

Southern Grampians Shire Council

Glenthompson Pool

Report R-06 (of 8 reports)

TECHNICAL CONDITION & COMPLIANCE ASSESSMENT



Document History

CLIENT	Southern Grampians Shire Council
OWNER	Southern Grampians Shire Council
DOCUMENT TITLE	Glenthompson Pool Technical Condition & Compliance Assessment 21012.R-06A Glenthompson

Version	Description	Date
A	Issue to SGSC – Marg Scanlon	28 Dec 2023

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1 Introduction

Technical Condition & Compliance Assessments of Southern Grampians Shire Council seven (7) swimming pools have been requested by Council under request for quotation **Swimming Pool Technical Condition and Compliance Assessment –Q 504-22**.

Table 1 lists the seven (7) individual sites and respective reports numbered **R-01 to R-07** with the **Consolidated Overview** report assigned number **R-00**.

This report is **R06** for the **Glenthompson Pool**. The full list of JWC reports is set out in Table 1.

Table 1 - Report List

Report R-00	Consolidated Overview Report
Report R-01	Hamilton Indoor Leisure & Aquatic Centre (HILAC)
Report R-02	Hamilton Outdoor Pool
Report R-03	Balmoral Pool
Report R-04	Coleraine Pool
Report R-05	Dunkeld Pool
Report R-06	Glenthompson Swimming Pool
Report R-07	Penshurst Pool

2 Site Inspections

The seven (7) sites were inspected between 21 to 25 November 2022. Underwater inspections (using snorkel, etc) were included, except at Coleraine which was empty.

3 Previous Reports

Refer R-00.

4 Facility Description

Glenthompson Swimming Pool opened in 1975 (48 yrs).

The facility comprises:

- 25m pool,
- Toddlers pool,
- WTP (Water Treatment Plant).
- Changerooms, Entry / kiosk building, storerooms.

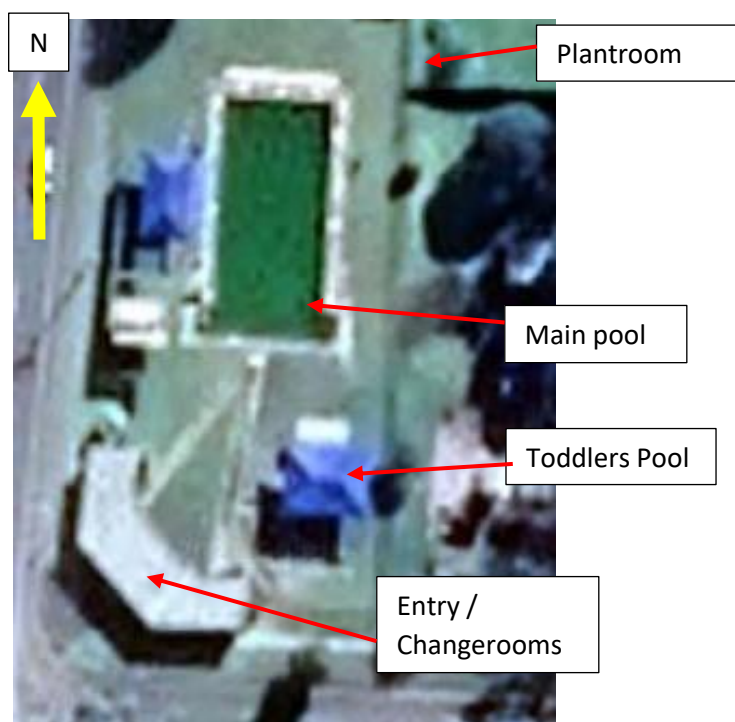


Image 1: Glenthompson Swimming pool – Aerial photo (Googlemaps)



Image 2: Entry



Image 3: Plaque. Opened 1975.



