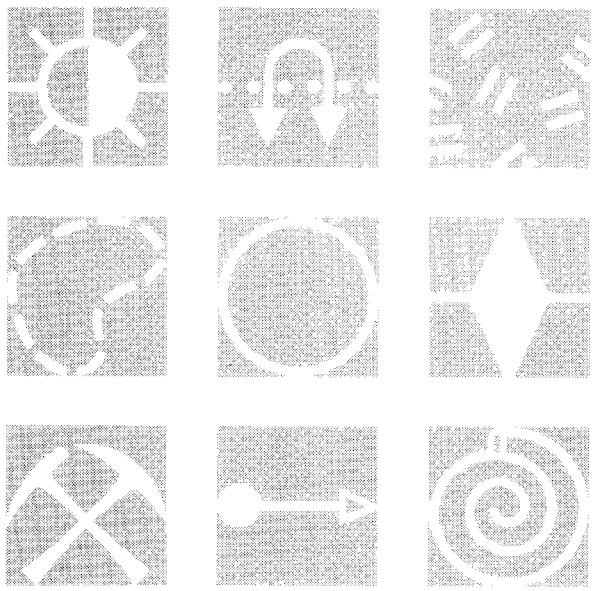
SYMBOLS USED ON GEOLOGICAL MAPS

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

1989

SYMBOLS USED ON GEOLOGICAL MAPS

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS



1989

CONTENTS

Section 1	**DESIGN AND USE OF SYMBOLS**	**Page**
1.1	General	1
1.2	Special-purpose maps	1
1.3	Size of symbols	1
1.4	Descriptions for symbols	1
1.5	Structural symbols	1
1.6	Units of measurement	3
1.7	Other sources of standard symbols	3
1.8	Symbols for rock and time-rock units	3
1.9	Acknowledgements	4
1.10	Availability	4
Section 2	**GEOLOGICAL BOUNDARIES**	
2.1	Classification of geological boundaries	5
2.2	Geological boundaries	5
2.3	Metamorphic boundaries	5
2.4	Igneous intrusive boundaries	5
2.5	Unconformities	6
2.6	Marker beds, marker bands	6
2.7	Miscellaneous outcrops	6
2.8	Tectonic and structural map symbols	6
Section 3	**FAULTS**	
3.1	Definitions and notes	7
3.2	Classification of faults	7
3.3	Faults	8
3.4	Normal faults	8
3.5	Thrust faults	9
3.6	Crushing, breccia, shearing, schistosity, mylonite	9
3.7	Tectonic and structural map symbols	10
3.8	Combined symbols	10
Section 4	**DYKES, VEINS, SILLS**	
4.1	Dykes, veins, sills	11
4.2	Suggested abbreviations for dykes, veins, sills, and filling in faults and shears	11
Section 5	**FOLDS**	
5.1	Definitions and notes	13
5.2	Classification of fold axial surface traces	14
5.3	Multiple folding episodes	14
5.4	Anticlines and synclines	15
5.5	Overturned folds	15
5.6	Reclined folds	16
5.7	Recumbent folds	16

CONTENTS

Section 5	**FOLDS (CONT'D)**	**Page**
5.8	Vertical folds	17
5.9	Asymmetrical folds	17
5.10	Inverted folds	18
5.11	Folds, facing not known	21
5.12	Monoclines and monoforms	22
5.13	Plunge of fold axes	23
5.14	Minor folds	23
5.15	Vergence	24
5.16	Tectonic and structural map symbols	26
5.17	Combined symbols	26
Section 6	**BEDDING**	
6.1	Notes	27
6.2	Bedding	27
6.3	Undulating and folded bedding	28
6.4	Top of beds (facing)	28
6.5	Direction of movement (water, ice)	28
6.6	Photo-interpreted bedding	29
6.7	Trend-line	29
6.8	Combined symbols	29
Section 7	**JOINTS**	
7.1	Notes	31
7.2	Joints	31
7.3	Joint pattern	31
7.4	Columnar joints	31
Section 8	**METAMORPHIC FOLIATION**	
8.1	Definitions and notes	32
8.2	Foliation	32
8.3	Multiple deformation episodes	32
8.4	General trend of foliation	32
8.5	Schistosity	33
8.6	Combined symbols	33
Section 9	**CLEAVAGE**	
9.1	Definition and notes	34
9.2	Cleavage	34
9.3	Combined symbols	34
Section 10	**LINEATION**	
10.1	Notes	35
10.2	Lineation (type not specified)	35
10.3	Bedding-cleavage intersection	35

CONTENTS

		Page
Section 10	**LINEATION (CONT'D)**	
10.4	Crenulation	35
10.5	Mineral elongation or alignment	35
10.6	Flow lineation	36
10.7	Combined symbols	36
Section 11	**BANDING IN IGNEOUS ROCKS**	
11.1	Notes	37
11.2	Igneous banding or platy alignment	37
Section 12	**PHOTOGEOLOGY**	
12.1	Bedding	38
12.2	Lineaments	38
12.3	Joints	38
12.4	Photogrammetry	38
Section 13	**FOSSIL AND OTHER SITES; SECTIONS; DRILL HOLES**	
13.1	Fossil localities	39
13.2	Specimen localities, observation localities	39
13.3	Age determination localities	40
13.4	Section localities	40
13.5	Drill holes	40
Section 14	**MINERAL DEPOSITS AND DEVELOPMENTS**	
14.1	Notes	42
14.2	Mineral deposits	42
14.3	Mining	42
14.4	Treatment plants	43
14.5	Symbols used on mining plans and sections	43
Section 15	**PETROLEUM OCCURRENCES AND DEVELOPMENT**	
15.1	Natural occurrences of oil and gas	46
15.2	Exploration, development, and production wells	46
15.3	Names of petroleum exploration, development, and production wells	47
Section 16	**GEOPHYSICS**	
16.1	Gravity contours, anomalies, basement	48
16.2	Magnetic contours, anomalies, basement	48
16.3	Radiometric contours, anomalies	48
16.4	Seismic	49
16.5	Geology interpreted from geophysical data	49

CONTENTS

		Page
Section 17	**VOLCANOES**	
17.1	Volcanoes and related features	50
Section 18	**TECTONIC AND STRUCTURAL MAP SYMBOLS**	
18.1	Boundaries	51
18.2	Faults	51
18.3	Folds	51
18.4	Structural contours, form lines	52
Section 19	**SYMBOLS AND PATTERNS FOR IGNEOUS ROCK BODIES ON TECTONIC MAPS**	
19.1	General notes	53
19.2	Oceanic lithosphere	53
19.3	Circular gabbro-peridotite intrusions	53
19.4	Orogenic granites	54
19.5	Orogenic felsic volcanics	54
19.6	Cratonic igneous rocks	55
19.7	Symbols for metamorphic foliation	55
Section 20	**ABBREVIATIONS FOR MINERALS AND ROCKS**	
20.1	Notes	56
20.2	Abbreviations	56
Section 21	**HYDROLOGY**	
21.1	Notes	58
21.2	Natural features	58
21.3	Springs	58
21.4	Water bores and wells	59
21.5	Water tanks and dams	59
21.6	Salinity	60
21.7	Names of water bores and wells	60
21.8	Combined symbols	60
Section 22	**TOPOGRAPHY**	
22.1	Notes	61
22.2	Natural features	61
22.3	Topographic survey stations, elevations and contours	62
Section 23	**CULTURE**	
23.1	Notes	63
23.2	Roads, railways, buildings, etc.	63
SAMPLE SYMBOLS REFERENCE		65
INDEX		67

Section 1 DESIGN AND USE OF SYMBOLS

1.1 General

This book presents standard and special (preferred) geological map symbols that are for use at all stages of map preparation and publication. Drafting specifications are included. The symbols have been endorsed by the Chief Government Geologists' Conference, 1988.

The following are the guiding principles for symbol selection:

- Symbols should be simple, easy to draw, clear, and reproducible on printed maps.
- The symbol which creates a mental image of the object or concept represented is preferred.
- Symbols portraying related objects or concepts should have common characteristics (e.g. oil and gas well symbols).
- Established symbols have been retained, where compatible with the points above.
- There must be a general symbol which can be used where knowledge is incomplete (e.g. a fault symbol that can be used where only the strike of the fault is known).

1.2 Special-purpose maps

Symbols designed for large-scale or special-purpose maps are, in general, unsuitable for use on general-purpose maps; their indiscriminate use on such maps as the 1:250 000 Series is to be avoided. For example, foresets would not usually be shown on maps at 1:100 000 or smaller scale. Similarly, element symbols, rather than the mineral symbols would be used for metallic deposits on such maps. Anyone compiling special-purpose maps should, as far as possible, conform to the five points set out above and/or relate symbols to those adopted for general-purpose maps. Extensive use of colour may be necessary. Special-purpose symbols are sometimes needed on general-purpose maps, examples are seen in these 1:250 000 sheets:

Hughenden (Qld) — *primary pegmatite banding.*
Marble Bar (WA) — *schistosity.*
Maree (SA) — *fault or monoclinal fold.*
Melbourne (Vic) — *zone of metamorphism.*
Camooweal (Qld) — *slumped strata.*

1.3 Size of symbols

Specifications for symbols should be adhered to wherever possible. However, some symbols may need to be reduced (or enlarged) to suit the map scale, to fit in congested areas, or when combined with other symbols (e.g. 10.7.2).

1.4 Descriptions for symbols

The description given for each symbol is the preferred description. In some cases alternative descriptions are given; the most appropriate one should be used. Descriptions may be modified to suit specific cases.

1.5 Structural symbols

Structural symbols comprise the symbols for faults, folds, joints, metamorphic foliation, cleavage, lineation, etc.

1.5.1 Arrows and arrowheads

The style of arrow and arrowhead for structural symbols indicates a particular type of observation:

⟶ Bedding (including facing, direction of sedimentation, prevailing dip of folded strata, and plunge).
⟶ Direction of movement.
▲ Metamorphic foliation, other than cleavage (cleavage follows past usage).
△ Primary banding, other than bedding (e.g. flow banding).
⟶ Lineation of all kinds, including trace of a plane on another plane.
⇒ ⇒ ⇒ Specific types of lineation.

Arrows with both open and closed triangles are also used as part of fold symbols:

⟶ Fold, facing not known (e.g. 5.11.1).
⟶ Vertical fold (e.g. 5.8.1), folds with one preferentially thinned limb (e.g. 5.4.2).

1.5.1 Arrows and arrowheads (cont'd)

Other styles of arrows available for miscellaneous purposes are ⟶▷ ⟶ but the compiler should ensure that the styles adopted are distinctive; this is most important when draftsmen are not available for compilation.

1.5.2 Combined symbols

Where more than one structural element is observed at a locality, symbols are usually combined on the map. Examples appear under Faults, Folds, Bedding, Metamorphic Foliation, Cleavage, and Lineation. To avoid lengthy and complicated descriptions, combined structural symbols may be shown separately in the symbols reference and the following note added:

'Some structural elements observed at a single locality are combined on the map'

For ease of drafting, combined symbols should either be standardised so they can be reproduced on stripping film, or be formed by combining standard basic symbols.

1.5.3 Not measured or prevailing dips and plunges

Where dips or plunges are measured the value is shown with the symbol. Where not measured, or where the symbol shows the prevailing dip or plunge, no value is shown and ***'not measured'*** or ***'prevailing'*** is added to the symbol description if desired.

e.g. ⊤ *Strike and dip of strata, dip not measured*
or
Prevailing strike and dip of strata
or
Strike and dip of strata

To avoid repetition of ***'not measured'*** or ***'prevailing'*** dip and plunge descriptions in a reference with numerous structural symbols, insert the following note after the last structural symbol:

'Dips and plunges without values are not measured, or prevailing'

A combined dip and plunge symbol will commonly show the plunge value, but if it does not, the plunge value can be measured from the geometry of the symbol.

e.g. 70 60 *Strike and dip of strata and plunge of bedding-cleavage intersection*
or
70 *Strike and dip of strata and plunge of bedding-cleavage intersection*

1.5.4 Facing or younging not known

Double lines in structural symbols, at least in large-scale maps, indicate that the facing or younging is not known (e.g. 6.2.11, 5.14.9 to 5.14.12). On small-scale maps double lined symbols present difficulties in drafting and reproduction and should be avoided.

1.5.5 Classification of geological boundaries, faults, and fold axial surface traces

Classification is governed by:

- Geological certainty
- Planimetric accuracy.

For example, boundaries are established or inferred. Established boundaries may be accurate (located within the thickness of the line drawn), approximate, or concealed; inferred boundaries are approximate and may be concealed (deduced, not observed). A concealed, but not inferred, boundary is one established by sub-surface exploration or is an established boundary beneath cover.

For cartographic convenience, question marks may be omitted from inferred boundaries and faults portrayed in geological cross-sections. If this is done it should be noted above the cross-section.

1.6 Units of measurement

Care should be taken to use legal units of measurement on maps and to avoid the use of non-legal units as far as possible. Information on the standing of units may be obtained from publications of the Metric Conversion Board.

1.7 Other sources of standard symbols

BMR has produced other standards and catalogues in addition to this publication:

- Standard symbols for age of rock units } **'Australia Standard Colour Scheme and Stratigraphic Symbols for Geological Maps'**
- Standard colours for geological ages }
- Screens and patterns — a booklet (in black and white) showing the range of variations that can be achieved by use of screens and overprinting patterns available to BMR.

The International Standards Organisation (ISO) has compiled International Standard ISO/DIS 710 which covers graphical symbols for use on detailed maps, plans, and geological cross-sections (including letter symbols for minerals and rocks). Some of the symbols adopted in this booklet are at variance with ISO symbols.

Australian Standards Association, Standard A. SK183 covers lithological symbols for coal seams, some associated rocks, and letter symbols for some minerals and rocks.

State and Territory authorities may also be consulted for local standards.

1.8 Symbols for rock and time-rock units

1.8.1 Standard colours and age letter symbols for rock units

A rock unit may be shown on a map by colour and/or a letter symbol that represents age and rock name, or perhaps age, group, and rock name:

Brindabella (NSW, ACT) 1:100 000 sheet — Dmh represents the Middle Devonian Hatchery Creek Conglomerate.

Adelaide (SA) 1:250 000 sheet — Ꞓkb represents the Cambrian Brukunga Formation (metasiltstone and greywacke) which is part of the Kanmantoo Group.

Colours and letter symbols to show the ages of rocks have been standardised at the annual Chief Government Geologists' Conference. They were published in chart form by BMR in 1974 as the **Australian Standard Colour Scheme.**

1.8.2 Nomenclature of rock units

Rock units are named in accordance with the **Guide to Stratigraphic Nomenclature** currently approved by the Geological Society of Australia.

1.8.3 Metamorphic rocks

Metamorphic rocks are shown on maps in the same way as other rock units:

Lennard River (WA) 1:250 000 Sheet — Ah represents the Archaean Halls Creek Group of metamorphic rocks

The age symbol is that of the rocks, not the metamorphism. Localised metamorphism of a rock unit (metamorphic aureole, contact aureole) is usually shown by an overprint of stipple or pattern (see 18.1.2).

1.9 Acknowledgements

This book results from suggestions and contributions from many people in BMR, from the State and Territory Geological Surveys, and from the Papua New Guinea and New Zealand Geological Surveys. These contributions are acknowledged with thanks. The book was compiled and prepared by A.J. Stewart, D.G. Walton, J.F. Stirzaker, and P. Moffat BMR.

1.10 Availability

Copies of this book may be obtained from:

Publication Sales
Bureau of Mineral Resources
Cnr Constitution Ave and Anzac Pde
Parkes ACT 2600
(GPO Box 378, Canberra, ACT, 2601)

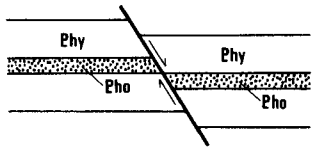
SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				Parallel lines in symbols are specified from centre to centre
2.1	**Classification of geological boundaries**			
	See 1.5.5 Classification of geological boundaries, faults, and fold axial surface traces			
2.1.1		*Geological boundary, position accurate*	Symbols for approximate, inferred, and concealed boundaries may be omitted from the map reference and part or all of this note inserted:	0.15
2.1.2		*Geological boundary, position approximate*	***'Where position of boundaries, faults, and folds is approximate, line is broken; where inferred, queried; where concealed, boundaries and folds are dotted, faults are shown by short dashes'***	0.25, 0.15, 1.5
2.1.3	?——?—	*Geological boundary, inferred*		13.0, ?, 1.5
2.1.4		*Geological boundary, concealed*		0.2, 0.75
2.1.5	??—	*Geological boundary; inferred, concealed*		13.0, ?, ?, 1.5, 0.2
2.2	**Geological boundaries**			
2.2.1		*Geological boundary*	Use classifications in 2.1	0.15
2.2.2	70	*Geological boundary showing dip*	Use classifications in 2.1 (e.g. *Geological boundary showing dip; position accurate*)	70, 0.75
2.2.3		*Sedimentary facies change or Sedimentary facies boundary*	Generally schematic only. Use mainly in ***sections and rock relationship diagrams.*** See also 2.3.1	0.15
2.2.4		*Transitional geological boundary*	Dividing, for example, granitic and metamorphic types. See also 2.4 Igneous intrusive boundaries	0.5, 0.5, 0.15, 3.0
2.2.5	a	*Alluvial boundary*	A miscellaneous boundary symbol for superficial deposits on ***large-scale maps.*** Use a letter symbol appropriate for type of deposit	0.5, a, 0.2
2.2.6		*Miscellaneous boundary*	For example: limit of dyke swarms, oil and gas fields. See also 15.1.9, 15.1.10 and 22.2.22	0.5, 0.2, 1.0, 5.0
2.3	**Metamorphic boundaries**			
2.3.1		*Metamorphic facies change or Metamorphic facies boundary*	Generally schematic only. Use mainly in ***sections and rock relationship diagrams***	1.5, 0.15, 0.25
2.3.2	biotite	*Metamorphic isograd showing index minerals*	Red line — Use on ***large scale maps*** Single mineral denotes higher-grade side of isograd. Mineral pair (e.g. biotite/garnet) may be shown if desired; in this case, isograd marks incoming of higher-grade mineral	biotite, 0.5
2.3.3	biotite ○○○○○○○○	*Metamorphic isograd showing index minerals*	Black or coloured	1.0, biotite, 0.1, 2.0
2.4	**Igneous intrusive boundaries**			
	See also 18.1.1, 18.1.2			
2.4.1	Y O	*Geological boundary between intrusive rocks showing relative age: younger, older*	Ordinary geological boundary; Y and O at point where relationship observed	Y, 0.15, O

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
2.5	**Unconformities**			
2.5.1		*Unconformity. Top of* U *towards younger rocks*	This is a general symbol which may include angular unconformities, disconformities	3.0 0.15 1.0 1.0
2.5.2		*Angular unconformity. Top of* V *towards younger rocks*		3.0 0.15 1.0 1.0
2.5.3		*Disconformity. Top of* U *towards younger rocks*		3.0 0.15 1.0 1.0
2.5.4		*Unconformity*	Use only in ***sections and rock relationship diagrams***	0.15 0.75 1.5
2.5.5		*Angular unconformity*		0.15 1.0 1.0
2.5.6		*Disconformity*		1.0 0.15 1.0 1.0 3.0
2.5.7		*Nonconformity*		3.0 0.15 1.0 1.5 0.5
2.6	**Marker beds, marker bands**			
		There are numerous ways to show marker beds or marker bands. • An appropriate lithological pattern in either black or colour (e.g. ····· *Sandstone*) • Thin band of solid colour (e.g. ———— *Glauconitic sandstone*) • A thick 'dash-dot' line with appropriate letter symbol (e.g. —— • —— • —— • —— Pbt) ***Always describe the symbol in the Stratigraphic / Lithological reference***		
2.7	**Miscellaneous outcrops**			
2.7.1			Use where lithology is not indicated on map face or for special types of outcrop. Use appropriate description in reference (e.g. *Gossan*)	0.15
2.7.2	• dl	*Small outcrop*	Use where outcrop is too small for mapping scale. Show with either formal rock unit name (e.g. Ppw) or lithology using lower case letters (e.g. dl)	0.6
2.8	**Tectonic and structural map symbols**			
	See 18.1 Boundaries			

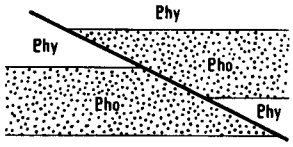
SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***

3.1 Definitions and Notes

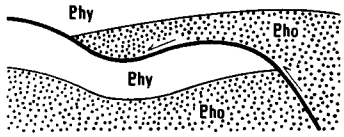
- Definitions: **Normal fault** — one which places younger rocks over older
  Thrust fault — one which places older rocks over younger
  Low-angle — dip of fault equal to or less than 45°
  High-angle — dip of fault greater than 45°



Normal fault



Thrust fault



Folded thrust fault

- To avoid repetition of 'not measured' or 'prevailing' dip and plunge descriptions in a reference, insert the following note after the last structural symbol:

  'Dips and plunges without values are not measured, or prevailing'

- Some symbols without values are described to indicate the correct form of the description

- Where faulting produces an escarpment, letter ***'Scarp'*** (on the topographic plate) along appropriate fault symbol

3.2 Classification of faults

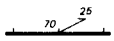
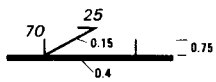
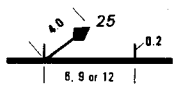
See 1.5.5 Classification of geological boundaries, faults, and fold axial plane traces

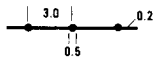
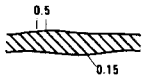
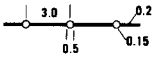
Symbols for accurate, approximate, inferred, and concealed faults are illustrated only in this sub-section, but they apply to all solid line symbols in sub-sections 3.3 to 3.7. The descriptions for symbols should contain their classification (e.g. 70 25 ***Normal fault showing relative displacement and dip of fault plane; position accurate. Tick on younger rocks***). See also 3.2.1 note

3.2.1	———	*Fault, position accurate*	Symbols for approximate, inferred, and concealed faults may be omitted from the map reference and part or all of this note inserted:	0.4
3.2.2	— — — —	*Fault, position approximate*	***'Where position of boundaries, faults, and folds is approximate, line is broken; where inferred, queried; where concealed, boundaries and folds are dotted, faults are shown by short dashes'***	2.5 0.4 0.5
3.2.3	?— — — —?	*Fault, inferred*		13.0 ?—?— — —
3.2.4	- - - - - - - - - -	*Fault, concealed*		1.0 0.4 0.5
3.2.5	?- - - - - - - - ?	*Fault; inferred, concealed*		13.0 ?- - - - - - - - ?

