David Manteit V Brisbane City Council 2916/24

Reference material and responses to Brisbane city Council Expert Witness reports

Corrigan report.

> 1.6.3. Condition 17 – provide stormwater infrastructure within the subject lot generally in accordance with marked up plan SK01. This plan depicted pipe drainage for future development of Lots 98 and 99 to the east, drainage to the low surface area of the lot in the southwest corner, discharge to Ashridge Road.

1. Corrigan thinks that Condition 17 is for upstream drainage and drainage to the low surface of the lot in the Southwest corner, discharge to Ashridge Rd

2. Corrigan doesn't know what the red lines are.

3. David Manteit doesn't know what the red lines are, except they are charged, illegal, non-certified and will cause nuisance flooding of around 9 million litres of water a day.

4. I believe the Court doesn't know what the red lines are either, to the best of my knowledge

5. Corrigan confirms Council employee non RPEQ certified red line is charged under the kerb (same as Manteit plan since 4/10/24, 19/11/24, 27/3/25 and around 70 other references.)

What QUDM says about Corrigan's Master Drainage Plan

5.4.2 On-site detention systems

There are generally three design standards set by regulating authorities, they are:

- A specified minimum site storage requirement (SSR) and permissible site discharge (PSD) relative to either the site area, land use, or the change in impervious area.
- A permissible site discharge for the specified design storm frequency with no minimum storage volume specified.
- A requirement not to exceed pre-development peak discharge rates for a range of design storm frequencies.

C2

The first two design criteria are often adopted by local governments following the development of a regional flood control strategy, Master Drainage Plan, or Stormwater Management Plan.

Most small on-site detention systems incorporate underground tanks. When appropriate soil and groundwater conditions exist, some underground tanks can be converted into infiltration systems. Above-ground stormwater detention tanks are rarely used on single residential properties because of the risk of the tanks being converted solely to rainwater tanks.

Above-ground stormwater detention tanks are rarely used on single residential properties because of the risk of the tanks being converted solely to rainwater tanks

6. Depiction by Manteit Master Plan of Corrigan Master Drainage plan tanks for one hour rainfall = 169,000 litres only.

7. Corrigan's report is "Rudimentary" and "indicative" (Corrigan).

Rudimentary is not the level or standard accepted by other licenced engineers or the Public.

8. Indicative of what? Nobody knows. Does Corrigan want to escape from his report?

No RPEQ certification

9. Is there RPEQ certification to the hydraulic plans?

10. Corrigan says his report is Rudimentary and indicative. Therefore it should be determined by the Court as such. This is Council third illegal, unlawful and charged rudimentary and indicative plan.

I believe that the Court must place 100% weight on the report as being unsatisfactory professional conduct.

Corrigan refuses to report a conclusion on flows

11. Corrigan has no conclusion. Just some tiny numbers in a table. The reader is to guess.

12. The Corrigan report is a master shamble in my opinion.

13. The report demonstrates that allegedly Corrigan has no knowledge and experience in or of -

- engineering methodologies for stormwater
- types of pipes and pits used
- Water falling downhill (charged pipes)
- Detention
- Council assessment procedures into filling requirements for a usable pad (14m)
- QUDM policies

14. Corrigan states that the Council employee illegal non RPEQ certified plan is charged under the kerb, the same as Manteit stated in the Notice of Appeal and since 1/10/24.

Corrigan hydraulic plans are charged

15 This is the third Council plan that is charged and therefore illegal and will cause nuisance flooding and cause damage to people and property.

Corrigan uses unlawful parameters to understate flows by 15%

See below.

16. Corrigan uses fi (fraction imperveous) instead of Coefficient Q2 and Q20

17. Corrigan report uses intentional illegal engineering methodologies, eg fi instead of Coefficient C2 and C20.

Apparently.

Corrigan – it's ok to not comply with a Development permit $725,000 fine.

Comments on Pipe Drainage by Civil Works Engineers

9.10. Civil Works Engineers appear to have concluded that the marked-up plan SK01 was not feasible and then did not consider any amendments to the markup that would allow a workable design solution. It appears to me that Civil Works Engineers and the Applicant have adopted a literal response to the markup by the Respondent on SK01. In my experience, a literal interpretation is not necessarily required to satisfy Council conditions. I disagree with the latter approach by Civil Works Engineers.

Corrigan wants every owner of the land to receive fines of $725,000 for not complying with S164.

18. Council have never allowed Manteit build something that is contrary to the the Development Permit.

19. Corrigan – "I used the same parameters as Civil Works" – an alleged false statement with intention to show lower flows.

20. Corrigan allegedly intentionally fudges flows by 15.2% lower by using fi instead of C2 and C20.

Proof

Corrigan acknowledges Civil Works parameters but use his own to lower flow rates by 15%

Civil Works	Corrigan	Corrigan intentionel fudging
.(91+.74)/2 = .825	.7	.7/.825*100 = 84.8% = 15.2% lower

> 9.11.4. Civil Works Engineers goes on in the report to calculate storm discharge flows from Lots 98 and 99. I do not disagree with the input parameters of the calculation (set out by Civil Works Engineers below Table 1 on page 4 of the Civil Works Report).

21. Corrigan states that he uses the same methodologies as Civil Works. This is a false statement. Corrigan used .7 instead of .91 and .74.

Corrigan used fraction impervious instead of a Coefficient.

22. Corrigan plan is charged by .43 m, option 1 and .790 m option 2. This will cause nuisance flooding.

23. Corrigan system shows filling required which illegally disguises a charged pipe that would cause nuisance flooding, action damages.

24. Corrigan plan shows around 40 mistakes.

25. Corrigan sometimes like one decimal place. Sometimes Corrigan like two decimal places. Sometimes Corrigan likes 1 decimal place. Sometimes Corrigan likes no decimal place.

26. Corrigan plan shows water going uphill, charged pipes and fill without Manteit consent.

27. Corrigan wants to fill Manteit's front yard by 385mm without Manteit consent.

Corrigan causes Manteit driveway to be unlawful with BSD 2024 maximum height difference from kerb to front boundary.

28, Corrigan is willing to break Council law BSD 2024, without Manteit consent, to get pipes to work.

Manteit has a plan to the millimetre for the front yard and driveway. Filed on 19/11/24 in the Planning Court. Filed again on 31/3/25.

Corrigan wants Manteit to build a 385 high mound of concrete in the driveway and front yard without consent,

29. Corrigan master plan for the catchment only area will create 75 l/s Q20. This is 45 l/s greater than 30 l/s

30. Corrigan rainwater tanks required -

162,000 litres flooding per hour

4,888,000 litres flooding per day

27, 216,000 litres flooding per week

This excess flooding nuisance will flood the subject land, and

31. The master plan does not identify the flood water that.

32. Corrigan master plan has no way for the owner of the subject land to stop flooding when the rainwater tanks are faulty after one year.

33. Corrigan master plan has no management plan for installation of the rainwater tanks and overflow of the rainwater tanks

Around 100 Corrigan mistakes on plans and tables

34. There are allegedly around 100 intentional mistakes found in the report. This is not a standard that can be upheld by his engineering peers or the Public.

Corrigan design is for “half a house”

35. Corrigan expects there will be many “half a house”

36. It is expected that upstream owners will drink the water from the rainwater tanks so that the water won’t spill onto Manteit’s yard.

37. There is no nomination of what limit in litres per second each rear lot is to spill into the undersized 225mm pipe.

38. Mr Corrigan refuses to nominate what the site storage limits and discharges will be for each site are, Lot 97, 98, 99.

39. QUDM says that these are the design standards set by regulating authorities (Brisbane City Council) -

- Specified minimum site storage requirement SSR and permissable site storage PSD relative to the site area and land use.

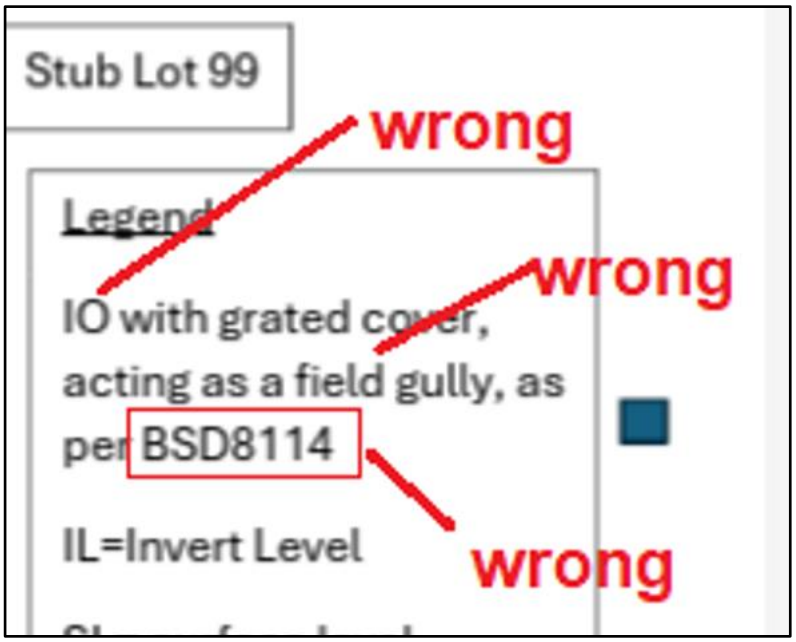
- A permissable site discharge … for the specific storm frequency

- A requirement not to exceed pre-development peak discharge rates for a range of storm frequencies.

"Above ground stormwater detention systems are rarely used on single use residential properties because of the risk of the tanks being converted solelly to rainwater tanks".

40. Corrigan says one must look at the Development assessment process and what he has found in his experience. I agree 100%. We must look at 40 pages of RTI and audit of 412 cases studies.

41. In my view, Corrigan has demonstrated he has no knowledge of the components of construction of a stormwater system. He thinks a sewerage I/o will be the pit infrastructure and a field gully are satisfactory engineering.



Corrigan thinks BSD8114 is for gullies (as above)

42. Corrigan thinks that a new house on Lot 2 will be a barrier to stormwater flow, when a house is not required to be built.

42. If the Council employee plans are indicative only. Indicative of what ?

43. Why are Corrigan plans indicative only.

Such as

- Dodgy rainwater tanks
- Installing and maintaining a dodgy plastic or rusty rainwater tank.
- Any action required by an owner upstream needs to be a condition placed on the title if the upstream owner

44. Corrigan has supplied some numbers that show his proposed system is over 75 litres per second to the kerb, without detention tank. This is unlawful with S7.6.3.1 (2).

Total litres per second 75 l/s without detention systems.

Corrigan's new proposed mysterious dwelling

> 1.3. I obtained the location of the proposed new dwelling from the Civil Works Engineers plan S01 which is page 10 of the Applicant's Affidavit dated 31 March 2025 (which is Document 6 in the table below of Appeal documents) and added it to the site view as follows.

Corrigan makes a false statement that he obtained the location of the new proposed dwelling.

- There is no new proposed dwelling.
- Civil Works have provided demontration of a usable building pad that satisfies –

- Usable dry pad of greater then 14m setback from boundary, as per 115 Pope St Tarragindi.
- Lawful point of discharge to the kerb
- Complies with the boundary setbacks of the Small Lot Code, without any fill.
- The usable pad has AEP of 1% fall from 35.46 at rear to 35.798 at front of pad.
- Full proposed site plan also provided in the Notice of Appeal 19/11/24.

In my view, Corrigan has demonstrated -

- zero knowledge of site pads and AEP.
- onsite earthworks required for subdivisions and lawful point of discharge.
- Zero knowledge of town planning assessment requirements.
- Corrigan has not spoken or discussed with any planner the site in relation to what is the fully developed

> 1.4. I note the report of Mr Kieran Ryan, the Respondent's town planner, which states that the most likely development outcome for the newly created lot would be a single dwelling house with a maximum site cover of 60%. Given the location of the driveway crossover and the constraints of the site (size, shape, depression in back corner), the proposed new dwelling location identified on the plans seems the most likely location for a new dwelling.

45. Corrigan and (according to Corrigan) Ryan do all their assessment on what they think is the most likely instead of what complies with Council laws.

This is Corrigan's stated intention of how to assess a development site and application – whatever is "most likely".

Corrigan has not assessed City Plan 2014, especially in relation to the Small Lot Code boundary setbacks.

45. Corrigan alleged false statements of condition 17.
The long list continues.

> 1.6.3. Condition 17 – provide stormwater infrastructure within the subject lot generally in accordance with marked up plan SK01. This plan depicted pipe drainage for future development of Lots 98 and 99 to the east, drainage to the low surface area of the lot in the southwest corner, discharge to Ashridge Road.

Corrigan continues to make false statements. This list is endless.

47. Corrigan thinks that the illegal Council employee flooded non-certified by an RPEQ hydraulic plan is for future drainage for Lot 98 and Lot 99

48. Corrigan thinks that illegal Council employee flooded non-certified by an RPEQ plan is to provide drainage for the southwest corner.

Corrigan thinks that Council plan is for drainage to the low part of the South West corner ??????

Now I know, after 9 months of guessing. Thanks Mr Corrigan.

49. Corrigan thinks that conditions 17 and 18 are both for future development of Lots 98 and 99.

> 1.6.3. Condition 17 – provide stormwater infrastructure within the subject lot generally in accordance with marked up plan SK01. This plan depicted pipe drainage for future development of Lots 98 and 99 to the east, drainage to the low surface area of the lot in the southwest corner, discharge to Ashridge Road.
>
> 1.6.4. Condition 18 – provide connections to Lots 98 and 99 for future ultimate development

50. Corrigan thinks that Condition 17 and 18 are both for Upstream drainage.

These statements by Corrigan indicate that Corrigan either -

- Corrigan has not read the development approval.

- Corrigan seems to have never spoken to the RPEQ Council employee who prepared the hydraulic plan.

> **3. EXECUTIVE SUMMARY**
>
> 3.1. The application to subdivide the existing lot into two lots requires a Development Approval. Brisbane City Plan 2014 stipulates that the development must ensure satisfactory stormwater drainage of the subject site as well as provision in the development for drainage of up slope future development.

51. Corrigan makes alleged false statements

"**must ensure"**

City Plan ensures that there is no nuisance flooding and damage to people and property.

There is no drainage of upslope future development.

> 3.4. The construction of a dwelling on the subdivided lot on the subject site will create a barrier to stormwater flow across the subject site and hence will change the stormwater discharge characteristics - namely flow will be diverted to the south of the dwelling and, unless stormwater infrastructure is provided, will result in concentration of flow into the adjacent Lot 1. This and the discharge from the upstream sites along with drainage from the existing and any new dwelling should be addressed in a stormwater master plan for the development.

52 Corrigan continues to make alleged false statements. There is no new house required in the approval.

52. Corrigan statements demonstrated allegedly -

- zero knowledge of site pads requirements for AEP fall.
- zero knowledge of onsite earthworks required for subdivisons and lawful point of discharge.

- Zero knowledge of town planning assessment requirements.
- Corrigan has not spoken to any Town Planning expert to provide advice as to his report.

53. Ryan said there no trigger for bulk earthworks approval. Why is Corrigan proposing earthworks.

54. Manteit has demonstrated a usable pad of at least 14 metres from the front boundary, as example 115 Pope St Tarrangindi (Civil Works) and Council red lines.

The **LPD of 35.053** will command the lot.

Manteit provided a site plan in the **Notice of Appeal 19/11/24 –**

Council solicitor thought you had to be an expert to work out if 35.053 could support a pad of 35.798.

Civil Works has supplied a **site plan stating** –

Lawful point of dicharge at kerb	35.053
Lawful point of discharge on site	35.125
- FSL front of pad	35.798
- FSL rear of pad	35.946
AEP 1% fall from rear of pad to front of pad	.200

All rainfall will fall 1% to the front the back of the pad to the front of the pad. This is standard practice for subdivisions to finish off prior to plan sealing.

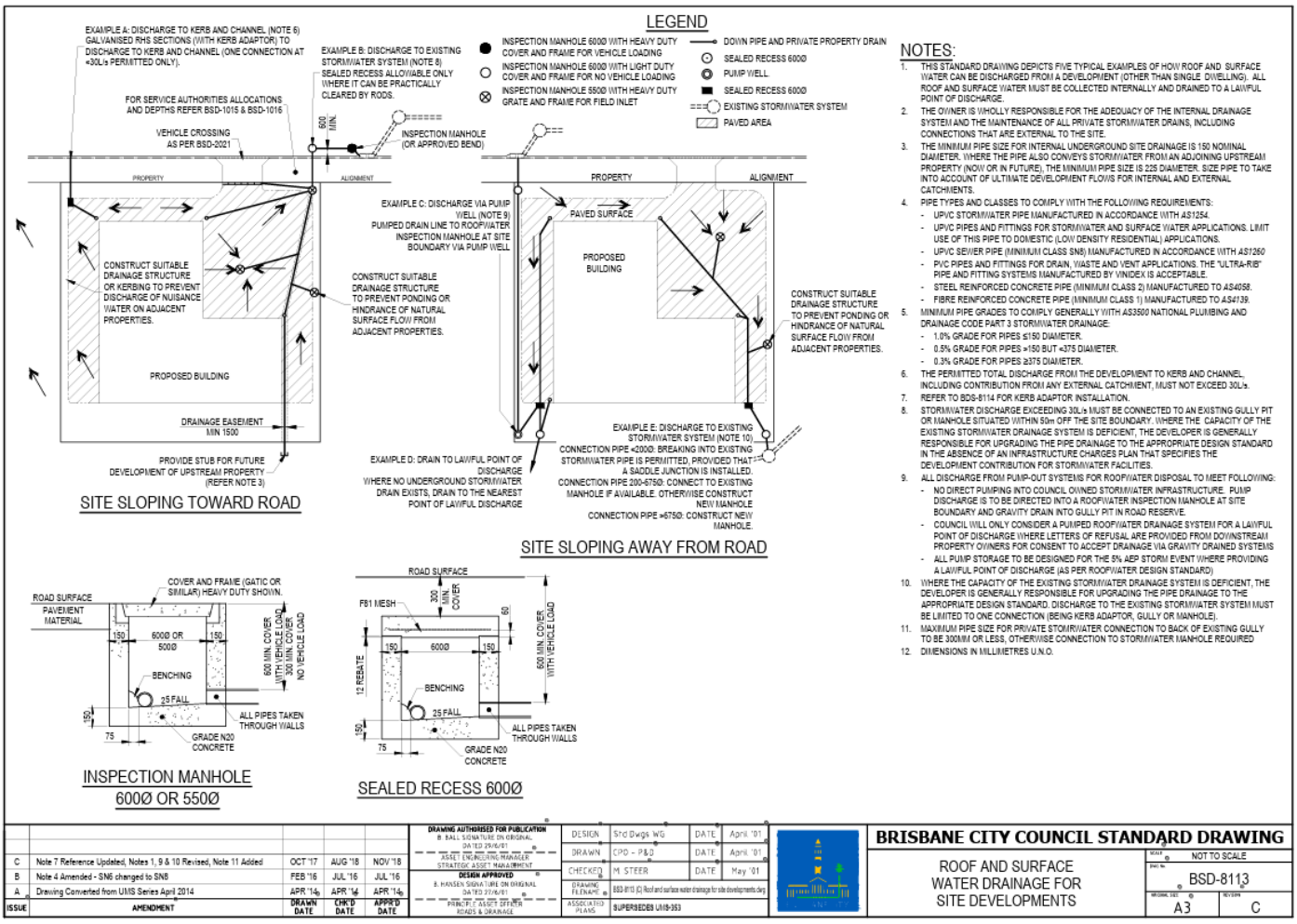
- to leave no water ponding in the future on the earth (grass to be replanted as well)

There is not proposed nor any requirements to fill the site, only cut. Civil Works plan may show some minor fill, but this is only due to computer modelling and this does not modelling does not allow for

- fall away from the future house, generally, to guarantee house not flooding.

- pathway ground to be100mm below pad ground, as pathways ned to be 75mm below house slab, minimum

- Existing and future retaining wall is TOW AHD 36.4. Therefore the retaining wall is 400mm above FGL, and will support the pad.



55. Downpipes of 90mm to SN6 grade sewerage pipes placed in ground. Field gullies suitably located to concentrate any flows of the roof rainwater to these stormwater Pipes,

56. It appears that Corrigan, in his 40 years experience is not aware of BSD 8113, roof drainage.

57. The stormwater pipes are then connected to the stormwater pit on site and lawful point of discharge which is the kerb in the street,

It is an absurd idea to have a house LPD around the side of a house when the kerb is much lower. 35.053 is available.

BSD 8111 is grade three mathematics and Council Development Services team have demonstrated incompetence in my view by the sloppy and conflicting stated requirements. Council's calculations, if any, demonstrate a charged stormwater line.

10. My calculations of usable site ESL's, FSL's and IL's are -

Notice of appeal

Lawful point of discharge at kerb, 500mm from boundary.	35.100	
Fall over boundary 1:100	.038	
Min IL at front boundary	35.138	
Pipe minimum as per BSD 8111	.150	
Minimum Cover as per BSD 8111	.450	
Min FSL required at front boundary		35.738
ESL at front boundary as per surveyor	35.859	
Fall pipe 150mm 1:100 over 6 metres from boundary,	.060	
Minimum FSL at 6 metre setback= start of usable pad		35.798
Adopted usable pad FSL at front of usable pad		**35.798**
Fall pipe 150mm 1: 100 over 14.8 metres		.148
usable pad FSL at rear		35.946
Adopted usable pad FSL at rear		**35.946**

3.7. In my opinion, the proposed development triggers the need for piped stormwater infrastructure within the subject site that will manage flows in accordance with the planning scheme. Hence, in my opinion, as is the usual practice, the Applicant should provide the necessary design with sufficient details to demonstrate a satisfactory solution.

58. Manteit has no obligation to provide a solution. The Application was argued honestly and transparently that there was no solution.

Joel Wake never issued the information request drawn up by him on 21/8/25.

Dedicated to a better Brisbane

Brisbane City Council ABN 72 002 765 795

City Planning & Sustainability
Development Services
Brisbane Square, 266 George Street, Brisbane Qld 4000
GPO Box 1434 Brisbane QLD 4001
T 07 3403 8888
www.brisbane.qld.gov.au

21 August 2024

Mr David Manteit
C/- David Manteit
128 Ashridge Road
DARRA QLD 4076

Application Reference: A006565555
Address of Site: 128 ASHRIDGE RD DARRA QLD 4076

Dear David,

RE: Information request under the *Planning Act 2016*

Council has carried out an initial review of the above application and has identified that further information is required to fully assess the proposal.

