

## 2.0 DESCRIPTION OF THE PROPOSED PROJECT

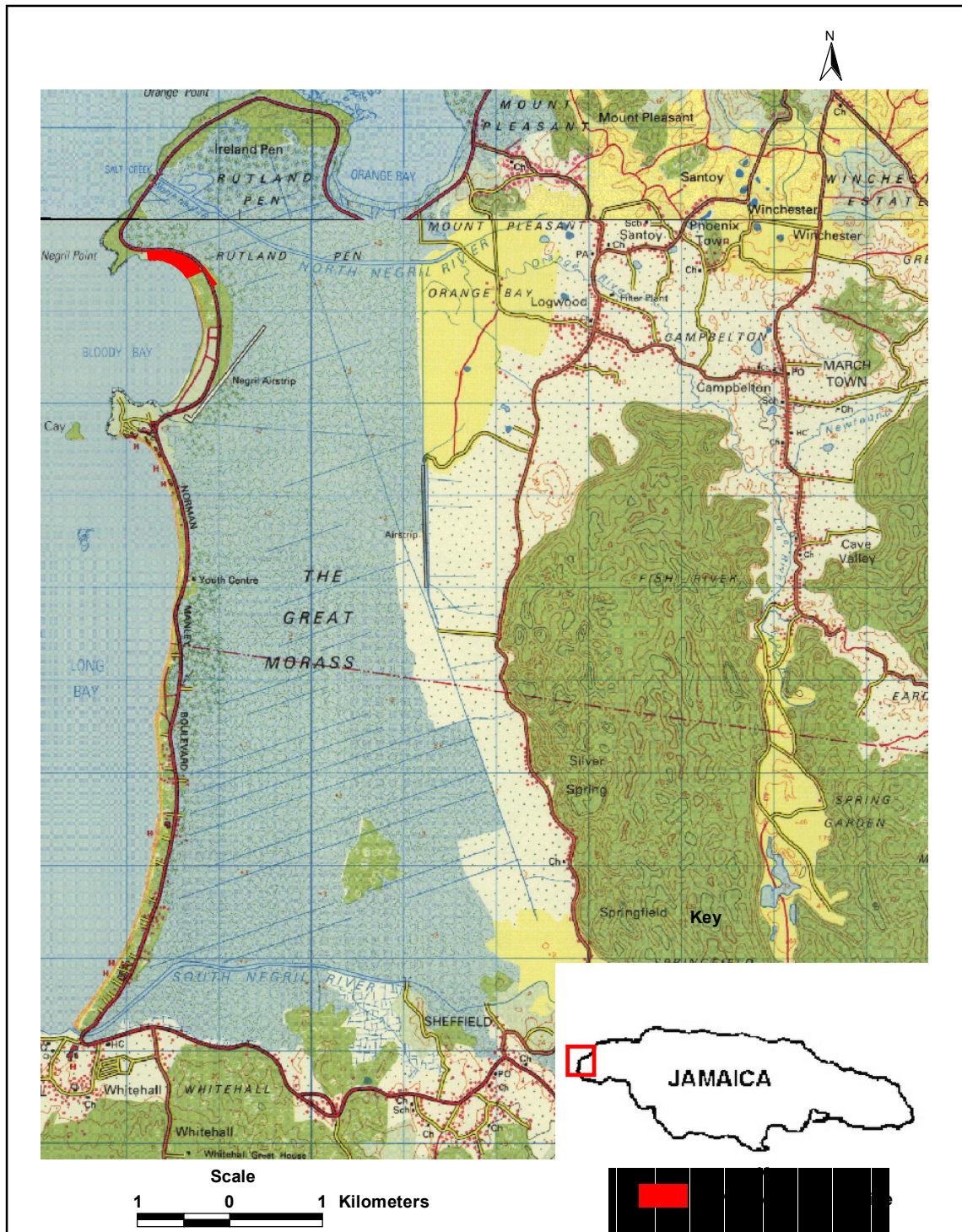
RIU International is a Spanish-owned international hotel chain with properties throughout the world, including the Caribbean and one in Jamaica. RIU now proposes to develop their second resort in Bloody Bay, Negril in Hanover, Jamaica (See Figure 2.1). The proposed site for this second hotel is approximately 1000 yards away from the present RIU hotel (*RIU Tropical Bay*).

It is proposed that the new hotel will have four hundred and twenty (420) habitable rooms with a floor area of 32,874 square metres (m<sup>2</sup>). Four (4) blocks of rooms, each of three (3) storeys high are planned for the main site of the approximately nine (9) hectares (22 acre) (Figure 2.2). A main building, which will house the lobby area, main dining, main kitchen, entertainment area and other service areas is also proposed. It will be no more than nine (9) metres high with a floor area of 8,684 square metres. Table 2.1 details the specifications of the proposed hotel.

