DPSH REPORT

New Development on Erf 4747, Swakopmund, Namibia

29 June 2016

Photograph Courtesy of Lighthouse Property Investment Trust

PREPARED BY:

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Report review history:

Revision No	Date	Prepared by:	Reviewed by:
0	29.06.2016	D.McDonald Reg.Eng.Tech.	B. Fourie BSc Hons Geology Cand.Sci.Nat
			

Authors & Reviewers Qualifications and Affiliations:

Dennis McDonald holds a national diploma in Civil Engineering and has been trained as a Civil Engineering technician covering project management, civil and structural design, contracts management, survey, laboratory management, investigations and testing, geotechnical investigations and report writing.

He has 42 years' combined experience, with 22 years managing his own civil SANAS Accredited engineering laboratories and geotechnical consultancy in the Southern Cape and Eastern Cape of South Africa. Dennis McDonald is registered with the Engineering Council of South Africa (ECSA) as a Registered Engineering technician # 2000 400 58, the South African Institute of Civil Engineers (SAICE), the Institute of Municipal Engineers of South Africa (IMESA), SABITA and SAT.

Burger Fourie holds an Honors Bachelor of Science (Geology) degree. He is currently undergoing in-service training as a Natural Scientist practicing Engineering Geology. He has 3 years' experience in Engineering Geology. Burger Fourie is registered with the South African Council for Natural Scientific Professions (SACNASP) as a Candidate Natural Scientist, Registration number: 115062.

Declaration of Independence:

The authors of this report are independent professional consultants with no vested interest in the project, other than remuneration for work associated with the compilation of this report.

Table of Contents

Appendices

1. Introduction

Omamanya Geotechnical Consultants was appointed by Mr Nik Moroff on behalf of Jimmey Construction to conduct Dynamic Probe Super Heavy (DPSH) tests at Erf 4747, Swakopmund in the Erongo Region Namibia (**Figure 1**). The aim of the investigation was to attempt to establish the rock depth below Natural Ground Level (NGL).

