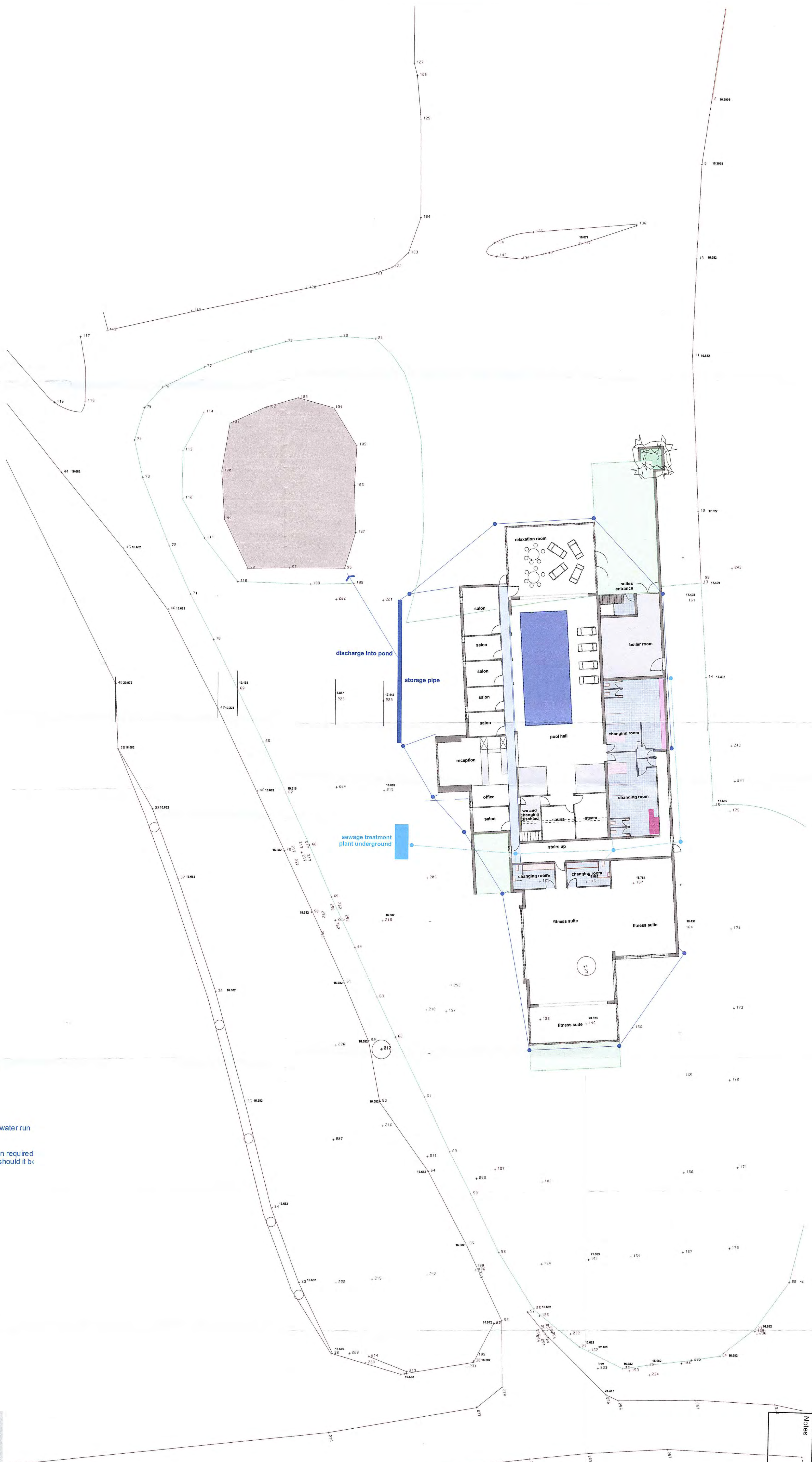


NYM/NLPA
13 AUG 2015



surface water drainage

Increased area of rainwater run-off at Ox Pasture Hall Hotel

Proposed areas of patios and paths
Total of proposed permeable surfaces = 350 m²

run-off rate from roofs - total area = 800 m²
intensity of 150mm/h may occur for 3 minutes once in 50 years

rate of run-off = $\frac{\text{effective area (m}^2\text{)} \times \text{rainfall intensity (m/h)}}{3600}$

= $\frac{800 \times 0.150}{3600}$

= 0.033 m³/s

therefore run off in 3 minutes = 0.033 x 180 = 6.0m³

therefore excess volume of water to be stored in larger pipes = 6000 litres

large pipe storage

750 diameter pipe area = πr^2 = 3.142 x .375 x .375 = 0.441 m²

cross sectional area = 0.441 m²

therefore length of pipe required for total storage = 14 m

Proposal

A pipe of 750mm diameter and 14 m long will provide the required storage for rainwater run off

It is proposed however, to cater for an additional 10% + storage capacity more than required Therefore the proposed pipe will be 16m long in order to give additional capacity should it be required.

foul drainage

Process Design

The Klargasair BioDisc® uniquely provides four separate treatment zones within a single vessel.

