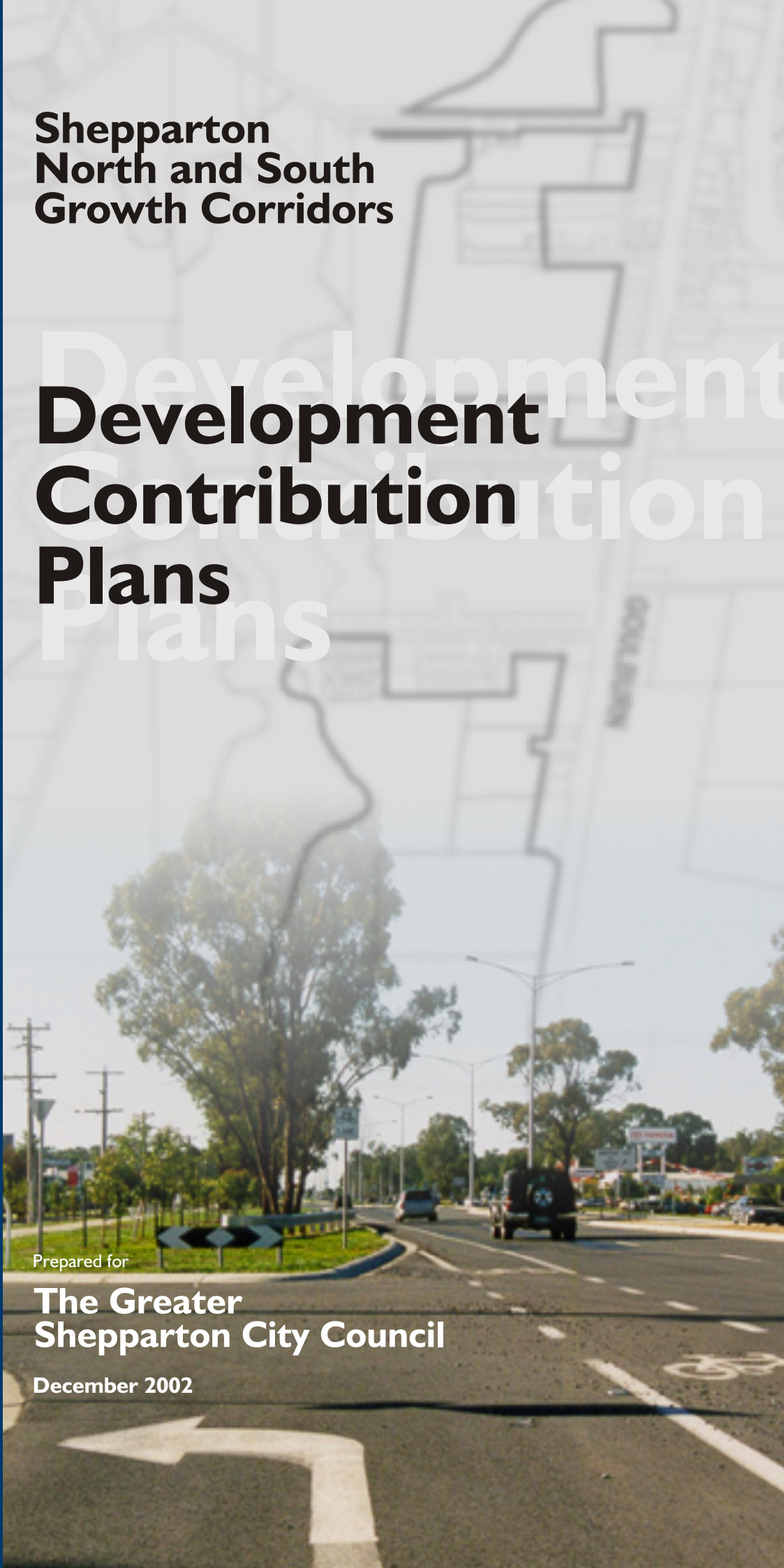


Shepparton North and South Growth Corridors

Development Contribution Plans



Prepared for

**The Greater
Shepparton City Council**

December 2002

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1.0 Strategic policy context for Development Contribution Plans

An established framework of policy provides for the preparation and implementation of Development Contribution Plans for the north and south corridors of Greater Shepparton, which are the subject of the Outline Development Plans.

1.1 State planning policy provisions

- The principles of land use and development planning (Clause 13) of the Greater Shepparton Planning Scheme identifies that planning for development of urban physical and community infrastructure should enable it to be provided in a way that is efficient, equitable, accessible and timely. The principle foreshadows the use of development contributions (levies) in the funding of infrastructure.
- Clause 18-12 details the State Planning Policy Framework as it applies to Development Contributions for Infrastructure. The objective for policy is:

“To provide for partial funding of physical and community infrastructure by use of development contributions”.

The implementation notes:

“The guidelines for Development Contributions 1995 should be used, within the framework of the Planning and Environment Act to prepare Development Contribution Plans to manage development contributions for urban infrastructure.

Development contributions may be collected on the basis of an approved Development Contribution Plan prepared in accordance with the guidelines.”

- Clause 45.06 of the Victoria Planning Provision provides the framework of a Development Contributions Overlay.
- Clause 45.06-2 specifies matters that must be included in the development contributions plan. These include:
- *Specify the area to which the plan applies.*
- *Set out the works, services and facilities to be funded through the plan, including the staging of the provision of those works, services and facilities.*

- *Relate the need for the works, services or facilities to the proposed development of land in the area.*
- *Specify the estimated costs of each of the works, services and facilities.*
- *Specify the proportion of the total estimated costs of the works, services and facilities which is to be funded by a development infrastructure levy or community infrastructure levy or both.*
- *Specify the land in the area and the types of development in respect of which a levy is payable and the method for determining the levy payable in respect of any development of land.*
- *Provide for the procedures for the collection of a development infrastructure levy in respect to any development for which a permit is not required.*

The development contributions plan may:

- Exempt certain land or certain types of development from payment of a development infrastructure levy or community infrastructure levy or both.
- Provide for different rates or amounts of levy to be payable in respect of different types of development of land or different parts of the area.

1.2 Local policy provisions

The Greater Shepparton Planning Scheme and its Municipal Strategic Statement addresses the matter of development contributions in the following terms:

- The strategic directions for the city foreshadow growth and growth corridors have been identified including corridors to the north and south of Shepparton.
- Development in corridors is anticipated to occur in the context of Outline Development Plans (ODP's), and Development Contribution Plans would accompany ODP's to manage the staging and provision of infrastructure with development.
- Clause 21.05-7 specifically addresses Infrastructure. The objectives of the policy include:

Funding and Management

- *Prepare an overall funding policy for the provision of infrastructure, including the pursuit of funding from other levels of government and/or use special rate schemes when applicable to offset the cost of maintaining existing or developing new infrastructure.*
- *Maximise utilisation and life of existing infrastructure by employing state of the art management systems and procedures.*
- *Seek development contributions for infrastructure requirements that result from new development.*
- *Work with infrastructure agencies to prepare infrastructure plans, which determine likely needs in terms of the location and staging of drainage, sewerage, water and power services.*

Clause 21.05-8 addresses community development and notes that with the growth of residential, commercial and industrial areas that there will be a need to consolidate and coordinate development of community services and facilities. *“Development Contribution Plans and Development Plan Overlays are important tools to ensure adequate provision of such facilities and services.”*

A strategic objective is detailed as:

To seek development contributions to provide some of the infrastructure needed to service the growing population.”

2.0 Legislative and transitional considerations Planning and Environment Act 1987

2.1 Overview

Part 3B, Sections 46H-46Q of the Planning and Environment Act 1987 details the head of power and associated provisions with respect to development contributions.

- A Development Contribution Plan can provide for either or both a development infrastructure levy or a community infrastructure levy.
- The levies must relate to development within the area to which the plan applies.

“Development Infrastructure is of a physical nature which is required to be in place before or when development occurs and may include roads, drains and land for community infrastructure.”

Community infrastructure is of a communal, human or social nature, which is required progressively as the community grows. It includes pre-schools, community halls and maternal and child welfare centres. Community infrastructure levy cannot exceed \$450.00 for each dwelling. Monies levied for community infrastructure can be collected upon the issue of a building permit.

2.2 Review of Development Contributions in Victoria 2000 - 2002

This development contribution plan is prepared in the context of a review of the 1995 DCP guidelines.

The review has recommended a different approach to the method of calculating Development Contributions and a renaming of the plan to an Infrastructure Change Plan (ICP).

The preparation of this plan has sought to have regard to both the existing guidelines (because of their legislative standing) and the improved framework.

3.0 Development Contribution Plan Timeframe

The Development Contribution Plans for the north and south growth corridors of Shepparton has a start and an end date.

The commencement date is the day the Development Contribution Plan is incorporated into the planning scheme being the gazettal approval date.

The expiry date is 15 years after this gazettal date.

