



PRYDE SCHROPP McCOMB INC.
CONSULTING ENGINEERS

**COBBLE BEACH
PART OF LOTS 28 TO 34
INCLUSIVE, CONCESSION 3
FORMER TOWNSHIP OF SARAWAK
TOWNSHIP OF GEORGIAN BLUFFS**

MASTER SERVICING STUDY

Prepared for:

Georgian Villas Inc.
PO Box 911
Owen Sound, ON N4K 6H6
Tel: 519-370-2173
Fax: 519-370-2174

Prepared by:

Pryde Schropp McComb, Inc.
Mr. Brad R. Pryde, P.Eng., President
311 Goderich Street
PO Box 1600
Port Elgin, ON N0H 2C0
Tel: 519-389-4343, Ext. 223
Fax: 519-389-4728

May, 2007

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1.0 Introduction

1.1 STUDY AREA

The Cobble Beach development (formerly Georgian Villas) is a new residential/golf course development located on the west shores of Georgian Bay (Owen Sound).

Refer to Figure 1 for the Regional Location Map of the 228 hectare development site, located on Lots 28 to 34 inclusive, Concession 3.

Figure 2 provides details of the location of the site in the former Township of Sarawak.

The site is bounded by Georgian Bay to the east, Church Sideroad to the south, Grey Road 1 to the west and Presqu'ile Road to the north.

1.2 STUDY PURPOSE

The **Master Servicing Study** will provide details of how the Cobble Beach development will be serviced with:

- Water
- Sanitary
- Drainage
- Roads
- Hydro
- Utilities (telephone, gas, cable)

The report will also discuss details of the phasing of services, as it relates to the overall residential/commercial development of the site.

Assisting in the preparation of the **Master Servicing Study** is Stantec Consulting Ltd., who are responsible for the planning and design of the waste water treatment and disposal system and the preparation of the traffic studies.

The **Master Servicing Study** will also serve as the basis for satisfying Conditions of Draft Plan Approval that have been issued to date for the southern portions of the development lands is outlined below.

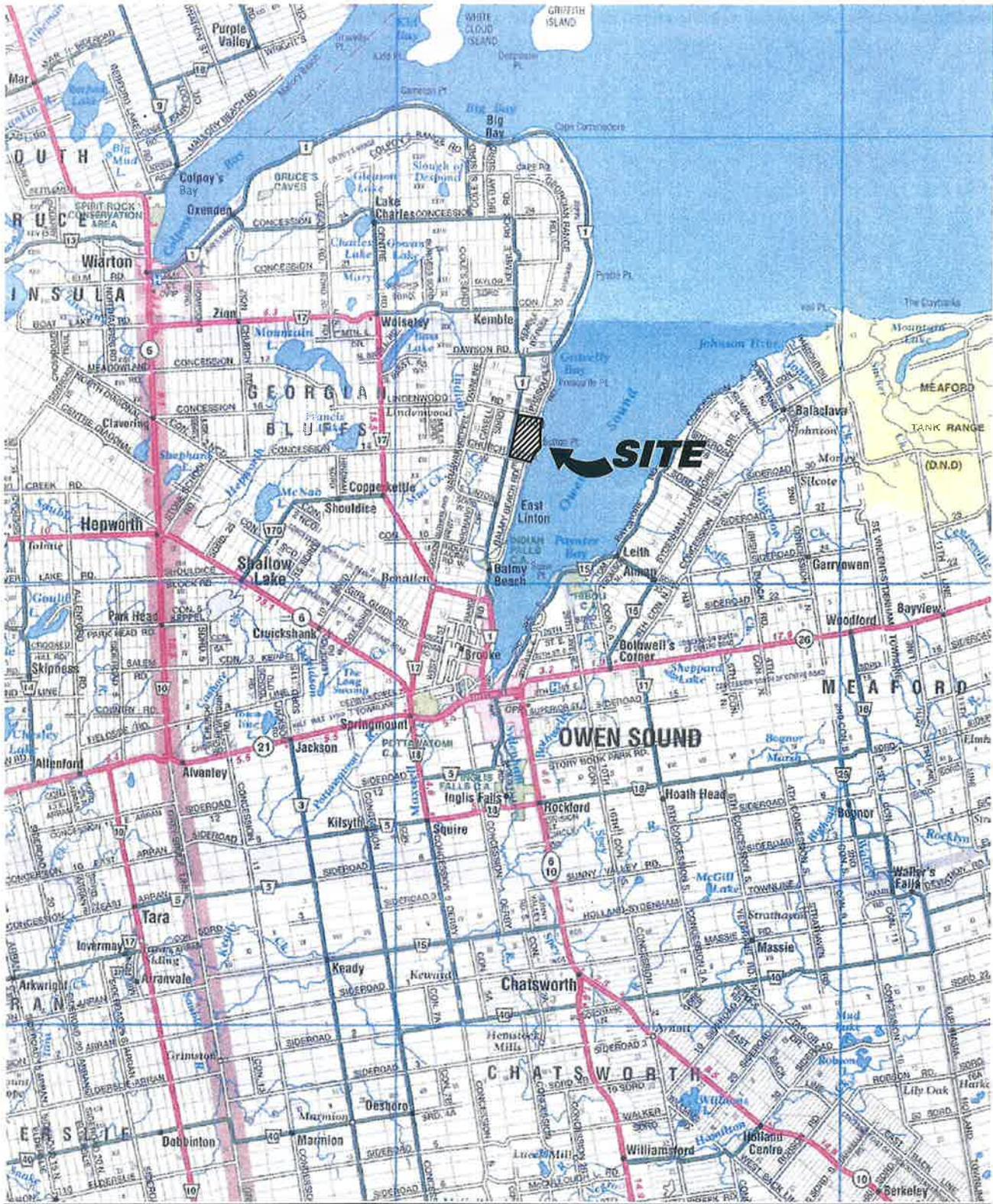
MASTER SERVICING STUDY
COBBLE BEACH

Phase 1 (File No. 42T-2004-02)

17. *That a Master Servicing Plan be prepared by a technically qualified consultant for the approval of the Township of Georgian Bluffs in consultation with the Ministry of the Environment and Grey Sauble Conservation Authority. The Master Servicing Plan shall include provisions for sanitary sewage, potable water services, road construction, utility services and surface/storm water management. The report will also detail the methods that will be used to control surface water flow and erosion and sedimentation within the development lands and abutting properties during and following construction. The Master Servicing Plan shall include suitable provisions for phasing of certain works and be incorporated into the Subdivision Agreements.*

Phase 2 (File No 42T-2006-12)

18. *That a Master Servicing Plan be prepared by a technically qualified consultant for the approval of the Township of Georgian Bluffs in consultation with the Ministry of the Environment and Grey Sauble Conservation Authority. The Master Servicing Plan shall include provisions for sanitary sewage, potable water services, road construction, utility services and surface/storm water management. The report will also detail the methods that will be used to control surface water flow and erosion and sedimentation within the development lands and abutting properties during and following construction. The Master Servicing Plan shall include suitable provisions for phasing of certain works and be incorporated into the Subdivision Agreement.*



MAP DERIVED FROM BRUCE PENINSULA REGIONAL MAP BY RAND McNALLY, 2005

Client/Project

SCALE 1:250,000

COBBLE BEACH

Georgian Bluffs, Ontario

Figure No.

1

Title

REGIONAL LOCATION MAP



PRYDE SCHROPP McCOMB INC.
CONSULTING ENGINEERS



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2.0 Existing Conditions

2.1 TOPOGRAPHY

Map 1 (Appendix A) is the topographical map of the overall site. The mapping was produced from aerial photography on September 21, 2005.

The topographical mapping illustrates the location of the Golf Course that was nearing completion of its construction at the time of the aerial photography. The golf course has been completed since the aerial photography was taken.

The property slopes from west to east to Owen Sound Bay from a topographical height of 231 m AMSL at Grey Road 1 to 176 m AMSL at the bayshore.

2.2 SOILS

The following soils reports have been completed to date for this project.

1. **Geotechnical Report**, Georgian Villas, Pryde Schropp McComb Inc., October, 2001.
2. **Geotechnical Investigation**, Georgian Villas Subdivision, Part of Lots 28 to 34, Concession 3, Former Township of Sarawak, Township of Georgian Bluffs, Peto MacCallum Limited, August 31, 2004.
3. **Geotechnical Investigation, Church Sideroad East**, Georgian Villas Development, Peto MacCallum Limited, September 17, 2004.
4. **Princess Beach Golf Course, Environmental Management Plan, Preliminary Report**, Gartner Lee Limited, August 6, 2003.
5. **Geotechnical Investigation, Wastewater Treatment Plant (WWTP) and Pumping Station**, Georgian Villas Development, Peto MacCallum Limited, May, 2005.
6. **Geotechnical Investigation, Proposed Residential Development**, Georgian Villas Subdivision, Peto MacCallum Limited, March 29, 2007.

The August 31, 2004, Peto MacCallum Limited report best reflects the general description of the soils of the southern portions of the site where development is first proposed. A copy of the 2004 soils report is enclosed in Appendix B.

MASTER SERVICING STUDY
COBBLE BEACH

The following is a brief description of the soils found on the property, as described in the 2004 Peto MacCallum Limited report:

"In general, the subsurface conditions in the test pits comprised surficial topsoil and localized fill overlying glacial till deposits with discontinuous deposits of sand and gravel, silty sand and gravel, silty sand, silt and clayey silt. These deposits are underlain by shale bedrock. Topsoil depths typically ranged from 300 to 400 mm.

Glacial till deposits were contacted below the topsoil and extended to the underlying weathered shale bedrock. The glacial tills usually comprise of clayey silt/silty clay with trace of some sand and gravel and occasional to numerous cobbles and boulders.

