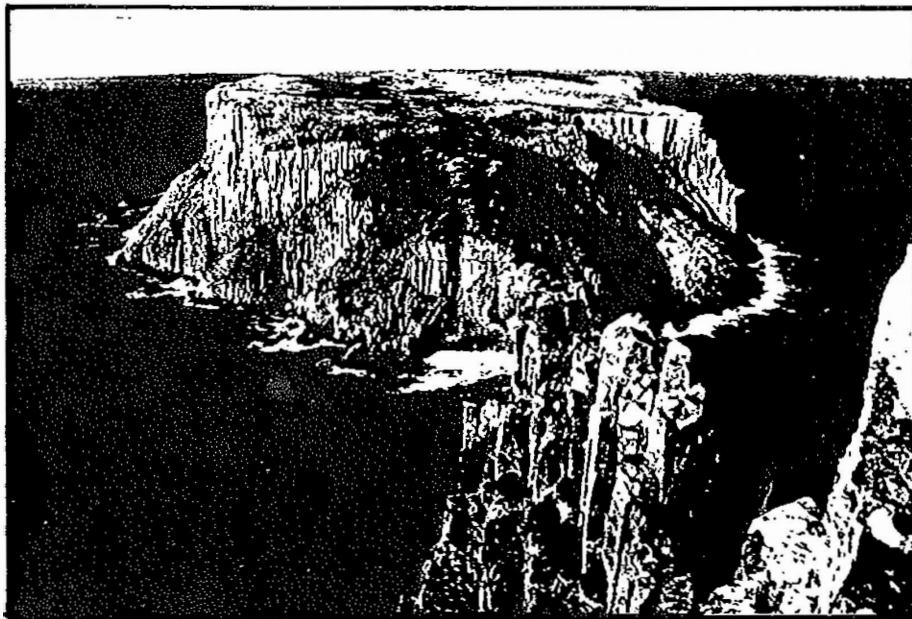


**A reconnaissance inventory
of
sites of geoconservation significance
on
Tasmanian islands**



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Earth Science Section



**A report for the Parks and Wildlife Service, Tasmania
and the Australian Heritage Commission**

March 1996

Flinders Island and the Furneaux Group

Summary geologic history

The following brief account of the geological evolution of Flinders Island and the Furneaux Group is presented to provide a context for the documented geoheritage sites, as well as facilitate a better understanding of this aspect of the area's natural history. Much of the following descriptive geological history is summarised from Cocker (1977), Reid (1987) and Vicary (1987), supplemented by observations by the author. Kershaw and Sutherland (1972) have undertaken the only extensive geomorphological work, and Pinkard and Richley (1984) include a brief, basic description of the soils of Flinders Island.

In broad terms, the geology of the Furneaux Group can be characterised as a Palaeozoic basement consisting of folded quartzites and argillites (the Mathinna Beds) intruded by granitoid plutons, all overlain unconformably by a superficial layer of Cainozoic sediments (Vicary 1987).

Palaeozoic

A thick, monotonous sequence of sandy, silty and muddy sediments - the Mathinna Beds - were deposited in a deep marine continental slope environment throughout what is now east and northeast Tasmania during Late Ordovician to Middle Devonian times. The coarser beds are turbidites (deposited by density currents) whereas the fine-grained beds represent periods of quiet water deposition (Sharples 1994b). In the Furneaux Group such rocks occur on central and southern Flinders (although outcrop is poor), northeast Cape Barren, Clarke and Badger Islands (McClenaghan & Calver 1994). McPowell (1990) considers it is possible that much of the succession (in eastern Tasmania, at least) could have been deposited very rapidly, over as little as 20 million years, with uplift and folding following immediately afterwards.

Deposition of the Mathinna Beds ended with the onset of a period of folding and uplift throughout eastern Australia - the Tabberabberan Orogeny - and were subsequently intruded by large volumes of granitic magma. The Mathinna Beds have been regionally metamorphosed to a low grade, with contact metamorphism occurring due to heating immediately adjacent to granitoid intrusions. Contact hornfels has been noted from 200 metres to 2 km from the contacts (Cocker 1980).

Granitoids (largely granites and granodiorite) comprise about 70% of the Palaeozoic basement of the Furneaux Group islands (Reid 1989) and were first noted in the Furneaux islands by Bass and Flinders' 1798 expedition (Giblin 1928). Several granites in the Furneaux Group have been radiometrically dated giving emplacement ages around 370 million years (Reid 1987). The granites of the Furneaux Group have been divided into some 6 compositional suites (Reid 1989), some unique to the Furneaux islands and some previously recognised in northeast Tasmania. However the granites of the Furneaux Group also have chemical affinities with islands to the north indicating that a basement terrane extends along the Bassian Rise from northeast Tasmania, through the Furneaux islands and islands to the north (Kent, Hogan and Curtis Groups) to Wilsons Promontory (White & Chappell 1988).

Cocker (1977,1980) considers that individual plutons were probably emplaced along fault-controlled margins by roof-lifting. Most of the granitoids have been emplaced to relatively high levels in the crust, probably as little as 5 to 7 km (Reid 1987). Some granites have a pervasive foliation, parallel to the main tectonic foliation in the country rock, indicating a forceful mode of emplacement (diapirism?), in other cases (where extensive stoping and multiple intrusion has occurred) a more passive style of emplacement is indicated (op. cit.).

Textures and contact relationships are spectacularly exposed in some areas. Well exposed variable granite textures, abundant mineralogical banding, dykes of tourmaline-bearing

pegmatites and aplites occur at Killiecrankie Bay (Groves 1972, Vicary 1987). Synplutonic intrusive features are exposed at Settlement Point and Holts Point, where a hybrid rock and various mixing textures are developed (Reid 1987). A porphyry dyke exposed near Long Beach, on Cape Barren Island, displays intense zoning, from aplite edges to a cumulate, megacrystic core (op. cit.). Contacts between granites and Mathinna Beds are well exposed on Clarke and Badger Islands. On Clarke Island, stope Mathinna Bed xenoliths occur in the granite near Foam Point and a contact migmatite is exposed at South Head (Cocker 1977).

Mesozoic

The Furneaux granites and Mathinna Beds are intruded by widespread dolerite dykes of pre-Tertiary age (Cocker 1977, 1980). Most of the dykes occur between Cape Barren and Flinders Island (op. cit.), however they have been noted as far north as the Hogan Group (Hope et al 1973). In the granitoid rocks the dolerite dykes tend to occupy tensional fractures (Cocker 1980).

The Bass and Gippsland Basins, which lie either side of the Bassian Rise, formed by continental rifting, largely during the Early Cretaceous. This was followed by thermal subsidence through the Late Cretaceous and Cainozoic, during which a 4.5 to 6 km thick sedimentary pile accumulated (Etheridge 1988, Abele 1988). The basins formed during the early stages of separation of Australia from Antarctica and the opening of the Tasman Sea to the east (op. cit.). Cross-faulting on the Bassian Rise probably bounds the Furneaux islands (Sutherland 1973). A major fault, related to extension in the Bass Basin, occurs between Flinders and Cape Barren Islands, with Flinders Island having moved 25 km southwest relative Cape Barren Island. In the Bass Basin, basal sediments are predominantly non-marine (floodplain, lacustrine and swamp deposits), with marine deposition occurring since early Tertiary times (Morrison & Davidson 1989).

Uplift of the Flinders Island block, by vertical faulting, occurred during the Late Mesozoic, accompanied by widespread terrestrial and coastal erosion (Sutherland & Kershaw 1971).

Tertiary

The Bassian granite massifs have formed a nucleus for sediment deposition since at least mid Tertiary times. The Tertiary rocks of Flinders Island (similar rocks occur on Cape Barren and some of the other, larger islands) consist of sandy and calcareous sediments, with interbedded basaltic volcanics in some areas (Everard 1950). These are generally poorly exposed, except in coastal areas. Alternations of predominantly terrestrial or marine erosion and deposition were related to fluctuating sea levels (Sutherland & Kershaw 1971).

Non-marine gravels, sands, clays and lignites, which include tin-bearing deposits, occur on Flinders Island, the lower levels probably deposited in coastal drainage and pondage deposits (Sutherland & Kershaw 1971). Carbonaceous and pyritic sediments deposited in a lagoonal environment during early Tertiary times occur in the Rooks River and other nearby valleys on Cape Barren Island (Harris 1965, in Cocker 1977).

Basaltic flows from several centres occur on Flinders Island (eg. north of Ranga), generally located along faults or granite contacts (Vicary 1987, McClenaghan & Calver 1994). Johnston (1879) noted "numerous trunks of fossil wood in a siliceous state" in bedded basaltic tuff near Badgers Corner (Petrifaction Bay). This occurrence has not been relocated, although silcrete (greybilly?) occurs in the area, and appears to have been destroyed by collecting. Basalt is also exposed in a small tidal platform near Lascars Point (Cape Barren Island), overlain by calcareous sands of possibly Miocene age (Cocker 1977). Laterite soils have been mapped in several areas on Flinders Island (Dimmock 1957), however true laterisation may only be present on basalt near Ranga (Sutherland & Kershaw 1971).

Calcareous marine sediments occur on western Cape Barren Island and around the eastern shore of Preservation Island (Quilty 1971). These calcareous sandstones and limestones are

considered to have been deposited in very shallow water under subtropical to tropical conditions during Early - Middle Miocene times (op. cit.). The sediments occur mainly up to 15m above present sea level, however they have been recorded up to 70m above sea level on Cape Barren Island (Blake 1935, in Quilty 1971). Younger, Middle Pliocene (and younger) calcareous (shell) beds, sands and gravels occur under the eastern plains and foothills of Flinders Island, deposited in a shallow, coastal environment after another marine transgression (Sutherland & Kershaw 1971, Harris 1965, in Cocker 1980). Fossil whale bones and sharks teeth, apparently of Pliocene age, have been recovered (probably from marine limestone) from the sea floor just off the east coast of Flinders Island (Caruso 1979, Holland 1979).

