
From: John Long
Sent: 18 July 2022 09:21
To: Hilary Saunders <h.saunders@northyorkmoors.org.uk>
Subject: Response to NE letter - Klagester

Dear Hilary

Thank you for sending me the NE response to the Snowdons Nab application. You have requested that I provide you with the Klagester details. I am therefore sending you a copy of the technical details of Klagester bio disc 6 person Unit: BA. The specification is also shown below. The Klagester outflow will drain into a drainage field via means of a pump to the former garden area south of the gravel drive (within the planning application area). This is a flat area with suitable conditions for drainage. The drainage field is shown on the attached Drainage Field Details Drawing 11-2021-1012 and photograph 20222018/09247. Nb – the Mulgrave Estate own the surrounding farmland surrounding the property.

The dwelling is a 3 bed property with a maximum occupation of 6 people. Daily flows from each person is 150 litres per day as specified in the Industry Code of Practice (ref: Flows and Loads

version 4). 6 x 150 litres = **0.9 m3** per day. It is also within the operational capacity of the Klagester bio disc 6 person unit: BA (1.2m3). You can see that the outflow will be significantly below NE's specified rate of 5.0 m3 per day.

The drainage field is more than 50m from the designated site boundary; and more than 40m from any surface water feature; it is in a area with a slope no greater than 15%; where the highwater table depth is at least 2m below the surface at all time; is not subject to significant flooding; and there are no known factors which would expedite the transport of phosphorus for example fissured geology, known sewer flooding, conditions in the soil/geology that would cause remobilisation phosphorus, presence of mineshafts; and there is no information on other discharge to ground within 200m. Nb – the Mulgrave Estate own the surrounding farmland surrounding the property.

Specification:

Model:	BA
Population Equivalent (Standard Flow):	6
Maximum Daily BOD (kg):	0.36
Maximum Daily Flow (m3):	1.2
Diameter (mm):	1995
Invert Depth Options (mm):	450 / 750 / 1250
Depth Below Inlet Invert (mm):	1400
Outlet Invert Depth (mm):	1315
Overall Height (mm) Depending on Invert:	2160 / 2460 / 2960
Height to Rim Of Cover (mm) Depending on Invert:	1945 / 2245 / 2745
Empty Weight (Kg):	310 / 325 / 380
Standard Power Supply:	1 phase
Motor Rating (Watts):	50
Full Load Current 1 Phase (amps):	0.51
Sludge Return Pump Rating (watts):	250

I trust this is sufficient to inform the HRA. If you need anything else let me know.

John Long

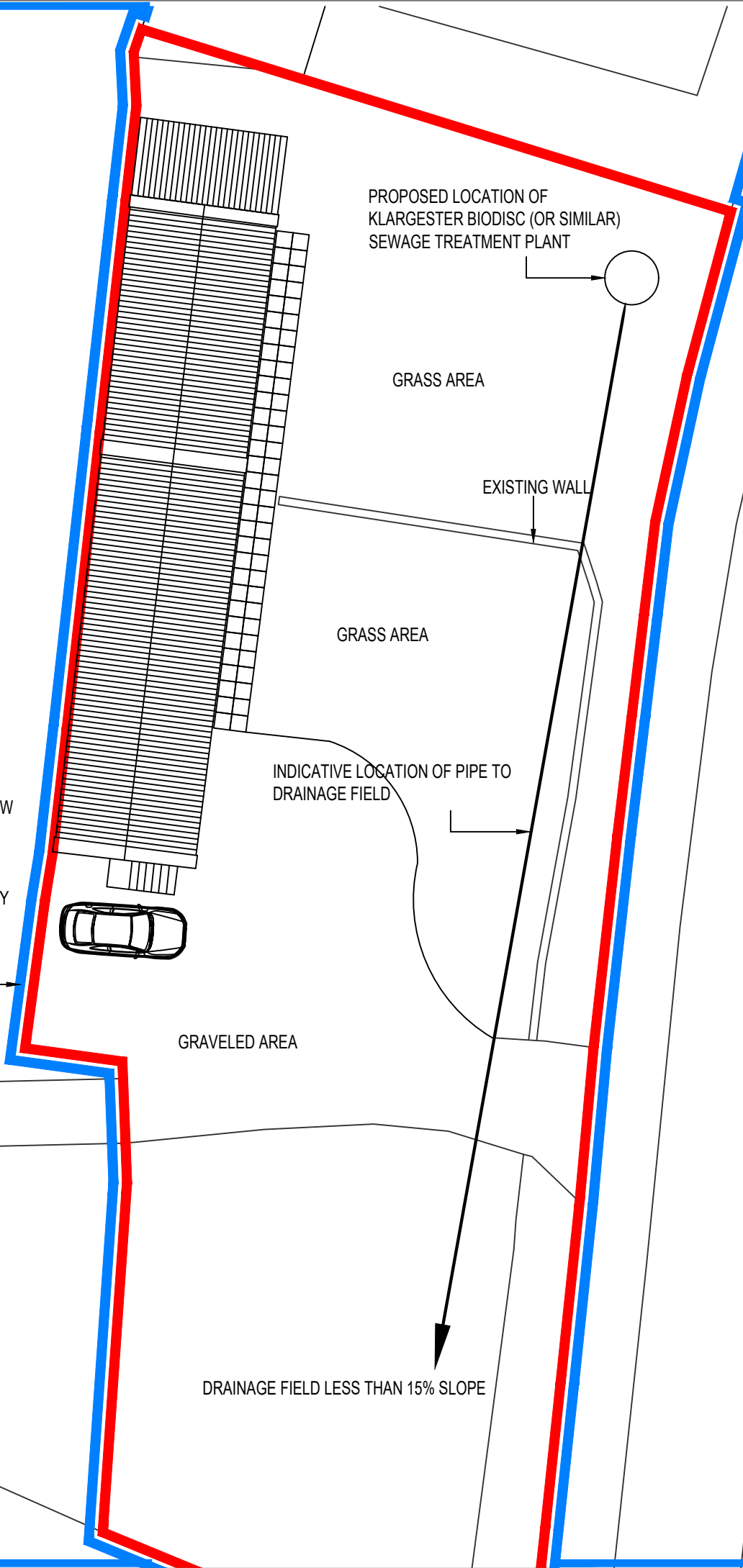


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2 x BAT BOXES (SCHWEGLER 1FF OR EQUIVALENT) AND 1 X BIRD BOX TO BE INSTALLED TO MAINTAIN BIODIVERSITY ON SITE AND MITIGATE THE LOSS OF POTENTIAL BREEDING BIRD HABITAT (EXACT LOCATION TO BE AGREED WITH NYMNP ECOLOGY TEAM)

NYMNP
18/07/2022

LANDSCAPING/PLANTING SCHEME TO INCLUDE PLANTING OF NATIVE HEDGEROW (90% HAWTHORN OR HORNBEAM AND 10% HAZEL, HOLLY, GUELDER ROSE AND OR CORNUS ON THE SOUTHERN PART OF THE SITE'S WESTERN BOUNDARY ADJACENT TO THE FIELD WITH A GATE TO PROVIDE ACCESS INTO THE FIELD



