MANUHERIKIA IRRIG CO-OP SOCIETY
P.O. BOX 201
ALEXANDRA

4

Ministry of Works and Development

Alexandra Residency

MANUHERIKIA IRRIGATION SCHEME

Review of Old Central Otago Irrigation Schemes.

Phase 1
Scheme Description and Inventory of Components.

R 85/30/Vol.1

APRIL 198

MINISTRY OF WORKS AND DEVELOPMENT
ALEXANDRA RESIDENCY

REVIEW OF OLD CENTRAL OTAGO IRRIGATION SCHEMES
PHASE 1 : SCHEME DESCRIPTION AND INVENTORY OF COMPONENTS
MANUHERIKIA SCHEME

Field Assessment: A Aldridge
Photographs: A Aldridge
Compilation: A Aldridge

CONTENTS

Appendices:
- (A) Race Index
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- (D) Water Sales Information
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Appendages:
- (A) Refer also to report No. R/85/30/vol 2 for photographs which are referred to in inventory
- (B) Refer also to set of Aerial photographs numbered 7/547/7/2706/56, 62, 67, 70, 71, 72, 73, 74, 76, 77, 78, 80

(Please note - Comments from O & M Staff are not available at this time and will follow later)

MANUHERIKIA IRRIGATION SCHEME
SCHEME DESCRIPTION

The Manuherikia Irrigation Scheme was commissioned in 1922 and now services 200 irrigators. There are currently approximately 2000 hectares of land under irrigation from the scheme.

The scheme, as shown on the map on page 2, extends from Chatto Creek to Alexandra and Clyde.

A regular supply to the Main Race is maintained through controlled use of Falls Dam near St Bathans. This 33½ metre high rockfill dam across the Manuherikia River is used for storage for both this scheme and the Omakau Irrigation Scheme.

The Main Race takes water from the Manuherikia River in the Ophir Gorge. The initial section of this race runs through the gorge over extremely rough terrain. This section consists of a 480 metre long tunnel, silt trap, 1200 metre long concrete sidling race, 1580 metre long tunnel, 152 metre long "Chinky Gully" flume, 1700 metres of open race and the 550 metre long "Chatto Creek Syphon". From the Chatto Creek Syphon the Main Race is mainly a sidling race over easier country above SH 85 and the Springvale-Clyde highway to the outskirts of Clyde. This report covers the scheme from the outlet of the Chatto Creek Syphon onwards.

600 m^3/hr of water is taken from Chatto Creek by an old mining race called the Borough Race. This race then travels below the Main Race in the same general direction to the outskirts of Alexandra. At several points along the race water is fed in from the Main Race. This allows the capacity of the Borough Race to be raised to 1500 m^3/hr at these points.

MANUHERIKIA IRRIGATION SCHEME

OPERATIONAL PROBLEMS AND POSSIBLE IMPROVEMENTS

This assessment excludes the Main Race from the intake to the end of the Chatto Creek Syphon. This section of the race is covered by:

(i) "Manuherikia Valley Irrigation : Prefeasibility Report on Civil Engineering Aspects of irrigation options" (January 1984) and

(ii) "Interim Feasibility Report for Manuherikia Headworks" (October 1984)

The Manuherikia Irrigation scheme is in sound condition and this is reflected by the minor nature of the problems encountered during the assessment.

No urgent or major problems have been identified during the assessment.

Minor problems are as follows:

Main Race

(i) A section of the Main race in the area adjacent to structure 67 has been identified as possibly slipping.

(ii) The Marslin Point Cut is exposed and it is suggested that some plant material cover be established to prevent any further rill erosion taking place.

Main Race Distributaries

(i) Dist. No. 11 A-G Race. The Waikerikeri Gully syphon structure 13 is buried but evidential leaking is occurring.

(ii) Dist. No. 13 C-D-E Race. Two concrete step type structures 3 & 9 are leaking and should be replaced.

Borough Race

(i) The intake structure is a gravel weir, however a more permanent structure with an upgraded semi-automated control structure would reduce maintenance costs.

(ii) Extensive rill erosion between structures 13 and 15 inclusive has occurred similar to the Marslin Point Cut.

(iii) A pipeline across an old break, structure 91 appears to be satisfactory. However the hillside moved some years ago shifting the culvert alignment. A watching brief is being maintained.

(iv) 'A' frame supports to a leaking steel pipeline structure 209 will require attention near the end of the Borough race. A regular upgrading policy with the continuing maintenance programme ensures problems are attended to promptly.

It is suggested that some distributaries could be handed over to the landowners, this would especially apply to

(i) The extension of the Borough Race from Lett's Gully structure 194 onwards which can not be machine cleaned.

(ii) Distributaries where benched access to adjacent blocks is presently not available.

There are numerous domestic water supplies based on the races, these should be actively discouraged for Public Health reasons.

Unfortunately the Borough race has been upgraded with limited funding, instead of a benched access on the outside to increase race stability and reduce water losses. Consideration should therefore be given to progressive upgrading of benched access on the outside of the Borough Race.

This report should be read in conjunction with the "Manuherikia Valley Irrigation : Prefeasibility Report on Civil Engineering aspects of Irrigation Options:.

Comments from Alexandra O & M staff will be forwarded when available.

15/39

MANUHERIKIA IRRIGATION SCHEME
IRRIGATORS COMMITTEE

Minutes of the Manuherikia Irrigation Scheme Irrigators Committee held at Ministry of Works and Development offices 7 30 p m 27 March 1985.

Present : R MacFie, D Muir, M Bennie, S Gladstone, R Gare (Irrigators Committee)

C Hughes Irrigation Review Alexandra

Mr Hughes handed the Interim Feasibility Report on the Ophir Gorge etc to Mr MacFie.

General discussion took place on the department's requirements, and input to the report from the Committee.

The following is a list of problems as the Committee see them for inclusion in the Phase 1 Report.

(1) Provision should be made for larger turnouts for pastoral development in some areas.

(2) Larger flows should be supplied for shorter periods when restrictions are imposed, not lower flows.

(3) An improved method of water management is necessary when storage is being used and there is a need for closer liason between scheme operators and Irrigators.

(4) The Committee is concerned that bywashing occurs when stored water is being utilized.

(5) A small storage facility could be constructed on the Borough Race before the water is dropped into Letts Gully then a pipe installed to the end of the Borough Race. This would rectify the maintenance problem with this section.

If storage of sufficient size was installed filling could be by roster therefore no bywashing down Letts Gully etc would be needed.

To this end some agreement with the Alexandra Borough Council will be needed.

(6) Race seepage: Losses will need identifying and repairs carried out.

C J Hughes
1.4.85

MANUHERIKIA SCHEME

3 (c) OPERATION COST DATA

(1) 1982/83, 1983/84 and 1984/85 costs are attached.

(2) Completion of the refurbishment of the entire scheme would result in the following estimated operational costs. (All x $1,000 at CCI = 2,200). It is assumed that a staff of four will be required to run the refurbished scheme, and a cost of $66,000 has been estimated for this. It should be noted that it may be possible to reduce the raceman input to this scheme below this level, by the setting up of a pool of racemen based in Alexandra for running the local schemes. The scheme is currently operated and maintained by a staff of 4.

SEG 1	Racemen Wages	66.0
	Wages - Alex. Irrig. Section	14.0
SEG 2	Racemen Vehicles	15.0
	Other	4.0
SEG 3	Plant-Race Cleaning etc	18.0
SEG 4	Weed spray	6.0
	M & E Mtce.	2.0
	Stores	3.0
10% Admin. Charge		13.0
		141.0
	Income based on	
	$200/irrigater x 150	30.0
	$50/hectare x 1960	98.0
	$300/pipe x 50	15.0
		143.0

NB: Estimate is ROC

P A Deane
Senior Engineer
22.2.85

COSTS INCURRED - MANUHERIKIA SCHEME

(All costs × $1000)	1982/83 (CCI Av = 2000)					1983/84 (CCI Av = 2030)					1984/85 (CCI Av = 2180)				
	Seg 1	Seg 2	Seg 3	Seg 4	Total	Seg 1	Seg 2	Seg 3	Seg 4	Total	Seg 1	Seg 2	Seg 3	Seg 4	Total
eneral	20.5	2.6	.3	23.0	46.4	13.5	1.1	0	36.8	51.5	NOT AVAILABLE WHEN COMPILED				
ater Management	27.5	4.2		0	31.6	24.5	5.0			29.5					
eed Spraying	2.3	.5		5.6	8.4	2.1	.6		.4	3.1					
lachine Cleaning	2.1	.5	15.9		18.5	1.0	.4	11.9		13.3					
land Cleaning	4.1	.9		0	5.0	8.1	1.3		0	9.4					
linor R & R's	7.1	1.2	2.0	6.3	16.6	13.9	3.7	3.3	9.1	30.1					
inter Water ine	.9	.2	.9	.1	2.2										
lain Intake epairs	3.5	.5	.5	5.5	10.0										
ccess Tracks	6.8	1.1	2.1	.9	10.9										
lip Damage						17.2	3.3	24.4	35.4	80.3					
econd Slip						23.1	2.2	69.4	36.3	130.9					
Total	74.8	11.7	21.7	41.4	149.6	103.3	17.6	109.0	118.2	348.2					
Total Schemes NR MGT and eneral Costs all schemes)					8.8%					17.6%					
					31.6					4.1					

(4) REFERENCES

"MANUHERIKIA VALLEY IRRIGATION : PREFEASIBILITY REPORT ON CIVIL ENGINEERING ASPECTS OF IRRIGATION OPTIONS". (January 1984) MWD Dunedin District Office R 84/10.