The glacial tills are generally very stiff to hard.

There were also areas of discontinuous deposits of sand and gravel, silty sand and gravel with perched watertable conditions.

The bedrock underlying the site is either red Queenston or grey Dundas shale which is a horizontally bedded relatively soft shale with occasional grey hard bands, typically weathered in the upper few meters."

On February 27, 2006, additional test pits were excavated.

Appendix B also contains a Site Plan for the entire site summarizing all of the test pits / boreholes completed for this project up to March 29, 2007.

2.3 GROUNDWATER

The 2004 Peto MacCallum Limited report also provides the following discussion regarding the groundwater conditions:

"Minor groundwater seepage was observed at random, isolated depths and locations, most commonly associated with sandy silt layers / zones within the till stratum, or near the bedrock surface. However, more significant groundwater inflow was encountered in Test Pit 32 from perched water within a sand and gravel deposit above the shale. In general, based on groundwater observations noted upon completion of excavation, the regional groundwater table is below the explored depths. Local variations and seasonal fluctuations in the groundwater table should be anticipated."

2.4 DRAINAGE

There are no existing permanent water courses that traverse the site from west to east. There are however, a number of small, seasonally intermittent drainage courses that flow from Grey Road 1 easterly towards Georgian Bay. The topographical map in Appendix A (Map 1) provides details regarding existing drainage systems.

A number of new drainage features ("boulder strewn creeks") have been or will be constructed as part of the golf course development.

The **Stormwater Management Report, Cobble Beach Development Phase 1 and 2** as prepared by Pryde Schropp McComb Inc., August, 2006, was completed for the development during its initial planning stages is enclosed in Appendix C.

A final **Stormwater Management Report** will be completed as part of fulfilling the Conditions of Draft Plan Approval for the various stages of residential development.

The following excerpts further detail the existing drainage features of the site.

2.2 Pre-Development Drainage Conditions

The proposed development prior to the construction of the golf course, consisted mainly of grassed fields with a number of wooded areas located throughout the site. Other than a single family dwelling constructed on the south side of the development, the property was vacant.

In 2004/2005, a golf course was constructed on the site. In 2005, a Maintenance Building located in the central portion of the site was constructed as well. A stormwater management plan for the golf course development was submitted to the Township, County and Conservation Authority in September 2002 to address the proposed management of runoff from the course. Stormwater Management for the Maintenance Building is part of a block of land that will drain directly into Owen Sound Bay. Stormwater quality provisions for this building include providing 600 mm sumps in the parking lot catchbasins and running eavestrough drains onto the grassed areas where possible. Drainage from the Maintenance Building eventually discharges into a natural ditch. This ditch will connect into the drainage out from Pond 5 on the east side of McLeese Drive and then flow into Owen Sound Bay.

The native soils on the site generally consist of poorly drained silt/clays over most of the property with small pockets of sandy silt soils and cobbles on the east part of the site. The topography of the site is gentle with an average slope of approximately 1.0% towards the east. This encourages runoff from the site to drain via sheet flow over most of the site. There are a number of drainage ditches located throughout the site where the slope of land is steeper. These ditches however, disappear on the lower portion of the property on the east side of the property. Based on site inspections of the site, there are no visibly defined outlets discharging into Owen Sound Bay on the east side of the property.

A ridge crosses over most of the southern half of the property in a south to north direction and divides this portion of the site into two distinct elevation levels. Considerable soil erosion is occurring on the ridge as a result of runoff concentrating into channels as it flows down the face of the ridge. Runoff at the base tends to infiltrate rapidly into the sandy silt type soils found in this area. Overburden thickness here is very shallow (< 0.6 m in some areas) and is underlain by an impermeable layer of shale. Runoff infiltrating into the overburden soils drains in an eastward direction along the bedrock / overburden interface where it eventually drains into Owen Sound Bay. In some areas where the shale prevents positive drainage towards the bay, sub-surface water ponds to the surface creating temporary wetland areas.

MASTER SERVICING STUDY
COBBLE BEACH

A second ridge rises from the shoreline of Owen Sound Bay on much of the northern portion of the property. At its highest, this ridge is approximately 10 m to 12 metres above the lower shoreline. Overburden on top of the ridge is very shallow (< 0.6 m) and is underlain by impermeable shale bedrock. There is no distinct runoff discharge point along this ridge indicating that drainage from the northern portion of the site is by sheet flow and or infiltrated into the overburden soils.

There are numerous locations on the upper level of the site (west side) where runoff ponds in low lying areas. Due to the native silty clay soils, these areas remain wet throughout most of the spring and fall and encourage the growth of cattails and other wetland type vegetation.

Although there are approximately five (5) culverts draining the lands west of the Cobble Beach property on to the site, the contribution of these lands to the overall quantity of runoff on the site is considered to be negligible.

Since all runoff from the site will discharge directly into Owen Sound Bay, there will not be a requirement to over control the post-development flows from the site to meet pre-development peak flow conditions. Therefore, the pre-development flows for the site have not been modelled as part of this report.

3.0 Existing Municipal Services

3.1 GENERAL

The proposed Cobble Beach development will be a fully serviced community. Details of each of the existing services are summarized below.

3.2 WATER SUPPLY AND DISTRIBUTION

3.2.1 Water Supply

Based on the **Final Environmental Study Report**, (July, 2005), for a regional municipal water supply, that was recently completed by the Township of Georgian Bluffs, the water supply for the Cobble Beach development will be from the East Linton Waterworks.

The water intake supplying water to the East Linton Waterworks is from Georgian Bay.

The East Linton Water Treatment Plant is located approximately 4 km south of Cobble Beach on Grey Road 1.

The East Linton Waterworks will have to be upgraded as part of the development plans for Cobble Beach. Extensive discussions have been underway for some time now between the Township of Georgian Bluffs and Georgian Villas Inc., to negotiate the cost sharing arrangement and phasing for the upgrading of the East Linton Waterworks to supply Cobble Beach. Minutes of Settlement have been executed for the cost sharing of the water works upgrades and a formal Agreement is now being finalized.

3.2.2 Water Distribution

Presently there is a 150 mm Ø watermain extending from the East Linton Waterworks at the East Linton Sideroad West northerly on Grey Road 1. Its present termination point is at Alexandria Street. The location where the existing 150 mm Ø watermain terminates on Grey Road 1 is approximately 900 m south of Church Sideroad at the southwest corner of the Cobble Beach development.

3.3 SANITARY COLLECTION TREATMENT AND DISPOSAL

Presently there are no existing municipal sewage works and the development will be required to construct its own sewage collection treatment and disposal system to service the needs of Cobble Beach.

3.4 ELECTRICAL

The Cobble Beach development is located within the service area of Hydro One.

Hydro servicing for the development will be connected to the existing 3 phase hydro system, located on the south side of Church Sideroad.

Design Agreements are in place with Hydro One for the construction of both the temporary overhead hydro lines for 2006 and 2007 and the permanent underground hydro lines for the subdivision construction starting in 2007.

In the fall of 2006, temporary overhead 3 phase power lines have been installed with interconnection at Church Sideroad at the intersection of McLeese Drive. The temporary hydro line extends generally along the alignment of McLeese Drive and Cobble Beach Drive to provide temporary services to the following facilities:

- Golf course irrigation pumping station (2007)
- Sewage pumping station (2007)
- Clubhouse (2006/2007)
- Maintenance garage (2006/2007)
- Golf course high lift pumping station (2007)

The temporary overhead hydro line will be decommissioned as site services are constructed. Permanent hydro servicing will be underground.

3.5 NATURAL GAS

Union Gas presently does not service this area of the Township. The closest location is at the intersection of Grey Road 17B and Grey Road 17 at the north end of Springmount.

Detailed negotiations are underway with Union Gas for provision of natural gas servicing to the development.

3.6 TELEPHONE

Bell Canada will provide telephone and internet service to the development.

3.7 CABLE TV

Rogers will provide full cable service to the site.

4.0 Proposed Development

4.1 DESCRIPTION OF PROPOSED LAND USES

The Cobble Beach development will consist of the following:

- 18 Hole Championship Golf Course (construction completed)
- Golf Club House (27,484 ft²) including: (under construction; opening summer of 2007)
 - 210 Seat Restaurant
 - Pro Shop
 - Ten (10) Inn Hotel Rooms
 - Spa
- Golf Course Maintenance Facility (construction completed)
- Residential
 - Phase 1 (Draft)
 - 104 – 124 residential units
 - 4 blocks – multi family (164 units – maximum)
 - Phase 2 (Draft)
 - 160 - 228 residential units
 - 39 – 63 townhouse units
 - Phase 3 (Estimated – not yet submitted for Draft Plan Approval)
 - 169 residential units
 - 216 units – multi family

Note: Within each Phase of the development, it may be undertaken in stages, depending on market demand.

In addition, the Phase 1 and 2 subdivisions provide a range of lots and lot sizes in the form of lot less blocks.

- Village Centre
 - 200 residential units – multi family
 - 53,821 ft² – commercial (includes 36 room hotel)

Table 1 summarizes the proposed development of the various phases of Cobble Beach.

**TABLE 1
COBBLE BEACH
PROPOSED DEVELOPMENT DETAILS**

RESIDENTIAL UNITS

Development Stage ⁵	Yrs: 2007-2009	Yrs: 2010-2020	Yrs: 2021-2028	TOTALS
	Stage 1 ¹	Balance of Draft Approved lands (Draft 1 & Draft 2) ^{2,4}	Future Development ³	
Single-Family	72	280	169	521 units
Townhouse	28	35	0	63 units
Multiple Family	92	99	216	407 units
Village Centre Residential	0	200	0	200 units
Total Residential Units	192	614	385	1,191 units

COMMERCIAL SQUARE FOOTAGE

	Yrs: 2007-2012	Yrs: 2013-2018	Yrs: 2019-2025	TOTALS
Clubhouse/Inn ⁶	27,484			27,484 sq.ft.
Starters Hut	1,000			1,000 sq.ft.
View House	3,300			3,300 sq.ft.
Village Centre Commercial ^{7,8}		26,911	26,910	53,821 sq.ft.
TOTAL	31,784	26,911	26,910	85,605 sq.ft.

