

Sedgwick Associates

Chartered Town Planners

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Land at Common Bank Works, Common Bank Lane, Chorley

Application: LCC/2020/0052

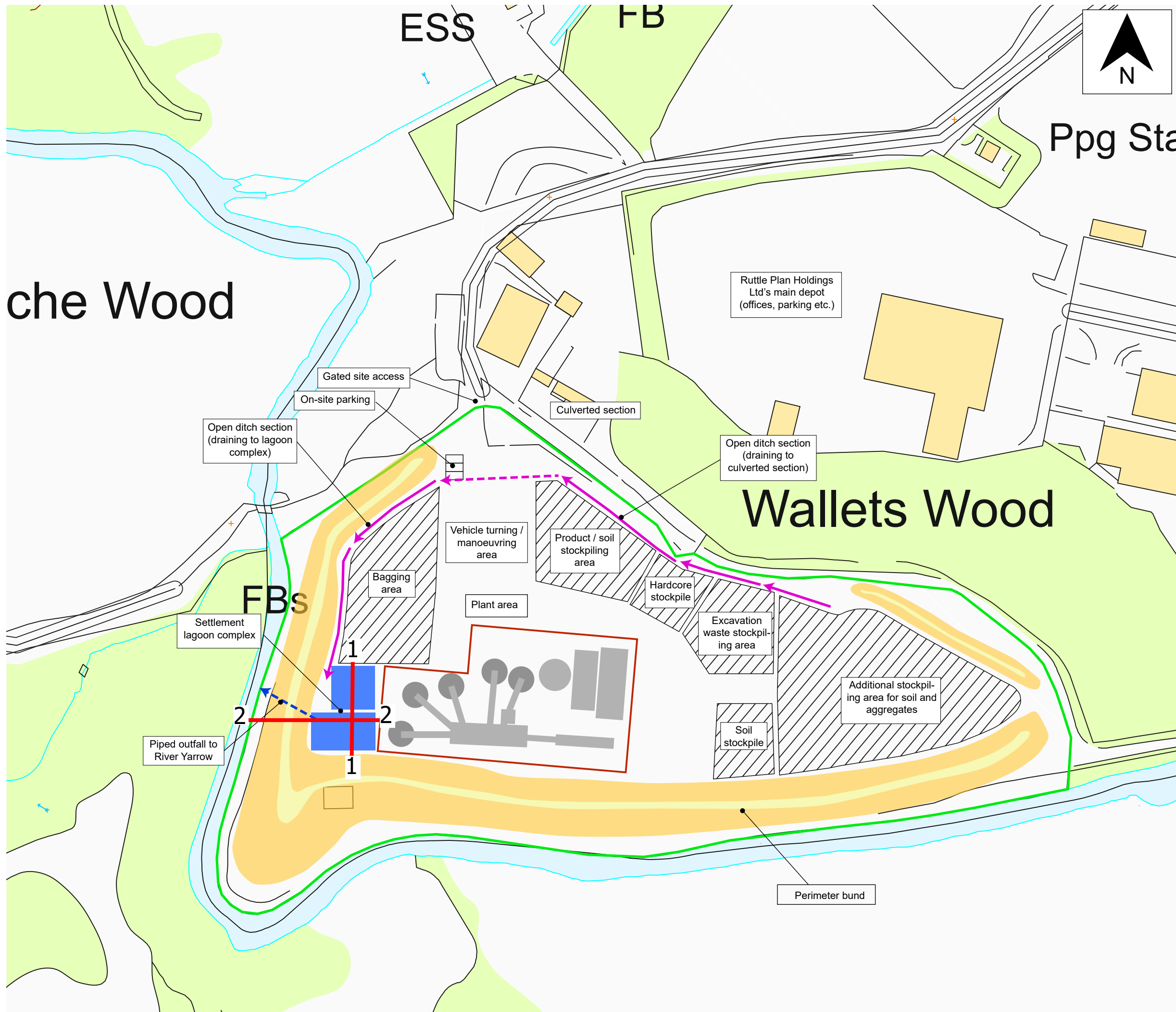
Erection of recycling wash plant to process selected wastes

