SUAVA ECONOMIC GROWTH CENTRE GEOTECHNICAL REPORT

SEPTEMBER 12th 2021

Ministry of Commerce, Industry, Labor and Immigration (MCILI)

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acronyms

Abbreviations	Definitions
DCP	Dynamic Cone Penetrometer
AS	Australia Standard
NZ	New Zealand Standard
OMC	Optimum Moisture Content
MDD	Maximum Dry Density
CBR	California Bearing Capacity
MCILI	Ministry of Commerce, Industry, Labor and Immigration
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
LS	Linear Shrinkage
kPa	Kilopascals
GW	Ground Water
Ha	Hecre
TP	Test Pit
GW	Ground Water
TCZ	Tropical convergence Zone

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1.0 INTRODUCTION

WECS was commissioned MCILI to undertake soil investigation testing and provide factual reporting for proposed commercial development at Suava, North Malaita. This report will provide the methodology, field observation and results obtained during the exploration. The data's and results obtained from the investigation will be used for preliminary design and construction recommendation. This report focuses mainly on the reclaim area proposed for the current development.

1.1 Project Description

Suava Economic Growth Centre (EGC) is part of Solomon Islands Government development plan mandated for rural areas, the main focus is to set up commercial areas, centres and market sites for locals. As part of rural development, the government plans to extend its economic plan to the province to improve social welfare, economic reform and standard of living. Once the project is completed, people within the area will used this growth centre to sell their local foods and products to the public and will help generate income for them.

1.2 Site Location & Description

The proposed area is situated at North Malaita, namely SUAVA Bay and is approximately 1km from the main village. The land is naturally solid in surfaces with little swampy area, gentle slopes and few coastal changes due to flooding and erosion. The area is water logged, during rainy seasons the place is filled with water and over saturated, majority of the area is still covered with shrubs and overgrowth. Clearing and removing of vegetation has been done already and currently the place is used for gardening and commuting by locals within the village.

1.3 Current & Existing Development

Earthworks is progress on site maintaining the access road and backfilling one sector of the prime site which connect to the beach (see fig 1). The reclaimed area was estimated about 200m x 50m x 2m, this section is situated at the coast and proposed for the current development. Other areas within the site are yet to developed and constructed. From our assessment and understanding the development will consist of normal foundation light structures such as, market stalls, canteen, etc, although no concept plans or foundation drawings are provided, see figure below the current site for construction.

Fig 1, Backfill area proposed for the development

2.0 SCOPE OF SERVICE

Purpose and objectives of the study involves,

- Desk study
- Site Inspection & Assessment
- Test pitting & Sampling
- Dynamic cone penetrometer Test (DCP)
- Soil Profiling & Field logging
- Soil Classification
- Lab Testing
- Factual Reporting

3.0 RAINFALL & HYDROLOGY

Suava Bay is located in the heart of North Malaita where the climate is extremely wet. It also lies in the Intertropical Convergence Zone (ITCZ) where the trade winds of the Northern and Southern Hemispheres come together. The intense sun and warm water of the equator heats the air in the ITCZ raising its humidity and making it buoyant. Below shows a Graph depicts of the recent Average temperature and Precipitation for North Malaita extracted from a Meteoblue. Earth works and construction activities on site must consider the weather pattern in order to mitigate and minimise any disruption of work due to effects the climate may cause.

