Management Plan for Antarctic Specially Protected Area No. 125

FILDES PENINSULA, KING GEORGE ISLAND (25 DE MAYO)

(Fossil Hill, Holz Stream (Madera Stream), Glacier Dome Bellingshausen (Collins Glacier), Halfthree Point, Suffield Point, Fossil Point, Gradzinski Cove and Skua Cove)

INTRODUCTION

An area of 1.8 km^2 (444,79 acres) in the Fildes Peninsula, King George Island (25 de Mayo), South Shetland Islands archipelago, was proposed as a SPA (Special Protected Area) by Chile four decades ago on the grounds of its uniqueness and paleontological richness. The area was officially designated SPA No 12 at ATCM IV (Santiago, 1966). After 42 years under different statuses (SPA, SSSI and ASPA), and numerous scientific studies, it is necessary to review whether these areas can be considered an ASPA, whether or not they can be defined as "an area designated to protect outstanding environmental, scientific, historic, aesthetic or wilderness values".

Paleontological research conducted in the early 1960s by the Chilean geologist Vladimir Covacevich revealed the existence of avian ichnofossils on Fossil Hill. The proximity of these unique fossils to permanent stations was the principal basis for the designation of SPA No 12. Given that Fildes also harbors areas of paleobotanical richness, SPA No 12 was redesignated SSSI No 5 (Site of Special Scientific Interest) at ATCM VIII (Oslo, 1975). Finally, when Annex V entered into force in May 2002, all previously designated SPAs and SSSIs were included as ASPAs, with ASPA No 125 being created from SSSI No 5.

In this management plan for the ASPA No 125 it is proposed a division of 8 areas, where the old two areas are included in three new ones, but additionally it is proposed five new areas, on the basis of the new findings and research carried out during the last 20 years. Halfthree Point, Skua Cove, Gradzinski Cove, Glacier Dome Bellingshausen (Collins Glacier) and Fossil Point are the new areas, where three of them could provide very relevant information about the evolution of the Upper Cretaceous paleoenvironment of west Antarctica. The extension of the zones has been determined based in paleontological criteria, giving more value to the *in situ* outcrops and the quality and uniqueness degree of the fossil content.

The boundaries for the ASPA No 125 zones contributes to put under protection key fossil outcrops that with complimentary and unique records of the Cretaceous and Eocene times, completing the puzzle of fossiliferous protected areas of Antarctica.

1. Description of values to be protected

Fildes Peninsula, King George Island (25 de Mayo), is one of the areas in Antarctica of greatest paleontological interest, owing to the presence of outcrops with fossil remains of a wide range of organisms, including vertebrate and invertebrate ichnites, and abundant flora with impressions of leaves and fronds, trunks, and pollen grains and spores that date from the Late Cretaceous to the Eocene. The Cretaceous was a crucial time of vegetation change, due largely to the evolutionary and geographic radiation of angiosperms. Throughout the Late Cretaceous angiosperms progressively infiltrated the pre-existing vegetation, but gymnosperms, ferns and sphenophytes dominated land-plant biomass until the Cenozoic. Also, the Eocene represents the warmest lapse of time since the end-Cretaceous mass extinction. The study of this periods could answer several important scientific questions, were Fildes Peninsula outcrops could be a key.

The Fildes Peninsula Group (Hawkes, 1961) has been defined as the stratigraphic unit. Its basal unit consists of outcrops assigned to the Late Cretaceous (Late Campanian to Early Maastrichtian) and comprises fine intercalations of volconclastic sediments among andesitic rocks with suprajacent limestones, tuffaceous conglomerates, sandstones and clays assigned to the early-mid Eocene (Barton, 1965; Birkenmajer, 1997; Hawkes, 1961; Li & Liu, 1991; Liu *et al.*, 2005; Liu, 1992; Park & Jwa, 1991; Zhou *et al.*, 1991). The

sequence represents continental environments dominated by vegetation consisting of warm to temperate forest elements. Further, the sequence contains important vestiges of the rapid expansion of angiosperms in the region, as well as of the beginning of Nothofagaceae dominance among the forest components of the Antarctic Flora.

On Fildes Peninsula, at least three locations have continental volcano sedimentary rocks from the Late Cretaceous: Halfthree Point, Skua Cove and Gradzinski Cove. Halfthree Point (62º13'34''S; 58º56'56''W) is located southwest of the Chinese Station "Great Wall". The site is characterized by palynomorphs and leaf impressions deposited in a lacustrine environment (Shen, 1994) and conserved in tuffaceous sedimentary rock, suggesting a warm and humid environment (Cao, 1994). Shen (1994) used Rb-Sr to determine the age of the rocks, 71.3 ± 0.3 Ma. The presence of acritarchs among the microfossils has been interpreted as the sporadic influence of the ocean on the depositional environment, even though palynomorphs indicate a primarily continental environment. Nearly 80% of the palynomorphs pertain to cryptogamic flora (fungi, bryophytes and ferns) and 5% to the gymnosperms (*Araucariaceae* and *Podocarpaceae*). Angiosperm pollen grains are few in number; these are dominated by the morphogenus *Nothofagidites* but contain the species *N. senectus*, a primitive form of *Nothofagus*, which underscores the Cretaceous age of the sequence. Among the megafossils found, the most important impressions are of *Sphenopteris*, *Podocarpaceae* and dicotyledons, such as *Nothofagus*.

Skua Cove or Skuabucht, as the official SCAR-CGA name Ref. No. 13455 (62º10'44''S; 58º58'59''W), situated northwest of the Frei Station airport, is considered the most exceptional Late Cretaceous outcrop on Fildes Peninsula, because of the degree of conservation of its megaflora, and the uniqueness of the flora, which contains at least two endemic morphospecies. But the access to the outcrops and in situ fossils is very difficult. In this section, tuffaceous sandstones with paleosoils are found subjacent to limestone beds with carbonate lenses, impressions and palynomorphs, which in turn lie subjacent to conglomerates of fossil wood remains. A late andesitic unit has been dated to 57.7 Ma (Fensterseifer *et al*. 1988). Megafossil remains of pteridophytes (*Culcita*, *Osmundaceae*, *Thyrsopteris*), gymnosperms (*Phyllocladus* and *Podocarpus*), and anemophilous dicotyledenous angiosperms pertaining to distinct taxa, including Monimiaceae, Nothofagaceae, Myricaceae, among others, have been found.

Gradzinski Cove, also known as Bahía Cormoranes (62º09'12''S; 58º56'16''W) is an oblong shaped bay northwest of the peninsula, and west of the southwest margin of Glacier Dome Bellingshausen (Collins glacier). Here, small outcrops are confined within a 50 meter span, and no more than 7 meters thick composed of tuffaceous-sedimentary rocks -primarily clays, lutites, and sandstones. Although the conservation of impressions is average, the site has a good record of palynomorphs. More than 50% of these are represented by angiosperm pollen, among which there is a large presence of *Nothofagidites*; some 40% and 10% are represented by cryptogams and gymnosperms, respectively (Dutra & Batten 2000). This location corresponds to Price Point as indicted by Dutra and Batten (2000).

There is general agreement among geologists and paleobiologists about the importance of the Fildes Peninsula for understanding geological, biogeographical, and evolutionary events during the Eocene. The Fildes outcrops have already led to the rejection of models postulating cold and warm humid climates. The paleoassemblages discovered in the Fildes outcrops have permitted the reconstruction of a vegetation type very similar to that of the Valdivian Forest in southern Chile, that is, a temperate flora composed of elements commonly found in the modern floras of New Zealand, Australia, and South America, including Araucariaceae, Podocarpaceae, Nothofagaceae, Cunoniaceae, Lauraceae, Winteraceae and Proteaceae. In addition, important vertebrate and invertebrate ichnites were found on the Fildes Peninsula, shedding light on a time period of recent and growing interest, the Eocene. Interest stems from the fact that the largest temperature increase in the last 60 Ma occurred during this period.

