Government of **Western Australia**
Department of **Water and Environmental Regulation**

Project:	Banjup	Date:	14/01/2021
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Subregion name: **Stage 1 - urban**

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	88	3.34	106.52	29.56
Industrial, commercial & schools	0	0.00	0.00	0.00
Rural living	0	0.00	0.00	0.00
Public open space	12	0.46	24.96	0.75
Road reserve	0	0.00	0.00	0.00

Total area (ha)	Total percent (%)
3.79	37
Nitrogen input (kg/yr)	**Phosphorus input (kg/yr)**
151.31	30.88
Nitrogen export (kg/yr)	**Phosphorus (kg/yr)**
11.74	0.22

Residential

Size (m²)	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
<400	80	2.67	62.73	18.38
400-500 m²	20	0.67	43.79	11.19
501-600 m²	0	0.00	0.00	0.00
601-730 m²	0	0.00	0.00	0.00
>730 m²	0	0.00	0.00	0.00
Multiple dwellings	0	0.00	0.00	0.00

Total area (ha)	Total percent (%)
3.3374	88
Nitrogen input (kg)	**Phosphorus input (kg)**
106.52	29.56

Public Open Space (POS)

Landuse	Percent (%)	Area (ha)
Native gardens	0	0.00
Non-native gardens	0	0.00
Not fertilised	0	0.00
Nature	18	0.08
Sport	0	0.00
Recreation	82	0.37
Golf course	0	0.00
Bowling green	0	0.00
Impervious	0	0.00
Water body	0	0.00

Total area (ha)	Total percent (%)
0.46	**12**

Nitrogen input (kg)	Phosphorus input (kg)
24.96	**0.75**

Soil and drainage information

Type of drainage	**Infiltration**	**Does it contain imported fill?**	**No**
Soil type	**Bassendean**	**Does subregion contain onsite sewage diposal system?**	**No**
Depth to groundwater (m)	**5**		
Groundwater slope (%)	**0.08**		
Soil PRI	**5.0**		

Note: Please attach the results of soil tests to this report when submitting.

Subregion name: **Stage 2 - urban**

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	73	2.92	93.14	25.85
Industrial, commercial & schools	0	0.00	0.00	0.00
Rural living	0	0.00	0.00	0.00
Public open space	27	1.08	27.74	0.76
Road reserve	0	0.00	0.00	0.00

Total area (ha)	Total percent (%)
4.00	39

Nitrogen input (kg/yr)	Phosphorus input (kg/yr)
141.78	27.21

Nitrogen export (kg/yr)	Phosphorus (kg/yr)
14.12	0.41

Residential

Size (m²)	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
<400	80	2.33	54.85	16.07
400-500 m²	20	0.58	38.29	9.78
501-600 m²	0	0.00	0.00	0.00
601-730 m²	0	0.00	0.00	0.00
>730 m²	0	0.00	0.00	0.00
Multiple dwellings	0	0.00	0.00	0.00

Total area (ha)	Total percent (%)
2.918175	73

Nitrogen input (kg)	Phosphorus input (kg)
93.14	25.85

Public Open Space (POS)

Landuse	Percent (%)	Area (ha)
Native gardens	0	0.00
Non-native gardens	0	0.00
Not fertilised	0	0.00
Nature	65	0.70
Sport	0	0.00
Recreation	35	0.38
Golf course	0	0.00
Bowling green	0	0.00
Impervious	0	0.00
Water body	0	0.00

Total area (ha)	Total percent (%)
1.08	**27**

Nitrogen input (kg)	Phosphorus input (kg)
27.74	**0.76**

Soil and drainage information

Type of drainage	**Infiltration**
Soil type	**Bassendean**
Depth to groundwater (m)	**3**
Groundwater slope (%)	**0.5**
Soil PRI	**5.0**

Does it contain imported fill? **No**

Does subregion contain onsite sewage diposal system? **No**

Note: Please attach the results of soil tests to this report when submitting.