Quaternary

During an early Quaternary marine regression, when low glacial sea levels exposed the continental shelf, calcareous dunes formed along the western and northwestern coastline of Flinders Island (with source material partly from erosion of earlier calcareous deposits), with siliceous dunes forming in the east (Sutherland & Kershaw 1971). The calcareous dunes have subsequently been subject to consolidation and secondary cementation, forming aeolianite. The remains of several linear, east-west dunes (now limestone) outcrop in a currently active sandblow at Palana; some are up to 20m high (Orchiston & Glenie 1978). Mature soil profiles developed on the calcareous dunes, with calcareous B horizons and siliceous A horizons. Siliceous residues, blown from such soils, may have provided the basis for the more recent dune fields (Sutherland & Kershaw 1971). Similar deposits veneer granite bedrock on Prime Seal Island and some islands in Franklin Sound. The oldest erosional landforms recognisable on the aeolianite date from the Last Interglacial indicating that the rock is no younger than Middle Pleistocene (Kiernan 1992).

Palaeosol formation has occurred on the older calcareous dunes, after stabilisation. In places a thin terra rosa remnant is present, associated with rhizomorphs and duricrusts (eg. Settlement Point and Fotheringate Bay, Flinders Island). Fossiliferous "calcareous earth" and "petrified wood" (rhizomorphs?) were noted on Preservation Island by Bass and Flinders' 1798 expedition (Giblin 1928).

On Flinders Island, shell-rich littoral and shallow marine deposits occur up to 20m (but generally less than 5m) above present sea level with possible erosional features associated with old Pleistocene shorelines occurring to possibly more than 70m above present sea level (Kershaw & Sutherland 1972, Sutherland & Kershaw 1971). Possible raised shorelines also occur on many headlands on Cape Barren and Clarke Islands (Cocker 1977). Neotectonic uplift (up to perhaps 20m) of the Bass Strait islands occurred during the early-middle Pleistocene, however it appears to have terminated by the Last Interglacial (Murray-Wallace & Goede 1995). Crustal movements which uplifted the east and south Gippsland highlands were also most pronounced during late Pliocene to early Pleistocene times (Abele 1988).

Extensive areas of linear dune systems with a westerly orientation occur on Flinders (near Memana), Cape Barren (eg. in the far northeast) and Clarke Islands, considered to represent a continuum of dune formation over several Pleistocene interglacial stages, but reflecting the influence of severe westerly winds during glacials (Kershaw & Sutherland 1972, Sutherland & Kershaw 1971, Cocker 1977, Harris & Bosworth 1980). On Flinders Island such dunes traverse the eastern coastal plain and interfinger with early (Last Interglacial?) coastal features (eg. near Cameron Inlet), and a similar relationship may occur on northeast Cape Barren Island. Similar Pleistocene longitudinal dunes which occur in northeastern Tasmania are considered to resemble desert dunes (Bowden 1983). Elongate parabolic dunes and lunettes, with westerly wind vectors, also occur, on eastern Flinders, east-central Cape Barren and north-central Clarke Islands (Kershaw & Sutherland 1972, Cocker 1980). Old dunes identified beneath 37-46 metres of water, northeast of Flinders Island, probably formed on the floor of Bass Strait during the late Last Glacial period, when sea level was low (Jennings 1959b, Colhoun 1975).

Early lagoon development on Flinders Island was associated with the extensive Pleistocene dune building. Thin lagoonal limestone deposits occur north of Lady Barron and in the Wingaroo area (Sutherland & Kershaw 1971).

Small areas of alluvial grit and clay flank the Palaeozoic basement rocks of the Strzelecki and Darling massifs on Flinders Island (Sutherland & Kershaw 1971). On Cape Barren Island, most streams also have only limited accumulations of alluvial material, except for the extensive alluvial sediments in the Modder River valley and alluvial fans south of Hogans Hill, which disconformably overlie Tertiary sediments in some areas (Cocker 1977, 1980). Development of stream valleys, the major erosional landforms in the highlands, has been controlled by joint systems, with drainage patterns varying from rectangular to parallel (Cocker 1977).

Post Last Glacial parabolic dunes occur inland from both the east and west coasts of Flinders Island. They are generally now stable, however at least two periods of active movement have occurred during the Holocene, and active blowing is currently extensive near Palana (Kershaw & Sutherland 1972). The orientation of contemporary parabolic dunes reflects the predominance of westerly winds, however early Holocene parabolic dunes indicate an easterly wind regime (Kershaw & Sutherland 1972, Sutherland & Kershaw 1971).

Subfossil sites are common on the islands of Bass Strait, being usually located in wind-eroded sand dune formations (blowouts), such as near Palana on Flinders Island. They contain both mammalian and avian remains (Hope 1973, Sutherland & Kershaw 1970, Brothers et al 1991). A cave near Ranga also contains an important bone-bearing deposit, some 8000 years BP in age (Hope 1969). Hope (1973) discusses the fauna of many of these deposits and biogeography of the mammals concerned in relation to the disappearance of a land bridge between Tasmania and Victoria.

The post Last Glacial marine transgression attained its maximum about 6000 years ago, with long term shoreline progradation on eastern Flinders Island probably then occurring without major interruptions, as in northwest Tasmania. Flinders Island was isolated from mainland Australia about 13,000 years BP and from Tasmania about 8000 years BP (Orchiston, in Ladd et al 1992). Many of the islands of the Furneaux Group are separated from each other by quite shallow water, so they would not have been isolated from each other until almost 6000 years ago.

Building of the extensive eastern Flinders Island parallel dune - coastal barrier system, and associated coastal lagoons and inlets, followed the establishment of present sea level (Sutherland & Kershaw 1971). The east coast has consisted of two embayments in the past which have gradually been reduced to the present alignment by barrier formation (south of Sellars Point) and shoreline progradation (Kershaw & Sutherland 1972). Extensive lagoon formation has occurred on the wide eastern coastal plain. Many inland lagoons, associated with impounding of drainage by dune formation, formed during the early Holocene, probably a period of increased rainfall, with subsequent lunette development (Sutherland & Kershaw 1971). Encroachment of the Hogans Lagoon lunette onto older beach ridges suggests that lunette formation (and the associated dryer climatic period) were probably later than the post-glacial sea level rise (op. cit.). Lunette (or source-bordering dune) formation may be continuing along currently-dry lagoons (eg. Sellars Lagoon).

Eastern Cape Barren Island hosts many lagoons. Many tend to occupy swales between longitudinal or younger coastal parallel dunes (lunettes or source-bordering dunes have developed east of some of the latter type). Several lagoons may have an entirely aeolian origin, for example the circular Crystal Lagoon and the lagoon east of Hogans Hill, around which a high lunette has developed. Others (eg. those behind Crows Beach) are impounded by a high beach berm, but now seem semi-permanent features.

Spectacular coastal karst features have developed in aeolian calcarenite in several areas along the west coast of Flinders Island (Kiernan 1992), and similar features occur on several of the other islands. Deep intertidal notches are the most spectacular feature, however broad shore platforms with solution pans, stacks with well-developed and rugged karren, caves formed by emerging groundwater and marine erosion and alveolar weathering of cliffs are also present (op. cit.). Inland karst features also occur in several limestone areas, including small blind valleys, sinkholes and rundkarren (Kiernan 1995). Dating of a speleothem from a cave at Fotheringate Bay has indicated that the cavity in which it occurs was in existence during the late Last Glacial stage and was invaded by the sea during the Holocene (Kiernan 1992).

Tufa occurs at Cape Barren, Thunder and Lightning Bay (both on Cape Barren Island) and at Deep Bight (Flinders Island), the latter apparently now inactive. It has been formed by redeposition of carbonate leached from dunes and aeolianite overlying the granite bedrock.

Extensive midden deposits occur at Palana, indicating the existence of a number of coastal camp sites, used from 7000 years BP, occupied by Aborigines isolated on Flinders Island by the Holocene transgression (Orchiston & Glenie 1978). However such populations apparently did not survive and the Furneaux Group (and Flinders Island in particular) is hence one of the few areas in Australia where humans were absent for an extended time (between 4700 and 200 years BP) during the Holocene, vegetation patterns hence developed independently of anthropogenic (fire etc.) influences (Ladd et al 1992). The pollen record from two swamps on Flinders Island indicate that early Holocene steppe vegetation was replaced by eucalypt forest and woodland as sea level rose to its present level (op. cit.). An increase in charcoal corresponded with the arrival of humans 200 years ago (op. cit.).

Geoconservation inventory highlights

Some aspects of the geology, geomorphology or geomorphic processes of Flinders Island and the Furneaux Group have much in common with the Tasmanian (and Victorian) mainland. Nevertheless the islands contain good representative (or even outstanding) examples of various phenomena and these have been noted in this inventory.

Geological and geomorphological features unique to or very well developed on the islands also occur. These are noted below:

- **Devonian granite intrusive features**

At least six compositional suites of granitoids occur in the Furneaux Group, each of which may include several rock types (differing in mineralogy and texture etc). The various granitoids have a range of contact relationships, which are often well exposed. These include faults, intrusive contacts with stoped blocks of country rock, synplutonic contacts (where one granitoid has intruded another whilst both were molten, with partial mixing or reaction occurring) and contact metamorphic features, including a contact migmatite.

- **Granite geomorphology**

The mountains of Flinders and Cape Barren Islands and the coastlines of many other islands in the Furneaux Group display many characteristic granite landform features. These include joint control on both large (ridgeline or drainage orientation, headland and bay locations) and small scale (tors and boulders) phenomena, good examples of residual hills and weathering features such as water runnels and gnammas.

- **Pleistocene and Holocene dunes**

Sand dunes have developed across Flinders Island at various times throughout the Pleistocene and Holocene. They include the early limestone dunes (now consolidated to aeolianite), Pleistocene longitudinal dunes, Holocene parabolic dunes and lunettes on the eastern plain, and recent active sand areas. The oldest, calcareous dunes occur in the west,

with the eastern dunes composed of siliceous sands. Relationships between the various ages and styles of dunes are well-displayed in many areas, and subfossils have been recovered from some areas. Palaeosols, or a hardpan or duricrust remnant, have developed on many of the older dunes, and are well exposed in places, the relationship with karst development (see below) being particularly interesting.

