9. OFFICER'S REPORTS
9.2 ADMINISTRATION REPORTS
9.2.1 YORK SWIMMING POOL

FILE NO:	**CCP.8**
COUNCIL DATE:	**17 March 2008**
REPORT DATE:	**5 March 2008**
LOCATION/ADDRESS:	**Georgiana Street, York**
APPLICANT:	**Shire of York**
SENIOR OFFICER:	**Ray Hooper, CEO**
REPORTING OFFICER:	**Peter Stevens, EHO**
DISCLOSURE OF INTEREST:	**Nil.**
APPENDICES:	**Yes – Swimming Pool Survey Report**
DOCUMENTS TABLED:	**Nil.**

Summary:
Council engaged an engineer to provide a survey report (**Appendix A**) for the Shires Swimming Pool to assist in future budget considerations and provide information on purchasing equipment that may be transferred to a new pool if built.

The report provides a detailed description of the pool and its equipment and relates this to the requirements of the new Aquatic Facilities Code of Practice. The report will be an invaluable source of information for future upgrades and repairs.

Background:
Council commissioned Mr Brian Beech to undertake a survey report of the York Swimming pool. Mr Beech was advised that Council may be building a new pool in the next 5-10 years and that consideration should be given in the report to this to enable any major new plant required to be transferable from the old facility to the new when needed.

Mr Beech has extensive experience with municipal swimming pools through his association with Chadstone Engineering who have been a major supplier of pool supplies equipment and advice for a number of years in Western Australia.

The York War Memorial Swimming Pool is approximately 41 years old. Much of the plant and equipment is as originally installed, consequently much of the pipe work and other associated plant is in need of replacement or major repairs.

The report details the current plant and equipment at the pool and asseses them against the requirements of the new Aquatic Facilities Code of Practice. In some areas the current pool fails to meet current standards whilst in others it exceeds or meets them.

It should be noted however that the Shire has never had problems with the water quality at the pool and there is no retrospectivity to the new Code of Practice therefore no upgrading of equipment has to be carried out unless major refurbishment takes place.

Other items that have previously been identified as in need attention in the near future are repainting and upgrading of the change room facilities, entrance and office area refurbishment, barbeque area refurbishment (possibly relocate) and attention to paving around kiosk and barbeque areas.

The swimming pool pump was refurbished in 2006 with other work undertaken in 2007 and should be serviceable for at least another 5 years.

The pool bowl was painted prior to the start of the season last year and appears to be in reasonable condition with no major concrete cancer apparent. Some areas of the coping and starting blocks require some repairs and there is evidence of hollow spots in the bowl.

The survey report concludes with three options for Council to consider;

Option A is the least expensive and involves replacing pipework in the plant room and some aesthetic tidying up of the coping and starting blocks. This will fix any immediate problems and allow the pool to keep operating – Budget $25 000

Option B considers developing and implementing a 5 year replacement plan for the whole facility. The cost of replacing the pool with a 25 metre facility is put at between $2 and 10 million dollars depending on specifications (indoor/ outdoor for example).

Option C considers replacing all of the current plant and equipment now but ensuring that it is transferable to a new facility, if built. This option has inherent difficulties as the future requirements of a new facility are unknown at this point so the plant and equipment requirements are also unknown.

Consultation:
Swimming Pool Manager
Brian Beech Dip.Eng., ONDMarE, HNCMechE

Statutory Environment:
Health (Aquatic Facilities) Regulations 2007
Code of Practice For the Design, Construction Mangement & Maintenance of Aquatic Facilities

Policy Implications:
Nil

Financial Implications:
Immediate budget implications and longer term (5 year plan) budget implications

Strategic Implications:
Resource Management – Long term planning and financial management
To provide services in the most cost- effective way

Voting Requirements:
Absolute Majority Required: No

Site Inspection:
Site Inspection Undertaken: Yes

Triple bottom Line Assessment:
Economic Implications:
The swimming pool is a valuable asset of the Shire of York and without continued maintenance or long term planning it will deteriorate beyond a reasonable state of repair.

Social Implications:
The York Memorial Swimming Pool has an average of 19 – 20,000 customers a year and is highly valued by the York community.

Environmental Implications:
Nil

Comment:
The report provides a valuable snapshot of the York Shire swimming pool and its current condition particularly the plant and equipment. The most immediate items requiring attention are relating to the pipe work in the plant room and the pre pump strainer. These may be fixed up at a relatively minor cost and extend the life of the pool.

