Memo

File No:	22 02 09
Date:	12 September 2025
To:	Hugh Keane – Team Leader Consents, RUD
From:	Jonathan Caldwell – Senior Scientist (Environmental Chemistry), SPI
Subject:	**Comments on Green Steel's proposed consent conditons**

I have been asked to provide commentary on the adequacy of the draft conditions to manage discharges from the steel recycling process, and any additional conditions that are considered necessary to ensure the effects of these discharges on the environment are no more than minor.

Comments are specifically sought on:

- Conditions relevant to stream monitoring;
- Conditions relevant to management of the proposed monofils including bond conditions on the monofils; and
- Reference to the requirement for addressing acid sulfate soils management in the Earthworks and Sediment control plan.

In providing my comments I have referred to:

- Proposed consent conditions Attachment 07
- FTAA-2506-1074 Green Steel Portal Substantive Application Documents - July 2025

Acid sulfate soils

I recommend that Condition 19 is amended as follows to include the need to address management of acid sulfate soils in the event that they are discovered (refer to underlined additions):

Condition 19

The Consent Holder must provide the Waikato Regional Council with a draft "<u>Earthworks Management and</u> Erosion and Sediment Control Plan" (<u>EM&</u>ESCP), at least 10 working days prior to the commencement of activities authorised by this consent. The objective of the E&SCP must be to minimise sediment discharge from the site to the extent practicable <u>and address the management of any discharges associated with the disturbance of acid sulfate soils in the event that they are encountered during earthworks</u>.

The E&SCP must as a minimum be based upon and incorporate those specific principles and practices which are appropriate for the activity authorised by this consent and contained within the Waikato Regional Council document titled "Erosion and Sediment Control – Guidelines for Soil Disturbing Activities" (Technical Report No. 2009/02 – dated January 2009) and <u>Waikato Regional Council's Acid</u>

Sulfate Soils Technical Guidance (Technical Report 25-25, currently being finalised for publication) and must include at least the following;

Subconditions i. to ix. as proposed but with the addition of subcondition x. as follows:

x. Contingency plan details for managing the effects of acid leachate discharges to the environment in the event that acid sulfate soils are encountered during earthworks.

Monofill conditions

I recommend adding in specific identification of the northeast and southwest sites as follows to:

Condition 150

The Consent Holder must ensure that leachate capture for the northeast and southwest monofill sites is maintained on an ongoing basis and that any leachate is temporarily stored in tanks and then transported off-site by tanker truck for treatment.

In addition to this there needs to be a specific condition around the installation of the liner, under liner drainage and leachate collection system to ensure it is effectively constructed and installed for both of the monofills.

I therefore propose the following condition which ideally should come before Condition 150.

Condition XX

The Consent Holder must provide the Waikato Regional Council with a draft "Liner and Drainage Installation Quality Control Plan" at least three months prior to the construction of the monofill Class 1 liner and drainage systems for peer review by an independent reviewer who is a suitably qualified and experienced practitioner.

The "Liner and Drainage Installation Quality Control Plan" shall set out how the Consent Holder will verify that the constructed Class 1 lining system and drainage system meets the specified requirements. It shall also set out the reporting requirements at the various stages of construction including the reporting of results of pinhole and welding testing.

The "Liner and Drainage Installation Quality Control Plan" must be certified in writing by the Waikato Regional Council acting in a technical certification capacity prior to any works authorised by this consent commencing and the Consent Holder must undertake all liner and drainage construction authorised by this consent in accordance with the certified "Liner and Drainage Installation Quality Control Plan".

I would also recommend that there is a condition requiring provision of a closure plan for the two monofills. Condition 29 does refer to the need for details and evidence of all stabilisation and site close-out aspects to be provided top WRC and WDC for certification after each stage of works but it doesn't specifically refer to capping and close out of the two monofills. Likewise, condition 61 on Landscaping is about generic amenity value for the whole site rather than specific to ensuring proper closure and management of the monofills. My recommendation would be to have a specific Monofill Closure and Rehabilitation plan under the Monofill section of the consent conditions as follows:

Condition XY
No later than 12 months following the commencement of this consent, the Consent Holder must submit to Waikato Regional Council, for approval in a technical certification capacity, a Monofill Closeout and Rehabilitation Management Plan "MCRMP" for the Southwest and Northeast Monofills.

