

# Appendix A:

## Core descriptions

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## Tan0706 Core Log Descriptions

MSc Thesis Data

Core: Tan0706 1	Water Depth: 2550m	Gear: Piston
Date Collected: 6/5/07	Date Described: 7/12/10	

Kirsty Herbert

Description and Comments:

<b>Unit Length (cm):</b>	<b>Description and Comments: (colour, texture, bioturb, other, contact)</b>
0-23	(2.5Y 6/4), light yellowish brown. Sandy silt. No visible bioturbation (NVB). Tephra layer at top of unit, (2.5Y 5/2) greyish brown to (5Y 5/3) olive. Silty glass. Sloped contact from 0-2 to 0-3cm. Contact potentially bioturbated? (Mini flame structures evident). Gradational contact over 5cm. Forams present.
23-87	<u>23-32.5cm</u> : (2.5Y 5/2) Greyish brown. Silty glass. Serated, sharp boundary. <u>32.5-49.5cm</u> : (2.5Y 5/2 to 5Y 4/2) greyish brown to olive grey. Mixed lighter and darker layers. Silty glass (darker layers coarser than lighter layers). ~50% bioturbation. Some darker patches have sand sized mafic grains. Top and bottom boundaries are of lighter material. Bottom boundary sloped from 47-49.5cm. <u>49.5-58cm</u> : (5Y 4/2 to 2.5Y 5/2) cross between olive grey and greyish brown. Silty (glassy?). NVB. Gradational boundary over 2.5cm. <u>58-65cm</u> : (5Y 5/2) olive grey. Silty (glassy?). NVB. Gradational lower boundary over 2cm. <u>65-78cm</u> : Faintly darker than above layer. Slightly more glassy texture than above. NVB. <u>78-81cm</u> : (2.5Y 5/2) greyish brown. Silty glassy (coarser than above layer). 0.5cm (5Y 4/1) dark grey band forms a sharp boundary at base. <u>81-84.5cm</u> : (2.5Y 5/2) medium greyish brown. Silty glass (finer than above layer). NVB. <u>84.5-87cm</u> : (2.5Y to 5Y 5/4) greyish brown to olive. Sandy glassy silt. NVB. Thin dark laminations towards base (?). Sharp sloping contact from 87-88.3cm.
87-96.5	(5Y 5/2) olive grey. (Clayey?) Silt. NVB. Sharp contacts.
96.5-100	(5Y 4/3) olive. Coarse silt-fine sand. Slight bioturbation at base? Coarse mafic ash throughout unit.
100-143	(2.5Y 6/2) light brownish grey. Silty clay. NVB. Darkens towards base. Sharp convex bottom contact from 143-144.5cm.

	<p><u>100-107cm</u>: see above</p> <p><u>107-116cm</u>: faintly darker than above layer. More silt content.</p> <p><u>116-143cm</u>: grades from (2.5Y 6/2 to 5Y 5/2) light brownish grey to olive grey at base. Glassy silt ( Medium ash). Dark band from 140.5-143cm.</p>
143-189	<p>(5Y 5/3) olive grey. Clayey silt. &lt;10% bioturbation. Faint dark laminations throughout. 2 small patches of ( 10YR 4/2) dark greyish brown material, 1 at top, other at base.</p> <p><u>156-169cm</u>: (5Y 4/1) dark grey. Graded med-coarse ash (darker layers coarser). NVB. Tephra layer 164-169cm displays ripple or microfault structures ( debris flow?).</p> <p><u>174.5-182.5cm</u>: (5Y 5/2) olive grey. Clayey silt. Base displays 20% bioturbation.</p> <p><u>182.5-189cm</u>: (2.5Y 7/2) light grey above layer of (5Y 5/2) olive grey. Silt, with sand sized grains throughout. Darker layer 30% bioturbated. Bioturbated bottom contact. Burrows (up to 3cm) visible.</p>
189-245.2	<p>Gradational colour change from (2.5Y 7/2 to 2.5Y 6/2) light grey to light brownish grey downcore. Faint bioturbation throughout (&lt;10%). Lobe-ier bioturbated patches towards top boundary, flattened and elongate towards bottom contact. Flame structure formed at boundary of lighter and darker layers. Sharp convex lower contact.</p>
245.2-253.5	<p>( 5Y 6/3) pale olive with dark tephra bands. Clayey silt to med-coarse ash. NVB. Sharp lower contact, defined by tephra layer.</p>
253.5-309.5 (core base)	<p>(5Y 6/2) light olive grey. Silty clay. ~10% bioturbation throughout, patches of darker material.</p> <p><u>287-293.5cm</u>: (3.5Y 6/2 and 5Y 4/2) light brownish grey and olive grey. Sandier/med-coarse ash. NVB. Displays darker mineral veneers over lighter material, turbidite structures? Direction of curvature of feature changes.</p> <p>Unit gradually darkens in colour towards base.</p> <p>Last few cm of sandy texture, with an assortment of mafic and felsic minerals.</p>

