



## **Appendix A BCC Natural Channel Design Guidelines Extracts**





Minimum	Normal	Maximum	Description
<b>A. Low gradient channel</b>			
0.025	0.030	0.033	Clean, straight, full stage, no riffles or deep pools.
0.035	0.050	0.075	As above, but more loose rock and weeds.
0.030	0.035	0.040	Clean, winding, some pools and riffles.
0.045	0.070	0.100	As above, but some weeds and loose rock.
0.033	0.040	0.045	Sluggish reaches, weedy, deep pools (irregular bed).
0.050	0.080	0.150	Very woody reaches, deep pools, or floodways with heavy stand of timber and understorey vegetation.
<b>B. Steep gradient channel</b> Mountain streams, minimal vegetation in channel, banks usually steep, trees and brush along banks submerged at high stages.			
0.030	0.040	0.040	Channel bed contains gravels, loose rock and a few boulders.
0.050	0.050	0.070	Channel bed contains loose rock and large boulders.



**Table C.2 Modified Cowan method for determining channel roughness**

$$\text{Manning's } n = (n_b + n_1 + n_2 + n_3 + n_4) m$$

Channel condition		n and m values	Description
Channel material ( $n_b$ )	Earth	0.020	Clay-based channels.
	Bed rock	0.025	Channels cut into bed rock.
	Sand-fine gravel	0.024*	Sandy creeks.
	Coarse gravel	0.026	Gravel-based creeks (otherwise use Eqn C.1).
Degree of irregularity ( $n_1$ )	Smooth	0.0	Smooth channel.
	Minor	0.001–0.005	Excavated channels in good condition.
	Moderate	0.006–0.010	Channels with considerable bed roughness and some bank erosion.
	Severe	0.011–0.020*	Natural' channels: pools and riffles, exposed tree roots, boulders, and/or irregular banks.
Variation in channel cross section ( $n_2$ )	Uniform	0.0	Near-uniform channel section.
	Gradual	0.001–0.005*	Large and small cross sections alternate occasionally (eg. typical NCD $n_2 = 0.003$ ).
	Severe	0.010–0.015	Large and small cross sections alternate frequently (eg. a significant pool-riffle system).
Effect of obstructions ( $n_3$ )  excluding vegetation	Negligible	0.0–0.004	A few scattered obstructions (boulders, trees, logs) that occupy less than 5% of the channel.
	Minor	0.005–0.015*	Obstructions occupy 5–15% of the channel and the obstructions are generally isolated.
	Appreciable	0.020–0.030	Obstructions occupy 15–50% of the channel.
	Severe	0.040–0.050	Obstructions occupy more than 50% of the channel (eg. severe debris collection).
Amount of vegetation ( $n_4$ )  Consideration should be given to the obstruction caused by vegetation relative to channel width and depth	Small	0.002–0.010	Grasses and/or weeds with the flow at least three times the height of the vegetation.
	Medium	0.010–0.025*	Grass and/or weeds with the flow one to two times the height of the vegetation; or reeds or tree seedlings growing with the flow two to three times the vegetation height; or minor bed vegetation with medium bank vegetation.
	Large	0.025–0.050	Grasses and/or weeds with flow depth equal to vegetation height; or weedy beds with thick bank vegetation; or moderate shrub growth across the bed and banks.
	Very Large	0.050–0.100	Grass and/or weeds more than twice the height of flow depth; or dense, strong reed growth; or significant shrub growth within the channel; or significant inflexible vegetation within channel.
Degree of channel meandering ( $m$ )	Minor	1.00	Channel sinuosity is 1.0 to 1.2
	Appreciable	1.15*	Channel sinuosity is 1.2 to 1.5
	Severe	1.30	Channel sinuosity is greater than 1.5 or: $m = 0.57 + 0.43 (\text{Sinuosity})$ , but $\geq 1.30$

(\*) Typical NCD channel roughness  $n = (0.024 + 0.003 + 0.012 + 0.005 + 0.015) 1.15 = 0.068$



**Table C.3 Manning's n for a watercourse floodplain**

Minimum	Normal	Maximum	Description
<b>A. Pasture, no brush</b>			
0.025	0.030	0.030	Short grass – use design charts for grass
0.035	0.035	0.050	High grass – use design charts for grass
<b>B. Cultivated areas</b>			
0.020	0.030	0.030	No crop
0.040	0.040	0.050	Mature crop
<b>C. Brush</b>			
0.035	0.040	0.070	Scattered brush, heavy weeds
0.050	0.060	0.100	Light brush and trees
0.070	0.080	0.160	Medium to dense brush
<b>D. Trees (also refer to Table C.5)</b>			
0.080	0.100	0.110	Heavy stand of timber, a few fallen trees, little undergrowth, tree branches above flood level.
0.100	0.120	0.150	As above, but with tree branches below flood level.
0.120	0.160	0.200	Dense tree cover