There are two extensive zones with important fossil deposits, Fossil Hill (62º12'22''S; 58º59'03''W) and Glacier Dome Bellingshausen (Collins glacier) (62º10'11''S; 58º55'18''W). The stratigraphic sequences are correlated. The middle sequence of Glacier Dome Bellingshausen (Collins glacier) corresponds to the central portion of the Fossil Hill sequence, in what is denominated Fossil Hill Formation. It consists of alternating layers of volcanic breccia, lavas, tuffs, tuffaceous sandstones, and carbonate lenses, adding to a total of 13 meters thick. Fossil Hill is one of the most famous paleontological sites in Antarctica, because of the presence of leaf and fossil wood impressions, as well as invertebrate and at least four types of avian ichnites (fossilized footprints) (Covacevich & Lamperein 1970, 1972; Covacevich & Rich 1977, 1982; Li & Zhen 1994), including one phororacoid, a giant bird that occupied the niche of raptors during the Eocene. In addition, the flora of Glacier Dome Bellingshausen (Collins glacier) consists of abundant silicified trunk

remains that are exposed at the front of the receding Glacier Dome Bellingshausen (Collins glacier), which limits the Fildes peninsula on the north. Internal conservation of the trunks is extraordinary, allowing study of the anatomical superstructure and dendroecological analyses to be used in their recognition and identification.

Smaller outcrops exist in Holz Stream, also known in scientific literature as Madera Stream (62º11'27''S; 58º56'19''W), Suffield Point (62º11'34''S; 58º55'16''W) and Fossil Point (62º11'16''S; 58º54'30''W). The latter two, in the northeastern section of the peninsula, near Artigas Station, have silicified trunks and tuffaceous sediments that may link them with the middle unit of the Fossil Hill Formation. In contrast, at the head of the Holz Stream (Madera Stream), to the west of the Bellingshausen Station tanks, on the eastern central coast of the peninsula, the trunks either exist *in situ* or fragments have been transported downstream. These outcrops have tentatively been assigned to the Eocene.

2. Aims and objectives

Management of Fildes Peninsula aims to:

- protect the paleontological values because of their uniqueness and the ease with which scientific research can be conducted in the Area;
- facilitate non-destructive paleontological and geological scientific research in the Area;
- create a public exhibition and improve understanding of the values protected in ASPA No 125, and
- promote education and awareness about the values of this remarkable area.

3. Management activities

The following management activities will be carried out to protect the values of the Area:

- When visitors are approaching the facilities of the Fildes Peninsula (stations, bay and airport) and upon their arrival, all persons should be informed of the existence of ASPA No 125, its location and the relevant provisions of the management plan.
- There shall be copies of the management plan and maps of the Area that clearly indicate its location on all units conducting logistical and scientific activities on Fildes Peninsula, specially in all the stations, bases and logistic facilities of the Fildes Peninsula.
- The transit to reach the zones will be developed following only the pre-existent demarked routes in Fildes Peninsula. In the places where there are not a pre-existent demarked routes, the transit must developed only by foot.
- On the access routes to Fossill Hill, Halfthree Point, Skua Cove, Gradzinski Cove, Holz Stream (Madera Stream), Glacier Dome Bellingshausen (Collins glacier), Suffield Point and Fossil Point, signs shall be erected that show the boundaries of the Area and clearly indicate restricted access ("Entry forbidden. Antarctic Specially Protected Area"), so as to avoid accidental entry into the Area.
- Signs installed in the Area should be secure, maintained in good condition and not harm the environment.
- The management plan shall be revised periodically to ensure protection of the values of the ASPA.

4. Period of designation

Designated for an indefinite period.

5. Maps

Map 1: Location of Fildes Peninsula, King George Island (25 de Mayo), South Shetland Islands Archipelago.

Map 2: Boundaries of Antarctic Specially Protected Area No 125, Fildes Peninsula.

Map 3: Location of zone 125a, Fossil Hill.

Map 4: Location of zone 125b, Holz Stream (Madera Stream).

Map 5: Location of zone 125c, Glacier Dome Bellingshausen (Collins glacier).

Map 6: Location of zone 125d, Halfthree Point.

Map 7: Location of zones 125e and 125f, Suffield and Fossil Points, respectively.

Map 8: Location of zone 125g, Gradzinski Cove.

Map 9: Location of zone 125h, Skua Cove.

6. Description of the Area

i. Geographical coordinates, boundary markers and natural features

GENERAL DESCRIPTION

The Fildes Peninsula is the most extensive coastal area free of snow in summer in King George Island (25 de Mayo), with a length of around 7 km. In general terms, appears as a tableland made up of old coastal landforms, with an average height of 30 m above sea level and rocky outcrops around the 100 meters. It is a territory with its own special characteristics, different from those of the rest of the island, which is covered by the ice from Collins Glacier.

ZONES

This Management Plan consider 8 different zones for the ASPA No 125, four of them located in the southern coast of Fildes Peninsula, two of them in the northern coast, one in the central southern part of Fildes and the last one, in the vicinity of the glacier:

125a: Zone located on Fossil Hill, in the central south part of Fildes Peninsula (see Map 3). It considers an area of 0.568 km^2.

125b: Zone located by Holz Stream (Madera Stream), in the southeast part of Fildes Peninsula (see Map 4). It zone consider two areas crossed by the road that connect Artigas Station with the other Stations in the southern part of the peninsula. The total area compromised is 0.178 km^2 (zone 125b1: 0.104 km^2 and zone 125b2: 0.074 km^2).

125c: Is the buffer zone surrounding the snout of Glacier Dome Bellingshausen (Collins glacier) (Map 5). Compromise an area of 1.412 km^2.

125d: Is the zone Area surrounding Halfthree and Dario Points, facing Maxwell Bay (Fildes Bay) (Map 6). The zone has an area of 0.019 km^2.

125e: It is the zone located at Suffield Point, in front of Maxwell Bay (Fildes Bay) (Map 7). It has an area of 0.024 km^2.

125f: Zone that compromise Fossil Point, facing Maxwell Bay (Fildes Bay) (Map 7), with an area of 0.013 km^2.

125g: Zone located in the northern part of Gradzinski Cove, also known as Biologists Bay, with an access from Klotz Valley (Map 8). The zone is located in the northern coast of Fildes Peninsula and has an area of 0.021 km^2.

125h: The zone in the vicinity of Skua Cove, covered by the Fuschloger beach, in the northern coast of Fildes Peninsula (Map 9). The zone has a total area of 0.117 km^2.

The transit to and from each one of these zones must be developed following only the pre-existent demarked routes in Fildes Peninsula. In the places where there are not a pre-existent demarked routes, the transit must developed only by foot.

PLANT FOSSILS

The palaeobotanical importance of Fildes Peninsula has been remarked by several researches during at least fifty years. A high level of diversity of Pteridophyta and Magnoliophyta could be inferred from the table 1, exhibiting the floral diversity of the Fildes Peninsula Group.

Table 1. Plant fossil taxa (at family taxonomic rank) present in the Upper Cretaceous and Eocene outcrops of Fildes Peninsula.

