APPENDIX A

JOINT WIND SPEED, WIND DIRECTION AND STABILITY CLASS FREQUENCY TABLES

PASQUILL STABILITY CLASS 'A'

Wind Speed Class (m/s)

WIND SECTOR	0.50 TO 1.50	1.50 TO 3.00	3.00 TO 4.50	4.50 TO 6.00	6.00 TO 7.50	7.50 TO 9.00	9.00 TO 10.50	GREATER THAN 10.50	TOTAL
NNE	00000004	00000002	00000000	00000000	00000000	00000000	00000000	00000000	00000006
NE	00000008	00000007	00000000	00000000	00000000	00000000	00000000	00000000	00000015
ENE	00000002	00000014	00000000	00000000	00000000	00000000	00000000	00000000	00000016
E	00000008	00000004	00000000	00000000	00000000	00000000	00000000	00000000	00000012
ESE	00000003	00000005	00000000	00000000	00000000	00000000	00000000	00000000	00000008
SE	00000000	00000007	00000000	00000000	00000000	00000000	00000000	00000000	00000007
SSE	00000002	00000005	00000000	00000000	00000000	00000000	00000000	00000000	00000007
S	00000003	00000006	00000000	00000000	00000000	00000000	00000000	00000000	00000009
SSW	00000004	00000009	00000000	00000000	00000000	00000000	00000000	00000000	00000013
SW	00000003	00000010	00000000	00000000	00000000	00000000	00000000	00000000	00000013
WSW	00000005	00000010	00000000	00000000	00000000	00000000	00000000	00000000	00000015
W	00000008	00000004	00000000	00000000	00000000	00000000	00000000	00000000	00000012
WNW	00000002	00000006	00000000	00000000	00000000	00000000	00000000	00000000	00000008
NW	00000000	00000001	00000000	00000000	00000000	00000000	00000000	00000000	00000001
NNW	00000002	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000002
N	00000006	00000002	00000000	00000000	00000000	00000000	00000000	00000000	00000008
CALM									00000010
TOTAL	00000060	00000092	00000000	00000000	00000000	00000000	00000000	00000000	00000162

MEAN WIND SPEED (m/s) = 1.68
NUMBER OF OBSERVATIONS = 162

PASQUILL STABILITY CLASS 'B'

Wind Speed Class (m/s)

WIND SECTOR	0.50 TO 1.50	1.50 TO 3.00	3.00 TO 4.50	4.50 TO 6.00	6.00 TO 7.50	7.50 TO 9.00	9.00 TO 10.50	GREATER THAN 10.50	TOTAL
NNE	00000011	00000006	00000004	00000000	00000000	00000000	00000000	00000000	00000021
NE	00000020	00000029	00000007	00000001	00000000	00000000	00000000	00000000	00000057
ENE	00000008	00000023	00000026	00000002	00000000	00000000	00000000	00000000	00000059
E	00000010	00000018	00000056	00000010	00000000	00000000	00000000	00000000	00000094
ESE	00000009	00000011	00000017	00000005	00000000	00000000	00000000	00000000	00000042
SE	00000007	00000008	00000006	00000000	00000000	00000000	00000000	00000000	00000021
SSE	00000006	00000005	00000010	00000000	00000000	00000000	00000000	00000000	00000021
S	00000004	00000003	00000004	00000002	00000000	00000000	00000000	00000000	00000013
SSW	00000009	00000006	00000007	00000000	00000000	00000000	00000000	00000000	00000022
SW	00000009	00000014	00000025	00000002	00000000	00000000	00000000	00000000	00000050
WSW	00000017	00000025	00000040	00000009	00000000	00000000	00000000	00000000	00000091
W	00000028	00000025	00000060	00000011	00000000	00000000	00000000	00000000	00000124
WNW	00000012	00000014	00000017	00000001	00000000	00000000	00000000	00000000	00000044
NW	00000006	00000007	00000003	00000001	00000000	00000000	00000000	00000000	00000017
NNW	00000008	00000002	00000001	00000000	00000000	00000000	00000000	00000000	00000011
N	00000005	00000001	00000000	00000000	00000000	00000000	00000000	00000000	00000006
CALM									00000010
TOTAL	00000169	00000197	00000283	00000044	00000000	00000000	00000000	00000000	00000703

MEAN WIND SPEED (m/s) = 2.65
NUMBER OF OBSERVATIONS = 703

PASQUILL STABILITY CLASS 'C'

Wind Speed Class (m/s)

WIND SECTOR	0.50 TO 1.50	1.50 TO 3.00	3.00 TO 4.50	4.50 TO 6.00	6.00 TO 7.50	7.50 TO 9.00	9.00 TO 10.50	GREATER THAN 10.50	TOTAL
NNE	00000009	00000003	00000003	00000006	00000000	00000000	00000000	00000000	00000021
NE	00000011	00000021	00000021	00000014	00000000	00000000	00000000	00000000	00000067
ENE	00000008	00000020	00000043	00000030	00000003	00000001	00000000	00000000	00000105
E	00000004	00000023	00000077	00000086	00000012	00000001	00000000	00000000	00000203
ESE	00000003	00000011	00000022	00000030	00000003	00000001	00000000	00000000	00000070
SE	00000002	00000012	00000010	00000005	00000000	00000000	00000000	00000000	00000029
SSE	00000002	00000006	00000003	00000003	00000002	00000000	00000000	00000000	00000016
S	00000003	00000005	00000007	00000004	00000000	00000000	00000000	00000000	00000019
SSW	00000003	00000010	00000008	00000010	00000004	00000000	00000000	00000000	00000035
SW	00000002	00000009	00000017	00000018	00000005	00000004	00000001	00000000	00000056
WSW	00000012	00000015	00000045	00000049	00000023	00000019	00000012	00000001	00000176
W	00000016	00000023	00000045	00000092	00000027	00000017	00000017	00000021	00000258
WNW	00000010	00000015	00000025	00000022	00000007	00000007	00000006	00000003	00000095
NW	00000004	00000002	00000006	00000005	00000001	00000001	00000000	00000000	00000019
NNW	00000007	00000004	00000001	00000004	00000000	00000000	00000000	00000000	00000016
N	00000001	00000001	00000001	00000001	00000000	00000000	00000000	00000000	00000004
CALM									00000012
TOTAL	00000097	00000180	00000334	00000379	00000087	00000051	00000036	00000025	00001201

MEAN WIND SPEED (m/s) = 4.51
NUMBER OF OBSERVATIONS = 1201

PASQUILL STABILITY CLASS 'D'

Wind Speed Class (m/s)

WIND SECTOR	0.50 TO 1.50	1.50 TO 3.00	3.00 TO 4.50	4.50 TO 6.00	6.00 TO 7.50	7.50 TO 9.00	9.00 TO 10.50	GREATER THAN 10.50	TOTAL
NNE	00000005	00000013	00000008	00000018	00000007	00000000	00000000	00000000	00000051
NE	00000017	00000047	00000115	00000078	00000025	00000007	00000000	00000000	00000289
ENE	00000018	00000092	00000225	00000260	00000109	00000013	00000000	00000000	00000717
E	00000005	00000085	00000284	00000388	00000223	00000053	00000002	00000000	00001040
ESE	00000006	00000024	00000075	00000064	00000059	00000008	00000002	00000000	00000238
SE	00000001	00000008	00000018	00000013	00000003	00000000	00000000	00000000	00000043
SSE	00000006	00000007	00000005	00000002	00000002	00000000	00000000	00000000	00000022
S	00000003	00000011	00000008	00000010	00000003	00000001	00000000	00000000	00000036
SSW	00000002	00000008	00000020	00000015	00000004	00000000	00000000	00000000	00000049
SW	00000004	00000018	00000030	00000021	00000023	00000005	00000001	00000001	00000103
WSW	00000006	00000026	00000037	00000079	00000091	00000065	00000013	00000009	00000326
W	00000012	00000053	00000070	00000130	00000122	00000110	00000046	00000051	00000594
WNW	00000012	00000052	00000072	00000066	00000086	00000042	00000017	00000013	00000360
NW	00000007	00000037	00000042	00000033	00000050	00000023	00000010	00000006	00000208
NNW	00000004	00000015	00000013	00000006	00000003	00000000	00000003	00000002	00000046
N	00000007	00000010	00000011	00000005	00000002	00000000	00000000	00000000	00000035
CALM									00000011
TOTAL	00000115	00000506	00001033	00001188	00000812	00000327	00000094	00000082	00004168

MEAN WIND SPEED (m/s) = 5.18
NUMBER OF OBSERVATIONS = 4168

PASQUILL STABILITY CLASS 'E'

Wind Speed Class (m/s)

WIND SECTOR	0.50 TO 1.50	1.50 TO 3.00	3.00 TO 4.50	4.50 TO 6.00	6.00 TO 7.50	7.50 TO 9.00	9.00 TO 10.50	GREATER THAN 10.50	TOTAL
NNE	00000000	00000011	00000001	00000002	00000000	00000000	00000000	00000000	00000014
NE	00000000	00000029	00000056	00000014	00000000	00000000	00000000	00000000	00000099
ENE	00000000	00000053	00000124	00000040	00000000	00000000	00000000	00000000	00000217
E	00000000	00000075	00000115	00000034	00000000	00000000	00000000	00000000	00000224
ESE	00000000	00000014	00000019	00000011	00000000	00000000	00000000	00000000	00000044
SE	00000000	00000010	00000006	00000001	00000000	00000000	00000000	00000000	00000017
SSE	00000000	00000008	00000003	00000002	00000000	00000000	00000000	00000000	00000013
S	00000000	00000010	00000003	00000001	00000000	00000000	00000000	00000000	00000014
SSW	00000000	00000010	00000010	00000002	00000000	00000000	00000000	00000000	00000022
SW	00000000	00000008	00000020	00000002	00000000	00000000	00000000	00000000	00000030
WSW	00000000	00000014	00000037	00000026	00000000	00000000	00000000	00000000	00000077
W	00000000	00000021	00000044	00000036	00000000	00000000	00000000	00000000	00000101
WNW	00000000	00000019	00000029	00000008	00000000	00000000	00000000	00000000	00000056
NW	00000000	00000009	00000017	00000003	00000000	00000000	00000000	00000000	00000029
NNW	00000000	00000004	00000005	00000002	00000000	00000000	00000000	00000000	00000011
N	00000000	00000007	00000002	00000001	00000000	00000000	00000000	00000000	00000010
CALM									00000000
TOTAL	00000000	00000302	00000491	00000185	00000000	00000000	00000000	00000000	00000978