"INTERIM FEASIBILITY REPORT FOR MANUHERIKIA HEADWORKS : (October 1984)· MWD Dunedin District Office Civil Design

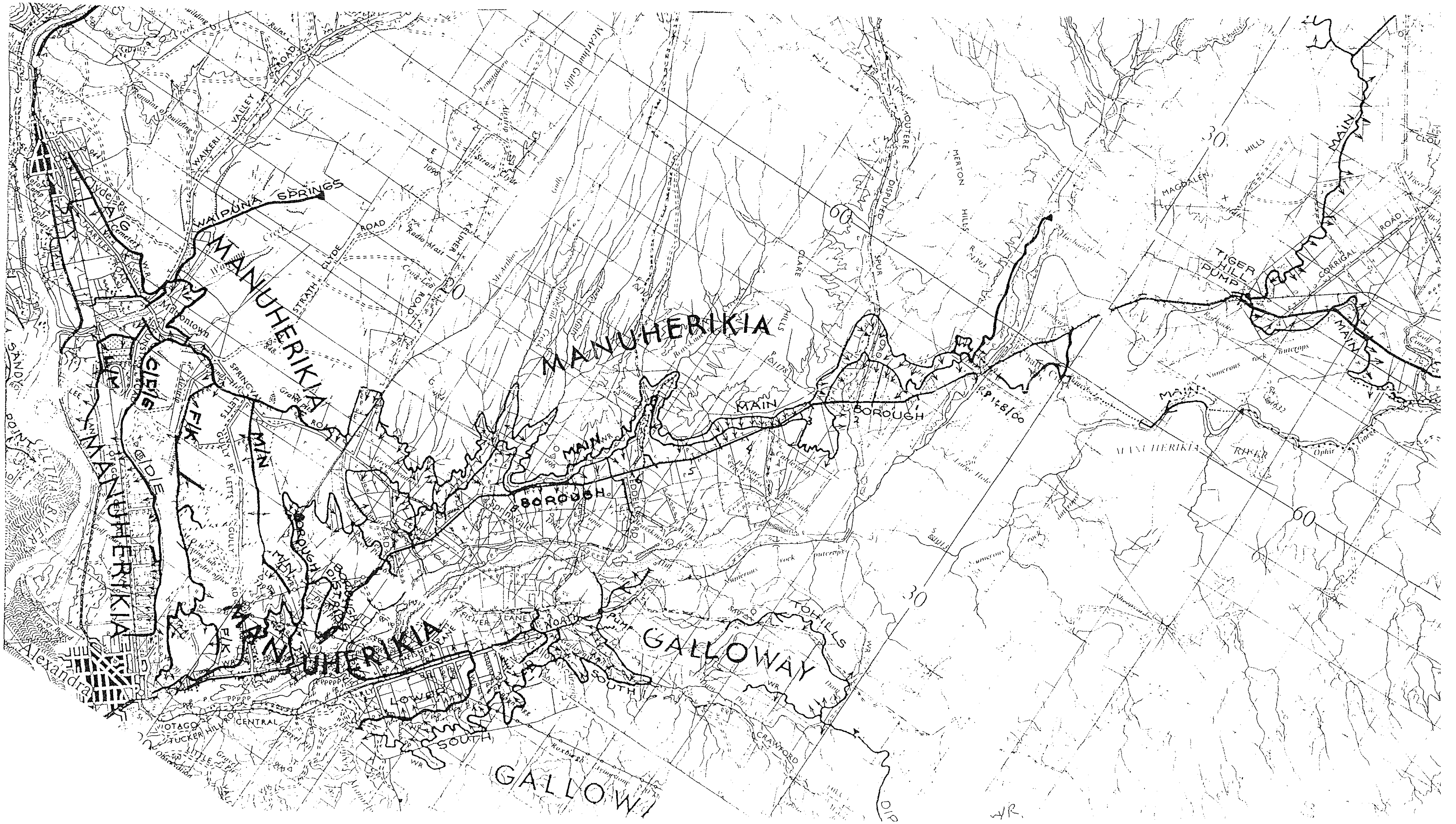
"OMAKAU IRRIGATION SCHEME - PHASE 1 - SCHEME DESCRIPTION AND INVENTORY OF COMPONENTS" (March 1985).
MWD Alexandra Residency R 85/16/Vol. 1.

APPENDIX A

MANUHERIKIA IRRIGATION SCHEME : RACE INDEX

Page	Race	Length (to nearest 0.1 km)	Capacity
63	Distrib. No. 3a	0.3	6
64	(Keddell's Race)		
	Distrib. No. 4	1.1	8
65	(Attfield's Race)		
	Distrib. No. 5	0.5	2
66	(Marslin's Point Race)		
	Distrib. No. 6	0.4	4
67	(McDonnell's No. 1)		
	Distrib. No. 7	0.07	2
68	(McDonnell's No. 2)		
	Distrib. No. 8	0.6	4
69	(McDonnell's No. 3)		
	Distrib. No. 9	0.5	4
70	(Montgomery Race)		
	Distrib. No. 10	2.1	4
71	Springs Race	0.1	-
72	Distrib. No. 11	1.7	4

APPENDIX B



MANUHERIKIA
WAIPUNA SPRINGS
MANUHERIKIA
MANUHERIKIA
MAIN
BOROUGH
MAIN
BOROUGH
TIGER HILL PUMP
MAIN
MAIN
MANUHERIKIA RIVER
MANUHERIKIA
MANUHERIKIA
GALLOWAY
GALLOW
SOUTH
NORTH
SOUTH
CRAWFORD
MERTON HILLS
MAGDALEN HILLS
CORRIGAL ROAD
DISPUTED SPUR
STRATH CLYDE ROAD
Alexandra
Springvale

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DATE: 18.2.85 sheet 1 of 72

struct. no.	Dist. (m)	ITEM				Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
		Acc-X	T/Obax	Pipeline	Misc.							
1	370			P/L		Okay	Gated 450 mm dia. pipe	New headgate LHS				
2	420	/			Bridge	Okay	1.8 m wide wooden bridge					
3	550			P/L		Okay	Gated 205 mm dia. concrete pipe	LHS				
4	850		750 MB			Okay	750 mm M/B	Set in concrete LHS. Pipe drips into creek				
5	910			P/L		Fair	Gated 375 mm dia. pipe	Into parallel race LHS To be renewed				
6	1150	/			Bridge	Okay	1.8 m wooden bridge	New				
7	1190		500 MB			Okay	500 mm M/B	LHS				
8	1400	/			Bridge	Okay	3.7 m wooden bridge	On skew				
9	1600			P/L		Fair	Gated 305 mm dia. pipe	Into parallel race To be renewed				
10	1820		500 MB			Okay	500 mm M/B	LHS				
11	1880	/			Bridge	Okay	1.8 m wooden bridge	Decking new				
12	1950		750 MB			Okay	750 mm M/B	Set in concrete LHS				
13	2250		500 MB			Okay	500 mm M/B	LHS				
14	2560		500 MB			Okay	500 mm M/B	LHS Headgate set in concrete				
15	2800	Culvert				Okay	Box culvert 1.22 m high x 2.6 m wide x 6 m long. Concrete	2 plane headwalls under Moutere Road				
16	2840		500 MB			Okay	500 mm M/B	LHS				
17	2930 - 3010			Pipe		Okay	82.9 m x 1.37 m RCRRJ pipe	Under Younghill Creek Replaced Flume 1975				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DATE: 18.2.85 sheet 2 of 72

