
Tables

(Table 2.1) Summary of the Palaeocene igneous geology of the Isle of Skye (based on Bell, J.D., 1976, table 1; Bell, B.R. and Harris, 1986)

Late dykes (dolerite, felsite and peridotite)		
Eastern Red Hills Centre		
Composite acid/basic sheets		
Five granite intrusions		
Kilchrist hybrids (possibly post-date some of the granites)		
Broadford and Beinn nan Cro gabbros		
Acid lavas, ignimbrites, tuffs and agglomerates of Kilchrist vent (may pre-date this Centre by a considerable amount)		
Dykes (dolerite, pitchstone)		
Western Red Hills Centre		
Marsco and Meall Buidhe granites		
Marscoite suite of hybrids, etc.		
Nine granite and major felsite intrusions		
Marsco Summit Gabbro		
Belig vent		
Dykes (dolerite)		
Strath na Crèitheach Centre Three granite intrusions Loch na Crèitheach vent		
Dykes (dolerite)		
Cuillin Centre		
Cone-sheets (dolerite)		
Coire Uaigneich Granophyre (but see text)		
Intrusive tholeiites		
Druim na Ramh Eucrite		
Explosive vents (of several ages)		
Inner Layered Series: allivalite, eucrite, gabbro		
Outer Layered Series: allivalite, eucrite, gabbro		
Layered Peridotite Series		
Border Group: gabbro, allivalite		
Cone-sheets and dykes (overlap with many of the above)		
Palaeocene lavas		
Preshal More tholeiitic flows		
Skye Main Lava Series (SMLS) flows (with sparse clastic sedimentary horizons, and basal sediments and tuffs)		
N.B. Additional details through text.		

(Table 2.2) Correlation of the divisions of the Palaeocene lavas of the Isle of Skye (mainly after Williamson, 1979, table 1).

NORTHERN SKYE	WEST-CENTRAL SKYE	Based mainly on NORTHERN SKYE
(1) Anderson and Dunham (1966)	(2) Williamson (1979)	(3) Thompson <i>et al.</i> (1972)
	7. Talisker Group	Preshal Mhor tholeiitic basalts

5. Osdale Group	6. Loch Dubh Group	Skye Main Lava Series
4. Bracadale Group	5. Arnaval Group	Transitional and alkali-olivine basalts, hawaiites, mugearites, benmoreites and trachytes.
3. Beinn Totaig Group	4. Tusdale Group	
2. Ramascaig Group	3. Cruachan Group*	
1. Beinn Edra Group	2. Bualintur Group	More fractionated types are more common in the higher groups.
	1. Meacnaish Group	

Individual groups are probably geographically restricted (see, for example Anderson and Dunham, 1966, figure 13)

* The thick fluviatile conglomerates of the Allt Geodh a' Ghamhna site are at the base of this group.

(Table 2.3) The succession at Allt Geodh a' Ghamhna (after Williamson, 1979, table 2)

14	Thin, alkali olivine basalts with scoriaceous tops	7 m
13	Massive basaltic lava with pillow structures towards the base	5 m
12	Thin white ash	0.03 m
11	Coal	0.05 m
10	Sandstone with obscure plant remains occurring as diffuse carbonaceous streaks	0.2 m
9	and rootlets, possibly seat earth Coal	0.01–0.05 m
8	Conglomerate with well-packed, rounded pebbles and cobbles of granophyre, quartzite, porphyritic rhyolite and red arkose. Clasts have a maximum diameter of 0.10–0.15 m, and are set in a pale sandy matrix	3.2 m
7	Sandstone with micaceous partings	0.2 m
6	Coal	0.02 m
5	Sandstone with plant remains	1.8 m
4	Conglomerate with a more sandy matrix than Bed 2, and a smaller proportion of acid igneous to arenaceous sediments than Bed 8. Rare pebbles of amygdaloidal and feldspar macroporphyritic basalt. Clast size <0.30 m, averaging 0.10–0.15 m. Thin lenses of white sandstone in lower horizons	2.3 m
3	Fine-grained sandstone, laminated base	1.1 m
2	Massive conglomerate with densely packed, crudely imbricated clasts of red arkose up to 0.30 m in diameter. Contains green siltstones with a sandstone wedge thickening to the north	2.75 m
1	Highly amygdaloidal basaltic lavas forming the top of the cliff at about 125 m elevation	10 m

