

To: Miles Orlopp, LLFA engineer
From: Caroline Jeanne SLR /
Jeremy Collins GGP
Company: Suffolk County Council
SLR Consulting Limited
cc:
Date: 28 February 2024
Project No. 405.064987.0007

RE: Spring Grove Farm
Lead Local Flood Authority (LLFA) Response

1.0 Introduction

Thank you for your letter in response to the Flood Risk Assessment (FRA) and Surface Water Drainage Strategy (SWDS) (SLR Ref: 404.11923.00004.0005 Version No:1 dated August 2023) for the proposed Anaerobic Digestion Plant at Spring Grove Farm, Withersfield, Northwest of Haverhill, Suffolk, CB9 7SW (the 'Site'). This Technical Memorandum aims to address the objection to the proposed development at the Site regarding the surface water drainage strategy as set out in your email dated 17th October 2023.

We thank you for your time in attending a meeting with the Design Team on 4th January 2024 and hope that it gave you insight into the purpose of the AD Plant and how we have approached the design. The meeting certainly helped us gain an understanding of your concerns and, with this response, we hope that we have addressed them fully.

Each of the objections, set out in your email, are addressed in turn below.

2.0 Proposed Outline SuDS Strategy

Objection:

"Submit a surface water drainage strategy that achieves the 4 pillars of SuDS and utilises above ground SuDS wherever possible for collection, conveyance, storage, and discharge, providing multi-functional and benefits. Features such as raingardens, tree pits and permeable paving are recommended. Please include an updated drainage layout which show the use of rain gardens and permeable paving within the development".

SLR response:

The 4 pillars of SuDS have been considered in the FRA and SWDS. However, due to the likelihood of contamination from the hardstanding and other open areas of the Site, it is recommended that SuDS source control and conveyance features are not adopted on the Site.

Instead, it is proposed that channel drains and underground pipes be used to intercept and convey runoff across the Site. 'Site Control' feature in the form of a lagoon is considered to be a viable option in terms of the management of water quantity and was integrated into the SWDS.

A full retention interceptor & catchpit will be adopted to mitigate runoff contaminants. Additionally, the proposed AD plant will operate under an Environmental Permit, with a strict operational & maintenance procedure in place. These procedures are developed to ensure compliance and protection of the local receptors.

As part of the Environmental Permit a detailed maintenance schedule will be regulated against. This shall cover the drainage, external surfacing, buildings & concrete containment bund as a minimum.

The drainage maintenance document will specify daily, weekly, biweekly, monthly, quarterly & year inspection work to be carried out, along with the necessary actions required.

As part of the actions under the permit, water quality checks will be required on the outfall locations, covering criteria such as TSS, PH, volume & hydrocarbons. These will be recorded and submitted to the Environment Agency under the permit conditions annually or more frequently (pending permit conditions).

Therefore, the proposed surface water drainage system shall conform and be regulated to a robust, audited & recorded operational & maintenance plan. This will ensure the performance of the drainage system is maintained throughout the life of the plant.

The proposed 'Conveyance' and 'Site Control' options are summarised in Table 10-2 within the FRA and SWDS and included below:

Management Train Mechanism	Application	Potential Suitable Features
Source Control	For the interception of surface water runoff at the source such as office roofs, parking lots and equipment hardstanding.	
Conveyance	To convey surface water runoff from 'Source Control' mechanisms to 'Site Control'.	• Channel drains • Underground pipes
Site Control	Provides the required surface water attenuation / storage prior to controlled discharge to the water environment.	• Lagoon

3.0 SuDS Drawings

Objection:

"Detailed SuDS drawings will need to be included within the drainage strategy, i.e., cross, and long sectional drawings. All features should be designed in accordance with Suffolk SuDS Guidance. We also expect to see a contour plan, exceedance routes and impermeable area drawings included within the drainage strategy".

SLR response:

As discussed in our meeting, the detailed SuDS drawings for the proposed development are included within **Appendix 01** as follows:

- GGP-29351-P-105-C Drainage Plan;
- GGP-29351-P-121-C Proposed Lagoon Details;
- GGP-29351-P-105a-C-Drainage Catchment Plan.



Drawing No. GGP-29351-P-105a-C shows the proposed impermeable areas.