struct. no.	Dist. (m)	I T E M Acc-X	T/Obox	Pipeline	Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
18	3100			Pipe		Okay	Gated 450 mm dia. pipe leading to 1.22 m crest weir (measuring)				1	
					Weir							
					Spillways	Okay	8 c/s Twin syphonic spillways 1.22 m x 600 mm wide					
					Slidegates	Okay	2 x 1.22 m steel slide gates in main race					
19	3550		750 MB			Okay	750 mm M/B	LHS Set in concrete				
20	3870	/			Bridge	Okay	4.6 m wide wooden bridge on concrete abutments					
21	4020		500 MB			Okay	500 mm M/B	LHS				
22	4300		500 MB			Okay	500 mm M/B	LHS				
23	4690		500 MB			Okay	500 mm M/B	LHS				
24	4800		500 MB			Okay	500 mm M/B	LHS				
25	5010		500 MB			Okay	2 x 500 mm M/B	D/S box leads to concrete channel across saddle LHS				
26	5030	/			Bridge	Okay	3.7 m wooden bridge					
27	5160		500 MB			Okay	500 mm M/B	LHS				
28	5280		500 MB			Fair	500 mm M/B	LHS To be removed				
29	5650		500 MB			Okay	500 mm M/B	LHS				
30	5730		750 MB			Okay	750 mm M/B into concrete channel	LHS To Dist. No. 5				
31	5820		500 MB			Okay	500 mm M/B	Set in concrete LHS				
32	6070		500 MB			Okay	500 mm M/B	LHS				
33	6270		500 MB			Okay	500 mm M/B	LHS				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DATE: 18.2.85 sheet 3 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
34	**6600**		500 MB			Okay	500 mm M/B	LHS				
				P/L			25 mm dia. polythene pipe to house					
35	**6760**	/			Bridge	Okay	2.44 m wooden bridge					
36	**6870**		500 MB			Okay	500 mm M/B	LHS				
37	**6970**		500 MB			Okay	500 mm M/B	LHS				
38	**7240**		500 MB			Okay	500 mm M/B into 1.22 m drop box	LHS				
39	**7320**	/			Bridge	Bad	2 m wooden bridge	Needs replacement				
40	**7550**		500 MB			Okay	500 mm M/B	LHS				
41	**7750**			P/L		Okay	Pipe under race 600 dia.	Blocked both ends with galv. iron				
42	**8150**		500 MB			Okay	500 mm M/B	Set in concrete LHS				
43	**8630**			P/L		Good	110 m x 450 mm P/L laid to 1.8 m weir to Borough Race	Laid 1977				
44	**8720**		500 MB			Okay	500 mm M/B	LHS				
45	**8850**			P/L		Okay	660 mm dia. steel pipe	Across race on rails				
46	**9300**					Okay	Open race 19.5 m of 1.37 m RC pipe under race	Replaced flume 1975 Brass knocker East Branch				
47	**9350**	/			Bridge	Okay	4.6 m wide wooden bridge					
48	**9450**		500 MB			Okay	500 mm M/B	Drop from box on D/S side				
49	**10030**			P/L		Good	1 m dia. x 19.5 m long concrete pipe	Pipe relaid in Creek and open race constructed over 1978. Brass knocker West Branch				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DATE: 18.2.85 sheet 4 of 72

struct. no.	Dist (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
50	10070	/			Bridge	Okay	3.7 m wooden bridge	LHS				
51	10220		500 MB			Okay	500 mm M/B	LHS				
52	10620			P/L		Fair	686 mm dia. steel pipe across race					
53	10800	/			Bridge	Okay	3.7 m wooden bridge					
54	11240			Pipe		Okay	600 mm dia. concrete pipe under race headwalls					
55	11300	Stock			Bridge	Fair	1.5 m wooden bridge	Decking needs repair				
56	11320		Pipe			Okay	Gated 225 mm dia. pipe	Scour D/S LHS				
57	11730			Pipe		Okay	5.5 m dia. concrete pipe under race					
58	12060		Pipe		Flume	Okay	Gated 305 mm dia. concrete pipe M/B and then down to steel flume	Not a good idea				
59	12460			Pipe		Okay	600 mm dia. concrete headwalls	Under race One pipe cracked				
60	12700					Okay	305 mm plank across race					
61	12730		500 MB			Okay	500 mm M/B	RHS Measured water flow under race				
				Pipe		Okay	450 mm dia. concrete pipe under race Headwalls					
62	12800			Pipe		Okay	305 mm dia. concrete pipe under race Headwalls	Blocked				
63	12910	/			Bridge	Okay	3.7 m wooden bridge					
64	12980			Pipe		Okay	686 mm dia. steel pipe	Across race on rails				
65	13020		500 MB				500 mm M/B	Not used				
66	13050			Pipe		Okay	305 mm dia. pipe under race Headwalls					
67	13150			Pipe			Gated 305 mm dia. pipe	To Parallel race				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DATE: 18.2.85 sheet 5 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
68	**13260**		500 MB			Okay	500 mm M/B Steel flume from box	LHS				
69	**13850**			Pipe	Frame	Okay	Gated 305 mm dia. pipe 500 mm frame set in distrib. race	LHS				
70	**14080**	Stock				Okay	900 mm wood on steel bridge					
71	**14740**		500 MB				500 mm M/B	LHS				
72	**15070**			Pipe			600 mm dia. concrete under race Headwalls					
73	**15480**		Pipe			Okay	Gated 305 mm dia. into creek	LHS Not used				
74	**15550**			Culvert		Okay	Box culvert under creek 2 plane headwalls Headwalls 2.4 m wide x 1.2 m high x 9 m long	For creek flow			3	
75	**16040**		500 MB			Okay	500 mm M/B					
76	**16240**			P/L		Fair	305 mm dia. under race	Weeded up				
77	**16350**	/			Bridge	Fair	1.22 m wide wood bridge					
78	**16480**		500 MB			Okay	500 mm M/B	LHS				
79	**16780**			Pipe	Frame	Fair	Gated pipe and chute 500 mm frame on one leg	To Parallel race				
80	**17700**			Culvert		Fair	Box culvert under creek 2 plane headwalls Headwalls 204 m wide x 1.2 m high x 9 m long	Some flood flow enters race				
81	**18700**		500 MB			Good	500 mm M/B	LHS				
82	**19060**					Poor	600 mm dia. under race (twin pipes) Headwalls	Blocked				
83	**19440**		500 MB			Okay	500 mm M/B					
84	**19650**		500 MB			Okay	500 mm M/B	LHS				
85	**20080**		500 MB			Okay	500 mm M/B	LHS				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DATE: 18.2.85 sheet 6 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
86	21600		500 MB				500 mm M/B	LHS			4	
87	21700		/		Frame		Gated 450 mm dia. pipe into concrete head box 450 mm dia. steel pipe box into creek 1.1 m frame 9.1 m d/s	LHS				
88	21750		500 MB			Okay	500 mm M/B	LHS				
89	21920		500 MB			Okay	500 mm M/B	LHS			5	
90	21990			Pipe		Okay	Twin 600 mm dia. concrete pipe under race Concrete headwalls	Blocked				
91	22060				Bridge		8 x 5m wooden bridge				6	
92	22200		500 MB			Okay	500 mm M/B separate sections	LHS				
93	22240			P/L		Okay	Twin 600 mm dia. concrete pipe under race Headwalls	Partly blocked				
94	22830		500 MB			Okay	500 mm M/B	LHS				
95	23120		500 MB			Okay	500 mm M/B. Separate sections	Scour hole between sections				
96	23600		500 MB			Okay	500 mm M/B	LHS				
97	24070		500 MB			Okay	500mm M/B	LHS				
98	24300		500 MB			Okay	500 mm M/B. Separate sections	LHS				
99	24700		500 MB			Okay	500 mm M/B	LHS				
100	24820	Culvert					Box culvert 2.44 wide x 1.22 deep x 6 m long 2 plane headwalls	Kelliher Road Endwall has moved Cracked				
101	24850		750 MB			Okay	750 mm M/B. Separate sections	LHS				
102	24900						600 mm dia. under race	Blocked				
103	24910				Bywash		10 m bywash					

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DATE: 18.2.85 sheet 7 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obax	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
103	A24950		1.1 m3				1.1 m M/B LHS and Stop					
104	25040				Turnout		Gated 150 mm dia. concrete pipe	LHS. Not used				
105	26100		500 MB			Okay	500 mm M/B	LHS				
106	26200	Farm					3½ x 10 m wooden bridge	Stringers suspect New				
107	26320		500 MB			Poor	500 mm M/B	LHS To be renewed				
108	26500		750 MB			Okay	750 M/B	LHS Race enters 1st of 3 dams. 75 mm dia. galv. pipe outlet Storage for domestic supply D/S of here. (Not used)				
109	27810				Control	Good	Steel gate control	1976 - replaced Stop-long control frame. New Controls dams over 1.8 m storage range				
110	28080		750 MB		Stop	Good	750 M/B Stop in main race					
111	28280	Road				Okay	7.6 m x 2.44 mm wide x 1.22 m deep box culvert 2 plane headwalls	Under Clyde-Springvale Road				
112	28540		500 MB			Okay	500 mm M/B. Separate sections	LHS				
113	28690		750 MB			Fair	750 mm M/B	LHS				
114	28820		1.1 MB		Gates Weir Frame	Okay Good Okay	3 x 900 mm slide gates 1.1 m M/B Concrete frame and boards on Main	To distrib. LHS As control				
115	28840	Farm				Okay	Wooden bridge 6 x 2.5 m					
116	28950				Bywash	Okay	Gated 450 mm dia. pipe Bywash					

