



# FRESH WATER MANAGEMENT TOOL

Site Specific Water Treatment Devices

# Overview

- What is the Fresh Water Management Tool (FWMT)?
- Mitigation Opportunities / Treatment Devices
- Wetlands
  - Footprint Mapping
  - Hydrological Connections
- Quality Assurance
- Potential Improvements



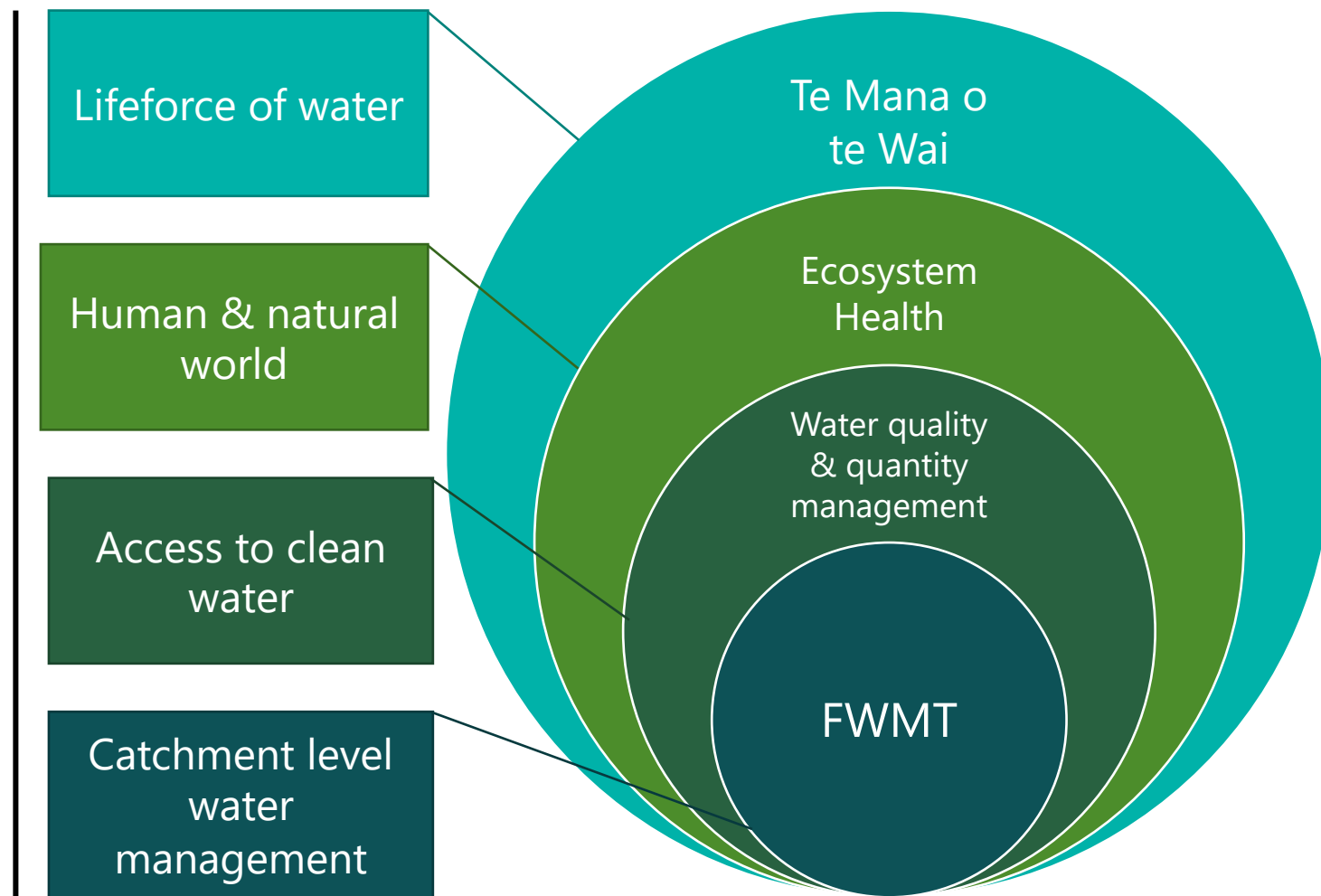




# **What is the Freshwater Management Tool?**

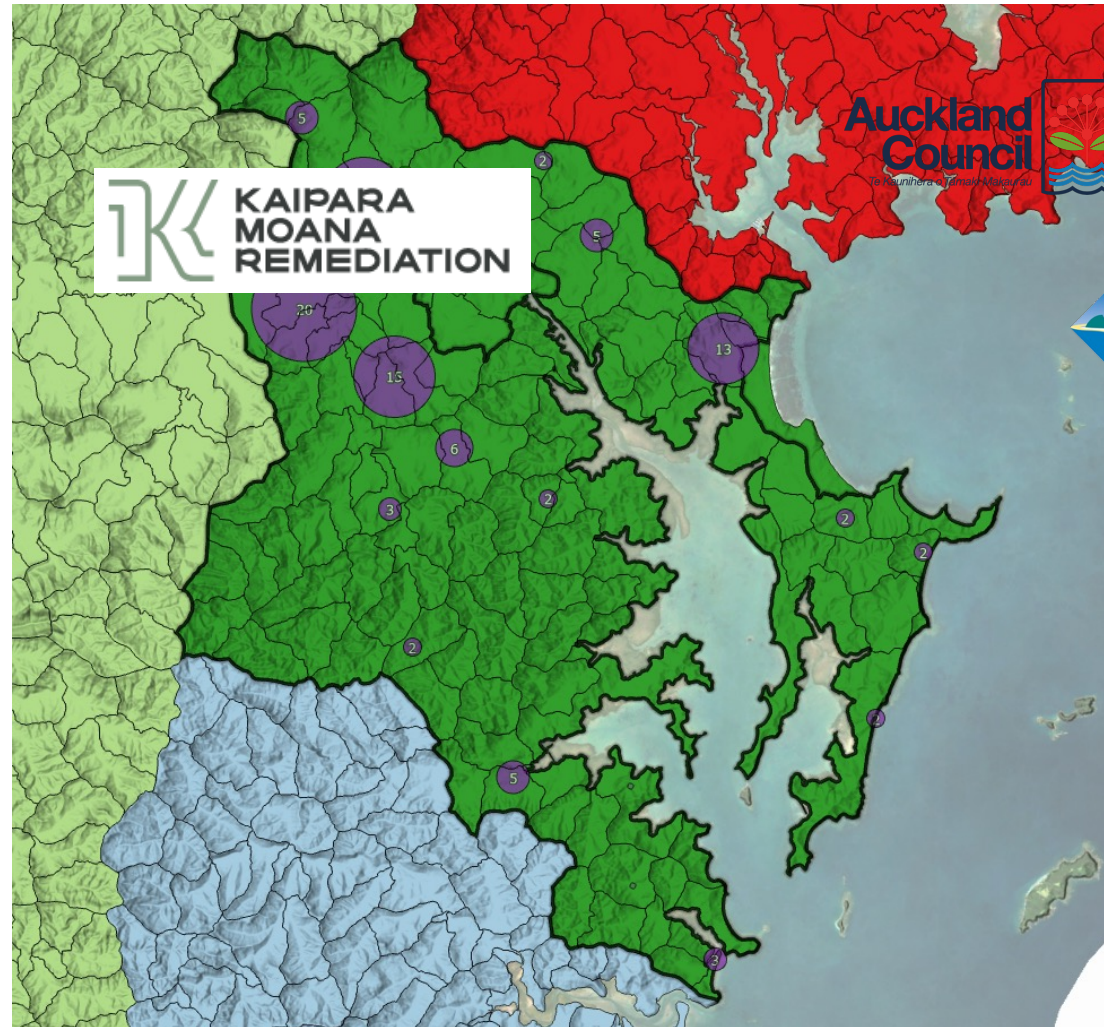
AT MORPHUM ENVIRONMENTAL

# FWMT





FWMT





# Mitigation Opportunities

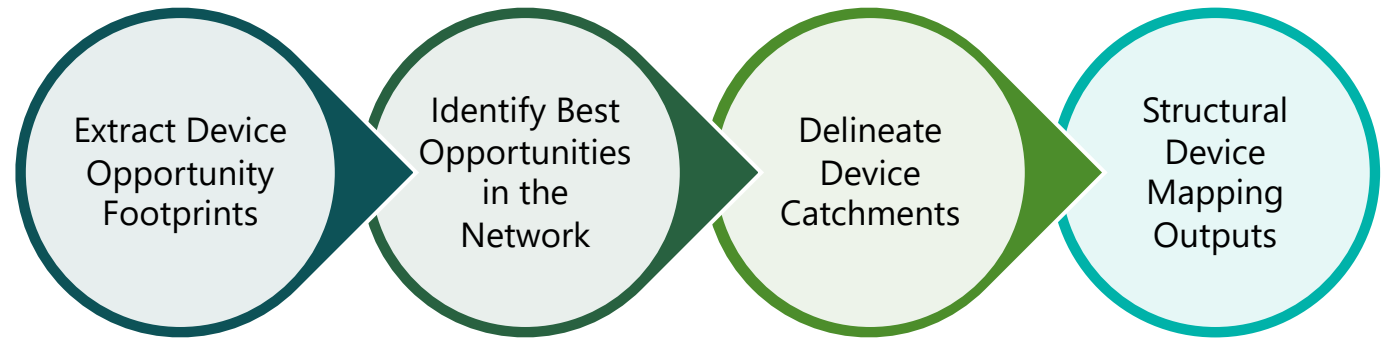
AT MORPHUM ENVIRONMENTAL