To address this, Drawing SW2: Surface Water Drainage Strategy has been amended to include exceedance routes.

These drawings have been discussed in our meeting and are attached to the Technical Memorandum; we hope that these satisfy the objections noted.

4.0 Drainage Calculations

Objection:

“There is confusion within the calculations, please can you remove the calculations with the discharge rates and climate change which are not being used”.

SLR response:

As discussed in our meeting, the calculations presented in the report are enclosed in Appendices 5 and 6 as follows:

- **Appendix 5:** Contains details the calculations for the dirty water usage drainage assessment, this establishes the storage requirements associated with the function of the proposed anaerobic digestion plant and details how the surface water from the site will be managed.
- **Appendix 6:** Includes calculations detailing the attenuation volume for the clean water lagoon, required for the proposed development in response to a range of AEP rainfall events.

5.0 Drainage Modelling

Objection:

“Additionally, please can the calculations be modelled as a network rather than source control which is currently being used”.

SLR response:

As discussed in our meeting, MicroDrainage network model simulation calculations are technically challenging to model due to the 12-hour delayed outflow due to the manual testing and accreditation procedure that is to be adopted as part of the approved Environmental Permit process. Simulation is not possible with a non-standard rainfall profile.

Accordingly, MicroDrainage Source Control calculations have been supplied that describe the cascade model – the process for the ‘clean water’ system that allows clean water from the sufficiently sized bunded area, that has been tested as clean, to be allowed into the swale. The bund has sufficient capacity (using 2x 50 m³ tanks, 3x 400m³ tanks, 5x 1,500 m³ tanks and a 7,400 m³ bund) to store water for the potential 12-hour overnight period between shifts, so that any dirty water with calorific value, can then be returned to the process. As stated, the process demand is significant requiring significant amounts of harvested rainfall.



6.0 Site Photographs

As discussed in our meeting in January, to aid understanding of the Site context and its surrounding, we have enclosed at **Appendix 02** a small gallery of photographs taken during our site visit undertaken in May 2022.

A brief description of the photographs is provided below.

- The visit occurred a week or so after the infiltration testing and, as such the reinstated trial pit is clearly seen in the foreground of Photo 1.
- The general site topography slopes gently to the north as can be seen in Photos 1, 2 & 6.
- Photo 3 shows the access route through from Spring Grove Farm, which passes through a 5m high embankment of a dismantled railway (within dense tree cover).
- Photos 4 & 5 the small watercourse to the south of the Site, together with an existing access bridge from Spring Grove Farm. The existing pipe culvert is in poor condition.

7.0 Closure

We would look forward to confirmation that the proposed amended surface water drainage design will be acceptable and as such you would be able to withdraw your objections to the planning application with no pre-commencement conditions.

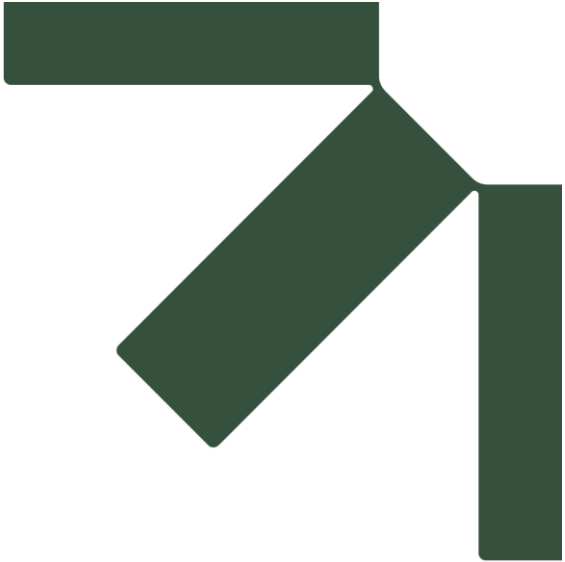
However, should you require any further information, please do not hesitate to contact us.

Regards,

SLR Consulting Limited

Caroline Jeanne
Associate Hydrologist
cjeanne@slrconsulting.com





Appendix 1 Proposed Development Drawings



1. All dimensions must be checked on site and not scaled from this drawing.
2. The Contractor shall make a survey of the site and shall be responsible for obtaining all dimensions and levels necessary for the proper fabrication of the structure as indicated.
3. All levels shown on this drawing are relative to Agreed Topographic survey.
4. This drawing is to be read in conjunction with 2351/100 Series Drawings.
5. All existing invert levels are to be confirmed by contractor prior to construction. Connection subject to approval.

