

PROJECT

Project: Proposed unit development at 28 Redbank Road, Stratford

Client: [REDACTED] Job No: 24101

AUSTRALIAN STANDARDS

AS 3500 Part 3 - 2018 - Stormwater Drainage

NCC

National Construction Code 2022 Volume 3: Section A, Vic Section F - Stormwater Drainage Systems

AEP

Design AEP = 20%

DESIGNED: [REDACTED] *B.E. (Civil)(Hons) PE-0002402 (Vic) CC4987C (Tas)*

DATE: January 2025

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UNIT DEVELOPMENT - 28 REDBANK RD.

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i) DETERMINE ALLOWABLE DISCHARGE

TOTAL SITE AREA = 4348 m²

FROM TABLE 10 OF IDM

FOR LDR2 LOTS > 4000 m² C = 0.35 AEP = 20%

FOR SITE WITH FAWS 0.2% FAW

ASSUME POOLY GRASS SURFACE n = 0.035

LENGTH OF FLOW = 70 m

$$t = (107 \times 0.035 \times 70^{0.333}) / 0.2^{0.2} = 21.2 \text{ min say } 20 \text{ min}$$

$$\therefore I_{\frac{20\%}{20}} = 49.4 \text{ mm/hr}$$

$$\therefore Q_{\max} = \frac{(0.35 \times 4348) \times 49.4}{3600} = \underline{\underline{20.88 \text{ M/s}}}$$

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POST DEVELOPMENT FLOW.

$$\text{TOTAL ROOF AREA} = 6 \times 142.2 + 8 \times 113.2 + 106.3 + 2 \times 95.7 \\ = 2056.5 \text{ m}^2$$

$$\text{TOTAL EXTERNAL PAVING} = 914 \text{ m}^2$$

$$\text{IMPERVIOUS AREA} = 1377.5 \text{ m}^2$$

$$\text{USE } t_c = 7 \text{ min}$$

$$\text{FOR AEP} = 20\%$$

$$\bar{I}^{20\%} = 84.3 \text{ mm/hr}$$

AREA	A	C	CA
ROOF	2056.5	1.0	2056.5
PAVING	914	0.9	822.6
IMPERVIOUS	1377.5	0.173	238.30

$$\Sigma CA = 3117.4$$

$$Q(\text{post}) = \frac{3117.4 \times 84.3}{3600} = 72.99 \text{ l/s}$$

For 300 ϕ UPVC AC 1 in 300

$$Q = 80 \text{ l/s} \\ V = 1.1 \text{ l/s}$$

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CHECK POTENTIAL SITE STORAGE

REFER TO EXCEL SPREADSHEET.

LIMIT FLOW TO PRE DEVELOPMENT FLOW TO 20.88 L/s.