**Key:**

PS – Phil Shane sampled

NVB – No visible  
bioturbation

## Tan0706 Core Log Descriptions

MSc Thesis Data

Core: Tan 0706 2	Water Depth: 2430 m	Gear: Piston
Date Collected: 7/5/7	Date Described: 8/12/10	

Kirsty Herbert

Unit Length (cm):	Description and Comments: (colour, texture, bioturb, other, contact)
0-10	(5Y 5/3) olive. Silt. NVB. Convex lower contact displaying 50% bioturbation.
10-24	(2.5Y 6/4) light yellowish brown. Gradational colour change to (5Y 5/3) olive at base. Clayey sand. 20% bioturbation throughout. Forams present. From 10-11.5 cm, dark sandy patch . Light and dark grains visible throughout, most abundant at top of core. Sharp lower contact.
24-34 (end of core)	(2.5Y 6/2) light brownish grey. Clayey silt. NVB. Sharp colour contrast to above unit. Graded tephra bed. Thin laminations of mafic minerals. Complex laminations from 30-34cm (differing orientations), with a glassy sand texture.

**Key:**

PS – Phil Shane sampled

NVB – No visible  
bioturbation

## Tan0706 Core Log Descriptions

MSc Thesis Data

Core: Tan0706 3	Water Depth: 2144	Gear: Piston
Date Collected: 7/5/7	Date Described: 8/12/10	

Kirsty Herbert

Unit Length (cm):	Description and Comments: (colour, texture, bioturb, other, contact)
0-6.5	(2.5Y 4/4) olive brown. Silt. Faint bioturbation (10%). Slightly lighter towards base. Sharp sloped contact from 5.5-6.5cm, slightly bioturbated.
6.5-15.7	(5Y 4/3) olive. (5Y 2.5/1) black, med-coarse ash from 12-15.7cm. Texture grades from silt at top of unit to coarse ash at base. NVB. Mafic (predominant) and felsic mineral throughout. Bottom contact displays 25% bioturbation.
15.7-26	(2.5Y 6/4) light yellowish brown. Grades to slightly darker material near base. Silt. NVB. Flecks or darker (organic?) material. Thin layer of black, sand sized grains along base. Bottom contact sharp, concave from 25-26cm.
26-35 (end of core)	(2.5Y 6/4) light yellowish brown. Fine silt. <u>27-31cm</u> : (10YR 5/1) grey. Gritty med-coarse ash. Coarser towards base. 35% bioturbated into layer below. <u>31-35cm</u> : (2.5Y 6/4) light yellowish brown. Fine silt. Contains two tephra pockets at base.

**Key:**

PS – Phil Shane sampled

NVB – No visible  
bioturbation

## Tan0706 Core Log Descriptions

MSc Thesis Data

Core: Tan 0706 4	Water Depth:2258	Gear:Gravity
Date Collected: 7/5/7	Date Described: 8/12/10	