Principal plant families in the Fildes Peninsula Group					
Sphenophyta	Pteridophyta	Lycophyta	Cycadophyta	Coniferophyta	Magnoliophyta
Equisetaceae	Adiantaceae	Selaginellaceae	Zamiaceae	Araucariaceae	Araliaceae
	Aspleniaceae			Cupressaceae	Caesalpinaceae
	Blechnaceae			Podocarpaceae	Hydrangeaceae
	Cyatheaceae				Malvaceae
	Dicksoniaceae				Poaceae
	Gleicheniaceae				Anacardiaceae
	Hymenophyllaceae				Cochlospermaceae
	Lophosoriaeceae				Cunoniaceae
	Osmundaceae				Dilleniaceae
	Polypodiaceae				Gunneraceae
	Salviniaceae				Icacinaceae
	Schizeaceae				Lauraceae
					Loranthaceae
					Melastomataceae
					Monimiaceae
					Myricaceae
					Myrtaceae
					Nothofagaceae
					Proteaceae
					Rhamnaceae
					Sapindaceae
					Sterculiaceae

Source: Cao 1989, 1994; Czajkowski & Rosler 1986; Dutra 2001; Dutra & Batten 2000; Gazdzicki & Wrona 1982; Li 1991, Li & Shen 1989; Li 1994; Li & Zhou 2007; Li & Shen 1994; Liu 1990; Lyra 1986; Palma-Heldt 1987; Perea *et al.* 2001; Poole *et al.* 2000; Poole *et al*. 2001; Shen 1989, 1994, 1992a, 1992b, 1994a, 1994b; Song & Cao 1994; Sun *et al*. 2002a; Sun *et al*. 2002b; Sun *et al*. 2005; Tatur & Del Valle 1986; Torres & Meon 1993; Torres & Meon 1990; Troncoso 1986; Vakhrameev 1991; Xue 1994; Xue *et al*. 1996; Zhang & Wang 1994; Zhou & Li 1994a; Zhou & Li 1994b; Zhou & Li 1994c.

PLANTS

The amount and type of terrestrial vegetation depends on relief, soil moisture content, and the degree of soil enrichment from birds and seals. The Region is home to two flowering plants - Antarctic hair grass (*Deschampsia antarctica*) and Antarctic pearlwort (*Colobanthus quitensis*). Some areas are densely covered by moss carpets. A total of about 175 lichen and 40 moss species have been identified in the Region (Peter *et al.* 2008).

Freshwater phytoplankton (Chlorophyceae-diatomes) biomass is low. The zooplankton is primarily composed of *Pseudoboeckella poppei* and *Branchinecta gaini* (Bonner & Smith 1985). The shoreline assemblages are made up of important communities of *Nacella concinna* and algae populations, such as *Phyllogigas*, *Desmarestia*, *Leptogomia*, *Iridaea*, *Gigartina*, *Ascoseira* and *Phaerus* (Bonner & Smith 1985).

VERTEBRATES

12 bird species have been identified on the Peninsula, including the Brown skua (*Catharacta antarctica lonnbergi*), South polar skua *(Catharacta maccormicki)*, Snowy sheathbill (*Chionis alba*), Cape petrel (*Daption capense*), Kelp gull (*Larus dominicanus*), Southern giant petrel (*Macronectes giganteus*), Wilson's storm petrel (*Oceanites oceanicus*), Blackbellied storm petrel (*Fregetta tropica*), Adelie penguin (*Pygoscelis adeliae*), Chinstrap penguin (*P. antarctica*), Gentoo penguin (*P. papua*) and Antarctic tern (*Sterna vittata*).

Of the mammal species, the most important are the Weddell seals (*Leptonychotes weddellii*) and the Southern elephant seals (*Mirounga leonina*). At the end of the summer, Antarctic fur seals (*Arctocephalus gazella*) are found in large numbers. Antarctic fur seals pups had been recorded in the northern coast of Fildes Peninsula; nevertheless, the breeding success has not been informed. Occasionally, Leopard seals (*Hydrurga leptonyx*) visit the area.

ii. Special and managed zones within the Area

There are no special zones within the Area.

iii. Structures within and near the Area

There are no structures in the Area.

iv. Location of other protected areas within close proximity of the Area

There are four protected areas in Nelson and King George (25 de Mayo) Islands, close to Fildes Peninsula. The nearest one is Ardley Island, ASPA No 150, about 1 km east from Fossil Hill and 2 km south of Suffield Point. ASPA No 128, on the western shore of Admiralty Bay, is located about 25.3 km northeast of Fildes Peninsula. Also in King George Island (25 de Mayo), ASPA No 132, Potter Peninsula, is approximately 15 km southeast of Fildes Peninsula. Finally, Harmony Point, ASPA No 133, is located around 18 km southwest of Fossil Hill.

7. Permit conditions

Entry into the Area is prohibited except in accordance with a permit issued by an appropriate national authority.

Conditions for issuing a Permit to enter the Area are that:

- permits will be issued only for the purposes specified in section 2 of the management plan;
- permits shall be issued for a stated period;
- the actions permitted will not jeopardize the natural ecological or scientific values of the Area;
- during the stated period, scientific staff present within the Area must carry the permit or an authorized copy thereof;
- visits to the Area shall be allowed, with an authorization of their own national Antarctic representative. Visits shall be recorded in a visitor's book at Escudero Scientific Station (Chile), specifying the date and purpose of the visit, as well as the number of visitors.
- A report of the visit shall be presented to the appropriate national authority when the permit ends or at the end of the season.
- Permits shall be issued for scientific research that is justified and that guarantees minimal impact to the outcrops. Duplication of research should be avoided.
- Permits issued for visits to or stays in the Area shall specify the extent and duration of the activities and the maximum number of persons authorized to visit the area.

i. Access to and movement within the Area

Access to the ASPA shall be on foot, and the movement within the Area shall be only on foot.

On foot

Only permit holders with authorized entry into the Area shall be permitted to access it on foot.

Pedestrian traffic is restricted to the trails indicated on the maps, which are annexed to this management plan. The access to each zone is shown in the maps.

Vehicle access

Entry into the Area by vehicles of any kind is strictly forbidden.

ii. Activities that are or may be conducted within the Area, including restrictions on time or place

- Research on fossil outcrops and other environmental studies that cannot be conducted elsewhere;
- Essential management activities, including monitoring;
- Educational visits to the Fildes paleontological museum in the Chilean Station "Profesor Julio Escudero", located outside the ASPA 125, but with a collection of fossils from this area.

iii. Installation, modification or removal of structures

Installation of structures or scientific equipment in the Area shall only be permitted for scientific or managment purposes, and must be approved by the appropriate national authority.

All installations shall be removed when they are no longer required.

iv. Location and regulation of field camps

Camping is not permitted in the Area, given access to facilities at the stations.

v. Restrictions on materials and organisms that can be brought into the Area

No living organisms shall be introduced into the Area. Chemicals not required for the scientific purposes specified in the permit shall not be brought into the Area. Chemicals introduced for research purposes shall be removed from the Area before the permit expires.

Fuel shall not be stored in the Area.

All materials introduced shall be for a stated period only, shall be stored and handled so that risk of their introduction into the environment is minimized, and shall be removed at or before the conclusion of the stated period. Permanent storage installations shall not be erected in the Area.

vi. Taking or harmful interference with native flora or fauna

Taking or harmful interference with native flora and fauna is prohibited, except in accordance with a permit issued under Arcticle 3 of Annex II to the Madrid Protocol. Where the activity involves removing or tampering with native flora or fauna, the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica should be used as a minimum standard.

vii. Collection or removal of anything not brought into the Area by the permit holder

Material not brought into the Area by the permit holder may be collected or removed from the Area only in accordance with a permit and should be limited to the minimum necessary to meet scientific or management needs. Removal of dead biological specimens or geological samples for scientific purposes must not exceed levels that affect the other species or values in the Area, and may only be taken for scientific studies.

Human waste produced due the development of any activities, shall be removed from the Area.

viii. Disposal of waste

All waste must be removed from the area.

ix. Measures that are necessary to ensure that the aims and objectives of the management plan can continue to be met

- Permits may be granted to enter the Area to conduct scientific research, biological monitoring and site inspection activities, which may involve the collection of limited samples of rocks for scientific purposes.
- To help maintain the ecological and scientific values of the Area, visitors shall take special precautions against the introduction of non-native materials and organisms.
- Long-term monitoring sites should be appropriately marked on the map and at the site.
- At the Artigas, Bellingshausen, Escudero, Frei and Great Wall stations, a copy of the management plan and a map showing the boundaries of the ASPA should be placed in full view. Free copies of the management plan shall be made available.

x. Requirements for reports

- Parties should ensure that the principal holder of each permit issued submit to the appropriate authority a report describing the activities undertaken.
- The report shall include, as appropriate, the information identified in the Visit Report form contained in Appendix 4 of the Guide to the Preparation of Management Plans for Antarctic Specially Protected Areas, appended to Resolution 2 (1998). Parties should maintain a record of such activities, and, in the annual Exchange of Information, should provide summary descriptions of activities conducted by persons subject to their jurisdiction.
- Said descriptions should be in sufficient detail to allow evaluation of the effectiveness of the Management Plan.
- Parties shall, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage, to be used both in any review of the Management Plan and in organizing the scientific use of the Area.