- Existing Watercourse
- Gas Line with Easement Offset
- Site Red Line Boundary (11.2Ha)
- Clean Surface Water Sewer
- Clean Surface Water Chamber
- Clean Surface Water Headwall
- Clean Surface Water Drainage Channel
- Clean Surface Water Rainwater Pipe
- Clean Surface Water Rising Main
- Contaminated Surface Water Sewer
- Contaminated Surface Water Chamber
- Contaminated Surface Water Channel Drain
- Contaminated Surface Water Rising Main
- Clean/Contaminated Surface Water Sewer
- Clean/Contaminated Surface Water Chamber
- Clean/Contaminated Surface Water Channel Drain
- Foul Water Sewer
- Foul Water Chamber
- Soil Vent Pipe

All pipes to be encased in concrete.

0 10m 20m 30m 40m 50m
Scale 1:500 @ A0

C	01/03/23	Redline Updated	JHC
B	28/02/23	Redline Updated	JHC
A	01/02/23	Issued For Planning	JHC
Rev	Date	Description	DR

© copyright

UVDS
Registered

Link-up
Qualified
via Audit

GGP CONSULT
CONSULTING ENGINEERS
PROJECT MANAGEMENT
2 Hallam Road
Priory Park East
HULL HU4 7DY
United Kingdom
Telephone: +44 (0)1482 627953
Fax: +44 (0)1482 641736
Email: info@ggpcconsult.co.uk

Client:

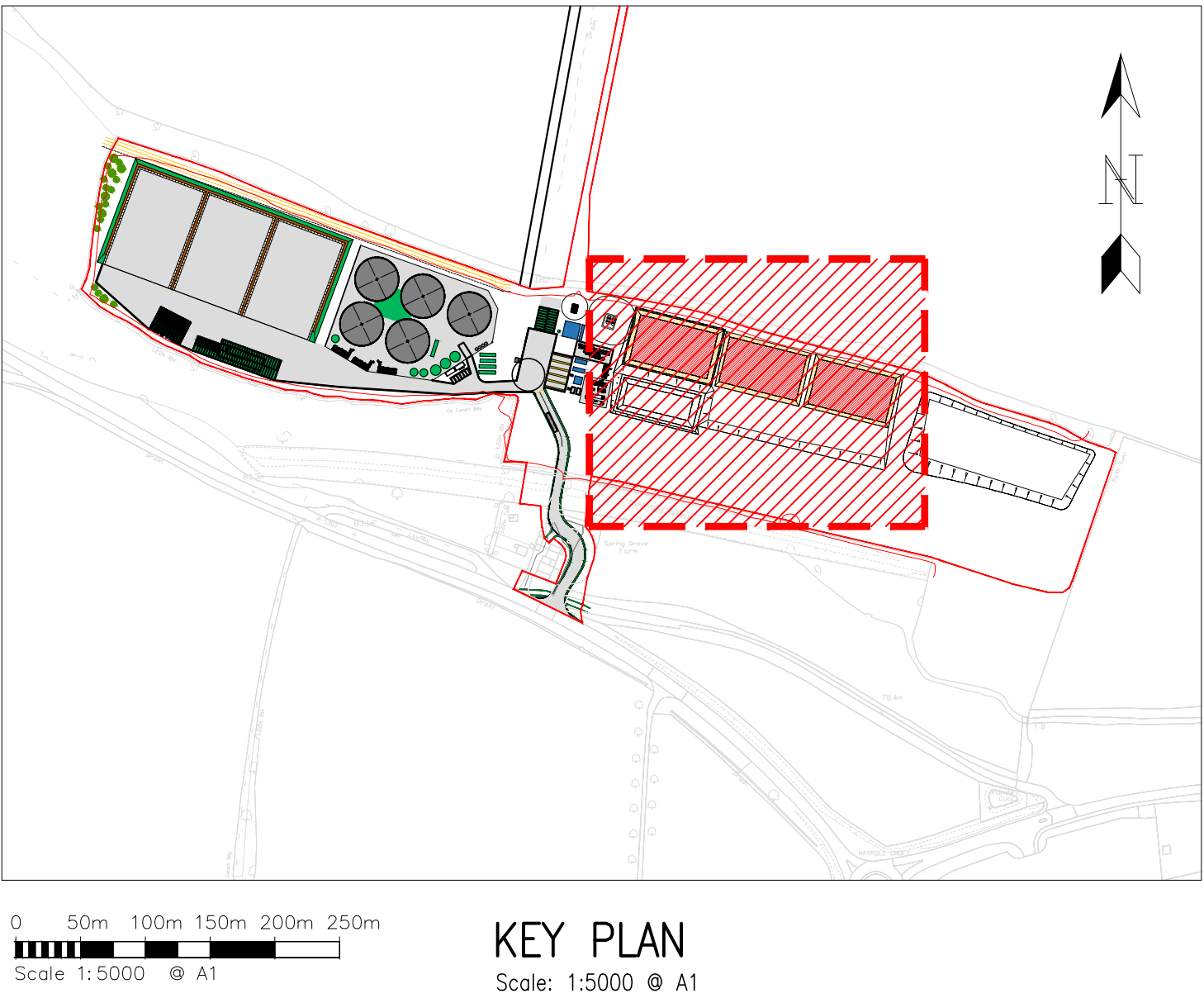
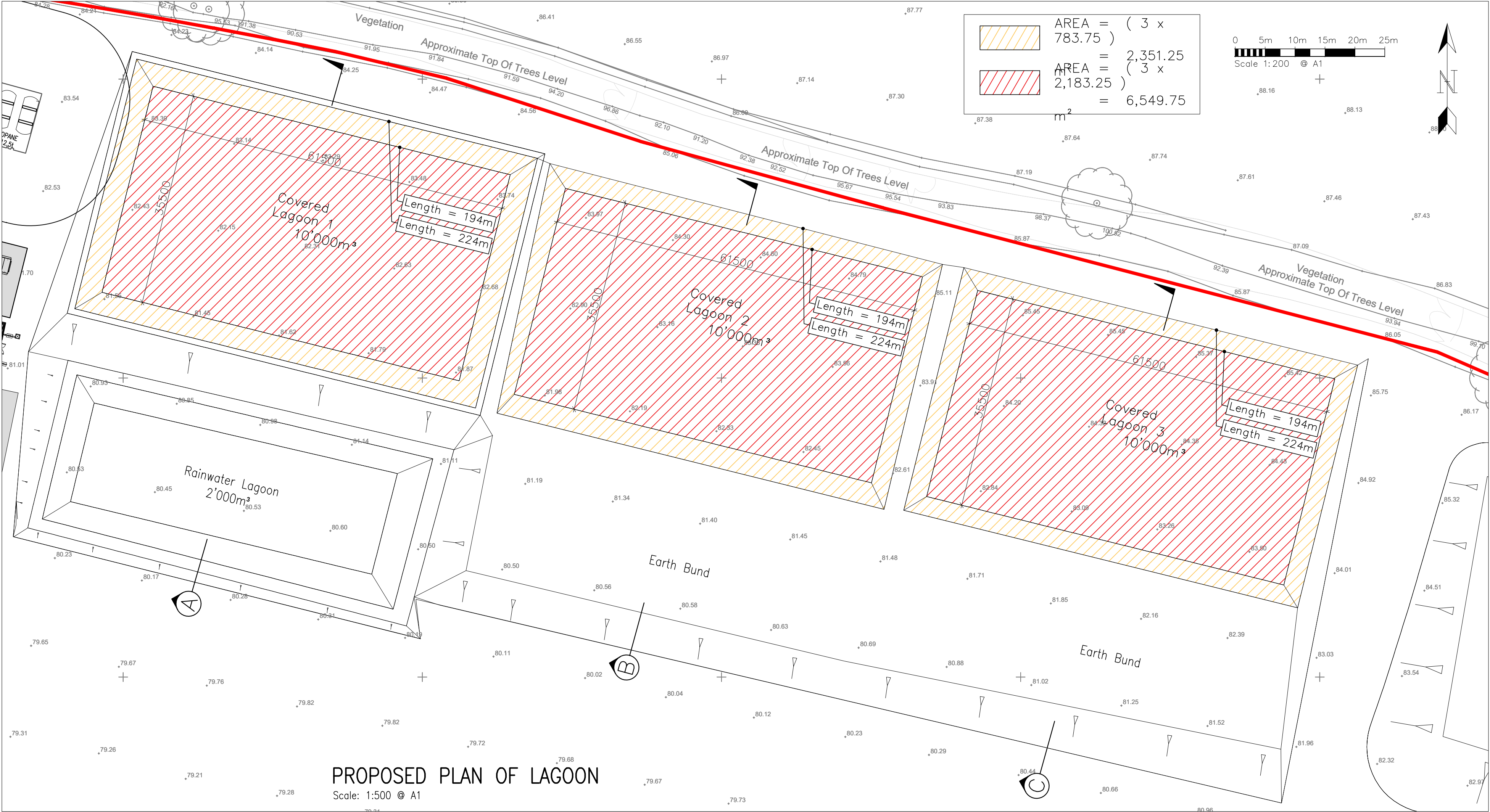
Job Title: **AD Plant, Spring Grove.**

