

- NOTES**
1. EXTRACT FROM 1:2,500 ORDNANCE SURVEY DIGITAL SHEET NOS. 3062-A, 3062-B, 3062-C, 3062-D, 3063-A, 3063-C, 3130-A & 3130-B
 2. ORDNANCE SURVEY IRELAND LICENCE NO. SU 0000712 (C)
ORDNANCE SURVEY & GOVERNMENT OF IRELAND
ON MAY 2009 AERIAL PHOTOGRAPHY
 3. TOPOGRAPHIC SURVEY PREPARED BY FUGRO BKS BASED ON MAY 2009 AERIAL PHOTOGRAPHY

LEGEND	
	ROADSTONE WOOD LTD. LANDHOLDING (c. 211 ha)
	PLANNING APPLICATION AREA (c. 167.5 ha)
	N2 NATIONAL PRIMARY ROUTE (DUAL CARRIAGEWAY)
	NORTH ROAD (R135)
	PROPOSED OVERALL EXTRACTION AREAS (XX HECTARES)
	EXISTING NOISE MONITORING LOCATIONS
	EXISTING DUST MONITORING LOCATIONS
	EXISTING GROUNDWATER WELL MONITORING LOCATIONS
	EXISTING SURFACEWATER MONITORING LOCATIONS
	PROPOSED NEW SURFACEWATER MONITORING LOCATION
	BLAST MONITORING LOCATION

roadstone wood
The Right Choice

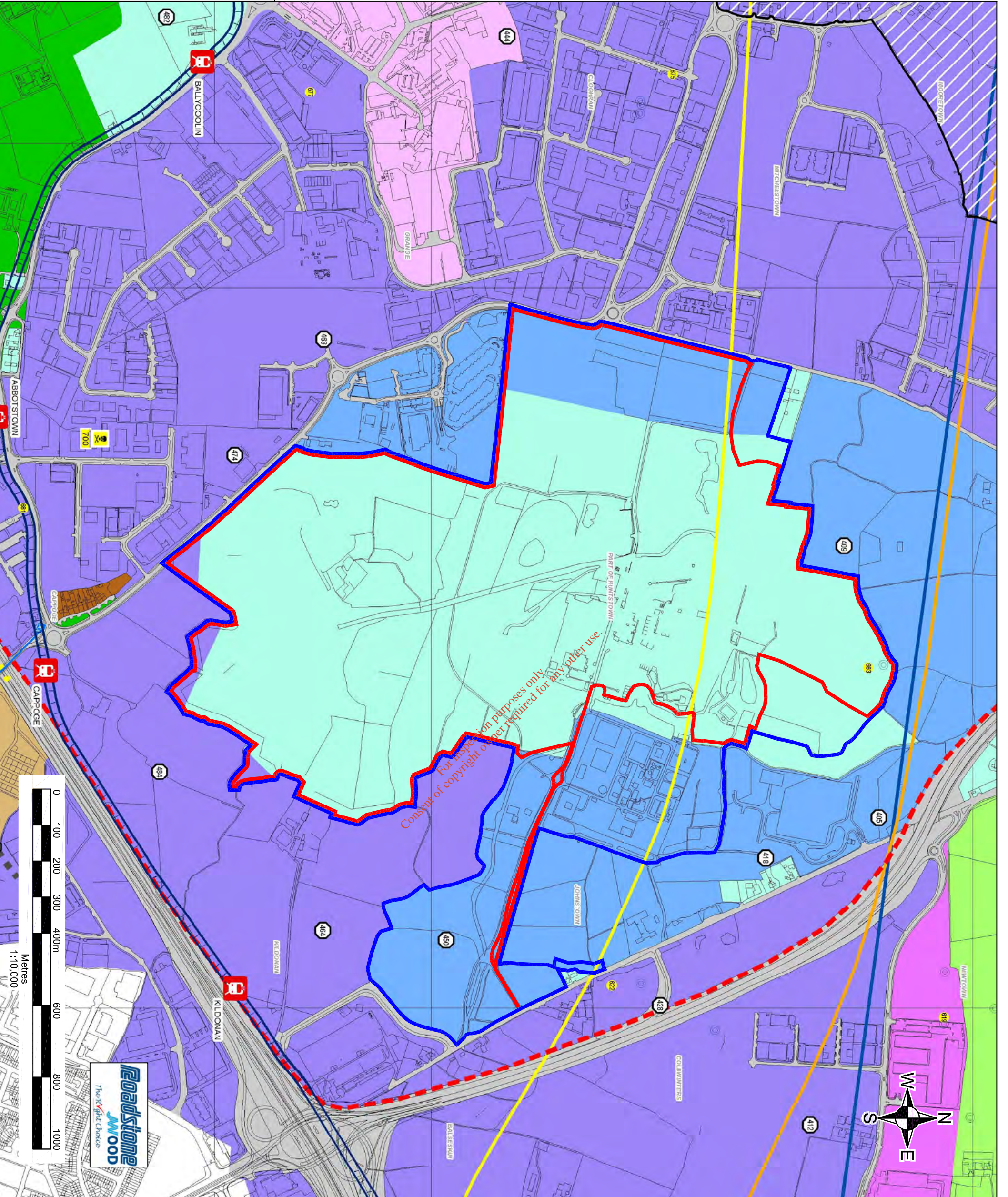
SLR
SLR CONSULTING IRELAND
7 DUNDRUM BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrconsulting.com

