Hokitika Wastewater Upgrade Project

Westland District Council
Oversight Subcommittee meeting

8 February 2023

Hokitika Wastewater Upgrade Project

Agenda

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- Overview of Work to Date
- Options/Alternatives – Sieving Approach
- Elements of a Wastewater Scheme
- Assessment Overview and Criteria
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  - Elements taken forward to Scheme Options
- Develop Base Scheme Options (Domestic) and Assess
  - Long Long List
  - Reduce this to a Long List and Add Treatment Enhancements
  - Traffic Light Assessment of Long List
  - Short List of Potential Wastewater Schemes
- Oversight Subcommittee Endorsement of the Short List
- Summary of Outputs to Date
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Introduction

- **Resource consent** for the current Hokitika Wastewater Treatment Plant discharge **expires in April 2026**.
- WCRC indicates the **existing discharge will not meet current receiving environment standards**.
- WDC is **investigating wastewater treatment and disposal options** for Hokitika.

- In 2019 Westland Milk Products (WMP) offered WDC the opportunity to join in with their then proposed ocean outfall project.
- The **community was consulted through the Annual Plan 2019/2020** with **two options presented**:
  - Option 1 - Partner with WMP on the Ocean Outfall project.
  - Option 2 - Wait until the Resource Consent is due to expire.

- WDC agreed to the ocean outfall option. Following **projected cost increases** WDC reviewed alternative methods of discharge and **consulted with the community through the Annual Plan 2020/2021** with **two potential options presented**:
  - Option 1 - Increased cost of WMP project.
  - Option 2 - Investigate alternative options.

- Following the Draft Annual Plan 2020/2021 hearing process, the community's preference for **Option 2: investigate alternative options**, was adopted.

Continued

Introduction

- **WDC committed to working in partnership with Poutini Ngāi Tahu** in the decision making process to develop a solution that is sensitive to cultural and environmental concerns and that meets the needs of the community.

- WDC presented the pathway/journey envisaged for the Hokitika Wastewater Upgrade Project to Poutini Ngāi Tahu at a hui at Arahura Marae, which was agreed to.

- Formation of a **WDC Oversight Subcommittee**, with **equal representation of Poutini Ngāi Tahu and WDC** was also agreed to.

- WDC resolved to endorse this approach, and formed the Hokitika Wastewater Treatment Plant Project Oversight Subcommittee, consisting of four representatives each from Poutini Ngāi Tahu and WDC.

Overview of Work to Date

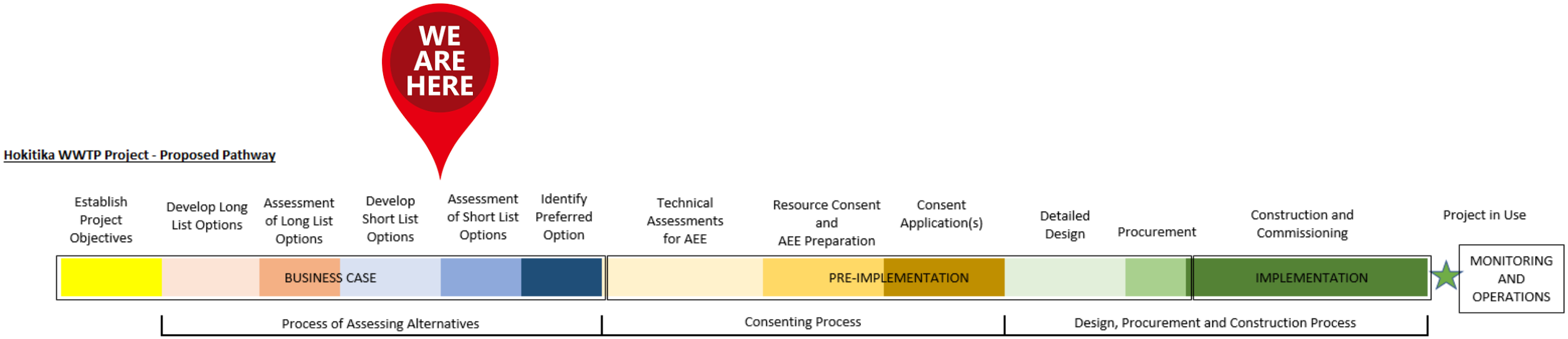
- WDC engaged Stantec to take the project lead.
- **Project outcome statement, process, and partner/stakeholder involvement** agreed by Oversight Subcommittee (Inaugural Meeting, Aug 2021).
- **Problems and benefits of investment defined** by Project Working Group (Iwi reps, WDC staff, Stantec persons) (Sept 2021) and **endorsed by Oversight Subcommittee** (Oct 2021).
- **Technical elements of the project defined** by Project Working Group, plus WCRC staff (Oct 2021). Included: scope, risks, constraints and dependencies.
- **Draft Strategic Case Report** issued to WDC for review (Nov 2021). Sets out: purpose, background, strategic context, case for investment, existing arrangements and needs, potential scope and key technical requirements, main benefits and risks, key constraints and dependencies.

