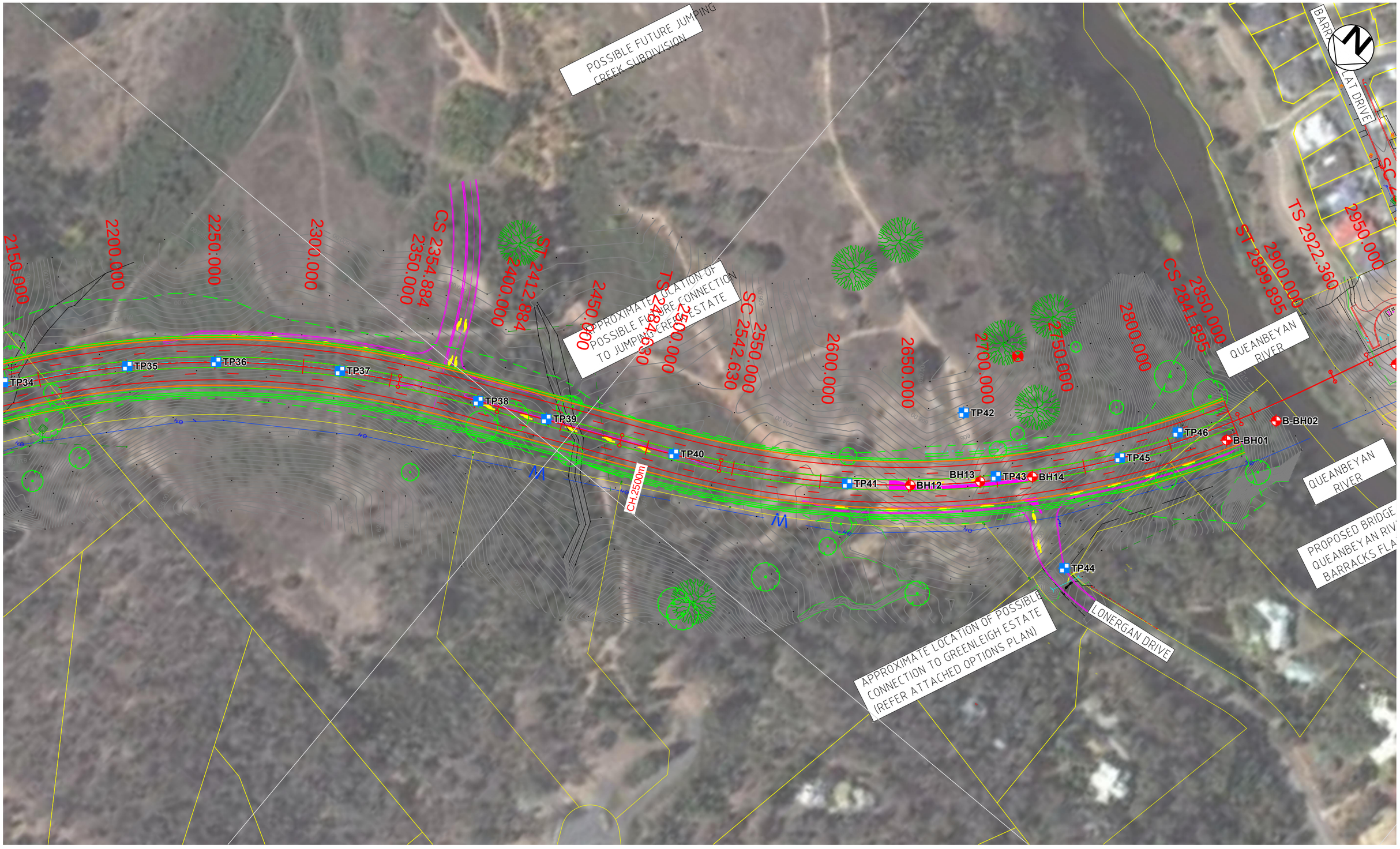


revision	no.	description	drawn	approved	date

20 0 20 40 60 80 100

Scale (metres) 1:2000

drawn	BC / LH
approved	BC
date	28/07/14
scale	1:2000
original size	A3

coffey

client: OPUS INTERNATIONAL CONSULTANTS

project: ELLERTON DRIVE EXTENSION
ELLERTON DRIVE, QUEANBEYAN NSW

title: INVESTIGATION LOCATION PLAN - SHEET 4 OF 6

project no: GEOTFYSH09703AA | drawing no: 014 | rev: A

PLOT DATE: 28/07/2014 10:51:47 AM DWG FILE: F:\GEOTECH\NICS\1.PROJECTS\OTHER OFFICE JOBS\CANBERRA\GEOTFYSH09703AA\CAD\GEOTFYSH09703AA.DWG

revision	no.	description	drawn	approved	date

20 0 20 40 60 80 100

Scale (metres) 1:2000

drawn	BC / LH
approved	BC
date	28/07/14
scale	1:2000
original size	A3

coffey

client: OPUS INTERNATIONAL CONSULTANTS

project: ELLERTON DRIVE EXTENSION
ELLERTON DRIVE, QUEANBEYAN NSW

title: INVESTIGATION LOCATION PLAN - SHEET 5 OF 6

project no: GEOTFYSH09703AA | drawing no: 015 | rev: A

PLOT DATE: 28/07/2014 10:34:35 AM DWG FILE: F:\GEOTECH\NICS\1.PROJECTS\OTHER OFFICE JOBS\CANBERRA\GEOTFYSH09703AA\CAD\GEOTFYSH09703AA.DWG

revision	no.	description	drawn	approved	date

20 0 20 40 60 80 100

Scale (metres) 1:2000

drawn	BC / LH
approved	BC
date	28/07/14
scale	1:2000
original size	A3

coffey

client: OPUS INTERNATIONAL CONSULTANTS

project: ELLERTON DRIVE EXTENSION
ELLERTON DRIVE, QUEANBEYAN NSW

title: INVESTIGATION LOCATION PLAN - SHEET 6 OF 6

project no: GEOTFYSH09703AA | drawing no: 016 | rev: A

PLOT DATE: 28/07/2014 10:34:44 AM DWG FILE: F:\GEOTECH\NCS\1.PROJECTS\OTHER OFFICE JOBS\CANBERRA\GEOTFYSH09703AA\CAD\GEOTFYSH09703AA.DWG

BARRACKS FLAT DRIVE

DOEBERL PLACE

POSSIBLE ROAD CONNECTION BETWEEN ELLERTON DRIVE AND BARRACKS FLAT DRIVE (REFER ATTACHED OPTIONS PLAN)

QUEANBEYAN RIVER

PROPOSED BRIDGE OVER QUEANBEYAN RIVER AND BARRACKS FLAT DRIVE

LONERGAN DRIVE

APPROXIMATE LOCATION OF POSSIBLE CONNECTION TO GREENLEIGH ESTATE (REFER ATTACHED OPTIONS PLAN)

BLE FUTURE JUMPING
K SUBDIVISION

XIMATE LOCATION OF
IBLE FUTURE CONNECTION
UMPING CREEK ESTATE

CH:2500m

TS 2922.360
SAG 2990.603
CS 2975.360
ST 2899.895

TP40 TP41 TP42 TP43 TP44 TP45 TP46 TP47 TP48 TP49 TP49S TP50 TP51 TP52

BH12 BH13 BH14 B-BH01 B-BH02 B-BH03 B-BH04 B-BH05 B-BH06

CH:3000m

2500.000 2550.000 2600.000 2650.000 2700.000 2750.000 2800.000 2850.000 2900.000 2950.000 3000.000 3050.000 3100.000 3150.000 3200.000 3250.000

