

Chapter 5

SITE DESCRIPTION

5.1 ZONING

The site where the undertaking would be implemented is presently within the Pas Geometrique. Since the Government has issued a letter of reservation to the promoter the site has the correct zoning for this type of development.

5.2 EXISTING LAND USE

The project site is presently a vast extent of land lying idle. It was formerly used as a grazing ground for cattle at Palmar. However, this grazing activity has ceased quite recently to operate and therefore the site remains in a state of despair and desolation. The site is colonized by some vegetation that are presently suffering the prolonged drought season. The “wetland” is actually a dry depression zone no water was observed during the site visit even at high tide conditions, but has a thick cover of grass and some cattails. The photos below give a general view of the site and its environs.



Site frontage to the B59 Road



Existing similar undertaking
& infrastructure near the site



General view of wetland looking North



Cattails and chiendent



Campeche and Accacia trees

5.3 CLIMATIC CONDITIONS

The climatic conditions of the site have been assessed from the particular parameters that are available at the statistics unit at the Department of Meteorological Services. This body collects data available at the stations scattered

over the island. Rainfall, wind and temperature data among other parameters are collected from the 100 stations over the island and are documented in such manner that they allow their users to have a clear picture on meteorological conditions over the island. The processed data are made available for information in documented formats. These reliable data are also available on the Government portal and website.

The Climatic conditions that prevail over the site in question are similar to what exist over the island of Mauritius as a whole. It is true that there are some micro- climates localized at specific places e.g. at Bras D'Eau. The site under study enjoys a typical coastal plain climatic condition with warm and long sunshine days. The Island as a whole may be characterised as having a moderately tropical climate. The warmer summer season is also characterised by the rainy episode and cyclonic conditions. The rainy season spans from November to March, with February as having the highest rainfall incidence. The winter season that occurs between May and October is relatively cool and dry.

5.3.1 Rainfall

The rainfall in Mauritius vary from region to region with highest precipitation on the Central plateau and lowest on the western and North Western belt. The site lies on the Eastern coast and as per the meteorological statistics the long term annual mean is about 2000mm. The country has on the other hand experienced isolated and unpredicted torrential rains of intensities of 80 mm/d, especially last year and has been the causes of short duration flash floods. For the purpose of estimating run-off for this undertaking a rainfall intensity of 60mm/h would be used as a design criterion. The long term rainfall for Mauritius is shown in *Figure 5*. (Source: Atlas of Mauritius)

5.3.2 Wind

The wind regime of the island is mainly governed by the easterlies. The wind speed varies between 9-12 km/h and as such the variance of the wind regime over the year is not significant. However, the island being tropical is also subject to cyclonic conditions. The average cyclonic winds recorded so far are found in the range of 120-200 km/h. Gusts of about 280 km/h have been recorded for Cyclones like Gervaise. The local authorities require that buildings and superstructures be designed in order to withstand gusts of 280-300 Km/h. This criterion would be adopted for the purpose of structural design. The terrain in question is fully exposed to the easterlies. *Figure 6* shows some cyclones track and their gusts intensities.

The climatic conditions prevailing over the site has been compiled in the Table 3 below and shall form the baseline data for design purposes.

Table 3: Meteorological data

Month	Temperature				Humidity %	Average Rainfall In whole mm	No. of days Rainfall >5mm	Mean wind speed km/h	Mean Sunshine h/day
	Mean Maximum	Highest Maximum	Mean Minimum	Lowest Minimum					
January	31.1	35.2	22.1	16.6	81	206	8	10.4	8.1
February	30.8	35.5	22.2	16.3	83	240	9	11.9	7.7
March	30.6	34.0	21.7	14.5	82	159	7	10.4	7.6
April	29.8	33.6	20.8	14.2	82	158	6	9.6	7.4
May	28.1	32.0	18.6	1.0	82	99	5	9.3	7.6
June	26.5	30.0	16.7	9.2	82	68	4	9.3	7.4
July	25.7	29.0	16.1	9.8	81	73	5	11.3	7.6
August	25.9	29.9	16.2	10.0	79	75	4	13.3	7.7
September	27.0	30.5	16.6	10.7	77	46	2	12.2	7.5
October	28.4	32.5	17.7	12.5	76	48	2	11.9	8.2
November	30.0	35.0	19.1	13.5	76	50	2	12.2	8.7
December	30.7	34.5	20.9	15.0	79	128	5	10.7	8.0