4.0 Scope of the Development Contribution Plan

4.1 Area of Development Contribution Plans

The North and South Growth corridors of Shepparton are the subject of two separate Outline Development Plans and a Planning Scheme Amendment C11. It is proposed that the areas are to be covered by two separate development contribution plans referred to as Schedule 1 and 2 to Clause 45.06 in the Planning Scheme. The areas covered by these plans are illustrated in Plans 1 and 2.

4.2 Funding of Infrastructure

To date the City of Greater Shepparton has not prepared an overall funding policy for infrastructure provision and the expectation is that the infrastructure required by the development will be funded by developers as part of typical land development works or by contributions to levies.

Monies to be paid by way of levies will be collected concurrently with the certification of plans of survey and the monies held by Council in account(s) assigned to physical infrastructure.

4.3 Types of Infrastructure to be funded

It is proposed that development infrastructure levies be sought for the following:

- **Arterial and Collector Roads** including the cost of upgrading intersections and constructing roads to a standard greater than local access.
- **Footpath** and bicycle paths.
- **Drainage Works** to provide for the collection, channelling and retardation of the Stormwater.

It should be noted that the development contribution is in addition to those items of infrastructure traditionally provided on the development site by developers under existing statutory provisions.

5.0 The Northern Corridor

5.1 Land Area

The Northern Corridor comprises a gross area of 200.68 ha of land. This is structured in 5 separate components.

- A low density area minimum lot size 4000m² (41.78 ha)
- A residential area with a minimum lot size of 2000m² (35.78 ha)
- A conventional residential area between Channel 12 and Ford Road. (88.53 ha)
- Goulburn Murray water and power transmission easements and associated open space. (34.56 ha)

For the purposes of this analysis the transmission easement and associated open space, the channels and drains have been excluded from the area considered as developable.

The net developable area is therefore 166.1 ha.

5.2 Yield

For the low density area – (minimum lot size 4000m²) (41.78 ha) it is anticipated a lot yield of 78 allotments will be achieved.

For the area suited to lots with a minimum size of 2000m² the projected lot yield would be 134 allotments.

In the conventional development area (88.53 ha) the lot yield is anticipated to be 830 allotments.

The total number of allotments are projected at 1042.

5.3 Population

Based upon an average household occupancy rate of 2.6 person per household the anticipated population in the Development Contribution Plan area is 2700 - 2750 persons.

5.4 Rate of development

A number of factors will materially influence the rate of development within the northern corridor.

Having regard to the following considerations and table, the Development Contribution Plans for the northern and southern corridors are based upon an anticipated take up of:

- 132 conventional lots per annum;
- 56 low density lots per annum.

Table 1 – Estimate of land consumption

• Gross developable area in North and South Growth Corridors	359.7ha
• Building approvals in Greater Shepparton averaged over the last 5 years	263 dwellings per annum
• Distribution of zoned land between North and South Corridors and balance of Greater Shepparton	North/South Corridor – 71.6% Balance of Shepparton – 28.4%
• Projected new dwellings to be built in north/south corridors per annum	188 dwellings per annum
• Split of dwellings between conventional and lower density based on 9.38 lots/ha and 3.75 lots per ha.	Conventional: 132 dwellings or 14ha/per annum Lower Density: 56 dwellings or 15ha/per annum
• Total land consumed per annum in north and south corridors	29ha per annum
• Total consumption of North/South Corridors	12.4 years
• Distribution of land consumption by corridors per annum	North Corridor – 11.6ha South Corridor – 17.4ha

5.4.1 Demand

The land comprises a combination of low density and conventional lots. The availability of each of these types of lots suggest that different take up rates will apply. Based upon real estate advice, the take up has been split at 70% conventional residential and 30% low density and the estimated total take of lots in the corridors would be 188 per annum.

5.4.2 Release of other land

The outline development plans are set in a context of a number of other development opportunities around the city (refer Municipal Strategic Statement). The north and south corridors are estimated to constitute 52% of all zoned and unzoned land with a potential residential role. If regard is

had for the following considerations the north and south corridors will in practical terms constitute 71.6% of land that would be available for development in the short to medium term.

- Only 142ha of other land is zoned and available for residential use
- An additional 183ha of land is identified for residential purposes in the MSS but not zoned
- Approximately 30% of the latter area is identified as either flood prone or impacted upon by the proposed Shepparton Bypass.

It is also anticipated that the northern corridor will not be as attractive as the southern corridor and a respectively proportional distribution of 40/60% of take up has been applied.

5.4.3 Land ownership

The areas south of Channel 12 are held in multiple ownership and their release for urban development will be materially influenced by the plans and circumstances of individual owners.

There are indications that some owners have no short term intention to cease rural production. This may indirectly influence the plans and costs of development of contiguous land.

The low density land is held in much larger land holdings (4 in total).

5.4.4 Infrastructure costs

This proposal constitutes the first initiative to levy Development Contributions within the Greater Shepparton area. This will place a cost premium on the land, which in the short term may influence the attraction and demand for land in the northern and southern corridors.

The northern corridor presents particular demanding drainage issues for which a consolidated drainage detention scheme has been held to be appropriate.

5.5 The works

The scope of works proposed to be the subject of development contributions and the factor that should influence the proportion of funds levied from developers within the corridor or be funded by Council from consolidated revenue is detailed below.

5.5.1 Arterial and collector roads

5.5.1.1 Turning lanes

- The subdivision and development of the land provides for the creation of 5 intersections between the established boundary road network of Goulburn Valley Highway/Ford Road/ and Verney Road and the site.
- Turning lanes will be required to protect the safe and orderly function of the arterial network as vehicles turn in and out of the land.
- The works will entail road widening, new shoulders to the road and open drains.
- The works are anticipated to cost between \$80,000 and \$133,000 per intersection or a total amount of \$657,875
- The DCP area will be the sole beneficiary and the costs should be bourn uniformly.
- The works will be required with the creation of each intersection and the subdivision of the adjacent land.

5.5.1.2 Intersection of Ford Road and Goulburn Valley Highway

It is anticipated that with the development of the northern corridor and the further use and augmentation of Ford Road as a link between the proposed Shepparton Bypass and the east side of Shepparton that the intersection of Ford Road and Goulburn Valley Highway will need to be upgraded and signalised.

The signals will serve a primarily subregional and arterial role providing for the safe and orderly movement through the northern city area.

The land in the northern corridor is anticipated to be a relatively small contributor to the use and demand of these lights and a factor of 10% of the cost has been attributed to the northern corridor.

The total cost of works is anticipated to be \$560,000 with a liability of \$56,000 to land in the northern corridor.

5.5.1.3 Collector Roads

The Outline Development Plan provides for collector roads to be built throughout the corridor connecting local access to the arterial network.

The collector road network would be distinguished from the local road network of streets by the following characteristics and features;

- Greater volumes of traffic movement

- Movement of vehicles connecting to the arterial road network or passing through the corridor.
- Greater width of road reservation and pavement width, collector roads would have a 20m wide reservation.

All developers will be responsible for the costs of providing the local road network and where lots front onto collector roads, the contribution scheme will be relied upon to fund the difference between the cost of upgrading a local road to collector road.

The costs of the levy will be distributed uniformly by development in the corridor. The collector road is for the benefit of land contained within the corridor.

5.5.2 Footpath and Bicycle Paths

As far as practicable bicycle paths will be integrated with road and footpath networks. Only where bicycle paths cross the transmission line easement will it be necessary to construct a dedicated bicycle path.

To provide integration of land use and movement networks through the corridor it is proposed to provide for a pedestrian bridge crossing (\$145,000) over Channel 12.

An additional \$65,313 has been set aside for a residential bike path scheme. For the most part bicycle paths will be provided within the framework of the road network, but the above cost recognises additional cost areas.

5.5.3 Neighbourhood Parks

Neighbourhood and local parks would be created in each of the major segments of the developable land as indicated in the outline development plan.

The land would be acquired and developed by Council based on the 5% open space levy secured under the provisions of Section 18 of the Subdivision Act. Approximately 4ha would be committed to this role.

5.5.4 Drainage and wetland corridor

The Outline Development Plan provides for a major open space and wetland corridor to be established along the alignment of the transmission easement in the southern half of the northern corridor.

The development of the northern corridor presents challenging drainage issues. It will be necessary to retard flow and discharge rates of water in to the drainage system.

At the same time the quality of water discharged from the corridor should be of the highest standard.

For the purposes of identifying the drainage requirements of this corridor a number of options have been considered in arriving at the preferred strategy.

Given the land fall and catchments affecting the land it is appropriate to consider the corridor in two parts. The low density area north of channel will drain to the north and be balanced towards the proposed drainage corridor.

The conventional residential area south of the channel will be required to drain towards a series of retaining basins and wetland systems located in the easement.

The design for the system provides for drainage works and a wetland system documented in Plan 3.

The design approach recognises that the affected land is contained in a diversity of ownership and that land may be released in stages. As a consequence the design provides the system to be built progressively. The cost of these works would be levied only on those lots located to the south of Channel 12 and the costs would include land that would have to be acquired.

