MAY PEN WASTEWATER

BACKGROUND

May Pen is the capital town of the parish of Clarendon which is located on the southern side of Jamaica. The population of the town and its adjacent areas has been growing steadily over the years and has been accelerated by the advent of the major highway project significantly. This population growth will be influenced in the coming years by a number of developments that are proposed for Clarendon.

The developments include some small industrial and commercial developments about the town, in tandem with May Pen Development Plan that propose of a Eco-industrial Zone. There is also the proposed Vernamfield Cargo Aerodrome, with some spin offs industries to support it; there is also the proposed development of the Milk River Spa and Resort.

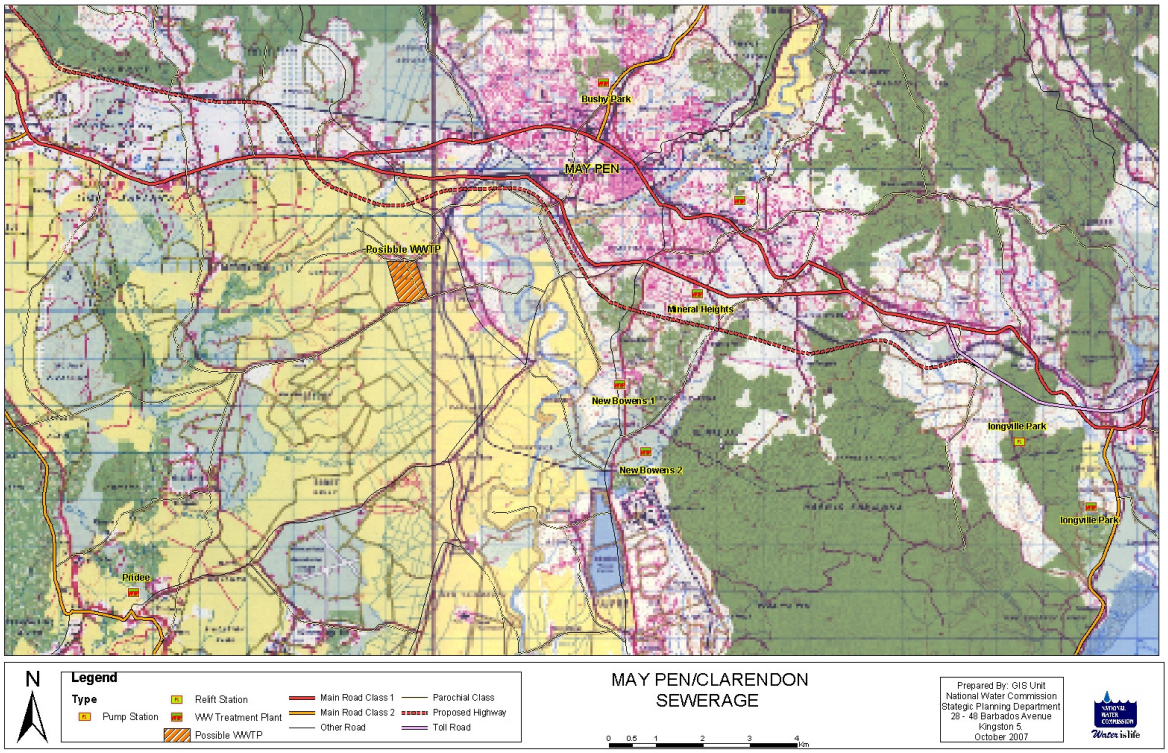
Clarendon is also seen as the ideal place for the construction of a second national stadium. However, the purpose of this exercise is to provide a conceptual plan for a Central Sewerage System for May Pen and its environs that will see the following benefits:

- Facilitate the proposed developments in May Pen and its immediate surroundings;
- Reduce ground water contamination;
- Minimize environmental pollution i.e. eutrophication waterborne diseases etc.; and
- Encourage proper zoning an and culminate to densely population of areas

WASTEWATER - CURRENT SITUATION

There are three mechanical type wastewater treatment plants in the May Pen in areas close to May Pen. The three plants are Mineral Heights, Bushy Park and Paisley Pen and are plants that were constructed in association with housing developments. These plants are fully operating at capacity and are therefore unable to accommodate additional wastewater flows from new developments and from other areas. It should be noted that there is a Bushy Park Housing Development Phase 2 where a new mechanical wastewater plant was constructed. This plant has not been taken over by NWC and is currently operated by the developers – the National Housing Trust (NHT). This phase mainly comprises service lots

Sewerage plants in Clarendon



Existing Wastewater Plant and Capacity				
No.	**Name of Community (Scheme)**	**Type of Treatment Process**	**Approximate/ Forecast Population to be Served**	**Design Capacity (MLD)**
1	Bushy Park	Aerated Lagoons	5,119	0.66
2	Paisley Pen	Oxidation Ditch	2,323	0.189
3	Mineral Heights	Oxidation Ditch	6,962	1.540
		Grand Total	**14,404**	**2.389**