revision	no.	description	drawn	approved	date

20 0 20 40 60 80 100

Scale (metres) 1:2000

drawn	BC / LH
approved	BC
date	28/07/14
scale	1:2000
original size	A3

coffey

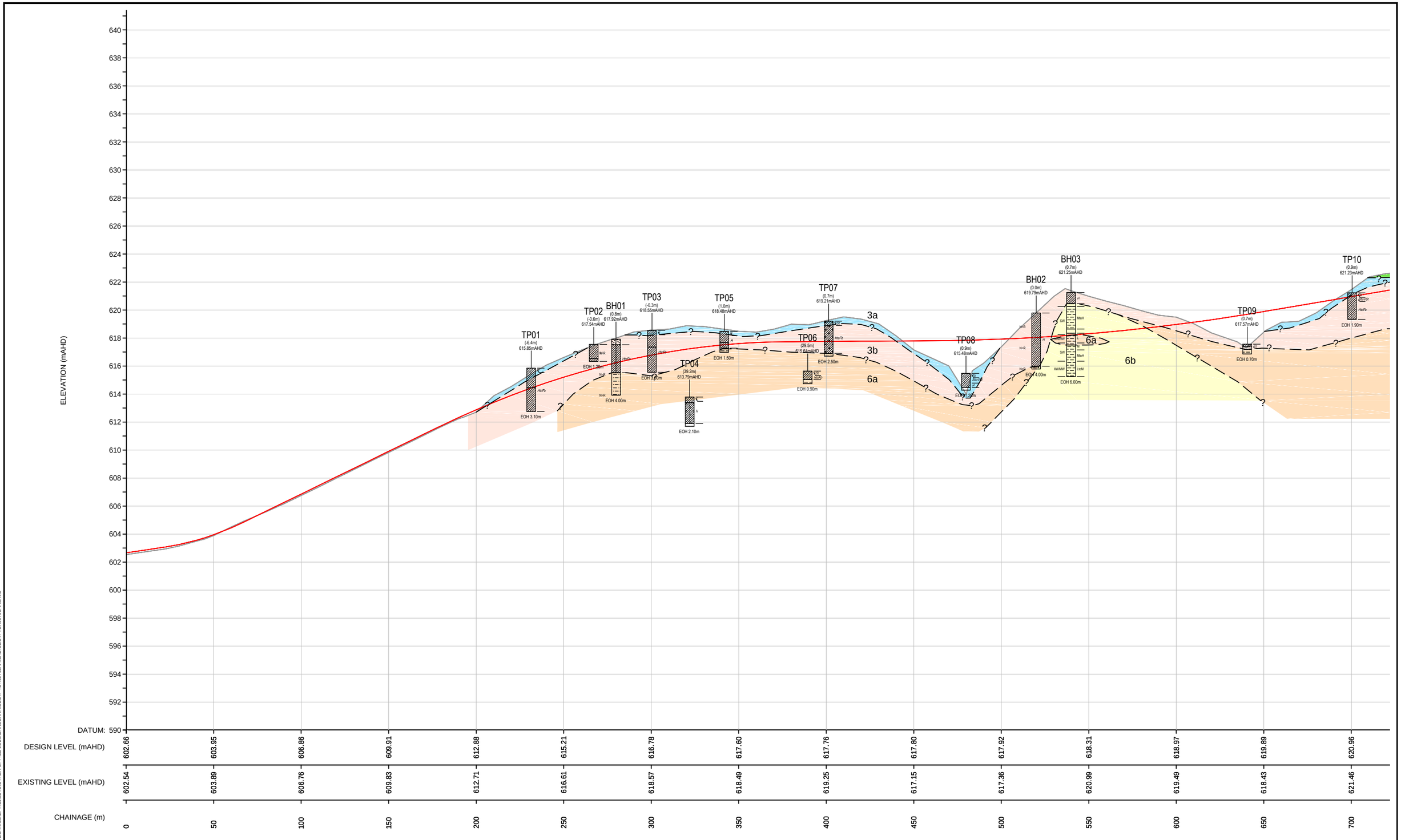
client: OPUS INTERNATIONAL CONSULTANTS

project: ELLERTON DRIVE EXTENSION
ELLERTON DRIVE, QUEANBEYAN NSW

title: INVESTIGATION LOCATION PLAN - QUEANBEYAN RIVER CROSSING

project no: GEOTFYSH09703AA | drawing no: 017 | rev: A

PLOT DATE: 28/07/2014 10:48:57 AM DWG FILE: F:\GEOTECHNICS\LPROJECTS\OTHER OFFICE JOBS\CANBERRA\GEOTFYSH09703AA\CAD\GEOTFYSH09703AA.DWG



revision	no.	description	drawn	approved	date

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Horizontal Scale (metres) 1:2000

2.5 0 5 10
Vertical Scale (metres) 1:250

drawn	BC / LH
approved	BC
date	28/07/14
scale	AS SHOWN
original size	A3

coffey

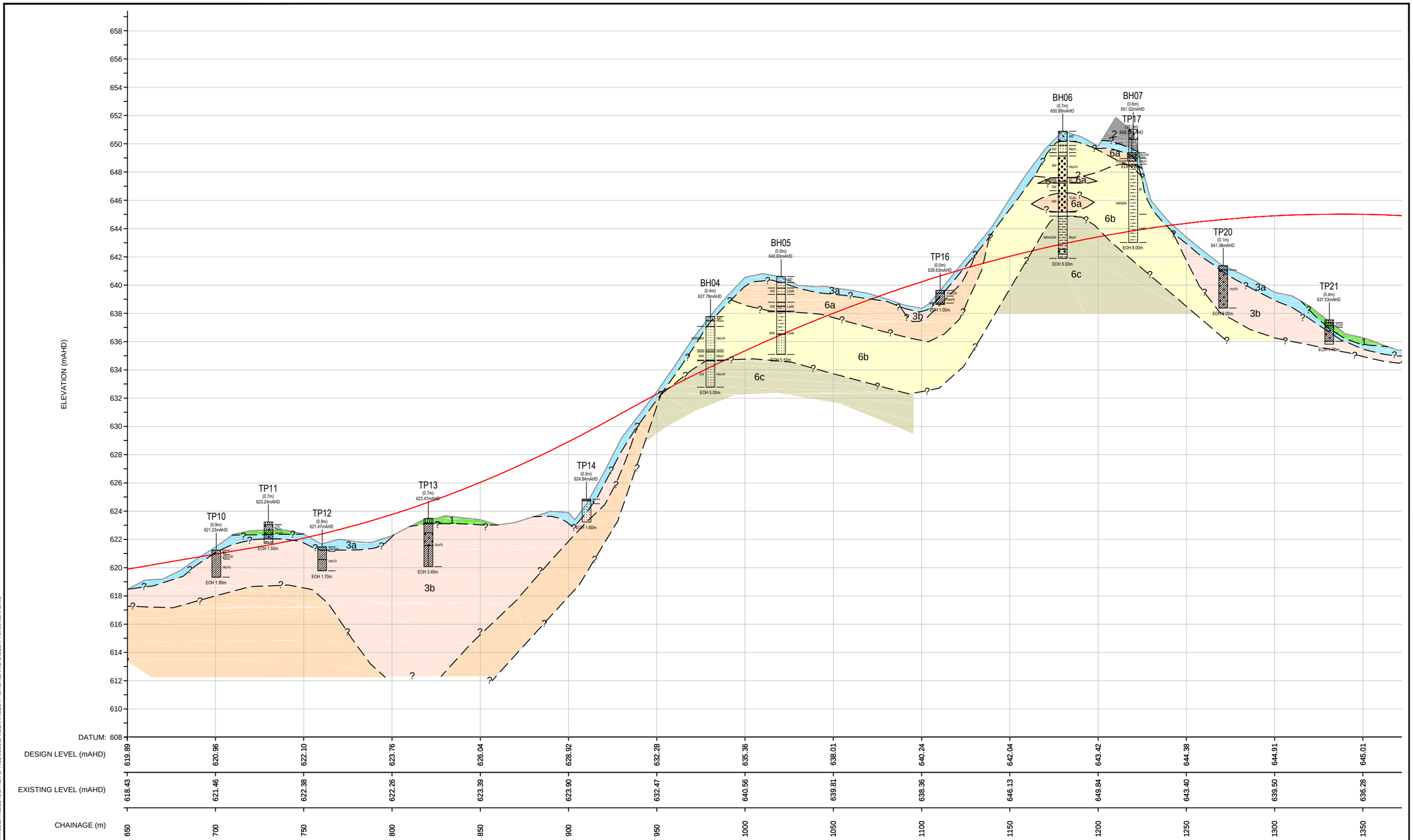
client: OPUS INTERNATIONAL CONSULTANTS

project: ELLERTON DRIVE EXTENSION
ELLERTON DRIVE, QUEANBEYAN NSW

title: GEOTECHNICAL LONG SECTION - SHEET 1 OF 7

project no: GEOTFYSH09703AA | drawing no: 021 | rev: A

PLOT DATE: 28/07/2014 10:33:03 AM DWG FILE: F:\GEOTECHNICS\1.PROJECTS\OTHER OFFICE JOBS\CANBERRA\GEOTF-YSH09703AA\CAD\GEOTFYSH09703AA.DWG



