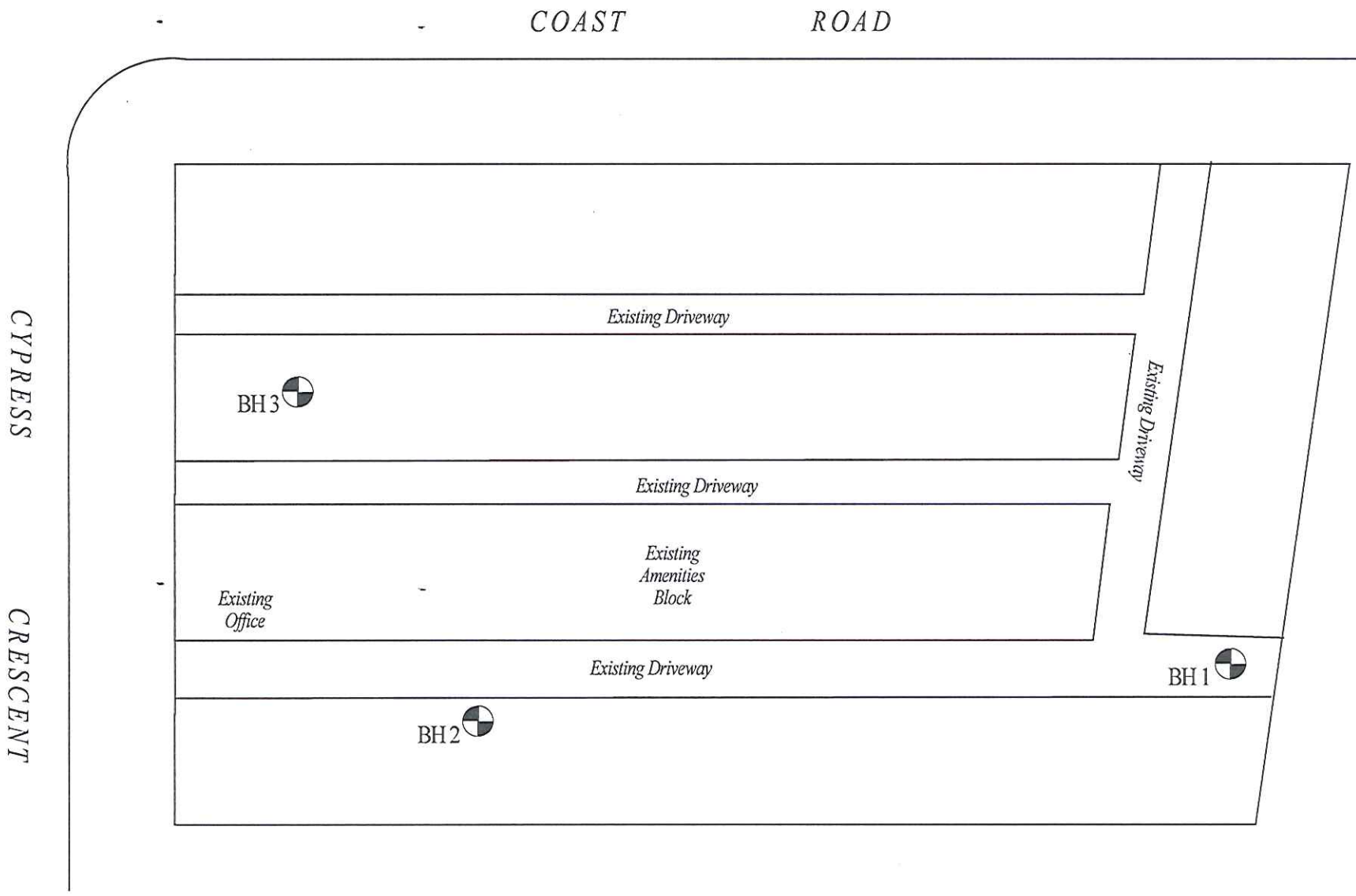
APPENDIX A

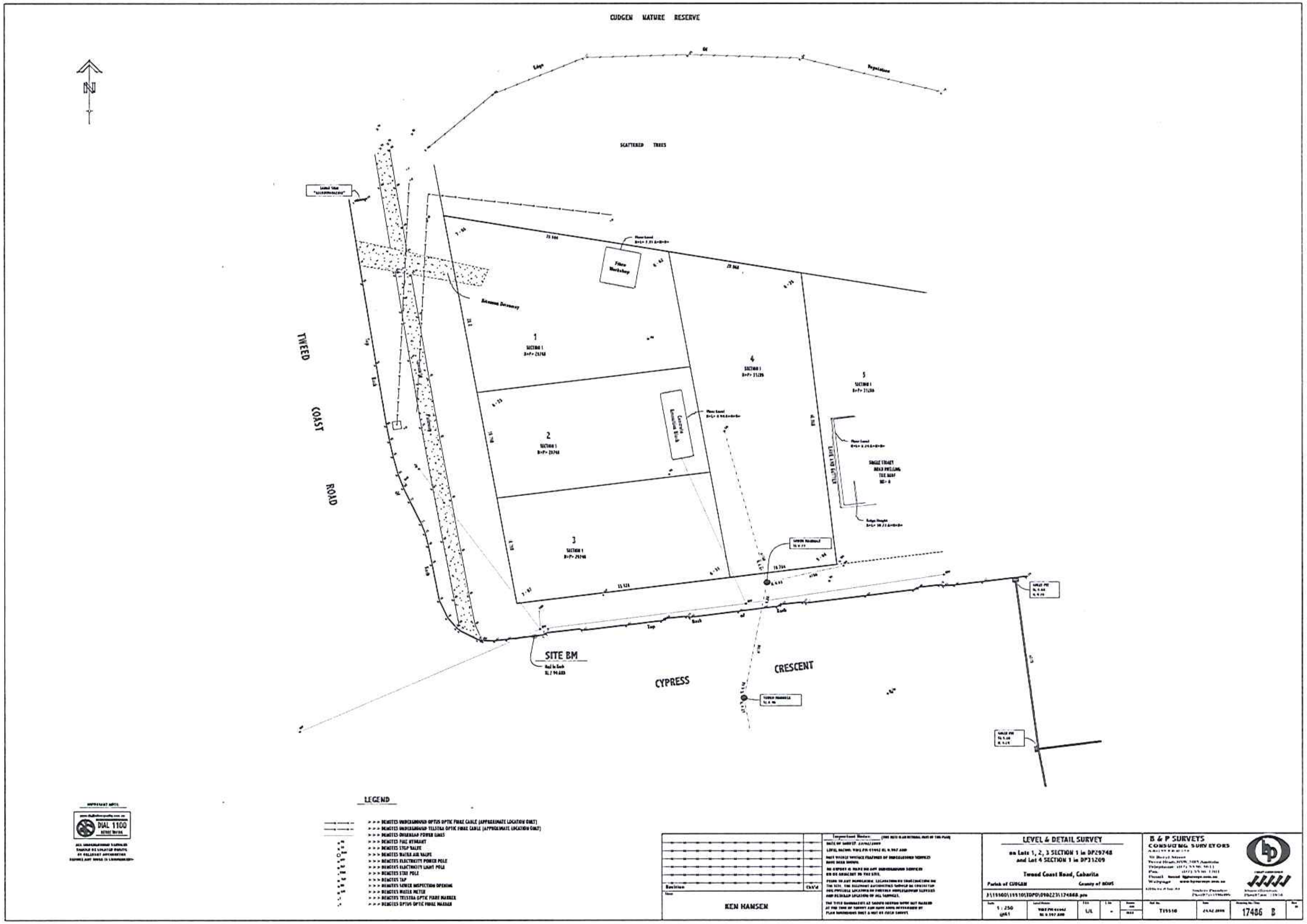
SITE AND SURVEY PLANS



Note: Drawing not to scale - Diagrammatic only - Measurements are approximate only

BORDER - TECH Unit 10 Corporate House, 8 Corporation Circuit Tweed Heads South NSW 2486	**CLIENT:** LANCE HANSEN c/- TWEED COAST HOMES PTY LTD	**PROJECT:** LOTS 1, 2, 3 & 4 Cnr COAST ROAD & CYPRESS CRESCENT CABARITA	NORTH	**JOB No:** BT 19320-1 **SITE PLAN**

Form A10 Issue 7



SURVEY PLAN
1:300

DATE	AMENDMENTS

PAT TWOHILL DESIGNS PTY. LIMITED
ARCHITECTS
SUITE 5/133 WHARF ST
TWEED HEADS NSW 2485

Client Name
Hansen Development P/L

Project Name
MULTI-RES DEV
LOTS 1-3 DP 29748
LOT 4 DP 31209 CRN COAST ROAD
& CYPRESS CRESCENT
CABARITA BEACH, NSW

Drawing Title:
SURVEY PLAN

Scale: 1:300	Date:
Drawn By: M.Y.	Checked By: P.A.T
Status:	

Project No.	Drawing No.	Rev
6005	PRE DA.1.01	

Plot Date: 21/04/09

APPENDIX B

ENGINEERING LOGS

BORDER – TECH

GEOTECHNICAL ENGINEERING SERVICES
Suite 10, No. 8 Corporation Cct, Tweed Heads South Ph (07) 5524 6199
1/35 Old Pacific Highway, Yatala Ph (07) 3804 6844

ENGINEERING LOG – BOREHOLE PROFILE

CLIENT:	LANCE HANSEN c/- TWEED COAST HOMES PTY LTD	**BOREHOLE I.D. :**	BH 1
PROJECT:	LOTS 1, 2, 3 & 4 Cnr TWEED COAST RD & CYPRESS CRES CABARITA	**JOB NO. :**	BT 19320
EQUIPMENT TYPE:	GCH 200	**HOLE DIAMETER:**	100mm
		PAGE:	1 of 2