- **Lagoons and lunettes**

Lagoons occur extensively throughout eastern Flinders and Cape Barren Islands, most impounded by the variety of dunes on the eastern plains (they are hence related to development of the dunes, above, however have sufficient characteristics to be described separately here). The lagoons commenced developing during the Pleistocene, however those currently discernible are Holocene in age. Some earlier lagoons, which became naturally dry, have well-developed lunettes or source-bordering dunes along their eastern margins. The Hogans Lagoon (Flinders Island) lunette, and that bordering lagoons south of Little Creek (Cape Barren Island), over-ride coastal parallel dunes, indicating the lunettes were still forming late in the Holocene. Relatively deep lagoonal peat deposits occur on some old lagoon floors, and one has been shown to contain a near-complete Holocene palynological (pollen) record.

- **Coastal barrier - parallel dune complex**

Building of the impressive and extensive eastern Flinders Island parallel dune - coastal barrier system, and associated coastal lagoons and inlets, followed the establishment of present sea level. However, the east coast has consisted of two embayments in the past which have gradually been reduced to the present alignment by barrier formation (south of Sellars Point) and shoreline progradation.

- **Coastal karst**

Spectacular coastal karst features have developed in aeolian calcarenite in several areas along the west coast of Flinders Island, the best examples of such features in Tasmania. Deep intertidal notches and extremely rugged karren are the most spectacular features, however broad shore platforms with solution pans, stacks, caves formed by emerging groundwater and marine erosion and alveolar weathering of cliffs are also present

Badger Island granodiorite - Mathinna Beds contacts

Location: 576700 E, 5536300 N Flinders Island 1:100 000 map sheet Land tenure: Aboriginal land

Size: Small/site Specification:

Physical type: Outcrop Coastal

Condition: Robust

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Intrusive	Both rep. & out. Local	Devonian				

Highest level significance: Representative and outstanding for Local region

Description: Well-exposed granite-metasediments contact (one of two on the island), with an inclusion swarm and complex biotite layering near contact. Inclusion-rich intrusions 20-40m wide at contact are associated with curved biotite layering.

Management
notes :Reference: Cocker 1977 Ph.D. thesis
Cocker 1980Form completed: 10/12/95
updated:
identifier: FLI01**Badger Island limestone pavement**

Location: 574500 E, 5537500 N Flinders Island 1:100 000 map sheet Land tenure: Aboriginal land

Size: Large/region Specification: covers much of island

Physical type: Outcrop Landform Condition: Vulnerable

Threat: Human- Degradation by trampling (by livestock?)

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Sedimentary Geomorph.	Representative Local	Tertiary	Karst	Both rep. & out. Tasmania	Quaternary	No

Highest level significance: Representative and outstanding for Tasmania

Description: Limestone pavement covers extensive portion of low-lying island. Rundkarren surfaces, originally formed beneath soil cover, are exposed.

Management
notes :Reference: S. Harris 1995 pers. comm.
Pemberton 1995Form completed: 11/12/95
updated:
Identifier: FLI02**Beeton rockshelter and stratified archaeological site**

Location: E, N Flinders Island 1:100 000 map sheet Land tenure: Nature Reserve

Size: Small/site Specification: northwestern Badger Island; exact location unspecified.

Physical type: Landform Excavation Condition: Vulnerable

Threat: Human- Degradation by disturbance (by livestock?)

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Sedimentary Geomorph. Archaeological	Representative Local Outstanding Tasmania	Tertiary Holocene	Karst Marine?	Outstanding Local	Quaternary	

Highest level significance: Outstanding for Local region

Description: Large overhang (20m long) in Tertiary(?) limestone, some 8m above present sea level. Contains stratified deposit with archaeological material, a shell midden with no evidence of use since 8,700BP (the oldest such midden in Tasmania) - at this time Badger Island was part of the Tasmanian mainland.

Management
notes :

Reference: Sim 1992

Form completed: 17/10/95
updated:
Identifier: FLI03

Big Reedy Lagoon lunette

Location: 605600 E, 5531500 N Flinders Island 1:100 000 map sheet Land tenure: unallocated

Size: Large/region Specification: eastern side of lagoon, central north Cape Barren Is.

Physical type: Landform

Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Geomorph.				Aeolian	Outstanding	Local	Holocene	No?

Highest level significance:

Outstanding for Local region

Description: Well-developed lunette (partly double at northern end), with classic form, around complete eastern margin of ephemeral lagoon. A long history of formation is indicated. Lunette is well vegetated (scrub & forest contrasts with surrounding plains) and may not be currently active.

Management notes: *Intensive firing of area, which would destroy vegetation cover, may promote instability and erosion of feature.*

Reference: G. Dixon & I. Houshold this study

Form completed: 6/2/96

updated:

identifier: FLI55

Bird Island aeolianite and karst

Location: 573900 E, 5570400 N Flinders Island 1:100 000 map sheet Land tenure: crown reserve

Size: Medium/area Specification: NE side Settlement Pt, opposite Bird Is, W. Flinders Is.

Physical type: Landform Natural sect. Coastal

Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Sedimentary	Representative	Local	Quaternary	Karst	Both rep. & out. Tasmania		Quaternary	Yes
Soils	Both rep. & out. Local		Quaternary	Marine				
Geomorph.								

Highest level significance: Representative and outstanding for Tasmania

Description: Spectacular jagged karren, solution pans, notches & caves. Collapsed granite tors overlie karren and imply long term development. Various orientations of cross lamination in aeolianite are well-exposed. Very well-exposed hardpan (duricrust), with overlying leached palaeosol, in situ rhizomorphs and relationship with aeolianite also well-exposed (2 dune building - soil development cycles exposed).

Management notes: *Surface features are readily broken, as the rock is soft and fragile. Trampling is major potential threat. Site is little visited at present (and access is through a muttonbird rookery), but this may change.*

Reference: G. Dixon & I. Houshold this study

Form completed: 5/2/96

updated:

identifier: FLI48

Cameron Inlet offshore fossil locality

Location: 611000 E, 5560000 N Flinders Island 1:100 000 map sheet Land tenure: Other

Size: Large/region Specification: very approx. location only; covers at least 60ha some 0.5km or so offshore

Physical type: submarine outcrop

Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Palaeontology Sedimentary	Outstanding		Australia Tertiary					

Highest level significance:

Outstanding for Australia?

Description: Fossil whale bones and sharks teeth (now slightly blackened and altered), including a skull of Sperm whale precursor. Considered of probable Pliocene age. Occur scattered on seabed and imbedded in sea floor bedrock (probably limestone).

Management notes:

Reference: Caruso 1979
Elder 1979
Holland 1979
N. Kemp 1996 pers. comm.

Form completed: 6/2/96

updated:

identifier: FLI50

Cameron Inlet Pleistocene coastline

Location: 606000 E, 5560000 N Flinders Island 1:100 000 map sheet Land tenure: unallocated
Size: Large/region Specification: N shore of Inlet, from near Sandy Lagoon to No Duck Lagoon
Physical type: Landform Condition: Vulnerable
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Geomorph.			Marine Aeolian	Both rep. & out. Local	Quaternary	No

Highest level significance: Representative and outstanding for Local region

Description: Old shoreline, of probable Pleistocene age, including a complete 'fossil' spit (the form of which is not degraded, with beach ridges still continuous around the perimeter). Beach ridges and parallel dunes (5-8 m high in places) continue east, parallelling northern shore of Cameron Inlet (which therefore represents the old coastline).

Management notes: Sand landforms are inherently sensitive to disturbance, however apart from road cutting (which exposes soil horizon on parallel dunes) there is no disturbance. Intensive firing may destabilise however.

Reference: Kershaw & Sutherland 1972

G. Dixon & I. Houshold

this study

Form completed: 6/2/96

updated:

identifier: FLI58

Cameron Inlet spit

Location: 609500 E, 5560000 N Flinders Island 1:100 000 map sheet Land tenure: coastal reserve and unallocated
Size: Large/region Specification: feature covers some 4 sq km, eastern Flinders Island
Physical type: Landform Landscape Condition: Vulnerable
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Geomorph.			Marine	Both rep. & out. Local	Holocene	Yes

Highest level significance: Representative and outstanding for Local region

Description: The spit (which is currently a 'bar', the inlet entrance being closed by beach development) enclosing Cameron Inlet formed initially as part of an offshore bar after Holocene sea level rise; barrier growth eventually enclosed entire coast, including Sellars and Logan Lagoons (Cameron Inlet presumably remains open due to its larger catchment).

Management notes: Whilst a sand landform (& therefore inherently fragile) it is a large scale feature and so relatively robust. However periodic 'breaking out' of lagoon is undertaken (to drain) & fwd use may locally degrade site.

Reference: Kershaw and Sutherland 1972

Fish and Yaxley 1965

Form completed: 24/12/95

updated:

identifier: FLI04

Cape Barren dunes

Location: 624300 E, 5522700 N Flinders Island 1:100 000 map sheet Land tenure: unallocated
Size: Large/region Specification: area north of Tinkers Gut, SE Cape Barren Island
Physical type: Landform Condition: Vulnerable
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Geomorph.			Aeolian	Outstanding Local	Holocene	yes

Highest level significance: Outstanding for Local region

Description: Stabilised, vegetated east-west, hummocky, calcareous, longitudinal dunes (probably Holocene, as little soil development) are being spectacularly over-ridden by mobile sands (tending to more siliceous composition). These originate from behind Jamiesons Bay (instability may have been promoted by firing, however starving of the blow and initial stabilisation/revegetation of the source area is occurring).

Management notes: Sand landforms are inherently sensitive to disturbance. Intensive firing may destabilise old dunes, or promote further activity in young sands.

Reference: G. Dixon

this study

Form completed: 6/2/96

updated:

identifier: FLI60

Cape Barren tufa

Location: 625500 E, 5522800 N Flinders Island 1:100 000 map sheet Land tenure: unallocated
Size: Medium/area Specification: several localities scattered along 200+m section of coast; SE Cape Barren Is
Physical type: Landform Condition: Vulnerable
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Geomorph.			Karst	Representative Local	Holocene	Yes

Highest level significance: Representative for Local region

Description: Calcareous tufa deposits (and crude terraces, at one locality) veneer granite at top of sloping shore platforms. Most are active, but only intermittently - indicating rapid hydrological throughput of rainwater through thin dune sands (which overlie granite).