Notes:

1. Unit Counts for Stage 1 based on a plan prepared by Design Plan Service dated February 8, 2007.
2. Unit Counts for Balance of Draft Approved Lands based on difference between Draft 1 (DPS Sept 14, 2007) and Draft 2 (DPS Feb 6, 2007) and Stage 1 dwg (DPS Feb 8, 2007).
3. Unit Counts for Future Development based on Overall Development Concept dated December 14, 2006, as prepared by Design Plan Services.
4. Unit Counts for Phases 1 and 2 represent the maximum units possible.
5. Development Stage based on approximately 60 units per year absorption rate.
6. Clubhouse also includes a 2nd floor Inn (10 rooms) and basement cart storage.
7. Nature of Village Centre commercial/retail space to be determined. It would likely contain a hotel/inn, small shops and restaurants along with some community areas like a Pavilion.
8. Village Centre commercial includes a 36 room hotel.

The most recent development concept for the overall development lands is enclosed in Appendix D and shown on Figure 3.

The southern part of the development referred to as Phase I received Draft Plan Approval on October 13, 2005. Subsequently, an application for Red Line Revisions was submitted to the County on July, 2006. Revised Draft Plan Conditions for Phase 1 were issued on October 12, 2006. Enclosed in Appendix E is the Red Line revised Draft Plan for Phase 1, as submitted to the County in July, 2006.

The residential development of the central portion of the site is referred to as Phase 2. The Draft Plan of Subdivision for Phase 2 was submitted in July, 2006, to the County of Grey for processing. A copy of the Phase 2 Draft Plan of Subdivision is enclosed in Appendix F.

4.2 DENSITY

Based on the overall development plans and information contained in Table 1, the following Equivalent Residential Units (ERU's) will be used in the design of the proposed water and sewage works.

Water Works

In negotiations with the Township, a total of 1,500 ERU's have been assigned to the Cobble Beach development. This is slightly more than required, based on the present plans of the Cobble Beach development.

Sewage Works

Due to the difficulty in "up sizing" some of the sewage works infrastructure at a later date, the Developer has decided to design the sewage works to 1,774 ERU's.

Within the Official Plan Amendment No. 32 of the Grey County Official Plan it states that the site is approved for approximately 1,500 units.

4.3 PHASING OF DEVELOPMENT

Though Phase 1 is further advanced in the planning approval process, Phase 2 has been submitted to the County for Draft Plan approval processing (July, 2006). It is planned to expedite the approval process for Phase 2, such that portions of Phase 2 are ready for construction in 2007.

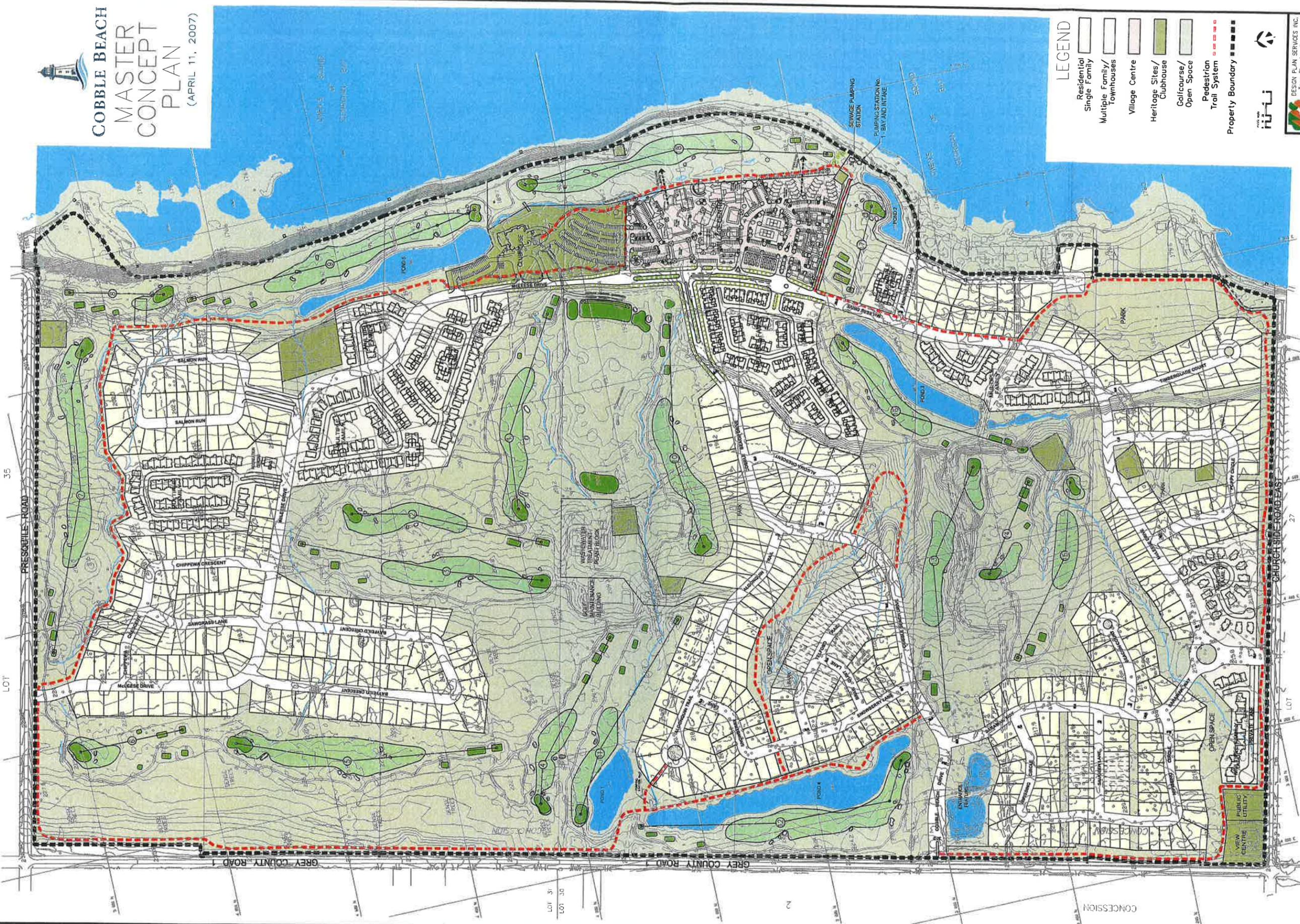
It is planned to construct in 2007 Cobble Beach Drive from Grey Road 1 to McLeese Drive and McLeese Drive from Hole 17 (utility corridor) to the northerly end at the Golf Clubhouse.

With the 2007 construction, Block 20 of Phase I (multi-family block), will also form part of the first stage of construction planned in 2007.

Punkinseed Drive is to be registered/constructed in 2007 and will provide permanent access to the existing residences along the east side of Punkinseed Drive.



**COBBLE BEACH
MASTER
CONCEPT
PLAN**
(APRIL 11, 2007)



LEGEND

- Residential Single Family
- Multiple Family/Townhouses
- Village Centre
- Heritage Sites/Clubhouse
- Open Space
- Pedestrian Trail System
- Property Boundary

DESIGN PLAN SERVICES INC.
Town Planning Consultants
385 The West Mall, Suite 303
Scarborough, Ontario M1B 2Y7
Telephone: (416) 526-5447
Fax: (416) 520-6665
www.designplan.com

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FIGURE 3

**MASTER SERVICING STUDY
COBBLE BEACH**

It is also proposed that a “holding” provision will be placed on all lots / blocks of both Phases 1 and 2 until the following conditions have been dealt with to the satisfaction of the Township of Georgian Bluffs and/or the County of Grey.

First 200 Lots

- Agreements have been entered into between the Developer and the Township for
 - Expansion of East Linton Waterworks, including the Water Tower and External Water Distribution System.
 - Sewage Responsibility Agreement
- Subdivision Agreement for Stage 1 registration