(Source: Mauritius Meteorological Services)

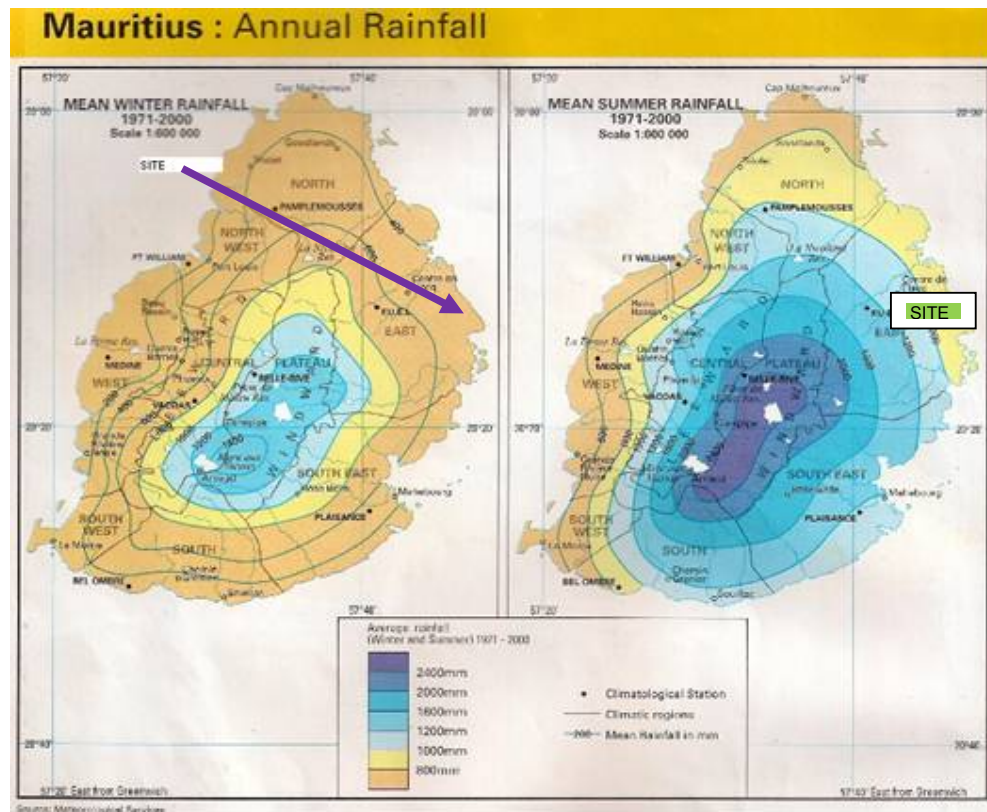


Figure 5: Long Term Rainfall isohyets for Mauritius

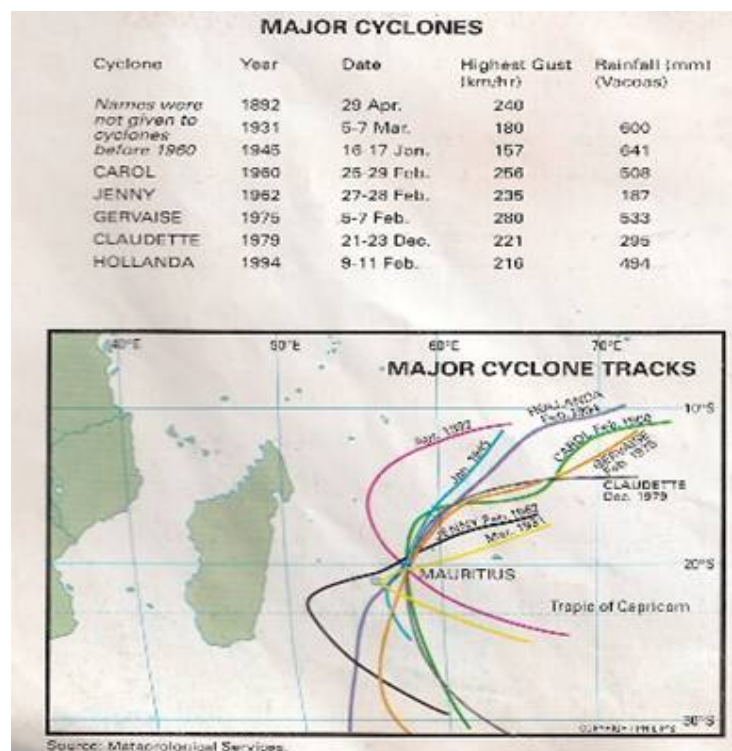


Figure 6: Records of Cyclonic winds (Source: Atlas of Mauritius)

