten signature in black ink, appearing to read 'Andrew Michelmore'.

**ANDREW MICHELMORE**

Chief Executive Officer  
August 2012

Figure 9: MMG Sustainability Policy.

## 5.2 STATUTORY AND NON-STATUTORY REQUIREMENTS

The following legislation and related regulations are applicable to this Project:

*Mineral Titles Act*  
*Mining Management Regulations*  
*Weeds Management Act*  
*Bushfires Act*  
*Heritage Conservation Act*  
*NT Aboriginal Sacred Sites Act*  
*Native Title Act*  
*Aboriginal Land Rights (Northern Territory) Act*  
*Environment Protection & Biodiversity Conservation Act*  
*Work Health and Safety (National Uniform Legislation) Act*  
*Soil Conservation and Land Utilisation Act*  
*Territory Parks and Wildlife Conservation Act*  
*Water Act*  
*Waste Management and Pollution Control Act*  
*Crown Lands Act*  
*Lands Planning and Mining Tribunal Act*  
ISO9001 and ISO14001 certificated stipulations  
Lease conditions  
Authorisation conditions

With respect to non-statutory requirements MMG have entered into positive negotiations with the NLC and local Traditional Owners in regards to obtaining land access agreements that cover this exploration project. As recommended by the NLC, MMG have in the interim engaged the AAPA to conduct cultural heritage clearance surveys of all our proposed ground disturbing activities such as the clearing of drill site access tracks and pads. Furthermore, MMG will continue to engage local Traditional Owners to act as Cultural Monitors during all ground disturbing activities and for stream and soil sampling. No works will be conducted without their endorsement.

## 5.3 INDUCTION AND TRAINING

All persons - MMG Employees, contractors or visitors, at the Central Batten Exploration Project shall receive, at a minimum, the site Project Induction. This induction is designed such that all Safety, Health, Environment and Community (SHEC) obligations, risks, and their respective controls, are explained and understood (see SHEC Management Plan; Appendix 3).

The Central Batten Exploration Project Leadership team will ensure personnel are deemed competent, and have the appropriate qualifications, job skills and training before they begin work with the project or before being assigned a new task.

Examples of typical induction and training required by MMG include:

- Mandatory skills and refresher training e.g. Applied 1<sup>st</sup> Aid, 4WD training and mobile equipment certification, fire safety awareness and firefighting;
- Workplace procedures and work methods e.g. Standard Operating Procedures (SOP), Field Task Observations (FTO), Task Hazard Analyses (also known as JSA), mandatory pre-shift safety meetings;
- Competency-based assessments e.g. on site driving competency assessments;
- Site emergency response scenario training;
- Environmental obligations and responsibilities e.g. waste management procedures, chemical and hydrocarbon storage and use, pre-authorisation of land disturbing activities, fire prevention, sensitive flora and fauna and reporting of animal interactions.
- Cultural Awareness training.

## 5.4 IDENTIFICATION OF ENVIROMENTAL ASPECTS AND IMPACTS

Key project environmental aspects and impacts are summarised in Table 8 below. All of these Environmental Aspects are applicable to this project to varying degrees and times depending on the exploration activity being undertaken. The risk ratings were assigned using the Risk Matrix below as provided in the NT DPIR Mine Management Plan and Public Reporting Structure Guide for Exploration Operations (Figure 10).

KEY		CONSEQUENCE (C)		
		Low	Medium	High
Critical Risk		Little to no impact	Medium term -ve impact	Irreversible or long term -ve impact
High Risk				
Moderate Risk				
Low Risk				
LIKELIHOOD (L)	High >75% Chance event will occur in life of plan	4	7	9
	Medium 25% <-> 75% Chance event will occur in life of plan	2	5	8
	Low <25% Chance event will occur in life of plan	1	3	6

Figure 10: Risk Ratings matrix used for Environmental Aspects and Impacts (as taken from NT DPIR Mine Management Plan and Public Reporting Structure Guide for Exploration Operations, Section 5.4).

Table 8: Details of environmental aspects, impacts and control measures.

