

## Urban CHI Forms

# CULTURAL STREAM HEALTH ASSESSMENT

**Date:**    **Site no:**

INDICATORS	UNHEALTHY					HEALTHY
1 Catchment land use	1. Land heavily modified Wetlands, marshes lost	2	3	4		5. Appears unmodified
2 Vegetation – banks & margins (100m either side)	1. Little or no vegetation - neither exotic or indigenous	2	3	4		5. Complete cover of vegetation – mostly indigenous
3. Use of the river banks + margins (100m either side)	1. Margins heavily modified	2	3	4		5. Margins unmodified
4. Riverbed condition (sediment)	1. Covered by mud/sand slime, weed	2	3	4		5. Clear of mud/sand/sediment/weed
5. Changes to river channel	1. Evidence of modification e.g. stopbanks, straightening, gravel removal, shingle build up	2	3	4		5. Appears unmodified
6. Water quality	1. Appears polluted eg foams, oils slime, weeds etc	2	3	4		5. No pollution evident
7. Water Clarity	1. Water badly discoloured	2	3	4		5. Water is clear
8 A variety of habitats	1. Little or no current, Uniform depth and limited Variety of flow related habitatst	2	3	4		5 Current and depth varies creating a variety of different flow related habitats
9. Are you satisfied that the present condition of the river protects cultural values at this site?						
	1(No)	2	3	4		5(Yes)

10. What actions would you like to see taken at this site to improve its condition?

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11. How would you describe the overall health of the river at this site?

1. Very unhealthy                      2.                      3.                      4.                      5. Very healthy

12. BIRDS: Please list the mahinga kai bird species that you can see at this site

1.                      2.                      3.                      4.  
5. \_\_\_\_\_ 6. \_\_\_\_\_ 7. \_\_\_\_\_ 8. \_\_\_\_\_

13. PLANTS: Please list the mahinga kai plant species that you can see at this site

1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_  
5. \_\_\_\_\_ 6. \_\_\_\_\_ 7. \_\_\_\_\_ 8. \_\_\_\_\_

14. ACCESS: Do you consider access to this site is sufficient to enable the gathering of mahinga kai?

1. Not able to gather at this site   2.                      3.                      4.                      5. Able to gather - no restrictions