Management notes: Significant disturbance to sands (which provide carbonate source) of local hydrology will degrade feature, however seems unlikely under current uses.

Reference: G. Dixon this study

Form completed: 6/2/96

updated:

identifier: FLI59

Cape Frankland tourmaline nodules

Location: 565000 E, 5586300 N Flinders Island 1:100 000 map sheet Land tenure: unallocated
Size: Medium/area Specification: coastal exposures east of Cape Frankland
Physical type: Outcrop Coastal Condition: Vulnerable
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Intrusive Petrology	Outstanding Local	Devonian				

Highest level significance: Outstanding for Local region

Description: Biotite granite with particularly intense development of tourmaline nodules. Nodules measure up to 2m in diameter, and are commonly zoned with a massive tourmaline core surrounded by quartz-rich periphery containing thin radiating tourmaline crystals.

Management notes: Nodules, or crystals therein, may be attractive for collecting or souveniring. No apparent existing problem (site requires walking some distance to access) and crystals may be difficult to extract in any case.

Reference: Vicary 1987 Hons. thesis

Form completed: 15/11/95

updated:

identifier: FLI05

Castle Rock granite tor

Location: 576900 E, 5573900 N Flinders island 1:100 000 map sheet Land tenure: coastal reserve
Size: Small/site Specification:
Physical type: Landform Condition: Robust
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Geomorph.			Weathering Multiple	Outstanding Local	Quaternary	Yes?

Highest level significance: Outstanding for Local region

Description: Large (20m high), isolated, massive granite tor. Largely of aesthetic significance, as is situated on headland and visible from a considerable distance, but is a fine example of such a feature.

Management notes:

Reference: D. Lovegrove 1996 pers. comm
G. Dixon this study

Form completed: 6/2/96

updated:

identifier: FLI56

Cave Beach karren and caves

Location: 574400 E, 5570400 N Flinders Island 1:100 000 map sheet Land tenure: coastal reserve

Size: Medium/area Specification: western end Cave Beach; shore platform, cliffs and stacks

Physical type: Landform

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Geomorph.			Karst	Outstanding	Tasmania Quaternary	Yes
Sedimentary	Representative Local	Pleistocene	Marine			

Highest level significance:

Outstanding for Tasmania

Description: Very rugged karren on stack, with dense network of sharp, narrow spires 1-1.5m high, sometimes surrounding flat-floored pans. Development of such coastal karren involves micritic weathering in spray zone, rainwater & spray solution, and biogenic weathering. Collapse dolines (up to 4m diam) occur near cliff edge, vertical entrances to spacious sea level caves (up to 4m high), with talus accumulations on floor.

Management notes: Surface features are readily broken, as the rock is soft and fragile (evidenced by carved graffiti in some caves, dating back >100 years).

Reference: Kiernan 1992
Kiernan 1995

Form completed: 22/12/95
updated:
identifier: FLI06

Cave Beach palaeosol and hardpan

Location: 574900 E, 5570400 N Flinders Island 1:100 000 map sheet Land tenure: Wybalenna Hist. Site

Size: Small/site Specification: approx. 100m long, erosion scarp backing middle of Cave Bch, E. Flinders Is.

Physical type: Natural sect. Coastal

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Soils	Both rep. & out. Local	Quaternary				

Highest level significance:

Representative and outstanding for Local region

Description: Calcareous hardpan (developed on Pleistocene aeolianite), with small nodules and in situ rhizomorphs, overlain by grey/brown leached soil horizon (palaeosol), itself overlain by recent dune sands. Excellent exposure in eroding dune face.

Management notes: Deposit material is soft and inherently sensitive, however no indications of threat at present (natural erosion will continue to provide fresh exposure for some time to come).

Reference: G. Dixon & I. Household this study

Form completed: 5/2/96
updated:
identifier: FLI49

Crows beach lagoons

Location: 615500 E, 5517600 N Flinders Island 1:100 000 map sheet Land tenure: unallocated

Size: Large/region Specification: two lagoons, behind Crows Bch, SE Cape Barren Is

Physical type: Landform Coastal

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Geomorph.			Marine	Outstanding	Local Holocene	Yes
			Fluvial			

Highest level significance:

Outstanding for Local region

Description: Two lagoons (one large - 25ha) are impounded by high Crows Beach beach ridge. Lagoons sit some 3m above sea level, behind a high ridge of coarse sand. They appear semi-permanent, with beach ridge now unlikely to be breached. Lagoons drain by percolating through beach sands, levels fluctuating with drainage. Large lagoon may be old embayment, cut off by beach barrier growth.

Management notes:

Reference: G. Dixon this study

Form completed: 6/2/96
updated:
identifier: FLI61

Deep Bight raised intertidal notch

Location: 570000 E, 5590000 N Flinders Island 1:100 000 map sheet Land tenure: coastal reserve

Size: Small/site Specification: stack on western side of Deep Bight, N Flinders Is.

Physical type: Landform Coastal

Condition: Robust

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base	level		base	level	
Geomorph.			Marine Karst	Outstanding	Local	Quaternary No

Highest level significance:

Outstanding for Local region

Description: Wave cut notch (also probably partly karstic) in Early Pleistocene aeolianite stack, approximately 4 metres above present sea level. A lower notch is developing at current sea level. The raised notch is probably of Last Interglacial age and indicates both long term development of the coastal karst of Flinders Island, and some neotectonic uplift.

Management notes:

Reference: I. Household & G. Dixon this study

Form completed: 5/2/96

updated:

identifier: FLI16

Egg Beach boulder beach

Location: 565600 E, 5583700 N Flinders Island 1:100 000 map sheet Land tenure: Egg Beach Coastal Reserve

Size: Small/site Specification:

Physical type: Landform Coastal

Condition: Vulnerable

Threat: Human - Degradation by removal

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base	level		base	level	
Geomorph.			Marine	Outstanding	Local	Holocene Yes

Highest level significance:

Outstanding for Local region

Description: Small (50m long) cobble or boulder beach consisting of near spherical to oblate granite clasts, with some grain size sorting (smaller to the north). Significant largely for aesthetic reasons, however it is a good example of such a feature, with very well rounded clasts.

Management notes: Many "eggs" now decorate gardens throughout Flinders Island, and such souveniring appears to have noticeably reduced the range of grain sizes on the beach (presumably only portable "eggs" are removed).

Reference: D. Lovegrove & I. Slaven 1996 pers. comm.
G. Dixon this study

Form completed: 5/2/96

updated:

identifier: FLI46

Emita dolines

Location: 580300 E, 5572700 N Flinders Island 1:100 000 map sheet Land tenure: private

Size: Medium/area Specification: best examples noted, but others occur in general area; W. Flinders Is

Physical type: Landform

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base	level		base	level	
Geomorph.			Karst	Both rep. & out.	Local	Quaternary ?

Highest level significance: Representative and outstanding for Local region

Description: Dolines or sinkholes in Pleistocene aeolianite (limestone); best developed, unequivocal inland karst features on Flinders Island.

Management notes: Whilst only large scale excavation might destroy features themselves, other depressions nearby have become rubbish dumps - likely to cause pollution of any underground drainage if occurs in dolines.

Reference: Kiernan 1992
Kiernan 1995

Form completed: 5/2/96

updated:

identifier: FLI51

Fergusons Creek Pleistocene limestone dunes

Location: 589100 E, 5551700 N Flinders Island 1:100 000 map sheet Land tenure: private

Size: Small/site Specification: Trousers Point Rd, southern Flinders Island

Physical type: Cutting Landform Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Sedimentary Geomorph.	Representative	Local	Tertiary	Aeolian	Representative	Local	Tertiary	No

Highest level significance:

Representative for Local region

Description: Aeolian calcarenite, up to 9m thick locally, late Tertiary - early (or even mid) Pleistocene in age. Such limestone occurs extensively on Flinders Is. and is usually lithified. This site provides a good cross section exposure, with well-exposed cross lamination. Area around site displays dune landscape, with Holocene sands overlying Pleistocene dune limestone.

Management notes: Whilst overall limestone occurrence is not threatened, particular exposures may be obscured or degraded by agricultural or other activity (eg. road maintenance).

Reference: Sutherland and Kershaw 1971
Kershaw and Sutherland 1972

Form completed: 22/1/96
updated:
identifier: FLI25

Foochow Beach parallel dune system

Location: 596600 E, 5582200 N Flinders Island 1:100 000 map sheet Land tenure: unalloc. & coastal reserve

Size: Terrain Specification: east coast of Flinders Island, north of Sellars Pt; some 30km in length.

Physical type: Landscape Landform Coastal Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Geomorph.				Aeolian Marine	Representative	Tasmania	Holocene	Yes

Highest level significance:

Representative for Tasmania

Description: One of most extensive coastal features on Flinders Island. Coast north of Sellars Point has developed by beach ridge and parallel dune progradation since Holocene stillstand.

Management notes: Whilst a very large scale feature, it is a sand landform and therefore inherently sensitive to degradation. Land clearance, firing, 4wd use and track construction may all degrade site.

Reference: Kershaw & Sutherland 1972

Form completed: 5/2/96
updated:
identifier: FLI44

Fotheringate Bay coastal karst

Location: 587500 E, 5547600 N Flinders Island 1:100 000 map sheet Land tenure: Strzelecki National Park

Size: Medium/area Specification: northern side Trousers Point, Flinders Island

Physical type: Landform Landscape Coastal Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Geomorph.				Marine	Representative	Local	Holocene	Yes
Sedimentary	Representative	Local	Pleistocene	Karst	Representative	Tasmania	Quaternary	Yes
				Mass move't			Holocene	

Highest level significance:

Representative for Tasmania

Description: Deep intertidal notches (3-4m deep) and caves are the most spectacular feature, characteristically floored by granite bedrock; also broad (up to 50m) shore platform with solution pans, stack with well-developed and rugged karren, and alveolar weathering of cliffs. Extensive, in situ rhizomorphs extend through rooves of some caves. Calcrete duricrust caps the aeolianite cliffs and governs slope retreat.