Stormwater discharge

1. The development proposes to discharge a portion of the stormwater to the rear of proposed Lot 2 and further states that upslope connections for several lots fronting Killarney Avenue are not required. Limited information or plans have been provided to demonstrate that this will not worsen flood nuisance to the proposed lots and adjoining properties in accordance with the requirements of the Stormwater code.
   a. Provide a Site Based Stormwater Management Plan prepared by a Registered professional Engineer of Queensland (RPEQ) demonstrating how all lots achieve a lawful point of discharge.
   b. Provide a concept earthworks plan demonstrating why it is not possible to provide an upslope connection to Lots 97, 98 and 99 on RP 29723.

Street tree

2. The proposed shared access appears to impact an existing street tree, however this has not been shown on the proposed plans.
   a. Provide amended plans showing the location of existing street trees in relation to the proposed crossover.

Urban Utilities (UU)

Council does not undertake water and sewer assessment of any planning applications. Contact UU on (07) 3432 2200 to discuss any water and sewer issues and whether you are required to submit an application to UU for assessment.

.../2

Responding to this request

Your response should include a summary table which outlines any changes to performance outcomes and plans that have resulted from addressing the issues outlined above. The table should also include details of any supporting documentation.

If a response is not provided within the prescribed response period of three (3) months assessment of the application will continue from the day after the day on which the response period would have otherwise ended.

Email your response to DSPlanningSupport@brisbane.qld.gov.au quoting the application reference number A006565555.

Please phone me on telephone number below during normal business hours if you have any queries regarding this matter.

Yours sincerely

Sch. 4(4)(6) / Sch. 4(3)(3)

Joel Wake
Senior Urban Planner
Planning Services South
Phone: (07) 3178 7467
Email: joel.wake@brisbane.qld.gov.au
Development Services
Brisbane City Council

DART Work Request Details Report

Work Request

Assigned To: RUHLAND, Scott From Date: 12 July 2024

Due Date: 26 July 2024 Completed: Y Actual Date: 24 July 2024
Request Type: Code
Advice Type: Engineering
Key Issues: ROL - 1 into 2

Work Request Outcome: Completed
Action Taken: Initial ENG assessment complete, RFI required.

Upstream Connection
1. The proposed plans do not show provision for a lawful point of discharge for the future development of upstream lots as well as existing development.

Provide amended plans that show:
i) An upstream connection to provide for the lawful point of discharge for the future development of upstream lots (Lots 97, 98 and 99 on RP 29723) and existing development in accordance with PO11 of the Stormwater Code and Chapter 7 of the ID PSP. These plans are to be RPEQ certified.
ii) Easements are required over the above drainage in accordance with PO3 of the Stormwater Code and Section 7.1 of ID PSP

The proposed crossover may also clash with an existing street tree and may require street tree scrum advice.

If there are any Engineering questions regarding this application, please see me.
Cheers,
Scott.

4.1. The requirements for on-site drainage are set out in PO2, PO3 and PO4 of 9.4.9 Stormwater Code of the Planning Scheme as follows.

PO2

Development ensures that the stormwater management system and site work does not adversely impact flooding or drainage characteristics of premises which are up slope, down slope or adjacent to the site.

Corrigan plan will cause flooding

PO3

Development ensures that the stormwater management system does not direct stormwater run-off through existing or proposed lots and property where it is likely to adversely affect the safety of, or cause nuisance to properties.

Corrigan plan will cause flooding

PO4

Development provides a stormwater management system which has sufficient capacity to safely convey run-off taking into account increased run-off from impervious surfaces and flooding in local catchments.

Corrigan plan will cause flooding

4.3.2.	There must be no change of stormwater discharge to an adjacent property which causes a nuisance. Lot 1 to the west is the adjacent property to be considered. The rear area of the proposed lot at the southwest corner which is a low point, must be considered.

59. Corrigan makes an alleged false statement.

There is no requirement to fill the rear of the lot.

There is no bulk earthworks required.

Small Lot Code provides that no building can occur within the setbacks, except allowed , such as a shade structure.

The rear lot setback of the Small Lot code for over 25 metres is 6m.

AO7
Development results in a minimum rear boundary setback that is:
a. 6m, where on a lot with an average depth of more than 25m; or
b. on a lot with an average depth of 25m or less:
i. 3m, for a part of a building or structure up to 4.5m high;
ii. 4.5m, for a part of a building or structure over 4.5m high.
c. located within an approved building envelope for the site to the extent of any inconsistency with (a) or (b).
Editor's note—For the purposes of determining compliance with AO7 reference is to be made to section 1.7.6.

60 Corrigan allegedly demonstrates

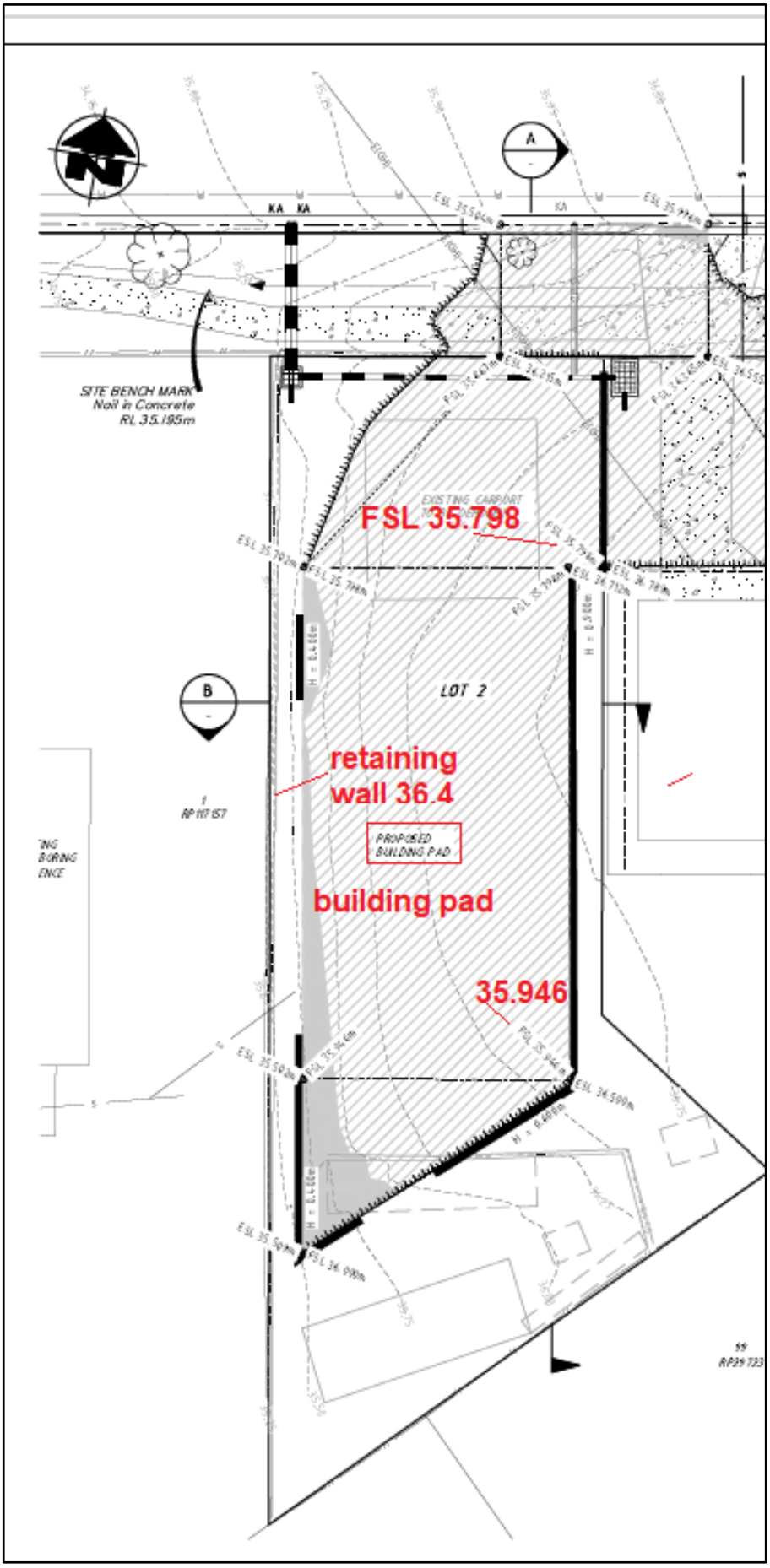
- zero knowledge of the Small Lot Code

- zero knowledge of Council assessment procedures

4.7.2.	The earthworks and building for the development on the subject lot must not concentrate or increase the existing stormwater discharge into Lot 1 RP117157. The discharge that is affected by the construction of the new dwelling, should be formally conveyed and not merely left to discharge into Lot 1 RP117157.

61. Corrigan false statement “the construction of the new dwelling, again and again and again.”

Again, can anyone train Corrigan about Council assessment produres, the AEP of the building pad and condition 17.



Civil Works site plan, which is similar to David Manteit site plan 19/11/24

S 12,17,18 - "The site must be filled……. to enable lawful point of discharge for Ashridge Rd Lots

…… and.. upslope properties…."

The Ashridge Rd blocks will be serviced by the kerb and channel of IL 35.1 without a teaspoon of fill required, contrary to requests in Council conditions S12, S17, S18.

The invert level of the kerb, which should be 500mm from the right boundary as per BSD 8113 is proposed IL 35.1.(Note Council sham plan of 4.9m and 4m). The surface level of the kerb above the lawful point of discharge is ESL 35.250. This lawful point of discharge of IL 35.1 commands the Ashridge Rd lots .

There is sufficient fall on the blocks for stormwater collection from the usable pad to the to the lawful point of discharge at kerb of IL 35.1 without any fill required.

Areas serviced by the lawful point of discharge -

- The proposed usable building pad

- The Small Lot Code building area

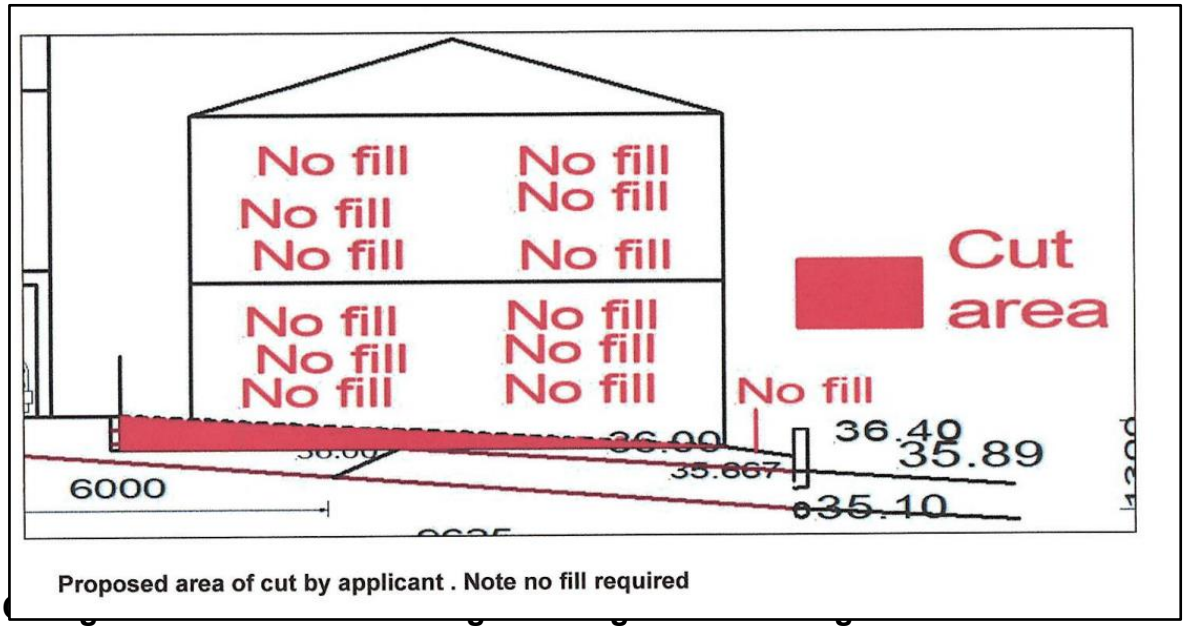
BSD 8111 is grade three mathematics and Council Development Services team have failed to demonstrate in any way how their system as in red line on plsn achieves lawful point of discharge for the Ashridge Rd lots.

The appellant's calculations of usable building pad levels and lawful point of discharge are as follows -

Lawful point of discharge at kerb, 500mm from boundary	35.100	
Fall over verge 1:100 as per BSD 8111	.038	
Min IL at front boundary	35.138	
Pipe diameter as per BSD 8111	.150	
Minimum Cover as per BSD 8111	.450	
Min FSL required at front boundary		35.738
ESL at front boundary as per surveyor	35.859	
Fall pipe 150mm 1:100 over 6 metres from boundary,	.060	
Minimum FSL at 6 metre setback= start of usable pad		35.798

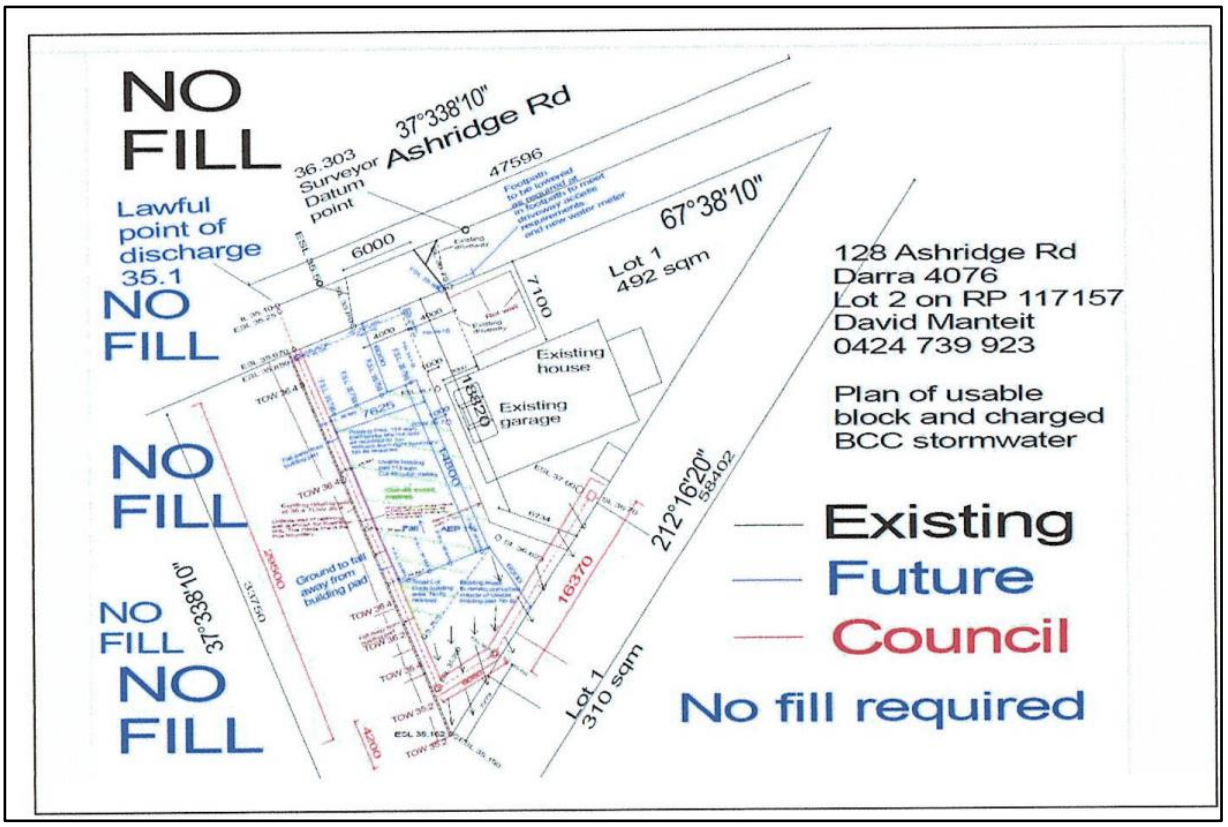
				(driveway crossover)
2	Affidavit by Applicant	49 Cover page plus 48 pages	19Nov24	Commentary by Applicant on the Lawful Point of Discharge and issues of provision of stormwater infrastructure. Page 12 includes a design of the pad for the proposed dwelling with levels and arrows denoting stormwater runoff. Page 27 depicts existing ground contours. This diagram is a portion of the survey plan included above in paragraph 4.5.

62. Corrigan acknowledges siting Manteit proposed building pad, lodged 19/11/24.



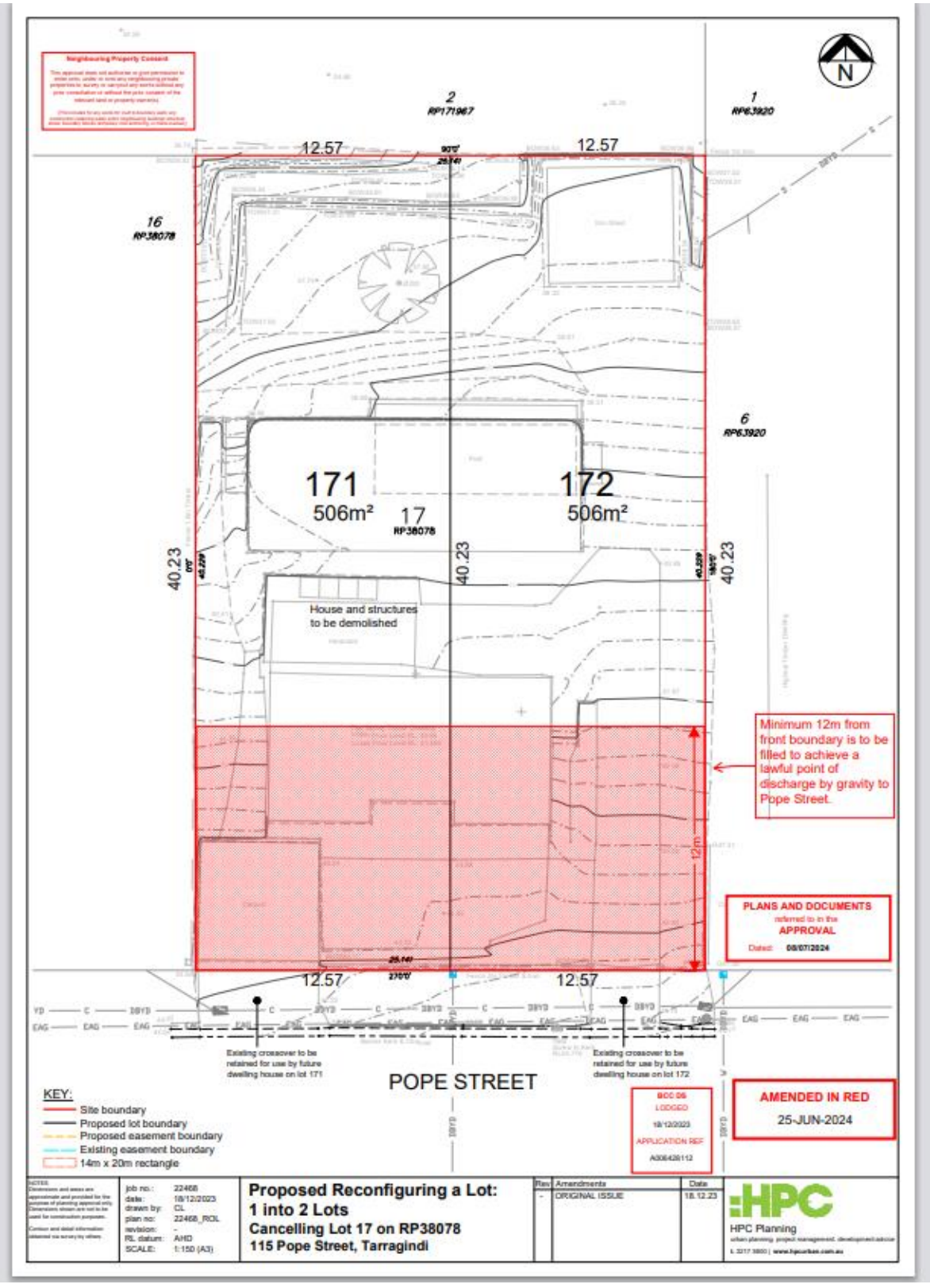
Proposed area of cut by applicant . Note no fill required

63.



64. Corrigan is aware of the proposed lot levels.

A full A3 copy of this plan was handed to Council at the ADR conference 19/11/24.



65. 14 Pope St Tarragindi – 14m setback

This site is example where Council employee decided that a 14 setback is the standard for a usable pad, falling down from the street.

Scenario 5 - Service Lots 98, 99 BSD 8111 pipe 600mm from boundary at all times.
More conservative 1% fall, 300 cover, take out sham triangle,
Note pit 2 disappears but is included in calculations.
Calculations done taking out sham triangle. 300 pipe, 1% fall, 600 cover,
Based on fully developed 4 houses = 60 litres/second 300 pipe. 83 litres/second
100*75 RHS pipes across verge.

Pit	1	2	3	4	5	Cross check
Pipe Length		16.370	7.279	33.750	3.750	3.750
(A) SL used for Pit	37.000	35.750				
Fall of natural ground - rear beighbour or Ashridge Rd	Rear neighbour	Rear neighbour				
(A) SL at neighbour boundary (1.2) or 600 mm in, 3,4,5	36.700	35.650	35.162	35.859	35.250	
New start of line invert level brought forward		35.800	34.750	34.262	33.925	
(B) Min depth - pipe 300 and and cover 600	0.900					
(C) Min Invert level depth	35.800					35.800
Min .5% fall, 1% over verge		0.164	0.073	0.338	0.038	-0.611
(D) Invert level end of line.with fall,		35.636	34.677	33.925	33.888	
(E) Prima facie depth (needs to be + .825. + .15 (kerb)		0.014	0.485	1.935	1.363	
Distance the pipe needs to be lowered by for min cover		0.886	0.415			-1.302
Adopted pit Min invert level 225 pipe and cover 600		34.750	34.262	33.925	33.888	33.887 ✓
Invert level at kerb					35.100	
BCC charged system malfunction in metres		34.750			-1.212	

BSD 8111 Build red line taking out triangle with 300 pipe, 600 cover, fall 1% on property, 1% on verge. To be more conservative.

5.11. I defer to the opinion of Mr Ryan that no further operational works permit will be required for the Applicant to install a stormwater solution required by the conditions of development approval. In my experience, the further approval that will be needed is a building permit from a private certifier. There is no later opportunity for Council to review detailed design of the stormwater system. Hence, in my experience, an appropriately detailed stormwater master plan is submitted at the DA stage which has sufficient design detail to demonstrate compliance of the stormwater drainage for the proposed development. At the time of the later assessment, the private certifier will check compliance of plans for the building permit with the scope of stormwater defined in the DA.