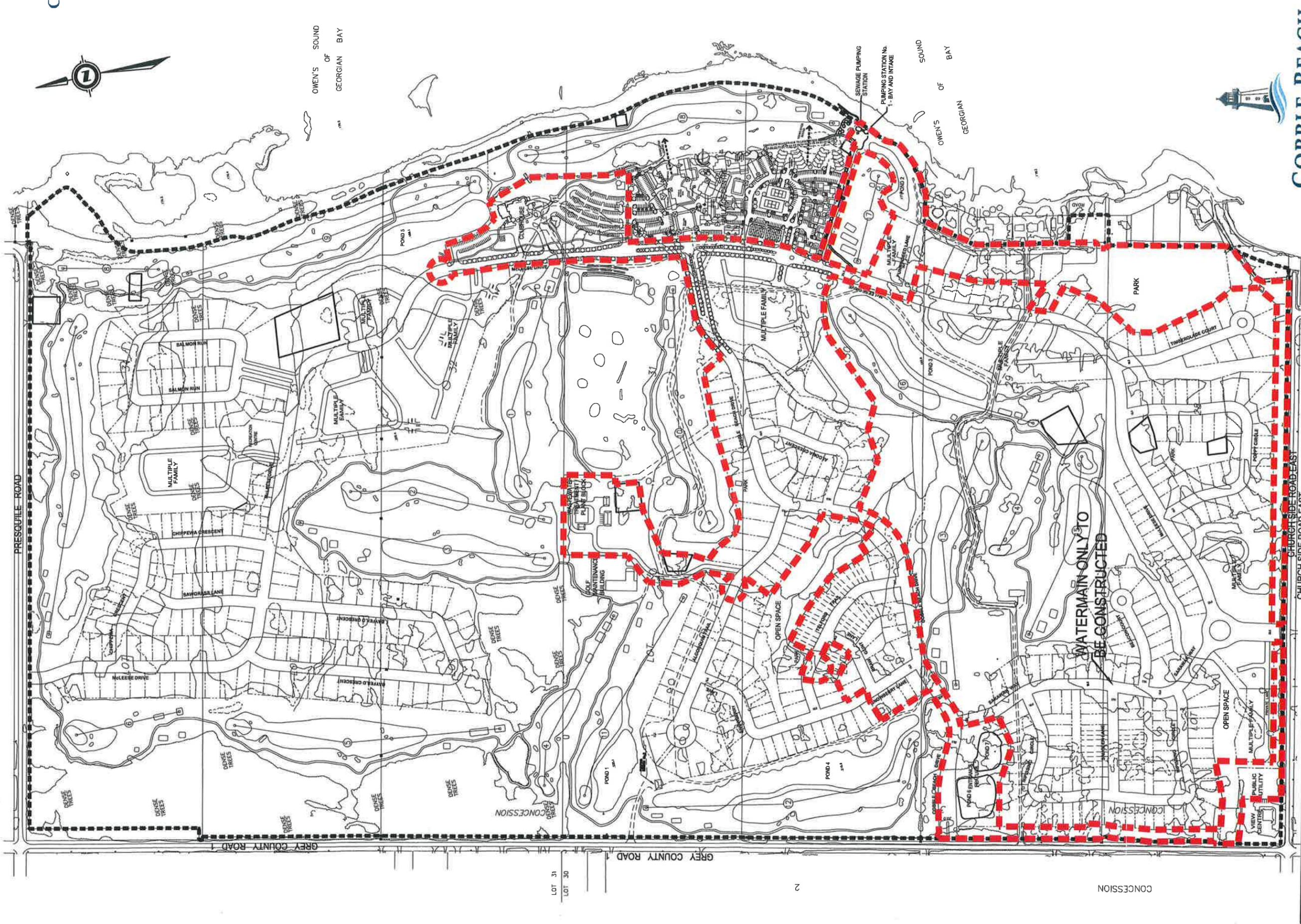
Prior to Approval of More Than 200 Lots

- Agreement for second expansion of East Linton Waterworks
 - Note:** Initial expansion of East Linton Waterworks will provide approximately 400 ERU's to Cobble Beach. A Water Capacity Study will be completed prior to 400 ERU's being reached to determine if actual flows are greater than or less than that originally designed. Additional ERU's may be available to Cobble Beach, depending on Study results.
- Traffic Study to assess the impact of the first stage of registration on Grey Road 1 and to modify, if necessary, the conclusions and recommendations of the most recent Traffic Study (July, 2006).

Based on present plans, the area shown on Figure 4 will be registered initially in early 2007. The lots/units associated with Stage 1 are summarized below:

Single Family Residential	72 Units
Townhomes (Freehold)	28 Units
Multi-Family Block (“Villas”)	98 Units (Condominiums)
TOTAL	192 Units

**Approximate Only



COBBLE BEACH

Client/Project

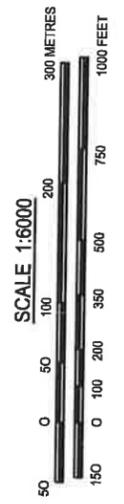
**COBBLE BEACH
MASTER SERVICING STUDY**

Figure No.

4

Title

**2007 REGISTRATION
/CONSTRUCTION**



SCALE 1:6000

50 0 50 100 200 300 METRES
150 0 100 200 350 500 750 1000 FEET



PRYDE SCHROPP McCOMB INC.
CONSULTING ENGINEERS

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5.0 Servicing Feasibility Analysis

5.1 WATER SUPPLY AND DISTRIBUTION

5.1.1 Water Supply/Storage

The Township of Georgian Bluffs, along with their Consultant, Henderson Paddon and Associates Limited (HPA) are responsible for completing the design of the water treatment plant upgrades and water storage facilities.

An Agreement is nearing finalization for the supply of water to Cobble Beach from the East Linton Water Works. The initial allocation to Cobble Beach is for 400 ERU's. The Township however, is designing the upgrades for a total of 557 ERU's with the additional 157 ERU's being assigned to the Township for their use.

The details of the water intake, low lift pumping station and water treatment plant are detailed in the HPA report entitled **Design Report – First Expansion of East Linton Water Treatment Plant and Storage Facilities**, September, 2006 (Appendix G).

In addition, the Township has also acquired the "Crannie" property immediately west of Cobble Beach, west of Grey Road 1. The site is for a proposed water tower. The tower would likely be constructed also in the spring of 2007. Preliminary details of the proposed water tower are enclosed in Appendix G. It is to be noted that the water tower will be sized for a capacity greater than 557 ERU's.

The Township of Georgian Bluffs has commissioned HPA to commence the design work in July, 2006, for the initial 557 ERU's of capacity. Construction is planned to commence in the spring of 2007, with all upgrades operational by August, 2007.

For subsequent upgrades to the East Linton Waterworks, the design will be in accordance with the **Final Environmental Study Report**, July, 2005. Timing of the upgrades will be in accordance with the residential/commercial water demand of Cobble Beach and other developments within the Regional Water Supply Study Area. The Water Agreement will be the framework for future cost sharing/phasing for the expansion of the East Linton Waterworks, as it relates to the Cobble Beach development.

5.1.2 Water Distribution

The HPA report entitled **Internal Watermain Sizing Analysis** (Revised), April, 2006, details the proposed water distribution system for the area north of the East Linton Waterworks that would include the Cobble Beach development.

The original Henderson Paddon and Associates Limited report (2004), was prepared based on 1,774 Equivalent Residential Units (ERU). As noted in Section 4.2 of this report, the density of the overall development has been reduced down to 1,500 ERU's for the water supply and as a result the Henderson Paddon and Associates Limited Water Distribution Study has been revised accordingly.

Based on the Water Tower being constructed in 2007, the sizing of the internal watermain was revised once again, as detailed in correspondence dated November 13, 2006 (Pryde/Graham) (Appendix G).

Figure 5 illustrates the water distribution layout including the proposed watermain sizing. Information to produce Figure 5 was obtained in part from the revised HPA design as contained in their letter of November 13, 2006.

Also shown on Figure 5, is the first phase of watermain construction that is planned in 2007.

A recent agreed upon change to the water distribution system is the increasing of the watermain size on the access road to the WWTP from 150 mm to 250 mm Ø. The 250 mm Ø watermain would then extend northerly to Phase 3, when required. This eliminates the need of the watermain crossing of Holes 4 and 11.

Subsequent staging of development and the associated construction of the water distribution system will be based on market demand.

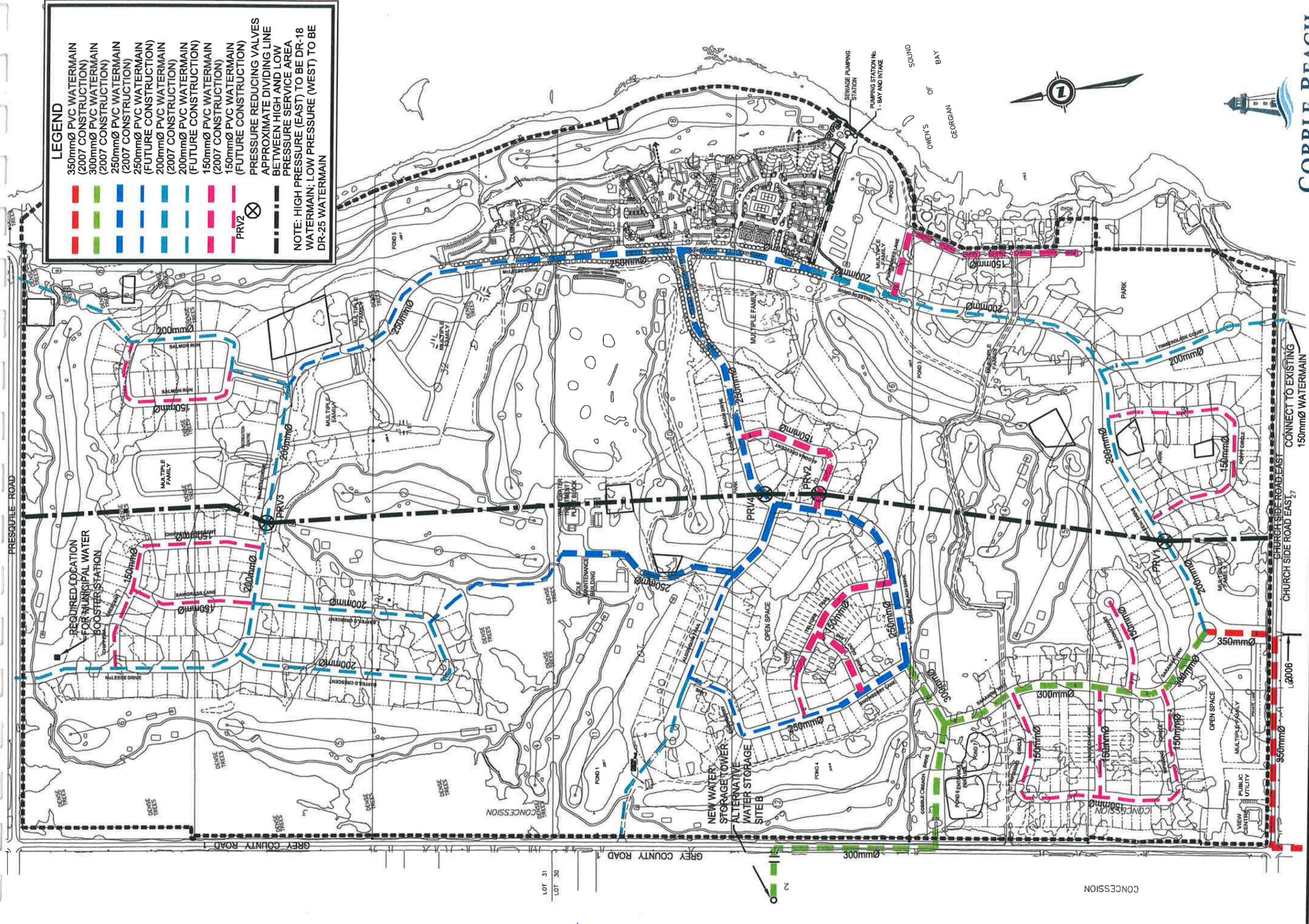
5.1.3 Design/Construction Criteria

Appendix K contains the generic design/construction criteria for water distribution systems for new subdivisions.