The report suggests that planning should be initiated to replace the pool in the next 5 years. Department of Sport and Recreation have indicated that funding of a new pool would only be available for a 25 metre pool.

If Council considers building a new aquatic facility for the Shire it should realise that it would cost between $2 to $5 million dollars depending on size, whether it was heated and whether it was indoor or outdoor.

OFFICER RECOMMENDATION

RESOLUTION
030811

MOVED Cr Fisher **SECONDED Cr Lawrance**

"That Council:

1. ***receive the York War Memorial Swimming Pool Survey Report;***
2. ***consider all of the immediate repairs needed as part of 2008/09 budget process; and***
3. ***initiate a 5 year plan including budget considerations and funding options to replace the pool by 2013.***

CARRIED 6/0

Shire President Cr Hooper asked that a letter of thanks to be written to Mr Bill Livingstone for his work in keeping the pool at an exemplary standard.

Brian Beech

52 Broome Street, Forrestdale, Western Australia 6112
ABN 42 494 558 701
Mob: 0438 277 208 – Tel & Fax 08 9397 0459
Email: brianpHd@westnet.com.au

Pool Filtration, Water Treatment, Hydraulic Advisory Services & Inspections

Swimming Pool Filtration & Water Treatment Survey Report for War Memorial Swimming Pool @ York

Date of Survey: 5th February 2008

Pool Details:

- The centre comprises of three pools on a single filtration system.
- The Main 50m Pool has an estimated volume of 864m³.
- The Rectangular Toddlers Pool has an estimated volume of 6m³.
- The Rectangular Wading Pool has an estimated Volume of 36m³.
- The total water volume within the pools therefore is approximately 906m³.
- The Balance Tank has an estimated total capacity of 99m³ but operates with a water volume of approximately 54m³.
- The Backwash Tank has an estimated capacity of 99m³.

Plant Details:

- Filtration for all pools is provided by a dual cell concrete gravity sand filter.
- The Filter is fully covered with a metal roof.
- The Filter has a surface area of approximately 26m².
- The construction is typical of the type manufactured for Swimming Pools of the era and is provided with a standard configuration of "Face Pipework" and regulating "Float Valve".
- Water is circulated by a "Worthington Simpson - Monoblock" Horizontal Centrifugal Pump Model 5DM3. Some time ago, a second label has been fitted to the motor casing indicating it to be equivalent to a Stalker 125LL fitted with a 220mm diameter impeller and powered by a 15HP (11kW), three phase 4 pole electric motor. The pump is believed to be the original unit supplied when the pool was built but has undergone several overhauls in its lifetime.
- The pump is fitted with a Steel Pre Pump Strainer with 250mm inlet & 150mm outlet connections set 90 degrees apart.
- The pipework within the plant room is Steel of diameters 125/150mm, 200mm & 250mm.
- The filter is fitted with a Godfrey type M-200 Air Scour blower Which is reported to be working well. The Blower is equipped with a silencer / filters and the pipework is fitted with a Check Valve at the upper section of the discharge loop. There is no pressure relief valve fitted.
- The pool is treated with Chlorine Gas & Soda Ash monitored & controlled by a Hofmann DPH-2 Controller.
- Chlorine is injected prior to filtration, with a secondary injection after filtration.
- The Chlorine is injected and regulated using a Siemens Single Cylinder Regulator, a US Filter SK10 Rate Meter and a Wallace & Tiernan Injector at a rate varying [depending on load] between 15 to 16 kg/day.
  [All these items are now part of the Siemens Group and therefore fully compatible].
- There is no Gas Detection or Automatic Shut Down system in place.
- Soda Ash is also injected, for pH control, prior to filtration by means of a Wallace & Tiernan Model EA747 chemical metering pump.