Method	Water	Depth (m)	Graphic Log	Material Description	Consistency / Rel. Density	Sample/ Test	DCP Blows / 100mm	Structure and additional observation
AD		0.0		(SM) Silty SAND: Fine sand, Moist, Black	L			FILL
				(SM) Silty SAND: Fine sand, Moist, Dark grey				
		0.5						
				(SP) SAND: Fine to coarse sand, Moist, Dark grey				
		1.0						
		1.5		(SP) SAND: Fine sand, Moist, Pale yellow with brown mottling		SPT 2,2,3 N=5		ALLUVIUM
		2.0						
		2.5						
		3.0				SPT 1,3,3 N=6		
		3.5						
		4.0						
	▼	4.5				SPT 5,11,12 N=23		
MS				As above, wet	MD			
		5.0						
		5.5						
				Continued on Page 2				

BORDER – TECH

GEOTECHNICAL ENGINEERING SERVICES
Suite 10, No. 8 Corporation Cct, Tweed Heads South Ph (07) 5524 6199
1/35 Old Pacific Highway, Yatala Ph (07) 3804 6844

ENGINEERING LOG – BOREHOLE PROFILE

CLIENT:	LANCE HANSEN c/- TWEED COAST HOMES PTY LTD	**BOREHOLE I.D. :** BH 1
PROJECT:	LOTS 1, 2, 3 & 4 Cnr TWEED COAST RD & CYPRESS CRES CABARITA	**JOB NO. :** | BT 19320
EQUIPMENT TYPE: | GCH 200	**HOLE DIAMETER:** 100mm	**PAGE:** 2 of 2

Method	Water	Depth (m)	Graphic Log	Material Description	Consistency / Rel. Density	Sample/ Test	DCP Blows / 100mm	Structure and additional observation
MS		6.0		(SP) SAND: Fine sand, Moist, Pale yellow with brown mottling	D - VD	SPT 20/150 N>50		ALLUVIUM
		6.5						
		7.0		(GP) Silty GRAVEL: Fine gravel, Moist, Dark brown /black	D			
				(SM) Silty SAND: Fine sand, Wet, Grey	VD			
		7.5				SPT 25/150 N>50		
		8.0						
		8.5		(SP) SAND: Fine sand, (Indurated), Moist, Dark brown/black				Slightly cemented materials
		9.0				SPT 27/150 N>50		

BH 1 TERMINATED AT 9.2m - LIMIT OF INVESTIGATION

METHOD	WEATHERING	Consistency / Density / Rock Strength		SAMPLES / TESTS
AD auger drilling	HW – Highly	VS - Very Soft	VL - Very Loose	U( ) - undisturbed (size in mm)
RR rock roller	DW – Distinctly	S - Soft	L - Loose	D - disturbed
MS mud support	MW – Moderately	F - Firm	MD - Medium Dense	BS - bulk sample
NMLC rock coring	SW – Slightly	St - Stiff	D - Dense	DCP - dynamic cone penetrometer
WB wash bore	F – Fresh	VSt - Very Stiff	VD - Very Dense	SPT - standard penetrometer test
		Hd - Hard	Fb - Friable	N - Number of blows for SPT / 300mm
WATER		EL - extremely low	VL - very low	VS - Vane Shear
▼ water level		Lw - low	M - medium	A - Acid Sulfate Sample
▶ water seepage		H - high	VH - very high	PP - Pocket Penetrometer (kPa)
»– partial loss				
–« complete loss				

Logged By:	LD	**Date:**	26/08/09	**Checked By:**		**Date:** 30/8/09

BORDER – TECH

GEOTECHNICAL ENGINEERING SERVICES
Suite 10, No. 8 Corporation Cct, Tweed Heads South Ph (07) 5524 6199
1/35 Old Pacific Highway, Yatala Ph (07) 3804 6844

ENGINEERING LOG – BOREHOLE PROFILE

CLIENT:	LANCE HANSEN c/- TWEED COAST HOMES PTY LTD	**BOREHOLE I.D. :**	BH 2
PROJECT:	LOTS 1, 2, 3 & 4 Cnr TWEED COAST RD & CYPRESS CRES CABARITA	**JOB NO. :**	BT 19320
EQUIPMENT TYPE:	GCH 200	**HOLE DIAMETER:**	100mm
		PAGE:	1 of 2

Method	Water	Depth (m)	Graphic Log	Material Description	Consistency / Rel. Density	Sample/ Test	DCP Blows / 100mm	Structure and additional observation
AD		0		(SM) Silty SAND: Fine sand, Moist, Black	L			FILL
				(SM) Silty SAND: Fine to medium sand, Moist, Dark grey				
		0.5		(SM) Silty SAND: Fine sand, With fine gravel, Moist, Yellow				
		1.0		(SP) SAND: Fine to medium sand, Moist, Pale grey /white				ALLUVIUM
		1.5				SPT 1,3,3 N=6		
		2.0		(SP) SAND: Fine to medium sand, Moist, Pale yellow				
		2.5						
		3.0		(SP) SAND: Fine to medium sand, Moist, Orange		SPT 2,1,2 N=3		
		3.5		(SM) Silty SAND: Fine to medium sand, Moist, Pale yellow with brown mottling				
	▼	4.0		(SP) SAND: Fine to medium sand, Moist, Pale yellow	D			
MS		4.5				SPT 11,14,22 N=36		
		5.0						
		5.5		*Continued on Page 2*				