5.4 GEOLOGY

Mauritius was formed some 25 million years ago as a result of volcanic activities which occurred in different phases. The geology of Mauritius is thus dominated by deposits of volcanic origin composed essentially of weathered basaltic strata. This is mostly characterised by basalt bed exposed nearly at natural ground level in some places (as it is the case on site) and is also visible as long stretches of cliffs (suggestive of lava flow towards the sea) especially on the South East part of the island (Gris Gris region). This is also depicted by the mountain ranges and peaks. Remnants of volcanoes are seen at Trou aux Cerfs and in the North the Volcanic eruptions occurred from the Butte aux Papayes. According to the Land Resources map prepared by the FAO and the MSIRI the site forms part of the Late Lava Coastal Plains and Inland Slopes. The soil characteristics changes immediately from a coralline sandy soil (regosol) at the limit of the Pas Geometrique near to the wetland to a basalt layer on site. Thus it could be concluded that the site is located on the interface where the sound basaltic stratum ends and the back dune starts. There is an absence of lava tunnels and caves in that region. However, observations made on nearby earthworks activities have exposed strata of disjointed basalt boulders with frequent presence of roots.

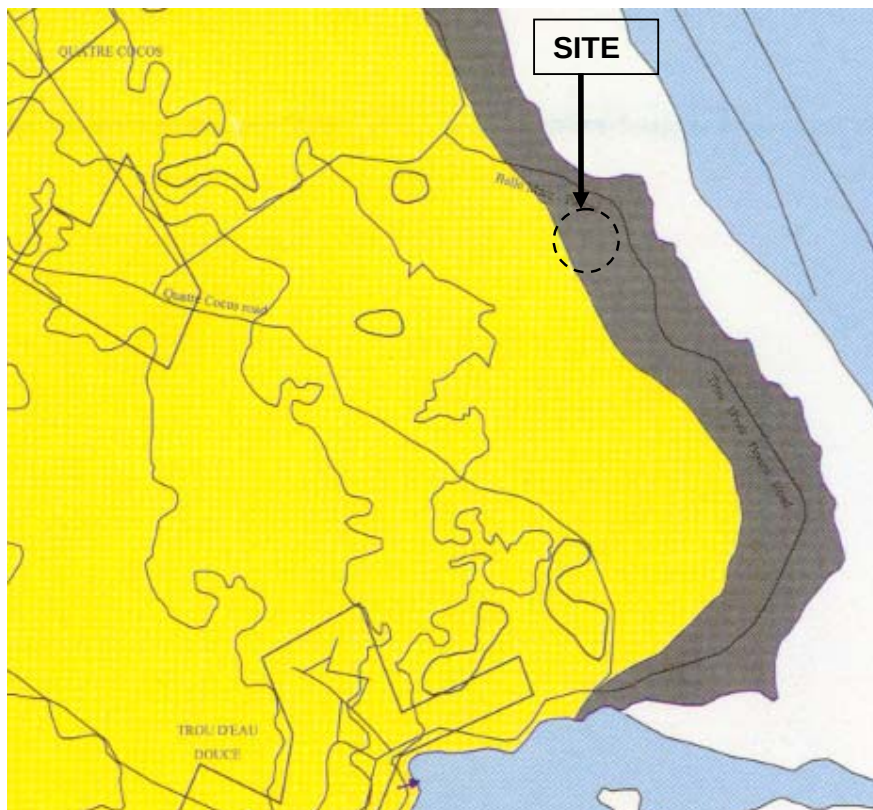
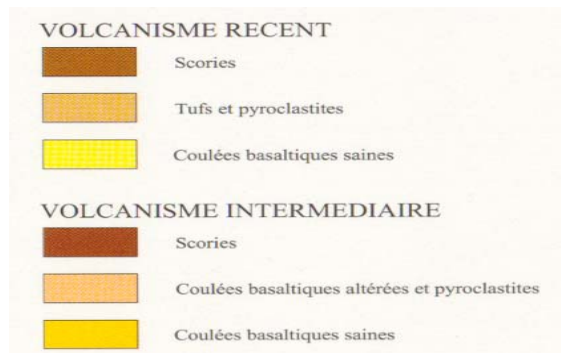


