



strata
geoscience and environmental

Stormwater Overflow Trench Specification and Management Plan

Address: Tasports Shed, Whitemark

Proponent: Jo Youl

Proposed Development – Redevelopment

Stormwater runoff from impervious surfaces is calculated according to the rational method taken from *Australian Rainfall and Runoff (ARR)* for a 1:20 year 5 minute storm event:

$$Q = 0.278CIA$$

Where:

Q = Flow rate

C = Runoff coefficient (taken as 0.85 for a pitched impervious roof surface)

I = Intensity of rainfall (taken as 50mm/hour for Whitemark)

A = Catchment area – 224 m²

Therefore:

$$\begin{aligned} Q &= 0.278 \times 0.85 \times 50 \times 224 \\ &= 2.64 \text{ L/sec} \end{aligned}$$

Now:

$$V=Qt$$

Where:

V=Volume of runoff

t=time

$$\begin{aligned}\text{Volume of Runoff} &= \text{flow rate} \times \text{time} \\ &= 2.64 \text{ L/sec} \times 300 \text{ sec} \\ &= 793 \text{ L}\end{aligned}$$

Assuming a design loading rate of 25 l/m²/d

Therefore:

$$BA = V/DLR$$

Where BA = Trench Basal Area

V= Volume

DLR = Design Loading Rate

$$BA=793/25$$

$$BA= 31.72$$

Therefore a stormwater trench of basal area of 32 m² is required

The dwelling should have all gutters plumber to a min 20KL tanks with the overflow plumbed to the trench. Please refer to Appendix 1&2 for detailed design and construction notes.



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Director

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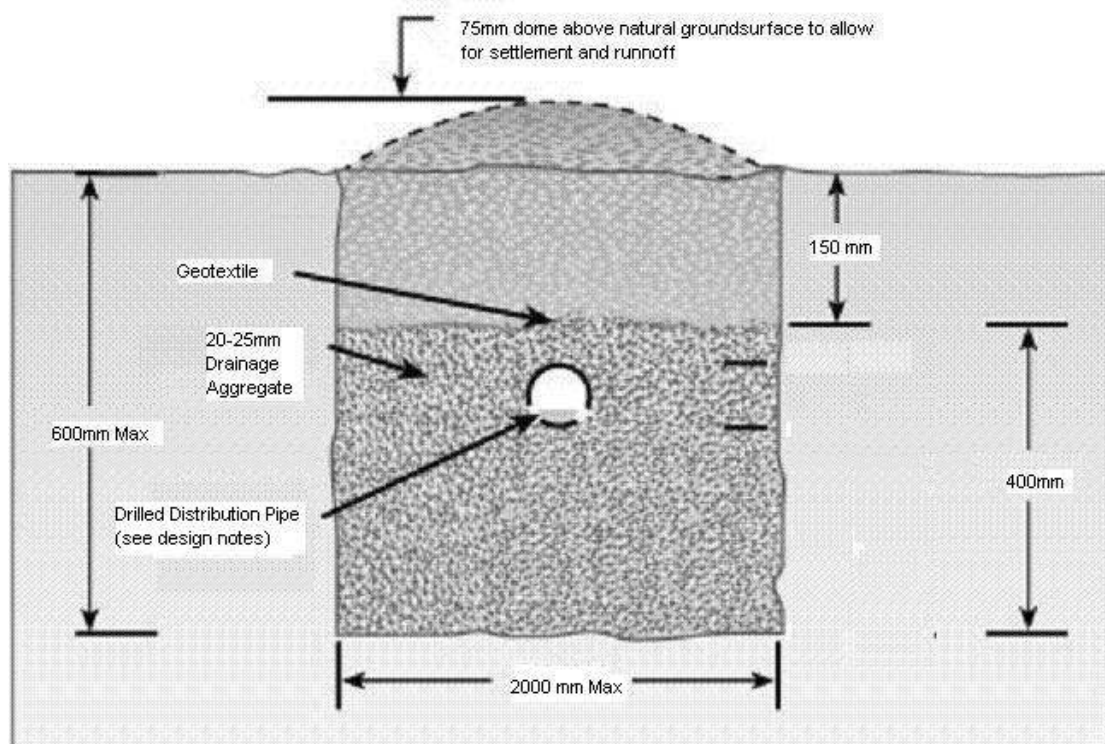
W: www.strataconsulting.com.au