BORDER – TECH

GEOTECHNICAL ENGINEERING SERVICES
Suite 10, No. 8 Corporation Cct, Tweed Heads South Ph (07) 5524 6199
1/35 Old Pacific Highway, Yatala Ph (07) 3804 6844

ENGINEERING LOG – BOREHOLE PROFILE

CLIENT:	LANCE HANSEN c/- TWEED COAST HOMES PTY LTD	**BOREHOLE I.D. :** BH 2
PROJECT:	LOTS 1, 2, 3 & 4 Cnr TWEED COAST RD & CYPRESS CRES CABARITA	**JOB NO. :** BT 19320
EQUIPMENT TYPE:	GCH 200 **HOLE DIAMETER:** 100mm	**PAGE:** 2 of 2

Method	Water	Depth (m)	Graphic Log	Material Description	Consistency / Rel. Density	Sample/ Test	DCP Blows / 100mm	Structure and additional observation
MS		6.0		(SP) SAND: Fine to medium sand, Moist, Pale yellow	D - VD	SPT 22/150 N>50		ALLUVIUM
		6.5						
		7.0		(SM) Silty SAND: Fine sand, Wet, Grey	VD			
		7.5				SPT 24/150 N>50		
		8.0						
		8.5						
		9.0		(SP) SAND: Fine sand, (Indurated), Moist, Dark brown/black		SPT 30/150 N>50		Slightly cemented materials

BH 2 TERMINATED AT 9.2m - LIMIT OF INVESTIGATION

METHOD
AD auger drilling
RR rock roller
MS mud support
NMLC rock coring
WB wash bore

WATER
▼ water level
▶ water seepage
»– partial loss
–« complete loss

WEATHERING
HW – Highly
DW – Distinctly
MW – Moderately
SW – Slightly
F – Fresh

Consistency / Density / Rock Strength
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
Hd - Hard
EL - extremely low
Lw - low
H - high
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense
Fb - Friable
VL - very low
M - medium
VH - very high

SAMPLES / TESTS
U( ) - undisturbed (size in mm)
D - disturbed
BS - bulk sample
DCP - dynamic cone penetrometer
SPT - standard penetrometer test
N - Number of blows for SPT / 300mm
VS - Vane Shear
A - Acid Sulfate Sample
PP - Pocket Penetrometer (kPa)

Logged By:	LD	**Date:**	31/08/09	**Checked By:**		**Date:**	30/9/09

BORDER – TECH

GEOTECHNICAL ENGINEERING SERVICES
Suite 10, No. 8 Corporation Cct, Tweed Heads South Ph (07) 5524 6199
1/35 Old Pacific Highway, Yatala Ph (07) 3804 6844

ENGINEERING LOG – BOREHOLE PROFILE

CLIENT:	LANCE HANSEN c/- TWEED COAST HOMES PTY LTD	**BOREHOLE I.D. :**	BH 3
PROJECT:	LOTS 1, 2, 3 & 4 Cnr TWEED COAST RD & CYPRESS CRES CABARITA	**JOB NO. :**	BT 19320
EQUIPMENT TYPE:	GCH 200	**HOLE DIAMETER:**	100mm
		PAGE:	1 of 2

Method	Water	Depth (m)	Graphic Log	Material Description	Consistency / Rel. Density	Sample/ Test	DCP Blows / 100mm	Structure and additional observation
AD		0		(SM) Silty SAND: Fine sand, Moist, Black	L			FILL
				(SM) Silty SAND: Fine to medium sand, Moist, Dark grey				
		0.5		(SM) Silty SAND: Fine sand, Moist, Yellow/brown				
				(SP) SAND: Fine to medium sand, Moist, Pale grey /white				ALLUVIUM
		1.0						
		1.5		(SP) SAND: Fine to medium sand, Moist, Yellow /brown		SPT 1,2,3 N=5		
		2.0						
		2.5		(SP) SAND: Fine to medium sand, Moist, Orange				
		3.0				SPT 1,2,2 N=4		
		3.5		(SP) SAND: Fine to medium sand, Moist, Pale yellow /brown	L - MD			
		4.0						
		4.5		(SP) SAND: Fine to medium sand, Moist, Pale yellow	D	SPT 3,11,20 N=31		
MS	▼	5.0						
		5.5						

Continued on Page 2

BORDER – TECH

GEOTECHNICAL ENGINEERING SERVICES
Suite 10, No. 8 Corporation Cct, Tweed Heads South Ph (07) 5524 6199
1/35 Old Pacific Highway, Yatala Ph (07) 3804 6844