**Table 2.1: Specifications for proposed RIU hotel**

Number of Rooms	420
Site Area	89,012 m <sup>2</sup>
Habitable/Rooms floor area	32,874 m <sup>2</sup>
Other floor area	8,684 m <sup>2</sup>
Number of room blocks	4
Number of Storeys	3

When the consultants visited, the proposed site appeared to be in its natural state; however, the previous owner had cleared an area, which has compacted marl. No pre-construction activities were observed. RIU proposes to construct the hotel in ten (10) months and plans to be operational by 2002. This represents an investment of millions of United States dollars to the Jamaican economy.



**Figure 2.1** Map showing location of proposed RIU hotel site.



**Figure 2.2 - Overall layout of most of the hotel buildings for RIU-II, showing guest blocks, main building, recreational facilities, etc.**

## **2.1 Construction Phase**

The type of construction proposed for the new RIU hotel is traditional concrete block and steel with cast floor and roof slabs.

It is proposed that the aggregate for the project be sourced out of St. Elizabeth. The concrete blocks are to be purchased from local suppliers in Savanna-la-mar, Westmoreland and Green Island, Hanover. The excavated material will be stored on site and covered with tarpaulin to minimise dust pollution.

The work force for the site will be an average of 600 trade men and labourers and at peak time the number will increase to approximately 1200. To the extent practicable, RIU will utilise local skills and labour for construction and operation of the hotel. It is anticipated that construction will be completed in 12 months.

The construction waste will be collected onsite by a waste disposal company and will be transported to the Retirement dump in St. James.

## **2.2 Operation Phase**

RIU expects to have an average of eighty percent (80%) occupancy once it is operational, assuming two guests per room that represents approximately 672 guests. The expected staffing for the operational phase is approximately 400 persons.

### *2.2.1 Environmental Policy*

The hotel does not have a documented Environmental Policy, however, the design of this development has considered a number of strategies to address environmental management of the hotel once it is complete. These include water conservation strategies, including low flow toilets

and showers, a centralised laundry and recycling of grey water from showers and the laundry for use in landscaping and grounds maintenance. (See Section 2.3.1.2). They also propose to recycle materials where practicable, either internally or through the community. The consultants will be outlining an Environmental Management Plan for the development of the hotel, which will include recommendations for continued environmental best practice during regular operation.

## 2.2.2 *Water Supply*

### 2.2.2.1 Customary Hotel Consumption Estimate

An estimate of the likely and expected water consumption of the hotel was undertaken. The two key references for the estimation were (i) the Jamaican Institute of Engineers (JIE) – Guidelines for Design and Construction of Housing Infrastructure (1984)<sup>1</sup> and (ii) Corbitt, R. (1989)<sup>2</sup>. The JIE guidelines suggest an estimation of usage of 200 Imperial Gallons Per Day (IGPD) per room for hotels. Assuming two persons per room, this works out to 100 IGPD per person or 455 Litres Per Day (LPD) per person for total consumption. Corbitt suggests the use of 50 US Gallons Per Day (USGPD) per person for hotels with private bathrooms; 15 USGPD per person for workers. Ten (10) USGPD per person each for restaurants and pools. This adds up to a total of 95 USGPD or 360 LPD, assuming two restaurant visits per visitor and one worker per visitor are assumed for each “visitor day”.

The total estimated consumption for the hotel, assuming 420 rooms with 2 persons per room at peak occupancy is 382,200 LPD or 84,000 IGPD. The assumptions utilized for this analysis and breakdown of the potential uses of the water are shown in Table 2.2.

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<sup>1</sup> JIE Recommended “Guidelines for Design and Construction of Housing Infrastructure (1984); Volume 3: 1984: Water Supply Systems

<sup>2</sup> Corbitt, R (1989); Standard Handbook of Environmental Engineering, McGraw Hill, New York

**Table 2.2 Estimated rate of water consumption**

Rate of consumption	455 LPD per person
Room Occupancy Rate	2 persons per room
Total estimated hotel consumption	382,200 LPD = 18,000 IGPD
Housekeeping and habitable areas	224,824 LPD (59%)
Food and beverage preparation	112,412 LPD (29%)
Maintenance and recreational area	44,965 LPD (12%)

2.2.2.2 Water Conservation Strategies and Resulting Consumption Estimate

Several water conservation strategies were noted in RIU’s design and design notes (Appendix 1).

These include the following;

1. Use of low-flush water closet (1.6 US gallon per flush) instead of the traditional 4-gallon water closet.
2. Use of a grey-water (face basin and shower) landscape irrigation system
3. Showerheads and faucet heads with aerators have been identified for use in this proposed hotel. They are currently in use at Tropical Bay.