PROPOSED LOCATION OF KLARGESTER BIODISC (OR SIMILAR) SEWAGE TREATMENT PLANT

GRASS AREA

EXISTING WALL

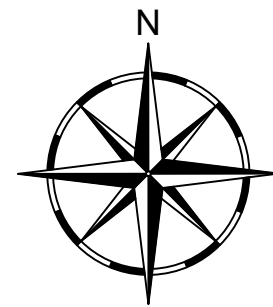
GRASS AREA

INDICATIVE LOCATION OF PIPE TO DRAINAGE FIELD

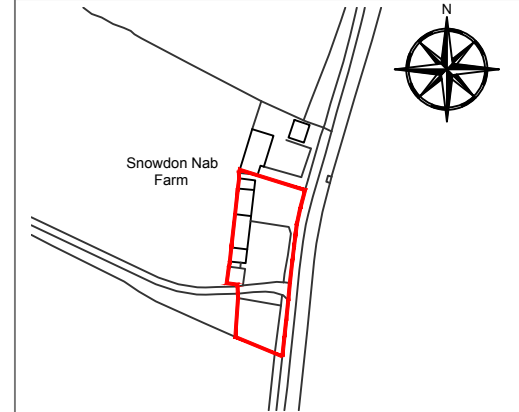
GRAVELED AREA

DRAINAGE FIELD LESS THAN 15% SLOPE

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Rev	Date	Description	Drawn	Check	Approve



SITE PLAN (Scale 1: 1250)

SCOPE OF WORKS

PROPOSAL FOR CHANGE OF USE OF EXISTING BARN TO CREATE A DWELLING AT SNOWDON NAB BARN, EGTON GRANGE, WHITBY, YO22 5BA. THE PROPOSED DWELLING/S WILL INCLUDE UTILITY ROOM, MAIN BATHROOM, KITCHEN/LOUNGE AREA, THREE BEDROOMS, ONE WITH ENSUITE. THE EXISTING GARAGE WILL REMAIN IN USE AS A GARAGE. THE EXISTING LOFT STORE ACCESSED VIA THE EXTERNAL STEPS WILL BECOME A WORKSPACE/STORE.

THE PROJECT WILL AIM TO MATCH THE EXISTING AS CLOSE AS PRACTICALLY POSSIBLE AND USE SUSTAINABLE MATERIALS AND ECO PRODUCTS WHERE AVAILABLE.

MATERIAL SCHEDULE

- EXTERIOR WALLS: REPAIRED WHERE NECESSARY (TO MATCH EXISTING)
- INTERIOR WALLS: TIMBER STUD WITH PLASTERBOARD
- ROOF: RED INTERLOCKING (TO MATCH EXISTING)
- RAINWATER GOODS: BLACK (TO MATCH EXISTING)
- WINDOWS: TIMBER (COLOUR TBC)
WINDOW LOUVRES (COLOUR TBC)
- DOORS: TIMBER (COLOUR TBC)
TIMBER GARAGE DOORS (COLOUR TBC)
- BOUNDARY: EXISTING DRY STONE WALLING TO BE REPAIRED WHERE REQUIRED
- ACCESS: ACCESS / EGRESS TO BE RETAINED
- NOTE 1: EXISTING SITE LEVELS TO REMAIN UNCHANGED
- NOTE 2: STRUCTURAL CALCULATIONS BY OTHERS
- NOTE 3: SITE AREA = 0.109 ha (0.269 ac)
- BS 1192: Part 3 - CONSTRUCTION DRAWING PRACTICE

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Client **MULGRAVE ESTATE**

Project **SNOWDON NAB BARN
EGTON GRANGE
WHITBY, YO22 5BA**

Drawing **SITE PLAN WITH DRAINAGE FIELD
DETAILS**

Drawing Number **11-2021-1012**

Scale	1:200	Sheet	0	Rev	-
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Drawn **JG**

SITE PLAN (Scale 1:200)

013103
OWNERS HANDBOOK
BA-BC BioDisc



Kingspan Environmental Service Contact Numbers:

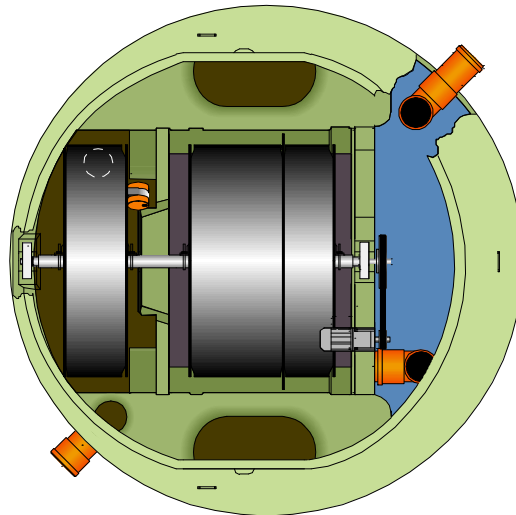
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NI: 028 3025 4077

IRL: 048 3025 4077

NYMNP

18/07/2022



**MANAGED FLOW
BIODISC®
BA BAX BB BC NB NC**

Issue	Description	Date
02	CC1088	September 2012

HEALTH AND SAFETY

These warnings are provided in the interest of safety. You must read them carefully before installing or using the equipment.

It is important that this document is retained with the equipment for future reference. Should the equipment be transferred to a new owner, always ensure that all relevant documents are supplied in order that the new owner can be acquainted with the functioning of the equipment and the relevant warnings. Installation should only be carried out by a suitably experienced contractor, following the guidelines supplied with the equipment.

We recommend the use of a dust mask and gloves when cutting GRP components.

A qualified electrician should carry out electrical work.

Sewage and sewage effluent can carry micro-organisms harmful to human health. Any person carrying out maintenance on the equipment should wear suitable protective clothing, including gloves. Good hygiene practice should also be observed.

Covers must be kept locked.

Observe all hazard labels and take appropriate action to avoid exposure to the risks indicated.

The correct ongoing maintenance is essential for the proper operation of the equipment. Service contracts are available and recommended. Please contact Kingspan for details of your local service provider.

Should you wish to inspect the operation of the equipment, please observe all necessary precautions, including those listed below, which apply to maintenance procedures.

BioDisc units contain rotating machinery and associated drive belts.

Ensure that you are familiar with the safe working areas and accesses.

Ensure that the working area is adequately lit.

The power supply to the equipment must be isolated at the control panel(s) before lifting the covers. Where a specific maintenance procedure requires the equipment to be running with the covers off, all care must be taken to avoid contact with moving parts and electrical components or conductors. Drive guards must be replaced and secured if removed during maintenance.

Once power has been isolated, the control panel must be kept locked shut to avoid accidental re-connection whilst work or inspection is being carried out.

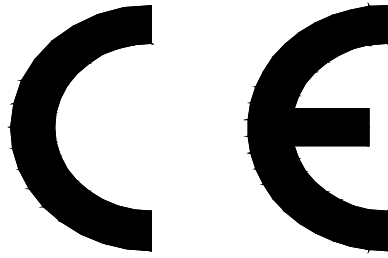
Use only the designated access walkways. Do not walk on the cover or deep well safety mesh(es).

Take care to maintain correct posture, particularly when lifting. Use appropriate lifting equipment when necessary. Keep proper footing and balance at all times. Avoid any sharp edges.

Desludging should be carried out by a licensed waste disposal contractor holding the relevant permits to transport and dispose of sewage sludge. The contractor must refer to the desludge instructions in this Handbook, a copy of the instructions are fastened under the covers.

There are separate installation guidelines available to provide full instructions for installations.