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ANNEX: MAPS

Map 1: Location of Fildes Peninsula, King George Island (25 de Mayo), South Shetland Islands Archipelago.

Map 2: Boundaries of Antarctic Specially Protected Area No 125, Fildes Peninsula.

Map 3: Location of zone 125a, Fossil Hill.

Map 4: Location of zone 125b, Holz Stream (Madera Stream).

Map 5: Location of zone 125c, Glacier Dome Bellingshausen (Collins glacier).

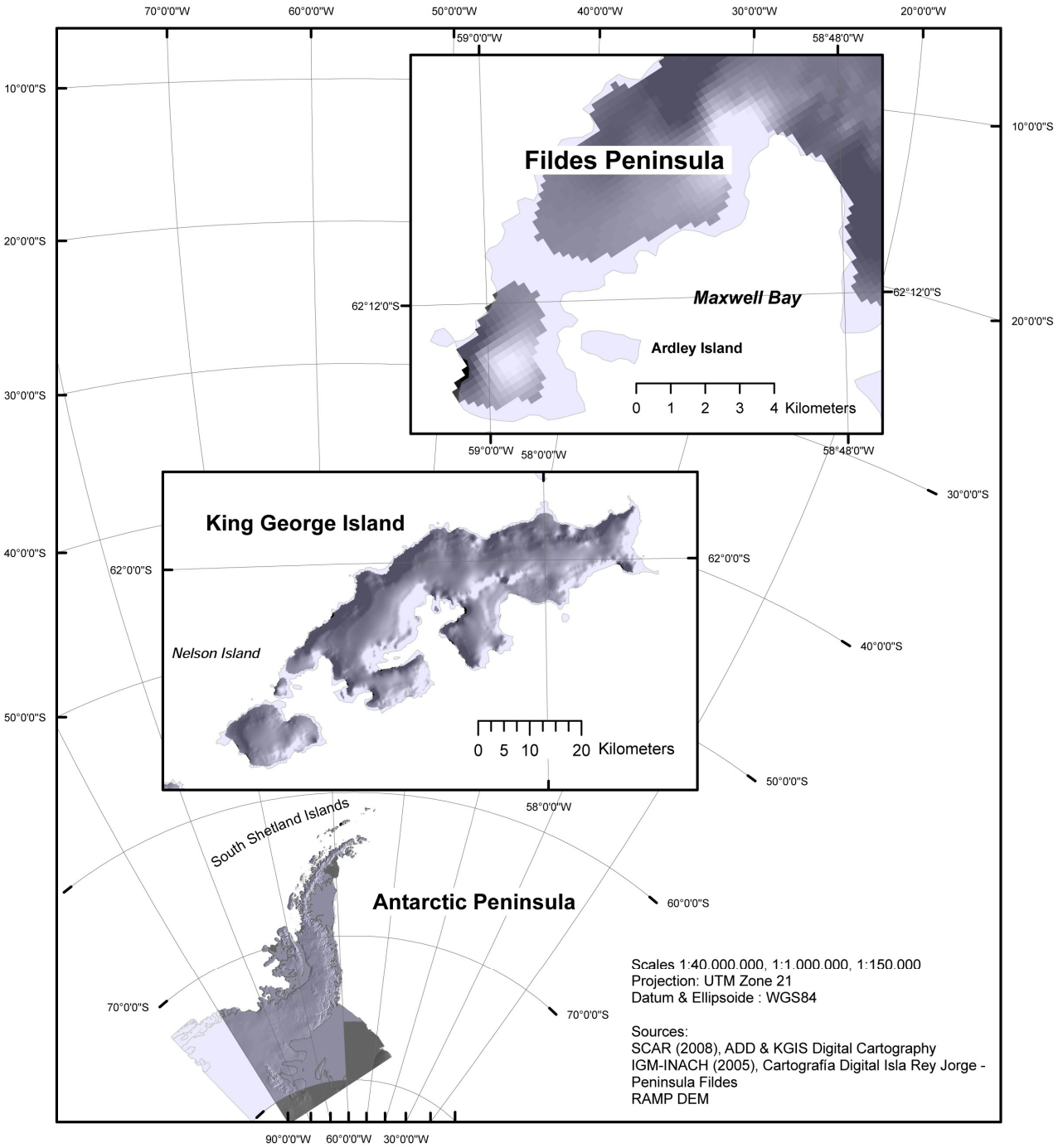
Map 6: Location of zone 125d, Halfthree Point.

Map 7: Location of zones 125e and 125f, Suffield and Fossil Points, respectively.

Map 8: Location of zone 125g, Gradzinski Cove.

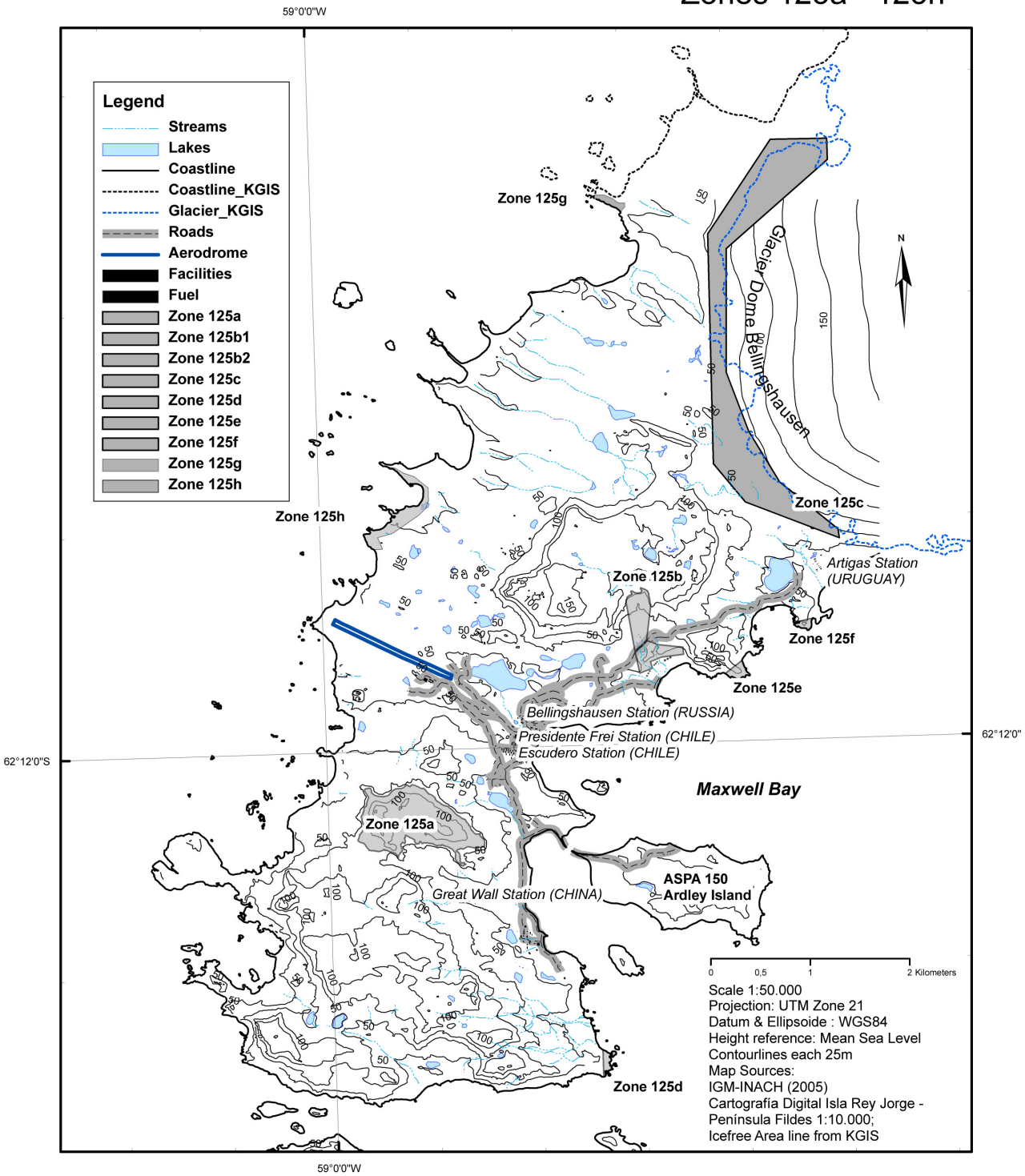
Map 9: Location of zone 125h, Skua Cove.