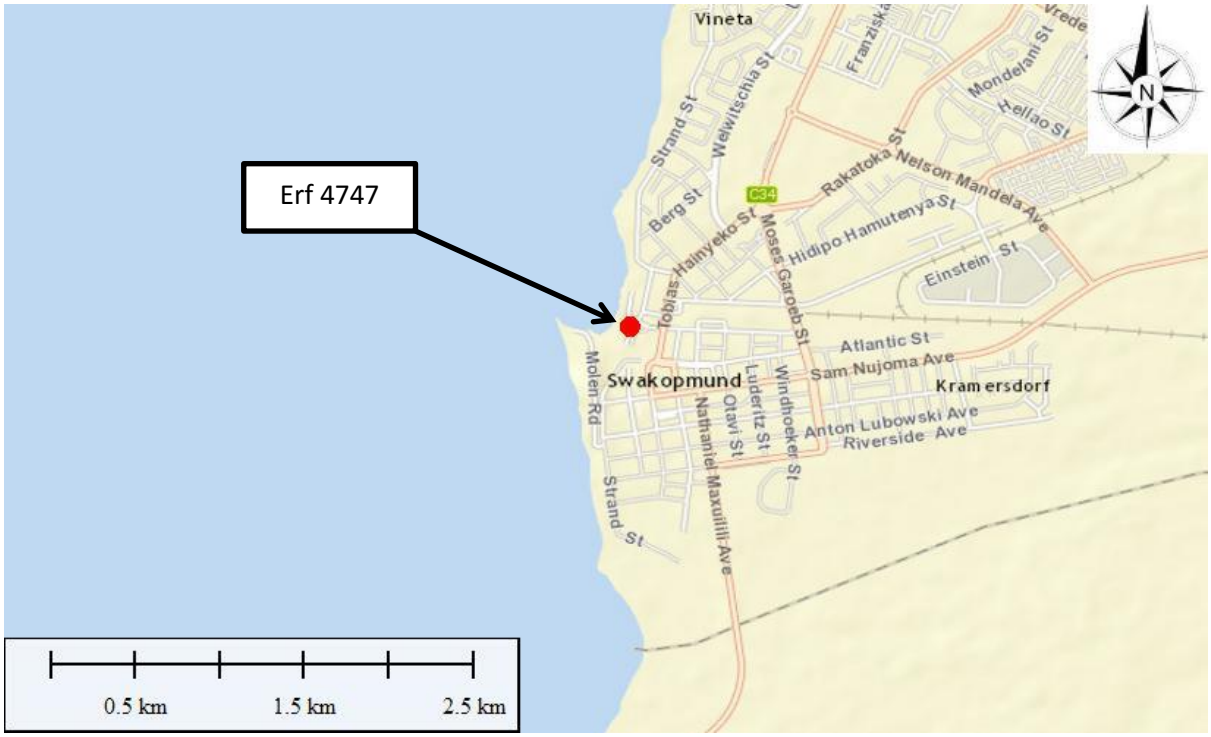


Figure 1: Location of Erf 4747, Swakopmund.

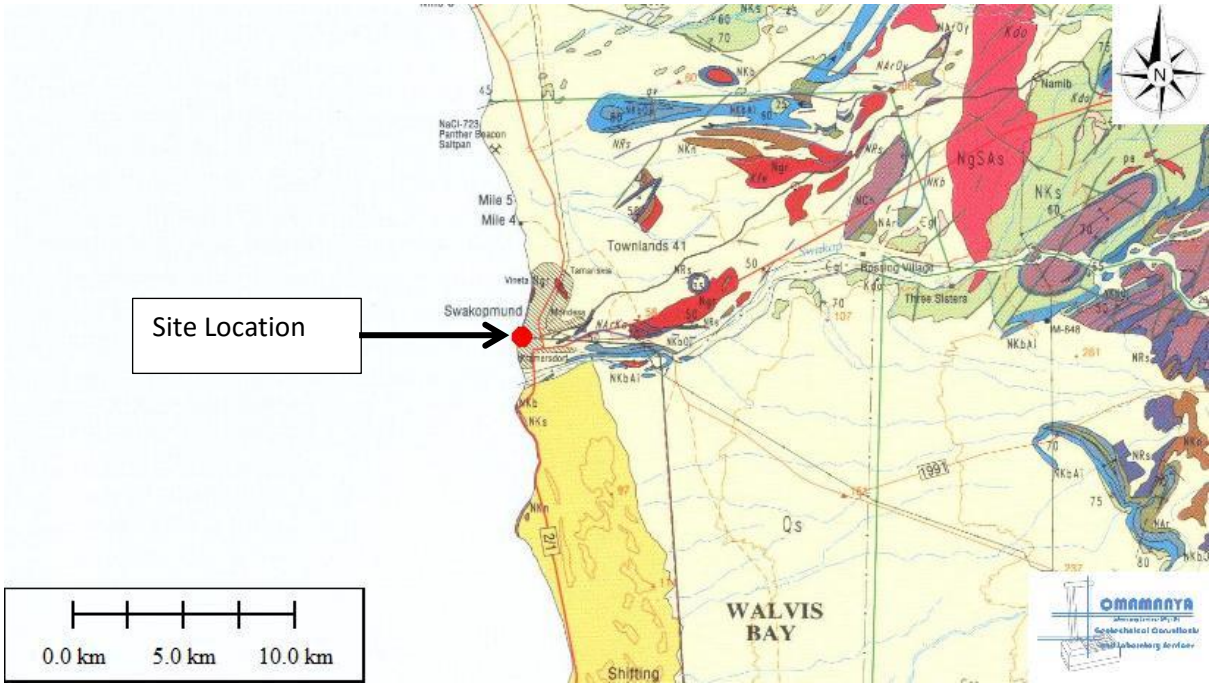
2. Site Description

The site is located where the old Municipal Swimming used to be in Swakopmund, on the beachfront known as the Mole. Buildings on site have mostly been demolished and there are currently shallow excavations.