Drawing Title: **Drainage Plan**

Scale: 1:500 @ A0	Date: Feb '23
Drawn By: Daniel Cook	Checked: JHC
Approved: JHC	

Orig No: 29351/P/105	Rev: c
----------------------	--------

NOT FOR CONSTRUCTION



- NOTES:-
1. All dimensions must be checked on site and not scaled from this drawing.
 2. The Contractor shall make a survey of the site and shall be responsible for obtaining all dimensions and levels necessary for the proper fabrication of the structure as indicated.
 3. All levels shown on this drawing are relative to Agreed Topographic survey
 4. This drawing is to be read in conjunction with 29351/100 Series Drawings.
 5. All existing invert levels are to be confirmed by contractor prior to construction. Connection subject to approval.

- Site Red Line Boundary
--- Denotes Existing Ground
--- Denotes Finished Ground

C	01/03/23	Redline Updated	WG	JTC
B	22/02/23	Redline Updated	MK	JTC
A	10/02/23	Issued For Planning	MK	JTC

Rev	Date	Description	DR	CH
-----	------	-------------	----	----

© copyright



GGP CONSULT

CONSULTING ENGINEERS
PROJECT MANAGEMENT

2 Hallam Road
Priory Park East
HULL HU4 7DY
United Kingdom

Telephone(+44) 01482 627963
Fax (+44) 01482 641736
Email info@ggpconsult.co.uk



Job Title
Spring Grove Green Power

Drawing Title Lagoon Details
--

Status
Planning

Scale
As Noted @ A1

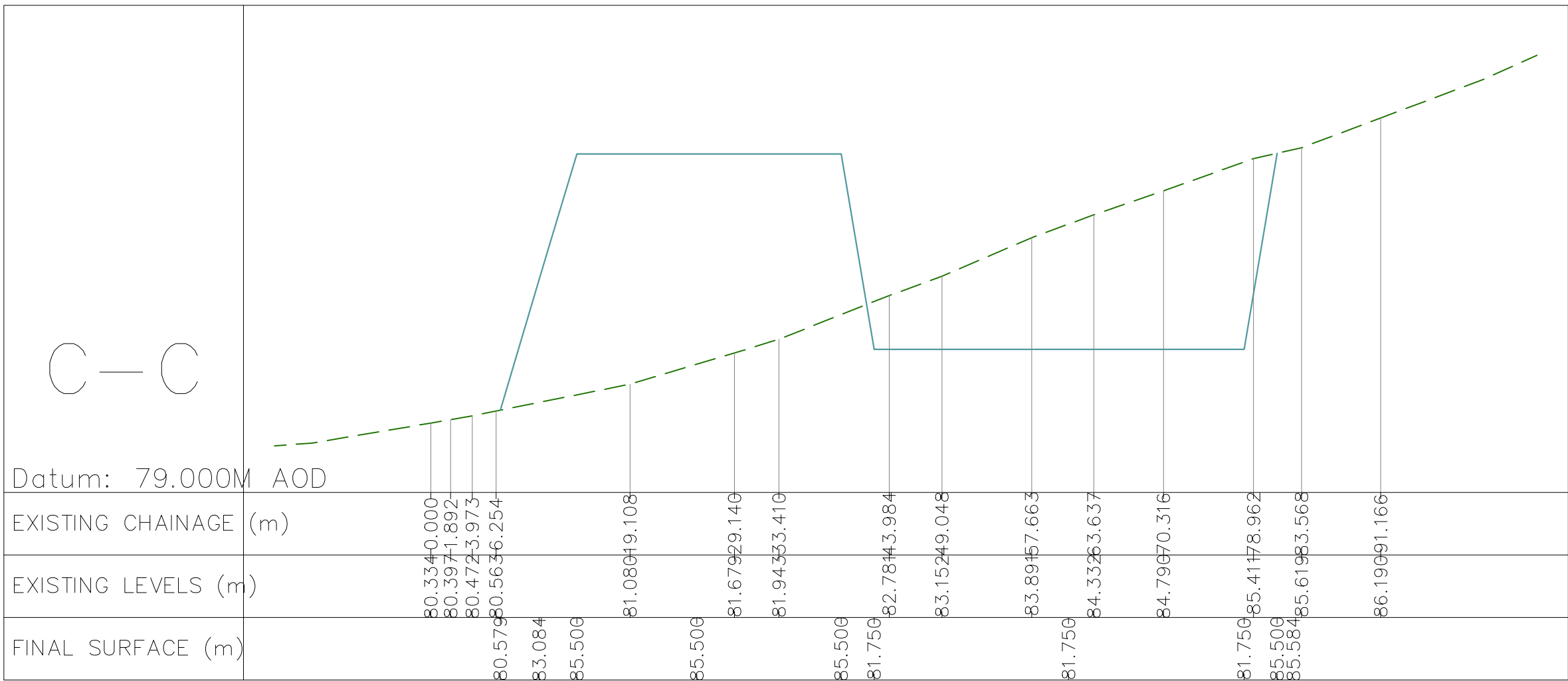
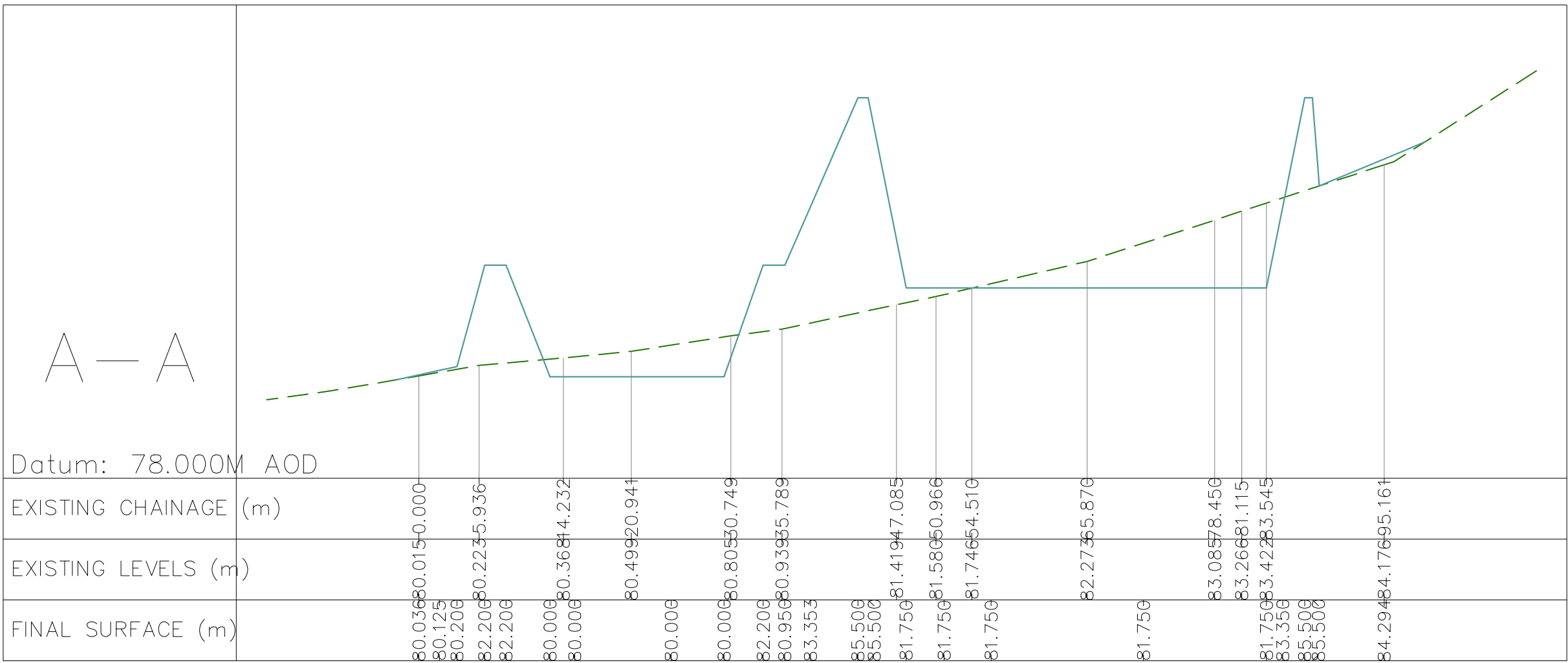
Date
Feb' '23