Image 4: Main & Toddler's pool. Looking N. WTP brick shed is at far end of pool



Image 5: Toddler's pool. Looking NE from roof of changerooms



Image 6: Main & Toddler's pools and main building. Looking S

5 Main Pool

5.1 Description

Table 2 - Pool Key Features

	Main Pool	Comments
Length	25m	
Width / lanes	11.3m (6 lanes)	
Min depth	1m (on sign, 0.95m actual)	
Max depth	1.6m (on sign, 1.52 actual)	
Dive well	No	
Gutter type (sides)	Ceramic scum gutter tiles	Built into side of hob.
Gutter type (ends)	Nil	At each end, there is a handrail, recessed into the wall.
Finishes @water level	A band of tiles is immediately below the ceramic gutter tile	
Finishes walls / floor	Paint	Includes the hob.
DA Access	Nil	

5.2 Structure

- a) The pool is essentially level with very little differential settlement (about 1-2cm range). This is acceptable and indicative of good ground conditions.
- b) There is cracking in the hob in various places that is indicative of corroding reinforcement. This will only get progressively worse and increase the cost of remedial works if delayed for a substantial period.
- c) There is cracking (Y-shaped) in the floor at the deep end but this seems a legacy issue.
- d) The expansion joint across the middle of the pool is quite rough and in only fair condition. At the outside face of the hob, it has bulged out and will need remedial work in due course.

5.3 Finishes

- a) The pool is painted below water level and for most of the hob. It is in average to poor condition generally.
- b) The hob paintwork, being a grey colour over blue, highlights large patches where the grey has delaminated.
- c) The ceramic scum gutter tiles and band of tiles are in average condition. There are the usual chips etc from wear and tear, but this is more an aesthetic issue at this stage. Any chips that present a safety issue will need to be addressed.



Image 7 : Main pool, Looking north to deep end.



Image 8: Main pool, Shallow end steps. Looking west. Depth signs partially obscured.



Image 9: Main pool, Shallow end steps. Looking east.

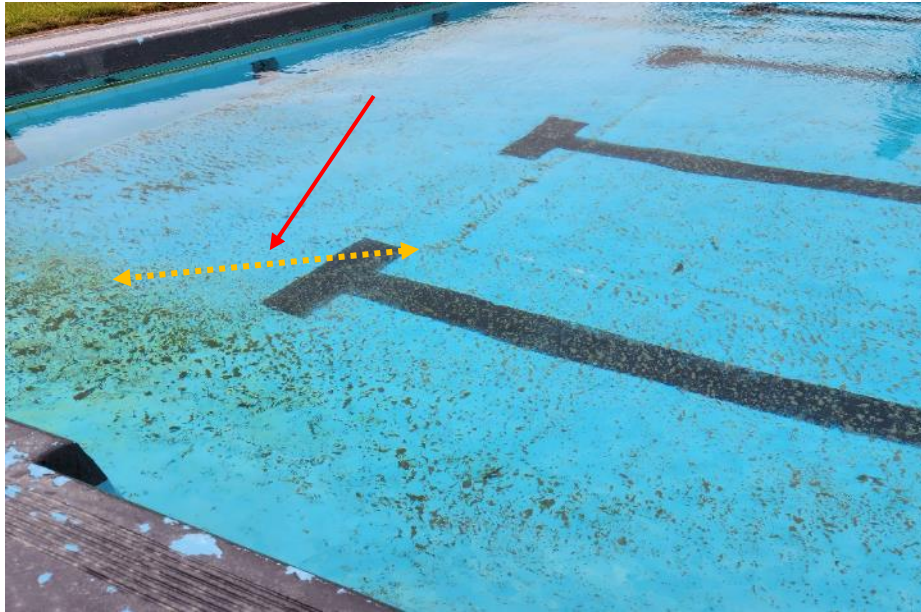


Image 10: Main pool, SE corner. Diagonal crack in floor from corner of construction joint



Image 11: Main pool, Shallow end hob on water side. Cracks starting due to reinforcement corrosion.