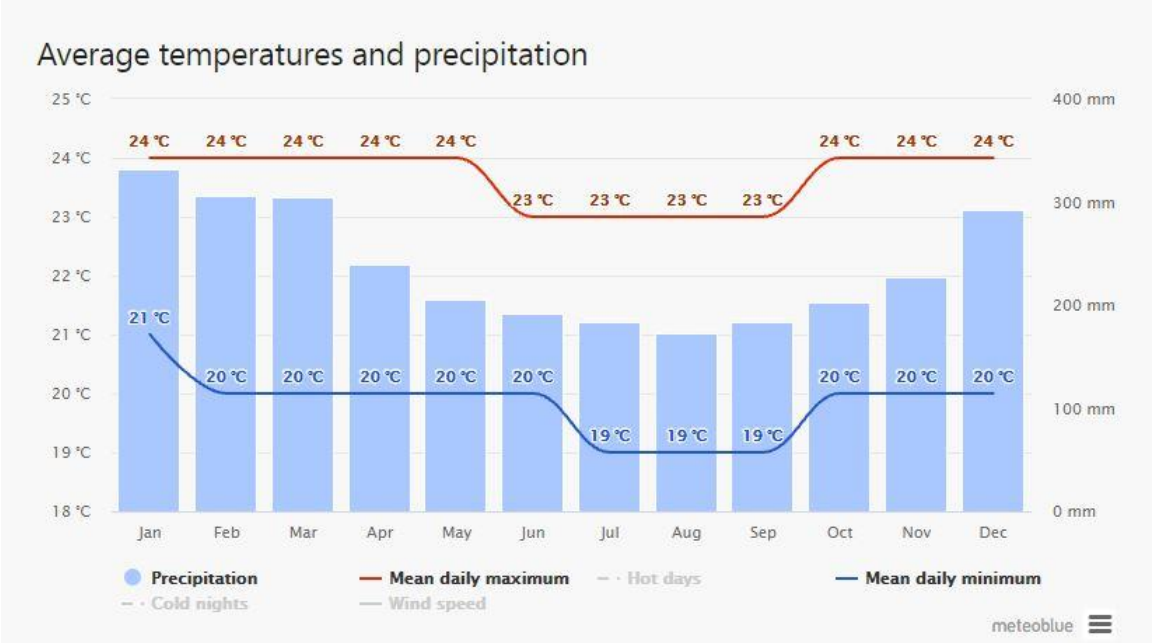


Fig 2, Average climate condition for North Malaita

4.0 SUBSURFACE CONDITION

4.1 Soil Profile

Sub surface material encountered during the excavation confirms ALLUVIUM silty clayey with some sand & fine gravel overlying the natural subsoil, while the filled area composes of granular and cobbles, see supporting documents for full engineering logs.

4.2 Ground Water

Ground water (GW) was encountered at depths of 0.3m – 0.6m bgl at the surrounding site and 2.1mbgl along the fill area. Furthermore, it should be noted that GW is also susceptible to various environmental and man-made factors, such as precipitation, nearby subsurface construction activities, changes in area drainage, landform and topography.

4.3 Geology

In General, the geology of north Malaita is classified under two major and oldest formation, the **Malaita Volcanics** which is dominant by extrusive basaltic lithologies and the **Malaita cancerous sediments**. These two formations holds the basis and oldest group which underlain the youngest and also the recent formations such as, Kwarae mudstone, Suafa limestone and rokera limestone are sighted. This sequence is the characteristic of "Pacific Province" (Coleman, 1965) of which Malaita is the major element in Solomon Islands.The tectonic settings in North Malaita can be summarised with the following stratigraphy and nomenclature outline below:

Table 1, Stratigraphy of North Malaita

Geology Succession	Lithology	Age
Riverine and beach Deposits	ALLUVIALTERRACE	< 20m Pleistocene to Recent
Rokera Limestone	CALCAREOUSE	< 50m Pleistocene
Lau Limestone	CALCAREOUSE	< 50m Pleistocene
Tomba Limestone	CALCAREOUSE	> 100m Pliocene
Suafa Limestone	CALCAREOUSE	750m Miocene - Pliocene
Haruta Calcisiltite		
Alite Limestone	CALCAREOUSE	1,000m Upper Cretaceous - Eocene
Kwara'ae Mudstone	CHERT	< 100m Upper Cretaceous
Malaita Volcanic Group	BASALTIC	>1,000m Pre-upper Cretaceous

The formations are classified according to their age and groups. The oldest group are the Malaita volcanic group while youngest and recent formations are the lau limestone and Rokera limestone. Therefore the local geology of Suava is predominant by **Calcareous limestone**.

4.4 Seismicity

Solomon Islands is one of the countries in the pacific located along the ring of fire which normally experience high seismic activity. The data's supplied by Ministry of Mines and energy indicated that average magnitude and strength of Malaita earthquake's range from 4.2 – 6.2 magnitude Richter scale (M_L). The figure below present's actual data's of tectonic activities happen in and around Malaita Province from 2011 – 2020.

