

# BUH Buttamuck Hill Land System

**Area:** 149.1 km<sup>2</sup>

**Landscape:** Range of steep to rolling hills trending north-south near Dawson, north-east of Peterborough. Buttamuck Hill is a prominent hill in the northern part. Elevations of the peaks are around 230-255 and relief is about 120 -130m.

**Annual rainfall:** 235 – 360 mm average

**Geology:** Adelaide Geosyncline metasedimentary rocks; mostly Neoproterozoic Ulupa Siltstone Formation shales and siltstones. Pepuarta Tillite Formation siltstones also occur along the northern margin of the land system. Holocene alluvium occurs along lower slopes.

**Main soils:**

- L1** (29%) Shallow soil on rock (Rocky Rudosol-Tenosol)
- RR** (23%) Bare rock
- D4** (16%) Loam over pedaric red clay (Pedaric Red Sodosol-Dermosol)
- A2** (10%) Calcareous loam on rock (Paralithic Calcarosol)

**Minor soils:**

- A5** (7%) Rubbly calcareous loam on clay (Supracalcic-Lithocalcic Calcarosol on clay)
- A3** (4%) Deep moderately calcareous loam (Calcic Calcarosol)
- D1** (4%) Loam over clay on rock (Shallow Calcic-Hypercalcic Red Chromosol)

**Summary:** The Buttamuck Hill Land System is a linear range with mostly shallow, fine-grained soils on siltstones and tillites. The deeper soils are red texture-contrast soils or gradational calcareous soils. The land is mostly too steep or rocky for cultivation.

## Soil Landscape Unit summary: Buttamuck Hill Land System (BUH)

SLU	% of area	Component	Main soils	Prop#	Notes
AAA	4.0	Undulating rises	L1RRA2	D	Dissected, rocky, undulating rises to steep low hills on limestone and calc-siltstone with very shallow loamy soils. <b>AAA</b> Undulating rises with shallow rocky soils or bare rock outcrop. Relief is less than 30m, slopes are 3-10%.
AAB	1.1	Rolling rises	L1RRA2	D	
AAC	5.3	Rolling low hills	L1RRA2	D	
AAD	2.0	Steep low hills	L1RRA2	D	<b>AAB</b> Rolling rises. Relief is less than 30m, slopes are 10-30%. <b>AAC</b> Rolling low hills. Relief is 30-90m, slopes are 3-10%. <b>AAD</b> Steep low hills. Relief is 30-90m, slopes are 30-50%. Main soils: <u>Shallow stony soils on rock - L1</u> , <u>Rock outcrop - RR</u> and <u>Calcareous loam on rock - A2</u> .
ABC	2.5	Rolling low hills	L1RR	D	Hills and rises with linear rocky quartzite outcrops and shallow rocky soils on interbedded fine-grained rocks. <b>ABC</b> Rolling low hills with shallow, often calcareous, soils on quartzite, or bare rock. Relief is 30-90m, slopes are 3-10%. <b>ABh</b> Rolling rises as above. Eroded watercourses and scalding. Relief is less than 30m, slopes are 10-30%. Main soils: <u>Shallow stony soils on rock - L1</u> , <u>Rock outcrop - RR</u> and <u>Calcareous loam on rock - A2</u> .
ABh	3.5	Rolling rises	L1RRA2	D	
AEA	0.6	Gently undulating rises	L1RR	D	Non-arable rocky rises and low hills formed on mostly fine-grained rocks. Soils are very shallow and more than 20% are petrocalcic (contain a calcrete layer). <b>AEA</b> Gently sloping rises with mostly very shallow loam on fine grained rock or bare rock, not or slightly calcareous.
AEB	3.4	Rolling rises	L1RR	D	
AEC	10.3	Rolling low	L1RR	D	