**Table C.4 Modified Cowan method for floodplain roughness**  
Manning's  $n = (n_b + n_1 + n_2 + n_3 + n_4) m$

Floodplain condition		n and m values	Description
Floodplain material ( $n_b$ )	Earth Bed rock Sand Gravel	0.020* 0.025 0.024 0.026	Clay-based soil. Smooth, flat rock floodplains. Sandy soils. Gravel-based soils (otherwise use Eqn C.1)
Degree of irregularity ( $n_1$ )	Smooth Minor Moderate Severe	0.0 0.001–0.005 0.006–0.010* 0.011–0.020	Smooth, flat, floodplains. Slightly irregular shape. A few rises and dips. Regular rises and dips. Very irregular floodplains. Pasture furrows perpendicular to the flow.
Variation in floodplain cross section ( $n_2$ )		0	Not applicable.
Effect of obstructions ( $n_3$ )  excluding vegetation	Negligible  Minor  Appreciable	0.0–0.004  0.005–0.015*  0.020–0.030	A few scattered obstructions (debris, stumps, logs, boulders) occupying less than 5% of the floodplain flow area. Obstructions occupy 5–15% of the flow area. Obstructions occupy 15–50% of the flow area.
Amount of vegetation ( $n_4$ )  Consideration should be given to the obstruction caused by vegetation relative to the depth of flow.	Small  Medium  Large  Very large  Extreme	0.002–0.010  0.010–0.025  0.025–0.050  0.050–0.100*  0.100–0.200	Grasses and/or weeds with the flow at least twice the height of the vegetation. Grass and/or weeds with the flow one to two times the height of the vegetation; or tree seedlings growing with the flow two to three times the vegetation height. Grasses and/or weeds with flow depth equal to vegetation height, or irregular shrub growth across the floodplain. Grass and/or weeds more than twice the height of flow depth; or significant shrub growth, woody weeds, or other inflexible vegetation growing across the floodplain. Dense bushy shrub growth, or heavy stands of trees with understorey vegetation and a few fallen trees, or a heavy stand of trees with branches below flood level.
Floodplain meander (m)		1	Not applicable.
(*) Example calculation: $n = (0.020 + 0.008 + 0.0 + 0.012 + 0.090) 1.0 = 0.130$			



**Table C.5 Floodplain revegetation density guidelines for various Manning's n roughness values**

Manning's n	Description
0.03	Short grass with the water depth >> grass height.
0.04	Short grass with water depth >> grass height on a slightly irregular earth surface. Trees at 10 metre spacing, area is easy to mow.
0.05	Long grass on an irregular (bumpy) surface with few trees. Irregular ground could make grass cutting difficult. Alternatively, trees at 8 metre spacing on an even, well-grassed surface, no shrubs, no low branches.
0.06	Long grass, trees at 6 metre spacing, few shrubs. The vegetation is easy to walk through. Area not mowed, but regular maintenance is required to remove weeds and debris.
0.07	Trees at 5 metre spacing, no low branches, few shrubs, walking may be difficult in some areas.
0.08	Trees at 4 metre spacing, some low branches, few shrubs, few restrictions to walking.
0.09	Trees at 3 metre spacing, weeds and long grasses may exist in some locations. Walking becomes difficult due to fallen branches and woody debris.
0.10	Trees at 2 metre spacing, low branches, regular shrubs, no vines. Canopy cover possibly shades weeds and it is difficult to walk through.
0.12	Trees at 1.5 metre spacing with some low branches, a few shrubs. Slow to walk through.
0.15	Trees and shrubs at 1 metre spacing, some vines, low branches, fallen trees, difficult and slow to walk through. Alternatively, a continuous coverage of woody weeds with sparse leaves and no vines.
0.20	Trees and shrubs at 1 metre spacing plus thick vine cover at flood level and fallen trees. Very difficult to walk through. Alternatively, a continuous coverage of healthy shrubs and woody weeds from ground level to above flood level.



Photo C1

*Straight, excavated, tidal channel.*

*Bed:  $n = 0.02$*

*Banks:  $n = 0.06$*

*Bankfull:  $n = 0.024$*



Photo C2

*Slight meandering, regular cross section,  
well maintained grass channel.*

*Bankfull:  $n = 0.028$*



Photo C3

*Mown grass channel, regular cross  
section, slight meander.*

*Bankfull:  $n = 0.028$  (clean)*

*$n = 0.030$  (some shrubs)*







Photo C4

*Regular cross section, slight meandering, mown overbanks.*

*Bankfull:  $n = 0.04$*

*Overbank grass:  $n = 0.03$  (shallow flow depth assumed)*



Photo C5

*Mown grass banks, unmaintained wetland plants on bed, regular cross section, very slight meander.*

*Bed: Manning's  $n$  is variable depending on flow depth.*

*Bankfull components:*

*bed  $n = 0.035$*

*bank  $n = 0.030$*

*resulting in a bankfull  $n = 0.035$*



Photo C6

*Canopy trees in early stages of growth, straight, regular channel.*

*Bankfull:  $n = 0.04$*

*Overbank:  $n = 0.15$*





Photo C7

Rock size approx. 300 mm, this results in  
a Manning's  $n = 0.034$  assuming deep  
water flow.

Bed:  $n = 0.04$



Photo C8

Deep channel, irregular cross section,  
meandering channel.

Bankfull:  $n = 0.045$



Photo C9

Near straight channel, full canopy cover  
with few weeds, pool-riffle system,  
shallow pools with boulders.