revision	no.	description	drawn	approved	date

20 0 20 40 60 80 100
Horizontal Scale (metres) 1:2000

2.5 0 5 10
Vertical Scale (metres) 1:250

drawn	BC / LH
approved	BC
date	28/07/14
scale	AS SHOWN
original size	A3

coffey

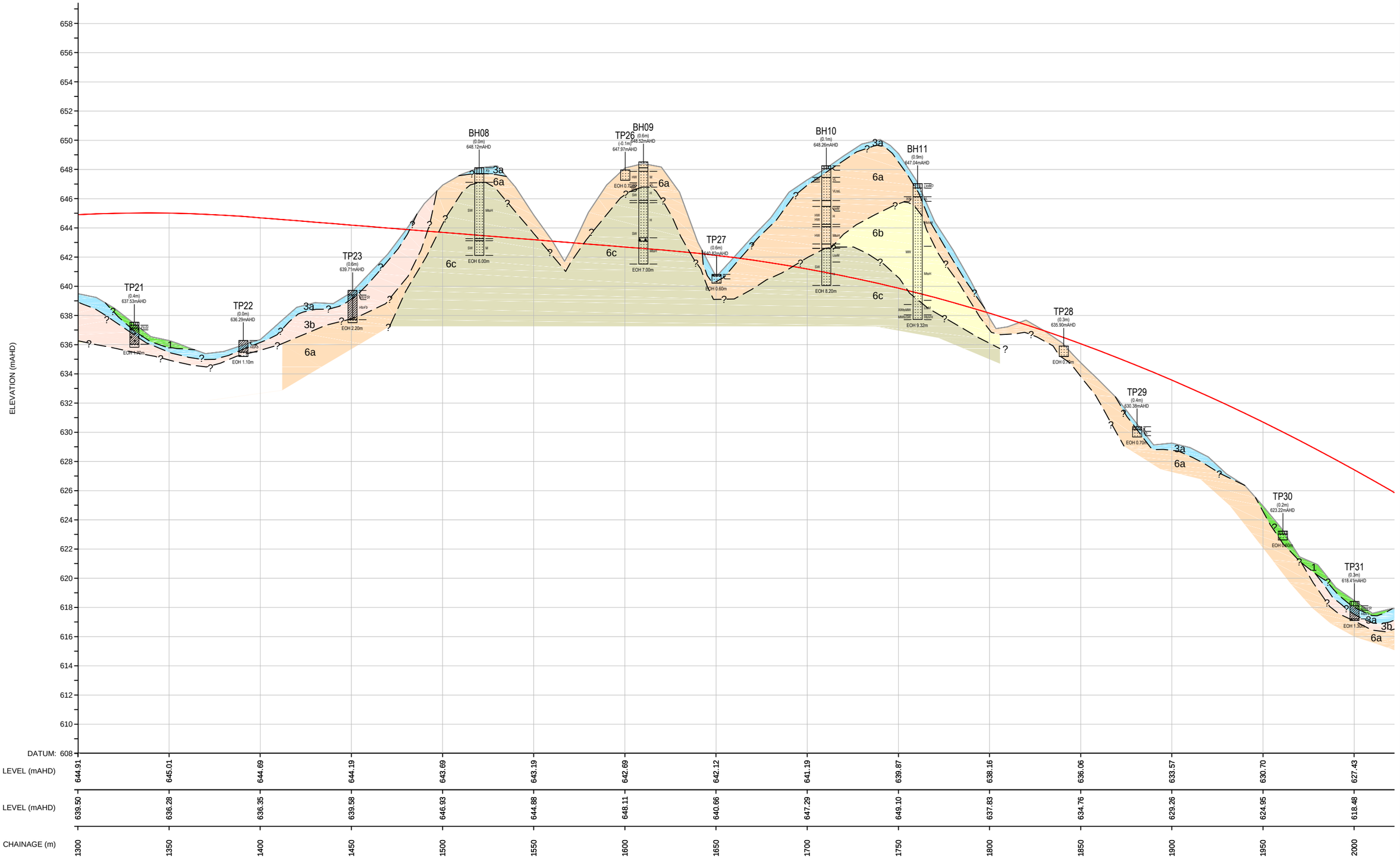
client: OPUS INTERNATIONAL CONSULTANTS

project: ELLERTON DRIVE EXTENSION
ELLERTON DRIVE, QUEANBEYAN NSW

title: GEOTECHNICAL LONG SECTION - SHEET 2 OF 7

project no: GEOTFYSH09703AA | drawing no: 022 | rev: A

PLOT DATE: 28/07/2014 10:33:11 AM DWG FILE: F:\GEOTECHNICS\1.PROJECTS\OTHER OFFICE JOBS\CANBERRA\GEOTFYSH09703AA\CAD\GEOTFYSH09703AA.DWG



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revision	no.	description	drawn	approved	date

20 0 20 40 60 80 100
Horizontal Scale (metres) 1:2000

2.5 0 5 10
Vertical Scale (metres) 1:250

drawn	BC / LH
approved	BC
date	28/07/14
scale	AS SHOWN
original size	A3

coffey

client: OPUS INTERNATIONAL CONSULTANTS

project: ELLERTON DRIVE EXTENSION
ELLERTON DRIVE, QUEANBEYAN NSW

title: GEOTECHNICAL LONG SECTION - SHEET 3 OF 7

project no: GEOTFYSH09703AA | drawing no: 023 | rev: A

ELEVATION (mAHD)

636
634
632
630
628
626
624
622
620
618
616
614
612
610
608
606
604
602
600
598
596
594
592
590
588
586

TP30
(0.2m)
623.22mAHD
EOH 0.40m

TP31
(0.3m)
618.41mAHD
EOH 1.30m

TP32
(-0.1m)
617.57mAHD
EOH 0.80m

TP33
(0.0m)
614.47mAHD
EOH 0.60m

TP34
(-3.0m)
606.97mAHD
EOH 0.90m

TP35
(-0.1m)
608.22mAHD
EOH 1.80m

TP36
(-0.1m)
609.48mAHD
EOH 0.40m

TP37
(-0.1m)
610.52mAHD
EOH 1.60m

TP38
(-0.1m)
605.70mAHD
EOH 1.80m

TP39
(-0.6m)
603.79mAHD
EOH 2.00m

TP40
(-0.4m)
605.23mAHD
EOH 2.30m

TP41
(0.1m)
600.79mAHD
EOH 3.20m

BH12
(0.2m)
603.12mAHD
EOH 6.30m

1
2
3a
3b
4
6a
6b

DATUM: 586

DESIGN LEVEL (mAHD)	630.70		627.43		623.77		619.92		616.78		614.47		612.88		611.38		609.88		608.32		606.58		604.67		602.57		600.35		598.12
EXISTING LEVEL (mAHD)	624.95		618.48		617.19		612.12		607.00		608.23		609.49		610.53		609.48		605.78		603.67		605.30		603.14		601.28		603.05
CHAINAGE (m)	1950		2000		2050		2100		2150		2200		2250		2300		2350		2400		2450		2500		2550		2600		2650

