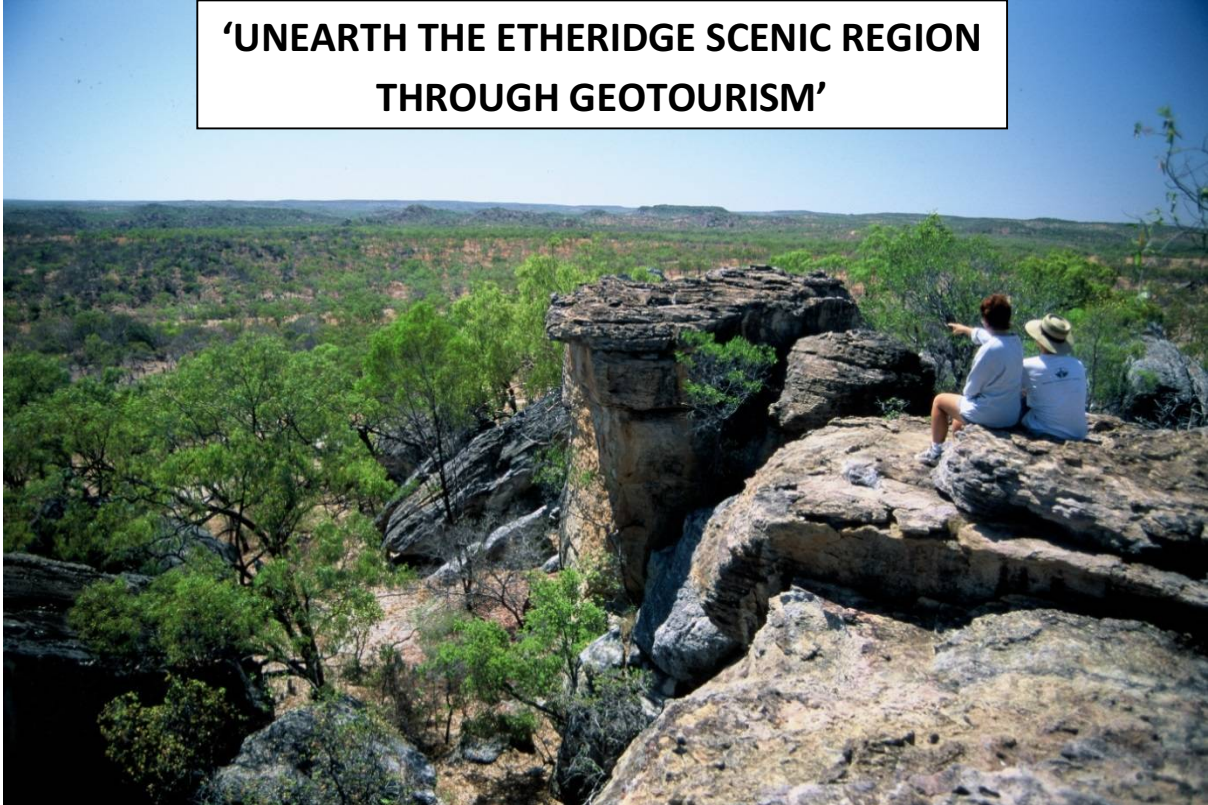


**'UNEARTH THE ETHERIDGE SCENIC REGION  
THROUGH GEOTOURISM'**



Castle Rock, photo courtesy of Savannah Guides Network

**A Discussion Paper**  
**prepared for the Geotourism Advisory Committee**  
**Of**  
**Etheridge Shire Council**  
**By**  
**Angus M Robinson FAusIMM (CP)**

**2nd November, 2017**

## EXECUTIVE SUMMARY

The indication by the Council of the Shire of Etheridge to support a geotourism based strategy represents a major step forward in realising its corporate aim of building future economic development focused on agriculture, mining and nature-based tourism in this highly attractive and authentic outback region.

This exciting initiative captures the aspirations of the pre-existing 'Unearth Etheridge' tourism strategy, providing additional natural and cultural heritage content. Through collaboration with other LGAs, it envisages establishment of strong geotrail linkages with geotourism attractions outside of the Shire e.g. Chillagoe, Croydon, 40 Mile Scrub National Park, Mt Garnet/Herberton/Irvinebank townships, as well as with the Dinosaur Trail and Flinders Discovery Centre of Western Queensland.

This strategic approach serves to build on the work previously undertaken by the Etheridge Tourism Action Group, taking also into account the more recent contributions to date of the recently appointed Geoscience and Mineral Heritage Reference group and newly established tourism industry engagement with National Parks and Wildlife, the Ewamian Aboriginal Corporation, and the Northern Gulf Resource Management Group. With the assistance of these groups, it is planned to establish other Reference Groups with expertise in biodiversity and indigenous cultural heritage.

The Strategy recognises that the existing, well patronised geosites comprising Undara Volcanic Park, Cobbold Gorge, Copperfield Gorge, the three fossicking areas of Flat Creek, Agate Creek and O'Briens Creek as well as the TerrEstrial Visitor Centre (which includes the Ted Elliott Mineral Collection) represent the core elements of existing geotourism attractions within the Shire. In addition, the Strategy proposes collaborative pilot projects to both develop opportunities for grazing properties and with the Etheridge community in collaboration with the Ewamian Aboriginal Corporation to assist the Ewamian people in redeveloping the Talaroo Hot Springs geosite to be suitable for accommodating tourist visitation including geotours.

It is also planned to reach out to the councils of adjoining local government areas to work together to build geotrail linkages with geotourism attractions external to the Shire, having regard to the existing strong linkages with Savannah Way Ltd. The considerable contribution of the Savannahlander rail service makes to providing valued access within the Shire of Etheridge and the linkages with adjacent regions is also recognised.

In order to provide a higher level of services to tourists, the project proposes to develop a digital transformation strategy based on a model developed for Longreach, a region which also employs a smartphone application as an information delivery mechanism for travellers. Moreover, the Etheridge strategy recognises the opportunity to incorporate additional functionality to deliver emergency support needs.

## TABLE OF CONTENTS

	<b>Page No</b>
1. Preamble	5
2. Key Tourism Development Strategies	7
3. Tourism Industry Structure and Emerging Opportunities	7
4. Positioning and Communicating the Etheridge Region as an Exciting Destination to Visit	9
4.1 Geotourism	9
4.2 Branding Options	12
4.3 Marketing to the Chinese	13
5. SWOT Analysis – Defining Brands and Issues Impacting on Tourism Development in the Shire of Etheridge	17
6. Option 2 – What Does it Actually Mean?	18
7. How does Option 2 differ from the UNESCO Global Geopark Proposal	19
8. Leveraging of the Etheridge Region’s ‘Strengths’	19
8.1 Indigenous Culture	19
8.2 Outstanding Biodiversity and Geodiversity	20
8.3 Savannah Guides Network	21
8.4 European Heritage and Historic Precincts including Mining and Agricultural History	21
9. Optimising the Opportunities Offered through the Etheridge Region	22
9.1 Expanding Community Events	22
9.2 Development of National Parks Access	22
9.3 Global Recognition through Geopark Development and Collaboration with the UNESCO Global Geopark and Asia Pacific Global Geopark Networks	22
9.4 Engagement with the Grazing Community	23
9.5 Engagement with Ewamian People	24

10. Development of a Branding Strategy to Underpin Project Implementation	24
11. Marketing Strategies	25
11.1 Broad Strategic Approach	25
11.2 Target Markets	26
11.3 Seasonality	27
12. Impacting Issues	27
12.1 Access Constraints – Air, Road and Rail	27
12.2 Accommodation Availability and Food Offerings	28
12.3 Low Investment in Tourism Product /Infrastructure	28
12.4 Lack of Onsite Visitor Information, Interpretation and Signage	28
12.5 Mobile Reception/Internet Connectivity	29
12.6 Lack of Collaboration/Industry Cooperation	29
12.7 Tourism Management	30
12.8 Community Engagement	30
12.9 Charleston Dam	31
12.10 China Market Readiness	31
12.11 Duty of Care Responsibilities	31
13. Recommendation	31
APPENDIX 1: Key Findings, Gulf Savannah Tourism Strategy (Savannah Way), 2016-2017	32
APPENDIX 2: ETAG Marketing Strategies	36
APPENDIX 3: Outcomes of the Work - Geoscience and Mining Heritage Reference Group	38
APPENDIX 4: Preliminary Notes Describing Environmental and Cultural Values of Protected Areas within the Shire of Etheridge	44
APPENDIX 5: Geology of the Etheridge ‘GeoRegion’	48
APPENDIX 6: Ecotourism Australia members - Far North Queensland	60

## 1. Preamble

Over the past 12 months, efforts had been focused on developing an application for an UNESCO Global Geopark with an official boundary which embraced the whole of the Shire of Etheridge, some 40,000 square kilometres in area. However, community opposition to this proposal was essentially predicated on a number of aspects of this proposal which included three considerations relevant to this discussion.

1. The proposed UNESCO affiliation promoted a fear of further regulation and restrictions curbing current and future activities and potentially leading to a World Heritage Listing.
2. The large area of the application across the whole Shire which included large land tracts which were considered unlikely to be of interest for tourism.
3. The use of the term 'geopark' which was interpreted by many to imply some form of existing or potential environmental protection (aligned to an expanded national parks network).

Having regard to Council's resulting decision not to proceed with an UNESCO application at this time, Council was provided with three alternative strategies which took into account these stated community concerns, but at the same recognising that Council was intent on establishing a major internationally recognised, geotourism destination which could stand alongside the other two major destinations of Far North Queensland – the Great Barrier Reef World Heritage Area and the Daintree World Heritage Area. This latter protected area is located within the designated Wet Tropics Australian National Landscape area, noting that the boundaries of the National Landscape Area (but not the Daintree World Heritage Area) embraces much of the eastern part of the Shire including Einasleigh and Mt Surprise.

All of these options recognised that a 'geotourism' area could be selected which took account of 'georegional' characteristics based on geological and mining heritage and embraced principles that could serve to pre-qualify the area for a UNESCO application at some future time, meeting the designated requirements of a 'defacto' geopark. In other words, by raising awareness of the importance of the area's geological heritage in history and society today, the adoption of any of these options should provide local people with a sense of pride in their region and strengthen their identification with the area. The creation of innovative local enterprises, new jobs and high quality training courses is stimulated as new sources of revenue are generated through geotourism, while the geological resources of the area are conserved as the foundation of tourism activity. An essential ingredient of these options is strong community engagement and ownership.

## **OPTION 1**

**Development of a significant, integrated geotourism initiative which is geo-regionally focused in a collaboration of the Shire of Etheridge with adjoining LGAs to include attractions already identified within the ‘Unearth Etheridge’ tourism strategy, and including additional natural and cultural heritage content.**

This alternative took account of a proposed regional collaboration involving adjacent LGAs having regard to the fact much of the mining heritage embodied in the Etheridge Shire had strong linkages to other key mining sites in Far North Queensland, a reflection of the rich geological heritage of the area.

## **OPTION 2**

**Within the Shire of Etheridge, development of a major geotourism initiative which captures the aspirations of the pre-existing ‘Unearth Etheridge’ tourism strategy, providing additional natural and cultural heritage content; and through collaboration with other LGAs, establishment of strong geotrail linkages with geotourism attractions outside of the Shire e.g. Chillagoe, Croydon, 40 Mile Scrub National Park, Mt Garnet/Herberton/Irvinebank townships, as well as the Dinosaur Trail and Flinders Discovery Centre of Western Queensland.**

This alternative focused on developing an expansive principal focus on key geotourism areas within the Shire of Etheridge but to create linkages with key attractions outside the Shire utilising dedicated geotrails.

## **OPTION 3**

**Within the Shire of Etheridge, development of a major geotourism initiative which captures just the aspirations of the pre-existing ‘Unearth Etheridge’ tourism strategy, but providing additional natural and cultural heritage content.**

This alternative proposed an incremental approach adding some added value to development work undertaken to date by Council’s Geoscience and Mineral Heritage Reference Group.

Having considered the three options, Council has decided to implement Option 2, however recognising that it can be expanded to include some pilot project activities focused on engagement with key stakeholder groups such as graziers and the Ewamian Aboriginal Corporation.

This discussion paper details what steps need to be undertaken to implement the fulfilment of Option 2 having regard to other existing key tourism development strategies as well as discussing a number of key impacting issues.

## 2. Key Tourism Development Strategies

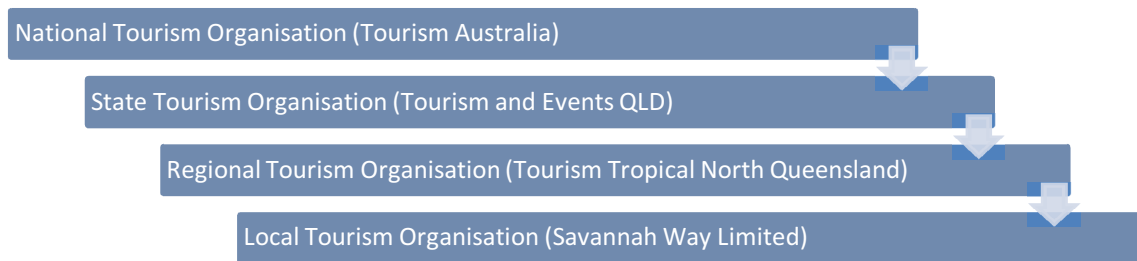
- 'Unlocking Our Great Outdoors', Tourism and Transport Forum, June 2017  
<http://www.ttf.org.au/wp-content/uploads/2017/08/TTF-Unlocking-our-Great-Outdoors-August-2017.pdf>
- Queensland Ecotourism Plan, 2016-2020, September 2016  
<https://www.npsr.qld.gov.au/tourism/pdf/final-qld-ecotourism-plan.pdf>
- Queensland Asia Tourism Strategy, 2016-2015  
<http://www.leisuresolutions.com.au/wp-content/uploads/2015/02/queensland-asia-tourism-strategy-2016-2025-1.pdf>
- Gulf Savannah Development Tourism Research Report, March 2013
- Gulf Savannah Tourism Strategy (Savannah Way), 2016-2017
- Tropical North Queensland Destination Tourism Plan, 2013  
<http://media.ttnq.org.au/documents/9-b5025ed792d34de7b56406a645d6703e.pdf>
- Strategic and Marketing Documentation of the Etheridge Tourism Advisory Group
- Strategic Plan, Ewamian Aboriginal Corporation, 2016 2021  
<https://www.ewamian.com/strategic-plan>
- Queensland Drive Tourism Strategy, 2012-2013  
<http://www.savannahway.com.au/wp-content/uploads/2015/10/qld-drive2013.pdf>
- Wet Tropics: A Guide Book to Making the Most of your Landscape Positioning, 2010  
<https://www.ecotourism.org.au/assets/wet-tropics-a-guide-book-to-making-the-most-of-your-landscape-positioning.pdf>
- Tourism In The Gulf Savannah Sub-Region Of Tropical North Queensland - Economic Impact. Cummins Economics, September 2015.  
<http://www.leisuresolutions.com.au/wp-content/uploads/2015/02/Gulf-Savannah-TNQ-EconomicImpact-Tourism.pdf>

## 3. Tourism Industry Structure and Emerging Opportunities

Of these strategic approaches, the Gulf Savannah Tourism Strategy of Savannah Way Ltd neatly describes the tourism industry structure in Far North Queensland and which best relates to the strategic approach being considered by Etheridge Shire Council. Because the Savannah Way extends right across northern Australia between Cairns and Broome, it offers the opportunity to provide a series of linked geotrails, managed by the various local government organisations located along its route. The most eastern section, which embraces the landscapes between Cairns and Croydon, represents the best opportunity to demonstrate what can be achieved in building a content-rich journey with a compelling story. Within the Shire of Etheridge, the Savannah Way is currently represented by the 'Lava Tubes, Gems and Gorges Trail'.