In addition, the Township has provided to Cobble Beach on April 17, 2006, the following site specific information to be incorporated into the Cobble Beach water distribution design.

The following are proposed technical conditions for construction and testing of GVI's internal water distribution system and partial requirements for the Township of Georgian Bluffs (Township) to eventually take over ownership of internal watermains within Georgian Villas Inc.

- i) All watermains be sized to the approval of the Township of Georgian Bluffs.*
- ii) All watermains in the de-pressurized zone (lower elevation of lands down near Georgian Bay) to be PVC DR-18 to provide extra watermain strength in the event that the pressure-reducing valves were to fail. Provide all watermains with approved tracing wires to allow for locating of watermains.*
- iii) All other watermains in upper pressure level to be PVC DR-25. Minimum bury depth of all to be 1.8 m.*
- iv) All services to be attached to watermains with approved service saddles. All service saddles shall be stainless steel. Approved main stop required.*



LEGEND

- 350mmØ PVC WATERMAIN (2007 CONSTRUCTION)
- 300mmØ PVC WATERMAIN (2007 CONSTRUCTION)
- 250mmØ PVC WATERMAIN (2007 CONSTRUCTION)
- 250mmØ PVC WATERMAIN (FUTURE CONSTRUCTION)
- 200mmØ PVC WATERMAIN (2007 CONSTRUCTION)
- 200mmØ PVC WATERMAIN (FUTURE CONSTRUCTION)
- 200mmØ PVC WATERMAIN (2007 CONSTRUCTION)
- 200mmØ PVC WATERMAIN (FUTURE CONSTRUCTION)
- 150mmØ PVC WATERMAIN (2007 CONSTRUCTION)
- 150mmØ PVC WATERMAIN (FUTURE CONSTRUCTION)
- PRV2
- PRV3
- PRV4
- PRV1

PRESSURE REDUCING VALVES
 APPROXIMATE DIVIDING LINE BETWEEN HIGH AND LOW PRESSURE SERVICE AREA
 NOTE: HIGH PRESSURE (EAST) TO BE DR-18 WATERMAIN; LOW PRESSURE (WEST) TO BE DR-25 WATERMAIN

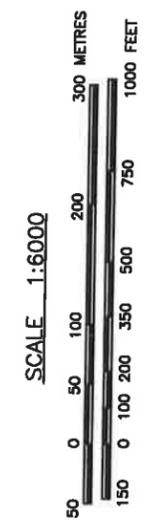
COBBLE BEACH

Client/Project

COBBLE BEACH MASTER SERVICING STUDY

Figure No. 5

WATER DISTRIBUTION SYSTEM



PRYDE SCHROPP McCOMB INC.
 CONSULTING ENGINEERS

ORIGINAL SHEET - 11 x 17
 T:\Manager-Francis\Georgian\Wm\2002-Planning\Approvals\Wm\Master Servicing Study\2002 Fig 4-5 - Bar May 1-07.dwg
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Summer 2011

MASTER SERVICING STUDY
COBBLE BEACH

- v) *All water services should be minimum 19 mm for single family units. For all non-single family residential homes, including clubhouse, minimum size should be 50 mm. All water services shall be copper water services Type K protected with sacrificial anodes to the approval of the Township. All curb stop shut off valves for services shall feature stainless steel control rods.*
- vi) *All watermain fittings shall be PVC wherever possible. All watermains, fittings, components, etc., shall be AWWA approved. All ferrous metal watermain components shall be protected with cathodic protection.*
- vii) *All bends shall be protected with concrete thrust blocks constructed to OPS standards.*
- viii) *All watermain components and appurtenances to be designed, installed and tested to OPS standards and the Safe Drinking Water Act in terms of disinfection and commissioning. All high strength chlorine solutions used for disinfection of watermains shall be disposed of in an environmentally appropriate way, which will likely require de-chlorination agents.*
- ix) *Watermain dead ends shall be minimized as much as possible, but where a dead end is required, the dead end shall terminate with a fire hydrant for flushing purposes. All hydrants installed shall be consistent with other hydrants within the East Linton water system and shall be approved by the Township. The location of all hydrants and the number of hydrants provided to be as per the requirements of the Township.*
- ✓ x) *All watermains shall be a minimum size of 200 mm. Internal trunk watermains to be oversized to the satisfaction of the Township.*
- xi) *Placement and the number of bends, fittings, isolation valves, hydrants, etc., to the satisfaction of the Township. All bedding material, cover material, methods of construction, etc., will be to Ontario Provincial Standards and approved by the Municipality.*
- xii) *Final layout of all watermains shall be approved by the Municipality including the location of easements in favour of the Municipality for access. The length of such easements should be minimized as much as possible to ensure ease of watermain maintenance, even under winter conditions.*
- xiii) *All pressure-reducing valves and accompanying valve chambers to the approval of the Township.*

- xiv) *The developer shall ensure that a qualified professional engineering firm, approved by the Township, develop all detailed design drawings and specifications for the proposed watermains, overview the submission of such drawings and specifications to the Ministry of the Environment for approvals, and be responsible for obtaining the necessary approvals from the Ministry of the Environment including payment of all application fees. During construction, the consulting engineering firm shall ensure that all watermains, services, hydrants and other appurtenances are installed as per the required drawings and specifications and, within thirty (30) days of completion of all works, submit a letter signed and sealed by the responsible professional engineer (registered in the Province of Ontario) certifying that all watermains, services and appurtenances were installed and tested in accordance with the design drawings, sound engineering practices and in accordance with applicable OPSS and OPSD and in conformance with this schedule (Table 1) of watermain requirements. Such certification by the professional engineer shall be required prior to assumption of ownership of the watermain system by the Township, among any other required conditions of assuming ownership of the watermain system by the Township.*
- xv) *The professional engineering firm identified in the previous point shall also complete and submit to the Township, within ninety (90) days of substantial performance of the water system, a complete set of "As Built" drawings with each drawing signed and stamped by a professional engineer registered to practice in the Province of Ontario. In addition, As Built Drawings (locate drawings) will be provided for every individual water service using swing-ties or other means to clearly identify the location of each service in the field. All submissions to the satisfaction of the Township.*

