Peter Berry & Associates Pty. Ltd.
Civil Engineers

Development Response Report

Glenmore Estate, Winchelsea

Prepared for :

Anderson Road Developments Pty Ltd

December, 2019

TABLE OF CONTENTS

APPENDICES

STORMWATER, SERVICING & DEVELOPMENT STRATEGY

Glenmore Estate - Winchelsea

1.0 Background

Appendix A attached, known as The Green Estate, indicates the original parcel of land our Client proposed to develop into two distinct lot sizes.

The area to the north comprised approximately 1,000Sm sewered allotments, while the area to the south were proposed to be approximately 4,000Sm unsewered allotments.

Since then, our Client has purchased a similarly sized parcel immediately abutting the original site's western boundary to be known as Glenmore Estate, and is proposing that this area be developed as 2,000Sm lots which are required to be sewered.

The sewering of the southern portion of this area requires a sewer pumping station and this has been allowed for in the reserve on The Green Estate immediately to the east.

As a result a revised development plan has been prepared by St Quentin Consulting and is shown as Appendix B, with its proximity to the pumping station indicated.

2.0 Document Review

The drainage intentions for the original Green Estate parcel, formed part of our initial Drainage Response for the Anderson Street subdivision submitted as part of the planning application for a development permit based on the lot sizes shown in Appendix A.

The final report submission was in July 2011 and was followed by some queries raised by Council in November 2011. These were responded to prior to the issuing of a Planning Permit 11/0108 in that same month.

The stormwater strategy for the northern part of the original parcel had been put in place, and for the southern parcel a revised response was prepared in July 2018 and recently accepted.

This revised response for The Green Estate, effectively separated a joint retardation proposal for the Glenmore and Green Estates, resulting in independent basins for each property.

The location for the Glenmore basin is shown as a drainage reserve on Appendix B.

This will be developed further below.

3.0 Stormwater strategy

3.1 Catchment Parameters

The computations in this and the original drainage response are based on the catchment areas provided by the Surf Coast Shire shown in Appendix C.

As a result, the development of The Green Estate sees reduced external areas entering at the northern road at the western boundary (15.5ha) and at the southern road (61.5ha) location.

Appendix D represents the catchment areas, the lots drainage directions, the piped and swale directions as well as the overflow path network.

The fraction impervious values for the various developed and rural land types is also shown and have been derived from the Infrastructure Design Manual.

3.2 Northern Catchment

As the original drainage response made no allowance for development further west, the piped drainage system through what became Stage 2, provided no additional capacity to cater for upstream.

As well the contour low point of the now proposed developed/commercial area is in part located on the commercial and current farming zone land.

At that location a drainage pipe does exist with an allowance of 113 l/sec for an outlet from a detention basin proposed at that location.

As a result it will be necessary to provide a 1 in 100 year drainage pipe network within the northern catchment to deliver water to the proposed drainage basin.

This is because the overland flow extended from the original drainage response, is unlikely to be able to be directed via the drainage reserve to the basin.

That said, there is an overland flow path shown on Appendix D, as well as an interconnection to the pipework in Stage 2 of the original parcel.

This connection is to make allowance for the 1 in 10 year rural runoff (430 l/sec) from the future land to the west and is on the assumption that the downstream runoff from the 2,000m^2 lots has cleared the system.

The system at this point has a minimum capacity of 615 l/sec with any balance provided for overland.

The computations for the basin shown on the commercial land are shown later in this report.

3.3 Southern Catchment

As part of Engineering plans prepared for the original 4,000m^2 allotments, it was demonstrated that with minor upgrades to the downstream open drain east of Anderson Street and within an existing easement, would result in an outlet capacity of 2,728 l/sec.

However since, then Council has determined that the outlet discharge from the 84 ha parcel west of Anderson Street, will be limited to the capacity of the two existing box culverts at this location.

This capacity has been calculated as 2,086 litres/sec and on an area basis, Glenmore's share would be 368 litres/sec.

The minor upgrades downstream east referred to above, will still need to be made due to the deepening of the Anderson Street culverts that will be required as foreshadowed in 0829E/A & B engineering plans in Council's possession.

It is Council's view that the downstream drainage must be able to cater for upstream rural runoff and have agreed to be involved in any downstream negotiations to achieve the upgrades required.

The 368 litres/sec value can be seen in the detention basin calculations below.

The intensity values used in the basin calculations below, were generated using the polynomial coefficients table immediately following.

LOCATION **38.250 S 143.975 E** *

LIST OF COEFFICIENTS TO EQUATIONS OF THE FORM

$$ln(I) = A + B \times (ln(T)) + C \times (ln(T))^2 + D \times (ln(T))^3 + E \times (ln(T))^4 + F \times (ln(T))^5 + G \times (ln(T))^6$$

T = TIME IN HOURS AND I = INTENSITY IN MILLIMETRES PER HOUR

RETURN PERIOD	A	B	C	D	E	F	G
1	2.548428	-0.61542E+0	-0.34645E-1	0.99113E-2	-0.32337E-5	-0.51277E-3	0.45238E-4
2	2.822782	-0.62488E+0	-0.35999E-1	0.10114E-1	0.16030E-3	-0.52606E-3	0.43365E-4
5	3.101305	-0.64626E+0	-0.39845E-1	0.87252E-2	0.97487E-3	-0.29855E-3	-0.18426E-4
10	3.253476	-0.65968E+0	-0.41314E-1	0.86427E-2	0.12433E-2	-0.24847E-3	-0.35080E-4
20	3.428890	-0.67094E+0	-0.42575E-1	0.83356E-2	0.14566E-2	-0.17861E-3	-0.51327E-4
50	3.637234	-0.68432E+0	-0.44469E-1	0.79872E-2	0.18114E-2	-0.10444E-3	-0.73460E-4
100	3.782078	-0.69356E+0	-0.45469E-1	0.76883E-2	0.20068E-2	-0.37987E-4	-0.89185E-4

As with the northern catchment, directional arrows (red) indicate both the overland flow path and the swale system that directs water to the detention basin.

An open drainage network either side of the road pavement and within easements in lots as opposed to piped drainage are proposed and will form part of the Water Sensitive Urban Design for this catchment.

There will be piped drainage at intersections and beneath lot accesses.

From this point onwards during development, an allowance within the northern piped network and the southern swale network will be made to account for the "potential low density residential growth" area shown in the Winchelsea Framework Map clause 21.09 of the Surf Coast Planning Scheme, albeit that it will only be in a rural sense as further development would require stormwater runoff to be retarded on these outside areas.

4.0 Detention Basins

Rural runoff calculations are not required in either the northern catchment or southern catchments, as downstream drainage is in place and the outlet capacity is known as described above.

The volumes for each basin have been determined using Poertners (modified rational) Method and rainfall intensities downloaded from the Bureau of Meteorology at this location, shown above.

4.1 Northern Basin

The catchment areas contributing to this basin have two different co-efficients of runoff, with an equivalent area of 11.99ha as shown in Appendix D.

Allowing for the 113 l/sec outlet as previously outlined, the basin volume is determined as 2,594 cubic meters.