As part of the land would be available used and developed as public open space and access, it is proposed that part of the open space levy be directed towards land acquisition.

The cost of these works are estimated at:

- Drainage Works \$1,038,117
- Wetland Cost \$894,762

The land area affected is 8.45ha. No allowance has been made for land acquisition.

5.6 Summary of land costs and works

Refer Table 2.

6.0 The Southern Corridor

6.1 Land area

The southern corridor comprises 488.12ha of land. the area comprises:

- 152.1ha of land suitable for convention residential use
- 41.5ha of land suitable for low density use
- 294.48 ha of land previously subdivided and developed and not appropriate for contributions

For the purposes of this analysis the latter area is excluded from the developable area, leaving a net developable area of 168.72ha.

6.2 Yield

The projected yield for the southern growth corridor is as follows:

- low density – 156 lots
- conventional density – 1426 lots

6.3 Population

Based upon average household occupancy rate of 2.6 persons per household the anticipated population in the Development Contribution Scheme would be approximately 4115 persons.

6.4 Rate of Development

The factors influencing the rate of development in the Southern Growth Corridor would be similar to those detailed for the northern corridor. Land is in a number of ownerships with different expectations about release for development.

Given the existing patterns of development with sporadic incidences of established development separated by green field opportunities it is considered appropriate to open all of this corridor as a single stage, offering multiple opportunities for growth and land release. A tightly sequenced land release would have the affect potentially constricting supply and inflating land prices.

It is anticipated that the southern corridor offers sufficient land to meet land requirements over the next 12 years.

6.5 Summary of works

The scope of proposed works in the southern corridor has similar attributes to that proposed for the northern corridor and is summarised in Table 3.

With the exception of two items the costs of work will be carried by development within the scheme area.

The exceptions and allocations are as follows:

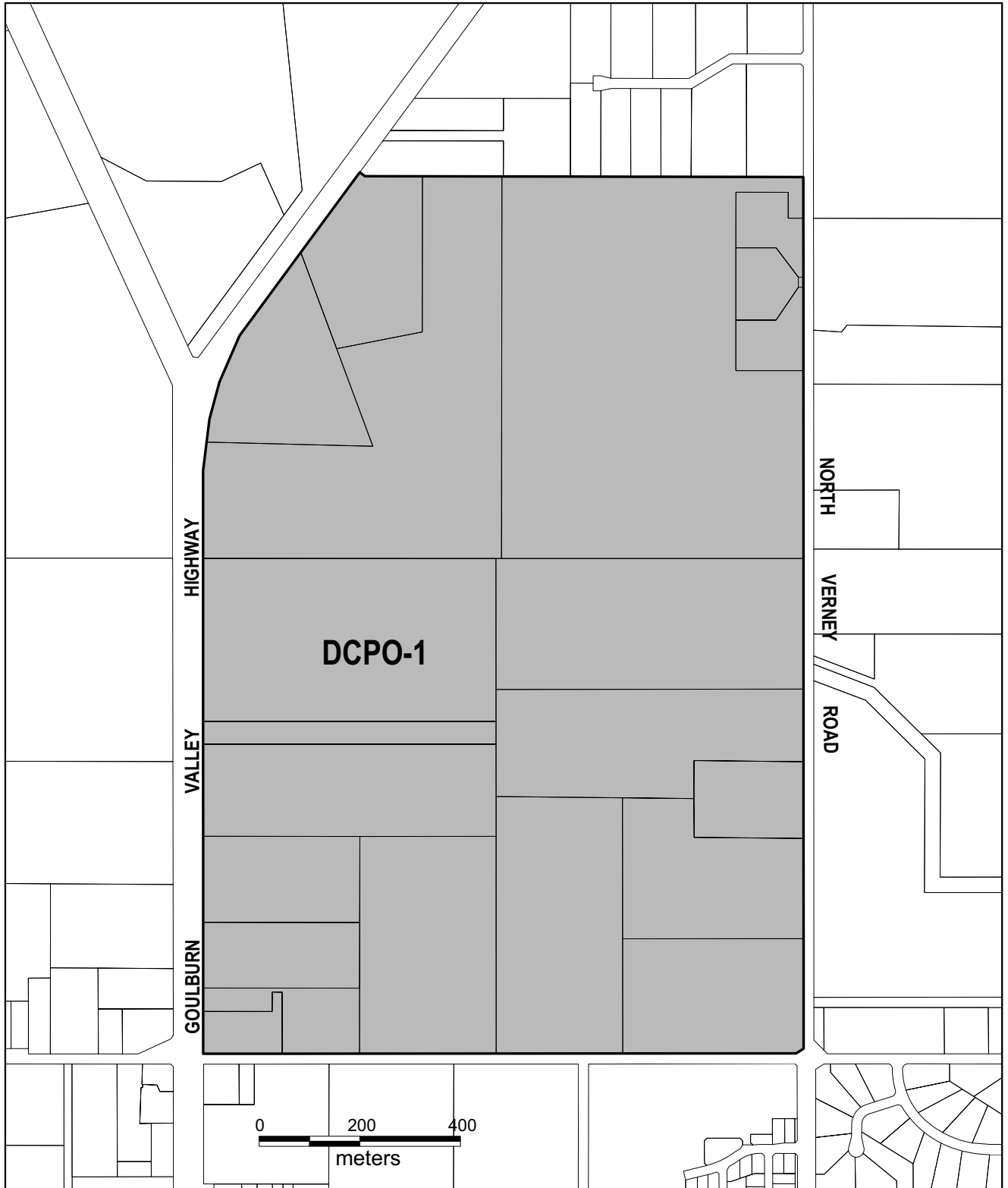
- 50% of the cost of a bike path along the alignment of seven creeks will be carried by the development
- 20% of the cost of upgrading the intersection of the Goulbourn Valley Highway and Riverview Drive will be attributed to the development contribution plan area. Riverview Road performs a subregional function linking the southern part of Shepparton with Mooroopna.

7.0 Development Contribution Plans

Attachment 2 details the recommended schedules for inclusion in the Planning Scheme.