In keeping with the Company policy of continuing research and development Kingspan reserve the right to alter specifications and dimensions without notice



Kingspan Environmental
Aston Clinton
Aylesbury
Buckinghamshire
HP22 5EW
United Kingdom

07

EN 12566-3

BA - BF BioDisc

Hydraulic daily load:	1.2m³/day - 10m³/day
Material:	GRP Glass Reinforced Plastic
Watertightness (water test):	Pass
Structural Calculation:	Pass
Treatment efficiency:	COD: 89%
	BOD₅: 96%
	SS: 95%
	Total P: 48%
	NH₄: 89%
	Total N: 46%
Electrical consumption:	1.3 kWh/d - 3.1 kWh/d
Sludge production:	0.21 litres per person per day

CONTENTS

	Page
HEALTH AND SAFETY	2
1 INTRODUCTION	4
2 TECHNICAL DATA	5
3 DESCRIPTION AND PROCESS	5
3.1 Introduction	5
3.2 Primary Settlement Tank	6
3.3 Biozone	6
3.4 Final Settlement Tank	7
3.5 Optional Integral Discharge Pump (BA/BB only)	7
3.6 Control Panel	7
4 INITIAL START UP PROCEDURE	7
4.1 Introduction	7
4.2 Water	7
4.3 Electrical	7
4.4 BioDisc	8
4.5 Switch On	8
4.6 Running Checks	8
4.7 Optional Loss of Rotation Alarm	9
4.8 Process Initiation	9
5 OPERATION	9
5.1 Introduction	9
5.2 Do's and Don't's	10
5.3 Desludging and Maintenance	11
6 MAINTENANCE	11
6.1 Introduction	11
6.2 Customer Checks	11
6.3 Failure of Power Supply or of Discharge Pump	11
6.4 IMPORTANT - READ THIS. TAKE IMMEDIATE ACTION IF A PROBLEM ARISES	11
6.5 Sludge Removal from BioDiscs BA, BAx, BB, NB, BC AND NC	12
6.6 Desludge Volumes	12
7 TROUBLE SHOOTING GUIDE FOR BIODISC UNITS BA/BAx/BB/NB/BC/NC	13
8 CONTROL PANEL FAULT CODES & FUSES	14
9 WARRANTY	14

1 INTRODUCTION

- 1.1.1 Thank you for choosing a Kingspan product. This manual will help you to keep it operating efficiently over a long service life. Please read this manual thoroughly, preferably before installation.
- 1.1.2 This manual should be referred to by:
- The installer
 - The electrician
 - The service engineer
 - The maintenance engineer
 - The desludge contractor
 - The owner/user

2 TECHNICAL DATA

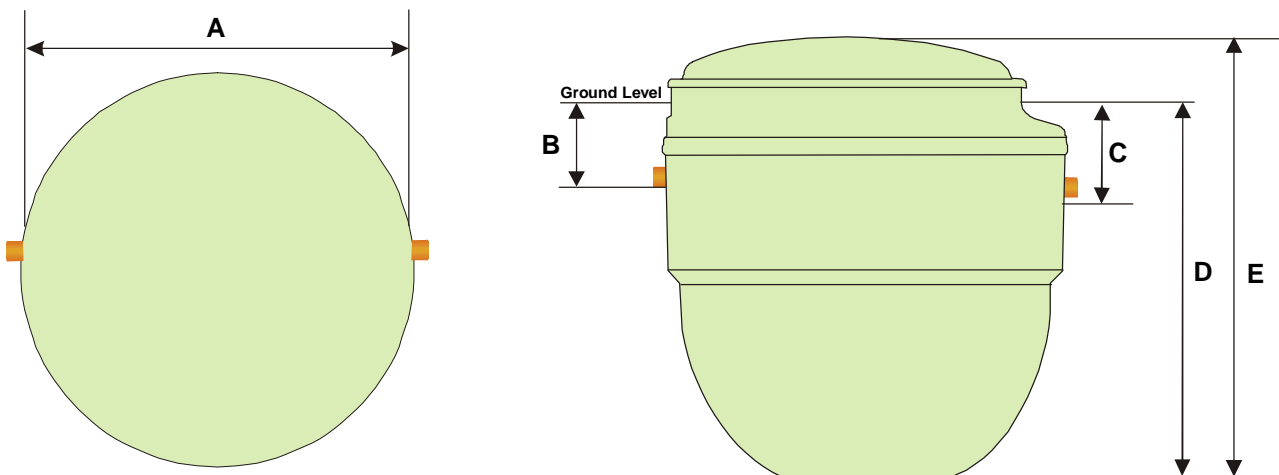


Fig. 1 General Dimensions

UNIT		BA/BAx/BB/NB			BC/NC	
Diameter	A mm	1995			2450	
Inlet Invert depth	B mm	450	750	1250	600	1100
Outlet Invert Depth C mm	Gravity discharge	535	835	1335	685	1185
	Pumped discharge	425	425	425	N/A	N/A
Depth Below Ground	D mm	1850	2150	2650	2420	2920
O/A Height	E mm	2160	2460	2960	2825	3325
Standard Power Supply		1 phase				
Optional Power Supply		3 phase				
Drive Motor Rating 1ph/3ph		60/60 watts			75/60 watts	
Sludge Return Pump Rating 1ph		480 watts (NB only)			480 watts (NC only)	
Integral Discharge Pump* Rating		480 watts (Not NB)			N/A	

*Optional

UNIT		BA	BAx	BB	BC
Maximum number of properties		1	1	2	Consult Kingspan
Maximum number of bedrooms		4	7	< 4 in each house	
Maximum Daily BOD	kg	0.36	0.54	0.72	1.08
Maximum Daily Flow	m ³	1.2	1.8	2.4	3.6
Peak Flow Rate **	m ³ /hr	0.15	0.22	0.30	0.45

** For ½ hour max. in any 2 hour period

- 2.1.1 All surface water must be excluded. These units should be used exclusively for the treatment of sewage from domestic properties. Contact Kingspan if your sewage results, wholly or partly, from any commercial function.

3 DESCRIPTION AND PROCESS

3.1 Introduction

- 3.1.1 BioDisc systems are designed to accept crude domestic sewage and produce an effluent of suitable quality for discharge to a watercourse or soakaway system, subject to the approval of the appropriate regulatory authority. These BioDisc's are self-contained single piece units.