REASSESSMENT OF SCHEME MANUHERIKIA RACE: MAIN DATE: 18.2.85 sheet 8 of 72

struct. no.	Dist (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
117	29150	Farm				Okay	3.7 m wooden bridge	Deck stringers need attention				
118	29190				Weir	Okay	1.8 m Weir LHS	Constructed 1976 To frost-fighting dam. LHS				
119	29380				Control		Control structure 2 slide gates and measuring weirs each 1.8 m crest length. All set in concrete. Dropping 1.5 m	Straight ahead race disused-used to lead to an old syphon				
120	29560				Drop	Fair	Drop concrete steps 2.1 m x 1.68 m deep x 179.8 m long	Sidewalls poor in places. Transverse wave action could be causing this				
121	29620				Gate Headwall		Slide gate into 450 mm dia. syphon headwall	RHS				
122	29750		500 MB			Fair	500 mm M/B	RHS				
123	29960				Drop	Fair	Drop concrete steps 2.1 m x 1.68 m x 25.6 m					
124	30060				Drop	Fair	Drop concrete steps 2.1 m x 1.68 m x 35.1 m					
125	30100		750 MB				750 mm M/B	RHS. Rusted and over-grown. Also sod by-wash into creek RHS Not used				
					Control		Main Race Control 2 & 3 slide gates and 1.8 m crested weir set in concrete	Consider as end of main race			40	

RE/SSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DISTRIB 2 DATE: 25-2-85 sheet 9 of 72

struct. no.	Dis (m	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							STARTS STR "4" ON MAIN RACE					
							One structure					
1	0-40					Okay	Concrete pipeline 41.5 x 380 mm	Down hill to Borough P/L relaid and 2 extra pipes into well 1977				
				Pipes								
			750 MB		Intake	Okay	Intake structure					
					Outlet	Okay	Outlet structure Concrete weir	Cracking and dis-placing by willow roots Remove tree and renew				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DISTRIB. 3 DATE: 25-2-85 sheet 10 of 72

struct. no.	Dist. (m)	ITEM				Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
		Acc-X	T/Obox	Pipeline	Misc.							
							Starts str. "18" on Main					
1	**70**	Farm				Okay	5.0 m x 1.08 m concrete pipe					
2	**570**	Pipe				Fair	Steel pipe crossing 5.5 x 750 mm	Water runs down channel and joins creek, then flows into Borough Race at structure 51				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DISTRIB. 4 DATE: 25.2.85 sheet 11 of 72

struct. no.	Dist. (m)	ITEM				Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
		Acc-X	T/Obox	Pipeline	Misc.							
							Starts structure "25" Main Race					
1	80				Chute		Concrete chute 69.2 m x 450 mm x 305 mm deep				qA	
2	100			P/L			Concrete pipe 10.06 m x 450 mm	Under SH 85 Raceman now only supplies water at main race - check whether agreement has been cancelled End Boundary Fence				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DISTRIB. NO. 5 DATE: 25.2.85 sheet 12 of 72

struct. no.	Dist (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts structure No. "30" on Main Race					
1					Chute	Okay	Concrete chute 166.4 m x 450 mm wide x 305 mm deep				10	
2		Farm					Concrete slab crossing 6 m from start 2" - 74 m x 600 mm x 50 mm thick prefabricated	Needs new boards				
							Chute has raised walls 1.22 m high at entrance to concrete pipe					
3		Road				Okay	Road crossing 18.59 x 450 mm concrete pipe	Under SH 85				
4					Headframe	Okay	Concrete division has gate on LHS to race feeding Borough Race and turnout gate at head of pipeline across Borough Race				10A	
			Pipeline			Okay	24.4 m x 450 mm pipeline with headframe	Across Borough Race to farmer's race			10B	
						Okay	Crosses Borough on timber stringers and saddles					
5				P/L		Fair	Water drops through 500 mm gate and down steel pipe					
						Poor	Goes through 750 mm M/B in race and enters Borough Race through concrete pipe 1.8 m x 350 mm	Requires repair				
							Water drops 1.22 m from pipe into race Also from concrete division					

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: MAIN DISTRIB. NO. 6 DATE: 25-2-85 sheet 13 of 72

struct. no.	Dist. (m)	ITEM				Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
		Acc-X	T/Obax	Pipeline	Misc.							
							From NO. "43" Main					
1	0			P/L		Okay	110 m x 450 mm P/L laid to 1.8 m weir	To Borough Race Laid 1977			11	

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 7 (KELLIHER'S DROP) DATE: 25.2.85 sheet 14 of 72

struct. no.	Dist. (m)	I T E M				Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
		Acc-X	T/Obox	Pipeline	Misc.							
							Starts structure NO. "87" on Main					
							Waterway - 900 mm wide x 450 mm deep	Down natural gully through willow roots which prevent scouring				
1	0					Okay	19.5 m x 600 mm RCRRJ pipes into concrete wall to dissipate energy	Laid 1975 to replace steel pipe				
2	60		M/B			Okay	Concrete 1.1 m M/B in Race	Measure only				
3	420	Culvert					Steel pipe crossing 6.2 m L x 600 mm dia.	900 mm fall at outlet				
					Drop		Stone pitched drop 1.22 m long to prevent scour of Borough Race	Race ends at Borough Race				
								Waterway good. Cut through willow roots originally planted to stop erosion				

REASSESSMENT OF SCH : MANUHERIKIA RACE: DISTRIB. NO. 8 KELLIHER'S RACE DATE: 25-2-85 sheet 15 of 72

struct. no.	Dist. (m)	I Acc-X	T T/Obax	E Pipelin	M isc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts structure No. 108 Main Length - 260m Waterway - 1.22 m wide x 305 mm deep Capacity - 8 cusecs					
1	230	Road				Okay	Concrete pipe crossing 12.8 m x 600 mm and concrete headwalls	Under SH Clyde-Springvale Race ends at Boundary fence. Waterway - Good Banks - ample				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 9 M - N RACE DATE: 25-2-85 sheet 16 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obax	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts structure No. 110 on Main Length - 3627.1 m Waterway - 1.8 m wide x 305 mm deep Capacity - cusecs					
1	0		750 MB			Good	750 mm M/B					
2	130	Culvert				Okay	Concrete Box culvert 12.8 m x 1.06 m wide x 500 mm high	Under SH Clyde-Springvale				
					Outlet		Concrete inlet and outlet					
3	160		500 MB			Okay	Concrete M/B's 500 mm	RHS			12	
4	170	/			Stop	Okay	Concrete pipe 2.4 m x 600 mm used as stop and stock access					
5	340	/				Okay	Bridge 2.5 m x 3 m wooden					
6	620					Okay	500 mm M/B LH & RH	No measuring device				
7	650	/				Okay	4.9 m x 600 mm pipe crossing	Used as stop				
8	1130		500 MB			Okay	Concrete M/B 500 mm RH	No measuring device				
9	1560	Bridge				Good	Wooden bridge 3 m x 2.5 m	Scour at outlet Lower pipe				
10	2140		500 MB				Concrete 500 mm M/B RH	M/B No stop Measuring device				
11	2640		450 Pipe				Piped t/o RH					
12	2760		750 MB 500 MB			Good Good	M/B 750 LH M/B 500 RH	Into Benny's Dam				
13	3000		500 MB			Good	M/B 500 RH and concrete stop					
14	3020				Chute		Start of concrete chute down hill 301.75 m x 483 mm wide x 305 mm deep. 114 mm thich walls. Last 6 m is 150 mm wide				13	
					Pond		Still pond					

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 9 DATE: 25-2-85 sheet 17 of 72

struct. no.	Dist (m)	ITEM				Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
		Acc-X	T/Obox	Pipeline	Misc.							
15	3230		/		Stop		Open T/O to RH					
16	3620				Stop		M/B to be installed. Farmer to pipe to dam and to borough race shortly					