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
3.3	**Faults**			
3.3.1		*Fault*		0.4
3.3.2	3	*Fault, width in metres*		3 0.4
3.3.3	f f	*Line of faulted outcrop too small to be shown*	Used on Dummer and Crossland 1:250 000 sheets to show narrow ferruginised and silicified outcrops, along pre-Cainozoic faults, that protrude through Cainozoic cover	f 0.4 f
3.3.4		*Vertical fault*		1.0 0.2
3.3.5	U D	*Fault showing relative displacement: up, down*	Only relative displacement is indicated; true character is not known. See also 3.3.6 notes	U 0.4 D
3.3.6		*Fault showing relative displacement* *or* *Strike-slip fault showing relative horizontal displacement*	Displacement may be horizontal (plan views), or vertical (sections). ***Do not*** use for vertical displacement if the second description *(Strike-slip fault . . .)* is used	0.75 0.15 1.0 0.5 4.0
3.3.7		*Fault showing sense of relative displacement of upper plate. Section only*		4.0 0.4
3.3.8		*Fault showing striated slickensides*		4.0 0.15 0.4
3.3.9	75	*Inclined fault, sense of displacement not known*		0.75 0.75 0.2 75
3.3.10	i	*Post-intrusive fault along intrusive boundary*	Use appropriate letter for the intrusive rock type: i – *intrusive* (general term) q – *quartz* (e.g. q *Post-intrusive fault, containing quartz, along intrusive boundary*) See also 4.2 Suggested abbreviations for dykes, veins, sills, and filling in faults	0.1 i 0.3
3.3.11		*Intrusive boundary along pre-existing fault*	Used by Tasmanian Department of Mines on Hobart 1:50 000 sheet. Compare with 2.4 Igneous intrusive boundaries	2.5 0.1 0.3
3.4	**Normal faults**			
3.4.1		*Normal fault. Tick on younger rocks*		6, 9 or 12 0.2
3.4.2	70	*Normal fault showing dip of fault plane. Tick on younger rocks*		0.4 0.75 70
3.4.3	25	*Normal fault showing relative displacement. Tick on younger rocks*		4.0 25 0.15 6, 9 or 12
3.4.4		*Low-angle normal fault. Square on younger rocks*		1.0 1.0 0.4
3.4.5		*High-angle normal fault. Square on younger rocks*		0.2 6.0 0.4

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
3.5	**Thrust faults**			
3.5.1		*Thrust-fault. Triangle on older rocks*		
3.5.2	75	*Thrust-fault showing dip of fault plane. Triangle on older rocks*		
3.5.3	30	*Thrust-fault showing relative displacement. Triangle on older rocks*		
3.5.4		*High-angle thrust-fault. Triangle on older rocks*	Use ***'reverse fault'*** if desired	
3.5.5	75	*High-angle thrust-fault showing dip of fault plane. Triangle on older rocks*		
3.5.6	30	*High-angle thrust-fault showing relative displacement. Triangle on older rocks*		
3.5.7		*Klippe. Triangle on older rocks*		
3.5.8		*Tectonic window. Triangle on older rocks*		
3.6	**Crushing, breccia, shearing, schistosity, mylonite**			
3.6.1		*Fault with crushing*		
3.6.2	60	*Inclined fault with crushing*		
3.6.3		*Fault with breccia*		
3.6.4	my q qb	*Fault containing:* br *—breccia,* my *—mylonite,* q *—quartz,* qb *—quartz breccia*	See also 4.2 Suggested abbreviations for dykes, veins, sills, and filling in faults and shears	
3.6.5		*Shear zone*		
3.6.6		*Shear zone*	Wide shear zone	
3.6.7	70	*Inclined shear zone*		
3.6.8	m	*Mylonite zone*		
3.6.9	br	*Breccia zone (pseudoconglomerate or tectonic melange)*		
3.6.10		*Shearing or schistosity*	Broad area of shearing or schistosity. See also 8.4 General trend of foliation	

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
3.7	**Tectonic and structural map symbols**			
	See 18.2 Faults			
3.8	**Combined symbols**			
	This sub-section contains a selection of symbols to illustrate symbol combinations and correct wording of descriptions. To avoid lengthy and complicated descriptions, combined structural symbols may be shown separately in the symbols reference and the following note added:			
	'Some structural elements observed at a single locality are combined on the map'			
3.8.1		*Normal fault showing relative displacement and dip of fault plane. Tick on younger rocks*	Use 3.2.1 note in reference or add appropriate classification to description (see 3.2)	
3.8.2		*Normal fault showing dip and plunge of lineation on fault plane. Tick on younger rocks*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
4.1	**Dykes, veins, sills**			
	• For metamorphic aureoles, see 1.8.3 and 18.1.2			
	• It is recommended that dykes be shown on the black plate, but a separate colour plate may be used (e.g. purple plate)			
4.1.1		*Dyke or vein*	If vein widens to mappable width use 4.1.2	
4.1.2		*Dyke or vein*	Colour may be used as infill in place of the line pattern Indicate type of rock or filling with lower case letters (e.g. **dl** –*dolerite*). See 4.2 for list of suggested abbreviations of rock types If appropriate, the age and name of body can be indicated in Stratigraphic/Lithological reference (e.g. **Pdw** –Wurugoi Dolerite) **Descriptions** Where dykes are all of one rock type use: e.g. *Dolerite dyke or vein* Where there are dykes of different rock type use: e.g. *Dyke or vein containing:* **dl** –*dolerite,* **peg** –*pegmatite,* **q** –*quartz* Where numerous dykes of one type exist, they need not be labelled on the map face provided a note is added to the symbols reference after the last dyke abbreviation (e.g. *Dyke or vein;* **br** –*breccia,* **q** –*quartz; unlabelled dykes are dolerite*) Use this symbol in the map reference if both 4.1.1 and 4.1.2 appear on the map	
4.1.3		*Sill*	Use where sill is not of mappable width. Indicate type of rock with lower case letters (e.g. **dl** –*dolerite*). See 4.2 for list of suggested abbreviations of rock types	

4.2 Suggested abbreviations for dykes, veins, sills, and filling in faults and shears

- Where diverse veins or dyke bodies or systems need to be distinguished use different abbreviations (e.g. **dl** ,**do**, **dt**); where the age relationship is known use (**d1**,**d2**,**d3**)

- For composite dykes, generally use the first letter of each rock type (e.g. **qt** –*quartz tourmaline,* **qb** –*quartz breccia*)

- Rock types should be listed in the symbols reference in alphabetical order ***based on their abbreviation***

a	*Acid*	**c**	*Calcite*
am	*Amphibolite*	**ch**	*Chlorite*
ad	*Andesite*	**da**	*Dacite*
ap	*Apatite*	**d**	*Deformed rock*
apl	*Aplite*	**dr**	*Diorite*
ba	*Barite*	**dl**	*Dolerite*
bs	*Basalt*	**dm**	*Dolomite*
b	*Basic*	**e**	*Epidote*
br	*Breccia*	**fs**	*Feldspar*

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
4.2	Suggested abbreviations for dykes, veins, sills, and filling in faults and shears (cont'd)			

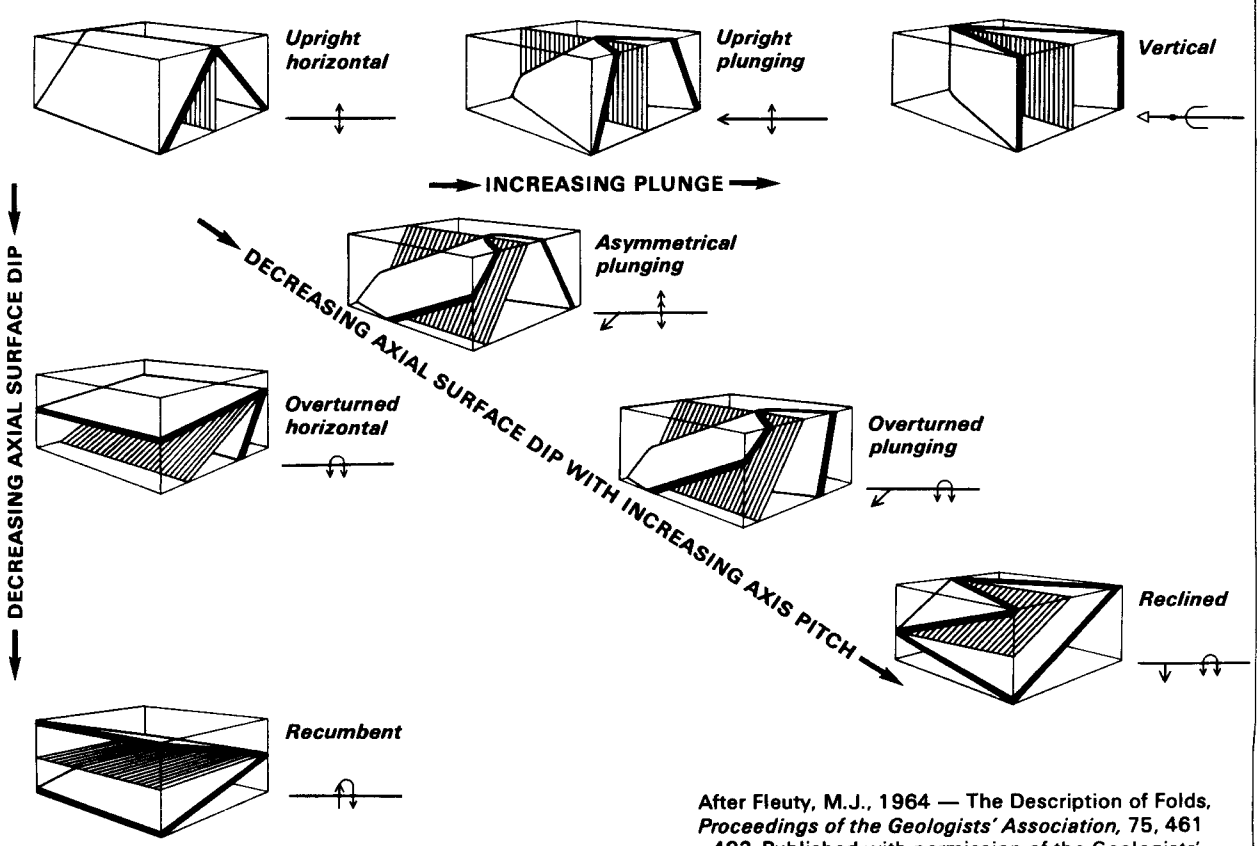
f	*Felsite*	**mz**	*Monzonite*
fl	*Fluorite*	**my**	*Mylonite*
gb	*Gabbro*	**n**	*Norite*
go	*Gossan*	**peg**	*Pegmatite*
gr	*Granite*	**ph**	*Phonolite*
gd	*Granodiorite*	**po**	*Porphyry*
gy	*Granophyre*	**q**	*Quartz*
gn	*Greisen*	**qf**	*Quartzofeldspathic vein*
he	*Hematite*	**rd**	*Rhyodacite*
hb	*Hornblendite*	**rh**	*Rhyolite*
in	*Intermediate*	**s**	*Silcrete*
fe	*Iron*	**si**	*Silica*
k	*Kimberlite*	**sy**	*Syenite*
lp	*Lamprophyre*	**ta**	*Talc*
lgr	*Leucogranite*	**to**	*Tonalite*
ls	*Limestone*	**t**	*Tourmaline*
m	*mafic*	**tr**	*Trachyte*
mt	*Magnetite*	**tm**	*Tremolite*
m	*Micro* — add '**m**' prefix (e.g. **mgr** –*microgranite*, **msy** –*microsyenite*	**tf**	*Tuffisite*
		u	*Ultrabasic*
mi	*Minette*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)

5.1 Definitions and notes

• Definitions:

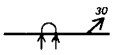
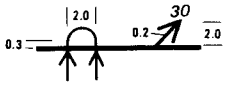
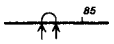
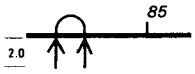
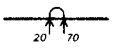
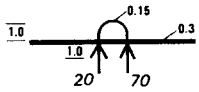
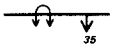
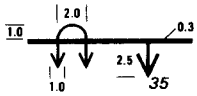
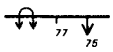
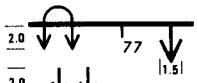
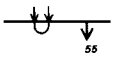
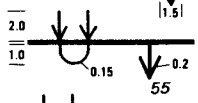
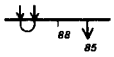
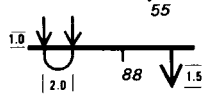
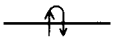
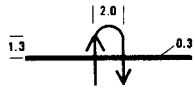
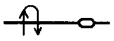
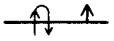
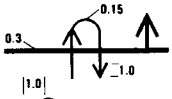
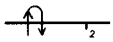
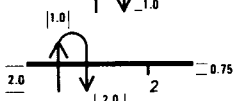
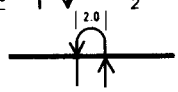
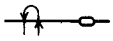
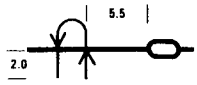
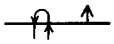
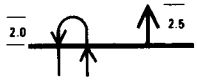
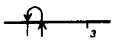
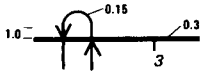
Anticline	— a fold with older rocks in the core
Syncline	— a fold with younger rocks in the core
Antiform	— a fold whose limbs close upward
Synform	— a fold whose limbs close downward
Upright fold	— a fold with a near-vertical axial surface (i.e. axial surface dip 80°–90°)
Inclined fold	— a fold with an axial surface dip between 10° and 80°
Overturned fold	— a fold with limbs dipping in same direction (i.e. one limb inverted)
Recumbent fold	— a fold with near-horizontal axial surface (i.e. axial surface dip 0°–10°)
Vertical fold	— a fold with near-vertical plunge (i.e. 80°–90°)
Asymmetrical fold	— a fold with axial surface dip between 10° and 80° and limbs dipping in opposite directions. The limbs usually dip at different angles but may not in folds with one preferentially thinned limb
Inverted fold	— a downward-facing fold (i.e. inverted strata)
Reclined fold	— a fold with axial surface dip between 10° and 80° and strike of axial surface at 90° ± 10° to trend of fold axis
Horizontal fold	— a fold with near-horizontal plunge (i.e. 0°–10°)
Monocline	— Local steepening of otherwise uniformly gently-dipping or horizontal upward facing strata
Monoform	— Local steepening of otherwise uniformly gently-dipping or horizontal layers of unknown facing

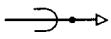
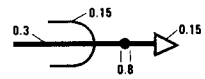
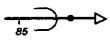
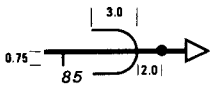
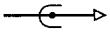
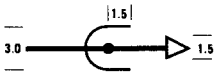
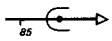
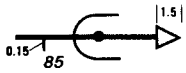
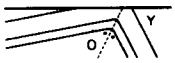
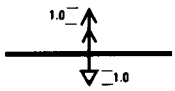
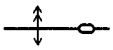
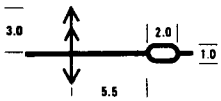
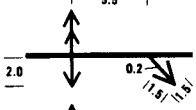
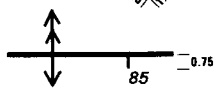
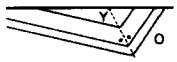
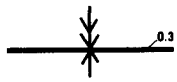
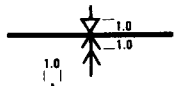
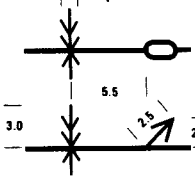
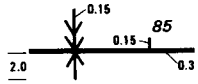


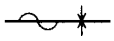
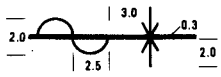
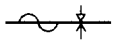
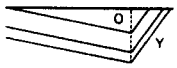
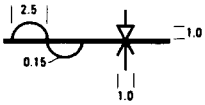
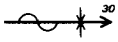
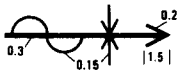
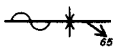
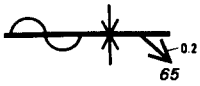
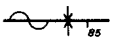
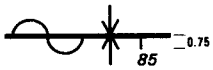
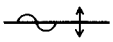
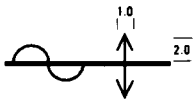
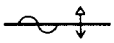
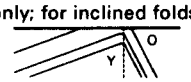
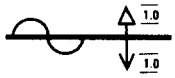
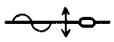
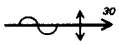
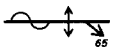
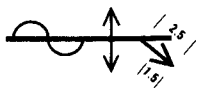
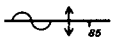
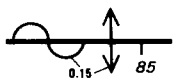
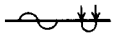
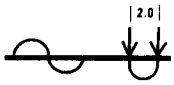
After Fleuty, M.J., 1964 — The Description of Folds, *Proceedings of the Geologists' Association*, 75, 461–492. Published with permission of the Geologists' Association, London, UK

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
5.1	**Definitions and notes (cont'd)**			
	• To avoid repetition of 'not measured' or 'prevailing' dip and plunge descriptions in a reference insert the following note after the last structural symbol: ***'Dips and plunges without values are not measured, or prevailing'***			
	• Some symbols without values are described to indicate the correct form of the description			
	• The term ***'axial plane'*** may be substituted for ***'axial surface'*** throughout this section			
	• See also 6.3 Undulating and folded bedding			
5.2	**Classification of fold axial surface traces**			
	See 1.5.5 Classification of geological boundaries, faults, and fold axial surface traces			
	Symbols for accurate, approximate, inferred, and concealed fold axial surface traces are illustrated only for anticlines (5.2.1 to 5.2.5), but they apply to all symbols in sub-sections 5.3 to 5.12. The descriptions for symbols should contain their classification (e.g. ***Anticline showing plunge and dip of axial surface; position approximate***). See also 5.2.1 note			
5.2.1		*Anticline, position accurate*	Symbols for approximate, inferred, and concealed folds may be omitted from the map reference and part or all of this note inserted: ***'Where position of boundaries, faults, and folds is approximate, line is broken; where inferred, queried; where concealed, boundaries and folds are dotted, fault are shown by short dashes'***	
5.2.2		*Anticline, position approximate*		
5.2.3		*Anticline, inferred*		
5.2.4		*Anticline, concealed*		
5.2.5		*Anticline; inferred, concealed*		
5.3	**Multiple folding episodes**			
	Symbols for multiple folding episodes are illustrated only for anticlines (5.3.1, 5.3.2), but they apply to all folds in sub-sections 5.4 to 5.12. The descriptions for symbols should also contain their classification: (e.g. ***Anticline showing plunge, position approximate; second folding episode***) See also 5.2.1 note.			
5.3.1		*Anticline, second folding episode*	Where relative ages of folds are known, folds have circled numbers, extra barbs, or short dashes added to symbol (see 5.3.2, 5.3.3). Alternatively, colour may be used to distinguish different generations.	
	or		Circled numbers indicate the sequence of folding episodes; —①— first, —②— second, —③— third generation.	
5.3.2		*Anticline showing plunge, second folding episode*	The number of barbs indicates the sequence of folding episodes; ——> first, ——>> second, ——>>> third generation. If this symbol is used, care should be taken to avoid confusion between plunging folds (e.g. 5.4.4) and also crenulation paralleling a plunge (e.g. 5.17.3).	
	or			
5.3.3		*Anticline, second folding episode*	The number of short dashes indicates the sequence of folding episodes; —·— first, —··— second, —···— third generation.	