3. Regional Geology

The majority of the central coastal region is covered by younger sediments forming either part of the visually impressive “Namib Sand Sea” (QGb), this only found south of Swakopmund, or surficial deposits (Qs) found blanketing the bedrock consisting of metamorphic rocks of the Swakop Group, Damara Sequence intruded by younger igneous intrusions (granites) as well as Karoo-aged dykes resulting in an intricate mixture of rock types as indicated in Figure 4.

The bedrock typically provides good bearing capacity, but excavations may prove to be difficult, requiring blasting in places, and the heterogeneity of the gneissic granite can cause uneven surfaces when excavated/blasted (Bulley, 1986).



LEGEND

GROUP	Formation	Member	Lithology	
			Surficial deposit	Qs
	Sossus		Dune sands of Namib Sand Sea	QSs
	Intrusive Unit		**Intrusive Rocks**	
	RED GRANITES		Heterogenous red granite	Ngr
GROUP	**Formation**	**Member**	**Main Lithology**	
Swakop Group	Kuiseb		Mica schist	NKs
	Tinkas		Dark mica schist	Nti
	Karibib		Undifferentiated Marble	NKb
	Karibib (NKb)	Onguati	Schist	NKbOn
		Arises River	White coarse grained calcite marble	NKbAi
		Otjongeama	Yellowish brown impure marble with interbedded calc-silicate rock	NKbOj
	Arandis (Nar)	Oberwasser	Mica schist and minor calc-silicate rock	NArOb
		Okawayo	Marble with interbedded calc-silicate rock	NArOy
		Spes Bona	Mica schist and calc-silicate rock	NArSp
		Karub	Marble with interbedded calc-silicate rock and schist	NArKa
	Chuos		Pebbly schist (diamictite)	NCh
	Rossing		Bluish-grey dolomitic marble	NRs

Figure 2: Regional Geology of Swakopmund and the surrounding area.

