Assessment of Fish Passage within Selected Districts of the Waikato Region



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Executive summary

A significant number of indigenous freshwater fish of New Zealand are diadromous and move between freshwater and marine environments at various stages of their lifecycle (Boubee et al.1999). In-river artificial structures such as culverts, fords, diversion structures, weirs and dams can pose a barrier to fish migration when poorly designed or installed.

In-river structures in six territorial authority areas of the Waikato Region were evaluated between 2000 and 2005 for their restriction to fish passage. These areas were Thames-Coromandel, Matamata-Piako, Waikato, Waipa, Otorohanga and Franklin (the portion which falls within the Waikato region). An evaluation method adapted from Boubee et al. (1998) was used in the survey.

A total of 1,614 structures or 36% of total potential public road crossings were assessed in these six areas. Structures were assessed as to whether they were likely to restrict fish passage at high, low or most flows, or pose none or minimal restriction to fish passage.

Of the 1614 structures surveyed, 725 or 45% were not considered to pose any restriction to fish passage. 481 (30%) were considered to pose a restriction at most flows while 151 (9%) were assessed as posing a restriction at high flows and 213 (13%) were considered to pose a restriction at low flows. Of those structures assessed a combined total of 845 structures or 52% were considered to pose some form of restriction to fish passage. 44 or 3% of structures visited were not assessed for fish passage restriction.

From the survey data a ranking process was developed to prioritise surveyed structures for remediation. The variables utilised in this ranking system were: severity of fish passage restriction, distance to the sea, upstream watercourse length and percentage of upstream length in indigenous forest in conjunction with the upstream catchment area. A weighting system was then applied to these variables and a district and regional rank given to each structure.

It is hoped that by providing this priority information to the relevant roading authorities and working in conjunction with these agencies, fish passage and subsequent access of fish to upstream habitats can be improved.

It is recommended that continued work be undertaken to reduce the impact of in-river structures on the restriction of fish passage within the Waikato Region. Work should focus on the provision of ongoing advocacy, advice and assistance to staff within both regional and local authorities, consultants, roading engineers and contractors with the design, installation and remediation of appropriate waterway crossings within the Waikato Region.

1 Introduction

The freshwater fish fauna of New Zealand consists of fifty-six species. Thirty-five of these species are indigenous and most are endemic¹; the remaining twenty-one species are introduced. Within the Waikato Region there are twenty-two species of indigenous and fourteen species of introduced freshwater fish as well as native freshwater crayfish and shrimp (Speirs 2001) (Appendix 1).

At least 18 of New Zealand's 35 indigenous freshwater fish are diadromous and move between freshwater and marine environments at various stages of their lifecycle (Boubee et al. 1999). This movement between habitats is often obligatory for completion of their lifecycle (McDowall 1990).

Migration of fish is species and life-stage specific, and occurs between marine and freshwater environments generally during spring and autumn. The species which undertake these migrations have varying swimming and climbing adaptations which affect their ability to negotiate in-river barriers such as culverts, fords, weirs, dams and diversions (Barnes 2004). The native freshwater shrimp also migrates up and down rivers, and requires passage through culverts in the same way as migrating fish. Culverts have also been shown to limit the movement of other invertebrates within streams (Blakely et al. 2006). As a result, the ability of some fish and Crustacea to move freely between freshwater and marine environments (fish passage) is a significant issue for the indigenous freshwater fauna of New Zealand (Boubee et al. 1999).

The swimming capabilities of a range of common species found in the Waikato region are outlined in Table 1.

Swim	ming ability classification	Species				
<u>Angui</u>	lliforms					
•	Ability to move through small spaces	Shortfinned eels, Longfinned eels, Juvenile				
•	Move both in and out of the water	Kokopu and Koaro (to a limited extent)				
•	Can respire atmospheric oxygen if skin remains damp					
<u>Climb</u>	ers					
•	Climb wetted margins of waterfalls, rapids, spillways	Lamprey, Elvers (juvenile eels), Juvenile Kokopu species, Juvenile Koaro, Juvenile				
•	Adhere to substrate using surface tension and may use pectoral or pelvic fins	common and redfinned bullies (to a limited extent)				
Jumpe	ers					
•	Ability to leap using wave momentum at rapids and waterfalls	Trout, Salmon, Smelt and Inanga (to a very limited extent)				
<u>Swimr</u>	ners					
•	Primarily swim to move around or past obstacles	Inanga, Smelt, Grey mullet				
•	Rely on low velocities of flow to rest					
•	Ability to burst swim to get through small areas of high velocity water					

 Table 1
 Swimming abilities of various New Zealand freshwater fish species (Boubee et al. 1999)

¹ Endemic – native and restricted to a given area (in this case New Zealand)

Although preference is given to restoring fish passage, consideration must also be given to the positive benefits of maintaining a barrier to fish passage in a given location. Trout species (Rainbow Trout *Onchorhynchus mykiss* and Brown Trout *Salmo trutta*), although valued as a sports fish, can compete with and prey on some indigenous species. The exclusion of these species by maintaining a barrier may provide a refuge for native species upstream (Taranaki Regional Council 2000). The spread of noxious fish such as Koi Carp and *Gambusia* along with other undesirable species may also be contained and limited by retaining specific barriers to fish passage in key catchments.



Figure 1 Banded Kokopu - one species found in small forested streams throughout the Waikato region (Drawing by Sonia Frimmel)

Artificial barriers to fish passage are mainly comprised of poorly designed and installed in-river structures such as culverts, fords, diversion structures, weirs and dams. Fish passage can be impeded or prevented by a structure if:

- the water velocity is too high and/or there are no resting areas provided within the barrel of the structure
- there is no low velocity zone or wetted margin provided at the water edge
- water turbulence is too great (normally the result of culverts which are too small or too steep)
- the crossing is too dark (ie: culvert is too long or too small)
- water depth within the structure is too shallow
- the substrate within the culvert is too smooth for bottom swimmers
- the bed level of the crossing is raised (ie: perched above the streambed)
- debris has been allowed to build up and has formed a weir
- scouring has occurred causing the culvert to become perched (Speirs and Ryan 2006)

Many in-river structures are placed at intersections where streams cross roads or farm tracks. While it is often difficult to assess fish passage in structures on private land, those structures located on public roads are easily accessible. The agencies responsible for the maintenance of structures on the public roading system are Transit New Zealand and Territorial Authorities (District and City Councils). Transit New Zealand has authority over maintaining the State Highway system while Territorial Authorities maintain all other public roads within their jurisdictional boundaries.

To begin addressing the issue of fish passage within the Waikato Region, it was considered necessary to quantify the magnitude of restriction to fish passage in key areas of the Region. Priority for the project was given to investigating those structures located on the public roading system. From this information a prioritisiation process has been undertaken that identifies and ranks structures for potential remediation.

It is hoped that by providing information to the relevant roading authorities and working in conjunction with these agencies, fish passage and subsequent access of fish to upstream habitats can be improved. This publication follows on from a previous report which was produced from results during the earlier stages of this study:

Fish Passage at Culverts – A Survey of the Coromandel Peninsula and Whaingaroa Catchments (11/00 – 04/01). This publication can be ordered from the Environment Waikato website : <u>www.ew.govt.nz/publications/index.htm?tehnical=33#2001</u>.

1.1 Statutory requirements for fish passage

Legislative requirements for fish passage have been in place for in excess of 20 years and are addressed under several pieces of legislation:

Section 17 of the RMA requires every person to avoid remedy or mitigate any adverse effects on the environment resulting from an activity carried out by that person, whether or not the activity is in accordance with a rule in a plan or resource consent. This means that the owner of any structure causing an adverse effect must take the appropriate action to remedy or mitigate this effect.

Part VI, section 42 of the Freshwater Fisheries Regulations, 1983 places a requirement that all culverts and fords in natural waterways provide for the passage of fish:

- 42. Culverts and fords—
- (1) ... no person shall construct any culvert or ford in any natural river, stream, or water in such a way that the passage of fish would be impeded, without the written approval of the Director-General
- (2) The occupier of any land shall maintain any culvert or ford in any natural river, stream, or water (including the bed of any such natural river, stream, or water in the vicinity of the culvert or ford) in such a way as to allow the free passage of fish...

In addition to the requirements above, consideration can be made of the various responsibilities placed on Regional Councils by Part II of the RMA with respect to the life supporting capacity of water and ecosystems, protection of significant habitats of indigenous fauna, the intrinsic values of ecosystems and the protection of the habitat of trout and salmon. These must all be accounted for when considering fish passage at artificial structures in waterways.

1.2 Study scope

This study aims to assess and quantify the impact of structures on public roads on native fish within selected districts of the Waikato Region.

The areas of this study have been defined using Territorial Authority boundaries found within the Waikato Region (See Figure 2). Thames-Coromandel, Matamata-Piako, Waipa, Waikato, Otorohanga and Franklin District's are the study areas where data have been collected. Franklin District spans both Environment Waikato and the Auckland Regional Council regions. For the purpose of this study, only the area of Franklin District which falls within the Waikato Region has been surveyed.

Although surveys have been undertaken in these study areas, the data collected and the subsequent results may not reflect all structures that are present on public roads within a territorial authority boundary.

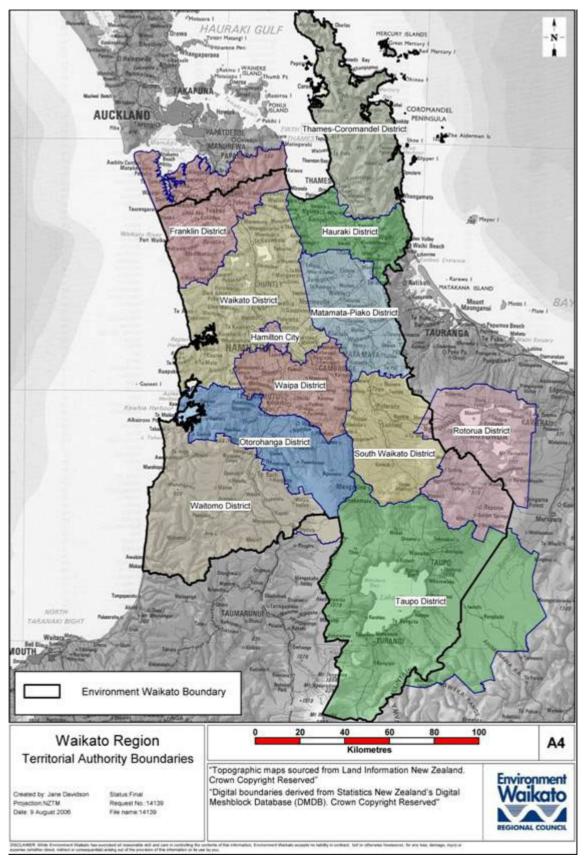


Figure 2

Map of the Waikato region showing territorial authority boundaries

1.3 Thames- Coromandel district

The Thames-Coromandel District covers approximately 217,200 hectares of mainland and offshore islands. On the west coast of the peninsula, small, steep and forested catchments draining into the Firth of Thames are typical. On the east coast the land comprises rolling hill country, floodplains and estuaries. Within the district, there remain large areas of regenerating and intact indigenous forest, and large areas of publicly owned land administered by the Department of Conservation. The district has 556km of coastline along the mainland and 200km of coastline on offshore islands. The Coromandel has an extensive area of largely undeveloped land with areas of beef, sheep and dairy farming and plantation forest (Thames-Coromandel District Council 2006).

The district has diverse and abundant populations of indigenous fish with over 17 species having been recorded (McDowall 1990). Fish passage remains an issue of high priority in this district given this diversity, proximity to the sea and the available upstream habitat of largely undeveloped land. The presence of a coastal ring road with steep upstream catchments has the potential to limit the movement of fish into freshwater environments only metres from the sea.

1.4 Waikato district

The Waikato District covers an area of 3,450 square kilometres. It borders Hamilton City in the south, extends to the west coast and stretches to the north of Meremere (Waikato District Council 2006). The district encompasses parts of both the Waikato and Waipa Rivers. It also includes Raglan and parts of Aotea harbour, Mount Karioi and significant peat lakes and wetlands (Waikato District Council 2004).

The Waikato District is an important area for the native fishery within the Waikato region. The presence of harbours, large river systems, wetland habitats and areas of indigenous forest provide a range of potential fish habitat. The major rivers (Waikato and Waipa) are still uninterrupted by dams in this area and allow unimpeded access to the sea. The distance from the sea throughout most of the district is less than 100 kilometres which makes much of this habitat accessible within the swimming capabilities of many native fish.

1.5 Matamata-Piako district

The Matamata-Piako District encompasses an area of 182,150 hectares of land and lies to the west of the Kaimai ranges. The Piako-Waitoa River catchment occupies a significant part of the district with the Waihou River also flowing through the district. Much of the land in this area is flat or rolling and is predominantly used for dairy farming (Matamata-Piako District Council 2005).

The Matamata-Piako District has both important native and trout fishery habitat in the Waihou, Piako and Waitoa rivers and unimpeded access to the sea through the Firth of Thames. Many of the small tributaries flowing from the Kaimai Ranges into the District have high levels of native or exotic forest cover and provide valuable fish habitat. Fish passage in this area is potentially affected by the high level of flood protection (floodgates) on both the Piako and Waihou systems.

1.6 Franklin district

The Franklin District spans both the Waikato and Auckland Regions. The area of the district which falls within the Waikato Region contains the lower reaches of the Waikato River and it's associated wetlands, coastline along the west to south of Waikaretu, the Miranda foreshore on the Firth of Thames, and the lower catchment of the Mangatawhiri River (Franklin District Council 2000).

The Franklin District is a valuable area for the native fishery given that it includes the lower reaches of the Waikato River and associated wetlands. The protection and enhancement of this habitat for spawning of species such as Inanga (*Galaxias maculatus*) is important. Given the district's proximity to the marine environment, maintaining fish passage in large rivers as well as associated tributaries is essential.

1.7 Otorohanga district

The Otorohanga District covers a land area of 1,976 square kilometres. In the western area of the district are the harbours of Aotea and Kawhia. These harbours are surrounded by steeper hill country with a mix of pastoral farming and indigenous bush cover. The central area of the district covers the southern limit of the Waikato Basin and is predominantly rolling countryside and river plains with dairying and cropping being the main land use. The boundary in the eastern part of the district is the Waikato River with the hydro lakes of Arapuni and Waipapa. This eastern area also contains Pureora and other large tracts of indigenous and exotic forest (Otorohanga District Council 1999)

The Otorohanga District has valuable resources in regards to the native fishery. Those areas accessible from the sea include Kawhia and Aotea harbours and their associated tributaries as well as the Waipa River and its tributaries which are within the district boundaries. The Waikato River forms a boundary with the district, but areas upstream of the lowest hydroelectric dam (Karapiro) have limited fish access.

1.8 Waipa district

The Waipa District extends to the Waikato River in the east and the Waipa River on the western boundary. The district covers an area of 147,372 hectares of land (Waipa District Council 2006) and encompasses the five volcanic cones of Kakepuku, Te Kawa, Maungatautari, Maungakawa and Pirongia, over 16 nationally significant peat lakes and two hydro lakes located on the Waikato River. Land use within the district is primarily dairy farming with some sheep and beef, racing stables and horse stud farms (Waipa District Council 2004).

The eastern part of the Waipa District provides limited native fishery value due to restrictions in fish passage imposed by the lower hydroelectric dam (Karapiro) on the Waikato River. The west of the district provides access to the Waipa River and its associated tributaries which have unimpeded physical access through to the Lower Waikato River and the downstream marine environment. Some areas of the Waipa District such as Mount Pirongia have good areas of native forest with high quality potential habitat for native fish. One further limitation may be high levels of turbidity within the Waipa River which may limit some native fish entering this system.

2 Methodology

2.1 Survey techniques

In-river structure surveys have been conducted within six territorial authorities (outlined above) within the Waikato Region between December 2000 and March 2005. The study was restricted to structures located on public roads and accessible off road verges and bridges. Forestry roads were also surveyed in the Thames-Coromandel District. Structures on private land were not included in the survey.

To enable accurate coverage of all structures a combination of techniques was used. Known structures and potential sites of stream/river crossings were identified using topographic maps (NZMS 260 series). Asset maps were also provided by Ernslaw One and Carter Holt Harvey forestry in the Thames-Coromandel District. Both of these processes were supplemented in the field by visual identification of potential sites. The process of collecting the data was to drive accessible public roads and look for culvert crossings. If appropriate they were assessed with the standard form (Appendix 2) which has been modified from Boubee (1988). Ephemeral waterways and stormwater structures were not included in this work. There was no minimum or maximum size restriction on structures surveyed.

A hand held Global Positioning System unit (GPS) (Garmin 12 XL) was used to provide a New Zealand Grid bearing (Easting and Northing). A digital camera was used for photographing the inlet and outlet of all structures surveyed. A gauge board with a metal spike at its base was used for measurement of diameter, water outlet, sediment depth, as well as height and undercut on those culverts that were perched. Each culvert was numbered and the number recorded in the photographs by way of a small whiteboard.

2.1.1 Variation of survey technique - 2005

The fundamental methods of survey techniques have remained the same through the entire survey time. The development of palm pilot technology enabled data to be collected directly into an IPAC hand-held computer during 2005. The existing evaluation sheet was developed into an electronic format and GPS locations were collected by a linked GPS unit making use of blue tooth technology. Data were downloaded from the IPAC directly into the corporate database. The use of this technology reduced the time required for completing field sheets and data entry into the corporate database.

2.1.2 Data storage

Information from the survey has been entered into a purpose built attachment (Culverts) to Environment Waikato's corporate database system (Located). Photographs taken at each structure have also been entered into the corporate photograph database (Media) which in turn is linked to the Located database.

3 Results and discussion

3.1 Severity of passage restriction

The primary measure of reporting is based around the assessed severity of fish passage restriction. The four categories are:

None or minimal: where the structure poses no significant barrier to the upstream or downstream passage of fish likely to be found in the stream within the normal range of flow conditions.



Figure 3 Culverted ford with none or minimal restriction to fish passage - culvert barrels are offset at different heights to allow for changes in flow

Low flow only: where the structure poses a barrier to the passage of most fish likely to be found in the stream, but where this barrier is only present at low flow conditions.



Figure 4 Box culvert – likely to pose a barrier to fish passage at low flows due to lack of water coverage on culvert base

High flow only: where the velocity in the structure is likely to increase and become unnavigible by the majority of fish in the stream during high flows (generally where the structure is over half full at normal flows)



Figure 5 Culvert considered to restrict fish passage at high flows (culvert barrel is over half full at normal flows)

Most flow conditions: where the structure poses a significant barrier to the passage of fish likely to be found in the stream at most of the normal range of flow conditions.



Figure 6 Precast culvert with perched concrete apron and barrel which are both likely to restrict fish passage at most flows



Figure 7 Culvert assessed as restriction to fish passage at most flows – significantly perched and undercut barrels

How representative the water flow was during inspection was taken into account when assessing the presence or severity of any fish passage restriction.

3.2 Regional results

The regional results are presented as a summary of the 6 districts that were incorporated in the survey. As an indication of how these results relate to the total available habitat and survey sites, information has been generated on the potential number of crossings between road and waterway within the 6 areas surveyed. GIS has been used to generate this information.

The following spatial information was used to generate these data:

 Number of points where streams and rivers cross public roads GIS_ALL.REC_WATERCOURSE, GIS_ALL.CRS_ROAD

In these six districts, a total of 1,614 structures were assessed compared to 4,543 points where streams and rivers cross public roads (generated using GIS). This equates to 36% of the potential available crossing points being assessed in these 6 districts. This information generated by the GIS will include crossings where bridges are present which have not been assessed in this study. This comparative figure (36%), may slightly underestimate the percentage of structures assessed comparative to the total crossings available.

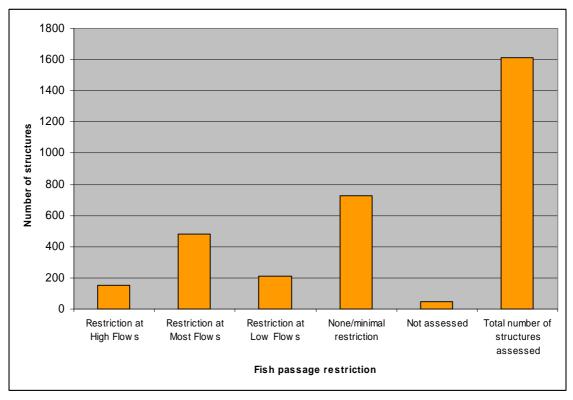


Figure 8 Number of structures assessed by fish passage restriction - combined total of 6 territorial authorities

Figure 8 illustrates the combined fish passage restriction of the 6 areas combined. Of the 1614 structures surveyed in the study, 725 or 45% were not considered to pose any restriction to fish passage. 481 or 30% were considered to pose a restriction at most flows while 151 (9%) were assessed as posing a restriction at high flows and 213 (13%) were considered to pose a restriction at low flows. Of those structures assessed, a combined total of 845 structures or 52% were considered to pose some form of restriction to fish passage. 44 or 3% of structures surveyed were not assessed for fish passage restriction.

3.3 District results

The potential number of crossings between roads and waterways have also been generated by district and this data are presented in Table 2. Franklin district data reflects only that part of the area which falls within the Waikato region.

 Table 2
 Summary of data by district

District	Total number of structures assessed	Number of points where streams and rivers cross roads	% of structures surveyed (assessed versus number of points)		
Franklin District	210	480	43.7		
Matamata-Piako District	282	811	34.7		
Otorohanga District	133	563	23.6		
Thames-Coromandel District	367	779	47.1		
Waikato District	403	1245	32.3		
Waipa District	219	665	32.9		
Total	1614	4543	35.5		

In both Franklin and Thames-Coromandel, the number of structures surveyed compared to the GIS generated number of crossing points was more than 40%. In Matamata-Piako, Waikato and Waipa the number of structures compared with the number of points was between 32 and 35%. Otorohanga District was comparatively poorly represented with only 24% of structures surveyed compared to the results from the GIS.

The following series of graphs represent the survey results by district. Data are presented as the assessed severity of fish passage restriction.

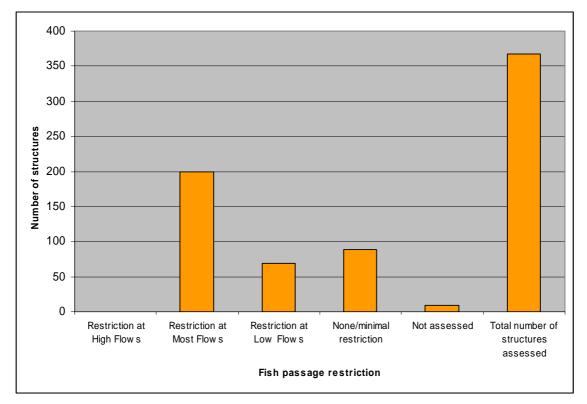


Figure 9 Thames-Coromandel District - number of structures assessed by fish passage restriction

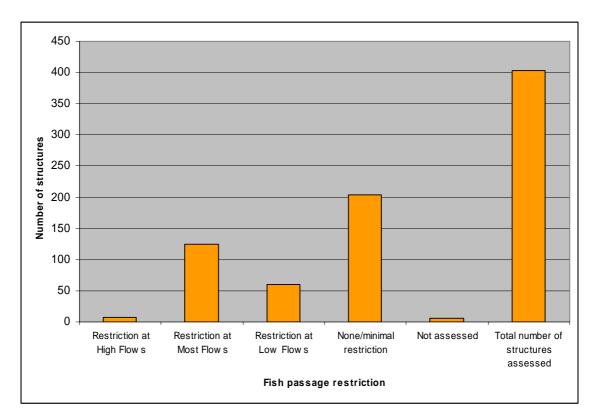


Figure 10 Waikato District – number of structures assessed by fish passage restriction

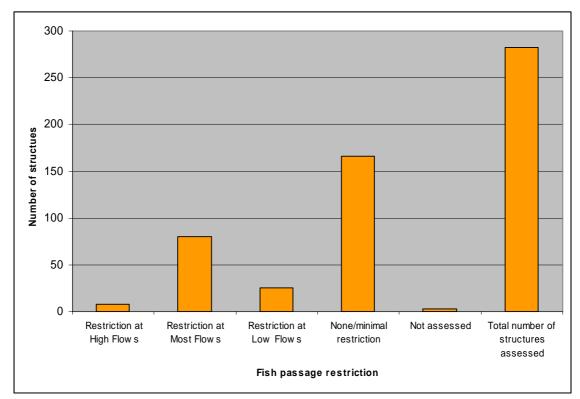


Figure 11 Matamata-Piako District - number of structures assessed by fish passage restriction

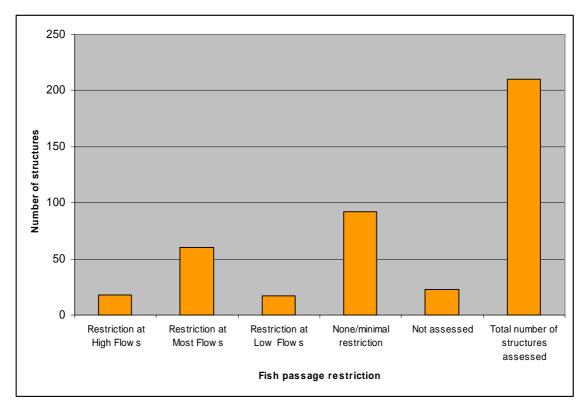


Figure 12 Franklin District - number of structures assessed by fish passage restriction

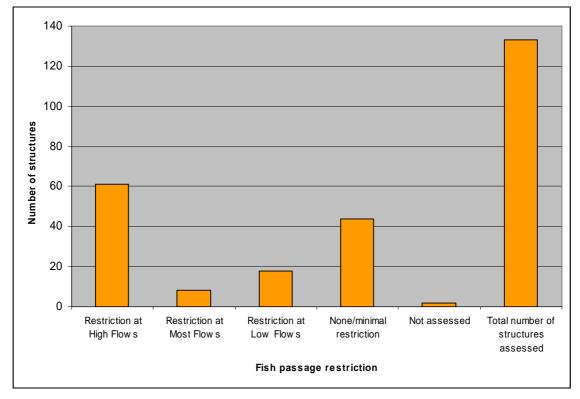


Figure 13 Otorohanga District - number of structures assessed by fish passage restriction

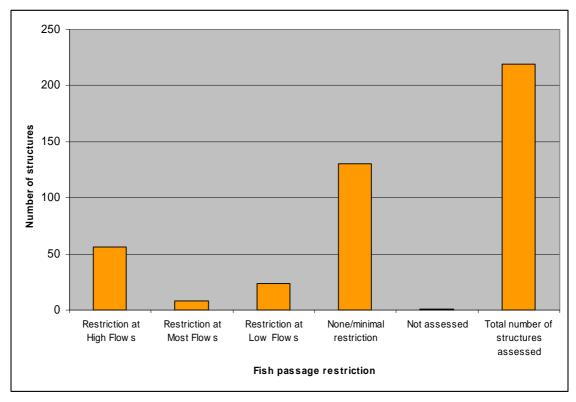


Figure 14 Waipa District - number of structures assessed by fish passage restriction

3.4 Prioritisation for remedial works

After the identification of structures within the study sites, a process of prioritisation was used to highlight which structures would provide the greatest gains if remediated. The priority list was developed on a regional scale and within each Territorial Authority.

3.4.1 Ranking process

The prioritisation and ranking process used for this exercise is based on information collected in the field and the GIS data available at the time of analysis. This ranking is seen as indicative and should be used with consideration of the limitations outlined below (3.4.2).

The ranking dataset is only for structures deemed restrictive to fish passage at low, high or most flow conditions, as these are considered the type most in need of remediation (culverts with none/minimal restriction on fish passage were not ranked, nor were those that had no fish passage restriction recorded).

When determining final priorities, the perch height and undercut also need to be taken into account (these factors were not considered in the ranking process described below). Other considerations that need to be taken into account are whether structures have downstream barriers which can't be remediated (ie: floodgates, dams, waterfalls), or whether remediation may allow access to alien fish species (inclusive of trout) that would not otherwise be present.

The culvert ranking information is based on data extracted from the culvert database in April 2006.

3.4.1.1 Methodology of ranking and GIS layers used

For the ranking prioritisation the following steps were undertaken. All those structures which were assessed to pose none/minimal restriction to fish passage were removed from the analysis. Those structures located >100km from the sea were also removed (other than Waipa District where structures >200km from the sea were removed).

<u>Ranking</u> Culvert barrier rating	1 = barrier at high flows 2 = barrier at low flows 3 = barrier at most flows
Weighting of 5	
Distance <100km (or <200 km for Waipa) from the sea (km)	1 = >50 2 = 11-50 3 = 0-10
Weighting of 4	
Upstream network length (km)	1 = 0-10 2 = 11-50 3 = >50
Weighting of 3	
% Upstream catchment forest cover	
	1 = 0-10 2 = 10-50 3 = >50
Weighting of 2	
No other road culverts upstream or dow (that have a barrier rating of low flows or most flows) <i>Weighting of 1</i>	nstream 1 = >1 2 = 1 3 = 0

Priority is therefore set by:

Sum of (Culvert score x 5) + (Distance score x 4) + (Upstream networks score x 3) + (Upstream forest cover score x 2)

Range of scores = 15-45

The scores were then priority ranked for the whole Region and by District. A priority ranking of a low number represented sites which have higher scores generated using this ranking process. These sites with the lowest number priority (eg: 1) are the highest priority for remedial action. For the purpose of ranking, the presence or absence of road culverts downstream was not included in the scoring system because it was not clear how many had been surveyed.

Those structures which pose a barrier at most flows are considered to be a greater issue and of a higher priority due to their greater impact on fish passage. Perch height and undercut of these structures must also be taken into account when looking at remedial options. The viability of remedial works may be influenced by the size of both the perch and the undercut of these structures.

3.4.2 Data limitations:

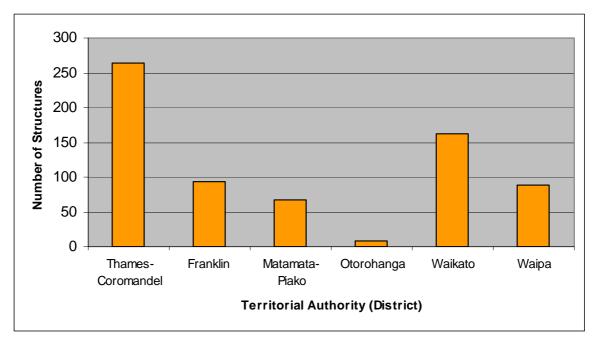
There are a number of **limitations** that must be considered in regard to the culvert ranking dataset when using this information:

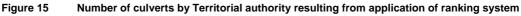
- The dataset is limited to publicly accessible roads and does not include all structures present. It does not include structures on private land.
- The assessment of each structure is subjective and assumes an 80% correct assessment rate.

- The Regional ranking is for those structures assessed within the scope of this project. Not all Territorial Authorities were included in the project.
- Given the age of these data some structures may have been affected by weather events and deteriorated, and may in fact now rank higher in this system.
- Alternatively, some structures may have been remediated since data were collected and may in fact now rank lower in this system or not at all.
- These data are provided as a guideline only it is recommended that a fishery and/or hydrological survey be conducted before any **major** work is undertaken on remedial measures at any of these structures.
- Geographical locations are accurate to \pm 50 m (1:50000 scale) unless otherwise indicated.
- The provision of these data does not resolve any legislative requirements by any operating authority.

3.5 Ranking process results

Those structures which ranked in the priority process are presented in Figure 15. Data are presented by district.





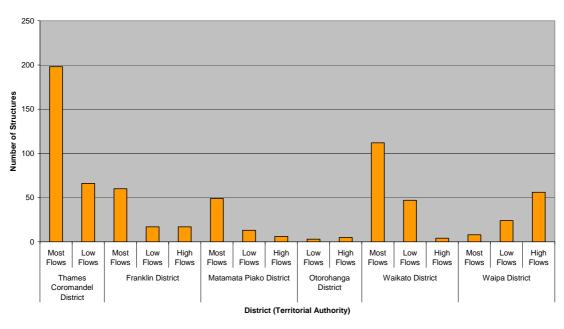
After removal of structures assessed to pose none/minimal fish passage restriction, structures not assessed and structures >100km from the coast (>200km from the coast in Waipa), 685 of the 1614 structures (42%) surveyed were prioritised following the ranking system (Table 3). The relative percentage of ranked structures compared with the total surveyed in each district is also represented.

Thames-Coromandel had the highest percentage of ranked structures followed by Franklin, Waikato, Waipa, Matamata-Piako and finally Otorohanga district.