Plan 1

GREATER SHEPPARTON PLANNING SCHEME LOCAL PROVISION



MAPSCALE 1:5000

Part of Planning Scheme Maps 11,26

LEGEND

DCPO-1 Development Contribution Plan Overlay 1

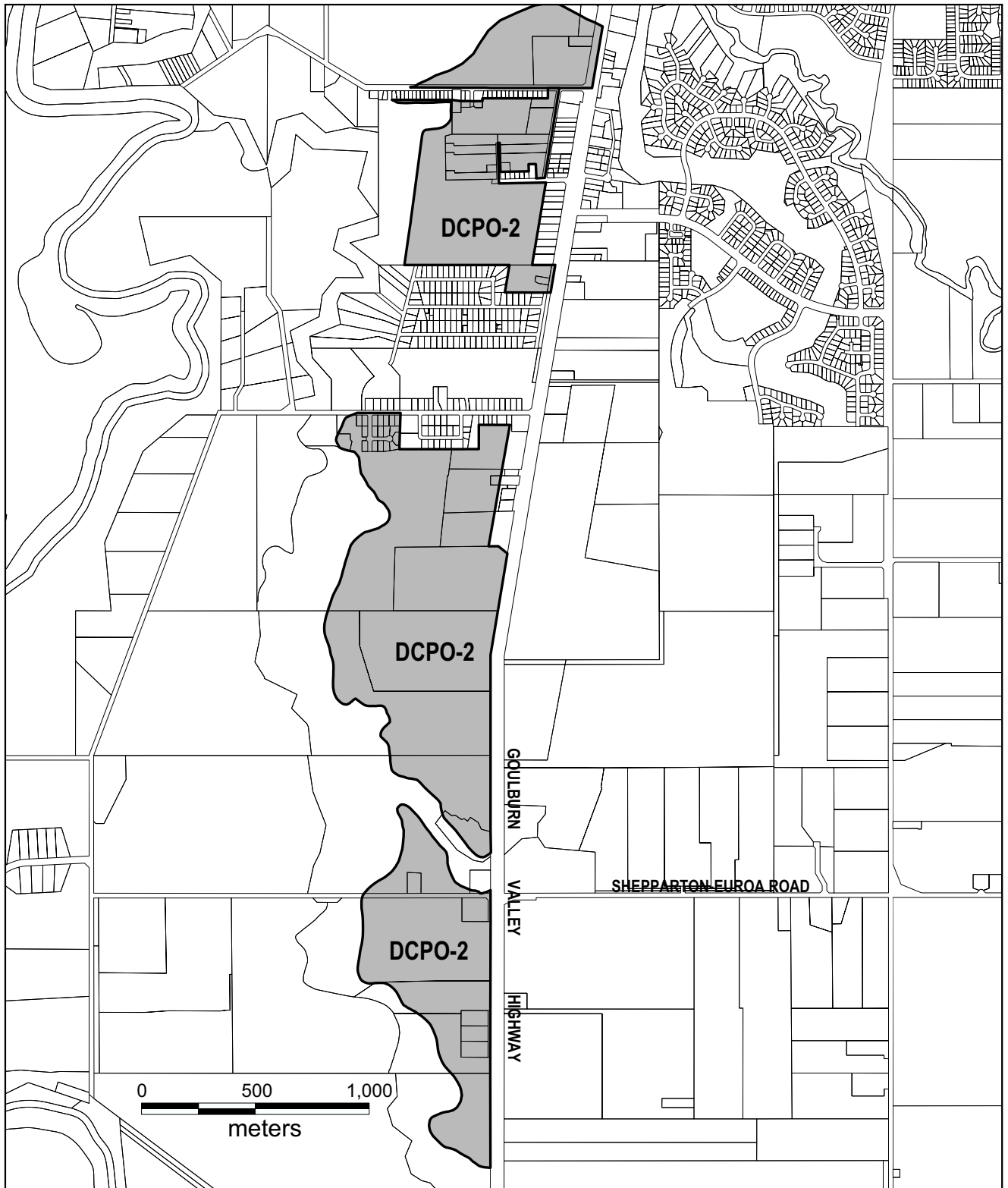
AMENDMENT C11

PREPARED BY: PLANNING DATA AND MAPPING TEAM
Geographical Information System



Plan 2

GREATER SHEPPARTON PLANNING SCHEME LOCAL PROVISION



MAPSCALE 1:5000

Part of Planning Scheme Maps 11,26

LEGEND

DCPO-2 Development Contribution Plan Overlay 2

AMENDMENT C11

PREPARED BY: PLANNING DATA AND MAPPING TEAM
Geographical Information System



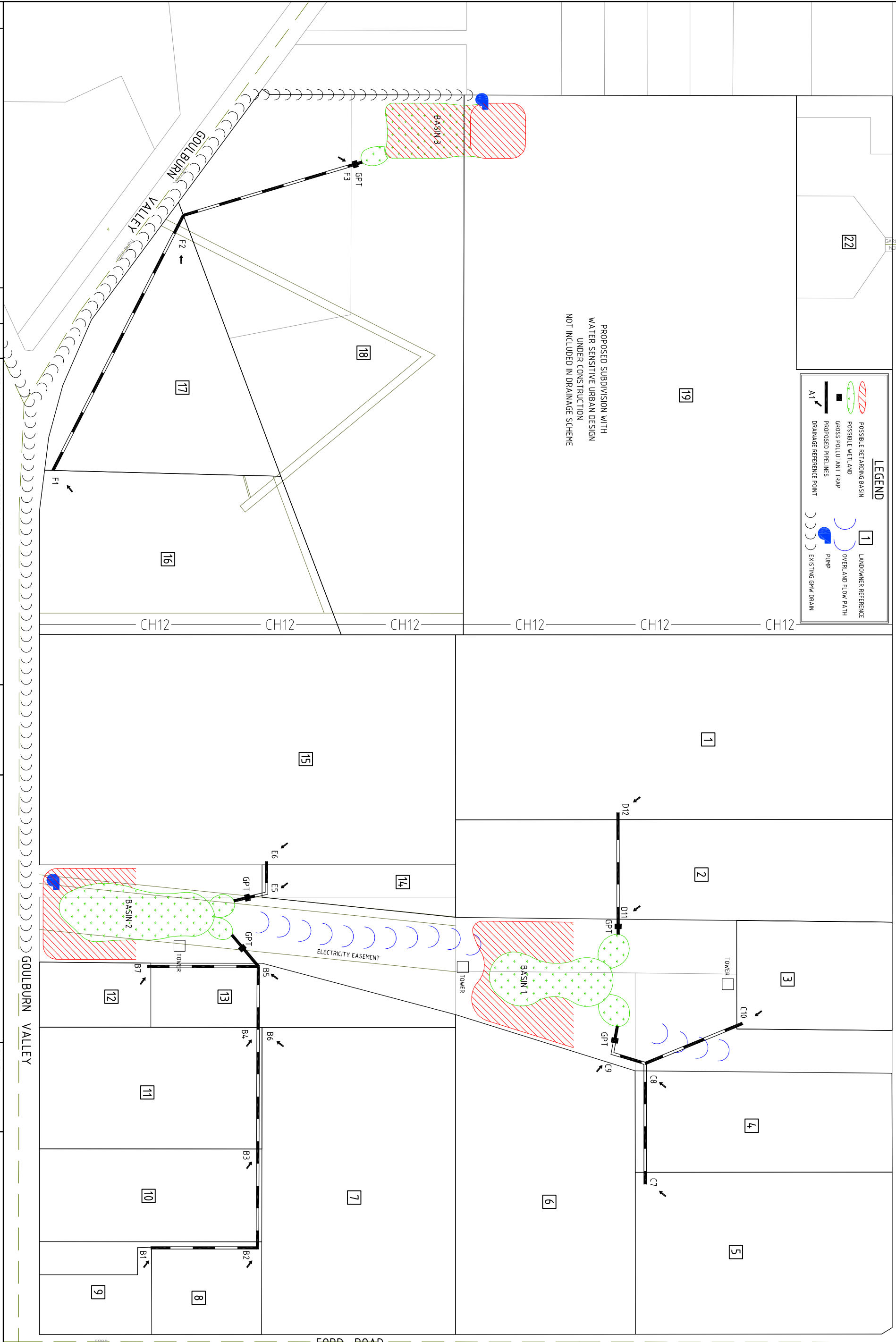
INFRASTRUCTURE

Attachment 1 – Drainage Basin Designs, North & South Corridors

LEGEND

- POSSIBLE RETARDING BASIN
- POSSIBLE WET LAND
- GROSS POLLUTANT TRAP
- PROPOSED PIPELINES
- DRAINAGE REFERENCE POINT
- LANDOWNER REFERENCE
- OVERLAND FLOW PATH
- PUMP
- EXISTING GHW DRAIN

PROPOSED SUBDIVISION WITH WATER SENSITIVE URBAN DESIGN UNDER CONSTRUCTION NOT INCLUDED IN DRAINAGE SCHEME



GENERAL NOTES/SYMBOLS/CROSS REFERENCES/CADD FILES		DOCUMENT STATUS: COMES MARKED OTHERWISE IN RED	
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5715 North Corridor Drainage Calcs																		
PIT US	PIT DS	AREA (ha)	C	AE (ha)	TOT AE (ha)	TC (min)	INT (mm/hr)	ARI (yr)	Qact (L/sec)	Diam (mm)	n	ROUGH	SLOPE	Qfull (m ³ /sec)	Vfull (m/s)	Qa/Qf	LENGTH (m)	TP (min)
B1	B2	1.39	0.45	0.63	0.63	8.00	74.21	5	128.94	450	0.011	500	0.15	0.95	0.86	0.86	149	2.62
B2	B3	2.65	0.45	1.19	1.82	8.00	74.21	5	374.64	675	0.011	500	0.44	1.24	0.84	0.84	140	1.88
B3	B4	4.05	0.45	1.82	3.64	9.88	67.69	5	664.08	825	0.011	500	0.76	1.42	0.90	0.90	170	2.00
B4&B6	B5	16.98	0.45	7.64	11.28	12.00	61.94	5	1940.61	1200	0.011	500	2.06	1.82	0.94	0.94	85	0.78
B7	B5	1.41	0.45	0.63	0.63	8.00	74.21	5	130.80	450	0.011	500	0.15	0.95	0.87	0.87	155	2.73
B5	Outlet	2.86	0.45	1.29	13.20	12.78	60.13	5	2205.02	1350	0.011	500	2.82	1.97	0.78	0.78	58	0.49
C7	C8	8.16	0.45	3.67	3.67	10.00	67.32	5	686.91	900	0.011	500	0.96	1.50	0.72	0.72	175	1.94
C10	C8	3.31	0.45	1.49	1.49	8.00	74.21	5	307.08	600	0.011	500	0.32	1.15	0.95	0.95	140	2.03
C8	C9	5.05	0.45	2.27	7.43	11.94	62.08	5	1281.93	1050	0.011	500	1.44	1.67	0.89	0.89	45	0.45
C9	Outlet	10.27	0.45	4.62	12.05	12.39	61.02	5	2043.18	1350	0.011	500	2.82	1.97	0.72	0.72	45	0.38
D12	D11	15.80	0.45	7.11	7.11	12.00	61.94	5	1223.26	1050	0.011	500	1.44	1.67	0.85	0.85	155	1.55
D11	Outlet	8.57	0.45	3.86	10.97	13.55	58.47	5	1781.34	1200	0.011	500	2.06	1.82	0.86	0.86	40	0.37
E6	E5	18.79	0.45	8.46	8.46	12.00	61.94	5	1454.75	1200	0.011	500	2.06	1.82	0.71	0.71	45	0.41
E5	Outlet	1.60	0.45	0.72	9.18	12.00	61.94	5	1578.63	1200	0.011	500	2.06	1.82	0.77	0.77	45	0.41
F1	F2	8.56	0.32	2.74	2.74	16.85	52.50	5	399.44	675	0.011	500	0.44	1.24	0.90	0.90	401	5.38
F2	F3	7.18	0.32	2.30	5.04	22.23	45.40	5	635.14	825	0.011	500	0.76	1.42	0.84	0.84	245	2.88
F3	Outlet	22.52	0.32	7.21	12.24	25.11	42.46	5	1444.18	1050	0.011	500	1.44	1.67	1.00	1.00	16	0.16