ROADSTONE WOOD LTD.
ENVIRONMENTAL IMPACT STATEMENT
CONTINUANCE OF USE
HUNTSTOWN QUARRY,
HUNTSTOWN, CO. DUBLIN

ENVIRONMENTAL
MONITORING LOCATIONS

FIGURE 2-6

Scale 1:10,000 Date FEBRUARY 2012



NOTES
 1. EXTRACT FROM FINAL COUNTY DEVELOPMENT PLAN (2011-2017) ZONING OBJECTIVES
 MAP - MAP NO. 12.BLANCKARSTOWN NORTH
 2. ORDNANCE SURVEY IRELAND LICENSE NO. 50/00007H (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

	ROADSTONE WOOD LTD. LANDHOLDING (c. 211 ha)
	PLANNING APPLICATION AREA (c. 167.5 ha)

ZONING OBJECTIVES

	Objective C1 Provide for and protect local, regional, community, education, health care and social infrastructure
	Objective C8 Protect and provide for a Greenbelt
	Objective G6 Provide opportunities for general enterprise and employment
	Objective IA Protect and enhance high amenity areas
	Objective HI Provide for heavy industry
	Objective IT Provide for office, research and development and high technology/high technology manufacturing type enterprises in a high quality built and landscaped environment
	Objective IC Protect, provide for and improve local centre facilities
	Objective OS Remove and provide for open space and recreational amenities
	Objective IA Provide for new residential communities in accordance with approved local area plans and subject to the provision of the necessary social and physical infrastructure
	Objective IB Provide for and facilitate non-related business which has a demonstrated need for a rural location
	Objective IS Provide for residential development and protect and improve residential amenity
	Objective IS Protect and promote in a balanced way, the development of agriculture and rural related enterprises, businesses, the rural landscape, the built and cultural heritage
	Objective IV Protect and promote the character of the Rural Village and promote vibrant community in accordance with an approved local area plan, and the availability of physical and community infrastructure
	Objective WD Provide for distribution, workshops, storage and light industrial facilities which require good access to a major road network within a good quality environment