(Table 2.4) Minerals present in skarn zones (after Tilley, 1951, Table 1)

Aureole beyond the skarn zones	Skarn zones Group 1 Primary skarns	Skarn zones Group 2	
		Boron-fluorine ore skarns	
Talc	Grossular-andradite*	Magnetite*	Grossular-andradite
Tremolite	Wollastonite solid solutions*	Tremolite	Hydro grossular
Forsterite	Diopside-hedenbergite	Forsterite*	Idocrase
Diopside	Spinel	Diopside*	Bornite
Periclase	Plagioclase	Monticellite*	Chalcosite
Wollastonite	Idocrase	Cuspidine*	Covellite
Spinel	Xanthophyllite	Fluorite	Chalcopyrite
Idocrase	Phlogopite	Chondrodite*	Pyrite
Grossular	Orthite	Humite	Blende
Phlogopite	Clinozoisite-epidote	Clinohumite	Galena
Brucite	Prehnite	Ludwigite	Chessylite
Serpentine	Apophyllite	Fluoborite	Malachite
Chlorite	Pectolite	Szailbelyite	
Hydromagnesite	Xonotlite	Datolite	
		Harkerite	

* most abundant minerals

(Table 2.5) Succession in the Cuillin Hills site (after Bell and Harris, 1986, pp. 45–6)

Granites of the Strath na Crèitheach Centre

Volcaniclastic deposits of Strath na Crèitheach dolerite cone-sheets

Coire Uaigneich Granite

Intrusive tholeiites of the Outer and Main Ridge Complexes

Inner Layered Series

Inner Layered Gabbros

(?vent agglomerates in Harta Corrie)

Inner Layered Eucrites

Inner Layered Allivalites

Druim nan Ramh Eucrite

Agglomerates and explosion breccias of diatremes

Dykes

(Gars Bheinn ultrabasic sill?)

Outer Layered Series

Outer Layered Gabbros

Outer Layered Eucrites

Outer Layered Allivalites

Layered Peridotites

Border Group (including White Allivalite)

Cone-sheets

Dykes

Outer Marginal Gabbros and Eucrites

?Early Granites (may pre-date Palaeocene basalts of south-west Skye)

Basalt lavas

Torridonian sediments

(Table 3.1) Summary of the Palaeocene igneous geology of Rum and the Small Isles (based on Emeleus and Forster, 1979, table 1, with later amendments)

Valley-filling pitchstone of the Sgurr of Eigg, and associated conglomerates Dolerite dykes

Lavas and fluviatile sediments of north-west Rum and Canna-Sanday, olivine basalts, hawaiites, mugearite (on Canna), including also tholeiitic basaltic andesite, icelandite (on Rum)

—Period of profound erosion during which the Rum central igneous complex was unroofed and eroded—

The Rum Layered Igneous Complex:

Central Series: feldspathic peridotites, including breccias and some layered allivalites and peridotites

Western Layered Series (WLS): feldspathic peridotites and gabbroic rocks at Harris

Eastern Layered Series (ELS): layered feldspathic peridotite and allivalite, also gabbroic and ultrabasic intrusive bodies

(The WLS and ELS above may be coeval)

Dolerite and basalt dykes (some also post-date the Layered Igneous Complex)

Dolerite and basalt cone-sheets on Rum

Early phase of acid igneous activity:

Western Granite, also granite at Papadil and Long Loch

Porphyritic felsite (ignimbrites, in caldera, and intrusions)

Tuffisites (some may post-date porphyritic felsite)

Volcaniclastic breccias - probably a mixture of explosion breccias and breccias formed by caldera wall collapse

Dolerite and basalt dykes (some intruded after breccias and prior to felsites)

Initiation of the Main Ring Fault System: movement on this system of arcuate faults probably continued at least until emplacement of the ELS/WIS and was a major tectonic feature during the early acid phase of igneous activity.

