Approval

1. The **Aerobic Sand Filtration (HTSP)** ("the system") described in the Specifications and Drawings in the attached Schedule and manufactured by **Sayer Civil Pty Ltd** ("the manufacturer") (ABN 64 010 875 091) has been assessed in accordance with the Queensland Plumbing and Wastewater Code (QPW Code) dated 15 January 2013.

2. Approval is granted for the advanced secondary quality wastewater treatment system, subject to compliance by the manufacturer with the requirements of the **Plumbing and Drainage Act 2002**, part 5 and the conditions of approval detailed below.

3. This approval, the conditions of approval and the Schedule comprise the entire Chief Executive Approval document.

4. Any modification by the manufacturer to the design, drawings or specifications scheduled to this approval must be approved by the Chief Executive.

Conditions of approval

5. The manufacture, installation, operation, service and maintenance of the systems must be in conformity with the conditions of this Chief Executive Approval.

6. The advanced secondary quality wastewater treatment system may only be used on premises that generate per day:

   (a) a maximum hydraulic loading of 4000L; and

   (b) a maximum organic loading of 1500 grams BOD₅

7. For the system to meet the requirements of an advanced secondary quality wastewater treatment system, the system must produce the following effluent quality —

   (a) 90% of the samples taken must have a BOD₅ less than or equal to 10g/m³ with no sample greater than 20g/m³; and

   (b) 90% of the samples taken must have total suspended solids less than or equal to 10g/m³ with no sample greater than 20g/m³; and

   (c) Where disinfection is provided 90% of the samples taken over the test period must have a thermotolerant coliform count not exceeding 10 organisms per 100ml with no sample exceeding 200 organisms per 100ml.

   (d) Where chlorination is the disinfection process, the total chlorine concentration must be greater than or equal to 0.5g/m³ and less than 2.0g/m³ in four out of five samples taken.

8. Each system must be serviced in accordance with the manufacturers details supplied in the owner’s service and maintenance manuals.

9. Each system must be supplied with —

   (a) a copy of this Chief Executive Approval document;

   (b) details of the system and ancillary equipment;
(c) instructions for authorised persons for its installation;
(d) a copy of the owner’s manual to be given to the owner at the time of installation; and
(e) detailed instructions for authorised service personal for its operation and maintenance.

10. This approval does not extend, apply to, or include the land application system used in
conjunction with an approved system installed on premises.

11. At each anniversary of the Chief Executive Approval date, the manufacturer must submit to
the Chief Executive a list of all systems installed in Queensland that they have received an
installation and commissioning certificate for during the previous 12 months.

12. Where the Chief Executive is notified of any system failures that they believe are a result of
poor design or faulty manufacture, the Chief Executive may randomly select a number of
installed systems for audit. The Chief Executive will notify the National Association of
Testing Agencies (NATA) accredited laboratory nominated by the manufacturer, which
systems are to be audited for Biochemical Oxygen Demand (BOD5) and Total Suspended
Solids (TSS). The sampling and testing of the selected systems, if required, is to be done at
the manufacturer’s expense. The following results must be reported to the Chief Executive;

(a) Address of premises.
(b) Date inspected and sampled.
(c) Sample identification number.
(d) Biochemical Oxygen Demand (BOD5).
(e) Total Suspended Solids (TSS).

13. The Chief Executive may, by written notice, cancel this approval if the manufacturer fails —
to comply with one or more of the conditions of approval; or within 30 days, to remedy a
breach, for which a written notice been given by the Chief Executive.

14. This approval may only be assigned with the prior written consent of the Chief Executive.

15. This approval expires on May 2023 unless cancelled earlier in accordance with paragraph
13 above.

Lindsay Walker
Director
Strategic Policy (Plumbing, Drainage, Tribunal and Special
Projects)

Date approved: 3 May 2018
SCHEDULE

Attachment 1

Specifications for the

Aerobic Sand Filtration (HTSP)
SCHEDULE

Attachment 2

Drawings for the

Aerobic Sand Filtration (HTSP)
SAND FILTER LAYOUT

DIMENSIONS OF SAND FILTER MAY BE VARIED TO SUIT LOCATION, OVERALL AREA TO BE MIN 20 sq. m. AND
DEPTH OF SAND FILTER MIN 150mm

DN 95 SLOTTED DISTRIBUTION PIPE

DN 90 SLOTTED COLLECTION PIPE
AT BASE LEVEL

DN 95 SLOTTED DISTRIBUTION PIPES

SAYER CIVIL PTY LTD
CIVIL ENGINEERING CONTRACTORS

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TREATMENT PLANT LAYOUT

PROJECT: PROPOSED AEROBIC SAND FILTRATION
TREATMENT OF DOMESTIC WASTE WATER

CLIENT:
SITE ADDRESS:

DRAWING TITLE: TREATMENT PLANT LAYOUT

DRAWN: G. SAYER

DATE: GS/2002/S1
SECTION "B-B"
TYPICAL CROSS SECTION SAND FILTER

SPECIFICATIONS

5 - 10mm AGGREGATE
20 - 25mm AGGREGATE
FILTER SAND AS PER SPECIFICATIONS

2 x ON 90 SLOTTED DISTRIBUTION PIPES (LAIRED LEVEL)

WHERE IT IS NOT POSSIBLE TO GRAVITATE WITHIN THESE LIMITS THEN THE EFFLUENT SHOULD BE DISCHARGED BY MEANS OF A PUMP TO THE FILTER

PERCUTION TESTS
TESTING OF THE SOIL PROFILE MAY BE REQUIRED BY LOCAL GOVERNMENT TO TEST THE ABSORPTION CAPACITY OF THE SURFACE DISPOSAL AREA OR TO DESIGN THE ABSORPTION TRENCHES IF APPLICABLE. TESTING IN ACCORDANCE WITH AS 1647

GEOTEXTILE MIN MASS
100gsm/sqm.

FINISHED SURFACE LEVEL
GRADE 1:30 EACH WAY OR FROM CENTRE AS SHOWN

TOP SOIL OR SANDY LOAM REPLACED

2 x 150mm FLUORAGATE

8.5mm PLASTIC LINER AS PER SPECIFICATIONS

IN 100 SLOTTED COLLECTION PIPE
GRADE 1 in 200

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CLIENT:
SITE ADDRESS:

PROJECT: PROPOSED AEROBIC SAND FILTRATION
TREATMENT OF DOMESTIC WASTE WATER

DRAWING TITLE: TREATMENT PLANT SECT "BB"

DRAWING STATUS
FOR APPROVAL

DATE
AMENDMENT DESCRIPTION

DRAWN: G. SAYER
DRAWING No:
DATE:

DEPARTMENT OF HOUSING AND SOLAR WO
CHIEF EXECUTIVE APPROVAL
APPROVAL No:
DATE OF ISSUE:
DELEGATE SIGNATURE:
BUILDING CODES QUEENSLAND
THE DISTRIBUTION PIPES

The distribution pipes are required to evenly distribute the effluent over the entire sand filter bed with the following:

- The distribution pipes are to be 110mm smooth bore uPVC slotted storm water pipe (AS 1254).
- The slots in the distribution pipes are to be 60mm wide by 30mm long and be positioned along the pipe and located 300mm below the horizontal as detailed.
- The slots within the distribution pipe are to be longitudinally positioned along the pipe axis at 200mm centres and terminate 100mm from the pipe ends.
- The total area of the slot openings is to be 4000mm² for each metre length of pipe.
- The pipes are to be laid level and are to be capped at the terminal end.
- Slotted distribution pipes are positioned no closer than 50mm from the sand filter side and end walls.
- They are to be installed as required by this standard and positioned as detailed and/or as shown on the approved plan.
- The distribution pipes must be installed level along the longitudinal axis of the pipe and across the horizontal axis of the slots.

FINAL EFFLUENT PUMP SUMP

N.T.S.

DETAIL OF SLOTS ON DISTRIBUTION PIPE

SCALE: 15

AREA OF SLOTS = 4800 sq.mm. PER METRE LENGTH OF PIPE
FILTER SAND

ONLY FILTER SAND CONFORMING WITH THE FOLLOWING CRITERIA MUST BE USED:
1. THE EFFECTIVE SAND PARTICLE SIZE MUST NOT BE LESS THAN 0.25mm AND NOT GREATER THAN 0.6mm
2. THE SAND MUST HAVE A UNIFORMITY COEFFICIENT OF LESS THAN 4
3. THE SAND MUST CONTAIN LESS THAN 5% VOLUME OF CLAY AND FINE SILTS AS DETERMINED BY THE TEST METHOD IN AS 1441, SECTION 33.

WHERE THE:

- EFFECTIVE SIZE = MAXIMUM PARTICLE SIZE OF THE SMALLEST 10% (D10) OF THE SAMPLE AS MASS OF THE SAMPLE

- UNIFORMITY COEFFICIENT (UC) = RATIO OF THE MAXIMUM PARTICLE SIZE OF THE SMALLEST 60% (D60) BY MASS

- D10 = UC

CERTIFICATION MUST BE PROVIDED BY THE SUPPLIER OF THE FILTER SAND AND STATING THAT THE SAND SUPPLIED COMPLIES WITH THE SPECIFICATION AS DETAILED ABOVE.

AGGREGATES

ALL AGGREGATES ARE TO BE CLEAN HARD QUARTZITE OR OTHER APPROVED STONE, BE OF SPECIFIED SIZE RANGE AND BE FREE OF DUST, DIRT, LOAM, SOFT PARTICLES, ORGANIC MATTER OR OTHER FOREIGN MATERIAL AND BE SUITABLE FOR USE WITH SEPTIC TANK EFFLUENT.

