

DEVELOPMENT CONTRIBUTION FOR
ENGINEERING SERVICES - 2010

PROPOSED UPDATED POLICY
CALCULATION SHEETS

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2010








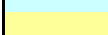



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Services

Assisted by: SSI Engineers and Environmental Consultants (Pty) Ltd

Mogale City Local Municipality Calculation of the development contribution for engineering services

Calculation sheets

Applicants and their appointed professional engineers are advised to carefully read the notes below with regard to the preparation and use of the calculation sheets.

Notes	
1	These calculation sheets have been prepared by the Mogale City Local Municipality (the municipality) in support of the MOGALE CITY POLICY FOR DEVELOPMENT CONTRIBUTION FOR ENGINEERING SERVICES - 2010 (the policy) and must be read together with the policy.
2	The calculation sheets are intended to assist an applicant who applies to the municipality for change in land zoning, for change in the development rights of parts of land or portions of land as well as for additional capacity of an engineering service for a premises to determine the development contribution for engineering services that will be due by the applicant to the municipality as a result of the application.
3	Some of the data that are already contained in the calculation sheets relate to the year in which the application is lodged. The municipality reviews this data annually and hence the development contribution for engineering services will vary from year to year. As the data provided by the municipality is protected, new calculation sheets will have to be obtained from the municipality for the determination of development contribution in any year that differs from the year in which an application is lodged.
4	The policy requires the calculations to be prepared by or to be verified by the professional engineers engaged by the applicant for the engineering services. The applicant and the professional engineers are to signify their agreement with the development contribution determined by means of these calculation sheets. To this end the applicant and the professional engineers are to sign the development contribution summary sheet upon completion of the calculations. Once the municipality is satisfied with the development contribution determined by means these calculation sheets in accordance with the requirements arising from the application, and the applicant together with the professional engineers have signified their acceptance by signing the development contribution summary sheet, the authorised representative of the municipality will signify acceptance by signing the development contribution summary sheet.
5	The amounts in the calculation sheets exclude Value Added Tax or any other statutory tax.
6	The calculation sheets are colour coded. The applicant and the professional engineers are to insert the data required for the application in the cells shaded in yellow. The applicant must not endeavour to enter information into any other cells.
7	The colour coding is as follows:
	Electricity Roads (including stormwater drainage) Sewerage Water supply
	
	
	
	Data to be provided from time to time by the municipality
	Data to be provided annually by the municipality
	Calculation from another sheet or transferred to another sheet
	Calculation in the sheet which is open Information
	from the application Component of the development
	contribution Development contribution for
	engineering services

Mogale City Local Municipality
Calculation of the development contribution for engineering services

Applicant's name									
Description of the application									
Determination of the development contribution	original	Number	Date	Number	Date	Number	Date	Number	Date
	subsequent	1							

Development contribution summary (Rand) and signatures

	Land use/ rights change	Capacity change
Electricity		
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL SERVICES FOR CONNECTION AT 33KV #DIV/0! #DIV/0!		
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL SERVICES CONNECTION AT 6.6 OR 11KV #DIV/0! #DIV/0!		
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL AND INTERNAL SERVICES FOR CONNECTION AT 400/240V #DIV/0! #DIV/0!		
Roads		
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL SERVICES 0.00 -		
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL AND INTERNAL SERVICES 0.00 -		
Sewerage		
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL SEWERAGE/WASTEWATER SERVICES #DIV/0! #DIV/0!		
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL AND INTERNAL SEWERAGE/WASTEWATER SERVICES #DIV/0! #DIV/0!		
Water supply		
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL WATER SUPPLY SERVICES #DIV/0! #DIV/0!		
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL AND INTERNAL WATER SUPPLY SERVICES #DIV/0! #DIV/0!		

1 I/we, who have been duly authorised by the applicant and by my/our employers/organizations to sign this declaration: **2** concur with
the development contribution as calculated in these calculation sheets; and **attach a**
motivation to these calculation sheets for the capacity requirement I/we have selected for each unit of measure in respect of the land uses that constitute the application
for which these calculations have been prepared

Signatory	Title Pr. Eng.	Full name	Registration number	Signature	Date dd/mm/yyyy
Applicant or applicant's authorised representative					
Professional Engineer for Electricity					
Professional Engineer for Roads					
Professional Engineer for Sewerage					
Professional Engineer for Water Supply					
Designated Officer of Infrastructure Services					

I, who have been duly authorised by the applicant, am willing to accept:
 1 the Mogale City Policy for Development Contribution for Engineering Services - 2010
 2 the pro-forma service agreement included in the development contribution dossier, as the basis of the final service agreement to be entered into between the applicant and the municipality

Signatory	Title	Date	Full name Signature dd/mm/yyyy
Applicant or applicant's authorised representative			

I, who have been duly authorised by the applicant, provide the following undertakings:

1 should the applicant pay to the municipality development contribution for engineering services calculated in accordance with the calculations in these calculation sheets and the actual requirement or use of one or more engineering service exceeds the capacity requirement adopted in the calculations, the applicant shall pay to the municipality additional development contribution to the extent of the difference between the actual capacity of the engineering service or engineering services required or used and the capacity requirement adopted in the calculations

2 the applicant undertakes to record in the titles deeds of each erf or portion of land or part of land the capacity requirement in respect of each engineering service for which the applicant paid to the municipality a development contribution and shall also record in the title deeds that should the actual requirement or use of one or more engineering service exceed the capacity requirements for which the applicant paid to the municipality a development contribution, the owner of the erf, portion of land or part of land shall pay to the municipality an additional development contribution to the extent of the difference between the actual capacity required or used and the capacity requirement for which the applicant paid a development contribution to the municipality