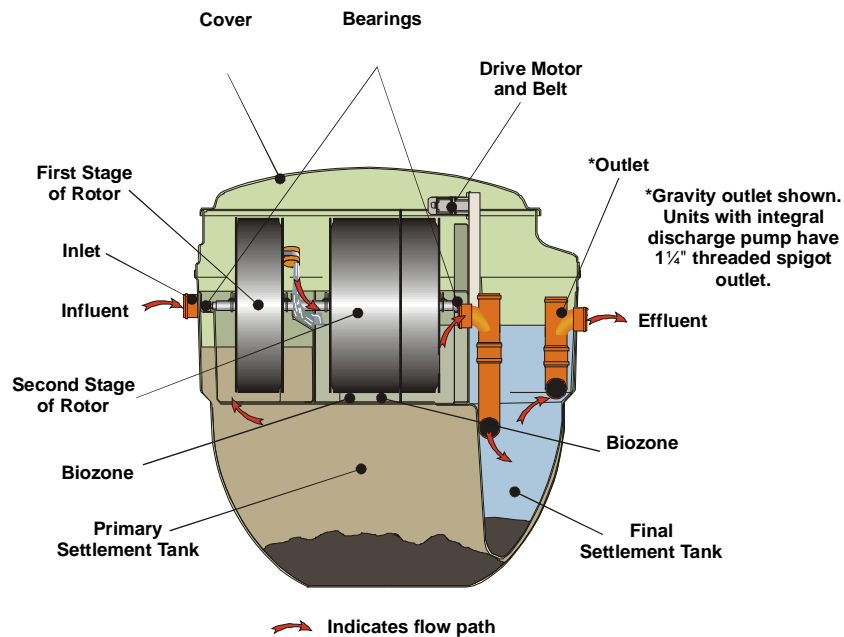


Fig. 2 - General Arrangement of BioDisc System

- 3.1.2 The main casing and cover of the BioDisc are constructed of Glass Reinforced Plastic (GRP). All steel parts are stainless, galvanised or surface coated to protect against corrosion. The discs are vacuum formed polyethylene.
- 3.2 Primary Settlement Tank**
- 3.2.1 Crude sewage enters the Primary Settlement Tank (PST), through an inlet pipe in the side of the BioDisc. Solids are settled out and retained for periodic desludging.
- 3.2.2 The PST is designed to have sufficient capacity to accept high flows over a short period and the patented Managed Flow System allows the liquid level to fluctuate to accommodate such surges.
- 3.3 Biozone**
- 3.3.1 The Biozone contains the Rotor, which consists of corrugated polyethylene discs mounted on a horizontal shaft, supported by a bearing at each end. The rotor is slowly rotated by an electric motor and reduction gearbox with a belt drive.
- 3.3.2 A flat GRP walkway along either side of the Biozone contains a number of ports which give desludge access to the Primary Settlement Tank.
- 3.3.3 The surface of the discs becomes colonised by naturally occurring micro-organisms, which form a visible coating known as the Biomass. As the discs rotate, the Biomass is alternately submerged in the settled sewage and aerated by exposure to the atmosphere. Under these conditions the Biomass can efficiently break down the pollutants in the sewage.
- 3.3.4 The Biozone and discs are divided into two stages, separated by a fixed baffle. Settled sewage enters the first stage of the Biozone through a submerged transfer slot. The liquid level in this stage will fluctuate in the same way as in the PST and the bacteria are exposed both to the fluctuating liquid level and to fluctuations in sewage strength and concentration of domestic chemicals such as washing powders. One of the functions of this stage is to minimise the effect of such shock loads, which could otherwise inhibit the process.
- 3.3.5 The second stage of the Biozone is hydraulically sealed from the first stage and maintains a constant liquid level. Liquid is transferred from the first to the second stage, at a steady rate, by a series of buckets attached to the rotor. This controlled flow of effluent is at the heart of the patented Managed Flow System, which promotes healthy and balanced growth of the micro-organisms essential for efficient treatment.
- 3.3.6 Excess Biomass (also referred to as humus) sloughs off the surface of the discs and passes with the flow, to the Final Settlement Tank.

3.4 Final Settlement Tank

- 3.4.1 The Final Settlement Tank (FST) is situated under the drive motor and receives a steady flow of treated effluent from the Biozone. The humus settles out and is retained for periodic desludging.
- 3.4.2 In NB and NC units the settled humus is periodically returned to the Primary Settlement Tank, for co-settlement, by a timer controlled pump system.
- 3.4.3 Final treated effluent discharges from the FST through a dip pipe (excepting units with an Integral Discharge Pump).

3.5 Optional Integral Discharge Pump (BA/BB only)

- 3.5.1 The discharge pump sits within a moulded chamber, positioned in the Final Settlement Tank. Treated effluent flows into the chamber, by gravity from the FST. When the liquid in the chamber reaches a pre-determined level, a float switches on the pump which then pumps effluent out of the chamber. The same float also switches off the pump when the liquid level has been sufficiently lowered, thus protecting the pump from running dry. We do recommend when this option is purchased, that a high level alarm is also fitted to warn against pump mal-operation or failure.

3.6 Control Panel

- 3.6.1 The weatherproof control panel need not be mounted next to the plant. It can be wall mounted or fixed to the mounting frame (available separately). Panel options are :
 - 3.6.1.a Standard Control Panel: (and all panels) include a 3 amp fuse which protects the motor should there be an electrical problem within the BioDisc.
 - 3.6.1.b Loss of Rotation Alarm Control Panel: This replaces the Standard Control Panel and also includes a Loss of Rotation (LOR) Alarm, which will activate if the rotor stops turning after a delay of 2-3 minutes (other than a failure in the power supply). An additional remote slave beacon may also be fitted. The loss of rotation of the rotor is sensed by a reed switch mounted near the BioDisc motor in conjunction with a magnet attached to the rotor.
 - 3.6.1.c Integral Discharge Pump Panel also includes a current overload protected supply for the discharge pump.
 - 3.6.1.d Nitrification Unit Panels contain a timer to control the operation of the sludge return pump and current overload protection for the pump motor.
- 3.6.2 All units will restart following a power cut, unless there has been a power surge greater than the pre-set limit of 3 amps.

4 INITIAL START UP PROCEDURE

4.1 Introduction

- 4.1.1 Every care is taken to ensure that all mechanical components are correctly fitted, adjusted and lubricated prior to leaving the factory. However, subsequent handling during transportation and installation may result in the movement of components and a subsequent need to re-adjust prior to starting the unit. Your installing contractor should have thoroughly checked the unit but if, on inspection, you consider that any components require adjustment, please contact Kingspan. We do recommend you purchase a Pre-service Agreement Inspection from an approved engineer.
- 4.1.2 Once the unit has been installed it should be left filled with water. Please switch on the motor, following the procedure below and leave the unit running, even if there is no sewage being fed into the plant. **If the unit has been installed with no operational power supply, then remove the motor/gearbox unit and store it in a dry or heated environment until such time as the unit is ready for permanent operation. The motor gearbox unit and drive belt should then be replaced and tensioned by Kingspan or an experienced contractor.**
- 4.1.3 We recommend that the system should be inspected. Please contact Kingspan. Where an immediate start-up is necessary, the following basic procedures should be carried out. Ensure that all Health and Safety precautions are observed.

4.2 Water

- 4.2.1 Check that the BioDisc is full of water to the outlet level.

4.3 Electrical

- 4.3.1 Check that the power supply is connected to the control panel. Check that all electrical components and conductors are earthed.

4.4 BioDisc

- 4.4.1 Check that the BioDisc is in order, with no obvious damage or misalignment of parts. If any problems are discovered, contact Kingspan.
- 4.4.2 Check that all electrical components: Drive Motor, Sludge Return Pump and LOR Alarm sensor, (where applicable) are connected to the Control Panel.
- 4.4.3 NB/NC units only: Check that the Sludge Return Timer in the BioDisc Control Panel is set correctly, as described in the installation instruction.



Fig. 3 - Pump Position

Units with optional discharge pump: Check that the pump float and associated pipework are positioned as shown and that the float can move freely.

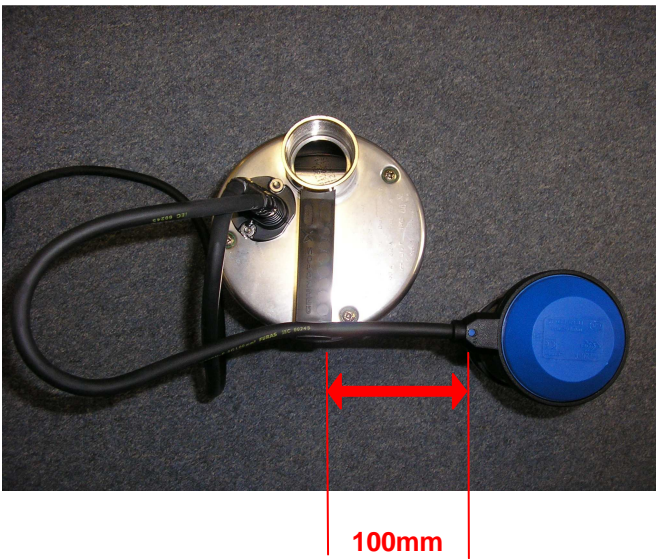


Fig. 4 - Float Setting

The float cable length is pre-set during assembly to a dimension of 100mm. Check that this dimension has not been altered. If for any reason the cable becomes disconnected from the retaining clip it should be replaced so that there is 100mm of cable between the clip and the float. Note: Setting less free cable will cause the pump to operate more frequently and may shorten its working life.