Area (sm)	119900	Coefficient of Runoff	0.57

Time of Concentration (mins)	Q (In) [l/sec]	Q (Out) [l/sec]	Intensity (mm/hr)	Poertner Method
2	4465	113	235.18	522
4	3587	113	188.93	840
6	3067	113	161.55	1077
8	2701	113	142.30	1263
10	2429	113	127.95	1417
12	2216	113	116.75	1548
14	2045	113	107.70	1663
16	1902	113	100.20	1765
18	1782	113	93.85	1856
20	1678	113	88.38	1939
22	1588	113	83.62	2014
24	1508	113	79.43	2083
26	1437	113	75.70	2147
28	1374	113	72.35	2206
30	1316	113	69.33	2261
32	1264	113	66.59	2312
34	1217	113	64.08	2360
36	1173	113	61.78	2405
38	1133	113	59.67	2447
40	1096	113	57.71	2487
42	1061	113	55.89	2525
44	1029	113	54.20	2560
46	999	113	52.62	2594
47	971	113	51.14	2572
48	944	113	49.75	2551
49	920	113	48.44	2531
50	896	113	47.21	2513

Storm Frequency (Yr)	
Winchelsea	100 yr
2	235.18
4	188.93
6	161.55
8	142.30
10	127.95
12	116.75
14	107.70
16	100.20
18	93.85
20	88.38
22	83.62
24	79.43
26	75.70
28	72.35
30	69.33
32	66.59
34	64.08
36	61.78
38	59.67
40	57.71
42	55.89
44	54.20
46	52.62
48	51.14
50	49.75
52	48.44
54	47.21

4.2 Southern Basin

The area of this catchment is 14.815ha with an outlet allowance of 368 l/sec, results in a storage volume requirement of 3,165 cubic metres as tabled below.

Area (sm)	148150	Coefficient of Runoff	0.57

Time of Concentration (mins)	Q (In) [l/sec]	Q (Out) [l/sec]	Intensity (mm/hr)	Poertner Method
52	1136	368	48.44	2949
54	1107	368	47.21	2970
56	1080	368	46.05	2989
58	1054	368	44.95	3007
60	1030	368	43.91	3023
62	1007	368	42.92	3039
64	985	368	41.98	3053
66	964	368	41.08	3065
68	944	368	40.23	3077
70	925	368	39.41	3088
72	906	368	38.64	3098
74	889	368	37.89	3107
76	872	368	37.18	3116
78	856	368	36.49	3123
80	841	368	35.84	3130
82	826	368	35.21	3136
84	812	368	34.60	3141
86	798	368	34.02	3146
88	785	368	33.46	3150
90	772	368	32.92	3154
92	760	368	32.39	3157
94	748	368	31.89	3159
96	737	368	31.41	3161
98	726	368	30.94	3163
100	715	368	30.48	3164
102	705	368	30.04	3165
104	695	368	29.62	3165
106	685	368	29.20	3165
108	676	368	28.80	3164
110	667	368	28.42	3163

Storm Frequency (Yr)	
Winchelsea	100 yr
52	48.44
54	47.21
56	46.05
58	44.95
60	43.91
62	42.92
64	41.98
66	41.08
68	40.23
70	39.41
72	38.64
74	37.89
76	37.18
78	36.49
80	35.84
82	35.21
84	34.60
86	34.02
88	33.46
90	32.92
92	32.39
94	31.89
96	31.41
98	30.94
100	30.48
102	30.04
104	29.62
106	29.20
108	28.80
110	28.42

The footprint of each of these basins is shown in Appendix D, making allowance for pipe outlets either existing or proposed and having regard for batter slopes and embankment walkways where they apply.

5.0 Water Sensitive Urban Design (WSUD)

Water quality performance objectives are set out in "Urban Stormwater, Best Practice Environmental Management Guidelines" and relate to the percentage removal of several nominated pollutants.

The objectives are –

80% reduction in the typical urban annual load for total suspended solids (TSS)

45% reduction in the typical urban annual load for total phosphorus (TP), and

45% reduction in the typical urban annual load for nitrogen (TN)

70% reduction gross pollutants (litter).

A MUSIC (Model for Urban Stormwater Improvement Conceptualization) assessment has been carried out on the major catchments and its findings in Appendix E confirms the achievement of the targets above.

5.1 Northern Catchment

Water Sensitive Urban Design

It is proposed that the Water Sensitive Urban Design treatment measures will be carried out by way of a Gross Pollutant Trap and the area of the retarding basin itself.

No allowance has been made to include cleaning within the swales which will provide an added benefit and improve WSUD objective targets.

This sees the achievement of the required levels of pollutant removal except for Total Nitrogen.

The MUSIC modelling target outcomes shown on the plan.

5.2 Southern Catchment

The treatment process for this southern section differs from that of the north in that the removal of pollutants, solids and nutrients is performed by the internal vegetated swale network and those either side of the roads, rather than treatment at the endpoint.

This is essentially due to one catchment being a piped network and the other being an open swale network.

Appendix E includes a plan of the sub catchments shown contributing at the downstream nodes and excludes the value derived from the upstream drains as lots contribute at regular intervals, particularly in the run to the first node at the upstream ends.

The nett result is that the downstream outlet is receiving treated water from the total upstream catchment that has achieved the water quality treatment objectives prescribed.

5.3 External Catchment

No allowance has been made for external areas as they remain undeveloped. In due course should development take place, they will be required to carry out WSUD on their development parcels.

6.0 Services Report

At this time it is prudent to touch on servicing, as this in part affects staging later in this report.

This servicing report provides an overview of the surrounding infrastructure and its ability to satisfy the development proposed.

6.1 Sewerage

Barwon Water is the responsible authority for sewerage services within this area.

While the northern portion of the Glenmore Estate can gravitate to the existing sewer in stage 2 of The Green development, the grade of the land and invert of surrounding sewer, makes it impossible to cater for both the southern part of the original parcel and the southern part of the newly acquired land.

As such a pumping station will be required and its location can be seen marked PS on Appendix B within The Green Estate.

That said the adjacent gravity outfall can cater for the anticipated load.

6.2 Potable Water

Barwon Water is the responsible authority for water services within this area.

Water will be extended from the existing mains internally and will link back to Anderson Street at the southern connection.

The main diameters are 150mm diameter internally and 150mm diameter in Anderson Street.

The mains have a supply level suitable to supply this development proposal.

6.3 Electricity Supply

Powercor is the responsible authority for the provision of electricity within this area.

The development area is surrounded by an underground power network internally and overhead externally in Anderson Street.

Powercor can be taken from the existing assets and reticulated internally.

An underground electrical network will be required to be provided by the developer, with small substations (kiosks) placed throughout the development.

6.4 Telecommunications

NBN is the responsible authority for the provision of telecommunication services.

Inspection of the NBN rollout maps indicate that service is available to this area and will be extended from the existing internal network.

As such application will be made at the time of development to NBN Co, afterwhich pit and pipe work will be placed by the developer ahead of fibre placement by the authority.