Management notes: Surface features are readily broken, as the rock is soft and fragile. Trampling is a possible concern, however most visitors would traverse only the robust shore platform.

Reference: Kiernan 1992
Kiernan 1995

Form completed: 15/11/95
updated:
identifier: FLI09

Goose Island granitic coastal geomorphology

Location: 568000 E, 5537100 N Flinders Island 1:100 000 map sheet Land tenure: Conservation Area

Size: Large/region Specification: Entire island, especially SW coastline

Physical type: Landform Landscape Coastal Condition: Robust

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Geomorph.				Multiple	Representative	Local	Quaternary	
Intrusive	Representative	Local	Devonian	Marine			Holocene	Yes
				Weathering			Quaternary	

Highest level significance:

Representative for Local region

Description: Remote island in good overall natural condition containing a range of small and large scale granite weathering features - bare slabs, joint-controlled tors, cobble/boulder beaches, etc. Bays and headlands along southwestern coastline reflect control by regular, widely-spaced joints.

Management notes:

Reference: N. Brothers 1995 pers. comm.
Pemberton 1995

Form completed: 15/11/95
updated:
identifier: FLI10

Harleys Point whale bones

Location: 620500 E, 5529700 N Flinders Island 1:100 000 map sheet Land tenure: unallocated

Size: Small/site Specification: floor of sand bow

Physical type: Natural sect.

Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
				Marine	Outstanding	Tasmania	Holocene	

Highest level significance:

Outstanding for Tasmania

Description: Bones of at least 2 dozen small whales, including several complete skeletons, are exposed on deflated floor of active sand blow. They lie 1-2m above sea level. Several palaeosols are exposed in blow sides, however relationship to bones unclear. Bones are probably relatively young, resulting from a stranding during or just before storm (is probably possible for big N-NE storm to wash whales up into blow).

Management notes: Souveniring of bones is major threat. Area is little-visited (and little known), however old ORV tracks were noted in sand blow, and is possible to drive down coast to north, from Puncheon Pt property.

Reference: D. Lovegrove 1996 pers. comm.
G. Dixon this study

Form completed: 6/2/96
updated:
identifier: FLI62

Hogan Lagoon lunette - beach ridge relationship

Location: 591400 E, 5588500 N Flinders Island 1:100 000 map sheet Land tenure: unallocated

Size: Large/region Specification: eastern Flinders Island

Physical type: Landform

Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Geomorph.				Multiple	Both rep. & out.	Local	Holocene	No
				Marine				
				Aeolian				

Highest level significance: Representative and outstanding for Local region

Description: Lunette east of Hogans Lagoon (which probably formed during early Holocene) has encroached onto older beach ridges backing Foochow Beach, suggesting that lunette formation (and the associated dryer climatic period) probably occurred later than the post-glacial sea level rise.

Management notes:

Reference: Sutherland and Kershaw 1971

Form completed: 24/12/95
updated:
identifier: FLI11

Holts Point hybrid zone

Location: 588800 E, 5543800 N Flinders Island 1:100 000 map sheet Land tenure: coastal reserve
Size: Medium/area Specification: approx. location; coast Holts Pt, & E towards Sarah Blanche Pt, south Flinders Is
Physical type: Outcrop Condition: Robust
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Intrusive	Both rep. & out. Local	Devonian				
Relationship	Representative Local					

Highest level significance: Representative and outstanding for Local region

Description: An extensive area of synplutonism, where mafic porphyry intrudes both another porphyry and the host granite. A continuum exists from the porphyry end members, through pillowed and spheroidal textures, to the uniform hybrid rock.

Management
notes:

Reference: Reid 1987 Ph. D. thesis

Form completed: 10/12/95
updated:
identifier: FLI12

Key Island Bay phenocryst accumulations

Location: 587700 E, 5523700 N Flinders Island 1:100 000 map sheet Land tenure: unallocated
Size: Small/site Specification: western Cape Barren Island
Physical type: Outcrop Coastal Condition: Robust
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Intrusive	Both rep. & out. Local	Devonian				

Highest level significance: Representative and outstanding for Local region

Description: Accumulations (spectacular knots and trains) of garnet phenocrysts and alkali feldspar megacrysts, probably generated during relative motion between crystal-rich magma and stopped blocks of granite country-rock. Probably formed as large blocks of granite stopped off and sank through crystal-rich magma below.

Management
notes:

Reference: Reid 1987 Ph. D. thesis

Form completed: 10/12/95
updated:
identifier: FLI13

Killiecrankie topaz ("diamond") locality

Location: 572500 E, 5591900 N Flinders Island 1:100 000 map sheet Land tenure: unallocated
Size: Medium/area Specification: Amongst foreshore boulders, near Diamond Gully Creek, Flinders Island
Physical type: Natural sect. Condition: Vulnerable
Threat: Human - Degradation by removal

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Mineralogy	Outstanding	Tasmania Devonian				

Highest level significance: Outstanding for Tasmania

Description: Topaz locality, with well-formed crystals and waterworn pebbles typically 20mm in size, with up to 80mm reported; quartz, beryl and zircon are also found.

Management notes: "Diamonds" (& other minerals) have been collected for many years, and area has been designated a "Fossicking Area" by Tasm. Development & Resources. Nevertheless unrestricted collecting is unwise.

Reference: Mineral Resources Tasm. n.d. Fossicking Guide

Form completed: 10/11/95
updated:
identifier: FLI14

Lascars Point Tertiary basalt

Location: 592100 E, 5521100 N Flinders Island 1:100 000 map sheet Land tenure: unallocated & private (Aboriginal)
Size: Medium/area Specification: actual exposure is small; SW Cape Barren Island
Physical type: Outcrop Coastal Condition: Robust
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Volcanic	Outstanding	Local Tertiary				

Highest level significance: Outstanding for Local region

Description: Alkali-olivine basalt; this small outcrop is the only occurrence on Cape Barren Island.

Management notes:

Reference: Cocker 1977 Ph.D. thesis Form completed: 10/12/95
Cocker 1980 updated:
McClenaghan and Calver 1994 geol. map identifier: FLI15

Little Creek Pleistocene(?) shoreline

Location: 615800 E, 5531500 N Flinders Island 1:100 000 map sheet Land tenure: unallocated
Size: Large/region Specification: Step/terrace in plain, approx 2km long, E. Cape Barren Island
Physical type: Landscape Landform Condition: Robust
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Geomorph.			Marine	Representative Local	Quaternary	No

Highest level significance: Representative for Local region

Description: Prominent step or terrace in coastal plain, with associated white sand deposits. Probable early (Pleistocene?), raised (approx. 15m ASL?) shoreline.

Management notes:

Reference: Pinkard and Richley 1982 Form completed: 5/2/96
Cocker 1977 updated:
identifier: FLI07

Logan Lagoon Holocene shorelines

Location: 610600 E, 5553500 N Flinders Island 1:100 000 map sheet Land tenure: Wildlife Sanctuary
Size: Large/region Specification: Lagoon and immediate surrounds, esp. E & N sides, Flinders Island
Physical type: Landform Landscape Coastal Condition: Vulnerable
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Geomorph.			Marine	Both rep. & out. Local	Holocene	No

Highest level significance: Representative and outstanding for Local region

Description: A number of old, slightly higher than present, strand lines are evident around lagoon (evidence of recent uplift, or higher mid Holocene sea levels?). Several old outlet channels are also evident.

Management notes: Sand landforms are inherently fragile. Local degradation may be caused by 4wd use, or by erosion perhaps promoted by firing, for example.

Reference: Kershaw and Sutherland 1972 Form completed: 15/11/95
Goldrin 1980 updated:
identifier: FLI17

Long Beach granitic dykes and synplutonic contact

Location: 585700 E, 5530000 N Flinders Island 1:100 000 map sheet Land tenure: coastal reserve
Size: Medium/area Specification: 3 localities; coastal outcrop both ends of Long Beach, Cape Barren Island
Physical type: Outcrop Coastal Condition: Robust
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Intrusive	Both rep. & out. Local	Devonian				
Relationship	Representative Local					

Highest level significance: Representative and outstanding for Local region

Description: Synplutonic zone (80m wide) consisting of spheroids (metre size) of fine-grained mafic granite within coarse-grained megacrystic granite of the same suite; also nearby a granitic dyke containing biotite schlieren, with truncation indicating a facing direction; and a zoned (aplite to porphyry with feldspar megacrysts) porphyry dyke, formed by relative movement of solid and liquid phases in suspension.

Management notes:

Reference: Reid 1987 Ph. D. thesis

Form completed: 12/10/95
updated:
identifier: FLI18

Long Island mafic dykes

Location: 586400 E, 5532600 N Flinders Island 1:100 000 map sheet Land tenure: unallocated
Size: Small/sites Specification: extensive occurrence but restricted exposures
Physical type: Outcrop Condition: Robust
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Intrusive	Representative Local	pre-Tertiary				
Petrology	Representative					

Highest level significance: Representative for Local region

Description: Mafic (dolerite) dykes, up to 10m wide, in tensional fractures in granite. Most common between Cape Barren and Flinders Islands, but also known from elsewhere in the Furneaux Group.

Management notes:

Reference: Cocker 1977 Ph.D. thesis
Cocker 1980

Form completed: 10/12/95
updated:
identifier: FLI19

Long Point tied island and intertidal wetland

Location: 581500 E, 5561500 N Flinders Island 1:100 000 map sheet Land tenure: coastal reserve & private
Size: Large/region Specification: entire Long Point and enclosed wetland
Physical type: Landform Coastal Condition: Vulnerable
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Geomorph.			Marine	Outstanding Local	Holocene	Yes

Highest level significance: Outstanding for Local region

Description: Long Point is a bedrock (Mathinna Beds) "island" tied to Flinders Island by beach and associated dune, which has built up due to longshore drift south along Long Point Beach. A large, enclosed and sheltered wetland has formed inside Point, with salt marsh, tidal channels, seagrass beds, intertidal sands and rock outcrops.

Management notes: Disturbance or pollution of local drainage may degrade biological (at least) aspects of wetland, ultimately affecting other aspects.