# Mitigation Opportunities

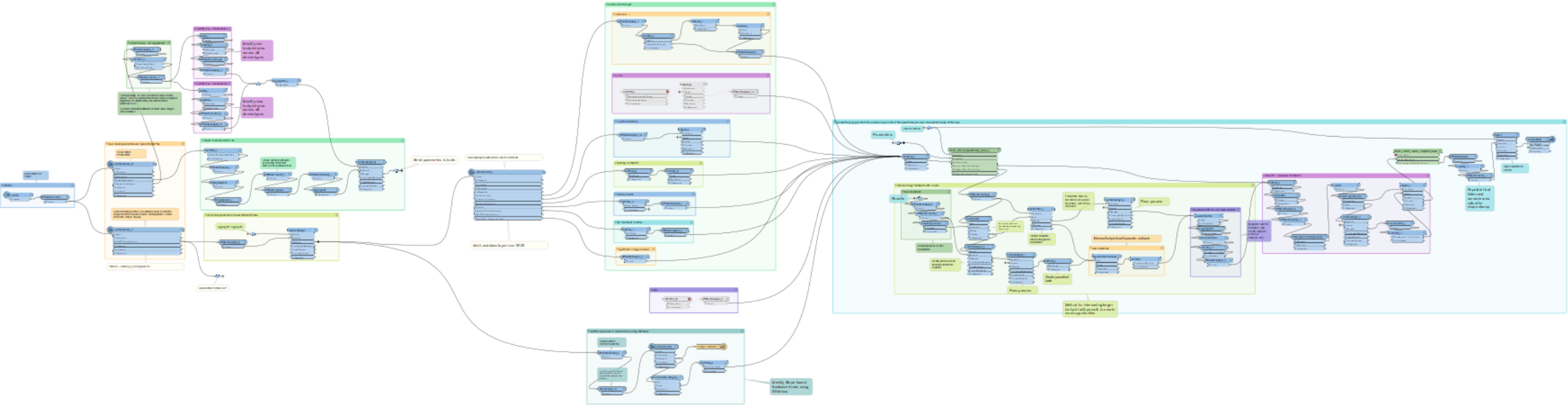


## Wetlands





# Footprint Mapping



# Footprint Mapping

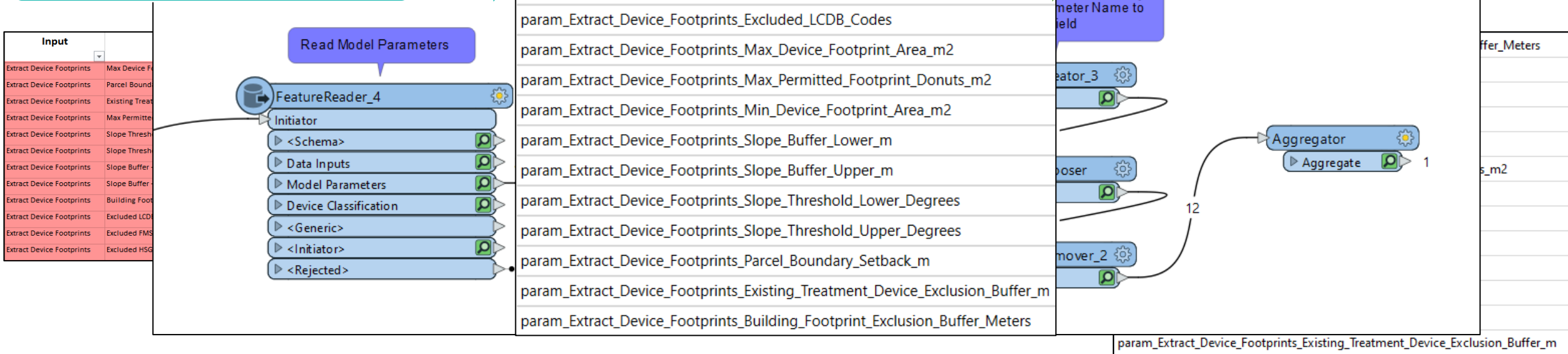
Extract  
Device  
Opportunity  
Footprints

- Model Parameters
- Exclusion layers
- Process data inputs from GDB
- Identify slope-based exclusions
- Extracting Opportunity Areas

Input

Process

Output





# Footprint Mapping

Extract  
Device  
Opportunity  
Footprints

- Model Parameters
- Exclusion layers
- Process data inputs from GDB
- Identify slope-based exclusions
- Extracting Opportunity Areas