MEAN WIND SPEED (m/s) = 3.51
NUMBER OF OBSERVATIONS = 978

PASQUILL STABILITY CLASS 'F'

Wind Speed Class (m/s)

WIND SECTOR	0.50 TO 1.50	1.50 TO 3.00	3.00 TO 4.50	4.50 TO 6.00	6.00 TO 7.50	7.50 TO 9.00	9.00 TO 10.50	GREATER THAN 10.50	TOTAL
NNE	00000028	00000020	00000002	00000000	00000000	00000000	00000000	00000000	00000050
NE	00000042	00000078	00000020	00000000	00000000	00000000	00000000	00000000	00000140
ENE	00000027	00000091	00000037	00000000	00000000	00000000	00000000	00000000	00000155
E	00000030	00000081	00000036	00000000	00000000	00000000	00000000	00000000	00000147
ESE	00000017	00000012	00000002	00000000	00000000	00000000	00000000	00000000	00000031
SE	00000014	00000011	00000002	00000000	00000000	00000000	00000000	00000000	00000027
SSE	00000008	00000008	00000003	00000000	00000000	00000000	00000000	00000000	00000019
S	00000009	00000013	00000007	00000000	00000000	00000000	00000000	00000000	00000029
SSW	00000012	00000020	00000003	00000000	00000000	00000000	00000000	00000000	00000035
SW	00000015	00000026	00000010	00000000	00000000	00000000	00000000	00000000	00000051
WSW	00000045	00000069	00000022	00000000	00000000	00000000	00000000	00000000	00000136
W	00000067	00000099	00000030	00000000	00000000	00000000	00000000	00000000	00000196
WNW	00000047	00000079	00000012	00000000	00000000	00000000	00000000	00000000	00000138
NW	00000016	00000024	00000009	00000000	00000000	00000000	00000000	00000000	00000049
NNW	00000019	00000005	00000002	00000000	00000000	00000000	00000000	00000000	00000026
N	00000026	00000010	00000001	00000000	00000000	00000000	00000000	00000000	00000037
CALM									00000065
TOTAL	00000422	00000646	00000198	00000000	00000000	00000000	00000000	00000000	00001331

MEAN WIND SPEED (m/s) = 1.97
NUMBER OF OBSERVATIONS = 1331

ALL PASQUILL STABILITY CLASSES

Wind Speed Class (m/s)

WIND SECTOR	0.50 TO 1.50	1.50 TO 3.00	3.00 TO 4.50	4.50 TO 6.00	6.00 TO 7.50	7.50 TO 9.00	9.00 TO 10.50	GREATER THAN 10.50	TOTAL
NNE	00000057	00000055	00000018	00000026	00000007	00000000	00000000	00000000	00000163
NE	00000098	00000211	00000219	00000107	00000025	00000007	00000000	00000000	00000667
ENE	00000063	00000293	00000455	00000332	00000112	00000014	00000000	00000000	00001269
E	00000057	00000286	00000568	00000518	00000235	00000054	00000002	00000000	00001720
ESE	00000038	00000077	00000135	00000110	00000062	00000009	00000002	00000000	00000433
SE	00000024	00000056	00000042	00000019	00000003	00000000	00000000	00000000	00000144
SSE	00000024	00000039	00000024	00000007	00000004	00000000	00000000	00000000	00000098
S	00000022	00000048	00000029	00000017	00000003	00000001	00000000	00000000	00000120
SSW	00000030	00000063	00000048	00000027	00000008	00000000	00000000	00000000	00000176
SW	00000033	00000085	00000102	00000043	00000028	00000009	00000002	00000001	00000303
WSW	00000085	00000159	00000181	00000163	00000114	00000084	00000025	00000010	00000821
W	00000131	00000225	00000249	00000269	00000149	00000127	00000063	00000072	00001285
WNW	00000083	00000185	00000155	00000097	00000093	00000049	00000023	00000016	00000701
NW	00000033	00000080	00000077	00000042	00000051	00000024	00000010	00000006	00000323
NNW	00000040	00000030	00000022	00000012	00000003	00000000	00000003	00000002	00000112
N	00000045	00000031	00000015	00000007	00000002	00000000	00000000	00000000	00000100
CALM									00000108
TOTAL	00000863	00001923	00002339	00001796	00000899	00000378	00000130	00000107	00008543

MEAN WIND SPEED (m/s) = 4.12
NUMBER OF OBSERVATIONS = 8543

APPENDIX B

PEAK TO MEAN TABLES

Table A1 – Recommended factors for estimating peak concentrations for different source types, distances and stabilities									
		Near field				**Far field**			
Source type	**Stability**	i_{max}	x_{max}	**P/M 60**	**P/M 3**	**i**	**P/M 60**	**P/M 3**	**p**
Area	Neutral, Convective Stable	0.5 0.5	500 – 1000 300 – 800	2.5 2.3	1.9 1.7	0.4 0.3	2.3 1.9	1.7 1.4	0.15 0.10
Line	Neutral, Convective Stable	1.0 1.0	350 250	6 6	2.8 2.8	0.75 0.65	6 6	2.8 2.8	0.25 0.25
Surface point	Neutral Stable Convective	2.5 2.5 2	200 200 1000	25 25 12	10 10 7	1.2 1.2 0.6	5 - 7 5 - 7 3 - 4	3 3 2.5	0.2 0.2 0.15
Tall point	Neutral, Stable Convective	4.5 2.3	5 h 2.5 h	35 17	8 4	1.0 0.5	6 3	1.3 1.1	0.5 0.5
Wake affected point	Neutral, Convective	0.4	-	2.3	1.4	-	2.3	1.4	0.1
Volume	Neutral, Convective	0.4	-	2.3	1.4	-	2.3	1.4	0.1

Source: Katestone Scientific (1998)

i_{max} is maximum centreline intensity of concentration
x_{max} is the approximation location of i_{max} in metres
P/M 60 is the peak to mean ratio for long averaging times (typically 1 hour), at a probability of 10^{-3}
P/M 3 is the best estimates of the peak to mean ratio for 3 minute averages, at probability 10^{-3}
p is the averaging time power law exponent
h is stack height

APPENDIX C

ESTIMATED DUST EMISSIONS FOR STAGE 10-20 YEARS

STAGING 10-20 YEARS EMISSION FACTORS

Introduction
Estimated emissions are presented for all significant dust generating activities associated with the proposed landfill operations during Staging 10-20 Years.

The dust emissions inventory has been estimated using information and assumptions provided by Maunsell Australia Pty Ltd. Emission factors have been developed using emission factor equations provided in the **US EPA (1985)** (and subsequent updates) publication referred to as AP-42 and from factors determined by **NERDDC (1986)**.

It has been assumed that excavation activities will occur 10 hours per day from 7 am to 5 pm, 7 days per week, while landfilling will occur for 12 hours per day from 6 am to 6 pm, 7 days per week. It should be noted that this is a conservative assumption since construction will not typically occur on Sundays and working hours will be slightly restricted for all activities on weekends and public holidays.

Dust from wind erosion is assumed to occur over 24 hours per day, but wind erosion is also assumed to be proportional to the third power of wind speed. Generally, this will mean that most wind erosion occurs during the day when wind speeds are highest.

Excavation operations:

Removing Topsoil
Topsoil will be removed using a dozer. The rate at which dust will be generated by a dozer is calculated using Equation 1.

Equation 1

$$E_{TSP} = \frac{2.6 \times s^{1.2}}{M^{1.3}} \qquad \text{kg/hour}$$

where,

$s = \text{silt content}(\%), \text{and}$

$M = \text{moisture content}(\%)$

Taking M to be 2% and s to be 10%, the emission factor is estimated to be approximately 16.735 kg/hour. Assuming that the dozer is working for approximately 60 hours/y, the total dust emissions would be approximately 1,004 kg/y [60 h/y x 16.735 kg/h].

Excavators in pit
In Staging 10-20 Years, approximately 65215 bcm/y of material will be excavated [16304 m^2 x 4 m]. Assuming a density of 1.8 t/bcm, this equates to a total of 117,387 t/y, which will then be loaded into trucks and transported to the stockpile area. Each tonne of material excavated will generate approximately 0.025 kg of dust (**NERDDC, 1988**). Therefore, the total dust generated will be approximately 2935 kg/y [117,387 t/y x 0.025 kg/t] in Staging 10-20 Years.

Hauling material to stockpile
Approximately 117,387 t/y of material will be hauled to the stockpile area, using 12 t trucks. Assuming a return travel distance of 0.2 km, a dust generation rate of 4 kg/VKT and 75% control of dust by watering of the haul road, the total dust generated is expected to be 7826 kg/y [(117,387 t/y / 12 t) x 0.2 km x 4 kg/km x 25/100].

Dumping material at stockpile
During Staging 10-20 Years, approximately 117,387 t/y of material will be dumped from trucks to the stockpile area. Each tonne of material dumped will generate a certain amount of dust, depending on the wind speed and the moisture content. Equation 2 (**US EPA, 1995, 13.2.4-3**) shows the relationship between these variables.

