



MSA Environmental Ltd.
PO Box 3611
Trowbridge
Wiltshire
BA14 0TY

T: +44 1225 774 775
E: info@gomsa.co.uk
W: www.gomsa.co.uk

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Simon Leaver
Chief Executive Officer
Fylde Fresh & Fabulous
Stanley Villa Farm
Back Lane
Weeton
Preston
PR4 3HN

24th February 2021

Dear Simon,

Further to our recent conversation, please find below further supporting information in relation to the proposed new settlement tank at Fylde Fresh & Fabulous.

1 **Background**

- 1.1 A suitably sized settlement tank is essential for any conventional activated sludge system to ensure that the biomass, used for biological treatment, from the aeration stage is sufficiently separated from the treated effluent, reducing suspended solids within the final effluent, and improving treated effluent quality.
- 1.2 The existing Settlement Tank at Fylde Fresh & Fabulous (see Image 1) is unsuitable for the following reasons:
 - ◆ *The existing Settlement Tank is considerably undersized for the current required flows.*
 - ◆ *Currently, as the flows being discharged to the Settlement Tank are above the design capacity this is resulting in an elevated level of solids carryover into the final effluent.*
 - ◆ *The current positioning of the tank is not ideal as it is not completely level. This means that the full surface area is not being utilised.*
 - ◆ *There is no scum removal system (floating scum).*
 - ◆ *The existing settlement tank is plastic construction and has a limited design life and it was only considered a short-term solution.*
- 1.3 The main issue is that the treated effluent quality is not currently at the expected level and it is a challenge to maintain low treated effluent suspended solids and BOD/COD levels. The installation of a new larger settlement tank will help address this issue.



Image 1: Existing Settlement Tank with RAS and WAS Pump Sets.

2 **Details of new Settlement Tank:**

2.1 A new Settlement Tank is proposed with the following dimensions:

- ◆ *Diameter* - *6.8 m diameter*
- ◆ *Height of tank* - *3.5 m (above ground level)*

2.2 The new Settlement Tank shall be an above ground GLS (Glass Lined Steel) construction erected on a reinforced concrete base and fitted with a central sludge hopper (with suitable floor slope). An example of this is shown in Image 2.



Image 2: Green GLS Settlement Tank with scraper bridge.

- 2.3 Activated sludge from the lagoon shall be pumped via submersible pumps to the central stilling well within the new Settlement Tank. The stilling well will minimise any turbulence and facilitate the settling of sludge to the bottom of the tank, whilst allowing treated effluent to radiate outwards towards the peripheral launder weir.
- 2.4 The tank would be fitted with a half scraper bridge which will continually rotate (1 revolution per 30 minutes) and help direct settled sludge (on the tank floor) into a central collection hopper in the concrete tank base. From here, the sludge will be pumped to the existing Settlement Tank, which will be converted for use as a Sludge Tank, via a sludge return line. The new sludge dewatering Screw Press will be fed from this tank.
- 2.5 A new scum removal system will also be installed such that FF&F can periodically capture any floating scum that would otherwise collect and potentially overflow into the treated effluent. This will flow via gravity into a small scum collection tank and will occasionally be pumped back to the Sludge Tank via a valved connection into the sludge return line.
- 2.6 For the treated effluent, this will flow via gravity to the existing Treated Effluent Lagoon before it is discharged to surface water (under an existing environmental permit).
- 2.7 The installation of the new Settlement Tank also offers the opportunity for water reuse on site, as an improvement to treated effluent quality means that it could be reused on site for applications such as initial potato washing and de-stoning. Further treatment to this water source could also allow for usage within the factory.

3 **Design considerations:**

- 3.1 The new Settlement Tank is proposed to be located to the West of the existing Effluent Treatment Plant (ETP) area, North-East of the site's Anaerobic Digestion Tank (As per the layout drawing FFF-GA-100).
- 3.2 This position has been selected as the optimal location for siting a new Settlement Tank for the following reasons:
- ◆ *There is good access for craning in equipment during installation.*
 - ◆ *Sufficient space is available for installation of the c. 6.8 m diameter tank in this location.*
 - ◆ *There is limited suitable space available elsewhere in close enough proximity to the existing ETP.*
 - ◆ *It is in close proximity to Lagoon 1, which minimizes the need for extensive pipe runs and larger pump specs.*
 - ◆ *It is in close proximity to the control room, so it is easy for operators to make regular and frequent checks.*
 - ◆ *The tank will be suitably screened from the dwellings to the east of the site (back lane) by the existing woodland*
- 3.3 The colour of the new above ground GLS tank would be dark green and minimise visual impact.
- 3.4 GLS tanks are regularly used on wastewater treatment systems (municipal and industrial) as they offer the following advantages:
- ◆ *Long life expectancy and corrosion resistance.*
 - ◆ *The GLS panels are available in a variety of colours to blend in with the surroundings (i.e., Dark Green).*
 - ◆ *GLS tanks are also very reliable.*
 - ◆ *Installation time is relatively quick due to the modular bolted tank construction.*
 - ◆ *Minimal excavation work is required in comparison to alternatives (e.g., below ground GRP) and this is much better from a Health & Safety perspective.*
 - ◆ *GLS Settlement tanks can be provided in a range of diameters and heights, unlike GRP alternatives.*
- 3.5 The height of the Settlement Tank has been kept to an absolute minimum to minimise visual intrusion. In addition, the siting of the proposed settlement tank (adjacent to AD tank) will be such that it is suitably below the apex of the existing AD tank and this will also help minimise visual impact (See elevation drawing FFF-GA-101).

Best regards,

Sent by email

Jerad O'Pray BSc MCIWEM C.WEM CEnv
Managing Director, MSA Environmental Ltd

(e-mail: jerad.opray@go [msa.co.uk](mailto:jerad.opray@go.msa.co.uk))