Aspect	Impact(s)	Risk Rating	Preventative Control Measures (to prevent/minimize impact)	Mitigation Control measures (to monitor and remediate impact)
Surface Water	Possible contamination of surface water by hydrocarbon and hazardous materials spillage from drilling or clearing activities. Potential damage to flora and fauna habitats. Increased soil erosion along banks.	Moderate	Avoidance of waterways. Minimum buffer of 100m from camps and drill sites.	If affected, immediate rehabilitation of site. Monitoring/recording of rehabilitation progress.
Groundwater	Potential groundwater release to surface and/or aquifer contamination from the drill hole intersection of artesian flows and/or intersection of multiple confined aquifers.	Moderate	Drilling contractors to carry enough cement/grout to immediately cement plug any artesian flows and multiple confined aquifers. (Note: the pastoralist will be notified in case they wish to convert it to a water bore for their future use).	If not required by the pastoralist, immediate cement/grout plugging of flowing zones.
Invasive Species	Negative impact on indigenous flora and fauna if invasive species become established via vehicular traffic.	Moderate	All vehicles are washed down on entry and exit to the project area and between all work sites.	Remove any introduced species.
Flora and Fauna	Negative impact on sensitive flora and fauna such as damage to habitats, introduction of invasive species, vehicle impact, injured or killed fauna due to clearing and drilling activities and related vehicular traffic. Fauna trapped in drill holes or sumps.	Moderate	Standard operating procedure is for at least one MMG personnel and two Traditional Owners (Cultural Monitors) to walk well in advance of the dozer during clearing activities which allows for early detection and avoidance of any fauna or sensitive environmental or cultural sites. Minimalist land disturbance approach. Avoidance of waterways. Adhere strictly to single lane track access, no off-road driving and project site speed limits (max 20 km/hr around pads/camps; 60 km/hr station tracks). Drill hole collars to be immediately capped. All sumps will have animal egress ramps inbuilt and will be	Immediate rehabilitation of any affected sites. Immediate reporting of environmental incidents. Fauna interactions are reported internally to potentially reduce any further interactions. Inspections, audits, monitoring procedures. Education through induction and training processes. If warranted, source seed for threatened flora.

			barricaded during all stages until rehabilitated. All vehicles are washed down on entry and exit to the project area and between all work sites (weed prevention).	
Hydrocarbon and hazardous materials spillage	Possible contamination of surface and groundwater and flora/fauna habitats by hydrocarbon and hazardous materials spillage derived from camp, drilling or clearing activities.	Moderate	Diesel and lubricants are the only hydrocarbons stored and used on site. Typically in large volumes (thousands of litres) to operate drill rigs, support vehicles and camps. Strictly held in metered, double-banded tanks. All rigs and camp sites have spill kits. Plastic liners are placed underneath drill rigs.	Standard operating procedure is for any spillage is to be dug up, bagged, and disposed of at a council designated facility. Use of biodegradable materials. Fully compliant and complete MSD sheets held on site.
Waste	Possible pollution of surface and groundwater and flora/fauna habitats by poor waste handling procedures.	Low	At camps and drill sites waste collection facilities are in place and all waste is collected and disposed of appropriately.	Waste disposal at a council designated facility.
Noise and Air quality	Occurrence of noise and air pollution associated with vehicular traffic, generators and drill rig operations.	Low	Use of hearing, eye and ear PPE. MMG employ a full-time water truck dedicated to watering all in-use tracks for dust suppression and track maintenance. All attempts are made to silence operating generators. Not considered a significant or likely issue given the nature and short term exposure of the drilling operations.	Regular maintenance and records of plant and equipment. Continual use of on-site dedicated water truck during drilling operations. Not considered a significant or likely issue given the nature and short term exposure of the drilling operations.
Clearing of vegetation for tracks, drill pads and sumps	Potential damage to sensitive flora and fauna habitats. Increased soil erosion due to poor earthworks.	Moderate	Standard operating procedure is for at least one MMG personnel and two Traditional Owners (Cultural Monitors) to walk well in advance of the dozer during clearing activities which allows for early detection and avoidance	Separate stockpiling and return of topsoil. Rapid rehabilitation of pads and tracks. "Ripping" of drill pads and placement of logs etc. Physical access barriers (e.g. logs) placed on tracks to halt traffic.