Equation 2

$$E_{TSP} = k \times 0.0016 \times \left(\frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \right) \qquad \text{kg/t}$$

where,

$E_{TSP} = \text{TSP emissions}$

$k = 0.74$

$U = \text{wind speed}(m/s)$

$M = \text{moisture content}(\%)$

$[\text{where } 0.25 \le M \le 4.8]$

The moisture content is assumed to be 2%. A "wind speed factor" (that is, the $(U/2.2)^{1.3}$ part of Equation 2) will vary from hour to hour. This factor has been calculated for each hour in the meteorological data file and an annual average determined to be approximately 2.26. The total emission rate will therefore be approximately 314 kg/y [117,387 t/y x 0.001184 x 2.26].

Dozers shaping tipping face
The TSP emission factor for dozers shaping material is given by Equation 1. Taking M to be 2% and s to be 10%, the emission factor is estimated to be approximately 16.735 kg/hour. Assuming that the dozer is working for approximately 4 hours/day, 350 days per year, the total dust emissions would be approximately 24,429 kg/y [1,400 h/y x 16.735 kg/h].

Landfilling operations:

Dozers working in landfill
Topsoil will be removed using a dozer. The rate at which dust will be generated by a dozer is calculated using Equation 1. Assuming that the dozer is working for approximately 4 hours/day for 350 days/y, the total dust emissions would be approximately 1,004 kg/y [1400 h/y x 16.735 kg/h].

Hauling waste to tipping face
Waste material will be hauled to the landfill tipping face on both sealed and unsealed roads. Approximately 15,000 t/y of waste will be delivered to the site in 20 t trucks. This gives 750 vehicle movements per year. Over 350 days in the year, this rounds up to 3 vehicle movements per day [750 veh/y / 350 days/y].

The return travel distance on sealed roads is approximately 1.15 km. Assuming a dust generation rate of 0.4 kg/VKT on sealed roads and 75% control using a water cart, the total dust generated by this operation will be approximately 121 kg/y [3 trips/day x 350 days/y x 1.15 km x 0.4 kg/VKT x 25/100].

The rate at which dust will be generated by a vehicle travelling on unsealed haul roads is calculated using Equation 3.

Equation 3

$$E_{TSP} = k(1.7)\left(\frac{s}{12}\right)\left(\frac{S}{48}\right)\left(\frac{W}{2.7}\right)^{0.7}\left(\frac{w}{4}\right)^{0.5}\left(\frac{365-p}{365}\right)$$

(kg/VKT)

where,

k = particulate size multiplier (0.8 for particles in

range $\leq 30\ \mu m$

in equivalent aerodynamic diameter

s = silt content of road surface material (%)

S = mean vehicle speed (km/h)

W = mean vehicle weight (Mg)

w = mean number of wheels

p = number of days with at least 0.254 mm of

precipitation per year

Assuming a silt content of 10%, mean vehicle speed of 20 km/h, mean weight of the waste trucks with 6 wheels at 20 t and 109 raindays per year, E_{TSP} is approximately 0.82 kg/VKT.

The return travel distance on unsealed roads is approximately 1.85 km. Assuming a dust generation rate of 0.82 kg/VKT on unsealed roads and 75% control using a water cart, the total dust generated by this operation will be approximately 400 kg/y [(3 trips/day x 350 days/y x 1.85 km x 0.82 kg/VKT x 25/100].

Scraping and transporting cover material
Scrapers will transport approximately 31,765 t/y of cover material in Staging 10-20 Years. The rate at which dust will be generated by this process is calculated using Equation 4.

Equation 4

$$E_{TSP} = 9.6 \times 10^{-6} (s)^{1.3} (W)^{2.4} \text{ kg/VKT}$$

where :

s = silt content (%)

W = mean vehicle weight (t)

Assuming a silt content of 10% and the mean weight of the scraper to be 50 t, including 75% control of dust by watering, E_{TSP} is approximately 2.29 kg/VKT. For a 34 t scraper and a return travel distance of 0.22 km, the total dust generated will be 118 kg/y [(31,765 t/y / 34 t) x 0.22 km x 2.3 kg/VKT x 25/100].

Shaping covered area
The TSP emission factor for dozers shaping material is given by Equation 1. Assuming an emission factor of 16.735 kg/hour, and that the dozer operates for 4 hours/day for 350 days/year on this activity, the total dust emissions would be approximately 23429 kg/y [1,400 h/y x 16.735 kg/h].

Wind erosion

Wind erosion from exposed excavation areas
The emission factor for wind erosion is given in Equation 2 below.

$$E_{TSP} = 1.9 \times \left(\frac{s}{1.5}\right) \times \left(\frac{365-p}{235}\right) \times \left(\frac{f}{15}\right) \quad \text{kg/ha/day}$$

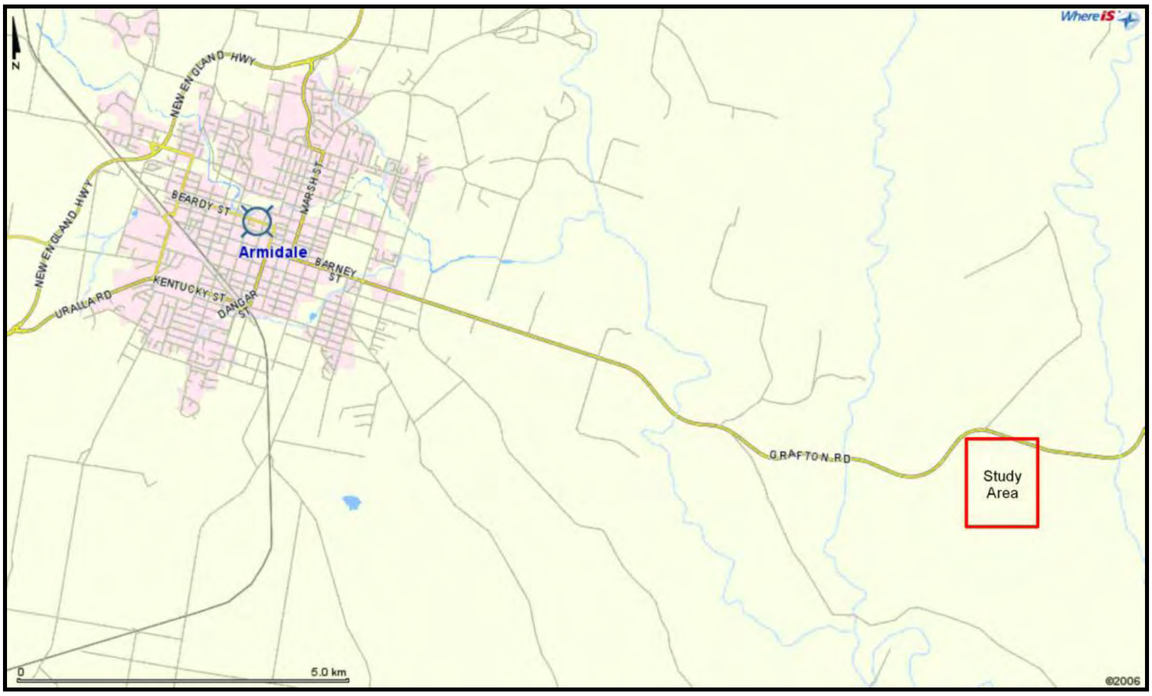
Where,
s = silt content (%)
p = number of raindays per year, and
f = percentage of the time that wind speed is above 5.4 m/s

Assuming a silt content of 10%, the average number of raindays in Armidale is 109 and the percentage of wind above 5.4 m/s is approximately 23%. Over 350 days/year, E_{TSP} is 3700.5 kg/ha/year. Cell 2 sections c and d cover an area of approximately 0.767 ha. The total dust emissions from wind erosion from exposed excavation areas will be 2840 kg/y [3700.5 kg/ha/y x 0.767 ha].

Wind erosion from stockpiles
Assuming that the total area of the stockpiles is approximately 0.3 ha, the total dust emissions from wind erosion from stockpiles will be

approximately 1136 kg/y [3700.5 kg/ha/y x 0.307 ha].

FIGURES



(Source: http://www.whereis.com.au)