66. Corrigan thinks a private certifier will check stormwater. That is a false statement.

67. Corrigan demonstrates time and time again, he has allegedly has no knowledge of Council's assessment processes..

6.6.3. Drainage to the southwestern corner area of the subject lot (to the rear of the proposed new dwelling). This area is a low point and the proposed new dwelling on the subject lot will cause concentration of stormwater at this location. Unless captured and conveyed, this stormwater will cause concentration of flow onto Lot 1 RP117157.

Can someone please straighten Corrigan out ?

> 8.2. An approved DA is then on the record and can be addressed at the time of detailed design as part of the building works permit. An approved DA is placed on the file for the subject property and is accessible to a future developer of the upstream lots.

68. The approved DA is on the record for maybe 10 years. But there is no guarantee that DA will still be there when required.

69. A DA is a development application, not a master plan.

70. Am upstream owner may find there is a stormwater pipe on record. But the upstream owner will not know what the litres per second limit that owner is to design to, when there is a combined stormwater drain.

71. There is danger to Manteit in that if a pipe is built as a 225mm pipe, then the owner would think that they have the right to connect 30 litres per second and not say 10 litres per second.

> b. Worst case upstream development assumed to be two townhouses per lot, each 180m2, the townhouse towards Killarney Ave to discharge to Killarney Ave, the rear townhouse to discharge towards the subject lot.

72. Corrigan wants a “townhouse” roofwater to climb up hill by around 2 metres to the kerb, No fill mentioned.

Corrigan refuses to say what method the font dwelling will use to obtain lawful point of discharge.

72. There is no house in Killarney St that has a kerb adaptor, on that side of the street.

Fallacy of a future house.

74. Corrigan is mistaken. The subdivision plan will be sealed without a house. There is no requirement for a house in the DA.

75. Evidence that Corrigan allegedly has no expertise in Subdivisions, nor Town Planning, or Council assessment procedures,

> 4.7.2. The earthworks and building for the development on the subject lot must not concentrate or increase the existing stormwater discharge into Lot 1 RP117157. The discharge that is affected by the construction of the new dwelling, should be formally conveyed and not merely left to discharge into Lot 1 RP117157.

Upstream pipes calculation checks

76 Corrigan RPEQ certified hydraulic systems are charged in my opinion as follows:

Corrigan system around 75 litres per second - check

	Stub 97	Stub 98	Stub 99	Pit 4	Pit 5	Pit 6	Kerb	Cross check	
FSL	37.300	37.000	36.000	36.000	35.798	35.500	35.300		
Pipe Length		20000	20000	6000	11000	12000	6000	75000	mm
New start of line invert level brought forward		36.625	36.325	35.250	35.220	35.048	34.750	36.625	m
Min .5% fall,1% over verge		0.100	0.100	0.030	0.055	0.060	0.060	**-0.405**	m
Invert level end of line.	36.625	36.525	36.225	35.220	35.165	34.988	34.690		m
Prima facie depth (needs to be min 675)	0.675	0.475	-0.225	0.780	0.633	0.512	0.610		m
Pipe needs to be lowered by to make it work.		0.200	0.975	0.000	0.117	0.238		**-1.530**	m
Adopted pit level		36.325	35.250	35.220	35.048	34.750	34.690	34.690	m
Lawful point of discharge							35.053		
Corrigan charged system malfunction in metres							-0.363		m

Corrigan option 1, corrected by Manteit.

This is Manteit's calculations.

77. All figures have 3 decimal places, unlike Corrigan, which can have one, two or three decimal places. All surface levels crosscheck to the Civil Works site plan.

78. The plan maintains exactly .5% gradient. So Manteit pipe not falling down due to gradient greater than .5%.

79. The result is that the RPEQ Corrigan certified Upstream hydraulic system is charged by 363 mm to the kerb 35.053

80. RPEQ Corrigan wants to send water uphill from pit This is a charged pipe that is called a flood.

Corrigan proposes to flood the site, in the same way as the Council employee illegal red line with no RPEQ certification. Who would have thought another flooded pipe would be seen.

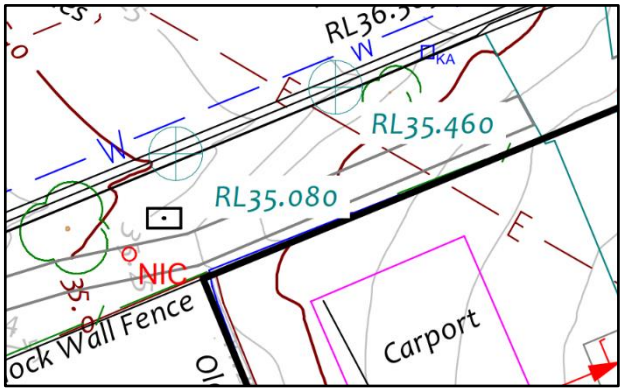
81. RPEQ Corrigan wants to raise the land at pit 6 by 385 mm.

82. There is no requirement by Manteit to change the levels of the land. Corrigan proposed to flood the site, with a charged pipe, in the same way as the original illegal red line with no RPEQ certification. Who would have thought another flooded pipe. This time by an RPEQ, certified.

Corrigan system 2

	Stub 97	Stub 98	Stub 99	Pit 4	Pit 5	Pit 6	Kerb	Cross check	
FSL	37.300	37.000	36.000	36.000	35.798	35.500	35.300		
Pipe Length		20000	20000	6000	11000	8000	8000	73000	mm
New start of line invert level brought forward		36.625	36.325	35.250	35.220	35.048	34.750	36.625	m
Min .5% fall,1% over verge		0.100	0.100	0.030	0.055	0.040	0.080	**-0.405**	m
Invert level end of line.	36.625	36.525	36.225	35.220	35.165	35.008	34.670		m
Prima facie depth (needs to be min 675)	0.675	0.475	-0.225	0.780	0.633	0.492	0.630		m
Pipe needs to be lowered by to make it work.		0.200	0.975	0.000	0.117	0.258	0.000	**-1.550**	m
Adopted pit level		36.325	35.250	35.220	35.048	34.750	34.670	34.670	m
Lawful point of discharge							35.460		
Corrigan charged system malfunction in metres							**-0.790**		m

Corrigan option 2 , corrected by Manteit



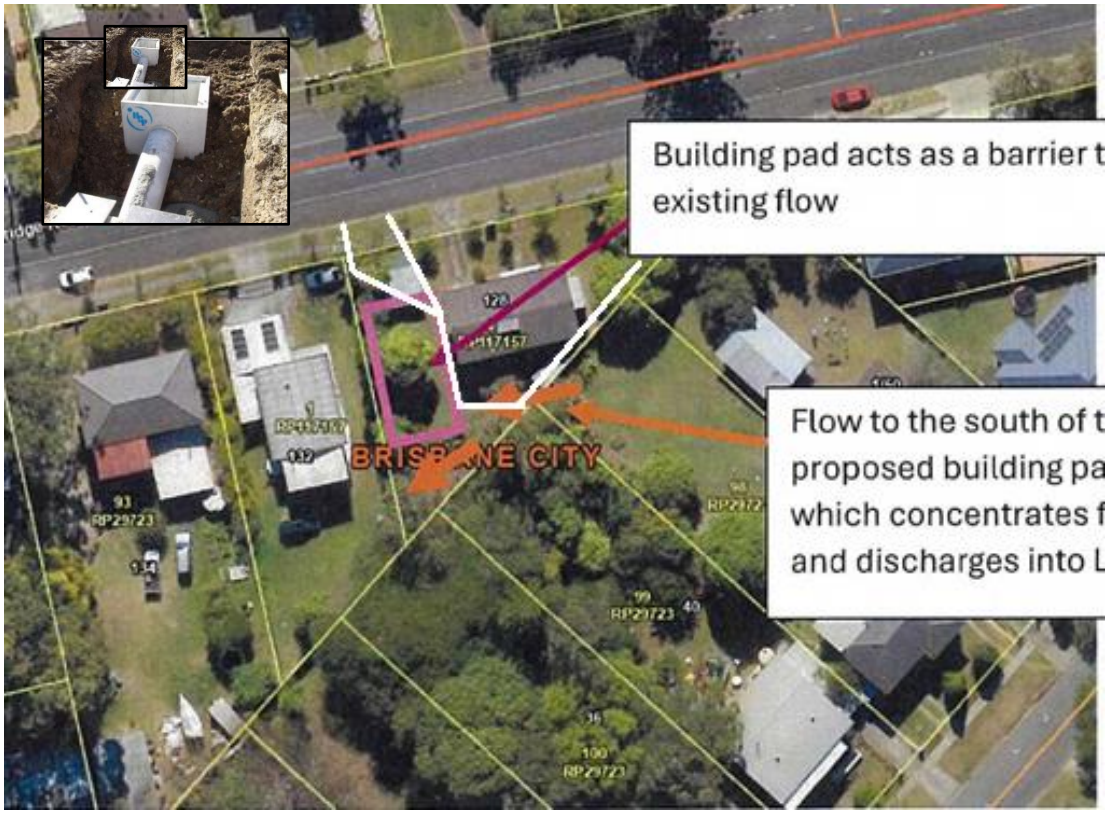
Updated survey plan showing spot survey 35.460 for Council

Conflict of location of Upstream Pipes

83 Corrigan plan to cause the demolition of the existing house.

84. Pipe between Lot 97 and Lot 98 will travel within 700mm of back fire escape steps. Hence part of the house would need to be demolished.

85. In addition, It is not possible to place a concrete pit 600mm to centre, and have sufficient drainage gravel.



86. Corrigan thinks building pad is a barrier, but there is no building required.

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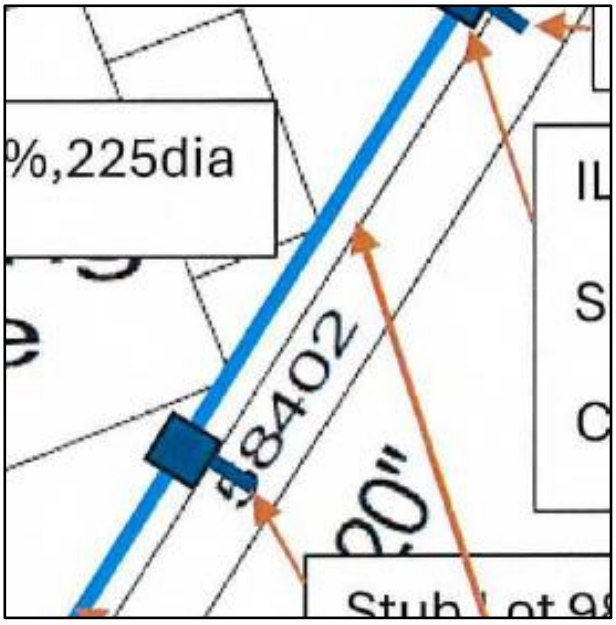


87. Corrigan system requires demolition of the existing house.

Corrigan udermining of the rear retaining wall.

88. The stormwater pipe would undermine both the rear retaining wall and the steps footings.

89. Corrigan stormwater pipes traverse under the proposed new house slab.

Corrigan has proposed location of the Upstream pipes crossing under the House Pad is absurd. The new house may be built to 3 metres from the boundary, with Council consent.

In addition, a carport will be built.

90. Upstream pipe would conflict with the future and current house rainwater pipes, 150 cover, 450 depth, connecting to the proper lawful point of discharge.

91. Would need a concrete manhole 900mm wide to cater for the depth of the pipe between the house and the Boundary fence.

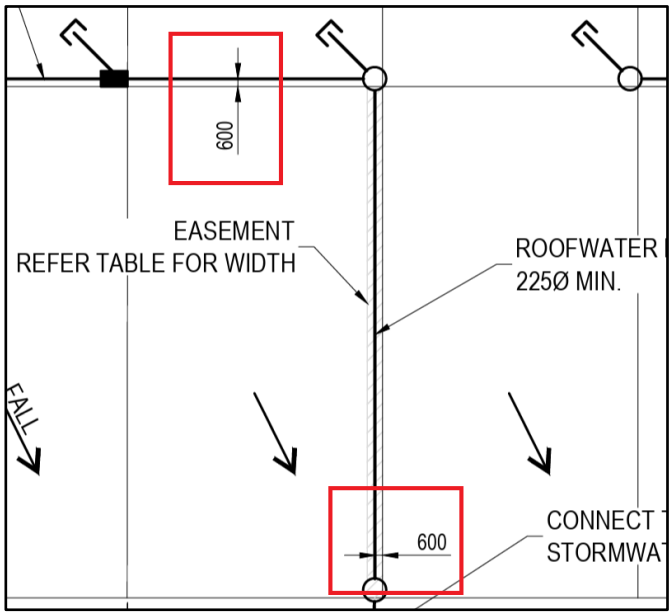
92. BSD 8111 requires that the stormwater pipe is to be 600mm away from the boundary.

93. It has been uphelf by the Planning Court, 4139/18 a Council red pen shown an upstream pipe did not show a pipe outside 600mm from the boundary.

94 This Council drawn red line plan has been upheld by Council 3 times last year, 68 Molonga Tce Graceville, as the source document. The notation of the plan was “BSD 8111”. There was no sham triangle.

95. Every time Manteit drives in or out of the driveway, he will need to call Council to get consent to cross the easement.

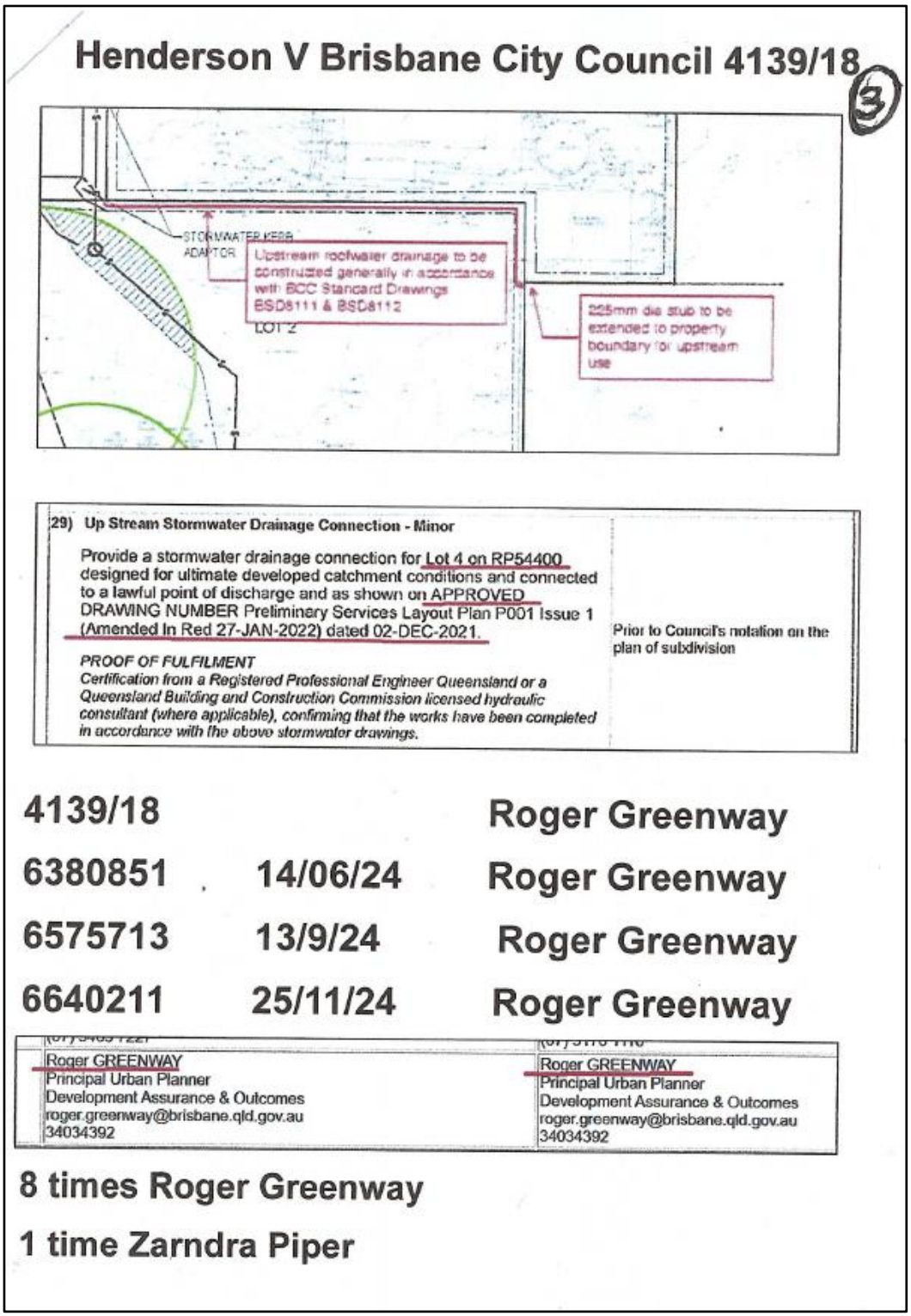
96. Corrigan plan is unlawful with BSD 8111



97. It is unlawful to place an Upstream pipe more than 600mm away from the boundary.

98. 4139/18 Planning and Environment Court Henderson V Brisbane City Council

Other Upstream approvals last year also, show no diversion from the 600mm away



99. Henderson V Brisbane City Council 4139/18

from the boundary.

21 Gabwina St Fig Tree Pocket.

The only exceptions to stormwater pipe over 600mm from the boundary have been in the case where the owner has provided consent.

Manteit does not give consent.
100. It is proposed by Manteit to build a 6000*6000 carport to boundary. It is usual for the Council site variation team to approve these structures. I have personally arrange for around 200 of these carports to be approved and built, in my job as a design consultant 10 years ago.

No services can get past the Upstream pipe due to –

The Upstream pipe requires an easement to be placed over the pipes.

Easement will not allow any other services to traverse the pipe. Council employees refuse to provide the easement document.

Services

(b) Water supply
(c) Phone/NBN
(d) Electrical
(e) Driveway
(f) Carport
(g) front retaining wall.

Zone of influence

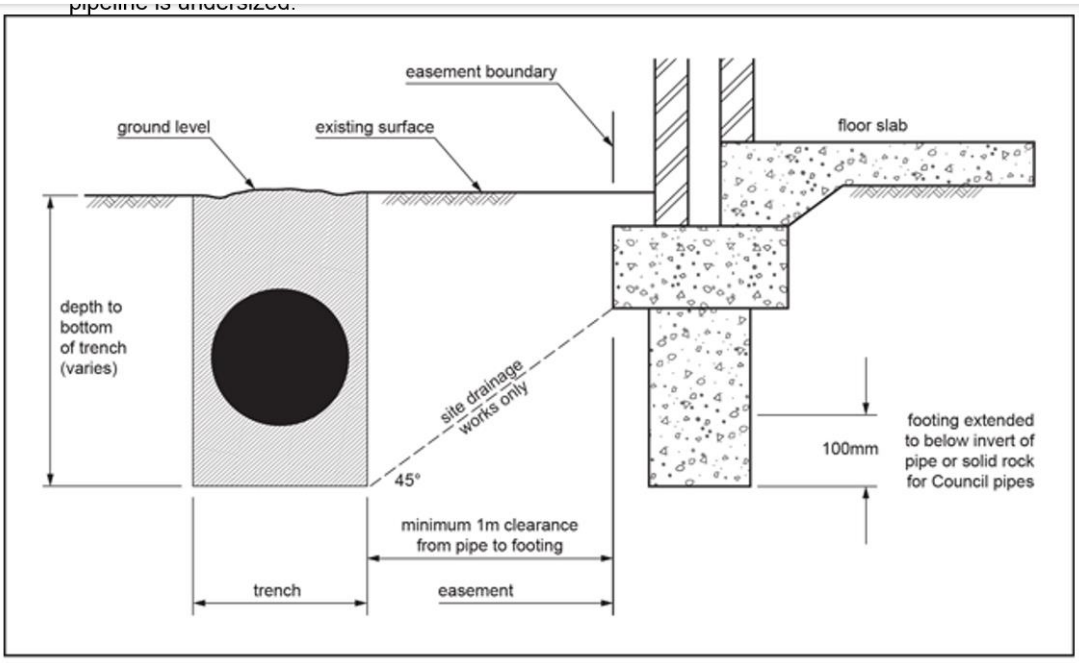
101. The existing structures have priority, not the water pipe.

The stormwater pipes are within the zone of influence of

The existing house

The retaining wall and drainage, and fence.

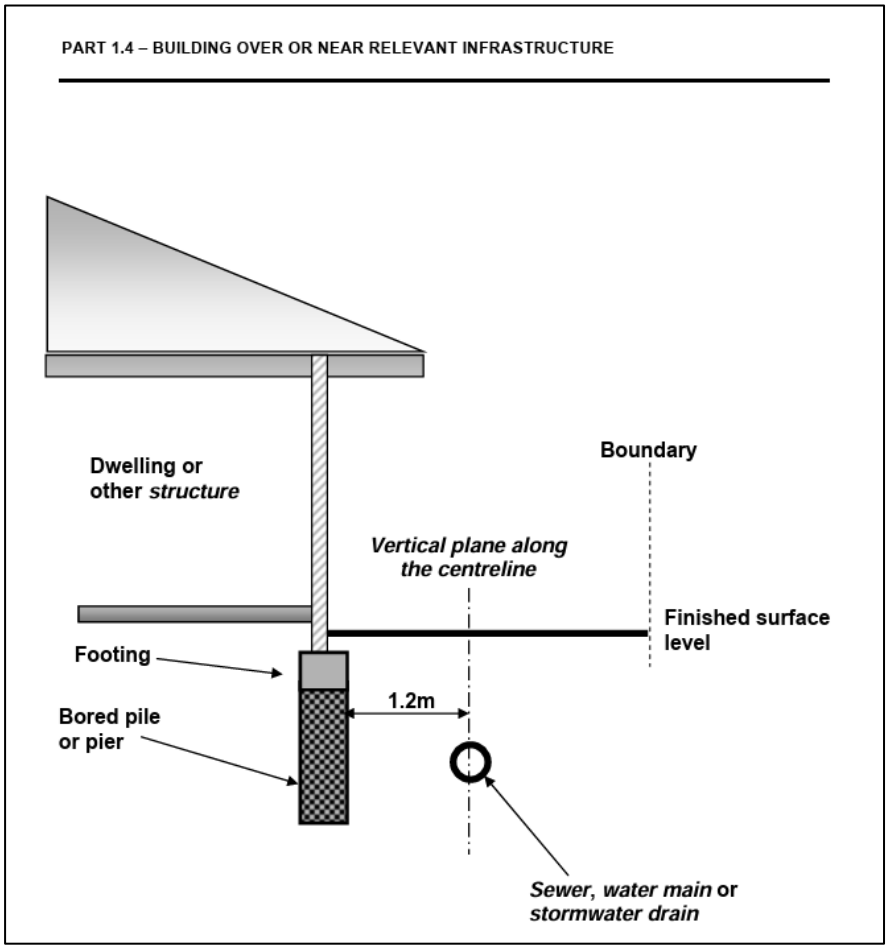
pipeline is undersized.