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 10 (F K RACE) DATE: 25-2-85 sheet 18 of 72

struct. no.	Dist. (m)	I T E M				Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
		Acc-X	T/Obox	Pipeline	Misc.							
							Starts No. 114 on Main Race Length 6800m Waterway 2.74m wide x 450 mm deep					
1	470		500 MB			Okay	Concrete M/B. 500 mm	LHS Make shift measuring device				
					Stop	Okay	Concrete stop					
2	900	/				Okay	Bridge - wood 3.4 m x 4.3 m	No cross decking on stringers				
3	1200			P/L			25 mm pipe supply	To Aerodrome				
4	1770				Outlet	Okay	Concrete outlet and headframe - LH and concrete stop. Waterway 1.8 m wide x 305 mm deep	Outlet to Distrib. "No. 10a" Mackies			14-15	
5	2320	Farm				Okay	3 m x 3 m wooden					
6	2510		500 MB		Stop	Okay	500 mm M/B Concrete LHS Concrete stop	Outlet to Distrib. "No.10b" Meehans				
7	2530	Farm				Okay	Concrete box culvert					
8	2820	Farm				Okay	Wooden bridge					
9	3040		750 MB			Okay	M/B 750 RH includes automatic bywash	To McLaren/Jordan's dam				
10	4030		750 MB			Okay	M/B 750 LH. and concrete stop	To O'Brians dam				
11	4070		500 MB			Okay	M/B 500 LH					
12	4410		500 MB			Okay	M/B 500 LH					
13	4640	Farm				Okay	Wooden bridge					
14	4840		500 MB				Concrete M/B 500 mm LHS	Into intake to steel pipeline Outlet to distrib. No. 10c				
15	4900		500 MB			Okay	Concrete M/B 500 mm LHS	Not used				

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REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 10 DATE: 25-2-85 sheet 19 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
16	5010				Outlet	Okay	Concrete outlet RHS	No M/B into dam				
17	5030			P/L		Okay	Concrete P/L down hill 70.1 m x 305 mm					
					Inlet	Okay	Inlet structure	Used as stop				
					Drop		4 concrete drops. Drop of 1.8 m over 15.24 m	At end of P/L			16	
					Outlet		Outlet of drops	Remove trees, cracked and displaced by willow roots				
18	5250	/				Fair	Concrete pipe crossing 3.7 m x 450 mm	Insufficient cover has resulted in pipe breaking				
19	5310	Farm				Poor	3 m x 2 m steel pipes on wooden stringers					
20	5480		500 MB			Okay	Concrete M/B 500 mm	LHS. Not used				
21	5510				Drops	Fair	Series of 10 concrete drops. Drop of 3 m over 61 m	Some cracking but solid. Needs patching. Tree roots have disturbed sections			17	
22	5570		500 MB			Okay	Concrete M/B 500 mm LHS at last drop	To Distrib. 10D				
			500 MB			Okay	Concrete M/B 500 mm Last drop in race					
23	5750				Drops		Series of 3 concrete drops. Drop of 1.22 m over 18.3 m	Waterway 600 mm wide x 229 mm deep				
24	6120				Drops	Okay	Series of 6 concrete drops. Drop of 2.74 m over 36.58 m				18	
25	6290				Outlet	Okay	Earth outlet RHS. concrete LHS and concrete stop	To short race 91.44 m to Boundary fence				
26	6320				Drop	Okay	128 x 150 mm PVC pipe					
27	6400		500 MB			Okay	M/B 500 LHS	To Short race to Boundary fence				

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REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. No.10 DATE: 25-2-85 sheet 20 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obax	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
27	(Contd)		500 MB			Okay	Concrete sills with wooden gate	Orchardist below claims there is a lot of seepage from this drop				
28	6440		500 MB			Okay	Concrete M/B 500 mm LHS	Start of distrib. 10E				
						Poor	Wooden stop					
29	6450		/				Concrete stop				19	
30	6520			P/L			Steel P/L down hill 12.8 m x 229 mm	Installed 1973			20	
						Poor	Drop of 5 m Corrugated iron unsatisfactory at bottom					
					Outlet	Fair	Stone outlet RHS	No Stop H.R.				
31	6560				Drop	Fair	Stone pitched drop of 9.1 m in 91.44 m					
32	6590				Outlet	Fair	Concrete outlet RHS				21	
33	6740				Stop	Fair	Concrete stop					
34	6760				Outlet	Fair	Concrete outlet RHS					
35					Stop	Fair	Concrete stop					
								Race ends 45.72 m at Boundary fence				
								Waterway good Banks ample				

REASSESSM OF SCHEME: MANUHERIKIA RACE: DISTRIB NO. 10a (MACKIE'S RACE) DATE: 25-2-85 sheet 21 of 72

struct. no.	Dist. (m)	I Acc-)	T /Obox	E Pipeline	M Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts No. 4 on Distrib. No. 10 440 m long Waterway 838 mm wide x 254 deep					
1	60				Outlet		Earth outlet RHS					
2	250		500 MB				M/B in race	Used as stop				
					Outlet		Earth outlet RHS					
					Stop		Concrete stop					
								Race ends at Boundary fence Waterway good, banks ample				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 10b DATE: 25-2-85 sheet 22 of 72

struct. no.	Dist. (m)	ITEM				Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
		Acc-X	T/Obox	Pipeline	Misc.							
							Starts structure No. 6 on Distrib. No. 10					
							Waterway 600 mm wide x 229 mm deep					
1	140				Outlet	Fair	Concrete stop. Earth T/O RHS					
2	510				Outlet	Fair	Earth outlet					
3	560	/				Okay	Concrete pipe crossing 2.44 m x 450 mm	Needs fill				
4					Outlet	Fair	Earth outlet RHS					
					Stop		Concrete stop					
5			500 MB			Okay	Concrete M/B 500 mm in race					
								Race ends Boundary fence. Waterway grassed up. Banks ample				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 10c DATE: 25-2-85 sheet 23 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts structure No. 14 on Distrib. No.10					
							Waterway 762 mm wide x 229 mm deep					
1	30			P/L	Drop	Fair	Steel pipeline down hill 44.8 m x 450 mm	Leaks Holes in line				
					Inlet	Poor	Inlet structure concrete	Headwall concrete broken				
					Outlet	Fair	Outlet structure 400 gal. tank	Works satisfactory			22	
2	160	/				Okay	Concrete pipe crossing 5.5 m x 305 mm					
					Inlet		Concrete inlet structure					
					Outlet		Outlet structure					
3	330					Fair	Earth T/O RH and concrete stop					
4	360				Stop	Fair	Earth T/O RH and Concrete Stop					
5	400		375 MB			Okay	Concrete M/B 375 mm RHS	No measuring device				
					Stop		Concrete stop					
6	430				Drop	Fair	Stone pitched drop of 7.6 m in 91.44 m	Requires repair at the bottom and extending			23	
							PVC Pipe 200mm					
7	480				Outlet	Fair	Concrete outlet RHS					
					Stop		Concrete stop					
8	780		/		Outlet	Poor	Earth and no stop					
9	860		/			Okay	Water permanent turned into dam					

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. No. 10d DATE: 26.2.85 sheet 24 of 72

struct. no.	Dis (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Start structure No. 22					
							Waterway - 760 mm wide x 300 mm deep					
1	130	Farm				Okay	Wooden 4 x 3 m bridge					
2	150	Stock				Fair	Wooden 3.5 x 2.0 m bridge					
3	4 & 5 200		/			Fair	3 earth T/O with concretestops in race	Farmer using race as headrace				
6	250	Farm				Fair	3.5 m x 600 mm steel pipe	No longer satisfactory a vehicle access				
7	290	Stock				Fair	2 m x .7 m wooden bridge					
8	330	Stock				Fair	Steel chute 2 m x .6 m					
9	350		/			Fair	Earth T/O LHS					
			500 MB			Fair	Open steel 500 M/B RHS to dam					
					Stop	Okay	Concrete stop in race					
10	380	Farm				Fair	3 m x .6 m steel pipe	Starting to collapse Insufficient cover				
								Waterway - good Banks - ample				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 10e DATE: 26.2.85 sheet 24a of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts structure No. 28 on distrib. No.10					
							Waterway - indeterminate					
1		/					Drops down over tree roots and stones to fence				24	
								Race ends at boundary fence.				
								Drops in race unsatisfactory				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. No. 11 AG DATE: 26.2.85

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts at structure No. 121 on Main Race					
							6344.64 m long Waterway 1.8 m wide x 305 mm deep					
					Inlet		Inlet to concrete pipe syphon					
1	0			Syphon		Okay	Syphon - 210.3 m					
					Outlet	Okay	Outlet structure	Replaced approx. 1976				
2	240		500 MB				Concrete M/B 500 mm RHS	Set in outlet Short box type				
					Stop	Okay	Board stop in structure					
3	350	Stock				Fair	3 m x 2.0 m wooden bridge					
4	480	/				Fair	3 m x 2.0 m wooden bridge					
5	720		500 MB			Okay	M/B 500 mm and concrete stop	LHS				
6	900	Farm				Fair	3.5 m x 3.0 m wooden bridge					
7	1000		500 MB			Okay	M/B 500 mm LHS					
					Stop		Concrete stop					
8	1550		500 MB			Okay	M/B 500 mm LHS	Some scour at outlet				
					Stop		Concrete stop					
9	1990		500 MB			Okay	M/B 500 mm LHS					
					Stop		Concrete stop					
10	2550		500 MB			Okay	Concrete M/B 500 mm LHS					
					Stop		Concrete stop					
11	2640				Outlet Trough	Okay	Concrete bywash outlet LHS to steel trough					
12	2670			P/L		Okay	Concrete pipeline 12.2 m x 600 mm at race level					

