12 Attachment C – Borehole Logs

CLIENT	**Twynam Property Group**	**COMMENCED**	10.01.2013	**COMPLETED**	10.01.2013	**REF**	**BH401**
PROJECT	**Stage 2 Contamination Assessment**	**LOGGED**	GT	**CHECKED**	AN	**Sheet**	**1 of 1**
SITE	**Mundamia Release Lands**	**GEOLOGY**	Sandstone	**VEGETATION**	Grasses	**PROJECT NO.**	P0802193
EQUIPMENT	Hydraulic Auger	**EASTING**	NA	**RL SURFACE**	NA		
EXCAVATION DIMENSIONS	0.1mØ X 1.0m depth	**NORTHING**	NA	**ASPECT**	South East	**SLOPE**	1-2%

EXCAVATION DATA						MATERIAL DATA					SAMPLING & TESTING			
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE (L M H R)	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS	
V	Nil	N	D	0.2			ML	SILT - Light grey/brown, fine grained sand.			E	0.05	2193/401/ 0.05	
V	Nil	N	D	0.3			SP	SAND - Light brown/grey.			E	0.25	2193/401/ 0.25	
V	Nil	N	D	0.5 0.6			SP	SAND - Orange, fine to medium grained.						0.5
V	Nil	N	M	1.0			SC	CLAYEY SAND - Orange/red.			E	1.0	2193/401/ 1.0	1.0
				1.5				Borehole terminated at 1.0m on clayey sand.						1.5
				2.0										2.0
				2.25										2.25

EQUIPMENT / METHOD
N Natural exposure
X Existing excavation
BH Backhoe bucket
HA Hand auger
E Excavator
CC Concrete Corer
V V-Bit
TC Tungsten Carbide Bit
S Spade

SUPPORT
SH Shoring
SC Shotcrete
RB Rock Bolts
Nil No support

WATER
N None observed
X Not measured
Water level
Water outflow
Water inflow

MOISTURE
D Dry
M Moist
W Wet
Wp Plastic limit
Wl Liquid limit

PENETRATION
L Low
M Moderate
H High
R Refusal

CONSISTENCY
VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard
F Friable

DENSITY
VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

SAMPLING & TESTING
A Auger sample
B Bulk sample
U Undisturbed sample
D Disturbed sample
M Moisture content
Ux Tube sample (x mm)
E Environmental sample (JAR)
pp Pocket penetrometer
S Standard penetration test
VS Vane shear
DCP Dynamic cone penetrometer
FD Field density
WS Water sample
PID Photo Ionization Detector

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
Y USCS
N Agricultural

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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Phone: (02) 9476 9999 Fax: (02) 9476 8767
mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - Borehole

CLIENT	Twynam Property Group	**COMMENCED**	10.01.2013	**COMPLETED**	10.01.2013	**REF**	**BH402**
PROJECT	Stage 2 Contamination Assessment	**LOGGED**	GT	**CHECKED**	AN	**Sheet**	1 of 1
SITE	Mundamia Release Lands	**GEOLOGY**	Sandstone	**VEGETATION**	Grasses	**PROJECT NO.**	P0802193
EQUIPMENT	Hydraulic Auger	**EASTING**	NA	**RL SURFACE**	NA		
EXCAVATION DIMENSIONS	0.1mØ X 1.0m depth	**NORTHING**	NA	**ASPECT**	East	**SLOPE**	1-2%

EXCAVATION DATA						MATERIAL DATA					SAMPLING & TESTING			
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE (L M H R)	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS	
V	Nil	N	D	0.12			ML	SILT - Light brown/grey, minor gravels.			E	0.05	2193/402/ 0.05	
V	Nil	N	D	0.4			SM	SILTY SAND - Orange/gold tending to orange, fine grained sand.			E	0.25	2193/402/ 0.25	
V	Nil	N	D	0.5			SC	CLAYEY SAND - Orange/brown, medium grained sand, tending to orange/red >0.8m.			E	0.5	2193/402/ 0.5	0.5
			M	0.8										
				1.0										1.0
								Borehole terminated at 1.0m on clayey sand.						
				1.5										1.5
				2.0										2.0
				2.25										2.25

