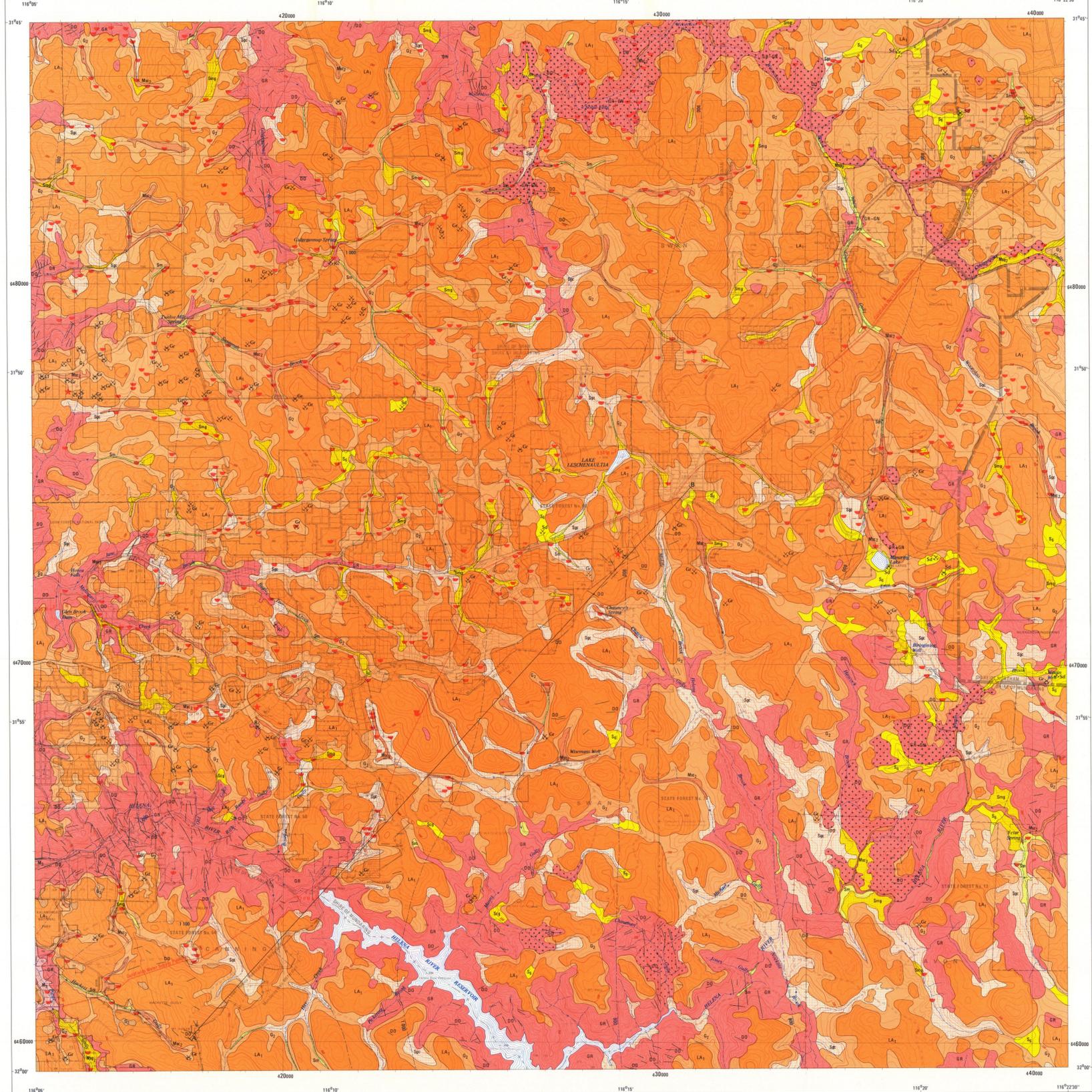


MUNDARING

GEOLOGICAL SURVEY OF WESTERN AUSTRALIA

ENVIRONMENTAL GEOLOGY SERIES



Map Unit	Description	Equivalent units on geological maps	Relief/Slope	Rock Mineral resources	PHYSICAL PROPERTIES				CURRENT PROCESSES	SUITABILITY FOR DESIGNATED LAND USES				NOTES
					Permeability	Compressibility	Flow of sheet water	Flow of groundwater		Soil water table	Soil erosion	Construction	Excavation	
Me2	GRAVELLY SANDY SILT - dark brown, fine to medium angular quartz, common fine gravel, cohesive; mainly alluvial	Alluvium (Ga)	160-175m; G	Clay from underlying pallid sandy silt	L	L	L	H	L	L	ML-M	Stream flow, sediment transportation	High seasonal water table, minor flooding, thick, overlies white kaolinitic silt; broad eastern valleys exhibit some surface saturation	
Me2	GRAVELLY SANDY SILT - orange and brown, fine to medium angular quartz, moderate cohesion; alluvial origin	Alluvium (Ga)	240-280m; G	Clay from underlying pallid sandy silt	L	L	L-M	H	L	L-M	ML-M	Stream flow, sediment transportation	High seasonal water table, swampy where undrained, usually thin, overlies white kaolinitic silt, quartz sand and boulders, which grows good wattle for farm and orchard sites	
Sp	SILT - white to grey, fine to medium, angular quartz, minor kaolinitic common to abundant silt, predominantly colluvial origin	Colluvium (Gc)	240-280m; G	Sand	L	L	L	H	V	L	V	Stream flow, sediment transportation	Swamps with seasonal flooding, contains small pockets of Sg	
Sp	GRAVELLY SILTY SAND - as for Sp but has more coarse sand and common fine gravel; colluvial origin	Colluvium (Gc)	180-200m; G-M	Sand	L-M	L	M	H	V	V	V	Stream flow, sediment transportation	Generally well-consolidated, good foundation conditions, subsurface lenses of cemented gravel may impede excavation	
Sp	CLAYEY GRAVELLY SAND - grey and yellow, kaolinitic, decomposed bedrock, sand and gravel veneer; granitic/gneissic origin	Colluvium (Gc)	150-250m; G-M	Gravel, sand	L-M	L	M	H	V	V	V	Stream flow, sediment transportation	Well-consolidated, good foundation conditions, weathered and fresh bedrock may impede excavation; rare quartz fragments	
Sp	GRAVELLY CLAYEY SAND - grey, brown, clotted, associated with Sp and G2; doleritic origin	Colluvium (Gc)	175-225m; M		L-M	L	M	H	V	V	V	Stream flow, sediment transportation	Poorly consolidated, prone to slumping when saturated, may contain boulders of fresh rock; represents zones of deep weathering; could form part of Sp and G2	