The MCRMP shall include, but not be limited to, the following matters:

(a) Identification of the final (future) landform once fill operations have ceased and each fill area has been capped;
(b) An implementation strategy that clearly identifies the timing of all rehabilitation and restoration works within the filling stage areas including:
    (i) identification and timing of progressive and closure rehabilitation works;
    (ii) on-going management strategy for weed and pest control; and
    (iii) procedures to be adopted in the handling and storage of topsoil, subsoil and overburden materials to ensure their continued viability for establishing pasture (or other identified vegetation cover).
(c) The design, construction procedures and stability of the final landform, including the maintenance of flows to the downstream receiving environments;
(d) Measures to avoid the over compaction of soils;
(e) Stormwater drainage/soakage of the final landform;
(f) Ecological enhancements;
(g) Reporting and review outcomes;
(h) The achievement of the minimum fill site cover and capping requirements;
(i) As-builts for subsoil drainage; and
(j) Any ongoing monitoring following site closure.

The Consent Holder shall undertake the mitigation and rehabilitation of the filling area in accordance with approved MCRMP and under the supervision of persons with appropriate restoration and rehabilitation experience.

The Consent Holder shall review and update the MCRMP every 3 years and within 6 months of any decision to cease filling operations at the site. Any changes (excluding changes to contact person and contact details etc.) to the MCRMP must only be made with the written approval of the Waikato Regional Council.

I also recommend including a standard bond condition. The two recent relevant examples include the Bond conditions used for Gleeson's Managed Fill consent:

- AUTH144475 Schedule One - General Conditions.docx
  (https://discover.wairc.govt.nz/otcs/llisapi.dll/link/29798569)

And GRP Limited's C&D landfill consent:

- AUTH138113 - Schedule One - General Conditions.docx
  (https://discover.wairc.govt.nz/otcs/llisapi.dll/link/21144507)

Condition 153

The Consent Holder must arrange for surface water sampling to be undertaken following significant rainfall events during the first year of operation by a suitably qualified person to demonstrate compliance against the following trigger values in the Table below, and be undertaken in accordance with the notes below.

The wording of this condition needs some amendment as it refers to monitoring only during the first year of operation. This should be an ongoing routine requirement. Significant rainfall events also need to be defined. In addition to this, I recommend some changes to the table and also I do not recommend that total hardness or dissolved organic carbon is measured for purposes of modifying the copper DGV as the intention is for modification based on hardness and DOC in the receiving water only i.e. the Waipapa stream. Therefore, this approach should only be used for stream monitoring.

In assessing the proposed monitoring locations for SRP, leachate sub-soil drainage as well as stream monitoring, a sampling plan or map is needed as I find it very difficult to determine what is being proposed. I have therefore drafted my own sampling plan to help guide my recommendations (refer Figure 1 below). I recommend that a finalised sampling plan similar to this is included in the consent itself so locations and names of sampling points are clear.

I also recommend the addition of cadmium and lead which are common metals associated with vehicle waste and were identified in the leachate trials. I also recommend the inclusion of a TPH limit as there will be various sources of TPH on site. I also recommend that dissolved metal trigger limits for the SRP discharges are set at the Australian and New Zealand Freshwater default guideline value for 90% Species Protection (ANZG (2018) DGV) as there has been no results provided yet of baseline conditions in the stream that the SRP will discharge to and therefore it is necessary to set a more conservative trigger limit than the 80% protection values. We also need to be mindful that new default guideline values for copper, zinc and nickel are imminent for release by ANZG which are quite a bit lower than the current values.