BASIN 1


Q_{max} INFLOW = 6.67m³/s PEAK
 Q_{max} OUTFLOW = 0.061m³/s PIPE
 REQUIRED VOLUME FOR 24 HOURS STORAGE = 21,206m³
 BASIN TO BE EXCAVATED BELOW NATURAL SURFACE

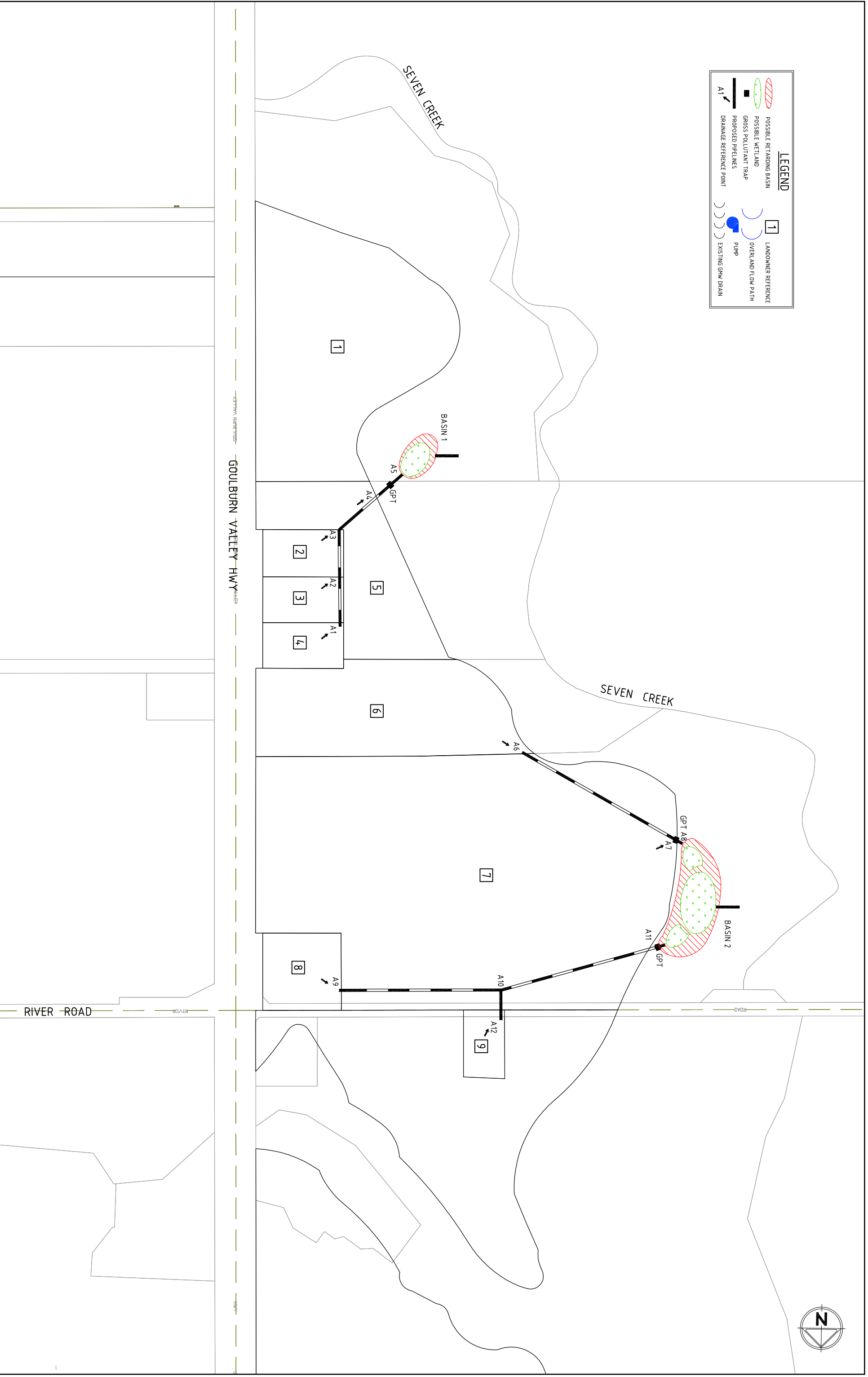
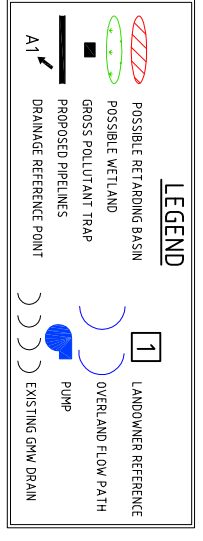
BASIN 2

Q_{max} INFLOW = 9.72m³/s PEAK
 Q_{max} OUTFLOW = 0.12m³/s PUMP
 REQUIRED VOLUME FOR 24 HOURS STORAGE = 28,14.0m³
 BASIN TO BE EXCAVATED BELOW NATURAL SURFACE

BASIN 3

Q_{max} INFLOW = 4.25m³/s PEAK
 Q_{max} OUTFLOW = 0.046m³/s PUMP
 REQUIRED VOLUME FOR 24 HOURS STORAGE = 15,815m³
 BASIN TO BE EXCAVATED BELOW NATURAL SURFACE,
 AND TO BE COMBINED / INCORPORATED WITH EXISTING
 BASIN TO EAST. PUMP FROM EXISTING BASIN TO BE
 UPGRADED TO INCORPORATE NEW OUTFLOW.

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ENGINEERING & SURVEYING TOWN PLANNING & DESIGN PROJECT MANAGEMENT LANDSCAPE ARCHITECTURE ENVIRONMENTAL SCIENCE AGRICULTURAL ENGINEERING		 Comes Consulting Group Pty Ltd 24 Albert Road South Melbourne Vic 3205 Australia ACN 050026355 Tel: (61) 3 9993 7888 Fax: (61) 3 9993 7999 Email: consult@comes.com.au Web: www.comes.com.au	
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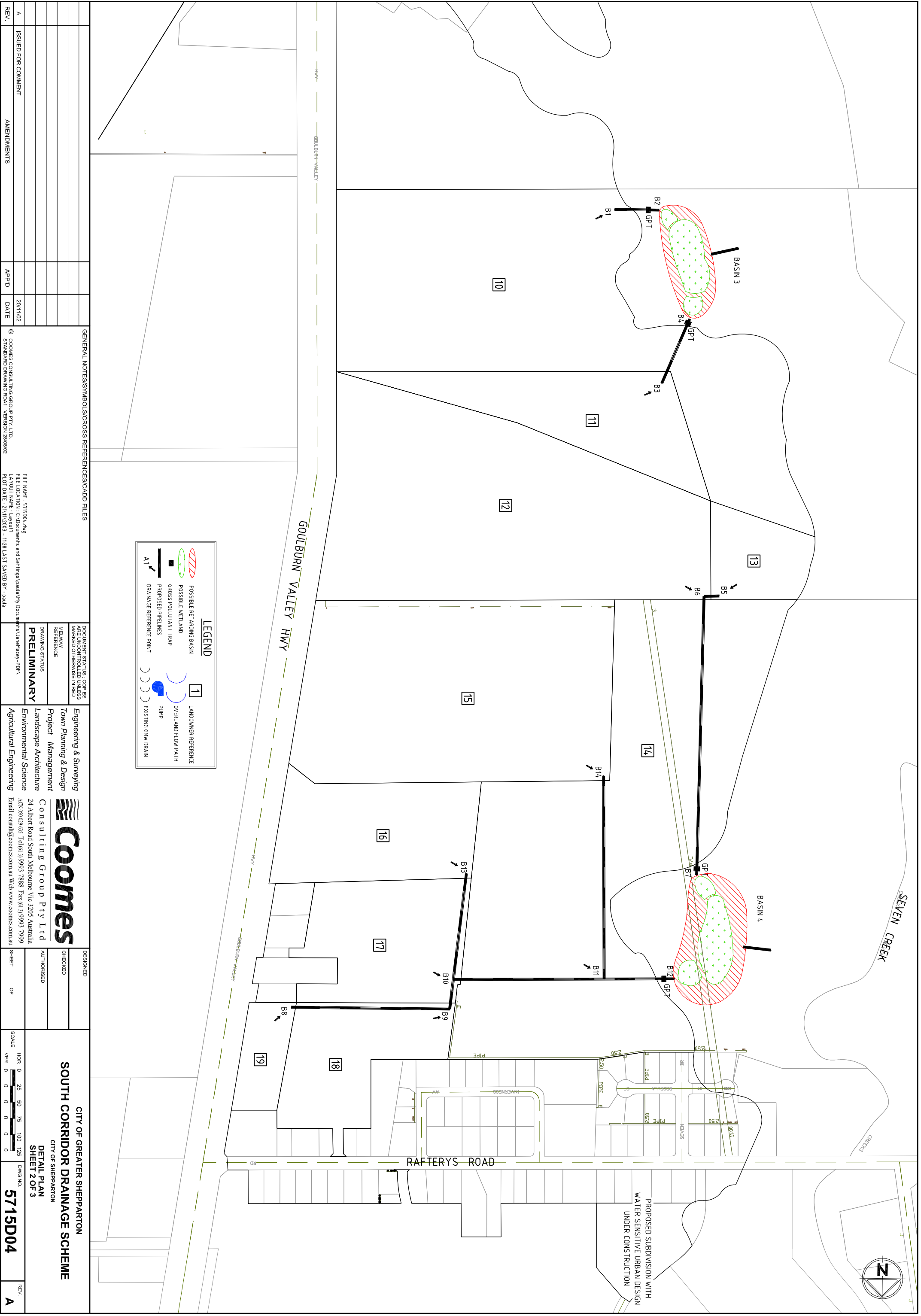
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CITY OF GREATER SHEPPARTON
 SOUTH CORRIDOR DRAINAGE SCHEME
 CITY OF SHEPPARTON
 DETAIL PLAN
 SHEET 1 OF 3