Table 3 Number of structures ranked within each district

District	Total ranked structures	Total structures surveyed	% of ranked versus total structures surveyed
Thames Coromandel District	264	367	72
Franklin District	94	210	45
Matamata-Piako District	68	282	24
Otorohanga District	8	133	6
Waikato District	163	403	40
Waipa District	88	219	40
Total	685	1614	

Figure 16 illustrates the ranked structures by level of fish passage restriction. The majority of structures which featured in the ranking system were those considered to be a barrier at most flows. This was reflected in 5 of the 6 areas assessed. Waipa District was the exception with the majority of ranked structures considered to be a barrier at high flows.



Number of ranked structures by District (at different flows)

Figure 16 Number of structures which resulted from applying ranking system by District and by fish passage restriction

4

Management implications

Thirty six percent of possible structures in the study area (as ascertained by GIS analysis) were assessed during this study. Despite this low percentage and limitation, it is still applicable to report that potential habitat access by diadromous fish within the Waikato region is affected by in-river structures. Key areas of concern in regards to fish passage are the Thames-Coromandel and Waikato Districts although this does not negate the importance of structures within other districts.

The results of this project indicate that continued liaison between regulatory authorities and roading authorities is required to increase knowledge of the native fishery and the importance of providing fish passage at structures. It is also imperative this knowledge be passed to construction staff both within the authorities themselves and their contractors.

The results of the ranking and prioritisation process have been supplied to the relevant local authorities to provide them with guidance on those structures which are the most important in their Districts to remediate for restoration of fish passage. These results can be incorporated into maintenance schedules and help Territorial authorities meet their obligations.

A guideline providing information on best practice when installing waterway structures has been designed to assist regional and local authorities, consultants, roading engineers and contractors with the design and installation of appropriate waterway crossings within the Waikato Region. These guidelines have already been widely distributed amongst Territorial authorities to support the results of this project and provide guidance on new structure installation. The guidelines have also been widely distributed amongst Environment Waikato staff to assist in best practice both in the field and promote knowledge of best practice within the resource consent process.

This publication is available from the Environment Waikato website at no charge. See: <u>http://www.ew.govt.nz/publications/technicalreports/tr0625.htm</u>

It is strongly recommended that this guide be used when installing new waterway structures as it takes into consideration fish passage issues. It is easier, more cost effective and requires less maintenance to install an appropriate and well designed structure that will allow for fish passage than it is to remediate a poorly designed and installed structure at a future date. It is also important to monitor key sites for changes after storm events which may also require remedial works.

Consideration must be given to other priorities within Environment Waikato but relative to available resources, additional work on this project could include:

- Information workshops with Territorial authorities and Transit New Zealand for exchange of ideas, discussion of best practice and provision of assistance
- Information workshops with relevant groups within Environment Waikato to
 promote best practice. Investigate potential for Environment Waikato staff to
 utilise assessment procedure used in this study to highlight potential fish
 passage issues after flood events or due to erosion at structures
- Provision of information to roading contractors on the importance of fish passage and ways to assist in it's provision during the course of their work
- Liaise and work with pre-cast culvert manufacturers in supporting designs which allow for unimpeded fish passage

5 References

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Appendix 1 Fish and large Crustacea of the Waikato Region

Common Name (Maori Name) Scientific Name

NATIVE FISH

Yelloweyed mullet (Aua) Shortfinned eel (Hao) Longfinned eel (Kuwharuwharu) Australian longfinned eel Torrentfish (Papamoko) Giant kokopu (Kokopu) Koaro Dwarf galaxias Banded kokopu (Para) Inanga Shortjawed kokopu Lamprey (Piharau) Black mudfish Giant bully Upland bully Common bully (Pako) Bluegill bully Redfinned bully Cran's bully Grey mullet (Kanae) Common smelt (Ngaoire) Black flounder

Aldrichetta forsteri Anguilla australis Anguilla dieffenbachii

Anguilla reinhardtii Cheimarrichthys fosteri Galaxias argenteus Galaxias brevipinnis Galaxias divergens Galaxias fasciatus Galaxias maculatus Galaxias postvectis Geotria australis Neochanna diversus Gobiomorphus gobioides Gobiomorphus breviceps Gobiomorphus cotidianus Gobiomorphus hubbsi Gobiomorphus huttoni Gobiomorphus basalis Mugil cephalus Retropinna retropinna Rhombosolea retiaria

INTRODUCED FISH

Catfish Goldfish Grass carp Koi carp Mosquitofish Rainbow trout Perch Sailfin molly Guppy Brown trout Brook char Rudd Tench Swordtail

Ameiurus nebulosus Carassius auratus Ctenopharyngodon idella Cyprinus carpio Gambusia affinis Onchorhynchus mykiss Perca fluviatilis Poecilia latipinna Poecilia reticulata Salmo trutta Salmo trutta Salvelinus fontinalis Scardinius erythropthalmus Tinca tinca Xiphophorus helleri

CRUSTACEA

Freshwater crayfish (Koura) Shrimp (Patiki) Paranephrops planifrons

Paratya curvirostris

Appendix 2 Evaluation sheet

FISH PASSAGE EVALUATION SHEET FOR INSTREAM STUCTURES

Date:	N	Monitoring Officer:						
Site Number:	A	Authorisation Number:						
NZMS 260: Map No:	S	Spatial Locator Metho				Low order GPS Survey (If other please state)		
Co-ordinates: (GPS)	E				N			
Site Address:								
Stream Name:				(Catch	ment):.			
Culvert Description:	Culvert	ert Concrete Slab Ford withCulverts						
	Concrete	rete Slab Ford without Culverts						
Culvert type:	Pipe	Box	ſ	Arch		Ford		
Culvert Materials:	Concrete	-	Steel (Corrugat		Ivanise	d Steel	Plastic	
			ater dept depth (m	:h (m	liameter (m)		

Culvert cross section :

Inlet FLAT POOLED PERCHED

Outlet FLAT POOLED PERCHED

For perched culverts provide an estimate of water fall (for multiple culverts note maximums only):

Height (m)..... Undercut length (m).....

None/Minimal	Low flows	Most fl	ows	High flov	NS				
Stream attributes	<u>6</u>								
Stream bed level Above culvert inve level		ie as culv	vert inver	culvert	invert				
Stream width Narrower than cul	vert inlet width		Same a	as culvert i	nlet width	I			
Wider than culver	t inlet width								
Stream gradient Flatter than culvert gradient Same as culvert gradient									
Steeper than culv	ert gradient								
Stream alignment Straight in and out of culvert Straight in and curved out of culvert									
Curved in and stra	aight out of culve	ert							
Bed material Mud% Silt	% Sanc	1%	Pebbles	s% Co	obbles%				
Boulders%									
Water flow durin Low	g inspection : Normal		High						
Other attributes Bank Erosion at Cu	lvert Ends	Y	N	NA					
Downstream Barrie	rs	Y	Ν	NA					
Upstream Barriers		Y	Ν	NA					
Photos									
INLET									
OUTLET									
Other comments	<u>::</u>								

Appendix 3 List of ranked structures by district

	LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
Tham	es Coromandel District													
	1856.1	236	27/11/2000	4	0.5	0.5	0.6	Most flows		Perched	Concrete	T12:466-553	164	107
	234.17	237	27/11/2000	8	1.2	0.2	0.2	Most flows		Perched	Galvanised Steel	T12:473-557	76	57
	234.18	238	27/11/2000	15	1.2	0.2	0.1	Most flows		Perched	Concrete	T12:457-544	76	57
	234.19	240	27/11/2000	4	0.25	0.1	0.1	Most flows		Perched	Concrete	T12:450-529	15	15
	234.20	241	27/11/2000	10	0.8	0.2	0.15	Most flows		Perched	Concrete	T12:443-521	164	107
	234.21	242	27/11/2000	15	1.2	0.1	0.4	Most flows		Perched	Concrete	T12:444-513	164	107
	447.2	243	27/11/2000	4	0.45	0	0.15	Most flows		Perched	Concrete	T12:428-498	76	57
	1019.2	245	27/11/2000	7	2	0.05	0.1	Most flows		Perched	Concrete	T12:411-472	98	67
	234.24	246	27/11/2000	4				Most flows		Perched	Concrete	T12:407-466	1	1
	962.4	247	27/11/2000	5 3	0.5	1	0.3	Most flows		Perched	Steel	T12:345-514	5	5
	962.5	248	27/11/2000	3	0.75 1	0.3	0	Most flows	Flat	Perched	Concrete	T12:350-516	5	5 27
	1577.2 790.1	249 250	28/11/2000	20	1	0.1	0.5	Most flows	Flat	Flat	Concrete	T12:340-529	35 35	27
	1175.9	250 254	28/11/2000 28/11/2000	20	0.3	0.1	0.8	Most flows Most flows		Perched Perched	Concrete Concrete	T12:346-565 T11:349-607	5	5
	681.1	255	28/11/2000	8	0.75	0.8	0.8	Most flows		Perched	Concrete	T11:321-679	164	107
	1857.1	257	28/11/2000	3	6	0.3	0.5	Most flows		Perched	Concrete	T11:326-700	20	17
	1814.1	258	28/11/2000	8	1	0.0	0.2	Most flows		Perched	Concrete	S11:293-717	98	67
	1556.3	261	28/11/2000	6	1.2	0.2	0.4	Most flows		Perched	Concrete	T11:324-850	164	107
	1599.1	262	28/11/2000	15	2	0.1	0.5	Most flows		Perched	Concrete	T11:313-821	35	27
	1571.1	265	29/11/2000	8	0.6	1	0.4	Most flows		Perched	Concrete	T12:342-550	35	27
	1569.2	266	29/11/2000	10	1	0.1	0.1	Most flows		Perched	Concrete	T12:347-571	35	27
	1105.6	273	30/11/2000	10	1	0.3	0.2	Most flows		Perched	Concrete	T11:353-866	20	17
	1105.7	274	30/11/2000	10	1	0.3	0.3	Most flows		Perched	Concrete	T11:355-865	20	17
	1105.9	277	30/11/2000		1.5	0.5	0.5	Most flows		Perched	Concrete	T11:372-836	164	107
	1595.1	279	30/11/2000	6	1	0.5	0.5	Most flows		Perched	Concrete	T11:409-792	76	57
	1597.2	281	1/12/2000	6	0.5	0.2	0.8	Most flows		Perched	Concrete	T11:435-796	164	107
	1594.1	282	1/12/2000	8	1.8	0.2	0.5	Most flows		Perched	Concrete	T11:448-791	35	27
	935.2	284	5/12/2000	8	0.7	0.3	0.5	Most flows		Perched	Concrete	T10:543-940	35	27
	1163.1	285	5/12/2000	12	1.5	0.5	1	Most flows		Perched	Concrete	T10:557-954	35	27
	1593.1	286	5/12/2000	12	1.6	0.1	0.1	Most flows		Perched	Concrete	T10:541-932	98	67
	1593.2	287	5/12/2000	3	1.5	0.1	0.5	Most flows		Perched	Concrete	T10:545-921	35	27
	1756.1	289	5/12/2000	10	3	0.3	0.5	Most flows		Perched	Concrete	T10:347-903	35	27
	1241.6	290	5/12/2000	10	1.6	0.2	0.5	Most flows		Perched	Concrete	T10:386-909	35	27
	1776.1	292	6/12/2000	12	1	1	0.5	Most flows		Perched	Concrete	T11:535-884	35	27
	42.7	300	6/12/2000	5	0.8	0.1	1	Most flows		Perched	Concrete	T11:429-866	76	57
	42.3	302	6/12/2000	6	0.8	0.5	0.5	Most flows		Perched	Concrete	T11:433-853	164	107
	42.19 813.4	303 304	6/12/2000	10 10	1 0.85	0.5 0.3	0.3 0.3	Most flows		Perched	Concrete	T11:433-853	164 20	107 17
	813.4	304 306	6/12/2000 6/12/2000	6	0.85	0.3	0.3	Most flows Most flows		Perched Perched	Concrete Concrete	T10:436-949 T10:426-950	20 20	17
	1241.2	308	6/12/2000	5	0.8	0.5	0.2	Most flows		Perched	Concrete	T10:426-930	20	17
	1241.2	308	6/12/2000	12	0.8	0.1	0.2	Most flows		Perched	Concrete	T10:391-906	20	5
	1549.1	310	8/12/2000	10		0.2	0.5	Most flows	Pooled	Pooled	Concrete	T10:317-913	98	67
	267.2	313	8/12/2000	6	2	0.2	0.8	Most flows	1 00100	Perched	Concrete	T10:304-949	35	27
	1575.1	314	8/12/2000	6	0.2	0.5	2	Most flows		Perched	Concrete	S10:192-164	35	27
	797.1	315	8/12/2000		3	1	2	Most flows		Perched	Concrete	S10:191-184	98	67
	1251.1	320	8/12/2000	7	0.7	0.2	0.2	Most flows		Perched	Concrete	S10:202-141	35	27
	1525.5	324	8/12/2000	7	0.8	0.2	0.3	Most flows		Perched	Concrete	S10:224-122	98	67
	1525.6	325	8/12/2000	7	1	1	1.5	Most flows		Perched	Concrete	S10:227-122	98	67
	1525.7	326	8/12/2000	7	1	0.1	0.5	Most flows		Perched	Concrete	S10:230-120	35	27
	916.1	327	8/12/2000	7	2	0.1	0.5	Most flows		Perched	Concrete	S10:233-118	35	27
	1525.8	328	11/12/2000	8	0.45	0.3	0.5	Most flows		Perched	Concrete	S10:237-118	98	67
	1525.9	329	11/12/2000	8	1	0.5	0.8	Most flows		Perched	Concrete	S10:238-116	98	67

LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
Thames Coromandel District													
1525.12	332	11/12/2000	10	1	0.2	0.3	Most flows		Perched	Concrete	S10:249-110	35	27
86.3	338	11/12/2000	6	1	0.05	0.05	Most flows		Perched	Concrete	S10:299-049	164	107
86.4	339	11/12/2000	6	0.8	0.8	0.8	Most flows		Perched	Concrete	S10:298-049	164	107
111.2	340	12/12/2000	10	0.8	0.3	2	Most flows		Perched	Concrete	T10:343-932	35	27
155.6	341	12/12/2000	7	0.2	0.1	1	Most flows		Perched	Concrete	T10:354-949	164	107
155.7	342	12/12/2000	8	0.4	0.5	1	Most flows		Perched	Concrete	T10:353-952	98	67
155.8	344	12/12/2000	6	1	0.5	1	Most flows		Perched	Concrete	T10:368-975	98	67
1816.1	345	12/12/2000	10	1	0.1	0.1	Most flows		Perched	Concrete	T10:384-005	35	27
1816.2	346	12/12/2000	8	0.8	0.1	0.3	Most flows		Perched	Concrete	T10:383-013	35	27
1542.1	349	13/12/2000	16	1.3	0.2	0.3	Most flows		Perched	Concrete	S10:297-169	35	27
1542.2	350	13/12/2000	14	1	0.2	0.3	Most flows		Perched	Concrete	S10:295-174	35	27
628.2	352	13/12/2000	8	0.8	0.1	1	Most flows		Perched	Concrete	T10:306-161	5	5
1506.1	353	13/12/2000	10	2	0.1	0.5	Most flows		Perched	Concrete	T10:314-161	98	67
1136.4	354	13/12/2000	20	1	2	5.5	Most flows		Perched	Concrete	T10:325-116	35	27
1136.5	355	13/12/2000	6		0.2	0.3	Most flows		Perched	Galvanised Steel	T10:333-104	35	27
9.2	356	13/12/2000	8	1	0.3	0.5	Most flows		Perched	Concrete	T10:315-089	35	27
9.3	357	13/12/2000	8	0.7	0.2	0.3	Most flows		Perched	Concrete	T10:312-081	35	27
875.1	358	14/12/2000	12	2	2	0.5	Most flows		Perched	Galvanised Steel	S10:285-964	98	67
877.1	359	14/12/2000	8	1.8	1	0.5	Most flows		Perched	Concrete	S10:284-966	35	27
875.2	361	14/12/2000	10	1	0.1	0.2	Most flows		Perched	Concrete	S10:277-971	164	107
1537.1	362	14/12/2000	14	1.2	0	2	Most flows		Perched	Concrete	S10:277-979	98	67
1537.4	365	14/12/2000	20	1.4	1	1	Most flows		Perched	Concrete	S10:278-987	164	107
1257.7	368	14/12/2000	8	1.6	0.2	1.5	Most flows		Perched	Concrete	T11:478-691	35	27
1257.8	369	14/12/2000	4.5	0.4	1	2	Most flows		Perched	Concrete	T11:472-688	1	1
4.3	370	14/12/2000	20	1	0.5	1.5	Most flows		Perched	Concrete	T11:454-677	76	57
1522.1	371	17/12/2000		0.6	0.2	0.5	Most flows		Perched	Concrete	T11:580-746	164	107
196.6	372	17/12/2000	14	2	0.2	0.6	Most flows		Perched	Concrete	T11:580-749	164	107
148.2	374	17/12/2000	12	0.8	0.1	0.0	Most flows		Perched	Concrete	T11:602-807	98	67
89.4	376	17/12/2000	10	1.8	9.9	0.5	Most flows	Perched	Perched	Concrete	T11:585-804	98	67
89.5	377	17/12/2000	12	1.0	0.1	0.8	Most flows	reicheu	Perched	Concrete	T11:587-799	98	67
250.6	379	19/12/2000	14	1.2	0.1	0.0	Most flows		Perched	Concrete	T12:410-448	297	195
1062.3	380	19/12/2000	14	1.2	0.2	0.5	Most flows		Perched	Concrete	T12:576-530	164	107
1062.4	381	19/12/2000	14	1.2	0.2	2	Most flows		Perched	Concrete	T12:564-518	345	218
1660.1	383	20/12/2000	14	1.2	0.3	0.3	Most flows		Perched	Concrete	T12:493-464	164	107
20.1	384	20/12/2000	30	3	0.5	0.3	Most flows		Perched	Concrete	T12:493-459	164	107
940.16	385	20/12/2000	30 4	1.5	0.1	0.1			Perched	Concrete	T12:556-544	345	218
940.17	386	20/12/2000	6	1	0.1	0.5	Most flows				T12:538-520	345	218
940.17	387	20/12/2000	8	0.8	0.1	0.5	Most flows Most flows		Perched Perched	Concrete Concrete	T12:540-521	345 15	218 15
			8 4	0.8	0.2								
940.19	389	20/12/2000	-	-		0.3	Most flows		Perched	Concrete	T12:536-492	345	218
940.20	391	21/12/2000	10	1.65	0.3	0.5	Most flows		Perched	Concrete	T12:601-556	164	107
146.2	393	21/12/2000	12	1	0.2	0.1	Most flows		Perched	Concrete	T12:635-574	164	107
145.1	394	21/12/2000	12	-	-	1	Most flows		Perched	Galvanised Steel	T12:637-577	164	107
1176.1	400	21/12/2000	8	1.8	0	0.2	Most flows		Perched	Concrete	T11:530-726	164	107
940.22	404	21/12/2000	14	0.8	0.5	1	Most flows		Perched	Concrete	T12:610-569	3	3
1271.12	408	19/03/2001	10	0.8	0.05	0.1	Most flows		Perched	Concrete	T12:636-379	164	107
1271.7	411	19/03/2001	15	3		0.4	Most flows		Perched	Concrete	T12:609-360	5	5
1312.11	421	23/03/2001	20	0.5			Most flows	Pooled	Pooled	Concrete	T12:628-454	164	107
1505.1	427	23/03/2001	16	0.6	0.1	0.2	Most flows		Perched	Concrete	T12:645-495	164	107
1507.1	429	23/03/2001	12	2	1.2	0.6	Most flows		Perched	Concrete	T12:661-526	164	107
1101.3	432	23/03/2001	8	0.3	0	0.4	Most flows		Perched	Concrete	T12:657-533	164	107
977.2	434	23/03/2001	17	0.3	0	0.1	Most flows		Perched	Concrete	T12:637-486	98	67
977.1	435	23/03/2001	10	5.5		0.1	Most flows		Perched	Concrete	T12:633-491	98	67
977.3	436	23/03/2001	16	0.4	0	1.1	Most flows		Perched	Galvanised Steel	T12:633-491	98	67
56.5	437	30/03/2001	15	0.5	0	0.1	Most flows		Perched	Concrete	T12:601-520	345	218