4. Results and Discussion

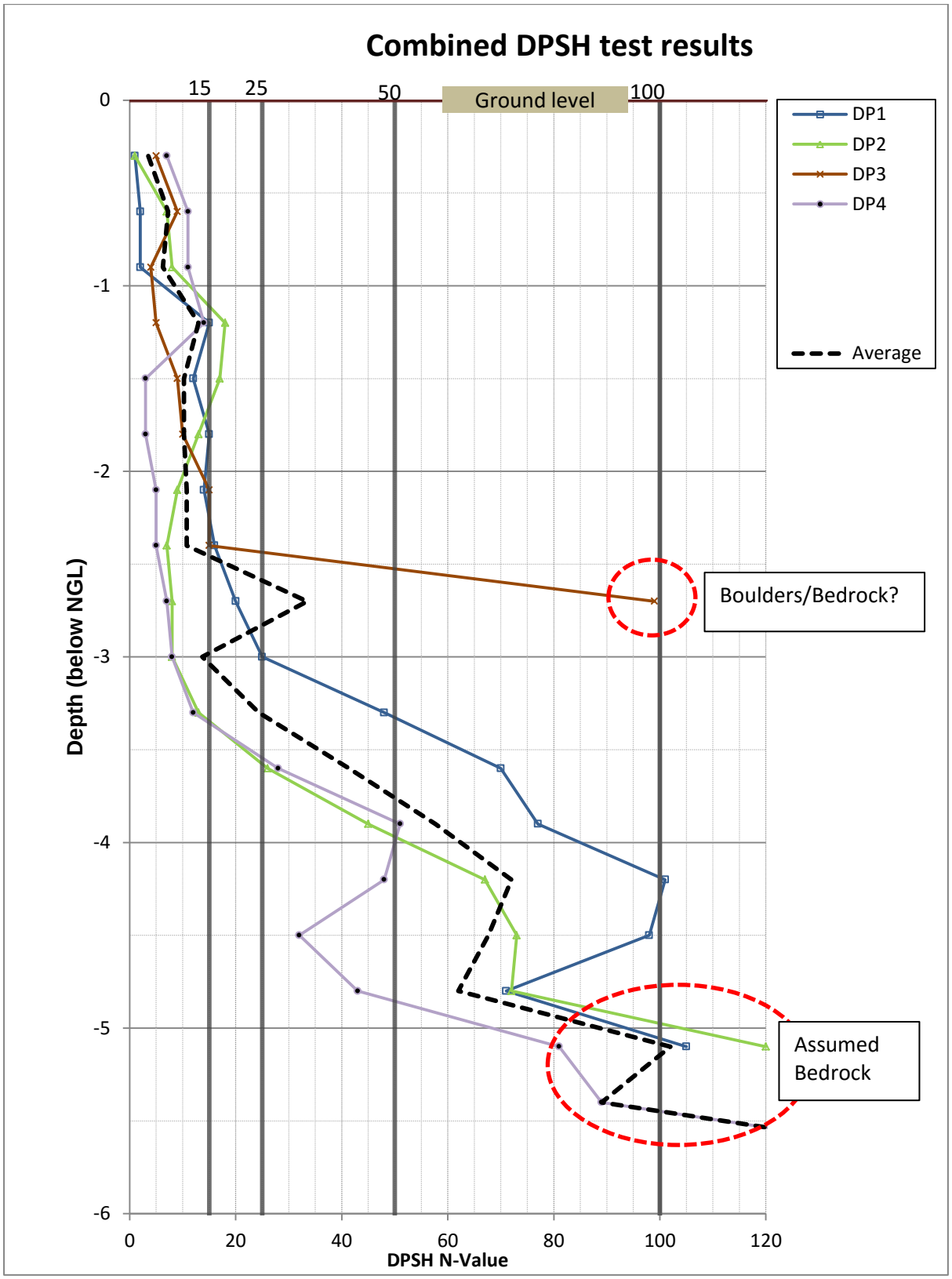
Four DPSH tests were conducted at the locations indicated on **Figure 3**. The tests were spaced to in order cover the site optimally. The DPSH Test Results are shown in **Table 1** below.

Figure 3: DPSH Test Locations on Site (Positions marked with handheld GPS)

Table 1: DPSH N-values with caclulated SPT N-Values, after (MacRobert et al.)

Depth of Penetration (m)	Position no.								Minimum SPT N-Value	Empirical Soil Consistency
	DP1		DP2		DP3		DP4			
	Number of blows									
	DPSH N_{30}	*SPT N-Value	DPSH N_{30}	*SPT N-Value	DPSH N_{30}	*SPT N-Value	DPSH N_{30}	*SPT N-Value		
0.3	1	1	1	1	5	6	7	7	1	Very Loose
0.6	2	2	7	7	9	9	11	11	2	Very Loose
0.9	2	2	8	8	4	5	11	11	2	Very Loose
1.2	15	14	18	16	5	6	14	13	6	Loose
1.5	12	12	17	15	9	9	3	3	3	Very Loose
1.8	15	14	13	12	10	10	3	3	3	Very Loose
2.1	14	13	9	9	15	14	5	6	6	Loose
2.4	16	14	7	7	15	14	5	6	6	Loose
2.7	20	17	8	8	99	36	7	7	7	Loose
3.0	25	19	8	8	Refusal		8	8	8	Loose
3.3	48	27	13	12			12	12	12	Medium Dense
3.6	70	32	26	20			28	21	20	Medium Dense
3.9	77	33	45	26			51	28	26	Medium Dense
4.2	101	36	67	31			48	27	27	Medium Dense
4.5	98	36	73	32			32	22	22	Medium Dense
4.8	71	32	72	32			43	26	26	Medium Dense
5.1	105	36	120	38			81	33	33	Dense
5.4	Refusal		Refusal				89	34	34	Dense
5.7							158	40	40	Dense
6.0							Refusal		Refusal	