7.4.7 Building near or over underground stormwater infrastructure

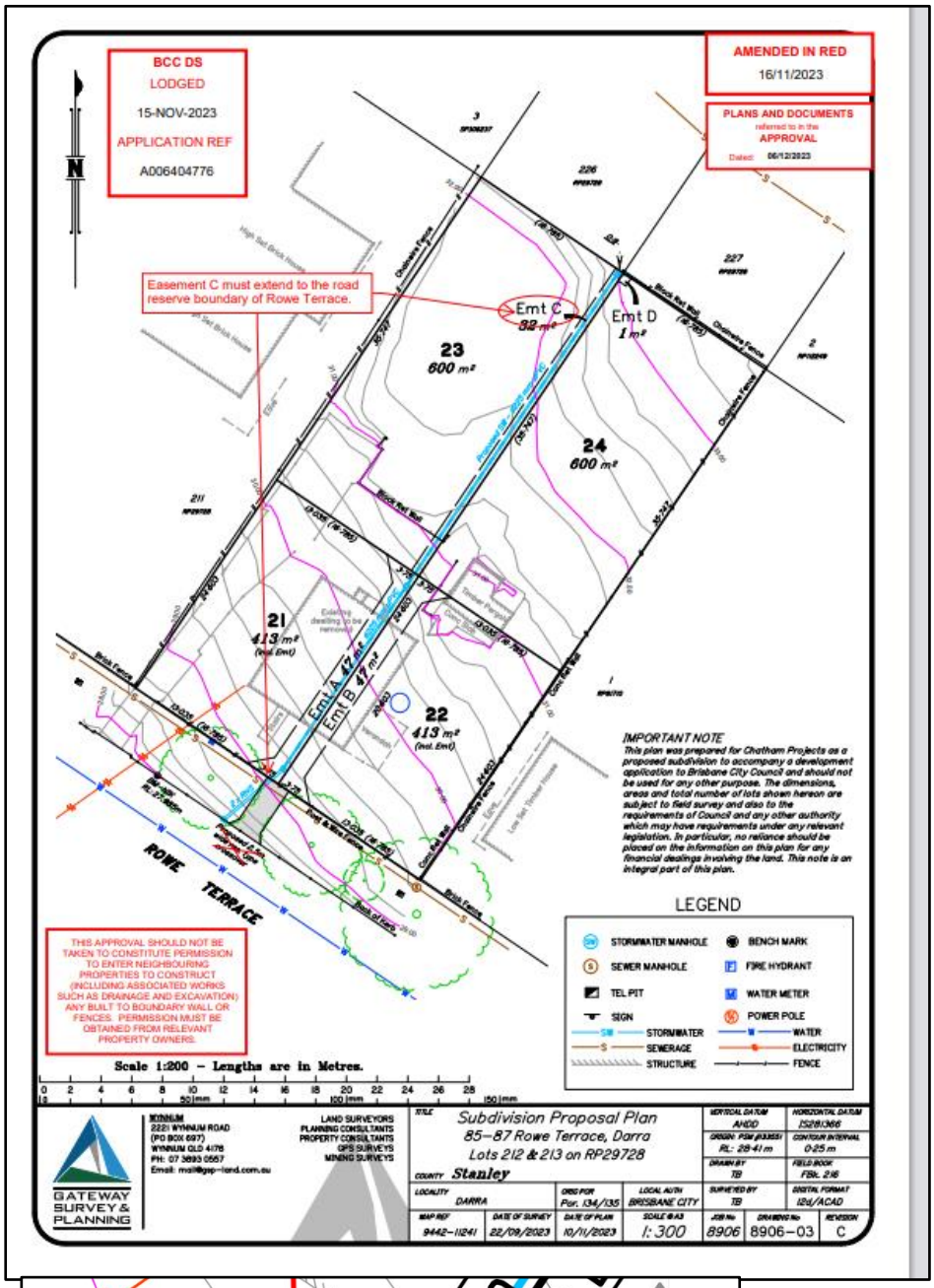
1. For underground stormwater facilities with or without drainage easements and where pipes or conduits are greater than or equal to 225mm in diameter or width, building over/near stormwater requirements will be applicable if the site is subject to any 1 or more of the following conditions:
   a. any proposed works contravening the drainage easement terms;
   b. any earthworks (filling or excavation) proposed directly over or adjacent to the stormwater drainage or maintenance holes that will result in changes to surface levels or loading conditions over these stormwater facilities;
   c. any building work proposed over the stormwater drainage or maintenance holes;
   d. any proposed works that will affect the structural integrity of the drainage or its trench;
   e. proposed changes to the loading conditions on an existing maintenance hole cover, for example, changing the use of a non-vehicular trafficable area to a vehicular trafficable area;
   f. proposed use of rock bolts or ground anchors within 2m of the stormwater drainage;
   g. proposed property access width of less than 2m from the front entrance or access road to any maintenance hole or property connection located on site;
   h. proposed driveways or concrete pavements over maintenance holes or property connections;
   i. clashing of services or utilities (other than sewers) with the stormwater drain line that may affect the structural integrity of the stormwater drainline or its trench, or sewers larger than 150mm diameter crossing any stormwater drainline.
2. When building over stormwater an adequate buffer zone is required between the edge of foundation system and the edge of the stormwater infrastructure to minimise structural damage during excavation, boring or piling operations.
3. The following minimum horizontal clearances are required where undertaking such works near stormwater infrastructure and may need to be increased if it is anticipated that the pipe bedding will be affected:
   a. 1m clearance applies to an excavated footing system such as beams and pad footings excavated by backhoe or similar;
   b. 1m clearance applies to bored piers;
   c. 6m clearance applies to driven, vibrated or jacked piles.

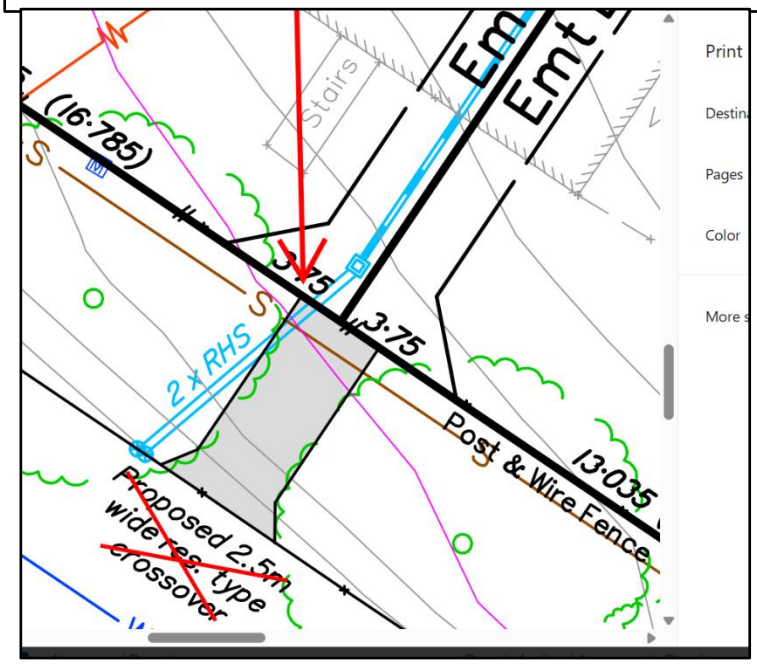
Above S 7.4.7 Easement



102. Other sites do not place Upstream pipes in the front yard, only Corrigan.

A site, 85 Rowe Tce Darra, 60 metres across the road from myself, there has been bulit an Upstream pipe sandwiched between to proposed lots. The pipe extends to the front boundary before it diverts to 300mm from the left side of the driveway.





85 Rowe Tce Darra approved plan – Upstream stormwater kerb

Corrigan's calculations

Stormwater design assumptions

a. Level II drainage as per QUDM Section 7.13.2, namely pipe system to convey the greater of 5% AEP (1/20) roof discharge or 39% AEP (1/2) discharge of the roof plus allotment.
b. Worst case upstream development assumed to be two townhouses per lot, each 180m2, the townhouse towards Killarney Ave to discharge to Killarney Ave, the rear townhouse to discharge towards the subject lot.
c. Discharge from upstream lot to be the worst of 5% AEP 180m2 roof or 39% AEP of 180m2 roof plus 440m2 of allotment (namely the portion of the allotment from the rear of the Killarney townhouse to the rear of the lot, 620m2 less the townhouse itself)
d. Coefficient of discharge f_i=0.7 (worst case = town house development upstream), as per QUDM Section 4.5
e. Time of Concentration 5 minutes (as per QUDM Section 4.6.2)
f. Rainfall intensity 248mm/hr (5% AEP) or 151mm/hr (39% AEP) – from BCC City Plan 2014 Schedule 6 PSP – Infrastructure Design, Chapter 7 Stormwater Drainage, Table &.2.2.2.A
g. Minimum pipe size 225mm (Table 7.2.3A)
h. Roof drainage detention systems adopted as per QUDM Table 7.13.6, for first option in Attachment D (to limit discharge to the kerb to below 30 L/s in accordance with,

103. Corrigan wants to design as per Level II instead of Level III.

Wrong

104. Corrigan's worst case scenario is two townhouses per lot.

Wrong

105. One townhouse will discharge to Killarney Ave.

Wrong

9.4.	In the absence of analysis of upstream catchments by the Applicant, I devised indicative catchments for the subject lot and upstream lots as set out in paragraph 8.6 above. I considered potential upstream development and adopted the town planning report of Keiran Ryan of Reel Planning at sections 5.9 – 5.11.
9.5.	The existing lots upstream have a size of 1,012m2 and it is likely that a rear lot is created with a townhouse located on the new lot. Hence, a development upstream would consist of each existing lot (relevantly Lots 97,98 and 99) containing two townhouses or the existing house plus a townhouse.

106. Corrigan – *"I considered potential upstream development and adpoted the town planning report of Keiran Ryan of Reel Planning at sections 5.9 - 5.11"*

That fact is that there is no evidence that Corrigan adopted anything whatsover from Ryan report.

Corrigan thinks that all front lots are 440 sqm. (Even if the dividing fence is put through the lounge room.

Corrigan thinks all rear lots are 620 sqm

Corrigan thinks all rear lots are 1,060 sqm.

Corrigan insists on Level II drainage, not Level III

Manteit advises that Level II drainage is not the correct level. Level III is the correct level, as per Chapter 7. S7.2.2.3.B. **Nobody knows why.**

Table 7.2.2.3.B—Design standards for drainage systems

Development category	Design parameter	Minimum design standard	
		AEP	ARI (years)
Rural areas (typically 2–5 dwellings per hectare)	Minor drainage system Major drainage system	39% 2%	2 50
Residential developments (Low density residential)	Minor drainage system Major drainage system	39% 2%	2 50
	Roof water drainage	Level II QUDM	
Residential developments (Low–medium density to High density)	Minor drainage system Major drainage system	10% 2%	10 50
	Roof water drainage	Level III and Level IV QUDM	
Industrial uses	Minor drainage system Major drainage system	39% 2%	2 50
	Roof water and lot	Level IV QUDM	

Corrigan want to force two townhouses of 180 sqm on each rear lot.

107. *"Worst case scenario is two 180 sqm townhouses per (rear) lot".*

This is not the fully developed, as Per S7.6.5.

Corrigan is forcing the rear lots to have only two townhouses of 180 sqm each. There is no town planning basis for that.

Ryan states that Lot 2 is LMR3 and will be

5.15 The amount of additional stormwater to be generated by an additional dwelling house on proposed lot 2 will depend on the design on that dwelling. To assist I note that the Dwelling House (Small Lot) Code[10] sets a maximum site cover[11] of 60%[12] where the lot size is greater than 300m^2 but less than 400m^2. On this basis I think it is reasonable to assume that up to 186m^2 of roof area would result on proposed lot 2.

Ryan

[10] A dwelling house that complies with the acceptable outcomes of this code would not require an application to be lodged with Council

[11] The definition of site cover in City Plan is Site cover, of development, means the portion of the site, expressed as a percentage, that will be covered by a building or structure, measured to its outermost projection, after the development is carried out, other than a building or structure, or part of a building or structure, that is—

a. in a landscaped or open space area, including, for example, a gazebo or shade structure; or
b. a basement that is completely below ground level and used for car parking; or
c. the eaves of a building; or
d. a sun shade.

Ryan

5.10 In my opinion redevelopment of these properties is likely, having regard to their existing use, their size and the town planning context applicable to them under City Plan. Redevelopment may include (for example):

(a) Multiple Dwelling (noting that development up to 3 storeys is anticipated via code assessment)

(b) Reconfiguring a lot (noting that subdivision where resulting in lots 180m^2 or greater is anticipated via code assessment)

Above - Ryan

Corrigan refused to listen to Ryan, Town planner

Ryan stated that Reconfiguring a Lot in lots 180 sqm was one option.

Corrigan never mentions that in his report. Corrigan fails to follow QUDM advice.

1. Introduction

1.1 Use of this manual

QUDM

This Manual has been prepared for the purpose of assisting engineers and stormwater designers in the planning and design of urban drainage systems within Queensland. Reference to this document as a Manual should not infer that it is anything more than an engineering guideline.

The procedures outlined in the Manual aim to encourage uniformity in urban drainage design practices throughout Queensland. Designers are nevertheless responsible for conferring with relevant local authorities to determine local design requirements.

108. QUDM says that designers are responsible for conferring with relevant local authorities to determine local design requirements.

109. Corrigan has failed to refer to Brisbane City Council design requirements in relation to providing calculations for fully developed.

110. Corrigan refused the advice of Ryan to examine a subdivision of 180sqm each.

Table 4.5.1 – Fraction impervious vs. development category

Development category	Fraction impervious (f_i)
Central business district	1.00
Commercial, local business, neighbouring facilities, service industry, general industry, home industry	0.90
Significant paved areas e.g. roads and car parks	0.90
Urban residential – high density	0.70 to 0.90
Urban residential – low density (including roads)	0.45 to 0.85
Urban residential – low density (excluding roads)	0.40 to 0.75
Rural residential	0.10 to 0.20
Open space and parks etc.	0.00

Notes (Table 4.5.1):

1. Designer should determine the actual fraction impervious for each development. Local governments may specify default values.
2. Typically for urban residential high density developments:
   - townhouse type development $f_i = 0.7$
   - multi-unit dwellings > 20 dwellings per hectare $f_i = 0.85$
   - high-rise residential development $f_i = 0.9$
3. In urban residential low density areas f_i will vary depending upon road width, allotment size, house size and extent of paths, driveways etc.
4. Refer to Table 7.3.3 for the definition of development categories.

This for townhouses. Need 3, This is not C10 or C2 or C20

Corrigan thinks that fraction impervious is the Coefficient.

7.6.5 Provision of drainage for future upslope development of a neighbouring property

(1) Provision must be made for the future orderly development of adjacent properties with respect to stormwater drainage where at least part of those upslope properties would drain through the development, or the most feasible location for stormwater drainage infrastructure to service those properties is within the development.

(2) If a piped drainage connection is provided for up-slope development, the drainage infrastructure must fully extend to the boundary of the up-slope site to ensure that the up-slope property owner does not have to undertake works in the down-slope property to connect to this stormwater infrastructure.

(3) Where a pipe is used to facilitate an up-slope stormwater connection (now or in future) the minimum pipe size is 225mm nominal diameter for any development. This stormwater pipe must be connected to a lawful point of discharge.

(4) The development is to design any up-slope stormwater connection for fully developed catchment flows.

Corrigan refuses comply with Council laws to design for the fully developed catchment.

111. Six Corrigan townhouses is not Brisbane City Council laws

Corrigan already has the advice from Ryan that a 310 sqm lot of same zoning will be 186 site cover and roof.

Corrigan knew that Ryan said that site cover excludes eaves, gazebos and sunshade devices.

Ryan refuses to allow additional 100 sqm eaves, sunshades, gazebo for roofcover allowances.

Upstream Properties

5.9 The Respondent's Reasons state that the two lots identified as being upstream/upslope of the subject site are Lots 98 and 99 on RP29723 (40 and 48 Killarney Avenue, Darra). I note that the report of Mr Corrigan confirms this and also identifies that Lot 97 (50 Killarney Ave) is upstream. Lots 98 and 99 are each 1,012m^2 in area and Lot 97 is 1,176m^2 in area. Each of the sites share the town planning context of the subject site, as summarised in Table 2 and each contains a single dwelling house constructed near the road frontage, with the balance of the site largely vacant.

5.10 In my opinion redevelopment of these properties is likely, having regard to their existing use, their size and the town planning context applicable to them under City Plan. Redevelopment may include (for example):

(a) Multiple Dwelling (noting that development up to 3 storeys is anticipated via code assessment)

(b) Reconfiguring a lot (noting that subdivision where resulting in lots 180m^2 or greater is anticipated via code assessment)

5.11 The extent of impervious area that might occur on lots 97 to 99 will depend on the form of development (e.g. apartments versus townhouses versus conventional houses) which is presently unknown. For example, depending on the proposed design, the upstream catchment might be used as deep planting or landscaping (resulting in minimal additional stormwater) or be fully sealed (resulting in substantial additional stormwater). For this reason I would rely on the development engineer to determine the amount of additional stormwater that should be assumed.

5.12 In my opinion Condition 18 appropriately fulfils the planning purpose and requirement of the

Ryan 5.9 - 5.1

Ryan didn't mention "three" townhouses. Corrigan seemed to rely on his own town planning ability.

Multiple dwelling Editor's note—The use term is defined in the *Planning Regulation 2017* - Regulated Requirements	Multiple dwelling means a residential use of premises involving 3 or more dwellings, whether attached or detached.	Apartments, flats, units, townhouses, row housing, triplex	Rooming accommodation, dual occupancy, duplex, granny flat, residential care facility, retirement facility

Multiple dwelling is 3 or more dwellings, whether attached or detached.

102. Manteit calculation of roof areas based on fully developed.

Manteit proposed lawful subdivision plan

103. The most fully developed situation for lots 97, 98,100 is a subdivision of 10 lots. Below are 3 already approved and subdivided examples, 1012 sqm LMR2, each.

104. Manteit master subdivision plan

Lot 97 4 lots

350 sqm
350 sqm
238 sqm
238 sqm

Lot 98 3 lots

350 sqm
350 sqm
312 sqm

Lot 98 3 lots

350 sqm
350 sqm
312 sqm

AO8
Development results in a maximum site cover of:
a. 50% where the lot is 400m^2 or more; or
b. 60% where the lot is 300m^2 or more and less than 400m^2; or
c. 70% where the lot is 200m^2 or more and less than 300m^2; or
d. 80% where the lot is less than 200m^2.
Editor's note—For the purposes of determining compliance with AO8 reference is to be made to section 1.7.6.

Above - Small lot Code site cover

SITE COVER
ADMINISTRATIVE TERM

Site cover, of development, means the portion of the site, expressed as a percentage, that will be covered by a building or structure, measured to its outermost projection, after the development is carried out, other than a building or structure, or part of a building or structure, that is—
a. in a landscaped or open space area, including, for example, a gazebo or shade structure; or
b. a basement that is completely below ground level and used for car parking; or
c. the eaves of a building; or
d. a sun shade.

