# LIVINGSTONE SHIRE COUNCIL

Policy No. D1.23

# GUIDELINES FOR DEVELOPMENT WORKS

#### **GUIDELINES FOR DEVELOPMENT WORKS**

# **CONTENTS**

<b>SECTION</b>	<u>SUBJECT</u>
1.	INTRODUCTION
2.	GENERAL REQUIREMENTS
3.	ROAD - PLANNING, DESIGN AND CONSTRUCTION
4.	BIKEWAYS
5.	STORMWATER DRAINAGE
6.	WATER
7.	SEWERAGE
8.	AMCORD
9.	MISCELLANEOUS

**APPENDICES** 

#### 1.0 INTRODUCTION

These Guidelines have been prepared to ensure that the design and construction of works associated with subdivisions and developments provide infrastructure assets that meet the needs of the community in Livingstone Shire.

The objectives behind these Guidelines are summarised below :-

- To provide good development by defining standards consistent with minimising asset life cycle;
- To provide a functional, attractive and safe environment for residents and users;
- To minimise Council's future maintenance costs for public roads and services;
- To minimise impact on the environment.

Whilst Council promotes the use of these Guidelines, Council is prepared to consider alternative approaches, if it can be proven to Council's satisfaction that these alternatives will achieve the above objectives with minimum risk.

These Guidelines should not be interpreted as relieving designers of their responsibility to properly assess all conditions and to use sound engineering practices in any design proposals.

Designers are encouraged to consider their proposals in detail, giving due regard to the topography of the land, retention of trees or other natural attributes, site stability, retention of natural drainage areas where possible and blending in with open space should be fully considered.

In the design preparation Council prefers the desirable minimum or maximum values to be adopted in all instances, however, it is prepared to consider absolute minimum or maximum values where circumstances justify. The overall design shall avoid the cumulative use/effect of all absolute minimum or maximum values. Where absolute values are used, the designer has to highlight its use and provide a justification.

The distribution of these Guidelines does not imply limitation in any way of Council's rights to impose differing conditions when approving proposals, nor limitation of Councils discretions to interpret engineering requirements in respect of a particular situation, having regard to good engineering practice.

Where a reference is made to other design guidelines etc and a conflict arises between this document and the reference document, this document takes precedence.

# SECTION 2 GENERAL REQUIREMENTS

		PAGE NO.
2.1	Preparation of Plans and Documentation	2-1
2.1.1	Standard Specifications and Standard Drawings	2-1
2.2	The Application	2-1
2.2.1	Acceptance of Application	2-2
2.3	Design Plans	2-2
2.3.2.1	Title Block	2-3
2.3.2.2	Locality Detail	2-3
2.3.2.3	Layout (and Stage Plan if applicable)	2-3
2.3.2.4	Plan and Longitudinal Section of Roads	2-4
2.3.2.5	Detail Plan of Intersection/Cul-de-sac Heads/Bends	2-5
2.3.2.6	Cross Sections of Roads	2-5
2.3.2.7	Type Cross Sections of Roads	2-5
2.3.2.8	Longitudinal Section of Drainage Network	2-6
2.3.2.9	Traffic Control Details (Traffic Signs and Pavement Markings)	2-6
2.3.2.10	Environmental Management Plan	2-6
2.3.2.11	Water Supply Reticulation Plans	2-7
2.3.2.12	Sewerage Plans and Longitudinal Sections	2-7
2.3.2.13	Pumping Stations and Rising Mains (Water & Sewerage)	2-8
2.3.3	Plan Size	2-8
2.3.4	Scales	2-8
2.3.5	Units for Dimensions and Quantities	2-9

		PAGE NO.
2.4	Survey Details	2-9
2.4.1	Chainages and Pegging	2-9
2.4.2	Levelling	2-9
2.4.3	Site Contours	2-9
2.4.4	Survey Marks	2-10
2.4.4.1	Bench Marks	2-10
2.4.4.2	Permanent Survey Marks	2-10
2.5	Approval of Design Plans and Documentation	2-11
2.5.5	Amended Design During Construction	2-11
2.6	Construction Works	2-11
2.6.1	Notices	2-11
2.6.2	Provision for Safety on Site	2-12
2.6.2.1	Traffic Safety	2-12
2.6.2.2	Employee Safety	2-12
2.6.3	Supervision and Access	2-12
2.6.4	Environmental Management	2-12
2.6.4.1	Clearing & Disposal of Cleared Material	2-13
2.6.4.2	Vegetation to be Retained	2-13
2.6.4.3	Erosion Control and Sediment Loss	2-13
2.6.4.4	Site Restoration	2-13
2.6.5	Noxious Weeds	2-13
2.6.6	Site Filling	2-14
2.6.7	Insurance	2-14