An estimate of the consumption with these conservation measures in place was calculated. It was assumed that the water closet uses about 30% of the total housekeeping and habitable area flow. A 20% reduction in the estimated 20% total usage by faucets and showerheads in habitable areas and 20% reduction in the estimated total food and beverage consumption was also considered. A 10% reduction of the total consumption due to the use of a wastewater landscape irrigation system was also considered.

The revised consumption under the conservation scenario is summarised in Table 2.3. The total consumption of the hotel, given the proposed conservation measures is 276,533 LPD.

**Table 2.3 - Revised Water consumption under the proposed conservation strategy**

**Conservation Measures: Reduction of total**

Water Closets (1.6 vs. 4 gallon)	10.6%
Faucets and showerheads – rooms	1.2%
Faucets and showerheads – staff	5.9%
Wastewater Landscape Irrigation	10.0%

**Revised Consumption, with conservation**

Total water conservation saving	27.6%
Total estimated hotel consumption, with conservation	276, 533 LPD = 60,776 IGPD

**2.3 Wastewater**

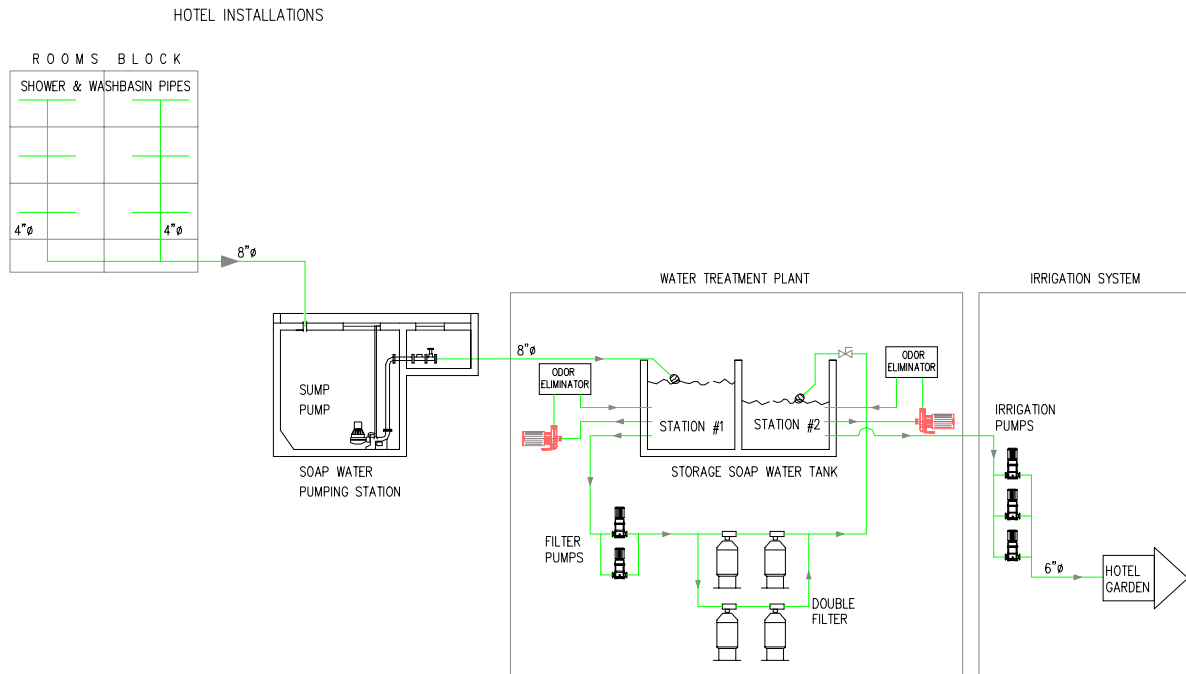
*2.3.1 Description of Proposed Sewerage, Grey Water Recycling and Grease Trap*

Drawings of the proposed sewerage on site indicates that the network consists of 4” and 6” pipes that gravity feed “black water”<sup>3</sup> from the visitors’ blocks and main building to a total of six lift stations on site. This black water will go to the Negril Treatment Plant, located at Sheffield.

‘Grey water’ from visitor’s blocks will be handled independently. This water will be collected, strained, settled and discharged into a landscape irrigation system. See Figure 2.3 for a drawing of the proposed system that is already in use by RIU at their first hotel.

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<sup>3</sup> “Black water” is untreated effluent from water closets and “grey water” is untreated effluent from sinks and showers.



**Figure 2.3 - Schematic of "Grey water" recycling scheme**

Grease traps are proposed for the primary treatment of the kitchen wastewater discharge (see Figure 2.4 for proposed design). Inspection of the drawings revealed that the grease trap has a volumetric capacity of 20.8 cubic meters (2 m x 6.5 m x 1.8 m). It is estimated that food preparation will result in approximately 68.8 cubic metres per day (assuming 5 US Gallons per meal, by 420 rooms, by 2 guests per room) with a kitchen that operates approximately 16 hours a day. The estimated retention time for the grease trap is 7.26 hours.

