Lincoln Recycling Facility Environmental Permit Application

Site Condition Report

GBCTR Limited

Unit 16, Electric Avenue, Witham St Hughs, Lincoln LN6 9BJ

Prepared by:

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Basis of Report

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Appendices

1.0 Introduction

SLR Consulting Limited (SLR) has been instructed by GBCTR Ltd (GBCTR) to prepare an application for an Environmental Permit (EP) for the proposed Lincoln Recycling Facility located at Unit 16, Electric Avenue, Witham St Hughs, Lincoln LN6 9BJ (the site).

The proposed facility will carry out a number of installation activities, directly associated activities and waste operations associated with the recycling of the following waste streams:

- End-of-life solar panels;
- End-of-life batteries from solar farms and Electric Vehicles.

Some pre-treatment activities will be carried out externally to the building, but all mechanical treatment will take place within a fully enclosed building. The site is a new-build and benefits from an impermeable surfacing and sealed drainage.

1.1 Context and Objectives of the Site Condition Report

This Site Condition Report (SCR) aims to record and describe the condition of the land prior to the commencement of any operations within the proposed EP installation boundary. It has been prepared in accordance with the Environment Agency's (EA) Site Condition Report H5 guidance with regards to the requirements of a baseline report to meet the requirements of Article 22 (2) of Industrial Emissions Directive (IED).

This SCR will provide a point of reference and baseline environmental data so that when the EP is surrendered it can be demonstrated that there has been no deterioration in the condition of the land as a result of the Installation operations and ensure that the condition of the land is in a 'satisfactory state'.

Additionally, where an environmental permitted activity produces, uses or releases Relevant Hazardous Substances (RHS) (as detailed in Article 3(128) of the IED), a risk assessment is required in accordance with Article 22(2). This SCR also includes an assessment of potential risk from RHS.

The location of the site is illustrated in Drawing 001. The site layout; site boundary and proposed EP boundary and emission points are presented on Drawing 002.

Sections 1 to 3 of the EA's SCR template[1] have been completed within this document and comprise the following aspects:

- Site details;
- Condition of the land at permit issue;
- Geology;
- Hydrology;
- Hydrogeology;
- Pollution history;
- Evidence of historic contamination; and

[1] EA Environmental Permitting Site Condition Report Guidance https://www.gov.uk/gov7ernment/publications/environmental-permitting-h5-site-condition-report accessed January 2026.

- Permitted activities.

Sections 4 to 7 of the SCR template will be maintained during the life of the EP and Sections 8 to 10 will be completed and submitted in support of the application to surrender the EP

1.1.1 Sources

The following sources have been utilised in the preparation of this SCR:

- Multi Agency Geographical Information for the Countryside[2] (MAGIC) map.
- British Geological Survey[3].
- EA. Flood map for planning[4]
- ECHA: European Chemicals Agency Substance Information[5].
- Water Framework Directive Environmental Agency Confirmed Hazardous Substances List[6].

The following reports have also been reviewed and are referred to in this report and should be read in conjunction with it:

- NTW2253/01/V2 Phase 1 Geo-Environmental Desk Study, BWB, October 2014 (a copy of which is enclosed in Appendix A);
- Phase 2 Geo-Environmental Assessment, BWB, April 2020 (a copy of which is enclosed as Appendix B); and
- St Modwen Park Lincoln: IBAA Report, BWB, March 2023 (a copy of which is enclosed as Appendix C).

2.0 Site Condition Report

2.1 Site Details

Applicant	Company Name
Address	Unit 16, Electric Avenue, Witham St Hughs, Lincoln LN6 9BJ
National Grid Reference	SK 8861 8294
Site Area	2.7 Ha
Document Ref for Site Condition Report	Site Condition Report – 416.066578.00002 (this report).
Figure References	• Drawing 002a/b - Site Layout • Drawing 003 – Environmental Setting & Receptors • Drawing 004 – Fire Prevention Plan.

[2] Multi-Agency Geographical Information for the Countryside Map, available at www.magic.defra.gov.uk, accessed in November 2025.

[3] British Geological Survey, available at http://www.bgs.ac.uk, accessed November 2025.

[4] Flood map for planning, available at https://flood-map-for-planning.service.gov.uk/, accessed November 2025.

[5] ECHA: European Chemicals Agency Substance Information. Accessed at: Homepage - ECHA (europa.eu). Accessed in November 2025.

[6] Water Framework Directive Environmental Agency Confirmed Hazardous Substances List. Accessed at '2018 01 31 Confirmed hazardous substances list_0.pdf (wfduk.org)'.

2.1.1 Current on-Site Land Use

Infrastructure at the facility comprises a new-build vacant warehouse, yard and carparking areas with impermeable surfacing, together with attenuation ponds, landscaping and drainage to manage rainfall-derived surface water run-off.