Kirsty Herbert

Unit Length (cm):	Description and Comments: (colour, texture, bioturb, other, contact)
0-5	(2.5Y 6/4) light yellowish brown. Clayey silt. NVB. Sharp textural change at base.
5-17.5	(2.5Y 4/4) olive brown. Clayey silt. Bioturbated (20%) – patches of coarser and lighter material. Sand sized dark grains visible throughout. Bioturbated basal contact.
17.5-37.5	(2.5Y 5/4) light olive brown. Silt. Grades to greyer silt at bottom of unit. NVB. Faint, thin laminations of darker and lighter material throughout. More prominent darker laminations towards base. Forams present. Sharp basal contact.
37.5-76	<p>Sharp lower contact, marked by colour and textural changes.</p> <p><u>37.5-51.5cm</u>: (2.5Y 5/4) light olive brown. Slightly darker in top 5cm. Sandy. NVB. Thick and thin laminations (darker material) throughout.</p> <p><u>51.5-65cm</u>: (2.5Y 5/4) light olive brown (slightly darker than above layer). Clayey silty sand. More numerous and thicker laminations than above layer. Some coarse sand sized white grains visible.</p> <p><u>65-76cm</u>: (2.5Y 5/4) light olive brown. Clayey silty sand (coarser than above layer), normally graded. NVB. Faint laminations, lighter and less frequent than above layer. Medium sand sized grains visible close to base. Sharp contact.</p>
76-83.5	(10YR 3/1) very dark grey. Silt at top, grading to glassy sand at base. Coarse black ash layer at base, 1cm thick. NVB. Lighter clayey band directly above tephra. Slightly darker band from 80.5-82cm. Slightly bioturbated (5%) bottom contact, with black tephra being worked downwards.
83.5-106	<p>(2.5Y 5/4) light olive brown. Fine sand, more silty towards base. NVB. Medium sand sized grains visible throughout. Colour darkens towards base.</p> <p><u>95-102.5cm</u>: Tephra influence. Bioturbated lower contact from 102.5-106cm. Tongues of pale (lower layer) material intrudes.</p>

106-121	(10YR 6/3) pale brown. Silt. NVB. Laminations throughout. Darker ashy band from 116.5-121cm (darker and glassy sandy silt texture). Tephra layer at base. Sharp, sloping (119.5-121cm) contact.
121-133	(2.5Y 5/4) light olive brown. Gradually darkens towards base. Glassy sand/tephra. Med sand at top grading to coarse ash at the base. NVB. Noticable darkending from 125cm downwards. Thin (1cm) graded, black tephra layer from 126-133cm. Coarse-very coarse ash. Basal contact convex (130.5-133cm)
133-149.6	(2.5Y 5/4 to 5Y 4/3 at base) light olive brown grades to olive near base. Sandy silt near top, silt at base. 30% bioturbation, but NVB in bottom 3cm. Coarse white sand sized grains throughout. Sharp contact.
149.6-154.8	(2.5Y 3/N3/) very dark grey. Graded coarse-very coarse ash. NVB. Laminations in top 3cm. Mix of mafic and felsic minerals, and accretionary lapilli. Mafic minerals concentrated near base, and as a veneer in a small ponded structure. Base slightly (10%) bioturbated.
154.8-177 (end of core)	<u>154.8-162cm</u> : (2.5Y 5/2) greyish brown. Silty sand. Slightly bioturbated. Large dark grey, clayey silt blob (151-159.5cm) dark ash layer 160.5-162cm. Thins to one side. Base 20% bioturbated, with material being distributed downwards. <u>162-177cm</u> : (5Y 3/2 grades from 2.5Y 5/2) dark olive grey grades to greyish brown at 162cm. Silty at base. Lightly (15%) bioturbated throughout. Dark, elongate bleb from 173.6-174.5cm.

**Key:**

**PS – Phil Shane sampled**

**NVB – No visible  
bioturbation**

## Tan0706 Core Log Descriptions

MSc Thesis Data

Core: Tan0706 5	Water Depth: 2424	Gear: Gravity
Date Collected: 7/5/7	Date Described: 9/12/10	

Kirsty Herbert

Unit Length (cm):	Description and Comments: (colour, texture, bioturb, other, contact)
0-5	(2.5Y 4/4) olive brown. Silty fine sand. NVB. 1cm darker layer sloped from 2-5cm, to a sharp contact. Sparse amount of white, med sand sized grains throughout.
5-23	(2.5Y 5/4) light olive brown. Coarse silt-very fine sand. Faint bioturbation (15%). 4cm clast at top of layer, Brownish grey, glassy, vesicular. Rounded exterior, with a thin weathered veneer.
23-43	(2.5Y 5/4) light olive brown. Silt. NVB. Laminations from mm to >cm size throughout. Varies from brown to brownish grey. Fainter bands in 35.5-43cm area (sloped relative to side of core). Sloping sharp contact from 43-45cm.
43-48 (end of core).	(5Y 3/1) very dark grey to black. Fine-coarse ash. NVB. Reverse grading at top. Mafic and felsic minerals.