Earthquake Data for Malaita Province						
Date	**Time**	**Latitude**	**Longitude**	**Depth**	**Magnitude**	**Location/Epicenter**
30/10/2020	T18:37:51.662Z	-8.7661	161.0861	10	4.6	42 km E of Auki, Solomon Islands
30/10/2020	T11:10:10.978Z	-8.8203	161.0406	20	5.5	38 km E of Auki, Solomon Islands
16/09/2020	T06:48:05.394Z	-8.6772	160.2804	52.06	4.9	47 km WNW of Auki, SolomonIslands
26/08/2020	T22:45:12.836Z	-8.2968	160.9282	25.35	4.4	57 km NNE of Auki, Solomon Islands
27/04/2020	T01:43:22.277Z	-8.2358	160.2883	47.12	4.4	74 km NW of Auki, Solomon Islands
04/12/2019	T15:10:50.642Z	-9.0477	160.8104	39.33	4.8	33 km SSE of Auki, Solomon Islands
03/10/2019	T23:20:44.742Z	-8.4624	160.1474	86.89	4.5	69 km WNW of Auki, SolomonIslands
07/02/2019	T01:41:33.250Z	-8.4462	161.0288	58.98	5.2	50 km NE of Auki, Solomon Islands
20/01/2018	T08:43:47.730Z	-9.0259	161.0702	44.34	4.5	49 km SE of Auki, Solomon Islands
10/06/2017	T04:19:42.510Z	-8.697	160.3538	54.03	4.5	38 km WNW of Auki, SolomonIslands
22/03/2017	T04:52:06.160Z	-7.9068	161.0717	10	4.6	103 km NNE of Auki, SolomonIslands
20/03/2017	T04:24:31.630Z	-8.1097	161.0037	10	5.2	80 km NNE of Auki, Solomon Islands
19/03/2017	T18:48:58.490Z	-8.0388	161.0626	10	4.4	90 km NNE of Auki, Solomon Islands
19/03/2017	T15:48:17.580Z	-7.9019	160.973	10	4.8	100 km NNE of Auki, Solomon Islands
19/03/2017	T15:43:25.690Z	-8.1364	160.7536	8.37	6	70 km N of Auki, Solomon Islands
18/03/2017	T09:45:01.200Z	-8.1161	160.9944	10	4.6	79 km NNE of Auki, Solomon Islands
18/03/2017	T08:08:13.290Z	-7.9721	160.9373	10	4.4	91 km NNE of Auki, Solomon Islands
18/03/2017	T02:17:27.830Z	-7.9617	160.9519	10	5.1	93 km NNE of Auki, Solomon Islands
18/03/2017	T00:57:49.750Z	-7.9752	160.9371	10	5	91 km NNE of Auki, Solomon Islands
17/03/2017	T18:14:07.970Z	-7.9236	160.9531	10	4.7	97 km NNE of Auki, Solomon Islands
17/03/2017	T18:05:50.230Z	-8.0004	161.0226	10	5.1	92 km NNE of Auki, Solomon Islands
16/03/2017	T21:12:10.140Z	-7.9176	160.9313	10	4.4	97 km NNE of Auki, Solomon Islands
16/03/2017	T18:28:30.720Z	-8.0256	160.9298	10	4.8	85 km NNE of Auki, Solomon Islands
16/03/2017	T18:25:23.260Z	-8.0668	160.8178	10	5.1	78 km N of Auki, Solomon Islands
10/01/2017	T14:56:26.890Z	-8.7054	160.3772	65.83	4.5	35 km W of Auki, Solomon Islands
24/08/2016	T18:53:32.500Z	-7.7756	160.6036	33.93	4.2	110 km N of Auki, Solomon Islands
15/06/2016	T16:35:13.180Z	-8.7172	160.7217	35	4.2	6 km NNE of Auki, Solomon Islands
13/06/2016	T10:17:05.340Z	-8.5454	160.4813	43.99	4.8	34 km NW of Auki, Solomon Islands
10/06/2016	T04:17:44.840Z	-8.6757	160.559	30.4	6.2	18 km WNW of Auki, SolomonIslands
10/08/2015	T21:57:44.530Z	-8.5281	160.4197	49.25	4.3	40 km NW of Auki, Solomon Islands
04/08/2015	T12:37:28.100Z	-9.5608	161.0655	98.49	4.7	96 km SSE of Auki, Solomon Islands
28/07/2015	T05:26:38.760Z	-8.5565	160.8189	58.31	4.5	26 km NNE of Auki, Solomon Islands
29/06/2015	T22:25:12.890Z	-9.4841	161.4502	36.29	4.4	114 km SE of Auki, Solomon Islands
25/05/2015	T16:25:38.750Z	-8.8424	160.5494	52.8	4.3	18 km WSW of Auki, SolomonIslands

05/08/2014	T18:18:34.120Z	-8.8652	160.5206	65.48	5	22 km WSW of Auki, SolomonIslands
18/04/2014	T10:50:18.610Z	-9.3259	160.7485	70.84	4.2	61 km S of Auki, Solomon Islands
29/01/2014	T00:32:28.240Z	-9.5949	161.2282	41	5.6	108 km SSE of Auki, SolomonIslands
08/12/2013	T18:44:13.100Z	-7.8477	160.8083	34.99	4.2	102 km N of Auki, Solomon Islands
22/07/2011	T03:36:49.130Z	-8.983	161.177	46.6	4.4	57 km ESE of Auki, Solomon Islands
22/07/2011	T02:36:46.960Z	-8.897	160.91	54	4.6	27 km ESE of Auki, Solomon Islands

Fig 3: Earth quake data indicating seismic activities occurred from 2011 - 2020

Source: Ministry Of Mines, Energy & Rural Electrification, 2021.