2.1.2 Proposed on-Site Land Use

The proposed facility will carry out a number of waste recycling activities to treat end-of-life solar panels and end-of-life batteries from solar farms. All mechanical treatment will take place within a fully enclosed building. Incoming end-of-life solar panels and batteries are stored outside the building, in weatherproof packaging and containers respectively. Cleaning of solar panels and discharging of batteries is carried out external to the building but in covered areas. The external yard also benefits from impermeable surfacing and a sealed drainage system.

2.1.3 Current Surrounding Land Use.

A summary of the immediate surrounding land use is provided in Table 1.

Table 2 Surrounding Land Uses

Boundary	Description
North	Industrial premises
East	Open land and residential properties
South	Open land and the CEMEX Swinderby Quarry
West	Industrial premises and former RAF Swinderby site

2.2 Condition of the Land at Permit Issue

Environmental setting including: • geology • hydrogeology • surface waters	**Geology** A review of the British Geological Survey (BGS)[3] mapping reveals that the site is directly underlain by superficial deposits of the Balderton Sand and Gravel Member (BSG) overlying the bedrock of mudstone and limestone from the Scunthorpe Mudstone Formation (SMF). The recorded ground conditions from a review of exploratory holes drilled in 2020 indicates the following typical local geology: • Topsoil: 0 to 1.2m below ground level (bgl). • Hardstanding: 0 to 0.15m bgl. • Made Ground: 0 to 1.4m bgl. • Reworked Natural: 0.4m to 1.8m bgl. • Relic Topsoil: 1.8m to 2m bgl. • BSG: 0.3m to >4.45m bgl (depth unproven).

	Intrusive investigations undertaken in 2014[7] found ground conditions to comprise concrete to depths of up to 0.25m bgl over Made Ground to depths between 0.4m and 1.1m bgl. Made Ground was generally described as orange-brown sand and/or gravel, with some areas being slightly clayey and two locations being either a grey black or brown colour. Gravels within the Made Ground were generally limestone, flint, quartzite, brick and concrete. One location identified Topsoil beneath the Made Ground. Incinerator Bottom Ash Aggregate (IBAA) has been imported to the site[8] for use a sub-base (not exceeding 0.7m) to the external yard and car parking areas to the north, the footpath to the south and the road to the east of the site. The IBAA sub-base is overlain with low permeability and durable bitmac or concrete. The BWB report confirms that the use IBAA was in compliance with the Environment Agency Remediation Position Statement 247: '*Using unbound incinerator bottom ash aggregate (IBAA) in construction activities: RPS 247'*, dated 11th April 2022 **Hydrogeology** The underlying ground conditions have been classified by the Environment Agency (EA) as follows: BSG: Secondary A Aquifer. SMF: Unproductive Strata. <u>Groundwater</u> The 2020 Phase 2 report[9] notes that initial ground investigation has recorded groundwater to be present at depths between 2.3m and 3.0m bgl within the BSG. Subsequent monitoring recorded groundwater at depths between 2.32m and 2.36m bgl, with groundwater flow predominantly in a northerly and north-easterly direction. <u>Groundwater Abstractions</u> The site is not located within a source protection zone for groundwater. The closest source protection zone is located approximately 8km east of the site. There are 11 groundwater abstraction licence records within 2000m of the site, the nearest being 626m to the south (upgradient) of the site. **Hydrology**

[7] NTW2253/01/V2 Phase 1 Geo-Environmental Desk Study, BWB, October 2014 (Appendix A)

[8] St Modwen Park Lincoln: IBAA Report, BWB, March 2023 (Appendix C).

[9] Phase 2 Geo-Environmental Assessment, BWB, April 2020 (Appendix B);

	The nearest surface water feature to the site is a pond which lies adjacent to the site's northwestern boundary, followed by a pond 20m to the northeast of the site and a lake located 610m to the south. There are several drains to the northwest, north, east and southeast of the site, the nearest is located 410m north of the site. Surface Water Abstraction There are 2 abstraction licence records within 2,000m of the site, the nearest being 1,644 to the southeast. Flood Risk The Flood Map for Planning[4] reveals that the site lies within a Flood Zone 1, defined as locations that have a low probability of flooding meaning land that has a less than 0.1% chance of flooding from rivers or the sea.
Pollution history including: • pollution incidents that may have affected land • historical land-uses and associated contaminants • any visual/olfactory evidence of existing contamination • evidence of damage to pollution prevention measures	**Site Land Use** **1886:** open fields with farms located to the northwest and northeast. A tree plantation located to the east of the site. **1951-1955**: Farms are no longer present and land is marked as RAF Swinderby Airfield. Tree plantation no longer mapped. **1965:** notable development of the airfield but buildings are not labelled. **1979:** two electrical sub-stations located on the eastern boundary and centre of the site. **1979 – 2012:** no significant changes. The site is indicated to have comprised undeveloped agricultural land until the 1950s, by which time the airfield at RAF Swinderby was developed. By 1965, several buildings can be seen on site associated with the airfield, although limited mapping is available between the 1950s and 1965, so it is likely the buildings were present prior to 1965. Additionally, by 1975, a tank can be seen in the southeastern corner, which is understood to have been used for storage of aviation fuel. No significant changes are noted from 1994 to 2012. The Phase 1 report[7] carried out in 2014 notes that the wider site is occupied by two former aircraft hangars, one of which was being used as a packaging logistics company and the other disused and vandalised. The external concreted and asphalted areas were noted to be in reasonable condition with some areas having undergone degradation. Stockpiles of demolition rubble were present. The Phase 2 report in 2020 notes that the site was covered by concrete and asphalt hardstanding ground

