Tasmania Department of Mines — Unpublished Report 1985/68

Ambrose and Bain subdivision, Jillian Street, Kings Meadows

by W. R. Moore

Four test pits were dug at the site of a proposed subdivision at Jillian Street, Kings Meadows (512500 mE, 5408800 mN). Five samples from the pits were collected and tested in the Department of Mines soil laboratory. Two slow shear box tests of clay from the dolerite area and Tertiary clay area (Trench 4 and Trench 2) were also undertaken.

Both the Tertiary and dolerite area clays are highly plastic and have high linear shrinkage. The Tertiary clay (Trench 2) has an angle of friction of 23° and an effective cohesion of 2.5 kPa, which is very low. These figures indicate, as does the surface geology, that building is not recommended on the steeper sections of the blocks between trenches 1 and 2. Even immediately below the road the surface clays are highly plastic and house foundations should go below this layer, with the clay being preferably removed if slab designs are to be used.

This also applies to the dolerite areas above the road. Differential soil movement as a result of the presence of clay within the dolerite will give problems if the clay is left on site, or if the potential movements are not allowed for in the house foundation design.

Table 1

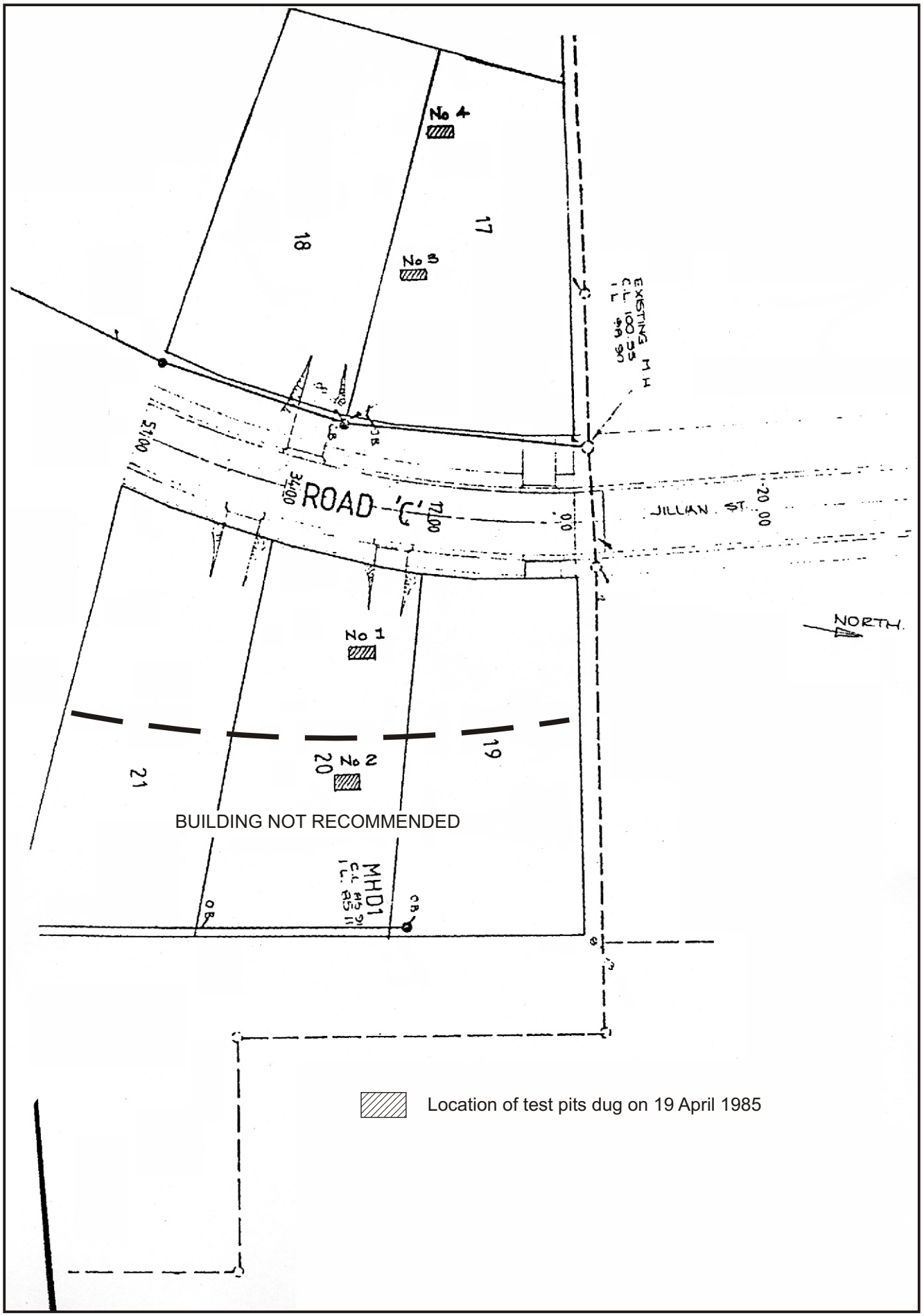
Soil laboratory results

Sample	*MC (%)*	*LL*	*PL*	*LS (%)*	*'*	*C'*	*XRD (<2 m)*		*XRD (total)*	
							Mont.	*Kaol.*	*Lepid.*	*Quartz*
Tl S1	2.5	129	29	28			45–50	50–55	–	15–20
T2 Sl	7	93								15–20
T2 S2	23	94	24	19	23	2.5	40–45	55–60	–	15–20
T3	l6	50								20–25
T4	28	113	31	32	12	5.8	65–70	20–25	5–10	5–10