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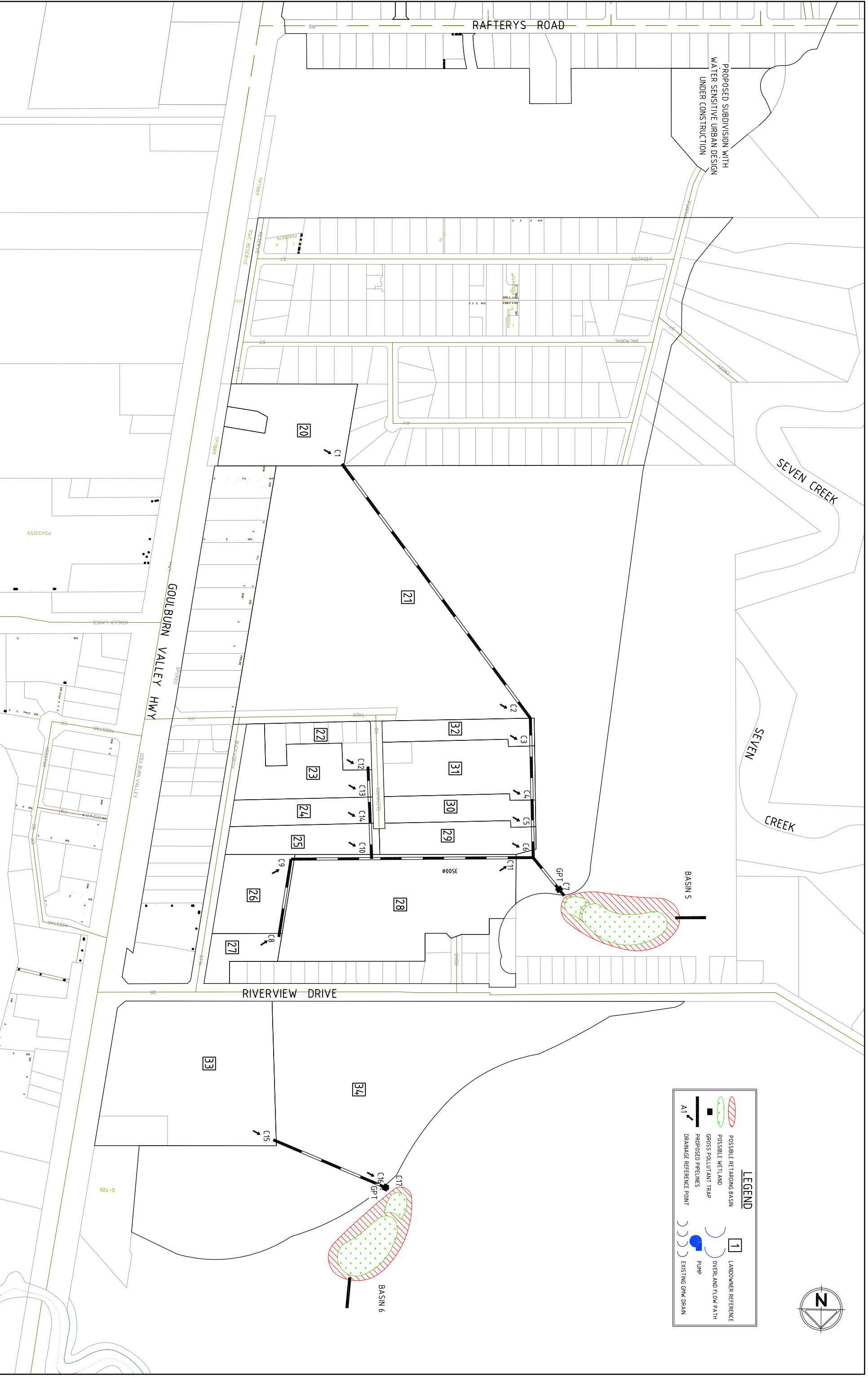
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- POSSIBLE WETLAND
- GROSS POLLUTANT TRAP
- PROPOSED PRELINES
- DRAINAGE REFERENCE POINT
- PUMP
- LANDOWNER REFERENCE
- OVERLAND FLOW PATH
- EXISTING GWM DRAIN

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SOUTH CORRIDOR DRAINAGE SCHEME		REV. A	
DETAIL PLAN			
CITY OF SHEPPARTON			
SHEET 2 OF 3			



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- POSSIBLE RETARDING BASIN
- POSSIBLE WETLAND
- GROSS POLLUTANT TRAP
- PROPOSED PIPELINES
- DRAINAGE REFERENCE POINT
- LANDOWNER REFERENCE
- OVERLAND FLOW PATH
- PIPE
- EXISTING GHW DRAIN



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CITY OF GREATER SHEPPARTON SOUTH CORRIDOR DRAINAGE SCHEME DETAIL PLAN SHEET 3 OF 3	
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PIT USE			South Corridor Drainage Calcs													
PIT DS	AREA (ha)	C	AE (ha)	TOT AE (ha)	TC (min)	INT (mm/hr)	ARI (Y)	Qact (L/sec)	Diam (mm)	ROUGH n	SLOPE	Qtot (m3/sec)	Vfull (m/s)	Qd/Qr	LENGTH (m)	Tp (min)
A1	0.800	0.32	0.26	0.26	8.930	70.73	5	50.33	300	0.011	500	0.05	0.72	0.99	73	1.66
A2	0.800	0.32	0.26	0.51	10.61	65.54	5	93.22	450	0.011	500	0.15	0.95	0.62	70	1.23
A3	0.830	0.32	0.27	0.78	11.84	62.32	5	134.60	450	0.011	500	0.15	0.95	0.89	73	1.28
A4	12.020	0.32	3.95	4.62	13.13	59.35	5	782.47	900	0.011	500	0.96	1.50	0.80	51	0.57
A5	5.050	0.32	1.62	1.616	14.800	56.01	5	251.43	600	0.011	500	0.32	1.15	0.78	260	3.78
A6	20.630	0.32	6.60	8.218	18.575	49.93	5	1139.83	1050	0.011	500	1.44	1.67	0.79	11	0.11
A7	1.130	0.32	0.36	0.362	9.330	69.43	5	69.74	375	0.011	500	0.09	0.84	0.75	236	4.73
A9	0.600	0.32	0.19	0.554	8.700	71.53	5	110.08	450	0.011	500	0.15	0.95	0.73	44	0.77
A10	0.000	0.32	0.00	0.554	14.058	57.44	5	88.33	450	0.011	500	0.15	0.95	0.59	252	4.43
A11	17.470	0.45	7.862	7.862	18.270	50.365	5	1099.852	1050	0.011	500	1.443	1.667	0.762	130	1.300
B1	4.630	0.45	2.084	2.084	14.430	56.711	5	328.215	675	0.011	500	0.444	1.242	0.739	170	2.282
B3	1.910	0.45	0.860	0.860	11.230	63.872	5	152.494	525	0.011	500	0.227	1.050	0.671	50	0.794
B5	15.330	0.45	6.899	7.758	21.270	46.491	5	1001.884	1050	0.011	500	1.443	1.667	0.695	75	0.750
B6	1.180	0.9	1.062	1.062	9.830	78.865	10	232.652	600	0.011	500	0.324	1.148	0.717	90	1.307
B8	3.710	0.45	1.670	2.732	13.130	59.353	5	450.382	750	0.011	500	0.588	1.332	0.766	75	0.939
B9	4.680	0.45	2.111	2.111	13.350	58.883	5	345.231	675	0.011	500	0.444	1.242	0.777	90	1.208
B10	4.430	0.45	1.994	1.994	14.558	56.465	5	1072.151	1050	0.011	500	1.443	1.667	0.743	75	0.750
B11	13.380	0.45	6.021	6.021	18.200	50.465	5	844.033	900	0.011	500	0.956	1.504	0.883	90	0.997
B14	20.070	0.45	9.032	21.888	19.197	49.085	5	2984.545	1500	0.011	500	3.734	2.114	0.799	75	0.591
C1	2.060	0.45	0.927	0.927	10.820	64.969	5	167.296	525	0.011	500	0.227	1.050	0.736	466	7.397
C2	23.110	0.45	10.400	11.327	19.950	48.102	5	1513.425	1200	0.011	500	2.060	1.822	0.735	41	0.375
C3	0.730	0.45	0.329	11.655	20.325	47.631	5	1542.048	1200	0.011	500	2.060	1.822	0.749	80	0.732
C4	1.780	0.45	0.801	12.456	21.057	46.742	5	1617.285	1200	0.011	500	2.060	1.822	0.765	39	0.357
C5	1.050	0.45	0.473	12.929	21.414	46.324	5	1663.599	1200	0.011	500	2.060	1.822	0.808	45	0.412
C6	0.540	0.45	0.243	0.243	70.950	47.891	5	47.891	300	0.011	500	0.051	0.723	0.938	116	2.674
C8	1.200	0.45	0.540	0.783	11.584	63.039	5	137.110	450	0.011	500	0.151	0.947	0.910	119	2.093
C9	0.760	0.45	0.342	0.342	9.680	68.303	5	64.893	375	0.011	500	0.093	0.839	0.701	45	0.894
C12	1.390	0.45	0.626	0.968	11.070	62.294	5	172.791	525	0.011	500	0.227	1.050	0.761	39	0.619
C13	0.810	0.45	0.365	1.332	11.689	62.700	5	231.989	600	0.011	500	0.324	1.148	0.715	52	0.755
C14	0.960	0.45	0.432	2.547	13.647	53.047	5	412.244	675	0.011	500	0.444	1.242	0.928	213	2.859
C10	4.670	0.45	2.102	4.649	16.507	53.047	5	684.964	825	0.011	500	0.758	1.419	0.903	251	2.294
C11	0.870	0.45	0.392	17.969	21.828	43.851	5	2288.539	1350	0.011	500	2.820	1.971	0.812	72	0.499
C6	5.290	0.9	4.725	4.725	12.880	69.491	10	912.068	900	0.011	500	0.956	1.504	0.954	176	1.950
C15	12.450	0.45	5.603	10.328	14.830	55.955	5	1605.229	1200	0.011	500	2.060	1.822	0.779	8	0.073
C16																
C17																