Figure 1 – Location of study area

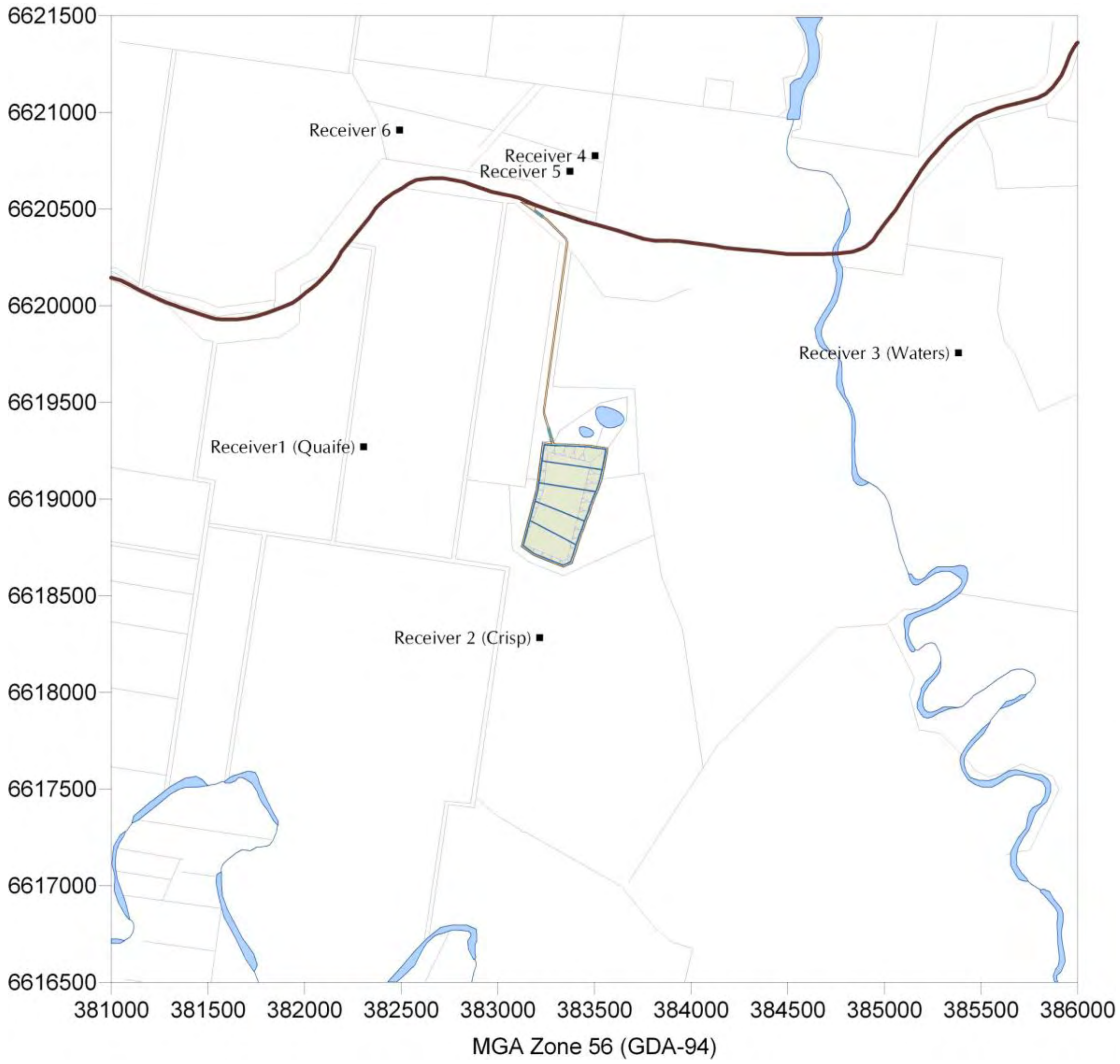


Figure 2 – Proposed site layout and nearby receivers

Figure 3 – Modelled scenarios representing Stages 0-10 years, 10-20 years and 40-50 years