Lavas of Eigg and Muck, and those involved in the Main Ring Fault on Rum. Principally olivine basalts, feldspar-phyric olivine basalts and mugearites on Eigg. The dykes cutting these lavas belong to the main post-felsite and granite phase of dyke intrusion on Rum. Thin sedimentary layers occur in the Eigg and Muck successions.

(Table 3.2) Harris Bay: subdivisions of the ultrabasic and basic layered rocks (modified from Wadsworth, 1961, table 1, with amended Western Layered Series).

	Thickness	Distinctive features
Upper Ruinsival Series	~ 330 m	Both Ruinsival series show an upwards gradation from olivine cumulates often with feldspar to feldspar-olivine cumulates often with pyroxene. Exposure is generally poor and the sequence is complicated by
Lower Ruinsival Series*	~ 500 m	transgressive later intrusions, zones of igneous breccia and structural disturbances. In places, gravity stratification, rhythmic layering and slump structures occur.
Transition Layer	~ 0.5 m	Olivine-feldspar cumulate. Variable dips (5°-50°) in all directions but predominantly in general easterly direction.

Dornabac Series	~ 130 m	<p>Olivine-feldspar and feldspar olivine cumulates often with streaky or rhythmic layering and frequently with slump structures and evidence of gravity stratification. Layering dips at 35° to 40° to the east and southeast. The rocks show similarities to the allivalites of the Hallival–Askival area. Feldspathic peridotite breccia at the base of the Central Series cuts transgressively across all Western Layered Series units. Olivine and olivine-feldspar cumulates with rhythmic layering throughout. Harrisitic cumulates are intimately associated with normal cumulates and are very prominent within the lower half to two-thirds of the sequence and they are also locally important higher in the series. The layering has a general dip of 5° to 10° (exceptionally 15°) to the south-east or east.</p> <p>Olivine-feldspar cumulates, often with pyroxene, of both harrisitic and normal types. Olivine is more abundant than in the Harris Bay Series, while the content of feldspar is higher than in the Ard Mheall Series.</p> <p>Essentially eucritic mesocumulates in texture with olivine, feldspar and ubiquitous pyroxene as cumulus phases. Olivine is the most abundant phase and forms distinctive tabular crystals exhibiting igneous lamination in the normal cumulates. Intercalations of generally thin harrisitic cumulates (crescumulates) richer in feldspar and pyroxene than those of the Ard Mheall Series occur. Layering dips at low angles (5–10°) to the north-east.</p> <p>* Now termed the Long Loch Group (of Volker and Upton, 1990).</p> <p>Part of Central Series: Upper Ruinsval Series to Ard Mheall Series</p> <p>Amended (1982) Western Layered Series: Ard Mheall Series to Transition Series</p>
Ard Mheall Series	~ 400 m	
Transition Series	~ 50–60 m	
Harris Bay Series	~130–140 m	

(Table 4.1) The geological succession in the Ardnamurchan Central Complex (based on Richey and Thomas, 1930, Chapter 7)

(youngest)

Late NNW-trending dolerite dykes

Centre 3

Quartz monzonite

Tonalite

Fluxion biotite gabbro of Glendrain

Fluxion biotite gabbro of Sithean Mòr

Quartz-biotite gabbro

Quartz dolerite, granophyre-veined

Inner Eucrite

Biotite eucrite

Quartz gabbro, southern side of Meall an Tarmachain

Quartz gabbro of Meall an Tarmachain summit

Outer Eucrite

Great Eucrite

Cone-sheets of Centre 3 (sparse)

Porphyritic gabbro of Meall nan Con screen

Gabbro, south-east of Rudha Groulin

Gabbro of Plochaig

Fluxion gabbro of Faskadale

Quartz gabbro of Faskadale

(Migration of focus of activity to Achnaha area)