revision	no.	description	drawn	approved	date

20 0 20 40 60 80 100
Horizontal Scale (metres) 1:2000

2.5 0 5 10
Vertical Scale (metres) 1:250

drawn	BC / LH
approved	BC
date	28/07/14
scale	AS SHOWN
original size	A3

coffey

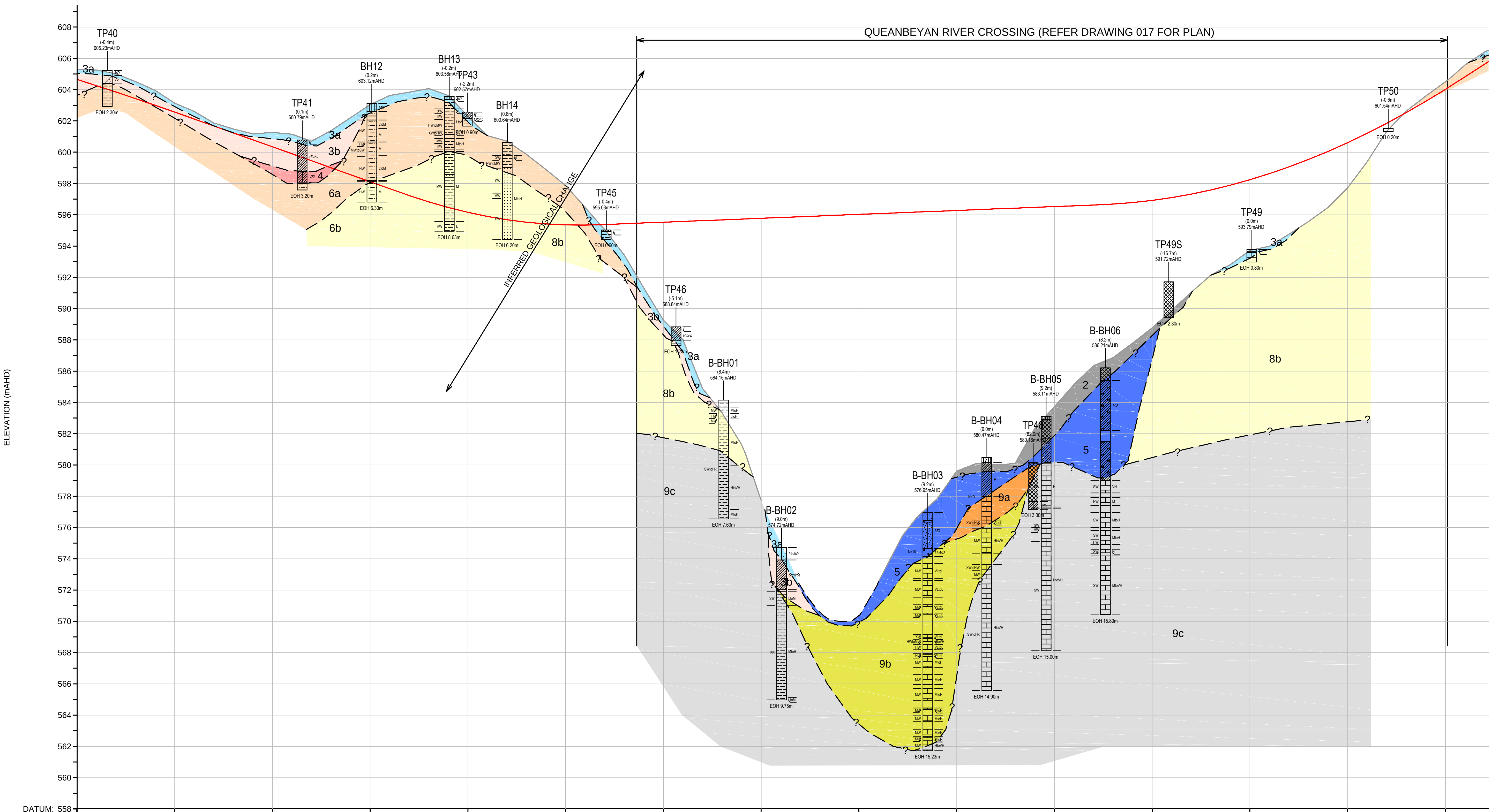
client: OPUS INTERNATIONAL CONSULTANTS

project: ELLERTON DRIVE EXTENSION
ELLERTON DRIVE, QUEANBEYAN NSW

title: GEOTECHNICAL LONG SECTION - SHEET 4 OF 7

project no: GEOTFYSH09703AA | drawing no: 024 | rev: A

PLOT DATE: 28/07/2014 10:33:26 AM DWG FILE: F:\GEOTECHNICS\1-PROJECTS\OTHER OFFICE JOBS\CANBERRA\GEOTFYSH09703AA\CAD\GEOTFYSH09703AA.DWG



DESIGN LEVEL (mAHD)	604.67	602.57	600.35	598.12	596.16	595.35	595.53	595.78	596.03	596.28	596.53	596.92	598.25	600.62	604.03
EXISTING LEVEL (mAHD)	605.30	603.14	601.28	603.05	602.30	597.88	589.26	577.71		579.61	583.72	588.77	593.72	597.72	604.51
CHAINAGE (m)	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950	3000	3050	3100	3150	3200

PLOT DATE: 28/07/2014 10:33:35 AM DWG FILE: F:\GEOTECHNICS\1.PROJECTS\OTHER OFFICE JOBS\CANBERRA\GEOTFYSH09703AA\CAD\GEOTFYSH09703AA.DWG

revision

no.	description	drawn	approved	date

20 0 20 40 60 80 100

Horizontal Scale (metres) 1:2000

2.5 0 5 10

Vertical Scale (metres) 1:250

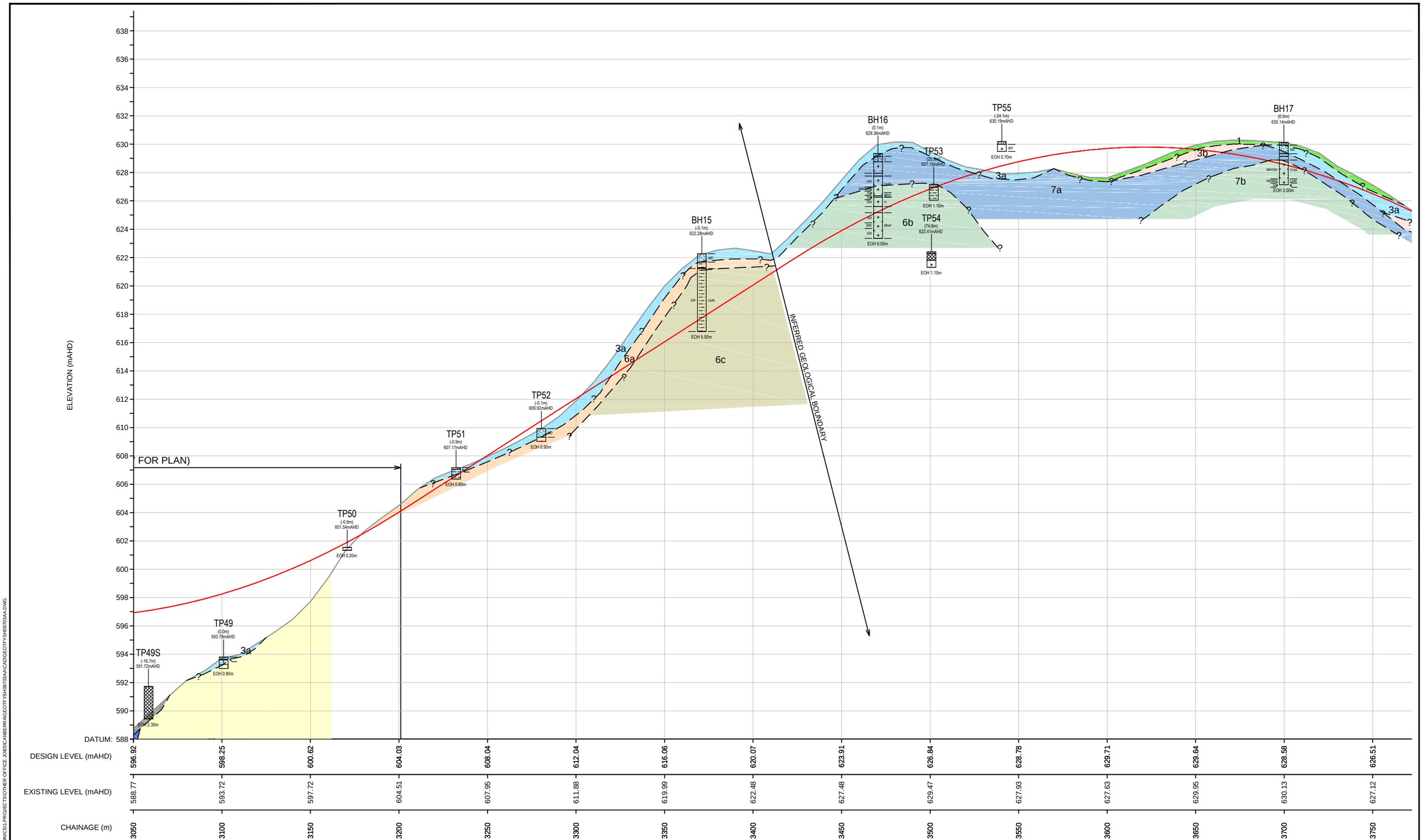
drawn	BC / LH
approved	BC
date	28/07/14
scale	AS SHOWN
original size	A3

client: OPUS INTERNATIONAL CONSULTANTS

project: ELLERTON DRIVE EXTENSION
ELLERTON DRIVE, QUEANBEYAN NSW

title: GEOTECHNICAL LONG SECTION - SHEET 5 OF 7

project no: GEOTFYSH09703AA | drawing no: 025 | rev: A



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revision	no.	description	drawn	approved	date