6.5 Gas

SPAusnet services is this responsible authority for the placement of gas within the area.

Gas is available within the existing development and will be reticulated internally looping back to Anderson Street in due course.

6.6 Country Fire Authority

Recent bushfires have led to the introduction of perimeter roads to both to provide a setback (fire break) to properties adjacent to undeveloped land and uninterrupted access for fire fighting appliances.

Given that there is likely to be development further to the west in due course, the CFA have agreed to an external fire track.

This is shown on Appendix B and includes a road (gravel track) to the west of the site, pushing north to the Princes Highway and ideally using the existing driveway.

7.0 Staging Plan

As discussed above, while sewer plays a part in staging, the current zoning determines the next stage of the development.

Appendix F indicates the current stage 7 to be developed in the adjoining Green Estate.

This is because stage 7 is currently zoned Low Density Residential Zone (LDRZ) while the newly acquired land to the west is Farming Zone (FZ) and requires rezoning to LDRZ.

Once rezoning is achieved development can proceed from either end as sewer, all other services and drainage basins will be available.

That said, we have chosen stage G1 (Glenmore Estate - Stage 1) to be in the north with stages G2, G3 and G4 proceeding from the south, northward.

Access for these stages will be via The Green Estate.

8.0 Functional Layout Plan

Given the rezoning aspect of this Development Response, we thought it beneficial to prepare a Functional Layout Plan at this time.

It gives Council some idea of road sections intended, and gives flesh to the Stormwater Management Strategy and WSUD components outlined herein.

This plan is shown as Appendix G wherein we have included Stage 7 of The Green Estate for context purposes.

8.1 Northern Catchment

Although there will be a piped network to cater for this area, there will be a swale within the road network as well.

This establishes continuity with the balance of the 2,000Sm development to the south and also provides for the overland conveyance of stormwater from the external catchment. It also accord with the increase road reservation width.

Appendix G , shows the cross-section, driveway type, their suggested location as well as proposed footpath location.

8.2 Southern Catchment

Swale drains as described earlier are the predominant stormwater transfer mechanism, and their location will also be within lots.

The depth of swale within road reserves are shown as deeper in this area due to the need to keep the swale invert below the pavement base.

9.0 Environmental Management Plan

We submit as part of this stormwater strategy, a Environmental Management Plan (EMP) that deals generally with the site as a whole.

This document outlines the major considerations affecting developments, and guidelines for how to deal with them.

It is intended that individual EMP's will form part of the detailed engineering plans for each stage.

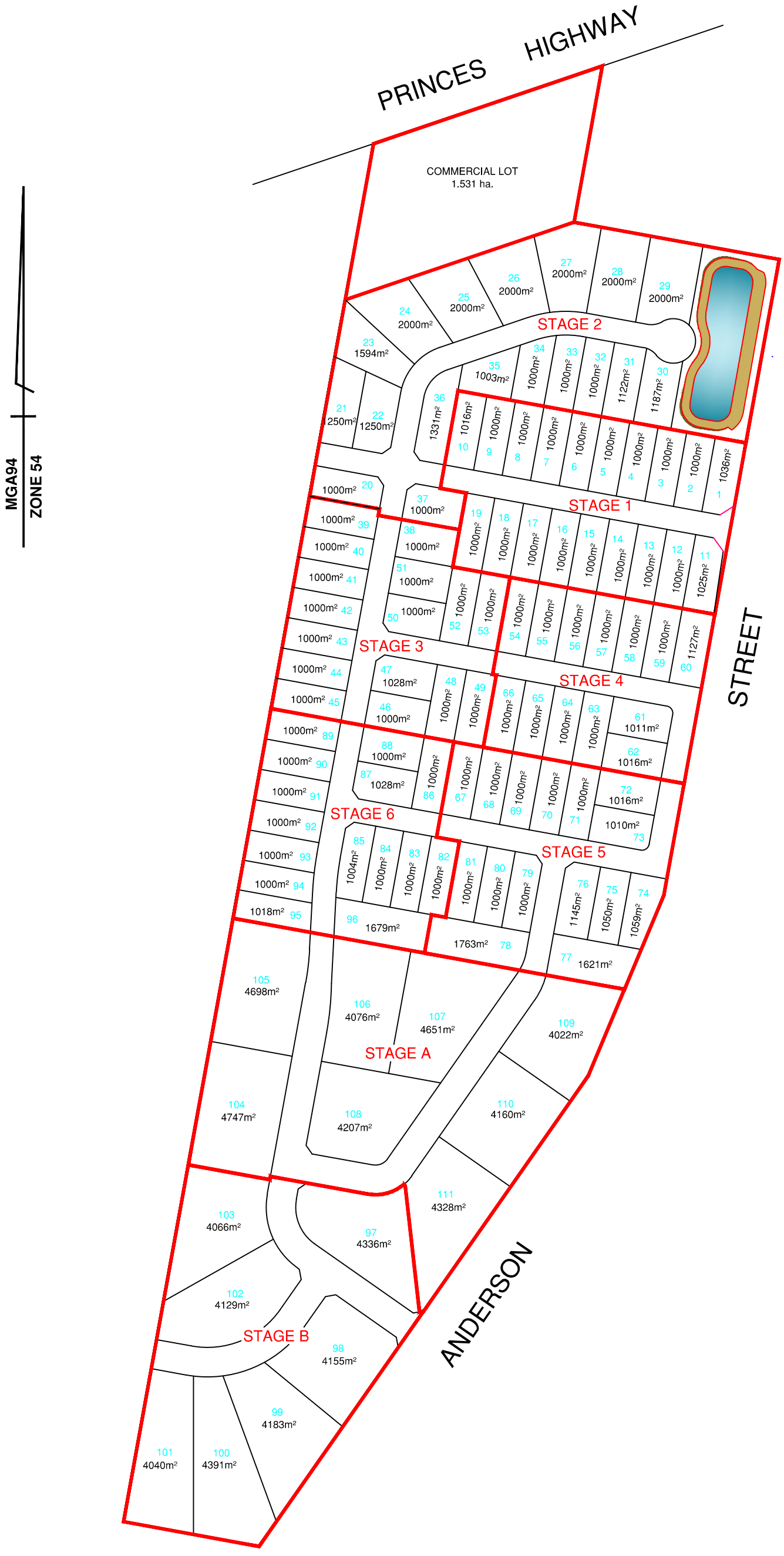
The plan is shown over two sheets indicated at H1 and H2.

10.0 Conclusion

The report has been prepared in support of the rezoning of Farming Zone land in the Glenmore Estate to LDRZ.

This report and the implementation of the proposals it contains, addresses all of the stormwater and water quality treatment issues, demonstrates that staging is systematic, that all services are available, that the transition to a rural road treatment can be achieved in a practical manner and that an environmental site management plan will dictate construction of the various stages.

As such it recommends the adoption of the changes proposed.