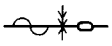
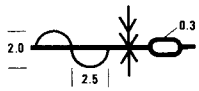
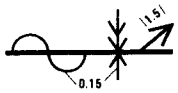
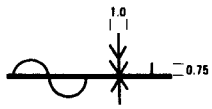
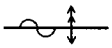
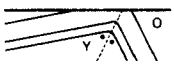
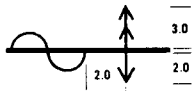
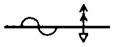
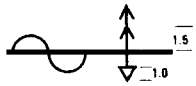
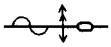
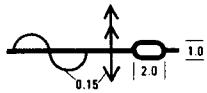
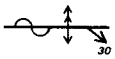
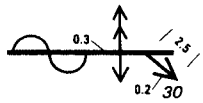
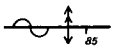
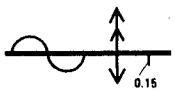
SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.4		**Anticlines and synclines**		
5.4.1		*Anticline*		
5.4.2		*Anticline. Closed arrow indicates steeper, thinned limb*	Upright folds only; for inclined folds see 5.9.1	
5.4.3		*Anticline, axis horizontal*		
5.4.4	30	*Anticline showing plunge*	Upright folds only; for inclined folds see 5.4.5 For 'plunge not measured' see 1.5.3	
5.4.5	65	*Anticline showing plunge*	See also 5.9.4	
5.4.6	85	*Anticline showing dip of axial surface*		
5.4.7		*Syncline*		
5.4.8		*Syncline. Closed arrow indicates steeper, thinned limb*	Upright folds only; for inclined folds see 5.9.6	
5.4.9		*Syncline, axis horizontal*		
5.4.10	30	*Syncline showing plunge*	Upright folds only; for inclined folds see 5.4.11 For 'plunge not measured' see 1.5.3	
5.4.11	65	*Syncline showing plunge*	See also 5.9.9	
5.4.12	85	*Syncline showing dip of axial surface*		
5.5		**Overturned folds**		
5.5.1		*Overturned anticline*		
5.5.2		*Overturned anticline, axis horizontal*		
5.5.3	35	*Overturned anticline showing plunge*		
5.5.4	85	*Overturned anticline showing dip of axial surface*		
5.5.5	20 70	*Overturned anticline showing dips of limbs*		
5.5.6		*Overturned syncline*		
5.5.7		*Overturned syncline, axis horizontal*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.5	**Overturned folds (cont'd)**			
5.5.8		*Overturned syncline showing plunge*		
5.5.9		*Overturned syncline showing dip of axial surface*		
5.5.10		*Overturned syncline showing dips of limbs*		
5.6	**Reclined folds**			
5.6.1		*Reclined anticline showing plunge*		
5.6.2		*Reclined anticline showing plunge and dip of axial surface*		
5.6.3		*Reclined syncline showing plunge*		
5.6.4		*Reclined syncline showing plunge and dip of axial surface*		
5.7	**Recumbent folds**			
5.7.1		*Recumbent anticline*		
5.7.2		*Recumbent anticline, axis horizontal*		
5.7.3		*Recumbent anticline showing plunge*		
5.7.4		*Recumbent anticline showing dip of axial surface*		
5.7.5		*Recumbent syncline*		
5.7.6		*Recumbent syncline, axis horizontal*		
5.7.7		*Recumbent syncline showing plunge*		
5.7.8		*Recumbent syncline showing dip of axial surface*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.8	**Vertical folds**			
5.8.1		*Vertical anticline showing plunge; dot indicates facing*		
5.8.2		*Vertical anticline showing plunge and dip of axial surface; dot indicates facing*		
5.8.3		*Vertical syncline showing plunge; dot indicates facing*		
5.8.4		*Vertical syncline showing plunge and dip of axial surface; dot indicates facing*		
5.9	**Asymmetrical folds**			
5.9.1		*Asymmetrical anticline. Double arrow indicates steeper limb*		
5.9.2		*Asymmetrical anticline with same dip on both limbs. Closed arrow indicates thinned limb*		
5.9.3		*Asymmetrical anticline, axis horizontal. Double arrow indicates steeper limb*		
5.9.4		*Asymmetrical anticline showing plunge. Double arrow indicates steeper limb*		
5.9.5		*Asymmetrical anticline showing dip of axial surface. Double arrow indicates steeper limb*		
5.9.6		*Asymmetrical syncline. Double arrow indicates steeper limb*		
5.9.7		*Asymmetrical syncline with same dip on both limbs. Closed arrow indicates thinned limb*		
5.9.8		*Asymmetrical syncline, axis horizontal. Double arrow indicates steeper limb*		
5.9.9		*Asymmetrical syncline showing plunge. Double arrow indicates steeper limb*		
5.9.10		*Asymmetrical syncline showing dip of axial surface. Double arrow indicates steeper limb*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.10	**Inverted folds**			
5.10.1		*Inverted anticline* *or* *Synformal anticline*		
5.10.2		*Inverted anticline. Closed arrow indicates steeper, thinned limb* *or* *Synformal anticline. Closed arrow indicates steeper, thinned limb*	Upright folds only; for inclined folds see 5.10.25 	
5.10.3		*Inverted anticline, axis horizontal* *or* *Synformal anticline, axis horizontal*		
5.10.4		*Inverted anticline showing plunge* *or* *Synformal anticline showing plunge*	Upright folds only; for inclined folds see 5.10.5 For 'plunge not measured' see 1.5.3	
5.10.5		*Inverted anticline showing plunge* *or* *Synformal anticline showing plunge*	See also 5.10.28	
5.10.6		*Inverted anticline showing dip of axial surface* *or* *Synformal anticline showing dip of axial surface*		
5.10.7		*Inverted syncline* *or* *Antiformal syncline*		
5.10.8		*Inverted syncline. Closed arrow indicates steeper, thinned limb* *or* *Antiformal syncline. Closed arrow indicates steeper, thinned limb*	Upright folds only; for inclined folds see 5.10.30 	
5.10.9		*Inverted syncline, axis horizontal* *or* *Antiformal syncline, axis horizontal*		
5.10.10		*Inverted syncline showing plunge* *or* *Antiformal syncline showing plunge*	Upright folds only; for inclined folds see 5.10.11 For 'plunge not measured' see 1.5.3	
5.10.11		*Inverted syncline showing plunge* *or* *Antiformal syncline showing plunge*	See also 5.10.33	
5.10.12		*Inverted syncline showing dip of axial surface* *or* *Antiformal syncline showing dip of axial surface*		
5.10.13		*Inverted overturned anticline* *or* *Synformal overturned anticline*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.10	**Inverted folds (cont'd)**			
5.10.14		*Inverted overturned anticline, axis horizontal* *or* *Synformal overturned anticline, axis horizontal*		
5.10.15		*Inverted overturned anticline showing plunge* *or* *Synformal overturned anticline showing plunge*	Inclined folds	
5.10.16		*Inverted overturned anticline showing dip of axial surface* *or* *Synformal overturned anticline showing dip of axial surface*		
5.10.17		*Inverted overturned syncline* *or* *Antiformal overturned syncline*		
5.10.18		*Inverted overturned syncline, axis horizontal* *or* *Antiformal overturned syncline, axis horizontal*		
5.10.19		*Inverted overturned syncline showing plunge* *or* *Antiformal overturned syncline showing plunge*	Inclined folds	
5.10.20		*Inverted overturned syncline showing dip of axial surface* *or* *Antiformal overturned syncline showing dip of axial surface*		
5.10.21		*Inverted vertical anticline showing plunge; dot indicates facing*		
5.10.22		*Inverted vertical anticline showing plunge and dip of axial surface; dot indicates facing*		
5.10.23		*Inverted vertical syncline showing plunge; dot indicates facing*		
5.10.24		*Inverted vertical syncline showing plunge and dip of axial surface; dot indicates facing*		
5.10.25		*Inverted asymmetrical anticline. Double arrow indicates steeper limb* *or* *Synformal asymmetrical anticline. Double arrow indicates steeper limb*		
5.10.26		*Inverted asymmetrical anticline with same dip on both limbs. Closed arrow indicates thinned limb* *or* *Synformal asymmetrical anticline with same dip on both limbs. Closed arrow indicates thinned limb*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.10	**Inverted folds (cont'd)**			
5.10.27		*Inverted asymmetrical anticline, axis horizontal. Double arrow indicates steeper limb* *or* *Synformal asymmetrical anticline, axis horizontal. Double arrow indicates steeper limb*		
5.10.28		*Inverted asymmetrical anticline showing plunge. Double arrow indicates steeper limb* *or* *Synformal asymmetrical anticline showing plunge. Double arrow indicates steeper limb*		
5.10.29		*Inverted asymmetrical anticline showing dip of axial surface. Double arrow indicates steeper limb* *or* *Synformal asymmetrical anticline showing dip of axial surface. Double arrow indicates steeper limb*		
5.10.30		*Inverted asymmetrical syncline. Double arrow indicates steeper limb* *or* *Antiformal asymmetrical syncline. Double arrow indicates steeper limb*		
5.10.31		*Inverted asymmetrical syncline with same dip on both limbs. Closed arrow indicates thinned limb* *or* *Antiformal asymmetrical syncline with same dip on both limbs. Closed arrow indicates thinned limb*		
5.10.32		*Inverted asymmetrical syncline, axis horizontal. Double arrow indicates steeper limb* *or* *Antiformal asymmetrical syncline, axis horizontal. Double arrow indicates steeper limb*		
5.10.33		*Inverted asymmetrical syncline showing plunge. Double arrow indicates steeper limb* *or* *Antiformal asymmetrical syncline showing plunge. Double arrow indicates steeper limb*		
5.10.34		*Inverted asymmetrical syncline showing dip of axial surface. Double arrow indicates steeper limb* *or* *Antiformal asymmetrical syncline showing dip of axial surface. Double arrow indicates steeper limb*		

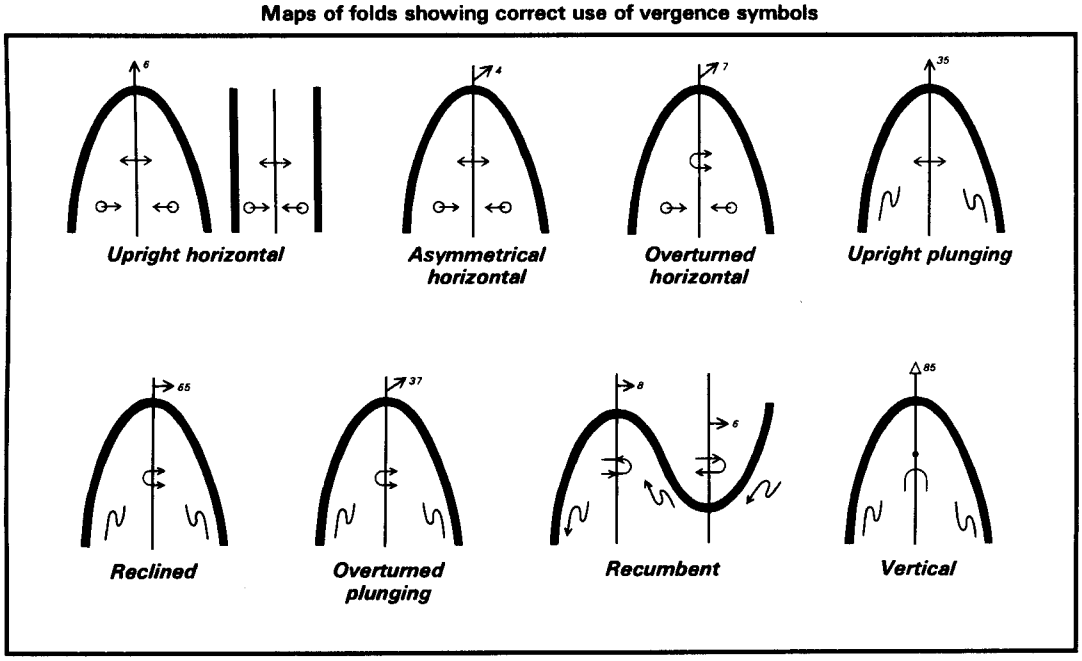
SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.11		**Folds, facing not known**		
5.11.1		*Antiform*		
5.11.2		*Antiform. Open arrow indicates steeper, thinned limb*	Upright folds only; for inclined folds see 5.11.27	
5.11.3		*Antiform, axis horizontal*		
5.11.4	30	*Antiform showing plunge*	Upright folds only; for inclined folds see 5.11.5 For 'plunge not measured' see 1.5.3	
5.11.5	65	*Antiform showing plunge*	See also 5.11.30	
5.11.6	85	*Antiform showing dip of axial surface*		
5.11.7		*Synform*		
5.11.8		*Synform. Open arrow indicates steeper, thinned limb*	Upright folds only; for inclined folds see 5.11.32	
5.11.9		*Synform, axis horizontal*		
5.11.10	30	*Synform showing plunge*	Upright folds only; for inclined folds see 5.11.11 For 'plunge not measured' see 1.5.3	
5.11.11	65	*Synform showing plunge*	See also 5.11.35	
5.11.12	85	*Synform showing dip of axial surface*		
5.11.13		*Overturned antiform*		
5.11.14		*Overturned antiform, axis horizontal*		
5.11.15	30	*Overturned antiform showing plunge*		
5.11.16	85	*Overturned antiform showing dip of axial surface*		
5.11.17		*Overturned synform*		
5.11.18		*Overturned synform, axis horizontal*		
5.11.19	30	*Overturned synform showing plunge*		
5.11.20	85	*Overturned synform showing dip of axial surface*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.11		**Folds, facing not known (cont'd)**		
5.11.21		*Recumbent fold*		
5.11.22		*Recumbent fold, axis horizontal*		
5.11.23		*Recumbent fold showing plunge*		
5.11.24		*Recumbent fold showing dip of axial surface*		
5.11.25		*Vertical fold showing plunge*	Symbol should be oriented to show trend of folded rocks and plunge:	
5.11.26		*Vertical fold showing plunge and dip of axial surface*		
5.11.27		*Asymmetrical antiform. Double arrow indicates steeper limb*		
5.11.28		*Asymmetrical antiform with same dip on both limbs. Open arrow indicates thinned limb*		
5.11.29		*Asymmetrical antiform, axis horizontal. Double arrow indicates steeper limb*		
5.11.30		*Asymmetrical antiform showing plunge. Double arrow indicates steeper limb*		
5.11.31		*Asymmetrical antiform showing dip of axial surface. Double arrow indicates steeper limb*		
5.11.32		*Asymmetrical synform. Double arrow indicates steeper limb*		
5.11.33		*Asymmetrical synform with same dip on both limbs. Open arrow indicates thinned limb*		
5.11.34		*Asymmetrical synform, axis horizontal. Double arrow indicates steeper limb*		
5.11.35		*Asymmetrical synform showing plunge. Double arrow indicates steeper limb*		
5.11.36		*Asymmetrical synform showing dip of axial surface. Double arrow indicates steeper limb*		
5.12		**Monoclines and monoforms**		
5.12.1		*Monocline*	Line marks position of upper line of dip change. On ***large-scale*** maps a second line may be added to indicate lower line of dip change	
5.12.2		*Monocline showing dip of axial surface*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.12	**Monoclines and monoforms (cont'd)**			
5.12.3		*Fault-induced monocline*		
5.12.4		*Monoform*		
5.12.5	85	*Monoform showing dip of axial surface*		
5.13	**Plunge of fold axes**			
5.13.1	FA 50	*Plunge of fold axes*	To be used where strata are too tightly folded to show individual folds. See also 5.14.19, 6.3.1	
5.13.2	FA 50 85	*Plunge of fold axes showing dip of axial surface*		
5.14	**Minor folds**			
	• Use where folds are too small to show at map scale			
	• The plunge arrowhead may be replaced by the appropriate lineation arrowhead to indicate lineation type paralleling the fold axis (see 5.17.3 and Section 10 Lineation)			
5.14.1		*Minor anticline. Dot indicates proved direction of facing*	Trend and plunge of axis are not known. Where plunge of fold axis is known use 5.14.3 to 5.14.8	
5.14.2		*Minor syncline. Dot indicates proved direction of facing*		
5.14.3	20	*Minor anticline showing plunge*	Upright folds only; for inclined folds see 5.14.4 For 'plunge not measured' see 1.5.3	
5.14.4	25	*Minor anticline showing plunge*		
5.14.5	20	*Minor syncline showing plunge*	Upright folds only; for inclined folds see 5.14.6 For 'plunge not measured' see 1.5.3	
5.14.6	25	*Minor syncline showing plunge*		
5.14.7	65	*Reclined minor anticline showing plunge and dip of axial surface. Dot indicates proved direction of facing*	The facing of the fold is not shown by the plunge of the fold axis (which is in a vertical plane), but the direction of facing is known	
5.14.8	65	*Reclined minor syncline showing plunge and dip of axial surface. Dot indicates proved direction of facing*		
5.14.9	20	*Minor antiform showing plunge*	Upright folds only; for inclined folds see 5.14.10 For 'plunge not measured' see 1.5.3	
5.14.10	25	*Minor antiform showing plunge*		

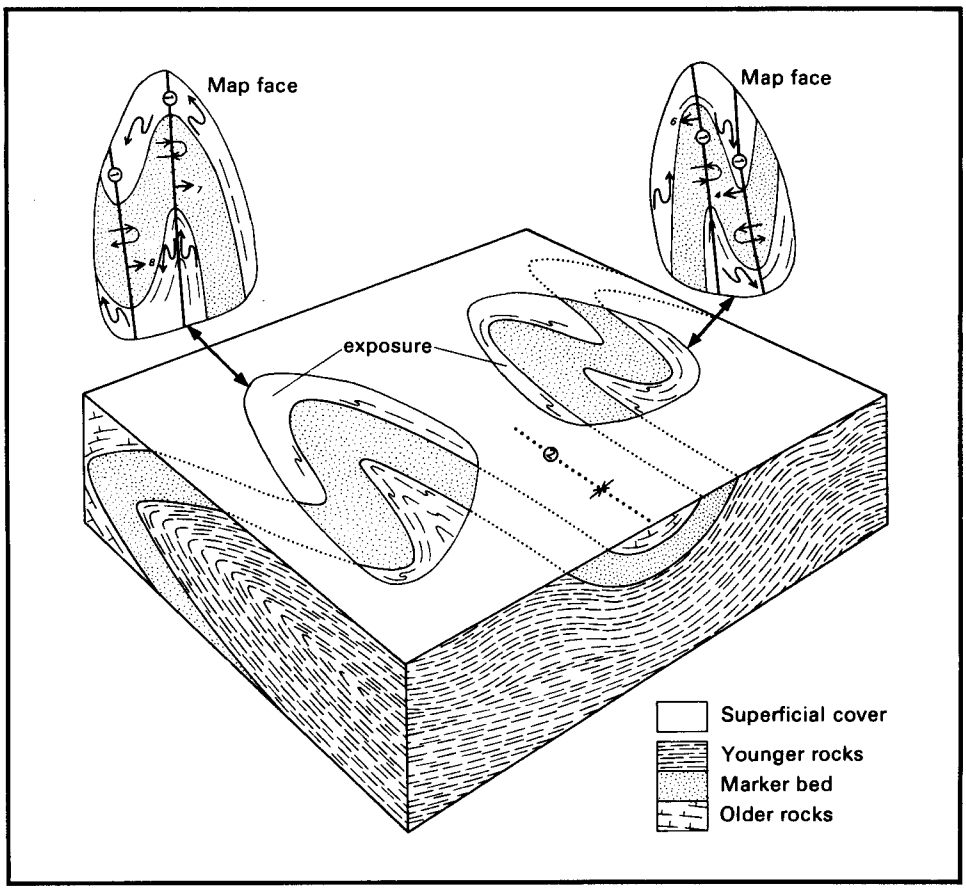
SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.14	**Minor folds (cont'd)**			
5.14.11	20	*Minor synform showing plunge*	Upright folds only; for inclined folds see 5.14.12 For 'plunge not measured' see 1.5.3	2.0 20 0.4
5.14.12	25	*Minor synform showing plunge*		0.5 2.0 1.5 4.5
5.14.13	40	*Minor fold showing plunge*	Upright folds only; for inclined folds see 5.14.14. For 'plunge not measured' see 1.5.3 — When combined with vergence use 5.17.6 or 5.17.7	5.0 40 3.0 1.0
5.14.14	40	*Minor fold showing plunge*		4.0 0.15 40
5.14.15	50	*Minor fold showing dip of axial surface*		0.75 1.5 50
5.14.16	70 40	*Overturned minor fold showing plunge and dip of axial surface*		0.75 0.75 2.0 70 40
5.14.17	65	*Reclined minor fold, facing of strata not known*		3.0 2.0 2.0 1.0
5.14.18	20	*Asymmetrical minor fold showing plunge*		2.0 0.15 20 2.0 2.0
5.14.19	20	*Folded bedding showing plunge*	See also 6.3.1	1.5 0.15 20 2.0
5.14.20	50	*Kink fold showing plunge*		2.0 50 0.15 5.0
5.14.21	⊖	*Locality of superposed folds*	Intersecting folds of different ages	0.15 2.0
5.15	**Vergence**			