MC — moisture content LL — liquid limit PL — plastic limit LS — linear shrinkage
' — angle of internal friction C' — cohesion
Mont. — montmorillonite Kaol. — kaolinite Lepid. — lepidocrocite

Analyses by R. N. Woolley, Department of Mines, Hobart

[28 May 1985]


No 4
No 3
No 1
No 2
18
17
21
20
19
EXISTING MH
ROAD 'C'
JILLIAN ST.
NORTH
BUILDING NOT RECOMMENDED
MHD1
Location of test pits dug on 19 April 1985

TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG — EXCAVATION

Borehole no. 1

sheet 1 of 1

project Mt Pleasant Heights Subdivision
Ambrose and Bain

location Jillian Street, Kings Meadows, Launceston

co-ordinates 512700 mE, 5408000 mN

R.L. 100

excavation dimensions 1.5 x 1.0 x 1.8 m deep

exposure type Trench

equipment Backhoe

operator

pit commenced 19.4.1985

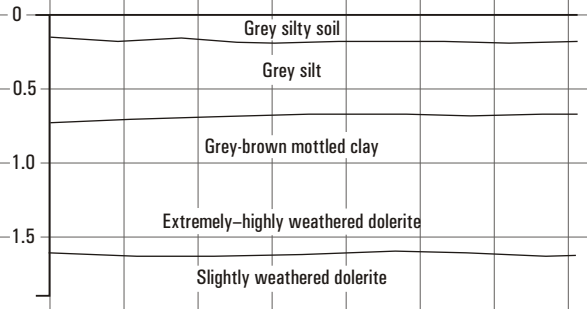
pit completed 19.4.1985

logged by WRM

checked by RCD

penetration 1 2 3	support	water	notes samples, tests	metres R.L. / depth	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency density index	hand penetrometer kPa 25 50 100 200 400	structure, geology
						OL	*Silt:* grey-brown, organic, low plasticity	D	Fb		Soil
				0.5		ML	*Silt with boulders:* Silt, grey, low plasticity. Dolerite boulders, weathered and unweathered	D	H		Cemented sub-soil
	None	None	S1	1.0		CH	*Clay:* Grey-brown mottled, high plasticity with roots. Changes gradually to extremely weathered dolerite to highly weathered dolerite — kernels to 300 mm of slightly weathered grey dolerite	M	D		Clay ↓ E – highly weathered dolerite, some concentric weathering
				1.5		Jdl					
							Backhoe stopped, too hard				Slightly weathered dolerite