Signatory SignatureFull name	Title	Date	dd/mm/yyyy
Applicant or applicant's authorised representative			

Electricity - Formula

Formula	
Development contribution = (cost per kVA of system capacity at the point of connection) X (capacity in kVA required by the change in capacity requirement)	
Explanation	
Term	Description
cost per kVA of system capacity	cost per kVA of ESKOM supply + cost per kVA of 33kV switching infrastructure + cost per kVA of 33kV lines and cables + cost per kVA of 33kV/medium voltage transformation + cost per kVA of medium voltage feeders + cost per kVA of medium/low voltage transformation + cost per kVA of low voltage infrastructure Note: for township applications - cost per k VA of capacity per network component payable for connection at 400/240 Volt is 0 (zero) as that component represents internal services
capacity in kVA required by the change in capacity requirements	the maximum capacity in kVA that can be supplied through the supply breaker for which the application makes provision - the maximum capacity in kVA that can be supplied through the supply breaker provided for the premises before the change for which the application makes provision
Calculation of the development contribution is to be done in accordance with the principles of the Rationalized User Specification: Code of Practice for the Recovery of Capital Costs for Distribution Network Assets - NRS 069:2004	

The calculation sheets endeavour to aid the calculation

Electricity - Development contribution for an increase in the capacity for a premises

		Land use type		
Land use type				
Development Contribution				
Cost of capacity per kVA for:	R/kVA			
external services connected at 33kV (A)		#DIV/0!	#DIV/0!	#DIV/0!
external services connected at 6.6 or 11 Kv (B)		#DIV/0!	#DIV/0!	#DIV/0!
external and internal services connected at 400/240V (C)		#DIV/0!	#DIV/0!	#DIV/0!
Application: Peak capacity of the supply breaker for which the application is lodged (D)	kVA			
Current: Capacity of the supply breaker installed on the premises (E)	kVA			
Additional capacity provided by the supply breaker that is the subject of the application (D)-(E)=(F)	kVA 0 0 0			
Development contribution for electricity for:	R			
external services connected at 33kV (A)*(F)		#DIV/0!	#DIV/0!	#DIV/0!
external services connected at 6.6 or 11 kV (B)*(F)		#DIV/0!	#DIV/0!	#DIV/0!
external and internal services connected at 400/231V (C)*(F)		#DIV/0!	#DIV/0!	#DIV/0!
				Rand
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL SERVICES FOR CONNECTION AT 33kV				#DIV/0!
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL SERVICES CONNECTION AT 6.6 OR 11kV				#DIV/0!
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL AND INTERNAL SERVICES FOR CONNECTION AT 400/240 V				#DIV/0!
d = day				Data to be provided from time to time by the municipality
FAR = floor area ratio				Data to be provided annually by the municipality
kV = kilovolt				Calculation from another sheet or transferred to another sheet
kVA = kilovolt ampere				Calculation in this sheet
m2 = square metre				Information from application
No. = number				Component of the development contribution
R = Rand				Development contribution for engineering services
V = volt				

Electricity - Cost per kVA of capacity

SCHEDULE 1

NETWORK COMPONENT	CAPACITY UPON WHICH THE COMPONENT IS BASED ON	CAPACITY IS CALCULATED TO BE -SEE SCHEDULE 2 KVA	COST OF COMPONENT IS BASED ON CURRENT REPLACEMENT COST OF:	CURRENT REPLACEMENT COST RAND	KVA LOADING ON NETWORK COMPONENT FOR AGREED MAX. DEMAND OF 1kVA FOR A CONSUMER SUPPLIED AT EACH VOLTAGE LEVEL-BASED ON THE CO-INCIDENCE FACTORS APPLICABLE TO THE SPECIFIC CONSUMER TYPE-SEE NOTE 7	COST PER KVA PER NETWORK COMPONENT PAYABLE FOR CONNECTION AT
					33kV 6,6 or 11kV 400/240V 33kV 6,6 or 11kV 400/240V	
1.Eskom supply	Smaller of the firm capacity of Eskom feeders into point of supply or Eskom firm transformer capacity	0	Eskom's installations used to supply the municipality			#DIV/0! #DIV/0! #DIV/0!
2.33 kV switching installations	Sum of the firm capacities of each set of feeders outgoing from Condale or Teddy Neil substations only	0	all 33kV and 33kV/MV substations, excluding the cost of transformers, but including land acquisition costs			#DIV/0! #DIV/0! #DIV/0!
3. 33kV lines and cables	Sum of the firm capacities of each set of feeders outgoing from Condale or Teddy Neil substations	0	all 33 kV lines and cable installations in the network, including servitude acquisition costs			#DIV/0! #DIV/0! #DIV/0!
4. 33kV / Medium Voltage transformation	Sum of the firm capacities at each medium voltage at all 33kV/MV substations	0	Sum of the current replacement cost of all 33kV/MV transformers installed on the network including land acquisition costs			N.A. #DIV/0! #DIV/0!
5. Medium voltage feeders	Sum of the firm capacities of each set of feeders outgoing from 33kV/MV substations only	0	all 11 kV and 6,6 kV lines and cable installations in the network including servitude acquisition costs			N.A. #DIV/0! #DIV/0!
6. Medium/Low voltage transformation	Sum of the capacity of all MV/LV transformers in the network , including minisubs and switchgear associated with other distribution transformers	0	all MV/LV transformers in the network , including minisubs and switchgear associated with other distribution transformers			N.A. N.A. #DIV/0!
7. Low Voltage installations	Sum of the capacity of all MV/LV transformers in the network , including minisubs and switchgear associated with other distribution transformers	0	the low voltage installations in the network including service, street light and traffic light connections			N.A. N.A. #DIV/0!
TOTAL R 0 #DIV/0! #DIV/0! #DIV/0!						