Image 12: Main pool / Deep end.



Image 13: Main pool. 'Bulging' expansion joint, east side. Hob cracking due to reinforcement corrosion.



Image 14: Main pool. 'Bulging' expansion joint in previous image probably linked to this concourse panel replacement.

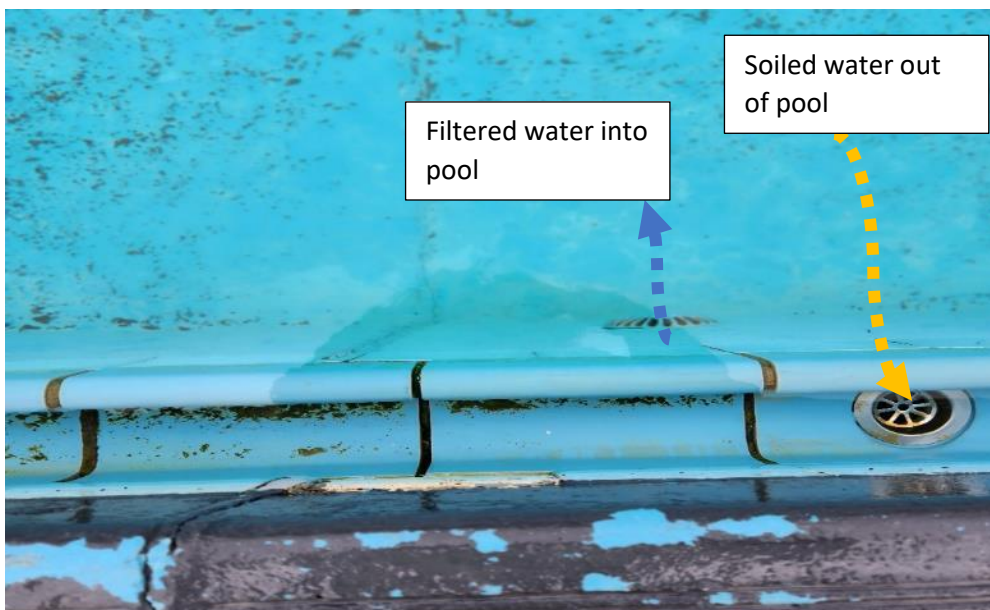


Image 15: Main pool. Filtered water wall inlet directly below gutter / soiled water outlet, could lead to short-circuiting.

6 Toddler's Pool

6.1 Description

Table 3 - Pool Key Features

	Toddler's Pool	Comments
Shape	Rectangle	
Length / Width	9.45 x 5.45m	
Min depth	Nom 0.05m	
Max depth	Nom 0.2m	
Gutter type	no perimeter gutter	Inlet / outlet nozzles and sumps / grates
Finishes @water level	painted	
Finishes walls / floor	painted	

6.2 Structure

- a) The pool is in average condition but does have some structural issues that will need attention in due course.
- b) There is a reasonably significant horizontal crack in the floor / wall joint on the west side. There are some small rust spots along the crack.
- c) There is a vertical wall crack above one of the nozzles at the base of the wall to the top but this seems a legacy issue and not that material.
- d) Both will need remedial work in due course.

6.3 Finishes

- a) The paint finish is in average to poor condition.



Image 16: Toddler's pool. Looking south



Image 17: Toddler's Pool. Looking east



Image 18: Toddler's Pool. Soiled Water outlet grate, NW corner



Image 19: Toddler's pool. Soiled Water outlet grate, SW corner



Image 20: Toddler's Pool. Crack in floor/wall through centre of pool, east side. Looking down vertically.



Image 21: Toddler's Pool. Crack in floor/wall through centre of pool, west side

7 Concourse

Refer to R-00.