SPECIFIC OBJECTIVES

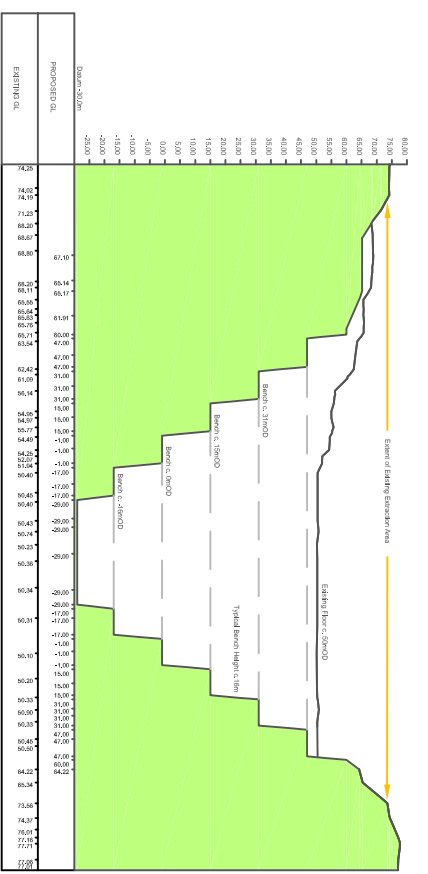
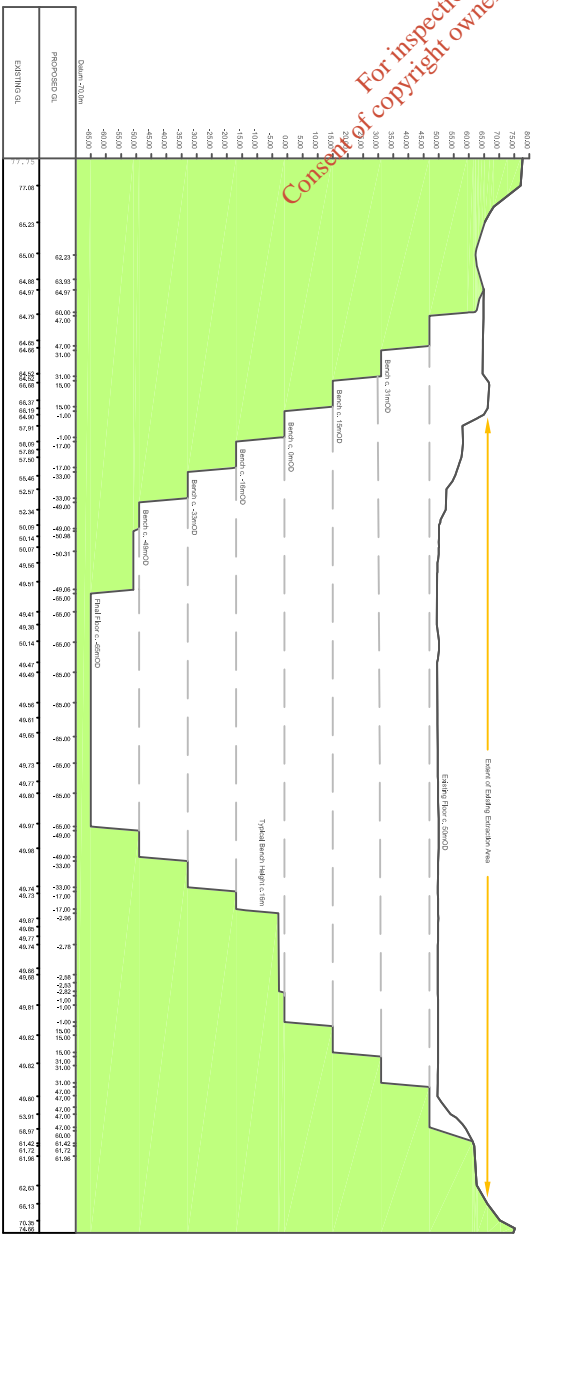
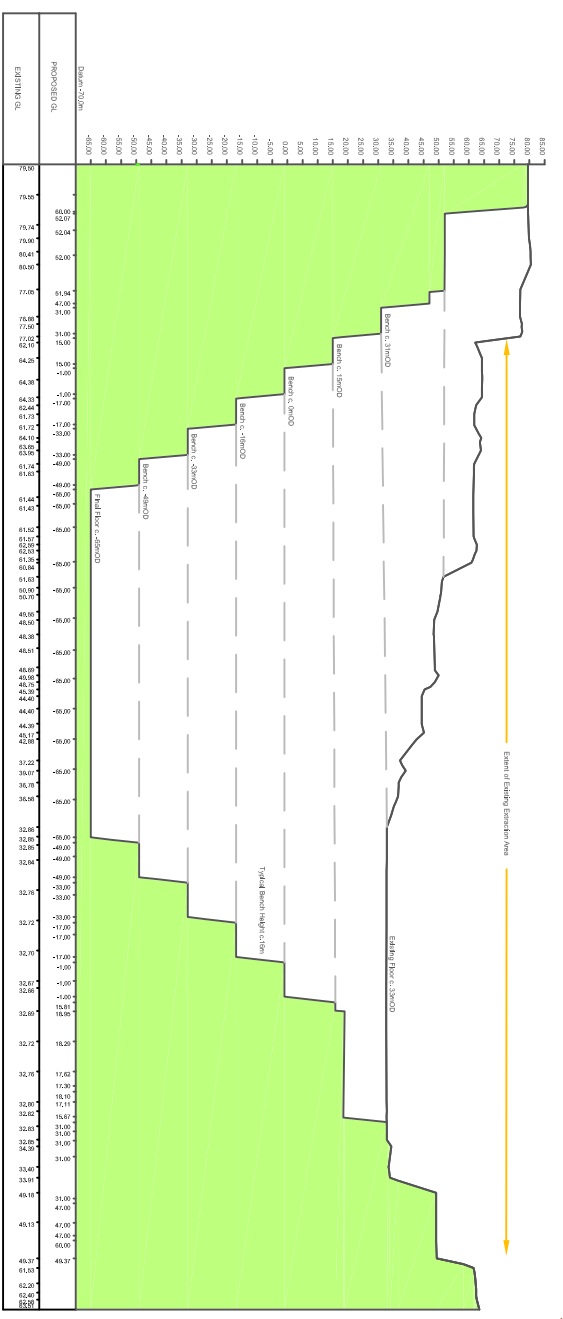
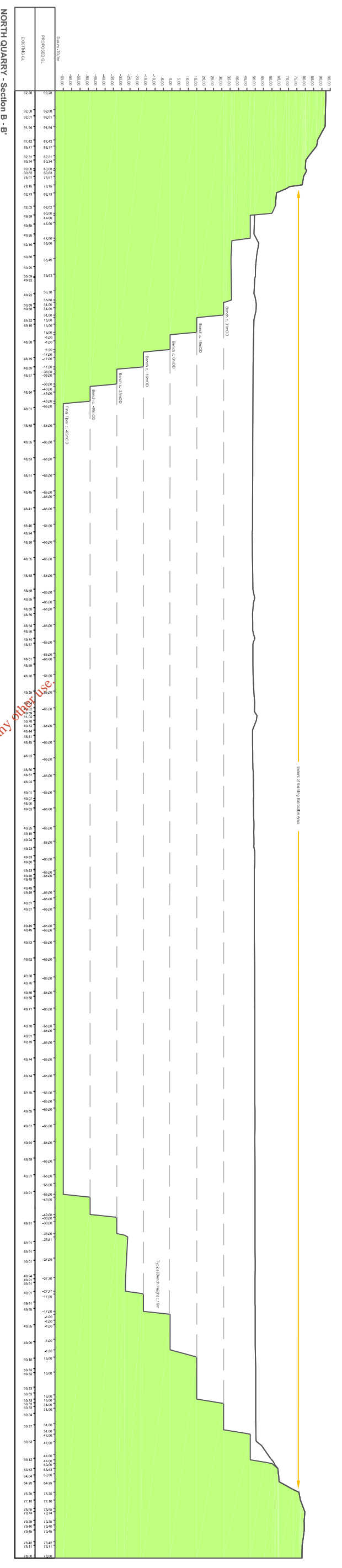
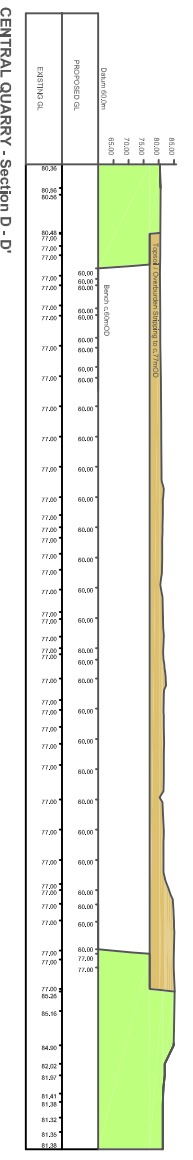
	Indicate Metro Stop
	Provide for residential development at a density per hectare as shown
	Shows site and consultation distances (meters)
	Proposed School
	Provide for Traveler Accommodation
	Protect & preserve trees, woodlands and hedgerows
	Recorded Monuments
	Local Objective
	Urban Centre Strategy/Spoke Area