Important: With the pump chamber empty of water the float must hang clear of the chamber floor. The correct float position and distance is essential. The float must not be able to either trap or tangle, as this will prevent its correct operation. The float must not jam.

4.5 Switch On

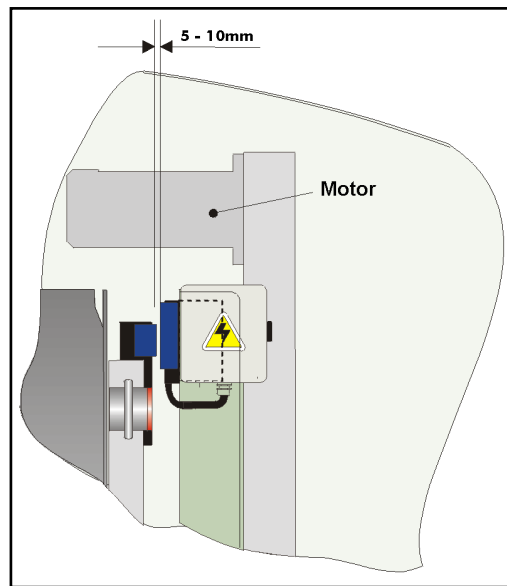
- 4.5.1 Open the Panel. Put the isolating switch into the “on” position. Close the panel. Note: If the unit is fitted with a sludge return pump, this will start immediately and will run for the pre-set period.

4.6 Running Checks

- 4.6.1 Check that the rotor is running smoothly in the correct direction of rotation and is not contacting any part of the fixed structure.
- 4.6.2 Check that the forward feed buckets are discharging correctly from the first to the second stage of the Biozone.
- 4.6.3 Units with optional Discharge pump: Once the rotor is turning, a flow through the FST and into the pump chamber will be generated. Check that the pump switches on at high level and off at low level.
- 4.6.4 **Note:** The pump switch-on level must be below the pump chamber inlet.

4.7 Optional Loss of Rotation Alarm

- 4.7.1 The alarm sensor (reed switch) is mounted adjacent to the motor/gearbox assembly. The sensor may be supplied out of position, to allow for possible minor rotor movement during transport. Check the sensor position and if necessary adjust to provide a gap of 5 - 10 mm between the sensor and the actuator magnet.



Check operation of the Loss of Rotation (LOR) Alarm as follows:

- 4.7.1.a Remove the main cover and switch off the Control Panel.
 - 4.7.1.b Remove the safety cover. At this point the display will read "F1".
 - 4.7.1.c Disconnect the cable to the motor.
 - 4.7.1.d Replace the safety cover.
 - 4.7.1.e Switch the control panel on.
 - 4.7.1.f After no more than a couple of minutes the display will read "F8".
 - 4.7.1.g Switch the panel off and remove the safety cover.
 - 4.7.1.h Reconnect the cable to the motor.
 - 4.7.1.i Replace the safety cover.
 - 4.7.1.j Switch the control panel on. The display will read "- -".
 - 4.7.1.k Press the orange reset button. The display will return to normal running mode.
 - 4.7.1.l Replace the main cover on the control panel.
- 4.7.2 Malfunctioning of the LOR Alarm does not prevent operation of the BioDisc System, but it should be reported to your maintenance engineer for early rectification.

4.8 Process Initiation

- 4.8.1 During installation, the unit will have been filled with water. Allow sewage to enter the unit, this will gradually displace the clean water used during installation.
- 4.8.2 Colonisation by micro-organisms will commence naturally and an operating biomass will develop on the discs after approx. 3-6 weeks, depending on individual site conditions and season.

5 OPERATION

5.1 Introduction

- 5.1.1 The biological treatment process of your BioDisc is self regulating and it requires no specialised operational knowledge, but it is important that you are aware of the following:
- 5.1.2 Your BioDisc system uses colonies of live natural micro-organisms (biomass), to break down the pollutants in the sewage. Many chemicals used in households and commercial establishments can inhibit or kill these micro-organisms; particularly if used in excessive amounts.
- 5.1.3 Bear in mind that treatment plants serving small populations do not have the benefit of dilution that occurs at a large sewage works. A bottle of bleach tipped down the toilet in Birmingham would be virtually lost amongst the millions of gallons of sewage arriving at the city's treatment works; a bottle of bleach in a plant serving one or two houses could be a lethal dose for the biomass.

- 5.1.4 If the biomass is damaged, it will usually recover in time. But in the meanwhile one of the more obvious symptoms may be an unpleasant smell, so it is in the operators interest to avoid this.
- 5.1.5 Generally speaking all common household cleaning fluids are acceptable, provided they are used in accordance with the manufacturers instructions and stipulated concentrations. The following "Do's and Don'ts" includes the most common household chemicals, but it is not an exhaustive list and the golden rule is "If in doubt - leave it out."
- 5.1.6 Bear in mind too that it isn't only the toilet that is connected to the treatment plant; anything that goes down the sink, bath etc., also ends up there.
- 5.1.7 During normal operation the control panel displays a single flashing red light between the two digits. During battery recharge a second red light will flash on the right of the display.

5.2 Do's and Don't's

5.2.1 Washing machine and dishwasher detergents, washing up liquids:

- 5.2.2 These are generally all right to use in the normal concentrations and usage found in domestic housing applications. Problems can occur if, for instance, you are washing the jerseys of the local rugby club's five teams!
- 5.2.3 BioDisc incorporates a unique flow management system which enhances its ability to handle shock loads of detergent waste, but there are limits even to this, so if you have to do unusual amounts of clothes washing it would be a good idea to spread it over a few days.
- 5.2.4 Excessive use of Biological washing powders can cause degradation of the biomass. Non-biological detergents, without enzymes, may be substituted.

5.2.5 Floor cleaners, disinfectants and bleaches:

- 5.2.6 These are safe to use in accordance with the makers recommendations and in the minimum necessary concentration. Do not pour neat disinfectant or bleach down sinks or outside gullies. If these are smelly it usually indicates a build up of decaying material or a plumbing problem and should be dealt with accordingly.

5.2.7 Nappy disinfectants and bottle sterilising fluids e.g. Milton

- 5.2.8 When disposing of the used fluid, ensure that it is well diluted with water. The easiest way of doing this is usually to flush it away down the toilet.

5.2.9 Waste disposal units:

- 5.2.10 These do not inhibit the biomass, but, depending on use, they can present the treatment plant with considerable extra load. This can result in the treatment process becoming unbalanced, leading to problems. Much better to compost your vegetable peelings etc - it's cheaper and environmentally friendly.

5.2.11 Home beer and wine making.

- 5.2.12 This presents a similar problem to waste disposal units. The BioDisc has to work as hard to treat one pint of beer tipped down the drain as it does to treat all the normal waste produced by one person in 24 hours. See also the notes above regarding sterilising fluids.