	associated with historical roadways and building footprints. In the east of the site was a small disused structure and several mature trees and scrubs. **Surrounding Land Use** **1886:** open land, agricultural and moorland. **1951 – 1955:** area has been cleared for use as airfield. **1965:** Runways are apparent to the north, south and west of the site and buildings are present to the east. **2012:** A residential development William St. Hughs has been constructed and runways are no longer mapped. **Pollution History**[10] Pollution Incidents There are no records of incidents within 500m of the site. Discharge Consents No licensed discharge consents within 500m of the site. Control of Major Accident Hazards (COMAH) Sites One COMAH site, British Gas Lp Gas (t/a Supergas Ltd) (historical NIHHS site) 330m to northeast of the site Dangerous Substances Sites One List 2 Dangerous Substances Inventory Site, Vip Bin Cleaning within 250 and 500m of the site. Integrated Pollution Prevention and Control sites None recorded within 500m Landfill & Waste Sites No landfills recorded within 5km of the site. Four permits for composting and treatment of waste wood located at Ansons Farm, 1,385m to the northwest.
Evidence of historic contamination, for example, historical site investigation, assessment, remediation and verification reports (where available)	On-site contaminants Chemical testing of soils undertaken in 2014 recorded one marginal exceedance of naphthalene and slightly elevated hydrocarbon concentrations within one borehole at the site. Significantly elevated hydrocarbon concentrations were identified within groundwater in the south eastern, central and northern parts of the wider site as part of the 2014 investigation. A subsequent detailed quantitative risk assessment and ground water sampling exercise identified contamination plumes in this part of the site to be from existing sources and whilst modelling suggested that off-site migration of

[10] GroundSure EnviroInsight report Appendix II to the Phase 1 Geo-Environmental Desk Study, BWB, 2014

	contamination was not currently occurring this could not be discounted in future. However, it was concluded that the proposed redevelopment of the site would remove the source and restrict future mobility though increasing the hardstanding at the site. Ground gas monitoring recorded flow rates and methane concentrations as <0.1% v/v and carbon dioxide concentrations between 1.9% v/v and 6.1% v/v. The 2020 Phase 2 investigation found the following additional contaminants: • Marginally elevated concentrations of heavy metals and cyanide in soil leachate; and • Marginally elevated concentrations of heavy metals in groundwater. Overall, the Phase 2 investigation concluded that the site is considered *'to pose a LOW risk to controlled waters due to hardstanding considered to be covering the majority of the proposed commercial development, which will reduce rainwater infiltration rates and therefore somewhat mitigate the risk to controlled waters.'* <u>Off-site contamination</u> The Phase 1 report refers to *'Desk Study for Military Related Contamination at RAF Swinderby, Lincolnshire'* by BAE Systems Property & Environmental Services for the BWB Partnership, dated March 2002, reference A186-00-R2-1 which assessed potential contamination related to the use of the airfield, including a bombing raid in 1940. The report concluded a moderate to low risk of unexploded ordnance and contamination to the wider site, but that the risks on-Site were low.
Baseline soil and groundwater reference data	Refer to Information in the supporting reports below.
Supporting information	Phase I Report, BWB, 2014; Phase 2 Geo-Environmental Assessment, BWB, April 2020, St Modwen Park Lincoln: IBAA Report, BWB, March 2023, MAGIC maps; British Geological Survey.

2.3 Baseline Soil and Groundwater Reference Data

The European Commission Guidance concerning baseline reports under *Article 22(2) of Directive 2010/75/EU on industrial emissions 2014/C 136/03*[11], outlines that a number of key tasks should be undertaken to both determine whether a baseline report needs to be produced for a particular situation and in order to produce the baseline report itself. Eight stages have been identified in this process, covering the following main elements:

- Stages 1-3: to decide whether a baseline report is required;
- Stages 4-7: to determine how a baseline report has to be prepared; and
- Stage 8: to determine the content of the report.

Where during stages 1-3 it is demonstrated on the basis of the available information that a baseline report is not required, the IED state the '*there is no need to progress to the later stages*'. However, a record of this decision should be provided to the competent authority.

2.3.1 Stages 1-3

- Stage 1: Identify which hazardous substances are used, produced or released at the installation and produce a list of these hazardous substances.
- Stage 2: Identify which of the hazardous substances from Stage 1 are 'relevant hazardous substances' (RHSs). Discard those hazardous substances that are incapable of contaminating soil or groundwater. Justify and record the decisions taken to exclude certain hazardous substances.