SLR
 SLR CONSULTING IRELAND
 7 DUNDRUM BUSINESS PARK
 WINDY ARBOUR DUBLIN 14
 T: +353-1-2964667
 F: +353-1-2964676
 www.slrconsulting.com

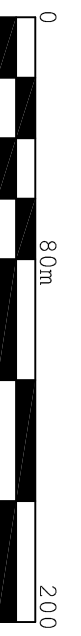
ROADSTONE WOOD LTD.
 ENVIRONMENTAL IMPACT STATEMENT
 CONTINUANCE OF USE
 HUNTSTOWN QUARRY,
 NORTH ROAD, FINGLAS, DUBLIN 11

FIGURE 2-7
 CURRENT LAND ZONING MAP

Scale 1:10,000 Date FEBRUARY 2012



For inspection purposes only.
Consent of copyright owner required for any other use.



SLR

SLR CONSULTING IRELAND
7 DUNDEMUN BUSINESS PARK
WINDY ARBOUR
DUBLIN 14
T: +353-1-2964667
F: +353-1-2964676
www.slrcounseling.com

ROADSTONE WOOD LTD.
ENVIRONMENTAL IMPACT STATEMENT

CONTINUANCE OF USE
HUNTSTOWN QUARRY,
NORTH ROAD, FINGLAS, DUBLIN 11

**EXISTING & PROPOSED
CROSS SECTIONS**

FIGURE 2-3B

Scale 1:2,500 @ A3
Date FEBRUARY 2012

DESCRIPTION OF DEVELOPMENT 2

APPENDICES

Appendix 2-A

Bord na Mona MBBR Aeration System Operations & Maintenance Manual

Appendix 2-B

Environmental Management System

*For inspection purposes only.
Consent of copyright owner required for any other use.*

Shane Geraghty
Roadstone Wood Ltd
Fortunestown
Tallaght
Dublin 24

15th December 2011

**REF: AR58 - System installed at Huntstown Quarry, North Road, Finglas,
Dublin 11**

Dear Shane,

I wish to confirm that there was an aeration system installed at the above address on 15th January 2003.