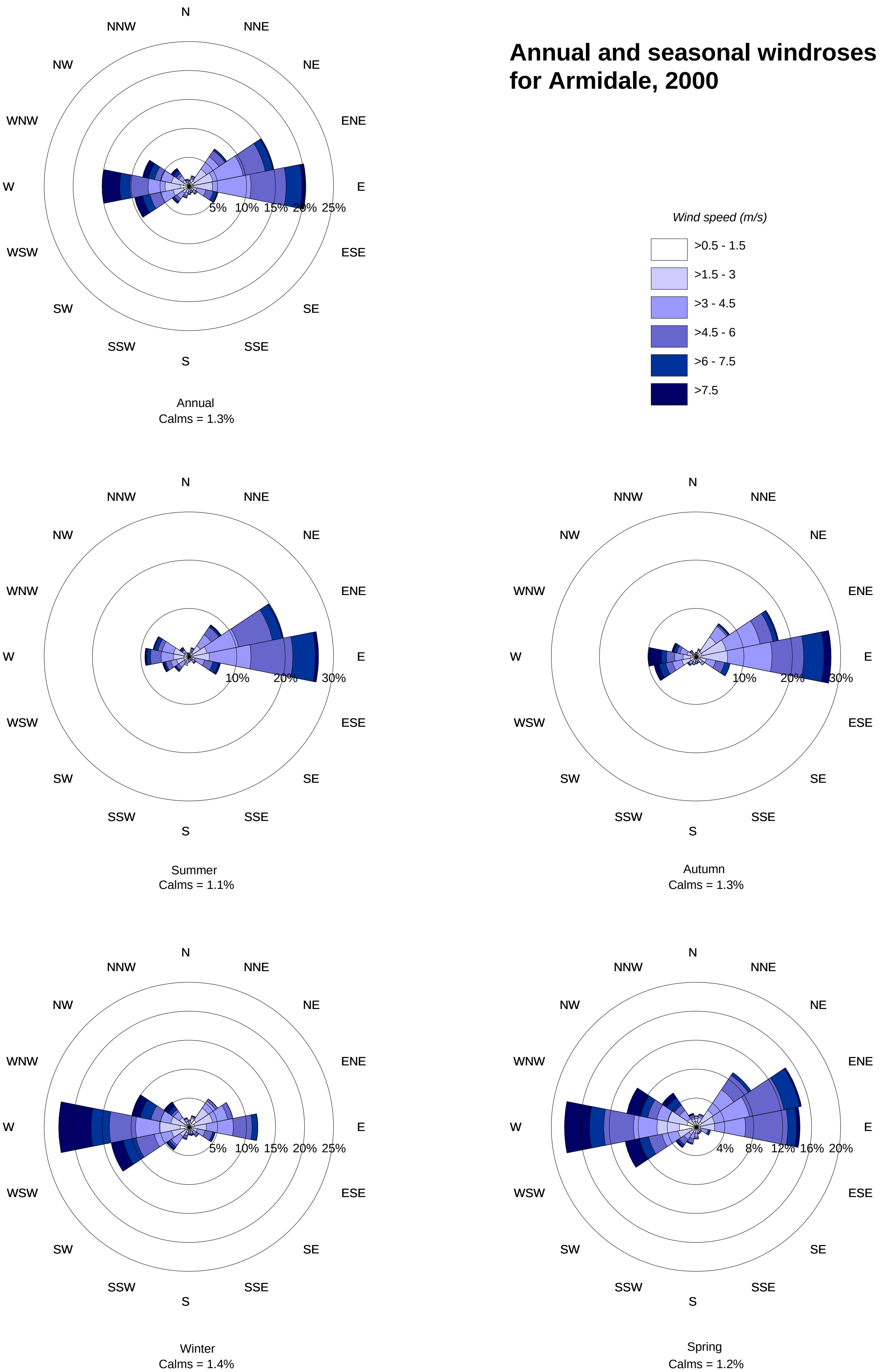


Figure 4 – Annual and seasonal windroses for Armidale Airport, 2000

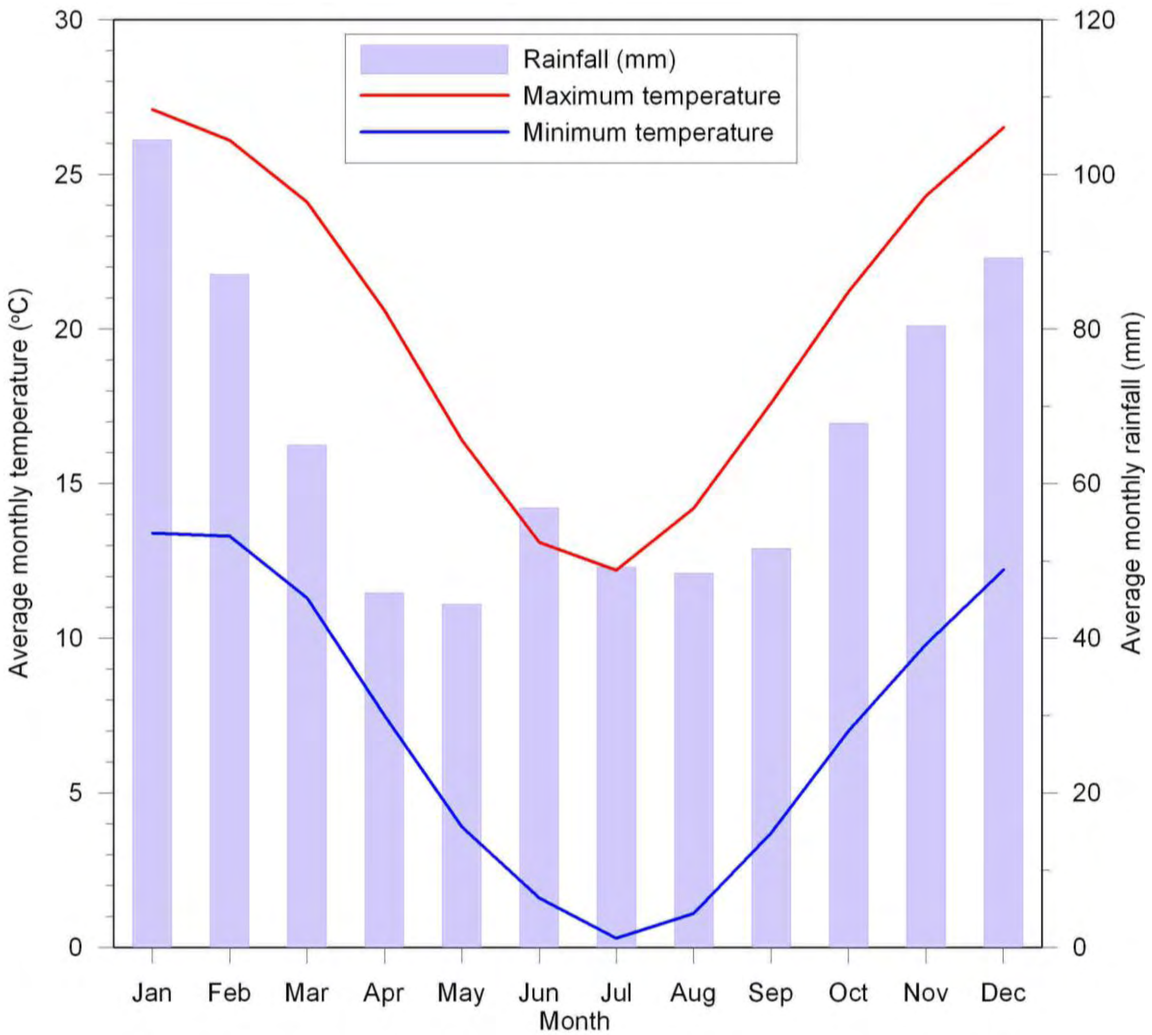


Figure 5 – Average monthly temperature and rainfall at Armidale Airport

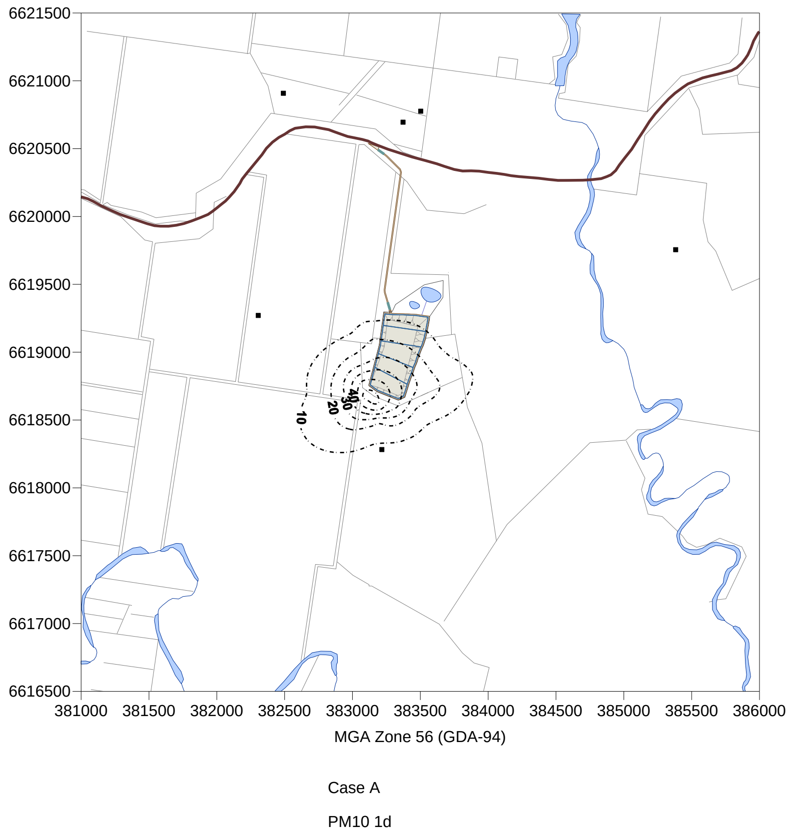


Figure 6 – Highest predicted 24-hour average PM_{10} concentrations, Staging 0-10 Years

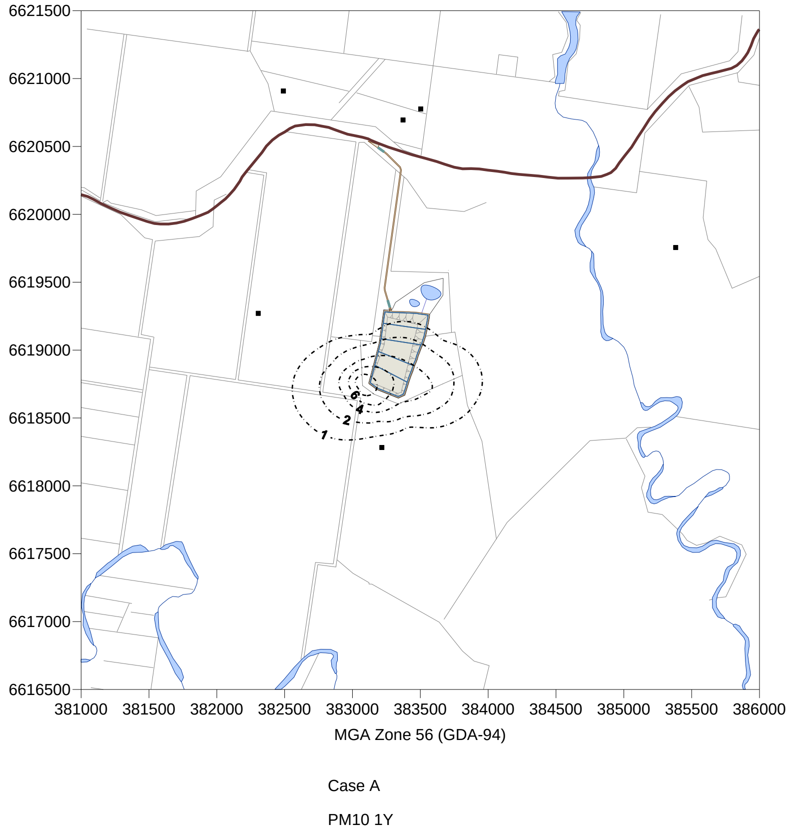


Figure 7 – Highest predicted annual average PM_{10} concentrations, Staging 0-10 Years

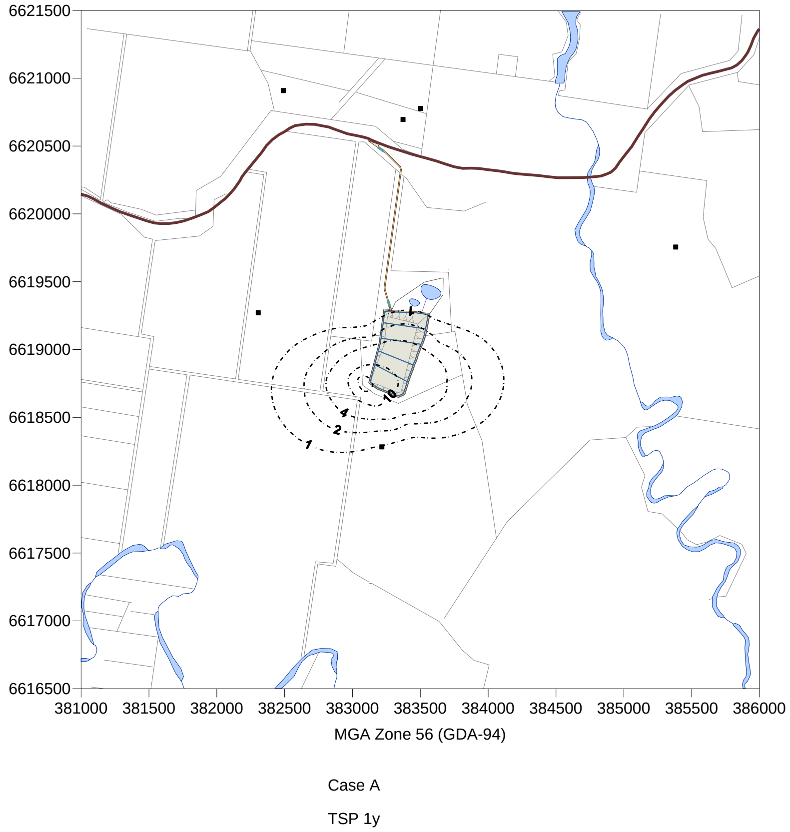


Figure 8 – Highest predicted annual average TSP concentrations, Staging 0-10 Years

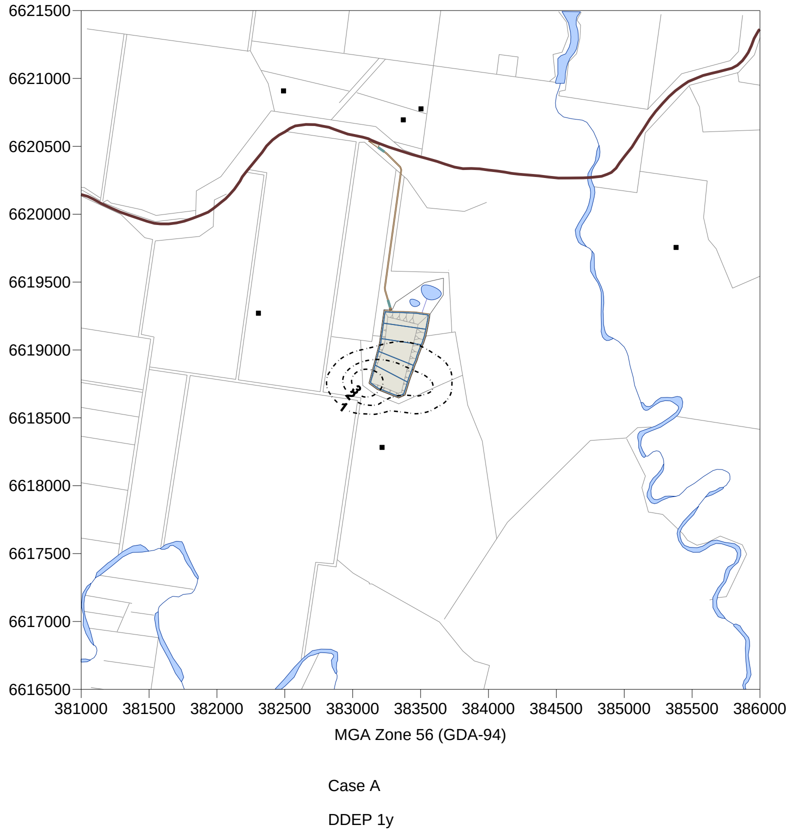


Figure 9 – Highest predicted annual average dust deposition, Staging 0-10 Years

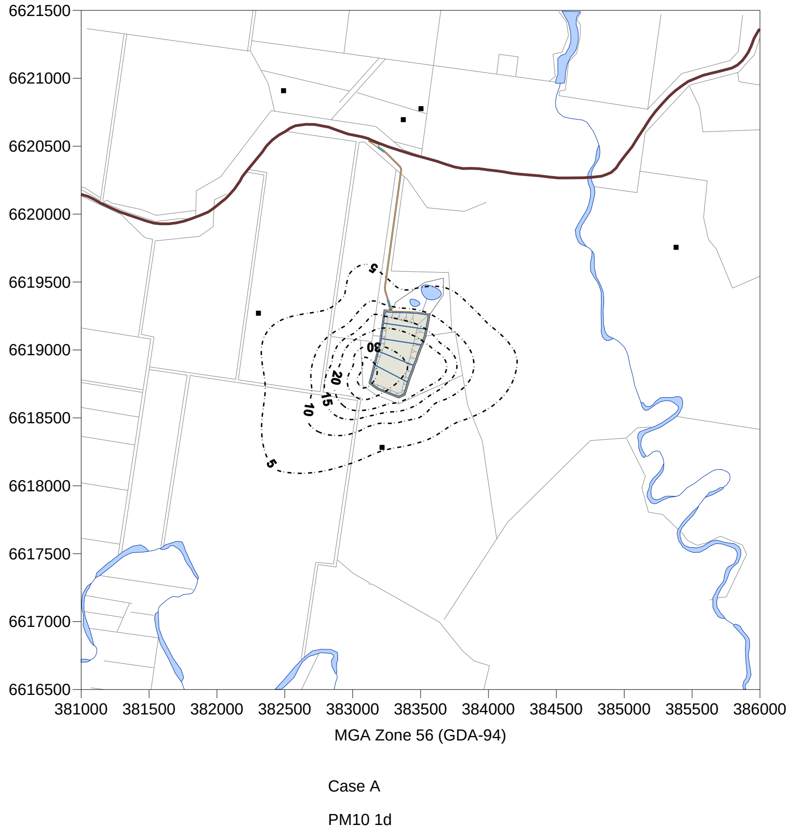


Figure 10 – Highest predicted 24-hour average PM_{10} concentrations, Staging 10-20 Years