Bed:  $n = 0.045$

Bank:  $n = 0.09$







Photo C10

*Pool-riffle bed system, meandering channel, thick shrub growth on banks, deep pools.*

*Bed:  $n = 0.04$*

*Left bank:  $n = 0.06$*

*Right bank:  $n = 0.20$*

*Bankfull:  $n = 0.06$*



Photo C11

*Channel vegetation in early growth stage, gradual bends, regular cross section, deep water, pool-riffle system.*

*Bankfull (existing):  $n = 0.04$*

*Long-term (full vegetation) bed:  $n = 0.05$*

*banks:  $n = 0.15$*



Photo C12

*Irregular, meandering, constructed channel with boulders.*

*Bankfull:  $n = 0.05$*

*Bank vegetation:  $n = 0.15$*





Photo C13

*Irregular channel with meanders and woody debris (logs).*

*Bankfull:  $n = 0.05$*

*Overbank:  $n = 0.10$*



Photo C14

*Bed is a combination of thick, flexible vegetation and open rock pools and riffles. banks have sparse trees and woody shrubs. Irregular channel shape with slight meandering.*

*Bed:  $n = 0.06$*

*Bank:  $n = 0.12$*

*Bankfull:  $n = 0.07$*



Photo C15

*Weedy channel passing through a long grass floodplain. Irregular channel cross section with some meanders.*

*Bankfull:  $n = 0.08$  (assuming low velocity and shallow depth that will not flatten reeds)*

*Overbank:  $n = 0.03$  to  $0.10$*

*(depends on flow depth and velocity)*







Photo C16

*Irregular mountain creek with flexible understorey plants, few vines or woody shrubs.*

*Bankfull:  $n = 0.10$  to  $0.12$*



Photo C17

*Overbank vegetation at approximately 8 metre spacing with no shrubs.*

*Overbank:  $n = 0.05$*



Photo C18

*Overbank vegetation consists of tall truck trees, no low branches or shrubs. Tree spacing of approx. 8 metres.*

*Overbank:  $n = 0.05$*





Photo C19

*Irregular channel with meanders.*

*Channel:  $n = 0.04$  to  $0.05$  depending on channel irregularity and debris content.*

*Overbank area consists of single truck trees with no low branches or shrubs.*

*LHS (5 m spacing):  $n = 0.055$*

*RHS (6-7 m spacing):  $n = 0.05$*



Photo C20

*Trees at approx. 5 metre spacing, no low branches.*

*Overbank:  $n = 0.055$*



Photo C21

*Irregular natural channel and wetland system with many weeds.*

*Overbank:  $n = 0.06$*





## **Appendix B Reviewed Flood Studies**





Company Name	Description	Date	Type	Number	Reviewed	Parameters Copied
JWP	<i>Regional</i> - Extreme Flood Event Analysis Works - Technical Brief - Project Deliverable Requirements	Oct-06	Folder	Red FLOOD AAA01	Y	Y
Various	<i>Regional</i> - Cyclone Tracking Map		Pack	Red FLOOD AAA02	Y	N
JWP	<i>Regional</i> - Digital Data and Flood Mapping Comprehensive Report - Final Report	Dec-06	Folder	Red FLOOD AAA03	Y	N
JWP	<i>Regional</i> - Data Summary Report Q100 Flood Mapping - Draft Report	Oct-04	Folder	Red FLOOD AAA04	Y	N
JWP	<i>Regional</i> - Data Summary Report Q100 Flood Mapping - Final Report	May-05	Folder	Red FLOOD AAA05	Y	N
JWP	<i>Regional</i> - Prioritisation of Study Upgrades - Updated Report	Feb-05	Folder	Red FLOOD AAA06	N	N
JWP	<i>Regional</i> - Report on Mapping Anomalies and Outcomes of Comprehensive Review	Aug-06	Folder	Red FLOOD AAA07	N	N
JWP	<i>Regional</i> - Report on Mapping Anomalies and Outcomes of Comprehensive Review	Aug-06		Red FLOOD AAA07/1	N	N
JWP	<i>Regional</i> - Pine Rivers Digital Flood Data	Dec-06	Letter	Red FLOOD AAA08	N	N
Water Studies Pty Ltd	Morgan Road Flood Study - Albany Creek - <b>Superseded</b>	Aug-94	Folder	Red FLOOD ALB01	N	N
Water Studies Pty Ltd	Flood Study - Faheys Road West Albany Creek	Feb-95	Folder	Red FLOOD ALB02	Y	N
John Wilson & Partners	Albany Creek Hydrological Study	1991	Folder	Red FLOOD ALB03	Y	Y
John Wilson & Partners	Albany Creek Hydrological Study Upstream of Old Northern Road	Jun-96	Folder	Red FLOOD ALB04	Y	N
Scott & Furphy	Burpengary Creek Flood Study	May-90	Folder	Red FLOOD BUR01	N	N
Australian Water Engineering	Little Burpengary Creek Flood Study - Final Report	Feb-94	Folder	Red FLOOD BUR02	Y	Y
Australian Water Engineering	Little Burpengary Creek Flood Regulation Line Study	Mar-97	Folder	Red FLOOD BUR03	Y	Y
Brisbane Stormwater Management P/L	Flooding and Drainage Investigation Pitt Road to Bruce Highway Burpengary	Jun-06	Folder	Red FLOOD BUR04	N	N