Centre 2

Felsite, south of Aodann

Fluxion gabbro of Portuairk

Younger quartz gabbro of Beinn Bhuidhe

Quartz gabbro of Beinn na Seilg

Quartz gabbro of Loch Caorach

Eucrite of Beinn nan Ord

Inner cone-sheets of Centre 2

Quartz dolerite of Sgurr nam Meann

Quartz gabbro of Aodann

Older quartz gabbro of Beinn Bhuidhe

Granophyre of Grigadale

Quartz gabbro of Garbh-dhail

Old Gabbro of Lochan an Aodainn

Hypersthene gabbro of Ardnamurchan Point

Glas Eilean vent

Outer cone-sheets of Centre 2

(Migration of focus of activity to Aodann area [NM 453 664])

Centre 1 and the Ben Hiant vent*

Cone-sheets of Centre 1 (penecontemporaneous with the quartz dolerite intrusion of Ben Hiant)

Ben Hiant quartz dolerite

Composite intrusion of Beinn an Leathaid

Augite diorite of Camphouse

Quartz dolerite of Camphouse

Porphyritic dolerite of Ben Hiant

Granophyre west of Faskadale

Quartz gabbro west of Faskadale

Old Gabbro of Meall nan Con

Porphyritic dolerite of Glas Bheinn

Agglomerates of Northern Vents

Tuffs, agglomerates and lavas of Ben Hiant vents

Trachyte plug

(Igneous activity localized at Ben Hiant and also centred on a focus c. 1.3 km west of Meall nan Con)

Palaeocene basalt lavas and thin sediments

Jurassic and Triassic sandstones, shales, limestones, conglomerates

Moine metasediments

(oldest)

*The relative ages of many of the units assigned to Centre 1 and Ben Hiant are uncertain. (From Emeleus, in Sutherland, 1982, table 29.5).

(Table 5.1) The Mull Central Complex: sequence of events (after Skelhorn, 1969, pp. 2–6)

(youngest)

Dykes were intruded throughout the sequence (Loch Bà–Ben More)

Loch Bà Centre (Centre 3; North-West or Late Caldera)

Loch Bà felsite ring-dyke (Allt Molach–Beinn Chaisgidle, Loch Bà–Ben More)

Hybrid masses of Sron nam Boc and Coille na Sroine (Loch Bà–Ben More)

Beinn a' Ghraig Granophyre (Loch Bà–Ben More)

Knock Granophyre (Loch Bà–Ben More)

Late basic cone-sheets (Loch Bà–Ben More)

Early Beinn a' Ghraig Granophyre and felsite (Loch Bà–Ben More)

Glen Cannel complex and some late basic cone-sheets

(Allt Molach–Beinn Chaisgidle, Loch Bà–Ben More)

Beinn Chaisgidle Centre (Centre 2)

Glen More ring-dyke (Loch Sguabain, Cruach Choireadail)

Late basic cone-sheets (Allt Molach–Beinn Chaisgidle), Loch Scridain sheets (intruded towards middle and end of Centre 2 and start of Centre 3)

Ring-dyke intrusions around Beinn Chaisgidle

?Augite diorite masses of An Cruachan and Gaodhail (Loch Bà–Ben More)

Corra-bheinn layered gabbro (Loch Bà–Ben More)

Second suite of early basic cone-sheets

Second suite of early acid cone-sheets

Explosion vents (numerous at margin of the South-East Caldera) (Loch Bà–Ben More)

Glen More Centre (Centre 1; including the Early or South-East Caldera)

Ben Buie layered gabbro

Loch Uisg granophyre-gabbro

First suite of early basic cone-sheets (Loch Bà–Ben More)

Early acid and intermediate cone-sheets (Loch Bà–Ben More)

Acid explosion vents containing porphyritic rhyolite material (Loch Bà–Ben More)

Glas Bheinn and Derrynaculen granophyres (Loch Spelve–Auchnacraig)

Updoming and folding in south-east Mull as a result of rising diapir (Loch Spelve–Auchnacraig).