EQUIPMENT / METHOD
N Natural exposure
X Existing excavation
BH Backhoe bucket
HA Hand auger
E Excavator
CC Concrete Corer
V V-Bit
TC Tungsten Carbide Bit
S Spade

SUPPORT
SH Shoring
SC Shotcrete
RB Rock Bolts
Nil No support

WATER
N None observed
X Not measured
Water level
Water outflow
Water inflow

MOISTURE
D Dry
M Moist
W Wet
Wp Plastic limit
Wl Liquid limit

PENETRATION
L Low
M Moderate
H High
R Refusal

CONSISTENCY
VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard
F Friable

DENSITY
VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

SAMPLING & TESTING
A Auger sample
B Bulk sample
U Undisturbed sample
D Disturbed sample
M Moisture content
Ux Tube sample (x mm)
E Environmental sample (JAR)
pp Pocket penetrometer
S Standard penetration test
VS Vane shear
DCP Dynamic cone penetrometer
FD Field density
WS Water sample
PID Photo Ionization Detector

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
Y USCS
N Agricultural

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - Borehole

CLIENT	**Twynam Property Group**	**COMMENCED**	10.01.2013	**COMPLETED**	10.01.2013	**REF**	**BH403**
PROJECT	**Stage 2 Contamination Assessment**	**LOGGED**	GT	**CHECKED**	AN	**Sheet**	**1 of 1**
SITE	**Mundamia Release Lands**	**GEOLOGY**	Sandstone	**VEGETATION**	Grasses	**PROJECT NO.**	P0802193
EQUIPMENT	Hydraulic Auger	**EASTING**	NA	**RL SURFACE**	NA		
EXCAVATION DIMENSIONS	0.1mØ X 1.0m depth	**NORTHING**	NA	**ASPECT**	North East	**SLOPE**	1-2%

EXCAVATION DATA						MATERIAL DATA				SAMPLING & TESTING			
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE (L M H R)	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.1			ML	SILT - Light brown/grey, minor gravels.			E	0.05	2193/403/ 0.05
V	Nil	N	D	0.45			SM	SILTY SAND - Orange/gold tending to orange, fine grained sand.			E	0.25	2193/403/ 0.25
V	Nil	N	D	0.5 1.0			SP	SAND - Orange, minor clay content, medium grained.			E	0.5	2193/403/ 0.5 0.5 1.0
				1.5 2.0 2.25				Borehole terminated at 1.0m on sand.					1.5 2.0 2.25

EQUIPMENT / METHOD
N Natural exposure
X Existing excavation
BH Backhoe bucket
HA Hand auger
E Excavator
CC Concrete Corer
V V-Bit
TC Tungsten Carbide Bit
S Spade

SUPPORT
SH Shoring
SC Shotcrete
RB Rock Bolts
Nil No support

WATER
N None observed
X Not measured
Water level
Water outflow
Water inflow

MOISTURE
D Dry
M Moist
W Wet
Wp Plastic limit
Wl Liquid limit

PENETRATION
L Low
M Moderate
H High
R Refusal

CONSISTENCY
VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard
F Friable

DENSITY
VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

SAMPLING & TESTING
A Auger sample
B Bulk sample
U Undisturbed sample
D Disturbed sample
M Moisture content
Ux Tube sample (x mm)
E Environmental sample (JAR)
pp Pocket penetrometer
S Standard penetration test
VS Vane shear
DCP Dynamic cone penetrometer
FD Field density
WS Water sample
PID Photo Ionization Detector

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
Y USCS
N Agricultural

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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Hornsby, NSW 2077 Australia
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mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - Borehole