Table 2: Graphical Representation of DPSH Values



The DPSH tests at DP1, DP2 and DP4 follow a similar trend with a consistency ranging from very loose to loose to a depth of 3m below NGL, from where the consistency increases to medium dense up to a depth of 4,8m, and dense to a maximum depth of 5,7m below NGL. The maximum depth of refusal was found at a depth of 5,7m at DP4. Considering the similarity in trends, it is assumed that refusal was encountered on bedrock.

At DP2, the consistency was similar to what was encountered at the other test positions to a depth of 2,4m below NGL, but from a depth of 2,4m to 2,7m the consistency drastically increased end refusal was encountered at 2.7m. Refusal is assumed to be on bedrock, as the NGL at DP2 is lower than at the other test locations which explain the shallow depth of refusal.

The water table depth could not be established during the DPSH tests.

5. Recommendations

Based on the knowledge that multi-storey basement excavation will take place, it is recommended that the upper 4,0m below the NGL be excavated to stockpile for re-use in all backfill operations. It is likely that an uneven residual bedrock surface will be exposed using a large tracked excavator (>22ton and possibly with a rock bucket). Should further refusal be encountered during the excavation process then the desired founding depth will have been achieved and further excavation is not necessary.

A level founding platform can be created by employing either of the following methods:

- Use a pecker (Montebehr) to reduce any hard rock protrusions to ≥ 1.0m below any structural foundations invert level.
- Backfill using the excavated/stockpiled sand in 150-300mm layers, saturate and compact to 100% of Mod AASHTO density providing a safe bearing capacity of 200kPa – cap with a 150mm subbase layer (PI<6) compacted to 95% of Mod. AASHTO density as a working surface; or
- Backfill with an imported G5 material compacted to 95% of Mod AASHTO density (with a Plasticity Index (PI) of <6) in layers of 150mm to final thickness below any foundation invert level, in which case a safe bearing capacity of 450kPa can be assumed.

Due to the high assumed permanent water table, basements should be designed as a watertight retaining structure. Water stops are recommended for all construction joints up to the proposed final ground level.

It is recommended that a penetron admix (xypex) be included in all concrete works below water level.

6. Conclusion

In the present state of the site, it is recommended that the alluvial sand on the site should be excavated in accordance with the recommendations above in order to assure a suitable founding platform. This investigation, although test position specific, has sought to highlight potential founding, excavation difficulties, and possible rock depth and does not obviate the variable ground conditions and isolated zones of poor foundation / rock material not identified in this report.

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DPSH - DYNAMIC PENETROMETER SUPER HEAVY TEST

PROJECT:	THE LIGHTHOUSE - SWAKOPMUND	**OPERATOR:**	GEORGE BRITTNELL
BH No:	DP 1	**DATE:**	25/06/2016
GEOLOGY:	BEACH ALLUVIUM	**CLIENT:**	OMAMANYA GEOTECHNICAL CONSULTANTS
COORDINATES:	S 22 40 29.70 E 14 31 26.60	**ELEVATION:**	8 m AMSL
EQUIPMENT :	63,5 KG HAMMER - 60 Deg 50 mm CONE	**PAGE:**	1 OF 2