Drawn By
MK

Checked
JHC

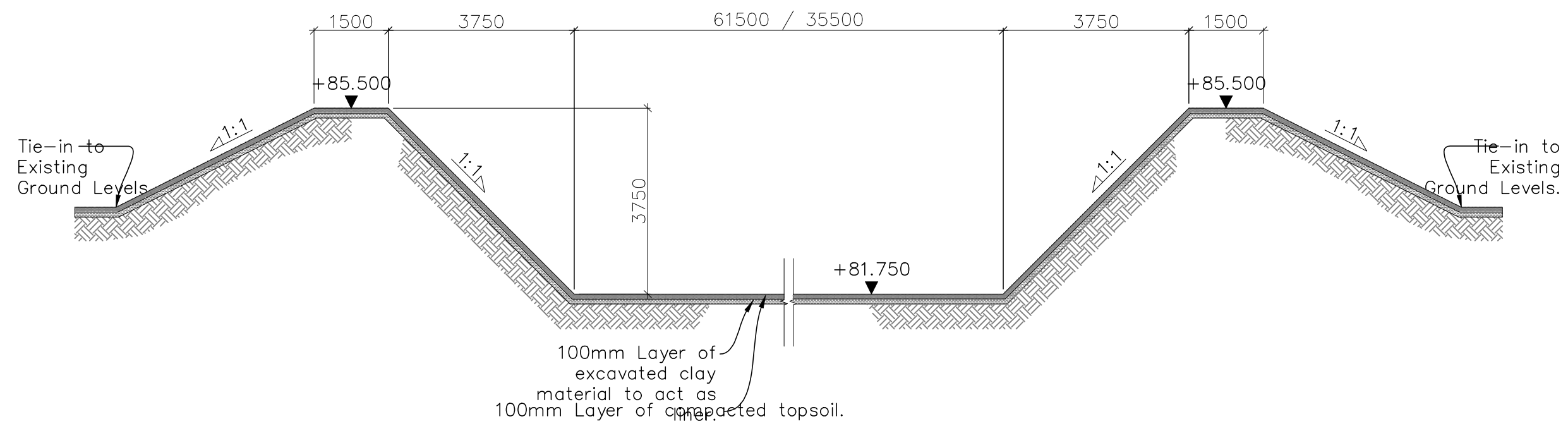
Approved
JHC

Dwg. No. 29351-P-121	Rev C
--------------------------------	-----------------



SECTIONS

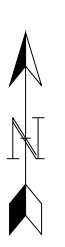
Scale: 1:500H/1:100V @ A1



TYPICAL SECTION THROUGH LAGOON

Scale: 1:100 @ A1

NOT FOR
CONSTRUCTION



1. All dimensions must be checked on site and not scaled from this drawing.

2. The Contractor shall make a survey of the site and shall be responsible for obtaining all dimensions and levels necessary for the proper fabrication of the structure as indicated.