Themes Commande Division 96 0.8 0.2 0.8 0.0 0.7 Most Towa Peached Constrain T12598-19 36.6 21.8 1082.2 4.89 30032001 1.4 1.3 1.6 Most Towa Peached Constrain T12592-17 27.7 27.6 15.9 1082.2 4.49 30032001 1.5 1.4 0.5 6.8 Most Towa Peached Constrain T12392-17 27.7 15.9 15.9 15.9 15.9 15.9 15.9 15.9 15.9 15.9 15.9 15.9 15.9 15.9 15.9 15.9 16.9 15.9 16.9 15.9 16.9 15.9 16.9 <td< th=""><th></th><th>LOCATED KEY</th><th>SITE ID</th><th>INSPECTION DATE</th><th>LENGTH (m)</th><th>DIAMETER (m)</th><th>UNDERCUT LENGTH (m)</th><th>PERCHED HEIGHT (m)</th><th>FISH PASSAGE RESTRICTION</th><th>INLET Cross - Section</th><th>OUTLET Cross - Section</th><th>CONSTRUCTION MATERIAL</th><th>MAP REFERENCE</th><th>REGION RANK</th><th>DISTRICT RANK</th></td<>		LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
10102.5 4.39 3003/2001 12 0.5 Most Rose Perchas Concrete T1250-317 301 301 11002.7 4.41 3003/2001 1 0.5 0.6 Most Rose Perchas Concrete T1250-323 217 105 144.4 4.46 3003/2001 17 0.5 0.5 0.6 Most Rose Perchas Concrete T1350-323 144 107 144.4 4.46 3003/2001 15 0.5 0 1 Most Rose Perchas Concrete T1350-323 144 107 145.1 4.43 3003/2001 16 1.5 0.5 0.0 Most Rose Perchas Concrete T1350-423 144 107 121.1 4.43 3003/2001 1 1.6 0 0.2 Most Rose Perchas Concrete T1350-723 34 107 122.1.1 4.43 604/2001 1 0.0 2.0 Most Rose Perchas Concrete T1350-78 5 5 5 5 5 5 <th>т</th> <th>hames Coromandel District</th> <th></th>	т	hames Coromandel District													
1962.6 440 30303200 14 1.3 3.5 Mosi Tows Perched Concrete T1255235 297 195 1144.3 444 30030200 15 1.1 1.0 0.0 Mater Tows Perched Concrete T1255235 195 1145.4 444 30030200 15 0.1 1 Moti Tows Perched Concrete T135347 164 107 1145.4 447 30030200 15 0.1 1 Moti Tows Perched Concrete T1350483 164 107 1161.4 449 30030200 17 1.7 0 0.1 Mater Tows Perched Concrete T1350483 164 107 1161.4 449 30030200 1 1.1 0.5 Mater Tows Perched Concrete T1355720 1.8 1.1 1.0 Mater Tows Perched Concrete T1455727 1.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9		56.6	438	30/03/2001	26	0.6	0.2	0.7	Most flows		Perched	Concrete	T12:598-519	345	218
1962.7 441 30030201 15 1.61 0.61 Mast Hows Percentel Concrete T15250-23 287 185 144.4 444 300302001 15 0.05 0 3 Mont Hows Percentel Concrete T15258-81 164 1077 144.5 446 300302001 15 1.5 Mont Hows Percentel Concrete T15256-861 164 1077 181.1 448 300302001 15 1.5 Mont Hows Percentel Concrete T15256-861 164 216 25.4 451 300302001 16 1.8 1.1 0.5 Mont Hows Percentel Concrete T1535780 164 107 123.11 454 65002001 10 0.0 0.1 0.5 Mont Hows Percentel Concrete T1535780 164 107 123.14 465 60042001 1 0.1 0.7 Mont Hows Percentel Concrete T1535780 164 107 123.14 465 60042001		1062.5	439	30/03/2001	22	0.5			Most flows		Perched	Concrete	T12:592-517	297	195
14.4.3 444 30032001 15 1.1 0.1 0.6 Most flows Perched Concret T1183-645 146 107 14.4.4 446 30032001 17 0.7 0.1 0.2 Most flows Perched Concret T1183-645 164 107 14.4.4 447 30032001 17 0.7 0.1 Most flows Perched Concret T1183-645 164 97 164 447 30032001 17 0.7 0.1 Most flows Perched Concret T1183-645 164 97 1724.1 453 30032001 17 1.0 0.0 2.0 Most flows Perched Concret T1183-672 1.6 97 124.1 455 6042001 10 0.0 2.0 Most flows Perched Concret T1185-672 1.6 97 124.1 456 6042001 10 0.0 2.0 Most flows Perched Concret T1135-672 1.6 97 224.5 456 60420		1062.6	440	30/03/2001	14	1.3		3.5	Most flows		Perched	Concrete	T12:592-515	297	195
14.4.4 443 30.003(20)1 20 0.05 0 3 Metal lines Prechad Concrete T1153-563 164 107 14.4.5 447 30.03(20)1 16 0.5 0 1 Motal lines Prechad Concrete T1153-563 164 107 16.11 444 30.03(20)1 17 1.0 1.0 Motal lines Prechad Concrete T1153-563 164 107 16.14 451 30.03(20)1 16 0.5 2 Motal lines Prechad Concrete T1153-572 164 107 132.14 453 0.042001 1 0.0 0.1 0.2 Motal lines Prechad Concrete T1153-572 164 107 22.24 454 0.042001 11 0.1 0.2 Motal lines Prechad Concrete T1153-572 164 107 22.24 458 0.042001 1 0.1 0.2 Motal lines Prechad Concrete T1135-572 164 107 22.44 458<		1062.7	441	30/03/2001	30	1	0.5	0.6	Most flows		Perched	Concrete	T12:580-523	297	195
144.5 447 30032001 17 0.7 0.1 0.2 Most Flows Perchad Cornert 11133-163 164 107 181.1 448 30032001 15 1.8 1.5 Most Flows Perchad Cornert 11133-166 164 107 181.1 448 30032001 17 1.7 0.0 0.2 Most Flows Perchad Cornert 11133-164 3.6 217 181.1 447 30032001 12 0.0 0.2 Most Flows Perchad Cornert 11133-17-0 1.4 0.0 1.7 Most Flows Perchad Cornert 11135-707 1.4 0.0 0.0 Most Flows Perchad Cornert 11135-707 1.4 0.0 0.0 Most Flows Perchad Cornert 11135-707 1.4 0.0 0.0 0.0 Most Flows Perchad Cornert 11135-707 1.4 0.0 0.0 0.0 Most Flows Perchad Cornert 11135-707 1.4 0.0 0.0 0.0 0.0 0.0 Most Flows		144.3	444	30/03/2001	15	1.1	0.1	0.6	Most flows		Perched	Concrete	T11:633-647	164	107
144.6 444 30032001 16 0.5 0 1 Mexil flows Percined Concrete T1183/683 164 107 1818.1 448 30032001 17 1.7 0 0.1 Mexil flows Percined Concrete T1183/683 345 218 132.1 453 30032001 14 0.0 0.2 Mort flows Percined Concrete T1183/673 345 218 132.1 455 600/2001 18 0.01 0.2 Mort flows Percined Concrete T1181/773 35 3 224.3 455 600/2001 10 0.3 0.2 Mort flows Percined Concrete T1183/783 5 5 224.5 457 600/2001 5 1.1 0.2 Mort flows Percined Concrete T1183/783 5 <		144.4	445	30/03/2001	25	0.65	0	3	Most flows		Perched	Concrete	T11:633-651	164	107
812.1 448 30032001 15 1.8 1 1.5 Meri flows Perched Concrete T11535690 345 218 25.4 451 30032001 6 1.1 0.5 2 Meri flows Perched Concrete T11514722 345 218 121.10 453 8042001 12 0.6 0.5 Meri flows Perched Concrete T11535780 164 107 224.4 466 6042001 1 0.1 0.2 Most flows Perched Concrete T11535788 64 107 204.3 456 6042001 1 0.2 0.2 Most flows Perched Concrete T11452781 164 107 204.3 457 6042001 1 0.2 0.2 Most flows Perched Concrete T11452781 164 107 204.4 458 6042001 8 0.5 1.7 Most flows Perched Concrete T1145776 35 5 201.6 461 6042001 8		144.5	446	30/03/2001	17	0.7	0.1	0.2	Most flows		Perched	Concrete	T11:631-653	164	107
1918.1 446 30032001 17 17 0 0.1 Mont flows Perched Concrete T11:50:60:44 346 218 122.10 452 30032001 14 0.6 0.2 Mont flows Perched Concrete T11:58:421 164 107 122.11 453 604/2001 8 1.3 0.01 0.2 Mont flows Perched Concrete T11:51:42.20 3 3 224.2 454 604/2001 10 0.3 1.0 1.0 Mont flows Perched Concrete T11:51:42.20 3 3 224.3 456 604/2001 1 0.1 0.2 Mont flows Perched Concrete T11:45:778 5 5 2026.4 456 604/2001 8 0.6 Mont flows Perched Concrete T11:45:778 5 5 2026.4 456 604/2001 8 0.8 0.4 Mont flows Perched Concrete T11:45:778 5 5 2026.4 457 604/2001		144.6	447	30/03/2001	16	0.5	0	1	Most flows		Perched	Concrete	T11:630-653	164	107
25.4 491 30/03/2001 8 1.1 0.5 2 Most flows Perched Concrete T1151/222 164 107 1321.10 453 60/02/201 12 0.6 0.5 Most flows Perched Concrete T1151/72 164 107 224.2 456 60/02/201 10 0.0 0.1 0.5 Most flows Perched Concrete T1151/72 164 107 224.5 467 60/02/201 10 0.2 0.4 Most flows Perched Concrete T1151/72 164 107 224.5 467 60/02/201 1 0.2 0.4 Most flows Perched Concrete T1142/78 164 107 205.6 461 60/42/01 6 0.5 1.7 Most flows Perched Concrete T1148/78 30 27 705.1 468 60/42/01 9 0.5 0.5 1.7 Most flows Perched Concrete T1148/78 30 27 705.1 468 60		812.1	448	30/03/2001	15	1.8	1	1.5	Most flows		Perched	Concrete	T11:635-666	164	107
1321.10 453 30032001 14 0.6 0 0.2 Most flows Perched Concrete 171:584-721 164 107 1321.11 453 6042001 8 1.3 0.01 0.2 Most flows Perched Concrete 171:58-720 164 107 224.3 456 6042001 10 0.3 0.1 0.2 Most flows Perched Concrete 171:52-73 164 107 224.4 456 6042001 10 0.2 0.4 Most flows Perched Concrete 171:426-778 5 5 201.4 457 6042001 9 1 0.2 0.6 Most flows Perched Concrete 171:426-778 5 5 2026.4 461 6042001 8 0.8 0.4 Most flows Perched Concrete 171:426-778 5 5 125.710 466 6042001 13 0.8 0.2 0.6 Most flows Perched Concrete 171:477.73 164 107 12		1818.1	449	30/03/2001	17	1.7	0	0.1	Most flows		Perched	Concrete	T11:595-694	345	218
111 43 60/42001 12 0.66 Mast flows Perched Concret T11:53P-73 3 224.3 456 60/42001 10 0.9 0.1 0.5 Most flows Perched Concret T11:52P-70 164 107 224.4 456 60/42001 10 0.9 0.2 0.4 Most flows Perched Concret T11:52P-70 164 107 224.5 457 60/42001 10 0.9 0.2 0.4 Most flows Perched Concret T11:52P-70 164 107 200.4 409 60/42001 1 1 0.2 Most flows Perched Concret T11:45P-73 35 75 200.4 404 60/42001 1 6 Add Most flows Perched Concret T11:45P-73 36 75 201.7 404 60/42001 3 Add Most flows Perched Concret T11:52P-77 164 171 201.7 74 80/42001 20 Add Most		25.4	451	30/03/2001	8	1.1	0.5	2	Most flows		Perched	Concrete	T11:614-722	345	218
2242 454 60/42001 8 1.3 0.01 0.2 Most flows Perched Concret T11:51-773 3 3 2243 456 60/42001 11 1 0.1 0.7 Most flows Perched Concret T11:537-682 164 107 2245 457 60/42001 1 2 0.3 0.2 Most flows Perched Gauvained Stee T11:482-781 164 107 200.6 468 60/42001 6 0.6 0.4 0.33 Most flows Perched Gauvained Stee T11:482-781 164 107 706.6 468 60/42001 3 0.5 1.7 Most flows Perched Gauvained Stee T11:482-781 46 107 1257.0 468 60/42001 3 0.5 1.7 Most flows Perched Concret T11:482-781 46 107 1257.0 408 60/42001 3 0.3 0.4 Most flows Perched Concret T11:482-787 46 107 125		1321.10	452	30/03/2001	14	0.6	0	0.2	Most flows		Perched	Concrete	T11:584-721	164	107
224.3 456 604/2001 10 0.9 0.1 0.5 Most Hows Perched Concrete T1527-107 164 107 224.4 456 604/2001 10 0.9 0.2 0.4 Most Hows Perched Concrete T1527-892 164 107 209.3 458 604/2001 9 1 0.1 0.2 Most Hows Perched Galarniaed Steel T1142-781 55 57 209.4 459 604/2001 8 0.5 0.5 1.7 Most Hows Perched Concrete T1142-771 164 40 60 <		1321.11	453	6/04/2001	12	0.6		0.5	Most flows		Perched	Concrete	T11:538-730	164	107
224.4 456 6042001 11 1 0.1 0.7 Most Rows Perched Concrete T11527682 56 164 107 209.3 458 6042001 11 2 0.3 0.2 Most Rows Perched Galvanies Ruel T11452781 164 107 209.4 459 6042001 6 0.6 0.5 Most Rows Perched Galvanies Ruel T1145773 35 277 705.1 464 6042001 3 0.8 0.45 Most Rows Perched Galvanies Ruel T1148778 35 57 1257.1 0.49 6042001 3 0.8 0.45 Most Rows Perched Concrete T1142774 58 57 1257.1 0.49 6042001 3 0.8 Most Rows Perched Concrete T11571771 68 67 1257.1 0.49 9042001 15 0.2 0.8 Most Rows Perched Concrete T11571771 68 67 2157 476 9042001 <td< td=""><td></td><td>224.2</td><td>454</td><td>6/04/2001</td><td>8</td><td>1.3</td><td>0.01</td><td>0.2</td><td>Most flows</td><td></td><td>Perched</td><td>Concrete</td><td>T11:518-720</td><td>3</td><td>3</td></td<>		224.2	454	6/04/2001	8	1.3	0.01	0.2	Most flows		Perched	Concrete	T11:518-720	3	3
2245 457 604/2001 10 0.9 0.2 Most flows Perched Concrete 111425-782 164 107 2094 469 604/2001 9 1 0.1 0.2 Most flows Perched Concrete 111485-78 35 57 2096 461 604/2001 8 0.5 0.5 Most flows Perched Concrete 111485-78 164 107 7045 466 604/2001 8 0.5 0.5 Most flows Perched Concrete 111485-78 164 107 11455 474 604/2001 13 0.8 0.5 Most flows Perched Concrete 111452-77 164 107 1145 473 904/2001 2.6 Most flows Perched Concrete 111567-73 164 107 1145 0.6 0.6 0.6 Most flows Perched Concrete 111567-73 164 107 1145 15 0.5 0.2 0.6 Most flows Perched Concrete		224.3	455	6/04/2001	10	0.9	0.1	0.5	Most flows		Perched	Concrete	T11:521-707	164	107
200345860/420011120.30.2Most flowsPerchedGavanies Size11:148-7815520066060/4200160.60.40.3Most flowsPerchedConcret11:148-781640.7705164660/4200190.90.80.45Most flowsPerchedGavanies Size11:148-78164107705464660/4200190.90.80.68Most flowsPerchedConcret11:148-771641077146.6473280320013.60.3Most flowsPerchedConcret11:159-773164107821447390/420012.00.70.20.3Most flowsPerchedConcret11:159-73168107821547490/420011.50.40.25Most flowsPerchedConcret11:159-731681071520.147790/420011.50.40.25Most flowsPerchedConcret11:159-731681071520.247390/420011.50.40.25Most flowsPerchedConcret11:159-731681071520.147790/420011.50.40.25Most flowsPerchedConcret11:159-731681071520.147890/420011.50.40.2Most flowsPerchedConcret11:159-73168107 <td></td> <td>224.4</td> <td>456</td> <td>6/04/2001</td> <td>11</td> <td>1</td> <td>0.1</td> <td>0.7</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>T11:537-688</td> <td>5</td> <td>5</td>		224.4	456	6/04/2001	11	1	0.1	0.7	Most flows		Perched	Concrete	T11:537-688	5	5
2004 459 60/42001 9 1 0.1 0.2 Most flows Perched Concrete T114/57/78 5 5 706.1 444 60/42001 8 5 0.5 1.7 Most flows Perched Galvanised Steel T114/67/78 164 107 706.6 445 60/42001 13 0.8 0.4 Mast flows Perched Concrete T114/67/78 164 107 1145.6 471 20032001 3.6 0.8 0.4 Mast flows Perched Concrete T113/57/70 88 67 821.4 473 90/42001 2.0 0.6 Mast flows Perched Concrete T113/57/73 88 67 1520.1 477 90/42001 15 0.5 0.2 Mast flows Perched Concrete T113/57/73 88 67 1520.1 477 90/42001 15 0.5 Mast flows Perched Concrete T113/57/73 84 107 1520.1 478 90/42001 15 0.5 </td <td></td> <td>224.5</td> <td>457</td> <td>6/04/2001</td> <td>10</td> <td>0.9</td> <td>0.2</td> <td>0.4</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>T11:525-692</td> <td>164</td> <td>107</td>		224.5	457	6/04/2001	10	0.9	0.2	0.4	Most flows		Perched	Concrete	T11:525-692	164	107
2096 461 6042001 6 0.6 0.4 0.3 Most flows Perched Concrete T11:48-775 35 27 776.4 646 6042001 9 0.9 0.8 Most flows Perched Galvanias T11:46:754 45 55 1257.10 469 6042001 13 0.3 0.6 Most flows Perched Concrete T11:46:754 45 55 1257.10 474 9042001 24 0.3 Most flows Perched Concrete T11:55:773 164 673 821.7 474 9042001 15 0.7 0.2 0.3 Most flows Perched Concrete T11:55:73 38 67 152.1 477 9042001 15 1.1 0.8 0.25 Most flows Perched Concrete T11:45:73 164 107 152.1 477 9042001 15 1.3 0.3 0.25 Most flows Perched Concrete T11:45:747 164 107 152.1 478 <td< td=""><td></td><td>209.3</td><td>458</td><td>6/04/2001</td><td>11</td><td>2</td><td>0.3</td><td>0.2</td><td>Most flows</td><td></td><td>Perched</td><td>Galvanised Steel</td><td>T11:462-781</td><td>164</td><td>107</td></td<>		209.3	458	6/04/2001	11	2	0.3	0.2	Most flows		Perched	Galvanised Steel	T11:462-781	164	107
705.1 464 60/4/2001 8 0.5 0.7 Most flows Perched Galvanised Snell T11486-754 15 1257.10 469 60/4/2001 13 0.8 0.2 0.6 Most flows Perched Concrete T1142-754 164 107 1146.6 471 28/03/2001 2.6 0.6 Most flows Perched Concrete T1157-77 0.8 67 821.5 474 90/4/2001 12 0.5 0.61 Most flows Perched Concrete T11567-77 0.8 67 821.7 478 90/4/2001 17 0.5 0.2 0.3 Most flows Perched Concrete T11557-73 0.8 67 150.1 478 90/4/2001 17 1.1 0.8 0.03 Most flows Perched Concrete T11495-793 0.4 0.7 126.4 478 90/4/2001 17 1.3 0.3 0.62 Most flows Perched Concrete T11495-78 164 107 126.4 483		209.4	459	6/04/2001	9	1	0.1	0.2	Most flows		Perched	Concrete	T11:455-778	5	5
704.6 665 604.2001 9 0.8 0.45 Most flows Perched Concrete T1142-754 5 5 1125.7 476 200.2001 3.6 0.37 0.06 Most flows Perched Concrete T1150-270 96 67 821.5 474 904.2001 20 0.7 0.2 0.5 Most flows Perched Concrete T1159-2703 96 67 821.5 474 904.2001 15 0.5 0.6 Most flows Perched Concrete T1159-373 98 67 150.1 477 904.2001 15 0.5 0.43 Most flows Perched Concrete T1159-373 98 67 912 478 904.2001 17 1.1 0.25 Most flows Perched Concrete T1159-373 164 107 932.2 481 904.2001 10 0.8 0.25 Most flows Perched Concrete T11492-751 164 107 1257.11 482 904.2001 17		209.6	461	6/04/2001	6	0.6	0.4	0.35	Most flows		Perched	Concrete	T11:448-775	35	27
1257.10 469 6042001 13 0.8 0.2 0.6 Mest flows Perched Concrete T1:502-707 194 107 821.4 473 9042001 2.4 0.6 0.6 Mest flows Perched Concrete T1:57:1770 9.8 67 821.5 474 9042001 15 0.5 0.2 0.5 Mest flows Perched Concrete T1:58:731 9.8 67 1520.1 477 9042001 15 0.5 0.2 0.3 Mest flows Perched Concrete T1:58:731 9.8 67 1520.1 476 9042001 15 0.5 0.4 0.25 Mest flows Perched Concrete T1:58:731 9.8 67 943.2 481 9042001 17 1.3 0.3 0.25 Mest flows Perched Concrete T1:48:738 164 107 943.2 481 9042001 16 0.3 0.02 Mest flows Perched Concrete T1:483:738 164 107		705.1	464	6/04/2001	8	5	0.5	1.7	Most flows		Perched	Galvanised Steel	T11:468-758	164	107
1145.6 471 2803/2001 2.6 0.06 Most Hows Parched PPC T12834-404 98 67 821.5 474 904/2001 2.0 0.7 0.2 0.5 Most Hows Parched Concrete T1157.77.7 164 107 821.7 476 904/2001 15 0.5 0.2 0.5 Most Hows Parched Concrete T1155.9733 98 67 1520.1 477 904/2001 15 1.5 0.4 0.25 Most Hows Parched Concrete T1155.973 98 67 91.2 478 904/2001 22 0.8 0.4 0.3 Most Hows Parched Concrete T1135.97.7 164 107 943.2 481 904/2001 2 0.8 0.4 0.3 Most Hows Parched Concrete T11492-757 164 107 1267.71 482 904/2001 1 0.1 1 Most Hows Parched Concrete T11492-757 164 107 1267.11 <td< td=""><td></td><td>704.6</td><td>465</td><td>6/04/2001</td><td>9</td><td>0.9</td><td>0.8</td><td>0.45</td><td>Most flows</td><td></td><td>Perched</td><td>Concrete</td><td>T11:462-754</td><td>5</td><td>5</td></td<>		704.6	465	6/04/2001	9	0.9	0.8	0.45	Most flows		Perched	Concrete	T11:462-754	5	5
8214 473 904/2001 24 0.6 0.5 Most flows Perched Concrete T11:571-770 98 67 821.7 476 904/2001 15 0.5 0.2 0.3 Most flows Perched Concrete T11:562-781 98 67 1520.1 477 904/2001 17 1.1 0.8 0.5 Most flows Perched Concrete T11:562-781 98 67 912.2 478 904/2001 17 1.1 0.8 0.4 Most flows Perched Concrete T11:527-781 164 107 943.2 480 904/2001 20 0.8 0.8 Most flows Perched Concrete T11:327-373 164 107 1257.11 482 904/2001 17 1.3 0.3 0.2 Most flows Perched Concrete T11:428-68 148 101 1257.11 488 904/2001 6 0.4 0.2 Most flows Perched Concrete T11:428-68 148 107 1257.		1257.10	469	6/04/2001	13	0.8	0.2	0.6	Most flows		Perched	Concrete	T11:502-707	164	107
B21.5 474 904/2001 20 0.7 0.2 0.3 Most flows Perched Concrete T11:567-73 164 107 B21.7 476 904/2001 15 0.5 0.02 0.3 Most flows Perched Concrete T11:567-73 98 67 1520.1 477 904/2001 15 1.5 0.4 0.25 Most flows Perched Concrete T11:587-87 98 67 943.2 481 904/2001 22 0.8 0.4 0.3 Most flows Perched Concrete T11:357-87 164 107 1257.11 482 904/2001 15 0.3 0.02 Most flows Perched Concrete T11:327-87 164 107 1257.11 484 904/2001 15 0.3 0.02 Most flows Perched Concrete T11:327-87 164 107 1257.11 484 904/2001 16 0.4 0.02 Most flows Perched Concrete T11:327-87 164 107 <td< td=""><td></td><td>1145.6</td><td>471</td><td>28/03/2001</td><td>3.6</td><td>0.37</td><td></td><td>0.06</td><td>Most flows</td><td></td><td>Perched</td><td>PVC</td><td>T12:634-404</td><td>98</td><td>67</td></td<>		1145.6	471	28/03/2001	3.6	0.37		0.06	Most flows		Perched	PVC	T12:634-404	98	67
8217 476 904/2001 15 0.5 0.2 0.3 Matterine Perched Concrete T11562-791 98 67 1520.1 477 904/2001 17 1.1 0.8 0.5 Mostflows Perched Concrete T11562-793 98 67 89.6 480 904/2001 20 0.8 0.8 0.8 Mostflows Perched Concrete T1152-797 164 107 943.2 481 904/2001 20 0.8 0.4 0.3 Mostflows Perched Concrete T11532-703 164 107 1257.11 482 904/2001 17 1.3 0.3 0.02 Mostflows Perched Concrete T11492-761 48 101 864.4 484 904/2001 6 1 0.1 1 Mostflows Perched Concrete T11492-761 48 101 165.4 486 904/2001 16 0.2 0.45 Mostflows Perched Concrete T11492-761 164 107		821.4	473	9/04/2001	24	0.6	0.6	0.5	Most flows		Perched	Concrete	T11:571-770	98	67
1520.1 477 904/2001 17 1.1 0.8 0.5 Most flows Perched Concrete T11:559-767 164 107 91.2 478 904/2001 20 0.8 0.8 0.8 Most flows Perched Concrete T11:557-767 164 107 943.2 481 904/2001 22 0.8 0.4 0.3 Most flows Perched Concrete T11:557-767 164 107 1257.11 482 904/2001 5 0.3 0.02 Most flows Perched Concrete T11:492-768 148 101 864.6 483 904/2001 6 1.0.1 1 Most flows Perched Concrete T11:492-768 164 107 1504.1 486 904/2001 10 0.3 0.3 Most flows Perched Concrete T11:492-768 164 107 169.5 486 606/2001 10 0.3 Most flows Perched Concrete T12:49-31 164 107 1791.4 486 <		821.5	474	9/04/2001	20	0.7	0.2	0.5	Most flows		Perched	Concrete	T11:567-773	164	107
912 478 904/2001 15 1.5 0.4 0.25 Mest flows Perched Concrete T11552-905 98 67 88.6 460 904/2001 20 0.8 0.8 0.8 Most flows Perched Concrete T111582-767 164 107 1257.11 482 904/2001 17 1.3 0.3 0.25 Most flows Perched Concrete T11493-703 164 107 864.6 483 904/2001 6 1 0.1 1 Most flows Perched Concrete T11492-715 164 107 864.5 485 904/2001 6 1 0.1 1 Most flows Perched Concrete T11492-715 164 107 150.4 486 904/2001 10 0.3 0.1 0.5 Most flows Perched Concrete T12:45-313 164 107 169.5 488 606/2001 6 0.6 0.2 0.45 Most flows Perched Concrete T12:472-313 297 <		821.7	476	9/04/2001	15	0.5	0.2	0.3	Most flows		Perched	Concrete	T11:562-791	98	67
89.6 480 904/2001 20 0.8 0.8 0.8 Most flows Perched Concrete T11:582-787 164 107 943.2 481 904/2001 12 0.8 0.4 0.3 Most flows Perched Concrete T11:619-751 164 107 1267.11 482 904/2001 5 0.3 0 0.02 Most flows Perched Concrete T11:492-768 148 101 884.6 483 904/2001 6 0.1 0.1 Most flows Perched Concrete T11:492-768 148 101 1504.1 486 904/2001 10 0.3 0 0.8 Most flows Perched Concrete T11:492-768 148 107 1504.1 486 904/2001 10 0.3 0.4 Most flows Perched Concrete T12:514-312 76 57 1695.5 486 606/2001 16 0.4 0.2 0.45 Most flows Perched Concrete T12:46-331 164 107		1520.1	477	9/04/2001	17	1.1	0.8	0.5	Most flows		Perched	Concrete	T11:559-793	98	67
9432 481 9/04/2001 22 0.8 0.4 0.3 Most flows Perched Concrete T11:619-751 164 107 1257.11 482 9/04/2001 17 1.3 0.3 0.25 Most flows Perched Concrete T11:493-703 164 101 864.6 484 9/04/2001 6 1 0.1 1 Most flows Perched Concrete T11:492-666 164 101 864.4 484 9/04/2001 16 0.8 0.01 Most flows Perched Concrete T11:492-760 164 107 1504.1 486 9/04/2001 16 0.8 0.0 Most flows Perched Concrete T12:514-312 76 77 169.5 488 6/06/2001 6 0.4 0.2 0.25 Most flows Perched Concrete T12:47:31 164 107 169.5 497 6/06/2001 6 0.2 0.2 Most flows Perched Concrete T12:47:31 164 107 1		91.2	478	9/04/2001	15	1.5	0.4	0.25	Most flows		Perched	Concrete	T11:553-805	98	67
1257.11 482 9/04/2001 17 1.3 0.3 0.25 Most flows Perched Concrete T11493-703 164 107 864.4 483 9/04/2001 6 0.3 0 0.02 Most flows Perched Concrete T11492-686 148 101 864.4 484 9/04/2001 16 0.8 0 0.8 Most flows Perched Concrete T11492-705 164 107 1504.1 486 9/04/2001 16 0.8 0 0.8 Most flows Perched Concrete T11492-705 164 107 169.5 488 6/06/2001 0.4 . Most flows Perched Concrete T12514-313 164 107 169.8 491 6/06/2001 6 0.4 0.2 0.45 Most flows Perched Concrete T12472-313 297 195 169.7 497 6/06/2001 16 3.2 0.5 Most flows Perched Concrete T12469-313 345 218 179		89.6	480	9/04/2001	20	0.8	0.8	0.8	Most flows		Perched	Concrete	T11:582-787	164	107
864.6 483 904/2001 5 0.3 0 0.02 Most flows Perched Concrete T11.492-688 148 101 864.4 444 904/2001 16 0.1 0.1 1 Most flows Perched Concrete T11.492-686 148 101 169.4 485 904/2001 10 0.3 0.1 0.5 Most flows Perched Concrete T11.492-705 164 107 159.1 486 60/06/2001 0 0.3 0.1 0.5 Most flows Perched Concrete T12.514-312 76 57 189.1 489 60/06/2001 6 0.6 0.2 0.25 Most flows Perched Concrete T12.496-311 164 107 189.1 496 60/06/2001 10 1.2 0.2 0.5 Most flows Perched Concrete T12.496-311 345 218 199.7 497 6/06/2001 10 1.2 0.4 Most flows Perched Concrete T12.466-358 164		943.2	481	9/04/2001	22	0.8	0.4	0.3	Most flows		Perched	Concrete	T11:619-751	164	107
864.4 484 904/2001 6 1 0.1 1 Most flows Perched Concrete T11:489-687 148 101 864.5 485 904/2001 16 0.3 0.1 0.5 Most flows Perched Concrete T11:487-76 164 107 1504.1 488 606/2001 20 0.4 Perched Pooled Concrete T12:514-313 164 107 169.5 488 606/2001 6 0.4 0.2 0.45 Most flows Perched Concrete T12:514-313 164 107 189.8 491 606/2001 6 0.2 0.25 Most flows Perched Concrete T12:496-311 164 107 189.8 491 606/2001 16 0.2 0.2 Most flows Perched Concrete T12:49-631 305 218 1797.2 510 606/2001 4 0.6 0.3 0.3 Most flows Perched Concrete T12:46-38 164 107 1797.2 510		1257.11	482	9/04/2001	17	1.3	0.3	0.25	Most flows		Perched	Concrete	T11:493-703	164	107
864.5 485 $9/04/2001$ 16 0.8 0.1 0.6 $Most flows$ PerchedConcrete $T11.492-705$ 164 107 169.5 488 $6/06/2001$ 10 0.3 0.1 0.5 $Most flows$ PerchedConcrete $T12.514-313$ 164 107 1819.1 489 $6/06/2001$ 6 0.4 0.2 0.45 $Most flows$ PerchedConcrete $T12.514-313$ 164 107 189.8 491 $6/06/2001$ 6 0.4 0.2 0.45 $Most flows$ PerchedConcrete $T12.496-311$ 164 107 169.7 497 $6/06/2001$ 6 0.2 0.25 $Most flows$ PerchedConcrete $T12.479-313$ 297 155 169.7 497 $6/06/2001$ 10 1.2 0.2 0.1 $Most flows$ PerchedConcrete $T12.479-313$ 345 218 1797.2 510 $6/06/2001$ 4 0.6 0.3 0.3 $Most flows$ PerchedConcrete $T12.469-313$ 345 218 1797.2 510 $6/06/2001$ 3 0.6 0.2 0.4 $Most flows$ PerchedConcrete $T12.471-365$ 164 107 1797.3 517 $6/06/2001$ 3 0.6 0.2 0.4 $Most flows$ PerchedConcrete $T12.612-450$ 164 107 1797.3 516 $7/06/2001$ 9 0.4 $0.$		864.6	483	9/04/2001	5	0.3	0	0.02	Most flows		Perched	Concrete	T11:492-686	148	101
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		864.4	484	9/04/2001	6	1	0.1	1	Most flows		Perched	Concrete	T11:489-687	148	101
169.5 488 6/06/2001 20 0.4 Most flows Pooled Pooled Concrete T12:514-312 76 57 1619.1 489 6/06/2001 6 0.4 0.2 0.45 Most flows Perched Concrete T12:514-313 164 107 169.8 491 6/06/2001 16 3.2 0.05 0.55 Most flows Perched Concrete T12:496-313 297 195 169.7 497 6/06/2001 10 1.2 0.2 0.1 Most flows Perched Concrete T12:468-313 345 218 1797.3 511 6/06/2001 4 0.6 0.3 0.3 Most flows Perched Concrete T12:468-315 164 107 1797.3 511 6/06/2001 4 0.6 0.3 0.3 Most flows Perched Concrete T12:461-355 164 107 1797.3 515 7/06/2001 9 0.4 0.3 Most flows Perched Concrete T12:612-451 164 107		864.5	485	9/04/2001	16	0.8	0	0.8	Most flows		Perched	Concrete	T11:492-705	164	107
1819.1 489 6/06/2001 6 0.4 0.2 0.45 Most flows Perched Concrete T12:514-313 164 107 189.8 491 6/06/2001 6 0.6 0.2 0.25 Most flows Perched Concrete T12:496-311 164 107 1858.1 496 6/06/2001 16 3.2 0.05 Most flows Perched Concrete T12:496-313 297 195 169.7 497 6/06/2001 10 1.2 0.2 0.1 Most flows Perched Concrete T12:46-358 164 107 1797.3 511 6/06/2001 4 0.6 0.3 0.3 Most flows Perched Concrete T12:471-365 164 107 1797.3 511 6/06/2001 6 1 0.2 0.4 Most flows Perched Concrete T12:471-365 164 107 1476.3 516 7/06/2001 6 1 2.5 2 Most flows Perched Concrete T12:612-450 164 <		1504.1	486	9/04/2001	10	0.3	0.1	0.5	Most flows		Perched	Concrete	T11:493-736	164	107
169.84916/06/200160.60.20.25Most flowsPerchedConcreteT12:49-3111641071858.14966/06/2001163.20.050.55Most flowsPerchedConcreteT12:472-313297195169.74976/06/2001101.20.20.1Most flowsPerchedConcreteT12:469-3133452181797.35116/06/200140.60.30.3Most flowsPerchedConcreteT12:469-3133452181797.35116/06/200140.60.20.4Most flowsPerchedConcreteT12:469-3133452181797.35116/06/200130.60.20.4Most flowsPerchedConcreteT12:469-3133452181476.35167/06/2001610.20.15Most flowsPerchedConcreteT12:469-3131641071505.55197/06/200190.40.3Most flowsPerchedConcreteT12:61-42998671312.185217/06/20011212.52Most flowsPerchedConcreteT12:60-3453452181312.175227/06/200191.20.20.4Most flowsPerchedConcreteT12:59-4423452181312.175227/06/200170.50.10.2 <td></td> <td>169.5</td> <td>488</td> <td>6/06/2001</td> <td>20</td> <td>0.4</td> <td></td> <td></td> <td>Most flows</td> <td>Pooled</td> <td>Pooled</td> <td>Concrete</td> <td>T12:514-312</td> <td>76</td> <td>57</td>		169.5	488	6/06/2001	20	0.4			Most flows	Pooled	Pooled	Concrete	T12:514-312	76	57
1858.1 496 6/06/2001 16 3.2 0.05 0.55 Most flows Perched Concrete T12:472-313 297 195 169.7 497 6/06/2001 10 1.2 0.2 0.1 Most flows Perched Concrete T12:469-313 345 218 1797.2 510 6/06/2001 3 0.6 0.3 0.3 Most flows Perched Concrete T12:469-313 345 218 1797.2 510 6/06/2001 3 0.6 0.2 0.4 Most flows Perched Concrete T12:469-318 164 107 1476.2 515 7/06/2001 6 1 0.2 0.15 Most flows Perched Concrete T12:618-429 98 67 1476.3 516 7/06/2001 9 0.4 0.3 Most flows Perched Concrete T12:612-450 164 107 1505.5 519 7/06/2001 12 1 2.5 2 Most flows Perched Concrete T12:612-450 164		1819.1	489	6/06/2001	6	0.4	0.2	0.45	Most flows		Perched	Concrete	T12:514-313	164	107
169.74976/06/2001101.20.20.1Most flowsPerchedConcreteT12:469-3133452181797.25106/06/200140.60.30.3Most flowsPerchedConcreteT12:469-3581641071797.35116/06/200130.60.20.4Most flowsPerchedConcreteT12:471-3651641071476.25157/06/200190.40.3Most flowsPerchedConcreteT12:618-42998671476.35167/06/200190.40.3Most flowsPerchedConcreteT12:618-42998671505.55197/06/200190.40.3Most flowsPerchedConcreteT12:612-4501641071505.55197/06/20011212.52Most flowsPerchedConcreteT12:612-4501641071312.195207/06/200190.80.20.2Most flowsPerchedConcreteT12:59-4333452181312.175227/06/200191.20.20.4Most flowsPerchedConcreteT12:59-43976571804.15247/06/2001180.50.10.2Most flowsPerchedConcreteT12:589-4411481011804.25257/06/2001100.60.250.5Most flowsPe		169.8	491	6/06/2001	6	0.6	0.2	0.25	Most flows		Perched	Concrete	T12:496-311	164	107
1797.25106/06/200140.60.30.3Most flowsPerchedConcreteT12:466-3581641071797.35116/06/200130.60.20.4Most flowsPerchedConcreteT12:471-3651641071476.25157/06/2001610.20.15Most flowsPerchedConcreteT12:618-42998671476.35167/06/200190.40.3Most flowsPerchedConcreteT12:612-4301641071505.55197/06/20011212.52Most flowsPerchedConcreteT12:612-4501641071312.195207/06/200190.80.20.2Most flowsPerchedConcreteT12:603-4453452181312.185217/06/200191.20.20.4Most flowsPerchedConcreteT12:59-4423452181312.175227/06/200191.20.20.4Most flowsPerchedConcreteT12:59-4423452181312.175227/06/20011800.4Most flowsPerchedConcreteT12:589-4421481011804.15247/06/200110.60.250.5Most flowsPerchedConcreteT12:589-4421481011804.65267/06/2001100.30.7Most flows <td< td=""><td></td><td>1858.1</td><td>496</td><td>6/06/2001</td><td>16</td><td>3.2</td><td>0.05</td><td>0.55</td><td>Most flows</td><td></td><td>Perched</td><td>Concrete</td><td>T12:472-313</td><td>297</td><td>195</td></td<>		1858.1	496	6/06/2001	16	3.2	0.05	0.55	Most flows		Perched	Concrete	T12:472-313	297	195
1797.3 511 6/06/2001 3 0.6 0.2 0.4 Most flows Perched Concrete T12:471-365 164 107 1476.2 515 7/06/2001 6 1 0.2 0.15 Most flows Perched Concrete T12:618-429 98 67 1476.3 516 7/06/2001 9 0.4 0.3 Most flows Perched Concrete T12:618-429 98 67 1505.5 519 7/06/2001 9 0.4 0.3 Most flows Perched Concrete T12:612-430 164 107 1312.19 520 7/06/2001 12 1 2.5 2 Most flows Perched Concrete T12:612-430 164 107 1312.19 520 7/06/2001 9 0.8 0.2 0.2 Most flows Perched Concrete T12:612-430 164 107 1312.17 522 7/06/2001 9 1.2 0.2 0.4 Most flows Perched Concrete T12:59-4439 76 57		169.7	497	6/06/2001	10	1.2	0.2	0.1	Most flows		Perched	Concrete	T12:469-313	345	218
1476.25157/06/2001610.20.15Most flowsPerchedConcreteT12:618-42998671476.35167/06/200190.40.3Most flowsPerchedConcreteT12:629-4331641071505.55197/06/20011212.52Most flowsPerchedConcreteT12:612-4501641071312.195207/06/200190.80.20.2Most flowsPerchedConcreteT12:612-4501641071312.185217/06/200191.20.20.4Most flowsPerchedGalvanised SteelT12:59-4423452181312.175227/06/200191.20.20.4Most flowsPerchedConcreteT12:59-4423452181312.175227/06/20011800.4Most flowsPerchedConcreteT12:59-442345571804.15247/06/200170.50.10.2Most flowsPerchedConcreteT12:59-4421481011804.25257/06/2001110.60.250.5Most flowsPerchedConcreteT12:574-4342971951804.55287/06/2001100.30.7Most flowsPerchedConcreteT12:574-4342971951804.55287/06/200180.60.20.5Most flows </td <td></td> <td>1797.2</td> <td>510</td> <td>6/06/2001</td> <td>4</td> <td>0.6</td> <td>0.3</td> <td>0.3</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>T12:466-358</td> <td>164</td> <td>107</td>		1797.2	510	6/06/2001	4	0.6	0.3	0.3	Most flows		Perched	Concrete	T12:466-358	164	107
1476.35167/06/200190.40.3Most flowsPerchedConcreteT12:629-4331641071505.55197/06/20011212.52Most flowsPerchedConcreteT12:612-4501641071312.195207/06/200190.80.20.2Most flowsPerchedConcreteT12:632-4453452181312.185217/06/200191.20.20.4Most flowsPerchedGalvanised SteelT12:599-4423452181312.175227/06/20011800.4Most flowsPerchedConcreteT12:599-442345571804.15247/06/200170.50.10.2Most flowsPerchedConcreteT12:589-4421481011804.25257/06/2001110.60.250.5Most flowsPerchedConcreteT12:589-4421481011804.65267/06/2001100.30.7Most flowsPerchedConcreteT12:574-4342971951804.55287/06/200180.60.20.5Most flowsPerchedConcreteT12:59-4082971951804.55287/06/200180.60.20.5Most flowsPerchedConcreteT12:59-4082971951804.55287/06/200180.60.20.5Most flo		1797.3	511	6/06/2001	3	0.6	0.2	0.4	Most flows		Perched	Concrete	T12:471-365	164	107
1505.5 519 7/06/2011 12 1 2.5 2 Most flows Perched Concrete T12:612-450 164 107 1312.19 520 7/06/2001 9 0.8 0.2 0.2 Most flows Perched Concrete T12:612-450 164 107 1312.18 521 7/06/2001 9 0.8 0.2 0.4 Most flows Perched Galvanised Steel T12:599-442 345 218 1312.17 522 7/06/2001 18 0 0.4 Most flows Perched Concrete T12:597-439 76 57 1804.1 524 7/06/2001 7 0.5 0.1 0.2 Most flows Perched Concrete T12:589-442 148 101 1804.2 525 7/06/2001 11 0.6 0.25 0.5 Most flows Perched Concrete T12:589-442 148 101 1804.6 526 7/06/2001 10 0.3 0.7 Most flows Perched Concrete T12:589-441 148 101<		1476.2	515	7/06/2001	6	1	0.2	0.15	Most flows		Perched	Concrete	T12:618-429	98	67
1312.19 520 7/06/2001 9 0.8 0.2 0.2 Most flows Perched Concrete T12:603-445 345 218 1312.18 521 7/06/2001 9 1.2 0.2 0.4 Most flows Perched Galvanised Steel T12:599-442 345 218 1312.17 522 7/06/2001 18 0 0.4 Most flows Perched Concrete T12:597-439 76 57 1804.1 524 7/06/2001 7 0.5 0.1 0.2 Most flows Perched Concrete T12:589-442 148 101 1804.2 525 7/06/2001 1 0.6 0.25 0.5 Most flows Perched Concrete T12:589-441 148 101 1804.6 526 7/06/2001 10 0.3 0.7 Most flows Perched Concrete T12:589-441 148 101 1804.6 526 7/06/2001 10 0.3 0.7 Most flows Perched Concrete T12:574-434 297 195		1476.3	516	7/06/2001	9	0.4		0.3	Most flows		Perched	Concrete	T12:629-433	164	107
1312.18 521 7/06/2001 9 1.2 0.2 0.4 Most flows Perched Galvanised Steel T12:599-442 345 218 1312.17 522 7/06/2001 18 0 0.4 Most flows Perched Concrete T12:597-439 76 57 1804.1 524 7/06/2001 7 0.5 0.1 0.2 Most flows Perched Concrete T12:599-442 148 101 1804.2 525 7/06/2001 11 0.6 0.25 0.5 Most flows Perched Concrete T12:589-441 148 101 1804.6 526 7/06/2001 10 0.6 0.25 0.5 Most flows Perched Concrete T12:589-441 148 101 1804.6 526 7/06/2001 10 0.3 0.7 Most flows Perched Concrete T12:574-434 297 195 1804.5 528 7/06/2001 8 0.6 0.2 0.5 Most flows Perched Concrete T12:579-408 297		1505.5	519	7/06/2001	12	1	2.5	2	Most flows		Perched	Concrete	T12:612-450	164	107
1312.17 522 7/06/2001 18 0 0.4 Most flows Perched Concrete T12:597-439 76 57 1804.1 524 7/06/2001 7 0.5 0.1 0.2 Most flows Perched Concrete T12:597-439 76 57 1804.1 524 7/06/2001 7 0.5 0.1 0.2 Most flows Perched Concrete T12:589-442 148 101 1804.2 525 7/06/2001 11 0.6 0.25 0.5 Most flows Perched Concrete T12:589-441 148 101 1804.6 526 7/06/2001 10 0.3 0.7 Most flows Perched Concrete T12:574-434 297 195 1804.5 528 7/06/2001 8 0.6 0.2 0.5 Most flows Perched Concrete T12:559-408 297 195		1312.19	520	7/06/2001	9	0.8	0.2	0.2	Most flows		Perched	Concrete	T12:603-445	345	218
1804.15247/06/200170.50.10.2Most flowsPerchedConcreteT12:589-4421481011804.25257/06/2001110.60.250.5Most flowsPerchedConcreteT12:589-4411481011804.65267/06/2001100.30.7Most flowsPerchedConcreteT12:574-4342971951804.55287/06/200180.60.20.5Most flowsPerchedConcreteT12:559-408297195		1312.18	521	7/06/2001		1.2	0.2	0.4	Most flows		Perched	Galvanised Steel	T12:599-442	345	218
1804.2 525 7/06/2001 11 0.6 0.25 0.5 Most flows Perched Concrete T12:589-441 148 101 1804.6 526 7/06/2001 10 0.3 0.7 Most flows Perched Concrete T12:574-434 297 195 1804.5 528 7/06/2001 8 0.6 0.2 0.5 Most flows Perched Concrete T12:559-408 297 195		1312.17	522	7/06/2001	18		0	0.4	Most flows		Perched	Concrete	T12:597-439	76	57
1804.6 526 7/06/2001 10 0.3 0.7 Most flows Perched Concrete T12:574-434 297 195 1804.5 528 7/06/2001 8 0.6 0.2 0.5 Most flows Perched Concrete T12:579-408 297 195		1804.1	524	7/06/2001	7	0.5	0.1	0.2	Most flows		Perched	Concrete	T12:589-442	148	101
1804.5 528 7/06/2001 8 0.6 0.2 0.5 Most flows Perched Concrete T12:559-408 297 195		1804.2	525	7/06/2001	11	0.6	0.25	0.5	Most flows		Perched	Concrete	T12:589-441	148	101
		1804.6	526	7/06/2001	10		0.3	0.7	Most flows		Perched	Concrete	T12:574-434	297	195
1804.8 531 7/06/2001 10 3 0.5 0.7 Most flows Perched Concrete T12:580-430 148 101					8	0.6			Most flows		Perched	Concrete		297	
		1804.8	531	7/06/2001	10	3	0.5	0.7	Most flows		Perched	Concrete	T12:580-430	148	101

LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
Thames Coromandel District													
1505.6	532	7/06/2001	7	0.5	0.1	0.2	Most flows	Flat	Perched	Concrete	T12:616-450	164	107
1822.2	536	12/06/2001	20	1.5	0.2	0.5	Most flows		Perched	Concrete	T12:376-446	98	67
531.6	544	12/06/2001	4	1	0.2	0.4	Most flows		Perched	Concrete	T12:420-410	148	101
526.5	546	12/06/2001	14	1		0.35	Most flows		Perched	Concrete	T12:432-393	345	218
168.8	550	14/06/2001	13	0.6	0.1	0.3	Most flows		Perched	Concrete	T11:581-603	345	218
168.6	552	14/06/2001	12	0.8	0.1	0.5	Most flows		Perched	Concrete	T11:577-602	345	218
168.5	553	14/06/2001	7	0.5	0.02	0.17	Most flows		Perched	PVC	T11:574-601	345	218
168.4	554	14/06/2001	9	0.5	0	2	Most flows		Perched	Concrete	T11:572-600	297	195
113.9	555	14/06/2001	16	0.7	0.2	0.6	Most flows		Perched	Concrete	T12:637-562	164	107
113.8	556	14/06/2001	20	1.3	0.05	0.05	Most flows		Perched	Concrete	T12:635-559	164	107
146.5	557	14/06/2001	11	0.5	0.3	0.3	Most flows		Perched	Concrete	T12:650-570	164	107
146.3	558	14/06/2001	10	0.9	0	0.7	Most flows		Perched	Concrete	T12:648-569	164	107
146.4	559	14/06/2001	15	0.5	0.2	0.2	Most flows		Perched	PVC	T12:648-575	164	107
113.5	562	14/06/2001	12	1.3	0.1	0.5	Most flows		Perched	Concrete	T12:632-551	164	107
1101.4	565	14/06/2001	16	2	0.2	0.3	Most flows		Perched	Concrete	T12:648-542	164	107
1101.5	566	14/06/2001	16	0.7	0	0.5	Most flows		Perched	Concrete	T12:651-536	164	107
113.6	568	14/06/2001	10	0.5	0.1	0.5	Most flows		Perched	Concrete	T12:633-556	164	107
1241.11	572	19/06/2001		1.1	0.2	0.1	Most flows		Perched	Concrete	T10:400-901	164	107
1623.1	575	19/06/2001	8	2.2	0.4	0.3	Most flows		Perched	Galvanised Steel	T10:407-954	98	67
660.10	578	19/06/2001	12	1	0.3	0.6	Most flows		Perched	Concrete	T11:420-880	164	107
660.15	579	19/06/2001	12	0.5	0.2	0.1	Most flows		Perched	Concrete	T11:418-879	164	107
660.14	580	19/06/2001	10	1.1	0.1	0.12	Most flows		Perched	Concrete	T11:417-879	164	107
660.16	582	20/06/2001	15	0.9		0.6	Most flows		Perched	Concrete	T11:414-876	5	5
660.17	583	19/06/2001	5			0.7	Most flows		Perched		T11:414-872	164	107
660.13	586	19/06/2001	9	1.5	0.2	0.5	Most flows		Perched	Concrete	T11:407-862	98	67
42.11	587	19/06/2001	11	0.8	0.1	0.5	Most flows		Perched	Concrete	T11:429-864	76	57
42.14	589	19/06/2001	12	0.8			Most flows		Perched	Concrete	T11:431-862	164	107
42.5	592	19/06/2001	6	0.7	0.2	0.2	Most flows		Perched	Concrete	T11:436-851	164	107
42.17	593	20/06/2001	5	0.65			Most flows		Pooled	Concrete	T11:437-848	164	107
42.18	594	19/06/2001	12	1.3	0.2	0.3	Most flows		Perched	Concrete	T11:438-845	98	67
42.16	595	19/06/2001	8	1.2	0.3	0.5	Most flows		Perched	Concrete	T11:433-861	164	107
1105.11	602	20/06/2001	4.5		0.2	0.44	Most flows		Perched	Concrete	T11:371-840	20	17
1105.12	603	20/06/2001	13	0.3	0.5	2.5	Most flows		Perched	Concrete	T11:370-827	164	107
1105.13	604	20/06/2001	12	0.5	1	3	Most flows		Perched	Concrete	T11:369-826	164	107
1105.14	605	20/06/2001	12	0.5	0.5	1.5	Most flows		Perched	Concrete	T11:367-826	164	107
32.3	607	20/06/2001	15	1		0.5	Most flows		Perched	Concrete	T11:341-847	164	107
196.5	611	9/04/2001	11	0.9	0.1	0.3	Most flows		Perched	Concrete	T11:574-752	164	107
677.4	814	19/03/2001	13.5	1.1	0.01	0.15	Most flows		Perched	Concrete	T12:634-371	164	107
709.6	295	6/12/2000	8	1			Low flow only		Pooled	Galvanised Steel	T11:462-879	429	235
42.2	297	6/12/2000	10	1	0.5	0.5	Low flow only		Perched	Concrete	T11:427-882	297	195
42.8	298	6/12/2000	10	0.6	0.1	0.5	Low flow only		Perched	Concrete	T11:426-876	297	195
42.9	299	6/12/2000	10	0.5			Low flow only	Pooled	Pooled	Concrete	T11:428-869	429	235
42.10	301	6/12/2000	12	0.8			Low flow only	Pooled	Flat	Concrete	T11:430-862	297	195
813.1	305	6/12/2000	3.5	0.6	0.3	0.5	Low flow only		Perched	Concrete	T10:428-951	164	107
1304.17	309	6/12/2000	12	1.6	0	0.05	Low flow only		Perched	Concrete	T11:451-894	429	235
102.1	318	8/12/2000	8	0.6	Ŭ	0.00	Low flow only		Pooled	Concrete	S10:197-149	269	185
622.1	321	8/12/2000	Ũ	0.5	0	0.05	Low flow only		Perched	Concrete	S10:203-137	269	185
1525.4	323	8/12/2000	7	0.8	0	0.00	Low flow only	Flat	Flat	Concrete	S10:216-131	429	235
1525.4	323	11/12/2000	9	0.8	0.4	1	Low flow only	i idi	Perched	Concrete	S10:247-110	269	185
1525.13	333	11/12/2000	9	0.8	0.4	0.1	Low flow only		Perched	Concrete	S10:247-110 S10:252-107	269	185
1257.5	366	14/12/2000	8	0.75	0.1	0.1	Low flow only		Perched	Concrete	T11:483-697	209	17
1257.5 181.2	300	17/12/2000	8 12	0.75	0.2	0.1	Low flow only		Perched	Concrete	T11:596-764	20 534	261
89.3	375	17/12/2000	12	0.3	0.2	0.3	Low flow only		Perched	Concrete	T11:578-816	429	235
69.3 250.5	375	19/12/2000	14	0.3	0.1	0.3	Low flow only	Flat	Perched	Concrete	T12:402-442	429 486	235
250.5	310	13/12/2000	12	1.2			Low now only	Fidi	FOOled	Concrete	112.402-442	400	200

Thames Coromandel District 1257.9 399 21/12/2000 4 0.2 0.5 Low flow only Perched Concrete T11:486-704 20 129.1 401 21/12/2000 6 0.4 0.3 0.3 Low flow only Perched Concrete T11:534-817 324 938.23 403 21/12/2000 12 1.6 0.2 0.5 Low flow only Perched Concrete T11:631-606 429 1271.8 410 19/03/2001 9 1.1 Low flow only Flat Concrete T12:614-369 98 1271.13 413 19/03/2001 7 0.6 Low flow only Poled Flat Concrete T12:638-378 324 1817.1 418 19/03/2001 12 5 Low flow only Pooled Flat Galvanised Steel T12:638-413 324 1024.1 420 23/03/2001 12 2.2 Low flow only Pooled Flat Concrete <t< th=""><th>ISTRICT RANK</th><th>REGION RANK</th><th>MAP REFERENCE</th><th>CONSTRUCTION MATERIAL</th><th>OUTLET Cross - Section</th><th>INLET Cross - Section</th><th>FISH PASSAGE RESTRICTION</th><th>PERCHED HEIGHT (m)</th><th>UNDERCUT LENGTH (m)</th><th>DIAMETER (m)</th><th>LENGTH (m)</th><th>INSPECTION DATE</th><th>SITE ID</th><th>LOCATED KEY</th></t<>	ISTRICT RANK	REGION RANK	MAP REFERENCE	CONSTRUCTION MATERIAL	OUTLET Cross - Section	INLET Cross - Section	FISH PASSAGE RESTRICTION	PERCHED HEIGHT (m)	UNDERCUT LENGTH (m)	DIAMETER (m)	LENGTH (m)	INSPECTION DATE	SITE ID	LOCATED KEY
129.1 401 21/12/2000 6 0.4 0.3 0.3 Low flow only Perched Concrete T11:534-817 324 938.23 403 21/12/2000 12 1.6 0.2 0.5 Low flow only Perched Concrete T11:631-606 429 1271.8 410 19/03/2001 9 1.1 Low flow only Flat Concrete T12:620-374 429 1271.13 413 19/03/2001 21 1 Low flow only Flat Concrete T12:614-369 98 1271.13 413 19/03/2001 21 1 Low flow only Pooled Flat Concrete T12:63-378 324 1817.1 418 19/03/2001 45 0.8 Low flow only Pooled Flat Galvanised Steel T12:63-418 324 1145.3 419 23/03/2001 12 2.2 Low flow only Pooled Flat Concrete T12:63-418 324 1312.4 425 23/03/2001 21 0.45 Low flow only Pooled Concrete														Thames Coromandel District
938.23 403 21/12/2000 12 1.6 0.2 0.5 Low flow only Perched Concrete T11:631-606 429 1271.8 410 19/03/2001 9 1.1 Low flow only Flat Concrete T12:61-369 98 1271.11 412 19/03/2001 7 0.6 Low flow only Flat Flat Concrete T12:61-369 98 1271.13 413 19/03/2001 21 1 Low flow only Pooled Flat Concrete T12:638-378 324 1817.1 418 19/03/2001 45 0.8 Low flow only Pooled Flat Galvanised Steel T12:638-431 324 1145.3 419 23/03/2001 12 5 Low flow only Pooled Flat Concrete T12:638-413 324 1024.1 420 23/03/2001 12 2.2 Low flow only Pooled Concrete T12:636-418 324 1312.4 425 23/03/2001 21 0.45 Low flow only Pooled Concrete T12:626-470<	17	20	T11:486-704	Concrete	Perched		Low flow only	0.5	0.2		4	21/12/2000	399	1257.9
1271.841019/03/200191.1Low flow onlyFlatConcreteT12:620-3744291271.1141219/03/200170.6Low flow onlyFlatFlatConcreteT12:614-369981271.1341319/03/2001211Low flow onlyPooledFlatConcreteT12:638-3783241817.141819/03/2001450.8Low flow onlyPooledFlatGalvanised SteelT12:638-4133241145.341923/03/2001125Low flow onlyPooledFlatConcreteT12:638-4133241024.142023/03/2001122.2Low flow onlyPooledFlatConcreteT12:636-4183241312.442523/03/2001210.45Low flow onlyPooledConcreteT12:632-4844291312.543123/03/2001210.5Low flow onlyPooledConcreteT12:632-4844291505.343123/03/2001160.4Low flow onlyPooledConcreteT12:60-5324291101.643323/03/2001131.5Low flow onlyPooledGalvanised SteelT12:637-536429	208	324	T11:534-817	Concrete	Perched		Low flow only				6	21/12/2000	401	129.1
1271.11 412 19/03/2001 7 0.6 Low flow only Flat Flat Concrete T12:614-369 98 1271.13 413 19/03/2001 21 1 Low flow only Pooled Flat Concrete T12:638-378 324 1817.1 418 19/03/2001 45 0.8 Low flow only Pooled Flat Galvanised Steel T12:638-413 324 1145.3 419 23/03/2001 12 5 Low flow only Pooled Flat Concrete T12:638-413 324 1024.1 420 23/03/2001 12 2.2 Low flow only Pooled Flat Concrete T12:636-418 324 1312.4 425 23/03/2001 21 0.45 Low flow only Pooled Concrete T12:636-418 324 1312.4 425 23/03/2001 21 0.5 Low flow only Pooled Concrete T12:636-432 429 1505.3 431 23/03/2001 16 0.4 Low flow only Pooled Concrete T12:660-532 <t< td=""><td>235</td><td>429</td><td>T11:631-606</td><td>Concrete</td><td></td><td></td><td>Low flow only</td><td>0.5</td><td>0.2</td><td>1.6</td><td>12</td><td>21/12/2000</td><td>403</td><td>938.23</td></t<>	235	429	T11:631-606	Concrete			Low flow only	0.5	0.2	1.6	12	21/12/2000	403	938.23
1271.1341319/03/2001211Low flow onlyPooledFlatConcreteT12:638-3783241817.141819/03/2001450.8Low flow onlyPooledFlatGalvanised SteelT12:659-4584291145.341923/03/2001125Low flow onlyPooledFlatConcreteT12:638-4133241024.142023/03/2001122.2Low flow onlyPooledFlatConcreteT12:636-4183241312.442523/03/2001210.45Low flow onlyPooledConcreteT12:632-4844291312.1542623/03/2001210.5Low flow onlyPooledConcreteT12:632-484429150.543123/03/2001160.4Low flow onlyPooledConcreteT12:660-5324291101.643323/03/2001131.5Low flow onlyPooledGalvanised SteelT12:657-536429	235	429	T12:620-374	Concrete	Flat		Low flow only			1.1	9	19/03/2001	410	1271.8
1817.1 418 19/03/2001 45 0.8 Low flow only Pooled Flat Galvanised Steel T12:659-458 429 1145.3 419 23/03/2001 12 5 Low flow only Pooled Flat Concrete T12:638-413 324 1024.1 420 23/03/2001 12 2.2 Low flow only Flat Flat Concrete T12:636-418 324 1312.4 425 23/03/2001 12 0.45 Low flow only Pooled Concrete T12:636-418 324 1312.4 425 23/03/2001 21 0.45 Low flow only Pooled Concrete T12:626-470 76 1312.4 426 23/03/2001 21 0.5 Low flow only Pooled Concrete T12:626-532 429 1505.3 431 23/03/2001 16 0.4 Low flow only Pooled Concrete T12:626-532 429 1101.6 433 23/03/2001 13 1.5 Low flow only Pooled Galvanised Steel T12:657-536 429 <td>67</td> <td>98</td> <td>T12:614-369</td> <td>Concrete</td> <td>Flat</td> <td>Flat</td> <td>Low flow only</td> <td></td> <td></td> <td>0.6</td> <td>7</td> <td>19/03/2001</td> <td>412</td> <td>1271.11</td>	67	98	T12:614-369	Concrete	Flat	Flat	Low flow only			0.6	7	19/03/2001	412	1271.11
1145.341923/03/2001125Low flow onlyPooledFlatConcreteT12:638-4133241024.142023/03/2001122.2Low flow onlyFlatFlatConcreteT12:636-4183241312.442523/03/2001210.45Low flow onlyPooledConcreteT12:636-470761312.1542623/03/2001210.5Low flow onlyPooledConcreteT12:632-4844291505.343123/03/2001160.4Low flow onlyPooledConcreteT12:660-5324291101.643323/03/2001131.5Low flow onlyPooledGalvanised SteelT12:657-536429	208	324	T12:638-378	Concrete	Flat	Pooled	Low flow only			1	21	19/03/2001	413	1271.13
1024.142023/03/2001122.2Low flow onlyFlatFlatConcreteT12:636-4183241312.442523/03/2001210.45Low flow onlyPooledConcreteT12:626-470761312.1542623/03/2001210.5Low flow onlyPooledConcreteT12:632-4844291505.343123/03/2001160.4Low flow onlyPooledConcreteT12:660-5324291101.643323/03/2001131.5Low flow onlyPooledGalvanised SteelT12:657-536429	235	429	T12:659-458	Galvanised Steel		Pooled	Low flow only			0.8	45	19/03/2001	418	1817.1
1312.442523/03/2001210.45Low flow onlyPooledConcreteT12:626-470761312.1542623/03/2001210.5Low flow onlyPooledConcreteT12:632-4844291505.343123/03/2001160.4Low flow onlyPooledConcreteT12:660-5324291101.643323/03/2001131.5Low flow onlyPooledGalvanised SteelT12:657-536429	208	324	T12:638-413	Concrete	Flat	Pooled	Low flow only			5	12	23/03/2001	419	1145.3
1312.15 426 23/03/2001 21 0.5 Low flow only Pooled Concrete T12:632-484 429 1505.3 431 23/03/2001 16 0.4 Low flow only Pooled Concrete T12:660-532 429 1101.6 433 23/03/2001 13 1.5 Low flow only Pooled Galvanised Steel T12:657-536 429	208	324	T12:636-418	Concrete	Flat	Flat	Low flow only			2.2	12	23/03/2001	420	1024.1
1505.3 431 23/03/2001 16 0.4 Low flow only Pooled Concrete T12:660-532 429 1101.6 433 23/03/2001 13 1.5 Low flow only Pooled Galvanised Steel T12:657-536 429	57	76	T12:626-470	Concrete	Pooled		Low flow only			0.45	21	23/03/2001	425	1312.4
1101.6 433 23/03/2001 13 1.5 Low flow only Pooled Galvanised Steel T12:657-536 429	235	429	T12:632-484	Concrete	Pooled		Low flow only			0.5	21	23/03/2001	426	1312.15
	235	429	T12:660-532	Concrete	Pooled		Low flow only			0.4	16	23/03/2001	431	1505.3
25.2 450 20/02/2004 5 0.0 0.004 Low flow only Develop 744/505 740 534	235	429	T12:657-536	Galvanised Steel	Pooled		Low flow only			1.5	13	23/03/2001	433	1101.6
25.3 450 30/03/2001 5 0.8 0 0.01 Low now only Perched Concrete 111:595-716 534	261	534	T11:595-716	Concrete	Perched		Low flow only	0.01	0	0.8	5	30/03/2001	450	25.3
704.8 468 6/04/2001 10 0.6 0 0.3 Low flow only Perched Concrete T11:474-761 429	235	429	T11:474-761	Concrete	Perched		Low flow only	0.3	0	0.6	10	6/04/2001	468	704.8
1504.2 487 9/04/2001 8 0.4 0.2 Low flow only Perched Concrete T11:499-744 429	235	429	T11:499-744	Concrete	Perched		Low flow only	0.2		0.4	8	9/04/2001	487	1504.2
234.25 492 27/11/2000 8 1.2 0.1 0.2 Low flow only Perched Concrete T12:473-557 297	195	297	T12:473-557	Concrete	Perched		Low flow only	0.2	0.1	1.2	8	27/11/2000	492	234.25
631.3 494 19/03/2001 15 2 Low flow only Flat Concrete T12:638-396 429	235	429	T12:638-396	Concrete	Flat		Low flow only			2	15	19/03/2001	494	631.3
1312.16 523 7/06/2001 17 0.6 Low flow only Perched Concrete T12:594-442 345	218	345	T12:594-442	Concrete	Perched		Low flow only	0.6			17	7/06/2001	523	1312.16
1804.3 530 7/06/2001 11 3 0 0.2 Low flow only Perched Concrete T12:580-430 345	218	345	T12:580-430	Concrete	Perched		Low flow only	0.2	0	3	11	7/06/2001	530	1804.3
234.26 534 12/06/2001 8 0.8 Low flow only Pooled Pooled Concrete T12:382-454 20	17	20	T12:382-454	Concrete	Pooled	Pooled	Low flow only			0.8	8	12/06/2001	534	234.26
1822.1 535 12/06/2001 13 2 0 0.05 Low flow only Perched Concrete T12:379-448 324	208	324	T12:379-448	Concrete	Perched		Low flow only	0.05	0	2	13	12/06/2001	535	1822.1
1788.1 539 12/06/2001 10 1.2 0.2 Low flow only Perched Concrete T12:394-420 429	235	429	T12:394-420	Concrete	Perched		Low flow only	0.2		1.2	10	12/06/2001	539	1788.1
526.2 545 12/06/2001 7 2.5 0.1 Low flow only Perched Concrete T12:428-397 534	261	534	T12:428-397	Concrete	Perched		Low flow only	0.1		2.5	7	12/06/2001	545	526.2
168.7 551 14/06/2001 8 0.8 0.06 Low flow only Perched Concrete T11:579-604 534	261	534	T11:579-604	Concrete	Perched		Low flow only	0.06		0.8	8	14/06/2001	551	168.7
113.7 560 14/06/2001 13 0.7 Low flow only Pooled Concrete T12:634-558 429	235	429	T12:634-558	Concrete		Pooled	Low flow only			0.7	13	14/06/2001	560	113.7
113.3 563 14/06/2001 13 0.4 0 0.2 Low flow only Perched Concrete T12:629-549 429	235	429	T12:629-549	Concrete	Perched		Low flow only	0.2	0	0.4	13	14/06/2001	563	113.3
1624.2 573 20/06/2001 3.5 0.1 Low flow only Perched Concrete T10:417-953 324	208	324	T10:417-953	Concrete	Perched		Low flow only	0.1			3.5	20/06/2001	573	1624.2
1624.1 576 19/06/2001 8 0.6 Low flow on Pooled Concrete T10:420-951 429	235	429	T10:420-951	Concrete	Pooled		Low flow only			0.6	8	19/06/2001	576	1624.1
1169.3 577 19/06/2001 10 1.3 Low flow on Pooled Concrete T11:418-895 429	235	429	T11:418-895	Concrete		Pooled	Low flow only			1.3	10	19/06/2001	577	1169.3
660.11 581 19/06/2001 12 0.5 0 0.45 Low flow only Perched Concrete T11:415-877 98	67	98	T11:415-877	Concrete	Perched			0.45	0		12			660.11
660.6 585 19/06/2001 4 0.6 Low flow only Pooled Concrete T11:405-854 98	67	98	T11:405-854	Concrete	Pooled		Low flow only			0.6	4	19/06/2001	585	660.6
709.7 596 20/06/2001 6 0.6 Low flow on Pooled Concrete T11:467-862 269	185	269	T11:467-862	Concrete	Pooled		Low flow only			0.6	6	20/06/2001	596	709.7
709.3 597 20/06/2001 13 0.7 Low flow on Flat Flat Concrete T11:465-865 324	208	324	T11:465-865	Concrete		Flat	•			0.7	13	20/06/2001	597	709.3
709.8 599 20/06/2001 5 0.7 Low flow on Pooled Concrete T11:459-865 324	208	324	T11:459-865									20/06/2001		709.8
625.2 610 14/06/2001 Low flow only T12:653-555 429	235													

Waikato District 1946.4 1946.4 10/01/2005 8 0.35 0.25 0.76 Most flows Flat Perched Concrete R14:720-985 1231.40 2518 4/02/2005 14 1 0 0 Most flows Flat Perched Concrete S14:253-839 1900.2 3013 16/12/2004 24 0.65 0.75 0.28 Most flows Perched Concrete S14:915-927	164 489 345 98 345 345 345 345 345	48 135 102 27 102 102
1231.40 2518 4/02/2005 14 1 0 0 Most flows Flat Perched Concrete S14:253-839 1900.2 3013 16/12/2004 24 0.65 0.75 0.28 Most flows Perched Concrete S14:915-927	489 345 98 345 345 345 345 345	135 102 27 102 102
1900.2 3013 16/12/2004 24 0.65 0.75 0.28 Most flows Perched Concrete S14:915-927	345 98 345 345 345 345 345	102 27 102 102
	98 345 345 345 345	27 102 102
	345 345 345 345	102 102
1906.1 3020 16/12/2004 28 1 1 Most flows Flat Perched Concrete R14:839-904	345 345 345	102
1906.6 3035 17/12/2004 15 0.7 0.3 2 Most flows Pooled Perched Concrete R14:834-958	345 345	
1906.7 3036 17/12/2004 18 1.1 0.18 0.35 Most flows Pooled Perched Concrete R14:833-959	345	400
1923.7 3043 20/12/2004 14 1 0.7 0.15 Most flows Perched Perched Concrete R14:806-923		102
1923.6 3044 20/12/2004 14 0.7 0.6 0.1 Most flows Flat Perched Concrete R14:789-920		102
1923.5 3045 20/12/2004 14 0.7 0.55 0.15 Most flows Flat Perched Concrete R14:776-917	345	102
1923.3 3047 20/12/2004 25 0.7 0.45 0.12 Most flows Pooled Perched Concrete R14:767-914	345	102
1921.3 3052 22/12/2004 15 0.36 0.33 0.58 Most flows Flat Perched Concrete R13:816-003	489	135
1911.1 3055 22/12/2004 27 1 0.1 0.2 Most flows Flat Perched Concrete R14:813-967	345	102
1911.2 3056 22/12/2004 13 0.8 0 0.18 Most flows Flat Perched Concrete R14:810-969	345	102
1910.3 3063 10/01/2005 12 0.45 0.1 0.12 Most flows Flat Perched Concrete R14:799-868	76	16
1927.1 3072 10/01/2005 12 1 0.17 0.24 Most flows Flat Perched Concrete R14:689-986	164	48
1948.5 3085 11/01/2005 11 0.4 0.15 0.28 Most flows Flat Perched Concrete R14:778-978	345	102
1948.6 3086 11/01/2005 Most flows Perched R14:783-980	269	72
1916.6 3102 13/01/2005 12 0.5 0.2 0.15 Most flows Pooled Perched Concrete \$13:928-053	489	135
325.10 3113 13/01/2005 28 1.3 0.3 0.1 Most flows Flat Perched Concrete S14:951-996	489	135
325.11 3115 13/01/2005 25 1.8 0 0.2 Most flows Flat Perched Concrete S14:962-997	489	135
325.8 3117 14/01/2005 28 1.5 Most flows Flat Pooled Concrete S13:987-013	489	135
1909.1 3123 17/01/2005 16 0.4 0.25 0.08 Most flows Flat Perched Concrete R15:752-679	345	102
1950.1 3125 17/01/2005 12 0.45 0.02 0.21 Most flows Flat Perched Concrete R15:696-634	164	48
1952.1 3128 17/01/2005 8 0.7 0.3 0.18 Most flows Flat Perched Concrete R15:717-645	76	16
1939.2 3130 17/01/2005 22 0.9 0.18 0.22 Most flows Flat Perched Concrete R15:748-658	164	48
1939.3 3131 17/01/2005 14 2 0.28 0.21 Most flows Flat Perched Concrete R15:749-658	164	48
1939.4 3136 18/01/2005 16 1.3 1 0.95 Most flows Flat Perched Concrete R15:745-662	164	48
1936.2 3138 18/01/2005 0.45 0.03 0.08 Most flows Flat Perched Concrete R15:785-613	76	16
1936.3 3139 18/01/2004 13 0.7 0.05 0.11 Most flows Flat Perched Concrete R15:780-605	20	3
1936.4 3140 19/01/2005 12 1.4 0.04 0.12 Most flows Flat Perched Concrete R15:792-621	98	27
1917.1 3142 19/01/2005 6 1.5 0.38 0.45 Most flows Flat Perched Concrete R15:810-597	164	48
1902.2 3145 19/01/2005 12 1.5 Most flows Concrete R15:750-594	98	27
1925.1 3149 19/01/2005 17 1 0.1 0.37 Most flows Flat Perched Concrete R15:721-627	164	48
1929.1 3151 20/01/2005 8 1.4 Most flows Perched Perched Concrete R14:796-714	164	48
1929.2 3152 20/01/2005 8 1 0.08 0.12 Most flows Flat Perched Concrete R14:794-724	164	48
1930.1 3155 20/01/2005 14 1 Most flows Flat Perched Concrete R14:885-728	148	43
1866.1 3173 23/09/2003 18 0.6 0.1 0.15 Most flows Flat Perched Concrete T14:300-809	489	135
413.13 613 29/03/2001 11 0.5 0.1 0.2 Most flows Perched Concrete R14:896-744	76	16
413.14 614 29/03/2001 11 0.3 0 0.3 Most flows Perched Concrete R14:896-746	76	16
413.8 615 29/03/2001 8 0.5 0.1 0.5 Most flows Perched Concrete R14:895-750	76	16
413.10 617 29/03/2001 10 0.8 0.1 0.5 Most flows Perched Concrete R14:895-757	76	16
413.16 620 29/03/2001 12 1.2 0.15 0.25 Most flows Perched Concrete \$14:901-731	345	102
238.2 623 29/03/2001 16 1.5 0.2 0.8 Most flows Perched Concrete R15:758-688	345	102
238.4 624 29/03/2001 16 1 0.01 0.05 Most flows Perched Concrete R15:762-690	345	102
238.3 625 29/03/2001 16 0.3 0.3 0.2 Most flows Perched Concrete R15:763-692	345	102
632.4 626 29/03/2001 20 0.6 0 0.45 Most flows Perched Concrete R14:788-723	164	48
1518.2 628 29/03/2001 6 0.5 0.3 0.5 Most flows Perched Concrete R14:826-754	164	48
1746.1 630 5/04/2001 25 1 0.5 1.5 Most flows Perched Concrete S14:911-725	345	102
1746.2 631 5/04/2001 21 0.5 0.2 1 Most flows Perched Concrete S14:910-725	345	102
1746.3 632 5/04/2001 4 0.3 0.2 0.5 Most flows Perched Concrete \$14:910-725	345	102