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 11 DATE: 26.2.85 sheet 26 of 72

AG

struct. no.	Dist (m)	ITEM Acc-X	T/Obox	Pipeline	Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
13	2680			Syphon		Line buried unsure of condition	Concrete pipe syphon 112.78 m x 375 mm	"Minor" Under Waikerikeri Gully. Drain plug in gully. Headwalls slightly cracked. Some piping or leaking evident from green patch.				
14	2860		500 MB			Okay	M/B 500 mm and concrete stop					
15	2920			/	/	Okay	Concrete drop of 900 mm					
16	2970			P/L	Outlet	Okay	Outlet concrete from Waikerikeri Dam and gate into concrete pipe 4.9 m x 525 mm into	Gate installed 1977				
17	2980	Culvert					Concrete box culvert 6.7 m x 900 mm wide x 450mm deep	Under Waikerikeri Road				
18	50				Bywahs	Okay		Bywash race to Waikerikeri Creek includes 9 x 375 mm pipe drop from Waikerikeri Dam				
19	3030				Weir	Okay	1.1 m measuring weir	Installed 1980				
20	3100		750 MB			Okay	M/B 750 mm LHS	Outlet to Distrib. No. 119				
					Stop		Concrete stop					
21	3340		500 MB			Okay	M/B 500 mm LHS					
					Stop		Concrete stop on pipeline					
22	3380			P/L		Okay	15 m x 375 mm pipes	Installed 1977 Replaced staircase drop. Provides access to house				
23	3490		500 MB			Okay	M/B 500 mm LHS					

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. No.11 AG DATE: 26.2.85

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
24	3650				Drop	Fair	Staircase type concrete drop 18 steps 33.53 m long, 1.22 m wide Total drop 4.57 m Ends in stone-pitched race 4.57 m	Old patched cracking Requires repair			25	
25	3670	/				Fair	Enters concrete pipe crossing 4.57 m x 457 mm	To be repaired				
26	3710				Drop	Okay	Enters concrete and stone-pitched drop of 610 mm in 6 m	Some cracking			26	
27	3730		500 MB			Okay	500 mm M/B and concrete stop					
28	3790				Drop	Okay	Concrete drop of 305 mm Inlet - stone pitching Outlet - stone pirching					
29	3850				Drop	Fair	Concrete drop of 305 mm. Stone Inlet - stone pitching Outlet - stone pitching	Concrete cracked				
30	3970		500 MB				M/B 500 LHS					
31	3990				Drop	Fair	Concrete drop of 305 mm Inlet - stone pitching Outlet - stone pitching	Tree root damage. Cracked and dis-placed				
32	4050				Drop	Okay	Concrete drop 400 mm Stone pitched inlet and outlet					
33	4130		500 MB			Okay	500 mm LHS and concrete stop					
34	4320		500 MB			Okay	M/B 500 mm LHS					
35	4360				Drop		Concrete drop 3.7 m long Drop of 457 mm Inlet - stone pitching Outlet - stone pitching					
36	4400	Culvert				Okay	Concrete box culvert 4.6 m long x 900 mm wide x 500 mm deep	Flood channel over race				
37	4750		500 MB		Stop	Okay	M/B 500 mm LHS Concrete stop					

REASSES NT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 11 AG DATE: 26.2.85

struct. no.	Dist. (m)	Acc	T/Obac	E Pipeline	M Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
38	5180		500 MB		Stop	Okay	M/B 500 mm LHS Concrete stop					
39	5460		500 MB			Poor	M/B 500 mm LHS	Not adjustable. Not used				
40	5720	Highway				Okay	113 m x 450 mm RC pipe	Under SH 8				
41	5920		500 MB			Okay	M/B 500 in race and stop					
42	5930				Outlet Stop	Fair	Steel pipe outlet LHS 1.5 m x 225 mm Concrete stop	No measuring device				
43	5940	Farm				Good	7.4 m x 450 mm concrete pipe crossing					
44	6120				Outlet		Concrete outlet LHS 2.74 m long x 500 mm wide x 381 mm deep	No measuring device No stop				
45	6250	/					Steel pipe crossing 6.4 m x 610 mm	Needs fill				
46	6310				Outlet		Concrete outlet LHS	Race ends boundary fence. Waterway - good Banks - ample				

RE/.SSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 11A DATE: 26.2.85 sheet 29 of 72

struct. no.	Dist. (m)	ITEM				Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
		Acc-X	T/Obox	Pipeline	Misc.							
							Starts structure No. 20 on Distrib. No. 11 (A - G) 13 1.6 m long Waterway 900 mm x 305 mm deep					
1	40				Drop		Stone pitched drop of 1.22 m in 6 m					
2	240	/					Steel pipe crossing 8.23 m x 450 mm with concrete headwalls	Under Waikerikeri Road				
3	560		500 MB				Concrete M/B 500 mm turnout LHS Concrete M/B 500 mm in race as control				26A	
4				Syphon		Poor	15.24 m of turnout race to concrete pipe syphon 375 mm x 2.5 m L concrete pipe into well at inlet to 375 mm x 9.0 m L concrete pipe under road Drop at well 1.1 m	Under Clyde-Springvale Road Needs closer inspection Appears to be leaking at base of inspection well			26B	
5					Bywash Gate	Okay Okay	Concrete P/L bywash 30.48 m x 300 mm Control gate to bywash from outlet well of syphon	LHS				
6		Road		Syphon	Frame Outlet		Concrete pipe road crossing 15.9 m x 381 mm Outlet structure	Under Waikerikeri Road Waterway 600 mm wide x 229 mm deep			26C	
7		Road		P/L		Okay	12 x 450 mm RCRRJ pipes Concrete division complex	Installed 1977 Under Clyde-Springvale Road To Farm Race Outlet to Branch Race				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 11A DATE: 26.2.85 sheet 30 of 72

struct. no.	Dist. (m)	I Acc-X	T Obox	E Pipeline	M Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
8			375 MB 500 MB 375 MB				Concrete M/B 375 mm in race Concrete M/B 500 mm LHS Concrete M/B 375 mm LHS					
9		Farm				Okay	Concrete pipe crossing 5 m x 375 mm	Requires cover over pipe and concrete stop				
10					Outlet	Okay	Concrete outlet LHS					
11					Channel	Fair	Concrete channel in race 5.5 m long x 450 mm wide x 203 mm deep					
						V.Bad	Concrete slab over channel for footpath 1.37 m x 51 mm	Dangerous - broken				
12					Outlet		Concrete outlet RHS					
13		/					Concrete pipe crossing 5 m x 375 mm					
14					Outlet Stop Drop		Earth outlet LHS Concrete stop Stone pitched drop					
15					Drop		Stone pitched drop 600 mm in 14.6 m					
16					Outlet Stop Stop		Earth outlet LHS Concrete stop Concrete stop					
17					Drop		Race drops 6 m over 182.88 m. Some rough stone fill	Scouring prevented by willow roots.				
		/					Concrete pipe crossing 4.9 m x 375 mm					
								Race ends at boundary. Waterway - good Banks - ample				

REASSESSMENT OF SCHEME: MANUHERIKIA **RACE:** DISTRIB. NO. 11A BRANCH RACE **DATE:** 26.2.85

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obax	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts structure No. 8 on 11A 1320 m long Waterway 900 mm wide x 230 mm deep					
1	80				Drop		Concrete and stone pitched drop of 900 mm in 6 m					
2	120				Drop		Stone pitched drop of 600 mm					
3	140				Drop		Stone pitched drop of 600 mm					
4	170	Farm				Okay	5 m x 375 m concrete pipe crossing	Needs cover				
5	220		375 MB		Outlet	Okay Okay	Concrete outlet RHS Concrete M/B 375 mm in race					
6	270				Drop Drop Drop Drop		Series of 4 stone pitched drops Drop of 900 mm Drop of 457 mm Drop of 457 mm Drop of 305 mm					
7	310	/				Poor	Steel pipe crossing 3.41 m x 450 mm	Needs fill Buckling under traffic loading				
8	370				Drops Drop	Okay Fair	3 stone pitched drops Steel pipe drop 12.8 m x 450 mm Total drop of 3 m in 45.72 m					
9	440				Trough Drop		Split steel pipe trough set on "A" frames Drop of 4.6 m in 27.43 m Drops into vertical section of steel pipe used as "still" 900 mm drop in race	No longer satisfactory. "Minor" Scouring stayed by tree roots			27	
10	450	/					Steel pipe crossing 3 m x 450 mm	Needs fill				
11	460				Outlet Stop Drop		Concrete outlet RHS and) Stop) Drop of 375 mm)	In one structure				
12	490				Drops		2 stone pitched drops 9.1 m apart					