Company Name	Description	Date	Type	Number	Reviewed	Parameters Copied
Brisbane Stormwater Management P/L	Burpengary Creek Tributaries	Sep-06	Memo & Letter	Red FLOOD BUR05	N	N
GHD Pty Ltd	Memo to Caboolture Shire Council	Dec-06	Memo	Red FLOOD CAB01	Y	Y
John Wilson & Partners	Conflagration Creek Hydrological Investigation - <b>Superseded</b>	Dec-93	Folder	Red FLOOD CON01	N	N
JWP	Conflagration Creek Flood Investigation Report - Draft	Feb-05	Folder	Red FLOOD CON02	Y	N
JWP	Conflagration & Coulthards Creek Extreme Events Flood Study - <b>CONFIDENTIAL</b>	Apr-07	Folder	Red FLOOD CON03	N	N
John Wilson & Partners	Coulthards Creek Hydrological Investigation - <b>Superseded</b>	Dec-93	Folder	Red FLOOD COU01	Y	Y
JWP	Coulthards Creek Flood Investigation Report - Draft	Feb-05	Folder	Red FLOOD COU02	Y	N
JWP	Coulthards Creek Flood Investigation Report - Final	Feb-05	Folder	Red FLOOD COU03	Y	N
Worley Parsons	Coulthards Creek & Unnamed Tributary 1 Analysis of Current Flood Mitigation Measures	Feb-08	Folder	Red FLOOD COU04	Y	N
Worley Parsons	Coulthards Creek & Unnamed Trib. 1 - Analysis of Current Flood Mitigation Measures - Final Report (Updated July 2008)	Apr-08	Folder	Red FLOOD COU05	Y	N
Worley Parsons	Coulthards Creek & Unnamed Tributary 1 - Analysis of Current Flood Mitigation Measures - Final Report	Jul-08	Folder	Red FLOOD COU06	Y	Y
Worley Parsons	Coulthards Creek & Unnamed Tributary 1 - Analysis of Additional Flood Mitigation Measures - Draft Report	Jul-08	Folder	Red FLOOD COU07	Y	N
JWP	Cabbage Tree Creek Extreme Events Flood Study - <b>CONFIDENTIAL</b>	Apr-07	Folder	Red FLOOD CTC01	N	N
John Wilson & Partners	Four Mile Creek Hydrological Study	Dec-91	Folder	Red FLOOD FMC01	Y	N

Company Name	Description	Date	Type	Number	Reviewed	Parameters Copied
JWP	Four Mile Creek Flood Mitigation to Sovereign Avenue/Irula Street Area	Jul-03	Folder	Red FLOOD FMC02	Y	Y
Cardno Lawson Treloar	Four Mile Creek - Design and Extreme Flood Mapping - <b>CONFIDENTIAL</b>	Jun-07	Folder	Red FLOOD FMC03	N	N
JWP	<i>Four Mile Creek</i> - Wirraway Street Catchment Flood Study	Mar-07	Folder	Red FLOOD FMC04	Y	N
Cardno Lawson Treloar	Four Mile Creek Flood Mitigation to Sovereign Avenue Area	Dec-07	Folder	Red FLOOD FMC05	Y	N
Cardno Lawson Treloar	Four Mile Creek - Design Events Flood Study (including mitigation options) - Draft	Jun-08	Folder	Red FLOOD FMC06	N	N
Cardno Lawson Treloar	Four Mile Creek - Design and Extreme Flood Mapping - <b>CONFIDENTIAL</b>	Aug-07	Folder	Red FLOOD FMC07	N	N
John Wilson & Partners	Kallangur Waterways Study - Freshwater Creek Bruce Highway to Hays Inlet - <b>Superseded</b>	May-96	Folder	Red FLOOD FWC01	Y	N
John Wilson & Partners	Kallangur Waterways Study - Freshwater Creek South - <b>Superseded</b>	May-96	Folder	Red FLOOD FWC02	Y	N
John Wilson & Partners	Kallangur Waterways Study - Freshwater Creek Upstream of the Bruce Highway and Freshwater Creek North - <b>Superseded</b>	May-96	Folder	Red FLOOD FWC03	Y	N
JWP	Kallangur Waterways Study Freshwater Creek South - <b>Superseded</b>	Apr-99	Folder	Red FLOOD FWC04	N	N
JWP	Freshwater Creek Flood Investigation Report	Jun-05	Folder	Red FLOOD FWC05	Y	Y
JWP	Freshwater Creek Flood Mitigation Study	Oct-07	Folder	Red FLOOD FWC06	Y	Y
JWP	Freshwater Creek Extreme Events Flood Study - <b>CONFIDENTIAL</b>	Apr-07	Folder	Red FLOOD FWC07	N	N
Water Studies Pty Ltd	<i>Griffin Area</i> - Flood Investigations Brays Road Estate	Aug-94	Folder	Red FLOOD GRI01	Y	N
John Wilson & Partners	Henry Road, Griffin Flood Immunity Improvements	Mar-96	Folder	Red FLOOD GRI02	Y	N
JWP	Griffin Area Regional Flood Study - Final Report - <b>Superseded</b>	Oct-04	Folder	Red FLOOD GRI03	N	N