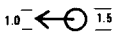
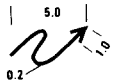
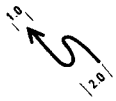
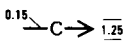
Maps of folds showing correct use of vergence symbols

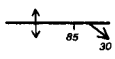
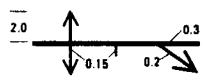
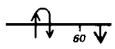
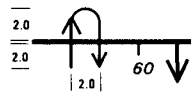
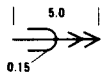
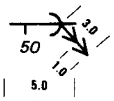
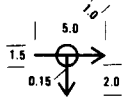
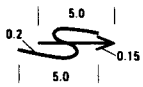


SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.15	Vergence (cont'd)			

Block diagram of warped recumbent folds showing use of vergence symbols



5.15.1		*Vergence to right in upright horizontal fold*	Upright and overturned folds only; use appropriate description. When combined with minor folds use 5.17.6	
5.15.2		*Vergence to left in upright horizontal fold*		
5.15.3		*Vergence to right in recumbent fold. Arrow shows direction to next (structurally lower) fold hinge*		
5.15.4		*Vergence to left in recumbent fold. Arrow shows direction to next (structurally lower) fold hinge*		
5.15.5		*Vergence to right in upright plunging fold*	Upright, overturned, vertical, and reclined plunging folds; use appropriate description. When combined with minor folds use 5.17.7	
5.15.6		*Vergence to left in upright plunging fold*		
5.15.7	—B→	*Plunge of chert boudins*		
5.15.8	—C→	*Plunge of chert contortions*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
5.16	**Tectonic and structural map symbols**			
	See 18.3 Folds			
5.17	**Combined symbols**			
	This sub-section contains a selection of symbols to illustrate symbol combinations and correct wording of descriptions. To avoid lengthy and complicated descriptions, combined structural symbols may be shown separately in the symbols reference and the following note added:			
		'Some structural elements observed at a single locality are combined on the map'		
5.17.1		*Anticline showing plunge, and dip of axial surface*		
5.17.2		*Recumbent anticline showing plunge (not measured), and dip of axial surface*	In the description '(not measured)' is optional. See 1.5.3	
5.17.3		*Minor anticline showing crenulation parallel to plunge*	Arrowhead indicates lineation type paralleling fold axis	
5.17.4		*Minor fold showing strike and dip of axial surface and coincident foliation*		
5.17.5		*Minor fold showing crenulation parallel to plunge and strike and dip of axial surface*		
5.17.6		*Minor horizontal fold showing plunge and vergence to right*	May describe upright, overturned horizontal fold	
5.17.7		*Minor fold showing plunge and vergence to left*	May describe upright, overturned, vertical, or reclined plunging fold	

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***

6.1 Notes

- To avoid repetition of 'not measured' or 'prevailing' dip and plunge descriptions in a reference insert the following note after the last structural symbol:

  'Dips and plunges without values are not measured, or prevailing'

- Some symbols without values are described to indicate the correct form of the description

- ***'Younging'*** instead of ***'facing'*** can be used if desired

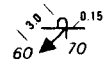
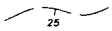
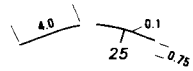
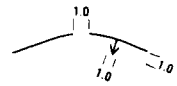
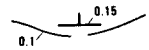
- GSWA uses the symbol *'Dip and strike of strata'* in the Archaean of WA, without any implication regarding facing. Other symbols ( ) indicate facing. Usually the facing of only 1% or 2% of the total dip measurements can be established. The symbol is not used, as it would imply that when is used, the direction of facing is known. The symbols are regarded as unnecessary. To clarify continued use of on their Archaean maps GSWA suggest that a note *'facing not implied'* could be added in the reference. Where basement Archaean is overlain by Proterozoic or Phanerozoic rocks which appear on the same map, the note could be changed to *'facing not implied in Archaean rocks'*.

6.2 Bedding

6.2.1	25	*Strike and dip of strata*	Normally used to represent observed bedding data. Symbol 6.2.11 is used only where observer has strong doubt about the direction of facing	3.0 0.15 25
6.2.2		*Strike and dip of strata, dip not measured* *or* *Prevailing strike and dip of strata*		0.75
6.2.3		*Strike of strata, dip not determined* *or* *Strike of strata, dip indeterminate*	Use sparingly	0.15 3.0
6.2.4		*Vertical strata*		1.5
6.2.5		*Horizontal strata*	Symbol should be oriented north/south	3.0 0.15
6.2.6	80	*Strike and dip of inverted strata*	See last note at beginning of this section	0.75 1.5 80
6.2.7		*Horizontal inverted strata*	Symbol should be oriented north/south	3.0 1.5 0.15
6.2.8		*Strike and dip of strata. Dot indicates proved direction of facing*	Optional. May be used to distinguish new mapping where facing was not proved previously. See notes at beginning of this section.	0.75 0.5
6.2.9		*Vertical strata. Dot indicates proved direction of facing*		1.5 0.15
6.2.10		*Strike and dip of inverted strata. Dot indicates proved direction of facing*		1.5
6.2.11	25	*Strike and dip of strata, facing not known*	See notes at beginning of this section	0.5 0.75 25
6.2.12		*Vertical strata, facing not known*		1.5 0.15

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
6.2	**Bedding (cont'd)**			
6.2.13	70 30	*Curving dip*	Angles indicate maximum and minimum dip	0.75; 0.15; 3.0; 70; 2.0; 30; 2.0
6.2.14	3	*Dip slope*	Observed. Arrow as long as exposed slope. To show outline, may combine with trend-line symbol 6.7.1	1.0; variable; 3; 0.15; 1.0
6.2.15		*Strike and dip of foresets*	Not to be combined with strike and dip of strata. ***Large-scale*** or ***special-purpose maps only***	3.5; 2.0; 0.5; 0.15
6.2.16	15–21	*Range of strike and dip of irregular foresets*		4.0; 0.75; 2.0; 2.0; 0.15; 1.0
6.2.17		*Dip on exhumed erosion surface*	***Special-purpose*** (e.g. ***geomorphological***) ***maps only***	3.0; 0.5; 1.0; 0.15
6.3	**Undulating and folded bedding**			
6.3.1	30	*Generalised strike and overall dip of crumpled strata* *or* *Generalised strike and overall dip of undulating strata*	Use where the overall dip is parallel to the fold axes. See also 5.13.1, 5.14.19	1.25; 0.75; 0.15; 30; 3.0
6.3.2		*Overall dip of gently folded strata*	Use where the overall dip is perpendicular to the fold axes	3.0; 0.15
6.3.3		*Overall dip of strongly deformed strata*		1.25; 0.75; 0.15; 3.0
6.4	**Top of beds (facing)**			
6.4.1	g	*Facing of beds* *or* *Facing of strata* *or* *Top of bed* *or* *Top of stratum*	General symbol. Arrow shows facing; base at point of observation. Letter indicates method: c – *cross-bedding* g – *graded bedding* Description for one method — *Top of bed determined by cross-bedding* Description for more than one method — *Top of bed determined by:* c – *cross-bedding,* g – *graded bedding*	1.0; 3.5; 0.15; 0.5; 1.0
6.4.2		*Facing of lava flows* *or* *Facing of pillow lavas*		1.25; 2.5; 0.15; 1.0
6.5	**Direction of movement (water, ice)**			
6.5.1	r	*Direction and sense of movement of sediment-bearing currents*	Letter indicates method: f – *fluting* r – *asymmetrical ripple marks or other structures* x – *cross-stratification*	1.25; 2.0; 0.15; 1.0
6.5.2	f	*Direction of movement of sediment-bearing currents, sense not known*	Description for one method — *Direction and sense of movement of sediment-bearing currents determined by cross-stratification* Description for more than one method — *Direction and sense of movement of sediment-bearing currents determined by:* f – *fluting,* x – *cross-stratification*	1.25; 3.5; 0.15; 1.0

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
6.5	**Direction of Movement (water, ice) (cont'd)**			
6.5.3		*Glacial striae showing sense of movement*	Centre of circle is the point of observation (generally not on bedding plane)	
6.5.4		*Glacial striae, sense of movement not known*		
6.6	**Photo-interpreted bedding**			
6.6.1		*Strike and dip of strata, dip less than 5°*	Dip values measured from airphotos and/or radar imagery can be added to symbol (e.g. $_{25}$). Dips (photo-) estimated at intervals along the strike may be supported by one or more (photo-) measured dips	
6.6.2		*Strike and dip of strata, dip 5° to 15°*		
6.6.3		*Strike and dip of strata, dip 15° to 45°*		
6.6.4		*Strike and dip of strata, dip greater than 45°*		
6.6.5		*Strike and dip of strata, dip not estimated*		
6.6.6		*Vertical strata*		
6.6.7		*Horizontal strata*	Symbol should be oriented north/south	
6.7	**Trend-line**			
6.7.1		*Trend-line*	May use *'Trend of bedding'* (or *strata*). See also 8.4 General trend of foliation	
6.8	**Combined symbols**			
	This sub-section contains a selection of symbols to illustrate symbol combinations and correct wording of descriptions. To avoid lengthy and complicated descriptions, combined structural symbols may be shown separately in the symbols reference and the following note added: ***'Some structural elements observed at a single locality are combined on the map'***			
6.8.1	60 70	*Strike and dip of strata and plunge of mineral elongation*		
6.8.2	50 60	*Strike and dip of strata parallel to foliation, and plunge of mineral elongation*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
6.8	**Combined symbols (cont'd)**			
6.8.3		*Strike and dip of strata parallel to foliation, and horizontal mineral elongation*		
6.8.4		*Strike and dip of inverted strata and plunge of mineral elongation*		
6.8.5		*Trend-line showing dip*		
6.8.6		*Trend-line showing dip 5° to 15°*		
6.8.7		*Curved outcrop of uniformly dipping strata*	See also 6.2.14	

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
7.1	**Notes**			
	• To avoid repetition of 'not measured' or 'prevailing' dip and plunge descriptions in a reference insert the following note after the last structural symbol: ***'Dips and plunges without values are not measured, or prevailing'***			
	• Some symbols without values are described to indicate the correct form of the description			
7.2	**Joints**			
7.2.1	80	*Strike and dip of joint*		3.0, 0.5, 80
7.2.2		*Strike and dip of joint, dip not measured* *or* *Prevailing strike and dip of joint*		1.0, 0.15
7.2.3		*Vertical joint*		0.75, 1.0
7.2.4		*Horizontal joint*	Symbol should be oriented north/south	0.75, 3.0, 0.15
7.3	**Joint pattern**			
7.3.1		*Joint pattern. Airphoto interpretation*		0.8, 0.2, 0.1
7.3.2		*Joint pattern*	Suitable for ***large-scale*** and ***special-purpose*** (e.g. ***engineering geology*** **maps**	0.1
7.3.3		*Trace of joint on inclined surface showing direction of dip*	Applies only to ***mining*** and ***engineering geology*** plans. True strike and dip of joint is defined by that of the inclined surface	1.0, 0.5, 0.15, 0.25
7.4	**Columnar joints**			
7.4.1	80	*Columnar joints showing plunge*		4.0, 0.5, 1.5, 0.15, 1.5

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
8.1	**Definitions and notes**			
	• Definitions: **Metamorphic Foliation** — planar arrangement of textural or structural features in any type of metamorphic rock **Schistosity** — foliation due to parallel planar arrangement of platy, prismatic, or ellipsoidal mineral grains			
	• To avoid repetition of 'not measured' or 'prevailing' dip and plunge descriptions in a reference insert the following note after the last structural symbol: ***'Dips and plunges without values are not measured, or prevailing'***			
	• Some symbols without values are described to indicate the correct form of the description			
8.2	**Foliation**			
8.2.1	50	*Strike and dip of foliation*		3.0, 1.0, 50
8.2.2		*Strike and dip of foliation, dip not measured* *or* *Prevailing strike and dip of foliation*		0.75, 0.15
8.2.3		*Strike and dip of foliation, dip not determined* *or* *Strike and dip of foliation, dip indeterminate*		0.75, 2.0
8.2.4		*Vertical foliation*		2.0, 0.15
8.2.5		*Horizontal foliation*	Symbol should be oriented north/south	3.0, 0.75
8.3	**Multiple deformation episodes**			
8.3.1	40	*Strike and dip of foliation, second deformation episode*	The number of barbs indicates the sequence of deformation episodes; first, second, third, generation. Alternatively, colour may be used to distinguish different generations	3.0, 0.5, 0.15, 0.75
8.4	**General trend of foliation**			
8.4.1		*General trend of foliation in metamorphic rocks*		4.0, 1.0, 0.1
8.4.2		*General trend of foliation in medium to high-grade metamorphic rocks*		1.0, 0.1
8.4.3		*General trend of foliation in migmatite and gneiss*		4.0, 1.0, 0.1, 0.75

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
8.5	**Schistosity**			
8.5.1	60	*Strike and dip of late stage schistosity associated with retrograde metamorphism*	Use appropriate description	0.15, 0.4, 1.0, 0.75
8.6	**Combined symbols**			
	This sub-section contains a selection of symbols to illustrate symbol combinations and correct wording of descriptions. To avoid lengthy and complicated descriptions, combined structural symbols may be shown separately in the symbols reference and the following note added: ***'Some structural elements observed at a single locality are combined on the map'***			
8.6.1	70 50	*Strike and dip of foliation and plunge of crenulation*		3.0, 0.15, 70, 50
8.6.2	55 70 60	*Strike and dip of foliation and plunge of crenulation and of mineral elongation*		3.0, 55, 70, 60
8.6.3	50	*Strike and dip of foliation and horizontal mineral elongation or alignment*		5.0, 50
8.6.4	30	*Vertical foliation and plunge of lineation*		4.5, 2.0, 30
8.6.5		*Horizontal foliation and lineation*		6.0, 3.0, 0.75
8.6.6	50 20	*Strike and dip of foliation, second deformation episode, and plunge of mineral elongation*		3.75, 0.15, 50, 20

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
9.1	**Definition and notes**			
	• Definition: **Cleavage** — tendency of a rock to split along aligned fractures or closely spaced planar structures or textures produced by deformation or metamorphism			
	• To avoid repetition of 'not measured' or 'prevailing' dip and plunge descriptions in a reference insert the following note after the last structural symbol: ***'Dips and plunges without values are not measured, or prevailing'***			
	• Some symbols without values are described to indicate the correct form of the description			
9.2	**Cleavage**			
9.2.1	60	*Strike and dip of cleavage*	Type of cleavage should be specified in reference. If necessary, add a letter to distinguish cleavage types (e.g. 60 k *Strike and dip of kink cleavage*)	3.0; 0.75; 60
9.2.2		*Strike and dip of cleavage, dip not measured* *or* *Prevailing strike and dip of cleavage*	Where more than one type of cleavage is present use: s *Strike and dip of cleavage: c – crenulation cleavage, k – kink cleavage, s – spaced cleavage*	0.15
9.2.3		*Strike of cleavage, dip not determined* *or* *Strike of cleavage, dip indeterminate*	Use sparingly	0.15; 0.5
9.2.4		*Vertical cleavage*		3.0; 1.5
9.2.5		*Horizontal cleavage*	Symbol should be oriented north/south	1.0; 0.15
9.3	**Combined symbols**			
	This sub-section contains a selection of symbols to illustrate symbol combinations and correct wording of descriptions. To avoid lengthy and complicated descriptions, combined structural symbols may be shown separately in the symbols reference and the following note added: ***'Some structural elements observed at a single locality are combined on the map'***			
9.3.1	70 30	*Strike and dip of cleavage and apparent dip of bedding on cleavage plane*		1.0; 70; 1.5; 30
9.3.2	60 70	*Strike and dip of strata and apparent dip of cleavage on bedding plane*		0.15; 3.0; 70; 60; 1.0
9.3.3	70 80	*Strike and dip of bedding and of cleavage*	Strikes coincident	3.0; 0.75; 70 80

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
10.1	**Notes**			
	• To avoid repetition of 'not measured' or 'prevailing' dip and plunge descriptions in a reference insert the following note after the last structural symbol: ***'Dips and plunges without values are not measured, or prevailing'***			
	• Some symbols without values are described to indicate the correct form of the description			
	• Plunge should be measured in the vertical plane; point of observation at base of arrow			
10.2	**Lineation (type not specified)**			
	Compare with 10.6 Flow lineation			
10.2.1	50	*Plunge of lineation*		4.0 0.15 1.5 50
10.2.2		*Vertical lineation*	Symbol should be oriented east/west	2.25 1.0
10.2.3		*Horizontal lineation*		5.0 1.0 1.0
10.3	**Bedding-cleavage intersection**			
10.3.1		*Plunge of bedding-cleavage intersection*		4.0 0.15 1.5
10.3.2		*Horizontal bedding-cleavage intersection*		5.0 1.0 1.0
10.4	**Crenulation**			
10.4.1		*Plunge of crenulation*		4.0 0.15 1.5 1.0
10.4.2		*Horizontal crenulation*		5.0 1.0
10.5	**Mineral elongation or alignment**			
10.5.1	30	*Plunge of mineral elongation* *or* *Plunge of mineral alignment* *or* *Plunge of mineral elongation or alignment*	Lineation may be expressed in orientation of minerals, pebbles (e.g.)	4.0 0.15 1.0 30

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
10.5	**Mineral elongation or alignment (cont'd)**			
10.5.2		*Horizontal mineral elongation or Horizontal mineral alignment or Horizontal mineral elongation or alignment*		
10.6	**Flow lineation**			
		Symbols in this sub-section should be used for lineations ***other than*** those in 10.2 to 10.5. Use appropriate description in reference (e.g. *Plunge of igneous lineation*)		
10.6.1	20	*Plunge of igneous lineation*		
10.6.2		*Vertical igneous lineation*	Symbol should be oriented east/west	
10.6.3		*Horizontal igneous lineation*		
10.7	**Combined symbols**			
		This sub-section contains a selection of symbols to illustrate symbol combinations and correct wording of descriptions. To avoid lengthy and complicated descriptions, combined structural symbols may be shown separately in the symbols reference and the following note added: ***'Some structural elements observed at a single locality are combined on the map'***		
10.7.1		*Asymmetrical minor fold showing lineation parallel to plunge*		
10.7.2	30 60	*Strike and dip of strata and plunge of mineral elongation*		
10.7.3	60 35	*Strike and dip of strata and plunge of mineral elongation and bedding-cleavage intersection*		
10.7.4	70 30	*Strike and dip of cleavage and plunge of lineation*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
11.1	**Notes**			
	• To avoid repetition of 'not measured' or 'prevailing' dip and plunge descriptions in a reference insert the following note after the last structural symbol: ***'Dips and plunges without values are not measured, or prevailing'***			
	• Some symbols without values are described to indicate the correct form of the description			
11.2	**Igneous banding or platy alignment**			
11.2.1	30	*Strike and dip of platy alignment*	Extrusive or intrusive igneous rocks. ***'Banding'*** or ***'flow banding'*** may be used instead of ***'platy alignment'***. Suitable for eutaxitic foliation in ignimbrite, mineral alignment, etc	3.0, 1.0, 0.15, 30
11.2.2		*Strike and dip of platy alignment, dip not measured* *or* *Prevailing strike and dip of platy alignment*		1.0, 0.15
11.2.3		*Strike of platy alignment, dip not determined* *or* *Strike of platy alignment, dip indeterminate*		1.0, 2.0, 0.15
11.2.4		*Vertical platy alignment*		1.0, 2.0, 0.15
11.2.5		*Horizontal platy alignment*	Symbol should be oriented north/south	1.0, 3.0, 0.15
	Additional symbols may be used to distinguish various types of planar structures: . These symbols should be restricted to layering in intrusive rocks (e.g. gabbroic complexes). (GSWA). See also 8.5.1			