NOTES FOR THE APPLICATION OF THE MATRIX
1. Network capacities and replacement values are intended to be recalculated annually
2. The diversity factors as reflected in the loading at each level in the network are intended to be reviewed on an annual basis and be apportioned based on the highest recorded system demand over the preceding 12 months, the type of development or the type of usage and the contribution from each voltage level to the overall demand at each point. Where recordings are not available at every point, available recorded values shall be scaled up to reflect the total demand. The highest recorded system demand may differ from the highest recorded maximum demand for Eskom billing purposes
3. Where the expected demand cannot be more accurately determined in advance on the basis of the nature of the development and/or known usage by the potential occupiers of each site the demand for each type of connection, as per Annexure B, Section B.2 of NRS 069:2004 may be used as a guide for design and for the determination of development contribution. Where the NRS does not provide a specific value, a value as determined by the municipality shall be applied
4. The Matrix excludes any costs directly associated with a specific consumer, such as service connection fees or feeders or transformers for the exclusive use of an applicant
5. An applicant may be required to provide such network components as may be required to meet the land use changes or development rights arising from the application. Network components shall be sized and rated as per the municipality's standard sizes and ratings.
6. All supplies at HV or MV shall be of a firm (N-1) nature and any new networks or strengthening of existing networks shall ensure that this requirement is met
7. The degree of diversity between different types of consumers will differ, and the municipality shall indicate for each application what diversity factors shall be applicable at each level in the network

SCHEDULE 2

DETERMINATION OF SYSTEM CAPACITIES FOR PURPOSES OF CALCULATING BULK CONTRIBUTIONS ON NEW/INCREASED SUPPLIES		
Network component	Total capacity/Rating Firm (N-1)	capacity (MVA)
1. Eskom supply 4. 33kV lines and cables	3x180MVA Transformers: 2x80MVA plus 1x90MVA	
2. 33 kV switching installations	Based on feeder lines out of Condale to Chamdor: 2x40MVA to Factoria: 2x40MVA to Spruit /Boltonia 2x40 MVA to Krugersdorp North: 1x40MVA plus 1x20MVA Total 0	
3. 33kV lines and cables	As for 33 kV switching installations 0	

DETERMINATION OF SYSTEM CAPACITIES FOR PURPOSES OF CALCULATING BULK CONTRIBUTIONS ON NEW/INCREASED SUPPLIES		
Network component	Total capacity/Rating	Firm (N-1) capacity (MVA)
Voltage transformation	At Condale 6,6kV: 3x10MVA	
	At Chamdor 11 kV: 1x20MVA	
	At Chamdor 6,6 kV: 6x10MVA	
	At Factoria 6,6kV: 2x20MVA	
	At Jackson 6,6 kV: 3x10MVA	
	At Krugersdorp North 6,6 kV : 2x20MVA	
	At Boltonia 6,6kV : 2x10MVA	
	at Spruit 6,6kV : 2x20MVA	
	at Libertas 11 kV : 2x40MVA	
	at Muldersdrift : 2x20MVA	
Total	0	

5. Medium voltage feeders	Based on MV feeders out of 33kV/MV substations
From Condale to	
From Condale to	
From Condale to	
From Condale to	
From Chamdor to	
From Chamdor to	
From Chamdor to	
From Factoria to	
From Jackson to	
From Jackson to	
From Jackson to	
From Jackson to	
From Krugersdorp North to	
From Krugersdorp North to	
From Krugersdorp North to 0	
From Krugersdorp North to	
From Boltonia to	

5. Medium voltage feeders (continued)	Based on MV feeders out of 33kV/MV substations
From Boltonia to	
From Boltonia to	
From Boltonia to	
From Spruit to	
From Spruit to	
From Spruit to	
From Spruit to	
From Libertas to	
From Libertas to	
From Libertas to	
From Libertas to	
From Muldersdrift to	
From Muldersdrift to	
From Muldersdrift to	
Total	
6. Medium/Low voltage	Based on total installed distribution transformer capacity (see separate list of distribution)
7. Low Voltage installations	As for medium/low voltage transformation

Municipality's contribution to internal services per kVA of capacity

The municipality generally does not take over internal electrical services nor does the electricity consumer tariff allow for depreciation or return on capital on assets for which the municipality has not or did not pay. Hence the contribution to internal services is 0 (zero)

kV = kilovolt (1000 volts)		Data to be provided from time to time by the municipality
kVA = kilovolt ampere (thousand volt ampere)		Data to be provided annually by the municipality
MV = megavolt (million volt)		Calculation from another sheet or transferred to another sheet
MVA = megavolt ampere (million volt ampere)		Calculation in this sheet
R = Rand		Information from application
V = Volt		Component of the development contribution
		Development contribution for engineering services