***N.B. 2.389 MLD = 0.631 MGD**

PROPOSED DEVELOPMENT

The proposed development of sewerage for May Pen and its adjoining areas will largely accord with the recommendations outlined in the report prepared by Reid , Crowther and Partners Limited back in 1980. This followed a comprehensive study that was undertaken to determine an appropriate sewerage scheme to serve May Pen and its environs. The location of choice for the construction of wastewater Stabilization pond is located south west of Denbigh on the west bank of the Rio Minho, just north of Content. This site was feasible based on the current plans for Cargo Aerodrome to be constructed in Vernamfield which is in close proximity to the proposed site. Along with the 50 hectares of land needed to construct a wastewater stabilization ponds system and re-use of effluent for irrigation purposes for Cane fields within the environs of Content.

It must be mindful that there are key potential issues that must be considered in relation to the development which takes the form of EIA Report that encompasses factors such as:

- Social and Economical Impact
- Water Quality
- Technical feasibility
- Endangered Species (wild-life)
- Economical Feasibility

The proposed sewerage works include :

- The ultimate construction of a 3 MGD central wastewater plant,
- Construction of sewer collection and trunk conveyance facilities (including five pump stations) to the town of May Pen, Toll Gate in the west and Palmers Cross in the east.
- Construction of collector sewers in the town of May Pen and some adjoining communities.
- Construction of trunk conveyance to re-direct sewage flows from the Mineral Heights, Bushy Park, Curatoe Hill and Paisley Pen wastewater plants, these plants would then be retired.
- However, other existing plants that are not within the geographical location of the trunk main and catchment area will be rehabilitated. These plants include: New Bowens Phase I & II; Hayes Phase I & II and Pridee.

Projected design capacity and population of catchment area

Proposed Sewer Area			
No.	**Name of Sub-division**	**Flow (GD)**	**Approximate/ Forecast Population to be Served**
1	City Centre/Main Street	123,680	3,092
2	City Centre/Manchester Avenue	130,040	3,251
3	Glenmiur	125,160	3,129
4	Trento/hazard	195,080	4,877
5	**Grand Total**	**573,960**	**14,349**

N.B. Grand Total is inclusive of the provision of groundwater infiltration

The population of the projected area is forecasted to be approximately 28,753 persons with a minimum demand of 1.4 MGD. Therefore, the projected population growth and demand for central May Pen and its environs is shown below.

Year	**2010**		**2015**		**2020**	
	Population	Flows (GD)	Population	Flows (GD)	Population	Flows (GD)
Demand Grand Total	28,753	1,150,120	30047	1,201,880	31,399	1,255,960

Year	2025		2030	
	Population	Flows (GD)	Population	Flows (GD)
Demand Grand Total	32,812	1,312,480	34,289	1,371,560