5.0 PROCEDURES&METHODOLOGY

5.1 Reconnaissance

A site walkover and inspection was carried out before actual testing was done. This is to identify test points and spots for testing and assessments within the vicinity. Six test points were located and marked along building footprints and sites that are anticipated for construction.

5.2 Field Exploration

Field investigation was carried out on the reclaimed area and the surrounding sites which involves excavation of 6 test pits and execution of 6 Dynamic Cone Penetrometer (DCP) test. Test pits were excavated at depths of 1- 2 m and samples were extracted from different strata to observe the physical properties and subsoil condition. From each test pits, Dynamic Cone Pentrometer test was also performed at the same depth to measure the density and strength of the existing material.

The Dynamic Cone Penetrometer (DCP) is widely known as an apparatus that measures the penetration resistance of a soil to the penetration of a steel cone of 30 degrees angle and 20 ± 2mm diameter and a steel rod 16 ± 2mm diameter driven with a 9kg mass dropping from a significant height of 510mm. DCP testing was performed every 100mm interval from the ground surface down to the base of the pits. The number of blows per 100mm was calculate to give the resistant and strength " r ".The value r was used to correlate the insitu CBR and the indicate bearing capacity (kPa) .The maximum blows for

every 100mm is 30 blows, if no further penetration occurs after 30 blows, testing should be terminated and the readings should be termed as refusal. Full DCP result is presented in the Table 3 below.

Table 2, summary of field work

Site Description	Easting	Northing	Test Done	Material Classification	Strata
TP1	160.708542	-8.375263	Sampling &DCP	SANDY GRAVEL	FILL
TP2	160.708842	-8.375363	Sampling &DCP	SANDY GRAVEL	FILL
TP3	160709139	-8.375501	Sampling &DCP	SANDY GRAVEL	FILL
TP4	160.70955	-8.375571	Sampling &DCP	SANDY GRAVEL	FILL
TP5	160.710284	-8.375571	Sampling &DCP	SILTY CLAYEY	ALLUVIUM
TP6	160.71	-8.376159	Sampling &DCP	SILTY CLAYEY	ALLUVIUM

Table 3, DCP Test Point & Results

Test Point	Soil Classification	Depth (mm)	Blows	Strength (r)	CBR Value (%)	Indicative Bearing Capacity (kPa)
01	Gap Graded SANDY GRAVEL (FILL)	100	10	10	26	332
		200	16	6.3	43	530
		300	7	14.2	18	232
		400	10	10	26	332
		500	8	12.5	21	265
		600	16	6.3	43	530
		700	25	4	70	840
		800	17	5.9	46	566
		900	20	5	55	670
		1000	R			
		1100	5	20	13	164
		1200	24	4.2	66	799
		1300	R			
		1400				
		1500				
		1600				
		1700				
		1800				
		1900				
		2000				

Test Point	Soil Classification	Depth (mm)	Blows	Strength (r)	CBR Value (%)	Indicative Bearing Capacity (kPa)
02	Gap Graded SANDY GRAVEL (FILL)	100	10	10	26	332
		200	19	5.3	52	631
		300	30	3.3	85	1021
		400	18	5.6	49	597
		500	15	6.6	41	506
		600	20	5	55	670
		700	R			
		800				
		900				
		1000				
		1100				
		1200				
		1300				
		1400				
		1500				
		1600				
		1700				
		1800				
		1900				
		2000				

Test Point	Soil Classification	Depth (mm)	Blows	Strength (r)	CBR Value (%)	Indicative Bearing Capacity (kPa)
03	Gap Graded SANDY GRAVEL (FILL)	100	10	10	26	332
		200	16	6.3	43	530
		300	13	7.7	35	432
		400	24	4.2	66	799
		500	18	5.6	49	597
		600	R			
		700				
		800				
		900				
		1000	6	16.6	16	198
		1100	7	14.2	18	232
		1200	9	11.1	24	298
		1300	11	9.1	30	365
		1400	7	14.2	18	232
		1500	3	33.3	7	98
		1600	2	50	5	65
		1700	4	25	10	131
		1800	6	16.6	16	198
		1900	6	16.6	16	198
		2000	7	14.2	18	232