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
12.1	**Bedding**			
	See 6.6 Photo-interpreted bedding, 6.7 Trend-line			
12.2	**Lineaments**			
12.2.1		*Lineament*		0.2
12.3	**Joints**			
	See 7.3 Joint pattern			
12.4	**Photogrammetry**			
12.4.1	*R8* *D3011*	*Photo-centre point*	Quote run and full number of first and last photograph of each run on map sheet; only last two-figures quoted for intermediate photographs (see 12.4.2)	3.0 0.15
12.4.2	*30*	*Photo-centre point*		2.0 0.15

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
13.1	**Fossil localities**			
	• For ***special-purpose*** or ***large-scale maps*** may use the following additional notation:			
		m *marine* e.g. m b *brackish water* e.g. b f *fresh water* e.g. f ( ) *sparse* e.g. ( ) – *abundant* e.g.		
	• May add number to locality to allow reference to reports and explanatory notes (e.g. 43 *Macrofossil locality with reference number*)			
13.1.1		*Fossil locality*		0.1 2.0 1.3
13.1.2		*Macrofossil locality*		0.1 1.7
13.1.3		*Microfossil locality*		0.6 0.1
13.1.4		*Trace fossil locality*		2.0 0.1 0.5
13.1.5		*Fossil wood locality*		2.25 0.75 0.1
13.1.6		*Oncolite locality*		1.75 0.75 0.1
13.1.7		*Palynomorph locality*	Includes pollens, spores, acritarchs, chitinozoans, dinoflagellate thecae and cysts, certain colonial algae, and other acid-insoluble microfossils	2.0 0.1
13.1.8		*Plant fossil locality*		1.2 2.0 0.1
13.1.9		*Stromatolite locality*		1.5 2.0 0.1
13.1.10		*Vertebrate fossil locality*		2.5 0.1 1.2
13.2	**Specimen localities, observation localities**			
13.2.1	× C134	*Specimen locality with reference number*		0.2 1.5 C134
13.2.2	× 9	*Locality visited with reference number* *or* *Observation locality with reference number*		9 0.2

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
13.3	**Age determination localities**			
	• Where radiometry is used to determine age, substitute ***'radiometric'*** for ***'isotopic'***			
13.3.1	⊗ 900	*Sample locality for isotopic age determination with reference number*	Place sample number against symbol, and key in reference giving age and method of determination; alternatively use 13.3.2	2.0 ⊗ 0.15
13.3.2	⊗ 321 ± 12	*Isotopic age in millions of years*		
13.3.3	× 300 / fis-tr	*Isotopic age in millions of years by fission-track method*	Symbols 13.3.3 -13.3.7 are generally used ***only on special-purpose maps***	
13.3.4	× 550 / Pb	*Isotopic age in millions of years by lead method*	Cross indicates locality; figures and letters give age in millions of years (Ma) and method used; for carbon dating age is in thousands of years	2.0 × 266 / Rb-Sr 0.3
13.3.5	× 320 / K-Ar	*Isotopic age in millions of years by potassium-argon method*	To show age by alternative methods at the same site the symbol may be amended: × 265 ± 10 (309 ± 10) Isotopic age in millions of years by potassium-argon and (rubidium-strontium) methods	
13.3.6	× 266 / Rb-Sr	*Isotopic age in millions of years by rubidium-strontium method*		
13.3.7	× 450 / Sm-Nd	*Isotopic age in millions of years by samarium-neodymium method*		
13.4	**Section localities**			
13.4.1	145	*Type section with reference number*	Arrow points mark the ends of the section	variable 0.15 1.0
13.4.2	145	*Type locality with reference number*		2.0
13.4.3	B5	*Measured section with reference number*		2.0 B5 0.2
13.4.4	C D	*Geological section*	Not normally described in references	4.0 0.2
13.5	**Drill holes**			
	• For use on small scale maps e.g. 1:250 000, 1:100 000			
	• See also 14.5.37 to 14.5.39 drill holes shown on mining plans, 15.2 Exploration, development, and production wells, 21.4 Water bores and wells			
	• Use letters to distinguish purpose or type of drill hole:			
		CH *Core hole* DD *Diamond-drill hole* HD *Hand-drill hole* PD *Percussion-drill hole* RD *Rotary-drill hole*	S *Structure hole* SH *Scout hole* SSH *Seismic-shot hole* St *Stratigraphic hole*	

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
13.5	**Drill holes (cont'd)**			
13.5.1	⊗ H6	*Drill hole with reference number*	If only one type of drill hole appears, use appropriate description: ⊗ St *Stratigraphic hole*	1.5 ⊗ 0.2
13.5.2	⊗ 450	*Vertical drill hole with depth in metres*	If more than one type appears use: ⊗ *Drill hole;* DD – *Diamond-drill hole,* SH – *Scout hole*	
13.5.3	⊗→	*Inclined drill hole*	Letter symbols may also be used to show important minerals and rocks encountered in the drill hole, e.g. ⊗ St Op *Stratigraphic hole containing opal*	2.0 0.2 ⊗ → 0.15

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
14.1	**Notes**			
	• Letters should be used to indicate minerals (e.g. **Ag** – Silver, **Pb** – Lead). See Section 20 Letter symbols for minerals and rocks			
	• Lower case letters may be used to indicate what work was done (e.g. ↖ **a,g,r**):			
		a *auger drilling*		
		c *costeaning*		
		d *rotary, percussion, diamond drilling*		
		g *geochemical survey*		
		r *ground radiometric survey*		
14.2	**Mineral deposits**			
14.2.1	•U	*Minor mineral occurrence*	May be of mineralogical interest only. Letters indicate minerals	●=0.7
14.2.2	Ls	*Unworked deposit*	May have been tested by drill or costean. Deposit located at centre of symbol	3.0 0.2
	or			
14.2.3	•Ls	*Unworked deposit*	Deposit located at black dot	0.15 0.7
14.3	**Mining**			
14.3.1	⚒	*Mine; may be abandoned* *or* *Prospect or mine; may be abandoned*	General symbol. Use the more specific symbols (14.3.2 to 14.3.15) wherever possible	2.0 1.8
14.3.2	>—<	*Costean or trench*	Arrow points mark ends of costean	variable 2.0 0.2 1.5
14.3.3	>—<2	*Costean or trench with depth in metres*		
14.3.4	↖	*Prospect* *or* *Mine with little production* *or* *Prospect or mine with little production*		1.8 2.0
14.3.5	↖	*Abandoned prospect* *or* *Abandoned mine with little production* *or* *Abandoned prospect or mine with little production*		0.15
14.3.6	⚒	*Mine* *or* *Minor mine*		
14.3.7	⚒	*Major mine*		3.0 0.2
14.3.8	⚒	*Abandoned mine* *or* *Mine not being worked*		2.0 2.5

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
14.3	**Mining (cont'd)**			
14.3.9		*Open cut or quarry*		0.2 1.0 0.5
14.3.10		*Minor open cut or quarry*		
14.3.11		*Major open cut or quarry*		3.0 0.2
14.3.12		*Abandoned open cut or quarry* or *Open cut or quarry, not being worked*		2.5 0.15 2.0
14.3.13		*Minor alluvial workings*		0.2 0.5 0.5
14.3.14		*Major alluvial workings*		
14.3.15		*Abandoned alluvial workings* or *Alluvial workings not being worked*		
14.3.16		*Limit of exploration activity* or *Extent of prospected area*	Mineral, prospect, and mine symbols may be shown within this area	4.0 0.25 0.5 0.15
14.4	**Treatment plants**			
14.4.1		*Treatment plant*	Several types of treatment plant can be differentiated by number and key in reference	0.75 1.5 2.0
14.4.2		*Treatment plant, not operating* or *Site of former treatment plant* or *Abandoned treatment plant*		0.5 0.15 2.25
14.5	**Symbols used on mining plans and sections**			
	These symbols should not be used on general geoscientific maps			
14.5.1		*Main shaft*		8.0 4.0 0.2
14.5.2	450	*Main shaft with depth in metres*		
14.5.3		*Main shaft showing number of compartments*		8.0 2.0 2.0
14.5.4	450	*Main shaft showing number of compartments and depth in metres*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
14.5	**Symbols used on mining plans and sections (cont'd)**			
14.5.5		*Shaft extending above and below plan level*		2.0 0.2 3.0
14.5.6		*Accessible shaft extending below plan level*		
14.5.7		*Accessible shaft extending above plan level*		
14.5.8		*Inaccessible shaft*		
14.5.9		*Head of rise or winze*		
14.5.10	N	*Inaccessible head of rise or winze*		
14.5.11		*Foot of rise or winze*		
14.5.12	N	*Inaccessible foot of rise or winze*		
14.5.13		*Rise or winze extending through level*		
14.5.14	N	*Inaccessible rise or winze extending through level*		
14.5.15	40	*Inclined accessible shaft extending below plan level*	***Small-scale mine plans*** Inclination and length of shaft may be added to 14.5.5 to 14.5.14	0.2 1.0
14.5.16	60 40	*Inclined accessible shaft extending below plan level with length in metres*		
14.5.17	25	*Inclined accessible shaft extending below plan level*	***Large-scale mine plans*** Inclination and length of shaft may be added to 14.5.5 to 14.5.14	0.75
14.5.18	40 25	*Inclined accessible shaft extending below plan level with length in metres*		
14.5.19		*Cross-section of cross-cut or drive; same side of plane of section as observer*		3.0 0.2 1.8
14.5.20		*Cross-section of cross-cut or drive; opposite side of plane of section to observer*		0.9
14.5.21		*Cross-section of cross-cut or drive extending across plane of section*		2.1
14.5.22		*Ore chute*		1.5 1.0 1.0 0.2
14.5.23	Stoped above	*Plan of stope*	Year(s) worked, tonnage removed, and grade of ore recovered may be shown in stoped area on ***large-scale maps***	0.1 1.25 0.2
14.5.24	Stoped	*Section of stope*		0.35 0.2 1.25

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
14.5		**Symbols used on mining plans and sections (cont'd)**		
14.5.25		*Lagging or cribbing along drive*		
14.5.26		*Workings caved or otherwise inaccessible*		
14.5.27		*Filled workings*		
14.5.28	*or*	*Portal and approach of tunnel or adit*		
14.5.29		*Portal and approach of tunnel or adit*		
14.5.30	145	*Elevation of roof (back) of underground workings*		
14.5.31	145	*Elevation of floor of underground workings*		
14.5.32		*Natural surface*	***Section only*** Where lithology and dip of strata not shown	
14.5.33		*Information projected onto a section from near side*		
14.5.34		*Information projected onto a section from far side*		
14.5.35		*Sample line*	Type of sample may be indicated by lower case letter: c *channel* h *chip* b *bulk*	
14.5.36		*Grab-sample locality*		
14.5.37		*Drill hole*	***Mining plans only.*** See 13.5 for symbols used on maps	
14.5.38	DD 20	*Diamond-drill hole showing projection in horizontal plane and inclination*	Circle indicates beginning of hole, arrow points down; for holes drilled upwards use DD 20 DD *Diamond-drill hole* HD *Hand-drill hole* PD *Percussion-drill hole* RD *Rotary-drill hole* See also 13.5 Drill holes	
14.5.39	DD 187	*Vertical diamond-drill hole with depth in metres*		
14.5.40	*or*	*Costean or trench*	The depth of the costean may be added to the symbol (e.g. 2 2 *Costean or trench with depth in metres*)	
14.5.41		*Costean or trench*		
14.5.42		*Prospecting pit*	***Large-scale mining plans only*** The depth of the pit may be added to the symbol (e.g. 3 *Prospecting pit with depth in metres*)	
14.5.43		*Open cut or quarry*		
14.5.44		*Dump or Mining dump*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
15.1	**Natural occurrences of oil and gas**			
15.1.1		*Oil seep*	Black plate. Colour may be used in special purpose maps	0.5, 3.5
15.1.2		*Gas seep*		2.0, 0.15
15.1.3		*Oil and gas seep or show*		1.5, 1.0
15.1.4		*Oil seep reported (by geoscientist) but not relocated*		2.5, 1.0
15.1.5		*Gas seep reported (by geoscientist) but not relocated*		2.0, 0.15
15.1.6		*Oil and gas seep reported (by geoscientist) but not relocated*		1.0, 0.5
15.1.7		*Mud volcano* *or* *Mud volcano without hydrocarbons*		0.25, 0.15
15.1.8		*Mud volcano with hydrocarbons*		1.0, 1.0
15.1.9		*Oil field*	No standard symbol is proposed. A line in a suitable colour, either broken or unbroken, may be used to show the limit of field. The area may be hachured at the compiler's discretion. Different colours may be used for oil fields and gas fields. See also 2.2.6	
15.1.10		*Gas field*		
15.2	**Exploration, development, and production wells**			

- Symbols 15.2.1 to 15.2.7 are used for both petroleum ***exploration*** wells and petroleum ***development*** wells. Use the appropriate description (e.g. ⊕ Petroleum development well, dry, abandoned). Where both exploration and development wells appear on the same map, add 'd' to development symbols

  (e.g. ○ *Petroleum exploration well, proposed site*
  ○ d *Petroleum development well, proposed site)*

- The Queensland Department of Mines has 3 categories: Exploration, Appraisal, and Development. Where some or all appear on the same map, add 'a' to appraisal symbols and 'd' to development symbols

- Where any of the wells (15.2.1 to 15.2.6) has been completed for a different purpose add:

  W – *Completed as water bore* ('W' on blue plate)

  WI – *Completed as water injection well* ('WI' on black plate)

  WIC – *Completed as control well (water injection)* ('WIC' on black plate)

Descriptions:

Petroleum development well completed as water bore

If more than one type occurs use:

◒ *Petroleum exploration well with show of oil;* W – *Completed as water bore,* WIC – *Completed as control well (water injection)*

15.2.1	○	*Petroleum exploration well, proposed site*		0.25, 2.0, 0.2

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
15.2	**Exploration, development, and production wells (cont'd)**			
15.2.2	○	*Petroleum exploration well, drilling*		2.0 ○ 0.2
15.2.3	☼	*Petroleum exploration well, dry, abandoned*	The same north, south, east, and west points are added to 15.2.4 to 15.2.6 to show that the well has been abandoned without any production taking place (ie ☼ ☼)	3.0 ☼
15.2.4	◒	*Petroleum exploration well with show of oil*	South Australian Mines Department recommends that, on general purpose maps, a show of oil be defined as a measurable quantity, at least 1 litre recovered in pipe; a show of gas, at least gas to surface	1.0 ◒
15.2.5	☼	*Petroleum exploration well with show of gas*		3.0 ☼
15.2.6	☼	*Petroleum exploration well with show of oil and gas*		☼ 0.2
15.2.7	St	*Stratigraphic hole for petroleum exploration*	SSH —*Seismic shot-hole* For mining stratigraphic hole, see 13.5	4.0 St
15.2.8	●	*Oil well*		2.0 ●
15.2.9	◔	*Oil well, shut in* *or* *Oil well, suspended*	The same northwest/southeast diagonal line is added to 15.2.11 to 15.2.13 to show that the well has been ***shut in*** or ***suspended*** (ie ☼ ✹ ◐)	◔ 0.2
15.2.10	◔	*Oil well, abandoned*	The same northeast/southwest diagonal line is added to 15.2.11 to 15.2.14 to show that the well has been abandoned (ie ☼ ✹ ◐)	4.0 ◔
15.2.11	☼	*Gas well*		2.0 ☼
15.2.12	✹	*Oil and gas well*		3.0 ✹
15.2.13	◐	*Gas and condensate well*		0.2 ◐
15.2.14	○	*Service well*	Use only where wells have been specifically drilled as service wells. Compare with last note at beginning of this sub-section. If purpose is known, replace 'S' with 'WI' or 'WIC' and use: ○ WI *Water injection well* ○ WIC *Control well (water injection)* If there is more than one type use: ○ *Service well:* WI —*Water injection,* WIC —*Control (water injection)*	1.5 ○ 0.15
15.3	**Names of petroleum exploration, development, and production wells**			

Petroleum well names are best set out in a fashion similar to the following examples:

Amoseas Balfour 1

BMR Longreach 2

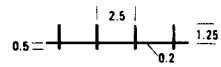
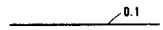
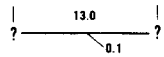
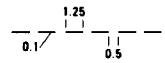
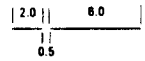
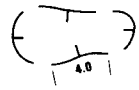
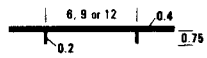
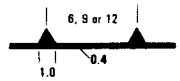
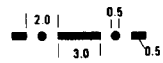
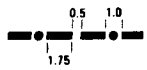
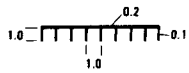
Farmout Drillers Alice River 1

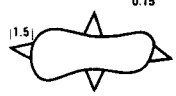
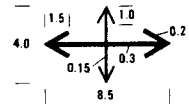
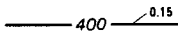
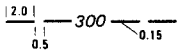
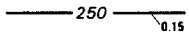
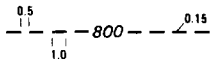
LOL 6 (Balmoral)

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
16.1	**Gravity contours, anomalies, basement**			
16.1.1	+1250	*Bouguer anomaly contour, interval 200 micrometres per second²*	Data acquisition and data processing details should be given on ***special-purpose*** (e.g. ***Bouguer Anomaly***) ***maps:***	0.3 / 0.125
16.1.2		*Relative gravity high*	Date of survey Gravity datum Normal gravity Elevation datum Bouguer density Terrain correction Contour interval Accuracy	9.0 / 3.0 / 0.3 / 0.6
16.1.3		*Relative gravity low*		0.15 / 3.0
16.1.4	-324 •	*Bouguer anomaly in micrometres per second²*	Plus or minus values in micrometres/second². The non-legal unit milligals is sometimes used but is not recommended ($10\,\mu ms^{-2}$ = 1 mGal)	-324 • 0.5
16.1.5	○	*Gravity station*	General symbol. A large range of symbols can be used to distinguish different surveys. Combine with elevation in metres (grey plate) and/or Bouguer anomaly in micrometres/second² (μms^{-2})	1.0 ○ 0.1
16.1.6		*Gravity basement*	***Section only.*** Black plate	5.0 / 0.15 / 0.75 / 0.2
16.2	**Magnetic contours, anomalies, basement**			
16.2.1	1250	*Magnetic contour, interval 10 nanoteslas*	Magnetic contours may be printed in reverse on the back of the map and seen in relation to the geology by placing the map over a light source	0.375 / 0.15
16.2.2		*Relative magnetic low*	Data acquisition and data processing details should be given on ***special-purpose*** (e.g. ***Total Magnetic Intensity***) ***maps:***	1.0 / 0.15 / 1.0
16.2.3	• 1156	*Peak anomaly value in nanoteslas*	Operator of survey Date of survey Magnetic datum Survey altitude and datum Flight-line interval and accuracy Contour interval Regional gradient	• 0.5
16.2.4		*Magnetic basement*	***Section only.*** Black plate	5.0 / 0.15 / 0.75 / 0.2
16.3	**Radiometric contours, anomalies**			
16.3.1	1450	*Radiometric contour, interval 20 counts per second*	Data acquisition and data processing details should be given on ***special-purpose*** (e.g. ***Total Count***) ***maps:***	0.375 / 0.15
16.3.2		*Contour low*	Date of survey Survey altitude and datum Sampling interval Spectrometer channels Background subtraction Height correction	1.0 / 0.15 / 1.0
16.3.3	• 1354	*Peak anomoly value in counts per second*		• 0.5