		PAGE NO
2.6.8	Bushfire Risk	2-14
2.7	Bonding	2-14
2.8	Defects Liability Period	2-15
2.9	Notifiable Projects	2-16
	APPENDIX 2.1 Application for Approval to Construct (3 pages)	
	APPENDIX 2.2 Application Primary Checklist (2 pages)	
	APPENDIX 2.3 Supervision Certificate - Proforma	
	APPENDIX 2.4 Construction Certificate - Proforma	

# **ROAD PLANNING, DESIGN & CONSTRUCTION**

3.1	Aim	<b>PAGE NO.</b> 3-1
3.2	Road Planning	3-1
3.2.1	Road Hierarchy	3-1
3.2.2	Road Classes & Characteristics	3-4
3.2.3	Layout	3-7
3.2.3.1	Connectivity	3-7
3.2.3.2	Permeability to Through Traffic	3-8
3.2.3.3	Legibility	3-8
3.2.3.4	Economy	3-8
3.2.3.5	Bus Routes	3-9
3.2.3.6	Recognition of Road Function	3-9
3.2.3.7	Stormwater Drainage Path	3-9
3.3	Road Design	3-9
3.3.1	Design Speed	3-10
3.3.2	Cross Section Elements	3-10
3.3.2.1	Widths	3-10
3.3.2.2	Crossfalls	3-10
3.3.2.3	Kerb and Channel	3-11
3.3.2.4	Table Drains	3-11

		PAGE NO.
3.3.2.5	Batters	3-12
3.3.3	Grades	3-12
3.3.3.1	Minimum Grade	3-12
3.3.3.2	Maximum Grade	3-12
3.3.4	Sight Distance	3-13
3.3.4.1	Absolute Minimum Stopping and Desirable Minimum Stopping	3-13
3.3.4.2	Intersection Sight Distance	3-13
3.3.5	Vertical Curves	3-14
3.3.5.1	Maximum Change of Grades	3-14
3.3.5.2	Crest Curves	3-15
3.3.5.3	Sag Curves	3-15
3.3.5.4	Appearance Criteria	3-15
3.3.5.5	Vertical Curves at Intersection	3-15
3.3.5.6	Vertical Curve Combinations	3-16
3.3.5.7	Vertical Curve Geometry	3-17
3.3.6	Horizontal Alignment	3-17
3.3.6.1	Maximum Superelevation	3-18
3.3.6.2	Minimum Superelevation	3-18
3.3.6.3	Minimum Horizontal Curve Radius	3-19
3.3.6.4	Local and Access Streets	3-20
3.3.7	Superelevation Transition	3-20
3.3.7.1	Grading of Control Lines	3-20
3.3.7.2	Length of Transition	3-21

		PAGE NO.
3.3.8.6	Real Property Alignment	3-21
3.3.9	Curve Widening on Horizontal Curves	3-21
3.3.9.1	Roads Requiring Curve Widening	3-21
3.3.9.2	Method of Curve Widening	3-21
3.3.10	Intersections	3-21
3.3.10.1	General Principles	3-22
3.3.10.2	Types of Intersections and Applications	3-25
3.3.10.3	Intersections Angle	3-26
3.3.10.4	Location of Intersections	3-26
3.3.10.5	Spacing of Intersections	3-27
3.3.10.6	Side Road	3-27
3.3.10.7	Truncations	3-28
3.3.10.8	Kerb Radii	3-28
3.3.10.9	Channelisation	3-29
3.3.10.10	Raised Median Islands	3-30
3.3.10.11	Raised Traffic Islands	3-33
3.3.10.12	Auxiliary Lanes at Intersections	3-34
3.3.10.13	Roundabouts	3-34
3.3.10.14	Rural Intersections	3-37
3.3.11	Cul de Sacs	3-38
3.3.11.1	General	3-38
3.3.11.2	Turning Heads and Radii	3-39
3.3.12	Property Access	3-39

		PAGE NO.
3.3.12.1	General	3-39
3.3.12.2	Location of Access Points	3-39
3.3.12.3	Design Principles	3-41
3.3.13	Easement	3-43
3.3.13.1	Proposed Easements	3-44
3.3.13.2	Existing Easements	3-44
3.3.13.3	Access Easements	3-44
3.3.13.4	Drainage Easements	3-45
3.3.14	Footpaths	3-45
3.3.14.1	Cross Sections	3-45
3.3.14.2	Longitudinal Grades	3-45
3.3.14.3	Footpath Paving	3-45
3.3.14.4	Service Allocations	3-46
3.3.14.5	Grassing	3-46
3.3.14.6	Clearances	3-46
3.3.15	Signs and Pavement Markings	3-46
3.3.15.1	General	3-46
3.3.15.2	Minimum Provisions	3-47
3.3.16	Guide Posts, Guard Rails and Delineators	3-48
3.3.16.1	Guide Posts	3-48
3.3.16.2	Guard Rails	3-50
3.3.16.3	Delineators	3-51
3.3.17	LATM's	3-52