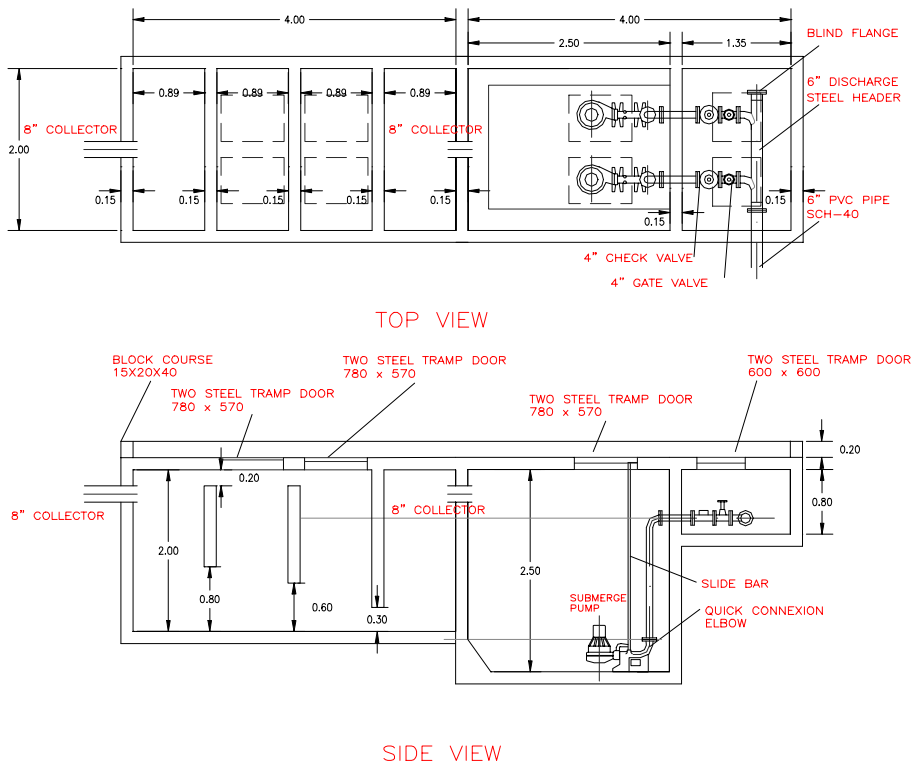
NWC (through their consultants Fisher Price Consultants (discussions with Mr. Manherst)) have provided guidelines to be followed for the design of the grease traps. These are as follows:

- ◆ A retention time of 2.5 hours should be provided for the average daily flow from the fixtures that leave the kitchen and discharge into the grease trap.
- ◆ A retention time factor should be applied to this flow as follows:
 

⇒ For 8 hours of operation	=	1
⇒ For 16 hours of operation	=	2
⇒ For 24 hours of operation	=	3



According to these guidelines, the grease trap's retention time should be 5 hours or greater. The current design exceeds this guideline.



**Figure 2.4 - Layout and Section through grease trap**

Discussions with the project manager for Tropical Bay (Mr. Sanchis) and the project's consulting architect (Ms. Madden) revealed that the new hotel plans to utilize Tropical Bay's laundry facility. That water is presently recycled to the landscape irrigation.

### 2.3.2 Wastewater Generation Estimate

Sewage is estimated at approximately 80 to 90% of the total water consumption. However, the proposed hotel's plans utilizes recycled water for landscape irrigation. The estimated water consumption rate will therefore be lower and the estimated wastewater rate can be expected to be closer to 100% of the water consumption estimate.

Assuming an additional 10% loss of water to areas other than the sewers, such as washdown water, the wastewater generation rate can be estimated. It was determined that this flow would range from approximately 343,390 LPD for the customary hotel consumption rate to as low as 248,880 LPD for the situation in which the conservation strategies are fully employed. The results are summarized in Table 2.3

**Table 2.4 - Wastewater generation flowrate for the proposed hotel**

<b>Generation Rates (LPD)</b>	<b>Customary</b>	<b>With Conservation Measures</b>
Water Consumption	382,200	276,533
Wastewater Generation	343,980	248,880

## **2.4 Coastal Infrastructure**

There is no existing plan for the installation of coastal structures, such as dunes, breakwaters, groynes, beach nourishment, outfalls, or pier structures. The consultants have advised RIU to notify and consult local and national stakeholder, including the National Environment and Planning Agency and the Negril Coral Reef Preservation Society if such plans arise in the future.