**Key:**

PS – Phil Shane sampled

NVB – No visible  
bioturbation

## Tan0706 Core Log Descriptions

MSc Thesis Data

Core: Tan0706 8	Water Depth: 3350	Gear: Piston
Date Collected: 8/5/7	Date Described: 9/12/10	

Kirsty Herbert

Unit Length (cm):	Description and Comments: (colour, texture, bioturb, other, contact)
0-6.5	(5Y 2.5/1) black. Glassy fine-coarse ash near top, medium lapilli at base. NVB. Lapilli begins at 2cm depth along one side, and widens at 4.2cm to span width of core. Complex contact (refer to sketch on paper copy), elongate downwards on one side to 11.5cm.
6.5-8.5	(5Y 4/2) dark grey. Fine-med ash. Near vertical dappled colouring (like sunlight shining through gaps in clouds). Complex contact (refer to sketch on paper copy).
8.5-11.2	(5Y 2.1/1) black, medium lapilli at base (in a hollow), fine-med ash above. NVB. Matrix supported.
11.2-21	(2.5Y 6/4) light yellowish brown. Silty fine sand. Faint (10%) bioturbation. Gradually darkens towards base. Concave sharp lower contact.
21-22 (end of core)	(2.5Y 4/N4/) dark grey. Coarse-very coarse sand. Mix of light and dark clasts.

**Key:**

PS – Phil Shane sampled

NVB – No visible  
bioturbation

## Tan0706 Core Log Descriptions

MSc Thesis Data

Core: Tan0706 10	Water Depth: 2654	Gear: Gravity
Date Collected: 9/5/7	Date Described: 10/12/10	

Kirsty Herbert

Unit Length (cm):	Description and Comments: (colour, texture, bioturb, other, contact)
0-20.5	<p><u>0-1cm</u>: (2.5Y 5/2) greyish brown. Silt. NVB. Few mafic and felsic sand sized grains. Sharp boundary.</p> <p><u>1-11.5cm</u>: (5Y 5/3) olive. Fine-med sand. NVB. Grades from olive fine-med sand at top to medium lapilli from 5cm downwards. Lapilli covered in olive sandy material. Lapilli range 2-7mm. 'Chimney/chute' of lapilli from 2.2-5cm near centre of core, silty sand surrounding darker lapilli. Individual clasts of glass, scoriaceous material, crystals. Boundary slopes from 9.5-11.5cm.</p> <p><u>11.5-20.5cm</u>: dark grey. fine-medium lapilli (med ash-.7mm), loosely packed. Individual grains easily distinguished:</p> <ul style="list-style-type: none"> <li>- glass, quartz, scoria, dacitic lava, mafic crystals</li> </ul> <p>Slightly coarser at base – normally graded. More felsic material in coarser layer. Reasonably sharp boundary. Some lapilli imbedded in softer sediments below.</p>
20.5-28 (end of core)	<p>(5Y 4/4) olive. Silt containing sparse medium sand grains. Possible slight bioturbation (5%). Sparse felsic sand sized grains from 20.5-23cm. More mafic grains from 23-27.5cm. 1cm pocket of sandy material from 24.3-25cm containing mafic and felsic grains. Layer of dark, fine-coarse sandy material from 27.5-28cm, with a few small specs of glass visible.</p>

**Key:**

**PS – Phil Shane sampled**

**NVB – No visible  
bioturbation**

## Tan0706 Core Log Descriptions

MSc Thesis Data

Core: Tan0706 13	Water Depth: 3288	Gear: Gravity
Date Collected: 10/5/7	Date Described: 10/12/10	