Continued

Overview of Work to Date

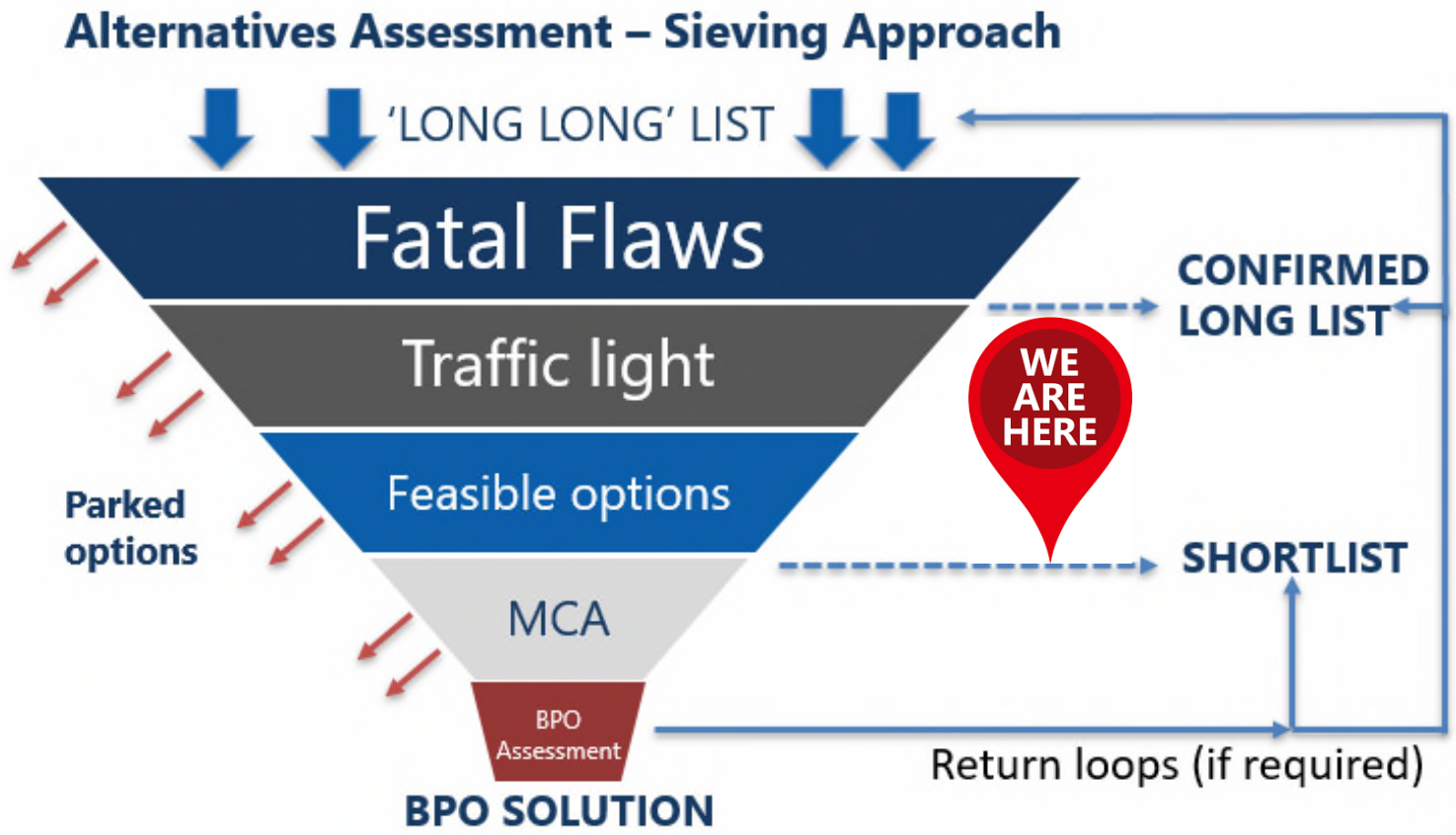
- **Options Development:**
  - Options for **key elements** of the WWTP explored by Project Working Group, plus reps from WCRC, DOC, CPH (Nov 2021 and Mar 2022). Included: locations, discharge, treatment, storage, capacity, funding and technology.
  - Commence discussions with Silver Fern Farms regarding the project process, activities to date, and consideration of their discharges within the options consideration process (Nov 2021).
  - **Fatal Flaw Assessment** of Base **Scheme Elements** by Project Working Group (May 2022).
  - Site visit to Greymouth WWTP by Project Working Group (June 2022).
  - **Traffic Light Assessment** of Base **Scheme Options Long List** by Project Working Group (June and July 2022, Jan 2023), to identify a Short List.

Overview of Work to Date



Latest application date for new discharge consents would be six months before expiry of existing consents in April 2026.

Options/Alternatives – Sieving Approach



Base Scheme Elements (Long List)

Base Scheme Elements (Short List)
Base Scheme Options (Long List)
Compiled Scheme Options (Long List)

Potential Wastewater Schemes

Preferred Wastewater Scheme Option

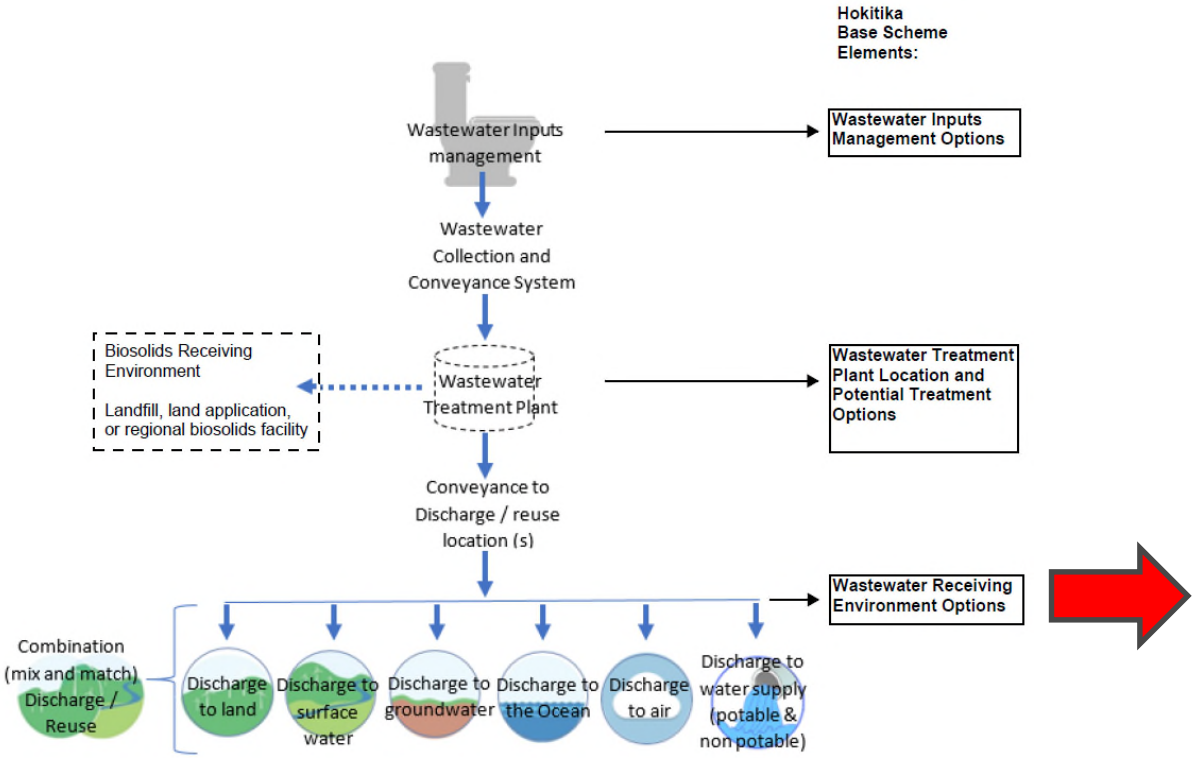
*Feasible Options are an outcome of the Traffic Light Assessment
MCA – Multi Criteria Analysis (decision tool), BPO – Best Practicable Option (RMA definition)

Importance under the RMA of a robust and defendable approach to alternatives assessment

Elements of a Wastewater Scheme

- Receiving Environment Options
- WWTP Location and Potential Treatment Options
- Wastewater Inputs Management Options

