

DATE: 8 May 2026

TO: Sara Westcott | Team Leader Consents

FROM: Laura Hickey | Freshwater Scientist

SUBJECT: FOXTON SOLAR FARM WATERWAY CLASSIFICATION ASSESSMENT

Hi Sara,

A fast-track resource consent application has been made by Genesis Energy to construct a solar farm near Foxton (APP-2025205573.00). There are a number of watercourses located onsite that the applicant has described as artificial farm drainage canals. I visited the site on 28 April 2026 to undertake a stream classification assessment, with specific regard to differentiating whether these waterbodies are artificial or modified in nature.

Context

The Resource Management Act defines a river as a “continually or intermittently flowing body of fresh water; and includes a stream and modified watercourse; but does not include any artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation, and farm drainage canal)”.

This assessment focuses specifically on differentiating between modified watercourses and artificial farm drainage canals. This distinction is particularly relevant in today’s landscapes which have been highly modified. Many waterways across the region have been significantly altered to the extent that they now exhibit ‘drain-like’ characteristics. In addition, the drainage of landscapes historically dominated by wetlands is a common process by which hydrological systems have become modified.

Therefore, the presence of constructed channels and ‘drain-like’ characteristics cannot be used as the sole identifying factors of artificial farm drainage canals. Instead, a broader set of indicators is required to differentiate artificial waterbodies from highly modified natural systems.

Several criteria have been developed to support the differentiation of artificial watercourses from modified natural streams and rivers in the Horizons Regions¹. These criteria consider factors such as the nature of the water source, evidence of prior waterway or wetland presence, the presence of natural stream processes, and the capacity to support freshwater ecosystems.

¹ Based on legal advice provided by CR Law (2022).

Site Characteristics

Numerous channels are located across the proposed solar farm site (Figure 1). The three main 'drains' identified by the applicant are assessed in full. The remaining smaller channels observed are grouped together and described collectively.

The amount of rainfall preceding the classification assessment can impact the observations made, particularly in relation to the presence of surface water. The Horizons Regional Council rainfall monitoring site closest to the project area is Manawatū at Motua². No rainfall was recorded in the 48 hours preceding the site visit, with the most recent rainfall event occurring seven days prior. However, irrigation systems had been operating on the site prior to the visit, likely influencing the flow conditions observed in the channels.