CLIENT	**Twynam Property Group**	**COMMENCED**	10.01.2013	**COMPLETED**	10.01.2013	**REF**	**BH404**
PROJECT	**Stage 2 Contamination Assessment**	**LOGGED**	GT	**CHECKED**	AN	**Sheet**	**1 of 1**
SITE	**Mundamia Release Lands**	**GEOLOGY**	Sandstone	**VEGETATION**	Grasses	**PROJECT NO.**	P0802193
EQUIPMENT	Hydraulic Auger	**EASTING**	NA	**RL SURFACE**	NA		
EXCAVATION DIMENSIONS	0.1mØ X 1.0m depth	**NORTHING**	NA	**ASPECT**	North East	**SLOPE**	1-2%

EXCAVATION DATA						MATERIAL DATA				SAMPLING & TESTING			
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE (L M H R)	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.08			ML	SILT - Light brown/grey, minor gravels.			E	0.05	2193/404/ 0.05
V	Nil	N	D	0.45			SM	SILTY SAND - Orange/gold tending to orange, fine grained sand.			E	0.25	2193/404/ 0.25
V	Nil	N	D	0.5 1.0			SP	SAND - Orange, minor clay content, medium grained.			E	0.5	2193/404/ 0.5 0.5 1.0
				1.5 2.0 2.25				Borehole terminated at 1.0m on sand.					1.5 2.0 2.25

EQUIPMENT / METHOD
N Natural exposure
X Existing excavation
BH Backhoe bucket
HA Hand auger
E Excavator
CC Concrete Corer
V V-Bit
TC Tungsten Carbide Bit
S Spade

SUPPORT
SH Shoring
SC Shotcrete
RB Rock Bolts
Nil No support

WATER
N None observed
X Not measured
Water level
Water outflow
Water inflow

MOISTURE
D Dry
M Moist
W Wet
Wp Plastic limit
Wl Liquid limit

PENETRATION
L Low
M Moderate
H High
R Refusal

CONSISTENCY
VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard
F Friable

DENSITY
VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

SAMPLING & TESTING
A Auger sample
B Bulk sample
U Undisturbed sample
D Disturbed sample
M Moisture content
Ux Tube sample (x mm)
E Environmental sample (JAR)
pp Pocket penetrometer
S Standard penetration test
VS Vane shear
DCP Dynamic cone penetrometer
FD Field density
WS Water sample
PID Photo Ionization Detector

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
Y USCS
N Agricultural

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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Engineering Log - Borehole

CLIENT	**Twynam Property Group**	**COMMENCED**	10.01.2013	**COMPLETED**	10.01.2013	**REF**	**BH405**
PROJECT	**Stage 2 Contamination Assessment**	**LOGGED**	GT	**CHECKED**	AN	**Sheet**	**1 of 1**
SITE	**Mundamia Release Lands**	**GEOLOGY**	Sandstone	**VEGETATION**	Grasses	**PROJECT NO.**	P0802193
EQUIPMENT	Hydraulic Auger	**EASTING**	NA	**RL SURFACE**	NA		
EXCAVATION DIMENSIONS	0.1mØ X 1.0m depth	**NORTHING**	NA	**ASPECT**	South East	**SLOPE**	1-2%

EXCAVATION DATA						MATERIAL DATA					SAMPLING & TESTING		
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE (L M H R)	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.1			ML	SILT - Light brown/grey, minor gravels.			E	0.05	2193/405/ 0.05
V	Nil	N	D	0.35			SM	SILTY SAND - Orange/gold tending to orange, fine grained sand.					
V	Nil	N	D	0.5 0.75			SC	CLAYEY SAND - Orange/brown.			E	0.5	2193/405/ 0.5 0.5
V	Nil	N	M	1.0			CL	SANDY CLAY - Grey with minor red/orange mottles.					1.0
				1.5				Borehole terminated at 1.0m on sandy clay.					1.5
				2.0									2.0
				2.25									2.25