		hills			Slopes are 1-3%, relief is less than 30m.
AED	11.6	Steep rises	L1RR	D	<b>AEB</b> Rolling rises. Relief is 9-30m, slopes are 10-30%.
AEE	8.6	Steep hills	L1RR	D	<b>AEC</b> Rolling low hills. Relief is 30-90m, slopes are 3-10%.
AEJ	0.2	Steep rises	L1RR	D	<b>AED</b> Steep rises with very shallow soils. Relief is 9-30m, slopes are 30-50%. <b>AEE</b> Steep hills. Relief is 90-300m, slopes are 30-50%. <b>AEJ</b> Steep rises. Eroded watercourses. Relief is 9-30m, slopes are 30-50%. Main soils: <u>Shallow stony soils on rock</u> - <b>L1</b> . <u>Rock outcrop</u> - <b>RR</b> is common.
AYB	0.5	Rolling rises	A2L1RR	D	Rises and low hills with shallow calcareous loam on calcareous siltstone or other fine grained rocks; or bare rock. <b>AYB</b> Rolling rises with shallow calcareous loam on calcareous siltstone or other fine grained rocks; or bare rock. Relief is 9-30m, slopes are 10-30%. <b>AYC</b> Rolling low hills. Relief is 30-90m, slopes are 3-10%. <b>AYD</b> Very steep low hills. Relief is 30-90m; slopes are 50-100%. <b>AYM</b> Undulating rises. Scalded. Relief is less than 30m, slopes are 3-10%. Main soils: <u>Calcareous loam on rock</u> - <b>A2</b> and <u>Shallow stony soils on rock</u> - <b>L1</b> and <u>Bare rock</u> - <b>RR</b> .
AYC	1.9	Rolling low hills	A2L1RR	D	
AYD	0.4	Very steep low hills	A2L1RR	D	
AYM	0.5	Undulating rises	A2L1RR	D	
DSG	0.2	Shallow pediment	D1C2 D7	V	Pediments and rises complex with shallow, clay-loamy surfaced, duplex soils over rock with more than 20% outcropping rock. <b>DSG</b> Gently undulating pediment with texture contrast or gradational shallow sandy loam over red clay on rock or deep texture contrast sandy loam over poorly structured red clay. 20-30% bare rock. Moderately gullied. Slopes are 1-3%, relief is less than 9m.
		Rock outcrop	L1RR	C	
DSH	1.6	Shallow pediment	D1C2 D7	V	<b>DSH</b> Undulating pediment and rocky outcrop as above. Moderately gullied. Relief is less than 9m, slopes are 3-10%. <b>DSI</b> Rolling pediment and rocky outcrop as above. Moderately gullied. Relief is less than 9m, slopes are 10-30%.
		Rock outcrop	L1RR	C	
DSI	0.4	Shallow pediment	D1C2 D7	V	<b>DSm</b> Undulating pediment and rocky outcrop as above. Moderately gullied and scalded. Slopes: 3-10%, relief: less than 9m. Main soils: <u>Clay loam over pedaric red clay on rock</u> - <b>D1</b> , <u>Gradational red-brown clay loam over rock</u> - <b>C2</b> , <u>Loam over poorly structured clay on rock</u> - <b>D7</b> and <u>Shallow stony soils on rock</u> - <b>L1</b> .
		Rock outcrop	L1RR	C	
DSm	2.5	Shallow pediment	D1C2 D7	V	Undulating rises with very shallow sandy loam on fine grained calcareous rocks; 10-30% shallow calcareous loam on calc-siltstones or on calcrete. Moderately gullied. Main soils: <u>Shallow stony soils on rock</u> - <b>L1</b> .
		Rock outcrop	L1RR	C	
EFH	1.3	Undulating rises	L1	D	Rises with gradational calcareous sandy loam over clay loam on weathered rock; or deep gradational calcareous loam over rubbly clay loam.
EOV	1.8	Gently undulating rises	A2A6	D	<b>EOV</b> Gently undulating rises. Moderately scalded. Slopes are 1-3%, relief is less than 30m.
EOW	0.6	Undulating rises	A2A6	D	<b>EOW</b> Undulating rises. Moderately scalded. Relief is less than 30m, slopes are 3-10%. Main soils: <u>Calcareous loam on rock</u> - <b>A2</b> and <u>Gradational calcareous clay loam</u> - <b>A6</b> .
EVV	1.8	Gently undulating rises	A2	V	Gently undulating rises with rock outcrops and shallow calcareous soils formed on fine-grained calcareous rocks, including gradational calcareous sandy loam over clay loam on weathered rock; 10-30% shallow calcareous
		Rocky	RR	C	