Lava eruption on to eroded surface of Mesozoic and older rocks. Latest flows overlap in time with formation of the South-East Caldera where pillow lavas are found. (Lavas: Bearraich, Ardtun, Carsaig Bay, Loch Bà–Ben More. Pillow lavas: Loch Sguabain, Cruach Choireadail)

(oldest)

(Table 5.2) Classification and correlation of the Mull lavas

Mull Memoir (Bailey <i>et al.</i> , 1924)	Beckinsale <i>et al.</i> (1978)	Morrison (1978) Thompson <i>et al.</i> (1982) Morrison <i>et al.</i> (1985) Thompson <i>et al.</i> (1986)
Central Group (= NPCMT) (Includes pillow lavas in central complex)	Not dealt with in detail	Some samples analysed, all zeolitized or hydrothermally altered.

Plateau Group (majority = PMT)	Group 1 olivine basalts (mainly sampled in north-west Mull) and Group 3 olivine basalts (mainly sampled around Lochaline, Morven)	Mull Plateau Group (MPG) Note that many are transitional between alkali basalt and tholeiite, and compare closely with Skye Main Lava Series. Some lower crust contamination. Staffa Magma Type (SMT) Variably enriched in lower and upper crustal contaminants.
Pale Group of Ben More (= PMT) (with interlayered mugearite and Big-Feldspar Basalt)		
(Staffa Type at base = NPCMT)	Group 2 of south-west Mull	
(NPCMT = Non-Porphyritic Central Magma Type) later = tholeiitic basalt		
(PMT = Plateau Magma Type) later = alkali olivine basalt but many flows are in fact transitional between alkali basalt and tholeiite		
Total thickness of Mull lavas estimated about 2000 m (Bailey <i>et al.</i> , 1924)		

(Table 6.2) Petrological variation within the Dippin Sill (based on Gibb and Henderson, 1978b, figure 4)

Rock type	Position within sill	Petrological features
(a) Crinanite	Central = forms the bulk of the intrusion	Plagioclase, analcite, olivine, ophitic Al-, Ti-rich augite. Zeolites. Analcite, secondary after nepheline and of hydrothermal origin. Olivine up to 12 vol.% about 10–15 m above base.
(b) Teschenite	Marginal facies = fine-grained margins showing quench textures	Lacks fresh olivine, substantial amounts of analcite, zeolites and calcite. Margins have skeletal Ti-augites.
(c) Augite teschenite	Patches within crinanites, especially towards base.	Augite, plagioclase, analcite. Alignment of augite suggests cumulate texture. Fe-Ti oxides more abundant than in crinanite.
(d) Pegmatite(i)	At several horizons throughout sill, centimetres to metres in thickness	Brown augite with emerald-green rims (Na-rich), plagioclase, analcite, Fe-oxides, apatite, rare blue riebeckitic amphibole and rare olivine pseudomorphs. Variant of augite teschenite.
(e) Pegmatite (ii)	As pegmatite (i)	Mineralogically as (i) but has less pyroxene and is much coarser grained. Skeletal magnetite and ophitic augite, rather than euhedral as in (i).

(Table 7.1) Geological succession in the St Kilda archipelago (adapted from the British Geological Survey 1:25 000 Special Sheet, St Kilda)

Pleistocene glaciation

Palaeocene igneous activity

Basaltic and composite (acid and basic) inclined sheets and dykes

Conachair Granite

Mullach Sgar Complex (mixed magma (basic-acid) intrusions)

Glen Bay Granite

Glen Bay Gabbro

Breccias of gabbro and dolerite

Western Gabbro (layered in places)

No pre-Palaeocene rocks are exposed, but the complex is thought to be intruded into Lewisian gneisses.

References

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Hydromagnesite	epidote	Datolite	Malachite
	Prehnite	Harkerite	
	Apophyllite		
	Pectolite		
	Xonotlite		

* most abundant minerals

(Table 2.4) Minerals present in skarn zones (after Tilley, 1951, Table 1)

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Volcaniclastic deposits of Strath na Crèitheach dolerite cone-sheets

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Border Group (including White Allivalite)

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Dykes

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Basalt lavas

Torridonian sediments

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Valley-filling pitchstone of the Sgurr of Eigg, and associated conglomerates

Dolerite dykes

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——— Period of profound erosion during which the Rum ———
central igneous complex was unroofed and eroded

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(The WLS and ELS above may be coeval)

Dolerite and basalt dykes (some also post-date the Layered Igneous Complex)

Dolerite and basalt cone-sheets on Rum

Early phase of acid igneous activity:

Western Granite, also granite at Papadil and Long Loch

Porphyritic felsite (ignimbrites, in caldera, and intrusions)

Tuffsites (some may post-date porphyritic felsite)

Volcaniclastic breccias – probably a mixture of explosion breccias and breccias formed by caldera wall collapse

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Initiation of the Main Ring Fault System: movement on this system of arcuate faults probably continued at least until emplacement of the ELS/WLS and was a major tectonic feature during the early acid phase of igneous activity.