Electricity - Guideline capacity requirement per land use type

Land Use	Maximum FAR. / Maximum Number of Dwelling Units (Units)	Unit of Measure	Guideline Capacity Requirement	Land Use	Maximum FAR. / Maximum Number of Dwelling Units (Units)	Unit of Measure	Guideline Capacity Requirement
Residential 1	1 unit/erf	kVA/erf 3.0	(20A supply breaker) to 15.0 (80A supply breaker)	Business 2 FAR	1.5	kVA/100 m ² of floor area permitted by the FAR	6.0 (40A supply breaker) to 15.0 (80A supply breaker)
Residential 2	20 units/ha	kVA/unit 3.0	(20A supply breaker) to 15.0 (80A supply breaker)	Business 2 FAR	2.0	kVA/100 m ² of floor area permitted by the FAR	6.0 (40A supply breaker) to 15.0 (80A supply breaker)
Residential 3	FAR: 0.6 44 units/ha	kVA/unit 3.0	(20A supply breaker) to 15.0 (80A supply breaker)	Business 3 FAR	0.8	kVA/100 m ² of floor area permitted by the FAR	6.0 (40A supply breaker) to 15.0 (80A supply breaker)
Residential 4	kVA/FAR: 3.0 64 units/ha	kVA/unit 3.0	(20A supply breaker) to 15.0 (80A supply breaker)	Schools Churches Government Municipal Institutions		kVA/100 m ² of floor area permitted by the FAR	6.0 (40A supply breaker) to 15.0 (80A supply breaker)
Business 1	FAR: 2.0	kVA/100 m ² of floor area permitted by the FAR	6.0 (40A supply breaker) to 15.0 (80A supply breaker)	Old aged homes Hospitals Residences Hostels		kVA/100 m ² of floor area permitted by the FAR	6.0 (40A supply breaker) to 15.0 (80A supply breaker)
Business 1	FAR: 5.0	kVA/100 m ² of floor area permitted by the FAR	6.0 (40A supply breaker) to 15.0 (80A supply breaker)	Industrial Commercial		kVA/100 m ² of floor area permitted by the FAR	6.0 (40A supply breaker) to 15.0 (80A supply breaker)

Note: The range of potential capacity requirements for residential land use applies for single (one) phase connections
 The potential capacity requirement for three phase connections for residential land use shall be agreed between the municipality and the applicant

erf = stand	Supply Capacity Data to be provided from time to time by the municipality
FAR = floor area ratio	breaker requirement Data to be provided annually by the municipality
ha = hectare	20A 3kVA Calculation from another sheet or transferred to another sheet
kVA = kilovolt ampere	40A 6kVA Calculation in this sheet
m ² = square metre	60A 12kVA Information from application
	80A 15kVA Component of the development contribution
	>80A Depends on the supply breaker
	Development contribution for engineering services

Roads - Formula

Formula	
Development contribution = (cost per potential peak hour vehicle) X (number of potential peak hour vehicles applicable to the change in land use or the change in development rights or the number of potential peak hour vehicles generated by the activities on a premises)	
Explanation	
Term	Description
cost per potential peak hour vehicle	road cost per direction per kilometre of each category of road / peak hour vehicle capacity per direction of each category of road X % use of each category of road X average trip length in kilometres of each category of road
cost per kilometre of each category of road	cost per km of (road reserve + carriageway + stormwater drainage + services + traffic lights + street lighting)
capacity of each category of road peak hour	vehicle capacity per direction
	Note: for township applications - cost for tertiary roads is 0 (zero) as those roads are viewed as internal services

Mogale City Local Municipality
Development Contribution for
Engineering Services

I

	Res 1 Bus 3	Res 2 Schools	Res 3 Churches	Res 4 Govern-	Bus 1	Bus 2	Mix of Road Types Used per Average Peak Hour Trip for Various Land Use Types	ment	Mun. inst.	Old Age Hospital Residen.	Hostel	Industrial Com- mercial
Road Type												
Primary	10%	10%	10%	10%	20%	20%						
Secondary	20%	0%	0%	10%	10%	10%						
Tertiary	10%	10%	10%	10%	10%	10%						
Other	60%	80%	80%	80%	60%	60%						
Average trip length (A)	km 2.5	2.5	2.5	2.5	2.5	2.5						
Cost per PPHV per km for:	R/km											
external services (B)	-	-	-	-	-	-						
internal services (C)	-	-	-	-	-	-						
external and internal services (B)+(C)=(D)	-	-	-	-	-	-						
Cost per PPHV for: R												
external services (A)*(B)=(E)	-	-	-	-	-	-						
external and internal services (A)*(D)=(F)	-	-	-	-	-	-						
PPHV per land use unit or per m2 (refer to sheet 'PPHV per Land use Type') (G)	evu											
Application : No. of potential units or potential floor area (H)	No. or m2											
Current rights : No. of potential units or potential floor area (I)	No. or m2											
Change in potential land use or development rights (H)-(I)=(J)	No. or m2	0	0	0	0	0						
PPHV applicable to change in potential land use or development rights (G)*(J)=(K)	N	0	0	0	0	0						
Development Contribution per land use type for: external services (E)*(K)=(L)	R	0	0	0	0	0						
external and internal services (F)*(K)=(M)	R	0	0	0	0	0						
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL AND INTERNAL SERVICES (L)+(M)	R	0	0	0	0	0						

Information from
m2 = square metre
Component of the
four vehicle
contribution for engineering
services

**Roads - Development
 contribution for an
 increase in the capacity
 for a premises**

Land use type	Mix of Road Types Used per Average Peak Hour per Land Use Types		
	Industrial	Res 2	Schools
Road Type			
Primary 10% 10% 10%			
Secondary 30% 30% 30%			
Tertiary/Residential 60% 60% 60%	100%	100%	100%
Average trip length (A)	km 2.5	2.5	2.5
Cost per PPHV per km for:	R/km		
external services (B)	-	-	-
internal services (C)	-	-	-
external and Internal services (D)	-	-	-
Cost per PPHV for: R			
external services (A)*(B)=(E)	-	-	-
external and Internal services (A)*(D)=(F)	-	-	-
Application: PPHV for which the application is lodged for the premises (G)	evu		
Current: PPHV that is currently applicable for the premises (H)	evu		
Change in PPHV as a result of the application (G)-(H)=(I)	evu 0	0	0
Development Contribution per external services (E)*(I)=(J)			
external and Internal services (F)*(I)=(K)			
			Rand
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL SERVICES FOR EXTERNAL PREMISES		S -	
Development Contribution for external services to be provided by the Municipality from the calculation of the sheet and the square metre Information from the number Component of the Development contribution for external services			