5.2 SANITARY

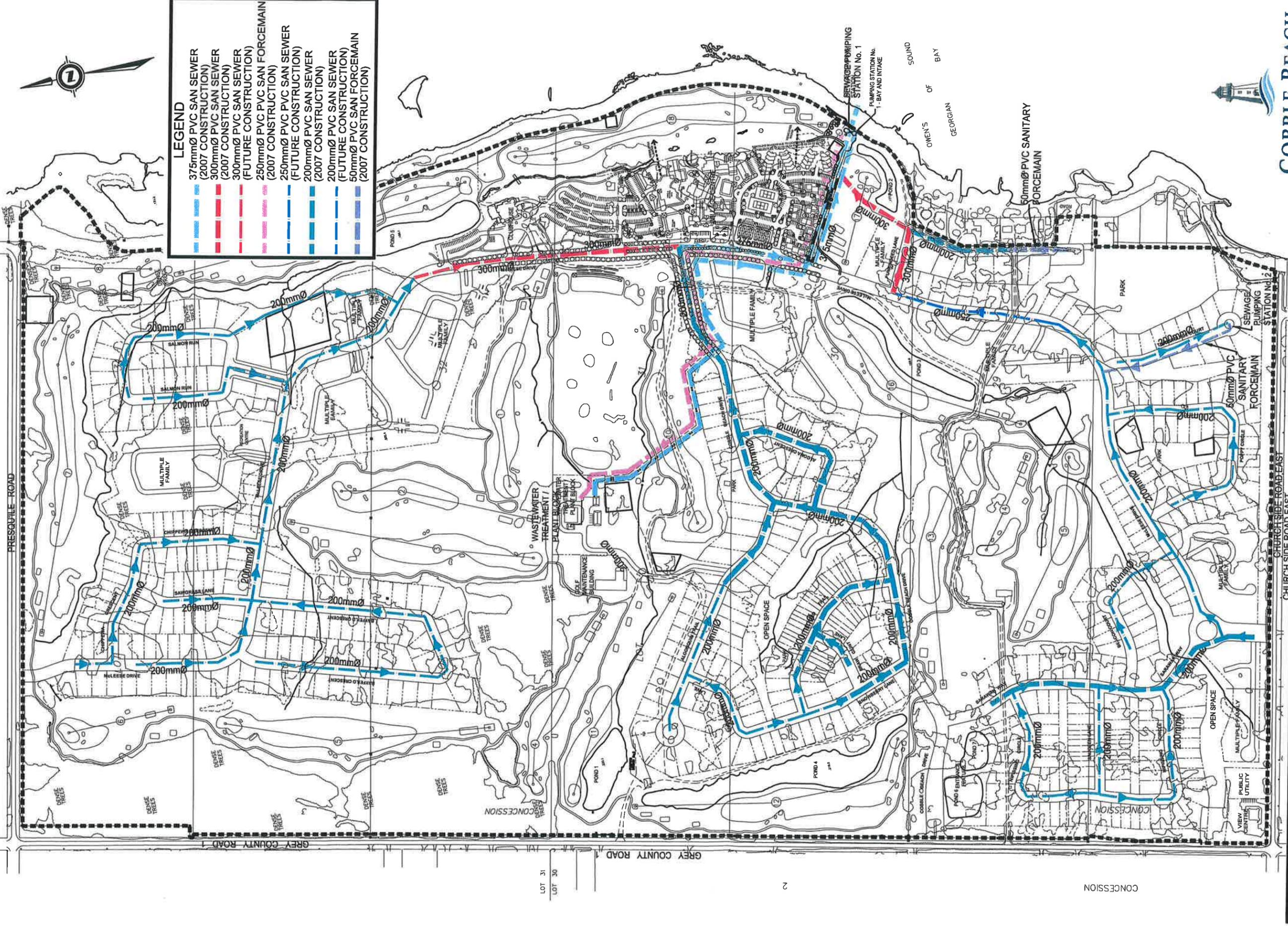
5.2.1 Sanitary Sewer Collection System

Figure 6 illustrates the proposed sanitary sewer collection system, based on the most recent development Concept Plan (Appendix D and Figure 3).

Also shown on Figure 6 is the first phase of sanitary sewer construction that is planned for 2007.

Design Calculations sheets for the sanitary sewer system shown on Figure 6 are enclosed in Appendix H. Also enclosed in Appendix H are more detailed plans of the sanitary sewer collection system.

Additional design/construction criteria can be found in Appendix K (Township Engineering Standards).



LEGEND

375mmØ PVC SAN SEWER (2007 CONSTRUCTION)	300mmØ PVC SAN SEWER (2007 CONSTRUCTION)	300mmØ PVC SAN SEWER (FUTURE CONSTRUCTION)	250mmØ PVC PVC SAN FORCEMAIN (2007 CONSTRUCTION)	250mmØ PVC PVC SAN SEWER (FUTURE CONSTRUCTION)	200mmØ PVC SAN SEWER (2007 CONSTRUCTION)	200mmØ PVC SAN SEWER (FUTURE CONSTRUCTION)
300mmØ PVC SAN SEWER (2007 CONSTRUCTION)	300mmØ PVC SAN SEWER (FUTURE CONSTRUCTION)	250mmØ PVC PVC SAN FORCEMAIN (2007 CONSTRUCTION)	250mmØ PVC PVC SAN SEWER (FUTURE CONSTRUCTION)	200mmØ PVC SAN SEWER (2007 CONSTRUCTION)	200mmØ PVC SAN SEWER (FUTURE CONSTRUCTION)	50mmØ PVC SAN FORCEMAIN (2007 CONSTRUCTION)



COBBLE BEACH

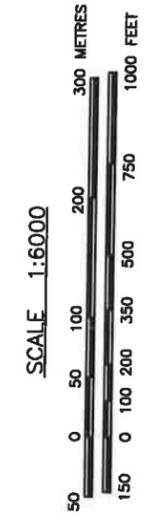
Client/Project

**COBBLE BEACH
MASTER SERVICING STUDY**

Figure No. **6**

Title

**SANITARY COLLECTION
SYSTEM**



PRYDE SCHROPP McCOMB INC.
CONSULTING ENGINEERS

ORIGINAL SHEET - 11 x 17
T:\Manitoba-Private\Geospatial\WMA\2002-Planning\Approvals\Water Servicing Study\2002_Fig 6-7 San-Sm - Rev May 1-07.dwg
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5.2.2 Sewage Pumping Station

The Sewage Pumping Station at the Bayshore is being designed by Stantec Consulting Ltd. The Sewage Pumping Station will be constructed in 2007. The **Design Brief** and subsequent Addendums can be made available upon request.

Due to the difficulty in phasing the increase in capacity of the Sewage Pumping Station (SPS), there is a need to initially construct the majority of the components to ultimate design capacity (i.e. 1,774 ERU's). The main components of the SPS that will be constructed initially to ultimate capacity are:

- External wet well;
- Valving / piping;
- Structural / architectural components;
- Water servicing to SPS;
- Discharge forcemain to Waste Water Treatment Plant.

The main component of the SPS that will be staged are the submersible sewage pumps.

5.2.3 Waste Water Treatment and Disposal

Details of the waste water treatment system and effluent discharge to Georgian Bay are outlined in a **Design Brief** and Addendums as prepared by Stantec Consulting Ltd. (not enclosed). The Waste Water Treatment Plant will be constructed in 2007. Details of phasing of the Waste Water Treatment Plant are detailed in the **Design Brief**. The effluent discharge piping will be constructed in 2007 and will be to its ultimate size requirements. Refer to Figure 6 for the location of the piping.

Both the Waste Water Treatment Plant and Sewage Pumping Station were subject to a Class Municipal Environmental Assessment, which has been approved by the MOE.

5.3 DRAINAGE

5.3.1 Stormwater Management

Phase 1 and 2

Details of the proposed Stormwater Management Plan for Phases 1 and 2 are contained within the **Preliminary Stormwater Management Report** that was prepared by Pryde Schropp McComb Inc. in 2006.

MASTER SERVICING STUDY
COBBLE BEACH

It is proposed to direct stormwater from both Phases to two (2) stormwater management ponds located on the east side of the site. Pond 3, located on the west side of McLeese Drive, will intercept stormwater from Sarawak Drive, the upper portion of Cobble Beach Drive and McLeese Drive and Streets B, C, D, E, F and G. Stormwater will flow into the pond from two (2) inlet points. Stormwater will outlet under McLeese Drive and flow into Pond 2.

Pond 2 will receive stormwater from the lower portions of Cobble Beach Drive and McLeese Drive, as well as from the north portion of Punkinseed Lane. This pond will outlet directly into Georgian Bay.

Both ponds will function as the stormwater quality facility for this portion of the development and have been designed to ensure that stormwater meets the Ministry of the Environment's "Normal" protection level requirements prior to discharging into Georgian Bay.

Quantity control for Phases 1 and 2 will not be required as both of these phases drain directly into Georgian Bay.

Village Centre

The Village Centre will drain east into the outlet channel from Pond 5 and then into Georgian Bay.

It is proposed that an oil/grit separator will be provided for stormwater quality control purposes.

Quantity control will not be required as the Village Centre catchment area drains directly into Georgian Bay.

Phase 3

Stormwater from the future Phase 3 area will be directed to Pond 5, located on the east side of the site. A portion of McLeese Drive located in front of the proposed clubhouse facility will also be directed into this pond.

Pond 5 will function as the stormwater quality control facility for Phase 3. This facility will ensure that stormwater leaving the pond meets the Ministry of the Environment's "normal" protection level requirements prior to discharging into Georgian Bay.

Stormwater quantity control is not required since all stormwater from the site discharges directly into Georgian Bay.

5.3.2 Storm Sewers

The Rational Method was used to determine the size of the storm sewers.

Enclosed in Appendix I are the preliminary design calculations for the sizing of the storm sewers within the overall development.

The design criteria used in the storm sewer design is summarized below:

- Rainfall Data – taken from the IDF curves for the Warton Airport.
- Rainfall Design Event = 1:5 years
- Minimum $T_c = 10$ min
- Minimum Pipe Size = 300 mm
- Runoff Coefficients
 - Impervious surfaces = 0.95
(street, sidewalks, driveways, rooftops)
 - Pervious Surfaces = 0.25
(lawns, open grassed areas)

5.3.3 Storm Sewer Laterals

The majority of lots will have 150 mm \emptyset storm laterals constructed to each property line to provide a discharge point from the foundation drain sump pumps.