DEPTH:	BLOWS / PENETRATION								ADJUSTED NO OF BLOWS	PENETRATION AT ADJUSTED BLOWS	N VALUE	REMARKS
AT 0.00m												
No. Of Blows	0	0	0	1					1	300mm	1	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.30m												
No. Of Blows	0	1	0	1					2	300mm	2	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.60m												
No. Of Blows	0	1	0	1					2	300mm	2	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.90m												
No. Of Blows	5	3	3	4					15	300mm	15	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.20m												
No. Of Blows	3	3	3	3					12	300mm	12	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.50m												
No. Of Blows	3	3	5	4					15	300mm	15	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.80m												
No. Of Blows	4	3	4	3					14	300mm	14	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 2.10m												
No. Of Blows	4	4	4	4					16	300mm	16	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 2.40m												
No. Of Blows	4	5	5	6					20	300mm	20	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 2.70m												
No. Of Blows	6	6	6	7					25	300mm	25	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 3.00m												
No. Of Blows	9	11	14	14					48	300mm	48	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								

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PROJECT:	THE LIGHTHOUSE - SWAKOPMUND	**OPERATOR:**	GEORGE BRITTNELL
BH No:	DP 1	**DATE:**	25/06/2016
GEOLOGY:	BEACH ALLUVIUM	**CLIENT:**	OMAMANYA GEOTECHNICAL CONSULTANTS
COORDINATES:	S 22 40 29.70 E 14 31 26.60	**ELEVATION:**	8 m AMSL
EQUIPMENT :	63,5 KG HAMMER - 60 Deg 50 mm CONE	**PAGE:**	2 OF 2

DEPTH:		BLOWS / PENETRATION							ADJUSTED NO OF BLOWS	PENETRATION AT ADJUSTED BLOWS	N VALUE	REMARKS
AT 3.30m No. Of Blows	15	18	18	19					70	300mm	70	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 3.60m No. Of Blows	17	19	20	21					77	300mm	77	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 3.90m No. Of Blows	22	35	20	24					101	300mm	101	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 4.20m No. Of Blows	23	25	24	26					98	300mm	98	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 4.50m No. Of Blows	24	25	11	11					71	300mm	71	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 4.80m No. Of Blows	12	19	31	43					105	300mm	105	REFUSAL
Penetration (mm)	75	75	75	75								BOULDERS/GRAVEL/ROCK?
AT 5.10m No. Of Blows									0	300mm	0	HOLE STOPPED AT 5.10m
Penetration (mm)	75	75	75	75								
AT No. Of Blows									0	300mm	0	
Penetration (mm)	75	75	75	75								
AT No. Of Blows									0	300mm	0	
Penetration (mm)	75	75	75	75								
AT No. Of Blows									0	300mm	0	
Penetration (mm)	75	75	75	75								
AT No. Of Blows									0	300mm	0	
Penetration (mm)	75	75	75	75								

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DPSH - DYNAMIC PENETROMETER SUPER HEAVY TEST

PROJECT:	THE LIGHTHOUSE - SWAKOPMUND	**OPERATOR:**	GEORGE BRITTNELL
BH No:	DP 2	**DATE:**	26/06/2016
GEOLOGY:	BEACH ALLUVIUM	**CLIENT:**	OMAMANYA GEOTECHNICAL CONSULTANTS
COORDINATES:	S 22 40 28.10 E 14 31 26.50	**ELEVATION:**	8 m AMSL
EQUIPMENT :	63,5 KG HAMMER - 60 Deg 50 mm CONE	**PAGE:**	1 OF 2

DEPTH:	BLOWS / PENETRATION								ADJUSTED NO OF BLOWS	PENETRATION AT ADJUSTED BLOWS	N VALUE	REMARKS
AT 0.00m												
No. Of Blows	0	0	0	1					1	300mm	1	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.30m												
No. Of Blows	2	2	1	2					7	300mm	7	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.60m												
No. Of Blows	2	2	2	2					8	300mm	8	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.90m												
No. Of Blows	4	5	4	5					18	300mm	18	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.20m												
No. Of Blows	4	5	4	4					17	300mm	17	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.50m												
No. Of Blows	3	3	4	3					13	300mm	13	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.80m												
No. Of Blows	2	2	3	2					9	300mm	9	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 2.10m												
No. Of Blows	1	2	2	2					7	300mm	7	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 2.40m												
No. Of Blows	2	2	2	2					8	300mm	8	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 2.70m												
No. Of Blows	2	2	2	2					8	300mm	8	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 3.00m												
No. Of Blows	2	3	4	4					13	300mm	13	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								