15. Would you return to this site in the future?

1. NO    5. YES.

## **In-depth impact assessment forms**

# STORM WATER OUTFALLS

<b>CATCHMENT</b>		<b>DATE:</b> ____/____/____		<b>ASSESSED BY:</b>	
<b>SURVEY REACH ID:</b>		<b>TIME:</b> ____:____ AM/PM		<b>PHOTO ID:</b>	
<b>SITE ID</b>				<b>GPS:</b>	
<b>BANK:</b> <input type="checkbox"/> LT <input type="checkbox"/> RT  <b>FLOW:</b> <input type="checkbox"/> None <input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial <input type="checkbox"/> Other:		<b>TYPE:</b> <input type="checkbox"/> Closed Pipe  <input type="checkbox"/> Open channel  <input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Other:		<b>MATERIAL:</b> <input type="checkbox"/> Concrete <input type="checkbox"/> Metal <input type="checkbox"/> PVC/Plastic <input type="checkbox"/> Brick <input type="checkbox"/> Other:  <input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Other:	
		<b>SHAPE:</b> <input type="checkbox"/> Single <input type="checkbox"/> Circular <input type="checkbox"/> Double <input type="checkbox"/> Elliptical <input type="checkbox"/> Triple <input type="checkbox"/> Other:  Depth: _____ (m) Width (Top): _____ (m) (Bottom): _____ (m)		<b>DIMENSIONS:</b> <b>SUBMERGED:</b> <input type="checkbox"/> No Diameter: ____ (m) <input type="checkbox"/> Partially <input type="checkbox"/> Fully	
<b>CONDITION:</b> <input type="checkbox"/> None <input type="checkbox"/> Chip/Cracked <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion <input type="checkbox"/> Other:		<b>ODOUR:</b> <input type="checkbox"/> <input type="checkbox"/> No <input type="checkbox"/> Gas <input type="checkbox"/> Sewage <input type="checkbox"/> Rancid/Sour <input type="checkbox"/> Sulfide <input type="checkbox"/> Other:		<b>DEPOSITS/STAINS:</b> <input type="checkbox"/> None <input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
		<b>VEGGIE DENSITY:</b> <input type="checkbox"/> None <input type="checkbox"/> Normal <input type="checkbox"/> Inhibited <input type="checkbox"/> Excessive <input type="checkbox"/> Other:		<b>PIPE BENTHIC GROWTH:</b> <input type="checkbox"/> <input type="checkbox"/> None <input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green <input type="checkbox"/> Other:  <b>POOL QUALITY:</b> <input type="checkbox"/> No pool <input type="checkbox"/> Good <input type="checkbox"/> Odours <input type="checkbox"/> Colours <input type="checkbox"/> Oils <input type="checkbox"/> Soaps <input type="checkbox"/> Algae <input type="checkbox"/> Floatables <input type="checkbox"/> Other:	
<b>FOR FLOWING ONLY</b>		<b>COLOR:</b> <input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Grey <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other:			
		<b>TURBIDITY:</b> <input type="checkbox"/> None <input type="checkbox"/> Slight Cloudiness <input type="checkbox"/> Cloudy <input type="checkbox"/> Opaque			
		<b>FLOATABLES</b> <input type="checkbox"/> None <input type="checkbox"/> Sewage (toilet paper, etc.) <input type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other:			
<b>OTHER CONCERNS:</b>		<input type="checkbox"/> Excess Trash (paper/plastic bags) <input type="checkbox"/> Dumping (bulk) <input type="checkbox"/> Excessive Sedimentation <input type="checkbox"/> Needs Regular Maintenance <input type="checkbox"/> Bank Erosion <input type="checkbox"/> Other:			
<b>OUTFALL SEVERITY:</b> <i>(circle #)</i>		Heavy discharge with a distinct colour and/or a strong smell. The amount of discharge is significant compared to the amount of normal flow in receiving stream; discharge appears to be having a significant impact downstream.		Small discharge; flow mostly clear and odourless. If the discharge has a colour and/or odour, the amount of discharge is very small compared to the stream's base flow and any impact appears to be minor/localized.	
		1		3	
				5	
<b>SKETCH/NOTES:</b>					
<b>REPORTED TO COUNCIL:</b> <input type="checkbox"/> YES <input type="checkbox"/> NO					