Brian Beech
52 Broome Street, Forrestdale, Western Australia 6112
ABN 42 494 558 701
Mob: 0438 277 208 – Tel & Fax 08 9397 0459
Email: brianpHd@westnet.com.au

Pool Filtration, Water Treatment, Hydraulic Advisory Services & Inspections

Circulation System Details:

- Water is drawn from the Balance Tank via a Foot Valve by the Circulating Pump.
- From here it is directed into the Filter via a "Crane" 200mm Cast Iron Gate Valve and 200mm Steel pipework.
- The water passes into an open concrete chamber and rises up to overflow a weir wall to cover and pass through the sand bed under gravity.
- The flow through the filter should be regulated by a float valve to prevent overfilling and loss of water and, although fitted, has not worked for many years.
- After passing through the two filter cell the water re-combines into a single 250mm Return to Pool Line. The flow is controlled by a 250mm "Crane" Cast Iron Gate Valve.
- The water then passes along a Chamber within the main pool structure.
  At the shallow end of the pool a take off line is split into two to feed the Toddler & Wading Pools. There is no additional control of the flow to these pools.
  The water enters the Main, Toddlers & Wading Pools at floor level via a series of fixed aperture nozzles.
- The circulating water rises upwards and exits all pools via Interconnected Scum Gutters before returning to the Balance Tank completing the circuit.

Observations & Recommendations for Existing Plant

Foot Valve.

- It was not possible to check the condition of the Foot Valve but it was reported that it would not hold water during a shut down period. A physical check of the condition at the end of the season should be made to confirm its condition.

Pre-Pump Strainer.

- The Pre-Pump Strainer is badly corroded. The base is being sealed with a steel plate held in place with Silastic & wedges. At the present time this repair is holding the negative pressure required. This strainer [if it survives the season] will need to be replaced when the pool is shut down.
  A UPVC / Fibreglass or Stainless Steel unit would be the best choice as a replacement preferably with a clear acrylic cover.
- The replacement unit should be fitted with a Vacuum Gauge, drain valve and an air vent valve.

Main Circulating Pump.

- Despite its age, the Worthington Simpson Pump appears to be performing reasonably well as indicated by the flow within the pools and the water quality.
- The pump is not fitted with a discharge control valve so the head cannot be accurately controlled from this point.
- At this stage a pump curve is not available to check the flow rate v head, however based on information provided by Stalker Pumps from their label, the pump has a flow capacity of 162m³/hr @ 10.0m head. [The general head chosen during the era]. Based on this the Turn over Time of the total pool water is approximately 6.0 Hours.

- There are no Pressure & Vacuum Gauges fitted to the pump, therefore it is not possible to determine the correct operating head and hence the correct flow being produced without a series of flow tests.
- Whilst the Turn over Time falls within the 1964 Regulations it will not be sufficient for the Health Department of Western Australia [HDWA] Code of Practice Dated May 2007 which will require a Turn over Time of 3.5 hours for the 50 Metre Pool, 0.5 hours for the Toddler & Wading Pools.
- During any upgrade, this pump would not be suitable for required flow rates.

Isolating Valves.

- Although there are signs of corrosion on the external surfaces, the valves, with the exception of the Backwash valve appear to be working satisfactorily.
- The Backwash Valve needs attention to stop a slight leak.

Filter.

- With a filter area of $26m^2$, the flow potential is estimated to be approximately $311m^3/hr$ at a maximum Filtration Rate of $12m^3/hr/m^2$.
  This relates to a potential Turn over Time of the pool water of 2.9 hours.
  However it appears that this filter is only being subjected to a flow of $162m^3/hr$ which probably accounts for the excellent water quality.
  Some of the pipework installed onto the filter, and possibly within the filter, would not be suitable for the potential flow and this is probably the reason for the existing working conditions.
- Externally the Concrete Filter shell appears to be in good condition for its age.
- The Entry points of the Filter inlet & Backwash outlet lines are showing signs of corrosion on the outer pipe surface.
- There is a potential for leakage in this area if the pipework through the filter wall corrodes further, concrete cancer sets in around the pipes, or the reinforcement steel corrodes.
- The filtered water outlet connections through the concrete structure are not showing signs of corrosion but judging the condition of other pipe entries it is safe to say that the internal of the pipes are badly corroded.
- A few other small areas of corrosion are noted within the plant room wall of the filter. These are a potential future weak spot within the filter structure, but should not pose any immediate risk.
- It was not possible to inspect the internal of the filter during this survey so no comment on the condition can be made at this stage. However looking at the quality of the water within the pool and the overall condition of the shell externally it is doubtful that there is a great problem within the structure. This is a testament to good management practices over the years.
- The clarity in the pool was excellent but, as the pool was not in use at the time of the survey, the performance of the filter under a heavy bather load could not be determined. It was reported however that there is rarely a problem with water clarity.
- A Float Valve is installed within the filter to regulate the inlet flow to ensure that there is always a constant level of water within the filter. This system has not been working for some

time and has seized.
To maintain correct levels in the filter the float valves should be restored to their working condition.