  Relevant hazardous substances' *are those substances or mixtures defined within Article 3 of Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP Regulation) which, as a result of their hazardousness, mobility, persistence and biodegradability (as well as other characteristics), are capable of contaminating soil or groundwater and are used, produced and/or released by the installation.*
- Stage 3: For each relevant hazardous substance brought forward from Stage 2, identify the actual possibility for soil or groundwater contamination at the site of the installation, including the probability of releases and their consequences, and taking particular account of:
  - the quantities of each hazardous substance or groups of similar hazardous substances concerned;
  - how and where hazardous substances are stored, used and to be transported around the installation;
  - where they pose a risk to be released; and
  - in the case of existing installations also the measures that have been adopted to ensure that it is impossible in practice that contamination of soil or groundwater takes place.

2.3.2 Stages 4-7

Stages 4 to 6 involves the collation of site-specific data to outline the site history and environmental setting to outline the sensitivity of the site to potential risk from accidental releases of RHS.

[11] Communication from the Commission — European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions (europa.eu)

Stage 7 outlines the requirement to collect intrusive soil and groundwater data to characterise the land at the start of permitted activities and set the ‘baseline’ land quality data.

2.3.3 Stage 8

Stage out outlines the requirement for a baseline report in line with Article 22(2) of the IED.

2.3.4 IED Baseline Assessment for the Site

Set out below in Table 2 are details of how GBCTR will meet the baseline data requirements for theSite.

Table 2 Industrial Emissions Directive Baseline Data Requirements

Stage	Activity	Objective	How The Requirements Have Been Met

1	Identify which hazardous substances are used, produced or released at the installation.	Determine whether hazardous substances are used, produced or released in view of deciding whether a baseline report is required.
		If yes: produce a list of all potential hazardous substances.
			The following potential hazardous substances may be present as a result of the proposed operations at the site:
			• Metals, including Co, Cu, Fe, Li, Mn, Ni
			• VOCs, specifically constituents of the electrolyte recovered from battery shredding:
			  ○ Dimethylcarbonate;
			  ○ Ethylmethylcarbonate;
			  ○ Diethylcarbonate; and
			  ○ Propylencarbonate
			  ○ Ethylcarbonate
			• Antimony Trioxide and deca BDE contained in older panels.
			The location of electrolyte storage is shown on Drawing 002.
			In addition, the following potential hazardous substances may be released as a result of historical operations at the site:
			• Heavy metals;
			• Hydrocarbons, including naphthalene; and
			• Cyanide.

2	Identify which of the hazardous substances from Stage 1 which, according to the evaluation by a suitably qualified and experienced person, and because of their hazardous potential (toxicity, mobility, persistence and biodegradability, as well as other characteristics), are	To restrict further consideration to only the relevant hazardous substances (RHS) that are capable of contaminating soil or groundwater in view of deciding on the need to prepare and submit a baseline report.	All of the substances listed above would be capable of contaminating soil and groundwater if there were no mitigation measures in place at the Installation. However, the Facility will be managed by technically competent personnel in accordance with site procedures and the Environmental Management System (EMS) to ensure good practice on site and minimise environmental risk throughout the operation. In addition, a number of mitigation measures will ensure that no contamination occurs as a result of the proposed activities to be undertaken at the site, as described in the following documents submitted with this permit application: • Environmental Risk Assessment; and

Stage	Activity	Objective	How The Requirements Have Been Met
	capable of contaminating soil or groundwater. Discard those hazardous substances that are incapable of contaminating soil or groundwater. Justify and record the decisions taken to exclude certain hazardous substances.		• Best Available Techniques and Operating Techniques.
3	Identify the possibility for soil or groundwater contamination at the site for each relevant hazardous substance brought forward from Stage 2 of the installation, including the probability and the consequences of releases, including - the quantities of each hazardous substance concerned; - how and where they are stored; - how they are to be transported around the installation; - how they are used - where they are emitted - measures that have been and, for new installations, will be adopted to protect soil and groundwater at the installation.	To identify which of the hazardous substances from Stage 2 represent a potential pollution risk at the site based on the likelihood of emissions of such substances occurring. **These are the 'relevant' hazardous substances for which information must be included in the baseline report.** Note: Where it is found that there is **no possibility of soil and groundwater contamination, then a baseline report does not need to be prepared or submitted** (due to the quantities of the hazardous substances used, produced or released). However, in these cases it is expected that a record of such a decision, including the reasons for the decision, will be made and held by the competent authority.	As detailed in Stage 2, existing mitigation measures in place will protect the groundwater, surface water and soil within the installation permit boundary from contamination from the existing and proposed site activities. Appendix D presents the RHS Assessment for the site. This assessment outlines the RHS used on site and what controls are used to minimise these risks. This assessment identifies the RHS stored and used at the site and the locations in which they are present. The assessment then assesses the adequacy of the containment and pollution prevention measures used to prevent loss of potential pollutants to the soil and groundwater underlying the site. The assessment identifies those materials / activities where the pollution prevention measures are considered to be suitable and sufficient, and hence where no credible risk of pollution occurring exists. Where applicable, it also identifies those materials / activities where a credible risk of pollution occurring exists, and hence the presence of such pollution risk should be used to inform the scope of any intrusive site investigation required to collate baseline data on the site condition. The RHS Assessment (Appendix D) has concluded that there is no credible risk potential pollution impacting on soil and groundwater as a result of the activities proposed to be regulated under the EP.