It is claimed quite rightly that the Gulf Savannah is strongly supported by the Queensland tourism network. This includes their plan's alignment with Tourism Tropical North

Queensland's Destination Tourism Plan. Their alignment to the national tourism framework means that the region is already included in many initiatives at little or no cost to the region. The following diagram neatly depicts the existing arrangements on the basis that the work of the Etheridge Tourism Advisory Group is already strongly linked to the strategic thinking of Savannah Way Ltd.



However, the emergence and original consideration (now discontinued as explained in the 'Preamble' ) of the UNESCO Global Geopark proposal by Etheridge Shire Council has already added a new dimension to the opportunities that can be created for international visitation, particularly for regions of the world where geopark development is well advanced. In this regard, of most interest is the Asia region (already identified in the Queensland Asia Tourism Strategy). Apart from global geopark development in Japan, South Korea, Malaysia, Indonesia, of the current total of 127 global geoparks, 35 are located in China.

China also features many outstanding natural heritage sites, most of which are accredited because of their outstanding geology and landscapes. In addition, China has over 320 Provincial Geoparks, of which over 200 have already gained national status, and 72 National Mining Parks which preserve the relics and geological features of mines. All of these 'scenic areas' are major drawcards for a very large domestic visitation base, and it is increasingly being recognised that this market, particularly the higher income segments, is keen to see what the rest of the world (including Australia) offers.

Moreover, the recently released report of the Tourism & Transport Forum (TTF) has concluded that Australia needs to maintain and improve its nature based tourism sector, as this is acknowledged to be a significant part of the overall visitor economy attraction, and recommends expansion and enhancement of nature based tourism related to Australia's National Landscapes because that will also support spreading the benefits of tourism more broadly across the economy as visitors, both domestic and international, are encouraged to sample the wide variety of natural experiences available. In effect, the TTF is arguing that governments revisit the Australian National Landscape program of which the Wet Tropics National Landscape is part.

Both TTF and Tropical North Queensland have developed a strong strategic focus on promoting specific destinations which in part feeds into recognising that geopark patrons are looking for similar geopark experiences as part of their international 'bucket list'



aspirations. It is worth noting that in discussions with Tropical North Queensland Destination & Global Partnerships of Tourism Tropical North Queensland and Tourism and Events Queensland), there is a keen interest in working with the Shire of Etheridge in developing a global presence for the region.

Of relevance too, it should be noted that the Queensland Ecotourism Plan, 2016-2020 outlines five new strategic directions:

- Driving innovation in ecotourism experiences.
- Showcasing the world renowned Great Barrier Reef.
- Stimulating investment in new and refurbished ecotourism opportunities.
- Expanding authentic Indigenous ecotourism experiences.
- Promoting Queensland's world-class ecotourism experiences.

The plan also avows continued commitments to conserving Queensland's natural assets, with collaboration and partnerships being cornerstones of the plan. The plan articulates a range of strategic actions and the lead government agencies which have been assigned responsibility for their implementation. Significantly both Undara and Cobbold Gorge are advanced certified ecotourism members of a substantive grouping of Ecotourism Australia members which are located across the Wet Tropics National Landscape (Appendix 6).

#### **4. Positioning and Communicating the Etheridge Region as an Exciting Destination to Visit**

##### **4.1 Geotourism**

The abovementioned reports refer to a variety of tourism experiences e.g. nature based tourism, ecotourism, adventure tourism, experiential (particularly with 'hero experiences') tourism, to which must be added the concept of geotourism, a term which is arguably better understood overseas, and which is very much the focus of the Etheridge tourism development imperative.

For example, according to a 2003 major travel industry survey report polling some 55 million Americans, geotourism is understood to encompass all aspects of travel, not just the environment. Its definition – **'tourism that sustains or enhances the geographical character of the place being visited, including its environment, culture, aesthetics, heritage, and the well-being of its residents – describes completely all aspects of sustainability in travel'**.

The study also found that three segments of these geotourists are inclined 'to exhibit geotourism attitudes and behaviours – these geotourists seek culture and unique experiences when they travel'. The three identified segments are:

- Geo-Savys - <35 y.o., well-educated and environmentally aware.
- Urban Sophisticates – affluent, focusing on cultural and social aspects of tourism.
- Good Citizens – older, less sophisticated, but socially conscious.

Geotourism, by diluting the mainly biological/cultural emphasis of mainstream ecotourism, will allow ecotourism to expand away from (in part) environmentally sensitive areas such as national parks and nature reserves. Geotourism therefore offers the opportunity to provide relief from the overuse of ecologically sensitive areas. It is therefore ecologically sustainable, environmentally educative, locally beneficial and as fostering tourist satisfaction.

Geotourism is essentially ecologically sustainable tourism that explains the scenery in terms of how geological processes formed the patterns that can be observed in landforms in a plethora of landscapes such as mountains, deserts and islands, and in the rock outcrops that can be observed in coastal cliffs, creeks, road cuttings, lookouts, quarries, mine sites, and through walks in national parks. Most of these are erosional sites, none need to be ecologically challenged.

In Australia, it has been argued that geotourism adds considerable content value to traditional nature based tourism as well as cultural tourism, inclusive of indigenous tourism, thus completing the holistic embrace of 'A' (abiotic) plus 'B' (biotic) plus 'C' (culture). Geotourism has been defined by the Geological Society of Australia as 'tourism which focuses on an area's geology and landscape as the basis for providing visitor engagement, learning and enjoyment'. It has links with adventure tourism, cultural tourism and ecotourism, but is not synonymous with any of these forms of tourism, although in broad terms it actually embraces them all!

Geotourism does not need wilderness, but it can go there. Geotourism can be delivered through a wide range of transport modes e.g. cars, coaches, trains, ships, boats, and on foot. The potential impact of increasing world tourism is enormous, and this should preclude its involvement with wilderness areas. Global tourism must be ecologically sustainable, and shifting the emphasis from ecotourism to geotourism represents a positive step towards more sustainable global tourism.

Whilst destination-focused strategists can argue about what terminology best represents the type of tourism experience that target market segments might be seeking, it needs to be accepted that such arguments are probably academic and don't really 'press the right buttons' that appeal to the actual customer base.

Prior to the adoption of the industry label 'tourism' some 25 years, 'travel and hospitality' labelling in one key respect provided a clearer definition of the core needs of travellers –

‘how to get there’ (i.e. access) and ‘where to stay and eat (accommodation, essentially). Understanding and addressing these needs in a relatively remote location such as the Gulf Savannah Region is still highly relevant in underpinning the destination communication messaging.

Moreover, as has been discussed in recent Savannah Guide workshops, developing and communicating and sharing ‘amazing stories’ about the destinations (and their experiences) being marketed is increasingly a critical imperative at a time that social media is playing an increasingly important role in digital marketing.

As a concept, the holistic nature of geotourism can bring together a broad spectrum of content sourced from both natural and particularly cultural heritage sources. So, for example, as is proposed for the Etheridge Shire in considering the development of linking geotrains, these

- Should be constructed around routes currently used by tourists; geotrains should form logical journeys linking accommodation destinations.
- Should meld the geological heritage features of a region with a cohesive STORY.
- Should incorporate and package in the biodiversity and cultural components (including the indigenous as well as the extensive mining and grazing heritage) of the region through which the geotrail traverses.



## 4.2 Branding Options

In recent years, the Etheridge Tourism Action Group (ETAG) has already developed some concepts for branding on the basis that Tourism Events QLD & TTNQ had come up with a brand and tag line for the Gulf region i.e. 'Rugged by Nature.'

These include the following options. The Etheridge Shire...

- Treasured by Nature
- A Natural Treasure
- A Geological Wonderland
- A Geological Treasure
- A Geological Masterpiece
- Natures Geological Treasures

The current brand in use, as evidenced in magazine advertising, is simply 'Unearth Etheridge', supported in various media by the promotion of the 'lava tubes, gems and gorges trail'.

Whilst it is reassuring to see the implicit understanding of the importance of the geology of the region, the other natural and cultural heritage elements (i.e. the 'B' and 'C') seem to be largely understated.

By way of comparison, the Central West region of Queensland, which includes the towns of Longreach, Blackall, Barcaldine, Aramac, Muttaborra and Winton, focuses on a strong cultural theme –'Matilda Country' celebrating Australia's unofficial anthem, 'Waltzing Matilda', which was performed for the first time in Winton, now probably better known as the home of the 'Australian Age of Dinosaurs'. This is a major tourism attraction to which Etheridge Shire aspires the establishment of a geotrail linkage. Curiously travel magazines promote the 'Matilda Country' as embracing all of the tourism attractions in Far North and North West Queensland! Whilst all of this confused and multiple layers of branding can be reasonably well sorted out by the domestic travellers, particularly the grey nomads, it is simply 'noise' offering little or no 'cut-through' with overseas markets.

Given this melee of mixed messaging, arguably the best pathway for determining a branding proposition, which best reflects the aspirations of Option 2 , is to work closely with Savannah Way Ltd and the Savannah Guides Network.

### 4.3 Marketing to the Chinese

The Chinese market has emerged as the most significant source of international tourism to Australia with the vast majority of this market visiting East Coast capital cities and high profile coastal destinations including Cairns.

In the context of understanding that Australian regional areas, which have outstanding natural landscapes, a key factor needs to be understood about the Chinese market. While domestic travellers implicitly can be educated to understand 'geotourism' experiences, the market is not likely to respond to marketing language emanating from Australia which uses the terms geotourism, ecotourism or nature based experiences, even the label of 'green tourism' is being promoted by the Chinese National Government. Chinese are essentially looking for outstanding 'Scenic Areas' which invariably feature mountains and bodies of water which exhibit spiritual significance. The whole focus of attaining Global Geopark status by the Chinese is predicated on enhancing the branding of famous 'Scenic Areas'.

However, according to the Queensland Asia Tourism Strategy document, 'experienced travellers from Asia are choosing to explore more exotic destinations that are **authentic and unique**.

The most important factors for Asian consumers in selecting a holiday destination, ranked in order of importance are:

1. Safety and security
2. Proximity - international and regional
3. Attractions
4. Good food, wine, local cuisine and produce
5. **World class beauty and natural environments**
6. Price of destination/value for money
7. World class coastlines, beaches and marine life
8. Rich history and heritage
9. Family friendly destination
10. Friendly and open citizens, local hospitality.'

In referring specifically to China, the strategy document claims, 'key components of Queensland's value proposition are the state's natural wonders and associated nature-based accommodation, attractions and attractions, tours and Indigenous tourism experiences. Coupled with Queensland's Aboriginal and Torres Strait Islander culture is the wonder of the ancient dinosaur discoveries and the drama and romance of the Queensland outback pioneering story. These Indigenous, dinosaur and heritage experiences, while

currently not major influences for Asian markets, represent valuable growth opportunities for Queensland in adding depth and value to Queensland's established nature-based experiences'.

Curiously, the document fails to recognise that the label 'nature based experiences' is not understood in Chinese culture, but a specific reference to (famous) 'scenic areas' is what we now believe could really make the difference; a realisation reinforced from a recent visit to key Chinese 'scenic regions' in Guizhou Province, a region designated recently by Chinese President Xi as the 'geopark province' of China.

Therefore, recognising the importance to the Chinese of visiting famous 'Scenic Areas' which feature mountains and water, it could be argued that the Etheridge Shire could be, for example, repositioned with the following 'product features'.

- \* The cluster of Undara volcanic peaks and craters from which emanated one of the world's longest lava tube system with the nearby heritage site of Mt Surprise.
- \* The magic of the terraced hot springs at Talaroo, the latter to be promoted when all the development work had been completed.
- \* The Cobbold and Copperfield Gorges; and in time,
- \* Mount Tabletop and the Flat Creek Gorge (to be developed).

And travelling en route from Cairns, a stop over to visit the very picturesque peaks, lakes and waterfalls of the Atherton Tableland.



Kalkani Cone, Undara, photo courtesy of Savannah Guides Network



Talaroo Hot Springs, photo courtesy of Angus M Robinson

The abovementioned visit to China undertaken in September 2017 has resulted in a proposal, discussed with senior Guizhou Province Government officials, predicated on the following assumptions and approach designed to attract a geotourism-primed Chinese market to consider travel to Far North Queensland Region (including Etheridge Shire).

- With its sub tropical climate, elevated plateau (sic, Tablelands) areas and mountains, Far NQ is an ideal partner for Guizhou Province which is located in Central West China (with a population base of some 35 million people).
- Both Guizhou and Far NQ – ‘green tourism’ exemplars.
- Proposed Sister City relationship – the regional city of Xingyi (a population of some 850,000) and Cairns.
- Proposed high level delegation to Guizhou Province by Council of Far NQ Mayors in 2018/2019.
- Tourism Promotion Agencies and Industry Groups from Australia and China to drive collaboration.
- Major opportunities then generated for collaboration in geotourism development, noting also that Guizhou Province has built major museums which focus on fossils, particularly dinosaurs.

This proposal will be followed up in discussions with Tropical North Queensland, Tourism and Events Queensland, and the TTF.

Of additional interest is the preliminary results from a PhD study of Chinese visitors for three selected geoparks in each of China, Hong Kong and Taiwan which indicate that a predominant demographic is of the 18-25 age group. Should this realisation be substantiated, this is encouraging information for marketing Far North Queensland to this age group which may be an ideal target market for attracting FITs with a 'soft adventure' focus, and with less need for 'up market' accommodation.



## 5. SWOT Analysis – Defining Brands and Issues Impacting on Tourism Development in the Shire of Etheridge

The following tabulation represents key attributes in each sector of a SWOT analysis based on several contributions from Advisory Committee members.