REASS[illegible] OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 11A BRANCH RACE DATE: sheet 32 of 72

struct. no.	Dist. (m)	T Acc	T Obst	E Pipeline	M Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
13	540	/					Concrete pipe crossing 4.9 m x 305 mm					
14	590						Waterway stone pitched for 45.72 m with drop of 1.22 m	Bank undermined at end of drop				
15	600				Outlet Stop Outlet Stop Drop		Earth outlet RHS with Concrete stop and drop of 203 mm Concrete outlet RHS Concrete stop Concrete and stone drop	Race ends here since 5/77				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 11B DATE: sheet 33 of 72

struct. no.	Dist. (m)	I T E M Acc-X	T/Obox	Pipeline	Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Distrib. from Distrib. No. 11 at structure No. 41 Waterway 1.5 m x 305 mm deep					
1	40			P/L			375 mm RC P/L	1977				
2	350	Foot				Okay	3 m x .9 m wooden bridge					
3	440	Foot				Okay	3 m x .9 m wooden bridge					
4	460	Road		Syphon		Good	34 m x 600 mm syphon	Hartley Road				
5	520	Culvert				Okay	Concrete box culvert 12.2 m x 900 mm x 500 mm high	Under Clyde-Springvale Road. Needs fill. Gravel road "Y" intersection. No longer used with new structure				
6	550	Culvert				Okay	Concrete box culvert 5.2 m x 900 mm wide x 533 mm high	Under Railway No longer used				
7	610	Road		Syphon		Good	18 m x 600 mm concrete pipe road syphon	Orchard Road syphon				
8	870		500 MB		Stop		Concrete M/B 500 mm Outlet stone pitching. Not adjustable Concrete stop	Waterless Branch Race 274.3 m long and ends at Boundary Fence				
9	1100	/				Okay	Bridge wood 2.74 m x 3.4 m	Decking				
10	1150				Outlet Stop		Concrete outlet LHS Concrete stop					
11	1160			P/L	Pond	Fair	Steel P/L down hill 44.8 m x 525 mm Concrete still pond at outlet. 2.1 m long x 813 mm wide x 600 mm deep	Pipes appear okay except from 1st pipe which is used for a crossing and has no fill			29	

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 11B DATE: 26.2.85 sheet 34 of 72

struct. no.	Dist. (m)	I Acc-X	T T/Obs	E Pipeline	M Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
12	1270		500 MB			Fair	500 mm M/B set in structure in race	Some cracking in still pond. The pipeline is leaking but it is not obvious from where				
13	1310			Syphon		Okay	Concrete pipe syphon 14.63 m x 450 mm Four bar screen on inlet and outlet structures Inlet Outlet	Under old SH 8 There appears to be a 375 mm concrete pipe sleeve 900 mm long near outlet. Could be a hazard				
14	1470				Outlet Stop	Fair	Concrete pipe outlet 1.1 m x 375 mm RHS Concrete pipe stop 1.22 m x 375 mm	Not used				
15	1550	/				Okay	Concrete pipe syphon crossing 12.2 m x 375 mm Inlet Outlet	Under Dunstan Hospital Road				
16	1680		500 MB		Stop	Okay	Concrete M/B 500 mm LHS Concrete stop	Not adjustable Ends Boundary fence. Waterway - good Banks - ample				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 12 OR L M RACE DATE: 26.2.85

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obax	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts structure No. 125 on Main Race 3020 m long Waterway 1.8 m wide x 305 mm deep					
1	160	/				Okay	Bridge wood, concrete sills 3.4 m x 2.74 m					
2	270	/				Okay	Bridge wood 3.7 m x 3.7 m					
3	400			P/L			PVC pipe 75 mm over race	Farmer's				
4	420	Stock				Okay	Bridge wood 3.7 m x 1.5 m					
5	470	Road				Okay	Concrete pipe road crossing 12.8 m x 750 mm	Under Dunstan Road				
6	490				Bywash	Okay	Open outlet	To Muttontown Gully Bywash race. RHS				
7	40		750 MB			Okay	Concrete M/B 750 mm LHS	In bywash race				
					Stop		Concrete stop	In bywash race				
8	60			P/L		Fair	Steel pipe 6.4 m x 750 mm	Projecting over cut bank in gully to stop back-scour. Used as crossing				
6	490		1.1 MB			Okay	Concrete M/B 1.1 m. Built in race	Slight scouring at entrance head-wall				
					Drop		Stone pitched drop at outlet					
9	590				Series of Drop	Okay	Series of stone pitched drop of 450 mm					
10	660				Stop	Okay	Steel gated stop 1.1 m gate					
11	740	Farm				Fair	5 m x 750 mm steel pipe					
12	790	Farm				Okay	12 m x 750 mm concrete pipe					
13	810		500 MB			Okay	Concrete M/B 500 mm LHS	To Distrib. 12A (Orchardist's Race)				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 12 DATE: 26.2.85

struct. no.	Dist. (m)	I Acc-X	T T/Obax	E Pipeline	M Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
14	850		500 MB		Stop		Concrete M/B 500 mm LHS. Concrete stop					
15	900				Drop	Poor	Series of stone pitched drops Drop of 1.5 m in 91.44 m				30	
16	960		500 MB			Okay	Concrete M/B 500 mm LHS	No stop				
17	1010				Drop	Fair	Series of 14 stone pitched drops Total drop of 6 m in 182.88 m					
18	1230			Pipe		Fair	Steel pipe over race 5.5 m x 375 mm	Farmer's				
19	1250	Farm				Fair	Steel pipe crossing 3.7 m x 600 mm Drop of 305 mm at outlet					
20	1310				Drop		2 concrete drops 9.1 m apart One of 610 mm One of 375 mm					
21	1430			Syphon		Fair	Concrete pipe syphon 41.15 m x 375 mm Steel bend on inlet side leaking Inlet structure Outlet structure	Under Railway Some cracking but solid				
22	1500		500 MB 500 MB 500 MB			Okay Okay Okay	Concrete M/B 500 mm LHS Concrete M/B 500 mm RHS Concrete M/B 500 mm in race					
23	1900	/				Okay	Semi-circular concrete and steel culvert-type crossing. 4.57 long x 1.22 m wide x 457 mm high	Waterway 1 m wide x 229 mm deep				
24	2050	/				Fair	Steel pipe crossing 4.88 m x 750 mm					
25	2180		500 MB				M/B 500 RHS and concrete stop					
26	2400		500 MB		Stop	Okay	M/B 500 mm LHS and concrete stop					
27	2530		500 MB		Stop	Okay	M/B 500 mm LHS and concrete stop					
28	2050	Road				Okay	Concrete pipe road crossing 11 m x 375 mm					