Additional surface water drainage information

December 2020
sa/pks/4942 rev C

1. This planning application is supported by a drainage management strategy statement by Betts Hydro Consulting Engineers. That statement assesses the consequence of the impermeable surfaces that would be created by the washing plant subject to this planning application and assesses that an additional 64.5m³ storm water storage is required on site in addition to the 108.5m³ required for the site without the development.
2. At present, on-site storage is achieved through two lagoons, one allowing for settlement of fines prior to discharge into the second lagoon, from which there is a 7.0 litre/second limit to discharge into the River Yarrow. These lagoons are shown diagrammatically in the statement. The attached drawing ref 305-2 amends this to show the area of the two lagoons, the first the settlement lagoon, being 15m x 15m and the second, the clean water lagoon from which the discharge is made, being 22m x 13m. The top 0.5m of the settlement lagoon can drain through a pipe into the clean water lagoon, giving a storage volume, taking account of the internal batter of the lagoon sides, of 98m³. (14m x 14m x 0.5m).
3. The second lagoon can outfall at a rate of 7 litres/second into the River Yarrow through a pipe located 1m below the lagoon surface and having an orifice plate of 58mm calculated as shown in the appended letter from Betts Hydro.. The storage volume above the pipe in that lagoon is 400m³. The total storage capacity of the lagoons is therefore 498m³.
4. The on-site surface water storage is substantially larger than required for the 1 in 100yr plus 20% Climate Change scenario. The 173m³ total surface water storage requirement, which includes the 64.5m³ arising from the application proposals, can be accommodated in the existing lagoons with a capacity of 325m³ in reserve.

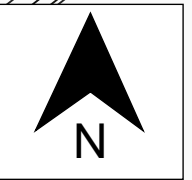
The reason why the lagoons are over-capacity is that they provide a source of water used by the washer. Whilst no water is discharged from the plant, the reclaimed materials are damp as a result of the process and the water lost in this way is expected to amount to some 1,000m³ an hour. The surface water collected during wet weather in the clean water lagoon is harvested for use within the washing plant.



che Wood

ESS

FB



Ppg Sta

Ruttle Plan Holdings Ltd's main depot (offices, parking etc.)

Walleys Wood

FBS

Piped outfall to River Yarrow

Perimeter bund

Drawing Title:
Layout Plan

- Key:
- Green Line Boundary
 - Approximate Plant Area
 - Plant elements (represented schematically)
 - Settlement lagoons (dimensions provided by client)

Notes:
Operational layout subject to minor changes due to on-the-ground challenges

Drawn by:	MS
Checked by:	
Approved by:	

The Mineral Planning Group Ltd.
The Rowan Suite
Oakdene House
Cottingley Business Park
Bingley, West Yorkshire
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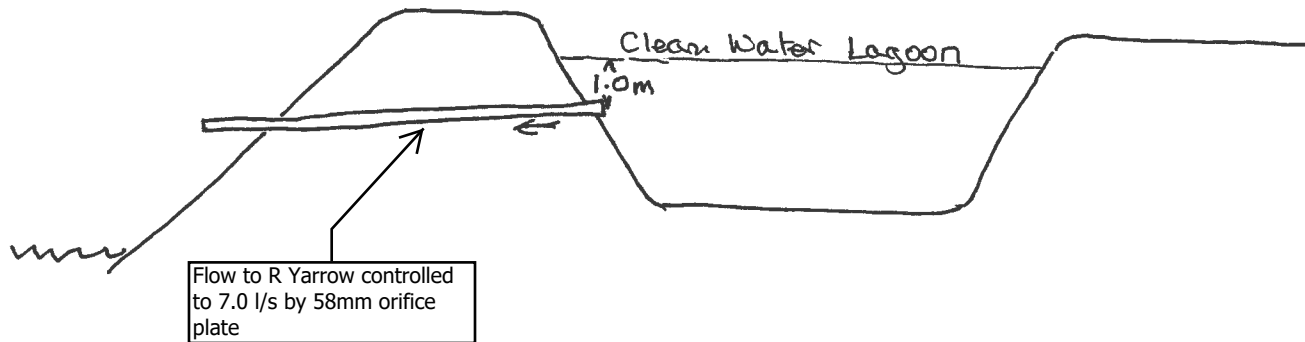
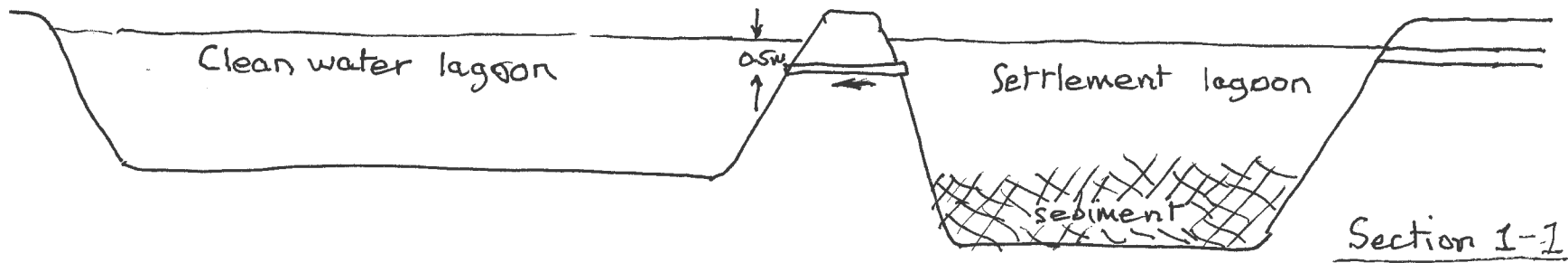
Scale:
1:1250 @ A3