BASIN 1
 Q_{in} INFLOW = $134m^3/s$ PEAK
 Q_{out} OUTFLOW = $0.22m^3/s$ PIPE
REQUIRED VOLUME STORAGE = $1716m^3$

BASIN 2
 Q_{in} INFLOW = $2.55m^3/s$ PEAK
 Q_{out} OUTFLOW = $0.37m^3/s$ PIPE
REQUIRED VOLUME STORAGE = $34.74m^3$

BASIN 3
 Q_{in} INFLOW = $2.47m^3/s$ PEAK
 Q_{out} OUTFLOW = $0.31m^3/s$ PIPE
REQUIRED VOLUME STORAGE = $44.75m^3$

BASIN 4
 Q_{in} INFLOW = $7.36m^3/s$ PEAK
 Q_{out} OUTFLOW = $0.71m^3/s$ PIPE
REQUIRED VOLUME STORAGE = $14.806m^3$

BASIN 5
 Q_{in} INFLOW = $4.46m^3/s$ PEAK
 Q_{out} OUTFLOW = $0.49m^3/s$ PIPE
REQUIRED VOLUME STORAGE = $84.14m^3$

BASIN 6
 Q_{in} INFLOW = $2.57m^3/s$ PEAK
 Q_{out} OUTFLOW = $0.26m^3/s$ PIPE
REQUIRED VOLUME STORAGE = $5070m^3$

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	AMENDMENTS			
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CITY OF GREATER SHEPPARTON SOUTH CORRIDOR DRAINAGE SCHEME CITY OF SHEPPARTON DRAINAGE COMPUTATIONS AND BASIN DETAILS				
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Attachment 2 – Development Contributions Planning Scheme Schedules

SCHEDULE 1 TO THE DEVELOPMENT CONTRIBUTIONS PLAN OVERLAYShown on the planning scheme map as **DCPO1****NORTHERN CORRIDOR DEVELOPMENT CONTRIBUTIONS PLAN****1.0 Area covered by this development contributions plan**

As detailed on the Development Contribution Overlay Plan Map.

2.0 Summary of costs

Facility	Total cost \$	Time of provision	Actual cost contribution attributable to development \$	Proportion of cost attributable to development %
<i>Arterial Traffic Management Works</i>	\$251,250	*	\$2,259	9%
<i>Turning Lanes</i>	\$657,875	**	\$657,875	100%
<i>Collector Road Widening</i>	\$615,250	**	\$615,250	100%
<i>Bicycle Path</i>	\$65,313	**	\$65,313	100%
<i>Drainage and Wetland</i>	\$1,932,879	**	\$1,932,879	100%
TOTAL	\$3,522,567		\$3,273,576	

* In association with construction of the Shepparton Bypass

** As required by the take up of land

3.0 Summary of contributions

FACILITY	LEVIES PAYABLE BY THE DEVELOPMENT		
	Residential (lots less than 2000m ²)	Development Infrastructure	
		Residential lots min 2000m ²	Low Density Residential lots minimum of 4000m ²
<i>Arterial Traffic management works</i>	\$2,259/ha	\$904/ha	\$452/ha
<i>Turning Lanes</i>	\$4,564/ha	\$4,477/ha	\$2,238/ha
<i>Collector Road widening</i>	\$4,864/ha	\$3,275/ha	\$1,629/ha
<i>Bike Path</i>	\$587/ha	\$235/ha	\$117/ha
<i>Drainage and wetland</i>	\$15,904/ha	\$8,581/ha	N/A
TOTAL	\$28,178/ha	\$15,826/ha	\$6,064/ha[#]

See Section 4 below

Note: All of the above rates will be subject to annual C.P.I reviews to allow for cost inflations

Note: Council will consider works in kind as an alternative to financial contributions made in accordance with the Schedule.

4.0 Land or development excluded from development contributions plan

The land zoned Low Density is excluded from the consolidated drainage and wetland scheme.

Note: This schedule sets out a summary of the costs and contributions prescribed in the development contributions plan. Refer to the incorporated development contributions plan for full details

SCHEDULE 2 TO THE DEVELOPMENT CONTRIBUTIONS PLAN OVERLAYShown on the planning scheme map as **DCPO2****SOUTHERN CORRIDOR DEVELOPMENT CONTRIBUTIONS PLAN****1.0 Area covered by this development contributions plan**

As detailed on the Development Contribution Overlay Plan Map.

2.0 Summary of costs

Facility	Total cost \$	Time of provision	Actual cost contribution attributable to development \$	Proportion of cost attributable to development %
<i>Arterial Traffic management works</i>	\$625,000	**	\$125,000	20%
<i>Turning lanes</i>	\$527,500	**	\$527,500	100%
<i>Collector Road widening</i>	\$1,189,625	**	\$1,189,625	100%
<i>Bike Path</i>	\$559,376	**	\$279,688	50%
<i>Drainage and wetland</i>	\$2,832,174	**	\$2,832,174	100%
TOTAL	\$5,733,675		\$4,953,987	

** As required by the take up of land

3.0 Summary of contributions

FACILITY	LEVIES PAYABLE BY THE DEVELOPMENT		
	Residential (lots less than 2000m ²)	Development Infrastructure	
		Residential (lots greater than 2000m ²)	Commercial
<i>Arterial Traffic Management Works</i>	\$676/ha	\$270/ha	\$676/ha
<i>Turning Lanes</i>	\$2,091/ha	\$5,042/ha	\$0/ha
<i>Collector Road Widening</i>	\$7,820/ha	\$0/ha	\$0/ha
<i>Bicycle Path</i>	\$1,658/ha	\$663/ha	\$0/ha
<i>Drainage</i>	\$16,846/ha	\$8,872/ha	\$22,136/ha
TOTAL	\$29,091/ha	\$14,847/ha	\$22,812/ha

Note: All of the above rates will be subject to annual C.P.I reviews to allow for cost inflations

Note: Council will consider works in kind as an alternative to financial contributions made in accordance with the Schedule.

Note: This schedule sets out a summary of the costs and contributions prescribed in the development contributions plan. Refer to the incorporated development contributions plan for full details

Table 2 – Development Contribution Calculations Northern Corridor

SHEPPARTON NORTH GROWTH CORRIDOR

CALCULATION OF INFRASTRUCTURE CONTRIBUTION RATES

(Excluding Drainage)

Residential Land

Total Developable Area	= 88.5398 ha.
Approx Lot Sizes	= 800 sqm.
Total Lot Numbers	= 830 lots
Lot Yield	= 9.38 lots / ha.