Figure 7 Geology of Site
(Courtesy: Geological Map Mauritius)

LEGEND



5.5 SOIL CHARACTERISTICS

The soil properties are characterized by the properties of the parent materials it is made of. With reference to the Land Resources and Agricultural Suitability map prepared by the FAO jointly with the MSIRI and the Soil map prepared by P. Willaime the soils belongs to the Latosolic Reddish Prairie (LRP) and Lithosol families. This has further been characterised as a shallow to very shallow or skeletal gravelly silty clay loam extremely rocky. The top layer that forms the A horizon generally sustain the vegetation cover and is mainly a brown to reddish brown loamy clay with stones and gravel and presence of roots. The state of the underlying strata exposed a thick deposit of moderately weathered but disjointed basalt layers that no doubt offers a good medium for absorption purposes.

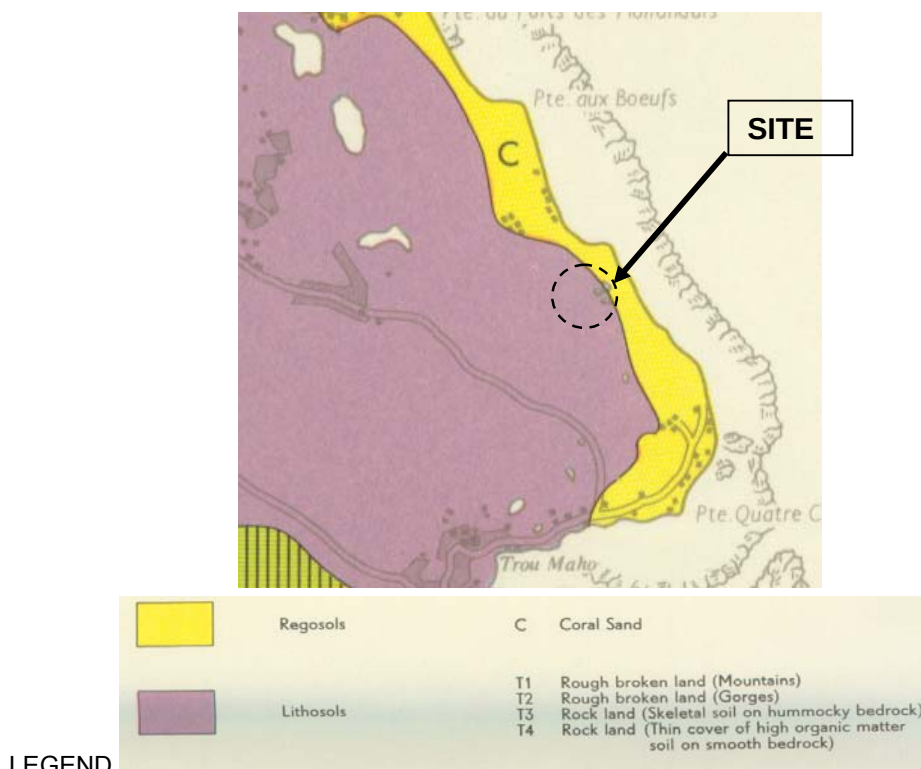


Figure 8 Soil map of Site (Courtesy: Soil Map of Mauritius)

5.6 Soil Study

A study of the soil was carried out on a 2.0m deep pit dug on the site and at the upper land on site. The cut pattern of the pit has been described in a log form as shown hereunder.

The observations made in the report describe the horizons as follows:-

A Horizon 0-10 cm

Colour reddish brown to brown Silty Clay with presence of loose cobbles/stones

B- Horizon disjointed moderately weathered basalt boulders

Colour pale yellow reddish yellow Basalt deposit

The overall configuration displayed at the site could be summarized by a weathered basalt stratum overlying a moderately weathered to un-weathered basalt layer.