Lavas of Eigg and Muck, and those involved in the Main Ring Fault on Rum. Principally olivine basalts, feldspar-phyric olivine basalts and mugearites on Eigg. The dykes cutting these lavas belong to the main post-felsite and granite phase of dyke intrusion on Rum. Thin sedimentary layers occur in the Eigg and Muck successions.

(Table 3.1) Summary of the Palaeocene igneous geology of Rum and the Small Isles (based on Emeleus and Forster, 1979, table 1, with later amendments)

	Thickness	Distinctive features
↑ PART OF CENTRAL SERIES		
Upper Ruissivai Series	~ 300 m	Both Ruissivai series show an upwards gradation from olivine cumulates often with feldspar to feldspar-olivine cumulates often with pyroxene.
Lower Ruissivai Series*	~ 500 m	Exposure is generally poor and the sequence is complicated by transgressive later intrusions, zones of igneous breccia and structural disturbances. In places, gravity stratification, rhythmic layering and slump structures occur.
Transition Layer	~ 0.5 m	Olivine-feldspar cumulate. Variable dips (5°-50°) in all directions but predominantly in general easterly direction.
Dornabac Series	~ 100 m	Olivine-feldspar and feldspar-olivine cumulates often with streaky or rhythmic layering and frequently with slump structures and evidence of gravity stratification. Layering dips at 35° to 40° to the east and south-east. The rocks show similarities to the alluvites of the Hallival-Askival area. Feldspathic peridotite breccia at the base of the Central Series cuts transgressively across all Western Layered Series units.
↓ AMENDED (1962) WESTERN LAYERED SERIES		
Ard Mheall Series	~ 400 m	Olivine and olivine-feldspar cumulates with rhythmic layering throughout. Harrisitic cumulates are intimately associated with normal cumulates and are very prominent within the lower half to two-thirds of the sequence and they are also locally important higher in the series. The layering has a general dip of 5° to 10° (exceptionally 15°) to the south-east or east.
Transition Series	~ 50-80 m	Olivine-feldspar cumulates, often with pyroxene, of both harrisitic and normal types. Olivine is more abundant than in the Harris Bay Series, while the content of feldspar is higher than in the Ard Mheall Series.
	Thickness	Distinctive features
Harris Bay Series	~ 130-140 m	Essentially eucritic mesocumulates in texture with olivine, feldspar and ubiquitous pyroxene as cumulus phases. Olivine is the most abundant phase and forms distinctive tabular crystals exhibiting igneous lamination in the normal cumulates. Intercalations of generally thin harrisitic cumulates (crescumulates) richer in feldspar and pyroxene than those of the Ard Mheall Series occur. Layering dips at low angles (5-10°) to the north-east.

* Now termed the Long Loch Group (cf Volker and Upton, 1990).

(Table 3.2) Harris Bay: subdivisions of the ultrabasic and basic layered rocks (modified from Wadsworth, 1961, table 1, with amended Western Layered Series).