## SEVERE BANK EROSION

CATCHMENT		DATE: ____/____/____		ASSESSED BY:							
SURVEY REACH ID:		TIME: ____:____ AM/PM		PHOTO ID:							
SITE ID					GPS:						
<table style="width: 100%; border: none;"> <tr> <td style="width: 20%; vertical-align: top;"> <b>PROCESS:</b>  <input type="checkbox"/> Widening  <input type="checkbox"/> Aggrading  <input type="checkbox"/> Sed. deposition             </td> <td style="width: 20%; vertical-align: top;"> <input type="checkbox"/> Currently unknown  <input type="checkbox"/> Bed scour  <input type="checkbox"/> Bank failure  <input type="checkbox"/> Channelized             </td> <td colspan="4" style="vertical-align: top;"> <b>BANK OF CONCERN:</b> <input type="checkbox"/> LT <input type="checkbox"/> RT <input type="checkbox"/> Both (<i>looking downstream</i>)  <b>LOCATION:</b> <input type="checkbox"/> Meander bend <input type="checkbox"/> Straight section <input type="checkbox"/> Steep slope/valley wall  <input type="checkbox"/> Other:  <b>DIMENSIONS:</b>                  Length LT ____m and/or RT ____m                  Bank Ht LT ____m and/or RT ____m             </td> </tr> </table>						<b>PROCESS:</b> <input type="checkbox"/> Widening <input type="checkbox"/> Aggrading <input type="checkbox"/> Sed. deposition	<input type="checkbox"/> Currently unknown <input type="checkbox"/> Bed scour <input type="checkbox"/> Bank failure <input type="checkbox"/> Channelized	<b>BANK OF CONCERN:</b> <input type="checkbox"/> LT <input type="checkbox"/> RT <input type="checkbox"/> Both ( <i>looking downstream</i> ) <b>LOCATION:</b> <input type="checkbox"/> Meander bend <input type="checkbox"/> Straight section <input type="checkbox"/> Steep slope/valley wall <input type="checkbox"/> Other: <b>DIMENSIONS:</b> Length LT ____m and/or RT ____m Bank Ht LT ____m and/or RT ____m			
<b>PROCESS:</b> <input type="checkbox"/> Widening <input type="checkbox"/> Aggrading <input type="checkbox"/> Sed. deposition	<input type="checkbox"/> Currently unknown <input type="checkbox"/> Bed scour <input type="checkbox"/> Bank failure <input type="checkbox"/> Channelized	<b>BANK OF CONCERN:</b> <input type="checkbox"/> LT <input type="checkbox"/> RT <input type="checkbox"/> Both ( <i>looking downstream</i> ) <b>LOCATION:</b> <input type="checkbox"/> Meander bend <input type="checkbox"/> Straight section <input type="checkbox"/> Steep slope/valley wall <input type="checkbox"/> Other: <b>DIMENSIONS:</b> Length LT ____m and/or RT ____m Bank Ht LT ____m and/or RT ____m									
LAND OWNERSHIP: <input type="checkbox"/> Private <input type="checkbox"/> Public <input type="checkbox"/> Unknown			LAND COVER: <input type="checkbox"/> Forest <input type="checkbox"/> Field / pasture <input type="checkbox"/> Developed:								
THREAT TO PROPERTY/INFRASTRUCTURE: <input type="checkbox"/> No <input type="checkbox"/> Yes (Describe):											
EXISTING RIPARIAN WIDTH: <input type="checkbox"/> ≤3m <input type="checkbox"/> 3-5m <input type="checkbox"/> 5-10m <input type="checkbox"/> 10-20m <input type="checkbox"/> > 20m											
<b>EROSION SEVERITY</b> (circle)  Channelized = <input type="checkbox"/> 1	Active downcutting; tall banks on both sides of the stream eroding at a fast rate; erosion contributing significant amount of sediment to stream; obvious threat to property or infrastructure.	Part downcutting evident, active stream widening, banks actively eroding at a moderate rate; no threat to property or infrastructure	Grade and width stable; isolated areas of bank failure/erosion; likely caused by a pipe outfall, local scour, riparian vegetation or adjacent use not impaired.								
	1	3	5								
<b>ACCESS:</b>	<b>Good access:</b> Open area in public ownership, sufficient room to stockpile materials, easy stream channel access for heavy equipment using existing roads or trails.	<b>Fair access:</b> Forested or developed area adjacent to stream. Access requires tree removal or impact to landscaped areas. Stockpile areas small or distant from stream.	<b>Difficult access.</b> Must cross wetland, steep slope or other sensitive areas to access stream. Minimal stockpile areas available and/or located a great distance from stream section. Specialized heavy equipment required.								
	5	3	1								
<b>NOTES/CROSS SECTION SKETCH:</b>											
<b>REPORTED TO COUNCILS:</b> <input type="checkbox"/> YES <input type="checkbox"/> NO											