3. All levels shown on this drawing are relative to Agreed Topographic survey.

4. This drawing is to be read in conjunction with 23351/100 Series Drawings.

5. All existing invert levels are to be confirmed by contractor prior to construction. Connection subject to approval.

Site Red Line Boundary (11.2Ha)

Denotes Clean Surface Water Swale Area - 1,944m²

Denotes Digestate Lagoon Area - 8,890m²

Denotes Clean w/Petrochemicals Hardstanding Runoff Area - 3,578m²

Denotes Clean Equipment Runoff Area - 1,485m²

Denotes Clean/Contaminated Bund Runoff Area - 9,405m²

Denotes Clean Silage Clamp Cover Runoff Area - 15,243m²

Denotes Contaminated Hardstanding Runoff Area - 5,976m²

Denotes Clean Roof Runoff Area - 1,661m²

0 20m 40m 60m 80m 100m

Scale 1:1,000 @ A0

C 01/03/23 Redline Updated JHC

B 28/02/23 Redline Updated JHC

A 01/02/23 Issued For Planning JHC

Rev Date Description DR CH

© copyright

UVDB

Registered

Link-up

Qualified via Audit

GGP CONSULT

CONSULTING ENGINEERS
PROJECT MANAGEMENT

2 Hallam Road
Priory Park East
HULL HU4 7DY
United Kingdom

Telephone: +44 (0)1482 627953
Fax: +44 (0)1482 641736
Email: info@ggpcconsult.co.uk

Client

Job Title

AD Plant.
Spring Grove.

Drawing Title

Drainage Catchment Plan.

Status

Planning

Scale

1:500 @ A0

Date

Feb '23

Drawn By

Daniel Cook

Checked

JHC

Approved

JHC

Orig. No.

29351/P/105a

Rev

c

NOT FOR CONSTRUCTION



NOTES

1. DRAWING GENERATED FROM INFORMATION SUPPLIED BY THE CLIENT. DRAWING REF: 29351/P/101, REVISION R, DATED: 20.04.2023.

LEGEND

- SITE BOUNDARY
- EXISTING WATERCOURSE
- ANTICIPATED RAINWATER DOWN PIPE LOCATION
- CHANNEL DRAIN
- PIPE
- OVERSIZED CHANNEL DRAIN
- LAGOON
- Flow Exceedance Route

THURLOW ESTATE 2 AD PLANT
SURFACE WATER DRAINAGE STRATEGY
PROPOSED SURFACE WATER DRAINAGE STRATEGY PLAN
SW2

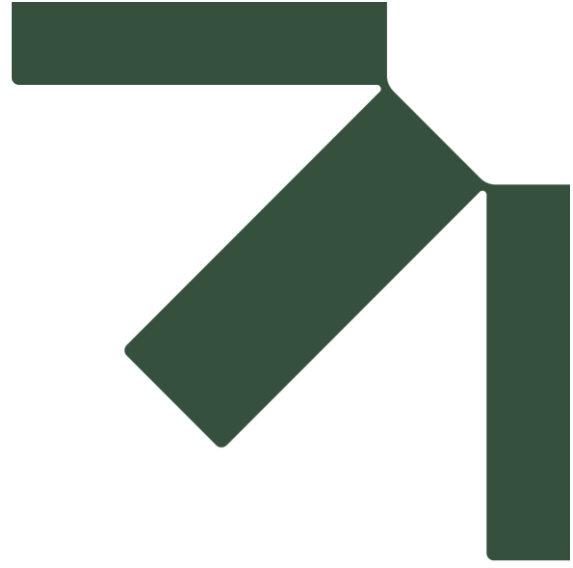
Scale 1:1250 @ A2

Date AUGUST 2023

© Crown copyright [and database rights] 2022 0100031673 Expires CLIENT SUPPLIED

© This drawing and its content are the copyright of SLR Consulting Ltd and may not be reproduced or amended except by prior written permission. SLR Consulting Ltd accepts no liability for any amendments made by other persons.

404.11923.00004.005.18.SW2.3_Prop_SW_Drainage.dwg



Appendix 2 Site Photographs

Spring Grove Farm (May 2022)

Photo 1: Site view showing infiltration trial pit 	Photo 2: Site View (looking east) 	Photo 3: Access Location 
Photo 4: Access Culvert (downstream) 	Photo 5: Watercourse by Access (upstream) 	Photo 6: Site View (looking west) 