Stage	Activity	Objective	How The Requirements Have Been Met
4	Provide site history	Identify potential sources which may have resulted in the relevant hazardous substances identified in Stage 3 being already present on the site of the installation.	Section 2.2 of this SCR provides details of past land use and historic pollution incidents.
5	Identify the site's environmental setting	Determine where hazardous substances may go if emitted and where to look for them. Also identify the environmental media and receptors that are potentially at risk and where there are other activities in the area which release the same hazardous substances and may cause them to migrate onto the site.	Details of the site setting are provided in Section 2.2 of this report and in the ERA submitted with this application.
6	Use the results of Stages (3) to (5) to describe the site, in particular, demonstrating the location, type, extent and quantity of historic pollution and potential future emissions noting the strata and groundwater bodies likely to be affected by those emissions – making links between sources of emissions, the pathways by which pollution may move and the receptors likely to be affected.	Identify the location, nature and extent of existing pollution on the site and determine which strata and groundwater bodies might be affected by such pollution. Compare with potential future emissions to see if areas are coincident.	The RHS Assessment (Appendix D) indicates that there is no credible risk of potential pollution impacting on soil and groundwater as a result of the activities proposed and management practices in place, taking into account the proposed preventative and mitigation measures. However, there are potential historical sources of pollution located at the site related to its previous use as an airfield, as summarised in Section 2.2 and provided in detail in the Site Investigation reports referenced in this report (listed in section 1.1.1).
7	If there is sufficient information to quantify the state of soil and groundwater pollution by relevant hazardous	Collect additional data as is necessary to allow a quantified assessment of soil and	Data on the condition of the land prior to the development of the industrial unit within the proposed Site is provided in detail in the Site Investigation reports referenced in this report (listed in section 1.1.1).

Stage	Activity	Objective	How The Requirements Have Been Met
	substances on the basis of Stages (1) to (6) then go directly to Stage 8. If insufficient data exists, then intrusive investigation of the site will be required in order to gather such information.	groundwater pollution by relevant hazardous substances.	
8	Produce a baseline report for the installation that quantifies the state of soil and groundwater pollution by relevant hazardous substances	Provide a baseline report in line with the IED.	This report '416.066578.00002_SCR' provides a baseline report in line with Article 22(2) of the IED.

2.3.5 RHS Assessment Conclusion

There is no credible risk of pollution from RHS from the proposed activities given the combination of management procedures and containment measures that will be in place.

3.0 Permitted Activities

Permitted activities	The proposed facility will carry out a number of waste recycling activities to treat the following waste streams: • End-of-life solar panels; • End-of-life batteries from solar farms and Electric Vehicles. The following activities will be carried out: <u>Installation Activities</u> • Treatment of lithium-ion batteries: *Section 5.3 Part A(1)(a)(ii): Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment* • Treatment of solar panels: *Section 5.4 (b)(iv) – non-hazardous waste installation – treatment in shredders of metal waste, including WEEE and end of life vehicles and their components* • Treatment of metal frames: *Section 5.4 (b)(iv) – non-hazardous waste installation – treatment in shredders of metal waste, including WEEE and end of life vehicles and their components* • Storage of hazardous waste (batteries) pending treatment: *Section 5.6 Part A(1) (a) Temporary storage of hazardous waste with a total capacity exceeding 50 tonnes pending any of the activities listed in Sections …5.3* <u>Directly Associated Activities</u> • Operation of the battery shredder regenerative thermal oxidiser; • Storage of hazardous waste outputs prior to removal from site; • Raw material storage (e.g. Nitrogen, scrubber chemicals).
Non-permitted activities undertaken	None
Document references for: • plan showing activity layout; and • environmental risk assessment.	• Drawing 02 Site Layout • Environmental Risk Assessment included as part of the environmental permit application package SLR ref. 416.066578.00002_ERA

The following sections will be maintained and updated by GBCTR throughout the operational life of the Environmental Permit.

4.0 Changes to the activity

Have there been any changes to the activity boundary?	To be maintained during the lifetime of the site
Have there been any changes to the permitted activities?	To be maintained during the lifetime of the site
Have any 'dangerous substances' not identified in the Application Site Condition Report been used or produced as a result of the permitted activities?	To be maintained during the lifetime of the site
Checklist of supporting information	To be maintained during the lifetime of the site

5.0 Measures taken to protect the land

To be maintained during the lifetime of the site	
Checklist of supporting information	

6.0 Pollution Incidents and Remediation

To be maintained during the lifetime of the site	
Checklist of supporting information	

7.0 Soil Gas and Water Quality Monitoring

To be maintained during the lifetime of the site	
Checklist of supporting information	

8.0 Decommissioning and Removal of Pollution Ris

To be maintained during the lifetime of the site	
Checklist of supporting information	