Test Point	Soil Classification	Depth (mm)	Blows	Strength (r)	CBR Value (%)	Indicative Bearing Capacity (kPa)
04	Gap Graded SANDY GRAVEL (FILL)	100	12	8.3	32	400
		200	R			
		300				
		400				
		500				
		600				
		700				
		800				
		900				
		1000	4	25	10	131
		1100	5	20	13	164
		1200	4	25	10	131
		1300	7	14.2	18	232
		1400	9	11.1	24	298
		1500	3	33.3	7	98
		1600	2	50	5	65
		1700	5	20	13	164
		1800	4	25	10	131
		1900	6	16.6	16	198
		2000	5	20	13	164

Test Point	Soil Classification	Depth (mm)	Blows	Strength (r)	CBR Value (%)	Indicative Bearing Capacity (kPa)
05	Well Graded SILTY CLAYEY (ALLUVIUM)	100	1	100	2	32
		200	1	100	2	32
		300	1	100	2	32
		400	1	100	2	32
		500	1	100	2	32
		600	1	100	2	32
		700	1	100	2	32
		800	1	100	2	32
		900	1	100	2	32
		1000	1	100	2	32
		1100				
		1200				
		1300				
		1400				
		1500				
		1600				
		1700				
		1800				
		1900				
		2000				

Test Point	Soil Classification	Depth (mm)	Blows	Strength (r)	CBR Value (%)	Indicative Bearing Capacity (kPa)
06	Well Graded SILTY CLAYEY (ALLUVIUM)	100	1	100	2	32
		200	1	100	2	32
		300	1	100	2	32
		400	1	100	2	32
		500	1	100	2	32
		600	1	100	2	32
		700	1	100	2	32
		800	1	100	2	32
		900	1	100	2	32
		1000	1	100	2	32
		1100				
		1200				
		1300				
		1400				
		1500				
		1600				
		1700				
		1800				
		1900				
		2000				

5.3 Lab Testing

12 bag samples were extracted from the test pits , sealed and transported back to Honiara for soil testing at the MID CONSTRUCTION SOILS LABORATORY. The following tests was performed to evaluate the physical properties of the material for engineering purpose and analysis.

- Particle Size Distribution
- Standard Proctor
- California Bearing Ratio
- Atterberg Limits

All testing procedures conducted were based on AS1289 Standards.

Table 3, laboratory Test Results

6.0 ENGINEERING ASSESSEMENT & DISCUSSION

The subsurface exploration conducted confirms the overall site compose of SILTY CLAYEY, and the embankment area is composed of granular material or uncontrolled fill. The embankment constructed on site indicates very dense Material but lacks cohesion and adhesion, this means the material is very loose to loose due to non-plasticity of the material. Non plastic reduces binding property and effective stress, thus the material on site is considered very loose and weak, any heavy load added to the structure will cause immediate settlement.

Granular material has high permeability and porosity which can allow water to percolate and disseminate through pores, since the environment underlying the embankment is consist of swamp and mangrove, heavy rainfall overtime will increase pore water pressure and reduce shear strength. Any surcharge added to the site will increase deformation and distortion and eventually consolidation settlement will occur.

Since, the area is susceptible to water logged and runoff, the material used for the proposed foundations is considered very weak and unstable.

7.0 CONCLUSION& RECOMENDATIONS

Based on the field assessment and results, the following recommendations and guidelines must be considered in order to mitigate and minimize any risks associated with the proposed development,

8.0 LIMITATION

The analysis and recommendations of data stated in this report are based on limited test points and position. The nature and extent of variations within the test locations and the surroundings may not become evident until construction commence.

Our investigation and evaluations were performed based on standard geotechnical procedures and specifications via AS Standards, if the parameters and results produced found vary with condition on site during excavation and construction, the undersigned should be informed immediately.

It should be noted that the subsoil conditions is susceptible to intensive weathering, environmental conditions and natural disaster, thus the contents and validity of this report is only applicable for two years, after two years the report must be reviewed and updated.