<p style="text-align: center;"><b><i>Strengths</i></b></p> <ul style="list-style-type: none"> <li>• Authenticity</li> <li>• Indigenous heritage</li> <li>• Outstanding biodiversity and geodiversity, including minerals and gemstones</li> <li>• Savannah Guides Network</li> <li>• European heritage and historic precincts including mining and agricultural history</li> </ul>	<p style="text-align: center;"><b><i>Weaknesses</i></b></p> <ul style="list-style-type: none"> <li>• Access constraints – air, road and rail</li> <li>• Accommodation availability and food offerings</li> <li>• Low investment in tourism product / infrastructure and marketing</li> <li>• Lack of onsite visitor information, interpretation and signage</li> <li>• No overarching strategy/brand to market</li> </ul>
<p style="text-align: center;"><b><i>Opportunities</i></b></p> <ul style="list-style-type: none"> <li>• Expanding community events</li> <li>• Development of National Parks access</li> <li>• Global recognition through geopark recognition and collaboration with Global Geoparks</li> <li>• Engagement with graziers</li> <li>• Engagement with Ewamian people</li> <li>• Mild and dry winters providing an escape for those living in cold areas of the Australia</li> </ul>	<p style="text-align: center;"><b><i>Threats</i></b></p> <ul style="list-style-type: none"> <li>• Seasonality of visitation and access to attractions</li> <li>• Environmental constraints on development in some areas</li> <li>• Potential conflicts between tourism and other industries for land use/development</li> <li>• Failure to secure sufficient community support</li> <li>• Well-intentioned but poorly resourced and half- hearted efforts not meeting raised expectations</li> <li>• Climate is hot and oppressive in the ‘wet season’, and access throughout the area can be severely impeded by wet weather, a threat that may well be accentuated by climate change.</li> </ul>

## 6. Option 2 – What Does it Actually Mean?

**“Within the Shire of Etheridge, development of a major geotourism initiative which captures the aspirations of the pre-existing ‘Unearth Etheridge’ tourism strategy, providing additional natural and cultural heritage content; and through collaboration with other LGAs, establishment of strong geotrail linkages with geotourism attractions outside of the Shire e.g. Chillagoe, Croydon, 40 Mile Scrub National Park, Mt Garnet/Herberton/Irvinebank townships, as well as the Dinosaur Trail and Flinders Discovery Centre of Western Queensland.”**

### 6.1 Key Features

- The newly adopted tourism development strategy is to be driven by the Shire of Etheridge on advice from an appointed Geotourism Advisory Committee which will now incorporate the pre-existing Etheridge Tourism Action Group (ETAG).
- This strategic approach serves to build on the work previously undertaken by ETAG, taking also into account the more recent contributions to date of the Geoscience and Mineral Heritage Reference group and recent tourism industry engagement with National Parks and Wildlife, the Ewamian Aboriginal Corporation, the Northern Gulf Resource Management Group. With the assistance of these groups, Council is keen to establish Reference Groups with expertise in biodiversity and cultural heritage.
- It is recognised that the existing, well patronised geosites comprising Undara Volcanic Park, Cobbold Gorge, Copperfield Gorge, the three fossicking areas of Flat Creek, Agate Creek and O’Briens Creek as well as the TerrEstrial Visitor Centre (which includes the Ted Elliott Mineral Collection) represent the core elements of existing geotourism attractions within the Shire.
- Council intends to reach out to the councils of adjoining local government areas to work together to build geotrail linkages with geotourism attractions external to the Shire. Implicit in this approach is the recognition that the Shire of Etheridge is inextricably linked to adjacent areas through its shared geological and mineral heritage across this Far North Queensland region. For example, as detailed in Appendix 2, there are very strong linkages between the various mineral fields in Etheridge and Chillagoe. Moreover, it is recognised that Chillagoe, through a strong commitment to quality interpretation, has been very successful in establishing a strong visitor flow to this precinct.
- Council recognises the considerable contribution of the Savannahlander makes to providing valued access within the Shire of Etheridge and the linkages with adjacent regions.

## **7. How does Option 2 differ from the UNESCO Global Geopark Proposal**

The Pre-Aspiring Etheridge UNESCO Global Geopark was being advanced on the basis that an application would embrace the whole of the Shire of Etheridge. It was also predicated on the proposition that two geological events feature as iconic geotourism attractions in the region, the most significant of which is the Undara Lava Tube System, truly unique in the world based on consideration of age, preservation and lineal extent, as well as the geomorphological expressions within flat-lying sediments at Cobbold Gorge. Both of these landforms, as well as the other landforms in the area proposed for the Global Geopark, have resulted in a diverse range of landforms with unique biodiversity characteristics including a rich assemblage of birdlife. Committed input from the Ewamian Aboriginal community was also seen as a means of identifying sites exhibiting rich indigenous culture.

Within the proposed application area, the Geoscience and Mineral Reference Group has identified an additional number of sites which were considered of particular geotourism value and were importantly considered readily accessible by the public. Conversely, the Reference Group acknowledged that whilst the area was rich in geological heritage, most of the Shire of Etheridge could be considered 'off limits' because it was inaccessible to the travelling public.

In the move away from a UNESCO Global Geopark structure into the Option 2 model (which has no linkages with UNESCO), all of the above mentioned 'geosites' could form part of a regional construct (let's say, a 'georegion') with linkages within the Shire of Etheridge being provided principally by the existing Lava Tubes, Gems and Gorges Geotrail as well as by the Savannahlander Geotrail and with external linkages being extended through the Savannah Way and other marked historic mining trails. In this context, Etheridge Shire Council could be seen to building and implementing a 'defacto' geopark/georegion, particularly, if with time, a management group was put in place to oversight all of these geotourism related activities.

## **8. Leveraging of the Etheridge Region's 'Strengths'**

### **8.1 Indigenous Heritage**

At the Talaroo Hot Springs area near Mt Surprise, the Ewamian Aboriginal Corporation (EAC) is focusing on tourism, economic development and maintaining cultural and natural values. The various protected areas under the management of National Parks and Wildlife contain sites of identified cultural heritage. It is more than likely that other sites outside of these protected areas will be identified and highlighted over time, as engagement with the Ewamian people develops.

It is noted that changes in land use can trigger the need for a new Indigenous Land Use Agreement (ILUA) e.g. Pastoral – Tourism because any new business deemed to be making profit from Native Title Lands could be subject to a new ILUA.

An ILUA is a voluntary agreement between a native title group and others about the use of land and waters. These agreements allow people to negotiate flexible, pragmatic agreements to suit their particular circumstances.

It should also be noted that the Queensland Ecotourism Plan is committed to identifying and progressing new opportunities to expand indigenous involvement in ecotourism.

## **8.2 Outstanding Biodiversity and Geodiversity**

In Queensland, regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The Shire of Etheridge embraces two extensive bioregions, namely the Einasleigh Uplands (covering the bulk of the Shire and for that matter the adjoining Chillagoe area) and the Gulf Plains. There are 46 regional ecosystems associated with seven land zones described for the Einasleigh Uplands bioregion, which basically consists of a series of rugged hills and ranges, dissected plateaus and alluvial and sand plains. The bioregion, which is defined by six Provinces, is dominated by eucalypt woodlands with only Provinces 1, 2 and 5 being located wholly within the Shire. By way of example, Regional Ecosystem 9.8.3 represents the distinctive deciduous vine thickets seen in the 40 Mile Scrub National Park and in the lava tube collapses.

The fauna biodiversity of this bioregion is very extensive, particularly rich in birdlife.

The protected areas managed by National Parks and Wildlife contain significant biodiversity, some of which is classified as endangered, vulnerable, or rare. Useful field guides include the following.

[http://www.northerngulf.com.au/sites/default/files/downloads/book\\_4\\_mammals\\_1.pdf](http://www.northerngulf.com.au/sites/default/files/downloads/book_4_mammals_1.pdf)

[http://www.northerngulf.com.au/sites/default/files/downloads/book\\_3\\_birds\\_0.pdf](http://www.northerngulf.com.au/sites/default/files/downloads/book_3_birds_0.pdf)

[http://www.northerngulf.com.au/sites/default/files/downloads/book\\_2\\_reptiles\\_0.pdf](http://www.northerngulf.com.au/sites/default/files/downloads/book_2_reptiles_0.pdf)

Of relevance also is reference to the programs of the Northern Gulf Resource Management Group <http://www.northerngulf.com.au/programs/biodiversity-conservation>.

The rocks comprising the geoh heritage of Etheridge Shire form 'the Georgetown Inlier'. They comprise consists largely of variably metamorphosed and deformed sedimentary and volcanic rocks extending back some 1.7 billion years and intruded by

granitoid rocks. Fluvial and marine sediments blanketed the region in the Jurassic–Cretaceous and basaltic volcanism has occurred without major breaks for the last nine million years, and features lava tubes and very long lava flows.

The Geoscience and Mineral Heritage Reference Group has therefore established that the geoheritage of the Etheridge Shire is very impressive, and that the region is certainly the most diversified mineralised area in Queensland, if not in Australia. The gemstone (agates, sapphires etc.) fields are also regarded as highly significant in Australia by fossickers. Further details are provided in Appendix 5.

### **8.3 Savannah Guides Network**

With key staging posts at both the Undara and Cobbold resorts, and solid representation through the Mt Surprise-based Bedrock Village tours to Undara, the strong presence of this network is a key strategic asset from a human resource viewpoint – so important for high levels of quality assurance in interpretation and storytelling.



Savannah Guides Workshop, April 2017, photo courtesy of Angus M Robinson

### **8.4 European Heritage and Historic Precincts including Mining and Agricultural History**

The Etheridge region has a rich post European settlement history with fascinating linkages involving exploration, mining, grazing and conservation. The recent development of Kidston from a mine site to a major renewable energy production site is an important part of the overall story.

A visit to the Etheridge Region offers a truly authentic Australian outback experience.

This strength can be enhanced through a higher level of community engagement.

## **9. Optimising the Opportunities Offered through the Etheridge Region**

### **9.1 Expanding Community Events**

Working closely with Savannah Way Ltd, the local communities supported by Council can develop further their annual events calendar which should feature prominently on the Etheridge Council web site and other communication media. These events include shows, races, rodeos, camp drafts, bushman balls, and peace days.

### **9.2 Development of National Parks Access**

The National Parks and Wildlife Service is developing a number of protected areas within the Shire of Etheridge – Undara, Littleton, Blackbraes, Canyon, and Rungulla (refer Appendix 4).

By including the externally located 40 Mile Scrub National Park, and conceivably the Bulleringa National Park, there is a considerable opportunity to assist the Service in fostering new tourism development. The inclusion of the 40 Mile Scrub National Park (and its interpretation signage) is also important because it is effectively positioned at the ‘gateway’ to the Shire to visitors travelling from Cairns. However, there is a real challenge of being able to ensure public access to many of these other national park areas.

The Queensland Ecotourism Plan is committed to working with the tourism industry to investigate and identify viable ecotourism projects on tenure other than the protected area estate; in this context, lands adjacent to existing protected areas could be regarded as being attractive for ecotourism projects such as environmentally sensitive accommodation.

### **9.3 Global Recognition through Geopark Development and Collaboration with the UNESCO Global Geopark and Asia Pacific Global Geopark Networks**

Whilst the UNESCO Global Geopark application is ‘off the table’ at this time, it should be recognised that circumstances may well arise where with community and government support, it is decided that a nomination be reactivated. With the continuing growth of and enthusiastic support for global geoparks overseas, it is inconceivable that Australia might end up being the only continent in the world where geoparks are absent.

It should also be noted that one outcome of the engagement in the recent Asia Pacific Geopark Network conference is the realisation that a new process of developing national geotourism regions suitable for future global geoparks could be achieved by the development of an assessment and approval process based on a system that has been

carefully developed in Japan to date. Discussions will be taking place with the Australian Government about this recommended new approach.

It is therefore clearly in the interest of the Shire of Etheridge to 'keep all options open'. With a commitment to raising awareness of the importance of the area's geological heritage in history and society today, Council can ensure that local people can have a sense of pride in their region and strengthen their identification with the region. It is clear that by pursuing a new tourism strategy, Council understands that the creation of innovative local enterprises, new jobs and high quality training courses is stimulated as new sources of revenue can be generated through geotourism, while the geological resources of the area are conserved. Council's approach in developing a geotourism strategy assumes strong community engagement and ownership.

The other significant consequence of the relationship with the Global Geopark community is the opportunity at some future time to develop 'sister park' relationships between the Etheridge geotourism sites and the global and national geoparks through the auspices of the Memorandum of Cooperation between the Geological Society of China and the Geological Society of Australia <http://www.leisuresolutions.com.au/wp-content/uploads/2015/02/MemorandumofCooperation.pdf>

This Memorandum will of course be applied should any proposal to develop further the proposed Guizhou Province relationship with the Far North Queensland Region.

#### **9.4 Engagement with the Grazing Community**

The campaign by AGFORCE to close down the UNESCO Global Geopark application uncovered a whole range of concerns, most of which (as was publicly conceded by legal advisers to AGFORCE) were of little or no consequence because they amounted to unrealised fears about the impact of the UNESCO designation on landholders. In fact, it was even established that arrangements could be put in place to enable landholders to opt out of any arrangement where geopark activities were proposed. However, what was surprising was the resistance of many pastoralists to increased levels of tourism generally for a whole range of reasons including dealing with people who got lost, brought in weeds, interference with cattle etc., in an environment where the folk who live in the four townships perceived increased tourism numbers as generating more income for various businesses as well as creating new jobs.

Nevertheless, there were other landholders (who have significant natural heritage features associated with their properties) and who have seen the success of both the Terry family operations at Cobbold and the Collins family at Undara, and could see that tourism offered the potential to generate additional revenue streams to be directed at supplementing farm income.

It has therefore been suggested that one effective strategy to engage with the grazing community (through the Gulf Cattlemen's Association and AGFORCE) would be to undertake

a pilot project in one or more selected areas. Such a pilot project could examine all of the perceived opportunities (including for example farmstay accommodation options) and to develop measures that address any identified concerns such as the protection of identified sensitive indigenous cultural sites including rock paintings.

### **9.5 Engagement with Ewamian People**

Subject to the possible need for a new Indigenous Land Use Agreement (ILUA), it has also been suggested that another pilot project could be undertaken by the Etheridge community in collaboration with the Ewamian Aboriginal Corporation to assist this group in redeveloping the Talaroo Hot Springs geosite suitable for accommodating tourist visitation. Again, the Queensland Ecotourism Plan has a specific commitment to working with Traditional Owners and Communities to support development of commercially viable, indigenous-led ecotourism investment across Queensland.

If agreed upon by EAC, the suggested use of the Wedge-tailed Eagle image (a totem of EAC) should have a Ewamian text component so that it is explicit where the image originates and its connection to the Ewamian people as being total. In these circumstances, it may well be appropriate to engage Ewamian artists to generate the logo to ensure that it is not too similar to the image that is used by EAC nor can it be considered an appropriation of the image used by EAC.

## **10. Development of a Branding Strategy to Underpin Project Implementation**

The UNESCO Global Geopark nomination provided a major opportunity to establish a prominent global brand which would have stood alongside the two Far North Queensland WHA brands.

In its place, there is a major imperative to identify and assign an alternative brand which can serve to ensure that the Etheridge 'GeoRegion' stands out from the basket of other tourism brands that are promote in the area e.g. Tropical North Queensland, Atherton Tablelands, Matilda Country, Gulf Savannah even though the Option 2 strategic approach calls for a higher level of integration with the tourism areas also using these brands.

Currently Etheridge Shire Council uses the tag line 'Golden Heart of the Gulf' and other imagery using the words 'The Golden Shire', 'Beef' and 'Gold' and a picture of an alluvial gold miner. Certainly this imagery and language has reflected historically the major primary industrial heritage of the Shire. However, there is now an opportunity to focus on branding which may better appeal to new visitors to the Region from both around Australia and internationally.



Based on the analysis undertaken by Ian Withnall in Appendix 3, there is a very compelling argument to retain the name 'Etheridge' in any descriptor and to apply the imagery of the "Kuritjala" or Wedged Tail Eagle, which is the totem of the Ewamian people.

To complete the descriptor, the additional words of 'Geo Region' or 'Geo Province' might be considered, but the question needs to be asked whether these labels may be understood by visitors, and importantly, consideration needs to be given to the sensitivities of local communities who may well be wary of the term 'geo' in the light of the recent objections to the Global Geopark proposal.

Perhaps using a brand name of '**Etheridge Scenic Region**' might be a viable alternative given that in the final analysis, 'nature based' tourism actually is a formula linking what people see (the 'scenery') to where they stay and how they get there!

This issue does need to be carefully discussed and considered by the Geotourism Advisory Committee. Moreover, it is essential that once finalised, the selected branding is consistent in marketing employed across all media channels.

## **11. Marketing Strategies**

### **11.1 Broad Strategic Approach**

Appendix 2 details marketing strategies that have been developed by ETAG to date.

Clearly the broad thrust of the stated objectives are now encompassed in the implementation of Option 2, with many of the strategies (e.g. signage, community events etc.) already underway and with the development of the mobile phone application being advanced somewhat by the work of the Geoscience and Mining Heritage Reference Group.