Wakano District USA bit 2007 10 0<	LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
141.8 634 6404 0.01 0.5 Most Trows Parched Corrects 81.4309.72 76 16 1716.8 685 64.42021 2.4 0.5 Most Trows Parched Corrects 81.4309.72 3.6 122 1174.1 686 64.42021 2.0 2.0 0.1 Most Trows Parched Corrects 81.4309.72 3.5 5 126.5 0.4 2.404.2021 2.0 0.0 Most Trows Parched Corrects 81.4309.72 3.5 5 126.5 0.4 2.404.2021 10 0.6 0.0 Most Trows Parched Corrects 81.4309.72 3.5 5 126.5 126.404.2021 10 0.6 0.7 1.0 5 Most Trows Parched Corrects 81.4309.72 3.5 5 127.7 1.6 0.7 0.1 0.5 Most Trows Parched Corrects 81.4309.72 3.5 5 1315.1 663 2.404.201 10 0.7 0.7 Most Trows <td< td=""><td>Waikato District</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Waikato District													
11714.6 635 64/42021 20 1 0.15 0.33 Most Rows Perchad Concrets R14499-72 36.5 122 1247.14 642 504/2021 24 1.8 0.2 0.3 Most Rows Perchad Concrets R1439-72 36.5 27 1247.14 642 504/2021 1.8 0.2 0.3 Most Rows Perchad Concrets R1439-72 36.5 25 1247.14 642 504/2021 1.6 0.6 2.4 Most Rows Perchad Concrets R1439-72 36.5 5 125.1 651 2404/2021 1.6 0.7 0.1 0.5 Most Rows Perchad Concrets R14375-72 36.5 16 1515.6 662 2404/201 1.6 0.7 0.1 0.5 Most Rows Perchad Concrets R14365-71 0.8 2.7 1515.6 664 2404/201 0.7 0.1 0.5 Most Rows Perchad Concrets R14365-71 0.8 2.7 15155.6<	413.17	633	5/04/2001	22	0.5	0.2	1.5	Most flows		Perched	Concrete	S14:902-726	345	102
1178.4 648 50V/2001 24 0.5 0.4 0.5 Most flows Perched Concrete R1480F-72 348 102 124.71 642 55042001 13 1.5 0.5 0.25 Most flows Perched Concrete R1480F-728 0.8 27 112.71 643 24040001 10 0.5 0.25 Most flows Perched Concrete R1470F-739 0.8 0.5 120.41 640 24040001 10 0.0 0.3 Most flows Perched Concrete R1470F-739 0.8 0.5 1751.61 653 24010201 7 1 1.5 Most flows Perched Concrete R1450F-728 3.8 0.7 1851.61 654 2401/2001 10 0.7 0.3 2.5 Most flows Perched Concrete R1450F-708 3.8 5 1851.61 650 2401/2001 10 0.4 0.4 Most flows Perched Concrete R1450F-708 3.8 5 1851.61 <t< td=""><td>413.6</td><td>634</td><td>5/04/2001</td><td>16</td><td>0.3</td><td>0.1</td><td>0.5</td><td>Most flows</td><td></td><td>Perched</td><td>Concrete</td><td>S14:900-726</td><td>76</td><td>16</td></t<>	413.6	634	5/04/2001	16	0.3	0.1	0.5	Most flows		Perched	Concrete	S14:900-726	76	16
122:1 642 504/2001 13 10 0.2 0.3 Most flows Perched Concrete R14/83/21 98 27 112:1 646 504/2001 10 2.5 0.2 0.1 Most flows Perched Gammal Skel R14/3728 35 5 125.1 640 2464/2001 2.5 1 0.1 2 Most flows Perched Concrete R14/87-73 35 5 184.1 660 2464/2001 2.5 1 0.1 2.5 Most flows Perched Concrete R14/87-73 35 5 175.1 665 2444/2001 16 0.7 0.1 0.5 Most flows Perched Concrete R14/85/76 88 2.7 1853.1 665 2444/2001 16 0.7 0.5 Most flows Perched Concrete R14/95 6666 5 5 1853.2 665 2444/2001 10 1 0.6 Most flows Perched Concrete R15/95/666 5 5 1853.2 <td>1718.6</td> <td>635</td> <td>5/04/2001</td> <td>20</td> <td>1</td> <td>0.15</td> <td>0.3</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>R14:899-726</td> <td>76</td> <td>16</td>	1718.6	635	5/04/2001	20	1	0.15	0.3	Most flows		Perched	Concrete	R14:899-726	76	16
142/14 646 604/2001 23 0.5 0.25 Most flows Porched Ghamard Stells 84.4708.730 35 55 1122.1 648 2404/2001 16 0.6 0.6 3 Most flows Porched Concrete R14708.735 35 55 184.4 660 2404/2001 10 1 0.2 Most flows Porched Concrete R1480.727.8 36 55 1516.1 661 2404/2001 15 0.7 0.0 8.5 Most flows Porched Concrete R1480.718 98 27 1515.1 666 2404/2001 15 0.7 0.0 8.5 Most flows Porched Concrete R1450.5566.9 98 27 1513.1 666 2404/2001 10 1 0.2 Most flows Porched Concrete R1555566.9 98 27 1513.2 668 2404/2001 12 0.2 0 Not flows Porched Concrete R1555568.9 98 27 1510.3 0.4 </td <td>1718.4</td> <td>636</td> <td>5/04/2001</td> <td>4</td> <td>0.5</td> <td>0.4</td> <td>0.5</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>R14:899-725</td> <td>345</td> <td>102</td>	1718.4	636	5/04/2001	4	0.5	0.4	0.5	Most flows		Perched	Concrete	R14:899-725	345	102
1172.1 648 24042001 120 2.5 0.2 0.1 Meast flows Perched Gammand Steet R14709-78 35 5 1255.1 649 24042001 10 1 0.2 0.68 30 Meast flows Perched Concrotte R14 695.73 35 5 1371.1 651 24042001 1 0.1 1.5 Moast flows Perched Concrotte R14 695.73 35 5 1151.1 655 24042001 1 0.7 0.2 1.5 Moast flows Perched Concrotte R14 695.73 35 5 1131.2 666 24042001 1 0.7 0.2 1.5 Moast flows Perched Concrotte R15 656.66 98 2.7 1131.2 666 24042001 10 1 0.4 0.4 Moast flows Perched Concrotte R15 656.66 98 2.7 1131.2 668 24042001 10 1 0.4 Moast flows Perched Concrotte R15 75.668 98 2.7 <td>1247.19</td> <td>642</td> <td>5/04/2001</td> <td>24</td> <td>1.6</td> <td>0.2</td> <td>0.3</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>R14:864-721</td> <td>98</td> <td>27</td>	1247.19	642	5/04/2001	24	1.6	0.2	0.3	Most flows		Perched	Concrete	R14:864-721	98	27
1 1 1 0	1247.14	645	5/04/2001	13	1.5	0.5	0.25	Most flows		Perched	Concrete	R14:853-726	98	27
194.4.1 661 24/04/2001 25 1 0.1 2 Mean flows Perched Concrete R14/897-79 35 5 1737.4 663 24/01/2001 7 1 1.5 Most flows Perched Concrete R14/877-25 98 27 1516.1 663 24/01/2001 14 0.7 0.3 2.5 Most flows Perched Concrete R14/667-70 98 5 1515.2 668 24/01/2001 10 1 0.0 1 Most flows Perched Concrete R15/68-88 08 27 1518.2 668 24/01/2001 10 1 0.0 1 Most flows Perched Concrete R15/68-88 08 27 1518.2 668 24/04/201 10 1.0 0.0 Most flows Perched Concrete R15/78-78 0.8 27 1518.3 668 24/04/201 10 1.0 0.0 Most flows Perched Concrete R15/78-68 0.8 27 1518.4 <t< td=""><td>1172.1</td><td>648</td><td>24/04/2001</td><td>20</td><td>2.5</td><td>0.2</td><td>0.1</td><td>Most flows</td><td></td><td>Perched</td><td>Galvanised Steel</td><td>R14:708-736</td><td>35</td><td>5</td></t<>	1172.1	648	24/04/2001	20	2.5	0.2	0.1	Most flows		Perched	Galvanised Steel	R14:708-736	35	5
1973.1 65 2404/2001 10 1 0.2 0.8 Most llows Perched Concrete R14 277-25 945 102 1515.1 654 2404/2001 15 0.7 0.1 0.5 Most llows Perched Concrete R14 665-70 98 2.7 1843.1 655 2404/2001 14 0.7 0.3 2.5 Most llows Perched Concrete R15 665-66 38 5 1839.2 665 2404/2001 10 1 0.5 0.7 Most llows Perched Concrete R15 665-66 38 2.9 1911.1 660 2404/2001 1 0.4 0.4 Most llows Perched Concrete R15 676-673 38 2.9 2.1 1.0 Most llows Perched Concrete R15 775-58 98 2.7 1 1.4 0.4 0.4 Most llows Perched Concrete R15 775-58 98 2.7 1 1.4 2.0 0.5 Most llows Perched Concrete R15 775-58 98 2.7<	1255.1	649	24/04/2001	16	0.6	0.6	3	Most flows		Perched	Concrete	R14:702-735	35	5
1516.16532401/20017.11.5Most HowsPerchedConcreteR1467-32598271615.16542404/2001140.70.32.5Most HowsPerchedConcreteR1468-703551513.26562404/200110010.5Most HowsPerchedConcreteR1468-768551518.26582401/200110010.5Most HowsPerchedConcreteR1565-6695551519.26892404/20011510.40.6Most HowsPerchedConcreteR1567-668271503.36862404/20011510.40.6Most HowsPerchedConcreteR1575-6898271503.66862404/200191.20.00.1Most HowsPerchedConcreteR1575-6898271466.66702404/200191.20.050.1Most HowsPerchedConcreteR1571-6898271466.56782404/2001101.20.050.4Most HowsPerchedConcreteR1571-6898271466.56782404/2011.00.15Most HowsPerchedConcreteR1571-6898271466.56782404/2011.00.50.01Most HowsPerchedConcreteR14715-7098	1844.1	650	24/04/2001	25	1	0.1	2	Most flows		Perched	Concrete	R14:693-739	35	5
1515.1 65.4 24042201 15 0.7 0.1 0.5 Most Hows Perched Concrete R14465-70 93 55 1513.2 65.6 24042201 15 0.7 0.2 1.5 Most Hows Perched Concrete R1565-668 35 5 1859.1 65.8 24042201 10 1 0.9 1.7 Most Hows Perched Concrete R15657-671 68 20 1511.1 66.8 24042201 15 1 0.4 0.4 Most Hows Perched Concrete R1557-668 68 27 1511.2 66 24042201 1 1.0 1.0 Most Hows Perched Concrete R1557-663 68 27 1511.2 66 2404201 1 1.0 1.5 Most Hows Perched Concrete R1571-630 68 26 26 26 26 26 26 R1571-630 68 26 26 26 26 26 26 26 26 26 26 26	737.1	651	24/04/2001	10	1	0.2	0.8	Most flows		Perched	Concrete	R14:878-729	345	102
1843.1 656 2404/2001 14 0.7 0.3 2.5 Most Hows Perched Concrete R1565-86 35 1839.1 658 2401/2001 10 1 0.9 1 Most Hows Perched Concrete R1565-86 35 5 1839.2 659 2404/2001 9 1 0.4 0.4 Most Hows Perched Concrete R1565-865 89 27 1508.3 663 2404/2001 12 2 0 0.15 Most Hows Perched Concrete R1575-69 89 27 1508.3 663 2404/2001 10 1 0.15 Most Hows Perched Concrete R1575-69 98 27 1665.1 673 2604/2001 10 1 0.15 O.15 Most Hows Perched Concrete R1575-76 98 27 1665.1 673 2604/2001 10 1 0.5 0.5 Most Hows Perched Concrete R14715-70 85 5 1665.2 <td< td=""><td>1516.1</td><td>653</td><td>24/01/2001</td><td>7</td><td></td><td>1</td><td>1.5</td><td>Most flows</td><td></td><td>Perched</td><td>Concrete</td><td>R14:673-725</td><td>98</td><td>27</td></td<>	1516.1	653	24/01/2001	7		1	1.5	Most flows		Perched	Concrete	R14:673-725	98	27
1513.26562.404/2001150.70.21.5Most HowsPerchedConcreteR15.658-683651839.26592.404/20011010.50.68Most HowsPerchedConcreteR15.658-6813651511.16602.404/20011510.40.6Most HowsPerchedConcreteR15.671-65888271511.26662.404/20011510.40.4Most HowsPerchedConcreteR15.71-68888271611.26662.404/200191.20.050.15Most HowsPerchedConcreteR15.71-68888271446.66702.604/200190.70.150.15Most HowsPerchedConcreteR15.71-68888271463.66702.604/200110.150.15Most HowsPerchedConcreteR14.715-70335551005.26812.604/20011.60.30.10.4Most HowsPerchedConcreteR15.73-6908426989.36842.604/20011.60.30.10.5Most HowsPerchedConcreteR15.73-6908426989.46842.604/20011.60.30.10.5Most HowsPerchedConcreteR15.73-6908426989.46842.604/20011.60.30.4Most HowsPer	1515.1	654	24/04/2001	15	0.7	0.1	0.5	Most flows		Perched	Concrete	R14:665-716	98	27
1933.1 658 24042001 10 1 0.0 1 Most flows Perched Concrete R15656.861 35 111.1 60 24042001 9 1 0.4 0.4 Most flows Perched Concrete R15675.671 38 27 1505.3 663 24042001 15 1 0.4 0.4 Most flows Perched Concrete R15715.68 98 27 1515.2 669 24042001 12 0.5 0.1 Most flows Perched Concrete R15715.68 98 27 1446.5 670 24042001 10 1 0.15 Most flows Perched Concrete R15715.68 98 27 1486.5 670 24042001 10 1.2 0.05 0.15 Most flows Perched Concrete R15737.483 48 28 1446.2 676 28042001 12 0.5 0.7 Most flows Perched Concrete R15737.489 16 2 1005.2 681 28042	1843.1	655	24/04/2001	14	0.7	0.3	2.5	Most flows		Perched	Concrete	R14:656-700	35	5
1839.2 659 24042001 10 1 0.5 0.7 Most flows Perched Concrete R15.658-861 35 1508.3 663 24042001 15 1 0.4 0.6 Most flows Perched Concrete R15.675-658 98 27 1518.1 666 24042001 12 0.6 Nost flows Perched Concrete R15.715-633 98 27 1446.6 670 24042001 10 1.2 0.05 Nost flows Perched Concrete R15.715-63 98 27 1446.3 670 26042001 10 1.2 0.05 0.2 Most flows Perched Concrete R14.735-73 35 55 1404.3 677 26042001 16 0.5 0.1 Most flows Perched Concrete R14.715-73 35 55 1404.3 26042001 12 2.3 0.2 Most flows Perched Concrete R14.715-73 35 54 1498.4 26042001 12 2.3 0.4 </td <td>1513.2</td> <td>656</td> <td>24/04/2001</td> <td>15</td> <td>0.7</td> <td>0.2</td> <td>1.5</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>R15:655-696</td> <td>35</td> <td>5</td>	1513.2	656	24/04/2001	15	0.7	0.2	1.5	Most flows		Perched	Concrete	R15:655-696	35	5
151.1 660 2404/2001 9 1 0.4 0.6 Most flows Parched Concrete R1567-67 98 27 1511.2 666 2404/2001 12 2 0 0.15 Most flows Parched Concrete R1571-693 98 27 1466.5 669 2404/2001 0 1 0.15 Most flows Parched Concrete R1571-693 98 27 1465.6 669 2404/2001 0 1 0.15 Most flows Parched Concrete R14715-703 35 5 1466.3 677 2604/2001 1 0.15 Most flows Parched Concrete R14715-703 35 5 10052 681 2604/2001 12 0.3 0.2 Most flows Parched Concrete R1573-660 98 27 989.3 684 2604/2001 12 0.3 0.1 0.2 Most flows Parched Concrete R1573-660 98 27 989.3 684 2604/2001 1	1839.1	658	24/01/2001	10	1	0.9	1	Most flows		Perched	Concrete	R15:658-685	98	27
1503.3 663 2404/2001 15 1 0.4 0.43 Most flows Perched Concrete R15/87-658 98 27 1446.5 669 2404/2001 9 1.2 0.05 0.15 Most flows Perched Concrete R15/15-688 98 27 1466.6 670 2404/2001 10 1.2 0.05 0.15 Most flows Perched Concrete R14/18/715-703 35 5 1463.2 677 260/42001 14 0.5 0.1 0.6 Most flows Perched Concrete R14/175-703 35 5 1463.2 677 260/42001 14 0.5 0.1 Most flows Perched Concrete R15/73-660 98 260/42001 14 48 1005.2 681 260/42001 15 0.6 0.1 0.2 Most flows Perched Concrete R15/73-680 98 27 1005.2 681 260/42001 12 2.1 0.1 0.2 Most flows Perched Concrete 81	1839.2	659	24/04/2001	10	1	0.5	0.7	Most flows		Perched	Concrete	R15:658-681	35	5
15112 666 2404/2001 12 0 0.15 Most flows Perched Concrete R15:716-88 98 27 1446.6 670 2404/2001 10 1 0.15 0.15 Most flows Perched Concrete R15:715-89 98 27 1466.5 670 2404/2001 10 1.2 0.05 0.15 Most flows Perched Concrete R15:715-89 98 27 1464.2 670 2604/2001 10 1.2 0.05 0.15 Most flows Perched Concrete R14:715-703 35 5 1005.2 681 2604/2001 12 0.3 0.1 0.25 Most flows Perched Concrete R15:73-680 98 27 999.3 684 2604/2001 15 0.61 0.25 Most flows Perched Concrete R15:73-680 98 64 48 999.4 685 2604/2001 12 0.4 0.1 0.5 Most flows Perched Concrete R15:73-680 98 27 </td <td>1511.1</td> <td>660</td> <td>24/04/2001</td> <td>9</td> <td>1</td> <td>0.4</td> <td>0.6</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>R15:657-671</td> <td>98</td> <td>27</td>	1511.1	660	24/04/2001	9	1	0.4	0.6	Most flows		Perched	Concrete	R15:657-671	98	27
1446.5 669 2404/2001 9 1.2 0.05 0.11 Most flows Perched Concrete R15/15-633 98 27 1466.6 670 2404/2001 9 0.7 0.15 Most flows Perched Concrete R15/15-633 164 48 1442.5 676 2604/2001 10 12 0.05 0.04 Most flows Perched Concrete R14/15/703 35 55 1445.5 677 2604/2001 16 0.5 0.1 0.6 Most flows Perched Concrete R15/73-680 98 26 985.2 681 2604/2001 15 0.6 0.1 0.22 Most flows Perched Concrete R15/73-680 98 48 2604/2001 12 0.1 0.23 Most flows Perched Concrete R15/71-683 164 48 616.3 694 2604/2001 12 0.3 0.1 0.23 Most flows Perched Concrete R15/71-683 164 48 616.3 694 26	1508.3	663	24/04/2001	15	1	0.4	0.4	Most flows		Perched	Concrete	R15:670-658	98	27
1446.6 670 2404/2001 10 1 0.15 Most Hows Perched Concrete R15/715-688 98 27 1466.1 673 2604/2001 10 1.2 0.05 0.1 Most Hows Perched Concrete R14/715-703 35 5 1446.2 677 2604/2001 10 0.5 0.1 Most Hows Perched Concrete R14/715-703 35 5 1005.2 683 2604/2001 12 2.3 0.2 0.2 Most Hows Perched Concrete R15/746-98 14 48 989.3 684 2604/2001 12 2.3 0.2 0.2 Most Hows Perched Concrete R15/746-98 14 48 616.3 649 2604/2001 12 2.1 0.1 0.2 Most Hows Perched Concrete R15/746-98 14 48 48 48 48 48 48 48 48 48 48 48 48 48 48 48 48 48 48 48<	1511.2	666	24/04/2001	12	2	0	0.15	Most flows		Perched	Concrete	R15:711-684	164	48
1685.1 673 2604/2001 9 0.7 0.15 0.15 Most flows Perched Concrete R14/38-723 164 48 1446.3 677 2804/2001 4 0.5 0.0 Most flows Perched Concrete R14/73-703 35 5 1005.2 681 2604/2001 16 0.5 0.7 0.1 Most flows Perched Concrete R13/734-694 164 48 989.3 684 2604/2001 15 0.6 0.1 0.25 Most flows Perched Concrete R13/734-694 164 48 616.3 694 2604/2001 12 2.1 0.1 0.05 Most flows Perched Concrete R13/734-694 164 48 1247.31 711 4/05/2001 12 2.1 0.05 Most flows Perched Concrete R13/9441-793 38 27 1247.31 711 4/05/2001 23 0.7 0.2 0.3 Most flows Perched Concrete R13/96/70 297 83 </td <td>1446.5</td> <td>669</td> <td>24/04/2001</td> <td>9</td> <td>1.2</td> <td>0.05</td> <td>0.1</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>R15:715-693</td> <td>98</td> <td>27</td>	1446.5	669	24/04/2001	9	1.2	0.05	0.1	Most flows		Perched	Concrete	R15:715-693	98	27
1446.2 676 26/04/2001 10 1.2 0.05 0.2 Most flows Perched Concrete R14/715-703 35 5 1005.2 681 26/04/2001 16 0.5 0.7 0.1 Most flows Perched Concrete R15/73/6494 164 48 899.2 683 26/04/2001 12 2.3 0.2 0.4 Most flows Perched Concrete R15/73/6493 88 27 989.4 686 26/04/2001 12 0.3 0.1 0.2 Most flows Perched Concrete R15/73/6488 164 48 989.4 686 26/04/2001 12 0.1 0.05 Most flows Perched Concrete R15/73/6488 164 48 1247.32 705 4/05/2001 10 0.6 0.3 Most flows Perched Concrete R15/846/85 15 1 1247.32 735 4/05/2001 14 0.4 0.3 Most flows Perched Concrete S14/90-705 345 102 16	1446.6	670	24/04/2001	10	1	0.15	0.15	Most flows		Perched	Concrete	R15:715-698	98	27
1446.3 677 2604/2001 14 0.5 0.1 0.6 Most flows Perched Concrete R14/715/703 35 5 1005.2 681 2604/2001 16 0.5 0.7 0.1 Most flows Perched Concrete R15/73-694 164 48 989.3 684 2604/2001 15 0.6 0.1 0.2 Most flows Perched Concrete R15/73-689 164 48 989.3 684 2604/2001 12 2.1 0.0 Most flows Perched Concrete R15/70-688 164 48 616.3 644 2604/2001 12 2.1 0.0 Most flows Perched Concrete R15/70-686 15 1 1247.3 714 405/2001 23 0.7 0.2 0.3 Most flows Perched Concrete S14/915/705 345 102 1247.3 718 705/2001 12 2.3 0.6 0.3 Most flows Perched Concrete S14/915/705 345 102	1685.1	673	26/04/2001	9	0.7	0.15	0.15	Most flows		Perched	Concrete	R14:738-723	164	48
10052 681 2804/2001 16 0.5 0.7 0.1 Most flows Perched Concrete R15:736-690 98 261 9893 684 260/4/2001 12 2.3 0.2 0.2 Most flows Perched Concrete R15:736-690 98 48 9894 685 260/4/2001 16 0.3 0.1 0.2 Most flows Perched Concrete R15:736-690 98 47 6163 694 260/4/2001 16 0.3 0.1 0.2 Most flows Perched Concrete R15:736-690 98 27 1247.32 705 4/05/2001 10 0.6 0.2 0.3 Most flows Perched Concrete S14906-705 14 43 17445.9 715 4/05/2001 12 2.3 0.6 0.3 Most flows Perched Concrete S14906-705 297 83 1746.1 721 7/05/2001 10 0.65 0.3 Most flows Perched Concrete S14905-707 297	1446.2	676	26/04/2001	10	1.2	0.05	0.2	Most flows		Perched	Concrete	R14:715-703	35	5
989.2 683 2604/2001 12 2.3 0.2 Most flows Perched Concrete R15.736-689 98 27 989.3 664 2604/2001 15 0.6 0.1 0.25 Most flows Perched Concrete R15.737-689 164 48 989.4 665 2604/2001 12 2.1 0.1 0.05 Most flows Perched Galvanised Steel R15.737-689 164 48 1247.32 705 405/2001 12 2.1 0.1 0.05 Most flows Perched Concrete R15.746-680 15 1 1247.31 711 405/2001 23 0.6 0.3 Most flows Perched Concrete S14.906-705 148 43 1746.5 715 405/2001 12 0.4 0.1 0.35 Most flows Perched Concrete S14.906-705 148 43 1746.11 720 705/2001 15 0.4 0.1 0.5 Most flows Perched Concrete S14.906-705 207 73 <td>1446.3</td> <td>677</td> <td>26/04/2001</td> <td>4</td> <td>0.5</td> <td>0.1</td> <td>0.6</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>R14:715-703</td> <td>35</td> <td>5</td>	1446.3	677	26/04/2001	4	0.5	0.1	0.6	Most flows		Perched	Concrete	R14:715-703	35	5
989.3 684 26/04/2001 15 0.6 0.1 0.25 Most flows Perched Concrete R15.73-689 164 48 989.4 663 26/04/2001 16 0.3 0.1 0.2 Most flows Perched Galvanised Steel R15.740-688 164 48 1247.32 705 4/05/2001 10 0.6 0.2 0.3 Most flows Perched Galvanised Steel R15.740-688 15 1 1247.32 715 4/05/2001 10 0.6 0.2 0.3 Most flows Perched Concrete S14.90-7.70 297 83 1746.5 715 4/05/2001 12 2.3 0.6 0.3 Most flows Perched Concrete S14.90-7.70 297 83 1746.10 720 7/05/2001 10 0.5 0.4 0.1 Most flows Perched Concrete S14.916-7.70 297 83 1746.11 721 7/05/2001 10 0.5 0.4 0.1 Most flows Perched Concrete	1005.2	681	26/04/2001	16	0.5	0.7	0.1	Most flows		Perched	Concrete	R15:734-694	164	48
989.4 685 26/04/2001 16 0.3 0.1 0.2 Most flows Perched Concrete R15:740-688 164 48 1247.32 705 406/2001 12 2.1 0.1 0.05 Most flows Perched Galvanised Steel R14:841-733 89 2 1247.32 711 406/2001 23 0.7 0.2 0.35 Most flows Perched Concrete S14:960-707 297 83 1746.5 715 406/2001 4 0.4 0.1 0.5 Most flows Perched Concrete S14:967.05 345 102 1746.10 7.0 705/2001 15 0.4 0.1 0.5 Most flows Perched Concrete S14:916-706 297 83 1746.13 723 705/2001 10 0.5 0.3 Most flows Perched Concrete S14:916-706 297 83 1247.27 731 1005/2001 10 0.5 0.3 Most flows Perched Concrete S14:916-706 297 83 </td <td>989.2</td> <td>683</td> <td>26/04/2001</td> <td>12</td> <td>2.3</td> <td>0.2</td> <td>0.2</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>R15:736-690</td> <td>98</td> <td>27</td>	989.2	683	26/04/2001	12	2.3	0.2	0.2	Most flows		Perched	Concrete	R15:736-690	98	27
616.3 694 26/04/2001 12 2.1 0.1 0.05 Most flows Perched Galvanised Steel R14.841-793 98 27 1247.31 710 4/05/2001 23 0.7 0.2 0.3 Most flows Perched Concrete R15.866-865 15 1 1247.31 711 4/05/2001 23 0.7 0.22 0.35 Most flows Perched Concrete R15.866-865 15 148 43 1746.5 715 4/05/2001 12 0.3 0.6 0.3 Most flows Perched Concrete S14:915-705 345 042 1746.10 720 7/05/2001 15 0.4 0.1 Most flows Perched Concrete S14:91-708 297 83 1746.11 721 7/05/2001 10 0.65 0.04 0.1 Most flows Perched Concrete S14:91-708 297 83 1746.13 721 7/05/2001 10 0.5 Most flows Perched Concrete R14:887-945 269 <t< td=""><td>989.3</td><td>684</td><td>26/04/2001</td><td>15</td><td>0.6</td><td>0.1</td><td>0.25</td><td>Most flows</td><td></td><td>Perched</td><td>Concrete</td><td>R15:737-689</td><td>164</td><td>48</td></t<>	989.3	684	26/04/2001	15	0.6	0.1	0.25	Most flows		Perched	Concrete	R15:737-689	164	48
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	989.4	685	26/04/2001	16	0.3	0.1	0.2	Most flows		Perched	Concrete	R15:740-688	164	48
1247.31 711 4/05/2001 23 0.7 0.2 0.35 Most flows Perched Concrete S14:900-707 297 83 1746.5 715 4/05/2001 4 0.4 0.1 0.35 Most flows Perched Concrete S14:915-705 345 02 1746.5 775 7/05/2001 15 0.4 0.1 0.5 Most flows Perched Concrete S14:915-705 297 83 1746.11 721 7/05/2001 10 0.5 0.04 0.1 Most flows Perched Concrete S14:915-706 297 83 1746.11 723 7/05/2001 10 0.5 0.03 Most flows Perched Concrete S14:919-708 297 83 1247.27 731 10/05/2001 20 0.4 0.2 0.5 Most flows Perched Concrete S14:919-708 269 72 1247.28 733 10/05/2001 13 1.2 0.4 1 Most flows Perched Concrete R14:889-945 269	616.3	694	26/04/2001	12	2.1	0.1	0.05	Most flows		Perched	Galvanised Steel	R14:841-793	98	27
1746.5 715 4/05/2001 4 0.4 0.1 0.35 Most flows Perched Concrete \$14:908-705 148 43 1746.9 719 77/05/2001 12 2.3 0.6 0.3 Most flows Perched Concrete \$14:915-705 345 102 1746.11 721 7/05/2001 15 0.4 0.1 0.5 Most flows Perched Concrete \$14:915-705 297 83 1746.11 721 7/05/2001 10 0.5 0.3 0.3 Most flows Perched Concrete \$14:919-708 297 83 1247.27 731 10/05/2001 20 0.4 0.2 0.5 Most flows Perched Concrete \$14:887-945 269 72 1247.28 732 10/05/2001 13 1.2 0.4 1 Most flows Perched Concrete \$14:889-938 269 72 1247.28 732 10/05/2001 13 1.2 0.4 1 Most flows Perched Concrete \$14:80-935 <td>1247.32</td> <td>705</td> <td>4/05/2001</td> <td>10</td> <td>0.6</td> <td></td> <td>0.3</td> <td>Most flows</td> <td></td> <td>Perched</td> <td>Concrete</td> <td>R15:886-685</td> <td>15</td> <td></td>	1247.32	705	4/05/2001	10	0.6		0.3	Most flows		Perched	Concrete	R15:886-685	15	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1247.31	711	4/05/2001	23	0.7	0.2	0.35	Most flows		Perched	Concrete	S14:900-707	297	83
1746.10 720 7705/2001 15 0.4 0.1 0.5 Most flows Perched Concrete S14:916-706 297 83 1746.11 721 7705/2001 10 0.65 0.04 0.1 Most flows Perched Concrete S14:916-706 297 83 1746.13 723 7705/2001 10 0.5 0.3 0.3 Most flows Perched Concrete S14:919-708 297 83 1247.27 731 10/05/2001 10 0.5 0.3 0.5 Most flows Perched Concrete R14:887-945 269 72 1247.28 732 10/05/2001 13 1.2 0.4 1 Most flows Perched Concrete R14:887-945 269 72 1247.28 733 10/05/2001 13 1.2 0.4 1 Most flows Perched Concrete R14:887-945 269 72 1451.7 734 10/05/2001 12 1.6 0.5 1.5 Most flows Perched Concrete R14:876-910	1746.5	715	4/05/2001	4	0.4	0.1	0.35	Most flows		Perched	Concrete	S14:908-705	148	43
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1746.9	719	7/05/2001	12	2.3	0.6	0.3	Most flows		Perched	Concrete	S14:915-705	345	
1746.13 723 7705/2001 10 0.5 0.3 0.3 Most flows Perched Concrete S14:919-708 297 83 1247.27 731 10/05/2001 20 0.4 0.2 0.5 Most flows Perched Concrete R14:887-945 269 72 1247.28 733 10/05/2001 13 1.2 0.4 1 Most flows Perched Concrete R14:889-935 269 72 1247.30 733 10/05/2001 13 1.2 0.4 1 Most flows Perched Concrete R14:889-935 269 72 1451.1 734 10/05/2001 19 5 0.6 Most flows Perched Galvanised Stet R14:889-935 269 72 1451.1 734 10/05/2001 12 1.6 0.5 1.5 Most flows Perched Concrete R14:87-910 297 83 1451.7 742 11/05/2001 14 0.5 0.2 2.5 Most flows Perched Concrete R14:876-910 2	1746.10	720	7/05/2001	15	0.4	0.1	0.5	Most flows		Perched	Concrete	S14:916-706	297	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1746.11	721	7/05/2001	10	0.65	0.04	0.1	Most flows		Perched	Concrete	S14:920-707	297	
1247.28 732 10/05/2001 19 0.3 0.5 Most flows Perched Steel R14:887-945 269 72 1247.30 733 10/05/2001 13 1.2 0.4 1 Most flows Perched Concrete R14:889-938 269 72 1451.1 734 10/05/2001 19 5 0.6 Most flows Perched Galvanised Steel R14:87-941 269 72 1707.2 738 10/05/2001 12 1.6 0.5 1.5 Most flows Perched Concrete R14:876-911 164 48 1167.11 739 10/05/2001 12 1.6 0.2 2.5 Most flows Perched Concrete R14:876-910 29 83 1451.7 742 11/05/2001 12 0.6 0.3 0.3 Most flows Perched Concrete S14:906-938 269 72 1451.5 744 11/05/2001 17 0.1 0.9 Most flows Perched Concrete S14:901-934 269 72	1746.13	723	7/05/2001	10	0.5	0.3	0.3	Most flows		Perched	Concrete	S14:919-708	297	
1247.30 733 10/05/2001 13 1.2 0.4 1 Most flows Perched Concrete R14:889-938 269 72 1451.1 734 10/05/2001 19 5 0.6 Most flows Perched Galvanised Steel R14:889-938 269 72 1707.2 738 10/05/2001 12 1.6 0.5 1.5 Most flows Perched Concrete R14:876-911 164 48 1167.11 739 10/05/2001 14 0.5 0.2 2.5 Most flows Perched Concrete R14:876-910 297 83 1451.7 742 11/05/2001 22 0.6 0.3 0.3 Most flows Perched Concrete S14:906-938 345 102 1451.6 743 11/05/2001 17 Most flows Perched Concrete S14:902-934 269 72 1451.4 745 11/05/2001 18 0.7 0.1 0.9 Most flows Perched Concrete S14:901-934 269 72 <t< td=""><td></td><td></td><td></td><td></td><td></td><td>0.2</td><td></td><td>Most flows</td><td></td><td>Perched</td><td></td><td></td><td></td><td></td></t<>						0.2		Most flows		Perched				
1451.1 734 10/05/2001 19 5 0.6 Most flows Perched Galvanised Steel R14:890-935 269 72 1707.2 738 10/05/2001 12 1.6 0.5 1.5 Most flows Perched Concrete R14:876-911 164 48 1167.11 739 10/05/2001 14 0.5 0.2 2.5 Most flows Perched Concrete R14:876-910 297 83 1451.7 742 11/05/2001 22 0.6 0.3 0.3 Most flows Perched Concrete S14:906-938 345 102 1451.6 743 11/05/2001 17 Most flows Perched Concrete S14:902-934 269 72 1451.5 744 11/05/2001 17 0.7 0.1 0.9 Most flows Perched Concrete S14:902-934 269 72 1451.5 744 11/05/2001 18 0.7 0.1 0.9 Most flows Perched Concrete S14:901-934 269 72 <	1247.28	732	10/05/2001	19	0.3		0.5	Most flows		Perched	Steel	R14:887-945	269	72
1707.2 738 10/05/2001 12 1.6 0.5 1.5 Most flows Perched Concrete R14:876-911 164 48 1167.11 739 10/05/2001 14 0.5 0.2 2.5 Most flows Perched Concrete R14:876-910 297 83 1451.7 742 11/05/2001 22 0.6 0.3 0.3 Most flows Perched Concrete S14:906-938 345 102 1451.6 743 11/05/2001 17 Most flows Flat Concrete S14:902-934 269 72 1451.5 744 11/05/2001 18 0.7 0.1 0.9 Most flows Perched Concrete S14:901-934 269 72 1451.4 745 11/05/2001 21 0.4 0.1 0.4 Most flows Perched Concrete S14:901-934 269 72 1451.4 745 11/05/2001 21 0.4 0.1 0.4 Most flows Perched Concrete S14:900-934 269 72 <t< td=""><td>1247.30</td><td>733</td><td>10/05/2001</td><td>13</td><td>1.2</td><td>0.4</td><td>1</td><td>Most flows</td><td></td><td>Perched</td><td>Concrete</td><td>R14:889-938</td><td>269</td><td>72</td></t<>	1247.30	733	10/05/2001	13	1.2	0.4	1	Most flows		Perched	Concrete	R14:889-938	269	72
1167.11 739 10/05/2001 14 0.5 0.2 2.5 Most flows Perched Concrete R14:876-910 297 83 1451.7 742 11/05/2001 22 0.6 0.3 0.3 Most flows Perched Concrete S14:906-938 345 102 1451.6 743 11/05/2001 17 Most flows Flat Concrete S14:901-934 269 72 1451.5 744 11/05/2001 18 0.7 0.1 0.9 Most flows Perched Concrete S14:901-934 269 72 1451.4 745 11/05/2001 21 0.4 0.1 0.4 Most flows Perched Concrete S14:901-934 269 72 1451.4 745 11/05/2001 21 0.4 0.1 0.4 Most flows Perched Concrete S14:901-934 269 72 14247.22 750 11/05/2001 20 0.6 Most flows Perched Concrete R14:869-896 345 102 1247.21 <td< td=""><td>1451.1</td><td>734</td><td>10/05/2001</td><td>19</td><td>5</td><td></td><td>0.6</td><td>Most flows</td><td></td><td>Perched</td><td>Galvanised Steel</td><td>R14:890-935</td><td>269</td><td>72</td></td<>	1451.1	734	10/05/2001	19	5		0.6	Most flows		Perched	Galvanised Steel	R14:890-935	269	72
1451.7 742 11/05/2001 22 0.6 0.3 0.3 Most flows Perched Concrete \$14:906-938 345 102 1451.6 743 11/05/2001 17 Most flows Flat Concrete \$14:906-938 269 72 1451.5 744 11/05/2001 18 0.7 0.1 0.9 Most flows Perched Concrete \$14:901-934 269 72 1451.4 745 11/05/2001 18 0.7 0.1 0.9 Most flows Perched Concrete \$14:901-934 269 72 1451.4 745 11/05/2001 21 0.4 0.1 0.4 Most flows Perched Concrete \$14:900-934 269 72 1247.21 750 11/05/2001 20 0.6 0.2 0.4 Most flows Perched Concrete \$14:868-899 35 5 1247.21 751 11/05/2001 17 0.6 0.2 0.6 Most flows Perched Concrete \$14:868-899 345 102 <t< td=""><td>1707.2</td><td>738</td><td>10/05/2001</td><td>12</td><td>1.6</td><td>0.5</td><td>1.5</td><td>Most flows</td><td></td><td>Perched</td><td>Concrete</td><td>R14:876-911</td><td>164</td><td>48</td></t<>	1707.2	738	10/05/2001	12	1.6	0.5	1.5	Most flows		Perched	Concrete	R14:876-911	164	48
1451.6 743 11/05/2001 17 Most flows Flat Concrete \$14:902-934 269 72 1451.5 744 11/05/2001 18 0.7 0.1 0.9 Most flows Perched Concrete \$14:901-934 269 72 1451.4 745 11/05/2001 21 0.4 0.1 0.4 Most flows Perched Concrete \$14:901-934 269 72 1451.4 745 11/05/2001 21 0.4 0.1 0.4 Most flows Perched Concrete \$14:901-934 269 72 1247.22 750 11/05/2001 20 0.6 0.2 0.4 Most flows Perched Concrete \$14:869-899 35 5 1247.21 751 11/05/2001 17 0.6 0.2 0.6 Most flows Perched Concrete \$14:869-899 35 5 1247.21 751 11/05/2001 25 1.6 0.1 0.15 Most flows Perched Concrete \$14:868-892 35 5	1167.11	739	10/05/2001	14	0.5	0.2	2.5	Most flows		Perched	Concrete	R14:876-910	297	83
1451.574411/05/2001180.70.10.9Most flowsPerchedConcrete\$14:901-934269721451.474511/05/2001210.40.10.4Most flowsPerchedConcrete\$14:900-934269721247.2275011/05/2001200.60.20.4Most flowsPerchedConcrete\$14:869-8993551247.2175111/05/2001170.60.20.6Most flowsPerchedConcrete\$14:869-8963451021696.175211/05/2001251.60.10.15Most flowsPerchedConcrete\$14:868-892355	1451.7	742	11/05/2001	22	0.6	0.3	0.3	Most flows		Perched	Concrete	S14:906-938	345	102
1451.474511/05/2001210.40.10.4Most flowsPerchedConcrete\$14:90-934269721247.2275011/05/2001200.60.20.4Most flowsPerchedConcreteR14:869-8993551247.2175111/05/2001170.60.20.6Most flowsPerchedConcreteR14:869-8963451021696.175211/05/2001251.60.10.15Most flowsPerchedConcreteR14:868-892355	1451.6	743	11/05/2001	17				Most flows		Flat	Concrete	S14:902-934	269	72
1247.22 750 11/05/2001 20 0.6 0.2 0.4 Most flows Perched Concrete R14:869-899 35 5 1247.21 751 11/05/2001 17 0.6 0.2 0.6 Most flows Perched Concrete R14:869-896 345 102 1696.1 752 11/05/2001 25 1.6 0.1 0.15 Most flows Perched Concrete R14:868-892 35 5	1451.5	744	11/05/2001	18	0.7	0.1	0.9	Most flows		Perched	Concrete	S14:901-934	269	72
1247.21 751 11/05/2001 17 0.6 0.2 0.6 Most flows Perched Concrete R14:869-896 345 102 1696.1 752 11/05/2001 25 1.6 0.1 0.15 Most flows Perched Concrete R14:868-892 35 5	1451.4	745	11/05/2001	21	0.4	0.1	0.4	Most flows		Perched	Concrete	S14:900-934	269	72
1696.1 752 11/05/2001 25 1.6 0.1 0.15 Most flows Perched Concrete R14:868-892 35 5	1247.22	750	11/05/2001	20	0.6	0.2	0.4	Most flows		Perched	Concrete	R14:869-899	35	5
	1247.21	751	11/05/2001	17	0.6	0.2	0.6	Most flows		Perched	Concrete	R14:869-896	345	102
1247.17 756 11/05/2001 26 1 Most flows Perched Concrete R14:857-870 35 5	1696.1	752	11/05/2001	25	1.6	0.1	0.15	Most flows		Perched	Concrete	R14:868-892	35	5
	1247.17	756	11/05/2001	26			1	Most flows		Perched	Concrete	R14:857-870	35	5

LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
Waikato District													
1167.13	761	11/05/2001	20	0.3	0.1	0.2	Most flows		Perched	Concrete	R14:852-854	15	1
1634.4	769	14/05/2001	14	1.3	0.4	0.2	Most flows		Perched	Concrete	R14:739-790	164	48
1634.5	770	14/05/2001	13	0.4	0.13	0.2	Most flows		Perched	Concrete	R14:738-793	164	48
1634.6	771	14/05/2001	11	2	0.4	0.1	Most flows		Perched	Concrete	R14:736-794	164	48
1642.2	773	14/05/2001	6	0.3	0.05	0.11	Most flows		Perched	Concrete	R14:769-805	164	48
1641.3	777	14/05/2001	10	0.3	0.01	0.4	Most flows		Perched	Concrete	R14:806-838	164	48
246.8	785	14/05/2001	15	0.4	0.1	0.2	Most flows		Perched	Concrete	R14:821-846	164	48
202.10	796	17/05/2001	13	0.4	0.08	0.2	Most flows		Perched	Concrete	R14:835-956	345	102
202.13	802	17/05/2001	20	0.3	0.6	0.45	Most flows		Perched	Concrete	R14:837-916	98	27
202.4	803	17/05/2001	16	0.6	0.68	0.5	Most flows		Perched	Concrete	R14:838-912	98	27
1056.5	836	24/04/2001	12	1.5	0.2	0.2	Most flows		Perched	Concrete	R15:703-669	297	83
1056.6	837	24/04/2001	20	1.5	0.1	0.5	Most flows		Perched	Concrete	R15:706-671	297	83
1936.1	1936.1	18/01/2005	8	0.8	0	0.02	Low flow only	Flat	Pooled	Concrete	R15:788-616	324	92
1231.21	2498	26/01/2005	16	1	0	0	Low flow only	Flat	Flat	Galvanised Steel	S14:277-743	566	151
1231.25	2502	26/01/2005	14	2	0	0	Low flow only	Flat	Flat	Galvanised Steel	T14:316-784	575	152
1231.30	2508	4/02/2005	16	1	0	0	Low flow only	Flat	Flat	Concrete	S14:261-782	575	152
1231.31	2509	4/02/2005	12	1	0	0	Low flow only	Flat	Flat	Concrete	S14:269-776	575	152
1231.34	2512 2514	4/02/2005 4/02/2005	14 18	1	0	0	Low flow only	Flat	Flat Flat	Concrete	S14:279-804 S14:259-808	575	152
1231.36 1231.37	2514	4/02/2005	16	1	0	0	Low flow only Low flow only	Flat Flat	Flat	Concrete Concrete	S14:249-813	563 575	150 152
1231.37	3028	17/12/2003	24	1	0	0	Low flow only	Pooled	Pooled	Concrete	R14:838-909	324	92
1908.2	3028	17/12/2004	24 14	0.4	0	0.05	Low flow only	Pooled	Perched	Concrete	R14:837-955	534	92 142
1900.3	3053	22/12/2004	14	1.5	0	0.05	Low flow only	Flat	Perched	Concrete	R13:818-029	575	142
1948.2	3070	10/01/2005	14	1.5	0	0.25	Low flow only	Flat	Pooled	Concrete	R14:712-940	324	92
1943.2	3079	11/01/2005	8	0.9			Low flow only	Flat	Flat	Concrete	R14:743-841	429	128
1916.5	3101	12/01/2005	8	0.5			Low flow only	Flat	Flat	Concrete	S13:922-042	575	152
1234.4	3109	13/01/2005	13	1.1	0	0.05	Low flow only	Flat	Perched	Concrete	R14:898-974	575	152
205.3	3134	17/01/2005	14	1.8	-		Low flow only	Flat	Flat	Concrete	R15:773-644	324	92
1917.2	3143	19/01/2005	10	2			Low flow only	Flat	Flat	Galvanised Steel	R15:799-592	20	3
1901.1	3148	19/01/2005	12	1	0.1	0.04	Low flow only	Perched	Perched	Concrete	R15:729-618	324	92
1926.1	3153	20/01/2005	12	2			Low flow only	Flat	Flat	Concrete	R14:811-723	429	128
413.4	612	29/03/2001	12	0.3			Low flow only		Pooled	Concrete	S14:901-734	297	83
413.15	621	29/03/2001	12	2			Low flow only	Flat	Flat	Galvanised Steel	S14:900-728	534	142
1518.1	627	29/03/2001	7.5	1.1			Low flow only		Pooled	Concrete	R14:822-754	429	128
1247.26	640	5/04/2001	21	0.8		0.05	Low flow only		Perched	Concrete	R14:878-720	76	16
1399.2	643	5/04/2001	13	1.8			Low flow only	Pooled	Flat	Concrete	R14:774-741	324	92
1513.1	657	24/04/2001	10	0.7			Low flow only			Concrete	R15:659-689	269	72
1508.2	664	24/04/2001	8	1	0.1	0.3	Low flow only		Perched	Concrete	R15:670-651	324	92
1446.4	667	24/04/2001	12	0.6	0.05	0.15	Low flow only		Perched	Concrete	R15:714-691	324	92
857.4	671	26/04/2001	17	0.6	0.1	0.1	Low flow only		Perched	Concrete	R14:738-748	429	128
1446.10	680	26/04/2001	15	0.5	0	0.2	Low flow only		Perched	Concrete	R15:728-692	429	128
1247.7	699	4/05/2001	12.5	0.45			Low flow only	Pooled	Pooled	Concrete	R15:886-663	148	43
1735.1	700	4/05/2001	12	0.3			Low flow only		Pooled	Concrete	R15:883-664	534	142
1247.10	703	4/05/2001	10	1	0	2	Low flow only		Perched	Concrete	R15:886-672	148	43
1247.11	704	4/05/2001	10	0.7			Low flow only		Pooled	Concrete	R15:887-681	148	43
1247.12	709	4/05/2001	9	0.3			Low flow only		Pooled	Concrete	R15:890-691	269	72
257.1	713	4/05/2001	15	2			Low flow only	Flat	Flat	Galvanised Steel	R14:887-711	534	142
1746.6	716	4/05/2001	18	1			Low flow only	Pooled	Flat	Concrete	S14:908-705	345	102
1746.12	722	7/05/2001	9	2.5			Low flow only		Pooled	Galvanised Steel	S14:925-710	534	142
1718.1	727	7/05/2001	24	1			Low flow only		Pooled	Concrete	R14:883-733	534	142

LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
Waikato District													<u> </u>
1707.3	737	10/05/2001	4	1	0.1	0.01	Low flow only		Perched	Concrete	R14:876-911	429	128
1451.2	746	11/05/2001	20	0.7			Low flow only	Flat	Flat	Concrete	R14:895-935	534	142
1247.20	753	11/05/2001	20	0.7	0.1	0.06	Low flow only		Perched	Concrete	R14:867-887	269	72
1826.2	754	11/05/2001	28	1.4			Low flow only	Flat	Flat	Galvanised Steel	R14:866-882	534	142
1690.1	760	11/05/2001	19	0.6	0.01	0.05	Low flow only		Perched	Concrete	R14:851-851	76	16
1634.1	766	14/05/2001	7	0.4	0.005	0.01	Low flow only		Perched	Concrete	R14:744-788	324	92
1447.2	774	14/05/2001	14	3			Low flow only		Pooled	Concrete	R14:777-832	429	128
246.3	780	14/05/2001	10	0.5		0.05	Low flow only		Perched	Concrete	R14:798-869	297	83
202.3	789	14/05/2001	13	1	0.002	0.1	Low flow only		Perched	Concrete	R14:849-884	324	92

Matamata-Piako Direirei T <tht< th=""> T T T</tht<>	LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
750.29 112 101/2001 20 1.8 0.2 0.8 Metallows Perched Concries T13.304-98 345 33 1242.66 117 61/122001 18 2.2 0.05 Metallows File Perched Concries T13.347.643 345 33 740.55 113 61/122001 18 2.5 0.005 0.16 Metallows Perched Concries T13.347.644 345 33 740.37 128 61/122001 15 0.05 0.16 Metallows Perched Concries T13.306.07 346 33 750.38 128 61/122001 10 0.05 0.14 Metallows File Perched Concries T13.306.07 346 33 750.37 107 101/122001 20 0.5 0.4 Metallows File Perched Concries T13.306.07 346 30 750.37 108 101/122001 10 0.2 0.3 Metallows File Perched Concries T14.329.878 489	Matamata-Piako District													
113:1 115 91/22021 12 1 0.15 0.05 Modellows File Perched Concrete T133B-077 153B-077 168 153B-077 168 153B-077 168 153B-077 168 153B-077 168 153B-077 168 163B-077 168 163B-077 168 163B-077 168 163B	750.27	109	5/12/2001	18	1.8	0.1	0.2	Most flows	Flat	Perched	Concrete	T13:313-149	345	3
124 64/20201 18 2 0.05 0.05 Mms flows Fits Perched Concrete 17.335-077 3.46 3.20 182.1 123 64/22001 8 5 0 0.4 Mms flows Fits Perched Concrete 17.337-033 3.47 16 181.1 123 64/22001 7.5 1 0.05 0.15 Mms flows Fits Perched Concrete 17.339-073 3.46 3.3 1703.3 120 01/22001 15 1.0 Mms flows Fits Perched Concrete 17.339-073 3.46 3.3 1703.4 109 101/22001 20 0.0 Mms flows Fits Perched Concrete 17.430-183-087 4.49 1.0 0.0 0.0 0.0 Mms flows Fits Perched Concrete 17.430-183-087 4.49 1.0 0.0 0.0 0.0 Mms flows Fits Perched Concrete 17.430-183-087 4.90 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	750.29	112	1/01/2001	20	1.8	0.2	0.8	Most flows		Perched	Concrete	T13:304-143	345	3
TP3.35 121 61/22001 12 2.5 0.05 0.4 Mast frow Mast frow Fist Perchad Perchad Concrete T3317-004 490 20 185.21 124 61/22001 17.5 1 0.05 0.1 Mast frow Mast frow Perchad Concrete T33317-004 345 33 750.37 122 61/22001 15 1.2 0.5 Mast frow Perchad Concrete T1330-071 345 33 750.38 127 61/22001 13 1.8 0.05 1.4 Mast frow Perchad Concrete T14302-080 489 20 750.41 129 101/22001 20 0.5 0.4 Mast frow Fist Perchad Concrete T1432-089 489 20 750.41 129 110/22001 20 0.7 0.3 Mast frow Fist Perchad Concrete T14432-723 489 20 754.16 175 1312/2001 1.5 0.8 0.5 Mast frow Fist Perchad Concrete T14432-723	1831.1	115	5/12/2001	22	1	0.15	0.5	Most flows	Flat	Perched	Concrete	T13:309-099	345	3
1132.1 112.4 61/22001 7.5 1 0.05 0.4 Meat Hows Perched Concrete 71.3316-033 471 16.8 1703.37 12.5 61/22001 1.5 0.05 0.05 Meat Hows Perched Concrete 71.3308-073 345 33 770.38 12.7 101/22001 13 1.5 0.06 1.4 Meat Hows Perched Concrete 71.3318-073 449 200 770.38 12.7 101/22001 10 0.2 0.3 Meat Hows Perched Concrete 71.4378-811 489 200 770.41 150 111/22001 10 0.2 0.3 Meat Hows Fat Perched Concrete 71.4477-853 489 200 1240.7 155 111/22001 10 0.5 Meat Hows Fat Perched Concrete 71.4477-853 489 200 1240.7 175 11/22001 10 0.5 Meat Hows Fat Perched Concrete 71.4477-853 489 200 776.1	1249.66	117	6/12/2001	18	2	0.05	0.5	Most flows	Flat	Perched	Concrete	T13:355-077	345	3
11312 114 01/2 0.6 0.11 Meat Hows Perched Concrete T33.396-04 496 3 760.37 125 61/22001 15 1.2 0.5 Meat Hows Perched Concrete T33.396-04 496 3 770.38 127 101/22001 13 1.8 0.05 0.4 Meat Hows Perched Perched Concrete T33.396-071 496 202 770.41 123 101/22001 20 0.3 Meat Hows Perched Perched Concrete T14-392-398 429 104 1260.71 143 111/22001 20 0.3 Meat Hows Perched Concrete T14-479-51 449 200 754.16 175 11/122001 120 0.5 0.5 Meat Hows Fiat Perched Concrete T14-479-72 486 32 754.19 179 13/122001 11 0.6 0.5 Meat Hows Fiat Perched Concrete T14-426-72 346 20 754.18 13/122001 <td>750.35</td> <td>121</td> <td>6/12/2001</td> <td>12</td> <td>2.5</td> <td>0.05</td> <td>0.4</td> <td>Most flows</td> <td>Perched</td> <td>Perched</td> <td>Concrete</td> <td>T13:317-004</td> <td>489</td> <td>20</td>	750.35	121	6/12/2001	12	2.5	0.05	0.4	Most flows	Perched	Perched	Concrete	T13:317-004	489	20
1750.37 126 6/12/2001 120 0.05 Most Hows Perched Concrete T3.336.07.3 445 3 770.38 127 101/22001 13 1.18 0.05 1 Most Hows Fiat Perched Concrete T4.3310-682 488 200 770.42 130 101/22001 20 0.5 0.4 Most Hows Fiat Perched Concrete T44.325.97.8 489 428 1249.7 130 101/122001 20 0.3 Most Hows Fiat Perched Concrete T44.35.83.8 498 200 1249.7 130 11/122001 10 0.2 0.3 Most Hows Fiat Perched Concrete T44.457.45.8 489 200 754.1 179 131122001 11 0.6 0.6 Most Hows Fiat Perched Concrete T44.457.45.3 489 200 754.1 186 131/22001 10 0.6 0.5 Most Hows Fiat Perched Concrete T44.457.6 3.4 20 <td>1832.1</td> <td>123</td> <td>6/12/2001</td> <td>8</td> <td>5</td> <td>0</td> <td>0.4</td> <td>Most flows</td> <td>Flat</td> <td>Perched</td> <td>Concrete</td> <td>T13:314-033</td> <td>471</td> <td>16</td>	1832.1	123	6/12/2001	8	5	0	0.4	Most flows	Flat	Perched	Concrete	T13:314-033	471	16
750.38 127 01/22001 15 1.2 0.5 Most flows Perched Concrete Ti3.30+072 445 32 750.41 128 10/12/2001 20 0.5 0.4 0.4 0.4 Perched Concrete Ti4.32-9878 489 20 750.42 130 10/12/2001 20 0.3 Mont flows Perched Sconcrete Ti4.32-9878 489 20 1249.72 150 11/12/2001 10 0.2 0 Mont flows Perched Sconcrete Ti4.47981 489 20 1249.74 155 11/12/2001 1.6 0.7 0.15 Mont flows File Perched Concrete Ti4.47783 489 20 754.19 179 139/12/2001 11 0.5 Mont flows File Perched Concrete Ti4.447-783 489 20 752.4 186 131/12/2001 1.0 0.5 Mont flows File Perched Concrete Ti4.447-783 489 20 754.10 167 141/202	1831.2	124	6/12/2001	17.5	1	0.05	0.1	Most flows	Perched	Perched	Concrete	T13:309-094	345	3
1929 19722001 13 1.8 0.05 1 Most froms First Perched Concrete Ti-334-022 489 20 750.42 130 10/12/2001 20 2 0 0.3 Most froms First Perched Concrete Ti-432-899 429 14 1249.71 149 11/12/2001 20 2 0.3 0.4 Most froms First Perched Concrete Ti-4438-333 489 200 1249.74 152 11/12/2001 1.5 1.6 1.6 Most froms First Perched Concrete Ti-4438-783 489 200 754.16 177 197 13722001 1.5 0.8 0.1 Southows First Perched Concrete Ti-4438-763 324 22 754.1 186 13722001 1.5 0.8 0.1 0.3 Most froms First Perched Concrete Ti-4438-763 324 220 754.3 187 13722001 2.5 0.0.3 Most froms First	750.37	125	6/12/2001	20	0.6	0.05	0.15	Most flows	Flat	Pooled	Concrete	T13:308-073	345	3
750.41 12 101/22001 20 0.5 0.4 0.4 Most flows Finch Perched Concrets T14329598 429 14 750.42 150 111/22001 20 2 0.3 0.4 Most flows Fint Perched Scelet T14329578 429 20 1240.72 150 111/22001 10 0.2 0.3 Most flows Fint Perched Concrets T14437533 489 200 754.16 177 13122001 15 0.1 0.5 Most flows Fint Perched Concrets T14437253 249 24 24 754.19 177 13122001 12 0.9 0.05 0.15 Most flows Fint Perched Concrets T14438-789 489 200 754.4 188 13122001 20 0.8 0.0 0.5 Most flows Fint Perched Concrets T14438-781 489 200 754.4 188 13122001 20 0.8 0.0 S0 Most fl	750.38	126	6/12/2001	15	1.2		0.5	Most flows	Perched	Perched	Concrete	T13:309-071	345	3
750.42 130 1012/2001 20 2 0.3 Most flows Flact Perched Concrete T14/329-378 4/29 14 1242472 150 111/22001 10 0.2 0 0.3 Most flows Flat Perched Concrete T14/378-33 489 200 1242472 152 111/22001 11.5 1 0.5 0.5 Most flows Flat Perched Concrete T14/378-33 489 200 754.16 175 131/22001 11.5 0.5 0.5 Most flows Flat Perched Concrete T14/35-78 348 200 754.3 187 131/22001 2.0 0.6 0.5 Most flows Flat Perched Concrete T14/435-74 489 200 754.3 187 131/22001 2.0 0.6 1.5 Most flows Flat Perched Concrete T14/435-74 489 200 754.3 188 14/122001 1 0.4 Most flows Flat Perched Concrete T14/427-7	750.39	127	10/12/2001	13	1.8	0.05	1	Most flows	Flat	Perched	Concrete	T13:310-062	489	20
1449.71 11/12/2001 20 2 0.3 0.43 Most flows Flat Perched Steel T.4.477-811 4.99 20 1249.74 150 11/12/2001 20 0.7 0.15 0.5 Most flows Flat Perched Concrete T14.477-833 499 200 764.16 175 13/12/2001 15 0.8 0.1 Most flows Flat Perched Concrete T14.4477-83 499 200 764.16 13/12/2001 15 0.8 0.1 Most flows Flat Perched Concrete T14.4457-769 492 20 764.4 186 13/12/2001 12 0.9 0.65 0.4 Most flows Flat Perched Concrete T14.4457-761 492 20 20 20 20 Most flows Flat Perched Concrete T14.4457-761 492 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 <t< td=""><td>750.41</td><td>129</td><td>10/12/2001</td><td>20</td><td>0.5</td><td>0.4</td><td>0.4</td><td>Most flows</td><td>Flat</td><td>Perched</td><td>Concrete</td><td>T14:302-989</td><td>489</td><td>20</td></t<>	750.41	129	10/12/2001	20	0.5	0.4	0.4	Most flows	Flat	Perched	Concrete	T14:302-989	489	20
1249.72 100 11/12/2001 100 0.2 0 0.3 Most flows Flat Perched Concrete T14.483-833 489 20 754.16 175 13/12/2001 11.5 0.1 0.55 Most flows Flat Perched Concrete T14.428-723 345 19 754.16 173 13/12/2001 11 0.6 0.05 0.14 Most flows Flat Perched Concrete T14.428-788 324 22 754.13 197 13/12/2001 20 0.6 0.2 Most flows Flat Perched Concrete T14.428-786 324 220 754.3 197 13/12/2001 20 0.8 0.1 Most flows Flat Perched Concrete T14.428-761 489 200 754.13 194 14/12/2001 30 0.6 15 2.5 Most flows Flat Perched Concrete T14.429-74 489 200 754.13 194 14/12/2001 30 0.6 1.5 2.5 Most flows	750.42	130	10/12/2001	20	2	0	0.3	Most flows	Perched	Perched	Concrete	T14:329-978	429	14
1242.74 11.72.2001 1.0 0.7 0.15 0.5 Most Hows Filet Perched Concrete T14.477.853 489 20 775.4.16 177 13.12.2001 115 0.8 0.1 Most Hows Filet Perched Concrete T14.418-725 289 1 775.4.1 180 13.12.2001 12 0.9 0.05 0.2 Most Hows Filet Perched Concrete T14.418-725 490 20 776.4.3 187 13.12.2001 22 0.8 0 0.5 Most Hows Filet Perched Concrete T14.458-769 490 20 776.4.5 188 13.12.2001 20 0.8 1 0.4 Most Hows Filet Perched Concrete T14.421-735 345 33 776.4.10 194 14.12.2001 30 0.6 1.5 2.6 Most Hows Filet Perched Concrete T14.421-735 345 33 776.16 144 14.12.2001 30 0.6 0.4 Most Hows	1249.71	149	11/12/2001	20	2	0.3	0.4	Most flows	Flat	Perched	Steel	T14:479-811	489	20
754.16 17/5 13/12/2001 11.5 1 0.5 Most Hows Flat Perched Concrete T14:487-72 248 3 754.12 180 13/12/2001 11 0.6 0.05 0.15 Most Hows Flat Perched Concrete T14:487-78 489 20 754.4 186 13/12/2001 22 1.3 0.1 0.5 Most Hows Flat Perched Concrete T14:487-761 489 20 754.4 188 14/12/201 20 0.3 Most Hows Flat Perched Concrete T14:487-73 489 20 754.9 183 14/12/201 30 1 3.04 Most Hows Flat Perched Concrete T14:487-73 489 20 754.13 195 14/12/201 30 1 3.04 Most Hows Flat Perched Concrete T14:427-74 489 20 756.13 16 171/12/201 1 0.5 Most Hows Flat Perched Concnete T14:428-74 <td< td=""><td>1249.72</td><td>150</td><td>11/12/2001</td><td>10</td><td>0.2</td><td>0</td><td>0.3</td><td>Most flows</td><td>Flat</td><td>Perched</td><td>Concrete</td><td>T14:483-833</td><td>489</td><td>20</td></td<>	1249.72	150	11/12/2001	10	0.2	0	0.3	Most flows	Flat	Perched	Concrete	T14:483-833	489	20
754.16 177 13/12/2001 11.15 1 0.5 Most Hows Fiat Perchad Concrete T14/48-722 345 32 754.12 180 13/12/2001 11 0.6 0.05 0.15 Most Hows Fiat Perchad Concrete T14/48-768 324 22 754.4 186 13/12/2001 12 0.9 0.05 0.2 Most Hows Fiat Perchad Concrete T14/48-761 489 20 754.4 188 13/12/2001 20 0.8 0 0.3 Most Hows Fiat Perchad Concrete T14/48-761 489 20 764.9 189 14/12/2001 0.0 0.6 1.5 2.5 Most Hows Fiat Perchad Concrete T14/48-771 489 20 764.13 184 14/12/2011 0.0 1.0.8 1.0 Most Hows Fiat Perchad Concrete T14/42-74 489 20 764.13 184 14/12/2011 1 0.0 Most Hows Fiat Perchad	1249.74	152	11/12/2001	20	0.7	0.15	0.1	Most flows	Flat	Perched	Concrete	T14:477-853	489	20
754.12 180 613/122001 112 0.05 0.05 0.05 Most flows Flat Perched Concrete T14:457-768 489 20 754.3 187 13/122001 25 1.3 0.1 0.5 Most flows Flat Perched Concrete T14:457-761 489 20 754.4 188 13/122001 19 0.8 0 0.3 Most flows Flat Perched Concrete T14:451-742 489 20 754.3 189 14/122001 30 0.6 1.5 2.5 Most flows Flat Perched Concrete T14:421-735 345 3 754.10 194 14/122001 30 1 3.04 0.4 Most flows Flat Perched Concrete T14:421-745 489 20 750.15 214 17/122001 7 0.8 0.1 0.5 Most flows Flat Perched Concrete T14:425-764 489 20 750.23 222 20/122001 18 0.5 0.1	754.16	175	13/12/2001	11.5	1	0.5	0.5		Flat	Perched	Concrete	T14:426-722	345	3
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754.10 194 14/12/2001 30 1 3.04 0.4 Most flows Flat Poched Concrete T14.422.774 489 20 756.15 195 14/12/2001 18 0.75 0.0 Most flows Flat Perched Concrete T14.422.754 471 16 750.15 214 17/12/2001 27 0.8 0.1 2 Most flows Flat Perched Concrete T14.422.833 489 20 750.15 214 17/12/2001 13 1 0.2 0.4 Most flows Flat Perched Concrete T14.327.842 489 20 750.24 223 20/12/2001 13 1 0.2 Most flows Flat Perched Concrete T14.337.842 489 20 1043.3 224 20/12/2001 12 0.6 Most flows Flat Perched Concrete T14.337.842 489 20 1466.2 316 23/03/2/03 15 0.6 Most flows Flat Perched Concrete	754.9	193	14/12/2001	30	0.6	1.5	2.5	Most flows	Flat	Perched	Steel	T14:421-735	345	
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11111.1 200 17/12/2001 18 0.75 0 0.4 Most flows Flat Perched Concrete T14.428-83 489 20 750.15 214 17/12/2001 27 0.8 0.1 2 Most flows Flat Perched Concrete T14.428-881 489 20 750.23 222 20/12/2001 13 1 0.2 0.4 Most flows Flat Perched Concrete T14.428-881 489 20 750.23 222 20/12/2001 13 1 0.2 0.4 Most flows Flat Perched Concrete T14.428-841 489 20 1043.3 224 20/12/2001 20 0.8 0 .5 Most flows Flat Perched Concrete T14.304-819 489 20 1043.3 242 20/12/2001 15 0.6 .5 Most flows Perched Concrete T14.304-819 489 20 1409.10 43 29/11/201 16 0.6 .5 Most flows Flat		195			1	0.8								
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1830.3 83 4/12/2001 14 0.1 0.5 Most flows Flat Perched Concrete T13:477-103 489 20 750.49 850 1/10/2003 18 Most flows Pooled Perched Concrete S13:296-018 471 16 1832.2 851 1/10/2003 16 1 Most flows Pooled Perched Concrete S13:293-025 345 3						0	0.5		Flat					
750.49 850 1/10/2003 18 Most flows Pooled Perched Concrete \$13:296-018 471 16 1832.2 851 1/10/2003 16 1 Most flows Pooled Perched Concrete \$13:293-025 345 3					1	0.1	0.5							
1832.2 851 1/10/2003 16 1 Most flows Pooled Perched Concrete \$13:293-025 345 3						0.1	0.5							
					4									
1832.3 852 1/10/2003 / 5 0.2 0.5 Moet flowe Elat Doolod Concrete \$12:001.020 471 46	1832.3	852	1/10/2003	4	5	0.2	0.5	Most flows	Flat	Pooled	Concrete	S13:293-025	471	
1832.3 652 1/10/2003 4 5 0.2 0.5 Most hows Flat Polled Concrete \$13,291-030 471 16 1111.10 133 10/12/2001 14 0.9 0 0.1 Low flow only Flat Perched Concrete T14:381-954 575 52														

LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
Matamata-Piako District													
433.9	148	11/12/2001	14	1.2	0	0.1	Low flow only	Perched	Perched	Concrete	T14:492-801	575	52
751.9	172	13/12/2001	17	2		0.4	Low flow only	Flat	Perched	Concrete	T14:452-739	566	51
750.44	176	13/12/2001		1		0.02	Low flow only	Flat	Perched	Concrete	T14:425-721	534	50
750.14	213	17/12/2001	15	0.75	0.05	0.05	Low flow only	Perched	Perched	Concrete	T14:389-884	575	52
750.20	219	17/12/2001	60	1.6		0.4	Low flow only	Perched	Perched	Concrete	T14:369-862	575	52
1232.10	234	8/01/2002	12	2.2		0.5	Low flow only	Pooled	Perched	Concrete	S14:298-867	575	52
1232.11	235	8/01/2002	10	1.3			Low flow only	Pooled	Flat	Steel	S14:299-864	575	52
403.2	50	29/11/2001	28	0.5	0.2	0.1	Low flow only	Flat	Perched	Concrete	T14:561-937	575	52
1409.22	57	30/11/2001	13	0.8	0.1	0.1	Low flow only	Flat	Perched	Concrete	T14:512-991	575	52
1409.25	64	3/12/2001	20	1	0.1	0.2	Low flow only	Flat	Perched	Concrete	T14:540-988	575	52
750.46	829	26/09/2003	12	1.5			Low flow only	Flat	Pooled	Concrete	T14:361-897	575	52
1865.1	830	26/09/2003		1			Low flow only	Pooled	Pooled	Concrete	T14:380-898	575	52
1088.2	146	11/12/2001	8.5	1.2			High flow only	Flat	Pooled	Concrete	T14:494-782	609	63
1249.70	147	11/12/2001	19	0.5			High flow only	Flat	Flat	Concrete	T14:510-790	614	65
750.17	216	17/12/2001		0.8			High flow only	Flat	Flat	Concrete	T14:391-854	614	65
1232.8	232	8/01/2002	25	0.6			High flow only	Flat	Pooled	Concrete	S14:279-870	614	65
1409.26	65	3/12/2001	20				High flow only	Pooled	Pooled		T14:542-986	610	64
750.45	828	26/09/2003	14	0.6			High flow only	Pooled	Pooled	Concrete	T14:360-894	614	65

	LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
Otoroha	anga District Council													
	658.7	1169	8/12/2004	12	1			Low flow only	Flat	Flat	Concrete	R15:802-496	20	1
	21.2	1170	8/12/2004	8	1			Low flow only	Flat	Flat	Concrete	R15:723-515	429	3
	994.3	1171	9/12/2004	8	0.5	0.2	0.05	Low flow only	Flat	Perched	Concrete	R15:801-435	76	2
	641.2		8/12/2004	10	1	0.2	1	High flow only	Flat	Perched	Concrete	R15:891-495	597	6
	658.4		8/12/2004	10	1	0.2	0.3	High flow only	Flat	Perched	Concrete	R15:837-514	597	6
	658.5		8/12/2004	12	0.5	0.1	2	High flow only	Flat	Perched	Concrete	R15:851-529	597	6
	658.6		8/12/2004	10	0.5	0.1	0.2	High flow only	Flat	Perched	Galvanised Steel	R15:797-487	563	5
	36.3		8/12/2004	12	0.5	0.1	0.1	High flow only	Flat	Perched	HDPE Plastic	R16:796-342	471	4

Franklin District Council Unit Unit <thu< th=""><th>LOCATED KEY</th><th>SITE ID</th><th>INSPECTION DATE</th><th>LENGTH (m)</th><th>DIAMETER (m)</th><th>UNDERCUT LENGTH (m)</th><th>PERCHED HEIGHT (m)</th><th>FISH PASSAGE RESTRICTION</th><th>INLET Cross - Section</th><th>OUTLET Cross - Section</th><th>CONSTRUCTION MATERIAL</th><th>MAP REFERENCE</th><th>REGION RANK</th><th>DISTRICT RANK</th></thu<>	LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
1113 1115 30111204 13 1 Luw live own Flat Flat Flat Concrete 81278-50 5.4 65 113122 1119 30111204 13 0.5 Luw live own Flat Flat Concrete 813672-28 5.3 6.3 45314 607 3102033 63 0.5 Luw live own Poold Concrete 81262-50 7.6 83 46016 005 13102033 63 1.5 Luw live own Poold Concrete 81268-51 5.6 63 63 11864 44 4010030 2 0.5 Luw live own Poold Concrete 81228-510 5.3 63 65 11664 64 4010030 2 1.5 Luw live own Poold Concrete 81228-510 63 65 1110 97 2010203 1.6 1.2 Luw live own Poold Concrete 81247-53 63 65 1111 97 2010203 1.6 0.5 Luw live own Poold Co	 Franklin District Council													
1111 2011/2004 12 2 Lww llow owly Piat Piat Concore R13/12/230 5.4 6.5 1151/220 868 711/2003 1.6 0.7 Low llow owly Pintel Pintel Concore R13/12/230 6.3 6.3 440.24 867 711/2003 2.0 1.0 Low llow owly Pintel Concore R13/12/230 7.3	457.2	1034	29/10/2003	12	0.3			Low flow only	Pooled	Pooled	Concrete	R13:782-055	563	76
1113 2011 2011/2004 13 0.5 Low flow only Finit Fund Concrete R132/73-285 428 420 440.14 897 3710/2003 20 2 Low flow only Finit Pockel Concrete R12/87-30 675 633 440.15 998 1310/2003 15 1 Low flow only Finit Pockel Concrete R12/87-30 675 636 1908.4 994 1310/2003 15 1 Low flow only Finit Pockel Concrete R12/87-30 636 651 1908.4 944 1610/2003 11 2 Low flow only Finit Pockel Concrete R12/87-36 634 651 110.9 984 1710/2003 10 1.5 Low flow only Fold Concrete R12/87-36 534 651 111.10 972 2010/2003 11 0.5 Low flow only Fold Concrete R12/87-361 345 534 651 111.11 972 2010/2003 11	1131.224	1113	30/11/2004	13	1			Low flow only	Flat	Flat	Concrete	R12:736-301	534	65
44.0.2 807 3/10/2003 10 0.7 Law if worm ip Perchet Pondet Concrete 812/80-430 675 8.3 440.0.6 805 13/10/2003 6.5 1.5 Law if worm ip Poilet Poilet R12/19/370.3 575 6.3 1282.13 833 15/10/2003 22 0.5 Law if worm ip Poilet Poilet R12/19/370.3 534 686 1082.14 0.47 16/10/2003 12 Law if worm ip Poilet Poilet R12/18/370.3 534 686 11.10 0.47 16/10/2003 12 0.5 Law if worm ip Poilet Poilet Concrete R12/18/370 534 656 11.10 0.47 16/10/2003 11 1.2 Law if worm ip Poilet Poilet Concrete R12/18/370 534 656 11.10 0.47 2010/2003 11 1.2 Law if worm ip Poilet Poilet Concrete R12/18/371 534 651 54 651 11.12 0.47 2010/2003 <t< td=""><td>1131.226</td><td>1115</td><td>30/11/2004</td><td>12</td><td>2</td><td></td><td></td><td>Low flow only</td><td>Flat</td><td>Flat</td><td>Concrete</td><td>R13:712-293</td><td>534</td><td>65</td></t<>	1131.226	1115	30/11/2004	12	2			Low flow only	Flat	Flat	Concrete	R13:712-293	534	65
de0.29 895 7102003 9.2	1131.229	1119	30/11/2004	13	0.5			Low flow only	Flat	Flat	Concrete	R13:672-265	429	40
49.16 96.13 13/10/20/3 9.5 1.5 Low flow only Poiled Poiled Poiled Sizes-20 5.8 7.7 123.13 93.3 15/10/20/3 22 0.5 Low flow only Poiled Poiled Concrette 812/28-13/39 63 65 108.43 947 101/220/3 11 2.2 Low flow only Poiled Poiled Concrette 812/28-13/39 63 65 1109 959 121/20/20/3 11 2.5 Low flow only Poiled Concrette 812/67/38/7 634 65 1110 977 201/020/3 14 1.2 Low flow only Poiled Poiled Concrette 812/67/38/7 634 65 1112 977 201/020/3 11 1.2 Low flow only Poiled Poiled Concrette 812/67/38/1 634 65 1112 1002 221/020/3 18 0.05 0.15 Most flow Poiled Poiled Concrette 812/67/38/1 634 65 1112.26 10107	453.14	867	3/10/2003	16	0.7			Low flow only	Perched	Pooled	Concrete	S12:066-458	575	83
P36.5 912 13/102003 12 Def with work of the point of the	460.29	889	7/10/2003	20	2			Low flow only	Flat	Pooled	Concrete	R12:879-370	575	83
138.33 43 167102003 22 0.5	460.16	905	13/10/2003	9.5	1.5			Low flow only	Pooled	Pooled	Concrete	S12:926-420	566	77
1088.41 947 16702003 1 2 Low flow only Pooled Flat Concres R12.281-381 6.5 1089.50 945 16702003 12 0.5 Low flow only Pooled Concres R12.281-381 6.5 6.5 11.10 977 20702030 14 0.6 Low flow only Pooled Concres R12.287-387 5.34 6.55 11.12 977 20702030 14 0.6 Low flow only Pooled Pooled Concres R12.287-387 5.34 6.55 44.14 982 20702003 11 1.2 Low flow only Pooled Fetched Concres R12.282-385 3.46 1.55 113.247 1002 22702003 13 0.1 Mont flows Pooled Fetched Concres R12.282-385 3.46 1.55 113.247 1002 22702003 16 1 1 Mont flows Pooled Fetched Concres R12.882-34	796.5	912	13/10/2003	18	1			Low flow only	Flat	Flat	Concrete	S12:980-451	575	83
1086.43 947 10102003 11 2 Low flow only Peoled Peoled Concrete R12.81.91 534 653 11.9 989 17/102003 10 1.5 Low flow only Poilet Poolet Concrete R12.81.93 534 653 11.10 977 20102003 11 1.2 Low flow only Poilet Peolet Concrete R12.81.93 534 653 41.20 982 20102003 15 0.2 Low flow only Poilet Priced Concrete R12.81.93 534 651 44.11 984 21102003 15 0.2 Low flow only Poilet Priced Gahaniad Steel R12.81.93 534 651 44.17 1009 24102003 16 1 1 Most flows Poilet Priced Gahaniad Steel R13.827.934 634 650 1132.56 1019 23102003 15 4 2 Most flows Poilet Priced Gahaniad Steel R13.827.934 489 571 1132.	1283.13	933	15/10/2003	22	0.5			Low flow only	Pooled	Pooled	Concrete	R12:851-399	534	65
11.96 969 11.7102003 12 0.5 Low flow only Fiel Pocket Concrete R12.281-381 534 653 11.10 975 201/02003 14 0.6 Low flow only Pocket Concrete R12.270-383 534 653 41.20 982 201/02003 11 1.2 Low flow only Pocket Concrete R12.873-385 534 653 44.14 984 21/02003 16 0.2 Low flow only Pocket Fiel Concrete R12.873-385 534 653 113.24 1008 22/102003 18 0.5 0.15 Mest flow Pocket Perched Concrete R12.873-981 534 637 113.24 1017 23/10203 16 1 1 Mest flow Pocket Perched Concrete R13.870-277 489 571 113.24 1017 23/10203 10 1 Mest flow Pocket Perched Concrete R13.870-277 489 572 113.25.6 1012 23/10203 </td <td>1086.41</td> <td>944</td> <td>16/10/2003</td> <td>20</td> <td>1</td> <td></td> <td></td> <td>Low flow only</td> <td>Pooled</td> <td>Flat</td> <td>Concrete</td> <td>R12:806-406</td> <td>534</td> <td>65</td>	1086.41	944	16/10/2003	20	1			Low flow only	Pooled	Flat	Concrete	R12:806-406	534	65
11.9 969 17/10/2003 10 1.5 Low flow only Pooled Concrete R12/673-38 554 656 11.12 977 20/10/2003 1 0.5 Low flow only Pooled Pooled Concrete R12/673-38 554 656 41.20 982 20/10/2003 15 0.2 Low flow only Pooled Pooled Concrete R12/643-36 554 655 44.21 1002 22/10/2003 15 0.2 Low flow only Pooled Pooled Concrete R12/643-36 544 651 44.21 1002 22/10/2003 16 0.1 Most flows Pooled Porched Concrete R12/643-36 545 650 112.24 1012 23/10/2003 16 0.1 Most flows Pooled Perched Concrete R13/8/277 498 577 112.25.4 1072 23/10/2003 12 0.5 0.2 Most flows Pooled Perched Concrete R13/8/277 498 57 112.25.4 1070-003	1086.43	947	16/10/2003	11	2			Low flow only	Pooled	Pooled	Concrete	R12:818-418	534	65
11.1097720/10/2003140.6Low flow onlyPooledFlatPooledConcreteR12/673-53753465641.2098220/10/20031112Low flow onlyPooledConcreteR12/673-53753465644.1499421/10/20031112Low flow onlyPooledFlatConcreteR12/673-53753465644.14100222/10/2003180.40.3Mot flowPooledPooledConcreteR12/673-537345156113.24100222/10/2003140.50.15Mot flowPooledPooledR12/873-537345156113.24101723/10/2003140.60.5Mot flowPooledPooledConcreteR13/870-277489577113.25.5101923/10/20031540.2Mot flowPooledPooledConcreteR13/870-277489570113.25.6102023/10/2003150.52Mot flowPooledPorchedConcreteR13/870-678470400666.5102223/10/2003150.51Mot flowPooledPorchedConcreteR13/870-698471450753.3103024/10/2003150.51Mot flowPooledPorchedConcreteR13/870-698471450753.3103124/10/2003160.50.5Mot flow <td>1086.50</td> <td>954</td> <td>16/10/2003</td> <td>12</td> <td>0.5</td> <td></td> <td></td> <td>Low flow only</td> <td>Flat</td> <td>Pooled</td> <td>Concrete</td> <td>R12:821-391</td> <td>534</td> <td>65</td>	1086.50	954	16/10/2003	12	0.5			Low flow only	Flat	Pooled	Concrete	R12:821-391	534	65
11.12 977 20/10/2003 1 0.5 Low Row only Pooled Pooled Concrete R12:879-336 634 65 44.14 984 21/10/2003 15 0.2 Low Row only Pooled Flat Concrete R12:879-316 634 651 44.21 1002 22/10/2003 16 0.2 Most Row Pooled Pooled Concrete R12:879-316 634 635 417.7 1008 22/10/2003 14 0.5 0.15 Most Row Pooled Pooled Concrete R13:87-04 227 11 1132:64 1017 22/10/2003 16 1 1 1 Most Row Pooled Pooled Concrete R13:880-255 489 571 1132:65 1019 22/10/2003 15 4 0.2 Most Row Pooled Pooled Concrete R13:880-235 489 571 1132:65 1022 22/10/2003 12 0.5 1 Most Row Pooled Pooled Pooled Pooled Pooled Pooled	11.9	969	17/10/2003	10	1.5			Low flow only	Pooled	Pooled	Concrete	R12:708-360	534	65
41.2041.2020/12/023111.2Low flow onlyPooledPooledPooledConcreteR1/2:84:3615346544.21100222/12/0203160.40.30.5Most flowsPooledPorchetConcreteR1/2:80:355345151132.47100822/12/02031430.650.15Most flowsFlatPerchetGalvanised SteelR13:82:764297111132.49101722/12/02031611Most flowsPooledPooledPooledConcreteR13:80:25499601132.56101722/10/20031540.2Most flowsPooledPooledConcreteR13:80:25499601132.56102022/10/20031540.30.2Most flowsPooledPooledConcreteR13:80:23499601132.56102022/10/2003120.40.30.2Most flowsPooledPorledGalvanised SteelR13:78:16949957353.4103324/10/2003120.30.5Most flowsPooledPorledGalvanised SteelR13:78:768441460666.5103329/10/2003120.30.5Most flowsPooledPorledGalvanised R13:78:768429400135.5104129/10/2003120.30.5Most flowsPooledPorledGoncreteR13:78:768	11.10	975	20/10/2003	14	0.6			Low flow only	Flat	Pooled	Concrete	R12:673-357	534	65
44.14 994 21/10/2003 15 0.2 Low flow only Pooled Flat Concrete R12:599-313 534 653 1132.47 1008 22/10/2003 16 0.15 Most flows Pooled Porled Gaunale Sinel R13:827-064 345 151 1132.47 1008 23/10/2003 16 0.15 Most flows Pooled Porled Concrete R13:870-97 28 65 1132.55 1019 23/10/2003 16 1 0.15 Most flows Pooled Concrete R13:890-25 499 57 1132.55 1019 23/10/2003 15 4 0.2 Most flows Pooled Concrete R13:890-25 499 57 1132.56 1012 23/10/2003 12 0.3 0.2 Most flows Pooled Concrete R13:890-25 499 409 1132.56 1012 23/10/2003 12 0.3 0.2 Most flows Pooled Gaunaled Steel R13:890-26 499 401 1132.6 1011 <t< td=""><td>11.12</td><td>977</td><td>20/10/2003</td><td></td><td>0.5</td><td></td><td>0.05</td><td>Low flow only</td><td>Pooled</td><td>Perched</td><td>Concrete</td><td>R12:675-336</td><td>534</td><td>65</td></t<>	11.12	977	20/10/2003		0.5		0.05	Low flow only	Pooled	Perched	Concrete	R12:675-336	534	65
44.21 1002 22/10/2003 14 0.3 0.0 Most flows Pooled Packed Galvanised Stell 812.87.064 2.97 113 112.24 1012 22/10/2003 16 0.15 Most flows Pooled Parchad Galvanised Stell 813.81.7064 2.97 15 112.24 1017 22/10/2003 16 0.5 Most flows Pooled Parchad Concrete 813.89.257 489 57 1132.56 1017 22/10/2003 15 4 0.2 Most flows Pooled Parchad Galvanised Stell 813.89.253 429 400 1132.56 1021 22/10/2003 15 4 0.2 Most flows Pooled Parchad Galvanised Stell 813.89.253 429 400 2666.5 1022 23/10/2003 15 0.4 0.3 0.2 Most flows Pooled Parchad Galvanised Stell 813.89.263 429 400 333.5 1033 29/10/2003 15 0.5 1 Most flows Pooled Parchad	41.20	982	20/10/2003	11	1.2			Low flow only	Pooled	Pooled	Concrete	R12:643-361	534	65
1132.47 1008 22/10/2003 10 Most flows Flore M Pooled Pooled S12.915-31 345 15 1132.49 1012 23/10/2003 14 0.5 0.05 Most flows Fooled Perched Galamiad Steel 231.92/003 16 1 1 Most flows Pooled Pooled Concrete 813.91/4.299 249 65 1132.55 1019 23/10/2003 15 4 0 Most flows Pooled Pooled Concrete 813.99.253 429 400 276.2 1021 23/10/2003 12 0.5 0.2 Most flows Pooled Porched Galvaniaed Steel R13.89.233 429 400 276.2 1021 23/10/2003 12 0.3 0.2 Most flows Pooled Parched Galvaniaed Steel R13.89.633 449 40 353.5 1033 24/10/2003 12 0.3 0.5 Most flows Parched Galvaniaed Steel R13.797.658 41 46 4140.43 1041 29.10/2003	44.14	994	21/10/2003	15	0.2			Low flow only	Pooled	Flat	Concrete	R12:599-313	534	65
4417 1009 24/10/2003 14 3 0.05 Most flows Flat Perched Galvanised Steel R13.827-064 297 111 1132.64 1017 23/10/2003 16 1 1 Most flows Pooled Perched Concrete R13.80-237 489 57 1132.56 1019 23/10/2003 15 4 0.2 Most flows Pooled Perched Concrete R13.80-235 429 400 1132.56 1020 23/10/2003 15 4 0.2 Most flows Pooled Perched Concrete R13.80-235 429 400 666.5 1022 23/10/2003 12 0.3 0.2 Most flows Pooled Perched Concrete R13.78-109 429 400 353.5 1033 24/10/2003 12 0.3 0.5 Most flows Pooled Perched Concrete R13.787-068 471 460 4104.3 1041 29/10/2003 12 0.3 0.5 Most flows Flat Perched Concrete	44.21	1002	22/10/2003	18	0.4	0.3	0.1	Most flows	Pooled	Perched	Concrete	R12:620-355	345	15
1132.49 1012 23/0/2003 18 0.5 0.15 Most flows Pooled Perched Concrete R13.914-299 269 6 1132.55 1019 23/0/2003 1 1 Most flows Pooled Perched Concrete R13.980-255 489 57 1132.56 1020 23/10/2003 15 4 0.2 Most flows Pooled Perched Galvanised Steel R13.980-255 429 400 276.2 1021 23/10/2003 19 0.4 0.3 0.2 Most flows Pooled Perched Galvanised Steel R13.981-29 489 57 353.3 1030 24/10/2003 15 0.5 1 Most flows Pooled Perched Galvanised Steel R13.787-061 429 400 353.5 1033 29/10/2003 12 3 0.5 Most flows Pooled Perched Galvanised Steel R13.787-061 429 400 1404.3 1041 29/10/2003 12 0.5 Most flows Pooled Perched Galv	1132.47	1008	22/10/2003	10				Most flows	Pooled	Pooled		S12:915-331	345	15
1132.54 1017 223/10/2003 16 1 1 Most flows Pooled Perched Concrete R13.870-277 489 577 1132.55 1019 223/10/2003 15 4 0.2 Most flows Pooled Perched Concrete R13.880-235 489 400 276.2 1021 23/10/2003 10 2 0.5 0.2 Most flows Pooled Perched Concrete R13.880-235 429 400 665.5 1022 23/10/2003 12 3 1 1 Most flows Pooled Perched Concrete R13.787-68 471 460 353.5 1033 24/10/2003 12 0.3 0.3 Most flows Pooled Perched Concrete R13.787-681 49 49 453.5 1033 29/10/2003 16 0.4 0.3 0.15 Most flows Pooled Perched Concrete R13.787-681 48 57 465.4 1140.4 161/24.4 0.0 0.5 Most flows Pooled Perch	441.7	1009	24/10/2003	14	3	0.05	0.15	Most flows	Flat	Perched	Galvanised Steel	R13:827-064	297	11
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1132.49	1012	23/10/2003	18	0.5		0.15	Most flows	Pooled	Perched	Concrete	S13:914-299	269	6
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	1132.54	1017	23/10/2003	16	1	1	1	Most flows	Pooled	Perched	Concrete	R13:870-277	489	57
2762 1021 23/10/2003 20 2 0.5 0.2 Most flows Pooled Perched Galvanised Stele R13:895-234 429 40 6665 1022 23/10/2003 12 0.3 0.2 Most flows Pooled Perched Concrete R13:861-229 489 57 353.4 1030 24/10/2003 12 0.5 1 Most flows Pooled Perched Concrete R13:78-061 429 400 353.5 1037 29/10/2003 12 0.3 0.5 Most flows Pooled Perched Concrete R13:787-061 429 400 1404.3 1047 29/10/2003 12 0.3 0.5 Most flows Flat Perched Concrete R13:787-061 429 400 1404.3 1047 29/10/2003 16 0.4 0.5 Most flows Flat Flat Concrete R13:787-061 429 453 55 1612.4 1150 6/12/2004 10 2.5 Most flows Flat Flat Fl	1132.55	1019	23/10/2003		1			Most flows	Pooled	Pooled	Concrete	R13:880-255	489	57
666.5 1022 221/02003 19 0.4 0.3 0.2 Most flows Pooled Perched Concrete R13.861-229 489 57 353.2 1028 24/102003 12 1 1 Most flows Pooled Perched Concrete R13.786-109 429 400 353.5 1033 29/10/2003 12 3 Most flows Pooled Perched Galvanised Steel R13.787-061 429 400 363.5 1033 29/10/2003 16 0.4 0.3 0.15 Most flows Pooled Perched Concrete R13.722-048 345 155 1404.3 1041 29/10/2003 16 0.4 0.3 0.15 Most flows Flat Perched Concrete R13.722-048 345 155 1283.17 128.2 16/10/2003 12 1.6 0.2 0.05 Most flows Pooled Perched Concrete S12.086-437 489 57 1283.17 128.2 16/10/2003 12 1.6 0.2 0.5 <t< td=""><td>1132.56</td><td>1020</td><td>23/10/2003</td><td>15</td><td>4</td><td></td><td>0.2</td><td>Most flows</td><td>Pooled</td><td>Perched</td><td>Concrete</td><td>R13:890-235</td><td>429</td><td>40</td></t<>	1132.56	1020	23/10/2003	15	4		0.2	Most flows	Pooled	Perched	Concrete	R13:890-235	429	40
333.2 1028 24/10/2003 22 1 1 Most flows Pooled Perched Concrete R13/780-109 449 400 353.4 1030 24/10/2003 15 0.5 1 Most flows Pooled Perched Galvanised Steel R13/787-061 429 400 572.3 1037 29/10/2003 12 0.3 0.5 Most flows Pooled Perched Concrete R13/787-061 429 400 1404.3 1031 29/10/2003 16 0.4 0.3 0.5 Most flows Pooled Perched Concrete R13/781-23 401 612.14 1150 6/12/2004 20 1 Most flows Flat Perched Concrete R13/781-23 297 115 612.14 1150 6/12/2004 20 1 Most flows Pooled Perched Concrete S13/79/203 405 57 783.75 864 2/10/2003 14 0.6 0.2 0.5 Most flows Pooled Perched Concrete S12/06/4/37<	276.2	1021	23/10/2003	20	2	0.5	0.2	Most flows	Pooled	Perched	Galvanised Steel	R13:895-234	429	40
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	666.5	1022	23/10/2003	19	0.4	0.3	0.2	Most flows	Pooled	Perched	Concrete	R13:861-229	489	57
353.5 1033 29/10/2003 12 3 Most flows Pooled Perched Galvanised Steel R13:787-051 429 40 1040.4 1041 29/10/2003 16 0.4 0.3 0.15 Most flows Perched Concrete R13:787-051 429 40 1040.4 1041 29/10/2003 16 0.4 0.3 0.15 Most flows Flat Perched Concrete R13:787-051 429 40 665.9 1134 6/12/2004 20 1 Most flows Flat Flat Concrete R13:787-051 429 451 612.14 1150 6/1/22004 20 1 Most flows Flat Flat Galvanised Steel R13:787-051 435 15 1283.7 1282.2 1 1 0.5 Most flows Pooled Perched Concrete S12:08-437 489 57 453.16 869 3/10/2003 14 1.5 0.4 Most flows Pooled Perched Concrete S12:08-437 471 46	353.2	1028	24/10/2003	22	1	1	1	Most flows	Pooled	Perched	Concrete	R13:786-109	489	57
572.3 1037 29/10/2003 12 0.3 0.3 0.5 Most flows Pooled Perched Concrete R13/787-061 429 40 1404.3 1041 29/10/2003 16 0.4 0.3 0.15 Most flows Flat Perched Concrete R13/787-051 429 435 15 665.9 1134 6/12/2004 10 2.5 Most flows Flat Flat Galvanised Steel R13/871-230 345 15 1283.17 1283.2 16/10/2003 12 1.6 0.2 0.05 Most flows Pooled Perched Concrete S12/08-437 489 57 453.13 866 3/10/2003 14 0.6 0.2 0.1 Most flows Pooled Perched Concrete S12/08-437 489 57 453.16 864 3/10/2003 12 1 1 0.5 Most flows Pooled Perched Concrete S12/08-437 489 57 453.17 870 6/10/2003 12 1 1 <t< td=""><td>353.4</td><td>1030</td><td>24/10/2003</td><td>15</td><td>0.5</td><td></td><td>1</td><td>Most flows</td><td>Pooled</td><td>Perched</td><td>Concrete</td><td>R13:789-109</td><td>429</td><td>40</td></t<>	353.4	1030	24/10/2003	15	0.5		1	Most flows	Pooled	Perched	Concrete	R13:789-109	429	40
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	353.5	1033	29/10/2003	12	3			Most flows	Pooled	Perched	Galvanised Steel	R13:787-058	471	46
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	572.3	1037	29/10/2003	12	0.3	0.3	0.5	Most flows	Pooled	Perched	Concrete	R13:787-061	429	40
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	1404.3	1041	29/10/2003	16	0.4	0.3	0.15	Most flows	Flat	Perched	Concrete	R13:722-048	345	15
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	665.9	1134	6/12/2004	20	1			Most flows	Flat	Flat	Concrete	R13:791-235	297	11
894.5 864 2/10/2003 12 1.6 0.2 0.05 Most flows Pooled Perched Concrete S12:086-437 489 57 453.13 866 3/10/2003 14 0.6 0.5 0.3 Most flows Pooled Perched Concrete S12:082-453 489 57 453.16 869 3/10/2003 16 1.5 0.2 0.1 Most flows Pooled Perched Concrete S12:082-453 489 57 453.17 870 6/10/2003 12 1 1 0.15 Most flows Pooled Perched Concrete S12:083-475 471 46 453.17 871 6/10/2003 12 1 1.1 Most flows Pooled Perched Concrete S12:082-485 471 46 453.19 872 6/10/2003 14 1.2 0.3 0.2 Most flows Flat Perched Concrete S12:082-485 471 46 161.2 874 6/10/2003 13 0.6 Most flows <td< td=""><td>612.14</td><td>1150</td><td>6/12/2004</td><td>10</td><td>2.5</td><td></td><td></td><td>Most flows</td><td>Flat</td><td>Flat</td><td>Galvanised Steel</td><td>R13:821-280</td><td>345</td><td>15</td></td<>	612.14	1150	6/12/2004	10	2.5			Most flows	Flat	Flat	Galvanised Steel	R13:821-280	345	15
453.13 866 3/10/2003 14 0.6 0.5 0.3 Most flows Pooled Perched Concrete S12:062-453 489 57 453.16 869 3/10/2003 16 1.5 0.2 0.1 Most flows Pooled Perched Concrete S12:074-468 489 57 453.17 870 6/10/2003 24 0.6 Most flows Pooled Perched Concrete S12:083-475 471 46 453.18 871 6/10/2003 12 1 0.15 Most flows Pooled Perched Concrete S12:082-475 471 46 453.19 872 6/10/2003 14 1.2 0.3 0.2 Most flows Flat Perched Concrete S12:082-475 471 46 161.2 874 6/10/2003 13 0.5 Most flows Flat Perched Concrete S12:15-509 20 1 161.3 875 6/10/2003 13 0.6 Most flows Flat Pooled Concrete S12:121-514	1283.17	1283.2	16/10/2003					Most flows		Perched		R12:797-373	345	15
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	894.5	864	2/10/2003	12	1.6	0.2	0.05	Most flows	Pooled	Perched	Concrete	S12:086-437	489	57
453.17 870 6/10/2003 24 0.6 Most flows Pooled Perched Concrete \$12.083-475 471 46 453.18 871 6/10/2003 12 1 1 0.15 Most flows Pooled Perched Concrete \$12.083-475 471 46 453.19 872 6/10/2003 14 1.2 0.3 0.2 Most flows Flat Perched Concrete \$12.092-485 471 46 161.2 874 6/10/2003 14 1.2 0.3 0.2 Most flows Flat Perched Concrete \$12.092-485 471 46 161.2 874 6/10/2003 5 0.5 Most flows Pooled Pooled Concrete \$12.121-514 20 1 161.3 875 6/10/2003 13 0.6 Most flows Flat Pooled Concrete \$12.121-514 20 1 128.8 882 6/10/2003 17 2 0.5 0.7 Most flows Pooled Perched	453.13	866	3/10/2003	14	0.6	0.5	0.3	Most flows	Pooled	Perched	Concrete	S12:062-453	489	57
453.18 871 6/10/2003 12 1 1 0.15 Most flows Pooled Perched Concrete S12:089-482 471 46 453.19 872 6/10/2003 14 1.2 0.3 0.2 Most flows Flat Perched Concrete S12:092-485 471 46 161.2 874 6/10/2003 6 0.6 0.2 0.2 Most flows Flat Perched Concrete S12:015-509 20 1 161.3 875 6/10/2003 5 0.5 Most flows Flat Perched Concrete S12:121-514 20 1 152.3 880 6/10/2003 13 0.6 Most flows Flat Pooled Concrete S12:125-452 164 3 128.8 882 6/10/2003 17 2 0.5 0.7 Most flows Pooled Perched Concrete S12:13*-442 164 3 128.9 883 7/10/2003 11 1 0.3 0.05 Most flows Pooled Perched	453.16	869	3/10/2003	16	1.5	0.2	0.1	Most flows	Pooled	Perched	Concrete	S12:074-468	489	57
453.19 872 6/10/2003 14 1.2 0.3 0.2 Most flows Flat Perched Concrete \$12:092-485 471 46 161.2 874 6/10/2003 6 0.6 0.2 0.2 Most flows Flat Perched Concrete \$12:115-509 20 1 161.3 875 6/10/2003 5 0.5 Most flows Pooled Pooled Concrete \$12:121-514 20 1 552.3 880 6/10/2003 13 0.6 Most flows Flat Pooled Concrete \$12:121-514 20 1 128.8 882 6/10/2003 17 2 0.5 0.7 Most flows Flat Perched Concrete \$12:125-452 164 3 128.9 883 7/10/2003 11 1 0.3 0.05 Most flows Pooled Perched Concrete \$12:116-448 164 3 1132.29 887 7/10/2003 11 1 0.2 Most flows Pooled <t< td=""><td>453.17</td><td>870</td><td>6/10/2003</td><td>24</td><td>0.6</td><td></td><td></td><td>Most flows</td><td>Pooled</td><td>Perched</td><td>Concrete</td><td>S12:083-475</td><td>471</td><td>46</td></t<>	453.17	870	6/10/2003	24	0.6			Most flows	Pooled	Perched	Concrete	S12:083-475	471	46
161.2 874 6/10/2003 6 0.6 0.2 0.2 0.2 Most flows Flat Perched Concrete S12:115-509 20 1 161.3 875 6/10/2003 5 0.5 Most flows Pooled Pooled Concrete S12:121-514 20 1 552.3 880 6/10/2003 13 0.6 Most flows Flat Pooled Concrete S12:125-514 20 1 128.8 882 6/10/2003 17 2 0.5 0.7 Most flows Flat Perched Concrete S12:125-452 164 3 128.9 883 7/10/2003 11 1 0.3 0.05 Most flows Pooled Perched Concrete S12:125-452 164 3 1132.29 883 7/10/2003 31 1 0 0.2 Most flows Pooled Perched Concrete S12:125-452 164 3 1132.29 887 7/10/2003 31 1 0 0.2 Most flows Pooled Pe	453.18	871	6/10/2003	12	1	1	0.15	Most flows	Pooled	Perched	Concrete	S12:089-482	471	46
161.3 875 6/10/2003 5 0.5 Most flows Pooled Pooled Concrete S12:121-514 20 1 552.3 880 6/10/2003 13 0.6 Most flows Flat Pooled Concrete S12:121-514 20 1 128.8 882 6/10/2003 17 2 0.5 0.7 Most flows Flat Perched Concrete S12:125-452 164 3 128.9 883 7/10/2003 11 1 0.3 0.05 Most flows Pooled Perched Concrete S12:126-452 164 3 1132.29 887 7/10/2003 31 1 0 0.2 Most flows Pooled Perched Concrete S12:126-432 345 15 460.7 890 8/10/2003 20 1.5 0.4 0.2 Most flows Pooled Perched Concrete S12:924-341 345 15 460.7 890 8/10/2003 10 0.5 0.4 0.4 Most flows Pooled Perched	453.19	872	6/10/2003	14	1.2	0.3	0.2	Most flows	Flat	Perched	Concrete	S12:092-485	471	46
552.3 880 6/10/2003 13 0.6 Most flows Flat Pooled Concrete S12:138-447 164 3 128.8 882 6/10/2003 17 2 0.5 0.7 Most flows Flat Perched Concrete S12:125-452 164 3 128.9 883 7/10/2003 11 1 0.3 0.05 Most flows Pooled Perched Concrete S12:125-452 164 3 1132.29 887 7/10/2003 31 1 0.3 0.62 Most flows Pooled Perched Concrete S12:188-447 164 3 1132.29 887 7/10/2003 31 1 0.3 0.62 Most flows Pooled Perched Concrete S12:188-345 345 15 460.7 890 8/10/2003 10 0.5 0.4 0.2 Most flows Pooled Perched Concrete S12:924-341 345 15 264.2 893 8/10/2003 10 0.5 0.4 0.4 Most flows	161.2	874	6/10/2003	6	0.6	0.2	0.2	Most flows	Flat	Perched	Concrete	S12:115-509	20	1
128.8 882 6/10/2003 17 2 0.5 0.7 Most flows Flat Perched Concrete S12:125-452 164 3 128.9 883 7/10/2003 11 1 0.3 0.05 Most flows Pooled Perched Concrete S12:125-452 164 3 1132.29 887 7/10/2003 31 1 0 0.2 Most flows Pooled Perched Concrete S12:182-432 345 15 460.7 890 8/10/2003 20 1.5 0.4 0.2 Most flows Pooled Perched Concrete S12:125-452 164 35 460.7 890 8/10/2003 31 1 0 0.2 Most flows Pooled Perched Concrete S12:125-432 345 15 460.7 890 8/10/2003 10 0.5 0.4 0.4 Most flows Pooled Perched Concrete S12:09-420 471 46 264.3 894 8/10/2003 0.8 0.1 0.2 <td< td=""><td>161.3</td><td>875</td><td>6/10/2003</td><td>5</td><td>0.5</td><td></td><td></td><td>Most flows</td><td>Pooled</td><td>Pooled</td><td>Concrete</td><td>S12:121-514</td><td>20</td><td>1</td></td<>	161.3	875	6/10/2003	5	0.5			Most flows	Pooled	Pooled	Concrete	S12:121-514	20	1
128.9 883 7/10/2003 11 1 0.3 0.05 Most flows Pooled Perched Concrete S12:116-448 164 3 1132.29 887 7/10/2003 31 1 0 0.2 Most flows Pooled Perched Concrete R12:828-345 345 15 460.7 890 8/10/2003 20 1.5 0.4 0.2 Most flows Pooled Perched Concrete S12:924-341 345 15 264.2 893 8/10/2003 10 0.5 0.4 0.4 Most flows Pooled Perched Concrete S12:924-341 345 15 264.2 893 8/10/2003 10 0.5 0.4 0.4 Most flows Pooled Perched Concrete S12:924-341 345 15 264.3 894 8/10/2003 10 0.5 0.4 0.4 Most flows Pooled Perched Concrete S12:998-411 471 46	552.3	880	6/10/2003	13				Most flows	Flat	Pooled	Concrete	S12:138-447	164	3
1132.29 887 7/10/2003 31 1 0 0.2 Most flows Pooled Perched Concrete R12:828-345 345 15 460.7 890 8/10/2003 20 1.5 0.4 0.2 Most flows Pooled Perched Concrete R12:828-345 345 15 264.2 893 8/10/2003 10 0.5 0.4 0.4 Most flows Pooled Perched Concrete S12:924-341 345 15 264.3 894 8/10/2003 10 0.5 0.4 0.4 Most flows Pooled Perched Concrete S12:924-341 345 15 264.3 894 8/10/2003 10 0.5 0.4 0.4 Most flows Pooled Perched Concrete S12:909-420 471 46 264.3 894 8/10/2003 0.8 0.1 0.2 Most flows Pooled Perched Concrete S12:998-411 471 46	128.8	882	6/10/2003	17	2	0.5	0.7	Most flows	Flat	Perched	Concrete	S12:125-452	164	3
460.7 890 8/10/2003 20 1.5 0.4 0.2 Most flows Pooled Perched Concrete \$12:924-341 345 15 264.2 893 8/10/2003 10 0.5 0.4 0.4 Most flows Pooled Perched Concrete \$12:924-341 345 15 264.3 894 8/10/2003 10 0.5 0.4 0.4 Most flows Pooled Perched Concrete \$12:09-420 471 46 264.3 894 8/10/2003 0.8 0.1 0.2 Most flows Pooled Perched Concrete \$12:998-411 471 46	128.9	883	7/10/2003	11	1	0.3	0.05	Most flows	Pooled	Perched	Concrete	S12:116-448	164	
264.2 893 8/10/2003 10 0.5 0.4 0.4 Most flows Pooled Perched Concrete \$12:009-420 471 46 264.3 894 8/10/2003 0.8 0.1 0.2 Most flows Pooled Perched Concrete \$12:009-420 471 46		887							Pooled		Concrete		345	
264.3 894 8/10/2003 0.8 0.1 0.2 Most flows Pooled Perched Concrete \$12:998-411 471 46		890		20	1.5	0.4	0.2	Most flows	Pooled	Perched	Concrete	S12:924-341	345	
	264.2	893	8/10/2003	10			0.4	Most flows	Pooled	Perched	Concrete	S12:009-420	471	
460.28 897 8/10/2003 1.5 0.3 0.1 Most flows Pooled Perched Concrete \$12:985-425 471 46														
	460.28	897	8/10/2003		1.5	0.3	0.1	Most flows	Pooled	Perched	Concrete	S12:985-425	471	46