5.7 PERCOLATION

The percolation tests that were carried out in the exposed pit at 2 m deep gave an average percolation rate exceeding 100 mm/h. This is fairly high and advantageous for the disposal of surface water after a spell of rain. Absorption pits and soakaways would be designed according to this percolation rate.

5.8 WATER TABLE

The exposed pit did not reveal any water trace even when observed at high tides. The water lake also did not show signs of water presence at high tides. Therefore it can be safely concluded that at this depth the water table does not exist at a depth of 2m.

5.9 WATER QUALITY

The site does not have any water body on it except for the above-mentioned water lake or wetland. The Sea is located on the other side of the B59 coastal road. The lake is itself colonized by cattails and there are no visible signs of free surface water. This "lake" would be an asset for disposal of surface run-off as well as for deep borehole injection.

5.10 WATER BODIES AND WETLANDS

As per the plan prepared by the Ministry of Housing and Lands the site has a wetland, on its frontage to the B59 coastal Road. This depression is colonized by wild bush and cattails. By virtue of its environmental sensitiveness a buffer of 30m has been maintained around that "wetland". The wetland and its buffer zone accounts for about 45% of the land area. The site is not recognized as habitat for migratory birds. Site observations did not reveal the presence of fauna on site except for a few

passing sparrows. A letter has been sent to the RAMSAR bureau in Mauritius to seek their clearance. A copy of the letter is shown in *Figure 9*.

5.11 SITE HYDROLOGY (SOURCE HYDROLOGY YEAR BOOK)

The water basin in the eastern part of the island, is delimited roughly by two catchment areas. Catchment site forms the Grand River South East River water basin (catchment area D) while the second one accounts for the Riviere du Poste de Flacq (catchment area C). The site in question lies on the coastal zone and exhibit a fairly flat terrain. It does not contribute to the two catchment zones. The project site is found in the **CD** water basin. The site within the context of the overall hydrology is shown in *Figure 10*.

5.12 TOPOGRAPHY

The site has a sloping landform along its East-West axis and that displays an overall sloping topography that dips towards the sea. From the site survey records and maps it can be seen that the site altitude is merely 5m Above Mean Sea Level (AMSL) with a peak of 9m. From the contour lines the site has an uneven landform with an isolated sharp fall on its southern side. Though the surface is rugged the slope of the terrain varies between 0.5% and 2%. The topographical map and slopes intensities for the site have been shown in *Figure 11*.

5.13 FLORA AND FAUNA

The vegetation is relatively dense on the site making access onto it difficult. It is colonized with shrubs, medium sized plants (not exceeding 4m high) and creepers. The depression constituting the water lake is fully colonized with a dense patch of cattails and foliage.

The observations of the existing flora identified on site are as follows:-

- Herbe bourique and chiendent
- Accacia tree
- Arbre lacolle
- Campeche tree
- Filaos and
- Manglier on the coastal side

The survey list above clearly shows that the site does not have any endemic species and any species that are on the verge of extinction.

The site does not have fauna on the verge of extinction. The ones observed were:-

- Sparrows, serein du cap, Pigeons, hirondelles and mynahs flying over site or seen perched on trees. Some nests of the yellow serein du cap was seen on a few trees in the vicinity
- Insects such as spiders, ladybirds, dragonflies and butterflies

- Rodents such as mongoose and chameleons.

5.13.1 *Marine Protected Areas*

The site is not found under the list of Marine Protected Areas for Mauritius nor is it near one. The nearest marine park is found at Blue Bay. The site does not contain any monument or structures that can be considered as a cultural heritage. It does not form part of any historical legacy.

5.13.2 *Observation on Fish Fauna*

Although the site is not linked to the sea and the proposed project would not impact on the sea yet it was deemed necessary to take stock of the marine life in the lagoon over there. The local fishermen are considered as potential suppliers of fish for the new project. The scope of the present EIA does not include transects and fish counts as it is not located near the sea nor does it have activities linked to the sea.

