APPENDIX E

SUMMARY OF HABITAT DATA FOR MCARTHUR RIVER EXISTING CHANNEL

SITE NO.	B1	B2	M1	M2	M3	M4
General Site Conditions						
River Name	Barney Ck	Barney Ck	McArthur River	McArthur River	McArthur River	McArthur River
Date	6-May-06	6-May-06	7-May-06	7-May-06	7-May-06	7-May-06
Time	1400	1510	0855	1040	1200	1325
UTM Map Co-ordinates (WGS 84)	53 K 617366 8183653	53 K 617656 8183374	53 K 616778 8181595	53 K 617235 8182092	53 K 617624 8182439	53 K 617773 8182816
Valley shape	Shallow valley	Steep valley	Steep valley	Steep valley	Steep valley	Steep valley
Local impacts and land use	Road/grazing	Grazing	Grazing	Grazing	Grazing	Grazing
Floodplain features	None	None	None	None	None	None
Weather	Fine, sunny	Fine, sunny	Fine, sunny	Fine, sunny	Fine, sunny	Fine, sunny
Rain In last week Y/N	Y	Y	Y	Y	N	N
Water Quality						
Temperature	25.7	26.3	21.8	24.1	24.6	24.2
Conductivity (µS)	326	261	454	454	454	483
Dissolved Oxygen (Mg/l))	5.73	5.55	6.80	6.15	6.20	6.20
pH	7.19	7.51	8.05	8.08	8.10	8.29
Sediment oils	absent	absent	absent	absent	absent	absent
Water oils	none	none	none	none	none	none
Sediment odours	normal/none	normal/none	normal/none	normal/none	normal/none	normal/none
Water odours	normal/none	normal/none	normal/none	normal/none	normal/none	normal/none
Turbidity (visual assessement)	Turbid/Suspended material	Turbid/Suspended material	Slight/Suspendid material	Slight/Suspendid material	Turbid/Suspended material	Turbid/Suspended material
Riparian zone vegetation						
Trees (>10m in height) % cover	10	15	50	50	60	50
Trees (<10m in height) % cover	20	10	40	60	40	60
Shrubs % cover	<5	<5	0	0	0	0
Grasses/ferns/sedges % cover	<5	<5	0	0	0	0
Dominant species - riparian	*Casuarina*	*Casuarina*	*Barringtonia* *Melaleuca*	*Barringtonia* *Melaleuca*	*Barringtonia* *Melaleuca*	*Barringtonia* *Melaleuca*
Other species - riparian				*Pandanus* *Casuarina*	*Pandanus* *Casuarina* *Syzigium*	*Nauclea*
Dominant species - upper banks	*Casuarina*	*Casuarina*	*Casuarina*	*Casuarina* *Melaleuca*	*Casuarina* *Melaleuca* *Eucalyptus*	*Casuarina* *Melaleuca*
Longitudinal extent - left bank	Semi-continuous	Occasional clumps	Semi-continuous	Continuous	Continuous	Continuous

APPENDIX E
SUMMARY OF HABITAT DATA FOR MCARTHUR RIVER EXISTING CHANNEL

SITE NO.	B1	B2	M1	M2	M3	M4
Longitudinal extent - right bank	Semi-continuous	Occasional clumps	Semi-continuous	Continuous	Continuous	Continuous
Shading of channel (%)	26-50	26-50	26-50	51-75	51-75	26-50
Extent of trailing bank vegetation	Nil	Nil	Moderate	Moderate	Extensive	Slight
% Native riparian vegetation	60	70	100	100	100	90
% Exotic riparian vegetation	40	30	0	0	0	10
Overall vegetation disturbance rating	Low disturbance	Low disturbance	Low disturbance	Low disturbance	Low Disturbance	Low disturbance
Channel form						
Physical barriers and height to local fish passage	Partly restricted passage	Partly restricted passage	Good passage	Good passage	Good passage	Unrestricted passage
Types of bars	Side/point bars unvegetated; mid-channel bars vegetated; braided channel	Side/point bars unvegetated; mid-channel bars vegetated; braided channel	Side/point bars vegetated; high flow deposits	Side/point bars vegetated; mid channel bars vegetated; bars around obstructions	Side point bars vegetated	Bars absent
Extent of Bars (%)	50	50	5	5	5	0
Dominant sediment particle size on bars	Boulder/cobble, pebble, gravel	Boulder/cobble, pebble, gravel	Sand	Boulder/cobble, Pebble, Gravel, sand	Sand	
Channel modifications	None	None	None	None	None	None
Channel shape	Flat U shape	Deepened U shape	Multi stage	Multi stage	Multi stage	Two stage
Bank shape - left	Concave	Concave	Stepped	Stepped	Stepped	Stepped
Bank shape - right	Concave	Concave	Stepped	Stepped	Stepped	Stepped
Bank slope - left	Steep 60-80°	Steep 60-80°	Moderate 30-60°	Moderate 30-60°	Steep 60-80°	Moderate 30-60°
Bank slope - right	Steep 60-80°	Steep 60-80°	Moderate 30-60°	Moderate 30-60°	Moderate 30-60°	Steep 60-80°
Water level at time of sampling	High	High	High	High	High	High
Artifical features	none	Ford	none	none	none	none
Bedform features						
Riffle (%)	50	50				
Glide (%)	50	50				
Run (%)			100	100	100	100
Bed compaction	Moderate compaction	Low compaction	Low compaction	Low compaction	Low compaction	Low compaction
Sediment matrix	Matrix filled contact framework	Matrix filled contact framework	Matrix dominated	Matrix dominated	Matrix dominated	Matrix dominated