			<p>of any fauna or any sensitive environmental or cultural sites. Minimalist 'blade up' clearing technique.</p> <p>Adhere strictly to single lane track access and no off-road driving.</p> <p>Avoidance of waterways.</p>	<p>Avoidance of waterways.</p> <p>Follow recommendations from environmental surveys.</p>
Soil Erosion	Increased erosion due to poor earthworks and poor track building.	Moderate	<p>Use experienced operators with local knowledge.</p> <p>Minimalist "blade up" track and pad clearing technique.</p> <p>Routine maintenance (e.g. grading) of high traffic tracks.</p> <p>Emplacement of whoa-boy (diversion banks) wherever required for improved drainage.</p> <p>Physical access barriers (e.g. logs) placed on tracks to halt traffic.</p> <p>Avoidance of well vegetated areas and waterways.</p>	<p>Regular monitoring of disturbed areas including immediate reporting and remediation of any soil erosion outbreaks.</p> <p>Minimalist approach. Ensure tracks are built to a high standard.</p> <p>Use of whoa-boys (diversion banks) on tracks wherever required.</p> <p>"Ripping" and seeding if warranted.</p> <p>Areas of high risk of erosion, which includes but is not limited to high traffic tracks, to be identified.</p>
Cultural and Heritage Sites	Disturbance of sensitive sites.	Moderate	<p>MMG Standard Operating Procedure: (1) Prior area clearance surveys by the AAPA followed up by (2) at least two on-site Traditional Owners (Cultural Monitors) present for all land disturbing activities.</p>	<p>Report any site disturbance to the AAPA and DPIR.</p> <p>Remediate site as instructed.</p>

## 5.5 ENVIRONMENTAL AUDITS AND INSPECTIONS

Mandatory internal SHEC (Safety, Health, Environment and Community) auditing processes are in place to ensure compliance with both internal and external requirements. Of particular note is MMG's Monthly Project SHEC Report which includes amongst other items the following details:

- All SHEC incidents (including environmental incidents);
- Site fuel and water usage;
- Waste produced and disposal details; and
- Land area disturbed and rehabilitated.

All data generated from these monthly project SHEC reports is compiled and included within the publically available Annual MMG Sustainability Report (Appendix 6). This information is captured via ERIK (Environment Reporting Information & Knowledge) which is a SAP based platform that captures and reports our corporate environmental data as per the MMG Environmental Compliance Reporting Standard.

Site inspections and audits are undertaken on an irregular basis by the Central Batten Project Manager, Exploration SHEC Manager and the Exploration Manager - Australia Region. The reason this is irregular is that MMG does not have a permanent established presence in this region and only operates on this project during the dry season. Site inspections take place during all active stages of access track and drill site preparation and rehabilitation works to ensure full compliance with procedures and standards. Washing down of vehicles as a weed management control is captured in vehicle logs and drill rig plods.

Monitoring is an ongoing standard operating procedure conducted by the site Exploration Team during the field season and reported to the Project Manager via the daily and monthly SHEC reports as listed above. Key monitoring tasks include:

- Visual inspection of cleared access tracks/lines for evidence of soil erosion and effectiveness of any installed whoa-boys (diversion banks).
- Visual inspection of rehabilitated drill pads and access tracks gauge the progress of site rehabilitation and regrowth.
- Visual inspection of drill hole collar positions to check integrity of collar cap and burial as well as any evidence of groundwater seepage.
- Immediate reporting to the Site Supervisor of any environmental issue or incident. These are further captured in daily site pre-start meetings and Monthly Project SHEC reports (as listed above).
- Photographic records with commentary are captured during all stages of pad and track clearing works: (1) pre-disturbance; (2) post-disturbance but prior to work commencing; and (3) post-rehabilitation.
- As standard practice MMG try to collect photographic evidence of all sites annually, ideally after each wet season, dependent upon the amount of regrowth and access to the site.

## 5.6 ENVIRONMENTAL PERFORMANCE REPORTING

### 5.6.1 Objectives and Targets

Environmental data is documented, maintained and auditable to meet both internal and external obligations as stated in Sections 5.5 and 5.7.