Reference: G. Dixon this study

Form completed: 6/2/96
updated:
identifier: FLI57

Long Point weathering pits

Location: 582100 E, 5562100 N Flinders Island 1:100 000 map sheet Land tenure: Other

Size: Small/site Specification: intertidal outcrops on inside of Long Pt, W. Flinders Is.

Physical type: Landform Coastal

Condition: Robust

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Geomorph.				Biogenic?	Outstanding	Local	Holocene	Yes

Highest level significance:

Outstanding for Local region

Description: Many small (1 - 1.5 cm diam, up to similar depth) pits occur on upper surface of outcrops and loose rocks (steeply dipping Mathinna Beds sandstone), often very closely spaced. Probably formed by biogenically promoted erosion - small molluscs (limpets, etc) reside in many of the pits, and many weathered and degraded pits are no longer occupied.

Management notes :

Reference: D. Smith 1996 pers. comm.
G. Dixon & I. Houshold this study

Form completed: 6/2/96
updated:
identifier: FLI54

Mannalargenna Cave Last Glacial occupation and subfossil site

Location: 565500 E, 5565700 N Flinders Island 1:100 000 map sheet Land tenure: unallocated

Size: Small/site Specification: southern Prime Seal Island

Physical type: Landform Evcavation

Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Geomorph.				Karst?	Outstanding	Local	Quaternary	No?
Palaeontology	Outstanding	Local	Quaternary					
Archaeological	Outstanding	Local	Quaternary					

Highest level significance:

Outstanding for Local region

Description: "Cave" (overhang) some 8m deep, in early Pleistocene (?) limestone, with calcareous floor deposits. Occupation deposits occur to 3.5m below surface. Site used 18,500 - 8000 years BP, most frequently 18,500 -15,000 yrs BP, the coldest period of the Last Glacial, when semi-arid, grassland covered region. Deposits include subfossil remains of various macropods etc - significant given site location & age.

Management notes :

Reference: Brown 1991
Harris 1988

Form completed: 24/12/95
updated:
identifier: FLI20

Mount Killiecrankie cliff

Location: 572500 E, 5593300 N Flinders Island 1:100 000 map sheet Land tenure: unallocated

Size: Medium/area Specification: spectacular coastal cliff, northern Flinders Is

Physical type: Landform

Condition: Robust

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Geomorph.				Multiple	Outstanding	Local	Quaternary	Yes

Highest level significance:

Outstanding for Local region

Description: Steep 100-150 metre high granite cliff. Of largely aesthetic interest, however a range of granite phases are well-exposed which vary in jointing and weathering features. Clear, close-spaced jointing occurs in later phases. Spectacular honeycomb weathering and development of large caves and overhangs (some possibly initiated by weathering of miarolytic cavities) are of particular note.

Management notes :

Reference: G. Dixon this study

Form completed: 6/2/96
updated:
identifier: FLI53

Mount Killiecrankie granite pluton

Location: 572700 E, 5593100 N Flinders Island 1:100 000 map sheet Land tenure: Unallocated
Size: Large/region Specification: Cliffs and slopes on northern side of Mt Killiecrankie, approx. 1.5 sq km.
Physical type: Outcrop Condition: Robust
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Intrusive	Both rep. & out. Local	Devonian				
Petrology	Representative Local	Devonian				

Highest level significance: Representative and outstanding for Local region

Description: Vertical cross-section, excellently exposed, through alkali feldspar granite pluton. Medium grained granite intrudes coarse grained porphyritic granite; aplite dykes and pegmatite patches intrude the medium grained granite, and miarolitic cavities occur in the upper portion of the medium grained granite zone.

Management
notes :

Reference: Vicary 1987 Hons. thesis

Form completed: 15/11/95
updated:
identifier: FLI21

Mt Boyes dune-dammed streams

Location: 582100 E, 5588700 N Flinders Island 1:100 000 map sheet Land tenure: Nature Reserve
Size: Medium/area Specification: NE Flinders Island
Physical type: Landform Condition: Vulnerable
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Geomorph.			Aeolian Fluvial	Representative Local	Holocene	No?

Highest level significance: Representative for Local region

Description: Wetland has formed due to impoundment of stream soon after reaching coastal plain, by advance of dunes into stream valley, possibly during late Pleistocene or early Holocene

Management
notes :

Reference: Kershaw and Sutherland 1972

Form completed: 24/12/95
updated:
identifier: FLI22

"Narrung" Pleistocene beach deposits

Location: 567400 E, 5580100 N Flinders Island 1:100 000 map sheet Land tenure: coastal reserve
Size: Small/site Specification: erosion scarp at back of present beach, adjacent to "Narrung" property.
Physical type: Natural sect. Coastal Condition: Vulnerable
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Sedimentary	Both rep. & out. Local	Quaternary				

Highest level significance: Representative and outstanding for Local region

Description: Semi-cemented beach deposits (coarse quartz sand or fine gravels), probably an old beach ridge. Some bedding or cross-lamination is evident in places. The deposit is slightly raised (occurs 1-3m ASL) and is probably of Last Interglacial age.

Management
notes :

Reference: G. Dixon & I. Household this study

Form completed: 22/1/96
updated:
identifier: FLI45

Nelson Lagoon lunette

Location: 602400 E, 5561600 N Flinders Island 1:100 000 map sheet Land tenure: unallocated and private

Size: Large/region Specification: 5-6km long, between Cameron Inlet & Conways Rds, SE Flinders Island

Physical type: Landform

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Geomorph.			Aeolian	Both rep. & out. Local	Quaternary	No

Highest level significance: Representative and outstanding for Local region

Description: Well developed lunette or source-bordering dune (with significant soil development thereon), 5-6 km long and up to 5-6 metres high, flanks the eastern side of "Nelson Lagoon", an extensive former lagoon east of the Darling Range (now represented by area of organic soils). Lunette probably late Pleistocene, but possibly earlier as longitudinal dunes extends eastward from the lunette.

Management notes: Lunette is generally still vegetated (lagoonal soils to east have been cleared & drained) and is crossed by only two roads or tracks, however it is an inherently sensitive sand landform.

Reference: Dimmock 1957

Form completed: 24/12/95

updated:

identifier: FLI23

North East River Late Pleistocene sedimentary section

Location: 581900 E, 5599700 N Flinders Island 1:100 000 map sheet Land tenure: game reserve

Size: Small/site Specification: NE Flinders Island

Physical type: Natural sect.

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Sedimentary	Representative Local	Quaternary				
Palaeoenviro.	Both rep. & out. Local	Quaternary				

Highest level significance: Representative and outstanding for Local region

Description: Dated section (4m thick) of shell-rich skeletal carbonate sand; Last Interglacial age. Comparison with deposits on Tasmanian mainland (typically higher above sea level) facilitates understanding of neotectonic history of region.

Management notes: Sand slumping (natural) is obscuring part of section, however trampling of slope (from nearby shacks) has potential to cause or accelerate degradation.

Reference: Murray-Wallace and Goede 1995
Sutherland and Kershaw 1971

Form completed: 24/12/95

updated:

identifier: FLI24

North East River spit

Location: 583500 E, 5598500 N Flinders Island 1:100 000 map sheet Land tenure: unalloc., game & coastal reserves

Size: Large/region Specification: entire spit north of Arthurs Ck mouth, northern Flinders Is.

Physical type: Landform

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Geomorph.			Marine	Outstanding Local	Holocene	Yes

Highest level significance: Outstanding for Local region

Description: Extensive (5km long) spit formed by longshore drift along Foochow Beach, enclosing North East River estuary behind. One or two small recurved spits have developed within the estuary (on the back of the major spit) due to inflowing tidal currents.

Management notes: Sand landforms are inherently sensitive to disturbance, however this feature is large scale and relatively inaccessible and is hence not currently threatened.

Reference:

Form completed: 5/2/96

updated:

identifier: FLI47

Palana sand blow and subfossil site

Location: 576500 E, 5598400 N Flinders Island 1:100 000 map sheet Land tenure: private & unallocated

Size: Large/region Specification: 1-2 sq km, near Palana, northern Flinders Island

Physical type: Landform Natural sect.

Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Palaeontology	Outstanding	Local	Holocene	Aeolian	Outstanding	Local	Holocene	Yes
Sedimentary	Representative	Local	Pleistocene					
Archaeological	Outstanding	Local	Holocene					
Geomorph.								

Highest level significance:

Outstanding for Local region

Description: The most extensive sand blow on Flinders Is; it is old, but has significantly expanded during European era. Subfossil bones of various mammals & birds have been described from blowout - most species are present on Flinders Is today, although two are now very rare. Remains of 7 Pleistocene limestone dunes (up to 20m high) also exposed, with duricrust, in situ rhizomorphs & old soil horizons developed.

Management notes: *Vegetated foredune (several small blowout runnels are developing) & limestone outcrops are causing starving of blowout, with progressive stabilisation occurring at W end. Marram grass infests some areas.*

Reference: Hope 1969

Form completed: 22/1/96

Orchiston & Glenie 1978

updated:

Kershaw and Sutherland 1972

identifier: FLI26

Dixon & Houshold 1996 PWS internal memo

Petrifaction Bay basalt and silcrete locality

Location: 601700 E, 5547100 N Flinders Island 1:100 000 map sheet Land tenure: Conservation Area and coastal

Size: Small/site Specification: mouth of Samphire Ck, southern Flinders Island

Physical type: Natural sect.

Condition: Vulnerable

Threat: Human - Degradation by removal

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Volcanic	Outstanding	Local	Tertiary			

Highest level significance:

Outstanding for Local region

Description: Basalt (mostly vesicular) is common as pebbles or cobbles. Several large (and the only remaining?) pieces of silcrete, with botryoidal and mammillary surface texture, occur. "Basaltic tuff containing numerous silicified logs" was reported by Johnston (1879), but not relocated by Sutherland and Kershaw (1971) or during this study.

Management notes: *No "silicified logs" appear to remain in situ - all have been souvenired. Some large fragments reside outside the Emitta museum and the Whitemark Police residence!*

Reference: Sutherland and Kershaw 1971

Form completed: 19/1/96

Johnston 1879

updated:

McClenaghan and Calver 1994 geol. map

identifier: FLI27

Petticoat Ridge granite pseudokarst

Location: E, N Flinders Island 1:100 000 map sheet Land tenure: unallocated

Size: Small/site Specification: lower N slopes of Petticoat Ridge, exact location uncertain; Cape Barren Is

Physical type: Landform Cave

Condition: Robust

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base level			base level		
Geomorph.			Weathering Karst?	Outstanding	Local	Quaternary ?