5.2.13 THE FOLLOWING MUST NOT BE DISCHARGED INTO THE DRAINS

- 5.2.13.a Motor oil, grease, anti-freeze, brake fluid etc.
- 5.2.13.b Cooking oil and fat.
- 5.2.13.c Weed-killers, insecticides, fungicides and other gardening chemicals.
- 5.2.13.d Paint, thinners, white spirit, turpentine, creosote etc.
- 5.2.13.e Chemical drain cleaners.
- 5.2.13.f Acid based brick/stone floor cleaners.
- 5.2.13.g Medicines
Take unused medicines to a pharmacist for safe disposal.
- 5.2.13.h Photographic developing fluids.
- 5.2.13.i Nappies, sanitary towels, rags, soft toys, tennis balls etc.
- 5.2.14 This may seem obvious, but it is amazing what gets flushed down the loo from time to time. Although such items are not directly damaging to the biomass they can cause problems, not the least of which is simple blockage of the drains.
- 5.2.15 Even so-called disposable nappies and sanitary towels often do not degrade fully in the treatment plant and can lead to malfunction, so it is best to dispose of them by other means.

5.3 Desludging and Maintenance

- 5.3.1 These are vital to the plant's ongoing operation and should be carried out in accordance with the guidelines in the maintenance section of this manual.
- 5.3.2 Maintenance contracts are available. Please contact Kingspan for your local service provider.

6 MAINTENANCE

6.1 Introduction

- 6.1.1 Kingspan BioDisc units are designed and engineered for the minimum possible maintenance requirements, consistent with proper performance. Nevertheless, it is important that routine preventive electro/mechanical maintenance and de-sludging are carried out at the appropriate intervals by suitably qualified persons.
- 6.1.2 Please contact Kingspan for your local service provider.

6.2 Customer Checks

- 6.2.1 As a back-up to routine servicing and to assist trouble-free operation, we recommend that you familiarise yourself with the operation of your BioDisc and make the following checks from time to time: (Refer to Fig. 6 for positions of parts mentioned.)
- 6.2.2 Your attention is specifically drawn to the Health and Safety section of this manual.
 - 6.2.2.a Review the appearance of the Biomass. It may be light grey to grey at the first bank, gradually changing to brown in the second stage and dark brown at the drive end of the rotor. If the growth is excessively thick and the colour predominantly grey throughout, an overload condition is indicated.
 - 6.2.2.b Visually check the general condition of the BioDisc.
 - 6.2.2.c Check that the inlet and outlet pipes (C) are clear. Remove any debris if necessary.
 - 6.2.2.d Check that the dosing bucket(s) (D) are transferring liquid consistently from the first to second biozone section.
 - 6.2.2.e Check that the buckets are clear of gross accumulations of biomass, simply clean with a water jet from a hose pipe.
 - 6.2.2.f Units with an Integral Discharge Pump: Check that the pump float can move freely and switches the pump on and off as the level in the pump chamber rises and falls. If a high level alarm is fitted check that the alarm float can move freely.
 - 6.2.2.g Familiarise yourself with the normal operating sound of your BioDisc. Report any unusual noises to your maintenance engineer.
- 6.2.3 If any malfunction is discovered, contact your maintenance engineer.

6.3 Failure of Power Supply or of Discharge Pump

- 6.3.1 BioDiscs with gravity discharge: In the event of a power failure, the control panel will show fault code "F1". Flow through the BioDisc will continue by gravity, although the quality of the discharge will gradually deteriorate. When power is re-established, check that the rotor has re-started and is turning correctly (see Section 3.0 paragraphs (5) and (6)). If the BioDisc has not been working for some time, the rotor may become unbalanced. This can cause the rotor to turn unevenly or prevent the unit restarting. In the event of any difficulties, contact your local service provider.
- 6.3.2 **Low Voltage Power Supply**
- 6.3.3 Motors may burn out if this condition is experienced. Consult electrician.

6.4 IMPORTANT - READ THIS. TAKE IMMEDIATE ACTION IF A PROBLEM ARISES

- 6.4.1 BioDiscs with pumped discharge (Integral or external pumps): During power cuts, or in the event of pump failure (indicated by fault code "F5" on the control panel), the level of sewage in the BioDisc will rise and if unchecked will lead to overflowing and/or possible damage to the motor/gearbox. At normal flow rates, sewage will reach the level of the motor in about 40 hours (6 people) or 20 hours (12 people). If pump operation cannot be re-established within this time the sewage level in the BioDisc must be carefully monitored and incoming flow restricted. If necessary the BioDisc should be emptied by a licensed waste contractor to avoid sewage overflowing the internal baffles or damaging the motor. **Do not allow the motor/gearbox to come into contact with sewage.**
- 6.4.2 *We advise that a High Level Alarm is fitted on all units with a pumped outlet. Contact Kingspan for more details.*

6.4.3 When normal operation is resumed, check for solids in the Biozone and FST and de-sludge if necessary. Check rotor rotation as above.

6.5 Sludge Removal from BioDiscs BA, BAx, BB, NB, BC AND NC.

6.5.1 Refer to the illustration below for recommended desludge positions.

(Note: Illustration is typical; individual units may vary).

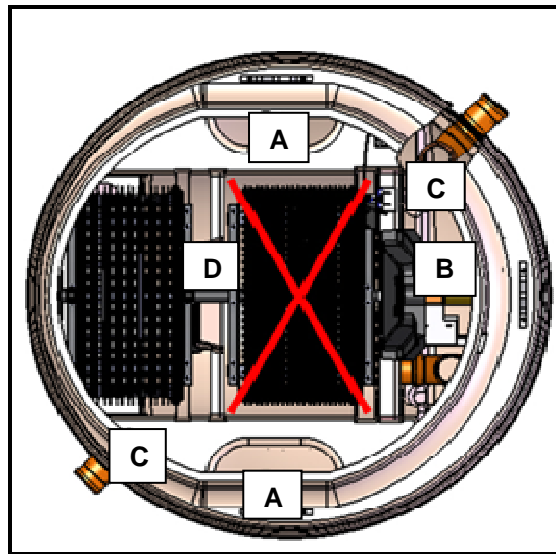


Fig. 6 - Desludge Positions

6.5.2 Isolate power to the BioDisc.

6.5.3 Undo the BioDisc cover latches and remove the cover. Hinged covers should be folded before removal.

6.5.4 Remove surface scum and about half the contents of the Primary Settlement Tank through the desludge ports [A] on either side of the rotor. Use the ports alternately. If port covers are fitted, keep the port not in use covered.

6.5.5 Empty the Final Settlement Tank [B]. **DO NOT** attempt to remove liquid from the discharge pump chamber (if fitted).

6.5.6 Remove remaining matter from the Primary Settlement tank.

6.5.7 **DO NOT** attempt to remove any liquid from the rotor section.

6.5.8 **DO NOT** attempt to clean off the gelatinous biomass growth on the rotor.

6.5.9 Ensure that the BioDisc inlet and outlet pipes [C] and the forward feed buckets [D] are free of debris. Ensure that the desludge port covers, if fitted, are replaced, then close and lock the BioDisc covers.

6.5.10 Re-connect the power supply. Ensure that the control panel door is locked shut.

6.5.11 Units with Loss of Rotation Alarms only: Wait for two minutes. If the alarm on the control panel does not activate, this indicates that the rotor has successfully re-started. If the alarm activates, switch off the power at the control panel and immediately switch on again. If the alarm continues to activate, isolate the power supply and notify the plant owner so that the problem can be investigated.