Roads - Cost per road type

		Road Type	
	Unit	Primary	Secondary
			Tertiary/ residential
a	Average no. of lanes	No 4	2.5 2
b	Road reserve width	m 30	16 12
c	Lane width	m 3.7	3.7 3.5
d	Traffic lights/km	No 2	1 0.05
e	Land cost	R/m ²	
f	Carriageway cost	m ² R	
g	Traffic light cost: Major	R/Int	
h	Traffic light cost: Minor	R/Int	
i	Street lighting - Tertiary/Residential Road	R/km	
j	Street lighting - Secondary Road	R/km	
k	Street lighting - Major Road	R/km	
l	Stormwater drainage (600mm + 2 catch pits/km + watercourse protection)	R/km	
m	Stormwater drainage (750mm + 3 catchpits/km + watercourse protection)	R/km	
n	Stormwater drainage (900mm + 4 catchpits/km + watercourse protection)	R/km	
o	Roads (2 lane x 3.5m) (ES0,3)	R/km	
p	Roads (2 lane x 3.7m + 2 x 0.5m shoulder) (ES1)	R/km	
q	Roads (4 lane x 3.7m + 2 x 1.0m shoulder) (ES3)	R/km	
r	Services: Move / protect - Tertiary/Residential Road	R/km	
s	Services: Move / protect - Secondary Road	R/km	
t	Services: Move / protect - Major Road	R/km	

	Primary	Secondary	Tertiary/ residential
Line item	Cost / km	Cost / km	Cost / km
Land (Road reserve)			
	b,e -	-	-
Traffic lights:			
Traffic lights composition - major	1	0.5	0
Traffic lights composition - minor	0	0.5	1
Cost d,g,h -	-	-	-
Street Lighting			
Street lighting composition - Tertiary/residential Road	0	0	1
Street lighting composition - Secondary Road	0	1	0
Street lighting composition - Primary Road	1	0	0
Cost i,j,k -	-	-	-
Stormwater drainage			
Stormwater drainage composition - Tertiary/residential Road	0	0	1
Stormwater composition - Secondary Road	0	1	0
Stormwater composition - Primary Road	1	0	0
Cost l,m,n -	-	-	-
Carriageway			
Carriageway composition - Tertiary/residential Road	0.1	0.3	0.8
Carriageway composition - Secondary Road	0.2	0.6	0.2
Carriageway composition - Primary Road	0.7	0.1	0
Cost o,p,q -	-	-	-
Services			
Services composition - Tertiary/residential Road	0.1	0.5	0.8
Services composition - Secondary Road	0.2	0.4	0.2
Services composition - Primary Road	0.7	0.1	0
Cost r,s,t -	-	-	-
ROAD COST PER km R/km -	-	-	-
ROAD COST PER DIRECTION PER km R/km -	-	-	-
Peak Hour Vehicle Capacity per lane (evu)	1,200	900	600
Peak Hour Vehicle Capacity per direction (evu)	2,400	1,125	600
Cost per Peak Hour Vehicle R/km -	-	-	-

	Data to be provided from time to time by the municipality evu = equivalent vehicle unit
	Data to be provided annually by the municipality Int = intersection
	Calculation from another sheet or transferred to another sheet km = kilometre
	Calculation in this sheet m = metre
	Information from application m2 = square metre
	Component of the development contribution No = number
	Development contribution for engineering services PPHV = potential peak hour vehicle
	R = Rand

Roads - Guideline potential peak hour vehicle per land use type

Land Use	Maximum FAR. / Maximum Number of Dwelling Units (Units)	Unit of Measure	Guideline Capacity Requirement	Land Use	Maximum FAR. / Maximum Number of Dwelling Units (Units)	Unit of Measure	Guideline Capacity Requirement
Residential 1	1 unit/erf PPHV/erf 1.00	to 3.00	Business 2 FAR: 1.5			PPHV/m ² of floor area permitted by the FAR	0.02 to 0.04
Residential 2	20 units/ha PPHV/unit 1.00	to 3.00	Business 2 FAR: 2.0			PPHV/m ² of floor area permitted by the FAR	0.02 to 0.04
Residential 3	FAR: 0.6 44 units/ha	PPHV/m ² of floor area permitted by the FAR	0.02 to 0.03	Business 3	FAR: 0.8	PPHV/m ² of floor area permitted by the FAR	0.02 to 0.04
Residential 4	FAR: 1.8 Schools 64 units/ha Government	PPHV/m ² of floor area permitted by the FAR	0.02 to 0.04			PPHV/m ² of floor area permitted by the FAR	0.02 to 0.04
Business 1	FAR: 2.0	PPHV/m ² of floor area permitted by the FAR	0.02 to 0.04	Municipal Institutions			
Business 1	FAR: 5.0	PPHV/m ² of floor area permitted by the FAR	0.02 to 0.04	Old aged homes Hospitals Residences Hostels Industrial Commercial		PPHV/m ² of floor area permitted by the FAR	0.02 to 0.03
						PPHV/m ² of floor area permitted by the FAR	0.02 to 0.04

erf = stand
FAR = floor area ratio
ha = hectare
m2 = square metre
PPHV = potential peak hour vehicle