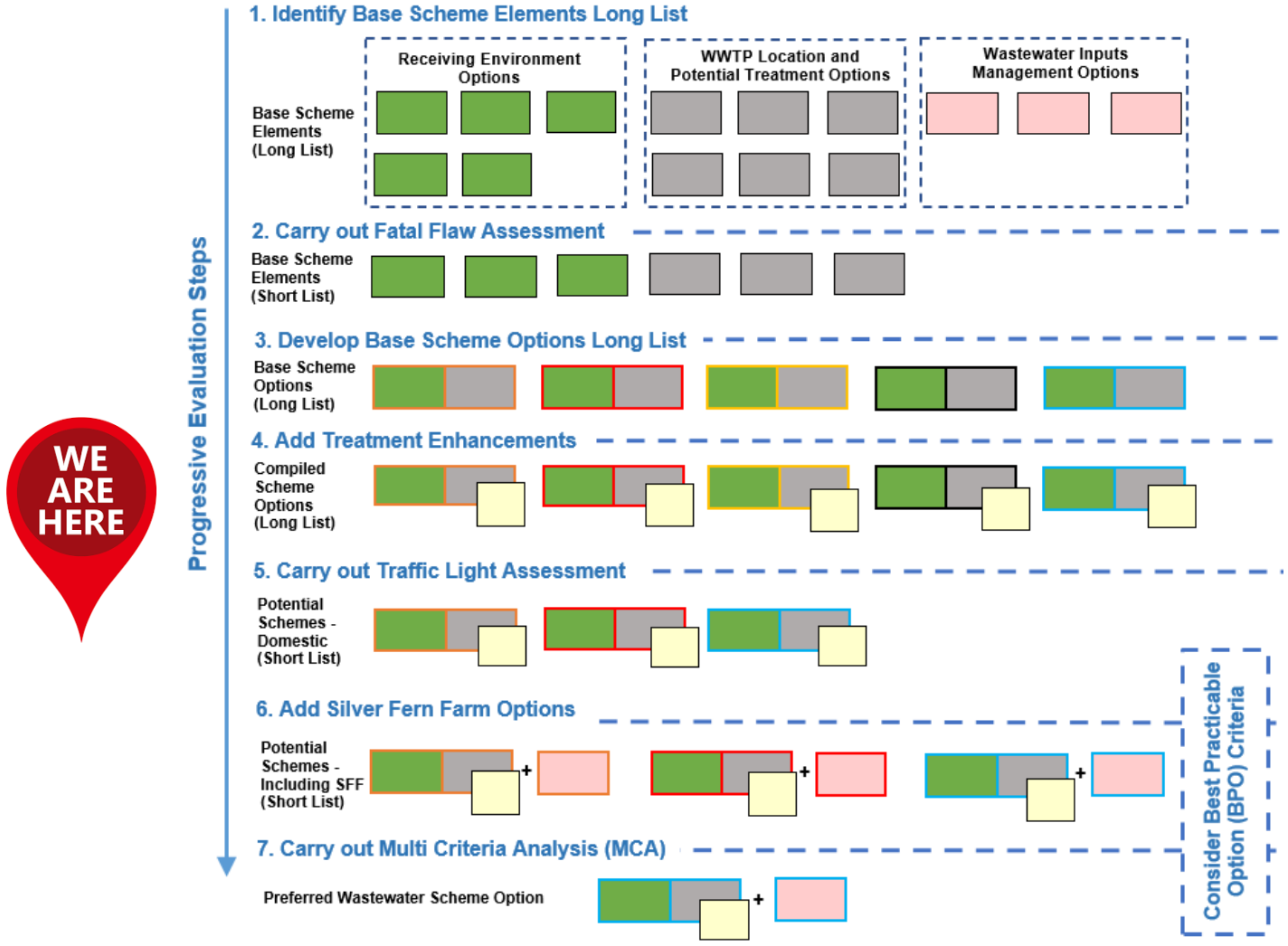
Extract below (Receiving Environment Options), from Fatal Flaw Assessment of Elements document.
Full document provided as PDF for viewing.



- Tasman Sea
- Hokitika River
- Land
- Groundwater
- Treated Wastewater Reuse

Assessment Overview and Criteria

Set out in **Options Assessment Framework** document, endorsed by Oversight Subcommittee (April 2022).
Extract below (Assessment Overview Diagram), full document provided as PDF for viewing.



Assessment Overview and Criteria

Set out in **Options Assessment Framework** document, endorsed by Oversight Subcommittee (April 2022).
Extract below (Assessment Criteria), full document provided as PDF for viewing.

Scope	Criterion	Assessment stage		
		Fatal Flaw Assessment	Traffic Light Assessment	MCA
Investment Objectives	Avoid discharge of treated human waste directly to natural water bodies.	Y	Y	Y
	Meet regulatory standards for treated wastewater contaminants	N	Y	
	Minimise risk of climate change impacts on the wastewater system.	Y	Y	
Minimum Service Requirements	Public health risk	Y	Y	Y
	Alignment with the planning framework	Y	Y	Y
	Constructability	Y	Y	Y
	GHG emissions / Carbon footprint	N	Y	Y
	Infrastructure and technology	Y	Y	Y
Four Wellbeings	Māori cultural	Y	Y	Y
	Natural environment	Y	Y	Y
	Social and community	N	Y	Y
	Economic development and growth	Y	Y	Y
Critical Success Factors	Affordability/Financial	N	N	Y
	Technical feasibility	N	N	Y

Identify Base Scheme Elements

Fatal Flaw Assessment of Elements (Domestic)

Extract below, full document provided as PDF for viewing.

Receiving Environment Options

Receiving Environment		Option Description	Secondary Receiving Environment	Fatal Flaw / Reason Why
Ocean (Tasman Sea)				
O1	**Existing Outfall**	Keep and use the existing outfall. As is.	N/A	3 – significant natural hazards. 4 – public health risk. 9 – not acceptable. 10 – effect on environment.
O2	**Extend existing Outfall**	Keep and use the existing outfall, with upgrade to extend further and increase the resilience of the structure.	N/A	3 - significant natural hazards. 9 – not acceptable. 10 – effect on environment.
O3	**Westland Milk Products Ocean Outfall**	Connect to Westland Milk Products' (WMP) new ocean outfall which extends 800m out to sea. Was completed in mid-2021, with provision for WDC to use the pipeline if needed as part of any future upgrade to WDC's WWTP.	N/A	
O4	**New WDC Ocean Outfall**	Construct a new sub-surface ocean outfall, like has been constructed by WMP.	N/A	
O5	**Coastal Rapid Infiltration Basins**	Rapid Infiltration Basins (RIBs), like those constructed at the Franz Josef WWTP, but constructed in the coastal zone. This provides a diffuse passage to the marine environment. RIBs operate on a rotational basis, providing rest and recovery of basins between doses.	N/A	3 - significant natural hazards.
O6	**Coastal Infiltration Wetland**	An unlined infiltration wetland, constructed in the coastal zone. Similar to O5, but within a continually used area (no rotation).	N/A	3 - significant natural hazards.
River				
R1	**Hokitika River**	**A. River Outfall** Construct an outfall to the river. Options include either a simple pipe discharge, or a diffuser style to provide optimal mixing and dilution. [WMPs treated wastewater discharge was to a river outfall prior to moving to their new ocean outfall.]	None L1 L2 L3 L4	9 – not acceptable.