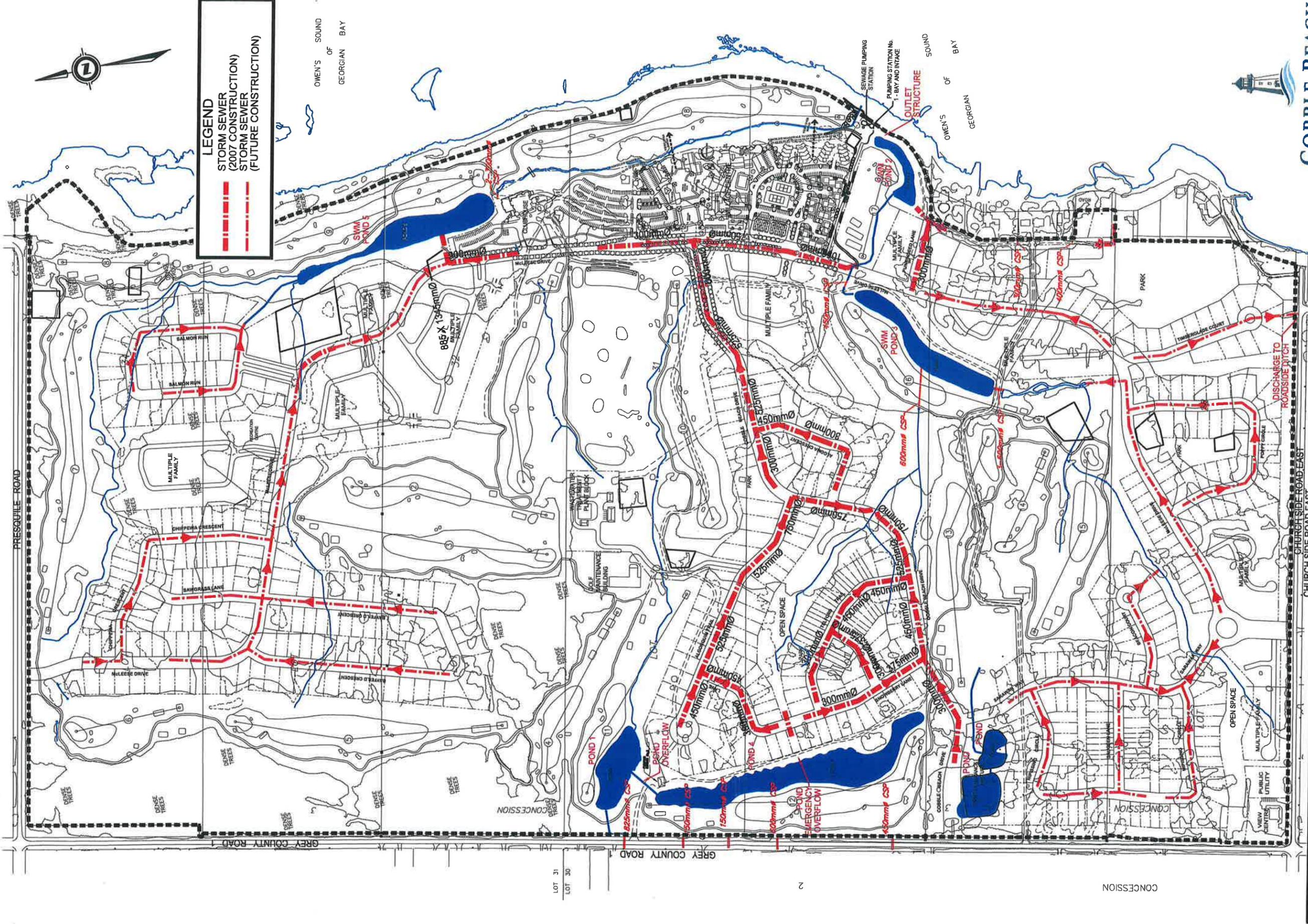


LEGEND

STORM SEWER (2007 CONSTRUCTION)

STORM SEWER (FUTURE CONSTRUCTION)

OWEN'S SOUND OF GEORGIAN BAY



COBBLE BEACH

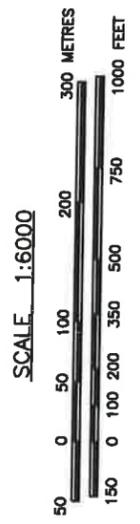
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COBBLE BEACH
MASTER SERVICING STUDY

Figure No. 7

Title

STORM SEWER SYSTEM



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ORIGINAL SHEET - 11 x 17
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5.4 ROAD WORKS

5.4.1 Internal

Based on information provided by the Township of Georgian Bluffs, the typical road cross-sections to be used for all roads within the subdivision are shown on Figures 8 to 10.

Figure 8 is for an 18 m Right-of-Way (ROW), Figure 9 is for a 20 m ROW and Figure 10 is for a 30 m ROW for McLeese Drive at the Village Centre.

5.4.2 External

It is the responsibility of Georgian Villas Inc. to upgrade Church Sideroad and the intersection of Church Sideroad and Grey Road 1, as part of the Phase I development. This work has been completed.

The main entrance to the development is planned at Grey Road 1 and Cobble Beach Drive. As detailed in the most recent Traffic Study, as prepared by Stantec Consulting Ltd., the improvements at this intersection include a northbound right turn lane.

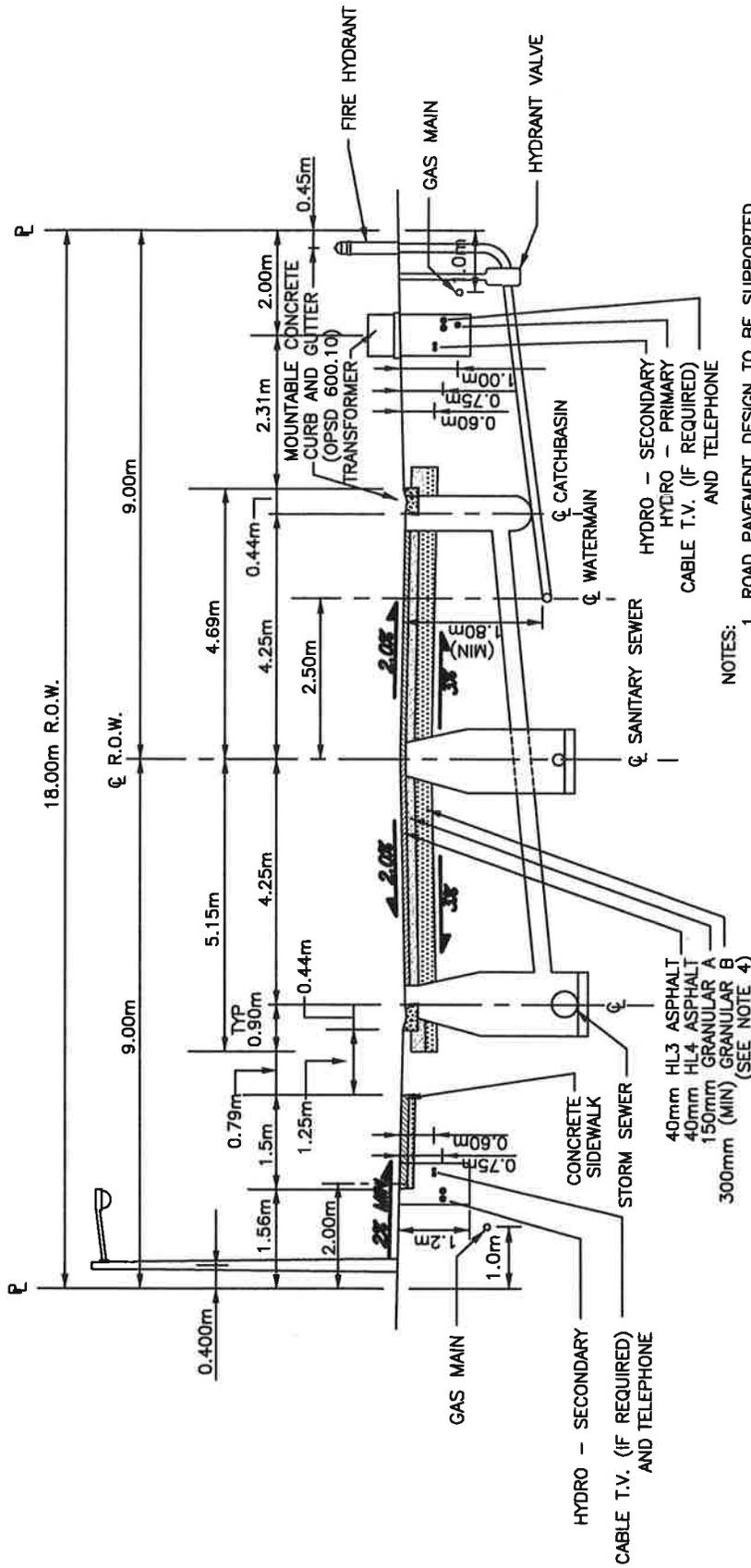
As development proceeds, other suggested external road improvements will be required. The most recent **Traffic Impact Study**, Cobble Beach (Georgian Villas), July, 2006 (revised) as prepared by Stantec Consulting Ltd. is enclosed in Appendix J. This Traffic Study will be updated once 200 homes are developed to ensure that the assumptions used in the report are correct.

The County has recently implemented a Development Charges By-Law and came into effect on January 1, 2007. The costs of all identified road improvements on Grey Road 1 will be paid for utilizing the Reserve Funds of the Development Charges.

5.5 ELECTRICAL

Design Agreements are in place for the temporary and permanent servicing of this subdivision. Temporary overhead 3 phase power lines have been constructed in 2006, with permanent underground hydro being installed as the construction of the subdivision roads proceed.

The Temporary overhead power lines will then be decommissioned and removed from the site as permanent underground hydro is extended through the site.



- NOTES:
1. ROAD PAVEMENT DESIGN TO BE SUPPORTED BY GEOTECHNICAL INVESTIGATION. SUBDRAINS MAY BE REQUIRED IN CERTAIN PARTS OF THE MUNICIPALITY.
 2. PLACE 75mm TOPSOIL AND SEED OR SOD FROM EDGE OF SHOULDER TO PROPERTY LINE. ADDITIONAL GRANULAR 'B' DEPTH MAY BE REQUESTED BY THE MUNICIPALITY.
 3. STORM DRAIN CONNECTIONS TO BE PROVIDED TO EACH LOT.