		outcrops			sandy loam on rock, or bare rock. 20-30% bare rock. Moderately scalded. Slopes: 1-3%, relief is less than 30m. Main soils: <u>Calcareous loam on rock</u> - <b>A2</b> ; <u>Bare rock</u> - <b>RR</b> .
IUW	0.4	Undulating rises	A5A3 A4	D	Undulating rises with gradational calcareous loam over, often rubbly clay; 10-30% texture contrast loam over crumbly red clay. The soils are underlain by deeply weathered, kaolinised fine-grained rock. Moderately scalded. Relief is less than 30m, slopes are 3-10%. Main soils: <u>Rubbly calcareous loam on clay</u> - <b>A5</b> , <u>Deep moderately calcareous sandy loam</u> - <b>A3</b> and <u>Deep (rubbly) calcareous sandy loam</u> - <b>A4</b> .
JFB	0.7	Gently undulating pediments	D2D4C1	D	Gently sloping pediments with texture contrast or gradational, loam over, often crumbly, red clay. Slopes are 1-3%, relief is less than 9m. Main soils: <u>Clay loam over red clay</u> - <b>D2</b> , <u>Clay loam over pedaric red clay</u> - <b>D4</b> and <u>Gradational sandy loam</u> - <b>C1</b> .
JLB	5.2	Gently undulating pediments	D4	D	Plains and pediments with more than 20% pedaric, texture contrast (loam over crumbly red clay) soils, but less than 20% calcareous gradational soils.
JLH	0.7	Undulating pediments	D4	D	<b>JLB</b> Gently sloping pediments with loam over crumbly red clay; 10-30% deep moderately calcareous loam over clay. Slopes are 1-3%, relief is less than 9m.
JLW	2.8	Undulating pediments	D4	D	<b>JLH</b> Undulating pediments. Moderately gullied. Slopes are 3-10%, relief is less than 9m.
JLI	1.1	Gently undulating pediments	D4	D	<b>JLW</b> Undulating pediments. Moderately scalded. Slopes are 3-10%, relief is less than 9m.
JLII	0.8	Gently undulating pediments	D4	D	<b>JLI</b> Gently sloping pediments. Moderately scalded and gullied. Slopes are 1-3%, relief is less than 9m.
JLm	0.4	Undulating pediments	D4	D	<b>JLII</b> Gently sloping pediments. Moderately scalded and severely gullied. Moderately saline subsoils. Slopes are 1-3%, relief is less than 9m.
JLmm	0.3	Undulating pediments	D4	D	<b>JLm</b> Undulating pediments. Moderately gullied and scalded. Slopes are 3-10%, relief is less than 9m.
JLoo	4.0	Creek flat	D4D1	D	<b>JLmm</b> Undulating pediments. Severely gullied and moderately scalded. Slopes: 3-10%, relief is less than 9m.
JPH	0.4	Undulating pediments	D4A5	D	<b>JLoo</b> Creek flat. Severely gullied and moderately scalded. Main soils: <u>Clay loam over pedaric red clay</u> - <b>D4</b> and <u>Loam over pedaric red clay on rock</u> - <b>D1</b> , with minor occurrences of <u>Deep moderately calcareous loam</u> - <b>A3</b> .
JPV	5.7	Gently sloping plain	D4A5	D	Pediments and plains with texture contrast soils formed on outwash sediments derived from basement rocks. Calcareous in some part of the profile. More than 20% of soils are pedaric (fine crumbly structure in subsoils).
JYG	4.9	Gently undulating pediment	A5D4	V	<b>JPH</b> Gently sloping plains clay loam over crumbly red clay, or deep calcareous rubbly clay loam over clay. Moderately gullied. Slopes are 1-3%, relief is less than 9m.
		Rocky outcrops	RRA2	C	<b>JPV</b> Gently sloping plains as above. Moderately scalded. Slopes are 1-3%, relief is less than 9m. Main soils: <u>Loam over pedaric red clay</u> - <b>D4</b> and <u>Rubbly calcareous loam on clay</u> - <b>A5</b> .
JZC	0.4	Undulating	D4A5	V	<b>JYG</b> Gently sloping pediments with deep rubbly calcareous clay loam on clay or clay loam over crumbly red clay. 20-30% rock outcrops or shallow calcareous loam over calc-siltstone. Moderately gullied (10-20%). Slopes are 1-3%, relief is less than 9m. Main soils: <b>Pediments:</b> <u>Rubbly calcareous loam on clay</u> - <b>A5</b> and <u>Loam over pedaric red clay</u> - <b>D4</b> . <b>Rock outcrop:</b> <b>RR</b> and <u>Calcareous loam on rock</u> - <b>A2</b> .