Horizontal Scale (metres) 1:2000

Vertical Scale (metres) 1:250

drawn	BC / LH
approved	BC
date	28/07/14
scale	AS SHOWN
original size	A3

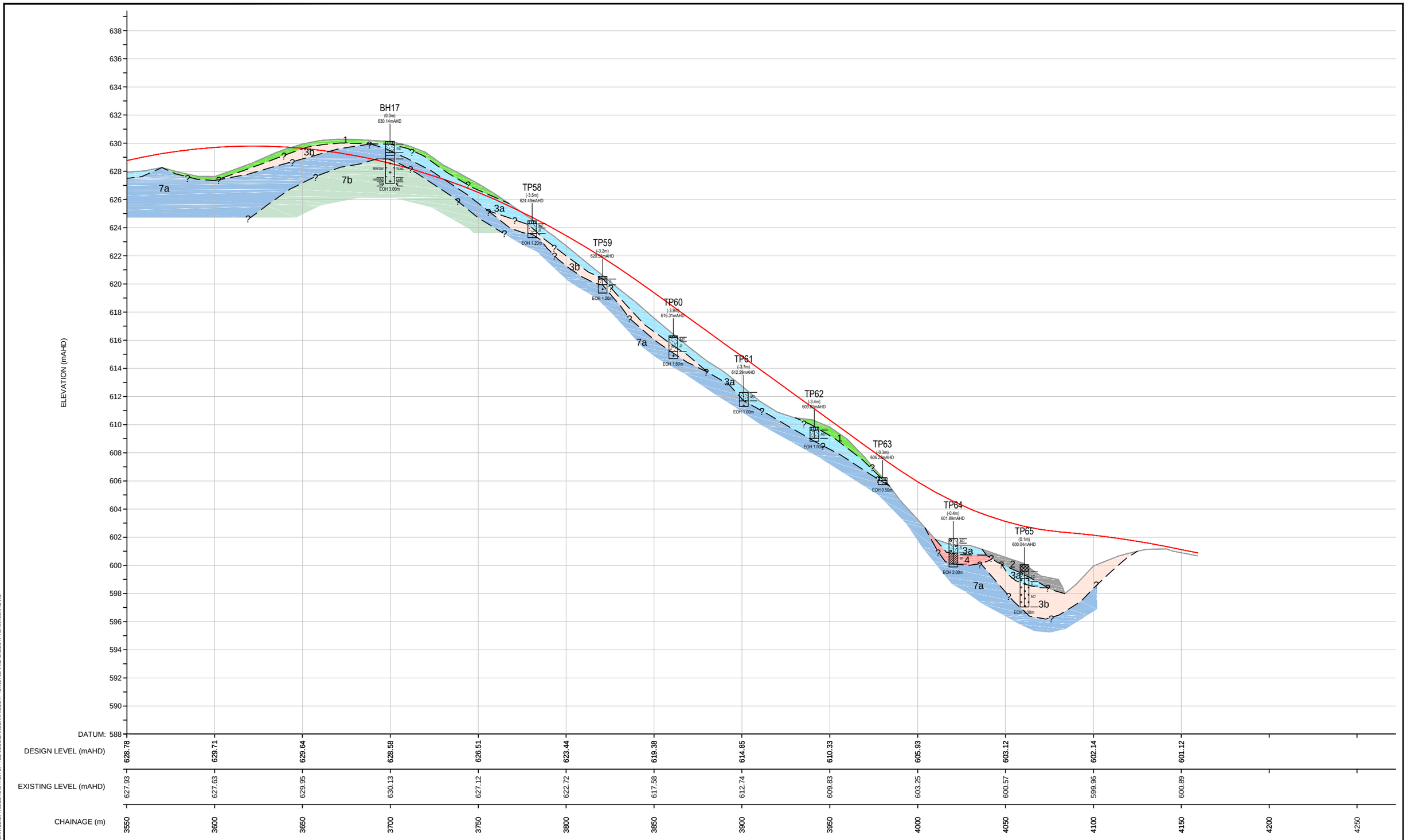
coffey

client: OPUS INTERNATIONAL CONSULTANTS

project: ELLERTON DRIVE EXTENSION
ELLERTON DRIVE, QUEANBEYAN NSW

title: GEOTECHNICAL LONG SECTION - SHEET 6 OF 7

project no: GEOTFYSH09703AA | drawing no: 026 | rev: A



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revision	no.	description	drawn	approved	date

Horizontal Scale (metres) 1:2000

Vertical Scale (metres) 1:250

drawn	BC / LH
approved	BC
date	28/07/14
scale	AS SHOWN
original size	A3

coffey

client: OPUS INTERNATIONAL CONSULTANTS

project: ELLERTON DRIVE EXTENSION
ELLERTON DRIVE, QUEANBEYAN NSW

title: GEOTECHNICAL LONG SECTION - SHEET 7 OF 7

project no: GEOTFYSH09703AA | drawing no: 027 | rev: A

Appendix A - Engineering Borehole Logs

coffey

Engineering Log - Borehole

Borehole ID.	***BH01***
sheet:	1 of 1
project no.	***GEOTFYSH09703AA***
client:	***Opus International Consultants NSW Pty Ltd***
date started:	***05 May 2014***
principal:	***Queanbeyan City Council***
date completed:	***05 May 2014***
project:	***Ellerton Drive Extension***
logged by:	***BC***
location:	***Queanbeyan, NSW***
checked by:	***BC***

position: E: 704684; N: 6085437 (Datum Not Specified) surface elevation : 617.92m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer hole diameter : 100 mm

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AS N		Not Observable					SM	**Silty SAND**: fine grained, pale brown.	D			**COLLUVIUM**
			SPT 5, 18 HB N=R	617	1.0		CH	**Silty CLAY**: high plasticity, pale yellow-brown.	<Wp	H to Fb		
			SPT 20, 25, 25/130mm N=R	616	2.0			**SILTSTONE**: mottled yellow/ brown, extremely weathered, estimated low strength.				**BEDROCK**
			SPT 6/mm HB N=R	615	3.0							
				614	4.0			Borehole BH01 terminated at 4.0 m Target depth				
				613	5.0							
				612	6.0							
				611	7.0							
				610								

CDF_0_9_04BA.GLB Log COF BOREHOLE: NON CORED GEOTFYSH09703AA - CBH LOGS.GPJ <<DrawingFile>> 27/06/2014 16:07

method
- AD auger drilling*
- AS auger screwing*
- RR roller/tricone
- W washbore
- CT cable tool
- HA hand auger
- DT diatube
- B blank bit
- V V bit
- T TC bit
- * bit shown by suffix
- e.g. AD/T

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey

Engineering Log - Borehole

Borehole ID.	**BH02**
sheet:	1 of 1
project no.	**GEOTFYSH09703AA**
client:	***Opus International Consultants NSW Pty Ltd***
principal:	***Queanbeyan City Council***
project:	***Ellerton Drive Extension***
location:	***Queanbeyan, NSW***
date started:	***05 May 2014***
date completed:	***05 May 2014***
logged by:	***BC***
checked by:	***BC***

position: E: 704774; N: 6085217 (Datum Not Specified) surface elevation : 619.79m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer hole diameter : 100 mm

drilling information | **material substance**

method & support	penetration (1 2 3)	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
AS, N		Not Observable	SPT 18, 20, 25/50mm N=R	619	1.0		CL	**Gravelly Sandy CLAY**: medium plasticity, pale brown, fine grained sand, trace fine grained angular gravel.	<Wp	H		**COLLUVIUM**
			SPT 18, 23, 25/100mm N=R	618	2.0							
				617	3.0							
				616	4.0			**SILTSTONE**: grey-brown, extremely to highly weathered, estimated low strength.				**BEDROCK**
			SPT 11, 1/mm HB N=R	615	5.0			Borehole BH02 terminated at 4.0 m Target depth				
				614	6.0							
				613	7.0							
				612								

CDF_0_9_04BA.GLB Log COF BOREHOLE: NON CORED GEOTFYSH09703AA - CBH LOGS.GPJ <<DrawingFile>> 27/06/2014 16:07

method
AD auger drilling*
AS auger screwing*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
B blank bit
V V bit
T TC bit
* bit shown by suffix
e.g. AD/T

support
M mud
C casing
N nil

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

coffey

Engineering Log - Borehole

Borehole ID.	***BH03***
sheet:	1 of 2
project no.	***GEOTFYSH09703AA***
client:	***Opus International Consultants NSW Pty Ltd***
date started:	***06 May 2014***
principal:	***Queanbeyan City Council***
date completed:	***06 May 2014***
project:	***Ellerton Drive Extension***
logged by:	***BC***
location:	***Queanbeyan, NSW***
checked by:	***BC***

position: E: 704780; N: 6085198 (Datum Not Specified) surface elevation : 621.25m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer casing diameter : HQ

drilling information | **material substance**

method & support	penetration (1 2 3)	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa)	structure and additional observations
AS / CASING		Not Observable		621			CL	**Sandy CLAY**: medium plasticity, pale brown, fine grained sand, with some fine grained angular gravel.	<Wp	H		**COLLUVIUM**
					1.0			**SHALE**: pale grey, highly to moderately weathered, estimated low strength.				**BEDROCK**
				620				Borehole BH03 continued as cored hole				
				619	2.0							
				618	3.0							
				617	4.0							
				616	5.0							
				615	6.0							
				614	7.0							