On the 3rd August 2011 you entered into a service agreement with us to have the system inspected.

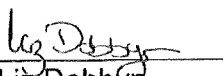
The system was inspected on 10th August 2011 and the blower had to be taken away and repaired.

The blower has since been repaired and is now installed back into the system.

I wish to confirm that the plant is fully functional both mechanically and electrically.

If you have any queries, please do not hesitate to contact us.

Kind regards,


Liz Dobbyn
Customer Services Unit
Anua

DESCRIPTION OF DEVELOPMENT 2

Appendix 2-A

Bord na Mona MBBR Aeration System Operations & Maintenance Manual

*For inspection purposes only.
Consent of copyright owner required for any other use.*



BORD NA MÓNA ENVIRONMENTAL LIMITED

**MBBR AERATION SYSTEM
OPERATIONS & MAINTENANCE MANUAL**

**AR58 – CRM Roadstone, Huntstown Quarry, North
Road, Finglas, Dublin 11.**

*For inspection purposes only.
Consent of copyright owner required for any other use.*

Contents

- 1.0 Introduction**

- 2.0 Description of Bord na Móna Waste Water Treatment System**
 - 1 Primary Settlement Tank(s)**
 - 2 MBBR Aeration Tank(s)**
 - 3 Secondary Settlement Tank(s)**
 - 4 Optional Extras**
 - 2.4.1 Denitrification**
 - 2.4.2 Phosphorous Removal**
 - 2.4.3 Pump Stations**
 - 2.4.4 Flow Meter**
 - 2.4.5 Composite Samples**

- 3.0 Maintenance of the Bord na Móna Waste Water Treatment System**
 - 1 Primary Settlement Tank(s)**
 - 2 MBBR Aeration Tank(s)**
 - 3 Secondary Settlement Tank(s)**
 - 4 Optional Extras**
 - 3.4.1 Denitrification**
 - 3.4.2 Phosphorus Removal**
 - 3.4.3 Pump Stations**
 - 3.4.4 Flow Meter**
 - 3.4.5 Composite Sampler**

- 4.0 Safety**
 - 1 Manholes/Lids**
 - 2 Primary Settlement Tank(s)**
 - 3 Aeration Tank(s) and Secondary Settlement Tank(s)**
 - 4 Site**
 - 5 Manholes/Lids**
 - 6 Electrical**

- 5.0 Start Up**

- 6.0 Maintenance Check List**

Appendix

- 1 **Holding Tanks**
- 2 **Air Blower**
- 3 **Effluent/Sludge Pumps**
- 4 **System Drawings**
- 5 **Electrical Diagrams**

*For inspection purposes only.
Consent of copyright owner required for any other use.*

1.0 Introduction

The following manual provides a description of the Bord na Móna MBBR Aeration System for the treatment of sewage effluent. Included in this manual are operating instructions and essential maintenance requirements.

Important: Section 4.0 describes safety precautions, which must be adhered to. Please read this section carefully.

The Bord na Móna aeration system is a Moving Bed Biological Reactor (MBBR), highly efficient system for the treatment of sewage effluent. The raw effluent is subjected to a primary settlement stage where the gross solid material is allowed to settle. The effluent is then directed to an extensively aerated biofilm stage where an accumulated population of biodegradative microorganisms is allowed to develop and actively degrade the effluent. The final stage in the treatment process consists of a secondary settlement stage, where any remaining biomass is allowed to settle, allowing the clarified final treated effluent to be discharged. Alongside with solids and organic matter removal MBBR offers the nutrient (Nitrogen, Ammonia and Phosphate) removal as an optional extra. These incorporate an anoxic stage after the primary settlement stage and chemical dosing system encompassed in conjunction with the aerated biofilm stage.

For inspection purposes only.
Consent of copyright owners required for any other use.

2.0 Description of the Bord na Móna Aeration System

2.1 Primary Settlement Tank

The raw effluent is first directed to the primary settlement tank(s). These tanks are designed to allow settlement of the primary solid material. A baffling system in conjunction with filter(s) prevents the transfer of gross solids from the primary to secondary stage.