Company Name	Description	Date	Type	Number	Reviewed	Parameters Copied
JWP	Griffin Area Regional Flood Study - Final Report	Oct-05	Folder	Red FLOOD GRI04	Y	Y
JWP	Griffin Area Extreme Events Flood Study - <b>CONFIDENTIAL</b>	May-07	Folder	Red FLOOD GRI05	N	N
	Kedron Brook - Sections		Drawings	Red FLOOD KED01	N	N
Cardno Lawson Treloar	Kedron Brook - Flood Assessment and Design and Extreme Flood Mapping - <b>CONFIDENTIAL</b>	Feb-08	Folder	Red FLOOD KED02	N	N
Connell Wagner	Kedron Brook Flood Study - Final Report	Nov-95	Folder	Red FLOOD KED03	N	N
Cardno Lawson Treloar	Kedron Brook - Design Events Flood Study - Draft	Jun-08	Folder	Red FLOOD KED04	Y	N
Cardno Lawson Treloar	Kedron Brook - Flood Assessment and Design and Extreme Flood Mapping - <b>CONFIDENTIAL</b> (see KED02 also)	Dec-07	Folder	Red FLOOD KED05	N	N
Fisher Stewart Pty Ltd	<i>Kingfisher Creek</i> - Letter to Council re Bunya Forest Estate - Flood Study	Apr-95	Letter	Red FLOOD KFC01	Y	N
John Wilson & Partners	<i>Kingfisher Creek</i> - Hydrological Study Lot 13 on RP 91170	Nov-97	Folder	Red FLOOD KFC02	Y	N
Lyndsay Smith Engineering	<i>Kingfisher Creek</i> - Bunya Forest Estate at Lancewood Drive, Albany Creek - Hydraulic Study Q100 Flow	May-99	Folder	Red FLOOD KFC03	Y	N
JWP	Letter to Council re North Pine River Backwater Sensitivity Analysis	Sep-04	Letter	Red FLOOD NPR01	Y	N
Water Studies Pty Ltd	North Pine River Flood Study for the Lodge EIS Castle Hill Estate	Jun-95	Folder	Red FLOOD NPR02	Y	N
JWP	North Pine River Hydrology - Final Report	May-05	Folder	Red FLOOD NPR03	Y	N
JWP	Lawnton Dam Project - Detailed Hydraulic Analysis	Oct-05	Folder	Red FLOOD NPR04	N	N
State Government	Manual of Operational Procedures for Flood Releases from North Pine Dam - <b>Superseded</b>	Sep-92	Folder	Red FLOOD NPR05	N	N

Company Name	Description	Date	Type	Number	Reviewed	Parameters Copied
Urban Engineering and Consulting Pty Ltd/Water Studies Pty Ltd	One Mile Creek Flood Study, Cashmere - Community Consultation Surveys	Apr-95	Folder	Red FLOOD OMC01	Y	N
Cardno Lawson Treloar	One Mile Creek - Design Events Flood Study - Draft	Jun-08	Folder	Red FLOOD OMC02	N	N
Cardno Lawson Treloar	One Mile Creek - Flood Assessment and Design and Extreme Flood Mapping - <b>CONFIDENTIAL</b>	May-07	Folder	Red FLOOD OMC03	N	N
Cardno Lawson Treloar	One Mile Creek - Flood Assessment and Design and Extreme Flood Mapping - <b>CONFIDENTIAL</b>	Aug-07	Folder	Red FLOOD OMC04	Y	Y
JWP	Pine River/Hays Inlet Storm Surge Study - Draft Report	Oct-04	Folder	Red FLOOD PIN01	Y	N
JWP	Pine River/Hays Inlet Storm Surge Study - Final Report	Dec-04	Folder	Red FLOOD PIN02	Y	N
JWP	North Pine & <i>Pine River</i> Estuary Flood Study Invitation Document and North Pine & <i>Pine River</i> Estuary Hydraulic Study	Jun-05 May-06	Folder	Red FLOOD PIN03	Y	N
JWP	North Pine and <i>Pine River</i> Estuary Flood Study - Proposal for Consultancy Services	Jul-05	Folder	Red FLOOD PIN04	Y	N
Kellogg Brown & Root P/L	North Pine & <i>Pine River</i> Estuary Flood Study - Proposal for Consultancy Services	Jul-05	Folder	Red FLOOD PIN05	Y	N
Patterson Britton & Partners P/L	North Pine & <i>Pine River</i> Estuary Flood Study - Study Proposal	Jul-05	Folder	Red FLOOD PIN06	Y	N
JWP	North Pine & <i>Pine River</i> Estuary Hydraulic Study - Report on Model Calibration	Jan-06	Folder	Red FLOOD PIN07	Y	N
JWP	North Pine & <i>Pine River</i> Estuary Hydraulic Study - Draft Report	May-06	Folder	Red FLOOD PIN08	Y	N
JWP	North Pine & <i>Pine River</i> Flood Study - Final Draft Report Volume 1 - Report	May-07	Folder	Red FLOOD PIN09	Y	Y