ASPA 125 - Fildes Peninsula
Location Map



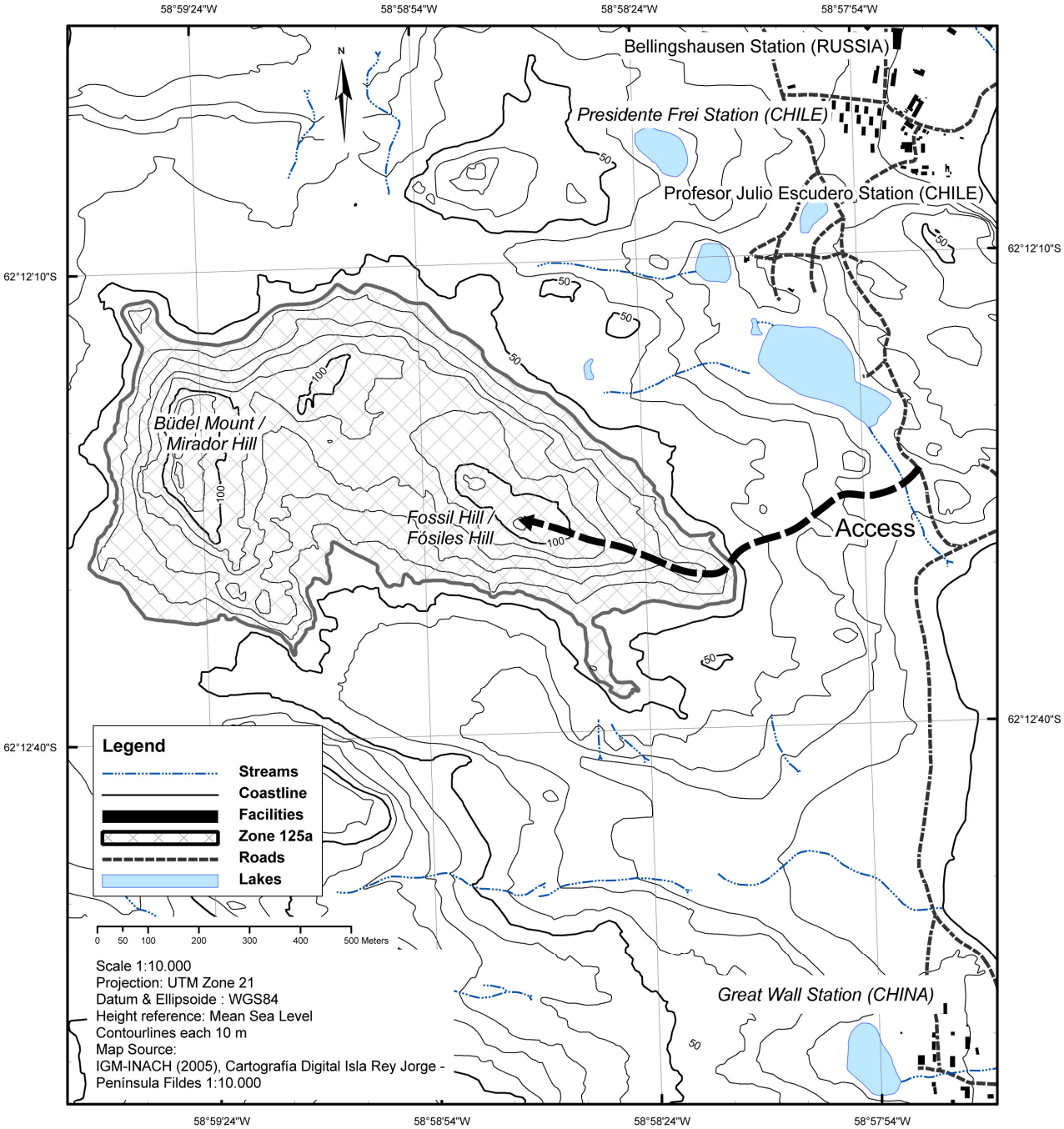
ASPA No 125 - Fildes Peninsula

Zones 125a - 125h



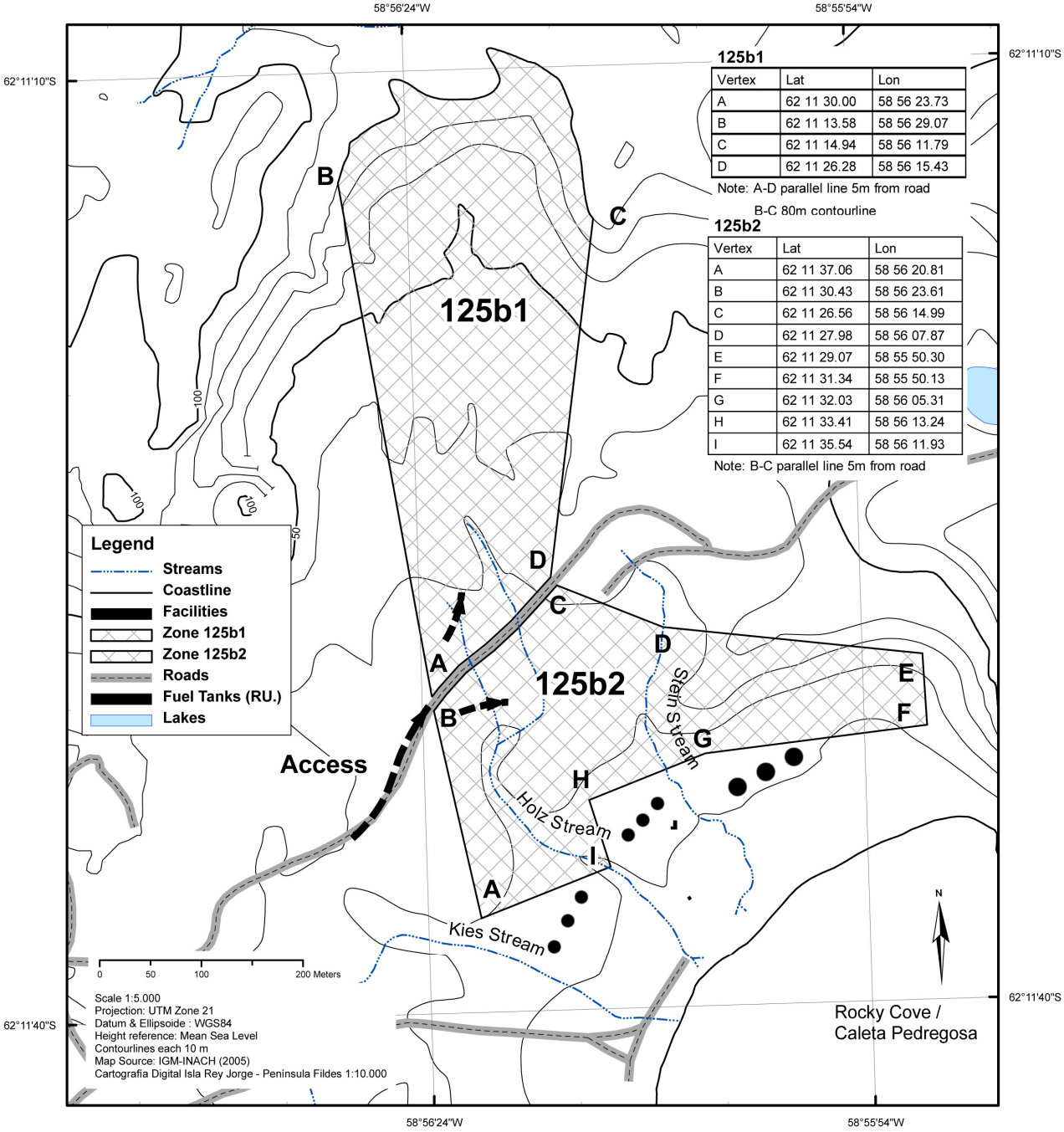
ASPA No 125 - Fildes Peninsula

Zone 125a : Fossil Hill



ASPA No 125 - Fildes Peninsula

Zone 125b : Holz Stream (Madera Stream)