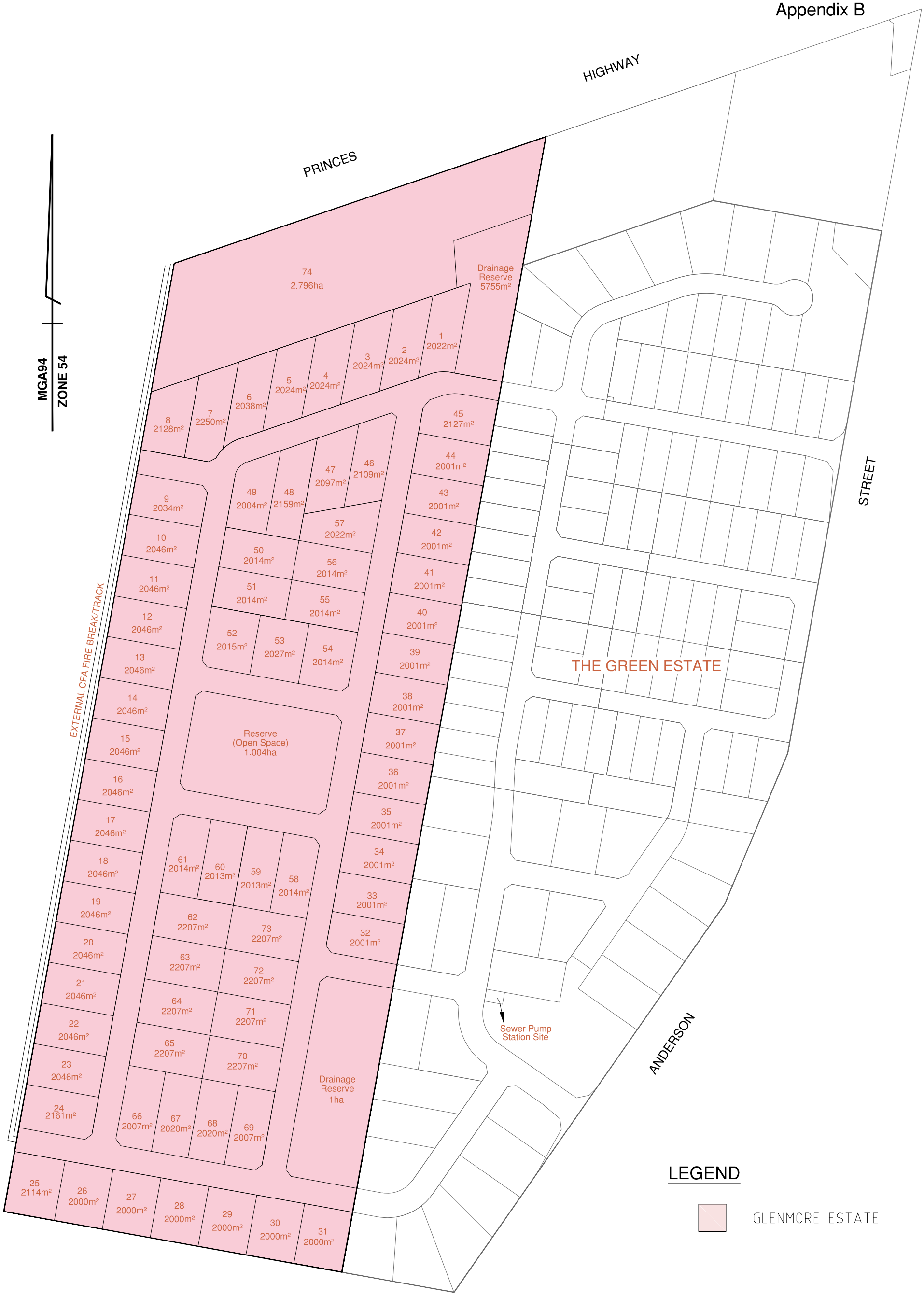


Peter Berry & Associates Pty. Ltd.
Civil Engineers

153 Yarra Street,
Geelong, Victoria, 3220
Telephone: 5223 2799

ORIGINAL DEVELOPMENT
PARCEL PLAN
THE GREEN ESTATE - WINCHELSEA

Appendix B



ST. QUENTIN
Surveyors · Town Planners · Engineers
51 LITTLE FYANS STREET,
P.O. BOX 919, GEELONG 3220
TELEPHONE (03) 5201 1811 FAX (03) 5229 2909

TIE-IN PLAN FOR PROPOSED PLAN OF SUBDIVISION GLENMORE ESTATE WINCHELSEA

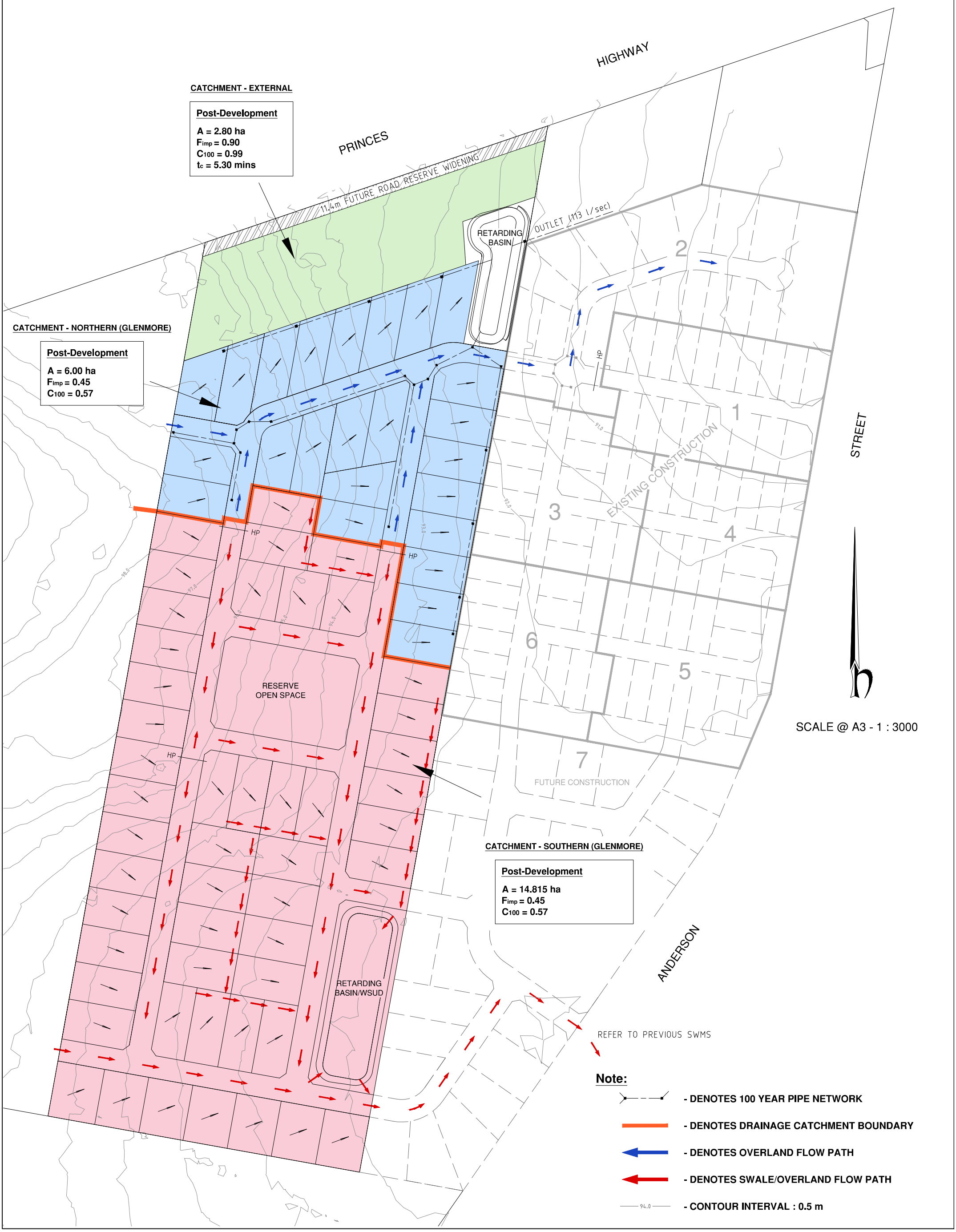
DRAWN	CHECK	LEVEL DATUM
DL	MM	-
DRAWING REF		SURVEY DATE
15377		06/02/2018
VERSION	SCALE	
05	1:3000	A3