## IMPACTED RIPARIAN MARGIN

<b>CATCHMENT</b>		<b>DATE:</b> ____/____/____		<b>ASSESSED BY:</b>				
<b>SURVEY REACH ID:</b>		<b>TIME:</b> ____:____ AM/PM		<b>PHOTO ID:</b>				
<b>SITE ID</b>					<b>GPS:</b>			
<b>IMPACTED BANK:</b> <input type="checkbox"/> LT <input type="checkbox"/> RT <input type="checkbox"/> Both		<b>REASON INADEQUATE:</b> <input type="checkbox"/> Lack of vegetation <input type="checkbox"/> Too narrow <input type="checkbox"/> Widespread invasive plants <input type="checkbox"/> Recently planted <input type="checkbox"/> Other:						
<b>LAND USE:</b> (Facing downstream)		Private	Institutional	Golf Course	Park	Other Public		
LT BANK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
RT BANK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<b>DOMINANT LAND COVER:</b>		Paved	Bare ground	Turf/lawn	Tall grass	Shrub/scrub	Trees	Other:
LT BANK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RT BANK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EXOTIC / INVASIVE PLANTS:</b>		<input type="checkbox"/> None	<input type="checkbox"/> Rare	<input type="checkbox"/> Partial coverage	<input type="checkbox"/> Extensive coverage	<input type="checkbox"/> unknown		
<b>STREAM SHADE PROVIDED?</b>		<input type="checkbox"/> None <input type="checkbox"/> Partial <input type="checkbox"/> Full						
<b>POTENTIAL RESTORATION CANDIDATE</b>		<input type="checkbox"/> Active reforestation <input type="checkbox"/> Greenway design <input type="checkbox"/> Natural regeneration <input type="checkbox"/> No <input type="checkbox"/> Invasives removal <input type="checkbox"/> Other:						
<b>RESTORABLE AREA</b>		<b>REFORESTATION POTENTIAL:</b> (Circle)		Impacted area on public land where the riparian area does not appear to be used for any specific purpose; plenty of area available for planting	Impacted area on either public or private land that is presently used for a specific purpose; available area for planting adequate	Impacted area on private land where road; building encroachment or other feature significantly limits available area for planting		
Length (m): <u>      </u> Width (m): <u>      </u>	Left                      Right <u>      </u> <u>      </u>						5	3
<b>POTENTIAL CONFLICTS WITH REFORESTATION</b>		<input type="checkbox"/> Widespread invasive plants <input type="checkbox"/> Potential contamination <input type="checkbox"/> Lack of sun <input type="checkbox"/> Poor/unsafe access to site <input type="checkbox"/> Existing impervious cover <input type="checkbox"/> Severe animal impacts (deer, beaver) <input type="checkbox"/> Other:						
<b>NOTES:</b>								

## INSTREAM CROSSING

CATCHMENT		DATE: ____/____/____		ASSESSED BY:							
SURVEY REACH ID:		TIME: ____:____ AM/PM		PHOTO ID:							
SITE ID					GPS:						
TYPE: <input type="checkbox"/> Road Crossing <input type="checkbox"/> Railroad Crossing <input type="checkbox"/> Manmade Dam <input type="checkbox"/> Geological Formation <input type="checkbox"/> Other:											
<b>FOR ROAD/ RAILROAD CROSSINGS ONLY</b>	<b>SHAPE:</b> <input type="checkbox"/> Arch <input type="checkbox"/> bottomless <input type="checkbox"/> Box <input type="checkbox"/> Elliptical <input type="checkbox"/> Circular <input type="checkbox"/> Other:	<b># BARRELS:</b> <input type="checkbox"/> Single <input type="checkbox"/> Double <input type="checkbox"/> Triple <input type="checkbox"/> Other:	<b>MATERIAL:</b> <input type="checkbox"/> Concrete <input type="checkbox"/> Metal <input type="checkbox"/> Other:	<b>ALIGNMENT:</b> <input type="checkbox"/> Flow-aligned <input type="checkbox"/> Not flow-aligned <input type="checkbox"/> Do not know	<b>DIMENSIONS: (if variable, sketch)</b> Barrel diameter: ____ (m)  Height: ____ (m)  Culvert length: ____ (m) Width: ____ (m)  Roadway elevation: __ (m)						
	<b>CONDITION: (Evidence of ...)</b> <input type="checkbox"/> Cracking/chipping/corrosion <input type="checkbox"/> Downstream scour hole <input type="checkbox"/> Sediment deposition <input type="checkbox"/> Failing embankment <input type="checkbox"/> Other (describe):										
<b>POTENTIAL RESTORATION CANDIDATE</b> <input type="checkbox"/> Fish barrier removal <input type="checkbox"/> Culvert repair/replacement <input type="checkbox"/> no <input type="checkbox"/> Upstream storage retrofit <input type="checkbox"/> Local stream repair <input type="checkbox"/> Other:											
<i>If yes for fish barrier</i>	<b>EXTENT OF PHYSICAL BLOCKAGE:</b> <input type="checkbox"/> Total <input type="checkbox"/> Partial <input type="checkbox"/> Temporary <input type="checkbox"/> Unknown  <b>CAUSE:</b> <input type="checkbox"/> Drop too high Water Drop: ____ (m) <input type="checkbox"/> Flow too shallow Water depth: ____ (m) <input type="checkbox"/> Other:	<b>BLOCKAGE SEVERITY: (circle)</b>  <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; border-right: 1px solid black; padding: 5px;">           A structure such as a dam or road culvert on a 3<sup>rd</sup> order or greater stream blocking the upstream movement of anadromous fish; no fish passage device present.         </td> <td style="width: 33%; border-right: 1px solid black; padding: 5px;">           A total fish blockage on a tributary that would isolate a significant reach of stream, or partial blockage that may interfere with the migration of anadromous fish.         </td> <td style="width: 33%; padding: 5px;">           A temporary barrier or blockage at the very head of a stream with very little viable fish habitat above it; natural barriers such as waterfalls.         </td> </tr> <tr> <td style="text-align: center; border-right: 1px solid black;">1</td> <td style="text-align: center; border-right: 1px solid black;">3</td> <td style="text-align: center;">5</td> </tr> </table>				A structure such as a dam or road culvert on a 3 <sup>rd</sup> order or greater stream blocking the upstream movement of anadromous fish; no fish passage device present.	A total fish blockage on a tributary that would isolate a significant reach of stream, or partial blockage that may interfere with the migration of anadromous fish.	A temporary barrier or blockage at the very head of a stream with very little viable fish habitat above it; natural barriers such as waterfalls.	1	3	5
	A structure such as a dam or road culvert on a 3 <sup>rd</sup> order or greater stream blocking the upstream movement of anadromous fish; no fish passage device present.	A total fish blockage on a tributary that would isolate a significant reach of stream, or partial blockage that may interfere with the migration of anadromous fish.	A temporary barrier or blockage at the very head of a stream with very little viable fish habitat above it; natural barriers such as waterfalls.								
1	3	5									
<b>NOTES/SKETCH:</b>											
<b>REPORTED TO COUNCIL:</b> <input type="checkbox"/> YES <input type="checkbox"/> NO											