The status of all rehabilitation activities to be as a minimum documented annually (post wet season) including photographs recorded at each of the following stages: (1) pre-disturbance; (2) post-disturbance but prior to work commencing; and (3) post-rehabilitation.

### 5.6.2 Performance Reporting

To be conducted as outlined in Sections 5.5 and 5.7 and Appendix 3 (Central Batten Project SHEC Management Plan).

## 5.7 EMERGENCY PROCEDURES AND INCIDENT REPORTING

All environmental incidents will be reported as soon as possible to the Mining Compliance Division in accordance with Section 29 Mining Management Act (MMA) including the use of the official Notification of Incident Form.

As outlined in the SHEC Management Plan (Appendix 3) the Central Batten project has a detailed Emergency Response Management Plan as well as a mandatory incident reporting policy and procedure.

All safety, health, environment and community incidents and events are reported using a combination of corporate systems including Incident and Event Management (IEM), ERIK (Environment Reporting Information & Knowledge) and *Staketracker* (Community-specific incidents).

## 6 EXPLORATION REHABILITATION

Table 9 below summarises MMG's rehabilitation policies and procedures.

Table 9: Details of disturbance and rehabilitation policies and procedures.

Disturbance	Rehabilitation Activities	Schedule (Timing)	Closure Objectives / Targets	Monitoring Techniques
<b>Drill holes</b>	Collar plugged with cement plug, cut below ground level and buried (min. 400m depth). Permanently sealed if groundwater flows intersected.	Capped immediately after completion of each hole. Cutting and burial of collar below surface to occur at end of program during pad rehabilitation. Immediately permanently seal groundwater flows if intersected.	All holes capped and stable at completion of program. Invisible site after two wet seasons (dependent upon rainfall amount). No surface water flow of intermixing of multiple aquifers.	Holes to be inspected at end of wet season.
<b>Drill pads</b>	Stockpiled topsoil replaced, ripped to allow regrowth, placement of logs etc, re-seeding if required	At completion of program	Invisible site after two wet seasons (dependent upon rainfall amount)	Hole sites to be inspected at end of wet season
<b>Sumps</b>	Filled in, topsoil replaced, lining removed and disposed of correctly	At completion of program	Invisible site after two wet seasons (dependent upon rainfall amount)	Hole Sumps to be inspected at end of wet season
<b>Tracks / Gridlines</b>	Rehab after use or maintain condition for use by Landowner	To be confirmed with Landowner	Invisible site after two wet seasons (dependent upon rainfall amount). Or written confirmation from Landowners if they wish tracks left open.	Tracks to be inspected at end of wet season
<b>Camp Sites</b>	Stockpiled topsoil replaced, ripped to allow regrowth, placement of logs etc, re-seeding if required	At completion of program	Invisible site after two wet seasons (dependent upon rainfall amount)	Hole sites to be inspected at end of wet season

### 6.1 EXPLORATION REHABILITATION REGISTER

Not applicable. No ground disturbing activities have yet occurred.

### 6.2 COSTING OF CLOSURE OBJECTIVES

MMG 2018 Security Calculation is provided in Appendix 4.

## 7 APPENDICES

### APPENDIX 1: \*COMMERCIAL-IN-CONFIDENCE PLANNED DRILL HOLES

### APPENDIX 2: COFFEY BIODIVERSITY REVIEW



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ersity\_review\_Aug20

### APPENDIX 3: CENTRAL BATTEN PROJECT SHEC & EMERGENCY RESPONSE MANAGEMENT PLANS



McArthur Basin SMP  
2018.pdf



Emergency  
Response Managemen

### APPENDIX 4: \*COMMERCIAL-IN-CONFIDENCE SECURITY CALCULATION: EXPLORATION OPERATIONS

### APPENDIX 5: \*COMMERCIAL-IN-CONFIDENCE LANDOWNER ACKNOWLEDGMENTS

### APPENDIX 6: MMG 2017 SUSTAINABILITY REPORT



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bility\_Report.pdf

### APPENDIX 7: AAPA AUTHORITY CERTIFICATES



Authority Certificate  
C2018-098 - MMG Ce