6.6 Desludge Volumes

Model	BA	BAx	BB/NB	BC/NC
Primary Settlement Tank	2200 litres (485 galls)	2200 litres (485 galls)	2200 litres (485 galls)	4580 litres (1009 galls)
Final Settlement Tank	400 litres (88 galls)	400 litres (88 galls)	400 litres (88 galls)	850 litres (187 galls)
Desludge Period	12 months Maximum	9 months Maximum	6 months Maximum	7 months Maximum

You should not exceed the maximum desludge periods given above.

7 TROUBLE SHOOTING GUIDE FOR BIODISC UNITS BA/Bax/BB/NB/BC/NC

SYMPTOM	CAUSE	ACTION
Strong odour	Excessive build up of sludge and scum	Desludge the unit.
	Grease (white/cream crust in primary tank and/or thick, smooth biomass ¹)	De-sludge unit. If necessary hose off discs. Avoid excessive use of fats and oils. Please note removal of Biomass will reduce treatment until new Biomass establishes.
	Chemicals in the system (very sparse or no biomass ¹)	In most instances, units will recover naturally from toxic inhibition events. Refer to section 4 of the Owners Handbook for general guidance on use of domestic chemicals.
	Excessive laundry use (thick, stringy whitish biomass ¹ on first section)	Spread out laundry operations. Avoid biological powders where possible and use the minimum possible amounts of detergent. Refer to section 4.
	Unit overloaded (thick/grey biomass ¹) over most of rotor	Check section 1 of the Owners Handbook for the process capability of the unit. If in doubt, contact Kingspan.
	Rotor stopped	See rotor stopped section below.
	Drains inadequately ventilated	Check that there is an open high level vent at the head of the drains (not "Durgo" valve or tile vent).
Rotor stopped	Switched off	Check that the motor switch on the panel is in the "on" position. Re-set if necessary.
	Power failure	Check the fuse/trip at the supply board. Replace/re-set as necessary. If the problem persists, contact Kingspan.
	Wiring fault	Have the wiring to control panel checked by a competent electrician. If the supply wiring is OK contact Kingspan.
	Drive belt broken	Contact Kingspan.
	Drive motor faulty	Contact Kingspan.
	Loose pulleys on rotor or gearbox output shaft	Contact Kingspan.
Rotor fails to re-start after a stoppage	Rotor unbalanced	Hose off excess Biomass on the heavy side of the rotor. Note removal reduces treatment.
Rotor turns intermittently	Drive motor overheating	Contact Kingspan.
Effluent discharge not to required standard	See strong odour and rotor stopped sections.	
	Managed flow system in-operative.	Check that bucket(s) are in place and discharging correctly into the biozone second stage.
	Sludge return pump inoperative (NB/NC only)	Contact Kingspan.
Unit flooded (units with integral discharge pump)	Discharge pump not working.	Check that the pump switch on the panel is in the "on" position. Re-set if necessary. Check that pump control float is clear of obstructions and set at the correct length. If the problem persists consider emptying unit to protect motor and gearbox and contact Kingspan or service provider. (See Section 5).

8 CONTROL PANEL FAULT CODES & FUSES

CODE	FAULT CONDITION	FUSE	Amp
F1	No power to the unit	Customer Fuse box	N/A
F3	The high level alarm has activated (where fitted)	N/A	N/A
F4	The fuse to the motor has failed	F3	3.15
F5	The fuse to the discharge pump (where fitted) has failed	F1	5.0
F6	The fuse to the chemical dosing pump has failed	F4	0.25
F7	The fuse to the recirculation pump has failed	F2	5.0
F8	The loss of rotation alarm has been activated	N/A	N/A
--	The unit has had a fault which has now corrected itself	N/A	N/A

All fuses are Time Lag HBC 20mm type.

9 WARRANTY

Taken from 'Kingspan's Terms & Conditions of Sale'

The company will replace or, at its option, properly repair without charge any goods which are found to be defective and which cause failure in normal circumstances of use within a period of twelve months from the date of delivery.

This warranty is conditional upon:

- (a) the Buyer notifying the Company of any claim within Seven days of the failure becoming discernible.
- (b) the Company being allowed a reasonable opportunity to inspect the goods so as to confirm that they are defective.
- (c) the goods not having been modified, mishandled or misused and being used strictly in accordance with any relevant instructions issued by the Company.

The Company's liability under this Clause is limited to the repair or replacement of the defective goods, and does not cover costs of transport, installation or associated site costs, if applicable.

The Company's liability to replace or repair the goods is in lieu of and excludes all other warranties and conditions, and in particular (but without limitation) the Company shall have no liability of any kind for consequential loss or damage.

For any further advice, please contact us.

A Warranty Form is included in this package, to register your unit for Warranty. Please complete ALL sections of the Form, and return it at your earliest convenience.

Also within this package is a Notice, describing the necessary maintenance of the plant in use. This should be fixed within the building.

Our service provider: Kingspan Environmental Services: 0844 846 0500

NOTICE:



KINGSPAN BioDisc®

The foul drainage from this property discharges into a package treatment works.

Maintenance is required, the frequency of which depends upon the model installed, its use and its application. Please consult your owners pack.

- * A BA BioDisc requires annual maintenance and desludging.
- * A BB BioDisc requires annual maintenance and desludging at 6 month intervals.
- * Other BioDisc models require more frequent desludging and maintenance (see individual operating manuals)

Maintenance and Desludging should be carried out by the owner in accordance with the Manufactures instructions.

THE OWNER OF THE PROPERTY IS LEGALLY RESPONSIBLE FOR ENSURING THAT THE SYSTEM DOES NOT CAUSE POLLUTION, A HEALTH HAZARD OR A NUISANCE.

We recommend that a separate log is kept of all maintenance and service visits, the log should detail the date and any action taken, e.g. Regular maintenance service, breakdown visit, desludge volume removed, parts replaced.

This notice should be fixed by the owner within the building alerting current and future owners to the maintenance requirement. (Building regulation H2 (1.57))

Please contact Kingspan Environmental Services on +44 (0) 844 846 0500 to arrange a maintenance service or to request replacement operating instructions. It would be helpful if you provide your equipment serial number.

NYMNPA

18/07/2022



PERFORMANCE RESULTS

Kingspan Environmental Ltd.
College Road North, HP22 5EW, Aylesbury
United Kingdom

EN 12566-3
"Small wastewater treatment system for up to 50 PT"

Small wastewater treatment system BioDisc®
Rotating biological contractor

Nominal organic daily load	0.29	kg BOD ₅ /d	
Nominal hydraulic daily load	1.2	m ³ /d	
Material	glass reinforced plastic (GRP)		
Watertightness (water test)	pass		
Crushing resistance (vertical load test)	pass (also wet conditions)		
Treatment efficiency (nominal sequences)		Efficiency	Effluent
	COD	89.4 %	59 mg/l
	BOD ₅	95.7 %	10 mg/l
	NH ₄ -N	88.6 %	3.8 mg/l
	SS	94.8 %	15 mg/l
Electrical consumption	1.3	kWh/d	

Performance tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
D-52074 Aachen

Certified according to
ISO 9001:2008
Notified Body number: 1739



Prüfinstitut für Abwassertechnik GmbH

geprüft - tested - teste

This document replaces neither the declaration
of conformity nor the CE marking.

Elmar Lancé

May 2013

Date: 11 July 2022
Our ref: 398172
Your ref: NYM/2022/0481



Mrs Hilary Saunders
Case Officer
North York Moors National Park Authority
The Old Vicarage
Bondgate
Helmsley, York YO62 5BP



Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

BY EMAIL ONLY

Dear Mrs Saunders,

Planning consultation: Conversion of outbuilding to a principal residence dwelling with associated amenity spaces, landscaping, package treatment plant and parking.