Orange	Data to be provided from time to time by the municipality
Grey	Data to be provided annually by the municipality
Green	Calculation from another sheet or transferred to another sheet
Yellow	Calculation in this sheet
Light Blue	Information from application
Dark Blue	Component of the development contribution
Purple	Development contribution for engineering services

Sewerage - Formula

Formula											
Development contribution = (cost per k/l/d of system capacity) X (capacity in k/l/d required by the change in capacity requirement) + (additional capital cost of wastewater treatment works due to COD loading)											
Explanation											
Term	Description										
cost per k/l/d of system capacity	cost per k/l/d of capacity of pump stations + cost per k/l/d of capacity of mains larger then 200 mm diameter + cost per k/l/d of capacity of mains 200 mm diameter and smaller + cost per k/l/d of capacity of wastewater treatment works + cost of land per k/l/d of capacity for external sewerage services Note: for township applications - cost per k/l/d of capacity of mains 200 mm diameter and smaller is 0 (zero) as those mains represent internal services										
capacity in k/l/d required by the change in capacity requirements	potential building floor area in m ² and/or the number of potential dwelling units applicable to the change in land use or development rights X capacity in k/l/d required by each m ² and/or dwelling unit or the actual capacity required for a premises less the capacity previously agreed to by the municipality or for which an applicant paid a development contribution to the municipaity										
additional capital cost of wastewater treatment works due to COD loading	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">COD values</th> <th style="text-align: center;">COD loading factor</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">COD < or = 750 mg/l</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">750 > COD < or = 1 500 mg/l</td> <td style="text-align: center;">1.5</td> </tr> <tr> <td style="text-align: center;">1500 > COD < or = 3 000 mg/l</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">COD > 3 000 mg/l</td> <td style="text-align: center;">4</td> </tr> </tbody> </table>	COD values	COD loading factor	COD < or = 750 mg/l	1	750 > COD < or = 1 500 mg/l	1.5	1500 > COD < or = 3 000 mg/l	3	COD > 3 000 mg/l	4
COD values	COD loading factor										
COD < or = 750 mg/l	1										
750 > COD < or = 1 500 mg/l	1.5										
1500 > COD < or = 3 000 mg/l	3										
COD > 3 000 mg/l	4										

Mogale City Local Municipality
 Development Contribution for
 Engineering Services

Sewerage -

Development contribution for change in the development rights of land or part of land	Land use types				
	Res 1 Bus 3	Res 2 Schools	Res 3 Churches	Res 4 Govern-	Bus 1 Mun. Inst. Old Age Hospi-tal Residen. Hostel Industrial Com- mercial
external services (A)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
internal services (B)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
external and internal services (A)+(B)=(C)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
k/d per land unit or per m2 of FAR (refer to sheet 'Sewer per Land use Type') (D)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Application : No. of potential units or potential floor area (E)					
Current rights : No. of potential units or potential floor area (F)					
Change in potential land use or development rights (E)-(F)=(G)					
Capacity required in k/d average daily flow of sewage with COD<or = 750 mg/l applicable to the change in land use or development rights (D)*(G)=(H)					
Contribution per land use type for sewage/ wastewater with COD<or= 750 m g/l for:					
external services (A)*(H)=(I)					
external and internal services (C)*(H)=(J)					

Mogale City Local Municipality
 Development Contribution for
 Engineering Services

Sewerage -

Development contribution for an increase in the capacity for a premises	Land use types
Land Use Type	Industrial Res 2 Schools
Contribution per land use type for sewage/wastewater with a COD of 150 mg/l	R/kl/d
external services (A)	#DIV/0! #DIV/0! #DIV/0!
internal services (B)	#DIV/0! #DIV/0! #DIV/0!
external and internal services (A)+(B)=(C)	#DIV/0! #DIV/0! #DIV/0!
Application Capacity for which premises (D) application is lodged for the	kl/d of average daily flow
Current rights Capacity that is currently applicable for the premises (E)	kl/d of average daily flow
Change in capacity as a result of the application (F) (D)-(E) (kg/effluent)	kl/d of average daily flow 0 0 0
Contribution per land use type for sewage/wastewater with a COD of 150 mg/l	R
external services (A)*(F)=(G)	#DIV/0! #DIV/0! #DIV/0!
external and Internal services (C)*(F) -(H)	#DIV/0! #DIV/0! #DIV/0!

B Additional cost due to COD loading			
Flow with COD=or>than 750 mg/l			
Quantity of sewage/wastewater with 750 mg/l #COD<or=1500 mg/l	kl/d of average daily flow		
Wastewater treatment works' cost per kl/d (J)	R -		
COD loading factor (K)	-	0.5	0.5 0.5
Additional cost due to COD loading (H)*(J)*(K)=(L)	R -		
Quantity of sewage/wastewater with 1500 mg/l >COD<or= 3000			
Quantity of sewage/wastewater with COD<or= 3000	kl/d of average daily flow		
Wastewater treatment works' cost per kl/d (M)	R -		
COD loading factor (O)	-	2.0	2.0 2.0
Additional cost due to COD loading (M)*(N)*(O)=(P)	R -		
Quantity of sewage/wastewater with COD>3000 mg/l (Q)			
Quantity of sewage/wastewater with COD>3000 mg/l (Q)	kl/d of average daily flow		
Wastewater treatment works' cost per kl per day (R)	R -		
COD loading factor (S)	-	3.0	3.0 3.0
Additional cost due to COD loading (Q)*(R)*(S)=(T)	R -		
Development Contribution per land use type for sanitation for (U)+(N)+(R)+(V)=(W)	R		
External services (J)+(N)+(R)+(V)=(X)		#DIV/0!	#DIV/0! #DIV/0!
external and Internal services (J)+(N)+(R)+(V)=(X)		#DIV/0!	#DIV/0! #DIV/0!
			Rand
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL SEWERAGE CONTRIBUTION FOR SERVICES			#DIV/0! #DIV/0!
SEWERAGE/WASTEWATER SERVICES			
FAR = floor area ratio			Data to be provided from time to time by the Data to be provided annually by the municipality
kl= kilolitre			Calculation from another sheet or transferred to another sheet this sheet
kl/d = kilolitre per day			Information from application
m2 = square metre			Component of the development contribution
No. = number			Development contribution for engineering services
R = Rand			