Company Name	Description	Date	Type	Number	Reviewed	Parameters Copied
JWP	North Pine & <i>Pine River</i> Estuary Hydraulic Study - Final Report Volume 2 - 1 in 100 Year ARI Flood Extent Maps	Apr-06	A3 Folder	Red FLOOD PIN10	N	N
JWP	North Pine & <i>Pine River</i> Estuary Hydraulic Study - Final Draft Report Volume 2 - 1 in 100 Year ARI Flood Extent Maps	May-07	A3 Folder	Red FLOOD PIN11	N	N
Worley Parsons	Consolidate and Transition Flood Data in the Pine River Catchment Technical Document Limit of Confidence	Nov-07	Folder	Red FLOOD PIN12	N	N
JWP	North Pine and <i>Pine River</i> Estuary Hydraulic Study - Extreme Event Analysis - <b>CONFIDENTIAL</b>	Apr-07	Folder	Red FLOOD PIN13	N	N
South East Queensland Water Board & Qld Govt Natural Resources	Brisbane River and Pine River Flood Study: Report No 4a - Pine River Flood Hydrology Report Volume I - Runoff-Routing Model Calibration	Aug-91	Folder	Red FLOOD PIN14	Y	N
South East Queensland Water Board & Qld Govt Natural Resources	Brisbane River and Pine River Flood Study: Report No 4b - Pine River Flood Hydrology Report Volume II - Design Flood Estimation	Aug-91	Folder	Red FLOOD PIN15	Y	N
South East Queensland Water Board & Qld Govt Natural Resources	Brisbane River and Pine River Flood Study: Report No 4c - Pine River Flood Hydrology Report Volume III	Aug-91	Folder	Red FLOOD PIN16	Y	N
South East Queensland Water Board & Qld Govt Natural Resources	Brisbane River and Pine River Flood Study: Report No 5 - North Pine Dam Flood Frequency Report - Post Dam Flood Frequency Analysis	Dec-91	Folder	Red FLOOD PIN17	Y	N
South East Queensland Water Board & Qld Govt Natural Resources	Brisbane River and Pine River Flood Study: Report No 9a - Pine River System Hydraulic Model Report Volume I - Model Calibration	Apr-93	Folder	Red FLOOD PIN18	Y	N

Company Name	Description	Date	Type	Number	Reviewed	Parameters Copied
South East Queensland Water Board & Qld Govt Natural Resources	Brisbane River and Pine River Flood Study: Report No 9b - Pine River System Hydraulic Model Report Volume II - Pine River Cross-Sectional Data	Apr-93	Folder	Red FLOOD PIN19	Y	N
South East Queensland Water Board & Qld Govt Natural Resources	Brisbane River and Pine River Flood Study: Report No 9c - Pine River System Hydraulic Model Report Volume III	Apr-93	Folder	Red FLOOD PIN20	Y	N
South East Queensland Water Board & Qld Govt Natural Resources	Brisbane River and Pine River Flood Study: Report No 11a - Pine River System Hydraulic Model Report Volume I - North Pine Dam Dambreak Analysis	Jun-93	Folder	Red FLOOD PIN21	Y	N
South East Queensland Water Board & Qld Govt Natural Resources	Brisbane River and Pine River Flood Study: Report No 11b - Pine River System Hydraulic Model Report Volume II - Flood Height Profiles and Flood Inundation	Jun-93	Folder	Red FLOOD PIN22	Y	N
South East Queensland Water Board & Qld Govt Natural Resources	Brisbane River and Pine River Flood Study: Report No 11c - Pine River System Hydraulic Model Report Volume III	Jun-93	Folder	Red FLOOD PIN23	Y	N
South East Queensland Water Board & Qld Govt Natural Resources	Brisbane River and Pine River Flood Study - Executive Summary Report	Dec-94	Folder	Red FLOOD PIN24	Y	N
Pine Rivers Shire Council	Extreme Flood Event Modelling - Pine River and Hays Inlet Catchment Final Claim Project ID: 247 - <b>CONFIDENTIAL</b>	Mar-08	Letter	Red FLOOD PIN25	N	N
John Wilson & Partners	Sandy Creek Hydrological Investigation - <b>Superseded</b>	Mar-94	Folder	Red FLOOD SAN01	Y	N
John Wilson & Partners	<i>Sandy Creek</i> - Hydrological Investigation for Proposed Woolworths Shopping Centre Albany Creek	Mar-96	Folder	Red FLOOD SAN02	Y	N
John Wilson & Partners	<i>Sandy Creek</i> - Greenview Park Drain Hydrological Investigation	Jun-98	Folder	Red FLOOD SAN03	Y	N