Identify Base Scheme Elements

Elements taken forward to Scheme Options, following Fatal Flaw Assessment

Receiving Environment Options
Ocean:
O3 – WMP Existing Outfall
O4 – New WDC Outfall (location not defined)

Land:
In the vicinity of -
L1 - West of Airport
L2 - Airport
L3 - East of Airport
L4 - Blue Spur
L5 - Kaniere
L6 - Southside / Adair Road

100ha block shown for scale (1,000m x 1,000m)

WWTP Location Options
In the vicinity of:
TP1 - Existing WWTP Location
TP2 - West of Airport
TP3 - Airport
TP4 - East of Airport

WWTP Base Treatment Options
A - Ponds
B - Biological Trickling Filter (BTF)
C - Conventional Secondary Treatment (CST)

Develop Base Scheme Options (Domestic) and Assess

'**Long Long List**' (153 Options)

Extract below, following reduction to a 'Long List'. Full document provided as PDF for viewing.

Base Scheme Options – LONG LONG LIST — **Treatment Plant Location – TP1 Existing Site**

Receiving Environment	Receiving Environment Ref	Secondary Receiving Environment	WWTP Location	Treatment Option	Treatment Enhancements	SFF Options: Treatment (portion of Process Flow* to Council WWTP) SFF2 All	SFF3 Some	SFF4 None	SFF Options: Discharge (combined with Council discharge, or separate) A Combined	B Separate	Scheme Ref	Scheme Long list No.	Schemes identified to take forward to Traffic Light Assessment based on: • Receiving Environment • Treat Plant Site and Process • SFF Option	Scheme Long list No.	Comments/Rationale
Ocean	O3 WMP existing outfall	-	TP1 Existing Site	B - BTF							TP1-O3-B SFF:	1	✓	1	Likely to stack up environmentally and cost efficiently as the best of these six Ocean discharge options. Dependent on WMP acceptance/ new consent.
				C – Conventional Secondary Treatment							TP1-O3-C	2			See row 1.
				D - Membrane							TP1-O3-D	3			See row 1.
	O4 New WDC outfall	-		B - BTF							TP1-O4-B	4			See row 1. Less desirable than joining WMP existing outfall. But could be considered if WMP option is not able to be taken forward.
				C – Conventional Secondary Treatment							TP1-O4-C	5			See row 1.
				D - Membrane							TP1-O4-D	6			See row 1.
Land West of Airport	L1B RIBs/ trenches	-		B - BTF							TP1-L1B-Bc	7			Clarifier required with BTF for the land discharge option. BTF with clarifier is a sub-option of C (Conventional), therefore this option is covered in row 8.
				C – Conventional Secondary Treatment							TP1-L1B-C	8	✓	2	See row 7.
				D - Membrane							TP1-L1B-D	9			High capital & operating costs; unlikely to be needed environmentally.
Land Airport	L2B RIBs/ trenches	-		B - BTF							TP1-L2B-Bc	10			Clarifier required with BTF for the land discharge option. BTF with clarifier is a sub-option of C (Conventional), therefore this option is covered in C.
				C – Conventional Secondary Treatment							TP1-L2B-C	11	✓	3	See row 10.
				D - Membrane							TP1-L2B-D	12			High capital & operating costs; unlikely to be needed environmentally.
Land East of Airport	L3A Slow rate irrigation	O3 WMP existing outfall		B - BTF							TP1-L3A/O3-B	13			RIBs/trenches options 19-21 would be more controllable / cost efficient than this item, would not require large areas of land in an area that is reasonably highly developed, and would not need the secondary receiving environment (Ocean).
				C – Conventional Secondary Treatment							TP1-L3A/O3-C	14			See row 13.
				D - Membrane							TP1-L3A/O3-D	15			See row 13.
		O4 New WDC outfall		B - BTF							TP1-L3A/O4-B	16			See row 13.
				C – Conventional Secondary Treatment							TP1-L3A/O4-C	17			See row 13.
				D - Membrane							TP1-L3A/O4-D	18			See row 13.
	L3B RIBs/ trenches	-		B - BTF							TP1-L3B-Bc	19			Clarifier required with BTF for the land discharge option. BTF with clarifier is a sub-option of C (Conventional), therefore this option is covered in row 20.
				C – Conventional Secondary Treatment							TP1-L3B-C	20	✓	4	See rows 13 and 19.
				D - Membrane							TP1-L3B-D	21			High capital & operating costs; unlikely to be needed environmentally.

*All human wastewater from SFF will go to Council WWTP. SFF treatment and discharge options still to be worked through.

Key abbreviations: O – Ocean, L – Land, TP – Treatment Plant, BTF – Biological Trickling Filter.

1

Develop Base Scheme Options (Domestic) and Assess

Reduce this to a '**Long List**' (21 Options)

Extract below, before consideration of Treatment Enhancements and SFF position.

Hokitika Wastewater Upgrade Project

Base Scheme Options - Long List (for Traffic Light Assessment)

Scheme Ref.	Receiving environmant	Receiving environmant Ref	Secondary receiving environment	WWTP Location	Treatment Option	Treatment enhancements	SFF Treatment (to be worked through)	SFF discharge (to be worked through)	Long Long List No.	Long List No.
TP1-03-B	Ocean	O3	-	TP1 Existing	B - BTF				1	1
TP1-L1B-C	Land West of Airport	L1B RIBs/trenches	-		C - Conventional				8	2
TP1-L2B-C	Land Airport	L2B RIBs/trenches	-		C - Conventional				11	3
TP1-L3B-C	Land East of Airport	L3B RIBs/trenches	-		C - Conventional				20	4
TP2-O3-B	Ocean	O3	-	TP2 West of Airport	B - BTF				22	5
TP2-L1B-C	Land West of Airport	L1B RIBs/trenches	-		C - Conventional				29	6
TP2-L2B-C	Land Airport	L2B RIBs/trenches	-		C - Conventional				32	7
TP2-L3B-C	Land East of Airport	L3B RIBs/trenches	-		C - Conventional				41	8
TP3-O3-B	Ocean	O3 Existing WMP	-	TP3 Airport	B - BTF				43	9
TP3-L1B-C	Land West of Airport	L1B RIBs/trenches	-		C - Conventional				50	10
TP3-L2B-C	Land Airport	L2B RIBs/trenches	-		C - Conventional				53	11
TP3-L3B-C	Land East of Airport	L3B RIBs/trenches	-		C - Conventional				62	12
TP4-O3-B	Ocean	O3 Existing WMP	-	TP4 East of Airport	B - BTF				83	13
TP4-L2B-C	Land Airport	L2B RIBs/trenches	-		C - Conventional				96	14
TP4-L3B-C	Land East of Airport	L3B RIBs/trenches	-		C - Conventional				108	15
TP5-O3-A	Ocean	O3 Existing WMP	-	TP5 South side	A - Ponds				134	16
TP5-O3-B					B - BTF				135	17
TP5-L6A/O3-A	Land South side	L6A Slow rate irrigation	O3		A - Ponds				142	18
TP5-L6A/O3-C					C - Conventional				144	19
TP5-L6B-A		L6B RIBs/trenches	-		A - Ponds				150	20
TP5-L6B-C					C - Conventional				152	21

Develop Base Scheme Options (Domestic) and Assess

Traffic Light Assessment of '**Long List'** (21 Options) including Treatment Enhancements, but before SFF considerations.