List of Fish species observed after a fish catch at the Trou D'Eau Douce is summarized below in Table 4 :-

Table 4 Fish incidence in the lagoon

<i>Common local Name</i>	<i>Incidence</i>
Licorne	High
Cateaux	High
Cordonier	High
Lalo	Low
Geule Pave	Moderate
Madame Tombe	Few
Rouget	Low
Carangue	Low
Vielle (Gris & Rouge)	Low
Ourite	Moderate



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The officer in Charge
RAMSAR office
Le Reduit
Moka

Date: 14 January 2011

Your Ref

Our Ref

Dear Sir/Madam,

**Proposed construction of an Ayurvedic sanctuary at Palmar
EIA**

We, the undersigned have been appointed by Ayurvedic Resorts and Spa Ltd to prepare an Environment Impact Assessment for the above undertaking.

The Ayurvedic Resorts and Spa Ltd intends to construct an Ayurvedic Sanctuary at Palmar. The project would consist of the construction of about 64 luxurious villas, 56 suites, a restaurant, a bar lounge, a spa centre and other basic amenities. The site where the proposed undertaking would be implemented is found on a State Land at Palmar. The site has presently a zone of depression which the Ministry of Housing has indexed as a wetland.

The proponent is fully aware of the importance of wetlands and would keep a buffer zone of 30m around it. We attach for your attention a copy of the Letter of Reservation from the Ministry of Housing and Lands, a print of the Master Plan showing the buffer zone as well as some photographs taken during the site visit.

The purpose of this letter is to seek your no-objection to the proposed undertaking

Yours Sincerely,

Chandansingh Chutoori
For Dagon Ingenieur Conseil Ltee

Enc.