Sg	SAND - light grey, white and yellow, angular to sub-angular quartz, some feldspar, moderately sorted; colluvial origin	Colluvium (Gc)	220-295m; F	Construction sand	H	L	M	H	L	M-H	SP-DW	Stream flow, sediment transportation	Provides sound foundation, some settlement depending on degree of consolidation, occurs as pockets within Sp and Sg, heads of valleys and mid to upper slopes	
G2	GRAVEL - yellow-brown to reddish brown, loose, fine to coarse, ferruginous, platy, sandy, sorted, variable amounts of sand and silt in matrix, river reconstruction; colluvial origin		200-300m; F-G	Gravel	H	L	L	H	L	L	DW	Stream flow, sediment transportation	Very loose, occasionally weakly consolidated, needs protection against water erosion, when compacted can withstand heavy loads	
G2	GRAVEL - as for G2 but contains predominantly angularly quartzitic, ferruginous black coating; colluvial origin	Laterite (Gc)	240-300m; G		H	L	L	H	L	L	DW	Stream flow, sediment transportation	As for G2, associated with doleritic dykes and iron-rich lenses	
LA1	LATERITE - massive, hard cemented, waxy and plastic; up to 4 m thick, overlies by and associated with gravel (G2 and G3) of residual origin		270-300m; F-G	Bauxite, gravel, building stone	L	L	M-H	V	L	H			Competent, requires blasting to excavate, strong foundation but poorly drained, may be ferruginous or bauxitic, weathered pallid argillite, some breakaway on eastern part of sheet	
DO	DOLERITE - fine to medium-grained, sub-vertical dykes up to 10 m wide, associated with granites and gneisses	Dolerite dyke (D)	130-300m; G-S	Crushed rock aggregate	L	V	V	V	H				Stability of slopes dependent on orientation of joints, competent foundation where fresh, weathers to expansive clays, resulting in unstable foundation conditions if moisture is not controlled	
M3	SILT - yellowish brown mudstone, overlying kaolinitic horizon, hard when dry, soft when wet, variable sand content	Grey-grained granite (Gc and Ag)	130-200m; G		L	L	L-M	H	L-M	L-M	ML-M	Soil creep, erosion	Foundation conditions variable, tendency to be unstable on steep slopes, storage in common	
GR	GRANITES - fine to coarse-grained, occasionally porphyritic; rocks of granite, gneissitic and adamellite composition	Granite (Ag, Agp, Agm, Apr)	130-350m; G-S	Aggregate, armour stone	L-M	L	V	V	H			Stream flow	Foundations may be unstable on slopes, permeability and slope stability dependent on joint spacing, size and orientation, soil seeps from boulders, silt sand to sandy clay depending on degree of weathering	
G1	GRANITES and GNEISSES - intimate association of granites (GR) and gneisses (GN)	Migmatite (Am)	220-280m; G-S	Aggregate, armour stone	L-M	L	V	V	H			Stream flow	As for GR, minor linear heterogeneity upon weathering, often simply contorted	