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 12 DATE: 26.2.85 sheet 37 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
29	2600		500 MB		Outlet		Concrete outlet RHS Concrete M/B 500 mm in race					
30	2800				Outlet Stop		Concrete outlet RHS Concrete stop					
31	2920				Outlet Stop		Concrete outlet RHS Concrete stop	Race ends boundary fence. Waterway good Banks ample except for a short section between structure "29" amd "30"				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. 12A (OR ORCHARDIST'S RACE) DATE: sheet 38 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts structure No. 13 on distrib. No.12 396.24 m long Waterway 762 mm wide x 229 mm deep					
1	10	/				Okay	Concrete pipe crossing 4.98 m x 375 mm	Needs fill				
2	70	/				Okay	Concrete pipe crossing 3.7 m x 375 mm	Needs fill				
3	80				Outlet		Concrete outlet RHS	Not used				
4	100		500 MB			Okay	500 mm M/B Concrete in race					
5	120				Drop	Fair	Series of 5 stone-pitched drops Drop of 3 m in 61 m					
6	170	/				Okay	Concrete pipe crossing 3.7 m x 375 mm	Needs fill				
7	190				Outlet		Concrete outlet RHS	Scoured under Not used				
8	250		500 MB				Concrete M/B 500 mm in race	Used as stop and drop. Measuring device not necessary				
9	260				Drop	Fair	Series of 3 stone pitched drops Drop of 1.8 m in 61 m					
10	300				Outlet	Fair	Earth outlet RHS					
11	330	Farm				Poor	Earthenware and concrete pipe crossing	Earthenware pipe broken				
12	350	Farm				Poor	Earthenware and concrete pipe crossing	Earthenware pipes broken				
					Drop		Concrete drop of 610 mm built into outlet					
13	380	/					Concrete pipe crossing 3.7 m x 375 mm					
								Race ends at boundary fence.				
								Waterway good Banks ample				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: (DISTRIB. 13) C _ D - E RACE STARTS STRUCTURE 125 MAIN DATE: 26.2.85 sheet 39 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
1	50	-	500 MB	-	-	Good	Concrete 500 mm M/B RHS and stop	1982/83. Old style				
2	180	Bridge	-	-	-	Fair	Bridge wood 3.7 m x 2.1 m	Old sleepers - Farmer's			41	
3	240	-	-	-	Drop	Good Good	Concrete staircase type drop. 1.8 m wide 9 steps. Drop of 3.7 m in 27.4 m Inlet and outlet structures HWL - concrete EWL - concrete	"Minor"				
4	310	-	375 MB	-	-	Fair	Concrete 375 mm M/B RHS	Not used				
5	400	-	500 MB	-	Stop	Okay	Concrete 500 mm M/B RHS and concrete stop					
6	730	-	500 MB	-	Stop	Okay	Concrete 500 mm M/B RHS and concrete stop					
7	850	-	-	Flood pipes	-	Fair	Twin concrete flood pipes 12.2 m x 450 mm under race Inlet and outlet structures	Wing wall broken			42	
8	860	-	500 MB	-	-	Okay	Concrete 500 mm M/B RHS	Needs concrete stop				
9	870	-	-	-	Drop	Fair	Staircase type concrete drop 1.8 m wide. Length 97.5 m. Drop of 15.9 mm 45 steps Inlet - concrete Outlet - concrete	Structure reasonably sound but a lot of old cracking. Line of poplars near and some right against RH wall and in two places wall has been cracked and slightly displaced. These trees which are on a boundary fence line should be cut down and the stumps killed. "Minor"			43,44	

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: C - D - E RACE (DISTRIB. 13) DATE: 26.2.85 sheet 40 of 72

struct. no.	Dist (m)	I T E M				Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
		Acc-X	T/Obox	Pipeline	Misc.							
10	1300	-	500 MB	-	-	Fair	Concrete 500 mm M/B RHS	To Branch Race. Branch race stone pitched downhill 12.2 m to steel pipeline (bad) 19.2 m x 450 mm downhill into stone pitched race 7.3 m (poor) into concrete pipe road crossing 18.3 x 375 mm (good) under Dunstan Road. Ends at boundary fence. Needs replacing with concrete pipeline from box outlet to Road crossing. Map Ref. 143/3 Raceman no longer maintains, check?				
11	1340	Farm	-		Culvert	Good	Culvert 4.8 m x 525 mm RCRRJ	Possible restriction				
12	2020		500 MB		Stop	Okay	Concrete 600 mm M/B RHS and concrete stop					
13	2060	Pipe Xing				Good	Concrete pipe crossing 7.3 m x 600 mm	Under Airport Road				
14	2120		500 MB			Okay	500 mm M/B RHS					
15	2150	Farm				Okay	7.5 m x 600 mm concrete crossing					
16	2190		500 MB		Stop	Okay	Concrete 500 mm M/B RHS and concrete stop					
17	2270		500 MB		Stop	Okay	500 mm M/B RHS and concrete stop					
18	2360	Bridge				Bad	Bridge wood 3.4 m x 2.7 m	Decking needs attention				
19	2480		500 MB		Stop	Okay	M/B 500 mm RHS and concrete stop					
20	2740		500 MB		Stop	Okay	M/B 500 mm RHS and concrete stop. Concrete stock bridge part of stop					

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: C - D - E RACE (DISTRIB. 13) DATE: 26.2.85

struct. no.	Dist. (m)	I Acc. X	T T/Obox	E Pipeline	M Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
21	3270		750 MB		Stop		Concrete M/B 750 mm RHS and concrete stop					
22	3360	Bridge				Okay	Bridge wood 3.4 m x 3.7 m					
23	3400		500 MB 750 MB		 Stop	Okay	Concrete M/B 500 mm RHS Concrete M/B 750 mm RHS Concrete stop					
24	3560	Stock				Fair	Wood Sheepwalk	Farmer's				
25	3650		500 MB			Fair	M/B 500 mm RHS	Farmer's				
26	3810	Farm				Okay	Concrete pipe crossing 5 m x 600 mm	Concrete headwall				
27	3900		500 MB		Stop	Fair	Comcrete M/B 500 mm RHS and concrete stop	Not used				
28	3980	Farm				Okay	Concrete pipe crossing 5 m x 600 mm	Concrete headwall				
29	4030		500 MB		Stop	Fair	Concrete M/B 500mm RHS and concrete stop					
30	4080	Pipe Xing				Fair	Steel pipe crossing 19 m x 750 mm	Provides crossing been constructed for some other purpose				
31	4180				Stop	Fair	Concrete stop	Not used				
32	4300		500 MB		Stop	Fair	Concrete M/B 500 mm RHS and concrete stop	Outlet to Distrib. 13A				
33	4310	Road				Okay	10 m x 750 mm concrete pipe	Hillview Road Concrete headwalls. 8 m x 900 mm steel pipe cross over pipe crossing				
34	4340		500 MB		Stop	Okay	Concrete M/B 500 mm RHS and concrete stop					
35	4350	Farm				Okay	3 m x 4 m wooden bridge					
36	4400		500 MB			Fair	Concrete M/B 500 MM RHS and concrete stop					
37	4450		500 MB		Stop	Okay	M/B 500 mm RHS and concrete stop	To Distrib. 13B				
38	4470	Farm				Fair	3 m x 3 m wooden bridge					

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: C - D - E RACE (DISTRIB. 13) DATE: 26.2.85 sheet 42 of 72

struct. no.	Dist. (m)	I Acc-X	T T/Obax	Pipe	M Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
39	4500	Farm				Fair	3 m x 3 m wooden bridge					
40	4530		500 MB		Stop	Okay	M/B 500 mm RHS and concrete stop					
41	4850		500 MB		Stop	Okay	M/B 500 mm and concrete stop	To Distrib. 13 C				
42	5010		500 MB		Stop	Okay	M/B 500 mm RHS and concrete stop	Not used				
43	5250		500 MB		Stop	Okay	T/O and concrete stop	Not used RHS				
44	5350		500 MB		Stop	Okay	T/O and concrete stop RHS	Used as bywash				
45	5410			Conc. P/L		Okay	Concrete pipeline on race level 14.6 m x 600 mm	Over old Break. Hole broken in top of pipe by dozer using as crossing				
						Good	Inlet and outlet structures					
46	5500		500 MB		Stop	Fair	Concrete M/B 500 mm LHS and concrete stop	Not used				
47	5520				Inlet to pipe line Bywash	Seems fair	Inlet to steel pipeline down hill 91.4 m x 375 mm Steel barred screen on bank. Pipe drops into concrete and stone pitched still pond	Not being used				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. NO. 13A DATE: 26.2.85 sheet 43 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts structure No. 32 on distrib. 13					
							Waterway 305 mm x 305 mm					
1	20	Farm				Okay	Wooden bridge 3 m x 1.8					
2	50				Drops	Okay	Stone lined race to form a series of drops					
3	220	Farm				Fair	Steel pipe crossing 10 m x 400 mm					
								This race is used as farmer's head race				
								Race ends at boundary fence				
								Waterway overgrown with grass				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. 13B DATE: 26.2.85 sheet 44 of 72

struct. no.	Dist. (m)	ITEM				Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
		Acc-X	T/Obox	Pipeline	Misc.							
							Starts structure No. 3 on distrib. No.13 Waterway - almost entirely pipes					
1	0						111.56 m x 225 mm RC pipes	Installed 1976				
2	150	Road					Steel pipe road crossing 4.6 m x 375 mm					
3	160		/				Outlet - RHS Outlet - LHS	To farm races at boundary fence. Race ends at this structure				

REASSESSMENT OF SCHEME: MANUHERIKIA RACE: DISTRIB. 13C DATE: 26.2.85 sheet 45 of 72

struct. no.	Dist. (m)	ITEM Acc-X	ITEM T/Obox	ITEM Pipeline	ITEM Misc.	Cond.	Detail	Remarks	last ass.	Access	Photo no.	Drawing no.
							Starts structure No. 41 on distrib. No.13 50 m long Waterway - 610 mm x 152 mm					
1	0					Fair	Stone pitched race. Drops 600 mm in 9.1 m					
2	10				Chute	Fair	Split steel chute. Drops 4.6 m in 50.29 m					
3	50				Outlet Stop	Fair	Concrete outlet RHS Concrete stop					
								Race ends at boundary fence. 15.24 m from (3) above				