Primary Settlement Section: (1) Wastewater enters the primary chamber. Solids and heavy particles, including non-biodegradable items, settle and consolidate into a sludge which requires periodic removal. Liquid still containing some solid particles rises upwards into the Primary Biozone.

Biozone: (2) Discs in this area, rotating at approximately two revolutions per minute, allow oxygen to be absorbed into the developing biofilm as naturally occurring bacteria attach to the discs. These discs provide a highly beneficial pre-treatment area.

Flow Management Device: (3) Forward flow is controlled by a baling device attached to the rotor assembly and a pre-determined volume of partially treated waste is transferred into the secondary disc zone. Incoming flows in excess of the baling device capacity stay in the primary area and it is this that creates hydraulic balancing within the plant. Zones 1 and 2 (as above) between them have a balancing capacity equal to approximately 25% of the design flow of the plant and it is this feature that can allow the plant to retain six hours flow in the event of a power failure. This is now a requirement under the latest Building Regulations Part H2.

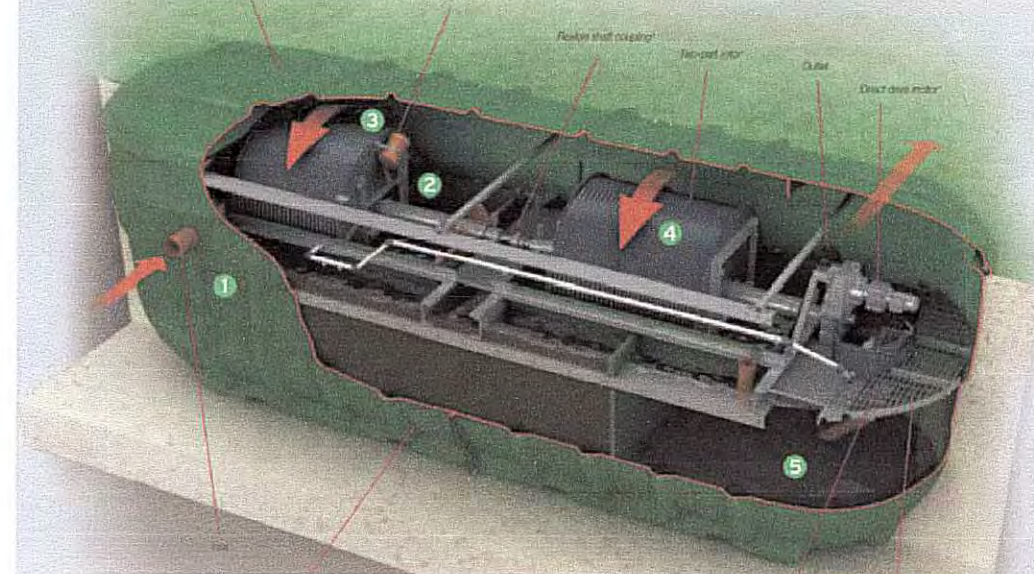
Secondary Disc Zone: Flows entering this zone are exposed to a second and separate bank of discs on which grow a further matrix of bacteria. Protected from flow variation and harmful contaminants, the bacteria efficiently use the nutrients in the effluent as a food source. The rotation of the discs creates a gentle flow path within both disc zones that moves wastewater along the zone and rotation also sloughs ageing or surplus bacteria from the discs creating space for new bacteria to develop.

A key benefit of BioDisc® is that the whole surface area is continually regenerated with new biological growth and that there is constant replenishment as all spent bacteria are flushed into the final settlement zone.

It is often the case with submerged or fixed media treatment processes, that the biological zones become clogged with dead or excessive biological growth, inhibiting treatment and demanding expensive and dirty maintenance.

Final Settlement Zone: (5) The almost fully treated effluent, is displaced from the disc area into the final settlement zone. The final settlement zone is fitted with a simple sludge return pump that transfers the settled material from the base of this zone into the primary settlement zone. This improves process performance by protecting the outlet and returning dilute and active biomass into the primary tank. This feature can be modified for seasonal flow variations.

The final effluent, free from solids and pollutants, exists through the outlet pipe.



drainage layout - scale 1:200

John Blaymires
56 Parkside Lane
Dipl. Arch (Leeds) RIBA
Scarborough YO12 4GR

CLIENT ox pasture hall hotel scale 1:200@A1
PROJECT proposed pipe complex and suites

Notes
AMENDED