Sketch



TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG — EXCAVATION

Borehole no. 2

sheet 1 of 1

project Mt Pleasant Heights Subdivision
Ambrose and Bain

location Jillian Street, Kings Meadows, Launceston

co-ordinates 512750 mE, 5408000 mN

R.L. 90

excavation dimensions 1.5 x 1.9 x 2.0 m deep

exposure type Trench

equipment Backhoe

operator

pit commenced 19.4.1985

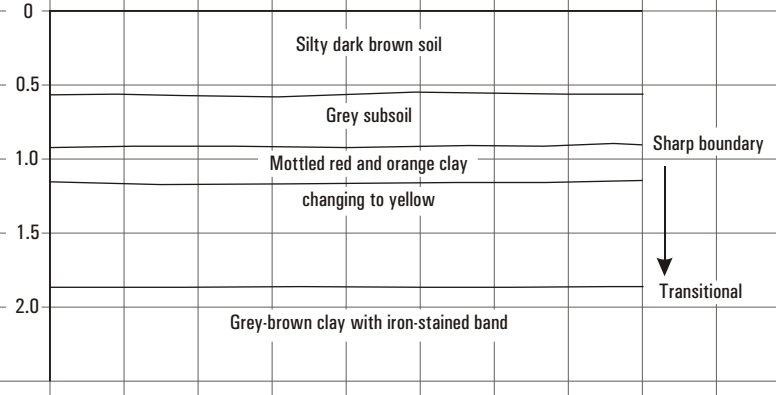
pit completed 19.4.1985

logged by WRM

checked by RCD

penetration 1 2 3	support	water	notes samples, tests	metres R.L. / depth	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency density index	hand penetrometer kPa 25 50 100 200 400	structure, geology
	None	None		0.5		OL	*Silt:* Dark brown with some organics, low plasticity	D	Fb		Soil
						ML	*Silt:* Grey, low plasticity, trace organics	D	F		Sub-soil
			S1	1.0		CH	*Clay:* Mottled red-orange, highly plastic	D ↓ M	H		Clay
				1.5		CH	*Clay:* Yellow-red, highly plastic		H		Clay (tertiary age)
			S2			CH	*Clay:* Grey-brown, highly plastic. Ironstone nodules and band	D	H		Clay
				2.0			Backhoe stopped				