		pediment			contrast soils on pediments and 20-30% rocky rises with shallow texture contrast soils. <b>JZC</b> Undulating pediments with clay loam over crumbly red clay, or rubbly calcareous loam on clay. 20-30% rocky outcrops. Slopes are 3-10%, relief is less than 9m on pediments and 9-30m on rises. <b>JZH</b> Undulating pediments and rocky outcrops as above. Moderately gullied. Slopes are 3-10%, relief is less than 9m on pediments and 9-30m on rises. <b>JZm</b> Undulating pediments and rocky outcrops as above. Scalding affects nearly 50% and gullyng affects more than 20% of pediments. Rises have less than 5% scalding and around 15% gullyng. Slopes are 3-10%, relief is less than 9m on pediments and 9-30m on rises. Main soils: <u>Loam over pedaric red clay - D4</u> and <u>Rubbly calcareous loam on clay - A5</u> . <b>Rocky rises:</b> <u>Bare rock - RR</u> .
		Rocky outcrops	RR	C	
JZH	1.0	Undulating pediment	D4A5	V	
		Rocky outcrops	RR	C	
JZm	0.2	Undulating pediment	D4A5	V	
		Rocky outcrops	RR	C	
KLB	2.5	Gently undulating pediment	A5	D	Pediments with clay loamy calcareous soils. <b>KLB</b> Gently sloping pediments with deep rubbly calcareous loam over clay. 10-30% shallow calcareous loam over rock or calcrete. Slopes are 1-3%, relief is less than 9m. <b>KLC</b> Undulating pediments as above. Slopes are 3-10%, relief is less than 9m. Main soils: <u>Rubbly calcareous clay loam on clay - A5</u> . Minor soils include: <u>Calcareous clay loam on rock - A2</u> , <u>Gradational red-brown clay loam over rock-C2</u> and <u>Shallow calcareous loam on calcrete - B2</u> .
KLC	0.2	Undulating pediment	A5	D	
KQh	0.4	Undulating pediment	A5	V	Undulating pediments pediments with shallow basement-rises in complex and with mostly gradational deep rubbly calcareous loam over clay. 10-30% clay loam over crumbly red clay. 20-30% rises with shallow calcareous loam over rock or bare rock. Moderately scalded and saline. Slopes are 3-10%, relief is less than 9m. Main soils: <u>Rubbly calcareous loam on clay - A5</u> on pediments and <u>Calcareous loam on rock - A2</u> on rises.
		Shallow rises	A2	C	
KVC	0.4	Undulating pediments	A6	D	Undulating pediments with gradational calcareous clay loam. 10-30% rubbly calcareous clay loam over clay or deep moderately calcareous clay loam. Slopes are 3-10%, relief is less than 9m. Main soils: <u>Gradational calcareous clay loam - A6</u> . Minor soils include: <u>Rubbly calcareous loam on clay - A5</u> and <u>Deep moderately calcareous clay loam - A3</u> .
KcB	0.4	Gently undulating pediment	A5D4 C1	D	Pediments with mostly gradational calcareous soils, but with more than 20% <u>non</u> -calcareous gradational soils (Kandosols).
KcC	0.2	Undulating pediment	A5D4 C1	D	<b>KcB</b> Gently sloping pediments with deep rubbly calcareous clay loam on clay, or texture contrast, loam over crumbly red clay or gradational sandy loam over massive red sandy clay. Slopes: 1-3%, relief is less than 9m. <b>KcC</b> Undulating pediments. Slopes: 3-10%, relief: < 9m. Main soils: <u>Rubbly calcareous loam on clay - A5</u> , <u>Loam over pedaric red clay - D4</u> and <u>Gradational sandy loam - C1</u> .