Appendix C

SCALE (AT A3) 1 : 7,500

Peter Berry & Associates Pty. Ltd.
Civil Engineers

POST DEVELOPMENT
DRAINAGE CATCHMENT PLAN
GLENMORE ESTATE - WINCHELSEA



Peter Berry & Associates Pty. Ltd.
Civil Engineers
153 Yarra Street,
Geelong, Victoria, 3220
Telephone: 5223 2799

POST DEVELOPMENT DRAINAGE CATCHMENT PLAN GLENMORE ESTATE - WINCHELSEA

Northern Basin MUSIC Output -

Treatment Train Effectiveness - Detention Basin

	Sources	Residual Load	% Reduction
Flow (ML/yr)	21.4	20.9	2.3
Total Suspended Solids (kg/yr)	3170	444	86
Total Phosphorus (kg/yr)	5.7	2.77	51.5
Total Nitrogen (kg/yr)	45.7	32.5	28.8
Gross Pollutants (kg/yr)	1020	0	100

SCALE @ A3 - 1 : 3000

Southern Basin MUSIC Output -

Treatment Train Effectiveness - Detention Basin

	Sources	Residual Load	% Reduction
Flow (ML/yr)	26.8	25.1	6.2
Total Suspended Solids (kg/yr)	3060	506	83.4
Total Phosphorus (kg/yr)	6.68	3.29	50.8
Total Nitrogen (kg/yr)	56.3	36.8	34.6
Gross Pollutants (kg/yr)	1350	0	100

Peter Berry & Associates Pty. Ltd.
Civil Engineers

153 Yarra Street,
Geelong, Victoria, 3220
Telephone: 5223 2799

GLENMORE ESTATE - WINCHELSEA
MUSIC MODEL PLAN

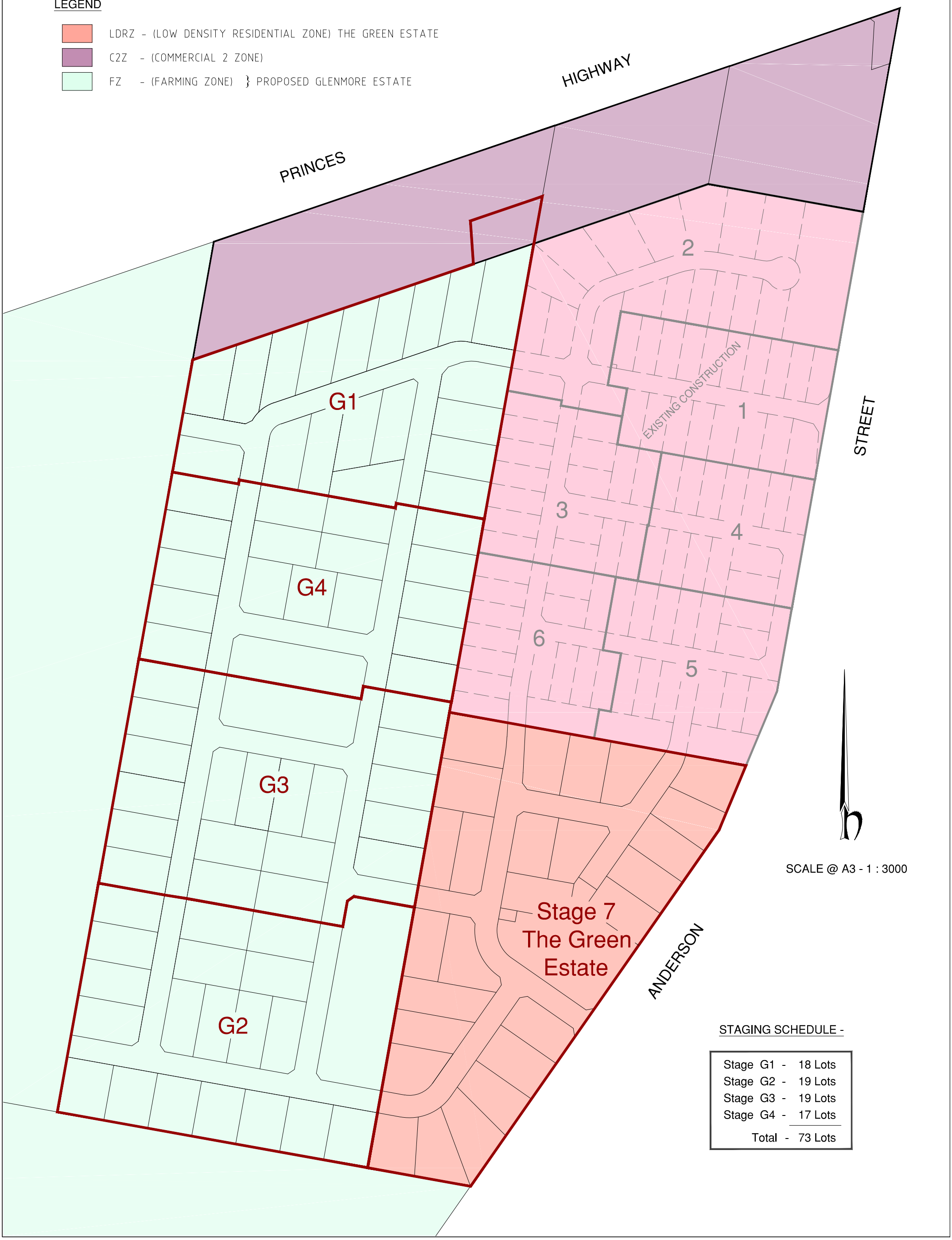
Appendix F

LEGEND

LDRZ - (LOW DENSITY RESIDENTIAL ZONE) THE GREEN ESTATE

C2Z - (COMMERCIAL 2 ZONE)