EQUIPMENT / METHOD
N Natural exposure
X Existing excavation
BH Backhoe bucket
HA Hand auger
E Excavator
CC Concrete Corer
V V-Bit
TC Tungsten Carbide Bit
S Spade

SUPPORT
SH Shoring
SC Shotcrete
RB Rock Bolts
Nil No support

WATER
N None observed
X Not measured
Water level
Water outflow
Water inflow

MOISTURE
D Dry
M Moist
W Wet
Wp Plastic limit
Wl Liquid limit

PENETRATION
L Low
M Moderate
H High
R Refusal

CONSISTENCY
VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard
F Friable

DENSITY
VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

SAMPLING & TESTING
A Auger sample
B Bulk sample
U Undisturbed sample
D Disturbed sample
M Moisture content
Ux Tube sample (x mm)
E Environmental sample (JAR)

pp Pocket penetrometer
S Standard penetration test
VS Vane shear
DCP Dynamic cone penetrometer
FD Field density
WS Water sample
PID Photo Ionization Detector

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
Y USCS
N Agricultural

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - Borehole

CLIENT	Twynam Property Group	**COMMENCED**	10.01.2013	**COMPLETED**	10.01.2013	**REF**	**BH406**
PROJECT	Stage 2 Contamination Assessment	**LOGGED**	GT	**CHECKED**	AN	**Sheet**	1 of 1
SITE	Mundamia Release Lands	**GEOLOGY**	Sandstone	**VEGETATION**	Grasses	**PROJECT NO.**	P0802193
EQUIPMENT	Hydraulic Auger	**EASTING**	NA	**RL SURFACE**	NA		
EXCAVATION DIMENSIONS	0.1mØ X 0.45m depth	**NORTHING**	NA	**ASPECT**	South	**SLOPE**	1-2%

EXCAVATION DATA						MATERIAL DATA					SAMPLING & TESTING		
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE (L M H R)	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.1			ML	SILT - Light brown/grey, minor gravels.			E	0.05	2193/406/ 0.05
V	Nil	N	D	0.45			SM	SILTY SAND - Orange/gold tending to orange, fine grained sand.			E E	0.25 0.4	2193/406/ 0.25 2193/406/ 0.4
				0.5				Borehole terminated at 0.45m on extremely/ moderately weathered sandstone.					
				1.0									
				1.5									
				2.0									
				2.25									

EQUIPMENT / METHOD
N Natural exposure
X Existing excavation
BH Backhoe bucket
HA Hand auger
E Excavator
CC Concrete Corer
V V-Bit
TC Tungsten Carbide Bit
S Spade

SUPPORT
SH Shoring
SC Shotcrete
RB Rock Bolts
Nil No support

WATER
N None observed
X Not measured
Water level
Water outflow
Water inflow

MOISTURE
D Dry
M Moist
W Wet
Wp Plastic limit
Wl Liquid limit

PENETRATION
L Low
M Moderate
H High
R Refusal

CONSISTENCY
VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard
F Friable

DENSITY
VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

SAMPLING & TESTING
A Auger sample
B Bulk sample
U Undisturbed sample
D Disturbed sample
M Moisture content
Ux Tube sample (x mm)
E Environmental sample (JAR)
pp Pocket penetrometer
S Standard penetration test
VS Vane shear
DCP Dynamic cone penetrometer
FD Field density
WS Water sample
PID Photo Ionization Detector

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
Y USCS
N Agricultural

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - Borehole

CLIENT	**Twynam Property Group**	**COMMENCED**	10.01.2013	**COMPLETED**	10.01.2013	**REF**	**BH407**
PROJECT	**Stage 2 Contamination Assessment**	**LOGGED**	GT	**CHECKED**	AN	**Sheet**	**1 of 1**
SITE	**Mundamia Release Lands**	**GEOLOGY**	Sandstone	**VEGETATION**	Grasses	**PROJECT NO.**	P0802193
EQUIPMENT	Hydraulic Auger	**EASTING**	NA	**RL SURFACE**	NA		
EXCAVATION DIMENSIONS	0.1mØ X 1.0m depth	**NORTHING**	NA	**ASPECT**	West	**SLOPE**	1-2%