9.0 Reference Data and Remediation (where relevant)

To be maintained during the lifetime of the site	
Checklist of supporting information	

10.0 Statement of Site Condition

To completed upon surrender of the environmental permit

Appendix A Phase I Report

NTW2253/01/V2 Phase 1 Geo-Environmental Desk Study, BWB, October 2014

[Attached as separate appendix]

Appendix B Phase II Report

Phase 2 Geo-Environmental Assessment, BWB, April 2020

[attached as separate document]

Appendix C IBAA Report

St Modwen Park Lincoln: IBAA Report, BWB, March 2023

[attached as separate document]

Appendix D Relevant Hazardous Substances Assessment

D.1 Relevant Hazardous Substances Assessment

Table D-1 Relevant Hazardous Substances Assessment

Raw Material/Substance	Volumes/ tonnes Utilised Annually	Containment	Location	Environmental Risk Phrases (from ECHA database and Water Framework Directive hazardous substances)	Relevant Hazardous Substance ?	Credible Risk of Pollution?
Solar panels & separated fractions following treatment: older panels may contain traces of fire retardants	Up to 55,000 tonnes[1]	Primary Delivered on pallets with weatherproof covering. Emissions from mechanical separation downstream of the shredder are abated by a dust filter. Separated fractions from shredder are contained in bulk bags and UN sealed containers. Secondary The Site will be kept clean and tidy by way of a regularised housekeeping regime. Regular checks will be undertaken by the Plant Manager or designated individual of dust on site and at the Site boundary. Tertiary All internal and external storage areas benefit from sealed drainage and impermeable surfacing. The integrity of the impermeable paving will be inspected regularly on a weekly basis. Areas prone to particularly heavy wear, for example entrances and exits, may be monitored more frequently. A record of infrastructure inspections and a log of any remedial actions taken will be made on the relevant EMS/QMS inspection form and	Locations as shown on Drawing 002 Site Layout.	Antimony trioxide • HP6 Acute toxicity • HP14 Ecotoxic decaDBE • Not listed in ECHA but a POP that can degrade into toxic PDBEs	Yes	No. Management procedures together with three levels of containment measures are considered sufficient to mitigate the potential risk.

Raw Material/Substance	Volumes/ tonnes Utilised Annually	Containment	Location	Environmental Risk Phrases (from ECHA database and Water Framework Directive hazardous substances)	Relevant Hazardous Substance ?	Credible Risk of Pollution?
		entered onto the maintenance tracking system. Spillages and contaminated run-off from accidents and incidents are contained within the building/storage yard/ drainage system by means of an isolation valve and kerbing.				
End-of-life batteries and separated fractions following treatment	17,000 tonnes[1]	**Solid Materials** Primary Infeed batteries are stored externally in weatherproof containment. Battery shredding unit is fully enclosed and emissions are abated via a caustic scrubber and RTO. Emissions from mechanical separation downstream of the shredder are abated by a dust filter. Black mass and other separated fractions from shredder are contained in bulk bags. Secondary Bunds and or double skinned walls will be provided for all tanks containing liquids whose spillage could be harmful to the environment. Containment bunds or double skinned walls will be provided to make sure that any leaks/spillages will be contained in the event of a leak of the primary containment. The containment measures will be:	Locations as shown on Drawing 002 Site Layout.	Metals **Cobalt** • Aquatic Chronic H413 • Carc. 1B H350 suspected of causing cancer • Not listed as Water Framework Directive priority substance **Copper** • HP14 Ecotoxic, aquatic acute, aquatic chronic (waste framework directive) • Water Framework Directive priority substance **Iron** • Not listed on ECHA database • Water Framework Directive priority substance **Lithium** • HP3 Flammable waste; water reactive; HP8 skin corrosive	Yes (cobalt, copper, iron, nickel, phosphorus)	No. Management procedures together with three levels of containment measures are considered sufficient to mitigate the potential risk.

Raw Material/Substance	Volumes/ tonnes Utilised Annually	Containment	Location	Environmental Risk Phrases (from ECHA database and Water Framework Directive hazardous substances)	Relevant Hazardous Substance ?	Credible Risk of Pollution?
		• capable of containing at least 110% of the volume of the largest tank within the bund; • constructed of materials which are impermeable and resistant to the stored materials in accordance with relevant material safety data sheets (MSDS); • constructed to the appropriate British Standard and Health and Safety Executive (HSE) guidance; • of a type suitable for the containment of the materials in the event of leak or spill; • pipework will be routed within bunded areas so that no penetration of walls or base of the bund takes place; and • connection points will be located within the bund. The Site will be kept clean and tidy by way of a regularised housekeeping regime. Regular checks will be undertaken by the Plant Manager or designated individual of dust on site and at the Site boundary. <u>Tertiary</u> All internal and external storage areas benefit from sealed drainage and impermeable surfacing. The integrity of the impermeable paving will be inspected regularly on a weekly basis. Areas prone to particularly heavy wear, for example entrances and exits, may be		**Manganese** • Not listed on ECHA database. • Not listed as a WFD priority substance. **Nickel** • Water Framework Directive priority substance <u>Other substances</u> **Phosphorus** • Very toxic to aquatic life; flammable solid		