Franklin District Council 460.11 460.15 460.18 460.23	900 904 914	13/10/2003				(m)		Section	Section				
460.15 460.18	904	13/10/2003											
460.18			8	0.8	0.5	0.5	Most flows	Flat	Perched	Concrete	S12:948-413	345	15
	01/	13/10/2003	5	0.6	0.5	0.05	Most flows		Perched	Concrete	S12:925-420	471	46
460.23	314	14/10/2003	13	0.6		0.5	Most flows	Flat	Perched	Concrete	S12:985-434	471	46
	923	14/10/2003		1.2	0.3	0.5	Most flows	Pooled	Perched	Concrete	R12:896-377	345	15
460.27	927	15/10/2003	9	1.5	0.2	0.15	Most flows	Flat	Perched	Concrete	R12:895-399	489	57
460.20	928	15/10/2003	16	0.4	0.5	1	Most flows	Pooled	Perched	Concrete	R12:897-353	297	11
1283.12	932	15/10/2003		0.4			Most flows	Flat	Pooled	Concrete	R12:840-390	345	15
1132.32	956	17/10/2003		0.5		0.15	Most flows	Flat	Perched	Concrete	R12:799-389	297	11
1132.34	958	17/10/2003	8	2	0.3	1	Most flows	Perched	Perched	Concrete	R12:774-386	345	15
1132.35	959	17/10/2003	12	1.5	0.05	0.15	Most flows	Pooled	Perched	Concrete	R12:768-378	345	15
1131.206	961	17/10/2003	11	0.5	0.6	0.4	Most flows	Pooled	Perched	Concrete	R12:719-342	269	6
1131.207	962	17/10/2003	4	0.4		1	Most flows	Pooled	Perched	Concrete	R12:703-323	345	15
1131.208	964	17/10/2003	10	0.4	0.4	0.4	Most flows	Pooled	Perched	Concrete	R12:718-352	269	6
11.7	967	17/10/2003	14	1			Most flows	Pooled	Perched	Concrete	R12:704-374	269	6
11.8	968	17/10/2003	16	0.2			Most flows	Pooled	Perched	Concrete	R12:703-370	269	6
11.13	970	20/10/2003	11	0.4		0.15	Most flows	Flat	Perched	Concrete	R12:671-324	345	15
41.18	979	20/10/2003	12	0.8			Most flows	Pooled	Perched	Concrete	R12:667-372	345	15
41.19	981	20/10/2003	16	0	0.15	0.15	Most flows		Perched	Concrete	R12:638-363	345	15
1132.37	985	21/10/2003	21	2.5	0.7	0.7	Most flows	Pooled	Perched	Concrete	R13:641-271	345	15
1132.40	988	21/10/2003	22	0.3	0.2	0.15	Most flows		Perched	HDPE Plastic	R13:629-275	345	15
1132.41	989	21/10/2003		0.4			Most flows	Pooled	Perched	Concrete	R13:618-282	345	15
1132.42	990	21/10/2003	14	0.4	0.1	0.3	Most flows		Perched	Concrete	R13:611-287	345	15
1132.59	991	21/10/2003	15			0.2	Most flows	Pooled	Perched		R13:614-290	345	15
1132.43	992	21/10/2003		0.4	0.2	0.2	Most flows	Flat	Perched	Concrete	R12:617-319	345	15
44.15	995	21/10/2003	15	0.5	0.5	0.3	Most flows	Pooled	Perched	Concrete	R12:620-342	345	15
44.17	998	22/10/2003	12	0.8	0.2	0.1	Most flows	Flat	Perched	Concrete	R12:634-347	345	15
44.18	999	22/10/2003	15	1.2	0.5	0.6	Most flows	Pooled	Perched	Concrete	R12:622-345	345	15
1131.222	1111	1/12/2004	12	1.5		1	High flows only	Perched	Perched	Concrete	R12:778-318	597	86
1131.227	1116	30/11/2004	12	3	0.1	0.3	High flows only	Flat	Perched	Concrete	R13:702-286	571	80
1131.230	1120	30/11/2004	10	2.5	0.2	0.3	High flows only	Flat	Perched	Concrete	R13:660-248	471	46
1904.1	1125	30/11/2004	13	3	0.1	0.1	High flows only	Flat	Perched	Galvanised Steel	R13:643-181	486	56
1139.2	1127	30/11/2004	13	3		0.2	High flows only	Flat	Perched	Galvanised Steel	R13:643-145	429	40
665.8	1133	6/12/2004	10	0.5	0.1	0.1	High flows only	Flat	Perched	Concrete	R13:788-244	610	93
1928.1	1139	6/12/2004	18	2	0.3	0.6	High flows only	Flat	Perched	Concrete	R13:672-245	571	80
1131.234	1140	6/12/2004	14	1	0.2	0.1	High flows only	Flat	Perched	Concrete	R13:739-294	597	86
1131.237	1143	6/12/2004	12	1	0.1	0.2	High flows only	Flat	Perched	Concrete	R13:769-294	597	86
	1148	6/12/2004	12	0.5		0.2	High flows only	Flat	Perched	Concrete	R13:793-292	597	86
1132.30	888	7/10/2003		0.8			High flows only	Pooled	Pooled	Concrete	R12:822-347	566	77
460.8	891	8/10/2003	18	1.2			High flows only	Flat	Pooled	Concrete	S12:926-341	597	86
460.9	898	8/10/2003	15	0.4			High flows only	Flat	Pooled	Concrete	S12:988-424	610	93
1283.10	930	15/10/2003	15	0.5			High flows only	Pooled	Flat	Concrete	R12:837-373	566	77
1132.58	941	16/10/2003	10	0.7			High flows only	Pooled	Pooled	Concrete	R12:787-364	597	86
1086.49	953	16/10/2003	10	0.5			High flows only	Pooled	Pooled	Concrete	R12:821-390	597	86
1132.33	957	17/10/2003	12	0.5			High flows only	Pooled	Pooled	Concrete	R12:769-365	571	80

LOCATED		E INSPECTION D DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
Waipa Dis	strict												
. 87	70.16 223	16/12/2004	18	3	0	0	Most flows	Flat	Flat	Galvanised Steel	S15:967-599		1
-	734.4 222	15/12/2004	20	2	0	0	Most flows	Flat	Perched	Galvanised Steel	S14:965-712		2
100	08.10 223	3 16/12/2004	14	1	0	0	Most flows	Perched	Flat	Concrete	S15:972-624		3
43	38.43 227	78 21/12/2004	14	1	0	0	Most flows	Flat	Perched	Concrete	S15:205-544		4
2	429.5 219	9 14/12/2004	12	1	0	0	Most flows	Flat	Perched	Concrete	S15:053-647		7
2	438.3 224	4 16/12/2004	14	1	0	0	Most flows	Flat	Perched	Concrete	S15:078-557		7
43	38.52 229	21/12/2004	20	1	0	0	Most flows	Flat	Pooled	Concrete	S15:235-561		7
	294.4 236	5/01/2005	12	1	0	0	Most flows	Flat	Perched	Concrete	T15:396-565		7
48	88.14 232	2 22/12/2004	16	3	0	1	High flows only	Flat	Perched	Concrete	S15:255-624		22
18	888.1 237	71 5/01/2005	20	3	0	0	High flows only	Flat	Perched	Galvanised Steel	T15:385-452		22
41	17.35 249	26/01/2005	18	2	0	0	High flows only	Flat	Flat	Concrete	S14:240-701		22
12	216.2 235	23/12/2004	20	1	0	0	High flows only	Flat	Perched	Concrete	T15:364-559		25
11	177.4 236	5/01/2005	12	2	0	0	High flows only	Flat	Perched	Concrete	T15:383-557		25
10	071.3 219	3 14/12/2004	10	2	0	1	High flows only	Flat	Perched	Concrete	S15:023-692		38
10	071.7 220	0 15/12/2004	15	1	0	0	High flows only	Flat	Perched	Concrete	S15:033-671		38
3	379.5 221	3 15/12/2004	16	1	0	0	High flows only	Flat	Perched	Concrete	S15:007-589		38
11	191.4 221	6 15/12/2004	18	1	0	0	High flows only	Flat	Perched	Concrete	S15:018-598		38
22	22.18 222	16/12/2004	12	2	0	1	High flows only	Flat	Perched	Concrete	S15:951-653		38
22	22.20 222	16/12/2004	16	1	0	0	High flows only	Perched	Perched	Concrete	S15:947-652		38
100	08.11 223	16/12/2004	14	1	0	0	High flows only	Flat	Perched	Concrete	S15:971-626		38
100	08.12 223	16/12/2004	14	1	0	0	High flows only	Flat	Perched	Concrete	S15:977-626		38
87	70.15 223	16/12/2004	14	1	0	0	High flows only	Flat	Perched	Concrete	S15:986-615		38
	270.8 225	50 20/12/2004	12	1	0	1	High flows only	Flat	Perched	Steel	S14:065-721		38
Ę	571.8 232	29 22/12/2004	16	1	0	1	High flows only	Flat	Perched	Concrete	S15:166-688		38
	160.8 235	5 23/12/2004	14	1	0	1	High flows only	Flat	Perched	Concrete	T15:337-543		38
41	11.35 237	7 5/01/2005	12	2	0	0	High flows only	Perched	Flat	Concrete	T15:329-472		38
3	384.7 220	15/12/2004	16	1	0	0	High flows only	Flat	Perched	Concrete	S15:030-598		51
43	38.35 227	0 20/12/2004	12	2	0	0	High flows only	Flat	Perched	Concrete	S15:160-565		51
43	38.38 227	3 20/12/2004	12	2	0	0	High flows only	Flat	Perched	Concrete	S15:174-550		51
11	103.4 234	4 23/12/2004	10	3	0	0	High flows only	Flat	Flat	Concrete	T15:371-648		51
43	38.26 130	3 21/12/2004	18	1	0	0.05	High flows only	Flat	Perched	Concrete	T15:307-510		55
2	268.3 228	8 21/12/2004	12	1	0	1	High flows only	Flat	Perched	Concrete	S15:293-479		55
2	268.4 228	39 21/12/2004	12	1	0	0	High flows only	Flat	Perched	Concrete	S15:291-471		55
2	213.3 230	21/12/2004	14	1	0	1	High flows only	Flat	Perched	Concrete	S15:297-518		55
	160.9 235	6 23/12/2004	10	1	0	0	High flows only	Flat	Perched	Concrete	T15:341-549		55
12	244.2 108	37 29/11/2004	18	2	0.2	0.4	High flows only	Flat	Perched	Galvanised Steel	T15:388-410		60
8	18.17 109	29/11/2004	14	0.5		0.1	High flows only	Perched	Flat	Concrete	S15:172-465		60
2	402.2 109	6 1/12/2004	15	1	0.1	0.1	High flows only	Flat	Perched	Concrete	S15:086-476		60
4	402.5 109	9 1/12/2004	10	0.5	0.1	0.1	High flows only	Flat	Perched	Concrete	S15:072-484		60
4	402.6 110	0 1/12/2004	14	0.5	0.1	0.1	High flows only	Flat	Perched	Concrete	S15:072-481		60
:	384.5 220	15/12/2004	12	1	0	0	High flows only	Flat	Perched	Galvanised Steel	S15:043-600		60
119	91.41 224	16/12/2004	12	1	0	0	High flows only	Flat	Perched	Concrete	S15:029-576		60
81	18.19 224	6 16/12/2004	14	1	0	0	High flows only	Flat	Perched	Concrete	S15:071-524		60
4	429.8 225	3 20/12/2004	16	1	0	0	High flows only	Flat	Perched	Concrete	S15:093-671		60
43	38.37 227	2 20/12/2004	10	1	0	0	High flows only	Flat	Perched	Concrete	S15:173-573		60
41	11.31 228	36 21/12/2004	12	1	0	1	High flows only	Flat	Perched	Concrete	S15:186-495		60
107	70.10 229	21/12/2004	18	1	0	0	High flows only	Flat	Perched	Concrete	S15:224-552		60
43	38.54 229	6 21/12/2004	18	1	0	0	High flows only	Flat	Perched	Concrete	S15:245-550		60
2	213.2 230	21/12/2004	12	1	0	1	High flows only	Flat	Perched	Concrete	S15:292-519		60
43	38.60 231	3 22/12/2004	12	1	0	0	High flows only	Flat	Perched	Concrete	T15:300-541		60

LOCATED KEY	SITE ID	INSPECTION DATE	LENGTH (m)	DIAMETER (m)	UNDERCUT LENGTH (m)	PERCHED HEIGHT (m)	FISH PASSAGE RESTRICTION	INLET Cross - Section	OUTLET Cross - Section	CONSTRUCTION MATERIAL	MAP REFERENCE	REGION RANK	DISTRICT RANK
Waipa District													
438.61	2314	22/12/2004	12	1	0	0	High flows only	Flat	Perched	Concrete	T15:308-545		60
438.62	2315	22/12/2004	12	1	0	0	High flows only	Flat	Perched	Concrete	T15:302-543		60
438.63	2316	22/12/2004	10	1	0	0	High flows only	Perched	Perched	Concrete	T15:311-526		60
438.65	2318	22/12/2004	16	2	0	0	High flows only	Flat	Perched	Concrete	S15:282-554		60
230.19	2338	23/12/2004	14	1	0	0	High flows only	Flat	Perched	Concrete	T14:381-706		60
230.20	2339	23/12/2004	20	2	0	0	High flows only	Flat	Perched	Galvanised Steel	T15:383-687		60
1103.3	2340	23/12/2004	10	2	0	1	High flows only	Flat	Perched	Concrete	T15:388-669		60
230.21	2341	23/12/2004	16	1	0	0	High flows only	Flat	Perched	Galvanised Steel	T15:358-687		60
230.27	2348	23/12/2004	18	1	0	0	High flows only	Flat	Perched	Concrete	T15:399-629		60
1177.3	2361	5/01/2005	16	1	0	0	High flows only	Flat	Perched	Concrete	T15:373-560		60
1292.3	2365	5/01/2005	14	2	0	0	High flows only	Flat	Perched	Galvanised Steel	T15:404-546		60
1292.4	2366	5/01/2005	16	1	0	0	High flows only	Flat	Perched	Concrete	T15:419-538		60
377.3	2368	5/01/2005	16	1	0	0	High flows only	Flat	Perched	Concrete	T15:422-495		60
1888.2	2372	5/01/2005	12	1	0	0	High flows only	Perched	Flat	Concrete	T15:387-455		60
438.55	2297	21/12/2004	16	1	0	0	Low flow only	Flat	Flat	Concrete	S15:257-536		4
571.6	2327	22/12/2004	16	2	0	0	Low flow only	Flat	Flat	Concrete	S15:145-645		6
1191.32	2189	14/12/2004	10	2	0	0	Low flow only	Flat	Flat	Concrete	S14:016-723		11
1191.33	2190	14/12/2004	13	2	0	0	Low flow only	Flat	Flat	Concrete	S14:008-712		11
1071.5	2195	14/12/2004	12	1	0	0	Low flow only	Flat	Perched	Concrete	S15:030-676		11
379.6	2214	15/12/2004	10	3	0	0	Low flow only	Flat	Flat	Galvanised Steel	S15:007-588		11
398.11	2249	20/12/2004	12	1	0	0	Low flow only	Flat	Flat	Concrete	S14:086-725		11
1071.9	2256	20/12/2004	12	2	0	0	Low flow only	Flat	Flat	Concrete	S15:033-693		11
488.5	2306	22/12/2004	10	1	0	0	Low flow only	Flat	Flat	Concrete	S15:268-600		11
488.13	2321	22/12/2004	16	1	0	0	Low flow only	Flat	Perched	Concrete	S15:248-621		11
571.4	2323	22/12/2004	12	1	0	0	Low flow only	Flat	Perched	Concrete	S15:172-631		11
411.36	2378	5/01/2005	12	2	0	0	Low flow only	Flat	Perched	Concrete	T15:327-474		11
438.57	2299	21/12/2004	10	1	0	0	Low flow only	Flat	Flat	Concrete	S15:262-549		21
1132.63	1086	29/11/2004	15	0.5		0.2	Low flow only	Flat	Perched	Galvanised Steel	T15:411-433		25
707.7	1090	29/11/2004	40	2		0.1	Low flow only	Flat	Perched	Concrete	S15:264-413		25
818.16	1091	29/11/2004	10	2		0.1	Low flow only	Flat	Perched	Steel	S15:231-428		25
402.3	1097	1/12/2004	14	1	0.05	0.05	Low flow only	Flat	Perched	Concrete	S15:082-475		25
402.7	1101	1/12/2004	13	0.5			Low flow only	Flat	Flat	Concrete	S15:073-478		25
222.23	2230	16/12/2004	14	2	0	0	Low flow only	Flat	Flat	Concrete	S15:937-623		25
429.9	2257	20/12/2004	14	1	0	0	Low flow only	Flat	Perched	Concrete	S15:054-646		25
438.46	2281	21/12/2004	12	1	0	0	Low flow only	Flat	Flat	Concrete	S15:218-525		25
488.6	2307	22/12/2004	10	1	0	0	Low flow only	Flat	Flat	Concrete	S15:269-586		25
230.23	2343	23/12/2004	10	1	0	0	Low flow only	Flat	Flat	Concrete	T15:321-661		25
1292.2	2364	5/01/2005	14	1	0	0	Low flow only	Flat	Flat	Concrete	T15:402-550		25