# CHANNEL MODIFICATION

<b>CATCHMENT</b>		<b>DATE:</b> ____/____/____		<b>ASSESSED BY:</b>	
<b>SURVEY REACH ID:</b>		<b>TIME:</b> ____:____ AM/PM		<b>PHOTO ID:</b>	
<b>SITE ID</b>					<b>GPS:</b>
<b>TYPE:</b> <input type="checkbox"/> Channelisation <input type="checkbox"/> Bank armouring <input type="checkbox"/> concrete channel <input type="checkbox"/> Floodplain encroachment <input type="checkbox"/> Other:					
<b>MATERIAL:</b> <input type="checkbox"/> Concrete <input type="checkbox"/> Gabion <input type="checkbox"/> Rip Rap <input type="checkbox"/> Earthen <input type="checkbox"/> Metal <input type="checkbox"/> Other:		Does channel have perennial flow? <input type="checkbox"/> Yes <input type="checkbox"/> No			
		Is there evidence of sediment deposition? <input type="checkbox"/> Yes <input type="checkbox"/> No			
		Is vegetation growing in channel? <input type="checkbox"/> Yes <input type="checkbox"/> No			
		Is channel connected to floodplain <input type="checkbox"/> Yes <input type="checkbox"/> No			
<b>BASE FLOW CHANNEL</b>			<b>ADJACENT STREAM CORRIDOR</b>		
Depth of flow _____			Available width LT _____ (m) RT _____ (m)		
Defined low flow channel? <input type="checkbox"/> Yes <input type="checkbox"/> No			Utilities Present? <input type="checkbox"/> Yes <input type="checkbox"/> No		
% of channel bottom _____%			Fill in floodplain? <input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>POTENTIAL RESTORATION CANDIDATE</b> <input type="checkbox"/> Structural repair <input type="checkbox"/> Base flow channel creation <input type="checkbox"/> Natural channel design <input type="checkbox"/> No <input type="checkbox"/> Can't tell <input type="checkbox"/> De-channelization <input type="checkbox"/> Fish barrier removal <input type="checkbox"/> Bioengineering					
<b>CHANNELIZATION SEVERITY:</b> (Circle #)	A long section of concrete stream (>250m) channel where water is very shallow (<15cm deep) with no natural sediments present in the channel.	A moderate length (>100m), but channel stabilized and beginning to function as a natural stream channel. Vegetated bars may have formed in channel.	An earthen channel less than 50m with good water depth, a natural sediment bottom, and size and shape similar to the unchanneled stream reaches above and below impacted area.		
	1	3	5		
<b>NOTES:</b>					