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PROJECT:	THE LIGHTHOUSE - SWAKOPMUND	**OPERATOR:**	GEORGE BRITTNELL
BH No:	DP 2	**DATE:**	26/06/2016
GEOLOGY:	BEACH ALLUVIUM	**CLIENT:**	OMAMANYA GEOTECHNICAL CONSULTANTS
COORDINATES:	S 22 40 28.10 E 14 31 26.50	**ELEVATION:**	8 m AMSL
EQUIPMENT :	63,5 KG HAMMER - 60 Deg 50 mm CONE	**PAGE:**	2 OF 2

DEPTH:	BLOWS / PENETRATION								ADJUSTED NO OF BLOWS	PENETRATION AT ADJUSTED BLOWS	N VALUE	REMARKS
AT 3.30m												
No. Of Blows	6	5	7	8					26	300mm	26	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 3.60m												
No. Of Blows	10	10	10	15					45	300mm	45	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 3.90m												
No. Of Blows	17	16	17	17					67	300mm	67	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 4.20m												
No. Of Blows	15	20	22	16					73	300mm	73	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 4.50m												
No. Of Blows	18	18	18	18					72	300mm	72	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 4.80m												
No. Of Blows	32	40	B						72	130mm	166.2	REFUSAL
Penetration (mm)	75	55	75	75								BOULDERS/GRAVEL/ROCK?
AT 5.10m												
No. Of Blows									0	300mm	0	HOLE STOPPED AT 4.93m
Penetration (mm)	75	75	75	75								
AT												
No. Of Blows									0	300mm	0	
Penetration (mm)	75	75	75	75								
AT												
No. Of Blows									0	300mm	0	
Penetration (mm)	75	75	75	75								
AT												
No. Of Blows									0	300mm	0	
Penetration (mm)	75	75	75	75								
AT												
No. Of Blows									0	300mm	0	
Penetration (mm)	75	75	75	75								

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PROJECT:	THE LIGHTHOUSE - SWAKOPMUND	**OPERATOR:**	GEORGE BRITTNELL
BH No:	DP 3	**DATE:**	26/06/2016
GEOLOGY:	BEACH ALLUVIUM	**CLIENT:**	OMAMANYA GEOTECHNICAL CONSULTANTS
COORDINATES:	S 22 40 28.90 E 14 31 25.00	**ELEVATION:**	7 m AMSL
EQUIPMENT :	63,5 KG HAMMER - 60 Deg 50 mm CONE	**PAGE:**	1 OF 1

DEPTH:	BLOWS / PENETRATION								ADJUSTED NO OF BLOWS	PENETRATION AT ADJUSTED BLOWS	N VALUE	REMARKS
AT 0.00m												
No. Of Blows	1	1	1	2					5	300mm	5	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.30m												
No. Of Blows	2	2	3	2					9	300mm	9	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.60m												
No. Of Blows	1	1	1	1					4	300mm	4	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.90m												
No. Of Blows	1	1	1	2					5	300mm	5	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.20m												
No. Of Blows	1	2	3	3					9	300mm	9	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.50m												
No. Of Blows	4	2	2	2					10	300mm	10	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.80m												
No. Of Blows	2	4	4	5					15	300mm	15	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 2.10m												
No. Of Blows	4	3	4	4					15	300mm	15	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 2.40m												
No. Of Blows	4	3	5	80					92	280mm	98.57	REFUSAL
Penetration (mm)	75	75	75	55								BOULDERS/GRAVEL/ROCK?
AT 2.70m												
No. Of Blows									0	300mm	0	HOLE STOPPED AT 2.68m
Penetration (mm)	75	75	75	75								NOTE: ROCK OUTCROP ON
												BEACH NEARBY
AT 3.00m												
No. Of Blows									0	300mm	0	
Penetration (mm)	75	75	75	75								