- The Float Valve should be serviced if it is intended to run the plant for an extended period. [More than 5 years] otherwise it is incumbent upon the operator to manually adjust the valves to maintain the correct water level & flow within the filter. At the moment this is being very successfully done by Bill Livingstone.
- It is reported that the Backwashing of the filter is perfect with even distribution of both water & air.

Air Scour.

- The Air Scour Blower is reported to be operating perfectly and is therefore considered to be in good condition for this system.
- The Air Scour pipework is in reasonably good condition.

Pipework.

- With the exception of the Chemical lines the pipework within the plant room is steel.
- At a flow rate of 162m^3/hr the velocity of the water flowing is estimated to be 1.4m/sec which is within the Australian Standard of 3.0m/sec for pump discharge and 1.8m/sec for pump suction. The pipework therefore is considered to be more than adequate for the existing installation.
- Generally the pipework within the plant room is in poor condition and will need to be replaced as soon as practical.
- At various points there are signs of corrosion appearing on the outer surface of the pipework.
  In particular these are: In the discharge loop from the Pump, at the inlet points to the filter from the pump, in the pump suction line, (specifically in the Balance Tank), at the exit point of the Backwash line from the filter, where the Backwash line exits the plant room.
  These external signs indicate severe corrosion within the pipework.
- 200mm Concrete Pipes take the water from the Scum Gutters to the Balance Tank.
  These are flowing well with reserve capacity, however for an upgraded flow they will becone too restrictive.
- It is reported that there is some water loss and it is believed that this loss is mainly from the pipework underground as the sub surface drain fills with Chlorinated Water and there does not appear to be leakage from the pool shell.
  The water from this sump is pumped into the Backwash Tank where, after settling, it is pumped to irrigate the grounds surrounding the pool.
  Dye testing the pool should confirm if the shell is leaking or whether the loss is totally attributed to the pipework.

Chemical Dosing.

- Under the Health Department of Western Australia Code of Practice, chemicals shall be dosed prior to the soiled water entering a Gravity Filter.
  The system installed fulfils these guide lines.

- The system installed is the very basic that is allowed under the current regulations and is therefore acceptable for the current installation.

Backwash, Balance Tanks & Surrounds:

- Both Backwash & Balance Tanks are of circular design typical of their era. Both are approximately 99m³ in maximum capacity.
- Although they are still holding water reasonably well, both tanks are in poor condition and will need replacing for any major upgrade.
- The Backwash Tank is uncovered.
- The Balance Tank is covered with a shade cloth structure. This is considered to be satisfactory but a solid Colorbond cover would improve the safety and appearance.
- The tanks are located on opposite sides of the plant room and the surrounding area is kept clear of rubbish etc.
- The area surrounding both the tanks & plant room is isolated from the public areas with a chain link fence.
- From an aesthetic viewpoint the area surrounding the plant room and tanks could be enclosed with a suitable Colorbond Fence at lease 2.4 metres high and taken to ground level. This may also improve patron safety by further isolating any Chlorine gas distribution in the event of a gas leak.

General Comments about the Pools:

- Although not my speciality, the following observation may be useful.
- The basic pool structure appears to be reasonably sound and with the newly painted surface looks good.
- There are no obvious cracks in the surface and no signs of reinforcing rust showing through to the surface.
- It is believed that much of the original concrete / steel pipework to and from the pools are still in place.
- The flow of water entering & exiting the Toddlers Pools has no individual control therefore the actual Turn over Time cannot be truly estimated.
- The Starting Blocks are in poor condition and should be replaced or refurbished.
- The coping around all pools is in need of some repair to prevent accidents. In particular at the steps into the main pool.

Future Planning

- The previous information is based on observations during the survey and are relevant only if the facility remains "As Is".
- Any future upgrade modification to the pool plant will be required to conform to the Health Department of Western Australia Code of Practice.