Sketch



TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG — EXCAVATION

Borehole no. 3

sheet 1 of 1

project Mt Pleasant Heights Subdivision
Ambrose and Bain

location Jillian Street, Kings Meadows, Launceston

co-ordinates 512600 mE, 5408800 mN

R.L. 110

excavation dimensions 1.5 x 1.0 x 2.3 m deep

exposure type Trench

equipment Backhoe

operator

pit commenced 19.4.1985

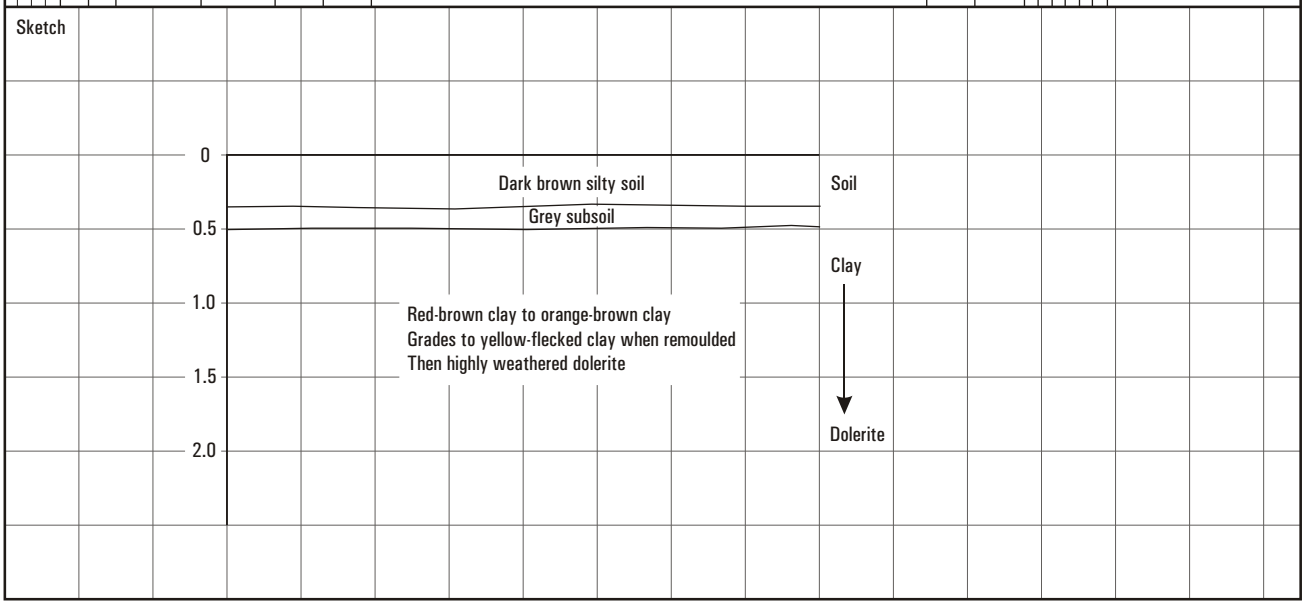
pit completed 19.4.1985

logged by WRM

checked by RCD

penetration 1 2 3	support	water	notes samples, tests	metres R.L.	metres depth	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency density index	hand penetrometer kPa 25 50 100 200 400	structure, geology
	None	None					OL	*Silt:* with dolerite boulders Silt — dark brown, organic, low plasticity Boulders — 100–1500 mm	D	Fb		Soil
							CL	Silt with boulders: silt dark grey	D	Fb		Sub-soil
			S1		0.5		CH	*Clay:* Red-brown, high plasticity	M	H		Clay
							CH	*Clay:* Orange-brown, high plasticity. Grades down into ironstone banded clay with ghost igneous texture	D	H		Transitional layer
					1.0		CH	*Clay:* Extremely then highly weathered dolerite. Yellow flecked soft rock, mostly too difficult to remould to a clay. Centres or kernels of harder rock but no slightly weathered grey-stained dolerite seen.	D	H		Highly weathered dolerite
					1.5		Jdl					
					2.0		Jdl					
								Backhoe stopped, too difficult to dig				

Sketch



TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG — EXCAVATION

Borehole no. 4

sheet 1 of 2

project Mt Pleasant Heights Subdivision
Ambrose and Bain

location Jillian Street, Kings Meadows, Launceston

co-ordinates 512500 mE, 5408000 mN

R.L. 120

excavation dimensions 1.5 x 1.0 x 2.0 m deep

exposure type Trench (east wall)

equipment Backhoe

operator

pit commenced 19.4.1985

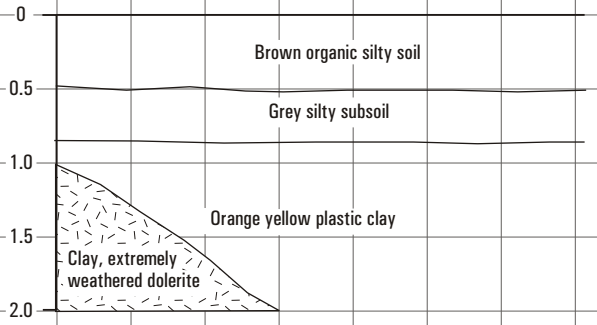
pit completed 19.4.1985

logged by WRM

checked by RCD

penetration 1 2 3	support	water	notes samples, tests	metres R.L. / depth	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency density index	hand penetrometer kPa (25 50 100 200 400)	structure, geology
						OL	*Silt:* Brown, organic with roots and dolerite boulders, low plasticity	D	Fb		Soil
				0.5		ML	*Silt with boulders:* Silt, light grey, low plasticity, inorganic. Dolerite boulders, 100–200 mm	D	St		Sub-soil
	None	None	S1	1.0		CH	*Clay:* Orange-yellow, high plasticity	M	H		
				1.5		CH	*Clay:* Orange and brown flecked, high plasticity. Extremely weathered dolerite, igneous texture	D	H		Extremely weathered dolerite
				2.0		Jdl	Dolerite: Highly weathered	D	H		
						Jdl					

Sketch



TASMANIA DEPARTMENT OF MINES

ENGINEERING LOG — EXCAVATION

Borehole no. 4

sheet 2 of 2

project: Mt Pleasant Heights Subdivision, Ambrose and Bain

location: Jillian Street, Kings Meadows, Launceston

co-ordinates: 512500 mE, 5408000 mN

R.L.: 120

excavation dimensions: 1.5 x 1.0 x 2.0 m deep

exposure type: Trench (N–S wall)

equipment: Backhoe

operator:

pit commenced: 19.4.1985

pit completed: 19.4.1985

logged by: WRM

checked by: RCD

penetration 1 2 3	support	water	notes samples, tests	metres R.L. / depth	graphic log	classification symbol	material: soil type: plasticity or particle characteristics, colour, secondary and minor components	moisture condition	consistency density index	hand penetrometer kPa (25 50 100 200 400)	structure, geology
	None	None				OL	*Silt:* Brown, organic with roots and dolerite boulders, low plasticity	D	Fb		Soil
						ML	*Silt:* Silt, light grey, low plasticity	D	St		Sub-soil
				0.5		CH	*Clay:* Orange-yellow, high plasticity	M	H		
				1.0		CL	*Clay:* Orange and brown flecked. Extremely weathered dolerite, low plasticity	D	H		Extremely weathered dolerite
				1.5		CL / Jdl	*Clay:* from extremely weathered dolerite and slightly weathered dolerite	D	H		SW–HW dolerite
				2.0			Digger stopped by hard dolerite				

Sketch