Rural Residential Land 4000

Total Developable Area	= 41.7890 ha.
Approx Lot Sizes	= 4,000 sqm.
Total Lot Numbers	= 78 lots
Lot Yield	= 1.88 lots / ha.

Rural Residential Land 2000

Total Developable Area	= 35.7852 ha.
Approx Lot Sizes	= 2,000 sqm.
Total Lot Numbers	= 134 lots
Lot Yield	= 3.75 lots / ha.

Total No. Lots	= 1,043 lots
----------------	--------------

Contributing Land Areas

Description	Area (ha)
Residential 800	88.5398
Rural Residential 4000	41.789
Rural Residential 2000	35.7852
Total	166.1140

Non - Contributing Areas

Description	Area (ha)
Transmission Line Easement / Open Space	8.4543
G.M.W. Easements	12.7453
Public Open Space	8.4282
Existing Sub Station Site	4.9408
Total	34.5686

Total North Growth Corridor Areas

Description	Area (ha)
Residential 800	88.5398
Rural Residential 4000	41.7890
Rural Residential 2000	35.7852
Non Contributing Areas	34.5686
Total	200.6826

Contributing Land Areas for Infrastructure Works

Land Use	Approx Area (ha)	Rate	Effective Res Area (ha)
Residential 800	88.5398	1	88.5398
Rural Residential 4000	41.7890	0.2	8.3578
Rural Residential 2000	35.7852	0.4	14.3141
Total	166.1140		111.2117

CALCULATION OF INFRASTRUCTURE CONTRIBUTION RATES**GV Highway / Ford Road Intersection (10% contribution) & Channel Crossing**

Estimated Construction Costs = \$251,250

Contribution Rate = Estimated Costs / Effective Residential Contributing Area
= \$2,259 / ha.

Residential Road Scheme Contribution Costs (Turning Lanes)

Estimated Construction Costs = \$404,125

Contribution Rate = Estimated Construction Costs / Effective Residential 800 Contributing Area
= \$4,564 / ha.

Residential Road Scheme Contribution Costs (Road Widening)

Estimated Construction Costs = \$430,625

Contribution Rate = Estimated Construction Costs / Effective Residential 800 Contributing Area
= \$4,864 / ha.

Rural Residential Road Scheme Contribution Costs (Turning Lanes)

Estimated Construction Costs = \$253,750

Contribution Rate = Estimated Construction Costs / Effective Rural Residential Contributing Area
= \$11,192 / ha.

Rural Residential Road Scheme Contribution Costs (Road Widening)

Estimated Construction Costs = \$184,625

Contribution Rate = Estimated Construction Costs / Effective Rural Residential Contributing Area
= \$8,143 / ha.

Bike Path Scheme Contribution Costs

Estimated Construction Costs = \$65,313

Contribution Rate = Estimated Construction Costs / Effective Residential Contributing Areas
= \$587 /ha.

Total Infrastructure Scheme Contribution Costs

Item	Residential 800	RR4000	RR2000
GV HWY & Channel Xing	\$2,259 /ha.	\$452 /ha.	\$904 /ha.
External Roads	\$4,564 /ha.	\$2,238 /ha.	\$4,477 /ha.
Internal Roads	\$4,864 /ha.	\$1,629 /ha.	\$3,257 /ha.
Bike Path	\$587 /ha.	\$117 /ha.	\$235 /ha.
Total	\$12,274 /ha.	\$4,436 /ha.	\$8,873 /ha.

Northern Corridor Drainage Contributions

Drainage Cost	\$	1,038,117.50
Wetland Cost	\$	894,761.59
Total Cost	\$	1,932,879.09

Note: Includes 12% design, 10% contingency fee, 3% scheme management fee

Effective Ratio Determined by 100 year volumes

Land Use	Volume (m3)	Areas (ha)	m3/ha	Ration
Residential 800	49346	100.89	489	1.00
Residential 2000	10097	38.26	264	0.54

Total Catchment Area 139.15 ha

Effective Area 121.53 ha

Rate / ha = Total Cost / Effective Area

= \$15,904 /ha.

Northern Corridor Drainage Contribution Rates

Land Use	Effective Rate/ha
Residential 800	= \$15,904 /ha.
Residential 2000	= \$8,581 /ha.

Note: Drainage Costs exclude "Grammar Park" rural residential development in north east corner of Northern Growth Corridor.

Table 3 – Development Contributions Calculations Southern Corridor

CALCULATION OF INFRASTRUCTURE CONTRIBUTION RATES

(Excluding Drainage)

Residential Land Budget**Residential 800**

Total Developable Area	= 152.1171 ha.
Approx Lot Sizes	= 800 sqm.
Total Lot Numbers	= 1,426 lots
Lot Yield	= 9.38 lots / ha.

Residential 2000

Total Developable Area	= 41.5261 ha.
Approx Lot Sizes	= 2,000 sqm.
Total Lot Numbers	= 156 lots
Lot Yield	= 3.75 lots / ha.

Total No. Lots	= 1,582 lots
----------------	--------------

Contributing Land Areas

Description	Area (ha)
Residential 800 (includes Tourism zone)	152.1171
Rural Residential 2000	41.5261
Commercial	16.2520
Total	209.8952

Non - Contributing Areas

Description	Area (ha)
Urban Floodway Zone	202.6254
Open Space Buffers	2.6954
Public Open Space	6.3343
Existing Open Space / Park	14.6648
Existing Residential	51.9148
Total	278.2347

Total South Growth Corridor Areas

Description	Area (ha)
Residential 800	152.1171
Rural Residential 2000	41.5261
Commercial	16.2520
Non Contributing Areas	278.2347
Total	488.1299

Contributing Land Areas for Infrastructure Works (excluding Commercial)

Land Use	Approx Area (ha)	Rate	Effective Res Area (ha)
Residential 800	152.1171	1	152.1171
Rural Residential 2000	41.5261	0.4	16.6104
Total	193.6432		168.7275

GV Highway / Riverview Drive Intersection (20% contribution)

Estimated Construction Costs (20%)	= \$125,000
------------------------------------	-------------

Contribution Rate	= Estimated Costs / Effective Residential Contributing Area + Commercial
	= \$676 / ha.

Residential Road Scheme Contribution Costs (Turning Lanes)

CALCULATION OF INFRASTRUCTURE CONTRIBUTION RATES

Estimated Construction Costs = \$318,125

Contribution Rate = Estimated Construction Costs / Effective Residential 800 Contributing Area
= \$2,091 / ha.

Residential Road Scheme Contribution Costs (Road Widening)

Estimated Construction Costs = \$1,189,625

Contribution Rate = Estimated Construction Costs / Effective Residential 800 Contributing Area
= \$7,820 / ha.

Residential 2000 External Road Scheme Contribution Costs (Turning Lanes)

Estimated Construction Costs = \$209,375

Contribution Rate = Estimated Construction Costs / Effective Residential 2000 Contributing Area
= \$12,605 / ha.

Residential 2000 Internal Road Scheme Contribution Costs (Road Widening)

Estimated Construction Costs = \$

Contribution Rate = Estimated Construction Costs / Effective Residential 2000 Contributing Area
= \$0 / ha.

Bike Path Scheme Contribution Costs (50% contribution)

Estimated Construction Costs = \$279,688

Contribution Rate = Estimated Construction Costs / Effective Residential Contributing Areas
= \$1,658 /ha.

Total Infrastructure Scheme Contribution Costs

Item	Residential 800	RR2000	Commercial
GV Highway / Riverview Dr Int	\$676 /ha.	\$270 /ha.	\$676 /ha.
External Roads	\$2,091 /ha.	\$5,042 /ha.	\$0 /ha.
Internal Roads	\$7,820 /ha.	\$0 /ha.	\$0 /ha.
Bike Path	\$1,658 /ha.	\$663 /ha.	\$0 /ha.
Total	\$12,245 /ha.	\$5,975 /ha.	\$676 /ha.

Southern Corridor Drainage Contributions

Drainage Cost	\$	1,589,445.00
Wetland Cost	\$	1,242,729.08
Total Cost	\$	2,832,174.08

Note: Includes 12% design, 10% contingency fee, 3% scheme management fee

Effective Ratio Determined by 100 year volumes

Land Use	Volume (m3)	Areas (ha)	m3/ha	Ratio
Residential 800	32765.1	139.18	235	1.00
Residential 2000	5190	41.86	124	0.53
Commercial	1624.1	5.25	309	1.31

Total Catchment Area 186.29 ha

Effective Area 168.13 ha

Rate / ha = Total Cost / Effective Area

= \$16,846 /ha.

Southern Corridor Drainage Contribution Rates

Land Use	Effective Rate/ha
Residential 800	= \$16,846 /ha.
Residential 2000	= \$8,872 /ha.
Commercial	= \$22,136 /ha.

Note: Drainage Costs exclude existing residential and commercial areas