Kirsty Herbert

Unit Length (cm):	Description and Comments: (colour, texture, bioturb, other, contact)
0-11	<p><u>0-7.8cm</u>: (2.5Y 7/4) pale yellow, coarse silt-fine sand. Mafic and felsic grains med ash grains throughout.</p> <p><u>7.8-11cm</u>: ( 5Y 4/2) olive grey. Medium ash with course ash grains. Possible bioturbation (pitted appearance) Darker ash ponded at bottom, and is connected to layer below by a 'chimney' structure (see sketch on paper copy). Complex contact ( see sketch on paper copy).</p>
11-27.3	<p>(5Y 2.5/1) black. Fine – medium ash. NVB.</p> <p><u>11-13cm</u>: fine, predominantly mafic minerals.</p> <p><u>13-17cm</u>: coarse ash. normally graded, laminated ash layers. Lighter layers predominantly felsic minerals (lots of glass shards).</p> <p><u>17-27.3cm</u>: grey ash. Mix of felsic and mafic minerals. Thin band from 25.2-25.5cm of felsic material, slightly coarser than surrounding. Finer band from 25.5-27.3cm, also more mafic.</p> <p>Complex contact (possibly related to coring), relatively sharp.</p>
27.3-83 (end of core)	<p>5Y 6/4) pale olive.</p> <p><u>27.3-30.7cm</u>: gritty, fine silty sand. Possible (10%) bioturbation. Fine ash sized mafic and felsic grains throughout.</p> <p><u>30.7-34.4cm</u>: (2.5Y 5/2) greyish brown. Fine ash, few fine lapilli. Faintly darker along bottom boundary. Slightly coarser in top layer (changing eruptions styles?).</p> <p><u>34.4-48cm</u>: (5Y 6/4) pale olive. Silt with some fine sand grains. NVB. Faint laminations of darker, sandy material. Mafic, fine ash grains present throughout. Felsic grains present, but not as abundant.</p> <p><u>48-51.3cm</u>: (5Y 5/2) olive grey. Fine ash. NVB. Abundance of glass shards. &lt;1cm bleb of felsic ash surrounded by mafic ash. Few coarse ash grains towards base.</p> <p><u>51.3-72.3</u>: (5Y 6/4) pale olive, fine silty sand. Mottled appearance (bioturbation?) throughout. Abundant mafic ash grains. Felsic grains present but not to such abundance.</p>

	<p>Felsic grains slightly coarser. Bottom boundary obscured, as material has crumbled.</p> <p><u>72.3-76cm</u>: black. gritty fine ash. Uniform grain size. Few glass shards, predominantly mafic minerals.</p> <p><u>76-83cm</u>: (2.5Y 6/4) light yellowish brown. Sandy coarse silt. NVB. Colour normally graded. Abundance of mafic and felsic grains.</p>
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## Tan0706 Core Log Descriptions

MSc Thesis Data

Core: Tan0706 15	Water Depth: 2574	Gear: Gravity
Date Collected: 10/5/7	Date Described: 10/12/10	

Kirsty Herbert

Unit Length (cm):	Description and Comments: (colour, texture, bioturb, other, contact)
0-23	<p><u>0-2cm</u>: (5Y 5/1) grey. Fine-medium ash. NVB. Bioturbated lower boundary, incorporating material from layer below.</p> <p><u>2-23cm</u>: very dark grey-black. Fine-very coarse basaltic ash. Few lapilli (3mm). Grains of glass, feldspars, shells, small amount of scoriaceous material, mica? More felsic towards top (noticeable colour change) bottom contact curved and relatively sharp (due to interaction with the core?).</p>
23-29.5	(2.5Y 7/2) light grey. Silty fine sand. NVB. Some mafic coarser mafic grains. Concave, sharp bottom contact.
29.5-31	Black. Coarse-very coarse ash, few fine lapilli. Mafic grains (60%).