Patio cover

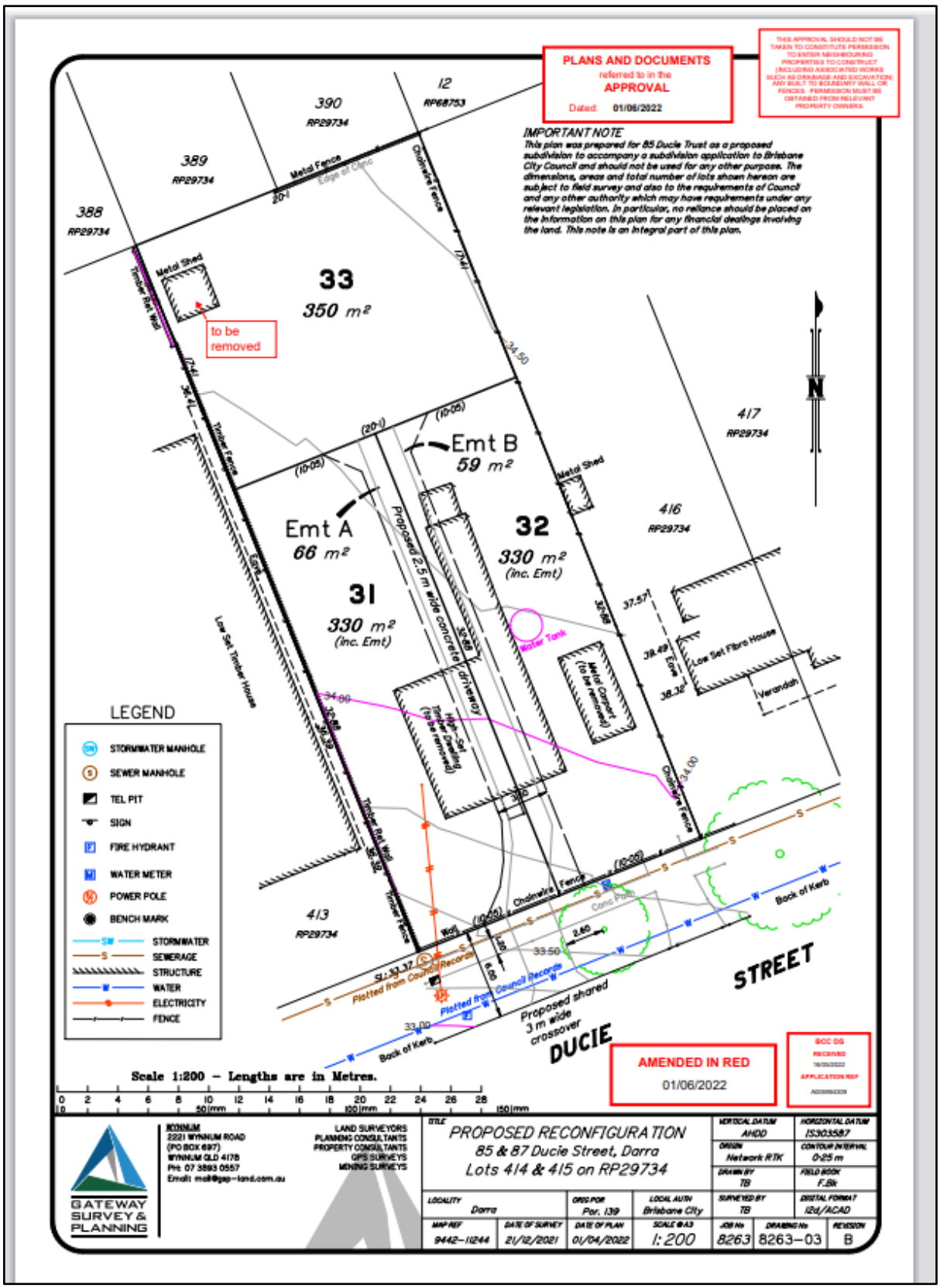
Patio cover

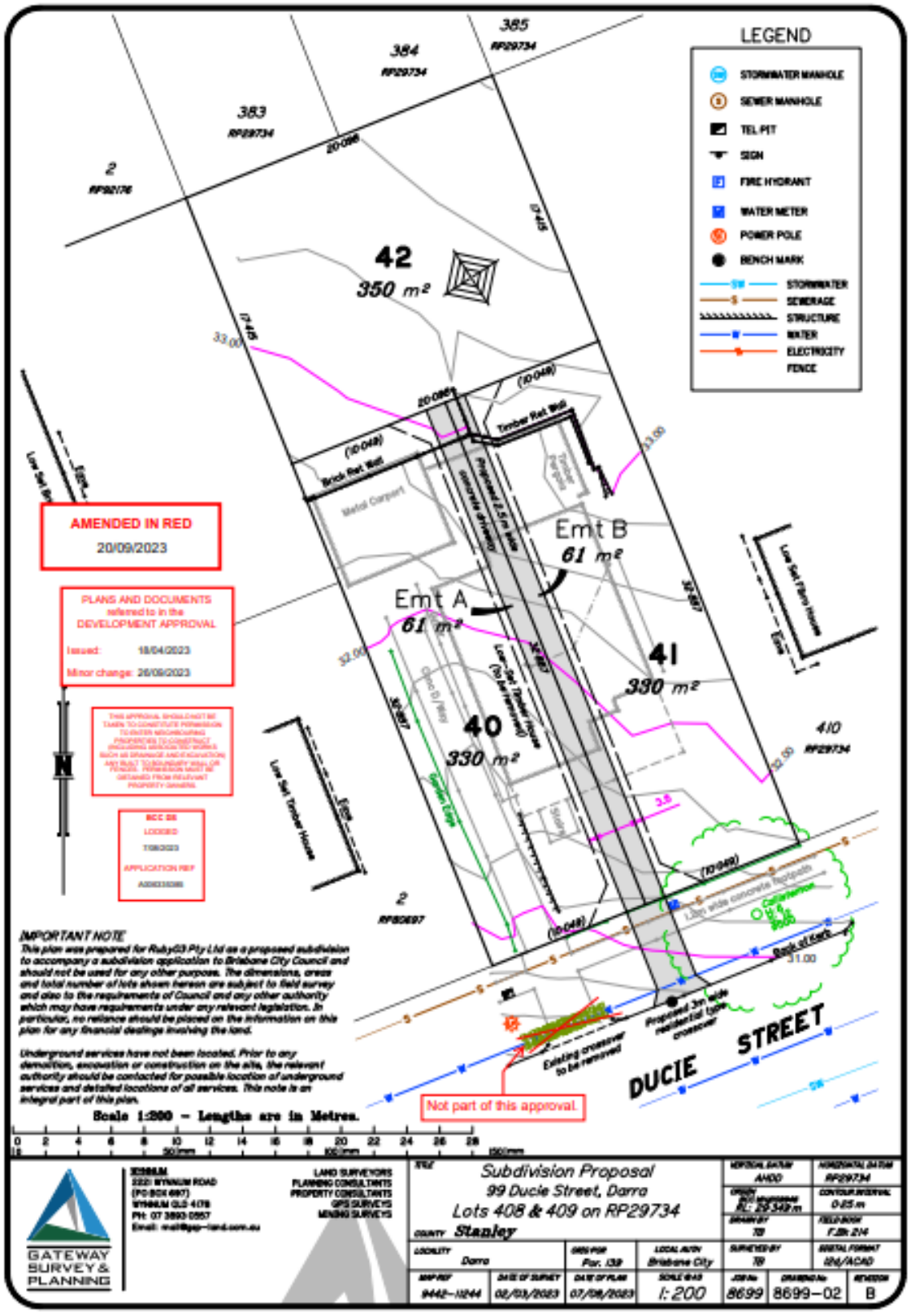
If in the 2 or 3 storey mix zone precinct of the Low-medium density residential zone			
Development of a residential lot	260	6 x 15	7.0
Where adjoining the side boundary of a lot 400m^2 or greater and vehicle access is from a secondary frontage (typically a rear lane)	260	6 x 15	6.5
Where adjoining the side boundary of a lot 400m^2 or greater containing an existing dwelling house	260	6 x 15	7.5
If in the Up to 3 storeys zone precinct of the Low-medium density residential zone			
Development of a residential lot	180	6 x 15	6.5
Where adjoining the side boundary of a lot 400m^2 or greater and vehicle access is from a secondary frontage (typically a rear lane)	180	6 x 15	6.0

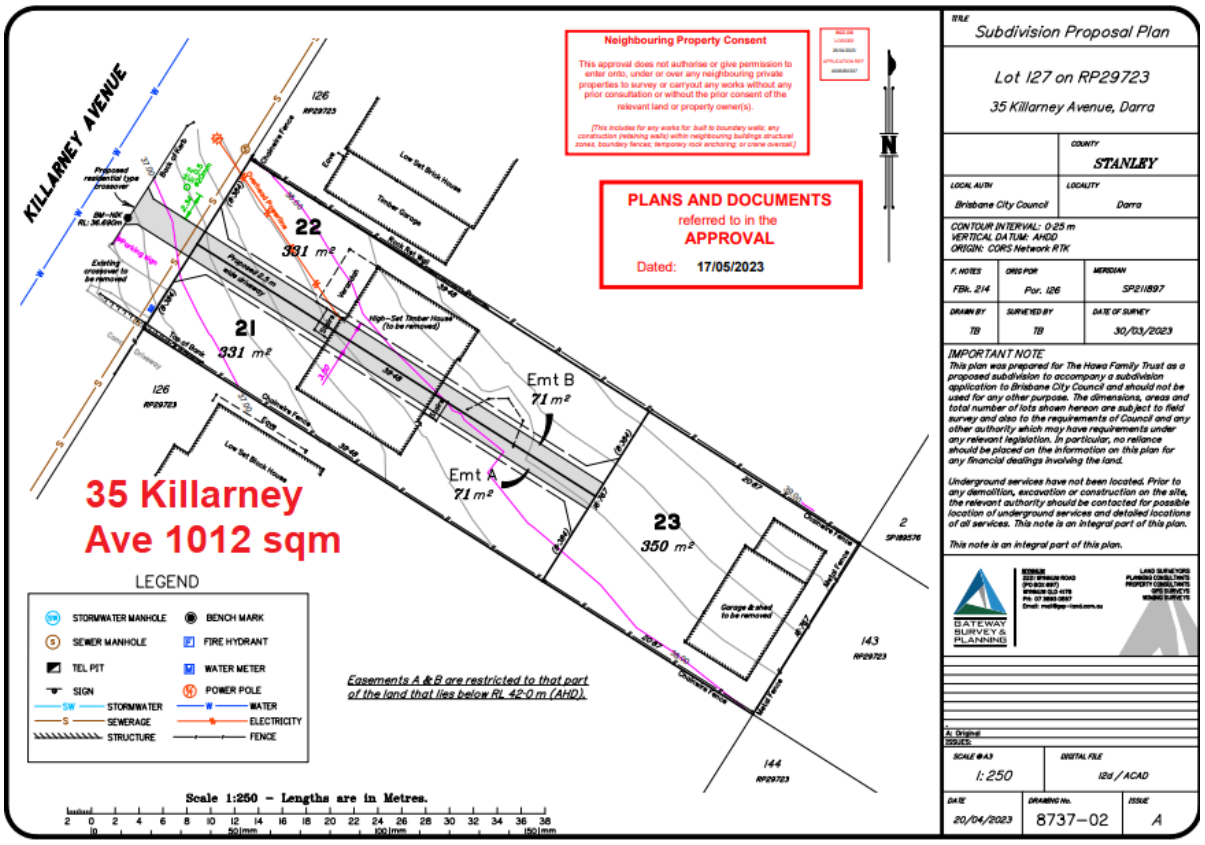
105. Front lots above. Rear lots are maximum 350 sqm.

106. Roof calculation Small Lot Code conservative example 85 and 97 Ducie St Darra, 35 Killarney Ave Darra.

Lot size	331
Site cover 60%	198
Eaves	36 (lawful)
Patio	40 (lawful)
Carport	36 (site variation)
Total roof size	310
% roof cover	95%
Conservative	90%


PLANS AND DOCUMENTS
referred to in the
APPROVAL
Dated: 01/06/2022
IMPORTANT NOTE
This plan was prepared for 85 Ducie Trust as a proposed subdivision to accompany a subdivision application to Brisbane City Council and should not be used for any other purpose. The dimensions, areas and total number of lots shown hereon are subject to field survey and also to the requirements of Council and any other authority which may have requirements under any relevant legislation. In particular, no reliance should be placed on the information on this plan for any financial dealings involving the land. This note is an integral part of this plan.
33
350 m²
to be removed
Emt A
66 m²
Emt B
59 m²
32
330 m²
(Inc. Emt)
31
330 m²
(Inc. Emt)
390
RP29734
12
RP68753
389
RP29734
388
RP29734
417
RP29734
416
RP29734
413
RP29734
Proposed 2.5 m wide concrete driveway
Low Set Timber House
Low Set Fibre House
Verandah
Metal Carport (to be removed)
Water Tank
Metal Shed
Timber Post Wall
Timber Fence
Chainwire Fence
Edge of Clinc
Back of Kerb
Conc Path
Proposed shared 3 m wide crossover
DUCIE STREET
Plotted from Council Records
LEGEND
STORMWATER MANHOLE
SEWER MANHOLE
TEL PIT
SIGN
FIRE HYDRANT
WATER METER
POWER POLE
BENCH MARK
STORMWATER
SEWERAGE
STRUCTURE
WATER
ELECTRICITY
FENCE
Scale 1:200 – Lengths are in Metres.
AMENDED IN RED
01/06/2022
GATEWAY SURVEY & PLANNING
WYNNUM
2221 WYNNUM ROAD
(PO BOX 697)
WYNNUM QLD 4178
Ph: 07 3893 0557
LAND SURVEYORS
PLANNING CONSULTANTS
PROPERTY CONSULTANTS
GPS SURVEYS
MINING SURVEYS
PROPOSED RECONFIGURATION
85 & 87 Ducie Street, Darra
Lots 414 & 415 on RP29734
LOCALITY Darra
ORIG FOR Por. 139
LOCAL AUTH Brisbane City
VERTICAL DATUM AHD
HORIZONTAL DATUM 1530358?
ORIGIN Network RTK
CONTOUR INTERVAL 0·25 m
DRAWN BY TB
FIELD BOOK F.Bk
SURVEYED BY TB
DIGITAL FORMAT 12d/ACAD
MAP REF 9442–11244
DATE OF SURVEY 21/12/2021
DATE OF PLAN 01/04/2022
SCALE @ A3 1:200
JOB No 8263
DRAWING No 8263–03
REVISION B


LEGEND
STORMWATER MANHOLE
SEWER MANHOLE
TEL PIT
SIGN
FIRE HYDRANT
WATER METER
POWER POLE
BENCH MARK
STORMWATER
SEWERAGE
STRUCTURE
WATER
ELECTRICITY
FENCE
AMENDED IN RED
20/09/2023
PLANS AND DOCUMENTS
referred to in the
DEVELOPMENT APPROVAL
Issued: 18/04/2023
Minor change: 20/09/2023
42
350 m²
41
330 m²
40
330 m²
Emt A
61 m²
Emt B
61 m²
383
RP29734
384
RP29734
385
RP29734
410
RP29734
2
RP92176
2
RP92697
Brick Rat Wall
Timber Rat Wall
Metal Carport
Low Set Timber House
Low Set Tiled House
Gutter Edge
Not part of this approval
DUCIE STREET
IMPORTANT NOTE
This plan was prepared for Ruby03 Pty Ltd as a proposed subdivision to accompany a subdivision application to Brisbane City Council and should not be used for any other purpose. The dimensions, areas and total number of lots shown hereon are subject to field survey and also to the requirements of Council and any other authority which may have requirements under any relevant legislation. In particular, no reliance should be placed on the information on this plan for any financial dealings involving the land.
Underground services have not been located. Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of underground services and detailed locations of all services. This note is an integral part of this plan.
Scale 1:200 – Lengths are in Metres.
GATEWAY SURVEY & PLANNING
LAND SURVEYORS
PLANNING CONSULTANTS
PROPERTY CONSULTANTS
GPS SURVEYS
MINING SURVEYS
Subdivision Proposal
99 Ducie Street, Darra
Lots 408 & 409 on RP29734
County Stanley
Locality Darra
Local Auth Brisbane City
Scale 1:200
8699
8699–02
B

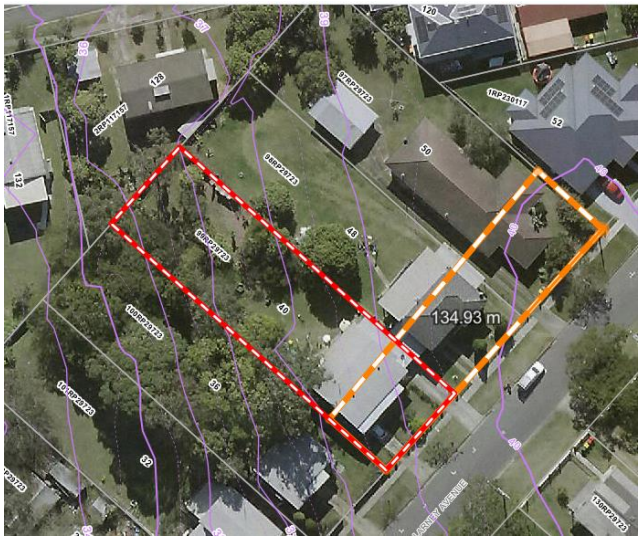


107. Calculation of roof areas

Based on the three examples, the existing houses cannot be reused. They will be demolished.

There is not available a 3.5m driveway for access to a rear lot.

The question is if the front lots are built up at the rear. They may fill to 14m from the front boundary, based on 115 Pope St Tarragindi. It is up to the owner if they wish to fill the rear of the front lot, or batter instead. The owner would require bulk earthworks if over 1 metre.



108. The owner is able to declare that advice up front to Council, with the subdivision plan.

The later owner would be required to accept that there is fill or not.

If there was fill provided, then the downstream requirement is for 6 lots.

If there is no fill provided, then the downstream requirement is for 10 lots.

109. Manteit master plan calculations

Lot 97

			C2 = .74	**C20 = .91**
	Land	**Roof**	**Land**	**Roof**
Roof size 4 lots @90%	1176	1058	37	69
Roof size 2 lots @90%	700	630	22	41
Lot 98				
Roof size 3 lots @90%	1012	910	31	59
Roof size 2 lots @90%	700	630	21	41
Lot 99				
Roof size 3 lots @90%	1012	910	31	59
Roof size 2 lots @90%	700	630	21	41
Totals				
With front lots			99	187 l/s
Without front lots			64	123 l/s

110. Corrigan calculations of flow using .7

	A	B	C	**Total**
Q20	12.0	13.3	21.0	46.3
Q2	26.0	13.2	32.0	71.2
Highest	26.0	13.3	32.0	71.3

Calculations are after fixing Corrigan mistakes because he uses Fraction Imperveous instead of C2 and C20.

Corrigan thinks Fraction imperveous is the good all round Coefficient.

Corrigan has never heard of the Frequency factor.

Corrigan's adjusted figures after expert David Manteit fixed up Corrigans fascination with fraction imperveous.

	A	B	C	**Total**
Q20	15.6	17.3	27.3	60.2
Q2	27.5	14.0	33.8	75.3
Highest	27.5	17.3	33.8	78.6

a. Level II drainage as per QUDM Section 7.13.2, namely pipe system to convey the greater of 5% AEP (1/20) roof discharge or 39% AEP (1/2) discharge of the roof plus allotment.
b. Worst case upstream development assumed to be two townhouses per lot, each 180m2, the townhouse towards Killarney Ave to discharge to Killarney Ave, the rear townhouse to discharge towards the subject lot.
c. Discharge from upstream lot to be the worst of 5% AEP 180m2 roof or 39% AEP of 180m2 roof plus 440m2 of allotment (namely the portion of the allotment from the rear of the Killarney townhouse to the rear of the lot, 620m2 less the townhouse itself)
d. Coefficient of discharge f_i=0.7 (worst case = town house development upstream), as per QUDM Section 4.5
e. Time of Concentration 5 minutes (as per QUDM Section 4.6.2)
f. Rainfall intensity 248mm/hr (5% AEP) or 151mm/hr (39% AEP) – from BCC City Plan 2014 Schedule 6 PSP – Infrastructure Design, Chapter 7 Stormwater Drainage, Table

111. Coefficient of discharge as per fi = .7 and worst case = townhouses. Townhouses are not allowed unless there are three of them. Not 2 or 1 townhouse.

Fi is not the Coefficient of Discharge, it is the fraction impervious.

Notes (Table 4.5.1):

1. Designer should determine the actual fraction impervious for each development. Local governments may specify default values.
2. Typically for urban residential high density developments:

townhouse type development	$f_i = 0.7$
multi-unit dwellings > 20 dwellings per hectare	$f_i = 0.85$
high-rise residential development	$f_i = 0.9$

If Corrigan has used the fraction imperveous, this report should be determined as unsatisfactory professional conduct, being a lesser standard than his peers.

112. Civil Works got the correct C2 and C20.

113. David Manteit got the correct C2 and C20.

114. Corrigan just used .7

Table 4.5.1 – Fraction impervious vs. development category

Development category	Fraction impervious (f_i)
Central business district	1.00
Commercial, local business, neighbouring facilities, service industry, general industry, home industry	0.90
Significant paved areas e.g. roads and car parks	0.90
Urban residential – high density	0.70 to 0.90
Urban residential – low density (including roads)	0.45 to 0.85
Urban residential – low density (excluding roads)	0.40 to 0.75
Rural residential	0.10 to 0.20
Open space and parks etc.	0.00

Notes (Table 4.5.1):

1. Designer should determine the actual fraction impervious for each development. Local governments may specify default values.
2. Typically for urban residential high density developments:

townhouse type development	$f_i = 0.7$
multi-unit dwellings > 20 dwellings per hectare	$f_i = 0.85$
high-rise residential development	$f_i = 0.9$

3. In urban residential low density areas f_i will vary depending upon road width, allotment size, house size and extent of paths, driveways etc.
4. Refer to Table 7.3.3 for the definition of development categories.

This is fraction impervious, not Frequency Factor or C10, or C20 or C2

Table 7.13.5 – Recommended design criteria for Level II rear of allotment drainage system

Item	Recommendation
Maximum number of allotments served	20
Flow applicable	10 L/s per allotment [1]
Minimum pipe grade	0.35%
Minimum pipe cover (mm)	500
Pit dimensions for depth to invert (a) ≤ 750 (b) > 750	(a) 600 x 600 (b) 600 x 900

Nominal pipe diameter (mm)	Flow (L/s) [2] Pipe gradient (%) [3]							
	0.5	1.0	1.5	2.0	2.5	3.0	4.0	5.0
150	[4]	18	23	26	30	33	38	42
225	38	56	67	78	87	96	110	125
300	84	120	146	170	190	210	N.A.	N.A.

Notes (Table 7.13.5):

[1] Based on roof areas of 180 m^2 and AEP = 5% for S.E. Queensland.

[2] Based on Manning's n = 0.011 and the likely use of UPVC for smaller pipes.

[3] Where the pipe gradient is in excess of 5% a more detailed hydraulic analysis should be undertaken including the assessment of structure losses, where appropriate.

[4] Minimum grade 1% for 150 mm diameter pipe to comply with AS 3500.3.

115. The above is possibly where Corrigan got his 180 sqm of roof from. Who knows. No calculations done for full development of catchment whatseover. He just used a tiny note.

116. The truth is that for a lot size 350 sqm, around 90% area is the real roof area = 315 sqm, not 180 sqm.

It is unsure how Corrigan can get 71.3 litres per second into 2 kerb adaptors of 30 litres capacity.

Inflow (L/s)	Pipe flow (l/s)	Inflow (L/s)	Pipe flow (l/s)
No roof detention		With roof detention	
16	16	7	7
4.7	21	0.4	7
30	51	9	16
8.8	60	8.8	25
12.4	72	0	25
10	75	10	28
2	2	2	2

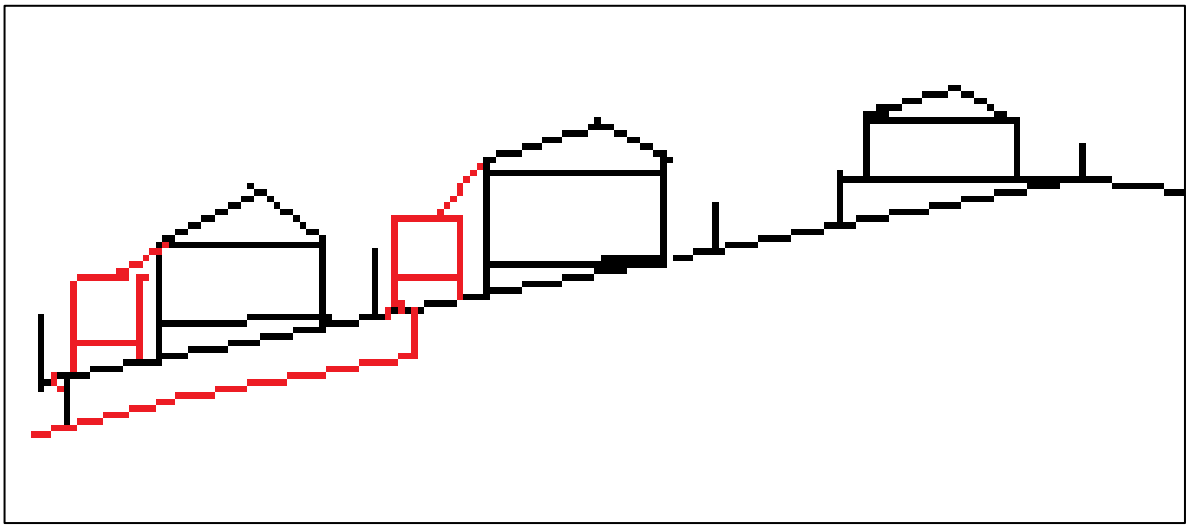
Corrigan has water tanks for 75 - 28 litres per second = 47 litres per second = 169,200 litres per hour, as per fraction imperveous. This is 17 * 10,000 litre water tanks required. That's 6 water tanks required per property. 5 square metres per tank = 30 square metres gone in your backyard.