CDF_0_9_04BA.GLB Log COF BOREHOLE: NON CORED GEOTFYSH09703AA - CBH LOGS.GPJ <<DrawingFile>> 27/06/2014 16:07

method
AD auger drilling*
AS auger screwing*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
B blank bit
V V bit
T TC bit
* bit shown by suffix
e.g. AD/T

support
M mud
C casing
N nil

penetration
1 2 3 — no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

coffey

Engineering Log - Cored Borehole

Borehole ID.	***BH03***
sheet:	2 of 2
project no.	***GEOTFYSH09703AA***
client: ***Opus International Consultants NSW Pty Ltd***	date started: ***06 May 2014***
principal: ***Queanbeyan City Council***	date completed: ***06 May 2014***
project: ***Ellerton Drive Extension***	logged by: ***BC***
location: ***Queanbeyan, NSW***	checked by: ***BC***

position: E: 704780; N: 6085198 (Datum Not Specified) surface elevation : 621.25m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer casing diameter : HQ

drilling information | **material substance** | **rock mass defects**

method & support	water	RL (m)	depth (m)	graphic log	material description **ROCK TYPE**: grain characterisics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 (X = axial; O = diametral) VL L M H VH EH	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm) 30 100 300 1000 3000	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other) particular / general
		621			start coring at 1.00m						
NMLC	Not Observable	620	1.0		**SHALE**: fine grained, brown, indistinctly bedded at 50°; highly jointed along defects and bedding.	SW		a=0.71 d=0.48	34%		~~Highly Fractured Zone: 340mm, some clay, trace of roots~~ PT, 15°, PL, RO, Fe SN PT, 50°, PL, RO, Clay CO Highly Fractured Zone: 260mm comprising closely spaced partings at 60° to 80°
		619	2.0					a=0.57 d=1.49			PT, 5°, PL, RO, CN JT, 70°, PL, RO, Fe SN Highly Fractured Zone: 1640mm, with joints, iron stained, trace of clay infilled seams
					NO CORE: 0.30 m						
		618	3.0		**SHALE**: fine grained, brown, indistinctly bedded at 50°; highly jointed along defects and bedding.	XW / HW			0%		Highly Fractured Zone: 1100mm comprising closely spaced joints and partings at various orientations
		617	4.0			SW		a=0.53 d=0.71	33%		
		616	5.0			XW / MW		d=0.30	0%		Highly Fractured Zone: 1100mm comprising closely spaced joints and partings
		615	6.0		Borehole BH03 terminated at 6.00 m Target depth						
		614	7.0								

Defects are: JT, 50 - 70°, PL, RO, Fe SN, unless otherwise described

CDF_0_9_04BA.GLB Log COF BOREHOLE: CORED GEOTFYSH09703AA - CBH LOGS.GPJ <<DrawingFile>> 27/06/2014 16:09

method & support

DT	diatube
AS	auger screwing
AD	auger drilling
RR	roller/tricone
CB	claw or blade bit
W	washbore
NMLC	NMLC core (51.9 mm)
NQ	wireline core (47.6mm)
HQ	wireline core (63.5mm)
PQ	wireline core (85.0mm)
SPT	standard penetration test

water

- 10/10/12, water level on date shown
- water inflow
- complete drilling fluid loss
- partial drilling fluid loss
- 25uL — water pressure test result (lugeons) for depth interval shown

graphic log / core recovery

- core recovered (graphic symbols indicate material)
- no core recovered

core run & RQD

- barrel withdrawn

RQD = Rock Quality Designation (%)

weathering & alteration*

RS	residual soil
XW	extremely weathered
HW	highly weathered
DW	distinctly weathered
MW	moderately weathered
SW	slightly weathered
FR	fresh

*W replaced with A for alteration

strength

VL	very low
L	low
M	medium
H	high
VH	very high
EH	extremely high

defect type

PT	parting
JT	joint
SZ	shear zone
SS	shear surface
CS	crushed seam
SM	seam
DB	drilling break

roughness

SL	slickensided
POL	polished
SO	smooth
RO	rough
VR	very rough

planarity

PL	planar
CU	curved
UN	undulating
ST	stepped
IR	Irregular

coating

CN	clean
SN	stain
VN	veneer
CO	coating

PointID : BH03 Depth Range: 1.00 - 6.00 m

drawn	**SB**
approved	**BC**
date	**24/06/2014**
scale	**N.T.S.**
original size	**A4**

coffey

client: Opus International Consultants NSW Pty Ltd

project: Ellerton Drive Extension
Ellerton Drive, Quanbeyan, NSW

title: **CORE PHOTOGRAPH**
BH03

project no: GEOTFYSH09703AA | fig no: **17** | rev:

coffey

Engineering Log - Borehole

Borehole ID.	***BH04***
sheet:	1 of 2
project no.	***GEOTFYSH09703AA***
client:	***Opus International Consultants NSW Pty Ltd***
date started:	***06 May 2014***
principal:	***Queanbeyan City Council***
date completed:	***07 May 2014***
project:	***Ellerton Drive Extension***
logged by:	***BC***
location:	***Queanbeyan, NSW***
checked by:	***BC***

position: E: 704928; N: 6084789 (Datum Not Specified) surface elevation : 637.78m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer casing diameter : 100 mm

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AS / CASING		Not Observable					SM	**Silty SAND**: fine to medium grained, orange-brown, with some fine grained angular gravel.	D	MD		**COLLUVIUM**
								SANDSTONE: grey-brown, highly weathered, estimated low strength.				**BEDROCK**
				637	1.0			Borehole BH04 continued as cored hole				
				636	2.0							
				635	3.0							
				634	4.0							
				633	5.0							
				632	6.0							
				631	7.0							
				630								

method
AD auger drilling*
AS auger screwing*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
B blank bit
V V bit
T TC bit
* bit shown by suffix
e.g. AD/T

support
M mud N nil
C casing

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remoulded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

coffey

Engineering Log - Cored Borehole

Borehole ID.	**BH04**
sheet:	2 of 2
project no.	**GEOTFYSH09703AA**
client:	**Opus International Consultants NSW Pty Ltd**
date started:	**06 May 2014**
principal:	**Queanbeyan City Council**
date completed:	**07 May 2014**
project:	**Ellerton Drive Extension**
logged by:	**BC**
location:	**Queanbeyan, NSW**
checked by:	**BC**

position: E: 704928; N: 6084789 (Datum Not Specified) surface elevation : 637.78m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer casing diameter : 100 mm

drilling information				material substance						rock mass defects			
method & support	water	RL (m)	depth (m)	graphic log	material description **ROCK TYPE**: grain characterisics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 (X = axial; O = diametral) VL L M H VH EH	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm) 30 100 300 1000 3000	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other) particular	general
					start coring at 0.70m							
NMLC	Not Observable	637	1.0		**SANDSTONE**: fine to medium grained, grey, distinct bedding@ approx. 55°, with a trace of interlaminated siltstone, some iron staining.	HW to MW	O	d=4.26	100% 100% 0%		JT, 70°, PL, RO, Clay CO Highly Fractured Zone: 2530mm comprising joints, partings, seams, 70° PL, ST, SN Fe	
		636	2.0						0%			
					NO CORE: 0.13 m							
		635	3.0		**SANDSTONE**: fine to medium grained, grey, trace of quartz veins interlaminated into sandstone.	MW			6%			
					NO CORE: 0.05 m	SW	X O	a=1.58 d=3.75				
		634	4.0		**SANDSTONE**: fine to medium grained, grey, trace of quartz veins interlaminated into sandstone.				68%		JT, 20°, PL, RO, Fe SN JT, 20°, PL, RO, Fe SN PT, 10°, PL, RO, Fe SN PT, 20°, PL, RO, Fe SN	
		633	5.0				O	a=2.06 d=3.49			PT, 20°, PL, RO, Fe SN	
					Borehole BH04 terminated at 5.00 m Target depth							
		632	6.0									
		631	7.0									
		630										

Defects are:JT, 70°, PL, RO, Fe SN, unless otherwise described

CDF_0_9_04BA.GLB Log COF BOREHOLE: CORED GEOTFYSH09703AA - CBH LOGS.GPJ <<DrawingFile>> 27/06/2014 16:10

method & support

DT	diatube
AS	auger screwing
AD	auger drilling
RR	roller/tricone
CB	claw or blade bit
W	washbore
NMLC	NMLC core (51.9 mm)
NQ	wireline core (47.6mm)
HQ	wireline core (63.5mm)
PQ	wireline core (85.0mm)
SPT	standard penetration test

water

- 10/10/12, water level on date shown
- water inflow
- complete drilling fluid loss
- partial drilling fluid loss
- 25uL: water pressure test result (lugeons) for depth interval shown

graphic log / core recovery

- core recovered (graphic symbols indicate material)
- no core recovered

core run & RQD

- barrel withdrawn

RQD = Rock Quality Designation (%)

weathering & alteration*

RS	residual soil
XW	extremely weathered
HW	highly weathered
DW	distinctly weathered
MW	moderately weathered
SW	slightly weathered
FR	fresh