2.2 MBBR Aeration Tank

Following the primary settlement tank (or anoxic tank), the effluent is then directed to an aeration tank, or a series of tanks, depending on the hydraulic loading to the system. These tanks are fitted with a network of floor mounted membrane diffusers which actively release fine bubbles of air upwards through the incoming effluent. Above these diffusers, suspended in the effluent is a volume of specific inert media. Shortly after start-up, a population of biodegradable microorganisms attaches to the media, growing on the interior surface of the media rings. As these microbes receive oxygen from the underlying diffusers, they subject the organic fraction, contained within the effluent, to extensive biodegradation. Any excess microbial growth attached to the media is sloughed off continually by the gentle shearing action of the bubble movement through the media. This excess biomass passes through the aeration tanks with the treated effluent and is allowed to settle in the secondary settlement tank. As the effluent exits the aeration tank (or the final aeration tank in the larger systems) it will have undergone extensive secondary treatment.

The oxygen, central to the aeration process, is delivered to the floor mounted diffusers via blowers situated outside the aeration tanks.

2.3 Secondary Settlement Tank

Following secondary treatment in the aeration zone the final effluent undergoes secondary settlement. This ensures that any biomass sloughed off from the inert media during the aeration phase is allowed to settle to the base of the tank. The clarified final treated effluent is then discharged.

In order to ensure minimum disturbance of the settled biomass within the secondary settlement tank, incoming effluent into this tank is directed upward through a cylindrical stilling well. This ensures maximum settling of biomass within the tank, and maximum clarification of the final effluent.

A sludge return pump is located at the base of the secondary settlement tank. This pump is operated on a timer basis. For a fixed period every 24 hours the pump is activated and pumps the secondary sludge material from the secondary settlement tank back to primary settlement tanks. This ensures that secondary sludge does not accumulate within the secondary settlement tank, and therefore is not discharged with the final treated effluent. Also, since all sludge (both primary sludge and secondary sludge) is directed to the primary settlement tank, only the primary settlement tank requires routine desludging.

2.4.1 Anoxic Zone (optional)

The optional "Anoxic Zone" is established by circulation of the effluent to the anoxic tank in which the process of "Denitrification" - the conversion of nitrate to nitrogen gas and water using suitable heterotrophic bacteria - is achieved.

2.4.2 Phosphorous Removal Facility (optional)

In conjunction with the aeration a second process; Phosphorous removal can be achieved by chemical dosage to the aeration stage from a dosing tank located above the aeration chamber. This automated dosing system reduces the phosphate ratio within the effluent.

2.4.3 Pump Stations (optional extra)

Following the secondary settlement or clarifying chamber the effluent proceeds to the forward feed chamber. This chamber allows for treated/untreated effluent/influent to be pumped to or from the treatment system.

2.7 Flowmeters (optional extra)

There are usually three types of flowmeters available:

1. Ultrasonic,
2. Electromagnetic
3. Mechanical (see Appendix for details)

3.0 Maintenance of the Bord na Móna MBBR Aeration System

The Bord na Móna MBBR Aeration system should be checked for the following:

1. Evidence of sludge carryover (as seen by excessive solid material floating in the inlet or outlet pipe work of the aeration tank(s), or by uneven distribution of air bubbles in the inspection port of the aeration tank(s)).
2. Evidence of restricted diffuser grid (as seen by uneven distribution of bubbles or lack of bubbles in the aeration tank(s) when the air blower is operational)
3. Evidence of operation of blower (as seen by abundance of bubbles in the aeration tank).

3.1 Primary Settlement Tank

The Bord na Móna MBBR Aeration System is designed for continuous operation. To ensure optimum performance from the Aeration system, ensure that the recommended maintenance procedures are carried out and the following points are adhered to:

1. Ensure that all storm water is not channeled to the primary settlement tank.
2. Ensure that the waste from domestic meat/food mincers, or other sources of excessive food particles are not emptied down the waste drain to the primary settlement tank, but collected and disposed off separately.
3. Ensure that greases or fats are not emptied down the waste drain to the primary settlement tank, but collected and disposed off separately.
4. Ensure that non-biodegradable materials are not flushed to the primary settlement tank.
5. Ensure that excessive volumes of detergents, disinfectants etc. are not flushed into the primary settlement tank.

It is recommended that the primary settlement tank be desludged on a quarterly basis.

The importance of desludging cannot be overstated, as only clarified effluent should be treated in the aeration tank. Failure to desludge regularly can result in solids carry over into the aeration tanks, clogging of the diffusers, and ultimate failure of the treatment system.

In the event of blockage:

1. Inspect the inlet manhole of the primary settlement tank and remove any solid matter, which may clog the inlet T-pipe. Determine the cause of any blockage.
2. If possible, inspect and rod the Inlet T-pipe of the primary settlement tank to ensure that scum has not accumulated, and that vertical legs are clear.
3. If possible, inspect any filters (if applicable) to ensure they have not become blocked or clogged up.