Sewerage - Cost per kilolitre/day of capacity

1 Pump stations															
															replacement cost of pump stations Rand
Current replacement cost of MCLM's sewage pump stations															
Cost per kl/d of capacity															
2 Sewers															
Sewers larger than 200 mm diameter															
Sewer diameter mm	Velocity in the sewer m/s	Cross sectional area of the sewer m2	Volume of flow kl/s	No of seconds/day	Volume of flow kl/d	Peak factor	Allowance for ingress of water as a % of the volume of flow	Average daily flow that can be conveyed through the sewer kl/d	Length of each sewer diameter in the wastewater disposal system m	Proportion of total length of sewers in the system %	Length per connection sewer/m	Cost of sewer/m Rand	Cost/1 kl of average daily flow capacity/m Rand	Cost/ connection of capacity in kl/d to convey sewage/wastewater Rand	Current replacement cost of sewers Rand
250	1.0	0.049	0.049	86,400	4,241	1.8	15	1,720	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
300	1.0	0.071	0.071	86,400	6,107	1.8	15	2,477	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
350	1.0	0.096	0.096	86,400	8,313	1.8	15	3,371	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
375	1.0	0.110	0.110	86,400	9,543	1.8	15	3,870	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
450	1.0	0.159	0.159	86,400	13,741	1.8	15	5,573	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
500	1.0	0.196	0.196	86,400	16,965	1.8	15	6,880	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
600	1.0	0.283	0.283	86,400	24,429	1.8	15	9,907	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
750	1.0	0.442	0.442	86,400	38,170	1.8	15	15,480	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
800	1.0	0.503	0.503	86,400	43,429	1.8	15	17,613	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
900	1.0	0.636	0.636	86,400	54,965	1.8	15	22,291	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
1300	1.0	1.327	1.327	86,400	114,681	1.8	15	46,509	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
Total for external sewers -			#DIV/0!	-											
Sewers 200 mm diameter and smaller															
200	1.0	0.031	0.031	86,400	2,714	2.0	15	950	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
150	1.0	0.018	0.018	86,400	1,527	2.0	15	534	#DIV/0!	#DIV/0!	0.00	#DIV/0!	-		
Total for internal sewers -			#DIV/0!	-											
Total length of sewers in the system -			#DIV/0!	#DIV/0!											
Number of connections in the system															
Length of sewers per connection m			#DIV/0!												
3 Wastewater treatment works															
Current replacement cost of MCLM's wastewater treatment works															Current

Sewerage - Guideline capacity requirements per land use type

Land Use	Maximum FAR. / Maximum Number of Dwelling Units (Units)	Unit of Measure	Guideline Capacity Requirement	Land Use	Maximum FAR. / Maximum Number of Dwelling Units (Units)	Unit of Measure	Guideline Capacity Requirement
Residential 1 1 unit/erf	1/erf	Business 2 FAR: 1.5	500 3 to to 2500 5			l/d/m ² of floor area permitted by the FAR	
Residential 2 20 units/ha	l/d/unit	Business 2 FAR: 2.0	400 6 to to 800 10			l/d/m ² of floor area permitted by the FAR	
Residential 3 1/erf	Business 4 44 units/ha to to		800 6		FAR: 0.8	l/d/m ² of floor area permitted by the FAR	
Residential 4 1/erf	FAR: 1.8 300 Schools 1 64 units/ha to Government to		600 Municipal 3			l/d/m ² of floor area permitted by the FAR	
Business 1 FAR: 2.0		l/d/m ² of floor area permitted by the FAR	6 Old aged homes 1 to Hospitals to 10 Residences 3			l/d/m ² of floor area permitted by the FAR	
Business 1 FAR: 5.0		l/d/m ² of floor area permitted by the FAR	2 Industrial 6 to Commercial to 4 10			l/d/m ² of floor area permitted by the FAR	

erf = stand		Data to be provided from time to time by the municipality
FAR = floor area ratio		Data to be provided annually by the municipality
ha = hectare		Calculation from another sheet or transferred to another sheet
l/d = litre per day		Calculation in this sheet
l/d/m ² = litre per day per square metre		Information from application
m ² = square metre		Component of the development contribution
		Development contribution for engineering services