(youngest)	Late NNW-trending dolerite dykes
Centre 3	<ul style="list-style-type: none"> Quartz monzonite Tonalite Fluxion biotite gabbro of Glendrain Fluxion biotite gabbro of Sithian Mor Quartz-biotite gabbro Quartz dolerite, granophyre-veined Inner Eucrite Biotite eschrite Quartz gabbro, southern side of Meall an Tarmachain Quartz gabbro of Meall an Tarmachain summit Outer Eucrite Great Eucrite Cone-sheets of Centre 3 (sparse) Porphyritic gabbro of Meall nan Con screen Gabbro, south-east of Ròdha Groulin Gabbro of Plochaig Fluxion gabbro of Faskadale Quartz gabbro of Faskadale
	(Migration of focus of activity to Achnaha area)
Centre 2	<ul style="list-style-type: none"> Feliste, south of Aodann Fluxion gabbro of Portuairk Younger quartz gabbro of Beinn Bhuidhe Quartz gabbro of Beinn na Seilg Quartz gabbro of Loch Caorach Eucrite of Beinn nan Ord Inner cone-sheets of Centre 2 Quartz dolerite of Sgorr nam Meann Quartz gabbro of Aodann Older quartz gabbro of Beinn Bhuidhe Granophyre of Grigdale Quartz gabbro of Garbh-dhall Old Gabbro of Lochan an Aodainn Hypersilene gabbro of Ardnamurchan Point Glas Eilean vent Outer cone-sheets of Centre 2
	(Migration of focus of activity to Aodann area (NM 483 684))
Centre 1 and the Ben Hiant vent*	<ul style="list-style-type: none"> Cone-sheets of Centre 1 (penecontemporaneous with the quartz dolerite intrusion of Ben Hiant) Ben Hiant quartz dolerite Composite intrusion of Beinn an Leathaid Augite diorite of Camphouse Quartz dolerite of Camphouse
	<ul style="list-style-type: none"> Porphyritic dolerite of Ben Hiant Granophyre west of Faskadale Quartz gabbro west of Faskadale Old Gabbro of Meall nan Con Porphyritic dolerite of Glas Bheinn Agglomerates of Northern Vents Tuffs, agglomerates and lavas of Ben Hiant vents Trachyte plug
(Igneous activity localized at Ben Hiant and also centred on a focus c. 1.3 km west of Meall nan Con)	
	<ul style="list-style-type: none"> Palaeocene basalt lavas and thin sediments Jurassic and Triassic sandstones, shales, limestones, conglomerates Molise metasediments
(oldest)	
*The relative ages of many of the units assigned to Centre 1 and Ben Hiant are uncertain. (From Embley, in Sutherland, 1982, table 29.5).	

(Table 4.1) The geological succession in the Ardnamurchan Central Complex (based on Richey and Thomas, 1930, Chapter 7)

(youngest)

Dykes were intruded throughout the sequence (Loch Bà–Ben More)

Loch Bà Centre (Centre 3; North-West or Late Caldera)

Loch Bà felsite ring-dyke (Allt Molach–Beinn Chàisgidle, Loch Bà–Ben More)

Hybrid masses of Sron nam Boc and Coille na Sroine (Loch Bà–Ben More)

Beinn a' Ghraig Granophyre (Loch Bà–Ben More)

Knock Granophyre (Loch Bà–Ben More)

Late basic cone-sheets (Loch Bà–Ben More)

Early Beinn a' Ghraig Granophyre and felsite (Loch Bà–Ben More)

Glen Cannel complex and some late basic cone-sheets

(Allt Molach–Beinn Chàisgidle, Loch Bà–Ben More)

Beinn Chàisgidle Centre (Centre 2)

Glen More ring-dyke (Loch Sguabain, Cruach Choireadail)

Late basic cone-sheets (Allt Molach–Beinn Chàisgidle), Loch Scridain sheets (intruded towards middle and end of Centre 2 and start of Centre 3)

Ring-dyke intrusions around Beinn Chàisgidle

?Augite diorite masses of An Cruachan and Gaothail (Loch Bà–Ben More)

Corra-bheinn layered gabbro (Loch Bà–Ben More)

Second suite of early basic cone-sheets

Second suite of early acid cone-sheets

Explosion vents (numerous at margin of the South-East Caldera) (Loch Bà–Ben More)

Glen More Centre (Centre 1; including the Early or South-East Caldera)

Ben Buie layered gabbro

Loch Uisg granophyre-gabbro

First suite of early basic cone-sheets (Loch Bà–Ben More)

Early acid and intermediate cone-sheets (Loch Bà–Ben More)

Acid explosion vents containing porphyritic rhyolite material (Loch Bà–Ben More)

Glas Bheinn and Derrynaculen granophyres (Loch Spelve–Achnacraig)

Updoming and folding in south-east Mull as a result of rising diapir (Loch Spelve–Achnacraig).