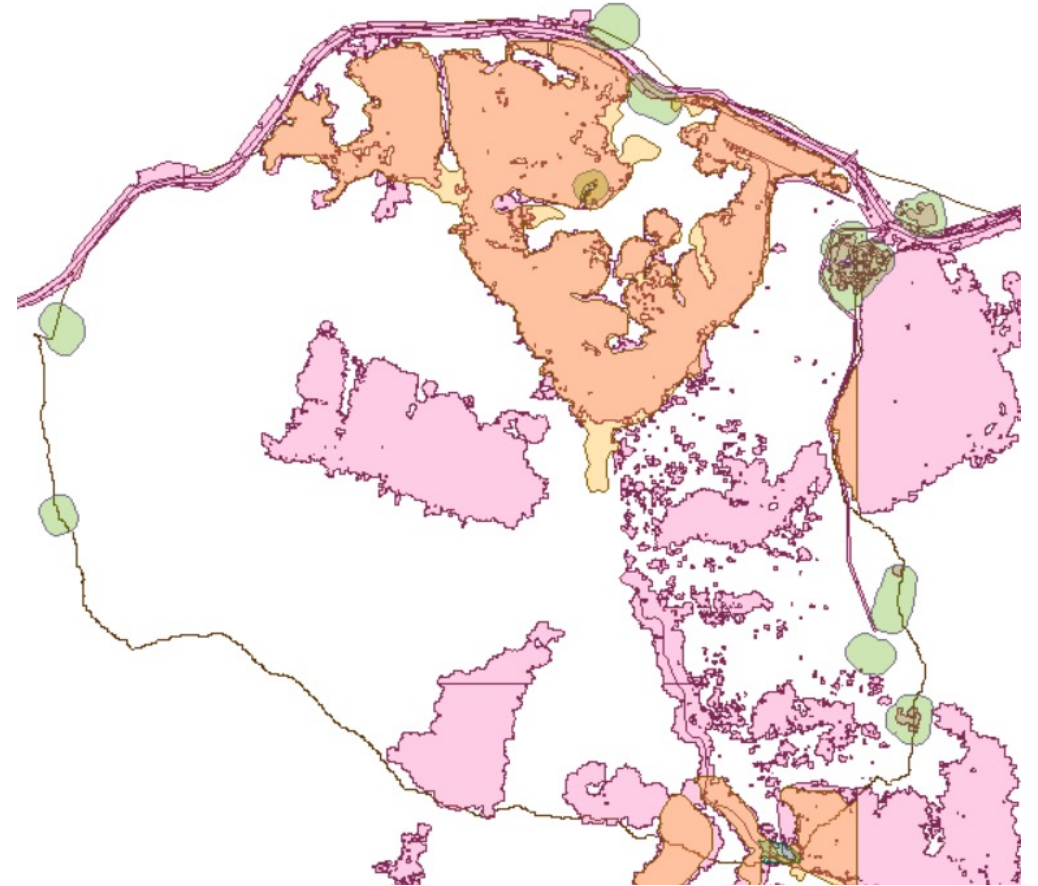
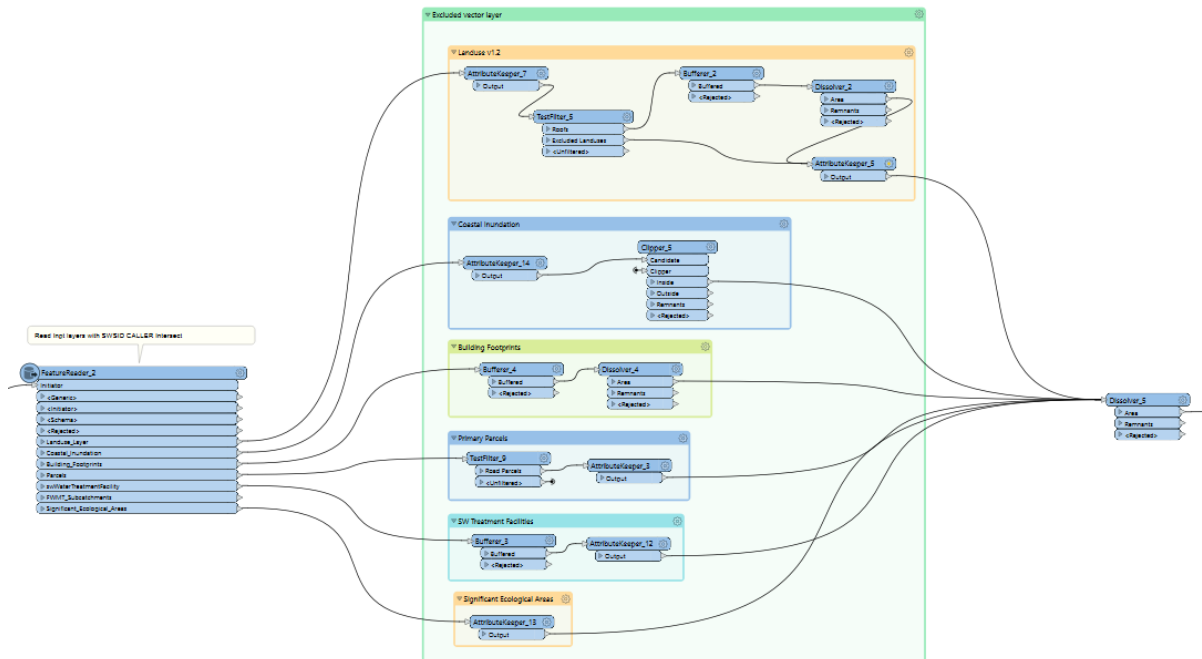
Model Uses	Target Directory Name	Source Directory Name	Source Directory
Device Exclusion Layer	Land	AKC FWMT Model Build > 01_Data_Inputs > Data_Inputs.gdb	Council\P03203 FWMT Advancements 2021\GIS\Task 1_Baseline Data\Delivered Data\Updated Landuse Data.gdb
Device Exclusion Layer	Coas		uncil\Council\District lan\UnitaryPlan.gdb
Device Exclusion Layer	Build		d\Water\Impervious Areas\building_outlines.gdb
Device Exclusion Layer (Roads), Split larger devices	Parc		d\Parcels\parcel_boundaries.gdb
Device Exclusion Layer	Sign		uncil\Council\District lan\UnitaryPlan.gdb
Device Exclusion Layer	Fund		d\Landcover\LRIS\fsl_Soil_Drainage_Class.gdb
Device Exclusion Layer	HSG		WMT_GIS\Data\Databases\Soils_HSG.gdb
Device Exclusion Layer	Coas		d\Water\NZ Coastlines and Islands Polygons\nz-coastlines-and-b
Existing Treatment Devices, Device Exclusion Layer	swW		uncil\Underground Services\SAP Data\Stormwater.gdb
Device Exclusion Layer (Slope), Elevation calculations	DEM		Derived Products\Regional Rasters\AKC_DTM_2m.gdb
Device Pour Point Placement, Device Catchment Size Es Flow			Derived Products\Regional Rasters\AKC_DTM_2m.gdb
Device Offtake Network, Primary Flow Network Burnlin SW_Pipe		PUBLICATION_MASTER_swPipe	Z:\GIS\Base_Data\Auckland Council\Underground Services\SAP Data\Stormwater.gdb



# Footprint Mapping

Extract  
Device  
Opportunity  
Footprints

- Model Parameters
- Exclusion layers
- **Process data inputs from GDB**
- Identify slope-based exclusions
- Extracting Opportunity Areas