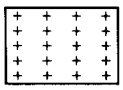
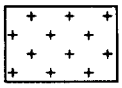
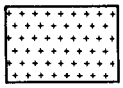
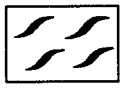
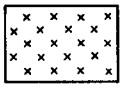
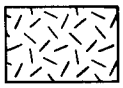
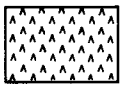
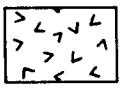
SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
16.4	**Seismic**			
16.4.1		*Seismic traverse line*	Grey plate or purple plate	0.5 0.5 0.2 3.0
16.4.2		*Seismic reflecting horizon*	***Section only.*** Black plate	0.4 0.3 3.0
16.4.3		*Seismic refracting horizon*		0.5 0.3 0.7
16.5	**Geology interpreted from geophysical data**			
		Symbols in this sub-section ***should appear in colour*** (purple plate) ***or be annotated with a letter:***		
		g *geophysics* gv *gravimetry* m *aeromagnetics*		
16.5.1		*Geological boundary interpreted from geophysical data*		0.5 0.2
16.5.2		*Fault interpreted from geophysical data*		0.5 0.4 1.0
	or			
16.5.3	g	*Fault interpreted from geophysical data*	Suitable for single-colour map. Place letter within line if length permits, otherwise place below line	g 0.4
16.5.4		*Anticline interpreted from geophysical data*	Use *'antiform'* if preferred	1.0 4.0 0.4
16.5.5		*Syncline interpreted from geophysical data*	Use *'synform'* if preferred	1.0 1.0 0.15
16.5.6		*Trend-line interpreted from geophysical data*		4.0 1.0 0.1
16.5.7		*Lineament interpreted from geophysical data*		0.2
	or			
16.5.8	g	*Linear feature interpreted from geophysical data*	Suitable for single-colour map. Place letter within line if length permits, otherwise place below line	g 0.2

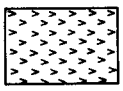
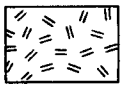
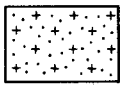
SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				Parallel lines in symbols are specified from ***centre to centre***
17.1	**Volcanoes and related features**			
	• Volcanic symbols should be shown in red where practicable. Letters may be added to indicate chemical or petrological characteristics (e.g. t *–tholeiitic suite;* ca *–calc-alkali suite*)			
	• For mud volcanoes see 15.1.7, 15.1.8			
17.1.1	●	*Volcanic neck, extinct* *or* *Volcanic pipe, extinct* *or* *Volcanic vent, extinct*		1.5
17.1.2		*Major eruptive centre with recorded eruption*	General symbol, (ie) *Volcano)* e.g. Central crater or vent of volcano	2.0 4.0
17.1.3		*Major eruptive centre with no recorded eruption*		0.15 1.0
17.1.4		*Minor eruptive centre with recorded eruption*	e.g. Satellite cone, cumulodome	1.0 3.5
17.1.5		*Minor eruptive centre with no recorded eruption*		0.15 1.5
17.1.6		*Crater wall* *or* *Caldera wall* *or* *Escarpment related to volcanism*		1.0 1.0 0.15 1.5
17.1.7	~H	*Thermal area*	Use letters to describe thermal area: F *Fumarole* G *Gas* H *Hot* So *Solfatara* Y *Geyser*	1.5 1.0 H 3.0
17.1.8		*Lava flow*	True outline shown May be annotated for lava type if known and date of eruption	0.15 0.15
17.1.9		*Pyroclastic flow*		0.4

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
18.1	**Boundaries**			
18.1.1		*Boundary of intrusive rock. Longer barbs indicate invaded rock*		
18.1.2		*Boundary of intrusive rock showing decreasing grade of contact metamorphism*	Variation in dot density shows decreasing grade of contact metamorphism	
18.1.3		*Boundary of major structural units*	Boundaries of other structures (e.g. anticlinorial and synclinorial zones, blocks, etc.) are shown by broken lines	
18.1.4	?——?—	*Boundary of major structural units, inferred*		
18.1.5	- - - - - - - - -	*Boundary of major structural units, concealed*		
18.1.6	—— – – ——	*Boundary of secondary structural units*	Sub-basins, segments of major structural units, etc.	
18.1.7		*Boundary of depositional basin*	Teeth facing basin. Compare with symbols 18.3.6 and 18.3.7 (tectonic or deformational basins and domes)	
18.1.8		*Boundary of depositional dome*		
18.2	**Faults**			
18.2.1		*Normal fault. Tick on younger rocks*		
18.2.2		*High-angle thrust-fault. Triangle on older rocks*	Dip greater than 45° — Used mainly on tectonic sketch maps	
18.2.3		*Thrust-fault. Triangle on older rocks*	Dip 45° or less — Used mainly on tectonic sketch maps	
18.3	**Folds**			
18.3.1		*Anticline*	Line thickness indicates magnitude of structure schematically only	
18.3.2		*Anticline, concealed*		
18.3.3		*Syncline*		
18.3.4		*Syncline, concealed*		
18.3.5		*Flexure*		

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
18.3	**Folds (cont'd)**			
18.3.6		*Tectonic basin* *or* *Centrocline*	Compare with 18.1.7, 18.1.8 depositional basins and domes	
18.3.7		*Tectonic dome* *or* *Pericline*		
18.3.8		*Structural 'low', facing not known*		
18.3.9		*Structural 'high', facing not known*		
18.3.10		*Brachyanticline*		
18.4	**Structural contours, form lines**			
18.4.1		*Structural contour in metres above sea level, position accurate*	If necessary, vary thickness or colour of line to distinguish from basement contours	
18.4.2		*Structural contour in metres above sea level, position approximate*		
18.4.3		*Structural form line in metres above sea level* *or* *Basement contour in metres above sea level*	Compiled from drilling data. Constructed to basement or other discrete horizon	
18.4.4		*Structural form line in metres above sea level* *or* *Basement contour in metres above sea level*	Compiled from data other than drilling	

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES
19.1	**General notes**		
	• On tectonic maps the letter symbols and patterns for igneous rock bodies indicate the compositions of the rocks, whether they are intrusive or extrusive, and usually the tectonic environments in which they were emplaced. These symbols and patterns are used in conjunction with other symbols, colours, screens, and patterns for the tectonic environments of associated bodies of sedimentary rocks. The choice and usage of symbols for the igneous rock bodies depend largely on the amount of detail that can be shown at the map scale. This may be illustrated by reference to the Tectonic Map of New South Wales, 1974, scale 1:1 000 000 and Tectonic Map of Australia and New Guinea, 1971, scale 1:5 000 000. On the Tectonic Map of New South Wales, γGW together with a pattern of white crosses on a red background denotes post-kinematic granite that intrudes the Gawler-Willyama Pre-cratonic Province. This granite also intruded rocks of a later province, either transitional or epi-cratonic, and should have a symbol for that province as a prefix. However, apart from the granite, the later province is not known in outcrop. On the same map νB_5L together with red randomly oriented V's denotes acid volcanics (ν) in the Yass-Canberra Rise (5) of the Bowning Tectonic Stage (B) of the Lachlan Pre-cratonic Province (L). Ages and time-ranges of the tectonic provinces, stages, and units can be read from a palinspastic diagram on the map sheet. The Tectonic Map of Australia and New Guinea shows, instead of γGW, γ6 with a pattern of red crosses; γ with red crosses denotes granite. Instead of νB_5L it shows γ13 with a pattern of red dots and randomly oriented V's; γ with this pattern denotes acid volcanics. Each numerical suffix (6, 13) indicates a time range which can be read off a table on the map sheet. On both maps, the tectonic environments of the associated rock bodies in which the igneous bodies were emplaced or interbedded are indicated by colours, patterns, and screens for the successive stages of orogeny, and of cratonic development and deformation.		
	• Most of the symbols that appear below are those of the Tectonic Map of New South Wales.		
19.2	**Oceanic lithosphere**		
19.2.1	oβ	*Oceanic island alkaline volcanics*	Alkali basalt. Map area coloured purple
19.2.2	δ_2	*Oceanic crustal layer 2*	Deep tholeiite, pillow-lava, dolerite, spilite, metabasalt, etc. } Map area coloured green
19.2.3	δ_3	*Oceanic crustal layer 3*	Gabbro, trondhjemite, diorite, amphibolite, etc. } Map area coloured green
19.2.4	δ	*Upper mantle ultrabasics*	Ultrabasic intrusive bodies } Map area coloured green
19.2.5	S	*Upper mantle serpentinite*	Serpentinite, altered ultrabasics } Map area coloured green
19.3	**Circular gabbro-peridotite intrusions**		
19.3.1	ϕ	*Gabbro-peridotite intrusions*	Basic and ultrabasic intrusive bodies. Map area coloured purple

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	
19.4	**Orogenic granites**			
	Granite of the pre-cratonic and transitional provinces formed anatectically within or intruding into the sedimentary and volcanic sequences			
19.4.1	γ 	*Post-kinematic granite*	Emplaced after terminal paroxysm, often in transitional tectonic province. Discordant. Generally white crosses on red background	Numbers may be placed after symbols to indicate successive intrusions, commonly but not necessarily during successive tectonic stages.
19.4.2	γ 	*Late- and post-kinematic granite*	Typical of late stages of pre-cratonic development. Concordant or discordant contact aureole. White crosses on red background	
19.4.3	γ 	*Syn- and late-kinematic granite*	Typical of early stages of pre-cratonic development. Concordant contact aureole. Small white crosses on red background	Reference may state whether granite is concordant or discordant; nature of aureole (regional or contact, concordant or discordant).
19.4.4	γ 	*Syn-kinematic orogenic granite; foliated*	Early stages of orogeny. Anatectic, concordant regional aureole. Foliation indicated as white pattern on red background	
19.4.5	γn	*Gneissic anatectic granite*	The finer line distinguishes this symbol from the symbol for vertical foliation (8.2.4). Black on red background.	
19.4.6	α 	*Gabbro-diorite*	Volcanic arcs. White pattern on red background	
19.4.7	ρ 	*Porphyry*	White pattern on red background	
19.5	**Orogenic felsic volcanics**			
	Pre-cratonic, transitional, and other provinces			
19.5.1	α 	*Island tholeiite-andesite-rhyolite extrusives*	Pre-cratonic volcanic arc. Purple pattern on white background	
19.5.2	δ	*Felsic volcanics, rare basics of volcanic rifts*	Pre-cratonic and transitional	Red pattern on white background
19.5.3	ν 	*Felsic volcanics, rhyolite and dacite*	Pre-cratonic volcanic arcs	
19.5.4	ν	*Felsic volcanics associated with granite*	Transitional; coupled with granite in volcanic arcs. Purple pattern on white background	

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES
19.6	**Cratonic igneous rocks**		
	Extrusive		
19.6.1	β 	*Flood basalt, trap, high-alkali basalt*	Stratigraphic symbol indicates the age (e.g. BT$\mathcal{J}$ is Tertiary plateau basalt of Tasman $\mathcal{J}$ Epicratonic Province). Orange pattern on white background
19.6.2	β 	*Dolerite-granophyre*	Green pattern on white background
19.6.3	β	*Keratophyre, etc.*	Purple pattern on white background
	Intrusive		
19.6.4	γ	*Granite intruding cratons*	Map area coloured orange. Tectonic Map of New South Wales
19.6.5	γ 	*Granite intruding cratons*	Red pattern on white background. Tectonic Map of Australia
19.6.6	π	*Layered intrusions*	Gabbro-peridotite
19.6.7	ξ	*Alkaline intrusives*	Map area coloured purple
19.6.8	κ	*Kimberlite, lamproite, etc.*	
19.6.9	κ	*Carbonatite*	Black diamond symbol
19.7	**Symbols for metamorphic foliation**		
	Use the symbols in 8.4 General trend of foliation		

20.1 Notes

- Minerals and rocks are listed here with their standard letter symbols. Those listed are generally of economic interest but the occurrence recorded is not necessarily economic. Where no confusion is likely to arise, this does not preclude the use of the same letters for other purposes, or as symbols for other rocks and minerals. For example, **St** is the letter symbol for staurolite; it is also the standard letter symbol for a stratigraphic hole. Element symbols, rather than mineral symbols, are used for metallic deposits except on large-scale maps.

- Minerals and rocks should be listed in the Symbols reference in alphabetical order ***based on their abbreviation***

20.2 Abbreviations

Ae Agate

Agg Aggregate other than crushed rock. Uses (e.g. concrete aggregate, road metal) and rock type may be indicated in reference. See also **Gr** –Gravel, **Rc** – Crushed-rock aggregate

At Alunite

An Anhydrite

Cba Anthracite

Sb Antimony

Ap Apatite (see also 4.2)

As Arsenic

Aa Asbestos — amphibole

Ac Asbestos — chrysotile

Ad Asbestos — crocidolite

Az Azurite

Ba Barite (see also 4.2)

Bx Bauxite

Be Beryllium

Bi Bismuth

Bo Borax

Bn Bornite

Bs Building stone (rock type/s may be indicated in reference)

Cd Cadmium

Ca Calc-silicate

Cc Chalcocite

Ch Chalcopyrite

Cr Chromium

Cy Clay, use not specified

- **Ci** Bentonite
- **Cj** Fire clay
- **Cl** For heavy products (bricks, tiles, pipes)
- **Cx** For use as fillers
- **Cf** Fullers earth
- **Ck** Kaolin
- **Cg** Pigment clay
- **Cp** Pottery clay
- **Cw** White clay, other than pottery clay

C Coal, type not specified

- **Cb** Black coal (type not specified)
- **Cba** Anthracite
- **Cbb** Bituminous coal
- **Cbs** Sub-bituminous coal
- **Cwb** Brown coal
- **Cwl** Lignite
- **Cwp** Peat
- **Cw** Other low-rank coal and coaliferous materials (type not specified)

Co Cobalt

Cu Copper

Cn Corundum

Cv Covellite

Rc Crushed-rock aggregate

Di Diamond

Dt Diatomite

Dl Dolerite (see also 4.2)

Do Dolomite (suitable for industrial purposes) (see also 4.2)

E Emery

Ep Epsomite

Fs Feldspar (see also 4.2)

Fl Fluorite (see also 4.2)

G Galena

Gs Gems (Sapphire, topaz, zircon etc. — to be specified in reference)

Gl Glauconite

Au Gold

Gt Graphite

Gr Gravel — aggregate devoid of sand

Gp Gypsum

He Hematite (see also 4.2)

Im Ilmenite

Fe Iron (see also 4.2)

J Jarosite

Ky Kyanite

Pb Lead

Ls Limestone (suitable for industrial purposes) (see also 4.2)

Li Lithium

Ms Magnesite

20.2 Abbreviations (cont'd)

Mt	Magnetite (see also 4.2)
Ml	Malachite
Mn	Manganese
Ma	Marble
Hg	Mercury
Mi	Mica
Mo	Molybdenum
Mz	Monazite
Ct	Natural cement
	Natural gas (see Section 15)
Ne	Nepheline
Ni	Nickel
Nb	Niobium
Oc	Ochre
Ol	Oil shale or torbanite
Op	Opal
Os	Osmiridium
Pe	Perlite
	Petroleum (see Section 15)
Ph	Phosphate rock
Pt	Platinum
Pz	Pozzolan
K	Potassium
Py	Pyrite
Pp	Pyrophyllite
Qc	Quartz crystal
Qt	Quartzite (see also 4.2)
RA	Radioactive minerals, unspecified
Rr	Rip-rap
Rm	Road materials, other than aggregate
R	Rutile
Na	Salt (sodium chloride)
Sd	Sand, building
Sf	Sand, foundry
Sg	Sand, glass
Ss	Sandstone (suitable for industrial purposes)
Se	Selenium
Sh	Shale (suitable for industrial purposes)
Si	Silica
Sm	Sillimanite
Ag	Silver
Sl	Slate (suitable for industrial purposes)
Sp	Sphalerite
St	Staurolite
Sr	Strontium
S	Sulphur
T	Talc, steatite
Ta	Tantalum
Th	Thorium, other than monazite
Sn	Tin
W	Tungsten (wolframite, scheelite)
Tq	Turquoise
U	Uranium
V	Vanadium
Ve	Vermiculite
Wh	Whiting
Zn	Zinc
Zr	Zirconium

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
21.1	**Notes**			*Parallel lines in symbols are specified from centre to centre*
	• For additional symbols to those below and notes on usage of symbols refer to **'Specifications for Topographic Map Series'** for 1:100 000 and 1:250 000 scale maps, compiled by the Australian Surveying and Land Information Group, Commonwealth Department of Administrative Services (formerly the Division of National Mapping).			
	• ***Special-purpose*** (e.g. ***hydrogeological***) ***maps*** require many additional symbols and may require the use of more than one colour.			
21.2	**Natural features**			
21.2.1		*Coastline*		0.2
21.2.2		*Lake, lagoon, or waterhole*		0.15
21.2.3		*Intermittent lake*		1.0, 0.5, 0.15
21.2.4		*River or creek*	Grade lineweights on map face to show drainage pattern	0.2, 0.1
21.2.5	• *WH*	*Waterhole or soak*	If on watercourse, may be shown thus	0.8
21.2.6		*Waterhole*	On a watercourse (drawn to scale)	0.1, 0.2
21.2.7	• *WH*	*Waterhole or soak, persistent*		
21.2.8	• *RH*	*Rockhole*		0.8
21.2.9		*Ephemeral water-table pool*	See also 21.2.2	2.0, 0.15, 0.5
21.2.10	*or*	*Swamp, marsh*		1.5, 0.1, 2.0
21.2.11		*Swamp, marsh*		1.0, 0.5, 0.1
21.2.12		*Mangroves*		1.0, 1.5, 0.15
21.3	**Springs**			
	• Salinity, chemical content, and yield are not normally shown on general geological maps but may be shown if desired.			
	• Descriptive data may be shown by letters:			
		H *Hot*; (hotter than blood heat (37°))	(ie *Hot spring*)	
		I *Intermittent*	(ie *Intermittent spring*)	
		M *Mud*	(ie *Mud spring*)	

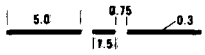
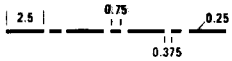
SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
21.3	**Springs (cont'd)**			
21.2.1	∽	*Spring*	General symbol. Where more than one type of spring occurs on the map use: ∽ H *Spring;* H – *Hot,* M – *Mud*	3.0, 1.0, 1.5
21.4	**Water bores and wells**			
	• Salinity, chemical content, yield, and depth of bore are not normally shown on general geological maps but may be shown if desired.			
	• Descriptive data may be shown by letters: C *Capped* H *Hot water;* (hotter than blood heat (37°)) (e.g. o H *Hot water bore*) Hy *Hydrogen-sulphide-bearing* Nf *Abandoned because of diminished flow* pe *Equipped with pump engine* (e.g. o pe *Bore with pump engine*) Su *Sulphur-bearing* Td *Abandoned for technical reasons* (drilling or equipment problems)			
21.4.1	⚳	*Windpump*	May be combined with bore, well, tank, or dam. If so, use appropriate description (e.g. ⚳ *Bore with windpump*)	1.0, 2.0, 1.0, 0.15
21.4.2	o	*Bore*	General symbol. Water quality not specified. May add bore registration number and authority (e.g. o R6518 *Bore with Water Resources Commission of New South Wales registered number*)	0.15, 1.5
21.4.3	ø	*Abandoned bore*	Use the slash through any water bore or water well symbol to indicate that it is abandoned (ie ø ø ø ø). May use letters (e.g. Nf, Td) to show reason why abandoned	3.0
21.4.4	↑o	*Artesian bore, flowing*	Hot water bore, etc. may be shown as for non-artesian bore	2.0, 0.75
21.4.5	↑o	*Artesian bore, ceased to flow*		0.75, 0.75
21.4.6	♀	*Sub-artesian bore*	Non-flowing. Confined water has risen above the water-table, but not to the surface	0.15, 2.0
21.4.7	□	*Well*	General symbol. Salinity, abandoned well etc. may be shown as for bore	0.15, 1.0
21.5	**Water tanks and dams**			
21.5.1	□T	*Water tank*	(e.g. steel, concrete, masonry, galvanised iron)	0.15, 1.0
21.5.2	□E	*Earth tank or dam*		
21.5.3	□S	*Water storage*	To be used where water storage facilities are known to exist, but type of storage is uncertain	
21.5.4		*Dam on stream*		2.5, 0.15

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
21.6	**Salinity**			
	• Salinity, chemical content, yield, and depth of bore are not normally shown on general geological maps but may be shown if desired.			
21.6.1	⊖	*Salty bore, salinity not measured*		1.5 ⊖ 0.15
21.6.2	◓	*Bore, salinity less than 1500ppm*	Potable	◓
21.6.3	◑	*Bore, salinity 1500 to 10 000ppm*	Usable for stock	0.15 ◑
21.6.4	◐	*Bore, salinity greater than 10 000ppm*	Saline	◐
			Salinity symbols may be combined with any spring, bore or well symbol (e.g. 21.8.2)	
21.7	**Names of water bores and wells**			
	Where a bore or well has no identification other than a 'number name' leave the abbreviation *'No.'* in the title e.g. *No. 2 Bore* (or if preferred for a particular map, *Bore No. 2*) N.B. be consistent on each map Where a 'number name' is preceded by a descriptive or station name the abbreviation *'No.'* is deleted, e.g. *Canobie No. 3 Bore* becomes *Canobie 3 Bore* Where a bore or well is known synonymously by both a 'number name' and a descriptive name, retain the abbreviation *'No.'* and bracket the descriptive name, e.g. *No. 3 (Bloodwood) Bore* Some organisations prefer to use the registered number assigned to a bore by the relevant State or Territory water authority e.g. ○ R8407 *Bore with Water Resources Commission of New South Wales registered number*			
21.8	**Combined symbols**			
	This sub-section contains a selection of symbols to illustrate symbol combinations and correct wording of descriptions. To avoid lengthy and complicated descriptions, combined symbols may be shown separately in the reference			
21.8.1	C	*Capped artesian bore*		1.0 C 0.15 1.5
21.8.2		*Artesian bore, salinity less than 1500ppm, ceased to flow*		2.0 0.75 0.75
21.8.3		*Abandoned sub-artesian bore, salinity less than 1500ppm*		3.0
21.8.4		*Well with windpump*		2.0 1.0 0.15 1.0
21.8.5		*Abandoned well, salinity greater than 10 000ppm*		3.0 0.15 1.0