# PROPORTION codes assigned to Soil Landscape Unit (SLU) components:

- |   |  |   |                                   |
|---|--|---|-----------------------------------|
| 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/L1** Shallow calcareous loam (Paralithic, Hypercalcic / Lithocalcic Calcarosol) (A2) OR Shallow stony loam (Calcareous, Paralithic, Leptic Tenosol) (L1)
- A3** Deep moderately calcareous (sandy) loam (Calcic Calcarosol)  
Calcareous (sandy) loam topsoil grading into loamy-clay loamy subsoil without a significant CO<sub>3</sub> buildup in the subsoil (<20% CO<sub>3</sub> in subsoil). Pediment type Calcarosols.
- A4** Deep (rubbly) calcareous loam (Hypercalcic-Lithocalcic Calcarosol)  
Calcareous sandy-clay loamy topsoil grading into loamy-clay loamy subsoil with a significant CO<sub>3</sub> buildup in the subsoil. Often rubbly. Soil usually >120 cm in depth.
- A5** Rubbly calcareous loamy sand on clay (Supracalcic-Lithocalcic Calcarosol on clay)  
Calcareous loamy sand topsoil grading into loamy-clay loamy subsoil on a clayey substrate. Usually rubbly. Clayey substrate occurs at >60cm and <120cm.
- A6** Gradational calcareous clay loam (Pedal Hypercalcic-Lithocalcic Calcarosol on clayey subsoil)  
Calcareous loams to clay loams grading into brown-red clay. Often rubbly.
- C1** Gradational sandy loam (Calcic-Hypercalcic Kandosol-Calcarosol)  
Friable sandy to loamy topsoil grading into massive red-brown alkaline loamy to clay loamy subsoil.
- C2** Gradational loam on rock (Calcic / Hypercalcic Red Dermosol)  
Loam to clay loam grading to a friable red clay with soft Class I carbonate within 50 cm, grading to weathering rock within 100 cm.
- D1** Loam over red clay on rock (Hypercalcic / Calcic, Red Chromosol / Sodosol)  
Medium thickness hard gravelly loam over red clay, friable and finely structured, calcareous with depth, grading to weathering basement rock within 100 cm.
- D2** Hard loam over red clay (Calcic / Hypercalcic, Red Chromosol)  
Hard setting sandy loam to clay loam (with variable quartzite stones) abruptly overlying a well structured red clay with soft Class I carbonate at depth.
- D4** Loam over red friable clay (Calcic, Pedaric, Red Sodosol)  
Thin to medium thickness fine sandy loam to loam over a finely structured friable red clay, calcareous from about 50 cm, grading to fine or medium grained alluvium.
- D7** Loam over red clay on rock (Hypercalcic / Calcic, Red Chromosol / Sodosol)  
Medium thickness hard gravelly loam over a red clay, friable and finely structured (D1), to hard, coarsely structured and dispersive (D7), calcareous with depth, grading to weathering basement rock within 100 cm.
- L1** Shallow stony loam (Paralithic, Leptic Tenosol)  
Shallow stony loam, often calcareous throughout or with depth, overlying weathering rock shallower than 50 cm.
- RR** Bare rock

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