Figure 9 Letter to RAMSAR bureau

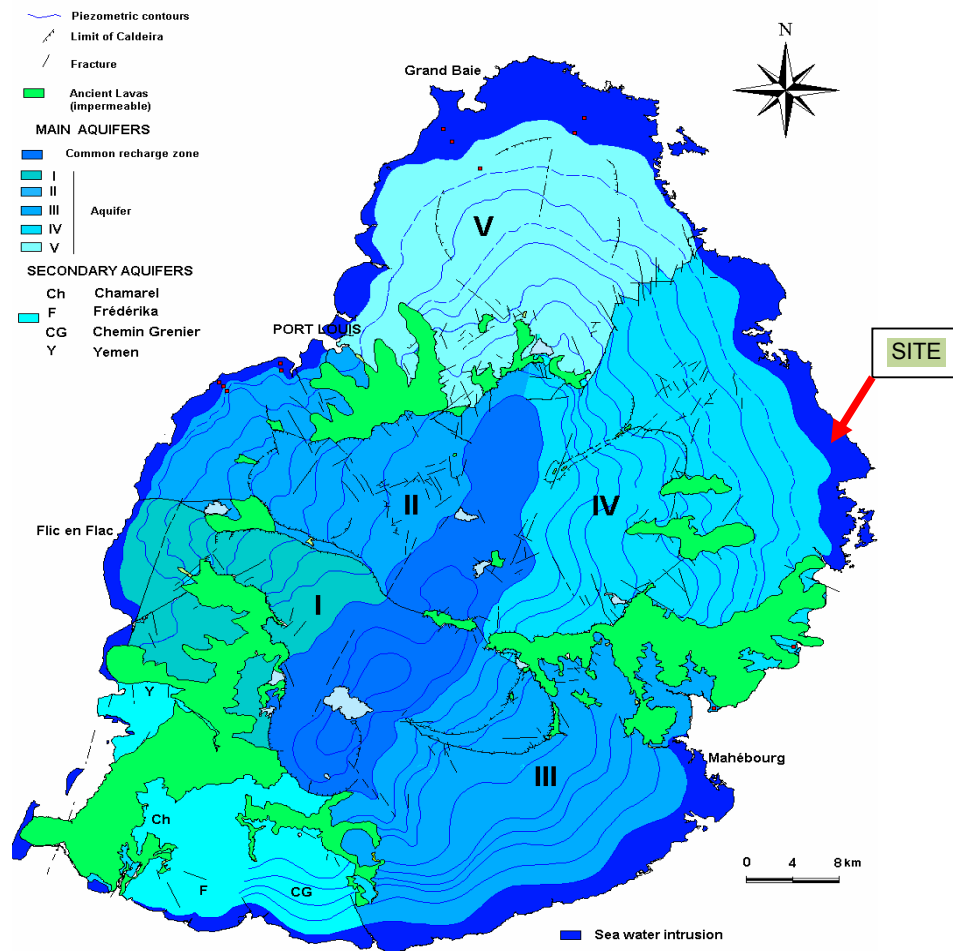


Figure 10 Site Hydrogeology

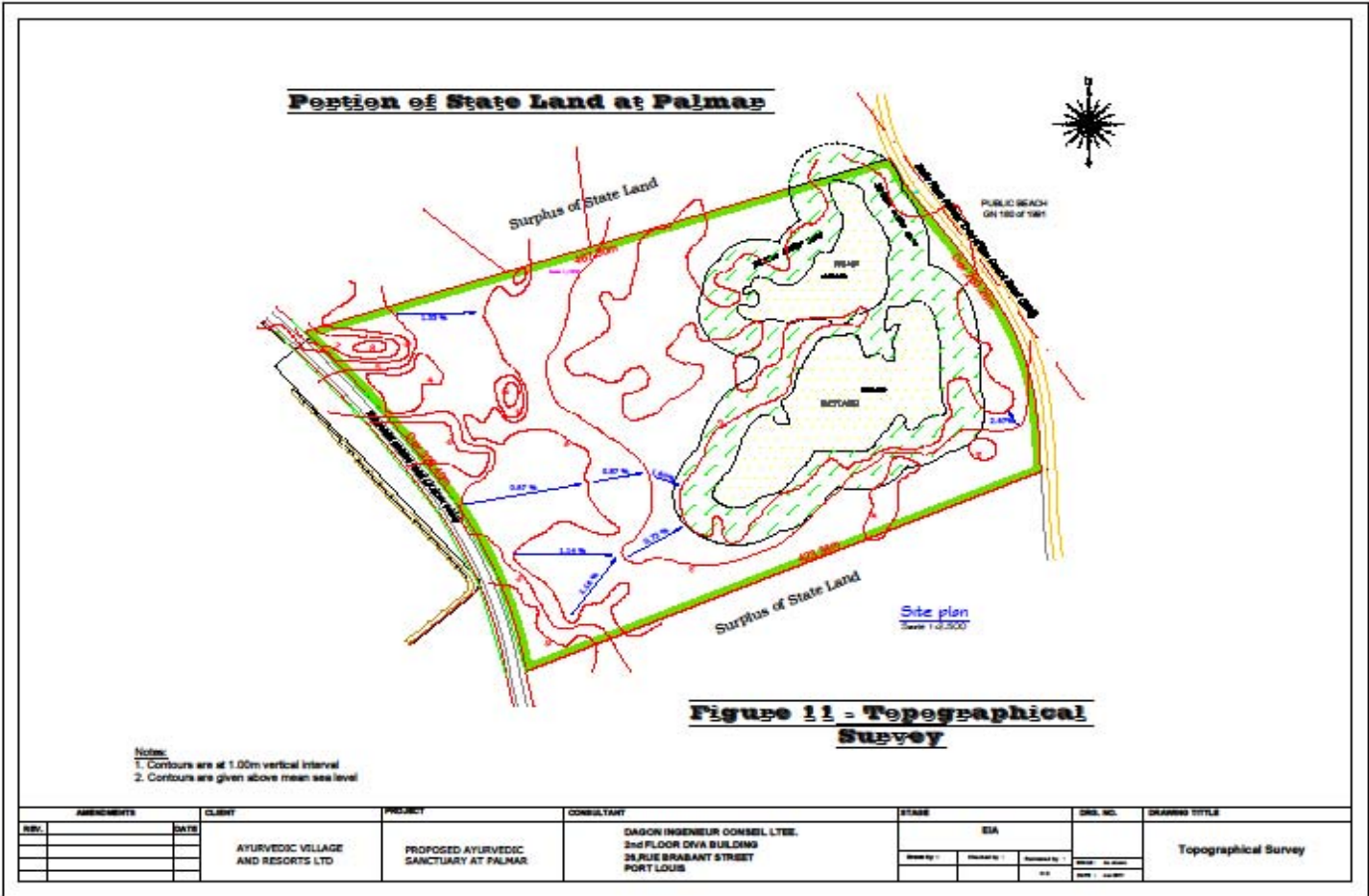


Figure 11 Topograhical survey