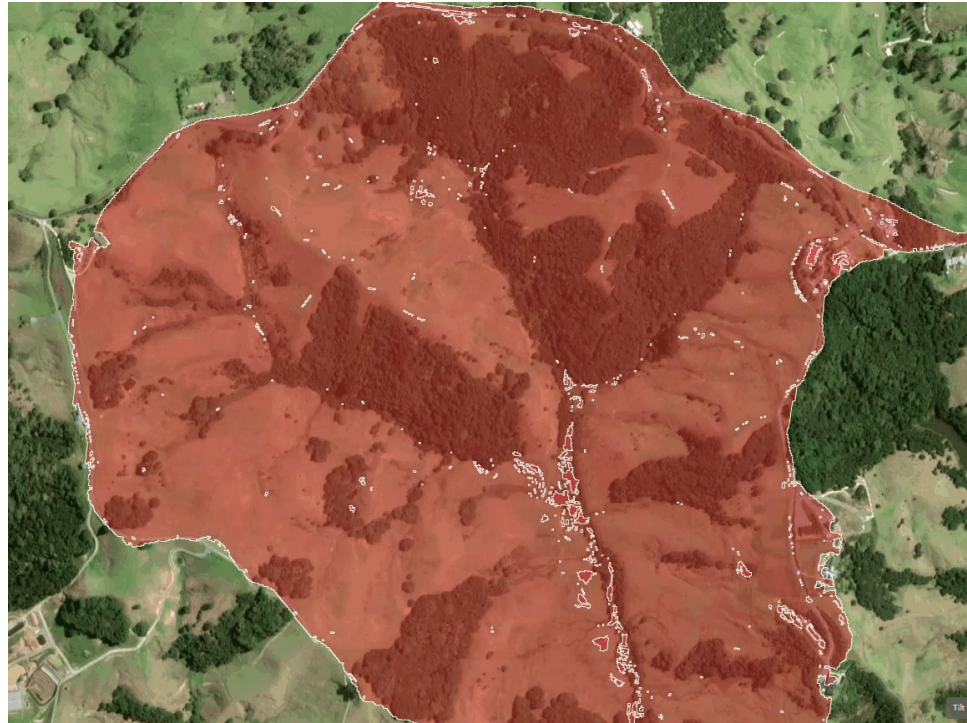




# Footprint Mapping

Extract  
Device  
Opportunity  
Footprints

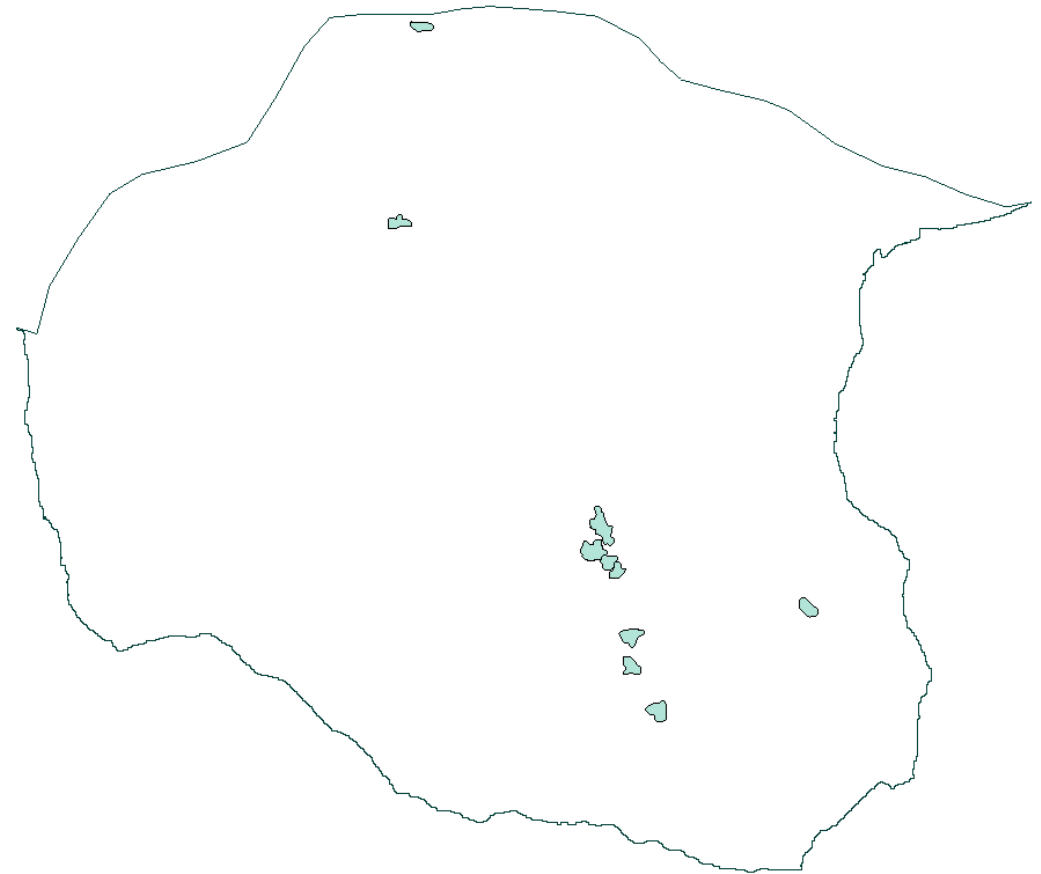
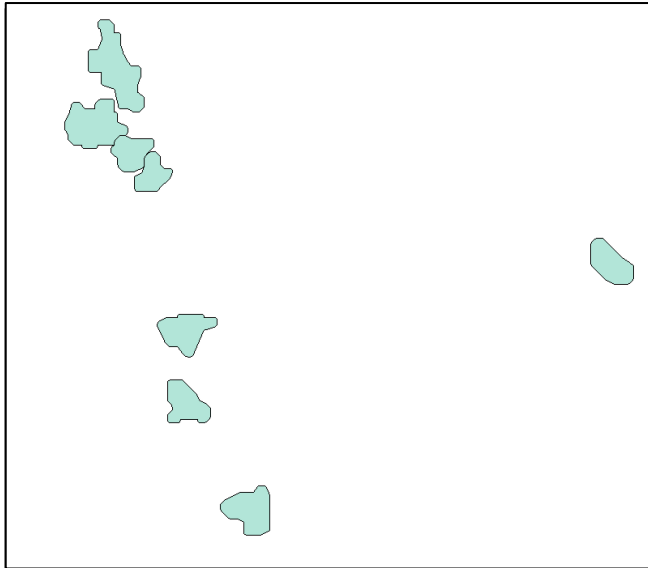
- Model Parameters
- Exclusion layers
- Process data inputs from GDB
- Identify slope-based exclusions
- Extracting Opportunity Areas