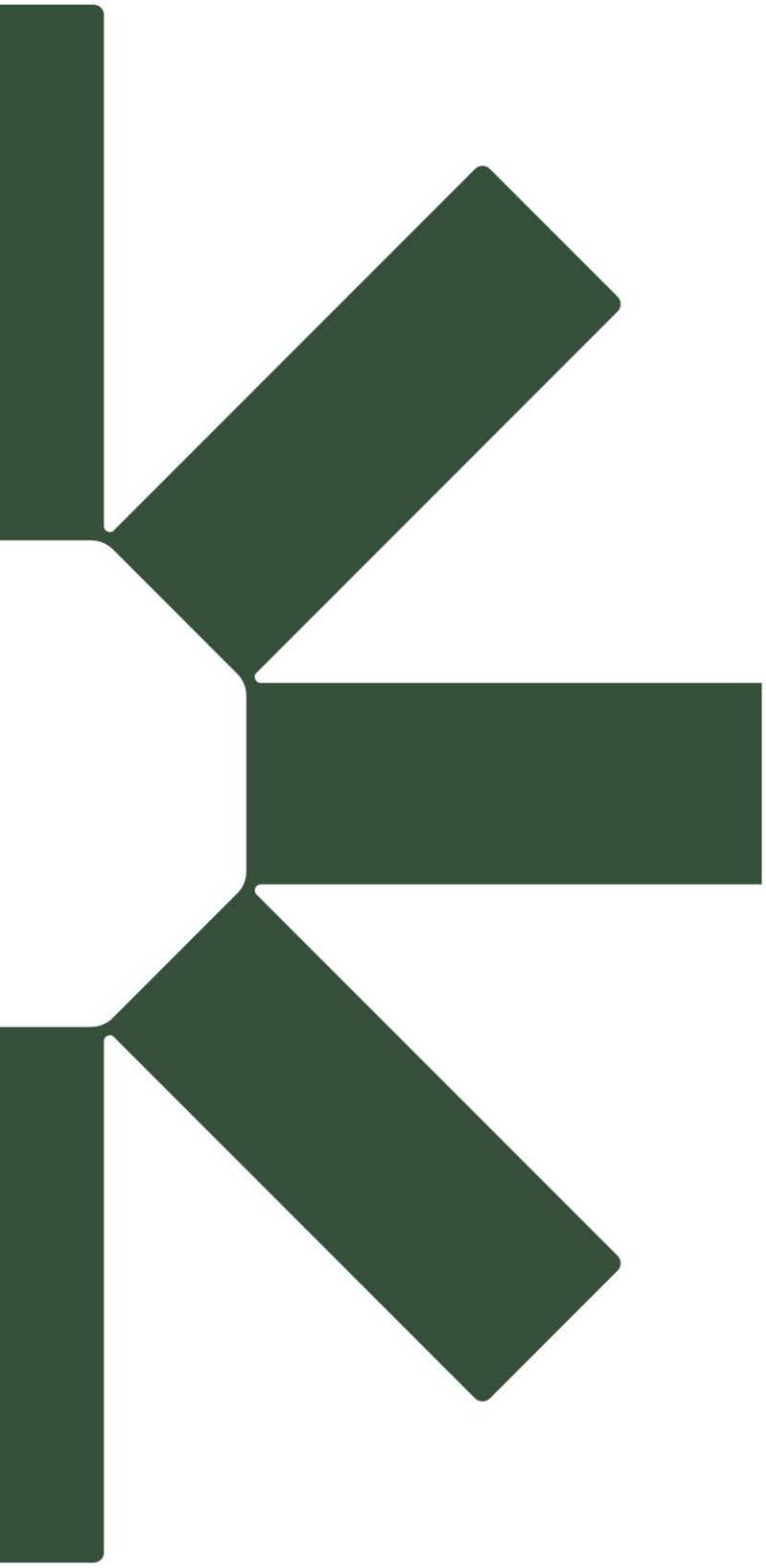
Raw Material/Substance	Volumes/ tonnes Utilised Annually	Containment	Location	Environmental Risk Phrases (from ECHA database and Water Framework Directive hazardous substances)	Relevant Hazardous Substance ?	Credible Risk of Pollution?
		monitored more frequently. A record of infrastructure inspections and a log of any remedial actions taken will be made on the relevant EMS/QMS inspection form and entered onto the maintenance tracking system. Spillages and contaminated run-off from accidents and incidents are contained within the building/storage yard/ drainage system by means of an isolation valve and kerbing.				
		Liquid materials <u>Primary</u> Electrolyte driven off from shredder is collected in IBCs internal to the building in a secure, access-controlled zone. Battery discharging is carried out using saline solution in leakproof containers under cover. Spent solution is collected in leak proof containers (IBCs) prior to transfer off site. <u>Secondary</u> Bunds and or double skinned walls will be provided for all tanks containing liquids whose spillage could be harmful to the environment. Containment bunds or double skinned walls will be provided to make sure that any leaks/spillages will be contained in the event of a leak of the primary containment. The containment measures will be: • capable of containing at least 110% of the volume of the largest tank within the bund; • constructed of materials which are impermeable and resistant to the		<u>Electrolyte</u> **Dimethylcarbonate** • HP3 Flammable liquid (Waste Framework Directive) **Ethylmethylcarbonate** • Not listed on ECHA or Water Framework Directive **Diethylcarbonate** • Only listed as flammable liquid under ADR **Propylencarbonate** • Not listed Waste Framework Directive or Water Framework Directive **Ethylcarbonate** • Not listed on ECHA or Water Framework Directive	Yes (dimethylcarbonate, diethylcarbonate)	No. Management procedures together with three levels of containment measures are considered sufficient to mitigate the potential risk.