		PAGE NO.
3.4	Pavement Design	3-52
3.4.1	General	3-52
3.4.2	Testing	3-53
3.4.3	Design Traffic Loading	3-53
3.4.4	Flexible Pavement	3-54
3.4.4.1	Minimum Pavement and Surfacing Thickness	3-54
3.4.4.2	Pavement Materials	3-55
3.4.4.3	Pavement Surface	3-56
3.4.4.4	Pavement Treatments	3-56
3.4.5	Other Pavement Types	3-56
3.4.5.1	Concrete Pavement	3-56
3.4.5.2	Interlocking Pavers	3-56
3.4.5.3	Asphalt Pavements	3-57
3.4.6	Construction	3-57
3.4.7	Floodway Design APPENDIX 3.1 - Traffic Generation Rates (1 page) APPENDIX 3.2 - Typical Layout Right Turn Lane (1 page) APPENDIX 3.3 - Typical Layout Traffic Islands (1 page)	3-58

# STORMWATER DRAINAGE

		PAGE NO
5.1	Aims, Objectives & Design Philosophy	5-1
5.2	Lawful Point of Discharge	5-1
5.3	Urban Drainage	5-2
5.4	Rural Road Drainage	5-2
5.5	Design Storms - Average Recurrence Interval	5-2
5.6	Roof and Allotment Drainage	5-7
5.7	Pipe Construction	5-8
	Appendix 5.1 - Culvert Design Form (1 page)	

# **WATER**

		PAGE NO.
6.1	Guidelines	6-1
6.2	Master plan	6-1
6.3	Network Analysis	6-1
6.4	Alignment	6-2
6.5	Fitting Layout	6-2
6.6	Pipeline	6-4
6.7	Valve and Hydrant Installation	6-4
6.8	Pipe Materials	6-4
6.9	Poly Sleeving	6-4
6.10	Road Crossings - Watermains	6-4
6.11	Hydrant Valves - Coated	6-5
6.12	Gate Valves	6-5
6.13	Fittings & Valves	6-5
6.14	Typical Construction Drawings for Approval	6-5
6.15	Joint Trenching	6-6
6.16	Marker Stakes	6-6
6.17	Footpath Boxes and Surrounds	6-6
6.18	Testing	6-6

## **SEWERAGE**

		PAGE NO.
7.1	Guidelines	7-1
7.2	Detailed Sewerage Reticulation Plans	7-1
7.3	Longitudinal Sections	7-1
7.4	Sewerage Notes Required on Construction Drawings	7-1
7.5	Design Standards	7-2
7.5.1	Sewers	7-2
7.5.2	Pipe Class and Cover	7-3
7.5.3	House Connections	7-3
7.5.4	Extended 150 & 100 House Connections	7-4
7.5.5	Bedding of Sewers	7-4
7.5.6	Sewer Drops	7-4
7.5.7	Sewer Inspection Points	7-5
7.5.8	Sewer Easements	7-5
7.5.9	Scour Stops	7-5
7.6	Manholes	7-5
7.7	Sewerage Reticulation within Fill Areas	7-5
7.8	Connection to Existing Sewerage System	7-5
7.9	Rising Mains	7-6
7.9.1	Pipe Materials	7-6

		PAGE NO.
7.9.2	Discharge Manholes	7-6
7.9.3	Design Standard	7-6
7.9.4	Air Vents	7-6
7.9.5	Odour Control Requirements	7-6
7.10	Construction Survey	7-6
7.11	Submersible Sewerage Pump Station	7-6
7.11.1	General	7-6
7.11.2	Access	7-7
7.11.3	Finished Ground Level	7-7
7.11.4	Water Supply and Sprinkler System	7-8
7.11.5	Fasteners	7-8
7.11.6	Pumpwell Access	7-9
7.11.7	Pump Lifting Chain	7-9
7.11.8	Pipework	7-9
7.11.9	Pump Station Overflow	7-9
7.11.10	Station Isolating Valves	7-10
7.11.11	Pump Station Control Manhole	7-10
7.11.12	Air Compressor Pit or Oxygen Injection Facilities	7-10
7.11.13	Pump Station Number	7-10
7.11.14	Discharge Manhole	7-10
7.11.15	Switchboard	7-11
7.11.16	Level Control Electrode	7-12
7.11.17	Ventilation	7-12

# **AMCORD**

		PAGE NO.
8.0	General	8-1
8.2	Applications	8-1

# **MISCELLANEOUS**

		PAGE NO.
9.0	Miscellaneous	9-1
9.1	Public Utility Services	9-1
9.1.1	Existing Public Utilities	9-1
9.1.2	Footpath Allocations	9-1
9.1.3	Electricity Supply	9-1
9.1.4	Street Lighting	9-2
9.1.5	Telecommunications	9-2
9.2	Parks	9-2
9.3	"As Constructed" Plans and Information	9-3
9.3.1	Format	9-3
9.3.2	Extent of Information	9-3
9.4	Testing Schedule	9-5
9.4.1	Road and Drainage Works and Allotment Fill	9-5
9.4.2	Water and Sewerage Works	9-5