THE AGGREGATES AND SAND MUST BE PLACED WITHIN THE LINED SAND FILTER BED IN SUCH A MANNER AS NOT TO DAMAGE THE LINER, COLLECTION AND DISTRIBUTION PIPE INLET AND OUTLET STRUCTURES, DISTRIBUTION SUMP AND PUMP SUMP.

PLASTIC LINER

THE PLASTIC LINER USED IN CONSTRUCTION OF THE SAND FILTER MUST COMPLY WITH THE FOLLOWING:
1. THE PLASTIC LINER FOR THE FILTER BED MUST BE 0.6mm PVC SHEETING MANUFACTURED FROM VIGOROUS MATERIALS AND BE SUITABLE FOR USE WITH EFFLUENT FROM THE PRIMARY TREATED SEWAGE.
2. ALL PVC SHEETING MUST HAVE THE BRAND NAME AND SHEET THICKNESS MARKED THEREON AND BE INSTALLED WITH THE NAME AND THICKNESS FACING UPWARDS.
3. ALL JOINTS SHALL BE LAPPED AND JOINED BY HIGH FREQUENCY WELDING IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
4. THE LINER MUST BE ASSEMBLED PRIOR TO THE PLACEMENT IN EXCAVATION AND ALL CORNERS MUST, WHERE PRACTICABLE, BE FORMED BY FOLDING THE SHEET RATHER THAN CUTTING AND HIGH FREQUENCY WELDING.
5. ALL PIPE/PITTING PENETRATIONS THROUGH THE LINER MUST BE SEALED BY Taping ON BOTH SIDES IN A MANNER RECOMMENDED BY THE MANUFACTURER OF THE LINER MATERIAL AND BE WATER-TIGHT.
6. THE LINER MUST EXTEND UP TO THE FINISHED GROUND LEVEL.
7. WHERE THE SAND FILTER IS TO BE INSTALLED SUCH AS ROCK OR SHALE TYPE SOILS, THE LINER MUST BE PLACED OVER A 75mm LAYER OF CLEAN SAND SUITABLE FOR CONCRETE OR BRICKLAYING WORK.
8. WHERE THE LINER IS DAMAGED DURING INSTALLATION IT MUST BE PATCHED WITH A LAYER OF PARENT MATERIAL AT LEAST 100mm BEYOND THE DAMAGED AREA. THE REPAIR IS TO BE SEALED JOINTING AND BE WATER-TIGHT.

TYPICAL ARRANGEMENT

AEROBIC SAND FILTRATION

DOMESTIC SYSTEM - Max 10 PEOPLE

DETAIL OF SLOTS ON COLLECTION PIPE

AREA OF SLOTS = 9000 x 1mm PER METRE LENGTH OF PIPE

THE COLLECTION PIPES ARE TO BE DESIGNED AND INSTALLED TO COLLECT AND TRANSPORT THE TREATED EFFLUENT FROM THE SAND FILTER BED TO THE COLLECTION / PUMP PUMP. THE DESIGN AND INSTALLATION OF THE COLLECTION PIPES MUST COMPLY WITH THE FOLLOWING:
1. SLOTS IN THE COLLECTION PIPE ARE TO BE 10mm WIDE THROUGH 1800m ACROSS THE PIPE AND SPACED AT 200mm CENTRES ALONG THE PIPE AND TERMINATE 100mm FROM THE PIPE ENDS AS DETAILED.
2. THE TOTAL AREA OF THE SLOT OPENINGS IS 9000 x 1mm PER EACH METRE LENGTH OF PIPE AND BE FACED DOWNWARDS.
3. THE CAPPED ENDS OF THE COLLECTION PIPES MUST TERMINATE 50mm FROM THE INLET AND END TRENCH WALL.
4. PIPES MUST BE LAYED ON A GRADE OF 1 in 200 (0.5%) EXCEPT IN THE CASE OF THE INTERCONNECTING PIPES.
5. THE BASED ON THE SAND FILTER MUST BE GROUTED TO DISCHARGE TO THE COLLECTION PIPE. WHERE MULTIPLE PIPES ARE UTILISED, THEY ARE TO BE CONNECTED TO A COMMON OUTLET.
6. THE COLLECTION PIPES ARE TO BE INSTALLED AS REQUIRED BY THIS STANDARD AND POSITIONED AS DETAILED AND/OR AS SHOWN ON THE APPROVED PLAN.

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DRAWING TITLE: TREATMENT PLANT DETAILS
PROJECT: PROPOSED AEROBIC SAND FILTRATION
TREATMENT OF DOMESTIC WASTE WATER

CLIENT:
SITE ADDRESS:

DRAWN: G. SAYER
DATE: GS/2002/55