REFERENCES

- See Lithological Classification
- The term unconsolidated material and rock are used in the engineering sense of "soil" and "rock"
- Colours were derived from Standard Soil Colour Charts, except for Me2
- Maximum and minimum elevation of the unit with respect to Australian Height Datum
- Slopes expressed qualitatively: F - flat, G - gentle, M - moderate, S - steep. The dominant slope of each unit is given
- H - high, M - moderate, L - low. Properties vary with degree of weathering
- Snowy Mountains Engineering Corporation Soil Classification which describes soils in terms of grain size, grading characteristics and compressibility
- activity undesirable for the environment
- possible problems for the activity
- activity compatible with unit

The data contained on this sheet are provided for preliminary study, and are not intended as a substitute for detailed on-site investigation

LITHOLOGICAL CLASSIFICATION

UNCONSOLIDATED MATERIAL
A single capital letter denotes the main lithology of the soil unit followed, if required, by lower case letters denoting qualifying lithologies in decreasing order of importance - left to right.

M silt
S sand
G gravel

ROCK
Double capital letters denote lithological symbols of rocks.
LA Laterite
GN Granite
GR Granite
DO Dolerite

Different mappable units of similar lithologies are shown by the lithological symbol followed by an Arabic number.

SYMBOLS

GEOLOGY
..... geological boundary

HYDROGRAPHY
..... seasonal stream with direction of flow
..... Lake or reservoir
..... (shaded) (m) figure on high side of line