# Footprint Mapping

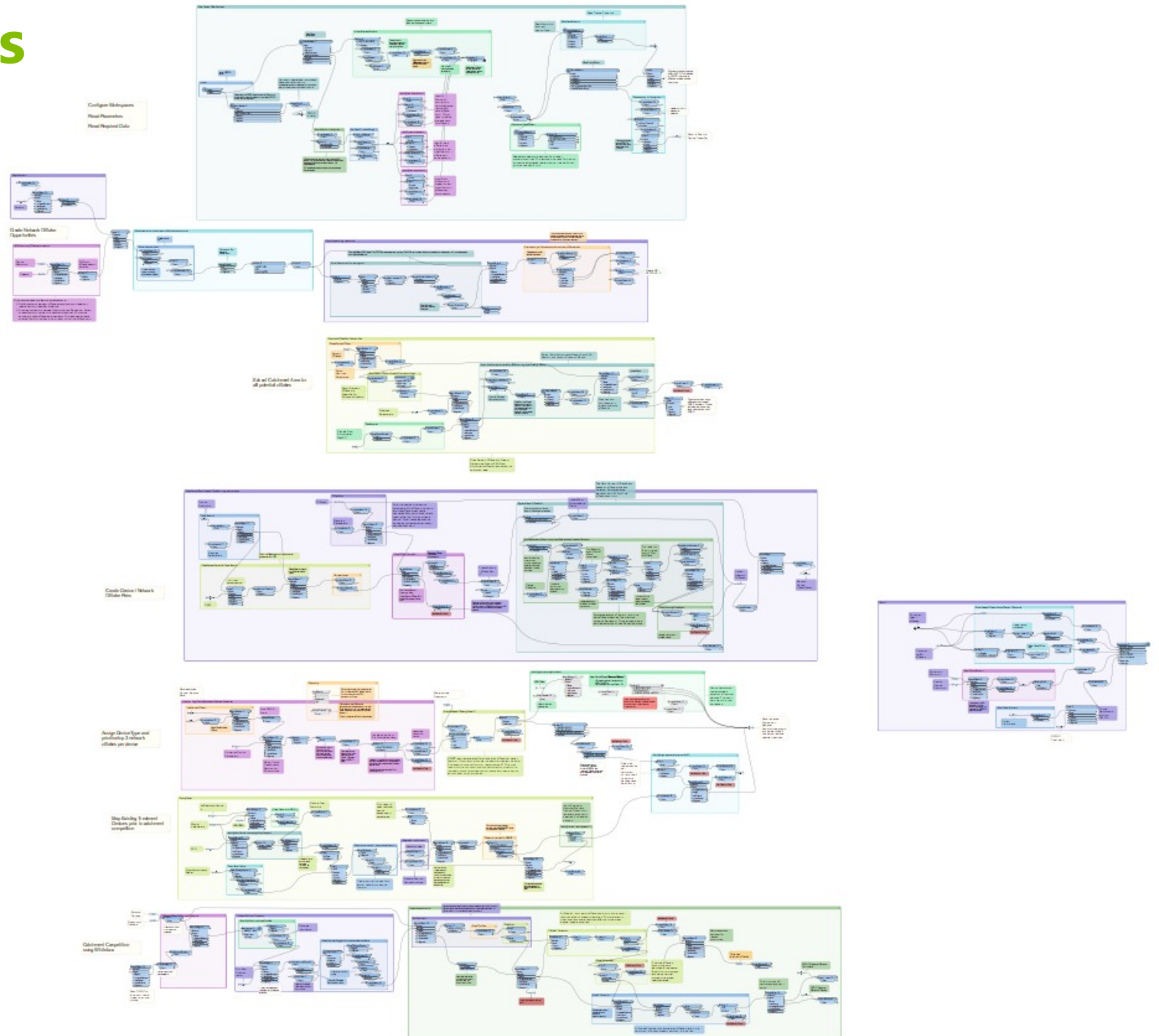
Extract  
Device  
Opportunity  
Footprints

- Model Parameters
- Exclusion layers
- Process data inputs from GDB
- Identify slope-based exclusions
- Extracting Opportunity Areas





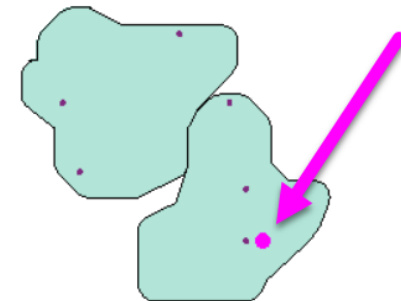
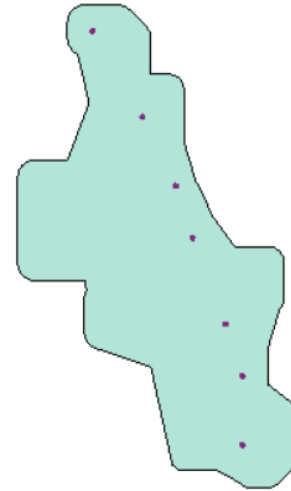
# Hydrological Connections



# Hydrological Connections

Identify Best Opportunities in the Network

- Finding valid streams along the Primary Flow Network
- Apply a buffer to the footprints
- Filter valid streams within the buffer
- Break the stream into 10m segments (iterativesnapper & centrepointhereplacer)
- Find points within wetland
- Check validity of each pour point
- Join back to wetland to identify the ones that are valid