125b1

Vertex	Lat	Lon
A	62 11 30.00	58 56 23.73
B	62 11 13.58	58 56 29.07
C	62 11 14.94	58 56 11.79
D	62 11 26.28	58 56 15.43

Note: A-D parallel line 5m from road
B-C 80m contourline

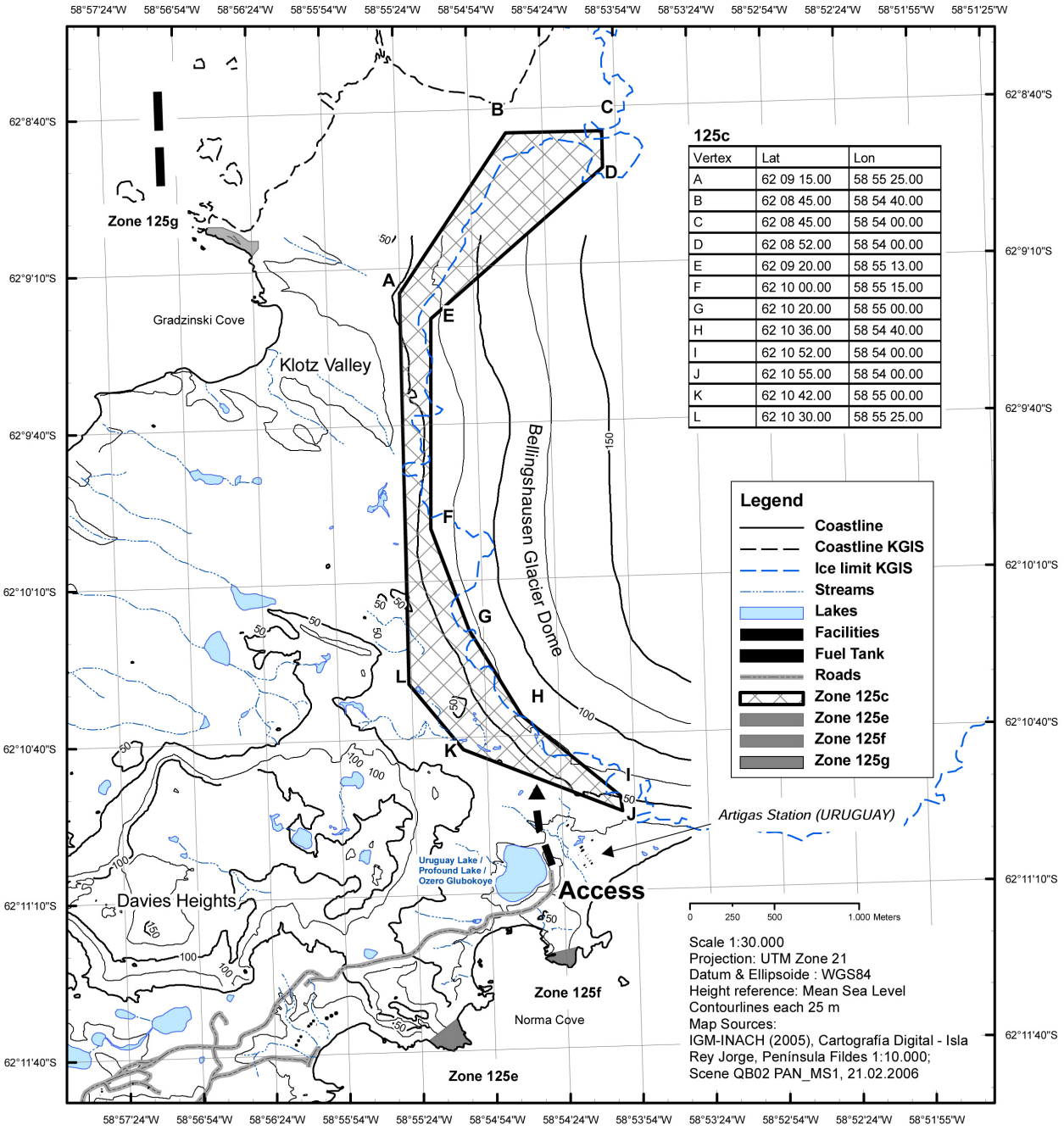
125b2

Vertex	Lat	Lon
A	62 11 37.06	58 56 20.81
B	62 11 30.43	58 56 23.61
C	62 11 26.56	58 56 14.99
D	62 11 27.98	58 56 07.87
E	62 11 29.07	58 55 50.30
F	62 11 31.34	58 55 50.13
G	62 11 32.03	58 56 05.31
H	62 11 33.41	58 56 13.24
I	62 11 35.54	58 56 11.93