ENGINEERING LOG – BOREHOLE PROFILE

CLIENT:	LANCE HANSEN c/- TWEED COAST HOMES PTY LTD	**BOREHOLE I.D. :** BH 3
PROJECT:	LOTS 1, 2, 3 & 4 Cnr TWEED COAST RD & CYPRESS CRES CABARITA	**JOB NO. :** | BT 19320
EQUIPMENT TYPE: | GCH 200	**HOLE DIAMETER:** 100mm	**PAGE:** 2 of 2

Method	Water	Depth (m)	Graphic Log	Material Description	Consistency / Rel. Density	Sample/ Test	DCP Blows / 100mm	Structure and additional observation
MS		6.0		(SP) SAND: Fine to medium sand, Moist, Pale yellow	D	SPT 21/150 N>50		ALLUVIUM
		6.5						
		7.0		(SM) Silty SAND: Fine sand, Wet, Grey	VD			
		7.5				SPT 26/150 N>50		
		8.0						
		8.5						
		9.0				SPT 28/150 N>50		
				(SP) SAND: Fine sand, (Indurated), Moist, Dark brown/black				Slightly cemented materials

BH 3 TERMINATED AT 9.2m - LIMIT OF INVESTIGATION

METHOD
AD auger drilling
RR rock roller
MS mud support
NMLC rock coring
WB wash bore

WATER
▼ water level
► water seepage
»– partial loss
–« complete loss

WEATHERING
HW – Highly
DW – Distinctly
MW – Moderately
SW – Slightly
F – Fresh

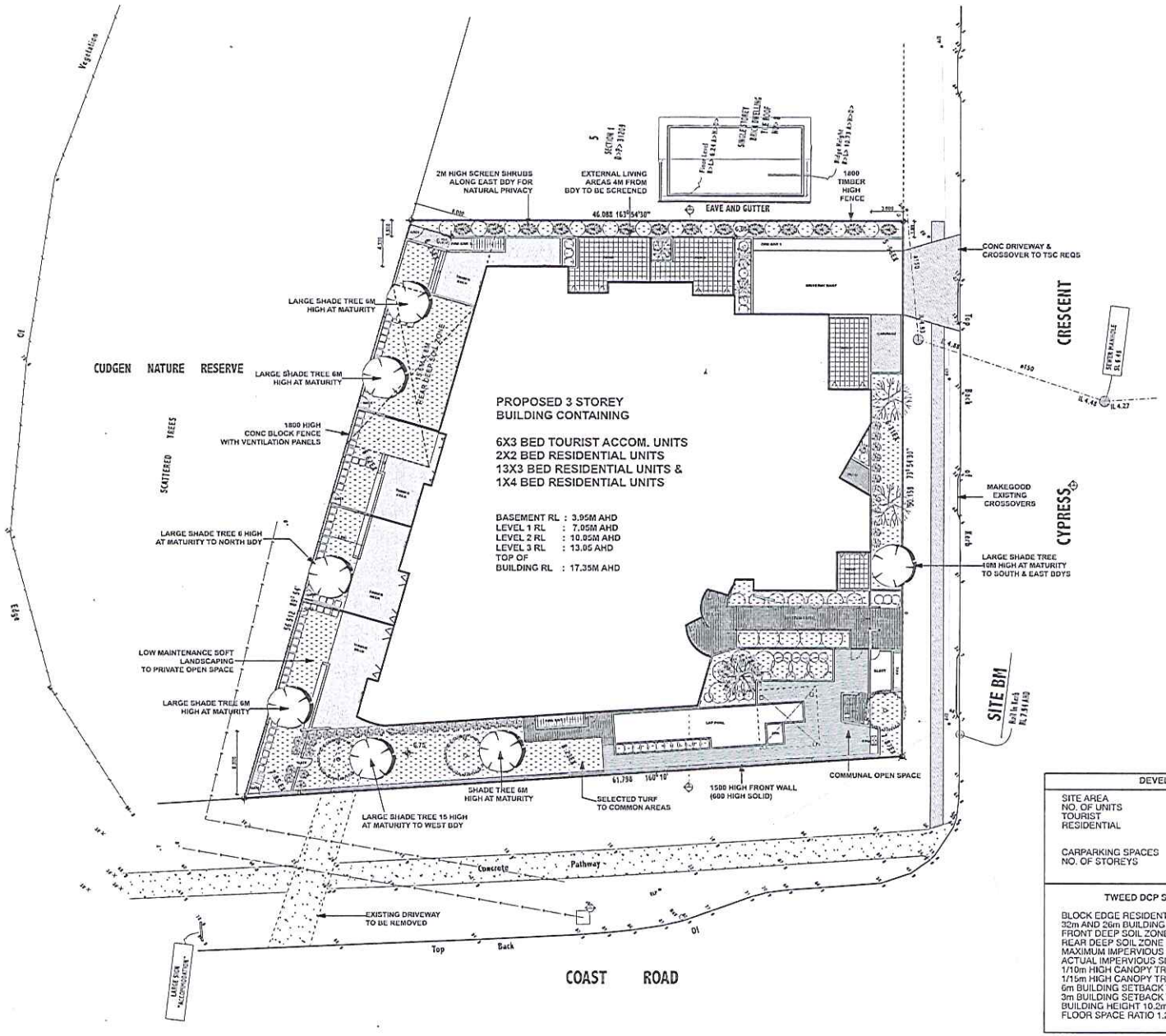
Consistency / Density / Rock Strength
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
Hd - Hard
EL - extremely low
Lw - low
H - high
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense
Fb - Friable
VL - very low
M - medium
VH - very high