The implementation of Objective 3.4 (self-drive itineraries both within and outside of the Shire) will require a considerable amount of careful consideration and development. ETAG has already identified and promoted through travel magazines six suggested itineraries

- Savannah Way
- Lava Tubes, Gems and Gorges Trail
- Fossicking Trail
- Cairns to Gulf Savannah – 3 Day
- Townsville to Gulf Savannah -3 Day
- Hughenden to Georgetown – 3 Gorges Trail (effectively addressing the linkage to the Dinosaur Trail and Flinders Discovery Centre of Western Queensland)

ETAG members have also looked at developing drive itinerary suggestions based on

- Undara – Mt. Surprise – Einasleigh – Lynd Junction loop
- Georgetown – Forsyth – Einasleigh loop

- Forsayth – Gilberton – Kidston loop

However, there is a need for the Department of Transport and Main Roads 'buy-in' to upgrade and maintain their roads to an acceptable standard for tourists.

Add to this the tourism trails of Far North Queensland recommended by HEMA maps and the various mining heritage trails across the Atherton Tableland and out to Chillagoe, there is a rich tapestry of routings from which structured geotrails can be developed holistically on a priority basis. For various reasons, a logical place to start would be a geotrail linking the Shire with Chillagoe.

It should be recognised that the success of either packaged or FIT organised trails extending over several days depends on securing suitable accommodation.

## 11.2 Target Markets

The 2012 Gulf Savannah Visitor Survey focused on leisure travelers. Previous surveys have identified that leisure visitation to the Gulf Savannah region is dominated by Australians aged 50 years or more, often categorized as 'grey nomads'.

The survey results show that older Australian and couples still dominate the leisure/holiday market:

- 59.6% of survey respondents were travelling as part of a couple
- 64% of travelers were aged 60 years or over
- 95.2% of survey respondents were Australians (sic, domestic travelers).

However there are some significant other segments:

- 16% of survey respondents were traveling as a group of friends
- Another 8.8% were traveling as family and children
- Almost 5% were international travelers.
- Potential younger age group FITs from Asia with a 'soft adventure' focus.

Anecdotally, within the Etheridge Shire, it is known that the region attracts a large number of fossickers, although more recent information does suggest that visitors to fossicking areas are more likely to be family groups rather than fossickers per se.

Input from the Savannahlander operators should also provide a valuable insight of the visitor composition choosing to visit the region by train.

A detailed destination and product development report of the Carpentaria Land Council Aboriginal Corporation provides some very useful information about visitation trends which can be applied to the Etheridge Region.

[http://www.clcac.com.au/sites/default/files/downloads/clcac\\_destination\\_and\\_product\\_development\\_plan\\_201306.pdf](http://www.clcac.com.au/sites/default/files/downloads/clcac_destination_and_product_development_plan_201306.pdf)

It is recognised that ETAG members (particularly Undara and Cobbold Resorts) would have on hand detailed information about the range of market segments requiring accommodation. However in broad terms, apart from self-drive, free and independent travelers (FITs), other key segments include small (maximum of 20 travellers using custom-designed 4WD buses) and large, operator-led tour groups, sourced from both the domestic and international markets. Many, but not all, of these market segments could be further categorised as ‘geotourists’ (as described previously).

Specialist wildlife interest groups (particularly birdwatchers and photographers) are likely to be attracted to the Etheridge region as are natural and cultural heritage, alumni groups associated with both domestic, but more particularly, overseas universities and research institutes. In addition, given the large number of National Mining Parks in China, interest from Chinese mining industry professionals has already been identified in visiting heritage mining sites in Australia.

### **11.3 Seasonality**

It needs to be recognised that a focus on marketing in the short term where accommodation options are limited may need to shift from the mid-year peak season to shoulder seasons of (March to May) and (September to November). Of interest is the observation in Taiwan where it was noted that visitors to a popular geopark seem quite happy to travel to see ‘scenic areas’ in very hot weather, in conditions where Australians might prefer to stay ‘under cover’. The use of shade umbrellas by Chinese of both genders was also noted.

Whilst it has been suggested that wet season visitation could be promoted (as has been the practice in the Kakadu area of the Northern Territory), the reality is that the climate is hot and oppressive, and access throughout the area can be severely impeded by wet weather. Moreover, the tourism infrastructure and support services are not as well developed as in the Northern Territory, and ‘duty of care’ responsibilities need to be taken into account.

## **12. Impacting Issues**

Many of the following issues have been identified as weaknesses in the abovementioned SWOT analysis.

### **12.1 Access Constraints – Air, Road and Rail**

Unsealed roads are perceived by ETAG members as a key issue for particularly dry season access. It needs to be recognised that most coach operators will not travel along unsealed roads – the only vehicles doing so are heavy duty 4WD units.

It is understood that none of the airstrips within Etheridge Shire are of sufficient length to permit operation by small capacity, commercial operators.

The Savannahlander operator is keen to add a new service linking Chillagoe – current services are operating at close to full capacity and are booked out a long time in advance.

## **12.2 Accommodation Availability and Food Offerings**

The lack of accommodation capacity within the existing townships is a major problem. Other options to be investigated will be encouraging the development of farmstay and/or homestay accommodation, the creation of up market, ‘glamping’ areas, and the creation of additional luxury accommodation of the style currently offered by Gilberton Outback Retreat. The management of ‘free camping’ arrangements for ‘grey nomads’ and other visitors particularly, present continuing problems for Council.

What is often forgotten is that tourists have to compete for limited accommodation in the townships with other travelers occupied on business assignment including utility and other industry workers.

The lack of places available to provide quality food services (all meals) is a major drawback within the Shire and presents a major problem for operators packaging new product development. International visitors expect to be able to purchase good quality food with variety also offered.

It is noted that the Talaroo Tourism project would grow the local available accommodation considerably with a new campground, RV park and ‘glamping’ style tents.

## **12.3 Low Investment in Tourism Product /Infrastructure**

The development of a credible tourism development strategy may attract, urgently required investment in new tourism infrastructure including additional small service businesses in the townships. Council will need to convince businesses to invest first and the customers will follow!

## **12.4 Lack of Onsite Visitor Information, Interpretation and Signage**

Whilst signage issues are currently being addressed, there is an urgent need to upgrade the interpretation services at the TerrEstrial VIC in Georgetown. Apart from investigating how best the proposed smart phone application can be integrated into installed monitors in the Centre, there is an opportunity to install display units within a proposed ‘closed in’ extension to the Centre. These display units/panels and/or interactive exhibits could focus on a range of themes which include

- The Undara story; the Volcanoes Discovery Centre at Peshurst in Victoria is a useful reference point <http://www.volcanoesdiscoverycentre.com.au/home/index.html>

- Geological evolution of the Etheridge Province
- History of the Etheridge Goldfield and the links with the former Chillagoe Smelter
- History of the Pastoral Industry of the Shire of Etheridge
- Gemstones of Etheridge
- Alluvial gold panning.

Any review of the operations of the TerrEstrial VIC should include the issue of what strategies could be adopted to maximise its commercial return from the investment made to date by Council.

Visitor information (other than the run of commercial brochures) containing natural history, interpretative content is not readily available in any of the townships or for that matter in other large regional centres in Far North Queensland.

There is the opportunity to also develop a digital transformation strategy based on a model developed for Longreach [www.visitlongreach.com](http://www.visitlongreach.com) , a region which also employs a smartphone application as an information delivery mechanism for tourists.

### **12.5 Mobile Reception/Internet Connectivity**

Mobile phone coverage is generally restricted to the immediate surrounds of the four townships with no coverage along the main connecting highways. However, at an additional cost, motorists can carry satellite phones which do of course provide universal coverage.

Internet Connectivity in the four townships is variable in capability with Georgetown offering by far the best service. It is a reality that tourists now days have an expectation that good WIFI access is a given when they are travelling.

The EAC has expressed a strong interest in this issue. The EAC would like to know if work can be done by Council to improve the current situation, and any likely impact on access to the internet at Talaroo.

### **12.6 Lack of Collaboration/Industry Cooperation**

Not unlike most of regional Australia, collaboration amongst the full scope of individual tourism operators is not well developed. However, Savannah Way Ltd (and the Savannah Guides) encourages collaborative activity, and the Geotourism Forum of Ecotourism Australia Ltd is an additional vehicle through which cooperation and knowledge serving can occur.

The local tourism industry also needs to examine ways in which collaborative lobbying of government can take place, noting the effective influence of other industry groups whose interests may not always be supportive of tourism development.

## **12.7 Tourism Management**

With limited available resources, currently, the management of regional tourism marketing and development is left essentially to ETAG with input from Council as required. It needs to be recognised that Council staff have other responsibilities and during the tourist season, ETAG members (and National Parks management for that matter) just don't have the time and the resources available to engage in broad industry development activities. However, along with Savannah Way, both Cobbold Gorge and the Undara operations devote a considerable amount of marketing spend to regional tourism . In addition, by way of example, in 2017 the Cobbold Gorge marketing team has attended eight consumer shows from Adelaide to Cairns and points in between on behalf of Savannah Way and the Etheridge Region, along with driving the Regional Advertising of Unearth Etheridge for the past two years. Cobbold Gorge also works closely with Savannah Way, with team members attending Destination Q, International wholesale marketing to agents in NZ and attendance at the Australian Tourism Exchange etc.

If this geotourism initiative is to 'take off', additional resources will need to be found to engage an individual who has the technical knowledge (particularly in the area of natural and cultural heritage), the experience, capability and organisational skills to champion and drive this project.

## **12.8 Community Engagement**

A critical ingredient of this geotourism strategy is maximizing community engagement not only through project work as proposed for the grazing community, but through activities generated in the townships. Emulating a program being undertaken in the United Kingdom, it is proposed that a 'geovillage' approach be adopted; thus enabling individual townships to take unique ownership of any activity which has a natural or cultural heritage characteristic. This could include a community operated museum e.g. emulating the museum in Millthorpe, NSW which features artefacts relating to historical and mining activity <http://www.millthorpemuseum.com/>

Both Forsayth and Mt Surprise have strong associations with agates and gems, and Einsaleigh has strong mining industry heritage. Georgetown already has the TerrEstrial Centre which might benefit from even a higher level of community involvement and the recently established Peace Monument has already made its mark.

Notwithstanding these initiatives, community engagement can be progressed by the organisation of regular workshops and forums, designed to capture resident ideas and viewpoints.

## **12.9 Charleston Dam**

The development of Charleston Dam, located just 6 km north of Forsayth on the road to Georgetown, will become a recreational hub for the Shire, with the dam potentially hosting a number of water based activities, supporting bush walking and maybe fishing and bird-watching as the ecosystems stabilise. Dam construction commences after the 2017/18 wet and the dam is expected to fill around February 2019. This development is potentially a big local drawcard, a significant part of the Shire's proposed recreational landscape, and offers the potential of being part of an integrated tourism package.

## **12.10 China Market Readiness**

Whilst developing an early engagement with Chinese global geoparks has been commenced and thus seeding interest in attracting Chinese tourism, it does need to be recognised that much work needs to be done in preparing our tourism attractions for overseas visitation from Asia. Issues such as the provision of food that suits the Chinese palate, additional training for guides, the provision of information translated into Mandarin and the availability of people who have bilingual skills are important. Whilst tour groups are generally resourced with bi-lingual guides, FITs are not so well endowed.

## **12.11 Duty of Care Responsibilities**

To date, most of the tourists (e.g. 'grey nomads' and tour guide-led groups) that have visited the Etheridge Region have been generally well equipped and prepared to manage the somewhat demanding environment of the Australian outback. With the current approach to actively encourage a higher level of visitation from FITs, particularly during times that verge on the wet season, the need to keep in mind an industry responsibility of 'duty of care'. This may translate into public authorities such the Queensland Police Service playing a more prominent role in providing traveler information and encouraging travelers to advise of their intended movements – much in the same way that the wilderness areas of the Blue Mountains in NSW are managed.

The proposed development of a smart phone application which features access to local services and assistance in times of emergencies represents a pro-active approach to addressing 'duty of care' responsibilities.

# **13. RECOMMENDATION**

At its meeting of 31 October 2017, the Geotourism Advisory Committee has recommended that this Geotourism Discussion Paper be submitted to Etheridge Shire Council for approval.

## **APPENDIX 1**

### **Key Findings, Gulf Savannah Tourism Strategy (Savannah Way), 2016-2017**

#### **Gulf Savannah Tourism Research Report 2013**

Surveys of visitors across the Gulf Savannah were conducted to gather key visitor behaviours and preferences. Some key facts include:

- The Gulf Savannah tourism industry was worth \$65 million to the region in 2012. The average spend for leisure visitors was \$79.11 per day, or \$910 for their trip into the Gulf Savannah.
- 67,000 visitors came to the Gulf Savannah in 2012. 58,000 for leisure and 9,000 for business
- Leisure visitors came from Queensland (36%), NSW (27%) and Victoria (19%). 5% came from overseas
- Australian couples comprise (59%), groups of friends (16%) and families (9%)
- 69% of leisure visitor nights were spent in caravan parks or commercial camping grounds including National Parks. 24% of visitor nights were in bush (or 'free') camps
- The average length of stay for leisure visitors was 11.5 days
- The Gulf Savannah has one of the highest satisfaction ratings of any region in Australia, with 74% 'Very Satisfied' with their trip due to the friendliness of locals, VICs and customer service.
- Key needs include better marketing to FNQ residents, addressing the free camping issue, more diverse and targeted products, development of the western Gulf and infrastructure development.

#### **Tropical North Queensland Destination Tourism Plan**

This overarching plan was developed by Tourism Tropical North Queensland to advise tourism initiatives across the entire TNQ region (from Mission Beach to Torres Strait and west including Gulf Shires to the NT border). The Gulf Savannah Tourism Strategy's Actions are aligned to the Goals, Strategies and Actions in the TNQ Destination Tourism Plan according to the Priority Drivers and Enablers.

#### **Key Strategy Recommendations for Savannah Way Ltd**

The following commitments would support a heightened level of coordination and commitment to tourism development and marketing in the Gulf Savannah. This will enable the Action List to be undertaken with combined strength and efficiency.



## **Work Together**

- The Gulf Savannah Tourism Strategy offers a framework for stakeholders to continually work on a key set of cooperative actions. In addition, local solutions can be pursued in participating Shires.
- Savannah Way Limited has, since its creation in 2007, massively increased the collateral (brochures, websites, social media etc.), stakeholder engagement in the region and linkages outside the region. It is the main driver of tourism marketing and development in the region and must be supported.

## **Capitalise on Strengths**

- The most valuable marketing asset for the region is the Savannah Way brand, the most recognised name and concept for potential visitors outside the region. Savannah Way marketing includes all towns and is not simply limited to the main road. While the Savannah Way extends from Cairns to Broome, the Queensland section is most heavily marketed. 88% of Savannah Way Limited's membership income is from the Gulf Savannah.
- There is an established national structure around tourism marketing and development that works effectively if we have the engagement of local operators and Councils. We must maximise our links with our Regional and State Tourism Organisations through Savannah Way Limited to access digital, media and agent support.

## **Build the Local Network**

- There is no State or Commonwealth funding to pursue this strategy. From time to time SWL or other stakeholders may access a grant or other opportunity, but much of our activity is purely through linking willing local partners and maximising the effectiveness of our supportive Councils' membership fees.
- More businesses should be active in tourism marketing and experience development. It is appalling how many tourism beneficiaries (roadhouses, accommodation, caravan parks, food and retail outlets) have a free ride on SWL members' fees and activity. All stakeholders should work to increase the engagement of new participants.
- The tourism stakeholders of the Gulf Savannah should communicate more regularly about cooperative issues.
- Shire Councils should have a clear internal tourism delegation and role.

### **Build Digital Activity**

- Savannah Way Limited and local operators are continually building our digital reach. This is critical to be considered by the growing number of visitors planning online. This requires ongoing content creation (pictures, words and videos) within the region by all stakeholders and digital upload on social media and websites.