EXCAVATION DATA						MATERIAL DATA				SAMPLING & TESTING			
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE (L M H R)	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.2			ML	SILT - Light grey, minor sand, floury.			E	0.05	2193/407/ 0.05
V	Nil	N	D	0.35			CL	SANDY CLAY - Grey/brown, minor gravels.			E	0.25	2193/407/ 0.25
V	Nil	N	D	0.5			CL	SANDY CLAY - Yellow/orange, tending to extremely weathered sandstone >0.75m.			E	0.5	2193/407/ 0.5
			D	0.75									
			M	1.0									
				1.5				Borehole terminated at 1.0m on extremely weathered sandstone.					
				2.0									
				2.25									

EQUIPMENT / METHOD
N Natural exposure
X Existing excavation
BH Backhoe bucket
HA Hand auger
E Excavator
CC Concrete Corer
V V-Bit
TC Tungsten Carbide Bit
S Spade

SUPPORT
SH Shoring
SC Shotcrete
RB Rock Bolts
Nil No support

WATER
N None observed
X Not measured
Water level
Water outflow
Water inflow

MOISTURE
D Dry
M Moist
W Wet
Wp Plastic limit
Wl Liquid limit

PENETRATION
L Low
M Moderate
H High
R Refusal

CONSISTENCY
VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard
F Friable

DENSITY
VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

SAMPLING & TESTING
A Auger sample
B Bulk sample
U Undisturbed sample
D Disturbed sample
M Moisture content
Ux Tube sample (x mm)
E Environmental sample (JAR)
pp Pocket penetrometer
S Standard penetration test
VS Vane shear
DCP Dynamic cone penetrometer
FD Field density
WS Water sample
PID Photo Ionization Detector

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
Y USCS
N Agricultural

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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Engineering Log - Borehole

CLIENT	**Twynam Property Group**	**COMMENCED**	10.01.2013	**COMPLETED**	10.01.2013	**REF**	**BH408**
PROJECT	**Stage 2 Contamination Assessment**	**LOGGED**	GT	**CHECKED**	AN	**Sheet**	**1 of 1**
SITE	**Mundamia Release Lands**	**GEOLOGY**	Sandstone	**VEGETATION**	Grasses	**PROJECT NO.**	P0802193
EQUIPMENT	Hydraulic Auger	**EASTING**	NA	**RL SURFACE**	NA		
EXCAVATION DIMENSIONS	0.1mØ X 1.0m depth	**NORTHING**	NA	**ASPECT**	North	**SLOPE**	1-2%

EXCAVATION DATA						MATERIAL DATA					SAMPLING & TESTING		
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE (L M H R)	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.15			ML	SILT - Grey/light brown, fine grained sand, minor gravels.			E	0.05	2193/408/ 0.05
V	Nil	N	D	0.45			SP	SAND - Yellow/gold, minor sandstone gravels (1-10mm, ≈10%).			E	0.25	2193/408/ 0.25
V	Nil	N	M	0.5 0.9			SC	CLAYEY SAND/EXTREMELY WEATHERED SANDSTONE - Orange/gold/brown/red.					0.5
V	Nil	N	D	1.0			CL	SANDY CLAY/EXTREMELY WEATHERED SANDSTONE - Red/grey/yellow, gravels.					1.0
				1.5 2.0 2.25				Borehole terminated at 1.0m on sandy clay.					1.5 2.0 2.25

EQUIPMENT / METHOD
N Natural exposure
X Existing excavation
BH Backhoe bucket
HA Hand auger
E Excavator
CC Concrete Corer
V V-Bit
TC Tungsten Carbide Bit
S Spade

