

DIH Disher Hill Land System

Moderately steep rocky low hills between Rockleigh and Disher Hill, east of Harrogate

Area: 68.3 km²

Annual rainfall: 390 – 670 mm average

Geology: The land is underlain by metamorphosed sandstones and mica schists of the Backstairs Passage Formation of the Kanmantoo Group. These rocks outcrop extensively. They are occasionally capped by relict deep weathering profiles and associated ironstone, or by Tertiary gravels. Medium to coarse textured alluvium derived from localized reworking occurs in minor valley flats.

Topography: The landscape is a gently inclined highland block, strongly dissected by generally south east to east flowing water courses. These have broken the terrain up into low hills with slopes of 10% - 50% (usually less than 30%), often with more or less flat topped crests (remnants of the surface of the pre-existing block). Rocky outcrop is extensive on both slopes and crests. There are only small areas where outcrop is sparse enough to allow cultivation. Minor valley flats and lower slopes where outwash sediments have accumulated are characterized by well defined water courses which are commonly eroded and saline in places.

Elevation: 110 m to 410 m

Relief: Up to 70 m

Soils: Most soils are shallow to moderately deep over basement rock. Some have red clayey subsoils, but the majority are coarse textured and stony directly overlying weathering rock. There is variable carbonate in the transition zone between soil and rock. Deep sandy soils, often with more clayey subsoils occur on creek flats.

Main soils

Shallow soils formed on basement rocks (metasandstones or greywackes)

L1 Moderately deep (**L1a**) to shallow (**L1b**) loamy fine sand

Moderately deep soils formed on basement rocks (metasandstones or greywackes)

D1 Sandy loam over red clay

C2 Gradational sandy loam

Minor soils

Moderately deep soils formed on basement rocks (metasandstones or greywackes)

D7 Loamy sand over dispersive sandy clay

K3 Sandy loam over brown clay

Soils formed on alluvial sediments

D3 Sandy loam over red sandy clay

M1 Deep alluvial sand

M4/D2 Gradational loamy sand

Main features: The Disher Hill Land System is characterized by moderately steep dissected slopes separated by flat topped crests. With few exceptions, the land is too rocky for cultivated agriculture, but is well suited to grazing, although opportunities for pasture improvement are limited by rocky outcrops. The soils are mostly shallow stony loamy sands to sandy loams. There are deeper soils with red clayey subsoils, and these are more common on small areas of arable slopes. Alluvial flats are minor overall. On



these, soils are deeper and often sandy. Saline seepages occur sporadically. Water course erosion is a problem in places on both creek flats and drainage depressions on hillslopes.

Soil Landscape Unit summary: 14 Soil Landscape Units (SLUs) mapped in the Disher Hill Land System:

SLU	% of area	Main features #
ALB ALC ALD ALI ALY	14.2 12.5 2.4 40.8 13.0	<p>Moderately steep to steep dissection slopes formed on metasandstones. Rock outcrop is extensive, often in strongly defined reefs.</p> <p>ALB Undulating rises to 40 m high with slopes of 3-10%.</p> <p>ALC Moderate slopes of 10-30%, up to 70 m high.</p> <p>ALD Steep hillslopes with relief to 70 m and slopes of 30-50%.</p> <p>ALI Moderate slopes of 10-30%, up to 70 m high with well defined and occasionally eroded water courses. There is minor saline seepage in drainage depressions.</p> <p>ALY Rounded crests with slopes generally of less than 5%. There are ironstone and Tertiary gravel deposits in places.</p> <p>Main soils: <u>moderately deep loamy fine sand</u> - L1a (E) and <u>shallow stony loamy sand</u> - L1b (C), with <u>sandy loam over red clay</u> - D1 (L) and <u>gradational sandy loam</u> - C2 (L). This land is well suited to rough grazing, but is too rocky, and often too steep for any other agricultural uses. Water course protection is a key soil management issue.</p>
DdC DdH	1.5 0.4	<p>Undulating slopes formed on schists and metasandstones. Minor (< 5%) rocky outcrop.</p> <p>DdC Undulating upper slopes of 3-10%.</p> <p>DdH Undulating slopes of 5-12% with eroded water courses.</p> <p>Main soils: <u>sandy loam over red clay</u> - D1 (E) and <u>sandy loam over brown clay</u> - K3 (E), with <u>moderately deep loamy fine sand</u> - L1a (L) and <u>shallow stony loamy sand</u> - L1b (M). These slopes are arable. Most soils are moderately deep with moderately high water holding capacity and moderate fertility. The main limitations are poor surface structure leading to excessive runoff and erosion of unprotected soil. Productive potential is moderately high.</p>
Djc	1.3	<p>Small catchment with slopes of 4-12%. Underlying rocks are schists with about 10% outcropping metasandstones. Water courses are eroded and 2-10% of the land is affected by saline seepage.</p> <p>Main soils: <u>loamy sand over dispersive sandy clay</u> - D7 (V) with <u>moderately deep loamy fine sand</u> - L1a (C) where rock is shallower. Soils poorly structured and prone to excessive runoff and associated erosion, poor workability and seedling emergence, and waterlogging. Mostly arable, but the land needs careful soil conservation management.</p>
ETC ETH ETI ETZ	0.5 0.8 5.2 3.9	<p>Semi arable slopes underlain by schists and metasandstones.</p> <p>ETC Gentle slopes of 5-8% with about 10% rock outcrop.</p> <p>ETH Gently inclined lower slopes of 5-10% with about 20% rock outcrop and eroded water courses.</p> <p>ETI Slopes of 6-20%, with about 20% rock outcrop and eroded water courses.</p> <p>ETZ Rounded crests with slopes of 2-8% and 20-50% rock outcrop.</p> <p>Main soils: <u>moderately deep loamy fine sand</u> - L1a (E) and <u>shallow stony loamy sand</u> - L1b (C) with <u>sandy loam over red clay</u> - D1 (L) and <u>sandy loam over brown clay</u> - K3 (L). This land is semi arable due to rocky outcrop and / or moderate slopes. Soils are mostly moderately shallow to shallow and stony, with restricted water holding capacity. Rocky reefs reduce areas which can be cropped and much of ETI is too rocky for cropping. Erosion potential on arable slopes is high.</p>
XBK XBN	0.7 2.8	<p>Lower slopes and creek flats formed on locally derived alluvium.</p> <p>XBK Lower slopes and creek flats with slopes of 4-10% and eroded water courses.</p> <p>XBN Creek flats with swampy areas and some saline seepage. Sections of creek eroded.</p> <p>Main soils: <u>deep alluvial sand</u> - M1 (V), <u>gradational loamy sand</u> - M4/D2 (L), and <u>sandy loam over red sandy clay</u> - D3 (L). These areas are small, but locally significant as they include much of the arable land in a System otherwise only suited to low input uses. The soils are deep and usually well drained, although there are wet areas, some with associated salinity. Water course stability is a management problem</p>

PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

- (D) Dominant in extent (>90% of SLU)
 (V) Very extensive in extent (60–90% of SLU)
 (E) Extensive in extent (30–60% of SLU)

- (C) Common in extent (20–30% of SLU)
 (L) Limited in extent (10–20% of SLU)
 (M) Minor in extent (<10% of SLU)



Detailed soil profile descriptions:

Moderately deep soils formed on basement rocks (metasandstones or greywackes)

- D1** Sandy loam over red clay (Calcic / Hypercalcic, Red Chromosol / Sodosol)
Medium thickness reddish brown loamy sand to loam, abruptly overlying a red well structured clay with abundant rock fragments, with variable soft carbonate from about 30 cm, grading to weathering rock at depths ranging from 50 cm to 100 cm.
- D7** Loamy sand over dispersive sandy clay (Calcic, Red Sodosol)
Medium thickness loamy sand to sandy loam sharply overlying a reddish dispersive sandy clay loam to sandy clay, calcareous from about 40 cm, grading to sandy basement rock at about 70 cm.
- K3** Sandy loam over brown clay (Eutrophic, Brown Chromosol)
Medium thickness stony sandy loam, overlying a red or brown well structured clay grading to weathering non-calcified sandy schist or metasandstone.
- C2** Gradational sandy loam (Hypercalcic, Red Kandosol)
Medium thickness red brown sandy loam grading to a reddish weakly structured sandy clay loam overlying massive soft to semi-hard carbonate grading to metasandstone or schist within 100 cm.

Shallow soils formed on basement rocks (metasandstones or greywackes)

- L1a** Moderately deep loamy fine sand (Paralithic, Leptic Tenosol)
Very thick reddish brown to greyish brown loamy fine sand with variable rock fragments, overlying weathering rock by 100 cm.
- L1b** Shallow stony loamy sand (Lithic, Leptic Rudosol)
Medium thickness reddish brown massive loamy sand to sandy loam with abundant rock fragments, overlying hard rock.

Soils formed on alluvial sediments

- D3** Sandy loam over red sandy clay (Eutrophic / Calcic, Red / Brown Sodosol)
Medium thickness reddish brown loamy sand to sandy loam, overlying a massive red or brown sandy clay loam to sandy clay, grading to clayey sand to sandy clay alluvium.
- M1** Deep alluvial sand (Arenic, Red-Orthic Tenosol)
Very deep gravelly loamy sand with a clayey sand subsoil, formed on gritty red or brown alluvial sand.
- M4/D2** Gradational loamy sand (Mesotrophic, Red / Brown Kandosol / Chromosol)
Medium to thick loamy sand to sandy loam grading to a weakly structured red or brown sandy clay loam, becoming more clayey from about 65 cm and grading to alluvial clayey sand to sandy clay from about 100 cm.

Further information: [DEWNR Soil and Land Program](#)