APPENDIX E
SUMMARY OF HABITAT DATA FOR MCARTHUR RIVER EXISTING CHANNEL

SITE NO.	**B1**	**B2**	**M1**	**M2**	**M3**	**M4**
Sediment angularity	Sub-angular	Sub-angular	Cobble, pebble & gravel fractions not present	Rounded	Cobble, pebble & gravel fractions not present	Cobble, pebble & gravel fractions not present
Bed stability rating	Bed stable	Bed stable	Moderate deposition	Moderate deposition	Moderate deposition	Moderate deposition
Channel cross-section features (average of 3)						
Type of bedform	Run	Run	Run	Run	Run	Run
Stream width at water surface (m)	12	13	24	15 (+10)	20	25
Bank width - left (m)	10	15	45	30	22	20
Bank width - right (m)	10	20	45	35	20	20
Bankfull channel width (m)	32	48	40	110	62	65
Bank height (m)	6	6	8	15	10	15
Riparian zone - left (m)	20	25	40	50	40	60
Riparian zone - right (m)	20	20	40	50	50	50
Bank material - bedrock (%)		5		0	0	0
Bank material - boulders >256 mm (%)		5	5	0	0	0
Bank material - cobble 64-256 mm (%)				0	0	0
Bank material - pebble 16-64 mm (%)				0	0	0
Bank material - gravel 2-16 mm (%)	10	5	5	0	0	0
Bank material - sand 0.06-2 mm (%)	10	10	30	50	80	80
Bank material - fines <0.06 mm (%)	80	75	60	50	20	20
Substrate - bedrock (%)	10	15	0	0	0	0
Substrate - boulders >256 mm (%)	10	15	5	0	0	0
Substrate - cobble 64-256 mm (%)			0	0	0	0
Substrate - pebble 16-64 mm (%)	30	20	0	0	0	0
Substrate - gravel 2-16 mm (%)	20	15	10	0	0	0
Substrate - sand 0.06-2 mm (%)		15	60	40	50	50
Substrate - fines <0.06 mm (%)	30	20	15	60	50	50

APPENDIX E

SUMMARY OF HABITAT DATA FOR MCARTHUR RIVER EXISTING CHANNEL

SITE NO.	B1	B2	M1	M2	M3	M4
USEPA Habitat Assessment (Score 0-20)						
Epifaunal substrate/availiable cover	13	13	9	10	5	7
Pool substrate characterization	8	13	10	10	5	7
Pool variability	4	6	5	1	2	4
Sediment deposition	11	13	10	10	8	10
Channel flow status	10	8	8	8	13	7
Channel alteration	18	8	19	19	16	16
Channel sinuosity	10	8	4	4	5	5
Bank Stability (left)	6	7	4	4	7	5
Bank stability (right)	6	7	4	4	7	5
Vegetative protection - left	4	5	5	5	7	6
Vegetative protection - right	4	5	5	5	7	6
Riparian zone - left	7	7	9	9	9	10
Riparian zone - right	6	7	9	9	9	10
TOTAL SCORE (% of max 260)	41	41	39	38	38	38
Instream habitats						
Large Woody Debris pieces >10cm in diameter	12	15	35	38	30	20
LWD >30 cm dia	4	4	10	10	8	5
Undercut banks (%)	0	0	0	0	30	20
Instream trees >40 cm DBH	2	0	6	0	10	6
Trees with root masses	1	0	2	0	1	1
Instream boulders (%)	20	30	0	10	0	0
Macrophytes - overall cover (%)	0	0	0	0	0	0
Maximum water depth (m)	1	1	1-2	1-2	1-2	1-2