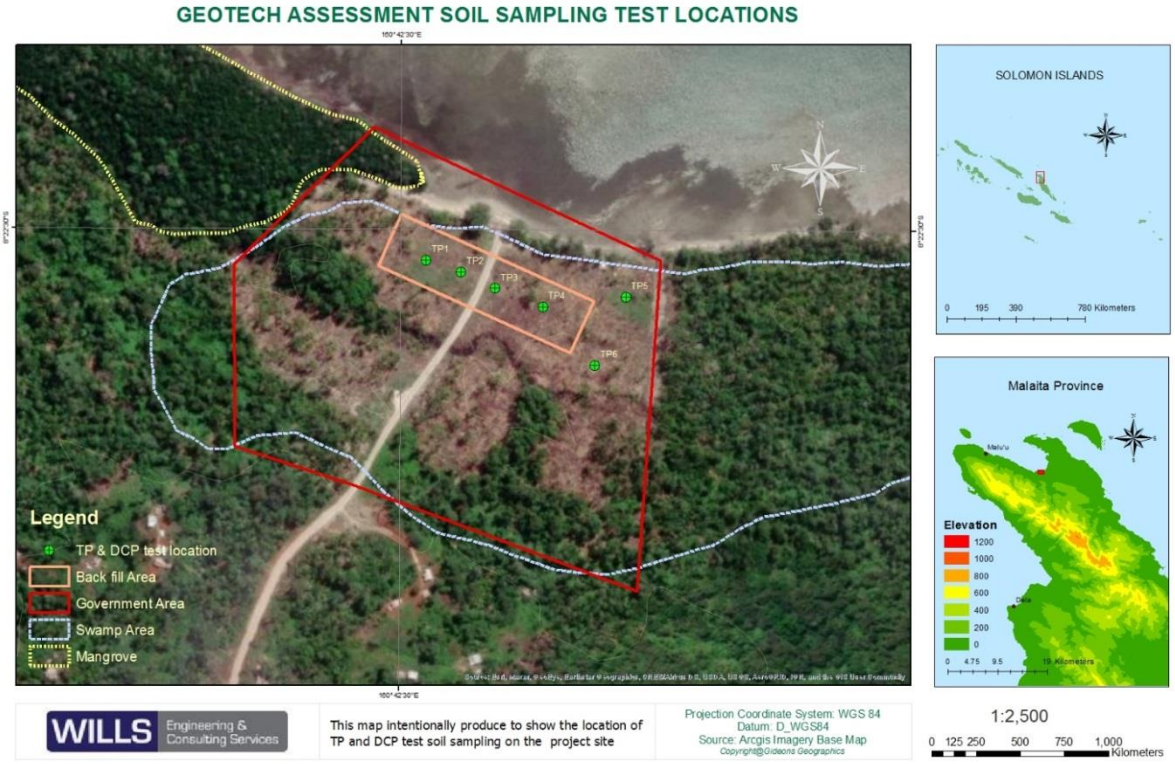
In any event, any queries regarding this geotechnical report arises, it is essential WECS is contacted immediately for clarification and justification.

REFERENCE

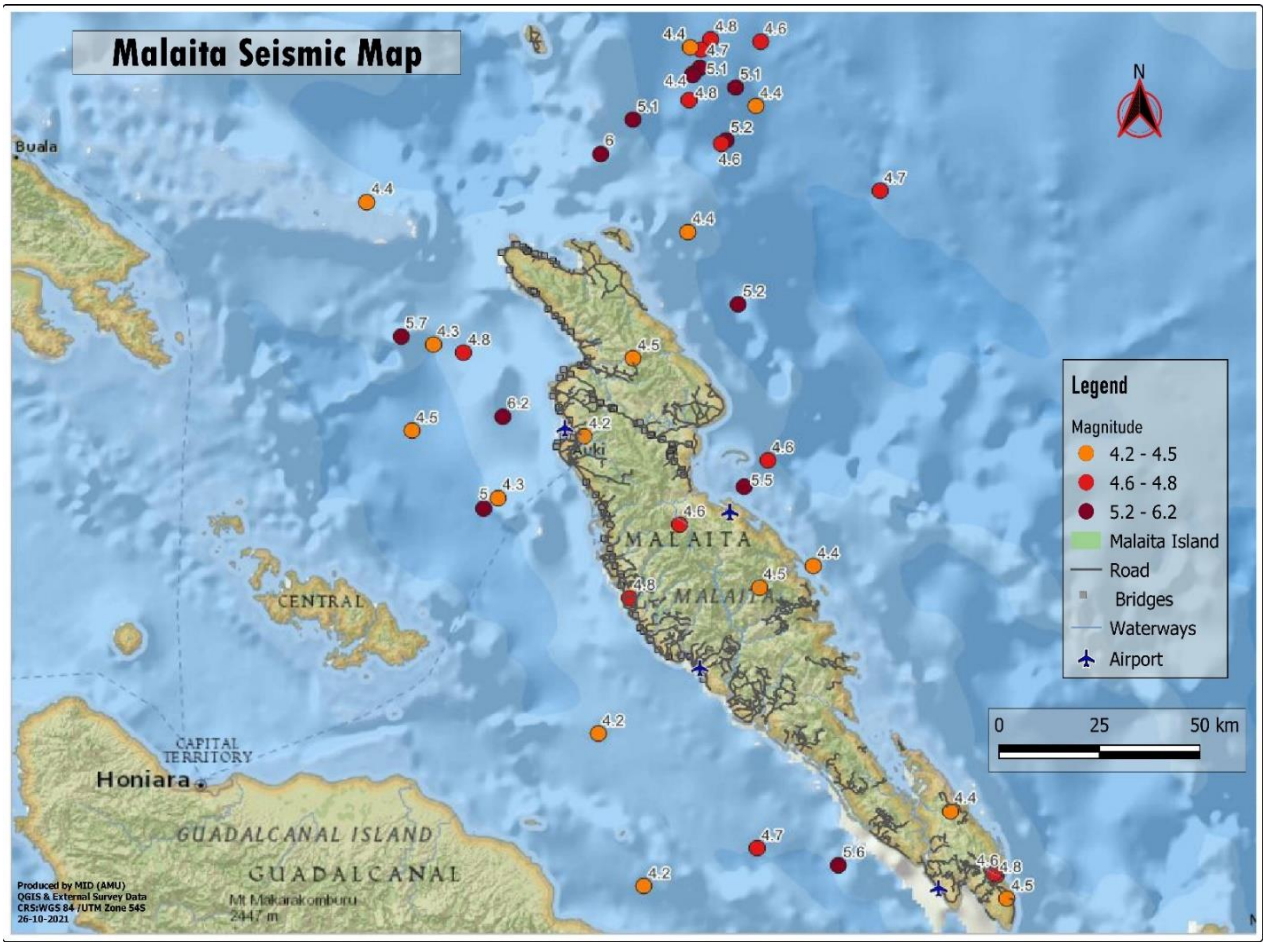
- Australian Standard AS1726-2017 'Geotechnical Site Investigation
- Stockwell M.J., 1977, Determination of allowable bearing pressure under small Structures. New Zealand Engineering, 32/6.
- Bowles, Joseph, E., 1996, Foundation Analysis and Design, Fifth Edition: The - McGraw-Hill Companies, Inc., New York, 1175 p
- AS1289.6.3.2 Penetration Resistance of Soil- (9kg DCP)
- AS1289.1.2.1- Sampling and Preparation of Disturbed samples –Standard Method.
- AS1289.3.6.1 Particle Size Distribution, Standard Sieving
- AS1289.3.1.1 Liquid Limit, 4 Point Casagrande
- AS1289.3.2.1 Plastic Limit, Standard
- AS1289.3.3.1 Plasticity Index