FZ - (FARMING ZONE) } PROPOSED GLENMORE ESTATE



SCALE @ A3 - 1 : 3000

STAGING SCHEDULE -

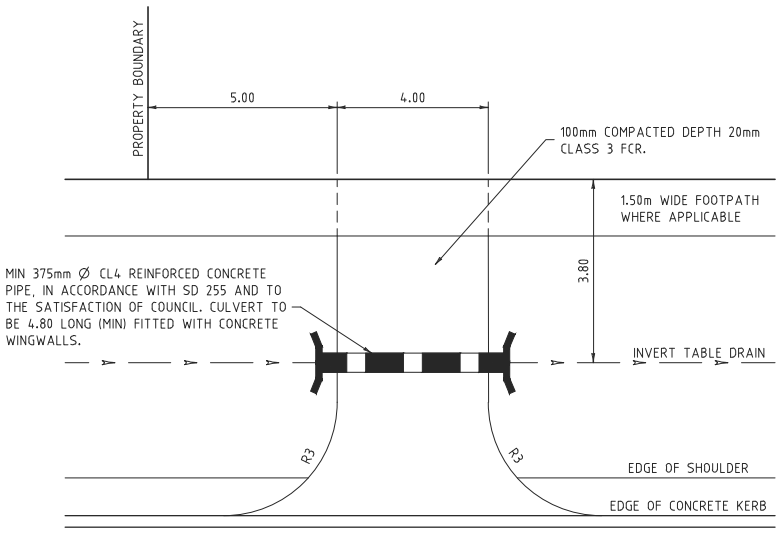
Stage G1	-	18 Lots
Stage G2	-	19 Lots
Stage G3	-	19 Lots
Stage G4	-	17 Lots
Total	-	73 Lots

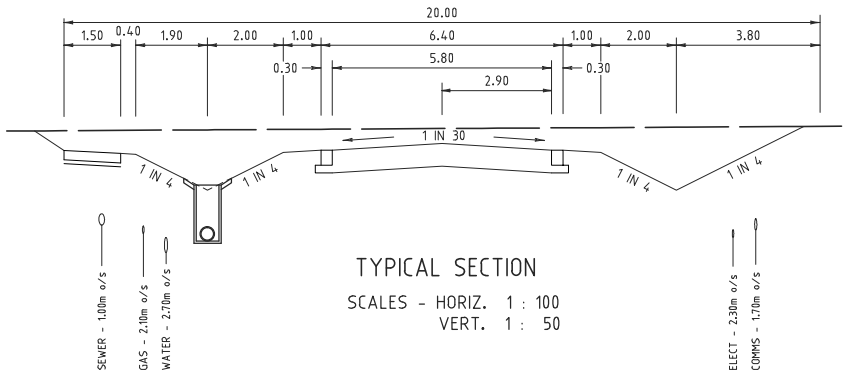
Peter Berry & Associates Pty. Ltd.
Civil Engineers

153 Yarra Street,
Geelong, Victoria, 3220
Telephone: 5223 2799

GLENMORE ESTATE, WINCHELSEA
STAGING PLAN

Appendix G

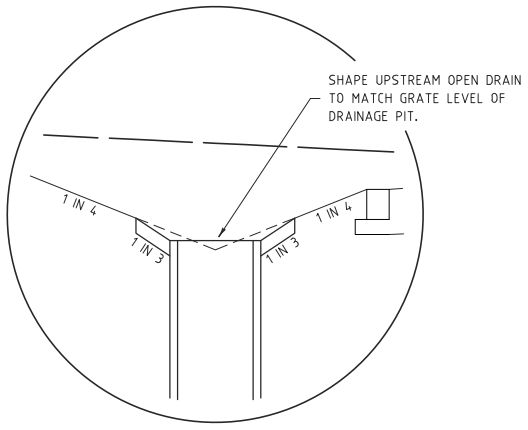




TYPICAL SECTION

SCALES - HORIZ. 1 : 100
VERT. 1 : 50

DRIVEWAY ENTRANCE
(NOT TO SCALE)



GRATED JUNCTION PIT DETAIL
(NOT TO SCALE)

SCALE @ A3 - 1 : 3000

NOTE: DRIVEWAY LOCATIONS ARE INDICATIVE

DEPRESSED EASEMENT DRAIN - OPEN DRAIN-1
(NOT TO SCALE)

Peter Berry & Associates Pty. Ltd.
Civil Engineers

153 Yarra Street,
Geelong, Victoria, 3220
Telephone: 5223 2799

FUNCTIONAL LAYOUT PLAN
GLENMORE ESTATE, WINCHELSEA

THE FOLLOWING HAVE BEEN IDENTIFIED AS SIGNIFICANT ASPECTS FOR THE SITE:

1. NOISE
2. DUST
3. EROSION AND SEDIMENT
4. WASTE
5. CHEMICALS
6. TRAFFIC
7. SIGNIFICANT FLORA AND FAUNA
8. ARCHAEOLOGICAL/HERITAGE
9. ACCESS
10. SERVICES

THESE ASPECTS SHALL BE MANAGED WITH THE ENVIRONMENTAL PROTECTION MEASURES OUTLINED ON THIS PLAN.

I HAVE READ THIS ENVIRONMENTAL MANAGEMENT PLAN AND AGREE TO UNDERTAKE WORKS AND ENSURE SUB-CONTRACTORS UNDERTAKE WORKS IN ACCORDANCE WITH THIS PLAN.

DEVELOPER: ANDERSON ROAD DEVELOPMENT PTY LTD

CONSULTANT: PETER BERRY & ASSOCIATES PTY LTD

CONTRACTOR: WELLAM CONSTRUCTIONS PTY LTD

MANAGEMENT

1. RESPONSIBILITIES:
   CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION OF THIS PLAN.
   EMERGENCY CONTACTS -
   - WELLAM CONSTRUCTIONS PTY LTD (03 5221 4366)
   - PETER BERRY (03 5223 2799)

2. COMMUNICATION ON EMP REQUIREMENTS:
   CONTRACTOR TO HAVE COPY OF PLAN ON SITE AT ALL TIMES.
   CONTRACTOR TO ADVISE ALL PERSONAL OF SITE EMP AT INDUCTION AND TOOLBOX MEETINGS.

3. INSPECTIONS AND MAINTENANCE:
   CONTRACTOR TO INSPECT ENVIRONMENTAL PROTECTION MEASURES ONCE A WEEK, INCLUDING PRIOR TO AND AFTER A HEAVY RAINFALL EVENT, WITH ANY OBSERVED FAILURES TO BE RECTIFY IMMEDIATELY.
   THE CONTRACTOR IS TO MAINTAIN ALL ENVIRONMENTAL PROTECTION MEASURES UNTIL THE END OF THE MAINTENANCE PERIOD.