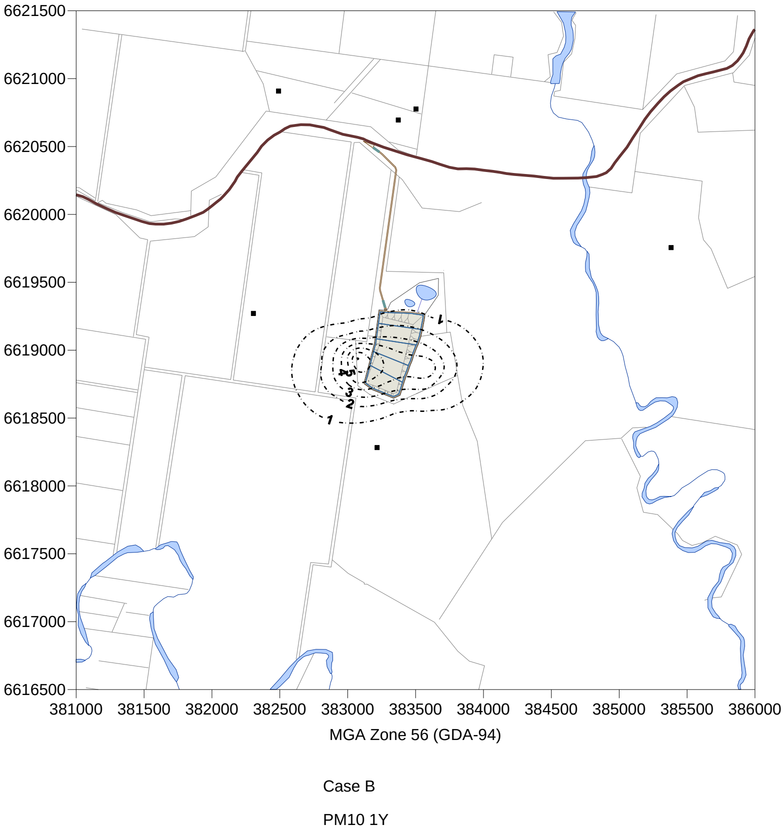


Figure 11 – Highest predicted annual average PM_{10} concentrations, Staging 10-20 Years

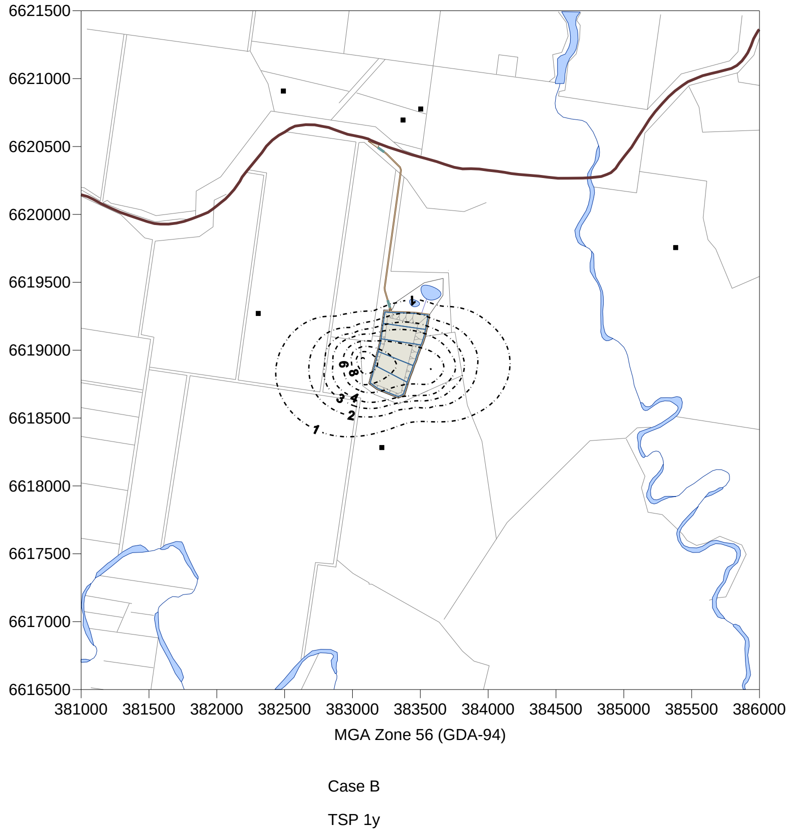


Figure 12 – Highest predicted annual average TSP concentrations, Staging 10-20 Years

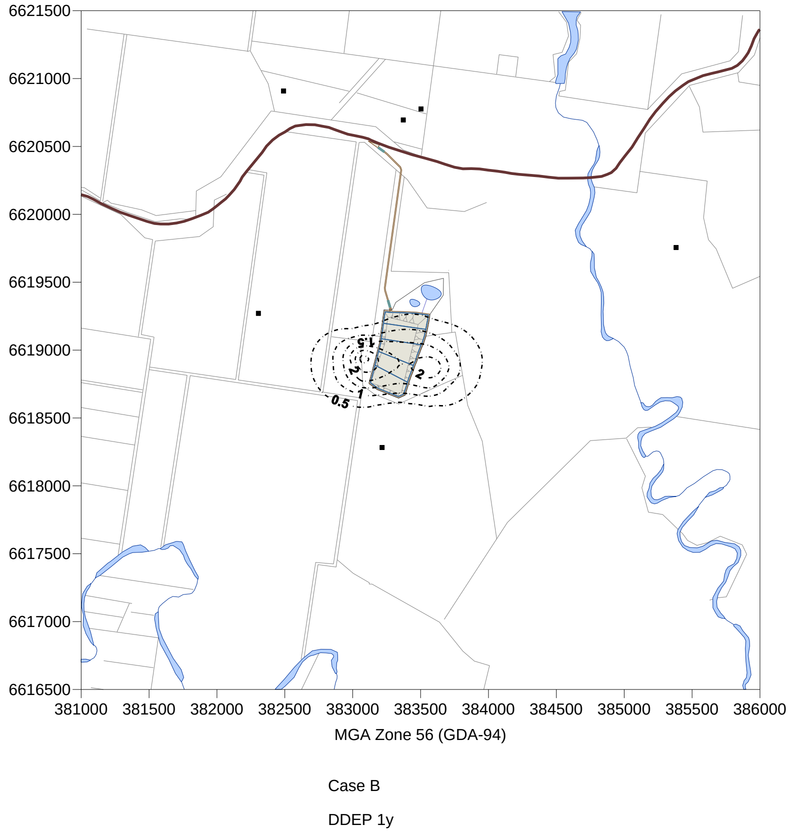


Figure 13 – Highest predicted annual average dust deposition, Staging 10-20 Years

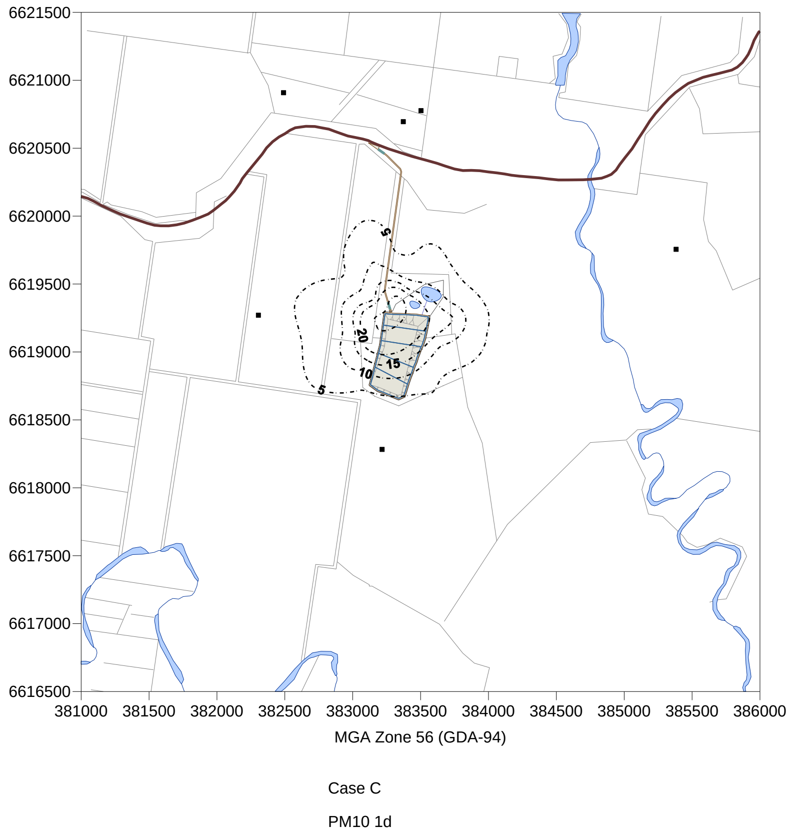


Figure 14 – Highest predicted 24-hour average PM_{10} concentrations, Staging 40-50 Years