117. Corrigan has not done a reconciliation of his numbers

72.1 / 75 l/s "? Unsure. Corrigan has no conclusion.

118. Detention tanks

- Limited one year warranty, one year on exposed metal
- no labour included even if no fault of owner
- non transferrable, base must be perfect, not guaranteed in a storm.



Depiction of rainwater tanks at Killarney Ave site.

119. Council would need to condition a statutory covenant of the title of all blocks that were proposed to use the detention pits.

119. Council cannot condition David Manteit site for works beyond the rear boundary.

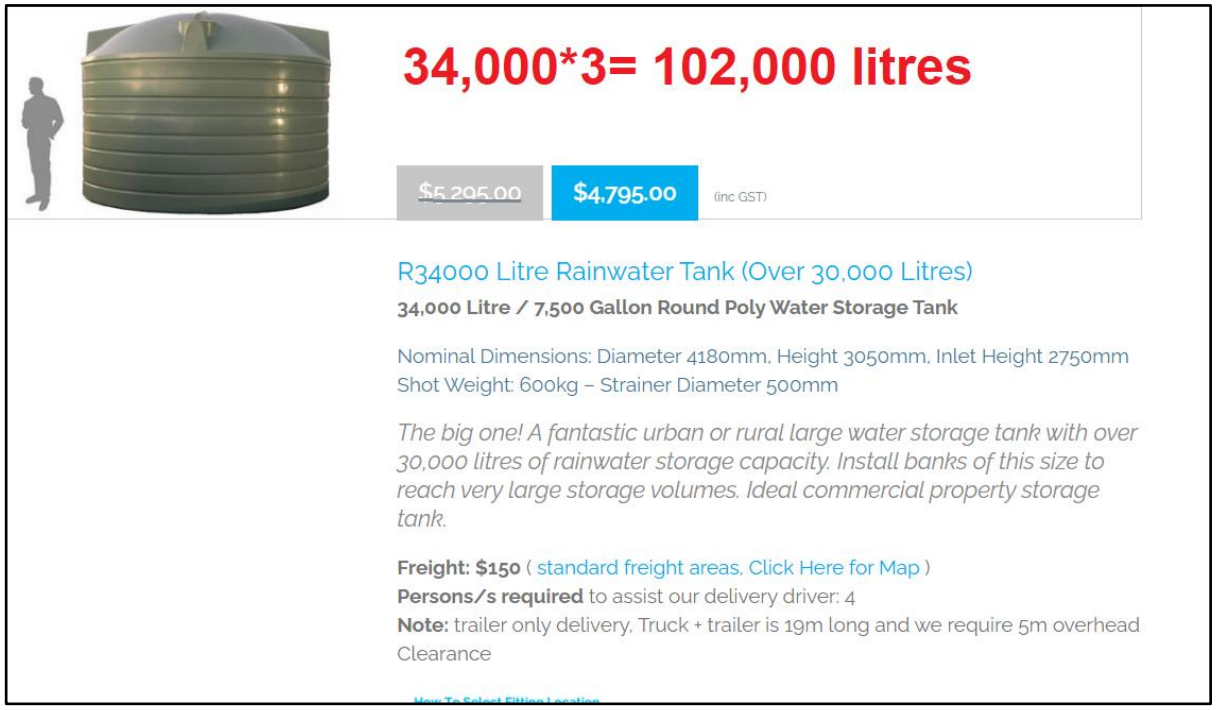
Council cannot condition the subject approval with the rear lots having above ground detention systems.

120. A detention system is not a lawful point of discharge.

121. Calculation of rainwater tank sizes required for one hour

Example 350 sqm 59/2 = 29 litres/second = 104,000 litres required

A Q20 rainwater tank for 104,000 l/s is required.



7.5.9 Maintenance requirements for Council and private detention systems

(1) All detention and retention systems must be designed with simple, safe, cost-effective maintenance in mind.

(2) A maintenance plan that documents all the maintenance requirements and responsibilities must be developed for all development applications for a material change of use applications (excluding dwelling houses). The plan must describe how the design facilitates maintenance requirements and set out how the system is to be maintained by addressing issues such as inspection, likely clean-out frequency, procedures, access and occupational health and safety requirements. Where a Council-owned asset, the maintenance plan must be submitted as part of the on-maintenance documentation and also include the cost estimate for the construction of the detention system and estimate of annual maintenance costs.

7.5.3 General requirements

(1) The design of stormwater detention and retention systems is to refer to QUDM section 5.0 for all design elements including but not limited to embankments, spillways, low and high flow outlets, freeboard, basin grade and scour control.
(2) Stormwater detention is offline to existing creeks/flow paths and external catchments.
(3) Where an online system is proposed, it must provide regional benefits to flow reduction and be designed for ultimate catchment development. These basins will require incorporation of natural low flow channels, riparian vegetation and use of weir outlets (no piped low flow outlet) to promote fauna movement and reduce likelihood of outlet blockages.
(4) Where stormwater from any public asset such as a road reserve is directed into a stormwater detention system, these detention systems must be located within public land such as a park or drainage reserve, but not within road reserves. Only above-ground detention storages will be permitted in Council-owned lands. Tanks in public roads will not be accepted.
(5) Above-ground detention basins should be integrated with water quality treatments by locating the detention storage requirement above the water quality extended detention depth.
(6) Council will not support the installation of on-site (lot-based) stormwater detention facilities in a residential subdivision on each freehold lot as there is no provision to adequately ensure these facilities are protected or maintained into the future.
(7) Using stormwater detention tanks in commercial or industrial developments will be permitted where located on lots or within privately owned roads/driveways. Similarly, tanks could be used within roads/driveways owned by community title for residential developments.

Council

What QUDM says about Corrigan's Master Drainage Plan

5.4.2 On-site detention systems

There are generally three design standards set by regulating authorities, they are:

- A specified minimum site storage requirement (SSR) and permissible site discharge (PSD) relative to either the site area, land use, or the change in impervious area.
- A permissible site discharge for the specified design storm frequency with no minimum storage volume specified.
- A requirement not to exceed pre-development peak discharge rates for a range of design storm frequencies.

C2

The first two design criteria are often adopted by local governments following the development of a regional flood control strategy, Master Drainage Plan, or Stormwater Management Plan.

Most small on-site detention systems incorporate underground tanks. When appropriate soil and groundwater conditions exist, some underground tanks can be converted into infiltration systems. Above-ground stormwater detention tanks are rarely used on single residential properties because of the risk of the tanks being converted solely to rainwater tanks.

Above-ground stormwater detention tanks are rarely used on single residential properties because of the risk of the tanks being converted solely to rainwater tanks

QUDM

(6) The provision of stormwater detention does not negate the requirement for a lawful point of discharge for development. Detention systems do not manage nuisance flows and may concentrate water that would have otherwise sheet flowed across a site boundary, often have high outlet velocity and will regularly release stormwater over extended periods of time. The provision of storm water detention is not to result in uncontrolled scour, ponding and nuisance to adjacent properties that would have otherwise not been experienced under existing conditions.

QUDM

5.3.3 Summary of functions

A summary of the possible functions of detention and retention systems is provided in Table 5.3.1.

Table 5.3.1 – Summary of detention/retention system functions

		Discharge control	Flood control	Volume control	Scour control	Stormwater harvesting	Pollution control
Detention systems	**On-site detention**	Yes	Yes				
	Detention basins	Yes	Yes		[1]		[1]
	Extended detention basins [2]	Yes	Yes		[1]		Yes
	Filter basins	[1]	[1]				Yes
Retention systems	**Rainwater tanks**	[3]		[4]		Yes	
	Retention basins	Yes	Yes	Yes	[1]	Yes	Yes
	Infiltration trenches	Yes	Yes	Yes	[1]		Yes
	Infiltration basins	Yes	Yes	Yes	[1]	[1]	Yes

Notes (Table 5.3.1):

[1] Not the normal function of this type of system, however, this function may be achieved if modifications are made to the design.

[2] The most commonly used terminology is extended detention basin, however, the concept of extended detention may also apply to the design of retention basins.

[3] Generally rainwater tanks cannot be used for on-site discharge control.

[4] When wide spread across a catchment, rainwater tanks can contribute to runoff volume control through activities such as water reuse, garden watering and groundwater infiltration.

Council PSP Chapter 7 laws required for calculations

122. Corrigan thinks that a townhouse is the only built form possible, on the rear lots.

Zoning LMR3 allows for a multiple dwelling.

Notes –

123. A multiple dwelling is max 45% site cover (plus roof) This is less than the Small Lot code which allows for up to 80%.

124. The Small Lot Code provides for the highest site cover, and therefore the highest roof cover and is therefore the most fully developed.

125. Note, one townhouse cannot be built. There must be at least 3 townhouses.

Corrigan has engineered an unlawful townhouse.
Corrigan's argument for a townhouse is gone.

7.6.3.1 Connection to kerb and channel

(1) The maximum permissible discharge to the kerb and channel must be limited to 30L/s (i.e. maximum 2 single house lots per discharge point dependent on roof area), and twin 100mm diameter pipes (equivalent 150mm diameter) with approved kerb adaptors.

(2) For development that is a material change of use (i.e. other than (1) above), Level III drainage (connection to kerb and channel) is only permitted if the total discharge from the development including any external catchment does not exceed 30L/s. Multiple hot dip galvanised rectangular hollow sections (RHS) 125/150/200mm wide x 75mm or 100mm high must be used (refer to BSD-8113).

(3) Only approved full-height kerb adaptors, complying with BSD-8114 are permitted. The kerb adaptors must be placed in a location where service pits on the footpath will not conflict with the future pipe location.

(4) Discharge into the high side kerb of a one-way crossfall street is generally not permitted for any development other than a single-house dwelling.

127. The total discharge from the development including any external catchment to the kerb is only permitted id the total discharge does not exceed 30 l/s.

6. THE PERMITTED TOTAL DISCHARGE FROM THE DEVELOPMENT TO KERB AND CHANNEL, INCLUDING CONTRIBUTION FROM ANY EXTERNAL CATCHMENT, MUST NOT EXCEED 30L/s.
7. REFER TO BDS-8114 FOR KERB ADAPTOR INSTALLATION.
8. STORMWATER DISCHARGE EXCEEDING 30L/s MUST BE CONNECTED TO AN EXISTING GULLY PIT OR MANHOLE SITUATED WITHIN 50m OFF THE SITE BOUNDARY. WHERE THE CAPACITY OF THE

BSD 8113

Table 7.2.2.3.B—Design standards for drainage systems

Development category	Design parameter	Minimum design standard	
		AEP	ARI (years)
Rural areas (typically 2–5 dwellings per hectare)	Minor drainage system Major drainage system	39% 2%	2 50
Residential developments (Low density residential)	Minor drainage system Major drainage system	39% 2%	2 50
	Roof water drainage	Level II QUDM	
Residential developments (Low–medium density to High density)	Minor drainage system Major drainage system	10% 2%	10 50
	Roof water drainage	Level III and Level IV QUDM	
Industrial uses	Minor drainage system Major drainage system	39% 2%	2 50
	Roof water and lot	Level IV QUDM	

Table 7.3.3.1.A—Coefficient of discharge C10 for development

Development category	C10
Central business areas (including in the Principal centre zone and Major centre zone)	0.90
Industrial uses and other commercial uses (including in the District centre zone and Neighbourhood centre zone)	0.88
Significant paved areas (e.g. roads and car parks)	0.88
Medium density and high density residential land uses	0.88
Low–medium density residential land uses	0.87
Low density residential area (including roads) Average lot ≥ 750m² Average lot ≥ 600m² < 750m² Average lot ≥ 450m² < 600m² Average lot ≥ 300m² < 450m²	 0.82 0.85 0.86 0.87
Low density residential area (infill subdivision excluding roads) Average lot ≥ 750m² Average lot ≥ 600m² < 750m² Average lot ≥ 450m² < 600m² Average lot ≥ 300m² < 450m²	 0.81 0.82 0.83 0.85
Rural/environmental protection areas (2–5 dwellings per ha)	0.74
Open space areas (e.g. parks with predominately vegetated surfaces)	QUDM, Table 4.05.3(b)

Table 4.5.2 – Table of frequency factors

AEP (%)	ARI (years)	Frequency factor (F_y)
63%	1	0.80
39%	2	0.85
18%	5	0.95
10%	10	1.00
5%	20	1.05
2%	50	1.15
1%	100	1.20

QUDM above – frequency factor

Council C10 for low - medium density = .87.

This figure is to be used to obtain C2 and C20 or any other C factor.

ROOF AREAS				
tc	***5***	***min***		
C_1	*0.70*		I_1	*117 mm/hr*
C_2	*0.74*		I_2	*151 mm/hr*
C_5	*0.83*		I_5	*191 mm/hr*
C_{10}	*0.87*		I_{10}	*215 mm/hr*
C_{20}	*0.91*		I_{20}	*248 mm/hr*
C_{50}	*1.00*		I_{50}	*291 mm/hr*
C_{100}	*1.00*		I_{100}	*325 mm/hr*

C2 = .7*.85 = .74 (As per Civil Works)

C20 =. 87*1.05 = .91 (As per Civil Works)

4.5 Coefficient of discharge

The coefficient of discharge, *'C'* is a coefficient used within the Rational Method. The value of *C* is linked, in a complex manner, to the infiltration characteristics of the catchment and impacts of other runoff 'losses'. It should **not** be confused with the *volumetric runoff coefficient* 'C_V', which is a direct ratio of total runoff to total rainfall.

The coefficient of discharge must account for the future development of the catchment as depicted in the Planning Scheme or zoning maps for the relevant local government, but should not be less than the value determined for the catchment under existing conditions.

It is recommended that the coefficient of discharge should be calculated using the method presented in Book 8 of ARR (1998), with the exception of 100% pervious surface. This method is summarised in the following steps:

STEP 1 Determine the fraction impervious (f_i) for the catchment under study from Table 4.5.1.

STEP 2 Determine the 1 hour rainfall intensity ($^1I_{10}$) for the 10 year ARI (10% AEP) at the locality – refer to section 4.8.

STEP 3 Determine the frequency factor (F_y) for the required design storm from Table 4.5.2.

STEP 4 Determine the 10 year discharge coefficient (C_{10}) value from tables 4.5.3 and 4.5.4.

STEP 5 Multiply the C_{10} value by the frequency factor (F_y) to determine the coefficient of runoff for the design storm (C_y).

$$C_y = F_y \,.\, C_{10} \qquad (4.4)$$

S7.2.2.3A

Duration (minutes)	Probability (AEP and ARI) and intensity (mm/h)						
	63%	39%	18%	10%	5%	2%	1%
	1 year	2 year	5 year	10 year	20 year	50 year	100 ye
5	117	151	191	215	248	291	325
6	110	141	179	202	232	273	304
7	103	133	169	190	219	258	288
8	98	126	161	181	209	246	274
9	94	121	154	173	200	236	263
10	90	116	147	167	192	227	253
11	86	111	142	161	185	219	244
12	83	107	137	155	179	212	237
13	80	104	133	150	174	205	229
14	78	100	129	146	169	199	223
15	75	97	125	142	164	194	217
16	73	95	122	138	160	189	211
17	71	92	118	134	156	184	206
18	69	90	115	131	152	180	201
19	68	87	113	128	148	176	197
20	66	85	110	125	145	172	193
21	64	83	108	122	142	168	189
22	63	81	105	120	139	165	185
23	62	80	103	117	136	161	181
24	60	78	101	115	133	158	178
25	59	76	99	113	131	155	174
30	54	70	90	103	120	142	160
35	49	64	83	95	111	131	148
40	46	59	77	88	103	123	138
45	43	56	72	83	97	115	129
50	40	52	68	78	91	108	122
55	38	49	64	74	86	103	115
60	36	47	61	70	82	97	110
90	28	36	47	54	63	76	85
120	23	29	39	45	52	62	71

Annual Rainfall Chapter 7 PSP.

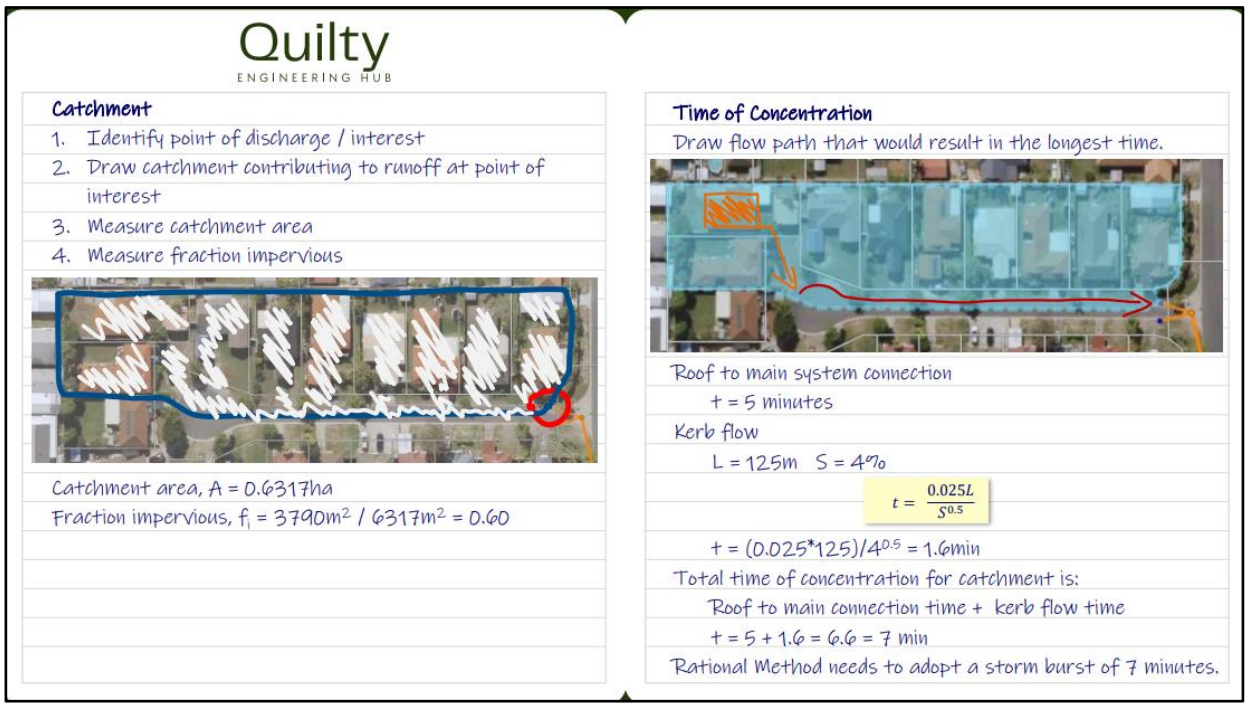
Table 4.5.3 – Table of C_{10} values

Intensity (mm/hr) $^1I_{10}$	Fraction impervious f_i						
	0.00	0.20	0.40	0.60	0.80	0.90	1.00
39-44	Refer to Table 4.5.4	0.44	0.55	0.67	0.78	0.84	0.90
45-49		0.49	0.60	0.70	0.80	0.85	0.90
50-54		0.55	0.64	0.72	0.81	0.86	0.90
55-59		0.60	0.68	0.75	0.83	0.86	0.90
60-64		0.65	0.72	0.78	0.84	0.87	0.90
65-69		0.71	0.76	0.80	0.85	0.88	0.90
70-90		0.74	0.78	0.82	0.86	0.88	0.90

Examples of how to calculate flow calculation from Quilty, below.

128. Note that whilst the C10 calculation may be estimated using the QUDM, as per S 4.51

129. By using the fraction Intensity and fraction imperveous for oneself, Council has provided the C10.



Quilty
ENGINEERING HUB

Coefficient of Runoff

Now we can obtain C_{10} based on f_i and $^1I_{10}$

f_i = 0.60 $^1I_{10}$ = 65.7mm/h

Intensity (mm/hr) $^1I_{10}$	Fraction impervious f_i					
	0.20	0.40	0.60	0.80	0.90	1.00
39-44	0.44	0.55	0.67	0.78	0.84	0.90
45-49	0.49	0.60	0.70	0.80	0.85	0.90
50-54	0.55	0.64	0.72	0.81	0.86	0.90
55-59	0.60	0.68	0.75	0.83	0.86	0.90
60-64	0.65	0.72	0.78	0.84	0.87	0.90
65-69	0.71	0.76	0.80	0.85	0.88	0.90
70-90	0.74	0.78	0.82	0.86	0.88	0.90

C_{10} = 0.80

Then we multiply this by our Frequency Factor to calculate our C_2 value.

AEP (%)	ARI (years)	Frequency factor (F_y)
63%	1.00	0.80
39%	2.00	0.85
18%	5.00	0.95
10%	10.00	1.00
5%	20.00	1.05
2%	50.00	1.15
1%	100.00	1.20

$C_y = F_y C_{10}$

C_2 = 0.85 x 0.80 = 0.68

Now we have all our variables needed.

Rational Method Peak Discharge

$Q_y = \frac{C_y {}^t I_y A}{360}$

Peak discharge Q = CIA/360 (m^3/s)

$Q_2 = (C_2 \, {}^7I_2 \, A)/360$

$Q_2 = (0.68*133*0.6317)/360$

Q_2 = 0.159m^3/s

Quilty
ENGINEERING HUB

We will need two values: $^1I_{10}$ (for Coefficient of Runoff) and $^6I_2$ (for Q_2 Peak Discharge)

Table Chart Unit: mm/h

Duration	Exceedance per Year (EY)							
	12EY	6EY	4EY	3EY	2EY	1EY	0.5EY#	0.2EY*
1 min	65.2	76.1	94.9	108	127	161	202	251
2 min	58.2	67.2	82.2	93.0	108	136	170	212
3 min	54.0	62.5	76.8	87.0	102	127	159	198
4 min	50.6	58.7	72.6	82.5	96.5	121	151	188
5 min	47.6	55.5	68.9	78.5	92.1	116	145	180
6 min	45.0	52.6	65.7	74.9	88.0	111	138	172

Rainfall intensity $^6I_2$ = 138mm/h

Table Chart Unit: mm/h

Duration	Annual Exceedance Probability (AEP)						
	63.2%	50%#	20%*	10%	5%	2%	1%
1 hour	36.3	40.9	55.6	65.7	75.7	89.1	99.6

Rainfall intensity $^1I_{10}$ = 65.7mm/h

Coefficient of Runoff

Now we can obtain C_{10} based on f_i and $^1I_{10}$

f_i = 0.60 $^1I_{10}$ = 65.7mm/h

Intensity (mm/hr) $^1I_{10}$	Fraction impervious f_i					
	0.20	0.40	0.60	0.80	0.90	1.00
39-44	0.44	0.55	0.67	0.78	0.84	0.90
45-49	0.49	0.60	0.70	0.80	0.85	0.90
50-54	0.55	0.64	0.72	0.81	0.86	0.90
55-59	0.60	0.68	0.75	0.83	0.86	0.90
60-64	0.65	0.72	0.78	0.84	0.87	0.90
65-69	0.71	0.76	0.80	0.85	0.88	0.90
70-90	0.74	0.78	0.82	0.86	0.88	0.90

C_{10} = 0.80

Then we multiply this by our Frequency Factor to calculate our C_2 value.