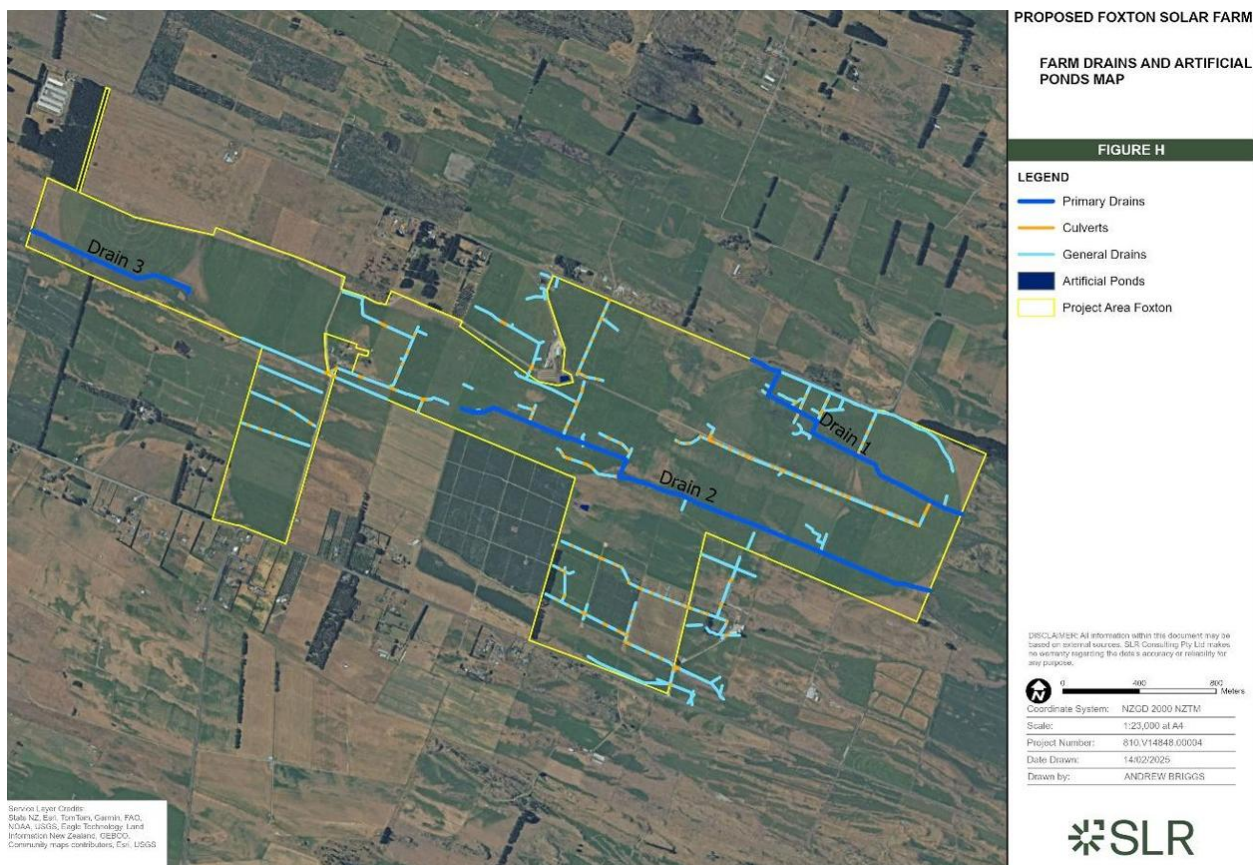


Figure 1. The locations of the watercourses onsite. Sourced from Appendix I of the application, the Ecological Impact Assessment

² <https://envirodata.horizons.govt.nz/>

Assessment - Main 'Drain' 1

Main 'drain' 1 was assessed at two locations on the site; an upper reach where the watercourse enters the site, and a downstream location. At the upstream assessment site, the channel exhibited a combination of stream and wetland characteristics, suggesting this system functions as a stream-wetland mosaic. At the downstream location, the channel had a moderate flow and supported aquatic obligate macrophytes, including watercress.

Table 1. Waterway classification assessment of Main 'Drain' 1: artificial vs natural modified.

Classification criteria	Criterion present in the watercourse? (yes/no)
Natural, modified waterway	
The following characteristics can aid in distinguishing a modified waterway from an artificial watercourse. If one or more of the following criteria are present, this may indicate a waterway is modified.	
Does the waterway convey water from natural sources, such as springs, snow melt, or a natural rainwater catchment?	Yes – a small upstream rainwater catchment is present. A groundwater connection is also likely, with the channel likely at least partially replacing historical wetland extent.
Does the watercourse mostly align with, or does it replace, a historical natural river, stream, or wetland?	Yes – this criterion is difficult to assess given limitations in historic knowledge at the site scale. While this channel has been constructed and is unlikely replacing a historic stream of similar size, it likely replaces historic wetland hydrological systems.
Is the bed of the watercourse made from natural materials, with evidence of substrate sorting processes?	Lack of evidence – this channel is highly modified, with a straightened form and numerous culvert crossings influencing flow and substrate transport. The streambed is dominated by soft substrates, which do not exhibit substrate sorting processes as clearly as coarser, hard-bottomed streams.
Does the watercourse meander?	No – the channel has been mechanically straightened.
Does the watercourse receive water from a larger natural water system?	Yes – The watercourse receives water from an upstream rainwater catchment and is also likely connected to the groundwater table.
Does the watercourse host riverine (and/or wetland) ecosystems?	Yes – wetland vegetation (including raupō) was observed at the upstream site, and aquatic macrophytes (including watercress) were present downstream. The watercourse provides suitable habitat for fauna such as tuna and kōura. Freshwater fish and macroinvertebrates are likely to utilise this habitat.
Waterway classification status	Natural - modified



Figure 2. Main 'drain' 1 at the upper (left) and lower (right) sites

Assessment - Main 'Drain' 2

Main 'drain' 2 was assessed at a reach within its downstream extent, near the project site boundary. This watercourse had some flow at the time of assessment and supported aquatic obligate macrophytes, including watercress.