4. STAGING OF WORKS:
   CONTRACTOR TO PREPARE A WORKS PROGRAM AND SUBMIT TO CONSULTANT PRIOR TO COMMENCING WORKS.

5. INFORMING RESIDENTS:
   CONTRACTOR TO NOTIFY ADJOINING RESIDENTS PRIOR TO COMMENCING WORKS.
   - SIGNAGE
   - DOOR KNOCK

6. ASSOCIATED DOCUMENTS:
   - PLANNING PERMIT

NOISE

RISK: ~~SIGNIFICANT~~/MED/~~LOW~~

REQUIREMENTS: EPA VICTORIA AND COUNCIL REQUIREMENTS MUST BE ADHERED TO IN RELATION TO THE LEVEL OF NOISE AND WORKING HOURS, TO ENSURE THAT RESIDENTS AND OTHER APPLICABLE NEIGHBOURS TO THE SITE ARE NOT DISTURBED UNREASONABLY. THE GENERATION OF NOISE MUST BE MINIMIZED.

7. WORKING HOURS:
   7am TO 5pm MONDAY - FRIDAY
   7am TO 2pm SATURDAY

8. NOISE MINIMIZATION METHODS:
   - WELL MAINTAINED EQUIPMENT

9. OTHER:

DUST

RISK: ~~SIGNIFICANT~~/MED/~~LOW~~

REQUIREMENTS: DUST GENERATION MUST BE MINIMIZED TO ENSURE THERE IS NO HEALTH RISK OR LOSS OF AMENITY.

10. MINIMIZING DUST GENERATION:
    - STOCKPILE PROTECTION
    - RESTRICTED VEHICLE MOVEMENTS

11. DUST SUPPRESSION:
    - WATER CART TO BE LOCATED ON SITE AS NECESSARY.
    - DUST SUPPRESSION MEASURES ARE TO BE UNDERTAKEN AT REGULAR INTERVALS OR AS NECESSARY SO AS TO MINIMIZE THE IMPACT UPON ADJACENT PROPERTIES.

12. CONTINGENCIES:
    - NOT REQUIRED.

13. OTHER:
    - HAVE REGARD TO WIND DIRECTION AND STRENGTH.

EROSION AND SEDIMENT

RISK: ~~SIGNIFICANT~~/MED/~~LOW~~

REQUIREMENTS: EROSION AND SEDIMENT MUST BE MANAGED IN ACCORDANCE WITH CURRENT BEST PRACTICE ENVIRONMENTAL MANAGEMENT PRACTICES, TO PREVENT SEDIMENT-LADEN WATER FROM ENTERING ANY DRAINAGE SYSTEM OR NATURAL WATERWAY.

14. DRAINAGE MANAGEMENT:
    - PROVIDE INLET FILTERS AROUND ALL DRAINAGE PITS.
    - PROVIDE A SILT FENCE DOWNSTREAM OF STOCKPILE.
    - PROVIDE TEMPORARY SURFACE DRAINS TO DIRECT WATER AWAY FROM EXISTING DWELLINGS AND SENSITIVE AREAS.
    - PROVIDE MESH AND GRAVEL (SAUSAGE) FILTERS AT EXISTING PITS.
    - HAYBALING.

15. SOIL STABILIZATION:
    - VEGETATION TO BE RETAINED WHERE POSSIBLE AND ENCOURAGED IN EXPOSED AREAS.
    - HYDRO MULCHING IS TO BE UNDERTAKEN AT THE COMPLETION OF CONSTRUCTION WORKS.

16. STOCKPILE PROTECTION:
    - STOCKPILE TO BE HYDRO MULCHED IF IN PLACE > 28 DAYS.
    - CONSTRUCTED TEMPORARY DRAIN AROUND STOCKPILE.
    - LIMIT HEIGHT OF STOCKPILE TO A MAXIMUM OF 2 METRES.
    - PROVIDE SEDIMENTATION RETENTION STRUCTURES DOWNSTREAM FROM STOCKPILE.

17. SEDIMENTATION TRAPS:
    - SWALES AND RETARDATION BASINS.

18. MONITORING:
    - COMPLIANCE WITH EMP CAN BE EVALUATED BY COUNCIL DURING STAGE CONSTRUCTION AS PART OF ITS SUPERVISION.

19. VEHICLE AND ROAD MANAGEMENT:
    SITE ACCESS: TO BE FROM EXISTING DEVELOPMENT.

    CLEANING VEHICLES: REQUIRED.

    STREET CLEANING: BY STREET CLEANING EQUIPMENT IF REQUIRED.

20. OTHER:
    - WHERE DE-SILTING IS REQUIRED, MUST BE CARRIED OUT DURING DRY PERIOD.

WASTE

RISK: ~~SIGNIFICANT/MED~~/LOW

REQUIREMENTS: LITTER AND WASTE MUST BE CONTAINED ON SITE, BEFORE DISPOSAL IN A RESPONSIBLE MANNER. WASTE GENERATION MUST BE MINIMIZED.

21. MOVEMENT OF SOIL: OFF SITE/ ON SITE/ ~~N/A~~
    CONTAMINANT STATUS: CLEAN FILL

22. WASTE MINIMIZATION METHODS:
    ALL WASTE MATERIALS TO BE STOCKPILES AND REMOVED FROM THE SITE.

23. WASTE STORAGE AND DISPOSAL:
    ALL WASTE MATERIALS TO BE STOCKPILES AND REMOVED FROM THE SITE.

24. OTHER:
    - STOCKPILES AT NOMINATED LOCATIONS

CHEMICALS

RISK: ~~SIGNIFICANT/MED~~/LOW

REQUIREMENTS: STORAGE AND SPILL MANAGEMENT PRACTICES MUST BE IMPLEMENTED TO ENSURE THAT NO ENVIRONMENTAL DAMAGE CAN RESULT FROM ESCAPE OR SPILLAGE OF CHEMICALS OR FUELS.

25. STORAGE:
    - NO CHEMICALS/FUEL STORED ON SITE.

26. SPILL MANAGEMENT:
    - SPILL KIT
    - CONTACT EPA
    - CONTAINMENT WALL/TRENCH

27. REFUELING PROCEDURE:
    - FROM FUEL TRUCKS
    - AT NOMINATED LOCATION

28. OTHER:
    - ISOLATE AND REMOVE CONTAMINATED SOIL TO EPA DESIGNATED LOCATIONS.

TRAFFIC

RISK: SIGNIFICANT/~~MED/LOW~~

REQUIREMENTS: TRAFFIC IS TO BE CONTROLLED TO ENSURE A SAFE WORKING ENVIRONMENT AND TO PROTECT THE GENERAL PUBLIC.

29. LOCATION:
    ACCESS WILL BE VIA GLENMORE STREET AND KINROSS DRIVE.
    CONTRACTOR TO PROVIDE TRAFFIC MANAGEMENT PLAN NOMINATING ACCESS POINTS PRIOR TO COMMENCING WORKS.

30. TRAFFIC MANAGEMENT:
    CONTRACTOR TO PROVIDE TRAFFIC MANAGEMENT PLAN DETAILING SIGNAGE AND OTHER APPARATUS REQUIRED TO ENSURE SAFETY PRIOR TO COMMENCING WORKS.