18.0m R.O.W.
NTS

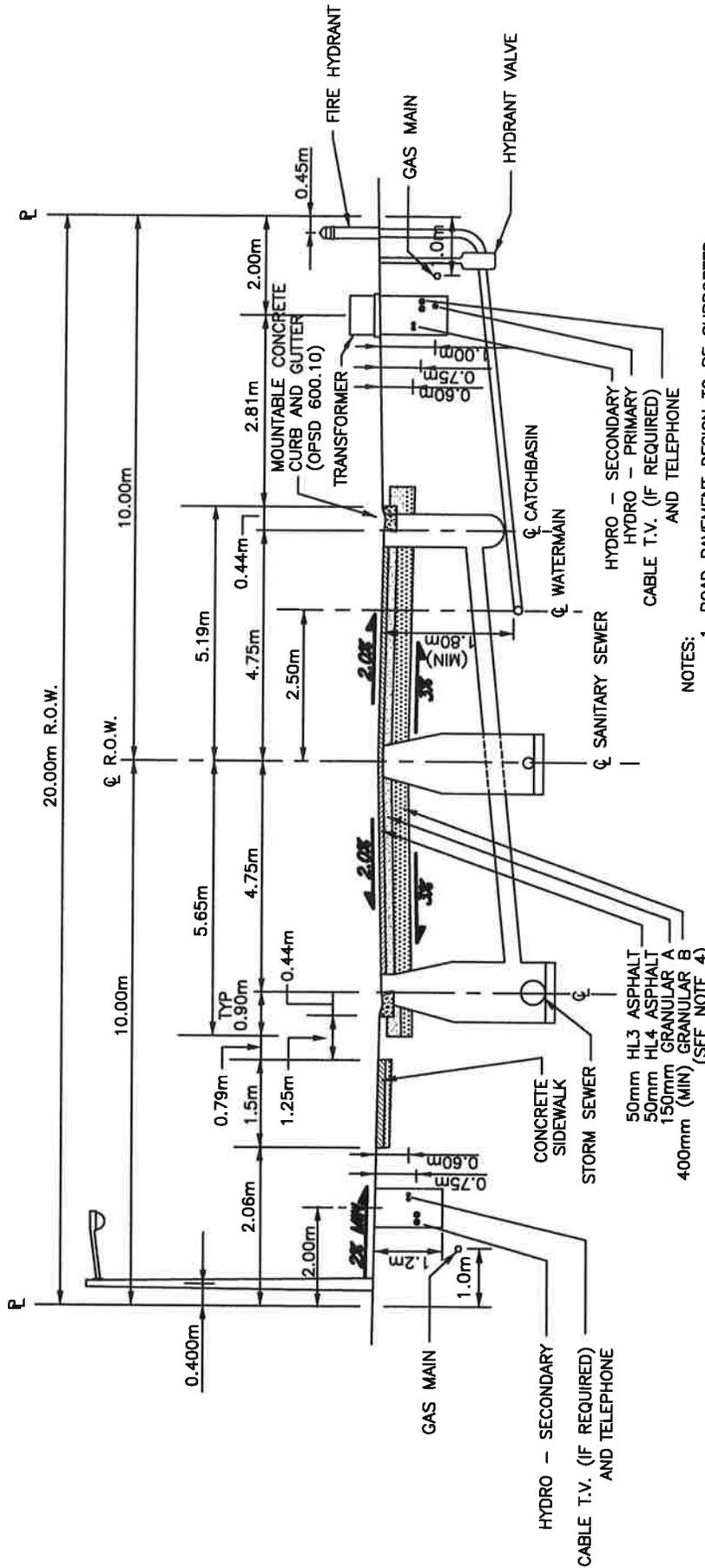
Client/Project
COBBLE BEACH

Figure No. 8
Title

**TYPICAL URBAN
CROSS SECTION
18.0m R.O.W.**



PRYDE SCHROPP McCOMB INC.
CONSULTING ENGINEERS



- NOTES:
1. ROAD PAVEMENT DESIGN TO BE SUPPORTED BY GEOTECHNICAL INVESTIGATION.
 2. SUBDRAINS MAY BE REQUIRED IN CERTAIN PARTS OF THE MUNICIPALITY.
 3. PLACE 75mm TOPSOIL AND SEED OR SOD FROM EDGE OF SHOULDER TO PROPERTY LINE
 4. ADDITIONAL GRANULAR 'B' DEPTH MAY BE REQUESTED BY THE MUNICIPALITY.
 5. STORM DRAIN CONNECTIONS TO BE PROVIDED TO EACH LOT.

20.0m R.O.W.
NTS

Client/Project
COBBLE BEACH

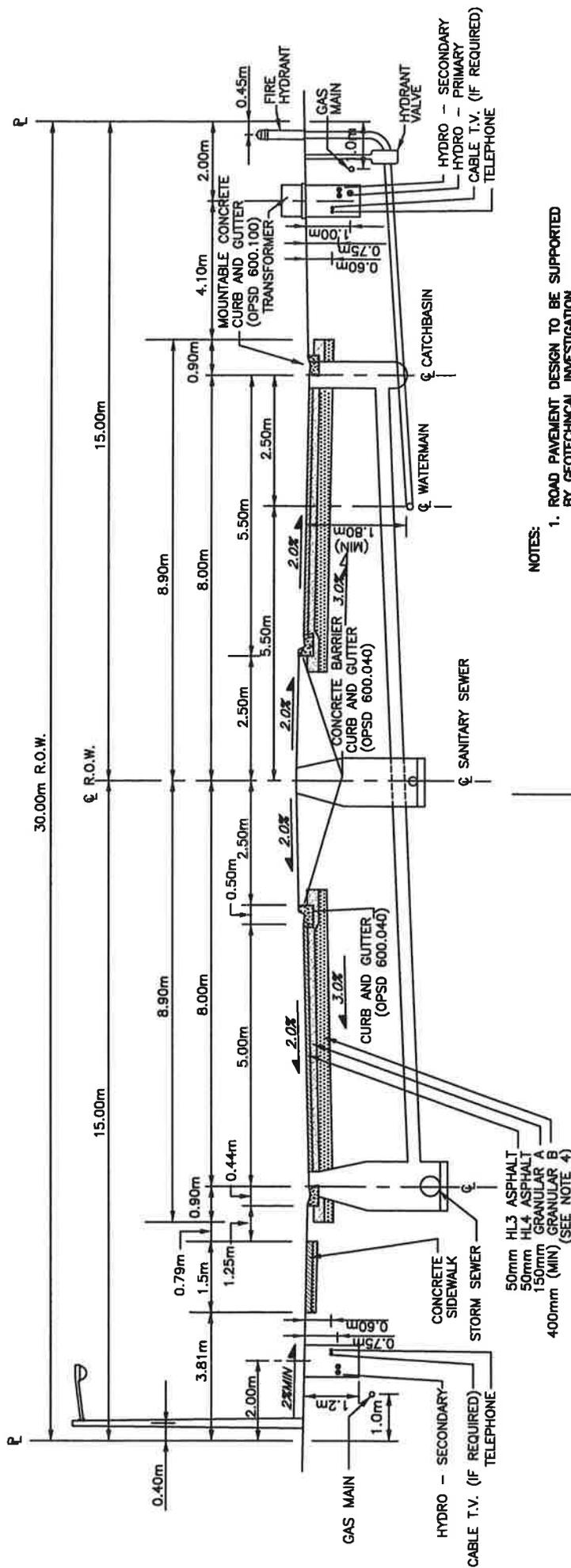
Figure No. 9
Title

TYPICAL URBAN
CROSS SECTION
20.0m R.O.W.



PRYDE SCHROPP McCOMB INC.
CONSULTING ENGINEERS

ORIGINAL SHEET - 8.5 X 11
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NOTES:

1. ROAD PAVEMENT DESIGN TO BE SUPPORTED BY GEOTECHNICAL INVESTIGATION.
2. SUBDRAINS MAY BE REQUIRED IN CERTAIN PARTS OF THE MUNICIPALITY.
3. PLACE 75mm TOPSOIL AND SEED OR SOD FROM EDGE OF SHOULDER TO PROPERTY LINE.
4. ADDITIONAL GRANULAR 'B' DEPTH MAY BE REQUESTED BY THE MUNICIPALITY.
5. STORM DRAIN CONNECTIONS TO BE PROVIDED TO EACH LOT.

30.0m R.O.W.
NTS



PRYDE SCHIROPP McCOMB INC.

CONSULTING ENGINEERS

ORIGINAL SHEET - 8.5 X 11
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Client/Project
 COBBLE BEACH

Figure No.
 10

Title

**TYPICAL URBAN
 CROSS SECTION
 30.0m R.O.W.**

5.6 NATURAL GAS

Negotiations are underway to potentially have natural gas supplied to the site by Union Gas.

5.7 TELEPHONE

Bell Canada will be providing telephone and internet services to the development.

5.8 CABLE TV

Cable TV will be provided by Rogers.

6.0 Preliminary Grading Design

6.1 DESIGN CRITERIA

6.1.1 General

The basis for the design of the site grading is the Engineering Standards of the Township of Georgian Bluffs. Enclosed in Appendix K is the proposed draft Engineering Standards to be used for the road/lot grading design.

Note: The attached Engineering Standards (Appendix K) will also serve as the basis of the design/construction of all other site services.

6.1.2 Roads

The road cross sections to be used in the design are detailed in Figures 8 to 10.

Additional design criteria to be used in the preparation of the subdivision plans are summarized below.

- 8.5 m minimum pavement width (see Figures 8 to 10)
 - 9.5 m for Cobble Beach Drive and McLeese Drive.
- 9.0 m radius at intersections
- horizontal and vertical sight distances – 90 m
- 15 m radius – edge of pavements – cul-de-sacs
- Boulevard grades
 - 2% - preferred
 - 10% maximum

6.1.3 Preliminary Lot Grading

The design criteria to be used in the lot grading design are summarized below.

- Minimum of 300 mm to maximum of 750 mm higher at dwelling midpoint to centerline of road at centre of lot.

6.2 PRELIMINARY LOT GRADING

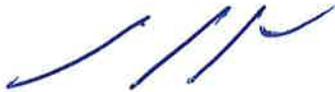
Preliminary Lot Grading Plans are contained in Appendix L.

7.0 CONCLUSION

The **Master Servicing Study** concludes that site services can be provided to all phases/stages of the development of Cobble Beach in accordance with Municipal and Provincial Standards/Guidelines.

All of which is respectfully submitted,

PRYDE SCHROPP McCOMB, INC.



Brad R. Pryde, P.Eng.
President

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