Note: B-C parallel line 5m from road

ASPA No 125 - Fildes Peninsula

Zone 125c : Bellingshausen Glacier Dome

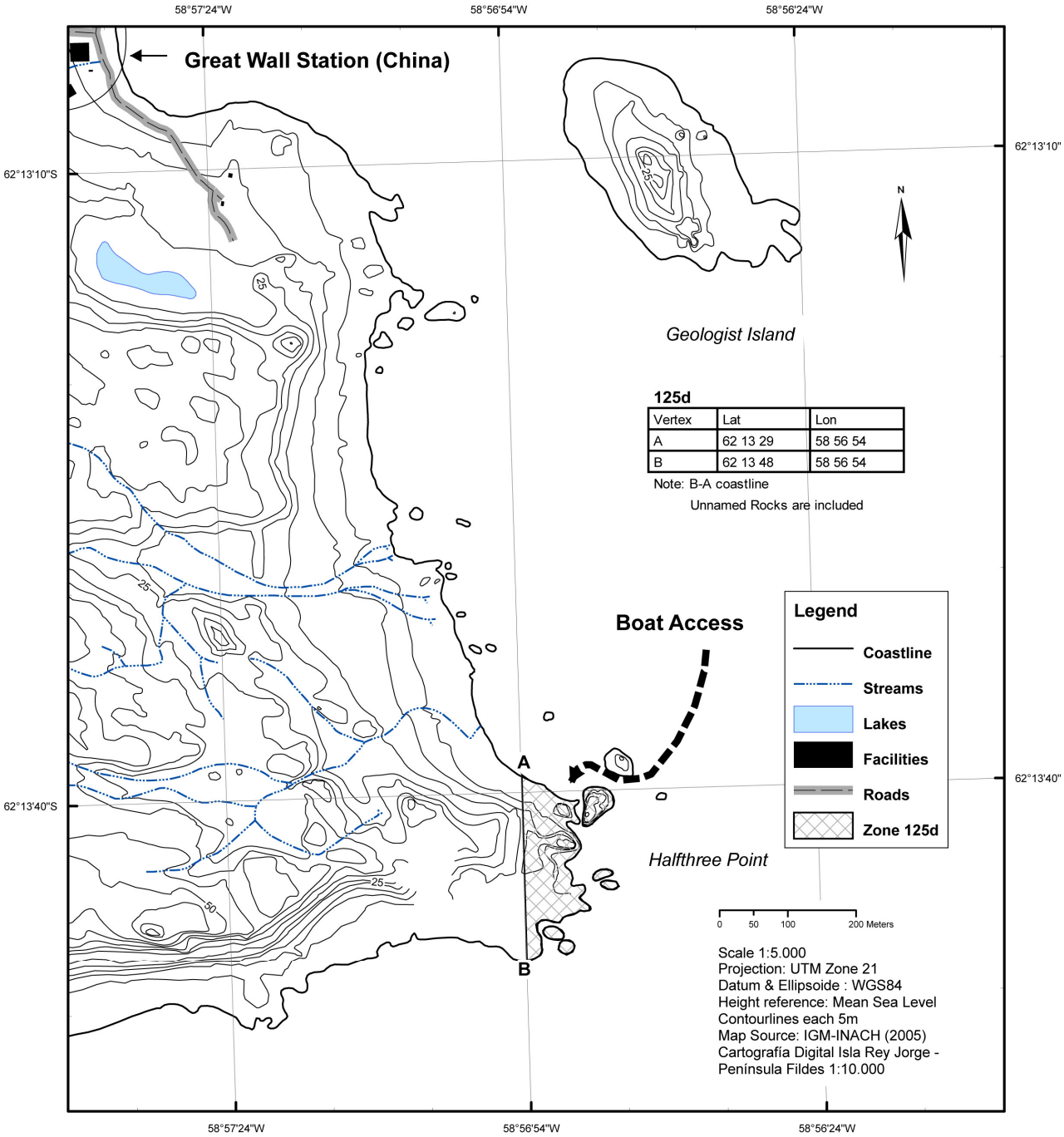


125c

Vertex	Lat	Lon
A	62 09 15.00	58 55 25.00
B	62 08 45.00	58 54 40.00
C	62 08 45.00	58 54 00.00
D	62 08 52.00	58 54 00.00
E	62 09 20.00	58 55 13.00
F	62 10 00.00	58 55 15.00
G	62 10 20.00	58 55 00.00
H	62 10 36.00	58 54 40.00
I	62 10 52.00	58 54 00.00
J	62 10 55.00	58 54 00.00
K	62 10 42.00	58 55 00.00
L	62 10 30.00	58 55 25.00