AEP (%)	ARI (years)	Frequency factor (F_y)
63%	1.00	0.80
39%	2.00	0.85
18%	5.00	0.95
10%	10.00	1.00
5%	20.00	1.05
2%	50.00	1.15
1%	100.00	1.20

130. Quilty calculation of the Coefficient of Runoff C10, using the table crosssection as above.

131. This is not a formula, but a table.

131. The rainfall intensity is for one hour. Ie, 60 minutes.

132. The frequency factor Fy comes straight from the QUDM table. Note 39% =Q2.

Quilty
ENGINEERING HUB

$C_y = F_y C_{10}$

$C_2 = 0.85 \times 0.80 = 0.68$

Now we have all our variables needed.

Rational Method Peak Discharge

$Q_y = \frac{C_y {}^{t}I_y A}{360}$

Peak discharge $Q = CIA/360$ (m^3/s)

$Q_2 = (C_2 {}^{6}I_2 A)/360$

$Q_2 = (0.68*138*0.1870)/360$

$Q_2 = 0.049 m^3/s$

4.5 Coefficient of discharge

The coefficient of discharge, *'C'* is a coefficient used within the Rational Method. The value of *C* is linked, in a complex manner, to the infiltration characteristics of the catchment and impacts of other runoff 'losses'. It should **not** be confused with the *volumetric runoff coefficient* 'C_V', which is a direct ratio of total runoff to total rainfall.

The coefficient of discharge must account for the future development of the catchment as depicted in the Planning Scheme or zoning maps for the relevant local government, but should not be less than the value determined for the catchment under existing conditions.

It is recommended that the coefficient of discharge should be calculated using the method presented in Book 8 of ARR (1998), with the exception of 100% pervious surface. This method is summarised in the following steps:

STEP 1 Determine the fraction impervious (f_i) for the catchment under study from Table 4.5.1.

STEP 2 Determine the 1 hour rainfall intensity ($^1I_{10}$) for the 10 year ARI (10% AEP) at the locality – refer to section 4.8.

STEP 3 Determine the frequency factor (F_y) for the required design storm from Table 4.5.2.

STEP 4 Determine the 10 year discharge coefficient (C_{10}) value from tables 4.5.3 and 4.5.4.

STEP 5 Multiply the C_{10} value by the frequency factor (F_y) to determine the coefficient of runoff for the design storm (C_y).

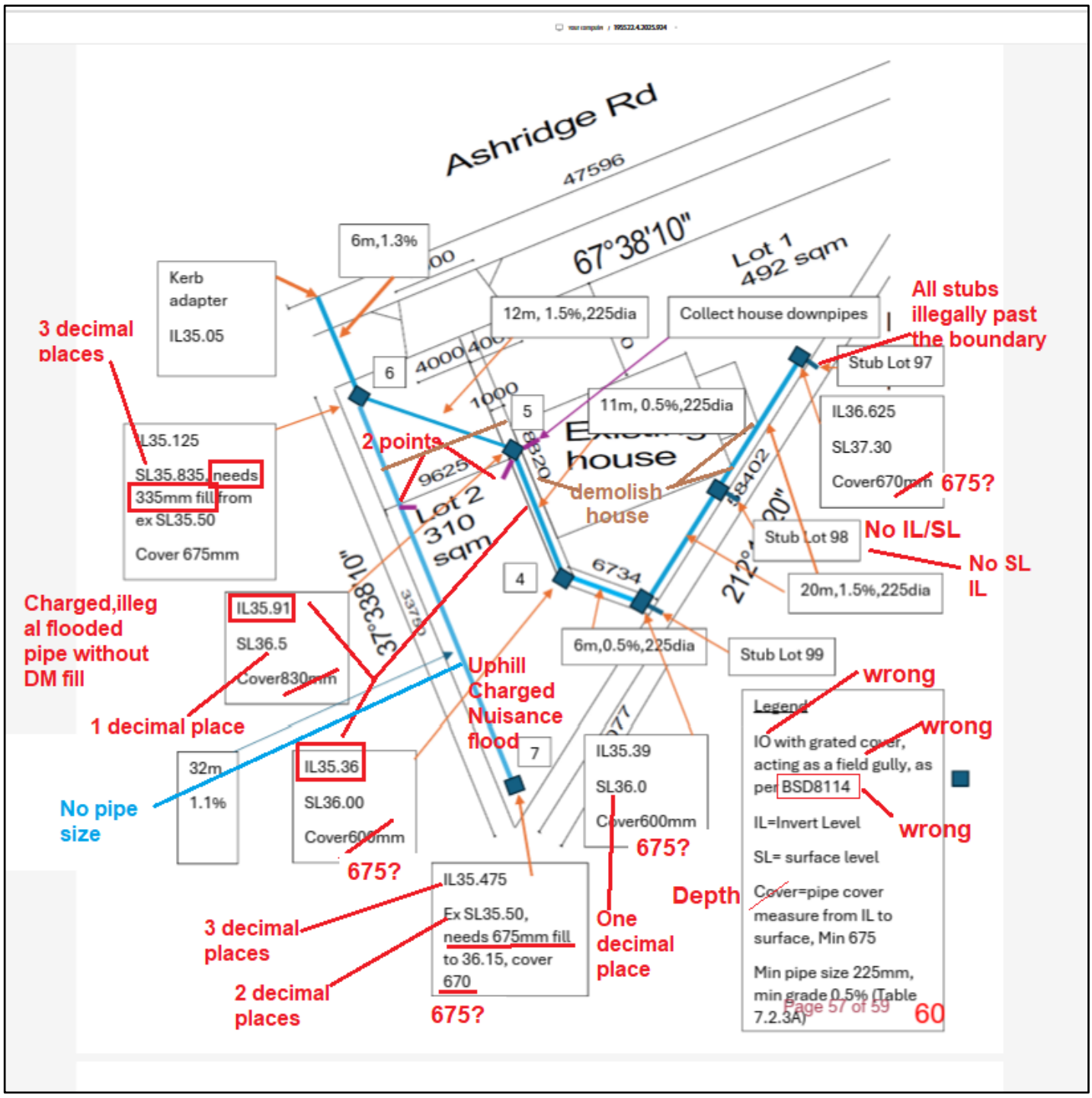
$$C_y = F_y \,.\, C_{10} \qquad (4.4)$$

9.2.3.	Drainage to the southwestern corner area of the subject lot (to the rear of the proposed new dwelling). This area is a low point and as discussed above in paragraph 4.7.2, the proposed new dwelling on the subject lot will cause concentration of stormwater at this location. Unless captured and conveyed, this stormwater will cause concentration of flow onto Lot 1 RP117157.

133. Corrigan 169,000 l/s per hour (who knows) rainwater tank plan

134. No detention pits drawn by Corrigan? Why not ?

135. Above - depiction of 16 water tanks that will provide water protection for one hour, when the expected rainfall comes.



136. Red line and mistakes and charged flooded pipes abound, that will create nuisance flooding and action claims from the proprietor and downstream neighbour to the designer, as per S7.6.1.

137.This hydraulic engineering standard is less that what a peer engineer would perform and the public would expect and is unsatisfactory conduct under schedule 2 of the Professional Engineers Act.

Comments on Corrigan plan

138. Sends water uphill from one pit to the next

He is confusing cover with depth.

139. Corrigan thinks BSD 8114 is for field gully.

140.Uses 335mm fill for final pit 35.5 to 35.885. We have no obligation to fill to make his system work.

141. Bizarre he says house will be a barrier. Civil Works plan is tiny fill at rear. My plan was no fill, but your computer proved some fill. In any case, the retaining wall of 36.4 (existing) will protect water to right neighbour.

142. Can't cross land for Upstream Pipe – see BSD 8111 600mm from boundary

Roof cover

143. This is not allowing for a fully developed site.

2.6 I have been asked to comment on whether there is a requirement for an Operational Works application for stormwater works to be submitted to Council following the approval of the proposed (reconfiguration of a lot) application.

2.7 Part 5.8 of City Plan contains the table of assessment for Operational work. Table 5.8.1 is repeated below:

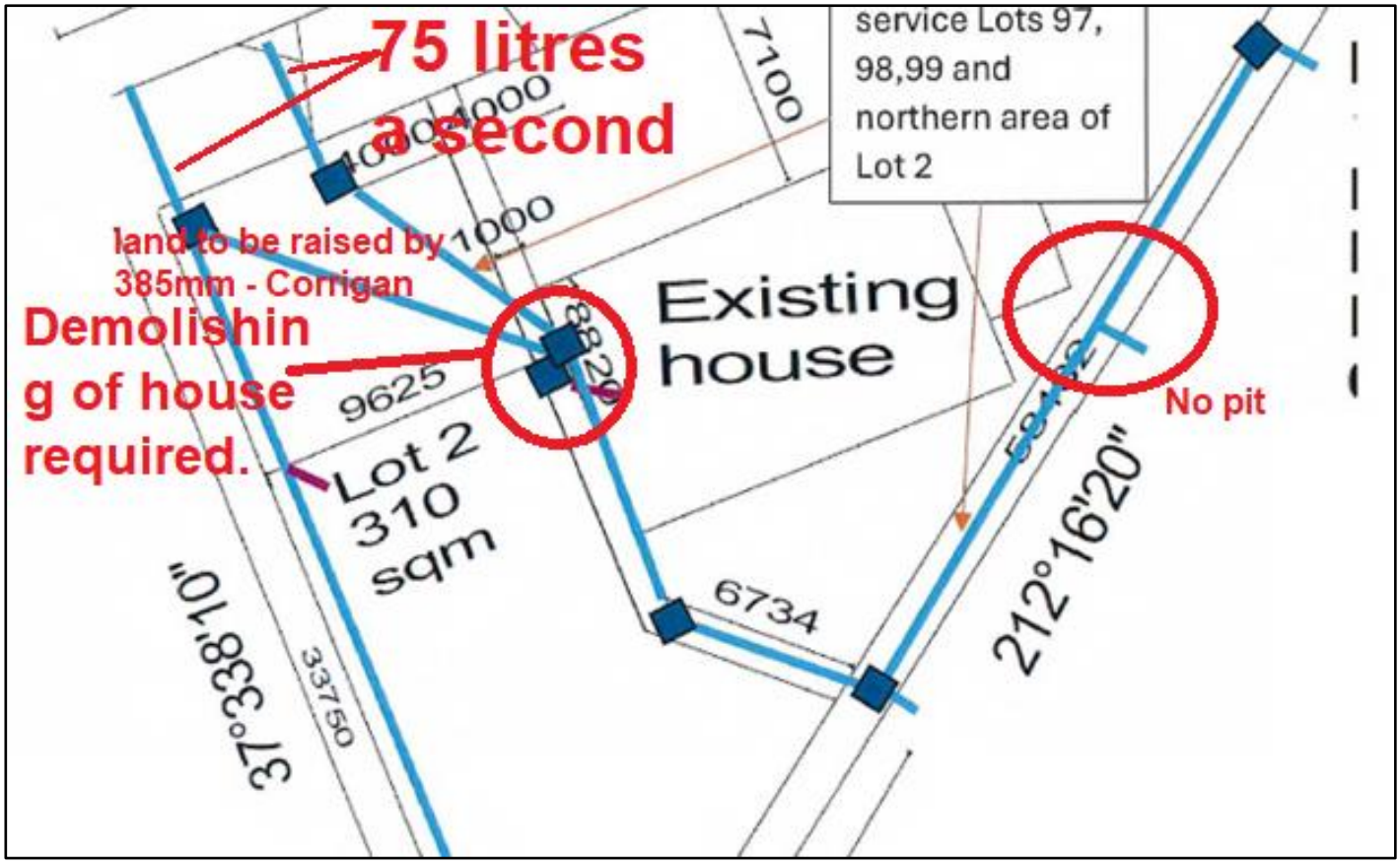
2.8 In my opinion the triggers for code or impact assessable development listed in table 5.8.1 would not be engaged following approval because:

(a) the stormwater works would not involve filling or excavation of the type described in the table;

(b) the works would not precede a ROL or MCU which was assessable[2];

(c) the works are not prescribed tidal work; and

(d) the works do not involve extracting gravel, rock, sand or soil from the place where it occurs naturally.



Corrigan Second solution

144. This concept works on the Corrigan argument that Council laws will allow two kerb adaptors of maximum 30 litres per second.

145. Corrigan proves this solution doesn't work.

146. Corrigan numbers say 75 litres.

> Option for less detention (and two kerb discharge locations to limit kerb discharge as per Chapter 7, 7.6.3.1(1)))

147. Corrigan second solution still requires 75 - 60 = 15 litres of detention.

Corrigan solution 2

148. 15 Litres per second detention

149. 54,000 litres per hour.

150. Six dodgy rainwater tanks will last one hour.

151. 60 litres per second to the kerb which is inlawful with S7.6.3.1.1(2) and BSD 8113.

Council assessment of Killarney Ave properties

152. A Council assessment manager will observe that the properties fall downhill.

153.Assuming that the Killarney Ave lots require lawful point of discharge, the assessment manager.

154. The assessment manger will asses the survey plan provided by the applicant to see if there is any fill provided for the front lots.

Examples –

115 Pope St Tarragindi

161 Baskerville St Brighton

16 Quirinal Cr Seven Hills

19 Idriess St Oxley

The last two projects have been completed by Manteit

155. If the applicant proposal is to fill the front lots, then they should be filled to 14m setback, then batter or more fill to the boundary.

156. The Assessment Manager will then possibly be notified by the applicant that the rear lots have a detention system plan from 128 Ashridge Rd Darra.

157. If the assessment manager accepts that perhaps 3 of the rear lots will have rainwater tanks, The assessment manager will still be seeking lawful point of discharge for the middle lots perhaps sideways to the lots on the left, in Killarney Ave.

158. The point is that without a lawful point of discharge demonstrated for all the lot, then the development will not be approved.

159. Council laws already state that they will not approve a subdivision application based on detention tanks, there is no need for Manteit to supply upstream drainage.

160. On the whole, considering all information, the Killarney lots should look to provide a 375mm concrete pipe at the rear, from right to left.

161. Who will the owner of 128 Ashridge Rd call when the rusty hardware falls apart on the rainwater tanks and 9,000,000 litres a day floodwater fall onto his site? The assessment manager. Sorry, but this is true.

162. The Wivenhoe Dam is a great example where the dam stores drinking water plus flooding.

They spent 10 years after 2011 to find out who was to blame for the flooding. This situation will happen with any rainwater tank proposal.

163. Corrigan invites developers and private certifiers to commit offences under S164 of the Planning Act and S84 of the building Act.

164. Corrigan thinks a private certifier will allow any changes made by a development that do not comply with a Development Permit under S164 of the Planning Act and he won't get a $725,000 fine under the Planning Act.

165. Corrigan thinks that private certifiers are prepared to lose their licence by contravening S84 of the building Act.

However, my experience is that private certifiers are bound by the previous approval (DA).

166. For Corrigan to imply that persons should commit offences, is a serious matter, and Mr Corrigan advices should be reported to other bodies.

166. Onsite drainage and red line plan changes.

Outlook

Fw: 128 ASHRDIGE RD DARRA DAVID MANTEIT NEW ENQUIRY.

From david manteit <davidmanteit@hotmail.com>
Date Sun 27/04/2025 8:57 AM
To david manteit <davidmanteit@hotmail.com>

Get Outlook for Android

From: Enquiry <Enquiry@pcgroup.com.au>
Sent: Monday, February 10, 2025 11:11:26 AM
To: davidmanteit@hotmail.com <davidmanteit@hotmail.com>
Subject: RE: 128 ASHRDIGE RD DARRA DAVID MANTEIT NEW ENQUIRY.

Hi David,

I've read your attached letter and can see there's an ongoing matter of appeal. Please take this as informal advice:

Where a DA condition /approved plan requires a stormwater drainage system to be installed in a particular location, then this becomes the legal point of discharge. The National Construction Code (NCC) Vol 2 Part 3.3.5 requires the appropriate authority (the building certifier) to be satisfied with the position and manner of discharge. There is also the point that the building development approval must be consistent with earlier development approvals (in your case the reconfig).

My view is that if I were engaged as the building certifier for a building development application on this site, I would have to go with the council approved location of the stormwater drainage system and not consider an alternative location.

Therefore I'd require a modified DA approval condition to change the approved location of the system before I'd accept it.

Regards,

Mitch Holmes
Director
QLD A1269539 NSW BPB2512
P: 1300 060 136
M: 0498 224 446

PROFESSIONAL CERTIFICATION GROUP

building partnerships

From: david manteit <davidmanteit@hotmail.com>
Sent: Friday, 7 February 2025 11:18 AM
To: Enquiry <Enquiry@pcgroup.com.au>
Subject: 128 ASHRDIGE RD DARRA DAVID MANTEIT NEW ENQUIRY.

HI

https://outlook.live.com/mail/0/ 1/2

Informal advice from Professional Cerification Group.

RE: NEW ENQUIRY 128 ASHRIDGE RD DARRA DAVID MANTEIT

From

Date

To davidmanteit@hotmail.com <davidmanteit@hotmail.com>

Hi David,

Regarding this matter, it should be addressed with the council directly. The Civil works must comply with the Development Approval (DA) . Certifiers are not accountable for civil works, and typically, the DA process mandates RPEQ sign-off or a council inspection to ensure compliance with the approval requirements.

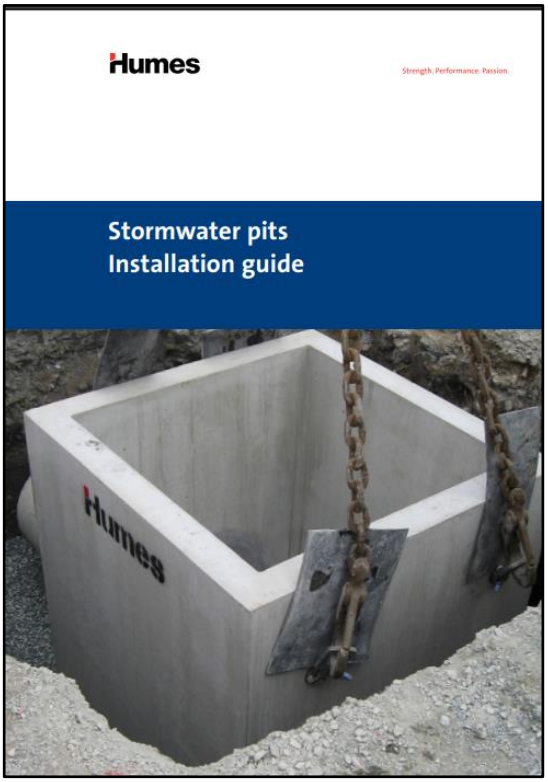
Thanks

Sarah

Advice from another Certifier.

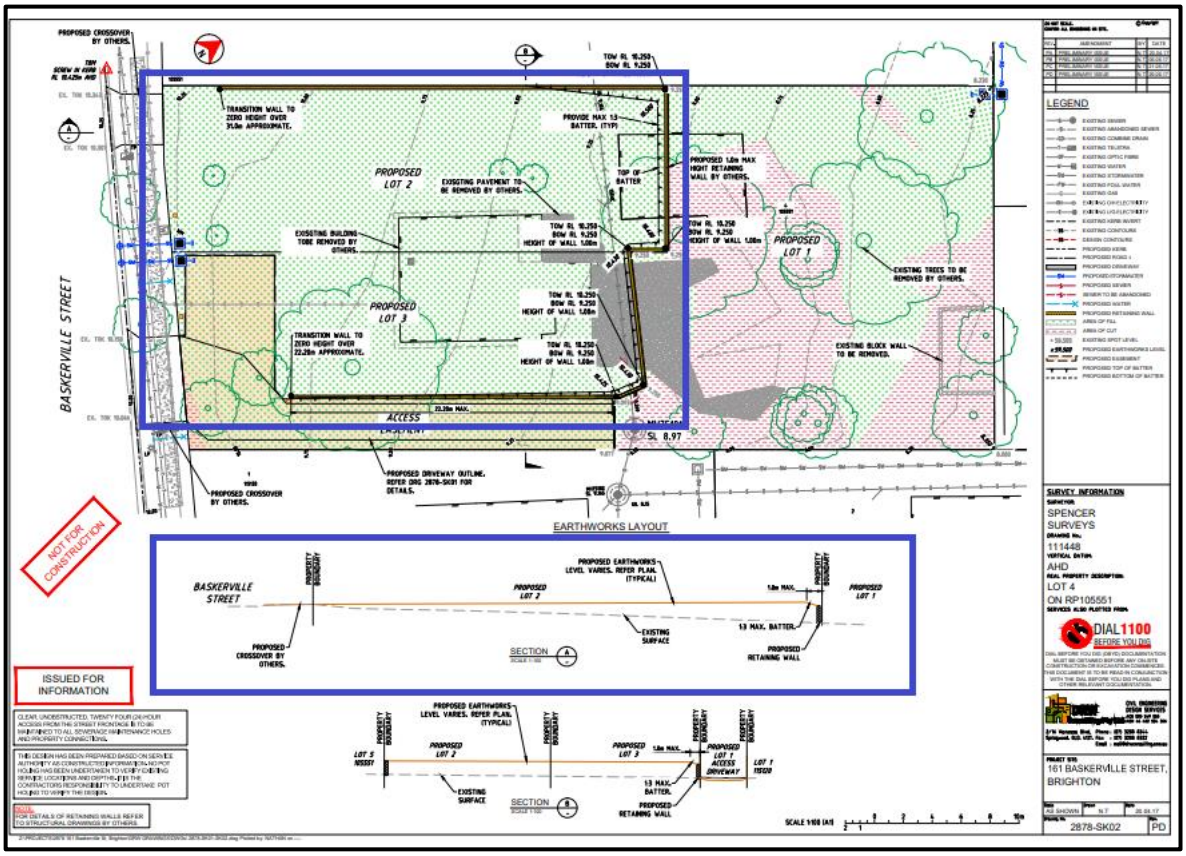
Pipe and pit construction

Typical pipe and pit.