APPENDIX E

SUMMARY OF HABITAT DATA FOR MCARTHUR RIVER EXISTING CHANNEL

SITE NO.	M5	M6	M7	M8	M9	M10
General Site Conditions						
River Name	McArthur River	McArthur River	McArthur River	McArthur River	McArthur River	McArthur River
Date	8-May-06	8-May-06	8-May-06	8-May-06	9-May-06	9-May-06
Time	1310	1120	1015	0850	0910	1015
UTM Map Co-ordinates (WGS 84)	53 K 618149 8183291	53 K 618669 8183442	53 K 619081 8183859	53 K 619353 8183802	53 K 619789 8183748	53 K 620231 8183883
Valley shape	Steep valley	Steep valley	Steep valley	Steep valley	Steep valley	Steep valley
Local impacts and land use	Grazing	Grazing	Grazing	Grazing	Grazing	Grazing
Floodplain features	None	None	None	None	None	None
Weather	Fine, sunny	Fine, sunny	Fine, sunny	Fine, sunny	Fine, sunny	Fine, sunny
Rain In last week Y/N	N	N	N	N	N	N
Water Quality						
Temperature	23.7	22.8	22.1	21.5	20.9	21.6
Conductivity (µS)	468	472	474	473	479	490
Dissolved Oxygen (Mg/l))	6.73	6.52	6.72	6.94	7.78	6.29
pH	7.72	8.18	8.35	8.10	8.35	8.31
Sediment oils	absent	absent	absent	absent	absent	absent
Water oils	none	none	none	none	none	none
Sediment odours	normal/none	normal/none	normal/none	normal/none	normal/none	normal/none
Water odours	normal/none	normal/none	normal/none	normal/none	normal/none	normal/none
Turbidity (visual assessement)	Turbid/Suspended material	Turbid/Suspended material	Turbid/Suspended material	Turbid/Suspended material	Turbid/Suspended material	Turbid/Suspended material
Riparian zone vegetation						
Trees (>10m in height) % cover	50	50	50	50	50	50
Trees (<10m in height) % cover	60	65	60	70	60	60
Shrubs % cover	0	0	0	0	0	0
Grasses/ferns/sedges % cover	5	0	0	0	0	0
Dominant species - riparian	*Barringtonia* *Melaleuca*	*Barringtonia* *Melaleuca*	*Barringtonia* *Melaleuca*	*Barringtonia* *Melaleuca*	*Barringtonia* *Melaleuca*	*Barringtonia* *Melaleuca*
Other species - riparian	*Casuarina* *Syzigium* *Nauclea*	*Casuarina* *Syzigium*	*Casuarina* *Syzigium*		*Casuarina* *Nauclea*	
Dominant species - upper banks	*Casuarina* *Melaleuca* *Nauclea*	*Casuarina* *Melaleuca*	*Casuarina* *Melaleuca*	*Casuarina* *Melaleuca*	*Casuarina*	*Casuarina*
Longitudinal extent - left bank	Semi-continuous	Semi-continuous	Continuous	Continuous	Semi-continuous	Occasional clumps

APPENDIX E
SUMMARY OF HABITAT DATA FOR MCARTHUR RIVER EXISTING CHANNEL

SITE NO.	M5	M6	M7	M8	M9	M10
Longitudinal extent - right bank	Semi-continuous	Semi-continuous	Continuous	Continuous	Semi-continuous	Occasional clumps
Shading of channel (%)	26-50	26-50	51-75	51-75	51-75	26-50
Extent of trailing bank vegetation	Nil	Nil	Nil	Nil	Nil	Nil
% Native riparian vegetation	100	100	90	100	100	100
% Exotic riparian vegetation	0	0	10	0	0	0
Overall vegetation disturbance rating	Low disturbance	Low disturbance	Very low disturbance	Very low disturbance		Very low disturbance
Channel form						
Physical barriers and height to local fish passage	Unrestricted passage	Unrestricted passage	Unrestricted passage	unrestricted passage	Unrestricted passage	Unrestricted passage
Types of bars	Bars absent	Bars absent	Side/point bars vegetated	Bars absent	Bars absent	Bars absent
Extent of Bars (%)	0	0	5	0	0	0
Dominant sediment particle size on bars			Sand			
Channel modifications	None	None	None	None	None	None
Channel shape	Deepened U shape	Deepened U shape	Deepened U shape	Deepened U shape	Two stage	Multi stage
Bank shape - left	Concave	Concave	Stepped	Stepped	Stepped	Stepped
Bank shape - right	Concave	Concave	Concave	Stepped	Stepped	Stepped
Bank slope - left	Steep 60-80°	Steep 60-80°	Moderate 30-60°	Moderate 30-60°	Steep 60-80°	Steep 60-80°
Bank slope - right	Steep 60-80°	Steep 60-80°	Steep 60-80°	Moderate 30-60°		Moderate 30-60°
Water level at time of sampling	High	High	High	High	High	High
Artifical features	none	none	none	none	none	none
Bedform features						
Riffle (%)						
Glide (%)						
Run (%)	100	100	100	100	100	100
Bed compaction	Low compaction	Low compaction	Low compaction	Low compaction	Low compaction	Low compaction
Sediment matrix	Matrix filled contact framework	Matrix filled contact framework	Matrix filled contact framework	Matrix filled contact framework	Matrix filled contact framework	Matrix filled contact framework