ASPA No 125 - Fildes Peninsula

Zone 125d : Halfthree Point



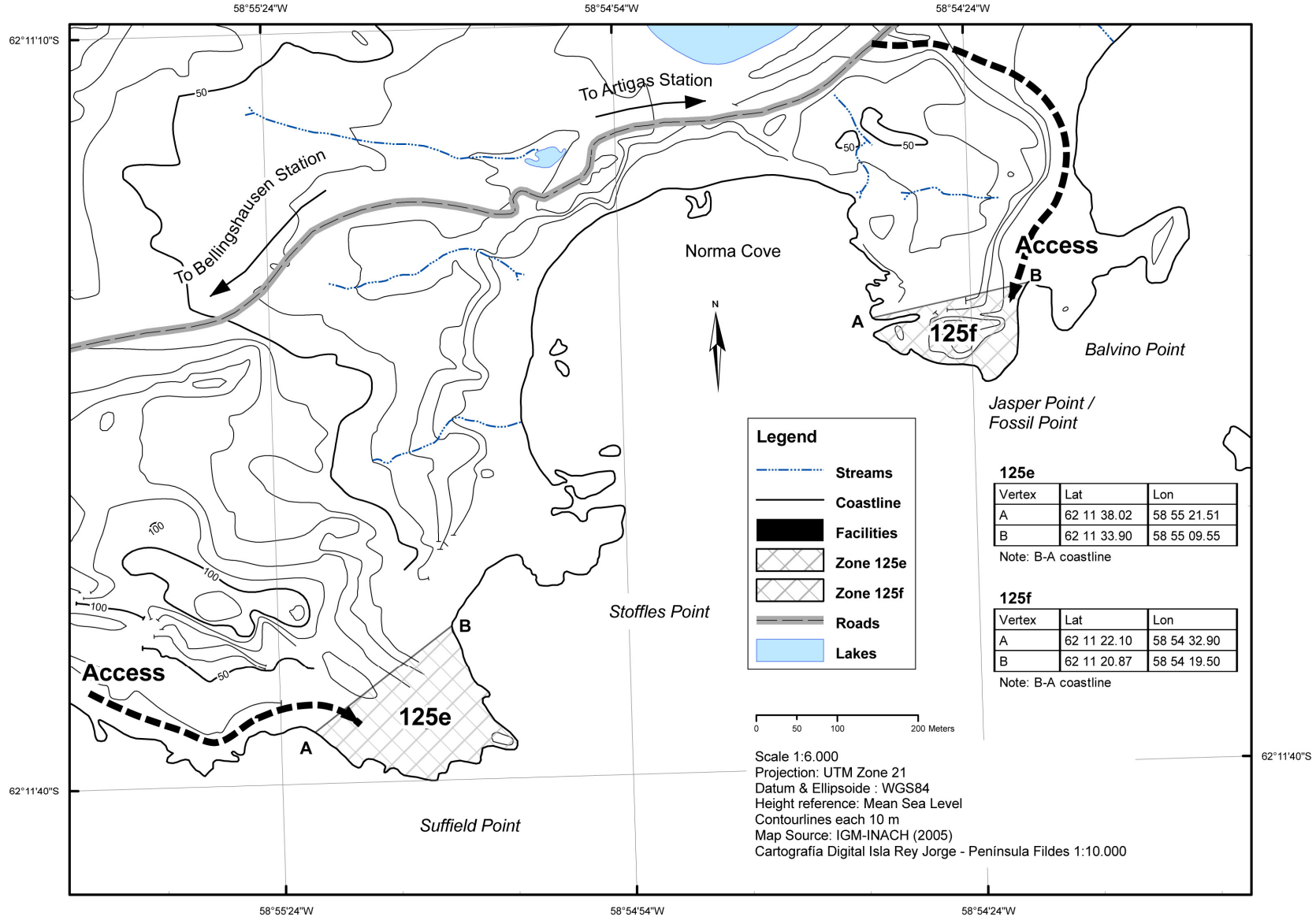
125d

Vertex	Lat	Lon
A	62 13 29	58 56 54
B	62 13 48	58 56 54

Note: B-A coastline
Unnamed Rocks are included

ASPA No 125 - Fildes Peninsula

Zone 125e :Suffield Point & Zone 125f : Fossil Point



125e

Vertex	Lat	Lon
A	62 11 38.02	58 55 21.51
B	62 11 33.90	58 55 09.55

Note: B-A coastline

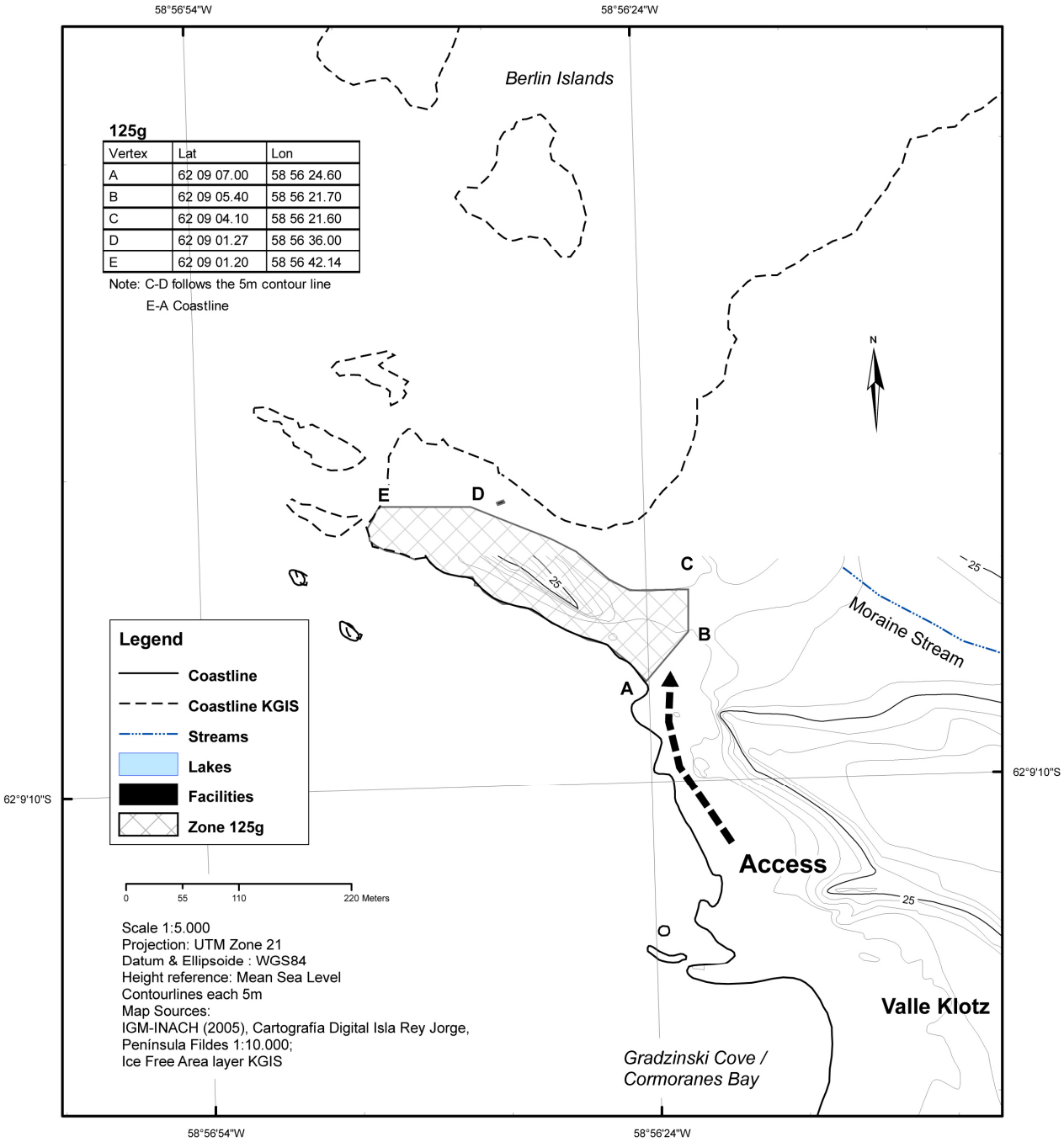
125f

Vertex	Lat	Lon
A	62 11 22.10	58 54 32.90
B	62 11 20.87	58 54 19.50

Note: B-A coastline

ASPA No 125 - Fildes Peninsula

Zone 125g : Gradzinski Cove (Cormoranes Bay)



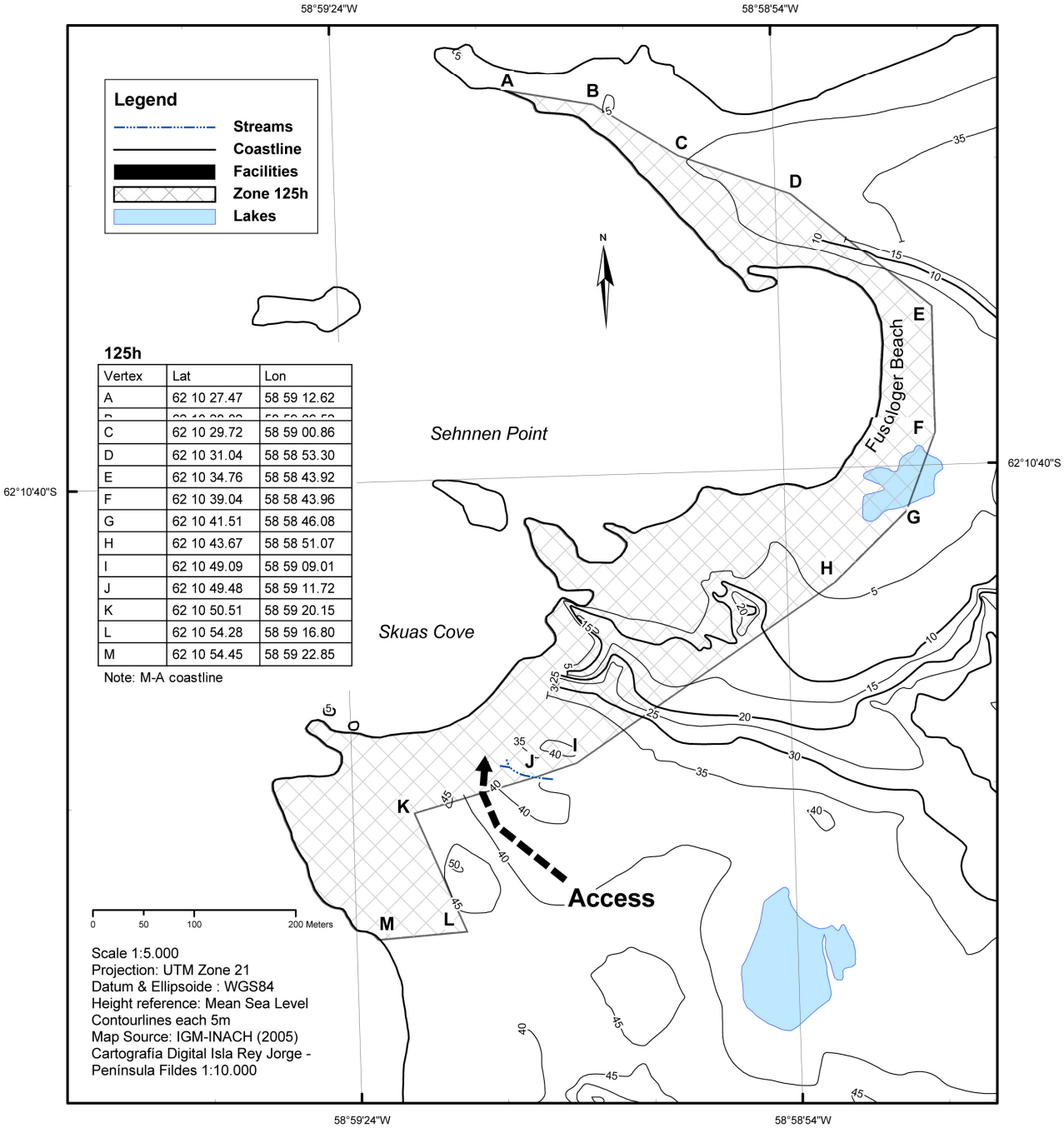
125g

Vertex	Lat	Lon
A	62 09 07.00	58 56 24.60
B	62 09 05.40	58 56 21.70
C	62 09 04.10	58 56 21.60
D	62 09 01.27	58 56 36.00
E	62 09 01.20	58 56 42.14

Note: C-D follows the 5m contour line
E-A Coastline

ASPA No 125 - Fildes Peninsula

Zone 125h : Skuas Cove



125h

Vertex	Lat	Lon
A	62 10 27.47	58 59 12.62
[illegible]	[illegible]	[illegible]
C	62 10 29.72	58 59 00.86
D	62 10 31.04	58 58 53.30
E	62 10 34.76	58 58 43.92
F	62 10 39.04	58 58 43.96
G	62 10 41.51	58 58 46.08
H	62 10 43.67	58 58 51.07
I	62 10 49.09	58 59 09.01
J	62 10 49.48	58 59 11.72
K	62 10 50.51	58 59 20.15
L	62 10 54.28	58 59 16.80
M	62 10 54.45	58 59 22.85

Note: M-A coastline