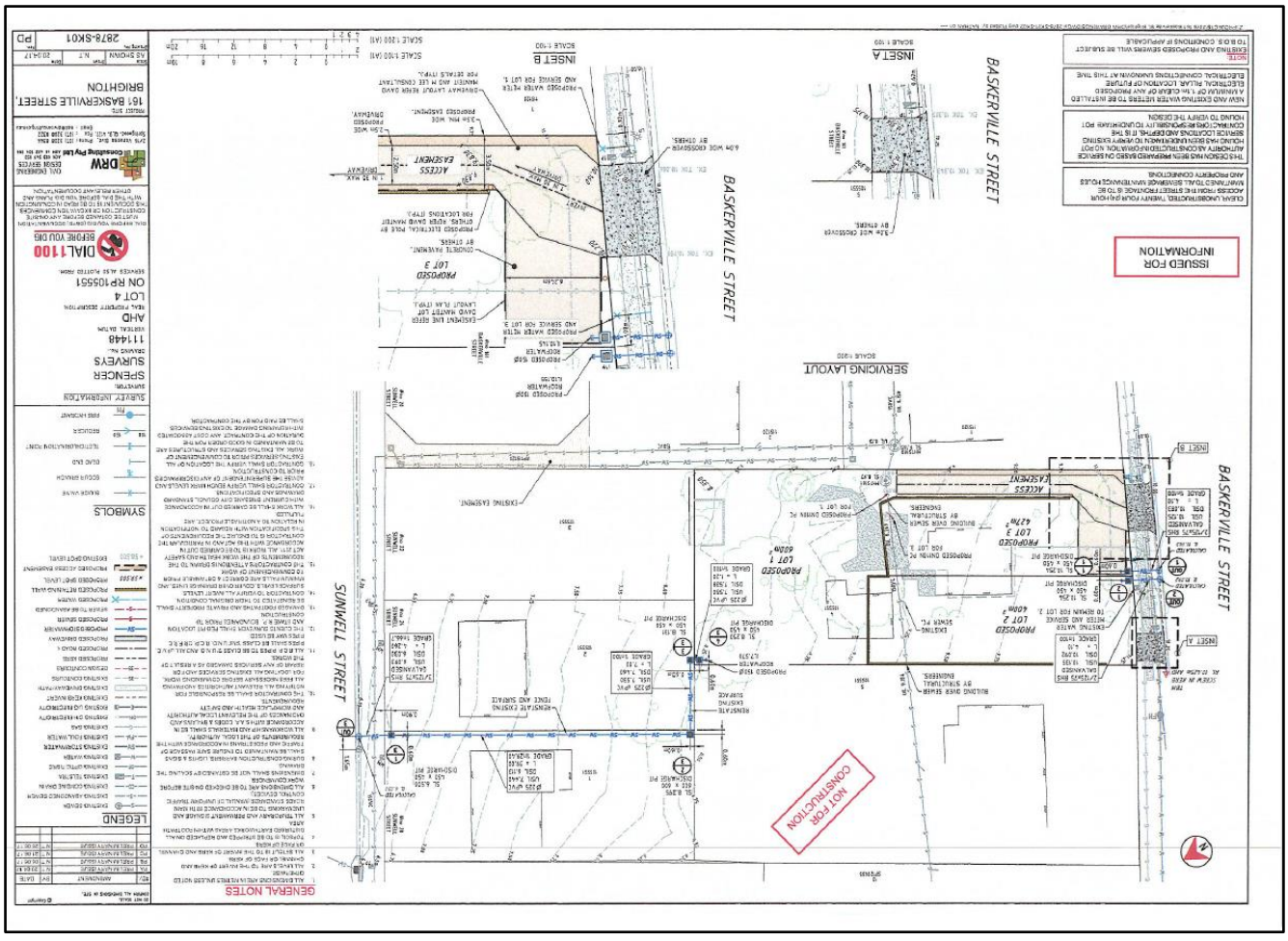


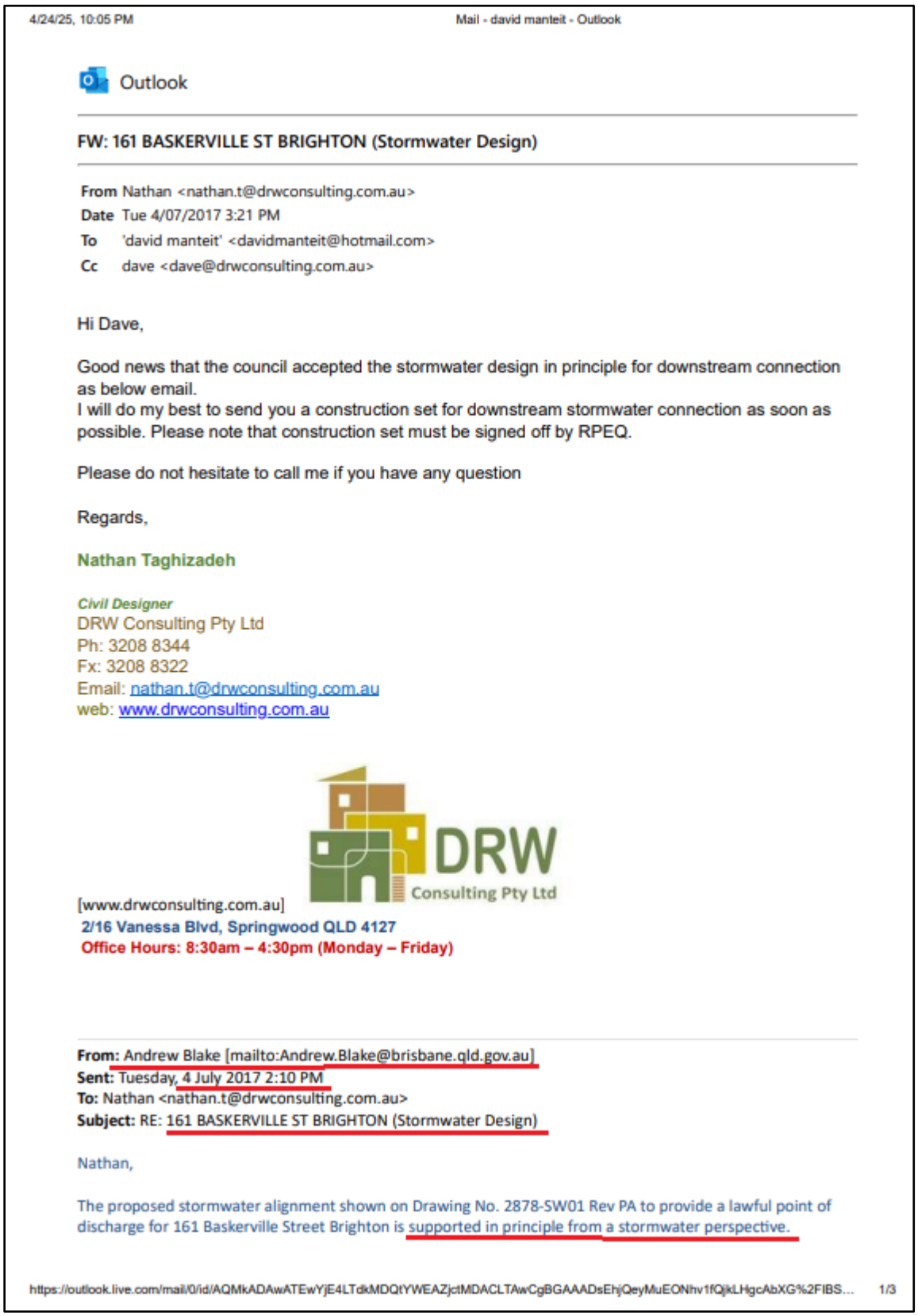
Typical pipe and pit.

Other stormwater examples



161 Baskerville St Brighton - fill





4/24/25, 10:05 PM Mail - david manteit - Outlook

Outlook

FW: 161 BASKERVILLE ST BRIGHTON (Stormwater Design)

From Nathan <nathan.t@drwconsulting.com.au>
Date Tue 4/07/2017 3:21 PM
To 'david manteit' <davidmanteit@hotmail.com>
Cc dave <dave@drwconsulting.com.au>

Hi Dave,

Good news that the council accepted the stormwater design in principle for downstream connection as below email.
I will do my best to send you a construction set for downstream stormwater connection as soon as possible. Please note that construction set must be signed off by RPEQ.

Please do not hesitate to call me if you have any question

Regards,

Nathan Taghizadeh

Civil Designer
DRW Consulting Pty Ltd
Ph: 3208 8344
Fx: 3208 8322
Email: nathan.t@drwconsulting.com.au
web: www.drwconsulting.com.au

[www.drwconsulting.com.au]
2/16 Vanessa Blvd, Springwood QLD 4127
Office Hours: 8:30am – 4:30pm (Monday – Friday)

From: Andrew Blake [mailto:Andrew.Blake@brisbane.qld.gov.au]
Sent: Tuesday, 4 July 2017 2:10 PM
To: Nathan <nathan.t@drwconsulting.com.au>
Subject: RE: 161 BASKERVILLE ST BRIGHTON (Stormwater Design)

Nathan,

The proposed stormwater alignment shown on Drawing No. 2878-SW01 Rev PA to provide a lawful point of discharge for 161 Baskerville Street Brighton is supported in principle from a stormwater perspective.

https://outlook.live.com/mail/0/id/AQMkADAwATEwYjE4LTdkMDQtYWEAZjctMDACLTAwCgBGAAADsEhjQeyMuEONhv1fQjkLHgcAbXG%2FIBS... 1/3

Above - 161 Baskerville St Brighton – letter from Andrew Blake verbal advice of plan is ok.

There is never a formal approval given.

Onsite Drainage

7.6.2 Roof water disposal in residential areas

(1) All lots that do not fall directly towards the road must be provided with a rear allotment roof-water drainage system. The inter-allotment drains should generally be placed in the allotments which they serve directly. This system is detailed in BSD-8111 and BSD-8112.
(2) Roof-water drainage systems are classified as private drains with the responsibility for future maintenance lying with the property owners.
(3) In local residential streets, an approved full height kerb adaptor must be provided in the kerb, 400mm from the projected low side boundary for each lot.
(4) In streets where footpaths will be constructed, kerb adaptors as per above with a length of UPVC pipe (sewer class SN8) extended from the adaptor to beyond the concrete footpath are required as per BSD-8114.
(5) All roof-water pipes >150mm nominal diameter are to connect to a stormwater gully or maintenance hole.

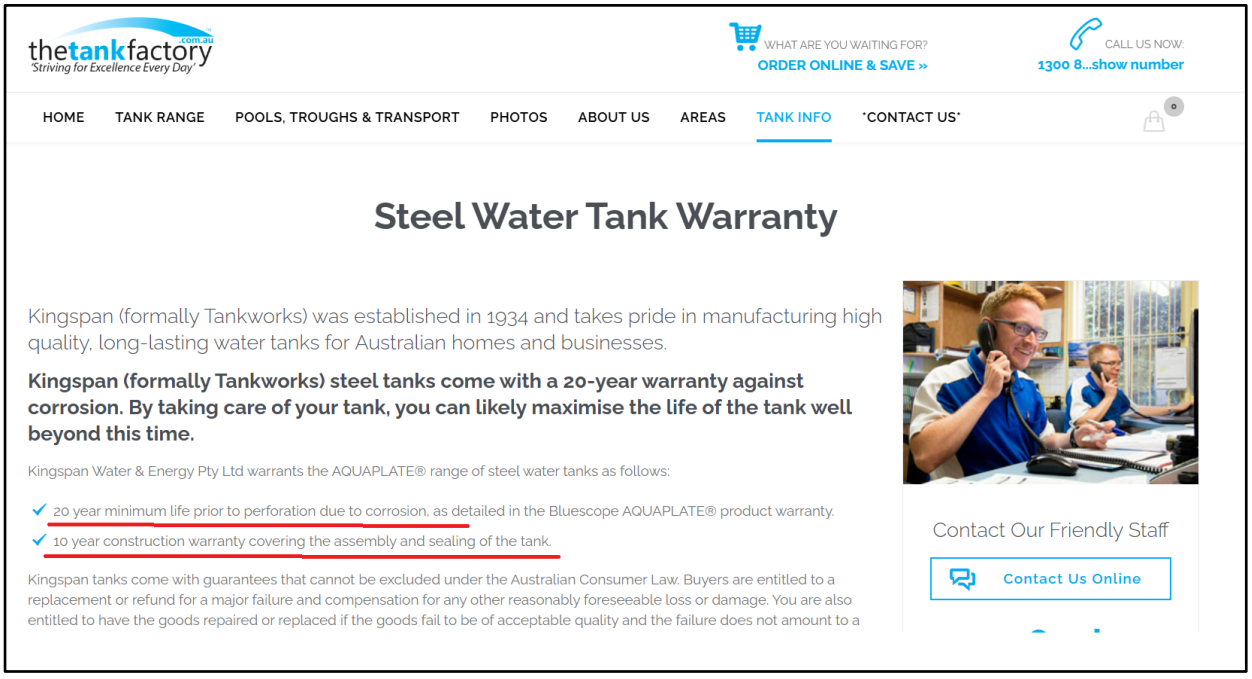
Penalties

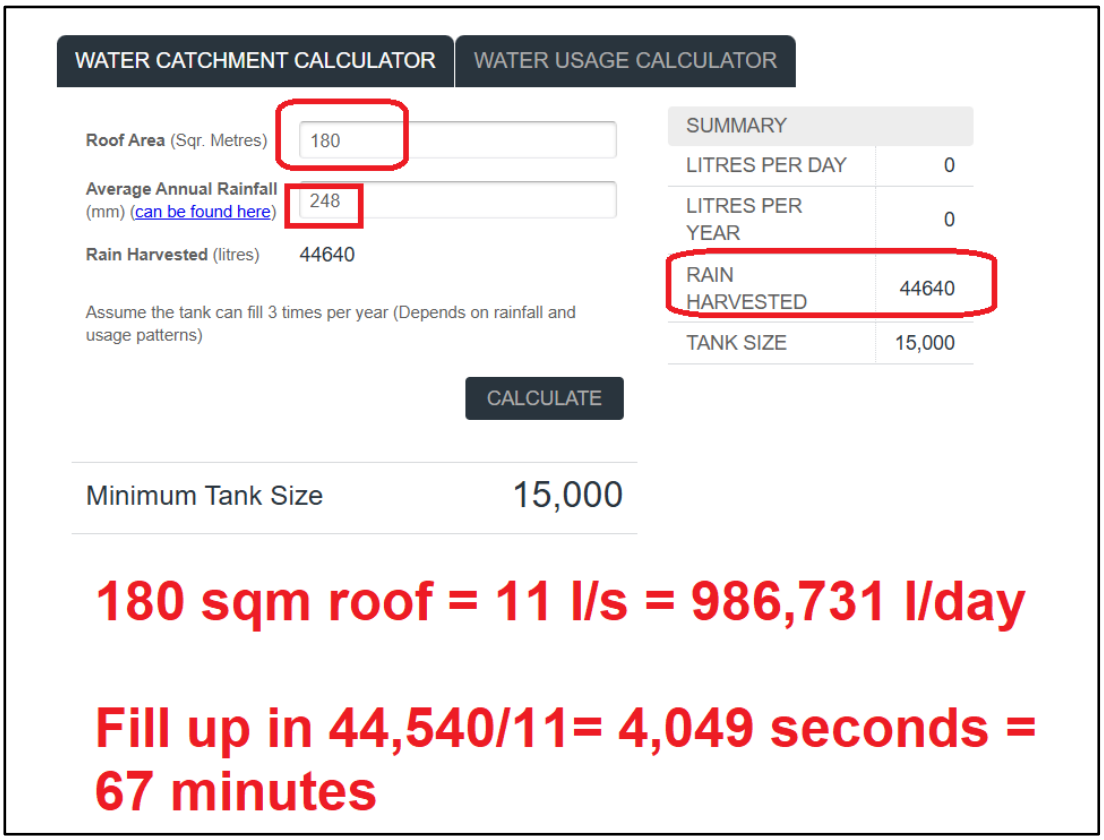
Enforcement action, if necessary, may include:

- notices and orders, such as a stop work notices or enforcement notices
- prosecution for criminal offences
- fines
- injunctions to restrain or remedy serious breaches (court orders).

It is a criminal offence to breach building, environmental and planning laws.

Water tank information





WARRANTY CONDITIONS FOR DURAPLAS POLYETHYLENE PRODUCTS

1) DURAPLAS INDUSTRIES PTY. LIMITED And Williams Bros Service Pty Ltd (t/a TheTankFactory.com.au, Duraplas Tweed Tanks, Duraplas Coffs Coast, Duraplas Midcoast) (herein referred to as "The Company") guarantees that its tanks are free from defects caused by faulty manufacture.

2) The company also warrants that the Polyethylene **"New Generation Cylindrical" & "Slimline Urban" Tank ranges** will perform the function for which it is designed, namely holding potable water at ambient rainwater temperatures for a period of **20 years from the date of purchase (10 + 10 year warranty – see details below)**, subject to the conditions herein as specified. **Septic** Range of products are warranted for a period of **7 years** from the date of purchase.

Industrial, Commercial, Truck Tanks™, Underground, Aquaculture, Chemical, Diesel, Adblue, Smartbund™, Molasses Tanks, Troughs, Planters and Agricultural (AG), Plunge Pool Ranges of products are warranted for a period of **5 years** from the date of purchase. **Duraplas boats are warranted for a period of 4 years** from the date of purchase. Duraplas warrants any **poly welded fittings** for a period of **12 months** from the date of welding.

Should any Duraplas poly product fail to perform the function for which it was designed within the specified period of time, the company shall, at its discretion, either.

a) Repair or Replace the above ground Water tank within the initial 10-year period; for Final 10-year period Repair or Replace the water tank, calculating the cost on a Pro-Rata basis. (eg: Year 12 – 40% residual, year 16 – 20% residual)

b) Repair or Replace other product, within specified warranty period nominated for that product

3) The original invoice must be kept as proof of purchase to validate the warranty. The warranty is not transferable.

4) This warranty shall be null and void if:

a) The tank or product is used for the purpose of storing goods other than potable water without first obtaining the written approval of the company.

b) The tank or product is not installed, maintained (see www.duraplas.com.au) or used in accordance with the company's installation procedures.

c) The tank or product has been subjected to abuse, misuse or any form of willful or accidental damage; or

d) Damage is caused by means other than manufacturing defect or by means otherwise outside the control of Duraplas, including natural disasters such as earthquakes, landslides & ozone depletion.

5) The warranty is void where any person has walked on or applied any load to the top of the tank. (excluding underground tanks installed in accordance with specifications)

6) The Purchaser is responsible to secure the product, once delivered to the site. Duraplas accepts no responsibility for any damage caused by an unsecured product.

7) Weathering and or degradation of the product over long periods of time (due to climatic conditions) and the effects thereof as expected by current industry standards is not covered by this warranty.

8) The purchaser has made their own enquiries as to the fitness of the product for the purpose to which it is to be put and acknowledges that Duraplas makes no representations regarding fitness for a particular purpose or situation, but only the specifications of the product sold. This warranty does not apply where the purchaser installs or uses a tank or product for a purpose or in a situation for which it was not fit.

9) Where any provisions of this warranty are inconsistent with the provisions of any statute, rule or regulation under the common law, that proviso shall be treated as excised only to the extent of the inconsistency and leaving in so far as possible the balance of the provisions of this Warranty unaffected.

10) "This Warranty does not apply to any fault or defect specifically brought to the attention of the customer to purchase" and then go on to specify in writing the nature of the defect.

11) All conditions, warranties, obligations and liabilities of any kind (other than the warranty expressly agreed to by the company and outlined above) which are or may be imposed or implied to the contrary by any statute, rule or regulation, or under the common law and whether arising from the negligence of the company, its servants or otherwise are hereby excluded except to the extent that the company may be prevented from doing so by any statute, rule or regulation under the common law.

12) DURAPLAS INDUSTRIES PTY. LIMITED And Williams Bros Service Pty Ltd (t/a TheTankFactory.com.au, Duraplas Tweed Tank, Duraplas Coffs Coast, Duraplas Midcoast) retains the ownership of all goods sold until full payment has been made by the purchaser

SITE PREPARATION AND MAINTENANCE FOR ABOVE GROUND DURAPLAS POLYETHYLENE TANKS

(FOR RAINWATER UNDERGROUND, PLUNGE POOL AND SEPTIC PRODUCTS, SEE PROVIDED SPECIFIC INSTALLATION GUIDES)

1. Ensure the location of the tank is LEVEL STABLE GROUND which has UNIFORM COMPACTION (free of soft spots). Do not locate a Duraplas water tank close to retaining walls or embankments without first consulting a professional engineer to ensure ground is capable of supporting the weight of the full tank.

2. Ensure the surface of the site is free from sharp objects or stones.

3. Spread a layer (approx. 75-100mm) of METAL DUST (3mm) (bedding sand can be used but is prone to erosion) compacted evenly over the level ground. Place the tank directly on top of this material, the tank pad needs to be larger than the base of the tank. Alternatively, your Duraplas tank can be sited on a reinforced concrete slab which must be 25mpa (approx. 75-100mm thick with F72 mesh) this level, flat and larger than the base of the tank (consult a professional engineer for slab details)

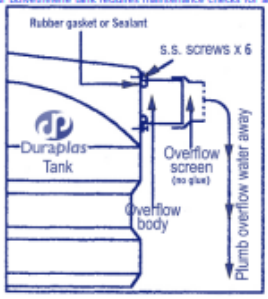
4. Ensure the METAL DUST is contained under the tank at all times and cannot be washed away. This can be achieved by diverting all the runoff water away from the site and retaining the METAL DUST with some form of retaining structure e.g. (cement strip, rocks or sleepers etc.).

5. For stand applications, ensure the stand is designed to carry the weight of a full tank (consult an Engineer). Support slats on the stand should be no further than 30mm apart. For more details see www.duraplas.com.au

6. Ensure all plumbing from the outlet is well supported and cannot be knocked and a flexible coupling must be fitted otherwise the warranty may be voided. A flexible coupling is required directly after the tank outlet to ensure no strain is applied to the outlet and the walls.

7. Ensure all overflows are fitted correctly and plumbed away from the tank site to help reduce the possibility of site erosion. See www.duraplas.com.au

8. Polyethylene tanks will expand when filled. Allowance for this expansion is required when all plumbing work is carried out. Your polyethylene tank requires maintenance checks for any site erosion and to clean leaves etc. from the tank roof, inlet and overflow screens at regular intervals.



DURAPLAS INDUSTRIES PTY. LIMITED ACN 003 589 973; 9 Robb Street, Russellton Industrial Estate, Alstonville, 2477.

PO Box 218 Wollongbar 2477; 1300 387 275; www.duraplas.com.au

- **IMPORTANT: I, the receiver, have read the Warranty Conditions, Installation and Maintenance procedures and will follow the above instructions**

Receiver Name: _____

Signature: _____

Date: _____

FW -1 REVISION 16/08/2024

One year warranty on metal parts