SUPPORT
SH Shoring
SC Shotcrete
RB Rock Bolts
Nil No support

WATER
N None observed
X Not measured
Water level
Water outflow
Water inflow

MOISTURE
D Dry
M Moist
W Wet
Wp Plastic limit
Wl Liquid limit

PENETRATION
L Low
M Moderate
H High
R Refusal

CONSISTENCY
VS Very Soft
S Soft
F Firm
St Stiff
VSt Very Stiff
H Hard
F Friable

DENSITY
VL Very Loose
L Loose
MD Medium Dense
D Dense
VD Very Dense

SAMPLING & TESTING
A Auger sample
B Bulk sample
U Undisturbed sample
D Disturbed sample
M Moisture content
Ux Tube sample (x mm)
E Environmental sample (JAR)
pp Pocket penetrometer
S Standard penetration test
VS Vane shear
DCP Dynamic cone penetrometer
FD Field density
WS Water sample
PID Photo Ionization Detector

CLASSIFICATION SYMBOLS AND SOIL DESCRIPTION
Y USCS
N Agricultural

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

Quality Sheet No. 4

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MARTENS & ASSOCIATES PTY LTD
6/37 Leighton Place
Hornsby, NSW 2077 Australia
Phone: (02) 9476 9999 Fax: (02) 9476 8767
mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - Borehole

CLIENT	**Twynam Property Group**	**COMMENCED**	10.01.2013	**COMPLETED**	10.01.2013	**REF**	**BH409**
PROJECT	**Stage 2 Contamination Assessment**	**LOGGED**	GT	**CHECKED**	AN	**Sheet**	**1 of 1**
SITE	**Mundamia Release Lands**	**GEOLOGY**	Sandstone	**VEGETATION**	Grasses	**PROJECT NO.**	P0802193
EQUIPMENT	Hydraulic Auger	**EASTING**	NA	**RL SURFACE**	NA		
EXCAVATION DIMENSIONS	0.1mØ X 1.0m depth	**NORTHING**	NA	**ASPECT**	West	**SLOPE**	1-2%

EXCAVATION DATA						MATERIAL DATA					SAMPLING & TESTING		
METHOD	SUPPORT	WATER	MOISTURE	DEPTH (M)	PENETRATION RESISTANCE (L M H R)	GRAPHIC LOG	CLASSIFICATION	DESCRIPTION OF STRATA Soil type, texture, structure, mottling, colour, plasticity, rocks, oxidation, particle characteristics, organics, secondary and minor components, fill, contamination, odour.	CONSISTENCY	DENSITY INDEX	TYPE	DEPTH (M)	RESULTS AND ADDITIONAL OBSERVATIONS
V	Nil	N	D	0.15			ML	SILT - Brown, fine grained sand, gravels (1-20mm, ≈10%).			E	0.05	2193/409/ 0.05
V	Nil	N	D	0.3			SM	SILTY SAND - Light brown/orange.			E	0.25	2193/409/ 0.25
V	Nil	N	D	0.5 0.75			SP	SAND - Yellow/gold, minor sandstone gravels (1-10mm, ≈10%).			E	0.5	2193/409/ 0.5 0.5
V	Nil	N	M	1.0			SC	CLAYEY SAND/EXTREMELY WEATHERED SANDSTONE - Orange/gold/brown/red.					1.0
				1.5 2.0 2.25				Borehole terminated at 1.0m on clayey sand.					1.5 2.0 2.25

EQUIPMENT / METHOD
N Natural exposure
X Existing excavation
BH Backhoe bucket
HA Hand auger
E Excavator
CC Concrete Corer
V V-Bit
TC Tungsten Carbide Bit
S Spade

SUPPORT
SH Shoring
SC Shotcrete
RB Rock Bolts
Nil No support

WATER
N None observed
X Not measured
Water level
Water outflow
Water inflow

MOISTURE
D Dry
M Moist
W Wet
Wp Plastic limit
Wl Liquid limit

PENETRATION
L Low
M Moderate
H High
R Refusal

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