- a) The concourse slabs are good condition for their age.
- b) There is some differential settlement and near the NE corner some slab panels have subsided slightly and pulled away from the pool (about 2cm) but this is not causing any concerns at this stage.
- c) There are some replacement panels with one beside the east side expansion joint where it is not in good condition. There was a probably a link between the condition of the joint and the panel replacement.
- d) There has been some grinding on the concourse slab panels on the west side .



Image 22: Concourse, east side, looking N



Image 23: Concourse at deep end of pool. Note gap here between hob and slabs



Image 24: Concourse west side

8 Main Water Treatment Plant - (WTP)

8.1 Description

There is no heating of any type.

Table 4- WTP Description - Main & Toddlers pool

	Description	Comments
Pools served:	Main & Toddler's pool	
Filter type	Pressure sand filter constructed in steel.	
Circulation Pump	Single short-coupled pump	A replacement of the original
Balance tank / pump well	Pump well	Circular well inside plantroom
Disinfection chemical	Calcium hypochlorite	Prominent system
pH control chemical	Hydrochloric acid	Stored close to cal hypo dilution unit.
Auto dosing system	Dinotec system	

8.2 Filters

- a) The steel filter looks in average condition for its age.
- b) The steel shell will need to be monitored as corrosion will no doubt be developing on the inside. When the sand is next inspected (for possible replacement) the thickness of the steel should be tested (with ultrasound test unit, over a semi-grid pattern) to gain an understanding of the range of current thickness and the likely original plate thickness. This should be documented for future reference.

8.3 Pumps and Pipework

- a) The pump is in very poor condition externally. Both the casing and base plate plinth are heavily corroded. This would indicate the pump is near the end of its design life.
- b) The pipework is a mixture of PVC, galvanised steel, and in one case asbestos cement.
- c) There is a 'Gibault' joint downstream of the pump where PVC changes to steel. Gibault joints are not designed to resist tension along the pipe and thus for the pipe system to resist the longitudinal hydraulic pressure forces requires other pipe restraint system. These are not present and were there to be a spike in pressure from the pump (e.g. blockage in the filtered water to the pool) then there is a risk of the pipe blowing apart at the Gibault.

- d) The pump pipework on the suction side has an elevated u-bend that could entrap air as there is no air release valve. As a result, there is probably reduced hydraulic capacity.
- e) Either an air relief valve could be installed or, with the likely replacement of the pump and plinth soon there is the opportunity to raise the pump and suction pipework to eliminate the air entrapment.
- f) Space in the pump shed is constrained.

8.4 Balance tank / Pump well

- a) The main pool drains directly to a pump well inside of the plantroom. This pump well is a large diameter pipe embedded vertically into the ground.
- b) The concrete pipe well is in poor condition with leaks (and previous repairs) and corrosion evident.
- c) The pump well will provide a very notional amount of 'balance' volume for the pool and with the low bather numbers at Glenthompson it may suffice.

8.5 Chemical storage and dosing

- a) Calcium hypochlorite is the disinfection agent. This is the result of Shire-wide changeover program when the (presumed) sodium hypochlorite systems were removed circa 2010. This decision would have very likely been due to the high safety requirements and issues with handling liquid sodium hypochlorite, versus that with 'calcium hypo' which is in the safer granular / tablet form.
- b) The calcium hypo dilution and dosing unit is Prominent which is a well-known and reputable brand.
- c) A Dinotec automatic sampling and dosing controller is installed. This is a German brand and should be good quality.
- d) Hydrochloric acid is used for pH control. This is delivered in 15litre containers. The containers are stored inside a larger plastic box which provides the bunding. However, it is very close to the Prominent unit and the risk of calcium hypochlorite coming in contact with acid is high. This will produce highly toxic chlorine gas. Significantly increased separation is strongly recommended.
- e) There is water leaking on the floor and it could be from several sources as noted above.
- f) An emergency shower is installed.