31. OTHER:
    - PERMITS, SIGNS, CONES, SIGNALMEN, ETC.

OTHER SITE SPECIFIC ISSUES

SIGNIFICANT FLORA/ FAUNA RISK: ~~SIGNIFICANT/MED~~/LOW

REQUIREMENTS: ALL SIGNIFICANT FLORA AND FAUNA ON AND ADJACENT TO THE SITE MUST BE PROTECTED.

32. ~~YES/~~ NO. DETAILS.
    - NO EXISTING VEGETATION WITHIN OR ON ANDERSON STREET REQUIRING PROTECTION.

ARCHAEOLOGICAL/ HERITAGE RISK: ~~SIGNIFICANT/MED~~/LOW

REQUIREMENTS: PLACES, SITES AND OBJECTS OF ARCHAEOLOGICAL OR HERITAGE SIGNIFICANCE MUST BE PRESERVED.

33. YES/ ~~NO.~~ DETAILS.
    WATHAURONG MONITORING TO TAKE PLACE DURING EARTHWORKS.

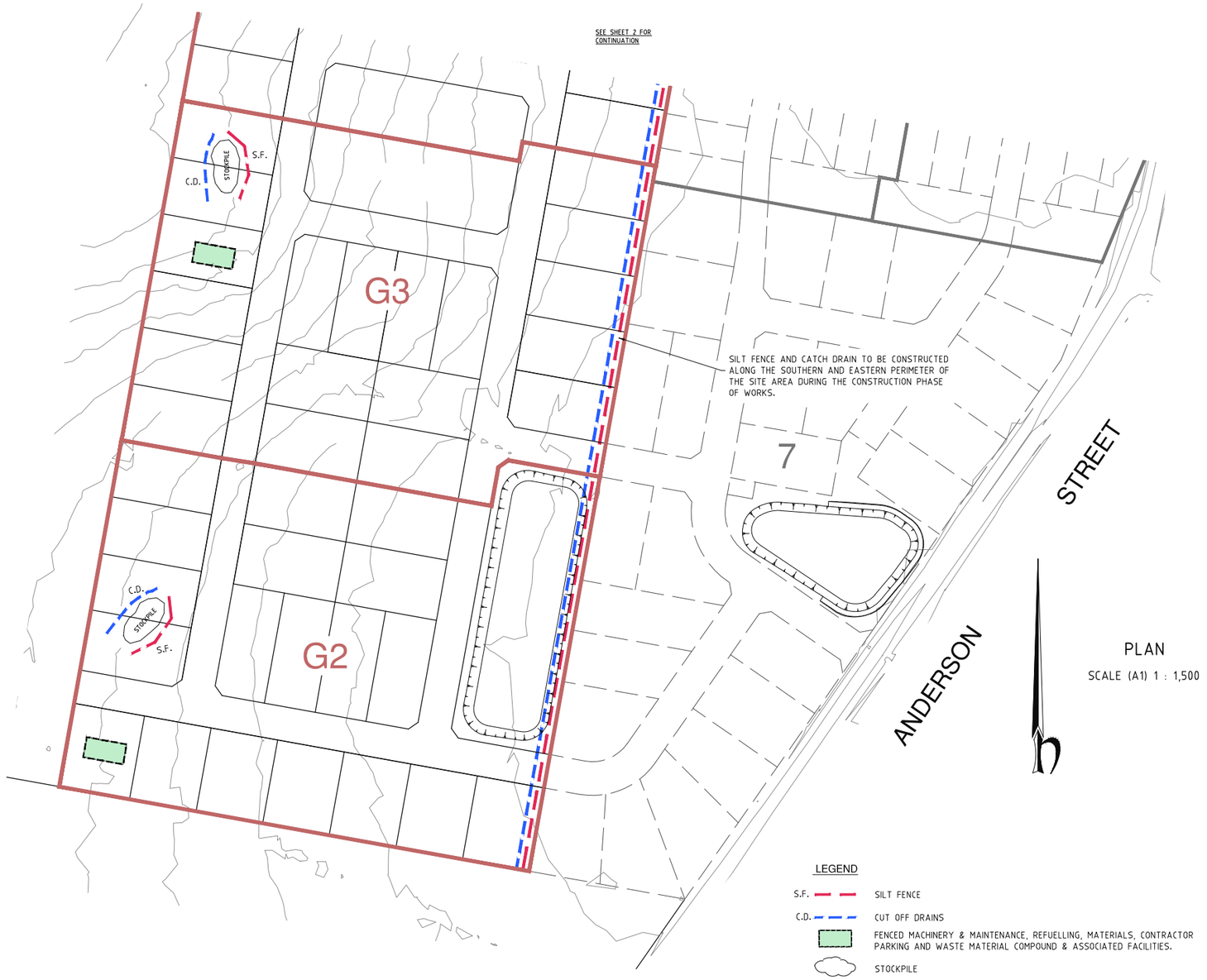
ACCESS RISK: ~~SIGNIFICANT~~/MED/~~LOW~~

34. ACCESS TO THE WORK SITE IS TO BE AS NOMINATED.
    - ALL VISITORS TO THE SITE ARE TO REPORT TO THE SITE OFFICE BEFORE ENTERING THE SITE.

SERVICES RISK: SIGNIFICANT/~~MED/LOW~~

35. CONTRACTOR IS TO CONTACT 'DIAL BEFORE YOU DIG' PRIOR TO COMMENCING WORKS ON SITE.
    ALL SERVICES ARE TO BE ACCURATELY LOCATED PRIOR TO WORKING IN THE VICINITY.
    CONTRACTOR TO PROVIDE AN 'ELECTRICAL SPOTTER' WHEN WORKING IN THE VICINITY OF OVERHEAD POWER LINES.

Appendix H-1



AMENDMENTS		
16.12.19	VERSION A	
DATE	DESCRIPTION	

A1

1 : 1500 25 12.5 0 25 50 75 METRES

PETER BERRY & ASSOCIATES PTY LTD
153 YARRA STREET, GEELONG 3220 TEL 5223 2799 FAX 5223 2901

PROPOSED SUBDIVISION GLENMORE ESTATE - WINCHELSEA SITE MANAGEMENT PLAN

SCALE (A1) 1:1500

DATE DEC '19

DRG No. 1 OF 2

PLAN

SCALE (A1) 1 : 1,500

LEGEND

- S.F. — SILT FENCE
- C.D. — CUT OFF DRAINS
- FENCED MACHINERY & MAINTENANCE, REFUELLING, MATERIALS, CONTRACTOR PARKING AND WASTE MATERIAL COMPOUND & ASSOCIATED FACILITIES.
- STOCKPILE
- INLET FILTER AROUND SIDE ENTRY PITS

AMENDMENTS	
16.12.19	VERSION A
DATE	DESCRIPTION

A1

1 : 1500 10 5 0 10 20 30 METRES

PETER BERRY & ASSOCIATES PTY LTD
153 YARRA STREET, GEELONG 3220 TEL 5223 2799 FAX 5223 2901

PROPOSED SUBDIVISION
GLENMORE ESTATE - WINCHELSEA
SITE MANAGEMENT PLAN

SCALE	1:1500
DATE	DEC '19
DRG No.	2 OF 2