APPENDIX E
SUMMARY OF HABITAT DATA FOR MCARTHUR RIVER EXISTING CHANNEL

SITE NO.	**M5**	**M6**	**M7**	**M8**	**M9**	**M10**
Sediment angularity	Cobble, pebble & gravel fractions not present	Cobble, pebble & gravel fractions not present	Cobble, pebble & gravel fractions not present	Cobble, pebble & gravel fractions not present	Cobble, pebble & gravel fractions not present	Cobble, pebble & gravel fractions not present
Bed stability rating	Moderate deposition	Moderate deposition	Moderate deposition	Moderate deposition	Moderate deposition	Moderate deposition
Channel cross-section features (average of 3)						
Type of bedform	Run	Run	Run	Run	Run	Run
Stream width at water surface (m)	22	22	18	16	25	19
Bank width - left (m)	28	18	15	17	25	15
Bank width - right (m)	25	18	25	17	24	15
Bankfull channel width (m)	75	58	58	50	74	50
Bank height (m)	15	10	18	10	14	10
Riparian zone - left (m)	33	50	30	30	80	90
Riparian zone - right (m)	50	80	30	30	80	100
Bank material - bedrock (%)	0	0	0	0	0	0
Bank material - boulders >256 mm (%)	0	0	0	0	0	0
Bank material - cobble 64-256 mm (%)	0	0	0	0	0	0
Bank material - pebble 16-64 mm (%)	0	0	0	0	0	0
Bank material - gravel 2-16 mm (%)	0	0	20	0	0	0
Bank material - sand 0.06-2 mm (%)	50	90	80	80	50	80
Bank material - fines <0.06 mm (%)	50	10	20	20	50	20
Substrate - bedrock (%)	0	0	0	0	0	0
Substrate - boulders >256 mm (%)	0	0	0	0	0	0
Substrate - cobble 64-256 mm (%)	0	0	0	0	0	0
Substrate - pebble 16-64 mm (%)	0	0	0	0	0	0
Substrate - gravel 2-16 mm (%)	0	0	0	0	0	0
Substrate - sand 0.06-2 mm (%)	70	60	50	50	80	80
Substrate - fines <0.06 mm (%)	30	40	50	50	20	20

APPENDIX E
SUMMARY OF HABITAT DATA FOR MCARTHUR RIVER EXISTING CHANNEL

SITE NO.	M5	M6	M7	M8	M9	M10
USEPA Habitat Assessment (Score 0-20)						
Epifaunal substrate/availiable cover	10	12	9	8	10	9
Pool substrate characterization	8	13	10	9	9	10
Pool variability	4	3	4	4	3	5
Sediment deposition	5	9	13	16	10	5
Channel flow status	8	8	9	9	8	8
Channel alteration	19	19	19	18	19	19
Channel sinuosity	4	5	4	5	4	5
Bank Stability (left)	5	7	5	4	7	6
Bank stability (right)	5	7	5	4	7	6
Vegetative protection - left	7	9	7	7	4	4
Vegetative protection - right	7	9	7	7	4	4
Riparian zone - left	9	9	9	9	9	9
Riparian zone - right	9	9	9	9	9	9
TOTAL SCORE (% of max 260)	38	46	42	42	40	38
Instream habitats						
Large Woody Debris pieces >10cm in diameter	20	10	18	30	13	10
LWD >30 cm dia	8	0	5	3	8	4
Undercut banks (%)	0	0	0	0	10	10
Instream trees >40 cm DBH	10	0	12	5	8	1
Trees with root masses	0	0	1	0	0	3
Instream boulders (%)	0	0	0	0	0	0
Macrophytes - overall cover (%)	0	0	0	0	0	0
Maximum water depth (m)	1-2	1-2	1-2	1-2	1-2	1-2