- g) The calcium hypo unit has an overflow that will operate whenever the pump stops unexpectedly. The overflow level is very low to the floor and is not connected to a pipe, meaning it easily floods the room. A remedy could be to raise the slightly, and the overflow could then be piped to waste.

Done 24/12



Image 25: Water Treatment Plant shed and pressure filter outside. Looking east



Image 26 – Steel filter vessel

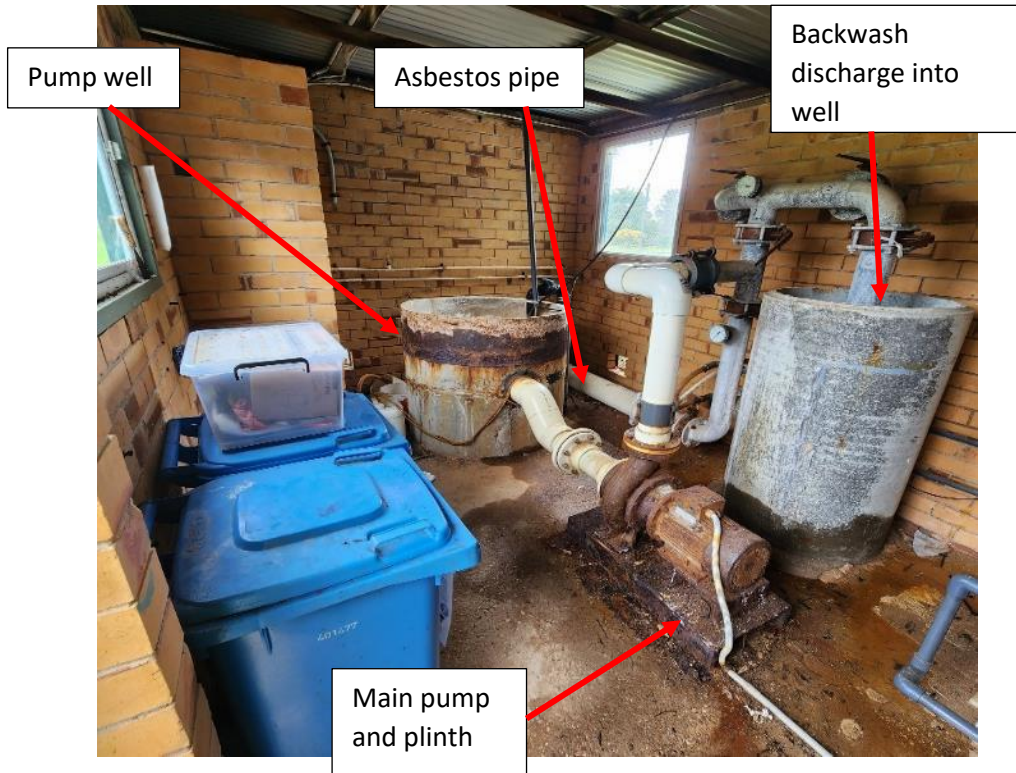


Image 27 – Main pump and pump well

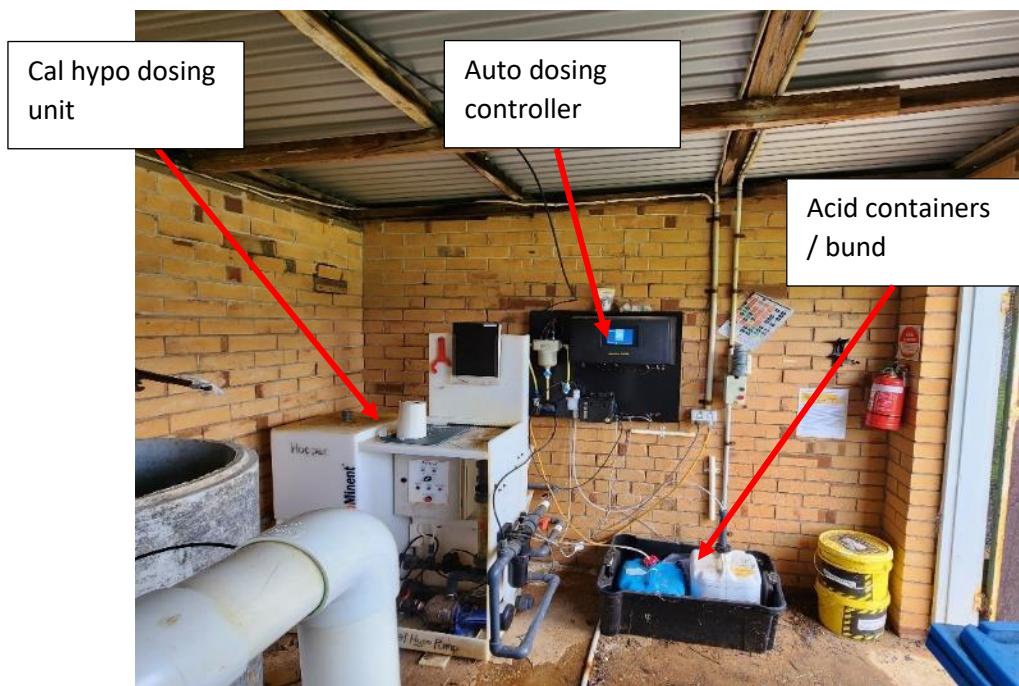


Image 28- Chemical dosing system



Image 29: Over-flow from cal-hypo unit discharges to floor



Image 30: Filtered water / asbestos pipe



Image 31: Unsupported Gibault joint in discharge pipework

8.6 Backwash

- a) Backwash water discharges into another large diameter vertical concrete pipe in the plantroom. This appears in reasonable condition. This pipe does not seem to act as a detention tank since there is a large drain at the bottom.
- b) Glenthompson does not have a reticulated sewer system and thus it is presumed that the above pipe's drain likely discharges to a water course. This is not uncommon in pools from this era.
- c) This should be further investigated by Council with Wannon Water to ensure compliance with any applicable EPA requirement.

9 Water distribution in pools

- a) Both pools are served by a single filtration system.
- b) The filtered water inlet nozzles (7 No.) are in the east side wall and about 0.3 - 0.5m above the floor. These are obviously a retrofit, the nozzles being much newer than the pool age and would have been driven by problems with the original centreline duct / nozzles along the pool centreline.
- c) This arrangement where filtered water is delivered via wall outlets, just below the gutter, elevates the risk of the filtered water 'short circuiting' to the gutters and leaving dead spots in the pool centre.
- d) Unfortunately, it would be difficult and costly to remediate, and the potential situation is only saved by the low bather numbers at Glenthompson which would not tend to threaten water quality limits in the pool itself (as opposed to the auto-samplers).
- e) The toddlers pool arrangement is again typical of the era with an inlet grate in one corner of the steps and an outlet grate in the step at the opposite end. These systems, without gutters, do not provide good water circulation.

10 Water leakage

- a) Water leakage is not reported to be a problem and the pool holds water well over the winter months. This allows the pool pumps to be run monthly over winter and super-chlorination to be undertaken to make the pool relatively ready for the new season with little additional work.

11 Depth signage

- a) Depth signage appears adequate. There are located on signs on posts around the outside of the concourse.
- b) Some are on the inside face of the hob above the gutter tile. In this location legibility is difficult because the water level in the gutter can obscure the lower part of the numerals.

12 Building - Changerooms

- a) The main building is very typical of the era being of simple brick construction with a metal deck roof.