SAMPLES / TESTS
U( ) - undisturbed (size in mm)
D - disturbed
BS - bulk sample
DCP - dynamic cone penetrometer
SPT - standard penetrometer test
N - Number of blows for SPT / 300mm
VS - Vane Shear
A - Acid Sulfate Sample
PP - Pocket Penetrometer (kPa)

Logged By:	LD	**Date:**	31/08/09	**Checked By:**		**Date:**	20/9/09

APPENDIX C

PROPOSED DEVELOPMENT SITE PLAN



DEVELOPMENT SUMMARY		
SITE AREA	2622.00m2	
NO. OF UNITS		
TOURIST	6	X 3 BED
RESIDENTIAL	3	X 2 BED
	13	X 3 BED
	1	X 4 BED
CARPARKING SPACES	49	
NO. OF STOREYS	3	

TWEED DCP SECTION A1 PART C DETAILS

BLOCK EDGE RESIDENTIAL FLAT BUILDING
32m AND 26m BUILDING LENGTH ALONG STREET FRONTAGE
FRONT DEEP SOIL ZONES PROVIDED
REAR DEEP SOIL ZONE PROVIDED 15.6m x 8m
MAXIMUM IMPERVIOUS SITE AREA 60%
ACTUAL IMPERVIOUS SITE AREA 59.9% INCLUDING GREEN ROOF
1/10m HIGH CANOPY TREE IN EACH FRONT DEEP SOIL ZONE
1/15m HIGH CANOPY TREE IN REAR DEEP SOIL ZONE
6m BUILDING SETBACK TO COAST ROAD
3m BUILDING SETBACK TO CYPRESS CRESCENT
BUILDING HEIGHT 10.2m
FLOOR SPACE RATIO 1.2:1

SITE PLAN
1:200 @A1

DATE AMENDMENTS

PROJECT NORTH

PAT TWOHILL DESIGNS PTY. LIMITED
ARCHITECTS
SUITE 9/139 SHARP ST
TWEED HEADS NSW 2485
PH. + FAX 07 5536 9170
EMAIL mail@patdesigns.com.au

Client Name
Hansen Development P/L

Project Name
MULTI-RES DEV
LOTS 1-3 DP 29748
LOT 4 DP 31209 CNR COAST ROAD & CYPRESS CRESCENT
CABARITA BEACH, NSW

Drawing Title:
SITE PLAN

Scale: 1:200	Date:
Drawn By: M.Y.	Checked By: P.A.T
Status:	
Project No: 6005	Drawing No.: PRE DA.1.02
Rev:	
Plot Date: 21/04/09	

APPENDIX D

NOTES ON UNDERSTANDING YOU GEOTECHNICAL REPORT

SCOPE These standard notes may be of assistance when understanding terms and recommendations given in this report. These notes are for general conditions and not all terms given may be of concern to the report attached. The descriptive terms adopted by Border-Tech are given below and are largely consistent with Australian Standards AS1726-1993 'Geotechnical Site Investigations'.

CLIENT can be described and is limited to the financer of this geotechnical investigation.

LEGALITY and privacy of this document is based on communication between Border-Tech and the client. Unless indicated otherwise the report was prepared specifically for the client involved and for the purposes indicated by the client. Use by any other party for any purpose, or by the client for a different purpose, will result in recommendations becoming invalid and Border-Tech will hold no responsibility for problems which may arise.

GEOTECHNICAL REPORTS are predominantly derived using professional estimates determined from the results of fieldwork, in-situ and laboratory testing and experience from previous investigations in the area, from which geotechnical engineers then formulate an opinion about overall subsurface conditions. The client must be made aware that the investigations are undertaken to ensure minimal site impact using test-pits or small diameter boreholes and soil conditions on-site may vary from those encountered during the investigation.

CLIENTS RESPONSIBILITY to notify this office should there be adjustments in proposed structure/location or inconsistencies with material descriptions given in this report and those encountered on site. Border-Tech is able to provide a range of services from on-site inspections to full project supervision to confirm recommendations given in the report.

CSIRO Publication BTF 18 'Foundation Maintenance and Footing Performance: A Homeowner's Guide' explains how to adequately maintain drainage during and post construction which lies as the responsibility of the client. Suitable drainage ensures recommendations given in this report remain valid.