Subregion name: **Stage 1 - roads**

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	0	0.00	0.00	0.00
Industrial, commercial & schools	0	0.00	0.00	0.00
Rural living	0	0.00	0.00	0.00
Public open space	0	0.00	0.00	0.00
Road reserve	100	1.95	5.45	0.18

Total area (ha)	Total percent (%)
1.95	19

Nitrogen input	Phosphorus input
15.64	0.47

Nitrogen export	Phosphorus
0.97	0.02

Road reserve

Landuse	Percent (%)	Area (ha)
Roads	80	1.56
Road reserve - impervious	0	0.00
Road reserve - native garden	10	0.19
Road reserve - non-native garden	0	0.00
Road reserve - turf	0	0.00
Road reserve - not fertilised	10	0.19

Total area (ha)	Total percent (%)
1.9475	100

Nitrogen input (kg)	Phosphorus input (kg)
5.45	5.45

Soil and drainage information

Type of drainage	**Piped drainage**
Soil type	**Bassendean**
Depth to groundwater (m)	**5**
Groundwater slope (%)	**0.08**
Soil PRI	**5.0**

Does it contain imported fill? **No**

Does subregion contain onsite sewage diposal system? **No**

Note: Please attach the results of soil tests to this report when submitting.

Subregion name: **Stage 2 - roads**

Landuse	Percent (%)	Area (ha)	Input load Nitrogen (kg)	Input load Phosphorus (kg)
Residential	0	0.00	0.00	0.00
Industrial, commercial & schools	0	0.00	0.00	0.00
Rural living	0	0.00	0.00	0.00
Public open space	0	0.00	0.00	0.00
Road reserve	100	0.51	0.00	0.00

Total area (ha)	Total percent (%)
0.51	**5**

Nitrogen input	Phosphorus input
2.68	**0.08**

Nitrogen export	Phosphorus
0.17	**0.00**

Road reserve

Landuse	Percent (%)	Area (ha)
Roads	80	0.41
Road reserve - impervious	10	0.05
Road reserve - native garden	0	0.00
Road reserve - non-native garden	0	0.00
Road reserve - turf	0	0.00
Road reserve - not fertilised	10	0.05

Total area (ha)	Total percent (%)
0.5125	**100**

Nitrogen input (kg)	Phosphorus input (kg)
0.00	**0.00**

Soil and drainage information

Type of drainage	**Piped drainage**
Soil type	**Bassendean**
Depth to groundwater (m)	**3**
Groundwater slope (%)	**0.5**
Soil PRI	**5.0**

Does it contain imported fill? **No**

Does subregion contain onsite sewage diposal system? **No**

Note: Please attach the results of soil tests to this report when submitting.

Summary: Nutrient stripping devices

Treatment	Name	Size (m²)	Treated area (ha)	Treating	N removed (kg/yr)	P removed (kg/yr)
Biofilter	Biofilter 1	758.00	3.79	Sandy soils – Runoff only (infiltration on lots)	2.31	0.05
Detention / infiltration basin	Detention / infiltration basin 1	2274.00	3.79	Sandy soils – Runoff only (infiltration on lots)	0.40	0.00
Detention / infiltration basin	Detention / infiltration basin 2	1170.00	1.95	Sandy soils – Runoff only (infiltration on lots)	0.04	0.00
Biofilter	Biofilter 2	800.00	4.00	Sandy soils – Runoff only (infiltration on lots)	2.78	0.10
Detention / infiltration basin	Detention / infiltration basin 3	2400.00	4.00	Sandy soils – Runoff only (infiltration on lots)	0.48	0.01
Detention / infiltration basin	Detention / infiltration basin 4	306.00	0.51	Sandy soils – Runoff only (infiltration on lots)	0.01	0.00
Load removed					**6.02**	**0.16**
Net export					**20.97**	**0.48**

Summary: Nutrient load exports

Region	Area (ha)	P export (kg/yr)	N export (kg/yr)
Stage 1 - urban	3.79	0.22	11.74
Stage 2 - urban	4.00	0.41	14.12
Stage 1 - roads	1.95	0.02	0.97
Stage 2 - roads	0.51	0.00	0.17

PRE-TREATMENT LOAD (kg/yr)		LOAD REMOVED (kg/yr)		NET LOAD EXPORT (kg/yr)	
NITROGEN	PHOSPHORUS	NITROGEN	PHOSPHORUS	NITROGEN	PHOSPHORUS
26.99	**0.65**	**6.02**	**0.16**	**20.97**	**0.48**

Treatment diagram