- b) The changerooms while spacious are very rudimentary with exposed plumbing on brick walls, group shower (male) areas with bare concrete floors, and of particular note is the high level of wind-blown debris inside as well as bird and vermin droppings. This is due to the wide openings above part height walls and the roof. These are up to 0.5m high and provide easy access.
- c) The roof structure is timber and appears in good condition.
- d) The roof sheeting is galvanised and is in reasonable condition for its age. There are some patch repairs of leaks, and the gutters were part flooded (i.e. from blockage. inadequate fall) but these are minor maintenance issues.
- e) There is a long crack along the front edge of the entry slab at the main street entry. This is from reinforcement corrosion but appears likely to have developed many years ago. It is not in a critical location and treatment of the corrosion and sealing of the crack can be undertaken under general maintenance in due course.



Image 32: Changerooms/Kiosk, looking south



Image 33: Changeroom (male)



Image 34: Changeroom (male) Shower and WC



Image 35: Changeroom (male) – debris from wind, and bird entry



Image 36: Changeroom (male) - Nest



Image 37: Changeroom roof- blocked gutters holding water.



Image 38: Entry to facility. Long crack along front of slab edge due to reinforcement corrosion.

13 Building - Water Treatment Plant

- a) This building is a small and simple brick shed with timber roof framing and corrugated iron roofing.
- b) While new corrugated iron roofing has been installed, overall, it is in poor condition.
- c) The most significant issue is the failure / repair of one of the timber roof rafters. The splice repair is totally inadequate. The rafter needs to be replaced in its entirety (full length) not just partial length and all other rafters should be checked for rot.
- d) There is extensive corrosion in the metal framed & sheeted door, and it needs to be replaced.
- e) Bricks in the rear wall have become dislodged indicating poor mortar. Otherwise, the brickwork is satisfactory. Fortunately, there seems no sign of cracking in brickwork that would indicate poor ground conditions. This is consistent with the pool shell stability.
- f) In the timber windowsill there is rot that will need to be addressed.



Image 39: WTP new roofing iron but with inadequately spliced rafter



Image 40: WTP dislodged bricks in north wall



Image 41: WTP door is badly corroded.

14 Building - Shade Structure

- a) The shade structure over the Toddler's pool has (technically) failed structurally. One of the hip ridge tubes is bent. This deformation will weaken the structure holistically. Fortunately, this structure is lightweight and with a perforated shade cloth it does not present high windage, and thus the structure has not collapsed further.
- b) The bent tube will need to be replaced and consideration should be given to replacing the entire structure with a stronger one such as the similar one at Balmoral.



Image 42: Toddler's pool, shade structure. Bent (technically failed) structural support tube.

15 Rainwater Tank

- a) A rainwater harvesting and reuse system has been installed, probably within the past two decades.
- b) While the tanks and pump appear in reasonable condition the fill pipe into the tanks has severely dislodged and is unusable. There has been no attempt to repair. The recycle pump was not plugged into the power (this may simply be an operational issue). Overall, it seems doubtful that the system is operational and has been used in recent times.



Image 43: Rainwater harvest tanks and pump



Image 44: Rainwater recycle pump. Note dislodged infill pipe.

16 DA facilities

Refer to Report R-00.

No facilities are provided at Glenthompson.

17 Remaining Life Expectancy

Refer to Consolidated Overview Report R-00.

18 Recommended Works & Indicative Costs

The works are listed in **Table 5** and this study finds the probable order of cost to be **\$136,555**, prioritised over 10 years. This includes an allowance of 3% for escalation and 20% for preliminaries / margins / contingency.

Table 5 - Recommended Works & Indicative Costs

Recommended Works - Glenthompson

Works are independent of redevelopment works. Modify to suit any redevelopment plans ultimately adopted.