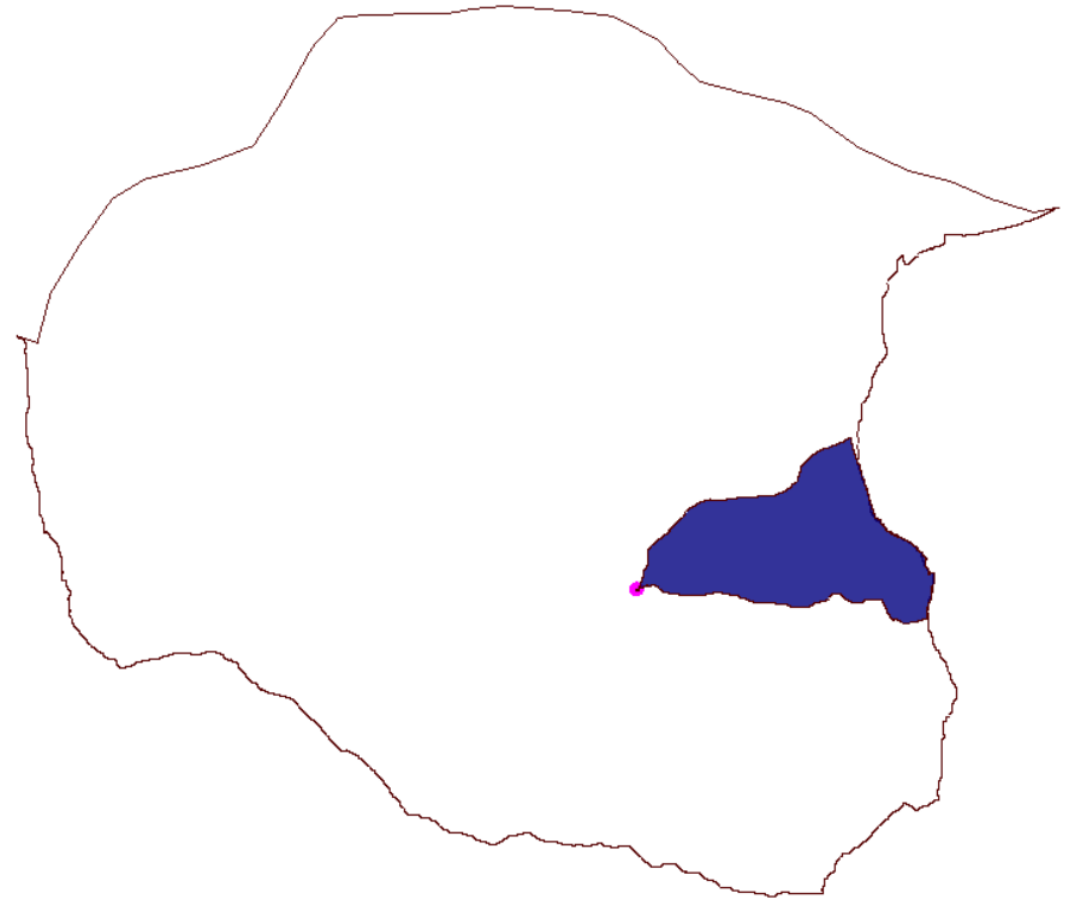




# Hydrological Connections

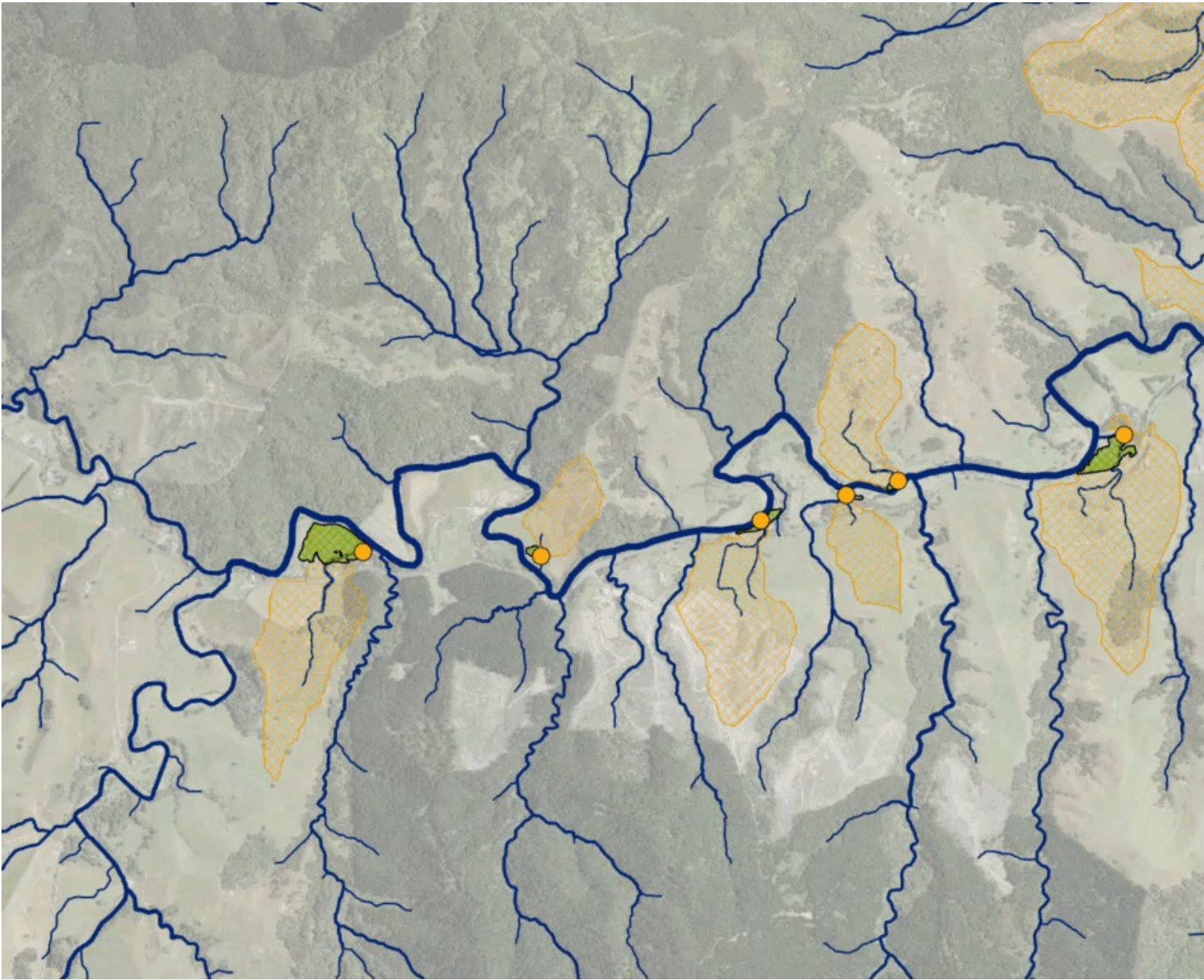
Delineate  
Device  
Catchments

- Creating Catchments / Treatment Area from Network Offtake



# Hydrological Connections

Structural  
Device  
Mapping  
Output







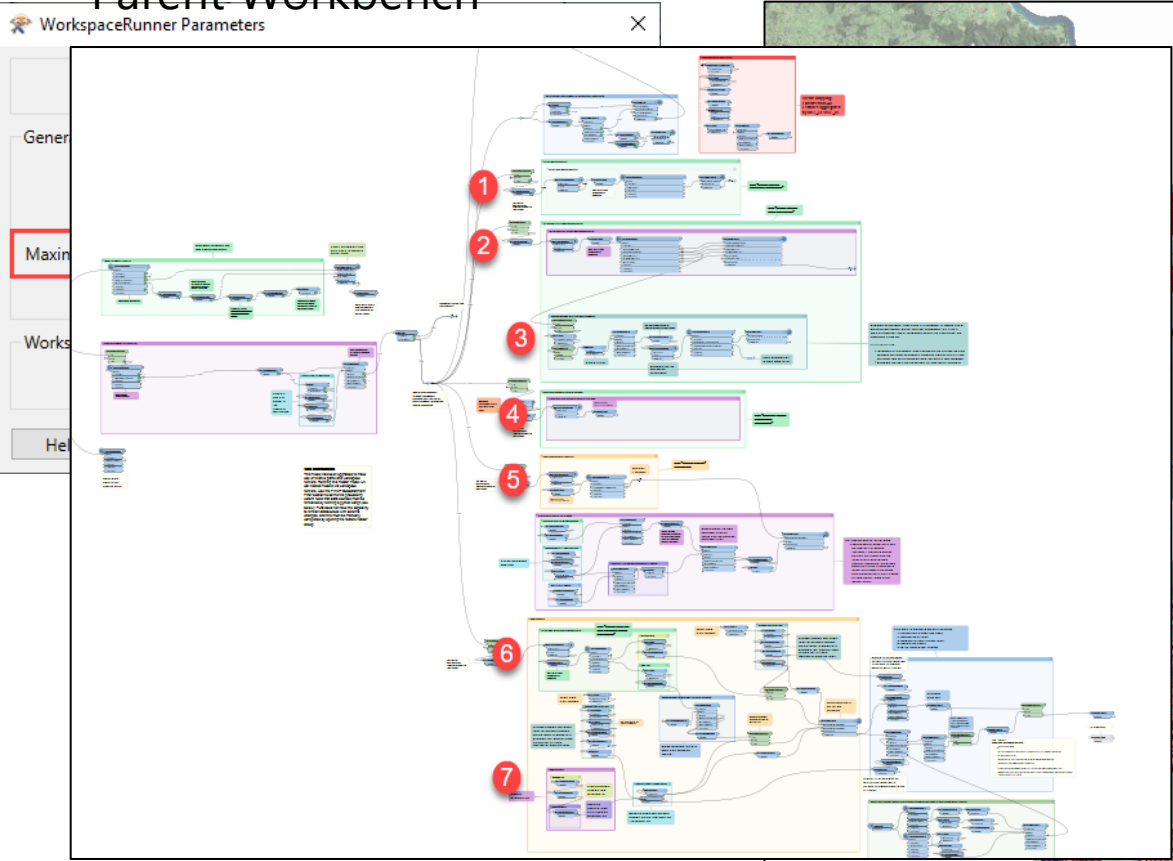
# **Workspace Runner & FFS Files**

AT MORPHUM ENVIRONMENTAL

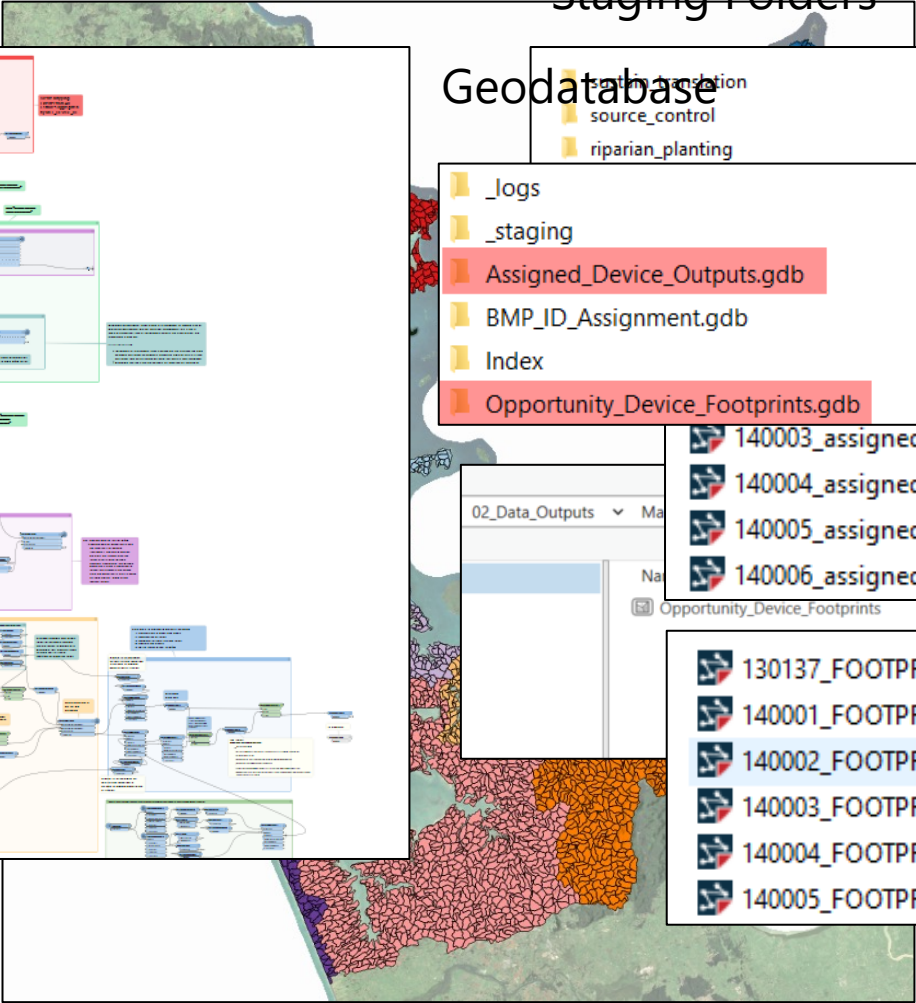


# Workspace Runner & FFS Files

Benefits  
Parent Workbench



Auckland Region



Staging Folders

Geodatabase		
source_control	19/05/2023 4:02 am	File folder
riparian_planting	19/05/2023 1:37 am	File folder
	19/05/2023 1:13 am	File folder
_logs	16/05/2023 5:55 pm	File folder
_staging	16/05/2023 5:37 pm	File folder
Assigned_Device_Outputs.gdb	1/06/2023 2:45 pm	File folder
BMP_ID_Assignment.gdb	1/06/2023 2:23 pm	File folder
Index	31/05/2023 8:22 am	File folder
Opportunity_Device_Footprints.gdb	1/06/2023 2:15 pm	File folder

140003_assigned_device_outputs	Assigned_Device_Outputs.gdb
140004_assigned_device_outputs	
140005_assigned_device_outputs	
140006_assigned_device_outputs	