Brian Beech
52 Broome Street, Forrestdale, Western Australia 6112
ABN 42 494 558 701
Mob: 0438 277 208 – Tel & Fax 08 9397 0459
Email: brianpHd@westnet.com.au

Pool Filtration, Water Treatment, Hydraulic Advisory Services & Inspections

Option A:

- Simply replacing pipework and equipment with "Like for Like" will not require any additional certification.
- This includes changing the steel pipework in the Plant Room with UPVC, replacing the Pre-Pump Strainer with a new one of similar dimensions, replacing the pump or chlorination equipment [providing their specifications are similar].
- The existing filters are working well and, with the exception of the potential failure of the pipework within the plant room and the pipework to the pools there is no reason to immediately change the current system.
- The cost of replacing the pipework within the plant room is minimal compared to the cost of a new facility or plant and, providing it is completed by a competent company, should allow the current filters to operate for at least five more years providing there are no serious internal problems within the filter. [This is always a grey area and no guarantees can be made as to the actual life expectancy of the filter structure or internal fittings. To get a better expected life span estimate it will be necessary to examine the internals of the filter when drained].
- Currently there only appears to be corrosion on the Filter Inlet & Backwash Outlet pipes and, as these are accessible from inside the filter and the plant room, the replacement with UPVC should not be too expensive.
- If the pump can be nursed along for a few more years the material cost for pipework & Pre-Pump Strainer should not exceed $15,000.00. Installation additional.
- A replacement pump would be approximately $3,000.00 to $4,000.00.
- This would be the least expensive option whilst preparing finances for a future upgrade.
- Some tidying up of the pool coping and starting blocks should also be made immediately or during the next shut down period to lessen the danger of injury to patrons.

Option B:

- As the pool is now some 40+ years old it may well be the time to consider upgrading to a more modern facility, whether Outdoors or Indoors.
- A five year plan should be considered as an absolute maximum period.
- Grants from the Department of Sport & Recreation are available to assist in the cost of the upgrade.
- The trend today is to provide a 25m pool instead of the 50m pool and provide an interactive play area for the children.
- The cost of providing such a facility will depend on what the expectations are for the upgrade, and can currently vary form $2m to $10m+ so it is essential to look at the long term requirements at this stage.
- A full costing of the equipment and installation is not available at present as this can only be made when the scope of any upgrade is established.

Option C:

- As a prelude to **Option B**, the Shire of York could consider immediate replacement of all the plant and equipment with that suitable for any future upgrade.

Brian Beech
52 Broome Street, Forrestdale, Western Australia 6112
ABN 42 494 558 701
Mob: 0438 277 208 – Tel & Fax 08 9397 0459
Email: brianpHd@westnet.com.au

- This has a few major & minor problems:
  1. Without knowing the size of the proposed future facility the selection of the equipment cannot be guaranteed as to its future suitability.
  2. The pipework to and from the pool is unlikely to be able to handle any additional flow created by the new plant and Health Department of Western Australia Code of Practice, and therefore will need to be upgraded also.
  3. Certification to the Code of Practice will be required, not only immediately, but be repeated when the upgrade occurs.

Filter Comparison for Options:

- As a comparison the following information indicates the differences in filters required between the existing facility and a theoretical new facility based on both being outdoor centres and using New Equipment and theoretical volumes.

ITEM	EXISTING FACILITY		NEW FACILITY	
Pool 1	50m, Toddler & Wading Combined		25m	Play / Learner
	Current	To new Code	To New Code	
Heating	No	No	Yes	Yes
Category	N/A	7	6	2
Turn over Time – Hours	6.0	3.5	2.5	0.5
Filtration Rate - m/h	6.25	42	36	24
Estimated Volume - m^3	906	906	560	60
Flow Rate - m^3/h	162	259	224	120
Total Flow – m^3/h	162	259	344	
Filter area – m^2	26	6.2	6.2	5
Total Filter Area – m^2	26	6.2	11.2	
Type of Filter	Gravity Sand	Pressure Sand	Pressure Sand	

As can be seen from the above, the same filter area will be required for a 25m pool as for the existing 50m pool under the new Code of Practice.
An additional $5m^2$ of filter area will be required to accommodate the Childrens pool.
This is assuming the pools are sized as indicated.
Under the Code of Practice the two pools in the proposed new facility are best kept isolated from each other.
On the surface it may look like a viable proposition to replace the existing equipment immediately. Invariably things will change and I therefore suggest that **Option A** is considered as an immediate "Fix" with applications for Grants and Budgeting for a new facility be put on the agenda for a five year plan.
The existing plant room & Filter area will not be large enough to house any new system and therefore a new plant room will be required.