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
				*Parallel lines in symbols are specified from **centre to centre***
22.1	**Notes**			
	• For additional symbols to those below and notes on usage of symbols refer to **'Specifications for Topographic Map Series'** for 1:100 000 and 1:250 000 scale maps, compiled by the Australian Surveying and Land Information Group, Commonwealth Department of Administrative Services (formerly the Division of National Mapping).			
22.2	**Natural features**			
	See also Section 21. Restraint should be exercised in use of these symbols on geological maps			
22.2.1		*Rock ledge* *or* *Coral reef*	Letter symbol for rock unit used where required	0.1
22.2.2	✳	*Rocks awash*		2.0 0.125
22.2.3	+	*Submerged rock*		2.0 0.125
22.2.4		*Edge of raised reef terrace*		0.15
22.2.5	o *or*	*Sinkhole*	Choice of symbol depends on size of feature. If water-filled show *W* in blue next to symbol (e.g. o *W Sinkhole, W indicates water-filled*)	1.75
22.2.6		*Sinkhole*		0.15 0.5
22.2.7		*Astrobleme* *or* *Impact structure* *or* *Cryptoexplosive structure*	If possible should be to scale. May be placed on black plate	4.0 2.5 0.2 1.0
22.2.8		*Strandlines*	Brown. plate. If lines are to be screened use 0.25 mm lineweight	0.15 or 0.25
22.2.9		*Sand ridges* *or* *Sand dunes*		0.15 or 0.25
22.2.10		*Claypan* *or* *Saltpan*		0.375 0.15 1.25
22.2.11		*Escarpment*	If produced by faulting, may letter ***'Fault scarp'*** along top. Alternatively letter ***'Scarp'*** along appropriate fault symbol. Other descriptive words may be added to symbol e.g. raised reef, cliff. Compare with fault symbol 3.4.1	0.25 1.0 0.1 1.0
22.2.12		*Alluvial terrace*	On brown plate. See also 22.2.4	0.5 0.15 0.75 0.1
22.2.13		*Alluvial fan*	Hand drawn to suit the individual land feature. See also 22.2.21	0.15
22.2.14		*Landslips showing heel of slip and direction of movement*	See also 22.2.15 to 22.2.17	1.0 1.0 0.2 variable

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
22.2	**Natural features (cont'd)**			
22.2.15		*Landslips*	Numerous slips. May be used to show extensive area of slips on general purpose maps or distribution of small slips on large-scale maps	
22.2.16		*Landslip*	Large slip, showing scar and tongue of colluvium, and small slips	
22.2.17	Qs	*Landslip*	Brown Plate. Large area — escarpment symbol and boundary on topography plate show limit of landslip scar; boundary and letter symbol Qs ***on geology plate*** show area of landslip debris. Dot density decreases towards base of landslip scar	
22.2.18		*Cliff*	***Large-scale maps only.*** Because the features portrayed may have great diversity in size and shape, the symbols are hand drawn	
22.2.19		*Cirque*		
22.2.20		*Moraine*		
22.2.21		*Alluvial fan*		
22.2.22			Miscellaneous boundary — to be used where necessary for topographic units (e.g. *Limit of Pleistocene glaciation*). Use appropriate description in reference or on map face	
22.3	**Topographic survey stations, elevations and contours**			
22.3.1	▲	*Trigonometrical station*		
22.3.2	⊕	*Astronomical station*		
22.3.3	·210	*Elevation in metres, accurate*	Datum to be specified: (e.g. *Mean sea level, Derby*)	
22.3.4	·210	*Elevation in metres, approximate*		
22.3.5	100	*Topographic contour, interval 20m*	Specify datum. Brown plate	
22.3.6	150	*Form line, interval 50m*	Brown plate	
22.3.7	5	*Bathymetric contour in metres*	Specify interval and datum. Blue plate	

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
23.1	**Notes**			*Parallel lines in symbols are specified from **centre to centre***
	• For additional symbols to those below and notes on usage of symbols refer to **'Specifications for Topographic Map Series'** for 1:100 000 scale and 1:250 000 scale maps, compiled by the Australian Surveying and Land Information Group, Department of Administrative Services (formerly the Division of National Mapping)			
23.2	**Roads, railways, buildings, etc.**			
23.2.1		*Highway or Principal road*	May add other details (e.g. *Divided highway, Unsealed secondary road, Sealed minor road, Vehicle track (4WD only)*)	0.75
23.2.2		*Secondary road*		0.525
23.2.3		*Minor road*		0.25
23.2.4		*Vehicle Track*		2.0, 0.25, 0.375
23.2.5		*Traverse line*	Use only in sparsely populated areas to aid navigation (e.g. *Seismic traverse line*). See also 16.4.1	0.5, 0.5, 0.2, 2.0
23.2.6		*Railway*	Related features may be added to this symbol (e.g. *Railway with station or siding*)	1.0, 0.25, 3.75
23.2.7		*Abandoned railway*		3.75, 0.25, 3.25, 0.375
23.2.8		*Fence*		0.1
23.2.9		*Aerodrome*	***1:250 000 or larger scale maps only***	0.375, 8.0, 0.525
23.2.10		*Landing ground*		variable, 0.75, 0.1
23.2.11		*Landing ground*	***Small-scale maps only*** Line is oriented in the direction of the airstrip	0.375, 3.5, 2.0
23.2.12		*Built-up area*		0.15, 0.075, 0.5
23.2.13		*City*	***Small-scale maps only***	0.125, 2.0
23.2.14		*Town or Village or Settlement*		0.125, 1.5
23.2.15		*Homestead or Outstation*		0.75
23.2.16		*Building*		0.5
23.2.17		*Yard*	If necessary add 'Yd' to symbol	0.1, 0.75

SYMBOL No.	SYMBOL	DESCRIPTION	NOTES	DRAFTING SPECIFICATIONS (mm)
23.2	**Roads, railways, buildings, etc. (cont'd)**			
23.2.18	—— - ——	*State or Territory border*		
23.2.19	—-—-—-—	*Minor administrative boundary*	e.g. local government boundaries	
23.2.20	*abd*	*Abandoned*	Use where there is not a standard abandoned symbol for a feature (e.g. ═══ *abd* *Abandoned landing ground*)	
23.2.21	*pa*	*Position approximate*	Use where positional accuracy is in question *pa* — known to exist in the vicinity *pd* — may exist in the vicinity Abbreviation should be in the same colour as the feature	
23.2.22	*pd*	*Position doubtful*		

SAMPLE SYMBOLS REFERENCE

This sample reference shows the ***preferred*** order and descriptions for symbols which typically appear on ***general geological maps.*** Variations to order and descriptions may be made to suit particular maps.

Geological boundary

Sedimentary facies boundary } *Reference and diagrams only*

Unconformity. Top of U *towards younger rocks* } *Reference and diagrams only*

Fault

br *Fault containing:* br *– breccia,* q *– quartz*

75 *Thrust-fault showing dip of fault plane. Triangle on older rocks*

Shear zone

dl *Dyke or vein;* dl *– dolerite,* gn *– greisen,* gr *– granite*

35 *Anticline showing plunge*

Syncline

25 *Syncline showing plunge, second folding episode*

35 *Overturned anticline showing plunge*

Recumbent syncline showing plunge

85 *Vertical anticline showing plunge and dip of axial surface; dot indicates facing*

Asymmetrical syncline. Open arrow indicates thinned limb

30 *Antiform showing plunge*

25 *Upright synform showing plunge*

30 *Inclined synform showing plunge*

Where location of boundaries, faults and folds is approximate, line is broken; where inferred queried; where concealed, boundaries and folds are dotted, faults are shown by short dashes

20 *Minor anticline showing plunge*

20 *Minor syncline showing plunge*

65 *Reclined minor syncline showing plunge. Dot indicates proved direction of facing*

Minor horizontal fold showing plunge and vergence to right

Vergence to right in recumbent fold. Arrow shows direction to next (structurally lower) fold hinge

Vergence to left in overturned plunging fold

25 *Strike and dip of strata*

Prevailing strike and dip of strata

Vertical strata

Horizontal strata

80 *Strike and dip of overturned strata*

Strike and dip of strata, dip 5°–15° } *Airphoto interpretation*

Strike and dip of strata, dip 15°–45° } *Airphoto interpretation*

Strike and dip of strata, dip greater than 45° } *Airphoto interpretation*

Trend-line } *Airphoto interpretation*

Lineament } *Airphoto interpretation*

Joint pattern } *Airphoto interpretation*

80 *Strike and dip of joint*

50 *Strike and dip of foliation*

45 *Strike and dip of foliation, first deformation episode*

40 *Strike and dip of foliation, second deformation episode*

60 *Strike and dip of cleavage*

Vertical cleavage

SAMPLE SYMBOLS REFERENCE

50	*Plunge of lineation*
20	*Plunge of mineral elongation*
80	*Plunge of crenulation*
30	*Strike and dip of platy alignment*
	Macrofossil locality
	Stromatolite (Georginia howchini) *locality*
	Sample locality for isotopic age determination
B5	*Measured section with reference number*
	Inclined drill hole; CH *– Core hole,* DD *– Diamond-drill hole*
U	*Minor mineral occurrence*
	Costean
	Prospect
	Mine
	Mine not being worked or abandoned
	Abandoned treatment plant
	Ag *– Silver,* Au *– Gold,* Cu *– Copper,* Fe *– Iron,* Pb *– Lead,* Sb *–Antimony,* Sn *– Tin,* U *– Uranium,* Zn *– Zinc*
	Petroleum exploration well with show of oil and gas
	Oil well, shut in
	Oil and gas well, abandoned
	Service well: WI *– Water injection,* WIC *– Control (water injection)*
	Fault
	Antiform } *Interpreted from geophysical data*
g	*Lineament*
	Windpump
R7747	*Bore with Queensland Water Resources Commission registered number*
C	*Capped artesian bore*
WH	*Waterhole*
	Spring
E	*Earth tank or dam*
W	*Sinkhole;* W *indicates water-filled*
	Escarpment
	Highway
	Unsealed minor road
	Vehicle track
	Abandoned railway
	Fence
	Landing ground
Gimbat	*Homestead*
	Building
	Yard
	Trigonometrical station
·302	*Elevation in metres*
pa	*Position approximate*
pd	*Position doubtful*

A

Abandoned 23.2.20
(For abandoned bores, mines etc see appropriate category- eg Water bores and wells)

Abbreviations (rocks, minerals, commodities) 4.2, 20

Adit (see Mining plan symbols 14.5)

Aerodrome 23.2.9

Age determination localities 13.3
Carbon dating 13.3
Isotopic age 13.3.2
Radiometric age 13.3
Sample locality 13.3.1

Alluvial boundary 2.2.5

Alluvial fan 22.2.13, 22.2.21

Alluvial terrace 22.2.12

Alluvial workings
Abandoned 14.3.15
Major 14.3.14
Minor 14.3.13
(See also Mineral Deposits and Workings 14)

Angular unconformities 2.5.2, 2.5.5

Anticlines
Anticline (general symbol) 5.4.1
Asymmetrical 5.9.1-5
Axis horizontal 5.4.3
Classification 5.2
Combined symbols 5.17.1-3
Definition and notes 5.1
Explanatory diagrams 5.1
Interpreted from geophysics 16.5.4
Inverted (ie synformal) 5.10.1-6, 5.10.13-16, 5.10.21-29
Minor 5.14, 5.14.1, 5.14.3-4, 5.14.7
Multiple folding episodes 5.3
Overturned 5.5.1-5
Plunging 5.4.4-5
Reclined 5.6.1-2
Recumbent 5.7.1-4
Showing dip of axial surface 5.4.6
Structural and tectonic map symbols 18.3.1-2
Upright 5.4.1-2, 5.4.4
Vertical 5.8.1-2
With one thinned limb 5.4.2

Anticlinorial zone 18.1.3

Antiforms
Antiform (general symbol) 5.11.1
Asymmetrical 5.11.27-31
Axis horizontal 5.11.3
Classification 5.2
Definition and notes 5.1
Minor 5.14.9-10
Multiple folding episodes 5.3
Overturned 5.11.13-16
Plunging 5.11.4-5
Showing dip of axial surface 5.11.6
Upright 5.11.1-2, 5.11.4
With one thinned limb 5.11.2

Artesian bores (see Water bores and wells 21.4, Combined symbols 21.8)

Astrobleme 22.2.7

Astronomical station 22.3.2

Asymmetrical folds 5.9
Anticlines 5.9.1-5, 5.10.25-29
Antiforms 5.11.27-31
Axis horizontal 5.9.3
Classification 5.2
Definition and notes 5.1
Explanatory diagram 5.1
Facing not known 5.11.27-36
Inverted 5.10.25-34
Minor 5.14.18
Multiple folding episodes 5.3
Plunging 5.9.4, 5.9.9
Showing dip of axial surface 5.9.5, 5.9.10
Synclines 5.9.6-10, 5.10.30-34
Synforms 5.11.32-36
With same dip on both limbs 5.9.2, 5.9.7, 5.11.28, 5.11.33

Auger-drill hole 13.5

Aureole, metamorphic 18.1.2

Axial surface or plane
Diagrams 5.1

B

Banding in igneous rocks (see Igneous banding)

Basins
Depositional 18.1.7
Tectonic 18.3.6

Battery (see Treatment plant 14.4.1-2)

Bedding 6
Bedding 6.2
Combined symbols 1.5.2, 6.8
Direction of movement (water, ice) 6.5
Exhumed erosion surface 6.2.17
Foresets 6.2.15-16
Notes 6.1
Photo-interpreted bedding 6.6
Top of beds (facing) 6.4
Trend-line 6.7
Undulating and folded bedding 6.3
(See also Strata)

Bedding-cleavage intersection 10.3

Border (State, Territory) 23.2.18

Bores, water 21.4, 21.6, 21.7, 21.8
(See also Exploration, development, and production wells 15.2)

Bouguer anomaly (see Gravimetry)

Boundaries
Alluvial 2.2.5
Extent of prospected area etc 14.3.16
Facies 2.2.3
Interpreted from geophysics 16.5.1
Intrusive 2.4
Lava flow 17.1.8
Metamorphic 2.3
Minor administrative 23.2.19
Miscellaneous (Limit of dyke swarms etc) 2.2.6, 22.2.22
Oil and gas field 2.2.6
Pyroclastic flow 17.1.9
Structural unit 18.1.3-6
(See also Geological boundaries)

Brachyanticline 18.3.10

Breccia 3.6

Building 23.2.16

Built-up area 23.2.12

C

Carbon dating 13.3

Centrocline 18.3.3

Cirque 22.2.19

City 23.2.13

Claypan 22.2.10

Cleavage 9
- Combined symbols 1.5.2, 9.3
- Definition and notes 9.1
- Dip indeterminate, not determined 9.2.3
- Dip not measured 1.5.3, 9.1, 9.2.2
- Horizontal 9.2.5
- Prevailing strike and dip 1.5.3, 9.1, 9.2.2
- Strike and dip 9.2.1-2
- Types (crenulation, kink, etc) 9.2
- Vertical 9.2.4

Cliff 22.2.18
(See also Escarpment)

Coastline 21.2.1

Columnar joints 7.4.1

Combined symbols 1.5.2, 3.8, 5.17, 6.8, 8.6, 9.3, 10.7, 21.8

Commodities, abbreviations 20.2

Contours
- Basement 18.4.3-4
- Bathymetric 22.3.7
- Gravity (Bouguer) 16.1.1
- Magnetic 16.2.1
- Radiometric 16.3.1
- Structural 18.4.1-4
- Topographic 22.3.5

Coral reef 22.2.1

Core hole 13.5, 13.5.1

Costean or trench 14.3.2-3
(See also Mining plan symbols 14.5)

Crater (see Volcanoes 17)

Creek 21.2.4

Crenulation 10.4

Crenulation cleavage 9.2

Cribbing (see Mining plan symbols 14.5)

Cross-bedding 6.2.15-16, 6.4.1, 6.5

Cross-cut (see Mining plan symbols 14.5)

Cross section 13.4.4

Cryptoexplosive structure 22.2.7

Culture 23
- Abandoned 23.2.20
- Administrative boundaries 23.2.18-19
- Aerodromes, landing grounds 23.2.9-11
- Cities, towns, etc 23.2.12-14
- Fences 23.2.8
- Highways, roads, and tracks 23.2.1-5
- Homesteads, outstations 23.2.15
- Notes 23.1
- Position approximate 23.2.21
- Position doubtful 23.2.22
- Railways 23.2.6-7
- Yards 23.2.16

Cumulodome (see Volcanoes 17)

D

Dams 21.5

Deposits, mineral 14.1-2
- Abbreviations 20

Descriptions for symbols 1.4

Development wells (see Exploration, development, and production wells 15.2-3)

Diamond-drill hole 13.5
(See also Mining plan symbols 14.5)

Dip, curving 6.2.13

Dip indeterminate, not determined
- Cleavage 9.2.3
- Igneous banding 11.2.3
- Metamorphic foliation 8.2.3

Dip not measured
- Bedding 6.1, 6.2.2
- Cleavage 9.1, 9.2.2
- Igneous banding 11.1, 11.2.2
- Joint 7.1, 7.2.2
- Metamorphic foliation 8.1, 8.2.2
- Note 1.5.3

Dip slope 6.2.14

Direction of movement (water, ice) 6.5

Disconformities 2.5.3, 2.5.6

Domes
- Depositional 18.1.8
- Tectonic 18.3.7

Drill holes 13.5
- Depth 13.5.2
- Diamond-drill, hand-drill, etc 13.5
- Inclined 13.5.3
- Reference number 13.5.1
- Vertical 13.5.2

(See also Mining plan symbols 14.5)

Drive (see Mining plan symbols 14.5)

Dump (see Mining plan symbols 14.5)

Dunes, sand 22.2.9
(See also Strandlines 22.2.8)

Dykes, veins, sills 4.1
- Dyke or vein 4.1.1-2
- Dyke swarm boundaries 2.2.6
- Sill 4.1.3
- Suggested rock type abbreviations 4.2

E

Elevation in metres 22.3.3-4

Eruptions (see Volcanoes 17)

Escarpment 22.2.11
- Related to volcanism 17.1.6

(See also Fault scarp 3.1, Cliff 22.2.18)

Exhumed erosion surface 6.2.17

Exploration, development, and production wells 15.2-3

F

Facing or younging
- Bedding 6.1, 6.2.8-10
- Folds 5.8, 5.10.21-24, 5.14.1-2, 5.4.7-8
- Note 1.5.4
- Not known 1.5.4, 5.11, 5.14.9-12, 5.4.17, 6.2.11-12
- Top of beds 6.4

Fan, alluvial 22.2.13, 22.2.21

Fault scarp 3.1

Faults 3
- Accurate 3.2.1
- Along intrusive boundary 3.3.10-11
- Approximate 3.2.2
- Breccia 3.6.3-4
- Classification 1.5.5, 3.2
- Combined symbols 1.5.2, 3.8
- Concealed 3.2.4
- Containing quartz, mylonite, etc 3.6.4, 4.2
- Crushing, breccia, shearing, schistosity, mylonite 3.6
- Definitions and Notes 3.1
- Dip of fault plane 3.4.2, 3.5.2, 3.5.5
- Explanatory diagrams 3.1
- Inclined 3.3.9
- Inferred 3.2.3
- Klippe 3.5.7
- Line of faulted outcrop 3.3.3
- Normal 3.4
- Relative displacement 3.3.5-7, 3.4.3, 3.5.3, 3.5.6
- Shearing 3.6.5-10
- Striated slickensides 3.3.8
- Strike-slip 3.3.6
- Tectonic and structural map symbols 18.2
- Tectonic window 3.5.8
- Thrust 3.5
- Vertical 3.3.4
- Width 3.3.2

Fence 23.2.8

Filled workings (see Mining plan symbols 14.5)