*W replaced with A for alteration

strength

VL	very low
L	low
M	medium
H	high
VH	very high
EH	extremely high

defect type

PT	parting
JT	joint
SZ	shear zone
SS	shear surface
CS	crushed seam
SM	seam
DB	drilling break

roughness

SL	slickensided
POL	polished
SO	smooth
RO	rough
VR	very rough

planarity

PL	planar
CU	curved
UN	undulating
ST	stepped
IR	Irregular

coating

CN	clean
SN	stain
VN	veneer
CO	coating

PointID : BH04 Depth Range: 0.70 - 5.00 m

drawn	**SB**
approved	**BC**
date	**24/06/2014**
scale	**N.T.S.**
original size	**A4**

coffey

client: Opus International Consultants NSW Pty Ltd

project: Ellerton Drive Extension
Ellerton Drive, Quanbeyan, NSW

title: **CORE PHOTOGRAPH**
BH04

project no: GEOTFYSH09703AA | fig no: **18** | rev:

coffey

Engineering Log - Borehole

Borehole ID.	***BH05***
sheet:	1 of 2
project no.	***GEOTFYSH09703AA***
client: ***Opus International Consultants NSW Pty Ltd***	date started: ***07 May 2014***
principal: ***Queanbeyan City Council***	date completed: ***08 May 2014***
project: ***Ellerton Drive Extension***	logged by: ***BC/ RB***
location: ***Queanbeyan, NSW***	checked by: ***BC***

position: E: 704930; N: 6084749 (Datum Not Specified) surface elevation : 640.60m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer casing diameter : 100 mm

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AS / CASING		Not Observable	DS	640			SC	**Clayey SAND**: medium grained, pale brown, low plasticity clay, with some fine grained, angular gravel.	D	MD		**COLLUVIUM**
								SANDSTONE: orange-brown, extremely to highly weathered, estimated low stength.				**BEDROCK**
				639	1.0			Borehole BH05 continued as cored hole				
				638	2.0							
				637	3.0							
				636	4.0							
				635	5.0							
				634	6.0							
				633	7.0							

method
AD auger drilling*
AS auger screwing*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
B blank bit
V V bit
T TC bit
* bit shown by suffix
e.g. AD/T

support
M mud N nil
C casing

penetration
1 2 3
no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

coffey

Engineering Log - Cored Borehole

Borehole ID.	***BH05***
sheet:	2 of 2
project no.	***GEOTFYSH09703AA***
client:	***Opus International Consultants NSW Pty Ltd***
principal:	***Queanbeyan City Council***
project:	***Ellerton Drive Extension***
location:	***Queanbeyan, NSW***
date started:	***07 May 2014***
date completed:	***08 May 2014***
logged by:	***BC/ RB***
checked by:	***BC***

position: E: 704930; N: 6084749 (Datum Not Specified) surface elevation : 640.60m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer casing diameter : 100 mm

drilling information | **material substance** | **rock mass defects**

method & support	water	RL (m)	depth (m)	graphic log	material description **ROCK TYPE**: grain characterisics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 (X = axial; O = diametral) VL L M H VH EH	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm) 30 100 300 1000 3000	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other) particular / general
		640			start coring at 0.80m						
NMLC	Not Observable		1.0		**SANDSTONE**: fine grained, brown, indistinctly bedded @ 40°, iron stained.	HW			0%		~~Highly Fractured Zone: 426mm~~ comprising closely spaced joints and partings at various orientations
									0%		
		639			**NO CORE:** 0.55 m				0%		
			2.0		**SANDSTONE**: fine grained, brown, indistinctly bedded @ 40°, iron stained.	HW			0%		JT, 30 - 70°, UN, RO, Fe SN, Highly Fractured Zone: 780mm comprising closely spaced joints and partings at various orientations
					SILTSTONE: dark green, indistinct wavy bedding @ 90° to 70°, iron stained, sandstone veins.				100%		
		638			**NO CORE:** 0.06 m	MW			0%		PT, 5°, PL, RO, Fe SN
			3.0		**SILTSTONE**: dark green, indistinct wavy bedding @ 90° to 70°, iron stained, sandstone veins.		O	a=0.28 d=0.58	85%		JT, PL, RO, Fe SN
											JT, 45°, PL, RO, Clay CO
		637					X	a=0.43 d=0.27			PT, 30°, ST, RO, Fe SN
											JT, 70°, ST, RO, Fe SN
			4.0								JT, ST, RO, Fe SN
					SANDSTONE: fine grained, pale grey, massive, with a trace of quartz veins.		O	a=0.19 d=0.39	92%		PT, 20°, PL, RO, Fe SN
											PT, 0°, PL, RO, Fe SN
		636									JT, 90°, PL, RO, Fe SN
											JT, 30°, ST, RO, Fe SN
			5.0								JT, 40°, UN, RO, Fe SN
							O	a=0.17 d=0.19			PT, 3°, ST, RO, Fe SN
		635			Borehole BH05 terminated at 5.50 m Target depth						
			6.0								
		634									
			7.0								
		633									

CDF_0_9_04BA.GLB Log COF BOREHOLE: CORED GEOTFYSH09703AA - CBH LOGS.GPJ <<DrawingFile>> 27/06/2014 16:10

method & support

DT	diatube
AS	auger screwing
AD	auger drilling
RR	roller/tricone
CB	claw or blade bit
W	washbore
NMLC	NMLC core (51.9 mm)
NQ	wireline core (47.6mm)
HQ	wireline core (63.5mm)
PQ	wireline core (85.0mm)
SPT	standard penetration test

water

- 10/10/12, water level on date shown
- water inflow
- complete drilling fluid loss
- partial drilling fluid loss
- 25uL: water pressure test result (lugeons) for depth interval shown

graphic log / core recovery

- core recovered (graphic symbols indicate material)
- no core recovered

core run & RQD

- barrel withdrawn

RQD = Rock Quality Designation (%)

weathering & alteration*

RS	residual soil
XW	extremely weathered
HW	highly weathered
DW	distinctly weathered
MW	moderately weathered
SW	slightly weathered
FR	fresh

*W replaced with A for alteration

strength

VL	very low
L	low
M	medium
H	high
VH	very high
EH	extremely high

defect type

PT	parting
JT	joint
SZ	shear zone
SS	shear surface
CS	crushed seam
SM	seam
DB	drilling break

roughness

SL	slickensided
POL	polished
SO	smooth
RO	rough
VR	very rough

planarity

PL	planar
CU	curved
UN	undulating
ST	stepped
IR	Irregular

coating

CN	clean
SN	stain
VN	veneer
CO	coating

PointID : BH05 Depth Range: 0.80 - 5.50 m

drawn	**SB**
approved	**BC**
date	**24/06/2014**
scale	**N.T.S.**
original size	**A4**

coffey

client: Opus International Consultants NSW Pty Ltd

project: Ellerton Drive Extension
Ellerton Drive, Quanbeyan, NSW

title: **CORE PHOTOGRAPH**
BH05

project no: GEOTFYSH09703AA | fig no: **19** | rev:

coffey

Engineering Log - Borehole

Borehole ID.	***BH06***
sheet:	1 of 3
project no.	***GEOTFYSH09703AA***
client:	***Opus International Consultants NSW Pty Ltd***
date started:	***08 May 2014***
principal:	***Queanbeyan City Council***
date completed:	***08 May 2014***
project:	***Ellerton Drive Extension***
logged by:	***BC/ RB***
location:	***Queanbeyan, NSW***
checked by:	***BC***

position: E: 704927; N: 6084590 (Datum Not Specified) surface elevation : 650.89m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer casing diameter : 100 mm

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AS CASING		Not Observable	DS	650	1.0		GP	**Clayey Sandy GRAVEL**: fine to medium grained, angular, orange-brown, medium grained sand, low plasticity clay.	D	MD		**COLLUVIUM**
								SANDSTONE: brown, extremely to highly weathered, estimated low strength.				**BEDROCK**
								Borehole BH06 continued as cored hole				
				649	2.0							
				648	3.0							
				647	4.0							
				646	5.0							
				645	6.0							
				644	7.0							
				643								