3.2 Aeration Tanks

1. Periodically remove the inspection manholes on the aeration tanks and ensure that the air bubbles are present and evenly distributed throughout the surface of the liquid.
2. Ensure that no excess solid material is present in the inlet or outlet pipe work of the aeration tanks. If so, then the primary settlement tanks(s) could require desludging. It may be necessary to rod the inlet and outlet pipe work.
3. Ensure that the air blower is operating normally by checking for an abundance of bubbles in the aeration tank. If no bubbles are observed then check that the aeration system is switched on at the control panel. If the blower is switched on at the panel but is not operating, then contact Bord na Móna Environmental Division immediately.
4. If the blower appears to be operating normally, but no bubbles are observed in the aeration tanks then switch off blower and contact Bord na Móna Environmental Ltd immediately.

3.3 Secondary Settlement Tank

1. Periodically observe the effluent being discharged. If this effluent is clear then the system is operating normally. If there is evidence of sludge carry over, (dark suspended matter in the effluent sample) then check that the system is switched on. If the system is switched on, but the sample appears to contain sludge, then check the primary tanks and aeration tanks as described in 3.1 and 3.2 above.

2. If everything appears to be normal with the primary tanks and aeration tanks and blower, and the system is switched on, yet there is evidence of sludge carry over, then it is likely that the sludge return pump needs attention. Contact Bord na Móna Environmental Division.

3.4.1 Denitrification (Optional extra)

Visual inspection of the Anoxic tank and Recirculation tank are necessary. If there is evidence of sludge build up, desludging may be necessary. Maintenance of the anoxic and recirculation pumps are necessary (see Appendix)

3.4.2 3.4.2 Phosphorous Removal Facility (Optional extra)

Residual levels of ferric sulphate within the phosphorous removal facility should be checked periodically and standby supplies of ferric sulphate should be sufficient.

3.4.3 3.4.3 Pump Stations (Optional extra)

Visual inspections are required periodically to ascertain the effluent composition; if this effluent is clear then the system is operating normally. If there is evidence of sludge carry over, (dark suspended matter in the effluent sample) then check that the system is switched on. If the system is switched on, but the sample appears to contain sludge, then check the primary tanks and aeration tanks as described in 3.1 and 3.2 above. Maintenance of the pumps as required (see Appendix for details) Visual inspections of the pump chambers should be regularly carried out. All floats must be cleaned. Any evidence of sludge build up should be addressed immediately.

3.4.4 3.4.4 Flow Meter (Optional extra)

Please ref. to Appendix for details of maintenance

3.4.5 3.4.5 Composite Samples (Optional extra)

Please ref. to Appendix for details of maintenance

NOTE: IF YOU ARE IN ANY DOUBT ABOUT YOUR SYSTEM, PLEASE CONTACT BORD NA MONA ENVIRONMENTAL DIVISION AT THE NUMBER GIVEN AT THE END THIS MANUAL.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

4.0 Safety

4.1 General

Protective gloves, Goggles and/or clothing should be worn when contact is made with any effluent sample, or internal component of this system.

Important: - when handling Ferric Sulphate Solution please refer to Material safety data sheet contained in section 8.0.

4.2 Primary Settlement Tank(s)

Primary settlement tanks are potentially dangerous when being desludged and desludging must not be carried out alone.

The person doing so has successfully completed the relevant Health & Safety training and have support from trained colleagues on the ground.

Naked lights should not be used in the vicinity of the tank due to the real danger of explosion.

The manhole covers should **NEVER** be left off an unattended tank. These tanks are 1 - 3.5 m in depth; therefore due care should be taken at all times. Disused or abandoned tanks should be demolished, filled in, or sealed so that accidental entry is impossible.

4.3 Aeration Tank(s) and Secondary Settlement Tank(s) and Anoxic Tank(s) (where applicable)

All points listed in 4.2 above are relevant, however, please note that the Aeration tank(s) do not need to be desludged (under normal operating conditions)

4.4 Site (where applicable)

Where a boundary fence is erected around an aeration system, then the fence itself should have a padlocked gate to exclude trespassers.