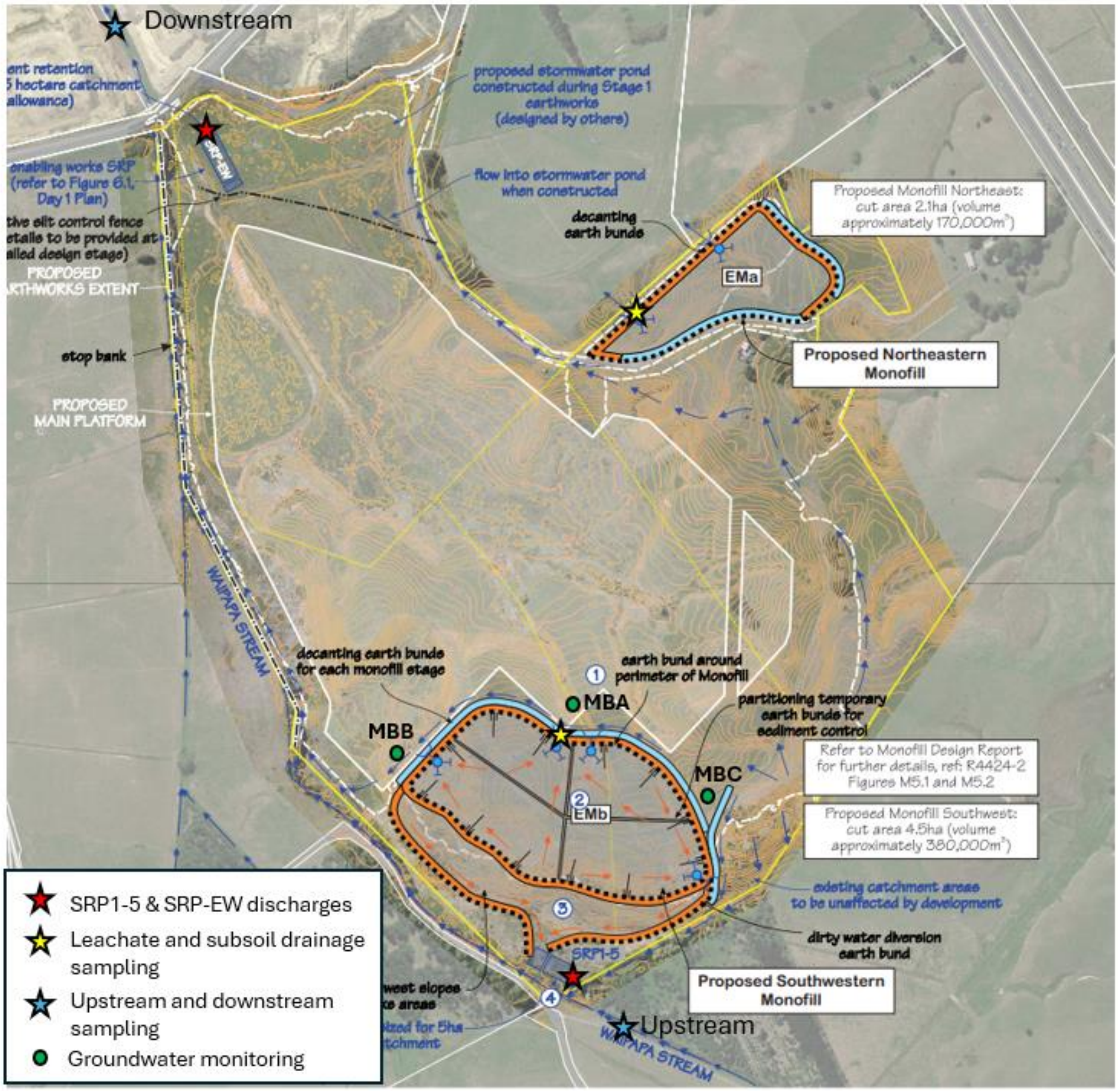

Figure 1. Assumed sampling locations.

I therefore recommend the following amendment to Condition 153:

The Consent Holder must arrange for surface water sampling to be undertaken within 24 hours of the following rainfall trigger events from the outlet flow of the sediment retention ponds (SRP1-5 and SRP-EW) at a minimum of four times per year, excepting times when there are no discharges, until such time as the fill activities on site have ceased and the site has undergone closure and afterworks rehabilitation:

(i) ≥ 15mm in one hour; or
(ii) ≥ 25mm in any 24-hour period.

Discharge water samples from the sediment retention ponds shall be submitted to an accredited laboratory for analysis of the following parameters with the requirement to include PFOS and PFOA dependent on the trace level detection of any PFAS compound in leachate or sub-soil drainage samples within the previous 12 months:

Parameters	Trigger Value[1] (mg/L)
pH	6.5 to 9.0
Electrical Conductivity	-
Chemical Oxygen Demand	-
Total Suspended Solids	100
Dissolved boron	1.5
Dissolved cadmium	0.0004
Dissolved chromium	0.006
Dissolved copper	0.0018
Dissolved lead	0.0056
Dissolved nickel	0.013
Dissolved zinc	0.015
Total petroleum hydrocarbons (TPH)	15[2]
PFOS	0.00013[3]
PFOA	0.22[3]

1. Dissolved metals - Australian and New Zealand Freshwater default guideline value (ANZG (2018) DGV) for 90% Species Protection.
2. MfE (1989) Petroleum Guidelines. To avoid visible sheens.
3. Ecological water quality guideline values for 95% Species Protection. PFAS National Environmental Management Plan 3.0, National Chemicals Working Group of the Heads of EPA Australia and New Zealand.