Extract below, following Traffic Light Assessment. Full document provided as PDF for viewing.

Hokitika Wastewater Upgrade Project

Base Scheme Options - LONG LIST to SHORT LIST (FINAL following Traffic Light Assessment)

Version: Final - following PWG workshop on 18 Jan 2023

Date: 30.01.2023

Scheme Ref.	Receiving Environment	Receiving Environment Ref	Secondary Receiving Environment	WWTP Location	Base Treatment Option	Treatment Enhancements Key question is: what is the rationale for why the enhancement(s) is required/desired? UV Disinfection (d)	Solids Removal (s)	Nutrient Removal (n)	Membrane Filtration (m)	Cultural (c)	SFF Treatment (to be worked through)	SFF discharge (to be worked through)	Traffic Light Assessment Criterion 1: Avoid direct discharge to natural water body	2: Regulatory standards	3: Natural hazard	4: Public health	5: Planning and regulatory	6: Constructability	7: Carbon footprint	8: Infrastructure/ technology	9: Māori cultural	10: Natural environment	11: Social and community	12: Economic development and growth	Sum of scores (to date)
TP1-03-B	Ocean	O3 Existing WMP	-	TP1 Existing	B (BTF)	x	x	x	x	x			0	2	1	2	2	1	2	2	0	2	1	2	17
TP1-03-Bc						x	x	x	x	✓			1	2	1	2	2	1	2	2	0	2	1	2	16
TP1-03-Bd						✓	x	x	x	x			0	2	1	2	2	1	2	2	0	2	1	2	17
TP1-03-Bdc						✓	x	x	x	✓			1	2	1	2	2	1	2	2	0	2	1	2	18
TP1-03-Bmc						x	x	x	✓	✓			2	2	1	2	2	1	1	2	0	2	1	2	18
TP1-L1B-C	Land West of Airport	L1B RIBs/trenches	-		C (CST)	x	x	x	x	x			.	2	1	1	1	1	2	1	0	1	0	1	11
TP1-L2B-C	Land Airport	L2B Trenches	-			x	x	x	x	x			.	2	1	1	1	1	1	1	0	1	0	1	10
TP1-L3B-C	Land East of Airport	L3B RIBs/trenches	-			x	x	x	x	x			.	2	1	1	1	0	0	1	0	1	0	1	8
TP2-O3-B	Ocean	O3 Existing WMP	-	TP2 West of Airport	B (BTF)	x	x	x	x	x			0	2	2	2	2	2	2	2	1	2	2	2	21
TP2-O3-Bc						x	x	x	x	✓			1	2	2	2	2	2	2	2	2	2	2	2	23
TP2-O3-Bd						✓	x	x	x	x			0	2	2	2	2	2	2	2	1	2	2	2	21
TP2-O3-Bdc						✓	x	x	x	✓			1	2	2	2	2	2	2	2	2	2	2	2	23
TP2-O3-Bmc						x	x	x	✓	✓			2	2	2	2	2	2	1	2	2	2	2	2	23
TP2-L1B-C	Land West of Airport	L1B RIBs/trenches	-		C (CST)	x	x	x	x	x			0	2	2	1	1	2	2	1	1	1	1	1	15
TP2-L1B-Cc						x	x	x	x	✓			0	2	2	1	1	2	2	1	1	1	1	1	15
TP2-L1B-Cd						✓	x	x	x	x			0	2	2	1	1	2	2	1	1	1	1	1	15
TP2-L1B-Cdc						✓	x	x	x	✓			1	2	2	1	1	2	2	1	2	1	1	1	17
TP2-L1B-Cmc						x	x	x	✓	✓			2	2	2	1	1	2	1	1	2	1	1	1	17
TP2-L2B-C	Land Airport	L2B Trenches	-			x	x	x	x	x			0	2	2	1	1	2	1	1	1	1	1	1	14
TP2-L3B-C	Land East of Airport	L3B RIBs/trenches	-			x	x	x	x	x			0	2	2	1	1	2	0	1	1	1	1	1	13
TP3-O3-B	Ocean	O3 Existing WMP	-	TP3 Airport	B (BTF)	x	x	x	x	x			0	2	2	2	2	2	2	2	1	2	2	2	21
TP3-O3-Bc						x	x	x	x	✓			1	2	2	2	2	2	2	2	2	2	2	2	23
TP3-O3-Bd						✓	x	x	x	x			0	2	2	2	2	2	2	2	1	2	2	2	21
TP3-O3-Bdc						✓	x	x	x	✓			1	2	2	2	2	2	2	2	2	2	2	2	23
TP3-O3-Bmc						x	x	x	✓	✓			2	2	2	2	2	2	1	2	2	2	2	2	23
TP3-L1B-C	Land West of Airport	L1B RIBs/trenches	-		C (CST)	x	x	x	x	x			0	2	2	1	1	1	2	1	1	1	1	1	14
TP3-L2B-C	Land Airport	L2B Trenches	-			x	x	x	x	x			0	2	2	1	1	1	2	1	1	1	1	0	13
TP3-L3B-C	Land East of Airport	L3B RIBs/trenches	-			x	x	x	x	x			0	2	2	1	1	0	1	1	1	1	1	1	12
TP4-O3-B	Ocean	O3 Existing WMP	-	TP4 East of Airport	B (BTF)	x	x	x	x	x			.	2	1	2	2	0	0	2	1	2	2	2	16
TP4-L2B-C	Land Airport	L2B Trenches	-		C (CST)	x	x	x	x	x			.	2	2	1	1	1	1	1	1	1	1	1	13
TP4-L3B-C	Land East of Airport	L3B RIBs/trenches	-			x	x	x	x	x			.	2	2	1	1	1	1	1	1	1	1	1	13
TP5-O3-A	Ocean	O3 Existing WMP	-	TP5 South side	A (Ponds)	x	x	x	x	x			.	1	1	2	0	0	0	2	0	1	0	1	8
TP5-O3-B					B (BTF)	x	x	x	x	x			.	2	1	2	1	0	0	2	0	2	2	1	13
TP5-L6A/O3-A	Land South side	L6A Slow rate irrigation	O3		A (Ponds)	x	✓	x	x	x			.	1	1	0	1	1	0	2	0	1	1	1	9
TP5-L6A/O3-C					C (CST)	x	x	x	x	x			.	2	1	1	1	1	1	1	0	1	1	1	11
TP5-L6B-A		L6B RIBs/trenches	-		A (Ponds)	x	✓	x	x	x			.	1	1	1	1	1	0	2	0	1	1	2	11
TP5-L6B-C					C (CST)	x	x	x	x	x			.	2	1	1	2	1	1	1	0	1	1	2	13