INVESTIGATION METHODS adopted by Border-Tech are designed to incorporate individual project-specific factors to obtain information on the physical properties of soil and rock around a site to design earthworks and foundations for proposed structures. The following methods of investigation currently adopted by this company are summarised below:-

HAND AUGER – investigations enable field work to be undertaken where access is limited. The materials must have sufficient cohesion to stand unsupported in an unlined borehole and there must be no large cobbles boulders or other obstructions which would prevent rotation of the auger.

TEST-PITS – investigations are carried out with an excavator or backhoe, allowing a visual inspection of sub-surface material in-situ and from samples removed. The limit of investigation is restricted by the reach of the excavator or backhoe.

CONTINUOUS SPIRAL FLIGHT AUGERING TECHNIQUES – investigations are advanced by pushing a 100mm diameter spiral into the sub-surface and withdrawing it at regular intervals to allow sampling or testing as it emerges.

WASH BORING – investigations are advanced by removing the loosened soil from the borehole by a stream of water or drilling mud issuing from the lower end of the wash pipe which is worked up and down or rotated by hand in the borehole. The water or mud carries the soil up the borehole where it overflows at ground level where the soil in suspension is allowed to settle in a pond or tank and the fluid is re-circulated or discharged to waste as required.

NON-CORE ROTARY DRILLING – investigations are advanced using a rotary bit with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from feel and rate of penetration.

ROTARY MUD DRILLING – is carried out as above using mud as support and circulating fluid for the borehole drilling. The mud tends to mask the cuttings and reliable identification is again only possible from separate intact sampling.

CONTINUOUS CORE DRILLING – investigations are carried out in rock material, specimens of rock in the form of cylindrical cores are recovered from the drill holes by the means of core barrel. The core barrel is provided at its lower end with a detachable core bit which carries industrial diamond chips in a matrix of metal. Rotation of the barrel by means of the drill rods causes the core bit to cut an annulus in the rock, the cuttings being washed to the surface by a stream of pumped down the hollow drill rods.

TESTING METHODS adopted by Border-Tech to determine soil properties include but not limited to the following:-

U50 – Undisturbed samples are obtained by inserting a 50mm diameter thin-walled steel tube into the material and withdrawing with a sample of the soil in a moderately undisturbed condition.

PP – Pocket Penetrometer tests are commonly used on thin walled tube samples of cohesive soils to evaluate consistency and approximate unconfined compressive strength of saturated cohesive soils. They may also be used for the same purpose in freshly excavated trenches.

VS – Vane Shear test are commonly used in-situ or on thin walled tube samples of cohesive soils by introducing the vane into the material where the measurement of the undrained shear strength is required. Then the vane is rotated and the torsional force required to cause shearing is calculated.

DCP – Dynamic Cone Penetrometer tests are commonly used in-situ to measure the strength attributes of penetrability and compaction of sub-surface materials.

SPT – Standard Penetration Tests are commonly uses to determine the density of granular deposits but are occasionally used in cohesive material as a means of determining strength and also of obtaining a relatively undisturbed sample. Samples and results are obtained by driving a 50mm diameter split tube through blows from a slide hammer with a weight of 63.5kg falling through a distance of 760mm. Blow counts are recorded for 150mm intervals with the sum of the number of blows required for the second and third 150mm of penetration is termed the "standard penetration resistance" or the "N-value".

GEOLOGICAL ORIGINS of sub-surface material plays a considerable role in the development of engineering parameters and have been summarised as follows:-

FILL – materials are man made deposits, which may be significantly more variable between test locations than naturally occurring soils.

RESIDUAL – soils are present in a region as a result of weathering over the geological time scale.

COLLUVIAL – soils have been deposited recently, on the geological time scale, as soils being transported slowly down slope due to gravitational creep.

ALLUVIAL – soils have been deposited recently, on the geological time scale, as water borne materials.

AEOLIAN – soils have been deposited recently, on the geological time scale, as wind borne materials.

SOIL DESCRIPTION is based on an assessment of disturbed samples, as recovered from boreholes and excavations, and from undisturbed materials. Soil descriptions adopted by Border-Tech are largely consistent with AS 1726-1993 '*Geotechnical Site Investigation*'. Soil types are described according to the predominating particle size, qualified by the grading of other particles present on the following bases detailed in Table 1.

COHESIVE SOILS ability to hold moisture known as its liquid limit is the state of a soil when it goes from a solid state to a liquid state described in Table 2

TABLE 1

Soil Classification	Particle Size
Clay	< 0.002 mm
Silt	0.002 – 0.06 mm
Sand	0.06 – 2.00 mm
Gravel	2.00 – 60.0 mm

TABLE 2

Descriptive Type	Range of Liquid Limit %
Of low plasticity	≤ 35
Of medium plasticity	> 35 ≤ 50
Of high plasticity	> 50

Furthermore to soil description cohesive soils are described on there strength (assessed in conjunction with penetration tests) and liquid limit. Non-cohesive soil strengths are described by there density index. With descriptions for cohesive and non-cohesive soils summarised in Table 3.