Client:
Ruttle Plant Ltd.

Site:
Common Bank

Drawing Number: 305/6 - 2	Rev: 4.1
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Date:
01/12/2020



Section 2-2

Common Bank Works, Chorley
Washing Plant
Site surface water lagoons.

Scale 1:200
Ref 4942/01 Rev A
15/12/2020

Paul Sedgwick
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BL1 9WY

Send via email to paul.s@sedgwickassociates.co.uk

23rd December 2020

HYD552 Common Bank Works Washing Plant, Chorley

Orifice flow control sizing for surface water outfall

Dear Paul,

As requested, I have undertaken a sizing exercise for the orifice diameter to control the surface water peak rate of discharge from the clean water lagoon.

The orifice plate control design is very simple and operates by throttling flow through a narrow opening in a plate reducing the forward pass rate and is basically controlled by the head of water behind it.

The design characteristics are for a max. peak rate of surface water discharge of 7.0 l/s. To achieve this the maximum hydraulic design head is considered and you have confirmed this to be 1m. The **orifice diameter required is 58mm** and should be installed in a small chamber or manhole immediately downstream of the clean water lagoon on the outlet pipe.

The orifice diameter of 58mm has been sized using Microdrainage which is the industry standard design software when specifying flow control mechanisms; I have appended some supporting information for completeness.

If you have any queries, please do not hesitate to call me to discuss.

Yours sincerely



Richard Nicholas BEng(Hons) MBA GMICE MCIWEM
Director

BETTS HYDRO

Cc. Gareth Ruttle – via email gareth@ruttle.co.uk



Old Marsh Farm Barns
Welsh Road, Sealand
Flintshire CH5 2LY
Telephone: 01244 289 041

Tank Number	DS Pipe Number	US/MH Name	Control Type	Volume (m³)
1	1.001	S2	Orifice	1.9



- OK
- Cancel
- Help
- Clear
- Clear All

Orifice Details

Diameter (m)

Coefficient of Discharge

Invert Level (m)

Network Details

Cover Level (m)

	Pipe No.	Invert	
Lowest Incoming Pipe	<input type="text" value="1.000"/>	<input type="text" value="98.406"/>	(m)
Outgoing Pipe	<input type="text" value="1.001"/>	<input type="text" value="98.406"/>	(m)

Diameter Calculator ×

Input

Design Depth (m)

Design Flow (l/s)

Coefficient of Discharge

OK

Cancel

Help

Results

Diameter (m)

Enter Design Depth between 0.000 and 10.000

Old Marsh Farm Barns
Welsh Road Sealand
Flintshire CH5 2LY

Common Bank Works
Chorley
Ruttle



Date 23/12/2020

Designed by JF

File GEO LOCATION.MDX

Checked by RDN

Micro Drainage

Network 2018.1.1

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Surface Network 1

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	9.410	0.094	100.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	🔒
1.001	10.479	0.105	99.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	🔒

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	46.70	5.16	98.500	0.000	0.0	0.0	0.0	1.00	17.8	0.0
1.001	46.05	5.33	98.406	0.000	0.0	0.0	0.0	1.01	17.8	0.0

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Micro Drainage

Network 2018.1.1

Online Controls for Surface Network 1

Orifice Manhole: S2 , DS/PN: 1.001, Volume (m³): 1.9

Diameter (m) 0.058 Discharge Coefficient 0.600 Invert Level (m) 98.406