Appendix 1 Site Plan



Appendix 2 Stormwater Overflow Trench Design and Construction Notes

1. Trench has the dimensions of 20 X 1.6 X 0.6 m.
2. There is one trench in total as located on site plan giving a total area of 32 m² (See Appendix 1)
3. The base of the trench **MUST** be excavated evenly and level. In clay soils smearing of walls and floors of bed **MUST** be avoided. Soils **MUST** be parallel raked and treated with gypsum at a rate of 1Kg/m².
4. The lower 400mm is to be filled with 20-25mm aggregate.
5. 100mm PVC pipe slotted in the 8'o'clock and 4'o'clock positions to be placed on top of aggregate as shown. The distribution pipe **MUST** be level to ensure flow of effluent to all areas of the trench. Failure to ensure this may cause preferential overloading of the trench and the potential for bed overflow. A 90 degree elbow should be installed to act as a velocity reducer prior to the main trench pipe.
6. A further 50mm of aggregate can be added around/over the grid before overlaying with geo-textile to prevent soil from clogging gravels/lateral slots. For sandy soils the sides of the trench should also be lined.
7. Backfilling of the bed to 50 - 75mm above original ground surface level with endemic topsoil (if a sand/loam) or imported loam should proceed. Do not mechanically compact this layer.
8. An inspection outlet should be placed on each distribution pipe.
9. Slight adjustments to the location of Septic Tank/Flow Diverter/Trenches are permitted to achieve correct fall to levelled trench bases.
10. Vehicles and livestock should be excluded from trench area.



Appendix 3 Form 35b

CERTIFICATE OF THE RESPONSIBLE DESIGNER (PLUMBING WORK)

**Section
80(1)(b)**

To: Owner name
 Address
 Suburb/postcode

Form
35B

Designer details:

Name: Category:
 Business name: Phone No:
 Business address:
 Fax No:
 Accreditation or Licence No: Email address:

Details of the proposed work:

Owner/Applicant: Designer's project reference No.
Address:

Type of work: (e.g. new installation/ alteration/ addition/ repair/ other)

Description of the Design Work (Scope, limitations or exclusions):

Deemed-to-Satisfy: Alternative Solution: (tick the appropriate box)
See Design and terms and conditions of appropriate report

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Design documents provided:

The following documents are provided with this Certificate –

Document description:

Drawing numbers: Strata Report 02351	Prepared by: S Nielsen	Date: 19/4/17
Schedules:	Prepared by:	Date:
Specifications: Strata Report 02351	Prepared by: S Nielsen	Date: 19/4/17
Computations: Strata Report 02351	Prepared by: S Nielsen	Date: 19/4/17
Alternative solution proposals: Strata Report 02351	Prepared by: S Nielsen	Date: 19/4/17
Test reports: Strata Report 02351	Prepared by: S Nielsen	Date: 19/4/17

Standards, codes or guidelines relied on in design process:	
AS1547-2012	

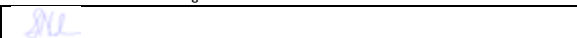
Any other relevant documentation:	
Terms and Conditions of relevant report	

Attribution as designer:	
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I Sven Nielsen..... being a licenced plumber practitioner-certifier or an accredited building practitioner am responsible for the design of that part of the plumbing work or plumbing installation as described in this certificate;

The documentation relating to the design includes sufficient information for the assessment of the work in accordance with the *Building Act 2000* and sufficient detail for the plumber or builder to carry out the work in accordance with the documents and the Act;

This certificate confirms compliance of this design with the requirements of the Plumbing Code of Australia (PCA) and is evidence of suitability under Clause A2.2 of the PCA.

	Signed:	Date:
Designer:		19/4/17



Appendix 4 Terms and Conditions

Scope of Work

These Terms and Conditions apply to any services provided to you ("the Client") by Strata Geoscience and Environmental Pty Ltd ("Strata"). By continuing to instruct Strata to act after receiving the Terms and Conditions or by using this report and its findings for design and/or permit application processes and not objecting to any of the Terms and Conditions the Client agrees to be bound by these Terms and Conditions, and any other terms and conditions supplied by Strata from time to time at Strata's sole and absolute discretion. The scope of the services provided to the Client by Strata is limited to the services and specified purpose agreed between Strata and the Client and set out in the correspondence to which this document is enclosed or annexed ("the Services"). Strata does not purport to advise beyond the Services.

Third Parties

The Services are supplied to the Client for the sole benefit of the Client and must not be relied upon by any person or entity other than the Client. Strata is not responsible or liable to any third party. All parties other than the Client are advised to seek their own advice before proceeding with any course of action.