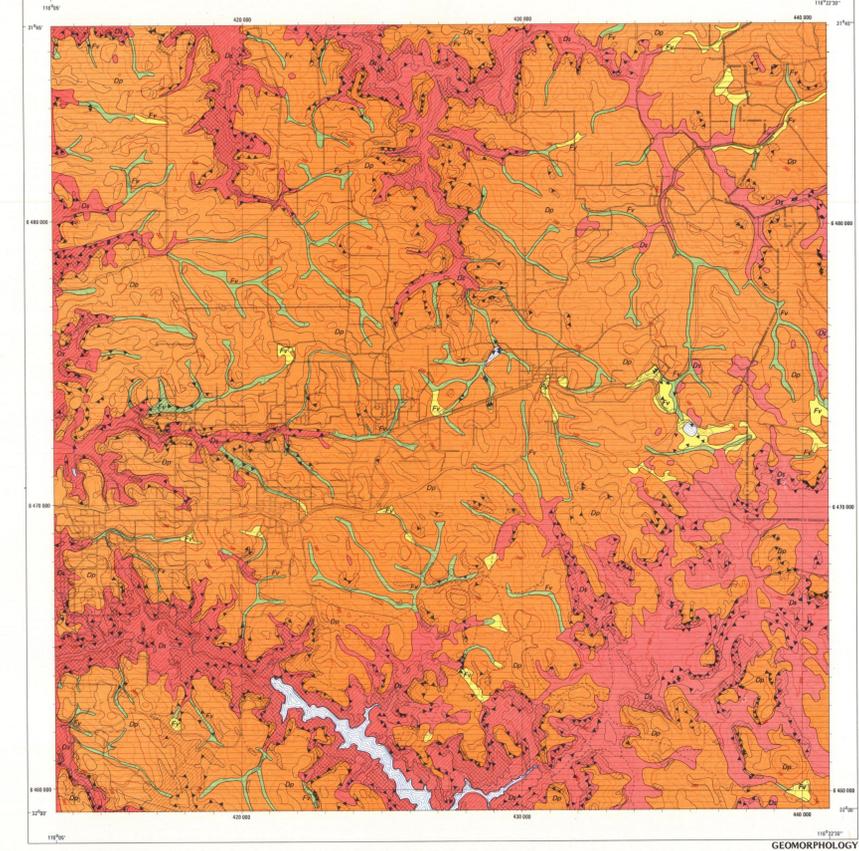
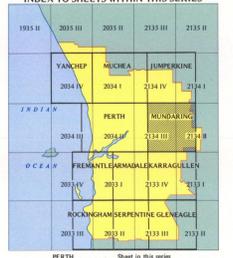
DAMS AND OTHER WORKS
..... storage reservoir, dam or tank
..... open, capacity in millions of cubic metres
..... solid waste disposal site, active
..... liquid waste disposal site, active
..... pipeline, (Gasfields Water Supply)

WATER SUPPLY AREA, WATER AUTHORITY OF W.A.
..... Lower Helena Pipedream Dam watershed
..... Mundaring Weir watershed

MINERAL RESOURCES
..... quarry or pit, active
..... quarry or pit, inactive
..... clay
..... gravel
..... rock
..... sand

TOPOGRAPIHICAL INFORMATION
..... flood, classification as shown
..... Metropolitan Regional Scheme boundary
..... townsite boundary
..... local authority boundary
..... state forest boundary
..... national park boundary
..... pipeline
..... contour in metres

INDEX TO SHEETS WITHIN THIS SERIES



GEOMORPHOLOGICAL CLASSIFICATION

Fv	Narrow, shallow valley floors	DO	Surface of plateau and lateritic uplands
Fv	Broad, shallow valley floors	DO	Dendroclinal slopes and deep valley floors

FEATURES

.....	Prevalent ridge
.....	Sharp convex break of slope
.....	Sharp concave break of slope

SLOPES

.....	0°-3°
.....	3°-10°
.....	10°-20°
.....	20°-30°

LANDFORM

.....	ridge
.....	valley
.....	stream valley

ORIGIN

.....	Rival
.....	dendroclinal
e.g. DO	dendroclinal slope

The Australian Map Grid covers Australia and the Territories administered by Australia. Zones are 4° wide plus 10' overlap. A.M.G. zones are numbered from zone 47 with central meridian 108° to zone 50 with central meridian 110°. The origin of each zone is the intersection of the central meridian with the equator. On this map scale the sheet edge represent 1000 metre intervals on the superimposed A.M.G. Zone 50.

The geomorphological classification comprises a single capital letter which denotes the origin of the material and a lower case letter which represents the landform.

ORIGIN
..... Rival
..... dendroclinal
e.g. DO: dendroclinal slope

LANDFORM
..... ridge
..... valley
..... stream valley

Published by and available from Geological Survey of Western Australia, 65 Adelaide Terrace, Perth. Cartography by the Mapping Branch, Survey and Mapping Division, Department of Mines. Topographic base from consultation by the Department of Land Administration, Canberra with New York Planning Department, Metropolitan Region Survey Map 1981. Printed by the State Printing Division, Department of Services, Perth, 1981.

Biographic Reference : Southwell, A.J. 1981. Mundaring Part Sheets 2134 II & 2134 III. Perth Metropolitan Region, Environmental Geology Series, Geological Survey of Western Australia.

DR. DAVID PARKER, M.Sc., F.R.S. (Geology)
DIRECTOR GENERAL OF MINES
OF WESTERN AUSTRALIA

DR. PETER J. HAYES
DIRECTOR GENERAL OF SURVEY
OF WESTERN AUSTRALIA

