

# TOH Tower Hill Land System

Western escarpment of the Clare Hills

**Area:** 46.1 km<sup>2</sup>

**Annual rainfall:** 450 – 600 mm average

**Geology:** Siltstones of the Stradbroke Formation underlie the full length of the western side of the land system. South of Spring Gully, the eastern part of the system is formed on fine sandstones of the Rhynie Formation. The rocks along the western edge are mantled by soft carbonates, but as rainfall increases in an easterly direction, carbonate content decreases. There is very little alluvium in the land system, as most valleys are too steep and narrow for substantial accumulation of outwash sediments.

**Topography:** Moderately steep to steep strongly dissected escarpment slopes bounding the western side of the Clare Hills. Slopes are variable, from 10% to 75% depending on the degree of dissection. There is a water course every 200 to 400 m cutting through the escarpment and flowing westwards on to the Blyth plains. Most of these water courses are eroded.

**Elevation:** Maximum elevation is 567 m (south of Spring Gully Conservation Park). The elevation of the foot of the escarpment varies from 300 to 350 m.

**Relief:** Maximum relief is 120 m

**Soils:** Soils are predominantly shallow to moderately deep over hard or weathering rock within 100 cm of the surface. Variations depend on the degree of rock weathering and presence of carbonate.

**Main soils:**

- L1** Shallow stony loam
- D1** Hard loam over red clay
- C2** Gradational red loam

**Minor soils:**

- A2** Calcareous loam
- F2** Hard sandy loam over dispersive brown clay

**Main features:** With the exception of some minor semi arable slopes in the north, the land system is too steep, stony and exposed for any agricultural uses other than grazing. The slopes are very strongly dissected by frequent water courses. The combination of steep slopes and highly erodible soils in the headwaters of these water courses has led to severe erosion, not just on the escarpment, but on the outwash plains to the west. Control of runoff and protection of the fragile water courses are key management issues.



**Soil Landscape Unit summary:** 4 Soil Landscape Units (SLUs) mapped in the Tower Hill Land System

SLU	% of area	Main features #
AAI AAJ	22.8 46.2	<p>Moderately steep to steep strongly dissected slopes formed over fine grained rocks of the Stradbroke Formation.</p> <p><b>AAI</b> Moderately steep slopes of 15-30% and relief to 50 m. There is up to 20% surface stone but outcrop is minor. Water courses are commonly eroded.</p> <p><b>AAJ</b> Steep slopes of 25-50% and relief to 120 m. There is up to 10% rock outcrop and 20-50% surface stone. Water courses are commonly eroded, severely in places.</p> <p>Main soils: <u>shallow stony loam</u> - <b>L1</b> (E) and <u>hard loam over red clay</u> - <b>D1</b> (C), with <u>gradational red loam</u> - <b>C2</b> (L) and <u>calcareous loam</u> - <b>A2</b> (M). This land is too steep, stony and exposed for agricultural uses other than grazing. Erosion control is a key management issue. Runoff is high, and water courses are mostly unprotected.</p>
AOJ	21.5	<p>Steep rocky slopes of 10-75%; relief to 100 m formed on fine sandstones of the Rhynie Formation. Up to 10% rock outcrop and up to 20% surface stone. Watercourse erosion widespread and severe in places. Main soils: <u>hard loam over red clay</u> - <b>D1</b> (E), <u>shallow stony loam</u> - <b>L1</b> (E) and <u>hard sandy loam over dispersive brown clay</u> - <b>F2</b> (C). This land is too steep, stony and exposed for agricultural uses other than grazing. It has been severely degraded in the past - a result of steep slopes, highly erodible soils and grazing management practices. Erosion control is the main management concern. Shallow stony soils on steeper slopes generate large volumes of runoff which must be controlled to protect the lower slope soils.</p>
ESI	9.5	<p>Moderately steep slopes of 10-20% with relief to 60 m formed on mainly fine grained rocks of the Stradbroke Formation. There is sporadic rock outcrop and up to 20% surface stone. Watercourses are commonly eroded.</p> <p>Main soils: <u>calcareous loam</u> - <b>A2</b> (E) and <u>shallow stony loam</u> - <b>L1</b> (E), with <u>hard loam over red clay</u> - <b>D1</b> (L) and <u>gradational red loam</u> - <b>C2</b> (L). Moderately erodible slopes, rocky areas and erosion gullies limit cropping of these areas. The arable land is generally confined to the gentler slopes. Water erosion is a potential problem because of the high runoff from the generally shallow soils.</p>

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

- |  |                                       |
|--|---------------------------------------|
| (D) Dominant in extent (>90% of SLU)         | (C) Common in extent (20–30% of SLU)  |
| (V) Very extensive in extent (60–90% of SLU) | (L) Limited in extent (10–20% of SLU) |
| (E) Extensive in extent (30–60% of SLU)      | (M) Minor in extent (<10% of SLU)     |

**Detailed soil profile descriptions:**

- A2** Calcareous loam (Paralithic, Hypercalcic Calcarosol)  
Medium thickness calcareous loam grading to very highly calcareous grey silty loam over weathering rock within 50 cm.
- C2** Gradational red loam (Hypercalcic, Red Dermosol)  
Medium thickness clay loam grading to a well structured red clay with abundant fine carbonate at about 50 cm over weathering rock within 100 cm.
- D1** Hard loam over red clay (Calcic, Red Chromosol)  
Medium thickness hard fine sandy loam abruptly overlying a well structured red clay with fine carbonate accumulations at depth, grading to weathering rock within 100 cm.
- F2** Hard sandy loam over dispersive brown clay (Hypocalcic, Brown Sodosol)  
Medium to thick brown sandy loam sharply overlying a brown, red and yellow mottled coarsely structured dispersive clay grading to highly weathered rock or local slope wash deposits.
- L1** Shallow stony loam (Paralithic / Lithic, Leptic Tenosol / Rudosol)  
Medium thickness stony fine sandy loam to clay loam overlying hard rock (Lithic) or softer weathering rock (Paralithic) at depths ranging from 10 to 60 cm. There is minor fine carbonate in rock fissures in some soils.

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