### **Develop and Coordinate Events**

- Events offer a significant opportunity and can, in many cases, be better promoted and more inclusive of visitors. Shoulder season scheduling can make a significant difference to length of stay.

In reviewing this draft discussion paper, Russell Boswell, Manager of Savannah Way has made the following observations.

The “Unearth the Etheridge Scenic Region Through Geotourism” paper is comprehensive and includes realistic opportunities for the region in the growing geotourism market. The paper has important application for Etheridge Shire.

The pursuit of Option 2 by the Shire Council is a positive initiative that has the potential to adapt to the available support and linkages that the tourism industry can provide. This may redefine the course of the geotourism initiative over time as determined by the Shire and its key stakeholders. Certainly the region has rare advantages in terms of its geological attractions which could be leveraged for a range of marketing and development benefits.

The movement away from a global geopark, which would have been easily defined and branded within Shire boundaries, means that considerable additional effort will be required to provide clear messages to the market about the destination and its experiences. The clarity of the concept will have to be effectively sold to a range of external stakeholders to gather their support. This will require considerable effort by the Shire and a range of stakeholders including tourism operators and tourism organisations. As identified in the report, Savannah Way Limited and Savannah Guides are available to assist with branding initiatives and message clarification. This will require significant local consultation and alignment with wider branding frameworks as an ongoing project.

Clearly a geotourism initiative has strong potential links to the various layers of tourism strategy, and lobbying tourism organisations for their awareness and practical support will be critical to the success of the initiative. The new direction of TEQ around experiences, and revisiting of domestic drive strategies by TEQ and TTNQ are opportune moments to integrate geotourism into these broad strategies and build local operator engagement with

statewide priorities, such as building digital advocacy from guests. It is currently an important time in these discussions.

Any efforts to build geotourism and its associated marketing are positive opportunities for the general development of tourism in the region. Signage, cooperative marketing, operator maturity, packaging, community awareness of tourism benefits, new businesses, employment and experience development can all flow from the geotourism driver, adding considerable stability to the region's economy.

However none of this can happen without considerable local ownership and engagement. The negative responses by some stakeholders to the geopark concept must be addressed to demonstrate how tourism development can benefit the whole shire, and specifically those individuals who felt threatened by this new opportunity. Ultimately stakeholders outside the region will respond according to the degree of enthusiasm and support demonstrated by the Etheridge Shire Council and its relevant resident and neighbouring stakeholders.

Overall the paper provides a valuable insight into the opportunities and challenges involved, and provides a solid pathway. Savannah Way Limited and Savannah Guides remain committed to supporting this process.

## APPENDIX 2

### ETAG Marketing Strategies

The Etheridge Tourism Action Group (ETAG) has previously developed the following marketing strategies.

OBJECTIVE NO	OBJECTIVE	STRATEGIES
1	To enhance recognition of Etheridge Shire,	<p>1.1 Establish a brand &amp; tag line unique to Etheridge Shire.</p> <p>1.2 To review proposed tag line “Etheridge Shire – Treasured By Nature”.</p> <p>1.3 Submit to Etheridge Shire Council for approval.</p>
2	Promote natural assets on the main tourism corridor leading into and around Etheridge Shire.	<p>2.1 Improve road signage.</p> <p>2.1.1 Design and install signs at main entry points to the Shire.</p> <p>2.1.2 Support signage that informs visitors of local features and activities.</p> <p>2.1.3 Within the Shire boundary directional signs indicating which station or tourist destination is located along the road.</p> <p>2.2 Design and distribute to local businesses detailed road maps of the Shire.</p> <p>2.3 Submit designs to Etheridge Shire Council for approval.</p>
3	To maximise the attractiveness, awareness and accessibility of the Shire for the enjoyment of both residents and visitors.	<p>3.1 Ensure that the entrances to the shire and its townships reflect an inviting, positive and representative image of the community.</p> <p>3.2 Identify, compile and maintain a list of places within the shire where visitors can be directed to find information.</p> <p>3.3 Review and redevelop current Etheridge brochure to enable more copies and wider distribution.</p> <p>3.4 Develop &amp; promote self-drive itineraries.</p>
4	To foster and support the use of digital technology including social media.	<p>4.1 Investigate the development of a Etheridge Shire phone app</p> <p>4.2 Ensure Etheridge Shire Council’s website’s homepage has direct hyperlinks to Savannah Way Limited and Gulf Savannah Development’s website.</p> <p>4.3 Local businesses submit updated content to Savannah Way Limited and Gulf Savannah Development to be placed on website.</p> <p>4.4 Local businesses submit updated content to Savannah Way Limited for inclusion in digital</p>

		4.5 4.5.1	newsletter. Develop an ETAG social media page. Nominate a member of ETAG to be the administrator of social media.
5	To coordinate tourist and social events with the Shire.	5.1	Liaison with local community groups and association to develop and maintain an annual events calendar for Etheridge Shire.

Note: The EAC has noted that ETAG marketing strategies have not specifically acknowledged traditional owners as stakeholders. EAC has suggested that perhaps this issue can be discussed about how this apparent oversight might be corrected.

## **APPENDIX 3**

### **Outcomes of the Work - Geoscience and Mining Heritage Reference Group**

To enable the compilation of information to support the application for the proposed Pre-Existing Etheridge UNESCO Global Geopark, an expert reference group was appointed to undertake this work under the chairmanship of Ian W Withnall. Mr Withnall is a member of the Governing Council of the Geological Society of Australia. Whilst engaged by the Geological Survey of Queensland, he undertook extensive geological investigations and mapping of the Shire of Etheridge.

Other members of this reference group included

- Leonard Cranfield, Earth Science Consultant
- Dr Laurie Hutton, Principal Geoscientist, Geological Survey of Queensland
- Patrick Maher, Manager - Eastern Australia & Pac-Rim Region at CSA Global
- Doug McConnell, Retired Geologist
- Ken Moule, Chief Executive, Global GBM
- John Nethery, Consultant Geologist, Nedex Pty Ltd
- Tom Saunders, Consultant Geologist and Project Manager at WT Saunders
- Dr Janice Wegner, Senior Lecturer, James Cook University
- Warwick Willmott, Retired Geologist, formerly Geological Survey of Queensland

**Administrator:** Angus M Robinson, Managing Partner, Leisure Solutions®

**Correspondent:** Graham Reveleigh, Secretary, Far North Queensland Branch, The AusIMM

To date the Reference Group has met by teleconference on 24<sup>th</sup> March, 21 April, 2<sup>nd</sup> June, 7<sup>th</sup> July and 23<sup>rd</sup> August 2017. At its August meeting, Etheridge Shire Council acknowledged the work undertaken by the Reference Group and has advised that it is keen to see this Group continue to be involved and provide recommendations on Geotourism. Council has also advised that it will continue to support the group meeting on a needs basis and/or whenever the Geotourism Advisory Committee is seeking advice.

Outcomes from the work of the Reference Group include

- Geological description (both a summary and a detailed account) of the Etheridge Region.
- Summary of the Mining Heritage of the Etheridge Area.
- Identification of some 20 geosites of geotourism significance, all described and complete with some preliminary photographs – prepared by Ian W Withnall.
- GIS map of the Shire of Etheridge.
- Geological commentary to support a Savannahland Geotrail – compiled by John Nethery.
- Formative development of smart phone based geotrail application.

## **Geological Summary of the Etheridge ‘GeoRegion’ #**

### **Ian Withnall, Chair, Geoscience and Mining Heritage Reference Group**

The Etheridge region’s geological history extends back 1700 million years when its oldest rocks were possibly deposited on the edge of a continent now forming the core of North America. They amalgamated with the Australian continent about 1600 million years ago during supercontinent assembly, and were deformed and metamorphosed. After continental breakup, quiescence was punctuated by episodes of intense geological activity. The most violent resulted in vast outpourings of silica-rich magma in the Carboniferous–Permian. Fluvial and marine sediments blanketed the region in the Jurassic–Cretaceous, but the older rocks were re-exhumed after Cenozoic uplift. Basaltic volcanism has occurred without major breaks for the last nine million years, and features lava tubes and very long lava flows. The region is potentially still volcanically active.

These events have contributed to a fascinating diversity of geology, mineral resources and landscapes, which influenced the lives and customs of Aboriginal people and patterns of European settlement.

# A more detailed geological account is included in Appendix 5.

## **Etheridge ‘GeoRegion’ Mining Heritage**

### **Jan Wegner, Geological and Mining Heritage Reference Group**

Mining for a remarkable range of minerals has occurred on the Etheridge Gold and Mineral Field. The Aborigines were the first miners. They used agate and chalcedony for knives and spear points, and clay, ochre and the ores of gold, silver and copper for body paint and art.

The first Europeans to the area were graziers, bringing herds of sheep and cattle in the 1860s. One of them, the geologist Richard Daintree, was a partner of the Hann brothers at Maryvale, to the south. They wanted to create a local market for their beef and Daintree prospected the southeast of the Etheridge. He became the first professional geologist in Australia to discover an economic mineral: copper, on the junction of the Copperfield and Einasleigh Rivers, in 1864. He worked the mine until 1867 but the cost of transporting the ore over the steep coastal ranges and then to England proved too much. His next discovery, of gold in the headwaters of the Gilbert River, proved more lasting. He led a party of prospectors to the area in 1868 and their finds sparked a rush which began the new Gilbert Goldfield. By 1869, the town of Gilberton was the centre of a busy district with hundreds of European and Chinese miners. They fanned out over the gold-bearing country drained by the Gilbert River and its tributaries: the Robertson, Delaney, Etheridge and Einasleigh Rivers. Initially the miners looked for alluvial gold but soon found gold-bearing quartz reefs. One of them was at the junction of the telegraph line to the Gulf and the Etheridge River, creating in 1870 the town of Georgetown which became the administrative centre of the growing

Etheridge Goldfield. Despite fierce opposition to the invaders by the Ewamian people, and the occasional bushranger robbing stores, more discoveries were made and other towns sprang up. Lane's Creek, Western Creek, Mcdonaldtown, Walshtown, Goldsmith's Creek, Castleton, Donnybrook, Donnyville, Mt Hogan, Percyville, Cumberland, Durham: these were shanty towns that soon died. Of the early gold towns, only Charleston (later Forsayth) and Georgetown would survive.

Other goldfields such as the Palmer alluvial rush in 1873 drew miners away, but the Etheridge threw up new discoveries to bring them back. It took rather longer for them to return to Gilberton, scene of a military victory by the Ewamian, who attacked the town in 1873 and forced the White residents to flee. In the 1880s an economic boom brought in capital from overseas as investors looked to north Queensland's gold mines, and gold mining companies brought new wealth and population to the area. Most of them lost their money but they introduced advanced equipment and left a legacy of improvements such as the Cumberland Dam. While the 1890s brought in a terrible economic depression, gold appreciates in value at such times and gold mining increases, and the introduction of the cyanide process for treating crushing mill tailings brought renewed prosperity.

The next mining boom came from base metals. World prices were high around the turn of the twentieth century and the copper, silver-lead, scheelite and bismuth lodes found in the 1880s and 1890s were worked more vigorously after 1900. The most important was Daintree's Einasleigh copper mine, which he had converted to freehold before abandoning it. A Broken Hill mining entrepreneur bought it from Daintree's heir and re-opened it, also putting in a smelter. Only one load of ore was put through before the plant was mothballed. The owners were awaiting developments in the huge Chillagoe project to the north-east, where the Chillagoe Company was opening mines and was building a large smelter and a railway to join with the Government line at Mareeba. However, overestimation of the orebodies around Chillagoe left them short of ore to keep the smelters working, and in 1906 an Act was passed by the Queensland Parliament allowing the company to extend a branch railway line to the Etheridge from Almaden on the Mareeba-Chillagoe line. The company had Einasleigh copper in its crosshairs, but extended the line to Charleston to tap gold, copper and lead mines in the southern part of the goldfield. Construction finished in 1910 and the town of Charleston moved a short distance to the railhead, becoming Forsayth. This is the line used by the 'Savannahlander' today. Georgetown was outraged; the main administrative centre of the field was now isolated from the most important transport route. Einasleigh and Forsayth boomed, nearly eclipsing the older town. The fourth of the modern Shire's towns was founded at the same time because of the railway: Mt Surprise, a railway stop near the old cattle station of the same name.

A surprise rush happened in 1907 when gold was found on the Oaks outstation southeast from Einasleigh, forming the town of Kidston. The Oaks goldfield began as an alluvial rush, though lack of water forced the miners into using dry blowers rather than cradles. When the



alluvial ran out, miners turned to the many small rich 'leaders' of quartz which ran through a breccia pipe of low grade ore. They could not cope with increasing depth and larger areas of land were allowed under lease to companies which could use economies of scale and open-cutting to make a profit from the low-grade material. Mining lapsed by 1925 and Kidston was almost abandoned; it had to wait until 1984, when the massive Kidston open cut took out the whole of the pipe along with the town site. Only the old crushing battery remains.

Etheridge residents expected great things of the railway and the Chillagoe Company's purchase of mines such as the Einasleigh, the Havelock at Forsayth and the Union at Percyville. The work of this and other companies, and the Oaks rush, certainly revived some of the languishing gold towns. However, the Company was in financial trouble and shut down operations in 1914, including the Chillagoe smelter, bringing base metal mining to a halt. The Queensland government came to the rescue, buying out the smelter and the company's railways in 1919, but not soon enough for the field to benefit from the high wartime prices for metals. The failure of the big companies cast a pall over mining, worsened by wartime inflation and lack of transport, which hit gold mining hard. The State Government re-opened the Chillagoe smelters in 1920 to keep population on the inland mining fields, and with a railway into the heart of the Shire, copper and lead mining revived. The reprieve was short; base metal mining soon ran into the maw of the Great Depression of the 1930s. Metal prices plummeted and wiped out mining for lead, copper and tin, though gold mining revived a little as it always does during economic depressions. Old gold mines were re-opened and the Mines Department provided equipment and funds for prospecting. Prices for base metals also recovered during the arms race preceding World War II, but the war itself was disastrous for all mining on the Etheridge. The Chillagoe Smelters were considered inefficient and outdated, and were closed, bringing base metal mining to a halt again at a time when wartime demand was high. Gold mining was considered an inessential industry and discouraged; shortages of mining supplies such as petrol and explosives soon killed it off.

After the war, mining revived a little, but the population had severely declined, the railway had been damaged by a flood, and roads were poor; like most of north Queensland, the Shire had become a backwater and mining was correspondingly difficult. With mining overall in severe decline after the 1920s, the population left and the economy was once again dominated by pastoralism. Mining never ceased entirely but was very small-scale until the 1980s when gold mining revived on a much larger scale than the old miners could have dreamed of, making old mines payable again. However, tin prices collapsed in 1984.

Other minerals exploited on the Etheridge include mica, which has to occur in large sheets to be commercially useful. It was mined briefly in 1913. Agates occur in a number of places, particularly Agate Creek which was discovered by Daintree in 1869. The agates there were mined for a time in the 1890s, when nearly a ton was sold for burnishing gold leaf, but were fossicked for private collections more often than mined. Other semi-precious stones like

topaz have attracted fossickers for decades. In 1971, uranium was found near Georgetown at Maureen, and other deposits have been found since. As yet, only prospecting has occurred. Another recent venture which would have puzzled the old miners is quartz (silicon) mining at Lighthouse. Zinc and molybdenum have been mined in conjunction with other minerals.

The Etheridge was once Queensland's second most productive goldfield, and though most of its mineral deposits are small, its variety of minerals has kept miners and gem collectors coming back.