Table 2. Waterway classification assessment of Main 'Drain' 2: artificial vs natural modified.

Classification criteria	Criterion present in the watercourse? (yes/no)
Natural, modified waterway	
The following characteristics can aid in distinguishing a modified waterway from an artificial watercourse. If one or more of the following criteria are present, this may indicate a waterway is modified.	
Does the waterway convey water from natural sources, such as springs, snow melt, or a natural rainwater catchment?	Yes – while only a small upstream rainwater catchment is present, a groundwater connection is also likely. The channel likely at least partially replaces historical wetland extent.
Does the watercourse mostly align with, or does it replace, a historical natural river, stream, or wetland?	Yes – this criterion is difficult to assess given limitations in historic knowledge at the site scale. While this channel has been constructed and is unlikely replacing a historic stream of similar size, it likely replaces historic wetland hydrological systems.

Is the bed of the watercourse made from natural materials, with evidence of substrate sorting processes?	Lack of evidence – this channel is highly modified, with a straightened form and numerous culvert crossings influencing flow and substrate transport. The streambed is dominated by soft substrates, which do not exhibit substrate sorting processes as clearly as coarser, hard-bottomed streams.
Does the watercourse meander?	No – the channel has been mechanically straightened.
Does the watercourse receive water from a larger natural water system?	Yes – The watercourse receives water from a small upstream rainwater catchment and is also likely connected to the groundwater table.
Does the watercourse host riverine (and/or wetland) ecosystems?	Yes –aquatic macrophytes (including watercress) were observed. The watercourse provides suitable habitat for fauna such as tuna and kōura. Freshwater fish and macroinvertebrates are likely to utilise this habitat. This is corroborated by eDNA monitoring carried out by the applicant within this watercourse. Shortfin tuna, common bully, gambusia, and goldfish were detected, indicating the watercourse provides sustained flow to support freshwater fauna.
Waterway classification status	Natural - modified



Figure 3. Main 'drain' 2 at the assessment reach

Assessment - Main 'Drain' 3

Main 'drain' 3 was flowing at the time of the assessment, and supported aquatic obligate macrophytes, including watercress.

Table 3. Waterway classification assessment of Main 'Drain' 3: artificial vs natural modified.

Classification criteria	Criterion present in the watercourse? (yes/no)
Natural, modified waterway	
The following characteristics can aid in distinguishing a modified waterway from an artificial watercourse. If one or more of the following criteria are present, this may indicate a waterway is modified.	
Does the waterway convey water from natural sources, such as springs, snow melt, or a natural rainwater catchment?	Yes – while only a small upstream rainwater catchment is present, a groundwater connection is also likely. The channel likely at least partially replaces historical wetland extent.
Does the watercourse mostly align with, or does it replace, a historical natural river, stream, or wetland?	Yes – this criterion is difficult to assess given limitations in historic knowledge at the site scale. While this channel has been constructed and may not be replacing a historic stream of similar size, it likely replaces historic wetland hydrological systems.
Is the bed of the watercourse made from natural materials, with evidence of substrate sorting processes?	Lack of evidence – this channel is highly modified with a straightened form. The streambed is dominated by soft substrates, which do not exhibit substrate sorting processes as clearly as coarser, hard-bottomed streams.
Does the watercourse meander?	No – the channel has been mechanically straightened.
Does the watercourse receive water from a larger natural water system?	Yes – The watercourse receives water from a small upstream rainwater catchment and is also likely connected to the groundwater table.
Does the watercourse host riverine (and/or wetland) ecosystems?	Yes –aquatic macrophytes (including watercress) were observed. The watercourse provides suitable habitat for fauna such as tuna and kōura. Freshwater fish and macroinvertebrates are likely to utilise this habitat. This is corroborated by eDNA monitoring carried out by the applicant within this watercourse. Shortfin tuna, common bully, gambusia, and goldfish were detected, indicating the watercourse provides sustained flow to support freshwater fauna.
Waterway classification status	Natural - modified



Figure 4. Main 'drain' 3 at the assessment reach

Assessment - other watercourses located across the site

In addition to the three primary waterways located on the site, there were various other watercourses observed during the site visit. For simplicity, these channels are described collectively below.