TABLE 3

COHESIVE SOILS		NON-COHESIVE SOILS	
Term	**Undrained Shear Strength kPa**	**Term**	**Density Index %**
Very soft	≤ 12	Very Loose	≤15
Soft	> 12 ≤25	Loose	> 15 ≤35
Firm	> 25 ≤50	Medium Dense	> 35 ≤65
Stiff	> 50 ≤100	Dense	> 65 ≤85

Very Stiff	> 100 ≤200	Very Dense	> 85
Hard	> 200		

Description of terms used to describe material portion are summarised in Table 4.

TABLE 4

COARSE GRAINIED SOILS		FINE GRAINED SOILS	
% Fines	**Modifier**	**% Coarse**	**Modifier**
≤ 5	Omit or 'trace'	≤ 15	Omit or 'trace'
> 5 ≤12	Describe as 'with'	> 15 ≤30	Describe as 'with'
> 12	Prefix soil as 'silty/clayey'	> 30	Prefix soil as 'sandy/gravelly'

ROCK DESCRIPTIONS are determined from disturbed samples or specimens collected during field investigations. A rocks presence of defects and the effects of weathering are likely to have a great influence on engineering behaviour.

Rock Material Weathering Classification is summarised in Table 5.

TABLE 5

Term	Symbol	Definition
Residual Soils	-	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported
Extremely Weathered Rock	XW	Rock is weathered to such an extent that it has 'soil' properties, i.e. it either disintegrates or can be remoulded, in water
Distinctly Weathered Rock	DW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to decomposition of weathering products in pores
Slightly Weathered Rock	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock
Fresh rock	FR	Rock shows no signs of decomposition or staining

Rock Material Strength Classification is summarised in Table 6.

TABLE 6

Term	Symbol	Point load index (MPa) I_s50	Field guide to strength
Extremely Low	EL	≤0.03	Easily remoulded by hand to a material with soil properties
Very Low	VL	>0.03 ≤0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 3cm thick can be broken by finger pressure
Low	L	>0.1 ≤0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling
Medium	M	>0.3 ≤1.0	Readiy scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty
High	H	>1.0 ≤3.0	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer
Very High	VH	>3.0 ≤10	Hand specimen breaks with pick after more than one blow; rock rings under hammer
Extremely High	EH	>10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer

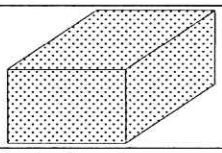
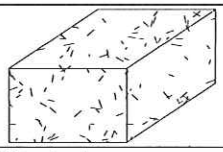
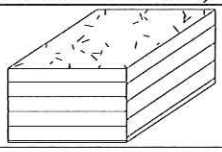
Rock Material Defect Shapes are summarised in Table 7.

TABLE 7

Term	Description
Planar	The defect does not vary in orientation.
Curved	The defect has a gradual change in orientation
Undulating	The defect has a wavy surface
Stepped	The defect has one or more well defined steps.
Irregular	The defect has many sharp changes of orientation
Smooth	The defect has a flat even finish
Rough	The defect has a irregular disoriented finish

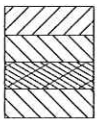
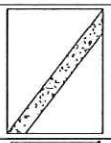
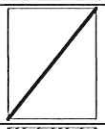
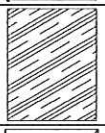
Rock Material Texture and Fabric are summarised in Table 8.

TABLE 8

Geological Description	Massive		Layered (Bedded foliate cleaved)
Diagram			
Fabric Type	Effectively homogenous and isotropic. Bulky or equi-dimensional grains uniformly distributed	Effectively homogeneous and isotropic. Elongated	Effective homogeneous with planar anisotropy. Elongated or tabular grains or pores in a layered arrangement

Rock Material Defect Type is summarised in Table 9

TABLE 9

Term	Definition	Diagram
Bedding	Signifying existence of beds or laminatae. Planes dividing sedimentary rocks of the same or different lithology. Structure occurring in granite and similar rocks evident in a tendency to split more or less horizontally to the land surface	
Cross Bedding	Also called cross-lamination or false bedding. The structure commonly present in granular sedimentary rocks, which consists of tabular, irregularly lenticular or wedge-shaped bodies lying essentially parallel to the general stratification and which them selves show pronounced lamination structure in which the laminae are steeply inclined to the general bedding.	
Crushed Seam	A fracture at a more or less acute angle to applied force generally with some pulverized material along its surface	
Joint	A fracture in rock, generally more or less vertical or transverse to bedding, along which no appreciable movement has occurred.	
Parting	A small joint in rock or a layered rock where the tendency of crystals to separate along certain planes that are not true cleavage planes.	
Sheared Zone	A fracture that results from stresses which tend to shear one part of a specimen past the adjacent part