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PROJECT:	THE LIGHTHOUSE - SWAKOPMUND	**OPERATOR:**	GEORGE BRITTNELL
BH No:	DP 4	**DATE:**	25/06/2016
GEOLOGY:	BEACH ALLUVIUM	**CLIENT:**	OMAMANYA GEOTECHNICAL CONSULTANTS
COORDINATES:	S 22 40 30.80 E 14 31 24.80	**ELEVATION:**	9 m AMSL
EQUIPMENT :	63,5 KG HAMMER - 60 Deg 50 mm CONE	**PAGE:**	1 OF 2

DEPTH:	BLOWS / PENETRATION								ADJUSTED NO OF BLOWS	PENETRATION AT ADJUSTED BLOWS	N VALUE	REMARKS
AT 0.00m												
No. Of Blows	1	1	3	2					7	300mm	7	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.30m												
No. Of Blows	2	3	3	3					11	300mm	11	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.60m												
No. Of Blows	3	3	3	2					11	300mm	11	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 0.90m												
No. Of Blows	4	3	4	3					14	300mm	14	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.20m												
No. Of Blows	0	1	1	1					3	300mm	3	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.50m												
No. Of Blows	0	1	1	1					3	300mm	3	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 1.80m												
No. Of Blows	2	1	1	1					5	300mm	5	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 2.10m												
No. Of Blows	1	1	1	2					5	300mm	5	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 2.40m												
No. Of Blows	1	2	2	2					7	300mm	7	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 2.70m												
No. Of Blows	2	2	2	2					8	300mm	8	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 3.00m												
No. Of Blows	2	3	2	5					12	300mm	12	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								

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DPSH - DYNAMIC PENETROMETER SUPER HEAVY TEST

PROJECT:	THE LIGHTHOUSE - SWAKOPMUND	**OPERATOR:**	GEORGE BRITTNELL
BH No:	DP 4	**DATE:**	25/06/2016
GEOLOGY:	BEACH ALLUVIUM	**CLIENT:**	OMAMANYA GEOTECHNICAL CONSULTANTS
COORDINATES:	S 22 40 29.70 E 14 31 26.60	**ELEVATION:**	8 m AMSL
EQUIPMENT :	63,5 KG HAMMER - 60 Deg 50 mm CONE	**PAGE:**	2 OF 2

DEPTH:	BLOWS / PENETRATION								ADJUSTED NO OF BLOWS	PENETRATION AT ADJUSTED BLOWS	N VALUE	REMARKS
AT 3.30m												
No. Of Blows	5	7	7	9					28	300mm	28	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 3.60m												
No. Of Blows	11	14	11	15					51	300mm	51	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 3.90m												
No. Of Blows	11	12	13	12					48	300mm	48	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 4.20m												
No. Of Blows	8	8	8	8					32	300mm	32	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 4.50m												
No. Of Blows	13	9	10	11					43	300mm	43	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 4.80m												
No. Of Blows	17	25	22	17					81	300mm	81	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 5.10m												
No. Of Blows	22	19	19	29					89	300mm	89	BEACH ALLUVIUM
Penetration (mm)	75	75	75	75								
AT 5.40m												
No. Of Blows	39	40							79	150mm	158	REFUSAL
Penetration (mm)	75	75	75	75								BOULDERS/GRAVEL/ROCK?
AT												
No. Of Blows									0	300mm	0	HOLE STOPPED AT 5.50m
Penetration (mm)	75	75	75	75								
AT												
No. Of Blows									0	300mm	0	
Penetration (mm)	75	75	75	75								
AT												
No. Of Blows									0	300mm	0	
Penetration (mm)	75	75	75	75								