Notes

- All Sampling must be undertaken as grab samples at the locations specified as monitoring points in the monitoring plan in Schedule 1.
- Samples must be held in laboratory-supplied containers.
- Chain-of-custody documentation must be completed for all samples.
- Samples must be kept in cooler boxes (on ice) and dispatched to the laboratory within one day of collection.
- All sample analyses must be undertaken in accordance with “Standard Methods for the Examination of Water and Wastewater, APHA 2012” or the current acceptable equivalent method.

And I recommend including the following condition:

Within 5 working days of the receipt of water sampling results, the Consent Holder shall ensure that all results of the analysis are forwarded to Waikato Regional Council.

Also need to include a consent condition that identifies actions in response to trigger limit exceedances such as the requirement for repeat sampling within a specified time after identifying exceedances and additional actions after that if repeat sampling also identified exceedances such as an investigation into potential reasons for the exceedances and remedial actions to be taken.

Condition 154

Should water flow from the subsoil drainage beneath the monofill sites become regular, then monitoring of water quality in these areas must be conducted in accordance with condition 151.

Advice note
The subsoil drains ensure that the liner subgrade is fully drained, and they also act as an early warning leak-detection system. The drains discharge by gravity to a monitoring manhole located near the low point of the monofill floor.

I agree with this consent condition but would recommend that as a minimum, sampling of the sub-soil drainage should occur on an annual basis. There should also be trigger limits included that are designed to identify if leakage is occurring and the triggering of certain actions to be taken.

On that basis I would recommend inclusion of a table as per below for inclusion with this consent condition. I would recommend that for PFAS that this is based on any PFAS compound identified above trace level detection limit. For the other parameters this may need to be based on an understanding of the baseline groundwater conditions with some allowance above the mean baseline GW concentrations based on statistical analysis for example.

Reference should also be made to the sampling points in the Monitoring plan in Schedule 1 for the sub-soil drainage collection points for the Northeastern and Southwestern monofills.

Parameters	**Trigger Value** (mg/L)
pH	6.5 to 9.0
Electrical Conductivity	
Chemical Oxygen Demand	
Dissolved boron	
Dissolved cadmium	
Dissolved chromium	
Dissolved copper	
Dissolved lead	
Dissolved manganese	
Dissolved nickel	
Dissolved zinc	
PFAS (standard lab analysis suite)	Above trace level detection limit

Condition 155
The Consent Holder must arrange for the annual sampling and analytical testing by suitably qualified person(s) of the leachate to be conducted for a full suite of parameters provided in the table below.

I agree with the annual sampling and analysis of the collected leachate but there needs to be reference to the sampling locations identified in the Monitoring plan in Schedule 1 for the leachate collection points for the Northeastern and Southwestern monofills.

I agree with the proposed table under Condition 155 but recommend that cadmium is also included in the analysis and that the analytical method for analysis is specified which should be acid soluble. This sampling condition in my view would not require trigger limits but rather the purpose of this monitoring would be to help identify any trends in leachate concentrations which could be used for helping interpret any changes occurring in sub-soil drainage concentrations and groundwater and surface water concentrations.

Condition 156

The Consent Holder must engage an independent groundwater specialist to undertake sampling and testing of biennial groundwater samples (from proposed groundwater monitoring bores which are to be established and used for groundwater monitoring). Groundwater sampling must demonstrate compliance with the following in the Table and must be undertaken in accordance with the notes below:

The wording indicates that GW monitoring is only to take place once every two years but the accompanying table under Condition 156 indicates a different list of parameters for two yearly monitoring and 6 monthly monitoring. With reference to Attachment 18 it appears that the proposal is for 6 monthly sampling and analysis to be undertaken in house by Green Steel staff and two yearly to be undertaken by an independent specialist and analysis by a certified lab.

I recommend that the condition wording is amended to require biannual (6 monthly) monitoring to be undertaken by a suitably qualified and experienced practitioner with samples to be collected from MBA, MBB and MBC for the southwestern monofill as identified in the Monitoring Plan in Schedule One and submitted to an accredited laboratory for analysis of the following parameters. Groundwater monitoring bores should also be identified for the Northeastern monofill with the same requirements for monitoring.