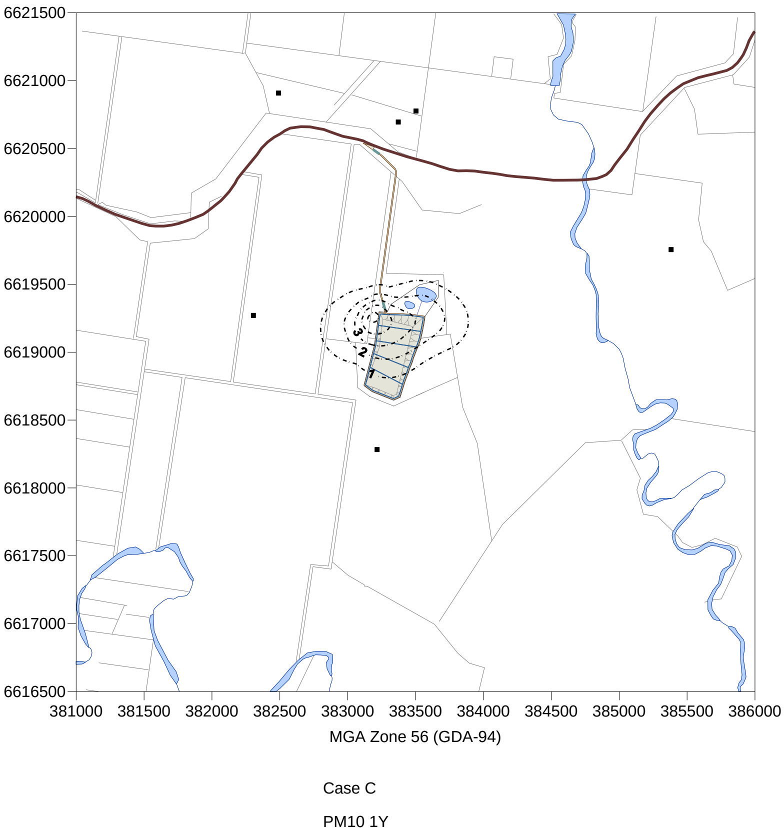


Figure 15 – Highest predicted annual average PM_{10} concentrations, Staging 40-50 Years

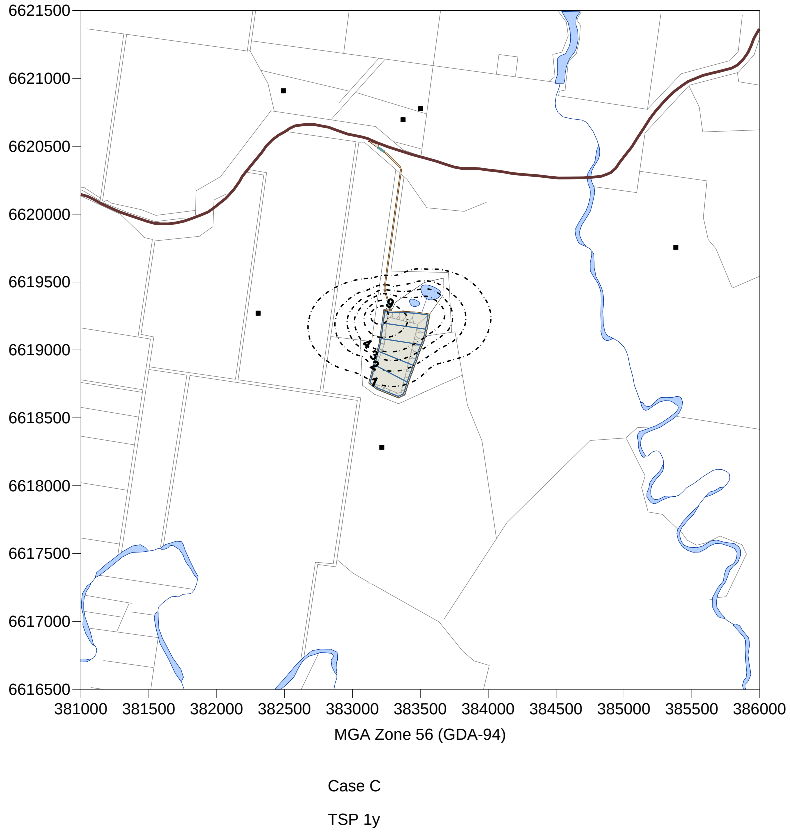


Figure 16 – Highest predicted annual average TSP concentrations, Staging 40-50 Years

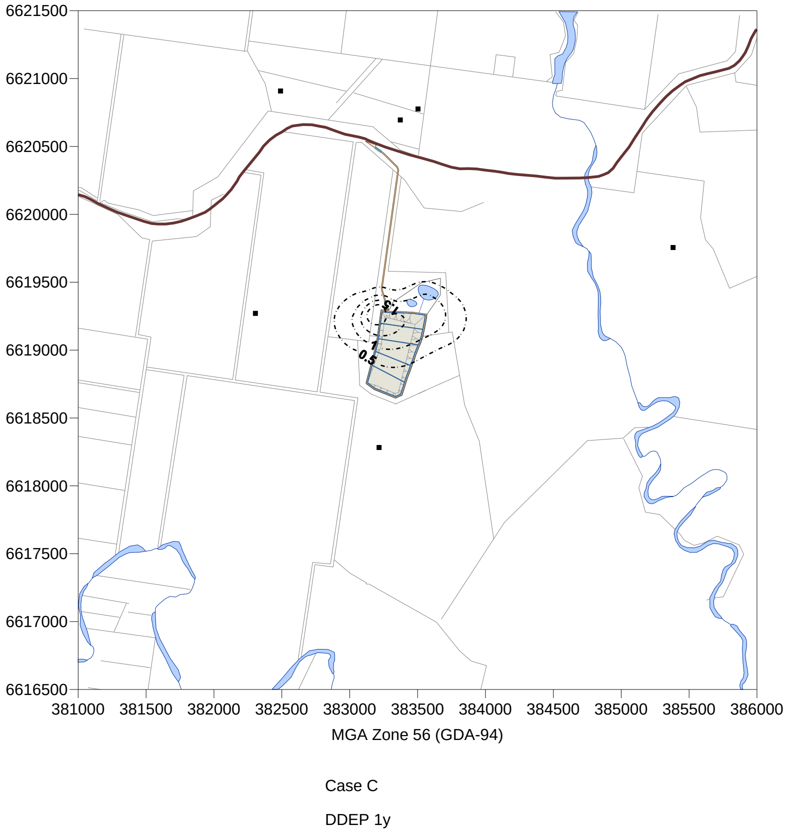


Figure 17 – Highest predicted annual average dust deposition, Staging 40-50 Years

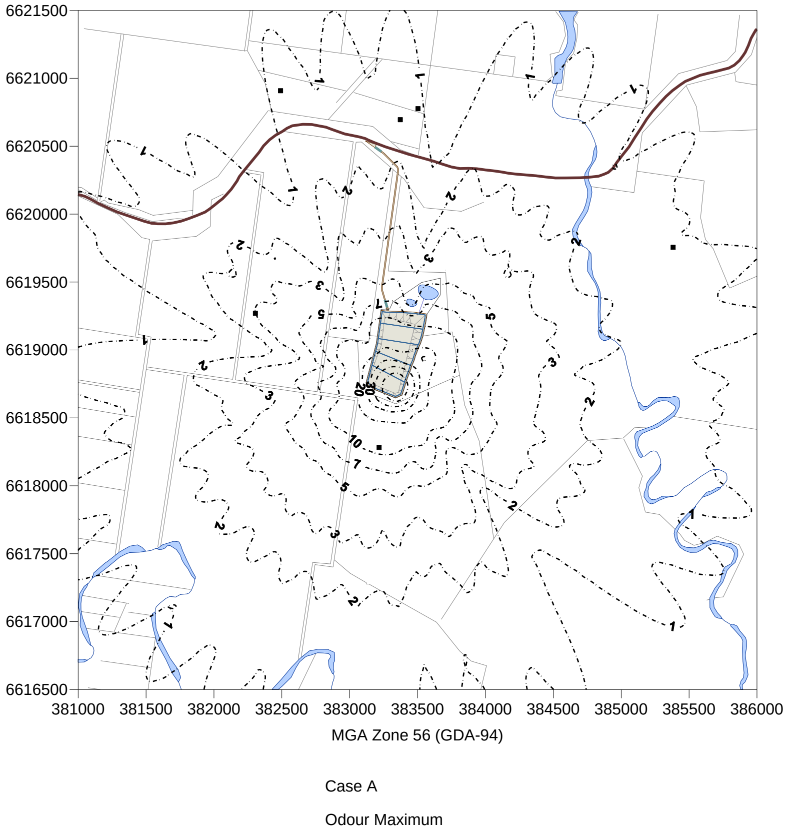
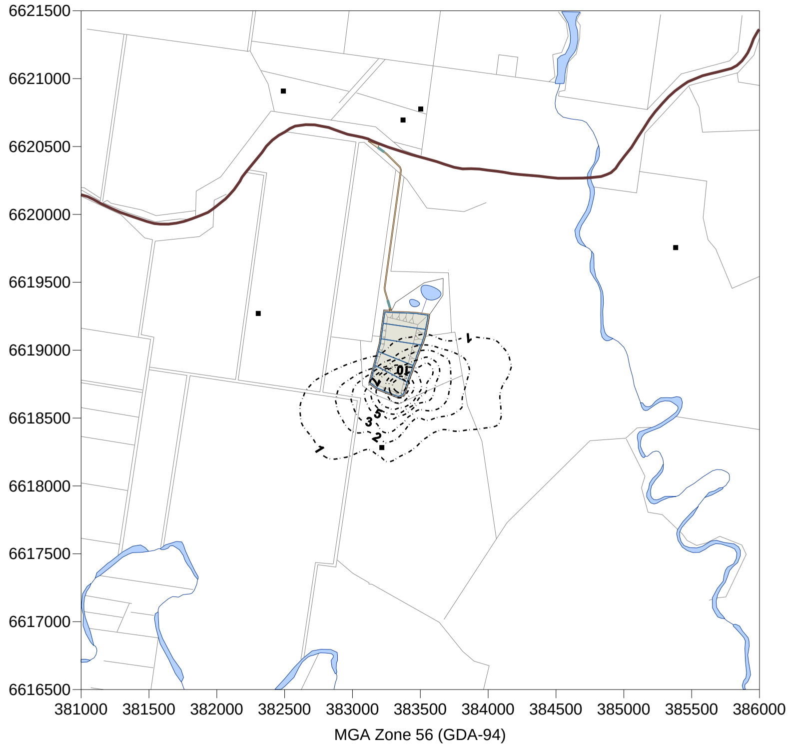