Company Name	Description	Date	Type	Number	Reviewed	Parameters Copied
JWP	Sandy Creek Flood Mitigation Study	Sep-00	Folder	Red FLOOD SAN04	Y	N
ETS Engineers	<i>South Pine River</i> - Hillbrook Residential Estate Flood Investigation Report	Feb-95	Folder	Red FLOOD SPR01	N	N
Connell Wagner	<i>South Pine River</i> - South Pine Retirement Village Hydraulic Assessment	Nov-96	Folder	Red FLOOD SPR02	Y	N
Water Studies Pty Ltd	<i>South Pine River</i> - Flood Study for Proposed Residential Development Birmingham Street, Eatons Hill	Sep-02	Folder	Red FLOOD SPR03	Y	N
JWP	<i>South Pine River</i> - Un-named Tributaries Flood Investigation Report	Dec-05	Folder	Red FLOOD SPR04	Y	N
Ian Edmiston & Associates	<i>South Pine River</i> - CSIRO Land Flood Study Report	Jan-01	Letter	Red FLOOD SPR05	Y	N
Sinclair Knight & Partners	Flood Study of South Pine River at Samford Downs Estate	Nov-90	Folder	Red FLOOD SPR06	Y	N
Australian Water Engineering	Flood Study of South Pine River - Lot 3 RP 98254	Apr-93	Folder	Red FLOOD SPR07	Y	N
Sinclair Knight & Partners	Flood Study of South Pine River at Samford Downs Estate - Supplementary Report	Jun-93	Folder	Red FLOOD SPR08	Y	N
WBM Oceanics Australia	<i>South Pine River</i> - Linkfield Connection Road Hydraulic Analysis - Draft Final Report	Apr-05	Folder	Red FLOOD SPR09	Y	Y
JWP	South Pine River Hydrologic and Hydraulic Modelling - Draft Report	Sep-07	Folder	Red FLOOD SPR10	Y	Y
JWP	South Pine River Catchment Extreme Events Flood Study - <b>CONFIDENTIAL</b>	Apr-07	Folder	Red FLOOD SPR11	N	N
Cameron McNamara	Saltwater Creek Hydrology Study	1987	Folder	Red FLOOD SWC01	Y	Y
JWP	Saltwater Creek Hydrologic and Hydraulic Study - Draft Report	Dec-06	Folder	Red FLOOD SWC02	Y	Y
JWP	Saltwater Creek Flood Mitigation Study	Nov-07	Folder	Red FLOOD SWC03	Y	Y
JWP	Saltwater Creek Hydrologic and Hydraulic Study - Extreme Event Analysis - Draft Report - <b>CONFIDENTIAL</b>	Jan-07	Folder	Red FLOOD SWC04	N	N



Company Name	Description	Date	Type	Number	Reviewed	Parameters Copied
JWP	Saltwater Creek Hydrologic and Hydraulic Study - Extreme Event Analysis - <b>CONFIDENTIAL</b>	Apr-07	Folder	Red FLOOD SWC05	N	N
John Wilson & Partners	<i>Terrors Creek</i> - Williams Street Dayboro Flood Mitigation Strategy	Dec-89	Folder	Red FLOOD TER01	N	N
John Wilson & Partners	Terrors Creek Hydrological Study	Aug-89	Folder	Red FLOOD TER02	N	N
JWP	Terrors Creek Dayboro Flood Study - Final Report	Dec-04	Folder	Red FLOOD TER03	Y	Y
JWP	Terrors Creek Dayboro Flood Study Extreme Flood Event Analysis - Final - <b>CONFIDENTIAL</b>	Dec-04	Folder	Red FLOOD TER04	Y	N
WRM Water & Environment	Terrors Creek Flood Mitigation Project - Proposal for Consultancy Services (see TER06 for final report)	Nov-06	Folder	Red FLOOD TER05	Y	N
Australian Govt Transport & Regional Services and Queensland Govt Emergency Services	Terrors Creek Flood Mitigation Project - Final Report	Feb-08	Folder	Red FLOOD TER06	N	N
JWP	Terrors Creek Flood Mitigation Project - Proposal for Consultancy	Nov-06	Folder	Red FLOOD TER07	Y	N
Pine Rivers Shire Council	Terrors Creek Flood Mitigation Project - Project ID 248	Mar-08	Letter	Red FLOOD TER08	N	N
JWP	Terrors Creek Dayboro Flood Study Extreme Flood Event Analysis - <b>CONFIDENTIAL</b>	Apr-07	Folder	Red FLOOD TER09	N	N
John Wilson & Partners	Todds Gully Hydrological Investigation - <b>Superseded</b>	May-93	Folder	Red FLOOD TOD01	Y	N
John Wilson & Partners	Todds Gully Hydrological Investigation - <b>Superseded</b>	Nov-00	Folder	Red FLOOD TOD02	Y	N
Cardno Lawson Treloar	Todds Gully Hydrologic and Hydraulic Study	Feb-05	Folder	Red FLOOD TOD03	Y	N