130137_FOOTPRINTS
140001_FOOTPRINTS
140002_FOOTPRINTS
140003_FOOTPRINTS
140004_FOOTPRINTS
140005_FOOTPRINTS



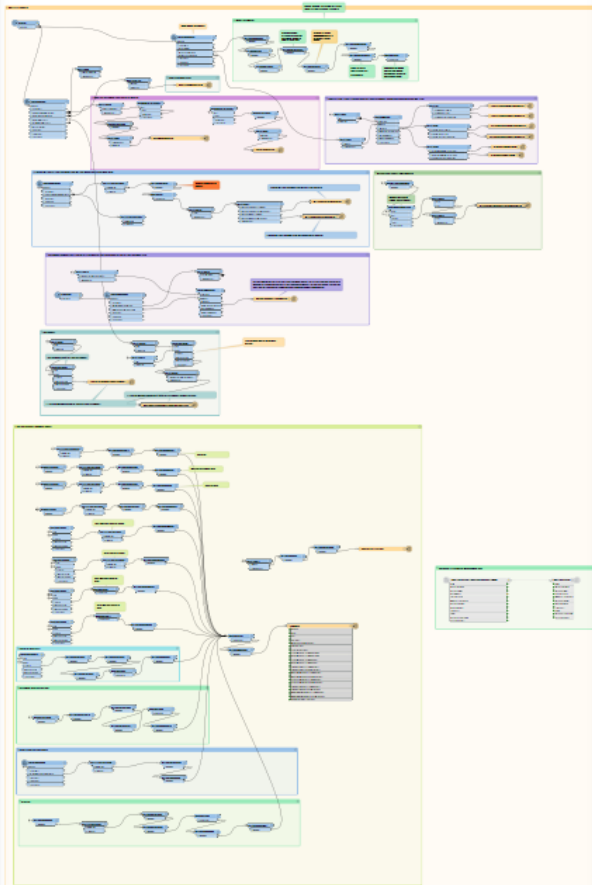


# **Quality Assurance**

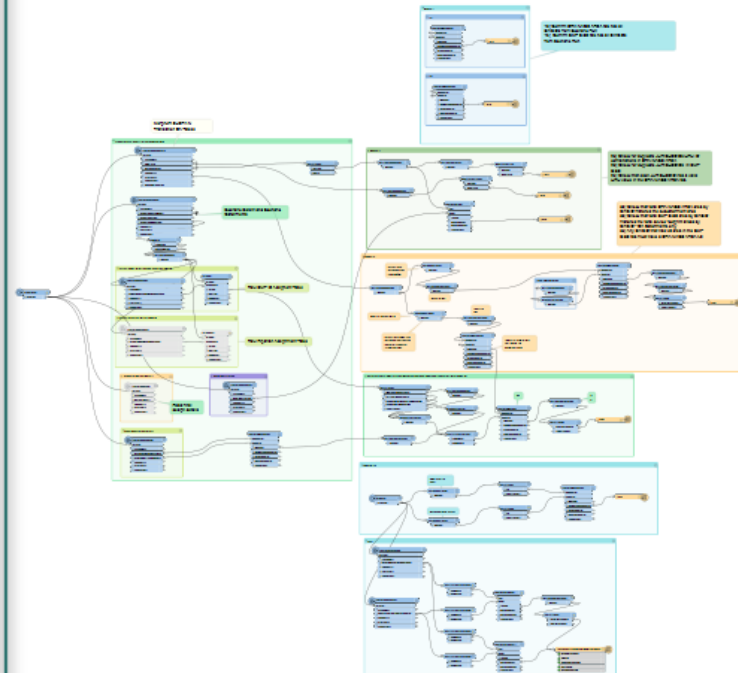
AT MORPHUM ENVIRONMENTAL

# Quality Assurance

## Spatial QA



## FWMT QA



## Manual QA

Page #	Page Title	Page Content	Page Type	Page Status	Page Date	Page Author	Page Editor	Page Reviewer	Page Approver	Page Status
101	101	101	101	101	101	101	101	101	101	101
102	102	102	102	102	102	102	102	102	102	102
103	103	103	103	103	103	103	103	103	103	103
104	104	104	104	104	104	104	104	104	104	104
105	105	105	105	105	105	105	105	105	105	105
106	106	106	106	106	106	106	106	106	106	106
107	107	107	107	107	107	107	107	107	107	107
108	108	108	108	108	108	108	108	108	108	108
109	109	109	109	109	109	109	109	109	109	109
110	110	110	110	110	110	110	110	110	110	110
111	111	111	111	111	111	111	111	111	111	111
112	112	112	112	112	112	112	112	112	112	112
113	113	113	113	113	113	113	113	113	113	113
114	114	114	114	114	114	114	114	114	114	114
115	115	115	115	115	115	115	115	115	115	115
116	116	116	116	116	116	116	116	116	116	116
117	117	117	117	117	117	117	117	117	117	117
118	118	118	118	118	118	118	118	118	118	118
119	119	119	119	119	119	119	119	119	119	119
120	120	120	120	120	120	120	120	120	120	120
121	121	121	121	121	121	121	121	121	121	121
122	122	122	122	122	122	122	122	122	122	122
123	123	123	123	123	123	123	123	123	123	123
124	124	124	124	124	124	124	124	124	124	124
125	125	125	125	125	125	125	125	125	125	125
126	126	126	126	126	126	126	126	126	126	126
127	127	127	127	127	127	127	127	127	127	127
128	128	128	128	128	128	128	128	128	128	128
129	129	129	129	129	129	129	129	129	129	129
130	130	130	130	130	130	130	130	130	130	130
131	131	131	131	131	131	131	131	131	131	131
132	132	132	132	132	132	132	132	132	132	132
133	133	133	133	133	133	133	133	133	133	133
134	134	134	134	134	134	134	134	134	134	134
135	135	135	135	135	135	135	135	135	135	135
136	136	136	136	136	136	136	136	136	136	136
137	137	137	137	137	137	137	137	137	137	137
138	138	138	138	138	138	138	138	138	138	138
139	139	139	139	139	139	139	139	139	139	139
140	140	140	140	140	140	140	140	140	140	140
141	141	141	141	141	141	141	141	141	141	141
142	142	142	142	142	142	142	142	142	142	142
143	143	143	143	143	143	143	143	143	143	143
144	144	144	144	144	144	144	144	144	144	144
145	145	145	145	145	145	145	145	145	145	145
146	146	146	146	146	146	146	146	146	146	146
147	147	147	147	147	147	147	147	147	147	147
148	148	148	148	148	148	148	148	148	148	148
149	149	149	149	149	149	149	149	149	149	149
150	150	150	150	150	150	150	150	150	150	150
151	151	151	151	151	151	151	151	151	151	151
152	152	152	152	152	152	152	152	152	152	152
153	153	153	153	153	153	153	153	153	153	153
154	154	154	154	154	154	154	154	154	154	154
155	155	155	155	155	155	155	155	155	155	155
156	156	156	156	156	156	156	156	156	156	156
157	157	157	157	157	157	157	157	157	157	157
158	158	158	158	158	158	158	158	158	158	158
159	159	159	159	159	159	159	159	159	159	159
160	160	160	160	160	160	160	160	160	160	160
161	161	161	161	161	161	161	161	161	161	161
162	162	162	162	162	162	162	162	162	162	162
163	163	163	163	163	163	163	163	163	163	163
164	164	164	164	164	164	164	164	164	164	164
165	165	165	165	165	165	165	165	165	165	165
166	166	166	166	166	166	166	166	166	166	166
167	167	167	167	167	167	167	167	167	167	167
168	168	168	168	168	168	168	168	168	168	168
169	169	169	169	169	169	169	169	169	169	169
170	170	170	170	170	170	170	170	170	170	170
171	171	171	171	171	171	171	171	171	171	171
172	172	172	172	172	172	172	172	172	172	172
173	173	173	173	173	173	173	173	173	173	173
174	174	174	174	174	174	174	174	174	174	174
175	175	175	175	175	175	175	175	175	175	175
176	176	176	176	176	176	176	176	176	176	176
177	177	177	177	177	177	177	177	177	177	177
178	178	178	178	178	178	178	178	178	178	178
179	179	179	179	179	179	179	179	179	179	179
180	180	180	180	180	180	180	180	180	180	180
181	181	181	181	181	181	181	181	181	181	181
182	182	182	182	182	182	182	182	182	182	182
183	183	183	183	183	183	183	183	183	183	183
184	184	184	184	184	184	184	184	184	184	184
185	185	185	185	185	185	185	185	185	185	185
186	186	186	186	186	186	186	186	186	186	186
187	187	187	187	187	187	187	187	187	187	187
188	188	188	188	188	188	188	188	188	188	188
189	189	189	189	189	189	189	189	189	189	189
190	190	190	190	190	190	190	190	190	190	190
191	191	191	191	191	191	191	191	191	191	191
192	192	192	192	192	192	192	192	192	192	192
193	193	193	193	193	193	193	193	193	193	193
194	194	194	194	194	194	194	194	194	194	194
195	195	195	195	195	195	195	195	195	195	195
196	196	196	196	196	196	196	196	196	196	196
197	197	197	197	197	197	197	197	197	197	197
198	198	198	198	198	198	198	198	198	198	198
199	199	199	199	199	199	199	199	199	199	199
200	200	200	200	200	200	200	200	200	200	200







# Potential Improvements

AT MORPHUM ENVIRONMENTAL

## Potential Improvements



**FME Flow**  
(was FME Server)



**FME Flow Hosted**  
(was FME Cloud)



- FME Flow / Flow Hosted
- PostGIS database for multi write access
  - Replace staging folder







# Wrap Up

AT MORPHUM ENVIRONMENTAL





**THANK YOU.**

[shannon.fourie@morphism.com](mailto:shannon.fourie@morphism.com)