Highest level significance:

Outstanding for Local region

Description: Small joint-controlled cave(s) in granite. Located at base of convex slab, approx. 2x2m in size, rounded form.

Management notes:

Reference: R. Franks 1995 pers. comm.

Form completed: 15/11/95

updated:

identifier: FLI28

Planter Beach coastal barrier system

Location: 511000 E, 5555000 N Flinders Island 1:100 000 map sheet Land tenure: unalloc., coast. res. & W'lfe Sanc.

Size: Terrain Specification: east coast of Flinders Island, south of Sellars Pt; some 30km in length.

Physical type: Landscape Landform Coastal Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Geomorph.			Marine Aeolian	Both rep. & out.	Tasmania Holocene	Yes

Highest level significance: Representative and outstanding for Tasmania

Description: Most extensive and spectacular coastal feature on Flinders Island. South of Sellars Point offshore bars formed with Holocene sea level rise and barrier growth enclosed the coast (forming various large lagoons); at times prior to this the coast consisted of at least one large embayment, although an earlier beach ridge system also existed (eg. north shore of Cameron Inlet)

Management notes: Whilst a very large scale feature, it is a sand landform and therefore inherently sensitive to degradation. Land clearance, firing, 4wd use and track construction may all degrade site.

Reference: Kershaw and Sutherland 1972

Form completed: 24/12/95

updated:

identifier: FLI08

Prime Seal Island karst and concretions

Location: 565200 E, 5568400 N Flinders Island 1:100 000 map sheet Land tenure: unallocated

Size: Small/site Specification: Scarp 50-100m inland, approx. 5m ASL

Physical type: Landform Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Geomorph. Sedimentary	Representative Local	Quaternary	Karst	Outstanding	Tasmania Quaternary	No?

Highest level significance: Outstanding for Tasmania

Description: Karst, including caves, (extraordinary development for such thin limestone - largest 10m deep & 3m high), notches, arches, inactive rimstone & small stalactites, spitzkarren) developed in thin Pleistocene limestone and/or calcrete caprock, overlying granite. Sub-spherical, knobby concretions litter the horizontal upper surface of the caprock layer, & similar botryoidal forms occur on some rimstone surfaces.

Management notes: The features are all fragile - readily broken by trampling etc. However the site is little visited (access practicalities) and is likely to remain such.

Reference: N. Brothers 1995 pers. comm.
G. Dixon this study

Form completed: 5/2/96

updated:

identifier: FLI29

Ranga Cave fossil site

Location: 591800 E, 5552300 N Flinders Island 1:100 000 map sheet Land tenure: private

Size: Small/site Specification: cave in N bank of ck below Barclays Hill, Flinders Island (exact locn. uncertain)

Physical type: Landform Quarry/pit/c Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Palaeontology Palaeoenviron.	Outstanding Local	Quaternary				

Highest level significance: Outstanding for Local region

Description: Cave in Pleistocene calcarenite, 45m ASL, consisting of a single domed shelter almost 30m long and 9m deep. Speleothems (pillars, stalactites, stalagmites) are common. Upper 60cm of floor deposit contains abundant bone fragments and charcoal, dated about 8100 yrs BP - fossils represent a selection of Bassian fauna at time of sea level rise and island isolation.

Management notes: Site is on private land and access is apparently not permitted (owner has threatened to destroy site in past, if access is sought). Many speleothems were apparently damaged during site excavation.

Reference: Hope 1973
Hope 1969
Sutherland and Kershaw 1971

Form completed: 17/1/96

updated:

identifier: FLI30

Rooks River secondary cassiterite deposits

Location: 597400 E, 5532300 N Flinders Island 1:100 000 map sheet Land tenure: unallocated

Size: Medium/area Specification: lower valley and adjacent flats, northern Cape Barren Island

Physical type: Quarry/pit Natural sect.

Condition: Vulnerable

Threat: No?

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base	level		base	level	
Mineralogy Sedimentary Historical	Both rep. & out. Local	Tertiary	Fluvial			

Highest level significance: Representative and outstanding for Local region

Description: Largest secondary cassiterite deposit in the Furneaux Group; mined from 1882, most intensively in 1920s. Cassiterite occurs in coarse sands and grits overlying uneven granite bedrock surface.

Management
notes :

Reference: Cocker 1977 Ph.D. thesis
Blake 1938
Blake 1947

Form completed: 10/12/95
updated:
identifier: FLI32

Samphire River "oil" and lagoonal peat locality

Location: 601100 E, 5547700 N Flinders Island 1:100 000 map sheet Land tenure: private

Size: Small/site Specification: may be more extensive in area; southern Flinders Is

Physical type: Natural

Condition: Vulnerable

Threat: Human - Degradation by process disturbance

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base	level		base	level	
Soils	Outstanding	Tasmania Holocene				

Highest level significance: Outstanding for Tasmania

Description: Marshy lagoon, floored by dark peaty soil, where oily seeps have been reported. "Oil" is an unusual comminuted organic mass of plant detritus - actually a resinous decomposition product (a "plant adipocere"). Was the basis for rumours that mineral petroleum may occur on Flinders island in the 1930s.

Management
notes : Site has been burnt, hence actual feature described in 1966 may no longer exist.

Reference: Cane 1966
Sutherland and Kershaw 1971

Form completed: 17/1/96
updated:
identifier: FLI33

Sellars Point cusplate foreland (and submarine tombolo)

Location: 610000 E, 5575000 N Flinders Island 1:100 000 map sheet Land tenure: unallocated

Size: Large/region Specification: 3-4 sq km, eastern Flinders Island

Physical type: Landform Coastal

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base	level		base	level	
Geomorph.			Marine	Both rep. & out. Tasmania	Holocene	Yes

Highest level significance: Representative and outstanding for Tasmania

Description: Cusplate foreland, which extends as a submarine sand bar to Babel Island (which is the factor causing its formation due to its influence on incident wave refraction patterns) forming a tombolo, tying the island to the eastern Flinders Island barrier coast. Parallel dunes system which backs Foochow Beach, to north, extends well out onto northern part of foreland.

Management
notes :

Reference: Kershaw and Sutherland 1972

Form completed: 17/1/96
updated:
identifier: FLI34

Settlement Point synplutonic intrusive zone

Location: 573300 E, 5569000 N Flinders Island 1:100 000 map sheet Land tenure: coastal reserve

Size: Small/site Specification: SW Flinders Island

Physical type: Outcrop Coastal

Condition: Robust

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base	level		base	level	
Intrusive	Both rep. & out.	Local				
Relationship	Representative					

Highest level significance: Representative and outstanding for Local region

Description: Tongues of both mafic porphyry intruding granite, and latter in former, demonstrating synplutonism for these two rocks.

Management
notes :

Reference: Reid 1987 Ph. D. thesis

Form completed: 18/1/96

updated:

identifier: FLI35

Stackeys Bight arches

Location: 572100 E, 5592500 N Flinders Island 1:100 000 map sheet Land tenure: private

Size: Small/site Specification: two arches through headland, northern Flinders Island

Physical type: Landform Coastal

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?	
	base	level		base	level		
Geomorph.			Marine	Outstanding	Tasmania	Quaternary	Yes
Sedimentary	Representative	Local	Quaternary				

Highest level significance: Outstanding for Tasmania

Description: Two archways cut by sea through a 10m wide Pleistocene aeolianite headland. Arches are 4-5m high, largest is 6m wide, one at sea level (and actively eroding), othe 1-1.5m above HWM. Form of arches is partly controlled by bedding and cross lamination.

Management
notes :

Reference: Kiernan 1995

Form completed: 22/12/95

updated:

identifier: FLI36

Strzelecki Peaks - Razorback granite geomorphology

Location: 591200 E, 5549400 N Flinders Island 1:100 000 map sheet Land tenure: Strzelecki National Park

Size: Terrain Specification: SW Flinders Island

Physical type: Landscape Landform

Condition: Robust

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base	level		base	level	
Geomorph.			Multiple	Both rep. & out.	Local	post-Tertiary partly

Highest level significance: Representative and outstanding for Local region

Description: Gross form of region is controlled by widely-spaced (esp. N-S) joints, with sub-parallel ridges and valleys, more complex due to history of multiple intrusion, with different granite phases (& grain sizes etc) which probably influence joint orientations. Includes monadnock-like form of entire massif, classical slabs, tors, boulders, etc. Block streams occur in two high N-S valleys.

Management
notes :

Reference: G. Dixon this study

Form completed: 17/1/96

updated:

identifier: FLI37

The Dock pocket beaches

Location: 573700 E, 5594300 N Flinders Island 1:100 000 map sheet Land tenure: coastal reserve
Size: Medium/area Specification: two small pocket beaches on eastern side of The Dock, N. Flinders Is
Physical type: Landform Coastal Condition: Robust
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base	level		base	level	
Geomorph.			Marine	Representative Local	Holocene	yes

Highest level significance: Representative for Local region

Description: Two small pocket beaches, both enclosed by granite headlands, shore platforms and offshore reefs, and less than 100m apart, with contrasting sediment composition. Northern beach consists of fine calcareous sand (derived from aeolianite, with duricrust, horizons above), other beach consists of characteristic coarse quartz - feldspar granite-derived sand.

Management notes :

Reference: G. Dixon this study Form completed: 6/2/96
updated:
identifier: FLI52

The Patriarchs residual granite hills

Location: 601400 E, 5572900 N Flinders Island 1:100 000 map sheet Land tenure: unallocated
Size: Large/region Specification: eastern Flinders Island
Physical type: Landform Landscape Condition: Robust
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base	level		base	level	
Geomorph.			Multiple Weathering	Both rep. & out. Local	Quaternary	Yes

Highest level significance: Representative and outstanding for Local region

Description: Fine examples residual granite hills with classical form (steep-sided, dome-like), surrounded by flat plain (partly depositional, however bedrock occurs between some hills).