Brian Beech
52 Broome Street, Forrestdale, Western Australia 6112
ABN 42 494 558 701
Mob: 0438 277 208 – Tel & Fax 08 9397 0459
Email: brianpHd@westnet.com.au

Pool Filtration, Water Treatment, Hydraulic Advisory Services & Inspections

Basic Proposed Alternative Filtration & Water Treatment Systems:

- There are basically only two methods of filtration currently suitable for Commercial Swimming Pools each with their advantages & disadvantages.
  These are:
  1) Sand Filters. 2) DE Filters.

1) The simplest and most cost efficient method of providing these Turn over Times would be to provide a Sand Filter system connected in a "Shunt" configuration with individual valves in the Return to Pool lines to regulate the flow.

The advantages of using Sand Filtration are:
- Initial equipment cost is low compared to DE.
- Virtually maintenance free [providing the correct product is chosen].
- Low ongoing running cost. - No re-charging of filter media after each Backwash.
- Only one pump is required for a bank of filters.
- Materials of construction are generally corrosion resistant fibreglass with UPVC and ABS internals.
- Simple to operate.
- Less downtime for each Backwash.
- No disposal problems related to filter media.
- The filter sand could last for many years without replacement. [Some filters have run for 25 years without a sand change].
- Manufactured for FRP for long life.

The disadvantages of using Sand Filtration are:
- It is perceived that Sand Filters do not give the same quality of water as DE. It is true that sand filters do not remove particles down to the micron levels of DE but, because the pool circulation system is a process of "continuous dilution" the difference in clarity is imperceptible to the naked eye.
- The consumption of water during a Backwash is higher than for a DE filter but with a suitable Water Recovery Program this should not be a problem.

2) A less cost effective method is to use DE filters.

The advantages of using DE Filtration are:
- The vessels take up slightly less space than the equivalent Sand Filters.
- DE filters use less water to Backwash.

The disadvantages of using DE Filtration are:
- DE is a Carcinogen.
- After Each Backwash it is necessary to strain out the used DE and dispose of it carefully.
- It is possible that future legislation may require the DE to be declared as a Toxic Waste requiring specialised disposal systems.
- After each Backwash it is necessary to re-charge the filters with fresh DE. [Ongoing Cost].

- Re-charging requires the operator to wear protective clothing to prevent inhalation of the DE powder.
- DE Filters are generally more expensive than the equivalent sand filters.
- A separate pump is required for each DE Filter.
- It is reported that TDS levels increase more rapidly when using DE Filters requiring much of the pool water to be dumped and therefore negating the reduction in Backwash water.
- Operation is more complex than Sand Filtration.
- Normally DE Filters are manufactured in Stainless Steel which under certain conditions are subject to corrosion.
- Each year the internal septums generally require replacement.
- It is advisable to employ an ongoing maintenance company to oversee the performance of the equipment.

Summary:

- The current Filtration & Water Treatment System does not conform to the New Health Department of Western Australia Code of Practice.
- **Option A** provides an inexpensive short term solution to the facility whilst the Shire of York prepares for a future upgrade of the entire facility.
- Any upgrade of the existing plant, (other than "Like for Like" changes as per **Option A**) will be required to conform to the Code.

- **Option B & C** - For any major upgrade of the equipment I would recommend the Use of Medium / High Speed Sand filtration.
- Any new pool will need to conform to the Health Department of Western Australia Code of Practice.
- Should an immediate plant upgrade be considered, the pools will need to be modified to take the additional flow rates required.
  These modifications will include, but not necessarily be limited to:
  - Re-piping to and from the pools
  - Providing isolation / control of flow to each pool within the new plant room
- The existing Balance Tank & Backwash would be suitable for a plant upgrade to the existing pool but, because of their physical condition, should be replaced for any new facility.
- It is advisable to cover the existing Balance & Backwash Tanks with a curved Colorbond roofs to prevent the potential hazard to patrons.
- A new Plant room will be required for either Option B or C. This could be manufactured "off site" in Colorbond.
  Typical examples of "Colonial Style" plant rooms with "Bull Nose" Verandas can be seen at Cunderdin and Corrigin. These offer a practical and aesthetic solution to the building. Any new building work should be equipped with Rainwater collection tanks for use as "Make-up water" in th pool or to provide water to the toilets etc.
- The Electrical Switchboard will require an upgrade to accommodate the new plant.
- The existing Chemical Dosing System may be suitable at the time for part of the upgrade but additional items of hardware will be required. Preferably a complete upgrade for a new pool complex.