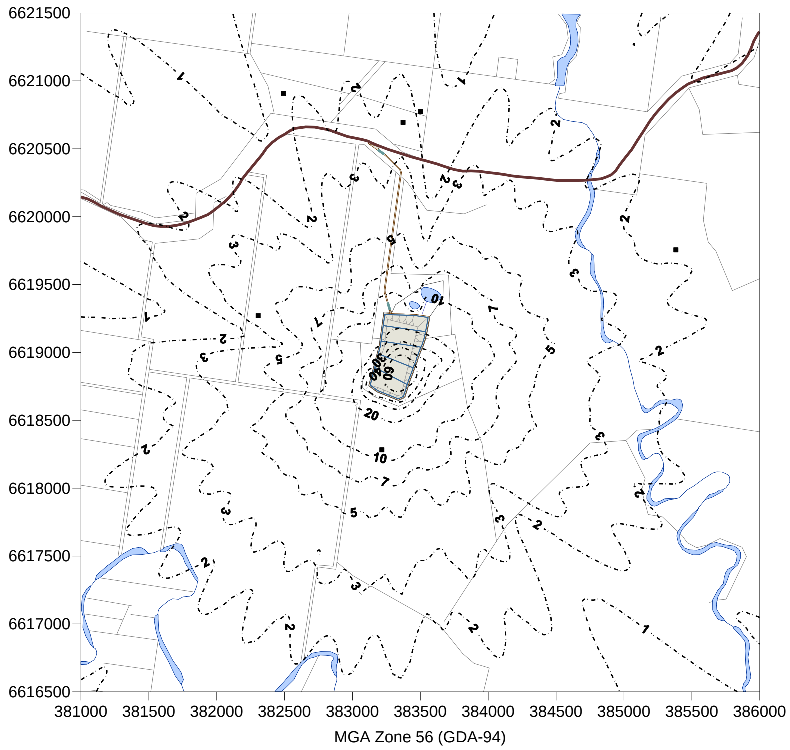
Figure 18 – Maximum odour levels (ou) due to landfill operations – Staging 0-10 Years



Case A

Odour 99th percentile

Figure 19 – Odour levels at the 99th percentile (ou) due to landfill operations – Staging 0-10 Years



Case B

Odour Maximum

Figure 20 – Maximum odour levels (ou) due to landfill operations – Staging 10-20 Years

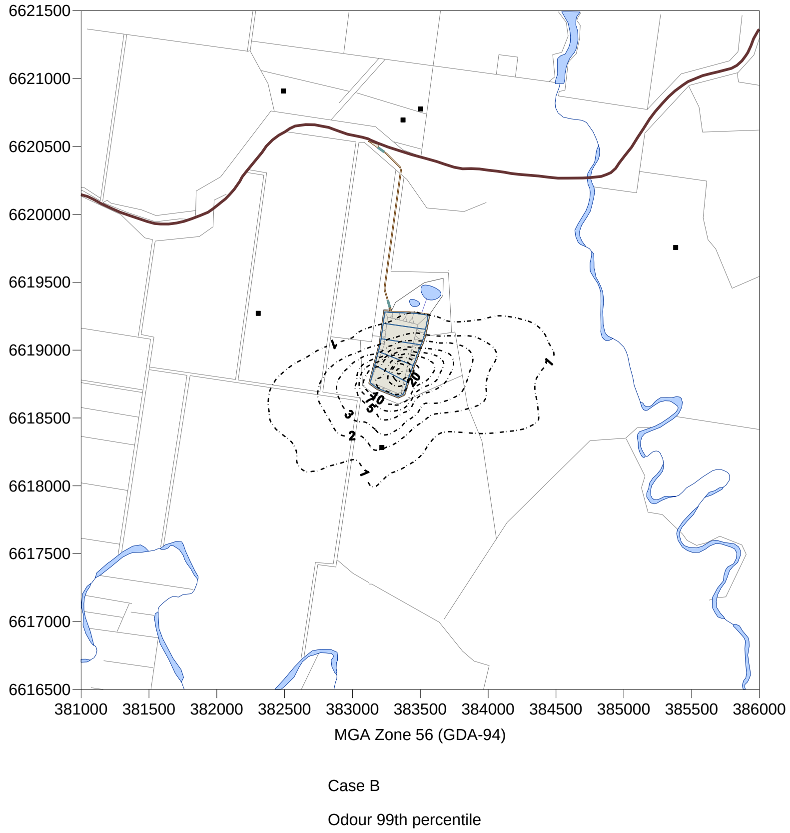


Figure 21 – Odour levels at the 99th percentile (ou) due to landfill operations – Staging 10-20 Years

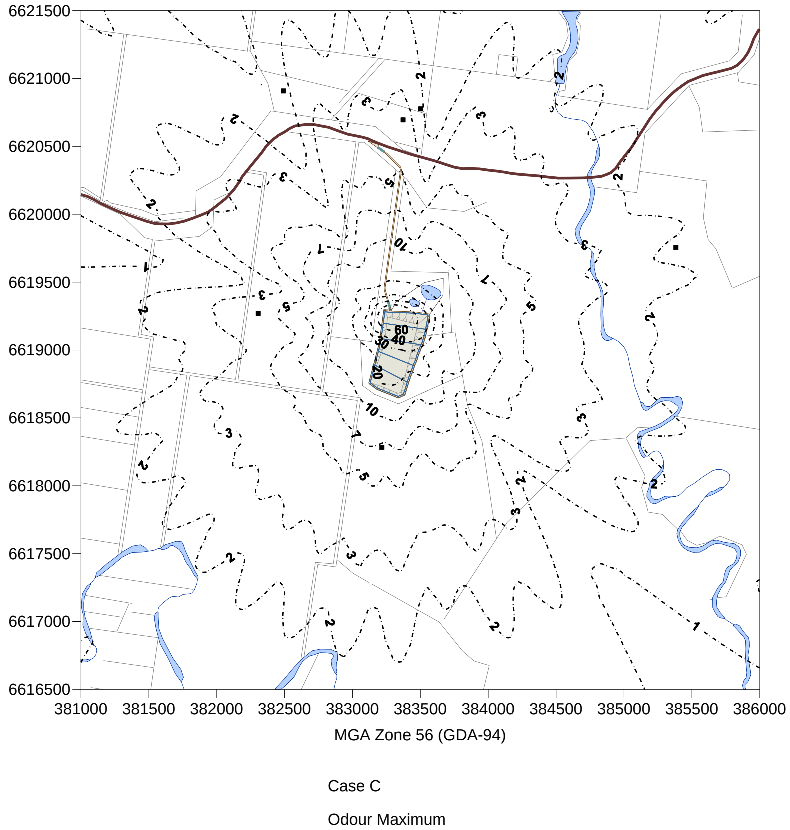


Figure 22 – Maximum odour levels (ou) due to landfill operations – Staging 40-50 Years

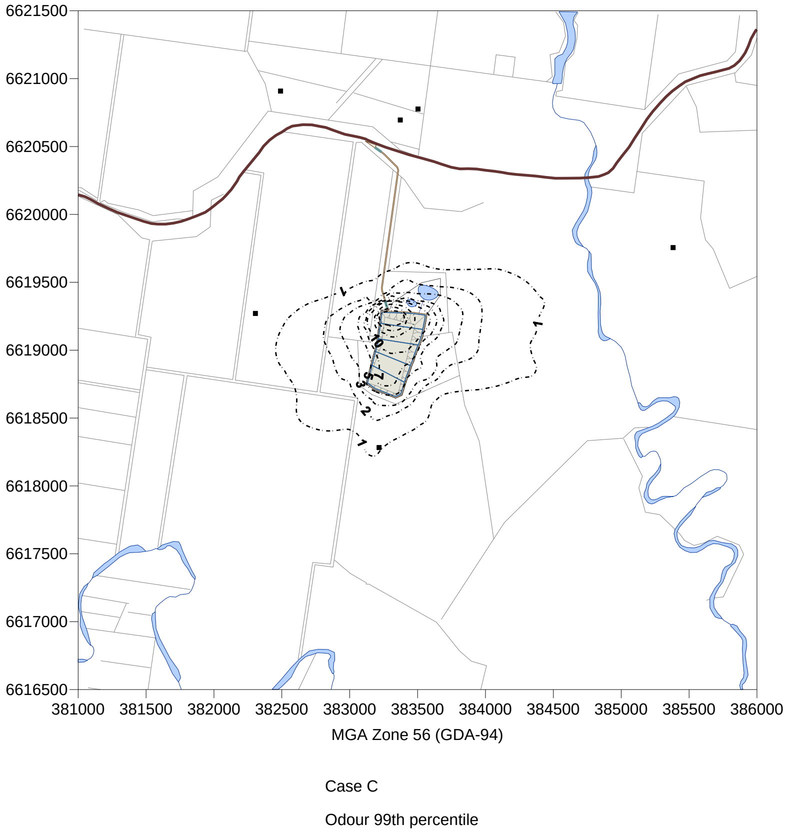


Figure 23 – Odour levels at the 99th percentile (ou) due to landfill operations – Staging 40-50 Years