These watercourses all had straight mechanically formed channels, and similarly to those assessed above, likely convey water that would originally have been part of a wetland hydrological system. This is corroborated by the wetland vegetation observed within and adjacent to many of the channels, and knowledge of potential historical site characteristics.

The channels show some variance in size; several of the larger channels were flowing at the time of assessment and were similar in character to the three primary waterways assessed above. A number of the smaller channels had little flow, with wetland vegetation rooted in the bed.

Table 4. *Waterway classification assessment of the subset of smaller channels observed onsite: artificial vs natural modified.*

Classification criteria	Criterion present in the watercourse? (yes/no)
Natural, modified waterway	
The following characteristics can aid in distinguishing a modified waterway from an artificial watercourse. If one or more of the following criteria are present, this may indicate a waterway is modified.	
Does the waterway convey water from natural sources, such as springs, snow melt, or a natural rainwater catchment?	Likely – the channels ranged from having small upstream rainwater catchments to effectively no upstream catchment. Groundwater connections are probable given that these channels are likely at least partially replacing historical wetland extent.
Does the watercourse mostly align with, or does it replace, a historical natural river, stream, or wetland?	Yes – this criterion is difficult to assess given limitations in historic knowledge at the site scale. While these channels have been constructed and may not be replacing historic streams of similar size, they do likely replace a historic wetland hydrological system.
Is the bed of the watercourse made from natural materials, with evidence of substrate sorting processes?	Lack of evidence – the channels are highly modified with a straightened form. The streambeds are dominated by soft substrates, which do not exhibit substrate sorting processes as clearly as coarser, hard-bottomed streams.
Does the watercourse meander?	No – the channels have all been mechanically straightened.
Does the watercourse receive water from a larger natural water system?	Likely – Several of the watercourses receive water from small upstream rainwater catchments, with connection to the groundwater table likely, given the nature and history of the site.
Does the watercourse host riverine (and/or wetland) ecosystems?	Yes – wetland vegetation was observed within many of the channels, with aquatic macrophytes present in the channels sustaining more flow. Some of the watercourses would provide suitable habitat for fauna such as tuna and kōura. Freshwater fish and macroinvertebrates are likely to utilise these habitats.
Waterway classification status	Natural - modified





Figure 5. Photographs taken of the various smaller channels observed onsite

Further comments

The watercourses located within the Foxton Solar Farm project area have all been assessed as modified waterways. This classification was consistently reached due to the nature of the site, with these channels likely replacing wetland hydrological systems within a dune landscape that is thought to have previously occurred at the site. In fact, several pockets of wetlands remain on the site, and wetland vegetation was observed adjacent to several of the waterways. Given that these channels are replacing natural hydrological systems, they are considered to be modified waterways as opposed to artificial farm drains.

The conclusions summarised above differ from those of the applicant, who classified all of the channels on site as artificial farm drainage canals. However, it is key to note that this difference in conclusion stems from a matter of interpretation only. Both parties agree that these channels are likely replacing historic wetland extent, with the Ecological Impact Assessment (Appendix I) stating that: *“The drains on the site are most likely to exist to drain wetlands that are likely to have historically been present.”*

The interpretation applied in this report is based on legal advice sought by Horizons and has been consistently applied across the region for several years. The criteria applied have an ecological foundation, ensuring that although the natural aquatic ecosystems previously present on the site have been greatly altered, they are still recognised as modified natural waterways and managed accordingly.

Conclusions

There are a number of watercourses located within the proposed Foxton Solar Farm Project Area. The watercourses I observed during a site visit made on 28 April 2026 meet the criteria of modified waterways and therefore meet the definition of a river under the Resource Management Act 1991.

If you have any questions, please do not hesitate to contact me.

Regards,

Laura Hickey | Freshwater Scientist