### **Use of the name 'Etheridge'**

#### **Ian Withnall, Chair, Geoscience and Mining Heritage Reference Group**

**Etheridge River.** The origin of the name is uncertain. It was possibly named by Daintree after Robert Etheridge senior (1819-1903) who was a prominent palaeontologist to the British Geological Survey. However, the source of the name is disputed, and it may have been named for an early drover (Wegner, 1990, p24). Daintree did name the Percy River after John Percy a mineralogist at the School of Mines so that would be consistent with him naming the Etheridge River, but there is no known documentary evidence of the latter.

**Robert Etheridge Junior** (1846-1920) was assistant field geologist to the Victorian Geological Survey, being appointed to the position four years after Daintree's departure from Victoria although they may have been contemporaries at the Royal School of Mines. He later collaborated as palaeontologist with Robert Logan Jack on the first major treatise on the geology of Queensland, but since none of the rocks in the Etheridge Shire are fossiliferous, has no connections with the area of the geopark.

**Etheridge Goldfield.** Gazetted in 1872 was one of the largest goldfields in Queensland in terms of area, although in terms of production in the 19th and early 20th century was eclipsed by Charters Towers, Gympie and others. Numerous small mines and mining camps scattered over a large area of the Etheridge Goldfield were administered from Georgetown. This mining history, which is one of the main aspects that the geopark will celebrate, was a key factor in establishing European settlement to the area, so in this respect, the name Etheridge has particular significance as a name for the geopark apart from it also being the shire name.

**Etheridge Shire.** It was originally the Einasleigh local-government division (1879). It was renamed Etheridge Shire in 1919, because Georgetown, not Einasleigh, was the centre of local government functions, and it was confusing having the Shire named after another township. Mail addressed to Einasleigh Shire was being sent to Einasleigh township instead of the shire offices at Georgetown. The change of name coincided with the decline of mining and the ascent of pastoralism in the Etheridge economy.

The name **Etheridge** has been applied to major geological features in the area. All of the Proterozoic metasedimentary of the region are assigned to the Etheridge Group, which comprises a number of units of formation status. The Etheridge Province refers to rocks of the same age extending north to Cape York Peninsula.

Although for international and even interstate visitors, the name Etheridge will have no particular significance, it has historical significance in terms of European settlement, and would be the logical choice if that was the only consideration. However, there is precedent in the past few decades for adopting an indigenous name for major tourist sites and National Parks in Australia (e.g. Uluru for Ayres Rock, Boodjamulla for Lawn Hill). Since most of the lands of the Etheridge Shire lie within the Ewamian Peoples Native Title Determined lands, it is understood that the Ewamian Aboriginal Corporation would be happy to contribute to the discussion around geotourism for the Etheridge Shire and would be happy to work with the Geotourism Advisory Committee in developing names and images for this project.

## APPENDIX 4

### **Preliminary # Notes Describing Environmental and Cultural Values of Protected Areas within the Shire of Etheridge**

# Cultural Heritage section in the appendix may need updating based on information that is recorded on the DATSIP database and also the EAC cultural heritage database as approved.

<b>Environmental protection values</b>	<b>Cultural heritage values</b>
<p><b>Blackbraes National Park</b>            Significant landscapes and flora and fauna communities of the Einasleigh Uplands and Gulf Plains bioregions. Within Blackbraes a network of lava tubes, cracks and tunnels exist which house Queensland’s largest known breeding colony of the eastern bent-wing bat . Also significant geological diversity embracing both very old and relatively younger rocks. Moonstone Hill, a small scoria cone on the eastern side of the Kennedy Development Road, contains significant deposits of moonstone crystal (anorthoclase feldspar).</p> <p>Twelve bird species listed on international conservation agreements;</p> <p>Blackbraes provides the only representation of 10 Regional Ecosystems (REs) within Queensland’s reserve system.</p> <p><b>Canyon Resource Reserve</b>            The Canyon incorporates a significant part of the Newcastle Range extending south to the Chudleigh Plateau and Blackbraes National Park.</p> <p>Five plant species have been identified as vulnerable, near threatened and endangered. The endangered plant, Solanum angustom, has since been located on the property.</p> <p>There are six REs present with no representation in the protected area estate. There are 17 poorly represented RE's. Five REs have a VMA and Biodiversity status 'of concern' and one RE is listed as a restricted RE.</p> <p>The endangered black-throated finch, near threatened skink Ctenotus zebrilla and black-necked stork are known to occur on the property. The property supports several nomadic and migratory bird species. There is at least one endemic Buprestid beetle.</p> <p>Limited detailed survey has been undertaken to identify endangered, vulnerable, or rare (EVR) flora or fauna on the property.</p> <p><b>Gilbert River Section –Rungulla National Park</b>            Gilbert River Station occurs along the bioregional boundary of the Gulf Plains and Einasleigh Uplands bioregions. The property includes a</p>	<p>Indigenous values identified including sites with stencils and grinding grooves</p> <p>Indigenous values identified including sites with stencils</p>

<p>great variety of priority ecosystems such as springs and good examples of Gulf ecosystems.</p> <p>Seventeen REs are mapped on the station. Fourteen of the REs have low representation in the protected area estate of the bioregion. Two REs comprising 1.5% of the property area are unrepresented. Four REs comprising 1.55% of the property area have a Biodiversity Status 'of concern'.</p> <p>The property forms part of a continuous complex of largely undisturbed sandstone and metamorphic landscapes dissected by the Gilbert River. Its intactness, altitudinal variation and local refugia associated with rock shelters, caves, springs and spring-fed systems all confer resilience and contribute to the overall integrity and function of the adjoining Great Artesian Basin state-wide corridor.</p> <p>Three EVR flora species are known to occur. Threat from grazing on these EVRs is considered low. A new plant species has been discovered since the property was acquired (<i>Leptospermum pallidum</i> (NT)), and there may be many more discoveries in the future.</p> <p>The property has not been surveyed for fauna. However, EVR fauna likely to occur includes the Gouldian Finch, Australian Painted Snipe, Northern Quoll and the Freshwater Sawfish.</p> <p>Limited detailed survey has been undertaken to identify EVR flora or fauna on the property.</p> <p><b>Rungulla Section – Rungulla National Park</b></p> <p>The property contains fifteen REs. Eleven of the REs are poorly conserved. Three of the REs covering 1.2% of the property, have VMA and Biodiversity Status 'of concern'. One includes a restricted RE which is not represented in National Parks.</p> <p>Included are permanent springs associated with sandstones, pockets of vine thicket amongst rocky outcrops, sparse shrub land on sandstone rock pavements and 'pagoda' type sandstone vegetation complexes comprising a mixture of heath communities, low open woodlands and spinifex grasslands.</p> <p>A systematic botanical survey of the property has not been conducted, however three EVNT flora species are known to occur on the property.</p> <p>The property has similarly not been surveyed for fauna. However, fauna likely to occur includes the Gouldian Finch, Australian Painted Snipe, Northern Quoll, the Freshwater Sawfish and the Red Goshawk.</p> <p>Limited detailed survey has been undertaken to identify endangered, vulnerable, or rare EVR flora or fauna on the property.</p>	<p>and grinding grooves</p> <p>Rungulla National Park has indigenous cultural heritage significance for the Ewamian and Ngawun Mbara people.</p> <p>A registered aboriginal site exists on Gilbert River- Rungulla Station and Aboriginal hand stencils, particularly those of children, and grooves containing grindstones for grinding ochre were observed in several rock shelters.</p>
--	--

<p><b>Eight Mile Section</b>  <b>Rungulla National Park</b>  There are two REs present which are unrepresented in the protected area estate. There are eight poorly represented REs and two more small areas of poorly represented REs.  A systematic plant and animal surveys have not been conducted.</p> <p><b>Littleton National Park</b>  Littleton is known to be an important habitat for the endangered Gouldian Finch and Black-throated Finch. Near threatened Pictorella mannikin, Black-necked Stork, Golden-backed Honeyeater, Grey Goshawk species are also known to be here.</p> <p>A near threatened reptilia, Ctenotus zebrilla and plantae, Polygala pycnantha are also present. Near threatened Acacia armiti has also been located at Spring Creek.</p> <p>Littleton is part of a zone of overlap between arid and tropical monsoonal fauna.</p> <p>Four REs (representing nearly 50% of Littleton) are unrepresented in protected area estate. A further 21 REs have little representation.</p> <p><b>Undara Volcanic National Park</b>  Geology: Undara Volcanic National Park protects an outstanding volcanic landscape in the north western part of the McBride lava province. It contains internationally significant geological features. Geology is the focus of both protection and presentation in the park; management aims to protect its outstanding volcanic features and present representative features with minimal impact to their natural and cultural values. The park is classified as having very significant presentation values.</p> <p>During the Cainozoic era, around 190,000 years ago, a massive eruption of the Undara Volcano (Undara Crater) caused lava (olivine basalt) to flow approximately 90 km to the north and 160 km to the northwest. The north western flow contains a lava tube system visible for 35 km from Undara Crater to just beyond Barkers Cave. Barkers Cave extends to 560 m before entering a subterranean lake that has been explored to 50 m below its surface. The Undara lava system is listed on the Register of the National Estate owing primarily to its geological significance.</p> <p>This lava tube system possibly extends for over 110 km &amp; is the longest in Australia and one of the longest in the world. The lava tube system is internationally significant, owing to its size, well-preserved state and unusual formation on a granitic basement. Surviving segments of the tube system form 68 known caves &amp; arches, of which 60 are protected in the park. These are mostly oval to circular in cross-section &amp; up to 14 m high and 20 m wide; most are less than</p>	<p>Indigenous values identified including sites with stencils and grinding grooves</p> <p>Indigenous values identified including sites with stencils and grinding grooves</p> <p>Undara Volcanic National Park is part of the traditional country of the Ewamian people. At the time of writing, the park except its north eastern and south eastern corners is within the area subject to a native title claim (Ewamian People).</p> <p>Accounts by Ewamian people, European explorers and early settlers indicate a substantial occupation of the park and surrounding area by the Ewamian people. Evidence of Aboriginal occupation of the park includes stone artefacts, charcoal deposits and scarred trees associated with caves, vine thickets and springs.</p>
--	--

<p>200m long, but Bayliss Cave is Australia’s longest lava cave at 1350 m. Olivine basalt lava fields and pyroclastic deposits form the plains that cover most of Undara Volcanic National Park. The Undara lava flow covers the central and northern sections of the park. Much of the remainder of the park consists of lava fields from other, mostly earlier volcanic eruptions. Undara Volcanic National Park features a variety of volcanic vents including shield volcanoes (Racecourse Crater), pyroclastic cones (Kalkani Crater) and lava vents (Undara Crater). These volcanic vents stand up to 200 m above the surrounding lava plains. The Undara Crater is 340 m across and 48 m deep.</p> <p>The north western section of the park extends beyond the McBride lava province; it comprises mainly Carboniferous (298 to 354 million years old) granite and Quaternary (0.01 to 1.8 million years old) alluvium. The Granite Range here rises 200m above the surrounding landscape. Gorges following fault lines in the Granite Range and its foot slopes are botanically, culturally and possibly zoologically significant.</p> <p>Volcanic vents form the dominant relief throughout much of Undara Volcanic National Park. Views from high points such as Racecourse and Kalkani craters present a little-modified savannah woodland landscape punctuated by impressive volcanic features. Collapsed lava tube sections with their characteristic vine thicket vegetation form distinct lines across the landscape.</p> <p>The undeveloped southern portion of the park is considered to have moderate to high wilderness value (Australian Heritage Commission 1994). Granite areas in the north west of the park have not incurred significant disturbance to geological values. Well-drained, strongly-structured clay soils to depths of 1.5 m have developed on the basalt plains in Undara Volcanic National Park and no widespread erosion is evident. There is no significant disturbance or degradation to the park’s lava tubes. Visual impacts are limited to necessary visitor infrastructure in the four publicly-accessible lava tube sections. Of the 44 vents scattered throughout Undara Volcanic National Park, only Kalkani Crater has incurred significant human disturbance in the form of quarrying, water tanks, access tracks and an interpretive walking track. About a quarter of the Undara Crater lies outside the park boundaries on the adjacent Scoria pastoral holding.</p> <p>Two areas in the northern part of the park have been cleared for cultivation and not yet revegetated. One of these areas is being used by the Department of Employment, Economic Development and Innovation Tropical Weeds Research Centre to research grader grass control methods. An area surrounding the Yaramulla ranger base has also been cleared and this clearing assists in protecting buildings and infrastructure from wildfire.</p>	<p>Lava tube caves and perennial springs are significant areas for Ewamian people and contain significant cultural heritage items.</p> <p>No systematic survey of archaeological sites has been undertaken but Indigenous cultural heritage items have been identified in some sections of the lava tubes in high-visitor use areas.</p> <p>A preliminary assessment of visitor impacts on identified sites near publicly accessed caves in 1993 suggested that some artefact scatters in these areas may have been lost or damaged.</p> <p>Guided-only visitor access to lava tubes reduces the potential for visitor impacts on cultural heritage sites.</p>
--	--

## **APPENDIX 5**

### **Geology of the Etheridge ‘GeoRegion’**

**Ian Withnall, Chair, Geoscience and Mining Heritage Reference Group**

The Etheridge region has a very long geological history extending back at least 1700 million years, and punctuated by subsequent, very intense, episodic periods of activity almost to the present day, and these have contributed to the fascinating diversity in the region’s geology, mineral resources and landscapes. The following text attempts to present a relatively succinct summary of the complex and protracted geological history geology of the area within the Etheridge Geopark proposal and adjacent areas. More detailed reviews of the geology and references to the research on which this knowledge is based are presented by Withnall & Hutton (2013), Withnall et al (1997), Withnall & Henderson (2012), Henderson et al (2013), Champion & Bultitude (2013), Oversby & Mackenzie (1994), Cook et al (2013), Cook & Jell (2013), Price (2013), Atkinson (2010), Stephenson & Griffin (1976) and Cohen et al (2017).

#### **Proterozoic rocks**

The Paleoproterozoic and Mesoproterozoic rocks that underlie the Etheridge region are part of the geological entity referred to as the Georgetown Inlier (which simply means an area of older rocks surrounded by younger ones). These rocks form the easternmost part of the North Australian Craton (Figure 1), which represents the old core of the Australian continent. They are juxtaposed against younger, largely Paleozoic rocks of the Tasman Fold Belt, which consists of belts of sedimentary and volcanic rocks that were accreted to the Australian continent through the processes of plate tectonics.

Two other inliers of Paleoproterozoic–Mesoproterozoic rocks occur further north (the Yambo and Coen inliers), but the Georgetown Inlier is the most extensive and the rocks are more accessible and better known. The Paleoproterozoic rocks in the Georgetown Inlier are assigned to the Etheridge Group, a succession metasedimentary rocks that were originally at least 6 km thick. The succession is best known from the western half of the area where the intensity of deformation and metamorphism has not precluded stratigraphic documentation.

The lower part of the Etheridge Group consists of fine-grained calcareous–dolomitic sandstone and siltstone–mudstone (Bernecker Creek Formation) overlain by the Roberston River Subgroup (non-calcareous sandstone and siltstone, overlain by fine-grained, locally pillowed basalt erupted in a submarine environment, passing up to carbonaceous



mudstone, intruded by sills of dolerite and gabbro). The environment of deposition has been interpreted as deepening with time from near shore to deep marine (Withnall et al, 1997). Geochemically, the basalt and dolerite are similar to those associated with continental break-up (Baker et al, 2010). The upper part of the Etheridge Group is variably carbonaceous siltstone and mudstone consistent with an abundance of primitive algae and bacteria. Parts of this upper succession have been interpreted as shallow water in a mud-dominated tidal flat environment (Withnall, 1996; Withnall et al, 1997).

Recent dating of detrital zircon grains in these sedimentary rocks as well as igneous zircons in gabbro has constrained the age of the Etheridge Group to between 1700 and 1655 Ma (Neumann & Kositcin, 2011; Black et al, 1998).

In the eastern part of the Georgetown Inlier, the Einasleigh Metamorphics consist of biotite and calc-silicate gneiss, common amphibolite and rare leucogneiss and granitic gneiss. These rocks are thought to at least partly represent the highly deformed and metamorphosed equivalents of the lower part of the Etheridge Group described above. The metamorphic temperatures were sufficient to result in partial melting of the rocks so that extensive areas of migmatitic gneiss and granite are present in places. The main age constraints are based on dating zircon from gneissic rocks considered to have been originally feldspathic sandstone. The simple zircon populations in these rocks suggest a maximum depositional age of ~1705 Ma (Black et al, 2005). Intrusion of the metamorphic rocks by rare granite gneisses that give ages of ~1685 Ma, and amphibolite that has been dated at ~1675 Ma (Black et al, 1998; Neumann & Kositcin 2011), suggest deposition between ~1700 and 1675 Ma.

The Einasleigh Metamorphics are the host of small copper and lead–zinc deposits, but the only one to have had significant production is the Einasleigh copper mine. Other deposits include the Kaiser Bill copper deposit and the Chloe lead–zinc deposit. Recent attempts to prove up sufficient ore to re-open the mines have so far been unsuccessful.

Although the Etheridge Group is now part of the Australian craton and has equivalent age rocks in the Mount Isa area, growing evidence suggests that it may have originally been deposited on the edge of another continent that geologists refer to as Laurentia and which now forms part of the North American craton. The lower part of the Etheridge Group is characterised by detrital zircon populations that are not evident in the sedimentary rocks in the Mount Isa area and these were derived from very old Archean or early Proterozoic crust. Studies of sedimentary structures also suggest that the sediment was transported from the east rather than from the direction of the Australian continent. Laurentia and the block of crust that included the Etheridge Group may have been amalgamated with the rest of the Australian continent before about 1600 Ma to form a supercontinent that geologists refer to as Nuna. The older zircons are greatly diminished in the upper part of the Etheridge Group

and have significant populations at ~1650-1655 Ma (Neumann & Kositcin 2011), indicating a major change in the source of the rocks. The supercontinent later broke up again, with Laurentia drifting away leaving the Etheridge Group stranded as part of the Australian craton.

The Langlovale Group unconformably overlies the Etheridge Group in the western part of the Etheridge Province. It may have been partly deposited in a shallow marine environment, although its upper part contains sandstones that have sedimentary characteristics suggesting deposition in deeper water. Dating of detrital zircon indicates a maximum depositional age of ~1625 Ma (Neumann & Kositcin, 2011).

The Etheridge Group was deformed by multiple phases of folding with the complexity of the deformation and grade of metamorphism increasing eastward. The metamorphism increased from greenschist (low temperature) in the west to local granulite (very high temperature) grade in the Einasleigh Metamorphics. The deformation and metamorphism is thought to have been episodic between 1590 and 1560 Ma. The peak of low pressure – high temperature metamorphism at 1560–1550 Ma, was associated with intrusion of the granitic rocks of the Mesoproterozoic Forsayth Supersuite, which form a large batholith in the Forsayth–Georgetown area.

Most of the deformation predated eruption of the Mesoproterozoic Croydon Volcanic Group, which forms the western part of the Georgetown Inlier and consists of almost flat-lying sheets of unmetamorphosed, rhyolitic ignimbrite. They have provided a zircon date of ~1550 Ma (Black & McCulloch, 1990). The volcanic rocks were intruded by granites of the Esmeralda Supersuite that probably represent the same magma.

Flat-lying quartz-rich sandstone of the Inorunie Group overlies the Croydon Volcanic Group in a small circular basin. Its age is not definitely known, but it is thought to be a relic of a large blanket of Mesoproterozoic sediments deposited in a large fluvial system that extended across from the Constance Range near the Northern Territory border.

### **Early Paleozoic rocks**

The rocks of the Tasman Fold Belt in north Queensland represent two sequential, east stepping tectonic systems expressed by voluminous igneous and sedimentary rocks formed on the margin of the Australian continent and subsequently deformed by discrete, intense episodes of compressional plate movements.

The westernmost system, abutting the Georgetown Inlier and the Einasleigh Metamorphics, is of the Neoproterozoic-early Ordovician Thomson Orogen, which also includes the rocks in

the Charters Towers and Clermont areas, but is known to continue south beneath cover of younger rocks into the north-western part of New South Wales.

In the area in and adjacent to eastern margin of the Etheridge Shire, the Thomson Orogen rocks are assigned to the Greenvale Province, and they lie to the east of a major north-north-east-trending fault zone, the Lynd Mylonite Zone, which separates the Einasleigh Metamorphics from the Oasis Metamorphics. The Oasis Metamorphics are superficially similar to the Einasleigh Metamorphics, but dating of detrital zircons indicates that they are younger than 600 Ma (Fergusson et al, 2007). They consist of gneiss and amphibolite, and some small areas of dolomitic marble and serpentinite. They were intruded in the Middle Ordovician by a complex assemblage of granitic rocks that have been dated at ~480 Ma.

East of the Oasis Metamorphics and separated from them by another major fault zone (Balcooma Mylonite Zone) are the Balcooma Metavolcanic Group, a succession of mainly metamorphosed rhyolitic and dacitic volcanic rocks and sedimentary rocks that formed in a marine setting in the late Cambrian or early Ordovician (Withnall, 1989; Withnall et al, 1991). They host small base metal deposits that formed from hot fluids exhaled onto the seafloor. These were mined at Balcooma between 2003 and 2014.

Further east, the rocks of the Lucky Creek Metamorphic Group also include metamorphosed volcanic rocks and metasediments, but these were largely andesitic to basaltic (Withnall, 1989). They have not been dated conclusively, but are probably Ordovician or Silurian. They mostly lie outside the Etheridge Shire. East of these, and also just beyond the Etheridge Shire, is a belt of high-grade metamorphic rocks that include mica schists and large bodies of metagabbro, pyroxenite and serpentinite that may represent slices of Cambrian oceanic crust. Weathering of the serpentinite in the Tertiary concentrated nickel and cobalt in the laterite over some of the serpentinite, and this was mined from 1974–1994 at the Greenvale mine.

The rocks of the Greenvale Province were deformed and metamorphosed during the Late Ordovician, in a major tectonic event known throughout eastern Australia as the Benambran Orogeny.

East of the Greenvale Province are the Silurian – early Carboniferous rocks of the Mossman Orogen, represented by the Hodgkinson and Broken River Provinces, which are bounded on the west by a system of major faults that include the Palmerville, Burdekin River and Teddy Mount Faults. These rocks are exposed in the Broken River area in the south-east part of Figure XX, but are most extensive in the Chillagoe–Mossman area and east of Greenvale. They are not represented within the area of the Etheridge Geopark proposal.

The region was intruded by large batholiths of granitic rocks in the Silurian between ~430Ma and 420Ma, stitching the Etheridge and Greenvale provinces together. These granitic rocks are referred to as the Pama Igneous Association which forms a large belt of Silurian and Devonian granitic rocks that extends from Cape York Peninsula to south of Charters Towers and possibly under cover into north-western New South Wales. Rocks of this association underlie much of the eastern half of the Etheridge Shire.

The eastern part of the region was uplifted during the emplacement of the batholiths, so that the outcrops we see today represent a cross section of the crust from shallower in the west to deeper in the east. Circulating fluids through fissures in the country rocks above the Silurian granitic rocks may have deposited many of the gold-bearing quartz veins in the Forsayth–Georgetown area that occur to the west of the main belt of Silurian batholiths.

The significance of the Silurian granitic rocks is still the subject of debate (Henderson et al, 2013), being variously interpreted as being the roots of a coeval volcanic arc related to subduction (Henderson 1987, Henderson et al, 2011), or alternatively emplaced in an extensional backarc setting (Bultitude et al, 1997).

### **Late Paleozoic**

In the Late Devonian to early Carboniferous, sediments were deposited in fluvial environments that drained eastwards into the basins now represented by the Broken River and Hodgkinson Provinces. These sedimentary rocks are mainly sandstone and conglomerate, preserved in down-faulted blocks, the largest being near Gilberton, but smaller areas include the Mount Tabletop area north-west of Forsayth and at Black Rock, south of The Oasis. Other areas are preserved beneath the extensive areas of volcanic rocks that were erupted in the Carboniferous–Permian.

Late Carboniferous–Permian igneous rocks, including major batholiths, smaller intrusions and numerous major volcanic fields are grouped together as the Kennedy Igneous Association and are widespread throughout northern Queensland. They are concentrated in a west-northwest-trending band 800 km long and up to 300 km wide that transgresses all of the older provinces stitching them together. Much of the distinctive landscape of north Queensland is due to these volcanic and granitic rocks. Concealed rocks of the same geophysical character extend at least 300 km farther west-northwest to the coast of the Gulf of Carpentaria. The rocks were emplaced between ~340 and 270 Ma and are little disturbed by tectonism.

The volcanic rocks are dominated by thick piles of dacitic to rhyolitic ignimbrite and some lava with subordinate andesite or basalt lava (Oversby & Mackenzie, 1994; Withnall et al, 1997; Bultitude et al, 1997; Champion & Bultitude (2013).

The ignimbrites were formed during single events, in which tens of cubic kilometres of magma was erupted as incandescent ash clouds that settled and welded into sheets of volcanic rock hundreds of metres thick. Most of the volcanic fields are preserved in large composite cauldron collapse complexes, which represent vast calderas that formed when the roof rocks collapsed into the emptied magma chambers after these violent eruptions. Magma that was not erupted at the surface cooled at shallow depth to form large granitic plutons, or was emplaced along narrow fissures as dykes, in places defining circular features called ring dykes.

Some of the tin, tungsten and topaz deposits in the Mount Surprise area formed during this period of granite intrusion and volcanism, as well as gold deposits ranging from narrow fissure-filling quartz veins to the breccia pipe that hosted the giant Kidston gold deposit.

In the Etheridge Shire, the volcanic fields include the Newcastle Range, Cumberland Range, Maureen, Ballynure, Scardons, Galloway and Agate Creek volcanic groups. The related Carboniferous–Permian plutonic rocks form rugged topography, such as in the Elizabeth Creek area north of Mount Surprise, and in the Lochaber area south of Kidston.

The Newcastle Range is the topographic expression of the Newcastle Range Volcanic Group, which represents the most extensive remnant of Carboniferous extrusive rocks in the Etheridge Shire, and one of the largest in north Queensland (Withnall & others, 1997). It is exceeded in extent and thickness only by the Featherbed Volcanic Group near Chillagoe. It consists of a main north–south elongated composite subsidence structure with a prominent lobe to the east.

Rocks of the Newcastle Range Volcanic Group are predominantly ignimbrite, together with minor lava, unwelded pyroclastic rocks and rare sedimentary rocks (Oversby & Mackenzie, 1994). The primary eruptive rocks range in composition from rhyolite to andesite (and possibly very rare basalt) with rhyolitic rocks constituting about 85–90%, dacitic rocks about 5–10%, and andesite the remainder of the preserved volume. These rocks have been divided into four subgroups according to which part of the composite subsidence structure they occupy:

- The Wirra Volcanic Subgroup, which forms the southern lobe of the main north–south elongated portion of the composite subsidence structure (Wirra Cauldron)
- The Kungaree Volcanic Subgroup, which forms a north–south ‘isthmus’ (Kungaree Trough) connecting the southern and northern lobes of the composite subsidence structure
- The Namarrong Volcanic Subgroup, which forms the rounded northern lobe of the main structure (Namarrong Cauldron).

- The Eveleigh Volcanic Subgroup, which forms the eastern lobe (Eveleigh Cauldron). Virtually all the rocks of the Newcastle Range Volcanic Group were erupted and emplaced in a subaerial environment. Volcaniclastic rocks at the base of the Wirra sequence contain lenses of sandy limestone and siltstone, locally containing plant fossils, probably deposited in a restricted lacustrine environment, and other sedimentary rocks intercalated within the volcanic rocks are fluvial, shallow lacustrine, or mass-flow in origin.

Most of the other volcanic fields consist of similar rocks, but the Permian Agate Creek Volcanic Group is somewhat younger and contains a larger proportion of basalt. Rhyolitic ignimbrite is insignificant and the rhyolitic magma was erupted as lava flows. The basalt in the Agate Creek Volcanic Group is locally amygdaloidal and is the source of the agate for which the area is famous. Large spherulites, locally infilled with agate and referred to as 'thunder eggs', are found in the rhyolite lava.

### **Mesozoic rocks**

During the next 100 million years through the late Permian and Triassic, erosion reduced the area to a featureless plain. Only parts of the hard volcanic rocks such as the Newcastle Range may have formed hills. In the Jurassic (~180 Ma), large meandering, braided river systems, probably similar to the Gulf rivers of today, flowed across the region and carried coarse sand and gravel, derived from highlands of granite and metamorphic rocks to the southeast and east. Renewed subsidence forming the Eromanga and Carpentaria basins allowed the sediments to accumulate as a sheet that eventually covered the entire area and are mapped as the Eulo Queen Group (Smart et al, 1980; Cook et al, 2013). The lower part of the Eulo Queen Group is the cliff-forming Hampstead Sandstone that forms the distinctive mesas throughout much of the area. Such Jurassic sandstones are widespread from Cape York Peninsular to northern New South Wales, and form some of the important aquifers in the Great Artesian Basin.

Subsequently, in the Cretaceous period, about 120 million years ago, the sea flooded much of western and northern Queensland. Marine sands and muds of the Gilbert River and Wallumbilla formations were deposited on top of the Jurassic rocks, and even on top of the Newcastle Range.

After the sea withdrew, the region underwent a long period of weathering. About 20 million years ago, in the Tertiary, gentle uplift took place, and probably continued episodically until about 4 million years ago. As a result, the rate of erosion increased, and the sandstone sheet that covered the region, began to be stripped away, exposing the underlying rocks, which today form the Einasleigh Uplands. This process is continuing today, and in most of the Etheridge Shire, only remnants of the sandstone sheet are preserved as flat-topped hills or

mesas. Beyond the uplifted area, the Mesozoic rocks remain intact or are concealed by younger Cenozoic deposits and form the Gulf Plains.

### **Cenozoic volcanic rocks**

Cainozoic basaltic volcanic rocks are irregularly distributed along the whole north-south length of the continental margin of north Queensland. They make up the northern part of the much larger eastern Australian volcanic province which extends southward to Tasmania and South Australia for over 4000 km.

In the Cairns-Townsville hinterland, there are large lava fields or basaltic provinces with diameters of 20 to 100 km and which erupted lava volumes of 3 to 300 km<sup>3</sup> (Jell & Cook, 2013; Price, 2013). These basaltic provinces include the Piebald, McLean, Atherton, McBride, Chudleigh, Sturgeon, and Nulla basalt provinces. Collectively, such areas constitute the greatest activity of Quaternary volcanism in Australia. The McBride and Chudleigh basalt provinces lie partly within the Etheridge Shire.

A characteristic of some of the provinces is the presence of very long lava flows, some being traceable for up to 160 km from their source. The compiled ages demonstrate that volcanic activity has occurred without major time breaks since at least 9 Ma ago. The greatest frequency of eruptions occurred in the last 2 Ma, with an average recurrence interval of <10–22 ka between eruptions (Cohen et al, 2017). The duration, frequency, and youthfulness of activity indicate that north Queensland volcanism should be considered as potentially still active.

Older Oligocene and Miocene basaltic rocks beyond the main outcrop area of these provinces include a basalt plug at Stockmans Hill near Einasleigh (dated at 28.7 Ma—the oldest in the region), nephelinite lava (11 Ma) near Greenvale, and basalt lava preserved in mesas near Carpentaria Downs (7.9 Ma) (Withnall & Grimes, 1995).

The McBride Basalt Province occurs in the eastern part of the Etheridge Shire and extends beyond it to the east. It was studied by Griffin & McDougall (1975), Atkinson et al, (1976) and Stephenson & Griffin (1976), who recognised 164 volcanic centres, including remnant plugs as well as lava and cinder cones and craters. The province is a large basaltic dome about 80 km across and nearly 500 m thick. The oldest rocks of the group are undifferentiated basalts which comprise more than half of the province and have ages between 2.7 and 0.5 Ma. Younger Quaternary basalts can be recognised on the basis of their more rugged surface morphology, and ten different groups of flows have been recognised, ranging in age from 870 000 years (Middle Mountain Basalt) to only 7000 years (Kinrara

Basalt — Cohen et al, 2017.), the latter being partly preserved within the Kinrara National Park, and outside the Etheridge Geopark Shire.

The most extensive unit, the Undara Basalt, covers 1550 km<sup>2</sup> and is dated by K–Ar and Ar–Ar at 190 000 years (Griffin & McDougall, 1975; Cohen et al, 2017). It hosts the area’s famous lava tubes, which are undoubtedly the region’s most significant geological site from a geotourism point-of-view. The volume of lava erupted from Undara Crater is estimated at 23 km<sup>3</sup> (Atkinson & Atkinson, 1995). Most of the lava was of the fluid pahoehoe type. Some of it found its way into watercourses, mainly to the north and north-west. Once channelled, the lava hardened on the top and sides to form insulated tubes which allowed it to flow long distances so that it forms one of the world's longest lava flow from a single volcano (Stephenson et al, 1998; Cohen et al, 2017). Lava flowed 160 km down the ancestral Elizabeth Creek into the Einasleigh River, and another branch 90 km long entered the Lynd River. The Undara flow along the Elizabeth Creek branch is notable for a feature called “The Wall” – a ridge 40 km long, typically 200 m wide, and up to 20 m above the surrounding lava level. “The Wall” has been interpreted as a lava inflation feature, and as a terrestrial analogue to sinuous ridges on Mars and the Moon (Whitehead, 2010, Atkinson, 2010; Atkinson and Atkinson, 1995; Stephenson et al, 1998).

The Chudleigh Province straddling the southern boundary of the Etheridge Shire has at least 46 volcanic centres over ~2000 km<sup>2</sup> (Stephenson 1989; Stephenson, Griffin & Sutherland 1980). The province is characterised by broad, partly dissected lava plains with numerous pyroclastic cones, some composite cones and several lava shields. Ages range from Miocene to Pleistocene and are 8.0–0.26 Ma. Several of the younger volcanoes in the region have been dated at 250–700 ka (Stephenson & Griffin 1976). A flow from one of the volcanoes, Barkers Crater, can be traced along the Einasleigh River for at least 160 km and has been dated at 265 ka (Withnall & Grimes 1995). It thus rivals the Undara Basalt flow in length. At the junction of the Einasleigh and Copperfield rivers, it is cut by the Copperfield River to form the Copperfield Gorge. Another undated flow can be traced intermittently along the Copperfield River to just north of Kidston. Upper mantle inclusions within the basalt have been fished for gemstones—peridot at Chudleigh Park and anorthoclase at Moonstone Hill.

Unlike other areas of Cenozoic volcanism in eastern Australia, the basaltic volcanism of the region does not appear to be related to hot-spot activity, because the volcanism has remained stationary relative to the Australian Plate instead of showing an apparent migration as the plate has moved north. They also do not show magmatic evolution to more silica-rich rocks like rhyolite, indicating that they were not related to long-lived magma chambers in the crust, the magmas rising directly from their sources in the mantle. A possible explanation for these observations is that the McBride, Chudleigh and Atherton Subprovinces are located close to the intersection of major tectonic blocks, and any



readjustment of these blocks as the plate moved might have caused opening of deep crust-mantle fractures resulting in the tapping of deeply sourced basaltic magmas.

## References

- Atkinson, A., 1992. The Undara Lava Tube System, north Queensland, Australia: updated data and notes on mode of formation and possible lunar analogue. *Proceedings 6th International Symposium on Vulcanospeleology*, 95–120. <http://www.vulcanospeleology.org/sym06/ISV6x21.pdf>
- Atkinson, A., 2010. Undara Volcano, north Queensland, Australia and its lava field – lava caves, depressions and The Wall – a possible lunar analogue. *Proceedings 14th International Symposium on Vulcanospeleology*, 19-44. <http://www.vulcanospeleology.org/sym14/papers/Atkinson.pdf>
- Atkinson, A. & Atkinson, V., 1995: Undara Volcano and its Lava Tubes. Vernon & Anne Atkinson (self-published), Brisbane.
- Atkinson, A., Griffin, T.J. & Stephenson, P.J., 1976: A major lava tube system from the Undara volcano, north Queensland. *Bulletin of Volcanologie*, 39, 266–93.
- Baker, M.J., Crawford, A.J. & Withnall, I.W. 2010: Geochemical, Sm-Nd isotopic characteristics and petrogenesis of Paleoproterozoic mafic rocks from the Georgetown Inlier, north Queensland: Implications for relationship with the Broken Hill and Mount Isa Eastern Succession. *Precambrian Research*, 17 (1-2,) 39-54
- Black, L.P. & McCulloch, M.T. 1990. Isotopic evidence for the dependence of recurrent felsic magmatism on new crust formation. *Geochimica et Cosmochimica Acta*, 54, pp49-60.
- Black, L.P., Gregory, P., Withnall, I.W. & Bain, J.H.C. 1998. U-Pb zircon age for the Etheridge Group, Georgetown region, north Queensland: implications for relationship with the Broken Hill and Mt Isa sequences. *Australian Journal of Earth Sciences*, 45, pp925-935.
- Black, L.P., Withnall, I.W., Gregory, P., Oversby, B.S. & Bain, J.H.C. 2005. U-Pb zircon ages from leucogneiss in the Etheridge Group and their significance for the early history of the Georgetown region, north Queensland. *Australian Journal of Earth Sciences*, 52, pp385-401.
- Bultitude, R.J., Garrad, P.D., Donchak, P.J.T., Domagala, J., Champion, D.C., Rees, I.D., Mackenzie, D.E., Wellman, P., Knutson, J., Fanning, C.M., Fordham, B.G., Grimes, K.G., Oversby, B.S., Rienks, I.P., Stephenson, P.J., Chappell, B.W., Pain, C.F., Wilford, J.R., Rigby, J.F., & Woodbury, M.J. 1997: Cairns Region. In: Bain, J.H.C. & Draper, J.J. (Editors) *North Queensland Geology*. Australian Geological Survey Organisation Bulletin 240/Queensland Geology 9, pp 225-325.
- Champion, D.A. & Bultitude, R.J., 2013: Chapter 6 Kennedy Igneous Association. In *Jell, P.A. (Editor): Geology of Queensland*. Department of Natural Resources and Mines, Queensland, 473-513.
- Cohen, B.E., Mark, D.F., Fallon, S.J., & Stephenson, P.J. (2017) Holocene-Neogene volcanism in northeastern Australia: chronology and eruption history. *Quaternary Geochronology*, 39, 79-91. (doi:10.1016/j.quageo.2017.01.003)

- Cook, A.G. & Jell, J.S., 2013: Chapter 8 Paleogene and Neogene. In Jell, P.A. (Editor): Geology of Queensland. Department of Natural Resources and Mines, Queensland, 577-652.
- Cook, A.G., Bryan, S.E. & Draper, J.J., 2013: Chapter 7 Post-orogenic Mesozoic basins and magmatism. In Jell, P.A. (Editor): Geology of Queensland. Department of Natural Resources and Mines, Queensland, 515-574.
- Fergusson, C.L., Henderson, R.A., Withnall, I.W. & Fanning, C.M. 2007. Structural history of the Greenvale Province, north Queensland: Early Palaeozoic extension and convergence on the Pacific margin of Gondwana. Australian Journal of Earth Sciences 54, 573-595.
- Griffin, T.J. & McDougall, I., 1975: Geochronology of the Cainozoic McBride volcanic province, northern Queensland. Journal of the Geological Society of Australia, 22, 387-397.
- Henderson, R. A., Innes, B. M., Fergusson, C. L., Crawford A. J., & Withnall I. W. 2011: Collisional accretion of a Late Ordovician oceanic island arc, northern Tasman Orogenic Zone, Australia. Australian Journal of Earth Sciences, 58, 1-19.
- Henderson, R.A. 1987. An oblique subduction and transform faulting model for the evolution of the Broken River Province, northern Tasman Orogenic Zone. Australian Journal of Earth Science 34, 237-249.
- Henderson, R.A., Donchak, P.J.T. & Withnall, I.W., 2013: Chapter 4 Mossman Orogen. In Jell, P.A. (Editor): Geology of Queensland. Department of Natural Resources and Mines, Queensland, 225-304.
- Neumann N.L. & Kositcin N. 2011: New SHRIMP U-Pb zircon ages from north Queensland 2007 – 2010. Geoscience Australia Record 2011/38.
- Oversby, B.S. & Mackenzie, D.E.M., 1995: Geology of late Palaeozoic ignimbrites and associated rocks in the Georgetown Region, northeastern Queensland. Australian Geological Survey Organisation, Record 1994/20.
- Price, G., 2013: Chapter 9 Quaternary. In Jell, P.A. (Editor): Geology of Queensland. Department of Natural Resources and Mines, Queensland, 653-683.
- Smart, J., Grimes, K.G., Douth, H.F. & Pinchin, J., 1980: The Carpentaria and Karumba basins, north Queensland. Bureau of Mineral Resources Australia, Bulletin 202.
- Stephenson, P.J. & Griffin, T.J., 1976: Some long basaltic lava flows in north Queensland. In Johnson, R.W. (Editor): Intraplate Volcanism in Eastern Australia and New Zealand. Cambridge University Press, Cambridge, 41-51.
- Stephenson, P.J., Burch-Johnson, A.T., Stanton, D., Whitehead, P.W., 1998. Three long lava flows in north Queensland. Journal of Geophysical Research, 103, 27359-27370.
- Whitehead, P.W., 2010: The regional context of the McBride Basalt Province and the formation of the Undara lava flows, tubes, rises and depressions. Proceedings 14th International Symposium on Vulcanospeleology, 19-44.  
<http://www.vulcanospeleology.org/sym14/papers/Whitehead.pdf>
- Withnall, I.W., 1996: Stratigraphy, structure and metamorphism of the Proterozoic Etheridge and Langlovale Groups, Georgetown region, north Queensland. Australian Geological Survey Organisation, Record 1996/15.

- Withnall, I.W. & Grimes, K.G., 1995: Einasleigh, Queensland 1:250 000 Geological Series (2nd edition). Geological Survey of Queensland, Explanatory Notes SE55 9.
- Withnall, I.W. & Henderson, R.A., 2012: Accretion on the long-lived continental margin of north-eastern Australia. *Episodes*, 35 (1), 166-176.
- Withnall, I.W. & Hutton, L.J., 2013: Chapter 2 North Australian Craton. In Jell, P.A. (Editor): *Geology of Queensland*. Department of Natural Resources and Mines, Queensland, 23-112.
- Withnall, I.W., 1989: Precambrian and Palaeozoic Geology of the southeastern Georgetown Inlier. Queensland Department of Mines, Report, 2, pp1-102.
- Withnall, I.W., Black, L.P. & Harvey, K.J., 1991: Geology and geochronology of the Balcooma area part of an early Palaeozoic magmatic belt in north Queensland. *Australian Journal of Earth Sciences* 38, 15 29.
- Withnall, I.W., Mackenzie, D.E., Denaro, T.J., Bain, J.H.C., Oversby, B.S., Knutson, J., Donchak, P.J.T., Champion, D.C., Wellman, P., Cruikshank, B.I., Sun, S.S. & Pain, C.F. 1997. Georgetown Region. In Bain, J.H.C. & Draper, J.J. (Editors) *North Queensland Geology*. Australian Geological Survey Organisation Bulletin 240/Queensland Geology 9, pp19-116.

**APPENDIX 6**  
**Ecotourism Australia members based in Far North Queensland**  
**(not marine related)**

Note: ROC designates 'Respect our Culture' certified, AECO designates Advanced Ecotourism, ECO designates Ecotourism and NT designates Nature Tourism. And CA= Climate Action

Business Name	Suburb/Town	Product Type	
BIG4 Atherton Woodlands Tourist Park	Atherton	Accommodation	NT
Bedarra Island Resort	Bedarra	Accommodation	AECO CA
The Cairns Turtle Rehabilitation Centre Inc	Kewarra Beach	Attraction & Tour	AECO
Cape York Motorcycle Adventures	Clifton Beach	Tour	ECO
Cobbold Gorge Tours	Forsayth	Tour	AECO
Mamu Tropical Skywalk	Innisfail	Attraction	ECO
Mandingalbay Yidinji Eco Cultural Tours	East Trinity	Tour	ROC & NT
Mungalla Aboriginal Tours	Allingham	Tour	ROC & NT
New World Tour Service	Manunda	Tour	ECO
Hidden Valley Cabins	Hidden Valley	Accommodation	AECO
Romantic Retreats	Babinda	Accommodation	AECO
Jungle Tours and Trekking	Cairns	Tour	NT
Daintree Wilderness Lodge	Cape Tribulation	Accommodation	AECO
Reef & Rainforest Connections	Port Douglas	Tour	AECO
Daintree River Cruise Centre	Daintree	Tour	AECO/ROC
Daintree Discovery Centre	Daintree	Attraction	AECO ROC
Cooper Creek Wilderness Daintree Rainforest Tours	Mossman	Tour	AECO ROC
Down Under Tours (Australia) Pty Ltd	Portsmith	Tour	AECO
Undara Experience	via Mt Surprise	Accommodation	AECO

Wildlife Habitat	Port Douglas	Attraction	AECO
Hartley's Crocodile Adventures	Wangetti	Attraction	ECO
Daintree Specialised Tours	Wonga Beach	Tour	ECO
Canopy Rainforest Tree Houses & Wildlife Sanctuary	Tarzali	Accommodation	AECO
Quicksilver Connections	Port Douglas	Tour	AECO
Silky Oaks Lodge & Healing Waters Spa	Mossman	Accommodation	AECO
Skyrail Rainforest Cableway	Smithfield	Attraction	AECO
Foaming Fury	Cairns	Tour	ECO
Heli Charters- now called Nautilus Aviation	Cairns Airport	Tour	AECO
Doki Doki Tours	Cairns	Tour	ECO
Jungle Adventures Cape Trib	Cape Tribulation	Tour	AECO
Mossman Gorge Centre	Mossman	Tour	ECO/ROC
Paronella Park	Mena Creek	Attraction	AECO
Lady Douglas River Cruises	Mowbray	Tour	ECO
Raging Thunder	Cairns	Tour	ECO
Ferntree Rainforest Lodge	Cape Tribulation	Accommodation	ECO
RnR White Water Rafting	Cairns	Tour	ECO
Safari Tours	Port Douglas	Tour	AECO
Savannah Guides	Cairns	Tour	ROC
Thala Beach Lodge	Oak Beach, via Port Douglas	Accommodation	AECO
Tjapukai Aboriginal Cultural Park	Smithfield	Tour	AECO
The Bat Hospital Visitor Centre	Atherton	Attraction	AECO
Tony's Tropical Tours	Port Douglas	Tour	AECO