**Key:**

PS – Phil Shane sampled

NVB – No visible  
bioturbation

## Tan0706 Core Log Descriptions

MSc Thesis Data

Core: Tan0706 16	Water Depth: 2353	Gear: Piston
Date Collected: 10/5/7	Date Described: 10/12/10	

Kirsty Herbert

Unit Length (cm):	Description and Comments: (colour, texture, bioturb, other, contact)
0-21.5	(2.5Y 7/4 grading to 2.5Y 5/2) pale yellow grading to greyish brown. Clayey silt-coarse silt. 25% bioturbation. Lighter material in pockets from 17.5cm upwards. Sharp bottom contact.
21.5-72	<p><u>21.5-37cm</u>: (2.5Y 6/4) light yellowish brown. Clayey coarse silt. NVB. Darker layers from 25.6-28.5cm and 30.4-37cm, silty fine sand, laminated? Mafic and felsic grains throughout, mafic more abundant.</p> <p><u>37-57cm</u>: (2.5Y 6/4) light yellowish brown. Clayey fine-medium silt. NVB? Colour normally graded. Darker band from 44.5-48cm, glassy fine ash. Mafic grains throughout, giving a mottled appearance.</p> <p><u>57-72cm</u>: (3.5Y 6/2) light brownish grey. Gritty silt/fine ash. NVB. Thinly (&lt;7mm) laminated. Laminae very fine from 66-72cm. Lighter, fine ash lens from 60-61cm. Sharp contact.</p>
72-77.5	(2.5Y 6/4) light yellowish brown. Silty, gritty fine sand. 50% bioturbation (strong mottled appearance). Pockets of medium ash, felsic grains. Few thin mafic lenses. 75cm above – blobby darker lenses. 75cm below – elongate, laminated material.
77.5-99.5	(2.5Y 5/4) light olive brown. Fine, glassy ash at base, coarse silt at top. NVB. Two 1cm pockets enriched in medium ash felsic grains. Some mafic grains throughout. Sharp contact.
99.5-117	(2.5Y 6/4) light yellowish brown. Silt, with fine sand grains. NVB. Darker band from 104-113cm. Few felsic medium ash grains throughout. Mafic grains smaller and less abundant. Sharp bottom contact.
117-131	(2.5Y 5/4) light olive brown. NVB? Pale laminations. Thin (<5mm) pale lens at 126.5cm. Subtle bottom contact.
131-189	<u>131-150.5cm</u> : (2.5Y 7/2 grading to 5Y 4/1) light grey grading to dark grey. Silt at top, grading to glassy fine ash at base. 50% bioturbation. Horizontal laminations in top half,

	<p>become more blobby towards base. Scattered medium felsic ash grains throughout.</p> <p><u>150.5-161cm</u>: (2.5Y 5/2) greyish brown. Silty fine ash. Normally graded laminations above 157cm. Few medium felsic ash grains throughout. Bottom boundary 60% bioturbated.</p> <p><u>161-183cm</u>: same as layer 131-150.5cm.</p> <p><u>183-189cm</u>: (5Y 5.1) grey, very fine to fine ash. NVB. Small flecks of lighter material throughout. Base 15% bioturbated with lower layer.</p>
189-205.5	(2.5Y 7/2) light grey. Silty fine sand. NVB. Thin, dark laminations throughout. Peachey layer (oxidised?) from 191-193cm. Slightly coarser towards base, as well as darker. Darker band from 201-203cm with fine-medium sand texture. Sharp contact.
205.5-225	(2.5Y 6/2) light brownish grey. Silty fine ash. NVB, darker band from 205.5-208.6cm. <u>218.5-225cm</u> : (2.5Y 5/2) greyish brown. Silty fine-medium ash. NVB? faint laminations. 1 x 1cm felsic blebs. Dappled lower contact.
225-240.5 (end of core)	(2.5Y 6/2) light brownish grey. Silty medium sand. Dappled from 226-231 cm, with darker grey material. Angled near vertical at top, angle decreases to horizontal at 229cm. thin laminations from 230-233cm. Thin (<7mm) oxidised band from 234.5-235.6cm. two 1x1cm clast imbedded. One pinkish, other dacitic. Slightly mottled texture/colour till end of ore. Few medium sand sized felsic grains underneath oxidised layer.

**Key:**

PS – Phil Shane sampled

NVB – No visible  
bioturbation