SUPPORTING DOCUMENTS

A. Geotechnical Site Location



B.Seismic Map



C. Engineering Log

WILLS Engineering & Consulting Services

Document No.	
Date Issued.	
Version/Authority.	
Laboratory Form No.	

Date:	09 / 09 / 2021	Excavation Method:	Back Hoe (Excavator)
Client:	WECS	Test Pit:	01 (West Wing)
Project:	Suava Economic Growth Centre	Logged by:	John Misitana
Location:	Suava, North Malaita	Checked by:	Ronald Kao

TEST PIT ENGINEERING LOG

Depth(m)	Moisture Content	Graphic Log	Strata	Material Classification
0.1	D		FILL	SANDY GRAVEL: Mottled Grey-brown,, some boulders and cobbles, moist, non plasticity (Alluvium)
0.2				
0.3				
0.4				
0.5				
0.6				
0.7				
0.8				
0.9				
1.0				
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7				
1.8			SUBGRADE	SILTY CLAYEY: Black, trace of Sand, moist, Low plasticity
1.9				
2.0	GW			

COMMENTS	Lengend	Symbol
- Exploration terminate at 2.0 m - GW is encountered at 2.0 m	-Clay -Gravel -Sand -Topsoil -Silt -Boulder	M - moist D - dry W - wet GW - Ground Water

WILLS Engineering & Consulting Services

Document No.	
Date Issued.	
Version/Authority.	
Laboratory Form No.	

Date:	09 / 09 / 2021	Excavation Method:	Back Hoe (Excavator)
Client:	WECS	Test Pit:	02 (West Wing)
Project:	Suava Economic Growth Centre	Logged by:	John Misitana
Location:	Suava, North Malaita	Checked by:	Ronald Kao

TEST PIT ENGINEERING LOG

Depth(m)	Moisture Content	Graphic Log	Strata	Material Classification
0.1	D			SANDY GRAVEL: Grey-White,some boulders and cobbles, moist, non plasticity
0.2				
0.3				
0.4				
0.5				
0.6				
0.7				
0.8			FILL	
0.9				
1.0				
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7				
1.8	M		SUBGRADE	SILTY CLAYEY: Black, trace of Sand,Organic, moist, Low plasticity
1.9				
2.0				

COMMENTS	Lengend	Symbol
- Exploration terminate at 2.0 m	-Clay -Gravel -Sand -Topsoil -Silt -Boulder	M - moist D - dry W - wet GW - Ground Water

WILLS Engineering & Consulting Services

Document No.	
Date Issued.	
Version/Authority.	
Laboratory Form No.	