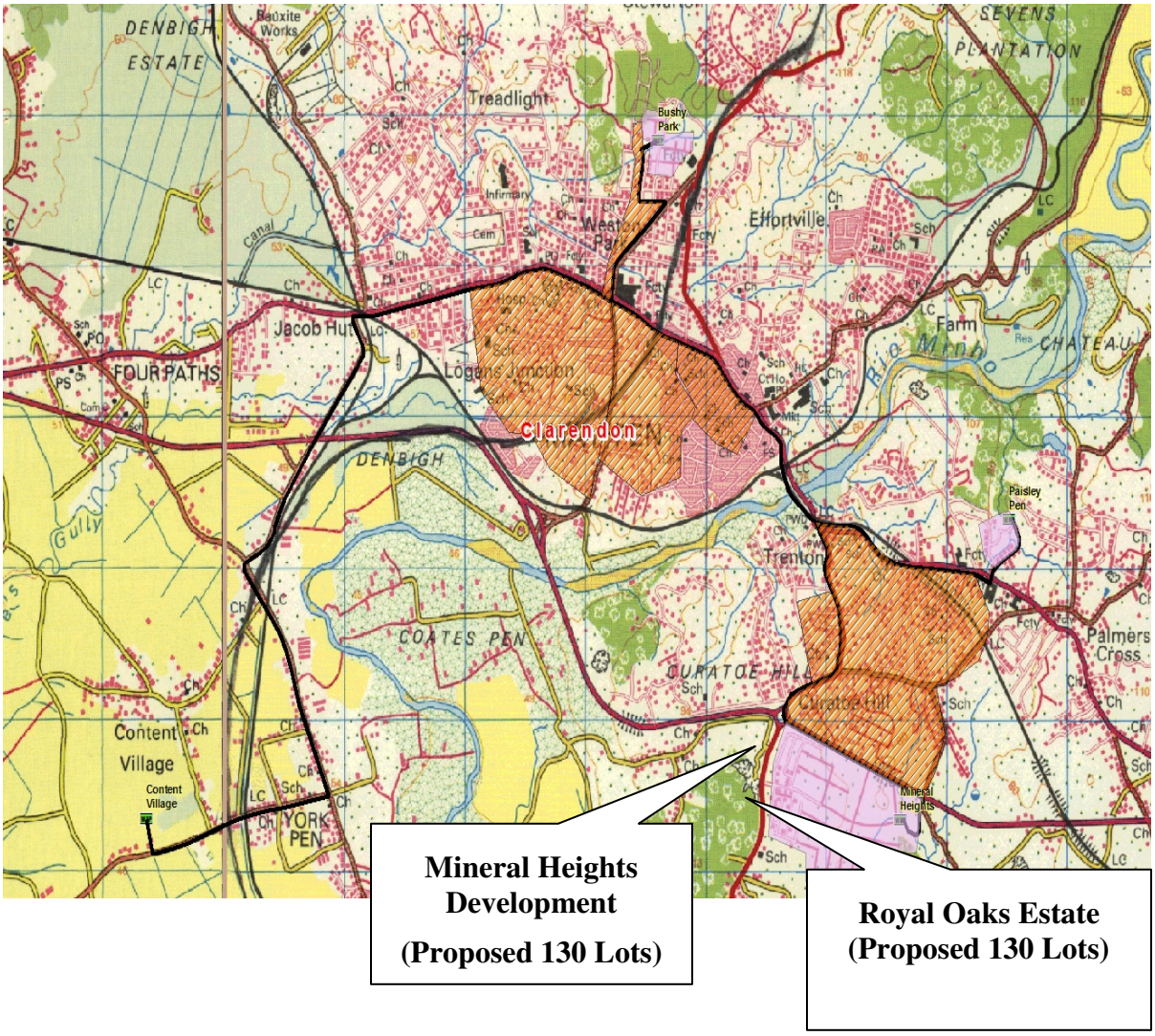
DESCRIPTION OF PROPOSED SCOPE OF WORKS

The proposed scope of work for the construction of a central sewerage system will involve the following works.

- Construction of a 3.3 MGD Wastewater Stabilization Pond
- Decommissioning of existing plants and to convert these plant to pumping stations where the current flows will be directed to the proposed Wastewater Stabilization Ponds
- Installation of conveyance system for existing treatment plant and proposed catchment area
- Construction of two pumping station

In keep with the overall scope of works for the preliminary exercise as such a detail engineering/ pre-design and assessment will be required to guide the selection for an appropriate site for the construction of the new central wastewater treatment facility.

Proposed sewerage system for May Pen



ESTIMATED PROJECT COST

The estimated cost to undertake the construction of a central sewerage system for May Pen and its environs is ***US$105.6M***. The amount does not include the purchase of land A breakdown is provided below.

No.	Description	Quantity	Unit	Unit Rate $ US	Amount (US)
1	**Construction Works WWTP**				
1.1	Procurement and installation of Sewer Pipes	70,000	m	276.32	$26,007,068
1.2	Construction of Re-lift Station	5	No.	1,454,750	$7,273,750
1.3	Construction of Treatment Plant/Ponds		Sum		$27,000,000
1.4	Land Acquisition	50	acres		
	Sub-total				**$60,280,818**
1.5	Preliminary (15%)				$9,042,122
1.6	Contingencies (7%)				$4,219,657
	Total Cost of Construction works WWTP				**$73,542,597**
2	**Engineering Design & Supervision**				
	Engineering Construction Supervision (20%)				$12,056,163
3	Provision Sum (Sewering of adjoining Communities)				$20,000,000
	Grand Total (WWTP)				**$105,598,761.56**

Cost for the acquisition for the construction of the plant and easement was not included. However, a list of landowners for the projected site for CSP system was indicated: Parcel 8-Jeremiah Johnson and Auther Johnson; Parcel 9- Mary Lewin; Parcel 14-Ivan Lewis and Parcel 15- Joseph Kabham.

PROPOSED IMPLEMENTATION STRATEGY

It is proposed that construction of the plant is done in two phases.

- Construction of a 3 MGD Contract Stabilization Pond (CSP)
- Installation of some 17 km of trunk
- Installation of 53 km of collector sewers to sewering of the catchment basin, in and around Central May Pen, Trento Harzard and Curatoe Hill areas.
- Decommission of Bushy Park, Paisley Pen and Mineral heights Wastewater Treatment Plant and divert these flows to the proposed CSP
- Construction of five (5) pumping station inclusive of the aforementioned treatment plant to pumping station

Proposed Implementation Schedule for Phase No. I

Tasks	2011				2012				2013				2014				2015				2016				2017			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Preparation Survey																												
Appraisal Loan Agreement																												
Selection of Consultant																												
Detail Design																												
Contractor Selection Process																												
Construction																												