Water supply - Formula

Formula	
Development contribution = (cost per k/l/d of system capacity) X (capacity in k/l/d required by the change in capacity requirements)	
Explanation	
Term	Description
cost per k/l/d of system capacity	cost per k/l/d of capacity of supply/treatment + cost per k/l/d of capacity of water storage + cost per k/l/d of capacity of pump stations + cost per k/l/d of capacity of mains larger than 250 mm diameter + cost per k/l/d of capacity of mains 250 mm diameter and smaller + cost of land per k/l/d of capacity for external water supply services Note: for township applications - cost per k/l/d of capacity of mains 250 mm diameter and smaller is 0 (zero) as those mains represent internal services
capacity in k l/d required by the change in capacity requirement	potential building floor area in m ² and/or the number of potential dwelling units applicable to the change in land use or development rights X capacity in k/l/d required by each m ² and/or dwelling unit <p style="text-align: center;">OR</p> the actual capacity required for a premises less the capacity previously agreed to by the municipality or for which an applicant paid a development contribution to the municipality

Water supply - Development contribution for an increase in the capacity for a premises

		Land use types	
Land use Type			
A Development Contribution per land use type			
Cost of capacity per kl/d of average daily water demand for:		R/kl/d	
external services (A)		#DIV/0!	#DIV/0!
internal services (B)		#DIV/0!	#DIV/0!
external and internal services (A)+(B)=(C)		#DIV/0!	#DIV/0!
Application : Capacity for which the application is lodged for the premises (D)	kl/d of average daily flow		
Current rights : Capacity that is currently applicable for the premises (E)	kl/d of average daily flow		
Change in capacity as a result of the applicaton (D)-(E)=(F)	kl/d of average daily flow	0	0
Development Contribution per land use type for water supply for:		R	
external services (A)*(F)=(G)		#DIV/0!	#DIV/0!
external and internal services (C)*(F)=(H)		#DIV/0!	#DIV/0!
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL WATER SUPPLY SERVICES		Rand	
TOTAL DEVELOPMENT CONTRIBUTION FOR EXTERNAL AND INTERNAL WATER SUPPLY SERVICES		#DIV/0!	
d = day			Data to be provided from time to time by the municipality
FAR = floor area ratio			Data to be provided annually by the municipality
kl = kilolitre			Calculation from another sheet or transferred to another sheet
kl/d = kilolitre per day			Calculation in this sheet
m2 = square metre			Information from application
No. = number			Component of the development contribution
R = Rand			Development contribution for engineering services

Water supply - Cost per kilolitre/day of capacity

1 Supply/treatment							
							Current replacement cost of MCLM's water supply/treatment - Rand
							Cost per kl/d
2 Water storage							
							Current replacement cost of MCLM's water storage structures - Rand
							No. days' storage 2
							Storage per annual average demand of 1 kl/d 2
							Cost per kl/d of storage
							Cost per kl/d of supply capacity -
3 Pump stations							
							Current replacement cost of MCLM's water supply pump stations - Rand
							Cost per kl/day of capacity

4 Water mains								
Water mains larger than 250 mm diameter		Cross sectional area of water main in m ²	Volume of flow in k l/day	Average daily flow in k l	Length of water main in the system	Cost of water main	Capacity of connection	Cost of connection
Water main diameter	Volume of flow in m ³ /s		Peak factor			Rand	Rand	Rand
300	1.0	0.071	0.071					
275	0.1	0.010	0.010					
250	0.2	0.013	0.013					
225	0.1	0.009	0.009					
200	0.1	0.007	0.007					
175	0.1	0.005	0.005					
150	0.1	0.004	0.004					
125	0.1	0.003	0.003					
100	0.1	0.002	0.002					
75	0.1	0.001	0.001					
50	0.1	0.000	0.000					
Total for existing water mains								
Water mains < 250 mm diameter								
200	0.1	0.007	0.007					
150	0.1	0.004	0.004					
100	0.1	0.002	0.002					
75	0.1	0.001	0.001					
Total for proposed water mains								
Total length of water mains								
Number of water mains								
Length of water main per connection								
Cost of land								
Current replacement								
Proposed replacement								
Difference between existing and proposed								
Percentage of proposed								
6 Capacity of services								
Cost per k l/d of capacity								

Water supply - Guideline potential daily water requirement per land use type

Land Use	Maximum FAR. / Maximum Number of Dwelling Units (Units)	Unit of Measure	Guideline Capacity Requirement	Land Use	Maximum FAR. / Maximum Number of Dwelling Units (Units)	Unit of Measure	Guideline Capacity Requirement
Residential 1 1 unit/erf	1/d/erf		600 4 to to 3000 6	Business 2 FAR: 1.5		l/d/m ² of floor area permitted by the FAR	
Residential 2 20 units/ha	l/d/unit	Business 2 FAR: 2.0	600 8 to to 1000 12			l/d/m ² of floor area permitted by the FAR	
Residential 3 1/d/unit	Business 3 FAR: 0.5 44 units/ha to to		1000 7		FAR: 0.8	l/d/m ² of floor area permitted by the FAR	
Residential 4 1/d/unit	FAR: 1.8 450 Schools 1 64 units/ha to Government to		700 Municipal 4			l/d/m ² of floor area permitted by the FAR	
Business 1 FAR: 2.0	l/d/m ² of floor area permitted by the FAR		8 Old aged homes 1 to Hospitals to 12 Residences 4	Institutions		l/d/m ² of floor area permitted by the FAR	
Business 1 FAR: 5.0	l/d/m ² of floor area permitted by the FAR		3 Industrial 8 to Commercial to 5 12	Hostels		l/d/m ² of floor area permitted by the FAR	

erf = stand		Data to be provided from time to time by the municipality
FAR = floor area ratio		Data to be provided annually by the municipality
ha = hectare		Calculation from another sheet or transferred to another sheet
l/d = litre per day		Calculation in this sheet
l/d/m ² = litre per day per square metre		Information from application
m ² = square metre		Component of the development contribution
		Development contribution for engineering services