Provision of Information

The Client is responsible for the provision of all legal, survey and other particulars concerning the site on which Strata is providing the Services, including particulars of existing structures and services and features for the site and for adjoining sites and structures. The Client is also responsible for the provision of specialised services not provided by Strata. If Strata obtains these particulars or specialised services on the instruction of the Client, Strata does so as agent of the Client and at the Client's expense. Strata is not obliged to confirm the accuracy and completeness of information supplied by the Client or any third party service provider. The Client is responsible for the accuracy and completeness of all particulars or services provided by the Client or obtained on the Client's behalf. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever suffered by the Client or any other person or entity resulting from the failure of the Client or third party to provide accurate and complete information. In the event additional information becomes available to the Client, the Client must inform Strata in writing of that information as soon as possible. Further advice will be provided at the Client's cost. Any report is prepared on the assumption that the instructions and information supplied to Strata has been provided in good faith and is all of the information relevant to the provision of the Services by Strata. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever if Strata has been supplied with insufficient, incorrect, incomplete, false or misleading information.

Integrity

Any report provided by Strata presents the findings of the site assessment. While all reasonable care is taken when conducting site investigations and reporting to the Client, Strata does not warrant that the information contained in any report is free from errors or omissions. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from errors in a report. Any report should be read in its entirety, inclusive of any summary and annexures. Strata does not accept any responsibility where part of any report is relied upon without reference to the full report.

Project Specific Criteria

Any report provided by Strata will be prepared on the basis of unique project development plans which apply only to the site that is being investigated. Reports provided by Strata do not apply to any project other than that originally specified by the Client to Strata. The Report must not be used or relied upon if any changes to the project are made. The Client should engage Strata to further advise on the effect of any change to the project. Further advice will be provided at the Client's cost. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever where any change to the project is made without obtaining a further written report from Strata. Changes to the project may include, but are not limited to, changes to the investigated site or neighbouring sites, for instance, variation of the location of proposed building envelopes/footprints, changes to building design which may impact upon building settlement or slope stability, or changes to earthworks, including removal (site cutting) or deposition of sediments or rock from the site.

Classification to AS2870-2011

It must be emphasised that the site classification to AS2870-2011 and recommendations referred to in this report are based solely on the observed soil profile at the time of the investigation for this report and account has been taken of Clause 2.1.1 of AS2870 - 2011. Other abnormal moisture conditions as defined in AS2870 - 2011 Clause 1.3.3 (a) (b) (c) and (d) may need to be considered in the design of the structure. Without designing for the possibility of all abnormal moisture conditions as defined in Clause 1.3.3, distresses will occur and may result in non "acceptable probabilities of serviceability and safety of the building during its design life", as defined in AS2870 - 2011, Clause 1.3.1. Furthermore the classification is preliminary in nature and needs verification at the founding surface inspection phase. The classification may be changed at this time based upon the nature of the founding surface over the entire footprint of the project area. Any costs associated with a change in the site classification are to be incurred by the client. Furthermore any costs associated with delayed works associated with a founding surface inspection or a change in classification are to be borne by the client. Where founding surface inspections are not commissioned the classifications contained within this report are void. Classification is based upon a range of expected ground surface movement as indicated in AS2870-2011. Where the range of movement exceeds the stipulations for the nominated classification Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever suffered by the Client or any other person.

Slope Instability Risks

Where comment, modelling or treatment options are suggested to limit the risk of slope instability Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from actual slope instability or mass movement over the site at any point over the design life of any structures or neighbouring structures.

Subsurface Variations with Time

Any report provided by Strata is based upon subsurface conditions encountered at the time of the investigation. Conditions can and do change significantly and unexpectedly over a short period of time. For example groundwater levels may fluctuate over time, affecting latent soil bearing capacity and ex-situ/insitu fill sediments may be placed/removed from the site. Changes to the subsurface conditions that were encountered at the time of the investigation void all recommendations made by Strata in any report. Strata is not

liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from any change to the subsurface conditions that were encountered at the time of the investigation. In the event of a delay in the commencement of a project or if additional information becomes available to the Client about a change in conditions becomes available to the Client, the Client should engage Strata to make a further investigation to ensure that the conditions initially encountered still exist. Further advice will be provided at the Client's cost. Without limiting the generality of the above statement, Strata does not accept liability where any report is relied upon after three months from the date of the report, (unless otherwise provided in the report or required by the Australian Standard which the report purports to comply with), or the date when the Client becomes aware of any change in condition. Any report should be reviewed regularly to ensure that it continues to be accurate and further advice requested from Strata where applicable.

