

Minimum Construction Requirements for water bores in Australia (MCR), implementation guidelines for Edition 4

The update to the MCR was completed by the National Uniform Drillers Licensing Committee (NUDLC) over an 18-month period.

The update to the MCR reflects necessary changes made to keep it current with industry standards and practices. Also, many of the contact details including addresses and websites needed to be updated.

To make it easy to see what the actual changes are and how they might affect future bore construction, Table 1 lists these in order of importance.

Edition 4 came into effect as of **1 September 2020**.

Therefore:

- All works initiated post 1 September 2020 (including the licensing, planning, quotation and construction stages) will need to be compliant with **MCR Edition 4**.
- Any work initiated prior to 1 September 2020 (including the licensing, planning, quotation and construction stages) will carry on compliance with the current MCR Edition 3.

If you have any queries regarding this implementation, please contact WaterNSW.

If you have any technical queries regarding MCR Edition 4, please contact Madhwan Keshwan at DPIE Water on 0412 723 635, or email: Madhwan.Keshwan@dpi.e.nsw.gov.au

Table 1. Changes to the MCR in order of importance

New page	Old page	Change	Chapter	Section
7	7	Note added - when drilling into sediments of the Great Artesian Basin (GAB) all water bores will be constructed in accordance with this document and relevant state and territory legislation.	2 - Administrative Requirements and Responsibilities	Mandatory Requirements
36	34	5.2 added. All water supply bores shall be grout sealed to protect the production zone from contamination.	5 - Siting a Water Supply Bore	Mandatory Requirements
54	52	Steel casing minimum standard API-5L-350 MPa changed to API-5L-B	9 - Casing	Mandatory Requirements
54	52	ABS removed from requirement 9.2 and GRE added in	9 - Casing	Mandatory Requirements
55	53	Updated the minimum requirements for FRP	9 - Casing	Mandatory Requirements
74	70	Added to 11.1 - Sealing, including any required cement top-up shall be completed before the drill rig leaves the work site.	11 - Bore Sealing	Mandatory Requirements
74	70	11.2 clarified requirement for thickness of grout sealing around the casing	11 - Bore Sealing	Mandatory Requirements
74	70	Added to 11.3 - Unrestricted circulation shall be obtained down the casing and up the annulus prior to pressure grouting	11 - Bore Sealing	Mandatory Requirements
74	70	11.4 clarified requirement for sealing	11 - Bore Sealing	Mandatory Requirements
97	93	16.1 - firmed up requirement for bore capping	16 - Bore Completion	Mandatory Requirements
97	93	16.3 - removed AS 3579 cast iron gate valves	16 - Bore Completion	Mandatory Requirements
97	93	16.3 added requirement for gaskets	16 - Bore Completion	Mandatory Requirements
108	106	18.1 clarified bore sealing methodology	18 - Bore Decommissioning	Mandatory Requirements

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New page	Old page	Change	Chapter	Section
108	106	18.2 clarified bore sealing materials	18 - Bore Decommissioning	Mandatory Requirements
108	106	18.4 and 18.5 clarified about using internal grout bridges	18 - Bore Decommissioning	Mandatory Requirements
4	1	Good Industry practice relocated	1 - Introduction	Good Industry Practice
40	38	6.3 changed to add bore identification number .	6 - Formation sampling and water sampling	Good Industry Practice
43	42	Added more recommendations on drilling mud use.	7 - Drilling Fluids	Good Industry Practice
56	54	9.9 changed to read - the base of the installed casing should be capped or sealed, except in open bore hole constructions.	9 - Casing	Good Industry Practice
65	62	10.2 added - open hole bores should be cased to the depth of the required pump setting	10 - Maximising Bore Efficiency and Water Entry	Good Industry Practice
66	62	Changes to content and order sequence of 10.7 to 10.14	10 - Maximising Bore Efficiency and Water Entry	Good Industry Practice
76	72	Added 11.19 and 11.20 to clarify the use of centralizers and cement mixes.	11 - Bore Sealing	Good Industry Practice
84	80	13.1 changed wording around bore testing	13 - Bore Yield Testing	Good Industry Practice
86	82	14.3 changed to - All water supply bores shall be disinfected	14 - Disinfecting Water Bores	Good Industry Practice
98	94	16.10 - changed to include mud cleaning and environmental needs	16 - Bore Completion	Good Industry Practice
109	107	Added 18.11 about casing perforation requirements	18 - Bore Decommissioning	Good Industry Practice
2	2	Principles have been reordered	1 - Introduction	General Content