Management notes :

Reference: G. Dixon this study Form completed: 17/1/96
updated:
identifier: FLI38

Thule Road laterite

Location: 592300 E, 5556300 N Flinders Island 1:100 000 map sheet Land tenure: private
Size: Small/site Specification: Thule Rd, Flinders Island
Physical type: Cutting Natural sect. Condition: Vulnerable
Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
	base	level		base	level	
Soils	Representative Local	Quaternary				

Highest level significance: Representative for Local region

Description: Lateritic soil developed on basalt, with clay underlying ferruginous gravelly material and a sandy loam surface horizon. Possibly Pliocene in age.

Management notes :

Reference: Dimmock 1957 Sutherland and Kershaw 1970 Form completed: 17/1/96
updated:
identifier: FLI31

Thunder and Lightning Bay tufa and springs

Location: 585800 E, 5525700 N Flinders Island 1:100 000 map sheet Land tenure: coastal reserve and private

Size: Medium/area Specification: western Cape Barren Island

Physical type: Landform

Condition: Vulnerable

Threat: Human - Degradation by process disturbance

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Geomorph.			Karst	Outstanding Local	Holocene	yes

Highest level significance:

Outstanding for Local region

Description: Tufa occurs above high water mark above beach, with freshwater springs issuing forth from the beach immediately below. Carbonate presumably derived from Pleistocene calcarenite which occurs extensively across western Cape Barren Island.

Management

notes :

Reference: P. Cullen 1995 pers. comm.

Form completed: 17/1/96

updated:

identifier: FLI39

Tin Kettle Island longitudinal dunes

Location: 597000 E, 5538600 N Flinders Island 1:100 000 map sheet Land tenure: unallocated

Size: Large/region Specification: entire island

Physical type: Landform

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Geomorph.			Aeolian	Outstanding Local	Quaternary	No

Highest level significance:

Outstanding for Local region

Description: Several east-west longitudinal dune traverse island. Composed of white sand and may be Pleistocene in age (and hence desert dunes, as occur extensively on NE Tasmanian mainland). Tin Kettle Island dunes are of note because they are clear and well-developed, and traverse flat island, without apparent interference or interaction with other dune generations.

Management notes: Sand landforms are inherently sensitive to disturbance. Excavation or instability (promoted by firing, for eg) may threaten feature.

Reference: G. Dixon this study

Form completed: 6/2/96

updated:

identifier: FLI63

Vansittart Shoal - Pot Boil tidal delta

Location: 613000 E, 5544000 N Flinders Island 1:100 000 map sheet Land tenure: Other

Size: Terrain Specification:

Physical type: Submarine landscape

Condition: Robust

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Geomorph.			Marine	Outstanding Tasmania	Holocene	Yes

Highest level significance:

Outstanding for Tasmania

Description: Large tidal delta (11x8km), formed due to net transport of sediment eastward through Franklin Sound (by fast, long-lasting tidal currents) with deposition occurring when currents encounter swells from Tasman Sea - Pacific Ocean. Turbulence at "Pot Boil" is due to this interaction of currents.

Management

notes :

Reference: Kershaw and Sutherland 1972
Jennings 1959

Form completed: 17/1/96

updated:

identifier: FLI40

West Patriarch Swamp palynological site

Location: 600900 E, 5571800 N Flinders island 1:100 000 map sheet Land tenure: unallocated

Size: Small/site Specification: eastern Flinders Island

Physical type: Excavation

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Palaeoenviro. Outstanding	Local	Holocene				

Highest level significance: Outstanding for Local region

Description: Swamp deposit containing black and brown peats, basal date about 10,000 yrs BP. Pollen record indicates steppe vegetation in early Holocene, replaced by eucalypt forest & woodland as sea level rose to present level. Good site to investigate firing regimes unaffected by humans in sclerophyllous vegetation similar to SE Australia (humans absent from Flinders Is. 4700-200yrs BP).

Management notes: *Potentially vulnerable to excavation etc, however extent of lagoon (and presumably pollen-bearing peats) make this unlikely.*

Reference: Ladd, Orchiston & Joyce 1992

Form completed: 24/12/95

updated:

identifier: FLI41

Wingaroo lagoonal peats

Location: 585400 E, 5588300 N Flinders Island 1:100 000 map sheet Land tenure: private

Size: Large/region Specification: 2 large dry, or drained, lagoons, NE Flinders Island

Physical type: Natural sect. Landform

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Soils	Both rep. & out. Local	Holocene				

Highest level significance: Representative and outstanding for Local region

Description: Well developed lagoonal peats; 0.5-0.9m thick, neutral to slightly acid "fen" peats.

Management notes: *Natural vegetation has been cleared, lagoon(s) drained and pasture established in places - peats are hence now "fossil" features.*

Reference: Dimmock 1957

Form completed: 17/1/96

updated:

identifier: FLI42

Wingaroo parabolic dunes

Location: 586300 E, 5593300 N Flinders Island 1:100 000 map sheet Land tenure: Nature Reserve

Size: Medium/area Specification: approx. location only, occur over a wider area; NE Flinders Island

Physical type: Landform

Condition: Vulnerable

Threat: No

Geological type	Significance	Age	Geomorphology	Significance	Age	Active?
base	level		base	level		
Geomorph.			Aeolian	Representative Local	Holocene	No

Highest level significance: Representative for Local region

Description: Unconsolidated siliceous parabolic dunes, which have moved several kilometres inland in the past, but stabilisation is now general. Probably formed during late Last Glacial- early Holocene, partly pre-dating the eastern beach ridge series.

Management notes: *Sand landforms are inherently sensitive to disturbance, however at this site only erosion promoted by intensive burning is likely to be a potential threat.*

Reference: Kershaw and Sutherland 1972

Form completed: 17/1/96

updated:

identifier: FLI43

Forsyth Island stabilised longitudinal dunes

Location: 610900 E, 5514600 N Swan Island 1:100 000 map sheet Land tenure: wildlife sanctuary

Size: Medium/area Specification: dunes lie across elongate island, best developed at N and S ends.

Physical type: Landform Landscape

Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Geomorph.				Aeolian	Representative	Local	Quaternary	No

Highest level significance:

Representative for Local region

Description: Poorly developed (or now degraded) sand ridges (white, possibly bleached sand) cross island. Possible Last Glacial desert-type dunes, as occur in northeast Tasmania and on Flinders Island.

Management notes: Sand landforms are inherently sensitive to disturbance, appropriate management of wildlife sanctuary should include consideration of these features. Blowout is developing in centre of island.

Reference: Pemberton 1995

N. Brothers 1995 pers. comm.

Form completed: 17/1/96

updated:

identifier: SWA09

Sandy Lagoon palaeosol

Location: 600100 E, 5514600 N Swan Island 1:100 000 map sheet Land tenure: unallocated

Size: Small/site Specification: eroded scarp, east side Sany lagoon, Clarke Is.

Physical type: Natural sect.

Condition: Vulnerable

Threat: ?

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Soils	Representative	Local	Quaternary					

Highest level significance:

Representative for Local region

Description: Palaeosol(s) horizons exposed in eroded scarp (2m high) in face of lunette.

Management notes:

Reference: S. Harris 1996 pers. comm.

Form completed: 18/1/96

updated:

identifier: SWA14

South Head contact migmatite

Location: 599700 E, 5505600 N Swan Island 1:100 000 map sheet Land tenure: unallocated

Size: Small/site Specification: actual contact is small site, however hornfels etc extends further

Physical type: Outcrop Coastal

Condition: Robust

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Intrusive	Outstanding	Tasmania	Devonian					
Mineralogy	Representative	Local						
Relationship	Representative	Local						

Highest level significance:

Outstanding for Tasmania

Description: Extremely well-exposed contact (granite-Mathinna Beds) migmatite; felsic layers are boudinaged and migmatite is transgressed by irregular, younger aplite dykes; primary cordierite, andalusite and biotite occur in spotted hornfels up to 2km distant.

Management notes:

Reference: Cocker 1977 Ph.D. thesis
Cocker 1980

Form completed: 10/12/95

updated:

identifier: SWA10

Southwest Clarke Island granite tors

Location: 598500 E, 5507000 N Swan Island 1:100 000 map sheet Land tenure: unallocated

Size: Medium/area Specification: coastal outcrop

Physical type: Landform

Condition: Robust

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Geomorph.				Weather/soil Multiple	Outstanding	Local	Quaternary	Yes

Highest level significance:

Outstanding for Local region

Description: Attractive, large rounded tors in massive, granite outlined by very regular, widely-spaced orthogonal jointing. Similar (but not as well developed, or with as regular jointing) occur elsewhere along the west coast of Clarke Island.

Management
notes :

Reference: G. Dixon this study

Form completed: 6/2/96
updated:
identifier: SWA15

Spike Bay rhizomorphs

Location: 595000 E, 5511500 N Swan Island 1:100 000 map sheet Land tenure: unallocated

Size: Medium/area Specification: exposed in sand blow, western Clarke Island

Physical type: Landform

Condition: Vulnerable

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Geomorph.				Karst	Representative	Local	Quaternary	No

Highest level significance:

Representative for Local region

Description: Many relatively small calcareous rhizomorphs (or "solution tubes") exposed in sand blowout - one of more extensively exposed examples in the region.

Management
notes :

Reference: L. Gilfedder 1996 pers. comm.

Form completed: 17/1/96
updated:
identifier: SWA11

Turtle Creek granite contacts

Location: 594000 E, 5512900 N Swan Island 1:100 000 map sheet Land tenure: unallocated

Size: Medium/area Specification: exposures occur in several localities, ie. several 'small' sites

Physical type: Outcrop

Condition: Robust

Threat: No

Geological type	Significance		Age	Geomorphology	Significance		Age	Active?
	base	level			base	level		
Intrusive	Outstanding	Local	Devonian					
Relationship	Representative	Local	Devonian					

Highest level significance:

Outstanding for Local region

Description: A thin "screen" of Mathinna Beds sediments lies between two granite plutons, with Mathinna inclusions common along contacts.

Management
notes :

Reference: Cocker 1977 Ph.D. thesis
Cocker 1980

Form completed: 10/12/95
updated:
identifier: SWA13