Parameters	**Trigger Value[1]**
pH	
Electrical Conductivity	
Chemical Oxygen Demand	
Alkalinity	
Sulphate	
Chloride	
Reactive silica	
Sodium	
Dissolved arsenic	0.14
Dissolved boron	2.5
Dissolved cadmium	0.0008
Dissolved chromium	0.04
Dissolved copper	0.0025
Dissolved lead	0.0094
Dissolved manganese	3.6
Dissolved mercury	0.0054
Dissolved nickel	0.017
Dissolved zinc	0.031
PFAS (standard lab analysis suite)	Above trace level detection limit

1. Dissolved metals (mg/L) - Australian and New Zealand Freshwater default guideline value (ANZG (2018) DGV) for 80% Species Protection

<u>Notes</u>

- The water level (static water level) will be measured from the top of the casing before each sampling occasion.
- Samples will be collected with disposable groundwater bailers and placed in laboratory-supplied containers.
- Before sampling, a minimum of three casing volumes of water will be removed from the borehole. Alternatively, temperature, conductivity (EC) and pH measurements will be monitored, and sampling undertaken once these parameters have stabilised.
- Samples to be analysed for dissolved constituents will be field-filtered whenever practicable.
- Chain-of-custody documentation must be completed for all samples.
- Samples must be kept on ice (cooler bins) and dispatched to the laboratory within one day of collection.
- All sample analyses will be undertaken in accordance with "Standard Methods for the Examination of Water and Wastewater, APHA 2012.
- Sampling and testing of half-yearly groundwater samples is to be conducted by Green Steel staff on-site or own laboratory.

I would also recommend adding in the following condition:

Within 5 working days of the receipt of ground water sampling results, the Consent Holder shall ensure that all results of the analysis are forwarded to Waikato Regional Council.

Condition 157
In the case of biennial groundwater monitoring data obtained via condition 154 differing by more than two standard deviations (2SD), then monitoring of the parameter in the particular bore must be changed to a sampling frequency as agreed with Waikato Regional Council.

I'm not really sure about this condition. I think it is referring to the GW monitoring under condition 156 rather than 154. Also, I'm not sure what's been proposed with regards to the difference in two standard deviations when we actually have specified trigger limits? However, I agree with conditions 158, 159 and 160 which identifies actions in response to trigger limit exceedances such as the requirement for repeat sampling within a specified time after identifying exceedances and additional actions after that if repeat sampling also identified exceedances such as an investigation into potential reasons for the exceedances and remedial actions to be taken. But I would recommend that the conditions specify the period of time e.g. 10 working days for requiring repeat monitoring to be undertaken and then a specified time for proposing a plan for further investigation in consultation with WRC so that there are clear and measurable timeframes identified in the consent conditions.

Stream monitoring
Condition 96
This condition specifies the requirements around baseline stream monitoring at an upstream and downstream location in the Waipapa Stream.

While I agree with the proposed contaminant analysis suite identified in subcondition 96 c) I recommend that atleast 10 rounds of baseline monitoring over a period of 1 year is undertaken prior to monofill filling in order to provide evidence of seasonal variation and provide a robust statistical basis for setting trigger limits.

Following this there should be a requirement for ongoing quarterly stream monitoring to be undertaken for these parameters with a requirement to include the standard suite of PFAS compounds should there be a detection of any PFAS compounds in the SRP sampling, sub-soil drainage or leachate sampling or the Groundwater sampling.

Cleanfill conditions

Condition 69

I recommend that the associated acceptance criteria identified in Table 1, 2 and 3 of this condition is replaced with the following table which is the criteria we currently specify for cleanfill in the Waikato region:

Trace elements	**Acceptance criteria (mg/kg)**
Arsenic	17
Boron	15
Cadmium	0.8
Chromium	56
Copper	120
Lead	78
Mercury	1
Nickel	33
Zinc	175
Organic compounds	**Acceptance criteria (mg/kg)**
TPH C7-C9	110
TPH C10-C14	58
Benzene	0.11
Ethylbenzene	1.1
Toluene	1.0
Total Xylene	0.61
Benzo[a]pyrene (equivalent)	2
Dieldrin	0.1
Total DDT	0.7