Long Long List No.	Long List No.	Scheme Ref.	Potential Wastewater Schemes (Short List) to take forward to MCA Assessment based on this Traffic Light Assessment	Comments/Rationale
1	1	TP1-03-B	x	This is one Potential Wastewater Scheme, with five sub-options. Sub-options without a cultural treatment enhancement not taken forward to the short list. - Option included as the Project Working Group want to evaluate having a WWTP on the existing site for comparison purposes.
		TP1-03-Bc	✓	
		TP1-03-Bd	x	
		TP1-03-Bdc	✓	
		TP1-03-Bmc	✓	
8	2	TP1-L1B-C	x	Low score and therefore not taken forward to the short list.
11	3	TP1-L2B-C	x	
20	4	TP1-L3B-C	x	
22	5	TP2-O3-B	x	This is one Potential Wastewater Scheme, with five sub-options. Sub-options without a cultural treatment enhancement not taken forward to the short list. - Option included as it scores equal highest on the Traffic Light Assessment.
		TP2-O3-Bc	✓	
		TP2-O3-Bd	x	
		TP2-O3-Bdc	✓	
		TP2-O3-Bmc	✓	
29	6	TP2-L1B-C	x	Low score and therefore not taken forward to the short list.
		TP2-L1B-Cc	x	
		TP2-L1B-Cd	x	
		TP2-L1B-Cdc	✓	This is one Potential Wastewater Scheme, with two sub-options. - Option included as the Project Working Group wants to evaluate a discharge to land option.
		TP2-L1B-Cmc	✓	
32	7	TP2-L2B-C	x	Low score and therefore not taken forward to the short list.
41	8	TP2-L3B-C	x	
43	9	TP3-O3-B	x	This is one Potential Wastewater Scheme, with five sub-options. Sub-options without a cultural treatment enhancement not taken forward to the short list. - Option included as it scores equal highest on the Traffic Light Assessment.
		TP3-O3-Bc	✓	
		TP3-O3-Bd	x	
		TP3-O3-Bdc	✓	
		TP3-O3-Bmc	✓	
50	10	TP3-L1B-C	x	Low score and therefore not taken forward to the short list.
53	11	TP3-L2B-C	x	
62	12	TP3-L3B-C	x	
83	13	TP4-O3-B	x	Low score and east of the Airport. Was rejected by Project Working Group as not desired.
96	14	TP4-L2B-C	x	
108	15	TP4-L3B-C	x	
154	16	TP5-O3-A	x	Low score and south of the Hokitika River. Was rejected by Project Working Group as not desired.
135	17	TP5-O3-B	x	
142	18	TP5-L6A/O3-A	x	
144	19	TP5-L6A/O3-C	x	
150	20	TP5-L6B-A	x	
152	21	TP5-L6B-C	x	

Develop Base Scheme Options (Domestic) and Assess

'Long List' Detail
Following Traffic Light Assessment.

Hokitika Wastewater Upgrade Project

Base Scheme Options - LONG LIST to SHORT LIST (FINAL following Traffic Light Assessment)

Scheme Ref.	Receiving Environment	Receiving Environment Ref	Secondary Receiving Environment	WWTP Location	Base Treatment Option	Treatment Enhancements Key question is: what is the rationale for why the enhancement(s) is required/desired?					SFF Treatment (to be worked through)	SFF discharge (to be worked through)
						UV Disinfection (d)	Solids Removal (s)	Nutrient Removal (n)	Membrane Filtration (m)	Cultural (c)		
TP1-03-B	Ocean	O3 Existing WMP	-	TP1 Existing	B (BTF)	x	x	x	x	x		
TP1-03-Bc						x	x	x	x	✓		
TP1-03-Bd						✓	x	x	x	x		
TP1-03-Bdc						✓	x	x	x	✓		
TP1-03-Bmc						x	x	x	✓	✓		
TP1-L1B-C	Land West of Airport	L1B RIBs/trenches	-		C (CST)	x	x	x	x	x		
TP1-L2B-C	Land Airport	L2B Trenches	-			x	x	x	x	x		
TP1-L3B-C	Land East of Airport	L3B RIBs/trenches	-			x	x	x	x	x		
TP2-O3-B	Ocean	O3 Existing WMP	-	TP2 West of Airport	B (BTF)	x	x	x	x	x		
TP2-O3-Bc						x	x	x	x	✓		
TP2-O3-Bd						✓	x	x	x	x		
TP2-O3-Bdc						✓	x	x	x	✓		
TP2-O3-Bmc						x	x	x	✓	✓		
TP2-L1B-C	Land West of Airport	L1B RIBs/trenches	-		C (CST)	x	x	x	x	x		
TP2-L1B-Cc						x	x	x	x	✓		
TP2-L1B-Cd						✓	x	x	x	x		
TP2-L1B-Cdc						✓	x	x	x	✓		
TP2-L1B-Cmc						x	x	x	✓	✓		
TP2-L2B-C	Land Airport	L2B Trenches	-			x	x	x	x	x		
TP2-L3B-C	Land East of Airport	L3B RIBs/trenches	-			x	x	x	x	x		
TP3-O3-B	Ocean	O3 Existing WMP	-	TP3 Airport	B (BTF)	x	x	x	x	x		
TP3-O3-Bc						x	x	x	x	✓		
TP3-O3-Bd						✓	x	x	x	x		
TP3-O3-Bdc						✓	x	x	x	✓		
TP3-O3-Bmc						x	x	x	✓	✓		
TP3-L1B-C	Land West of Airport	L1B RIBs/trenches	-		C (CST)	x	x	x	x	x		
TP3-L2B-C	Land Airport	L2B Trenches	-			x	x	x	x	x		
TP3-L3B-C	Land East of Airport	L3B RIBs/trenches	-			x	x	x	x	x		
TP4-O3-B	Ocean	O3 Existing WMP	-	TP4 East of Airport	B (BTF)	x	x	x	x	x		
TP4-L2B-C	Land Airport	L2B Trenches	-		C (CST)	x	x	x	x	x		
TP4-L3B-C	Land East of Airport	L3B RIBs/trenches	-			x	x	x	x	x		
TP5-O3-A	Ocean	O3 Existing WMP	-	TP5 South side	A (Ponds)	x	x	x	x	x		
TP5-O3-B					B (BTF)	x	x	x	x	x		
TP5-L6A/O3-A	Land South side	L6A Slow rate irrigation	O3		A (Ponds)	x	✓	x	x	x		
TP5-L6A/O3-C					C (CST)	x	x	x	x	x		
TP5-L6B-A		L6B RIBs/trenches	-		A (Ponds)	x	✓	x	x	x		
TP5-L6B-C					C (CST)	x	x	x	x	x		

Develop Base Scheme Options (Domestic) and Assess

'Long List' Detail
Following Traffic Light Assessment.