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New page	Old page	Change	Chapter	Section
10	10	note added - The client or bore owner should be aware of any water quality requirements for the intended crop types or proposed water use.	2 - Administrative Requirements and Responsibilities	General Content
13	13	New para heading Single Aquifer added	3 - Bore Design and Common Types	General Content
13	14	In multiple aquifer new sentence stating - Any unsuitable waters are excluded from the bore by grout sealing	3 - Bore Design and Common Types	General Content
17	17	New sentence added - Stock and domestic bores are the most common type of water supply bore.	3 - Bore Design and Common Types	General Content
23	23	Updated Drilling Endorsements to align with MOU including adding Sonic.	4 - Drillers Classification System and Drilling Methods	General Content
24	24	Updated Required skills, experience and abilities to align with MOU.	4 - Drillers Classification System and Drilling Methods	General Content
30	30	Added Dual Rotary Drilling section	4 - Drillers Classification System and Drilling Methods	General Content
32	32	Updated description of sonic drilling.	4 - Drillers Classification System and Drilling Methods	General Content
35	33	Added additional text to Obtaining Information	5 - Siting a Water Supply Bore	General Content
41	39	added extra info about salinity content identification.	7 - Drilling Fluids	General Content
50	48	ABS removed from types of casing used and FRE changed to GRE	9 - Casing	General Content
52	50	Added more info and clarification on fibreglass and stainless steel casing	9 - Casing	General Content

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New page	Old page	Change	Chapter	Section
57	55	Added more commentary about open hole bore construction	10 - Maximising Bore Efficiency and Water Entry	General Content
60	57	Clarified screen requirement when in sands and gravel.	10 - Maximising Bore Efficiency and Water Entry	General Content
64	61	Added comment on using an inline gravel pack	10 - Maximising Bore Efficiency and Water Entry	General Content
69	65	Added comment on using sulphur resistant cement	11 - Bore Sealing	General Content
70	66	Added comment on using lost circulation materials	11 - Bore Sealing	General Content
88	84	Added comment about online bore completion forms being available.	15 - Recording and Reporting Data	General Content
103	101	Clarified comment on grouting when decommissioning a bore	18 - Bore Decommissioning	General Content
14	14	Replaced figures 3.1 and 3.2 with new illustrations	3 - Bore Design and Common Types	Figures
15	15	Replaced figure 3.3 with a new illustration	3 - Bore Design and Common Types	Figures
18	18	Replaced figure 3.5 with a new illustration	3 - Bore Design and Common Types	Figures
19	19	Replaced figure 3.6 with a new illustration	3 - Bore Design and Common Types	Figures
58	56	Replaced figure 10.1 with a new illustration	10 - Maximising Bore Efficiency and Water Entry	Figures
61	58	Added figure 10.2 illustrating naturally developed bores	10 - Maximising Bore Efficiency and Water Entry	Figures
63	60	Updated figure 10.4 Sieve Analysis Report	10 - Maximising Bore Efficiency and Water Entry	Figures

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New page	Old page	Change	Chapter	Section
90	86	Updated 15.1 Example of a bore log	15 - Recording and Reporting Data	Figures
104	102	Updated figure 18.1 decommissioning a single aquifer bore by fully grouting	18 - Bore Decommissioning	Figures
105	103	Updated figure 18.2 decommissioning a multi aquifer bore by fully grouting	18 - Bore Decommissioning	Figures
106	104	Updated figure 18.3 decommissioning a multi aquifer bore by cement bridges	18 - Bore Decommissioning	Figures
107	105	Updated figure 18.4 decommissioning a flowing bore by fully grouting	18 - Bore Decommissioning	Figures
18	18	New photo of double orifice meter	3 - Bore Design and Common Types	Photos
30	31	Replaced photo of Rotary mud drilling	4 - Drillers Classification System and Drilling Methods	Photos
31	31	Added photo of Reverse circulation mud drilling	4 - Drillers Classification System and Drilling Methods	Photos
32	32	Added photo of Sonic drilling	4 - Drillers Classification System and Drilling Methods	Photos
26	26	Added Sonic to table of Drilling Methods .	4 - Drillers Classification System and Drilling Methods	Tables
45	43	Added new photos for measuring mud viscosity	7 - Drilling Fluids	Photos
48	46	New photo showing bore and cementing concentricity	8 - Bore Plumbness and Straightness	Photos
53	51	Table 9.2 updated to reflect changes to casing types	9 - Casing	Tables

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New page	Old page	Change	Chapter	Section
59	57	Replaced figure 10.2 with photos.	10 - Maximising Bore Efficiency and Water Entry	Photos
64	61	Added photo of stainless-steel screens	10 - Maximising Bore Efficiency and Water Entry	Photos
65	61	Added photo of inline gravel pack assembly	10 - Maximising Bore Efficiency and Water Entry	Photos
72	68	Added photo of cementing tank	11 - Bore Sealing	Photos
71	67	Added comment on table 11.2a saying that Bentonite should be API grade	11 - Bore Sealing	Tables
96	92	Updated photos of bore headworks	16 - Bore Completion	Photos
111-115	109-115	Necessary updates to acronyms and definitions	Appendix A	
117-118	116-117	Necessary updates to available resources	Appendix B	
n/a	118-121	Removed section showing various bore type illustrations	Appendix C	
119-140	122-134	Updated sample bore drilling contract	Appendix D	

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