Interpretation

Site investigation identifies subsurface conditions only at the discrete points of geotechnical drilling, and at the time of drilling. All data received from the geotechnical drilling is interpreted to report to the Client about overall site conditions as well as their anticipated impact upon the specific project. Actual site conditions may vary from those inferred to exist as it is virtually impossible to provide a definitive subsurface profile which accounts for all the possible variability inherent in earth materials. Soil depths and composition can vary due to natural and anthropogenic processes. This is particularly pertinent to some weathered sedimentary geologies or colluvial/alluvial clast deposits which may show significant variability in depth to refusal over a development area. Furthermore where rocky profiles are encountered no comment is made about the potential size of liberated rocks from bulk earthworks or vertical boring. Where large rocks are liberated this may impact upon the ability to cost effectively build on the site and further advice should be sought from Strata. Such profiles may also significantly increase earthworks costs and or materials cost in foundations. Rock incongruities such as joints, dips or faults may also result in subsurface variability. Variability may lead to differences between the design depth of bored/driven piers compared with the actual depth of individual piers constructed onsite. It may also affect the founding depth of conventional strip, pier and beam or slab footings, which may result in increased costs associated with excavation (particularly of rock) or materials costs of foundations. Founding surface inspections should be commissioned by the Client prior to foundation construction to verify the results of initial site characterisation and failure to insure this will void the classifications and recommendations contained within this report. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from any variation from the site conditions inferred to exist.

Strata is not responsible for the interpretation of site data or report findings by other parties, including parties involved in the design and construction process. The Client must seek advice from Strata about the interpretation of the site data or report.

Report Recommendations

Any report recommendations provided by Strata are only preliminary. A report is based upon the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until earthworks and/or foundation construction is almost complete. Where variations in conditions are encountered, Strata should be engaged to provide further advice. Further advice will be provided at the Client's cost. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever if the results of selective point sampling are not indicative of actual conditions throughout an area or if the Client becomes aware of variations in conditions and does not engage Strata for further advice.

Geo-environmental Considerations

Where onsite wastewater site investigation and land application system designs are provided by Strata, reasonable effort will be made to minimise environmental and public health risks associated with the disposal of effluent within site boundaries with respect to relevant Australian guidelines and industry best practise at the time of investigation. Strata is not liable, and accepts no responsibility, for any claim, demand, charge, loss, damage, injury or expense whatsoever resulting from:

- (i) changes to either the project or site conditions that affect the onsite wastewater land application system's ability to safely dispose of modelled wastewater flows; or
- (ii) seepage, pollution or contamination or the cost of removing, nullifying or clearing up seepage, polluting or contaminating substances; or
- (iii) poor system performance where septic tanks have not been de-sludged at maximum intervals of 3 years or AWTs systems have not been serviced in compliance with the manufacturers recommendations; or
- (iv) failure of the client to commission both interim and final inspections by the designer throughout the system construction; or
- (v) the selection of inappropriate plants for irrigation areas; or
- (vi) damage to any infrastructure including but not limited to foundations, walls, driveways and pavements; or
- (vii) land instability, soil erosion or dispersion; or
- (viii) design changes requested by the Permit Authority.

Furthermore Strata does not guarantee septic trench and bed design life beyond 5 years from installation, given the influence various household chemicals have on soil structural decline and premature trench failure in some soil types

Strata does not consider site contamination, unless the Client specifically instructs Strata to consider the site contamination in writing. If a request is made by the Client to consider site contamination, Strata will provide additional terms and conditions that will apply to the engagement.

Copyright and Use of Documents

Copyright in all drawings, reports, specifications, calculations and other documents provided by Strata or its employees in connection with the Services remain vested in Strata. The Client has a licence to use the documents for the purpose of completing the project. However, the Client must not otherwise use the documents, make copies of the documents or amend the documents unless express approval in writing is given in advance by Strata. The Client must not publish or allow to be published, in whole or in part, any document provided by Strata or the name or professional affiliations of Strata, without first obtaining the written consent of Strata as to the form and context in which it is to appear.

If, during the course of providing the Services, Strata develops, discovers or first reduces to practice a concept, product or process which is capable of being patented then such concept, product or process is and remains the property of Strata and:

- (i) the Client must not use, infringe or otherwise appropriate the same other than for the purpose of the project without first obtaining the written consent of Strata; and
- (ii) the Client is entitled to a royalty free licence to use the same during the life of the works comprising the project.

Digital Copies of Report

If any report is provided to the Client in an electronic copy except directly from Strata, the Client should verify the report contents with Strata to ensure they have not been altered or varied from the report provided.