CDF_0_9_04BA.GLB Log COF BOREHOLE: NON CORED GEOTFYSH09703AA - CBH LOGS.GPJ <<DrawingFile>> 27/06/2014 16:07

method
AD auger drilling*
AS auger screwing*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
B blank bit
V V bit
T TC bit
* bit shown by suffix
e.g. AD/T

support
M mud N nil
C casing

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

coffey

Engineering Log - Cored Borehole

		Borehole ID.	**BH06**
		sheet:	2 of 3
		project no.	**GEOTFYSH09703AA**
client:	**Opus International Consultants NSW Pty Ltd**	date started:	**08 May 2014**
principal:	**Queanbeyan City Council**	date completed:	**08 May 2014**
project:	**Ellerton Drive Extension**	logged by:	**BC/ RB**
location:	**Queanbeyan, NSW**	checked by:	**BC**

position: E: 704927; N: 6084590 (Datum Not Specified) surface elevation : 650.89m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer casing diameter : 100 mm

drilling information				material substance						rock mass defects		
method & support	water	RL (m)	depth (m)	graphic log	material description **ROCK TYPE**: grain characterisics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 (X = axial; O = diametral) VL L M H VH EH	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm) 30 100 300 1000 3000	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other) particular	general
		650			start coring at 1.00m							
NMLC	Not Observable		1.0		**SANDSTONE**: fine grained, pale brown, distinctly bedded at 40°.	SW		a=0.62 d=1.53	53%		JT, 30°, ST, RO, Fe SN JT, 35°, PL, RO, CN	
					NO CORE: 0.25 m	SW			100%			
		649	2.0		**QUARTZITE**: pale grey, massive, iron stained quartz veins at 35°.			a=1.57 d=4.88	0%		JT, 30 - 40°, PL, RO, Fe SN Highly Fractured Zone: 1780mm comprising closely spaced joints orientated at 30° to 40°	
		648	3.0			XW to HW			0%			
					NO CORE: 0.13 m							
		647	4.0		**QUARTZITE**: pale grey, massive, iron stained quartz veins at 35°.	SW HW		a=0.00 d=0.12	0%			
									0%		Highly Fractured Zone: 2060mm comprising closely spaced joints orientated at 30° to 40°	
		646	5.0					a=0.07 d=0.16	0%			
		645	6.0		**NO CORE:** 0.28 m							
					SHALE: fine to medium grained, brown, distinctly bedded at 60°, with interlaminated quartz veins (approx. 20%).	MW to SW		a=0.79 d=0.90	63%		Highly Fractured Zone: 4580mm comprising closely spaced joints orientated at 30° to 40°	
		644	7.0					a=0.73 d=2.37	45%		Highly Fractured Zone: 430mm comprising closely spaced joints orientated at 40°	
		643										

Defects are:JT, 60°, PL, RO, Fe SN, unless otherwise described

CDF_0_9_04BA.GLB Log COF BOREHOLE: CORED GEOTFYSH09703AA - CBH LOGS.GPJ <<DrawingFile>> 27/06/2014 16:10

method & support

DT	diatube
AS	auger screwing
AD	auger drilling
RR	roller/tricone
CB	claw or blade bit
W	washbore
NMLC	NMLC core (51.9 mm)
NQ	wireline core (47.6mm)
HQ	wireline core (63.5mm)
PQ	wireline core (85.0mm)
SPT	standard penetration test

water

- 10/10/12, water level on date shown
- water inflow
- complete drilling fluid loss
- partial drilling fluid loss
- 25uL — water pressure test result (lugeons) for depth interval shown

graphic log / core recovery

- core recovered (graphic symbols indicate material)
- no core recovered

core run & RQD

- barrel withdrawn

RQD = Rock Quality Designation (%)

weathering & alteration*

RS	residual soil
XW	extremely weathered
HW	highly weathered
DW	distinctly weathered
MW	moderately weathered
SW	slightly weathered
FR	fresh

*W replaced with A for alteration

strength

VL	very low
L	low
M	medium
H	high
VH	very high
EH	extremely high

defect type

PT	parting
JT	joint
SZ	shear zone
SS	shear surface
CS	crushed seam
SM	seam
DB	drilling break

roughness

SL	slickensided
POL	polished
SO	smooth
RO	rough
VR	very rough

planarity

PL	planar
CU	curved
UN	undulating
ST	stepped
IR	Irregular

coating

CN	clean
SN	stain
VN	veneer
CO	coating

coffey

Engineering Log - Cored Borehole

		Borehole ID.	**BH06**
		sheet:	3 of 3
		project no.	**GEOTFYSH09703AA**
client:	**Opus International Consultants NSW Pty Ltd**	date started:	**08 May 2014**
principal:	**Queanbeyan City Council**	date completed:	**08 May 2014**
project:	**Ellerton Drive Extension**	logged by:	**BC/ RB**
location:	**Queanbeyan, NSW**	checked by:	**BC**

position: E: 704927; N: 6084590 (Datum Not Specified) surface elevation : 650.89m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer casing diameter : 100 mm

drilling information				material substance						rock mass defects		
method & support	water	RL (m)	depth (m)	graphic log	material description **ROCK TYPE**: grain characterisics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 (X = axial; O = diametral) VL L M H VH EH	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm) 30 100 300 1000 3000	additional observations and defect descriptions (type, inclination, planarity, roughness, coating, thickness, other) particular	general
NMLC	Not Observable	642	9.0		MW to SW						JT, 75°, PL, RO, Fe SN	
					QUARTZITE: pale grey, massive, iron stained veins, highly fractured, jointed.				45%		JT, 30 - 40°, PL, RO, Fe SN	
					SHALE: fine to medium grained, brown, distinctly bedded at 60°, with interlaminated quartz veins (approx. 20%).			a=0.72 d=1.02			PT, 30°, PL, RO, Fe SN	
					Borehole BH06 terminated at 9.00 m Target depth							
		641	10.0									
		640	11.0									
		639	12.0									
		638	13.0									
		637	14.0									
		636	15.0									
		635										

CDF_0_9_04BA.GLB Log COF BOREHOLE: CORED GEOTFYSH09703AA - CBH LOGS.GPJ <<DrawingFile>> 27/06/2014 16:10

method & support

DT	diatube
AS	auger screwing
AD	auger drilling
RR	roller/tricone
CB	claw or blade bit
W	washbore
NMLC	NMLC core (51.9 mm)
NQ	wireline core (47.6mm)
HQ	wireline core (63.5mm)
PQ	wireline core (85.0mm)
SPT	standard penetration test

water

- 10/10/12, water level on date shown
- water inflow
- complete drilling fluid loss
- partial drilling fluid loss
- 25uL — water pressure test result (lugeons) for depth interval shown

graphic log / core recovery

- core recovered (graphic symbols indicate material)
- no core recovered

core run & RQD

- barrel withdrawn

RQD = Rock Quality Designation (%)

weathering & alteration*

RS	residual soil
XW	extremely weathered
HW	highly weathered
DW	distinctly weathered
MW	moderately weathered
SW	slightly weathered
FR	fresh

*W replaced with A for alteration

strength

VL	very low
L	low
M	medium
H	high
VH	very high
EH	extremely high

defect type

PT	parting
JT	joint
SZ	shear zone
SS	shear surface
CS	crushed seam
SM	seam
DB	drilling break

roughness

SL	slickensided
POL	polished
SO	smooth
RO	rough
VR	very rough

planarity

PL	planar
CU	curved
UN	undulating
ST	stepped
IR	Irregular

coating

CN	clean
SN	stain
VN	veneer
CO	coating

PointID : BH06 Depth Range: 1.00 - 9.00 m

drawn	**SB**
approved	**BC**
date	**24/06/2014**
scale	**N.T.S.**
original size	**A4**

coffey

client: Opus International Consultants NSW Pty Ltd

project: Ellerton Drive Extension
Ellerton Drive, Quanbeyan, NSW

title: **CORE PHOTOGRAPH**
BH06

project no: GEOTFYSH09703AA | fig no: **20** | rev:

coffey

Engineering Log - Borehole

Borehole ID.	***BH07***
sheet:	1 of 2
project no.	***GEOTFYSH09703AA***
client:	***Opus International Consultants NSW Pty Ltd***
date started:	***12 May 2014***
principal:	***Queanbeyan City Council***
date completed:	***12 May 2014***
project:	***Ellerton Drive Extension***
logged by:	***BC/ RB***
location:	***Queanbeyan, NSW***
checked by:	***BC***

position: E: 704919; N: 6084551 (Datum Not Specified) surface elevation : 651.02m (Datum Not Specified) angle from horizontal: 90°

drill model: Camacchio mounting: Trailer casing diameter : 100 mm

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (**SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	hand penetrometer (kPa) 100 200 300 400	structure and additional observations
AS / CASING		Not Observable	SPT 17, 24, 29 N=53	651			GM	**FILL: Silty GRAVEL**: medium grained, sub-angular, pale brown.	D			**FILL**
				650	1.0			**SANDSTONE**: pale brown, extremely to highly weathered, estimated low strength.				**BEDROCK**
				649	2.0			Borehole BH07 continued as cored hole				
				648	3.0							
				647	4.0							
				646	5.0							
				645	6.0							
				644	7.0							

CDF_0_9_04BA.GLB Log COF BOREHOLE: NON CORED GEOTFYSH09703AA - CBH LOGS.GPJ <<DrawingFile>> 27/06/2014 16:07

method
AD auger drilling*
AS auger screwing*
RR roller/tricone
W washbore
CT cable tool
HA hand auger
DT diatube
B blank bit
V V bit
T TC bit
* bit shown by suffix
e.g. AD/T

support
M mud
C casing
N nil

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense