Geotrail Development within the Ku-ring-gai GeoRegion

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What makes a Geotrail?

- A journey linking destinations and/or geosites.
- Universal appeal – does not compete or impact land management/access.
- Easy to establish.
- Cost-effective means of enhancing regional development.
- Constructed around routes currently used by tourists.
- Geotrails should form logical journeys linking accommodation destinations where appropriate.
- Meld the geological heritage features of a region with a cohesive story.
- Incorporates and packages up the natural and cultural heritage.

Abiotic, Biotic, Cultural Elements of Geotourism/Geotrails

- Geotrails not only link natural landscapes, wilderness and protected areas, but also include human modified environments like quarries, road sections and urban settings.

- Geotourism argues that to fully understand and appreciate the environment visitors have a desire to learn about the Abiotic (non-living) elements of climate, landscape, geology and soils first, as these determine the Biotic (living) elements of animals and plants.

- These components then determine the cultural landscape of how people have lived in the area in the past, as well as how they live there today. These become the key **ABC (Abiotic, Biotic, Cultural) elements of geotourism/geotrails,** which delivers a cohesive approach to interpreting natural areas.

Benefits

- Geotourism is the economic driver in all aspects of a region's tourism destination sites and products.
- It is considered a key 'engine' of regional development.
- It fosters conservation, community growth and economic development that involves local communities.
- It creates new businesses and jobs and generates financial benefits to regional communities.

ABOVE: Visitors to West Head Lookout with Barrenjoey Headland in the distance

What makes a Geotrail?

- Showcase accessible and well-known ‘visitor friendly’ geological locations.
- Include many unique landscapes for tourists to enjoy.
- Enable visitors to understand the relationship to flora and fauna as well as Aboriginal culture.
- Enrich their visits to the GeoRegion.

Geotrail development within the Ku-ring-gai GeoRegion (KGR)

- Will further foster tourism on the geology and landscapes which shape the character of the region.
- The geotrails are being developed in a working partnership with:
  - ❖ NSW National Parks and Wildlife Service; and
  - ❖ three local government agencies - Hornsby, Ku-ring-gai, and Northern Beaches.
- Showcase accessible and well-known ‘visitor friendly’ geological locations with many unique landscapes for tourists to enjoy.
- Enabling visitors to understand the relationship to flora and fauna, Aboriginal culture, thus enriching their visits to the KGR GeoRegion.

Geosites of the Ku-ring-gai GeoRegion

Long Reef Geotrail
Northern Beaches Council

The Northern Beaches Council agreed that a walk around the perimeter of Long Reef Headland would made an ideal geotrail.

- ✓ it is safer than most coast sections;
- ✓ the area was already popular;
- ✓ already visited by many school children and others;
- ✓ it is very well known for its inter-tidal ecology - the Coastal Environment Centre;
- ✓ will cover about 17 geosites around the base of the headland;
- ✓ will include interpretive data about the geology of the headland that contain geological features of international interest; and
- ✓ the walk already existed.

LEFT: Plant fossils along Long Reef Platform

Long Reef Platform – very popular with visitors

Long Reef Headland Geotrail
What's to see!

- With the help of QR Codes, it will 'read the rock record' and develop stories about the landscape, see the current version of the geologic history of the headland and reveal the points of evidence.

- Sites include volcanic dykes, significant trace fossil burrows including the discovery site of the fossil *labyrinthodont*.

- It also shows several points of human history such as Aboriginal land use, fishing, shipwrecks, copper staining at the legendary mine, and conservation.

- At the southern end of the geotrail, Long Reef Beach is fronting Dee Why Lagoon and is an example of Ice Age legacy and active coastal change.

- A narrated video with drone footage explains these concepts.

Significant trace fossil burrows - discovery site of fossil *labyrinthodont*.

Long Reef Platform

Large boulders of ironstone fallen from the top of the cliff, honey-combed platform showing traces of bedding

Ku-ring-gai Municipal Council (KMC) Geotrails

The Council already have a number of trails in the Hawkesbury Sandstone hill slopes and Wianamatta shale caps that now need a geology/landscape story to become a cohesive geotrail.

- The proposed Brown's Field Geotrail in Wahroonga covers 16 possible sites which are easily accessible and are interconnected.
- The existing Sheldon Forest walking track just south of the Turramurra shops is another popular walking track.
- By adding a story of the geology and landscapes, it would add more valued interest to this track.

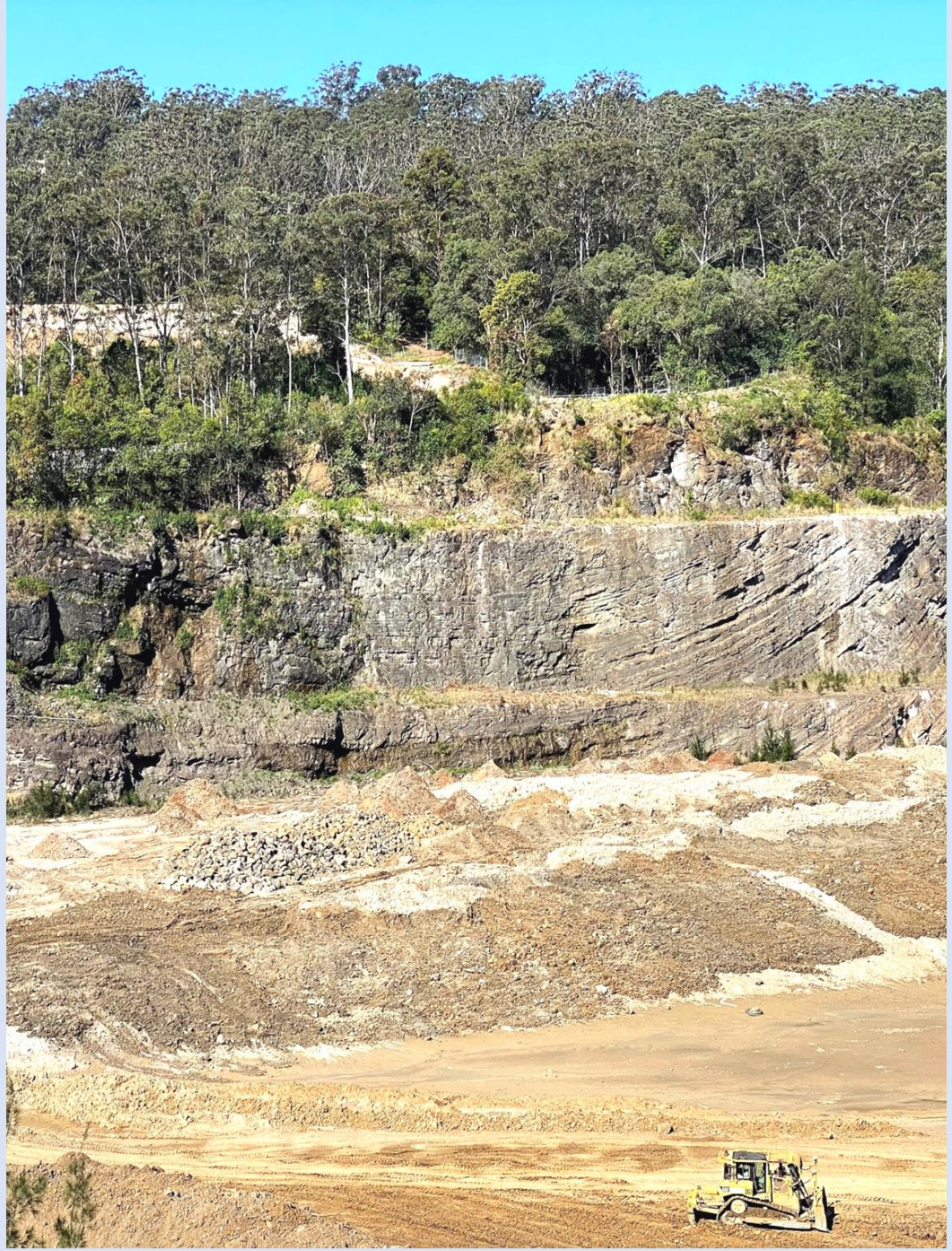
KMC Browns Field Geotrail - Fox Valley Diatreme

- Showcases highly weathered outcrops of fine to medium grained, quartz-poor fragmental volcanic rocks interlayered with much finer grained bedded rocks of possible crater-lake sediments.
- Entrained Permo-Triassic wall rock clasts are common with outcrops of intensely weathered volcanic breccia showing lithological evidence such as those observed in Cooper Crescent.
- Fine grained bedded clastic rocks are sliced up by a steeply dipping fault zone, with blocks of Hawkesbury Sandstone.
- The rainforest on the Cooper Crescent outcrop is rich and diverse and includes some very uncommon species for this botanical environment.

KMC Sheldon Forest Geotrail

- By adding a story of geology and landscapes, it would add more valued interest to this track as it meanders through the beautiful bushland, along ridge tops, through open forest on the hill slopes, and down to the creek side.

- It is of high conservation status because it contains some of the last remnants of the endangered ecological communities *Sydney Turpentine Ironbark Forest* and *Blue Gum High Forest*



Hornsby Council GeoTrails

Hornsby Council is fortunate to have the Hornsby diatreme quarry of international significance as it exposes a large volcanic neck rocks extruding through Sydney Basin sediments.

- Volcanic features visible at many scales, with post-volcanic features related to magma and gas extrusion at various depths, and different host rocks.
- Combining the Hornsby diatreme with the nearby Thornleigh diatreme accessed along an existing walking track, they could form part of a future Sydney Volcanic Geotrail.

ABOVE: Tessellated pavement, West Head

NPWS - Ku-ring-gai Chase National Park

- The Ku-ring-gai Chase National Park (KCNP) suggested areas around West Head Lookout would make a good trail to illustrate the Hawkesbury Sandstone plateau.

- KCNP is regularly traversed annually by tens of thousands of visitors but would benefit from a higher level of interpretive information.

- A geotrail package would illustrate the nature of the:
    - geology,
    - landscape,
    - soils,
    - vegetation, and
    - Aboriginal heritage would significantly enhance the overall visitor experience.

NPWS - West Head Geotrail

LEFT: Several sandstone platform sites show extensive tessellated pavement

BELOW: numerous vegetation islands and excellent Aboriginal rock engravings

Concluding Remarks

- Geotrails have enormous potential as vehicles to deliver sustainable benefits to the Ku-ring-gai GeoRegion (KGR) and to other GeoRegions.
- Community interest in developing geotrails fosters increased visitation to the GeoRegion and thus over time initiate product development, job generation, and wealth creation.
- The holistic geotourism approach is designed to maximise tourism benefits for a destination community, minimise negative impacts, and to build a sustainable tourism strategy that celebrates and builds on sense of place.
- The KGR project team has identified numerous interesting geosites/geotrails that have a <u>cohesive geological/landscape story</u> in places that were <u>already known</u>, <u>easily and safely accessed</u>, and <u>frequently visited</u>.