Date:	09 / 09 / 2021	Excavation Method:	Back Hoe (Excavator)
Client:	WECS	Test Pit:	03 (FILL)
Project:	Suava Economic Growth Centre	Logged by:	John Misitana
Location:	Suava, North Malaita	Checked by:	Ronald Kao

TEST PIT ENGINEERING LOG

Depth(m)	Moisture Content	Graphic Log	Strata	Material Classification
0.1	M			SANDY GRAVEL: Grey-White, some boulders and cobbles, moist, non plastic
0.2				
0.3				
0.4				
0.5				
0.6				
0.7				
0.8			FILL	
0.9				
1.0	M			SILTY CLAYEY: Pale Grey, Some boulders and Cobbles, moist, Low plasticity(SLATE)
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7				
1.8	M		SUBGRADE	SILTY CLAYEY: Black, trace of Sand, moist, Low plasticity
1.9				
2.0				

COMMENTS	Lengend	Symbol
- Exploration terminate at 2.0 m	-Clay -Gravel -Sand -Topsoil -Silt -Boulder	M - moist D - dry W - wet GW - Ground Water

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Laboratory Form No.	

Date:	09 / 09 / 2021	Excavation Method:	Back Hoe (Excavator)
Client:	WECS	Test Pit:	04 (East Wing)
Project:	Suava Economic Growth Centre	Logged by:	John Misitana
Location:	Suava, North Malaita	Checked by:	Ronald Kao

TEST PIT ENGINEERING LOG

Depth(m)	Moisture Content	Graphic Log	Strata	Material Classification
0.1	M			SANDY GRAVEL: Grey-White, some boulders and cobbles, trace of silt, non plastic
0.2				
0.3				
0.4				
0.5			UNCONTROLLED FILL	
0.6				
0.7				
0.8				
0.9				SILTY CLAYEY: Pale Grey, Some boulders and Cobbles, moist, Low plasticity
1.0				
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7	W		SUBGRADE	SILTY CLAYEY: Black ,trace of Sand, moist, Low plasticity
1.8				
1.9				
2.0				

COMMENTS	Lengend	Symbol
- Exploration terminate at 1.0 m	-Clay -Gravel -Sand -Topsoil -Silt -Boulder	M - moist D - dry W - wet GW - Ground Water

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Document No.	
Date Issued.	
Version/Authority.	
Laboratory Form No.	

Date:	10 / 09 / 2021	Excavation Method:	Back Hoe (Excavator)
Client:	WECS	Test Pit:	05
Project:	Suava Economic Growth Centre	Logged by:	John Misitana
Location:	Suava, North Malaita	Checked by:	Ronald Kao

TEST PIT ENGINEERING LOG

Depth(m)	Moisture Content	Graphic Log	Strata	Material Classification
0.1	M		ORGANIC	SILTY SAND: Black, trace of gravel, moist, low plasticity
0.2				
0.3				
0.4				
0.5	W		ALLUVIUM	SANDY GRAVEL: Grey-white, trace of silt, wet, low plasticity
0.6				
0.7				
0.8				
0.9				
1.0				SILTY SAND: Grey-brown, trace of gravel wet, non plastic
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7				
1.8				
1.9				
2.0				

COMMENTS	Lengend	Symbol
- Exploration terminate at 1.0 m - Ground Water (GW) is encountered at 1m depth	-Clay -Gravel -Sand -TopSoil -Silt -Boulder	M - moist D - dry W - wet GW - Ground Water

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Date Issued.	
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Date:	10 / 09 / 2021	Excavation Method:	Back Hoe (Excavator)
Client:	WECS	Test Pit:	06
Project:	Suava Economic Growth Centre	Logged by:	John Misitana
Location:	Suava, North Malaita	Checked by:	Ronald Kao

TEST PIT ENGINEERING LOG

Depth(m)	Moisture Content	Graphic Log	Strata	Material Classification
0.1	M		ALLUVIUM	SILTY SAND: Black, trace of gravel, moist, low plasticity, organic
0.2				
0.3				
0.4				
0.5				
0.6	GW			SAND: Grey-Black, trace of gravel, wet, non plastic
0.7				
0.8				
0.9				
1.0				
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7				
1.8				
1.9				
2.0				

COMMENTS	Lengend	Symbol
- Exploration terminate at 1.0 m - Ground Water encountered at 0.6	-Clay -Gravel -Sand -Topsoil -Silt -Boulder	M - moist D - dry W - wet GW - Ground Water

D.Site Photos


TP1
TP1

E. Laboratory Test Works