Location: Snowdon Nab, Smiths Lane to Snowdon nab, Egton Grange, Whitby, YO22 5BA.

Thank you for your consultation on the above dated 24 June 2022

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

SUMMARY OF NATURAL ENGLAND'S ADVICE

FURTHER INFORMATION REQUIRED TO DETERMINE IMPACTS ON DESIGNATED SITES

As submitted, the application could have potential significant effects on Arncliffe and Park Hole Woods SAC/SSSI. Natural England requires further information in order to determine the significance of these impacts and the scope for mitigation.

The following information is required:

- *Habitats regulations assessment (HRA)*
- *Confirmation of PTPs discharge method (direct to watercourse or drainage field)*

Without this information, Natural England may need to object to the proposal. Please re-consult Natural England once this information has been obtained.

Natural England's further advice on designated sites/landscapes and advice on other issues is set out below.

Additional Information required – Habitats Regulations Assessment Arncliffe and Park Hole Woods SAC

Despite the proximity of the application to European Sites, the consultation documents provided do not include information to demonstrate that the requirements of regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) have been considered by your authority, i.e. the consultation does not include a Habitats Regulations Assessment.

It is Natural England's advice that the proposal is not directly connected with or necessary for the management of the European site. Your authority should therefore determine whether the proposal is likely to have a significant effect on any European site, proceeding to the Appropriate Assessment

stage where significant effects cannot be ruled out. Natural England must be consulted on any appropriate assessment your authority may decide to make.

Natural England advises that there is currently not enough information provided in the application to determine whether the likelihood of significant effects can be ruled out.

We recommend you obtain the following information to help you undertake a Habitats Regulations Assessment:

- The Klargester biodisk package treatment plant will be required to discharge either directly to watercourse or to a drainage field. Natural England advise if the proposal is to discharge directly to watercourse then an environment agency permit will be required.

Please note the Environment Agency has a presumption against private sewage treatment works in sewered areas and will always seek connection to the mains sewer where possible and practicable. A principle concern relates to the failure rates of PTPs and the lack of review and periodic upgrades via regulatory systems that apply to mains. There will be site specific factors (e.g. in proximity to watercourses, soil saturation levels, etc.) that would need to be considered when evaluating this risk.

- Small discharges to ground i.e. less than 5m³/day¹ that are within the surface or groundwater catchment of a designated site will present a low risk that the phosphorus will have a significant effect on the designated site where certain conditions are met:
 - a) The drainage field is more than 50m from the designated site boundary (or sensitive interest feature)² **and**;
 - b) The drainage field is more than 40m from any surface water feature e.g. ditch, drain, watercourse³, **and**;
 - c) The drainage field in an area with a slope no greater than 15%⁴, **and**;
 - d) The drainage field is in an area where the high water table groundwater depth is at least 2m below the surface at all times⁵ **and**;
 - e) The drainage field will not be subject to significant flooding, e.g. it is not in flood zone 2 or 3 **and**;
 - f) There are no other known factors which would expedite the transport of phosphorus for example fissured geology, known sewer flooding, conditions in the soil/geology that would cause remobilisation phosphorus, presence of mineshafts, etc **and**;
 - g) To ensure that there is no significant in combination effect, the discharge to ground should be at least 200m from any other discharge to ground⁶. The density of discharges to ground should also not be greater than 1 for every 4ha⁷ (or 25 per km²).

¹ Many of the criteria are largely based on evidence from 'small discharges' often individual houses. Therefore a limit of 5m³/day is used based on this being the size used by Environmental Agency for what is classed as a small discharge for environmental permitting purposes.

² 50m is the distance as which no phosphorus signal was detected at this distance (NECR171 and NECR222)

³ 40m is the distance that represents a low risk, based on there was a weak phosphorus signal this distance for some of the small discharges (NECR171 and NECR222)

⁴ 15% is the slope that represents a low risk based on the methodology outlined in NECR222.

⁵ 2m is the groundwater depth that represents a low risk, based on very low levels being detected in soil at depth below this (NECR171 and NECR222)

⁶ The 200m is based on the 50m distance where no phosphorus signal was detected (NECR171) for each septic tank. So for two drainage field areas not to overlap they need to be at least 100m apart. A safety factor of two is then applied to ensure that in the long term there will be the certainty that the effective drainage field phosphorus retention areas don't overlap.

⁷ NECR170 identifies evidence that suggests that the maximum density of these systems should be not more than one for every 4ha.

Sites of Special Scientific Interest

Natural England notes that the application site is located in proximity to the Arncliffe and Park Hole Woods SSSI. Based on the plans submitted, Natural England considers that the proposed development could have potential significant effects on the interest features for which the Arncliffe and Park Hole Woods SSSI site has been notified. Natural England requires further information in order to determine the significance of these impacts. Our advice regarding the potential impacts upon the Arncliffe and Park Hole Woods SSSI coincide with our advice regarding the potential impacts upon the Arncliffe and Park Hole Woods SAC as detailed above.

Please note that if your authority is minded to grant planning permission contrary to the advice in this letter, you are required under Section 281 (6) of the Wildlife and Countryside Act 1981 (as amended) to notify Natural England of the permission, the terms on which it is proposed to grant it and how, if at all, your authority has taken account of Natural England's advice. You must also allow a further period of 21 days before the operation can commence.

Other advice

In addition, Natural England would advise on the following issues.

Protected Landscapes

The proposed development is for a site within or close to a nationally designated landscape namely North York Moors National Park. Natural England advises that the planning authority uses national and local policies, together with local landscape expertise and information to determine the proposal. The policy and statutory framework to guide your decision and the role of local advice are explained below.

Your decision should be guided by paragraph 176 and 177 of the National Planning Policy Framework which gives the highest status of protection for the 'landscape and scenic beauty' of AONBs and National Parks. For major development proposals paragraph 177 sets out criteria to determine whether the development should exceptionally be permitted within the designated landscape.

Alongside national policy you should also apply landscape policies set out in your development plan, or appropriate saved policies.

The landscape advisor/planner for the National Park will be best placed to provide you with detailed advice about this development proposal. Their knowledge of the site and its wider landscape setting, together with the aims and objectives of the park's management plan, will be a valuable contribution to the planning decision. Where available, a local Landscape Character Assessment can also be a helpful guide to the landscape's sensitivity to this type of development and its capacity to accommodate the proposed development.

The statutory purposes of the National Park are to conserve and enhance the natural beauty, wildlife and cultural heritage of the park; and to promote opportunities for the understanding and enjoyment of the special qualities of the park by the public. You should assess the application carefully as to whether the proposed development would have a significant impact on or harm those statutory purposes. Relevant to this is the duty on public bodies to 'have regard' for those statutory purposes in carrying out their functions (section 11 A(2) of the National Parks and Access to the Countryside Act 1949 (as amended)). The Planning Practice Guidance confirms that this duty also applies to proposals outside the designated area but impacting on its natural beauty.

Should the developer wish to explore options for avoiding or mitigating effects on the natural environment with Natural England, we recommend that they use our [Discretionary Advice Service](#).

Please send further correspondence, marked for my attention, to consultations@naturalengland.org.uk

Yours sincerely

James Hughes
Conservation and Planning Lead adviser
Yorkshire and Northern Lincolnshire area team

NYMNP

18/07/2022