Version: Final - following PWG workshop on 18 Jan 2023

Date: 30.01.2023

Scheme Ref.	Traffic Light Assessment Criterion												Sum of scores (to date)	Long Long List No.	Long List No.	Scheme Ref.	Potential Wastewater Schemes (Short List) to take forward to MCA Assessment based on this Traffic Light Assessment	Comments/Rationale
	1	2	3	4	5	6	7	8	9	10	11	12						
	Avoid direct discharge to natural water body	Regulatory standards	Natural hazard	Public health	Planning and regulatory	Constructability	Carbon footprint	Infrastructure/ technology	Māori cultural	Natural environment	Social and community	Economic development and growth						
TP1-O3-B	0	2	1	2	2	1	2	2	0	2	1	2	17	1	1	TP1-O3-B	×	This is one Potential Wastewater Scheme, with five sub-options. Sub-options without a cultural treatment enhancement not taken forward to the short list. - Option included as the Project Working Group want to evaluate having a WWTP on the existing site for comparison purposes.
TP1-O3-Bc	1	2	1	2	2	1	2	2	0	2	1	2	18			TP1-O3-Bc	✓	
TP1-O3-Bd	0	2	1	2	2	1	2	2	0	2	1	2	17			TP1-O3-Bd	×	
TP1-O3-Bdc	1	2	1	2	2	1	2	2	0	2	1	2	18			TP1-O3-Bdc	✓	
TP1-O3-Bmc	2	2	1	2	2	1	1	2	0	2	1	2	18			TP1-O3-Bmc	✓	
TP1-L1B-C	.	2	1	1	1	1	2	1	0	1	0	1	11	8	2	TP1-L1B-C	×	Low score and therefore not taken forward to the short list.
TP1-L2B-C	.	2	1	1	1	1	1	1	0	1	0	1	10	11	3	TP1-L2B-C	×	
TP1-L3B-C	.	2	1	1	1	0	0	1	0	1	0	1	8	20	4	TP1-L3B-C	×	
TP2-O3-B	0	2	2	2	2	2	2	2	1	2	2	2	21	22	5	TP2-O3-B	×	This is one Potential Wastewater Scheme, with five sub-options. Sub-options without a cultural treatment enhancement not taken forward to the short list. - Option included as it scores equal highest on the Traffic Light Assessment.
TP2-O3-Bc	1	2	2	2	2	2	2	2	2	2	2	2	23			TP2-O3-Bc	✓	
TP2-O3-Bd	0	2	2	2	2	2	2	2	1	2	2	2	21			TP2-O3-Bd	×	
TP2-O3-Bdc	1	2	2	2	2	2	2	2	2	2	2	2	23			TP2-O3-Bdc	✓	
TP2-O3-Bmc	2	2	2	2	2	2	1	2	2	2	2	2	23			TP2-O3-Bmc	✓	
TP2-L1B-C	0	2	2	1	1	2	2	1	1	1	1	1	15	29	6	TP2-L1B-C	×	Low score and therefore not taken forward to the short list.
TP2-L1B-Cc	0	2	2	1	1	2	2	1	1	1	1	1	15			TP2-L1B-Cc	×	
TP2-L1B-Cd	0	2	2	1	1	2	2	1	1	1	1	1	15			TP2-L1B-Cd	×	
TP2-L1B-Cdc	1	2	2	1	1	2	2	1	2	1	1	1	17			TP2-L1B-Cdc	✓	This is one Potential Wastewater Scheme, with two sub-options. - Option included as the Project Working Group wants to evaluate a discharge to land option.
TP2-L1B-Cmc	2	2	2	1	1	2	1	1	2	1	1	1	17			TP2-L1B-Cmc	✓	
TP2-L2B-C	0	2	2	1	1	2	1	1	1	1	1	1	14	32	7	TP2-L2B-C	×	Low score and therefore not taken forward to the short list.
TP2-L3B-C	0	2	2	1	1	2	0	1	1	1	1	1	13	41	8	TP2-L3B-C	×	
TP3-O3-B	0	2	2	2	2	2	2	2	1	2	2	2	21	43	9	TP3-O3-B	×	This is one Potential Wastewater Scheme, with five sub-options. Sub-options without a cultural treatment enhancement not taken forward to the short list. - Option included as it scores equal highest on the Traffic Light Assessment.
TP3-O3-Bc	1	2	2	2	2	2	2	2	2	2	2	2	23			TP3-O3-Bc	✓	
TP3-O3-Bd	0	2	2	2	2	2	2	2	1	2	2	2	21			TP3-O3-Bd	×	
TP3-O3-Bdc	1	2	2	2	2	2	2	2	2	2	2	2	23			TP3-O3-Bdc	✓	
TP3-O3-Bmc	2	2	2	2	2	2	1	2	2	2	2	2	23			TP3-O3-Bmc	✓	
TP3-L1B-C	0	2	2	1	1	1	2	1	1	1	1	1	14	50	10	TP3-L1B-C	×	Low score and therefore not taken forward to the short list.
TP3-L2B-C	0	2	2	1	1	1	2	1	1	1	1	0	13	53	11	TP3-L2B-C	×	
TP3-L3B-C	0	2	2	1	1	0	1	1	1	1	1	1	12	62	12	TP3-L3B-C	×	
TP4-O3-B	.	2	1	2	2	0	0	2	1	2	2	2	16	83	13	TP4-O3-B	×	Low score and east of the Airport. Was rejected by Project Working Group as not desired.
TP4-L2B-C	.	2	2	1	1	1	1	1	1	1	1	1	13	96	14	TP4-L2B-C	×	
TP4-L3B-C	.	2	2	1	1	1	1	1	1	1	1	1	13	108	15	TP4-L3B-C	×	
TP5-O3-A	.	1	1	2	0	0	0	2	0	1	0	1	8	134	16	TP5-O3-A	×	Low score and south of the Hokitika River. Was rejected by Project Working Group as not desired.
TP5-O3-B	.	2	1	2	1	0	0	2	0	2	2	1	13	135	17	TP5-O3-B	×	
TP5-L6A/O3-A	.	1	1	0	1	1	0	2	0	1	1	1	9	142	18	TP5-L6A/O3-A	×	
TP5-L6A/O3-C	.	2	1	1	1	1	1	1	0	1	1	1	11	144	19	TP5-L6A/O3-C	×	
TP5-L6B-A	.	1	1	1	1	1	0	2	0	1	1	2	11	150	20	TP5-L6B-A	×	
TP5-L6B-C	.	2	1	1	2	1	1	1	0	1	1	2	13	152	21	TP5-L6B-C	×	

Develop Base Scheme Options (Domestic) and Assess

'Short List' of Potential Wastewater Schemes (11 Options)

Following Traffic Light Assessment.