Raw Material/Substance	Volumes/ tonnes Utilised Annually	Containment	Location	Environmental Risk Phrases (from ECHA database and Water Framework Directive hazardous substances)	Relevant Hazardous Substance ?	Credible Risk of Pollution?
		stored materials in accordance with relevant material safety data sheets (MSDS); • constructed to the appropriate British Standard and Health and Safety Executive (HSE) guidance; • of a type suitable for the containment of the materials in the event of leak or spill; • pipework will be routed within bunded areas so that no penetration of walls or base of the bund takes place; and • connection points will be located within the bund. <u>Tertiary</u> All internal and external storage areas benefit from sealed drainage and impermeable surfacing. The integrity of the impermeable paving will be inspected regularly on a weekly basis. Areas prone to particularly heavy wear, for example entrances and exits, may be monitored more frequently. A record of infrastructure inspections and a log of any remedial actions taken will be made on the relevant EMS/QMS inspection form and entered onto the maintenance tracking system. Spillages and contaminated run-off from accidents and incidents are contained within the building/storage yard/ drainage system by means of an isolation valve and kerbing.				
Caustic Solution for scrubber	43 m^3	<u>Primary</u> Raw materials stored in leakproof IBCs		Caustic Alkalis – potential to alter pH	Yes	No. Management procedures together with three levels of

Raw Material/Substance	Volumes/ tonnes Utilised Annually	Containment	Location	Environmental Risk Phrases (from ECHA database and Water Framework Directive hazardous substances)	Relevant Hazardous Substance ?	Credible Risk of Pollution?
		Spent solution is collected in leak proof IBCs for transfer off site for treatment. <u>Secondary</u> IBCs are stored in bunded areas. Bunds and or double skinned walls will be provided for all tanks containing liquids whose spillage could be harmful to the environment. Containment bunds or double skinned walls will be provided to make sure that any leaks/spillages will be contained in the event of a leak of the primary containment. The containment measures will be: • capable of containing at least 110% of the volume of the largest tank within the bund; • constructed of materials which are impermeable and resistant to the stored materials in accordance with relevant material safety data sheets (MSDS); • constructed to the appropriate British Standard and Health and Safety Executive (HSE) guidance; • of a type suitable for the containment of the materials in the event of leak or spill; • pipework will be routed within bunded areas so that no penetration of walls or base of the bund takes place; and • connection points will be located within the bund.				containment measures are considered sufficient to mitigate the potential risk.

Raw Material/Substance	Volumes/ tonnes Utilised Annually	Containment	Location	Environmental Risk Phrases (from ECHA database and Water Framework Directive hazardous substances)	Relevant Hazardous Substance ?	Credible Risk of Pollution?
		Tertiary All internal and external storage areas benefit from sealed drainage and impermeable surfacing. Spillages and contaminated run-off from accidents and incidents are contained within the building/storage yard/ drainage system by means of an isolation valve and kerbing.				
The following chemicals may also potentially be located in solar panels, junction boxes and cables • **PFAS** (per- and polyfluoroalkyl substances • **PBDE** (brominated flame retardants)	Potential to be present in incidental amounts.	Primary Solar Panels stored externally are contained in weather-proof wrapping. Treatment of panels takes place in the enclosed building. Emissions from mechanical separation are abated by a dust filter. Secondary The Site will be kept clean and tidy by way of a regularised housekeeping regime. Regular checks will be undertaken by the Plant Manager or designated individual of dust on site and at the Site boundary. Tertiary All areas where waste is stored or treated benefits from impermeable surfacing and sealed drainage. Residues following treatment are stored undercover.	See locations on Drawing 002	• **H400:** Very toxic to aquatic life. • **H410:** Very toxic to aquatic life with long-lasting effects. • **H411:** Toxic to aquatic life with long-lasting effects. • **H413:** May cause long-lasting harmful effects to aquatic life.	Yes	No. Management procedures together with three levels of containment measures are considered sufficient to mitigate the potential risk.

Notes:
[1] total tonnage of waste processes per year: hazardous materials within the waste are present in lower quantities



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