From EXCEL SPREADSHEET

TOTAL SITE STORAGE (REQ) TO ROOFS = 28012 L

STORAGE REQUIRED TO ROOFS

For 142.2 m² ROOF - STORAGE REQ = 1936 L

113.2 m² ROOF - STORAGE REQ = 1541 L

106.3 m² ROOF - STORAGE REQ = 1447 L

95.7 m² ROOF - STORAGE REQ = 1303 L

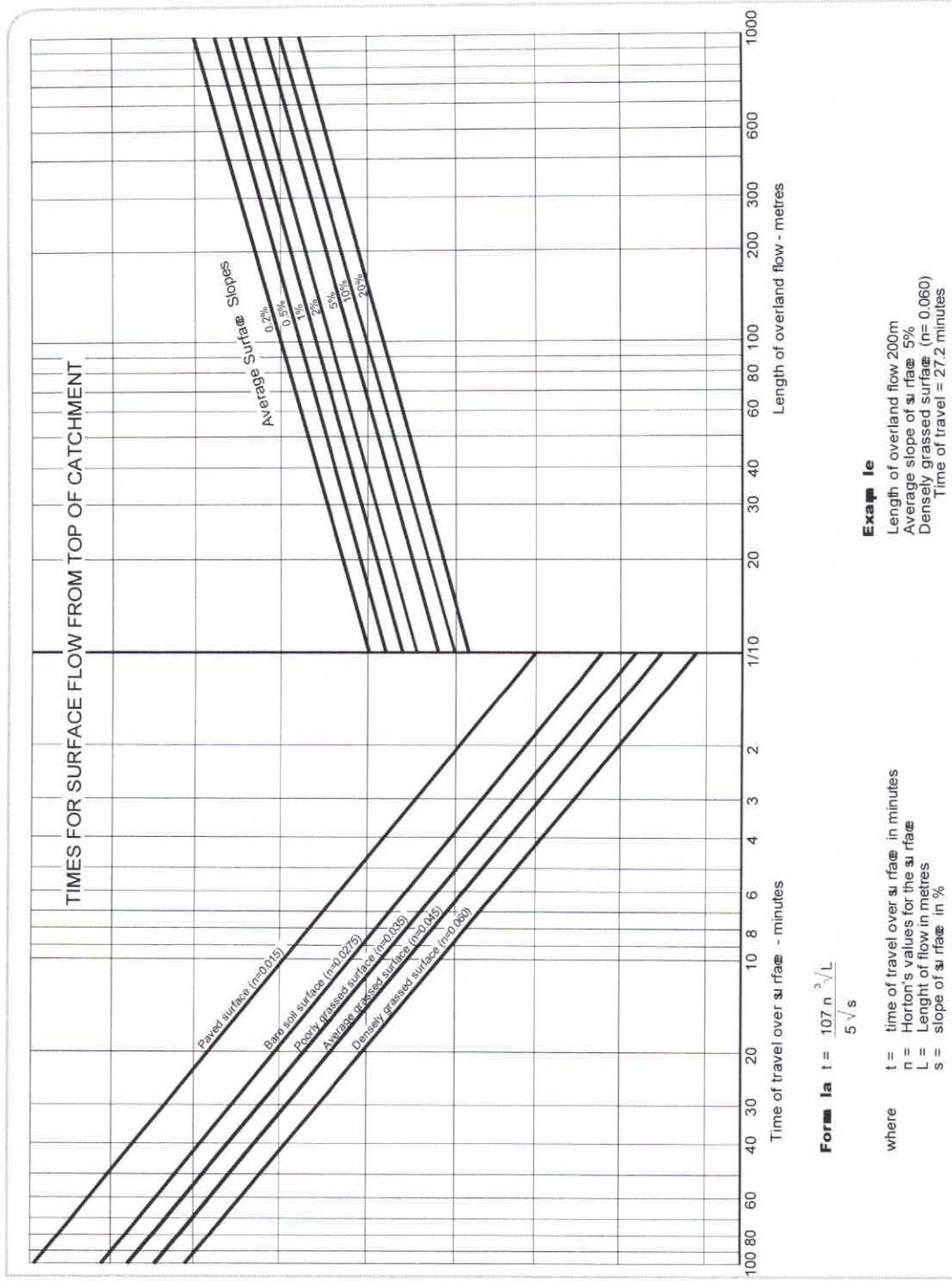
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Figure 4.2: Travel time for overland flow



Interception structure flow

Travel times along interception structures (contour and diversion banks) are calculated by dividing the length of flow by the design velocity of the structure. Since it is recommended that designs should be based on average conditions

Storage Tank Site Detention Design

Job No. 24101

Site Area = 4348 sqm

Project 28 Redbank Road, Stratford

Pre runoff coefficient = 0.35

Pre-Development flows	20.88 l/sec.
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ARI	5 years
m	0.95
10160	30.5 mm/hr
Cp	0.164

Duration	Design Year ARI
5 mins	93.2 mm/hr
6 mins	87.65 mm/hr
10 mins	71 mm/hr
20 mins	49.4 mm/hr
30 mins	38.7 mm/hr
60 mins	24.7 mm/hr
120 mins	15.7 mm/hr

Contributing areas	A	C	CA	
Other			0	
Roof	2056.5	1	2056.5	
Impervious	914	0.9	822.6	
Pervious	1377.5	0.164	225.93	
		ΣCA	3105.03	m^2

Critical	
ARI	58.04 mm/hr
Ylt	16 mins
Q	50.060 l/sec.
Vol. (req.)(max)	28012.85 litres

Allowable Runoff	
Q (roof)	33.16 L/sec.
Q (pervious + impervious)	16.90 L/sec.
Q (allowable roof runoff)	3.98 L/sec.