Hokitika Wastewater Upgrade Project

Potential Wastewater Schemes (Domestic) - SHORT LIST following Traffic Light Assessment

Base Scheme Ref.	Receiving Environment	WWTP Location	Base Treatment Option	Treatment Enhancements			SFF Treatment (to be worked through)	SFF Discharge (to be worked through)	Long List Ref.	Short List Ref.	Scheme Ref.
				UV Disinfection (d)	Membrane Filtration (m)	Cultural (c)					
O-TP1-B	Ocean via: WMP Existing Outfall	TP1 Existing WWTP Site	B (BTF)	×	×	✓			1	1	O-TP1-Bc
				✓	×	✓				2	O-TP1-Bdc
				×	✓	✓				3	O-TP1-Bmc
O-TP2-B		TP2 West of Airport		×	×	✓			5	4	O-TP2-Bc
				✓	×	✓				5	O-TP2-Bdc
				×	✓	✓				6	O-TP2-Bmc
O-TP3-B		TP3 Airport		×	×	✓			9	7	O-TP3-Bc
				✓	×	✓				8	O-TP3-Bdc
				×	✓	✓				9	O-TP3-Bmc
L-TP2-C	Land West of Airport via: RIBS/Trenches	TP2 West of Airport	C (CST)	✓	×	✓			6	10	L-TP2-Cdc
				×	✓	✓				11	L-TP2-Cmc

Key abbreviations:

O – Ocean, L – Land
WMP - Westland Milk Products
RIB - Rapid Infiltration Basin
TP – Treatment Plant
B (BTF) – Biological Trickling Filter, C (CST) - Conventional Secondary Treatment
d - UV Disinfection, m - Membrane Filtration, c - Cultural
✓ - option selected, × - option not selected
SFF - Silver Fern Farms

1. **SFF treatment and discharge** options still to be worked through.
2. **BTF with Clarifier** is a sub-option of C - CST.
3. **Discharge to WMP ocean outfall** is fundamental to outfall O3 options along with securing appropriate changes to resource consent conditions.
4. **SFF discharge**, providing it remains in the scheme, would be included in Council's agreement with WMP for the discharge through the WMP ocean outfall regardless of whether treatment is in the Council's system, or undertaken by SFF.
5. **Treatment Enhancements** could be part of the initial build or added in the future in accordance with requirements set in resource consent conditions. This could be through periodic reviews of performance, adaptive management approaches, or other techniques.
6. **Cost not considered at this phase** of assessment but is one of the criterion used for the coming assessment of the Short List.
7. **Refer to updated Assessment Overview Diagram** for summary of assessment steps and outcomes through to this Long List to Short List summary.
8. **Mana Whenua have confirmed** they desire an open channel type **cultural treatment enhancement** that includes rocks and that enables the water to be seen.

Oversight Subcommittee Endorsement of the Short List

‘Short List’ of Potential Wastewater Schemes (11 Options)
Following Traffic Light Assessment.

Summary:	Short Listed Schemes for Detailed Investigations and adding in of Silver Fern Farms Options, ahead of Multi Criteria Analysis (MCA) and Decision Making
Schemes (11)	Being combinations of the items below.
Receiving Environments (2)	**Ocean** (via Westland Milk Products existing ocean outfall) **Land** (West of airport via Rapid Infiltration Basins / Trenches)
Base Treatment Options (2)	**Biological Trickling Filter** (to Ocean) **Conventional Secondary Treatment** (to Land)
Treatment Enhancements (3)	**UV Disinfection** **Membrane Filtration** **Cultural**
Treatment Plant Sites (3)	**Existing Site** **West of Airport** **Airport**

Summary of Outputs to Date

Assessment Overview Diagram:

Update at January 2023:

Base Scheme Elements LONG LIST (Workshops - November 2021 and March 2022):
- **5** Receiving Environments: Ocean, River, Land, Groundwater, Re-use.
- **7** WWTP Sites: Existing site, West of airport, Airport, East of airport, Blue Spur, Transfer station, South side of Hokitika River.
- **4** Base Treatment Options: Ponds/lagoons, Biological Trickling Filter, Conventional Secondary Treatment, Membrane Reactor.
- Wastewater Inputs Management:
  - > Silver Fern Farms Inputs: **4** Options identified (Draft in Progress).
  - > Wastewater Network Inputs: **9** Options identified (Draft in Progress).

Base Scheme Elements (following Fatal Flaw Assessment Workshop - May 2022):
- **2** Receiving Environments: Ocean, Land.
- **6** WWTP Sites: Existing site, West of airport, Airport, East of airport, Blue Spur, South side of Hokitika River.
- **4** Base Treatment Options: Ponds/lagoons, Biological Trickling Filter, Conventional Secondary Treatment, Membrane Reactor.

Base Scheme Options LONG LIST (presented to Traffic Light Assessent Workshops - June and July 2022, January 2023):
- LONG LONG LIST: **153** options identified, reduced to a Long List of 21.
- LONG LIST: **21** options assessed.

Treatment Enhancements:
- **5** identified by Stantec team: UV Disinfection, Solids Removal, Nutrient Removal, Membrane Filtration, Cultural.
- Enhancements added to Base Schemes at January 2023 Traffic Light Assessment Workshop.

Potential Wastewater Schemes (Domestic) SHORT LIST (following Traffic Light Assessent Workshop - January 2023):
- **11** schemes: being combinations of the items below.
- **2** Receiving Environments: Ocean (via WMP existing outfall), Land (West of airport via RIBs/tranches).
- **2** Base Treatment Options: Biological Trickling Filter (to Ocean), Conventional Secondary Treatment (to Land).
- **3** Treatment Enhancements: UV disinfection, Membrane filtration, Cultural.
- **3** WWTP Sites: Existing site, West of airport, Airport.

Yet to be worked through.

Yet to be worked through.

Next Steps

Following Oversight Subcommittee endorsement of the '**Short List'** of Potential Wastewater Schemes, development of the way forward:

- Westland Milk Products – re-open discussion regarding the possible use of their ocean outfall
- Silver Fern Farms - options identification and addition to the 'Short List'
- Communication / Engagement (progress update)
  - Iwi Partner
  - Statutory Authorities (WCRC, CPH, DOC)
  - Water Reform Entity D
  - Interested Parties
  - Wider Community
  - Other key Stakeholders
- Detailed investigations of Short Listed Schemes including SFF options (multi faceted)
- Multi Criteria Analysis of the Short Listed Schemes and decision making
- Identification of a Preferred Wastewater Scheme