No	Location	Item	Total unesc. cost	Escalated Cost & Year					Annualised Esc. cost	
				1	2	3	4	5		10
1	Main pool - cracking	Hob crack along shallow end just above tiling. Chase out, neutralise any rust found and re-instate with epoxy filler & paint. Treat floor crack in deep end similarly.	\$10,000			\$10,927				\$1,000
2	Main pool - Expansion Joint	Repair Expansion Joint on outside of hob, both sides. Remove dislodged concrete, chase out, neutralise any rust found and re-instate joint concrete with new sealant. This is additional to normal EJ maintenance / replacement in pool.	\$10,000			\$10,927				\$1,000
3	Toddlrs pool - crack	Chase out crack to form Vee, neutralise any rust spots, reinstate with epoxy filler.	\$3,000			\$3,278				\$300
4	Main pool - solar blankets	Replace. Allowance.	\$35,000			\$38,245				\$3,500
5	Shade Structure (Toddlers pool)	Replace bent tube strut. Strengthen entire structure as/if required. Requires engineering input	\$10,000	\$10,300						\$1,000

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6	Rainwater harvest tanks / irrigation pump	Reinstate pipes & pump to make system serviceable. (System has been disabled for some time). Allowance	\$5,000			\$5,464				\$500
7	WTP - make up water	Automate water supply with control valve & level control. Install water meter (cumulative flow volume).	\$5,000	\$5,150						\$500
8	WTP - pump well	Allowance for supplementary leaks repairs to pump well conc. (vertical conc. pipe).	\$5,000			\$5,464				\$500
9	WTP - pump & plinth	Replace main pump and corroded steel plinth.	\$10,000			\$10,927				\$1,000
10	WTP - suction pipe	Provide valved offtake and open riser pipe to apex of U-bend on main pump suction side to allow for removal of any air entrapment	\$500			\$546				\$50
11	WTP - delivery pipe	Gibault joint needs additional pipe support so that it is not reliant on friction to resist tensile forces	\$1,000			\$1,093				
12	WTP - Cal hypo unit	Provide pipe from unit overflow (near floor level) to outside / waste pipe.	\$500			\$546				
13	WTP - building	Replace corroded steel entry door. Previously repaired / spliced rafter needs to be replaced (or supplemented) with new timber spanning full length. Replace rotten window frame.	\$2,000			\$2,185				\$200

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14	Entry / Changerooms	Crack in slab edge of concrete slab along full width of entry to facility. Not in critical location but break out loose concrete, neutralise any rust and repair / fill with high quality mortar	\$3,000			\$3,278				
15	Changerooms	Install bird-proof wire screens over high-level openings. Similar to Dunkeld (with lattice timber support).	\$5,000			\$5,464				\$500
16	Allowance for Contingencies / Prelims etc		\$22,759	\$3,090	\$0	\$19,669	\$0	\$0	\$0	\$2,276
			\$127,759	\$18,540	\$0	\$118,015	\$0	\$0	\$0	\$12,326

NOTES

- 1** is Total **unescalated** annualised funds p.a.
- 2** is Total **unescalated** annualised funds over 10 yrs

\$136,555
TOTAL ESCALATED FUNDS over 10yrs,

19 Conclusions

Key Findings

1. The pool shell has some differential settlement with a drop of about 1-2cm in the SE corner. This appears a legacy issue. Such differences are not uncommon and can be accepted in older pools.
2. The pools do have some cracking and signs of hob corrosion, but these can be addressed to counter the rate of deterioration.
3. Leakage is not a major issue. The pool hold water reasonably well.
4. The treatment plant is pressure filter system but it is in fair condition for its age.
5. Backwash water discharges directly to a water course. It should go to sewer, but Glenthompson township has no sewer reticulation.
6. Concourse condition is reasonably good.
7. The toddler's pool shade structure will need part or full replacement as it has technically failed structurally.
8. The changerooms are in fair to poor condition, out-dated in many respects but still functional. Debris, bird / vermin entry into the changerooms due to the lack of netting etc over high level openings leads to time-consuming cleaning issues.
9. The plantroom is in poor condition, particularly parts of the roof framing, and will need remedial works.

20 Closure

Should you have any queries regarding this report, please contact JWC Engineers.

A handwritten signature in blue ink, appearing to read 'John Wemyss', is positioned above the contact information.

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