Lava eruption on to eroded surface of Mesozoic and older rocks. Latest flows overlap in time with formation of the South-East Caldera where pillow lavas are found. (Lavas: Bearraich, Ardtun, Carsaig Bay, Loch Bà–Ben More. Pillow lavas: Loch Sguabain, Cruach Choireadail)

(oldest)

(Table 5.1) *The Mull Central Complex: sequence of events (after Skelhorn, 1969, pp. 2–6)*

Mull Memoir (Bailey <i>et al.</i> , 1924)	Beckinsale <i>et al.</i> (1978)	Morrison (1978) Thompson <i>et al.</i> (1982) Morrison <i>et al.</i> (1985) Thompson <i>et al.</i> (1986)
Central Group (= NPCMT) (Includes pillow lavas in central complex)	Not dealt with in detail	Some samples analysed, all zeolitized or hydrothermally altered.
Plateau Group (majority = PMT) Pale Group of Ben More (= PMT) (with interlayered mugearite and Big-Feldspar Basalt) (Staffa Type at base = NPCMT)	Group 1 olivine basalts (mainly sampled in north-west Mull) and Group 3 olivine basalts (mainly sampled around Lochaline, Morven) Group 2 of south-west Mull	Mull Plateau Group (MPG) Note that many are transitional between alkali basalt and tholeiite, and compare closely with Skye Main Lava Series. Some lower crust contamination. Staffa Magma Type (SMT) Variably enriched in lower and upper crustal contaminants.
(NPCMT = Non-Porphyritic Central Magma Type) later = tholeiitic basalt (PMT = Plateau Magma Type) later = alkali olivine basalt but many flows are in fact transitional between alkali basalt and tholeiite Total thickness of Mull lavas estimated about 2000 m (Bailey <i>et al.</i> , 1924)		

(Table 5.2) Classification and correlation of the Mull lavas

Rock type	Position within sill	Petrological features
(a) Crinanite	Central = forms the bulk of the intrusion	Plagioclase, analcite, olivine, ophitic Al-, Ti-rich augite. Zeolites. Analcite, secondary after nepheline and of hydrothermal origin. Olivine up to 12 vol.% about 10–15 m above base.
(b) Teschenite	Marginal facies = fine-grained margins showing quench textures	Lacks fresh olivine, substantial amounts of analcite, zeolites and calcite. Margins have skeletal Ti- augites.
(c) Augite teschenite	Patches within crinanites, especially towards base.	Augite, plagioclase, analcite. Alignment of augite suggests cumulate texture. Fe–Ti oxides more abundant than in crinanite.
(d) Pegmatite(i)	At several horizons throughout sill, centimetres to metres in thickness	Brown augite with emerald-green rims (Na-rich), plagioclase, analcite, Fe- oxides, apatite, rare blue riebeckitic amphibole and rare olivine pseudomorphs. Variant of augite teschenite.
(e) Pegmatite (ii)	As pegmatite (i)	Mineralogically as (i) but has less pyroxene and is much coarser grained. Skeletal magnetite and ophitic augite, rather than euhedral as in (i).

(Table 6.2) Petrological variation within the Dippin Sill (based on Gibb and Henderson, 1978b, figure 4)

Table 7.1 Geological succession in the St Kilda archipelago (adapted from the British Geological Survey 1:25 000 Special Sheet, St Kilda)

Pleistocene glaciation

Palaeocene igneous activity

Basaltic and composite (acid and basic) inclined sheets and dykes

Conachair Granite

Mullach Sgar Complex (mixed magma (basic–acid) intrusions)

Glen Bay Granite

Glen Bay Gabbro

Breccias of gabbro and dolerite

Western Gabbro (layered in places)

No pre-Palaeocene rocks are exposed, but the complex is thought to be intruded into Lewisian gneisses.

(Table 7.1) Geological succession in the St Kilda archipelago (adapted from the British Geological Survey 1:25 000 Special Sheet, St Kilda)