Company Name	Description	Date	Type	Number	Reviewed	Parameters Copied
Cardno Lawson Treloar	Todds Gully Design Events Flood Study - Draft	Jun-08	Folder	Red FLOOD TOD04	Y	Y
Cardno Lawson Treloar	Todds Gully Hydrologic and Hydraulic Study - Draft	Nov-04	Folder	Red FLOOD TOD05	Y	Y
Cardno Lawson Treloar	Todds Gully Design and Extreme Flood Mapping - <b>CONFIDENTIAL</b>	Aug-07	Folder	Red FLOOD TOD06	N	N
John Wilson & Partners	Yebri Creek Hydrological Investigation - <b>Superseded</b>	Apr-94	Folder	Red FLOOD YEB01	Y	N
John Wilson & Partners	Yebri Creek Hydrological Investigation - East Branch Mac's Lane to Leis Road	Dec-95	Folder	Red FLOOD YEB02	Y	N
JWP	Yebri Creek Flood Investigation Report - Draft Report	Feb-05	Folder	Red FLOOD YEB03	Y	Y
JWP	Yebri Creek Flood Mitigation Study	Aug-07	Folder	Red FLOOD YEB04	N	N
JWP	Yebri Creek Flood Mitigation Study	Oct-07	Folder	Red FLOOD YEB05	Y	Y
JWP	Yebri Creek Flood Mitigation	Oct-07		Red FLOOD YEB05/1	N	N
JWP	Yebri Creek Extreme Events Flood Study - <b>CONFIDENTIAL</b>	Apr-07	Folder	Red FLOOD YEB06	N	N
Cardno Lawson Treloar	Todds Gully Flood Study (Incorporating Flood Mitigation Assessment)	Jun-09	Folder	No Number	Y	Y
Cardno Lawson Treloar	Kedron Brook Flood Study - Final Report	Jun-09	Folder	Red FLOOD08	Y	Y
Worley Parsons	Lower Pine Flood Study	Jun-09	Folder	Red FLOOD PIN26	Y	Y
Australian Water Engineering	Six Mile Creek Flood Study		Folder	Red FLOOD SMC01	Y	N
Australian Water Engineering	Warrarba Creek Flood Study	Dec-99	Folder	Red Flood WAR02 & WAR01	Y	N
Worley Parsons	Upper South Pine Flood Study	May-09	Folder	Red FLOOD SPR16	Y	Y
Patterson Britton & Partners P/L	Review of Alert Flood Warning System for Caboolture River and Burpengary Creek	Dec-04	Folder	Red FLOOD CAB03	Y	N
Cardno Lawson Treloar	Four Mile Creek Flood Study	Jun-09	Folder	No Number	Y	Y
Australian Water Engineering	Gympie Creek Flood Study	Jul-09	Folder	Red FLOOD GYM01	Y	N
Cardno Lawson Treloar	One Mile Creek Flood Study	Jun-09	Folder	Red FLOOD OMC05	Y	Y

Company Name	Description	Date	Type	Number	Reviewed	Parameters Copied
Cardno Lawson Treloar	BMD/Boral North Pine Lakes Lawton	Jan-06	Folder	Red FLOOD NPR06	Y	N
Sargent Consulting	Review of Flood Study for Sheep Station Creek	Mar-05	Folder	Red FLOOD SSC02	Y	Y
Australian Water Engineering	Sheep Station Creek Flood Study	Oct-99	Folder	Red FLOOD SSC01	Y	N
CMBK	Mango Hill Development Proposal	Dec-03	Folder	Red FLOOD SWC08	Y	N
Sargent Consulting	Stanley River Flood Study	Mar-05	Folder	Red FLOOD STA01	Y	Y
JWP	South Pine River Catchment Plan	Mar-03	Folder	No Number	Y	N





## **Appendix C   Photos from Catchment Inspection**





■ Location 1 – Type B



■ Location 1 – Type B





■ Location 1 – Type B



■ Figure Location 1 – Type B





■ Location 1



■ Location 1 – Type B





■ Location 1 – Type B



■ Location 1 – Type B





■ Location 1 – Type B



■ Location 1





■ Location 1 – Type C



■ Location 1 – Type D





■ Location 1 – Type A



■ Location 2 – Type A





■ Location 2 – Type E



■ Location 2 – Type C





■ Location 2 – Type C



■ Location 3 – Type I





■ Location 3 – Type I



■ Location 3 – Type I





■ Location 3 – Type I



■ Location 3 – Type I





■ Location 3 – Type G



■ Location 3 – Type G





■ Location 3 – Type G



■ Location 3 – Type G





■ Location 3 – Type C



■ Location 3 – Type I





■ Location 3 – Type I



■ Location 3 – Type I





■ Location 3 – Type I



■ Location 3 – Type I





■ Location 3 – Type C



■ Location 3 – Type C





■ Location 3 – Type C and Type G



■ Location 3 – Type C and Type G





■ Location 3 – Type F



■ Location 3 – Type F





■ Location 3 – Type F



■ Location 3 – Type G





■ Location 3 – Type G



■ Location 3 – Type H





■ Location 3 – Type H



■ Location 3 – Type I and Type C





■ Location 3 – Type H



■ Location 4 – Type c





■ Location 5 – Type J



■ Location 5 – Type J





■ Location 5 – Type J



■ Location 6 – Type K





■ Location 6 – Type K



■ Location 6 – Type K





■ Location 6 – Type K



■ Location 6 – Type K





■ Location 6 – Type K



■ Location 6 – Bridge Piers



■ Location 6 – Bridge Piers





■ Location 6 – Bridge Piers



■ Location 6 – Bridge Piers





■ Location 6 – Bridge Piers



■ Location 6 – Type L





■ Location 6 – Bridge Piers



■ Location 6 – Type L



■ Location 6 – Type L





■ Location 6 – Type L



■ Location 6 – Type L





■ Location 6 – Type L





■ Location 6 – Type L



■ Location 6 – Type L