Flexure 18.3.5

Flow banding (see Igneous banding)

Flow lineation (eg Igneous lineation) 10.6

Folded bedding 6.3
(See also Folds)

Folds 5
- Accurate (position) 5.2.1
- Anticlines 5.1, 5.4
- Approximate (position) 5.2.2
- Asymmetrical 5.1, 5.9
- Axis horizontal 5.4-11
- Brachyanticline 18.3.10
- Centrocline (tectonic basin) 18.3.3
- Classification of fold axial surface trace 1.5.5, 5.2
- Combined symbols 1.5.2, 5.17
- Concealed (position) 5.2.4
- Definitions and notes 5.1
- Dip of axial surface 5.4-13
- Explanatory diagrams 5.1
- Facing not known 5.11
- Flexure 18.3.5
- Horizontal 5.1
- Inclined 5.1
- Inferred (position) 5.2.3
- Inverted 5.1, 5.10
- Kink 5.14.20
- Minor 5.14
- Monoclines and monoforms 5.1, 5.12
- Multiple folding episodes 5.3
- Overturned 5.1, 5.5
- Pericline (tectonic dome) 18.3.7
- Plunge of tightly folded strata 5.13
- Plunging 5.3-11
- Reclined 5.1, 5.6
- Recumbent 5.1, 5.7
- Structural 'high' 18.3.9
- Structural 'low' 18.3.8
- Superposed 5.14.21
- Tectonic and structural map symbols 18.3
- Thinned limbs 5.4, 5.9-11
- Upright 5.1
- Vergence 5.15
- Vertical 5.1, 5.9

Foliation (see Metamorphic foliation)

Foresets 6.2.15-16

Form lines
- Structural 18.4.3-4
- Topographic 22.3.6

Fossil localities 13.1

G

Gas
- Field 15.1.10
- Seep 15.1.2, 15.1.5-6
- Well 15.2.5-6, 15.2.11-13

(See also Petroleum occurrences and developments)

Geological boundaries 2
- Accurate 2.1.1
- Alluvial 2.2.5
- Approximate 2.1.2
- Classification 1.5.5, 2.1
- Concealed 2.1.4
- Inferred 2.1.3
- Intrusive 2.4.1, 18.1.1-2
- Marker beds, marker bands 2.6
- Metamorphic 2.3
- Miscellaneous 2.2.6
- Miscellaneous outcrops 2.7
- Sedimentary facies 2.2.3
- Showing dip 2.2.2
- Superficial deposits 2.2.5
- Tectonic and structural map symbols 18.1
- Transitional 2.2.4
- Unconformities 2.5

(See also Boundaries)

Geophysics 16
- Gravimetry 16.1
- Geology interpreted from 16.5
- Magnetics 16.2
- Radiometry 16.3
- Seismic 16.4

Geyser 17.1.7

Glacial striae 6.5.3-4

Gossan 2.7.1

Grab-sample locality (see Mining plan symbols 14.5)

Gravimetry 16.1
- Basement 16.1.6
- Bouguer anomaly 16.1.4
- Bouguer anomaly contour 16.1.1
- Relative high 16.1.2
- Relative low 16.1.3
- Station 16.1.5

Gravity (see Gravimetry)

H

Hand-drill hole 13.5
(See also Mining plan symbols 14.5)

Highway 23.2.1

Homestead 23.2.15

Horizontal cleavage, folds, etc (see appropriate category- eg Cleavage)

Hydrology 21
- Combined symbols 1.5.2, 21.8
- Natural features (rivers, lakes, etc) 21.2
- Notes 21.1
- Salinity 21.6
- Springs 21.3, 21.6
- Water bores and wells 21.4
- Water tanks and dams 21.5
- Waterhole or soak 21.2.5-9

I

Igneous banding 11.2
- Dip indeterminate, not determined 11.2.3
- Dip not measured 1.5.3, 11.1, 11.2.2
- Horizontal 11.2.5
- Notes 11.1
- Prevailing strike and dip 1.5.3, 11.1, 11.2.2
- Strike and dip 11.2.1
- Vertical 11.2.4

Igneous intrusions 2.4

Igneous lineation (see Flow lineation 10.6)

Impact structure 22.2.7

Inclined folds
- Definition 5.1

(See also Folds)

Intrusive rock boundary 2.4.1, 18.1.1-2, 3.3.10-11

Inverted folds 5.10
- Anticlines 5.10.1-6
- Asymmetrical 5.10.25-34
- Axis horizontal 5.10.3, 5.10.9, 5.10.14, 5.10.18, 5.10.27, 5.10.32
- Classification 1.5.5, 5.2
- Definition and notes 5.1
- Multiple folding episodes 5.3
- Overturned 5.10.13-20
- Plunging 5.10.4-5, 5.10.10-11, 5.10.15, 5.10.19, 5.10.21, 5.10.23, 5.10.28, 5.10.33
- Showing dip of axial surface 5.10.6, 5.10.12, 5.10.16, 5.10.20, 5.10.22, 5.10.24, 5.10.29, 5.10.34
- Synclines 5.10.7-12
- Upright 5.10.1-2, 5.10.4, 5.10.7-8, 5.10.10
- Vertical 5.10.21-24
- With one thinned limb 5.10.2, 5.10.8, 5.10.26, 5.10.31

Inverted strata 6.1, 6.2.6-7, 6.2.10

Isograd, metamorphic 2.3.2-3

Isotopic or radiometric age determination 13.3

J

Joints 7
- Columnar 7.4.1
- Dip not measured 1.5.3, 7.1, 7.2.2
- Horizontal 7.2.4
- Notes 7.1
- Pattern 7.3
- Prevailing strike and dip 1.5.3, 7.1, 7.2.2
- Strike and dip 7.2.1
- Vertical 7.2.3

K

Kink cleavage 9.2

Klippe 3.5.8

L

Lagging (see Mining plan symbols 14.5)

Lagoon 21.2.2

Lake 21.2.2-3

Landing ground 23.2.10-11

Landslips 22.2.14-17

Lava flows 6.4.2,17.1.8

Letter symbols 1.8.1, 1.8.3

Lineaments
- Photo-interpreted 12.2
- Interpreted from geophysics 16.5.7-8

Lineation 10
- Bedding-cleavage intersection 10.3
- Combined symbols 1.5.2, 10.7
- Crenulation 10.4
- Flow lineation (eg Igneous lineation) 10.6
- Horizontal 10.2.3, 10.3.2, 10.4.2, 10.5.2, 10.6.3
- Mineral elongation or alignment 10.5
- Notes 10.1
- Plunge measurement 10.1
- Unspecified lineation 10.2
- Vertical 10.2.2, 10.6.2

Localities
- Age determination 13.3
- Fossil 13.1
- Observation 13.2.2
- Specimen 13.2.1

M

Magnetics 16.2
- Basement 16.2.4
- Contours 16.2.1
- Peak anomaly 16.2.3
- Relative low 16.2.2

Mangroves 21.2.12

Marker beds, bands 2.6

Metamorphic boundaries 2.3

Metamorphic facies boundary or change 2.3.1

M (cont'd)

Metamorphic foliation 8
- Combined symbols 1.5.2, 8.6
- Definition and notes 8.1
- Dip indeterminate, not determined 8.2.3
- Dip not measured 1.5.3, 8.1, 8.2.2
- General trend 8.4
- Horizontal 8.2.5
- Multiple deformation episodes 8.3
- Prevailing strike and dip 1.5.3, 8.1, 8.2.2
- Schistosity 8.5
- Strike and dip 8.2.1
- Vertical 8.2.4

Metamorphic isograd 2.3.2-3

Metamorphic rocks 1.8.3
- Aureole 18.1.2
- Schistosity 8.5
- Trend of foliation 8.4

Mine 14.3.1, 14.3.4-8

Mineral deposits and workings 14
- Abbreviations 20
- Alluvial workings 14.3.13-15
- Costean or trench 14.3.2-3
- Limit of activity 14.3.16
- Mine 14.3.1, 14.3.4-8
- Mineral deposits 14.2
- Notes 14.1
- Open cut or quarry 14.3.9-12
- Prospect 14.3.1, 14.3.4-5
- Treatment plant 14.4

(See also Mining plan symbols 14.5, Letter symbols for minerals and rocks 20)

Mineral elongation or alignment 10.5

Mineshaft (see Mining plan symbols 14.5)

Mining plan symbols 14.5
- Caved workings 14.5.26
- Costean or trench 14.5.40-41
- Cross-cut or drive 14.5.19-21
- Drill holes 14.5.37-39
- Dump 14.5.44
- Elevation of floor 14.5.31
- Elevation of roof 14.5.30
- Filled workings 14.5.27
- Grab-sample locality 14.5.36
- Information projected onto a section 14.5.33-34
- Lagging or cribbing along drive 14.5.25
- Natural surface 14.5.32
- Open cut or quarry 14.5.43
- Ore chute 14.5.22
- Portal and adit 14.5.28-29
- Prospecting pit 14.5.42
- Rise or winze 14.5.9-14
- Sample line 14.5.35
- Shafts 14.5.1-8, 14.5.15-18
- Stope 14.5.23-24

Minor folds 5.14, 5.17.3-7

Miscellaneous outcrops 2.7

Monoclines and monoforms 5.12
- Classification 5.2
- Definition and notes 5.1
- Fault induced 5.12.3
- Multiple folding episodes 5.3
- Showing dip of axial surface 5.12.2, 5.12.5

Moraine 22.2.20

Movement direction (water, ice) 6.5

Mud volcanoes 15.1.7-8

Multiple folding, deformation episodes 5.3, 8.3

Mylonite 3.6.4, 3.6.8

N

Names
- Petroleum exploration, development, and production wells 15.3
- Water bores and wells 21.7

Nonconformity 2.5.7

Normal faults 3.4.1-3
- Classification of faults 3.2
- Definition and notes 3.1
- Dip of fault plane 3.4.2
- Explanatory diagram 3.1
- High-angle 3.4.5
- Low-angle 3.4.4
- Normal fault 3.4.1
- Relative displacement 3.4.3, 3.8.1

O

Observation localities 13.2.2

Oil
- Field 15.1.19
- Seep 15.1.1, 15.1.3, 15.1.6
- Well 15.2.4, 15.2.6, 15.2.8-10, 15.2.12

(See also Petroleum occurrences and developments)

Open cut or quarry 14.3.9-12

Ore chute (see Mining plan symbols 14.5)

Outcrop 2.6, 2.7, 3.3.3

Outstation 23.2.15

Overturned folds 5.5
- Anticlines 5.5.1-5
- Axis horizontal 5.5.2, 5.5.7
- Classification 5.2
- Definition and notes 5.1
- Explanatory diagram 5.1
- Facing not known 5.11.13-20
- Inverted 5.10.13-20
- Minor 5.14.16
- Mutiple folding episodes 5.3
- Plunging 5.5.3, 5.5.8
- Showing dip of axial plane 5.5.4, 5.5.9
- Showing dips of limbs 5.5.5, 5.5.10
- Synclines 5.5.6-10

P

Patterns for igneous rock bodies on Tectonic maps 19

Percussion-drill hole 13.5
(See also Mining plan symbols 14.5)

Pericline (tectonic dome) 18.3.7

Petroleum occurrences and developments 15
- Exploration, development, and production wells 15.2
- Gas field 15.1.10
- Names of wells 15.3
- Natural occurrences of oil and gas 15.1
- Oil field 15.1.9
- Service well 15.2.14
- Notes 15.2

Photogeology 12
- Bedding 6.6
- Joint pattern 7.3
- Lineament 12.2.1
- Photo-centres 12.4.1, 12.4.2

Pillow-lavas 6.4.2

Pit, prospecting (see Mining plan symbols 14.5)

P (cont'd)

Platy alignment (see Igneous banding)

Plunge
- Fold axes (closely-spaced folds) 5.13.1
- Folds 5.3-5.11,5.14
- Lineations 10.1-10.6
- Not measured 1.5.3

Portal (see Mining plan symbols 14.5)

Position approximate 23.2.21

Position doubtful 23.2.22

Prevailing strike and dip
- Bedding (strata) 6.1,6.2.2
- Cleavage 9.1, 9.2.2
- Igneous banding 11.1, 11.2.2
- Joint 7.1, 7.2.2
- Metamorphic foliation 8.1, 8.2.2
- Note 1.5.3

Production wells (see Exploration, development, and production wells 15.2)

Prospect 14.3.1, 14.3.4-5

Pseudoconglomerate 3.6.9

Pyroclastic flow 17.1.9

R

Radiometric age determination 13.3

Radiometry 16.3
- Contours 16.3.1
- Contour low 16.3.2
- Peak anomaly 16.3.3

Railways 23.2.6-7

Reclined folds 5.6
- Anticlines 5.6.1-2
- Classification 5.2
- Definition and notes 5.1
- Explanatory diagram 5.1
- Minor 5.14.7-8, 5.14.17
- Multiple folding episodes 5.3
- Showing dip of axial surface 5.6.2, 5.6.4
- Synclines 5.6.3-4

Recumbent folds 5.7
- Anticlines 5.7.1-4
- Axis horizontal 5.7.2, 5.7.6
- Classification 5.2
- Definition and notes 5.1
- Explanatory diagram 5.1
- Facing not known 5.11.21-24
- Multiple folding episodes 5.3
- Plunging 5.7.3, 5.7.7
- Showing dip of axial surface 5.7.4, 5.7.8
- Synclines 5.7.5-8

Reverse faults (see Thrust faults)

Ripple marks (see Sediment-bearing currents 6.5.1-2)

Rise (see Mining plan symbols 14.5)

River 21.2.4

Roads
- Highway 23.2.1
- Minor road 23.2.3
- Principal road 23.2.1
- Secondary road 23.2.2
- Traverse line 23.2.5
- Vehicle Track 23.2.4

Rock
- Awash 22.2.2
- Ledge 22.2.1
- Outcrop 2.7
- Submerged 22.2.3

Rockhole 21.2.8

Rock type abbreviations 4.2
(See also Abbreviations for minerals and rocks 20)

Rotary-drill hole 13.5
(See also Mining plan symbols 14.5)

S

Salinity (springs, bores, wells) 21.6

Saltpan 22.2.10

Sample line (see Mining plan symbols 14.5)

Sample localities (see Specimen localities 13.2.1, Age determination localities 13.3)

Sand dune or ridge 22.2.9

Satellite cone (see Volcanoes 17)

Schistosity 3.6.10, 8.5

Scout hole 13.5

Section localities 13.4
- Geological section 13.4.4
- Measured section 13.4.3
- Type section 13.4.1-2

Sedimentary facies boundary or change 2.2.3

Sediment-bearing currents 6.5.1-2

Seep (oil, gas) 15.1.1-6

Seismic 16.4
- Reflecting horizon 16.4.2
- Refracting horizon 16.4.3
- Traverse line 16.4.1

Seismic-shot hole 13.5

Service well 15.2.14
(See also Petroleum occurrences and developments)

Settlement 23.2.14

Shafts (see Mining plan symbols 14.5)

Shearing, shear zone 3.6.5-7, 3.6.10

Sills 4.1.3
- Abbreviations 4.2

(See also Dykes, veins, sills 4.1)

Sinkhole 22.2.5-6

Size of symbols 1.3

Soak 21.2.5

Solfatara 17.1.7

Spaced cleavage 9.2

Specimen localities 13.2.1

Spot height 22.3.3-4

Spring 21.3, 21.6

Stope (see Mining plan symbols 14.5)

Strandline 22.2.8

S (cont'd)

Strata
- Combined symbols 1.5.2, 6.8
- Curving dip 6.2.13
- Dip not determined, indeterminate 6.2.3
- Dip not measured 1.5.3, 6.1, 6.2.2
- Facing not known 6.1, 6.2.11-12
- Facing proved 6.1, 6.2.8-10, 6.4.1
- Horizontal 6.2.5, 6.2.7, 6.6.7
- Inverted 6.2.6-7, 6.2.10
- Photo-interpreted 6.6
- Prevailing strike and dip 1.5.3, 6.1, 6.2.2
- Strike and dip 6.2.1
- Trend-line 6.7
- Vertical 6.2.4, 6.2.9, 6.2.12, 6.6.6

(See also Bedding)

Stratigraphic holes
- Mining 13.5
- Petroleum exploration 15.2.7

Striation - glacial 6.5.3-4

Structure (see Tectonic and structural map symbols)

Structural contours, form lines 18.4

Structure hole 13.5

Superposed, superimposed folds 5.14.21

Survey information, topographic 22.3

Swamp, marsh 21.2.10-11

Symbols for igneous rock bodies on tectonic maps 19

Symbols for rock and time-rock units 1.8

Symbols for tectonic and structural maps 18

Symbols used on mining plans and sections 14.5

Synclines
- Asymmetrical 5.9.6-10
- Axis horizontal 5.4.9
- Classification 5.2
- Definition and notes 5.1
- Interpreted from geophysics 16.5.5
- Inverted (i.e. antiformal) 5.10.7-12
- Minor 5.14, 5.14.2, 5.14.5-6, 5.14.8
- Multiple folding episodes 5.3
- Overturned 5.5.6-10
- Plunging 5.4.10-11
- Reclined 5.6.3-4
- Recumbent 5.7.5-8
- Showing dip of axial surface 5.4.12
- Structural and tectonic map symbols 18.3.3-4
- Syncline (general symbol) 5.4.7
- Upright 5.4.7-8, 5.4.10
- Vertical 5.8.3-4
- With one thinned limb 5.4.8

Synclinorial zone 18.1.3

Synforms
- Asymmetrical 5.11.32-36
- Axis horizontal 5.11.9
- Classification 5.2
- Definition and notes 5.1
- Interpreted from geophysics 16.5.5
- Minor 5.14.11-12
- Multiple folding episodes 5.3
- Overturned 5.11.17-20
- Plunging 5.11.10-11
- Showing dip of axial surface 5.11.12
- Synform (general symbol) 5.11.7
- Upright 5.11.7-8, 5.11.10
- With one thinned limb 5.11.8

T

Tanks, water 21.5

Tectonic and structural map symbols 18
- Boundaries 18.1
- Contours, form lines 18.4
- Faults 18.2
- Folds 18.3

Tectonic map symbols and patterns for igneous rock bodies 19

Tectonic melange 3.6.9

Tectonic window 3.5.8

Terrace 22.2.4, 22.2.12

Thermal area (fumarole, geyser, etc) 17.1.7

Thrust faults 3.5
- Classification 1.5.5, 3.2
- Definition and notes 3.1
- Dip of fault plane 3.5.2
- Explanatory diagram 3.1
- General symbol 3.5.1
- High-angle or reverse 3.5.4-6
- Klippe 3.5.7
- Relative displacement 3.5.3, 3.5.6
- Tectonic window 3.5.8

(See also Tectonic and structural map symbols)

Top of beds (see Facing or younging)

Topography 22
- Natural features 22.2
- Notes 22.1
- Survey data (trig stations etc) 22.3

Town 23.2.14

Track 23.2.4

Traverse line 23.2.5

(See also Seismic)

Treatment plants 14.4.1-2

Trend-lines
- Bedding 6.7
- Foliation 8.4
- Interpreted from geophysics 16.5.6

Trigonometrical station 22.3.1

U

Unconformities 2.5

Undulating and folded bedding 6.3

V

Veins (see Dykes, veins, sills)

Vergence 5.15
- Chert boudins, contortions 5.15.7-8
- Explanatory diagrams 5.15
- Horizontal folds 5.15.1-2
- Plunging folds 5.15.5-6
- Recumbent folds 5.15.3-4

V (cont'd)

Vertical folds 5.8
- Anticlines 5.8.1-2
- Classification 5.2
- Definition and notes 5.1
- Explanatory diagram 5.1
- Facing not known 5.11.25-26
- Inverted 5.10.21-24
- Multiple folding episodes 5.3
- Plunging 5.8.1-4
- Showing dip of axial plane 5.8.2, 5.8.4
- Synclines 5.8.3-4

Vertical strata, cleavage etc (see appropriate category- eg Strata)

Village 23.2.14

Volcanism, volcanoes 17
- Crater or caldera wall 17.1.6
- Lava flow 17.1.8
- Eruptive centres 17.1.2-5
- Extinct volcano 17.1.1
- Mud volcano 15.1.7-8
- Pyroclastic flow 17.1.9
- Thermal area 17.1.7
- Volcano (general symbol) 17.1.2

W

Water bores and wells 21.4
- Names of bores and wells 21.7

Water tanks and dams 21.5

Waterholes 21.2.5-9

Wells (see Petroleum occurrences and developments, Water bores and wells)

Windpump 21.4.1

Winze (see Mining plan symbols 14.5)

Y

Yard 23.2.17

Younging (see Facing or younging)