4.5 Manholes/Lids

Ensure that all manholes and lids are secure, and in the correct position at all times unless under instruction from relevant personnel of for maintenance/inspection purposes.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

5.0 Start up

The following should be undertaken following start up:

1. Check that the blower is operating normally.
2. It may be necessary to empty the Primary and Secondary settlement tanks.
3. Check all tanks for blockages as outlined in **Section 3.1.**
4. Check the aeration tanks as outlined in **Section 3.2.**
5. Each day after start up, check the final effluent, to ensure that sludge is not being carried over. If sludge is evident after a number of days, then it is possible that the sludge return pump in the secondary settlement tank needs attention.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

6.0 Maintenance Check List

Item	Recommended Inspection Interval	Normal Condition
Chemical Storage Tank (optional extra)	Every Week	Sufficient chemical
Primary settlement tank(s) inlet and outlet T-pieces	Monthly	Clear
Primary settlement tank sludge depth	Every 6 – 8 weeks	<0.75m depth
Anoxic tank(s) (optional extra)		Visual inspection / no evidence of sludge
Aeration tank(s)	Monthly	Bubbles diffusing No solid material
Blower	Monthly	Normal abundance of bubbles
Secondary Settlement	Monthly	<0.2m sludge
Final sample	Monthly	Clear liquid No evidence of sludge
Control panel	Monthly	MCB switch on, Alarm switch on, Overload trip lamp off

The standard plant is equipped with a visual alarm light. If the alarm light is on contact BnM (contact details overleaf)

IF IN ANY DOUBT PLEASE CONTACT

BORD NA MONA ENVIRONMENTAL DIVISION AT:

TEL: 045 439 580

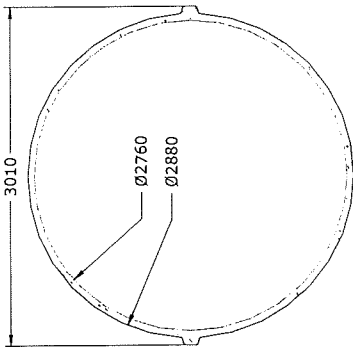
FAX: 045 432 312

**MAIN STREET,
NEWBRIDGE,
CO. KILDARE.**

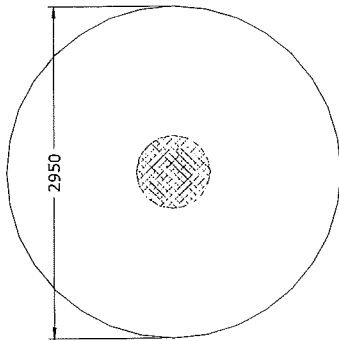
*For inspection purposes only.
Consent of copyright owner required for any other use.*

Appendix 1: Holding Tanks

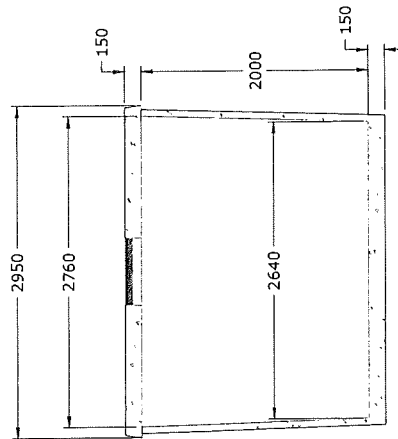
*For inspection purposes only.
Consent of copyright owner required for any other use.*



Floor Plan



Roof Plan



Section

Consent of copyright owner required for any other use.
 For inspection purposes only.

Standard opening 600mm diameter with medium duty ductile iron cover. Other sizes and configurations of opening on request.

Roof design to particular loading requirements.

Collars, fittings etc. to customers requirements.

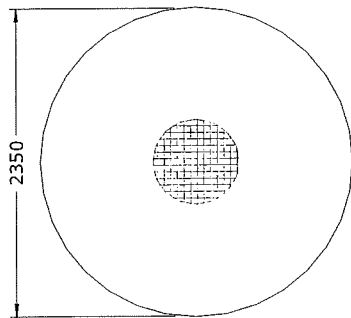
Standard tank weight 5.00 tonnes without lid, 7.60 tonnes including lid.

Working capacity 2500 gallons (11.36 cubic metres).

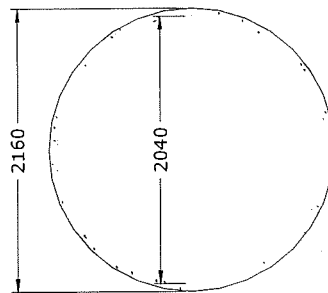
Tank can be subdivided to form septic tank, interceptor or other to customers requirements.

DATE	DESCRIPTION	DATE
BORD NA MÓNA BORD NA MÓNA ENVIRONMENTAL LIMITED Main St, Newbridge, Co. Kildare Phone 045 432201 Fax 045 432312 www.bnm.ie/environmental Email: ed.info@bnm.ie		
© Copyright Bord na Móna Environmental Ltd. Copying and publishing of this drawing is prohibited without the written consent of Bord na Móna Environmental Ltd. All rights reserved. No part of this drawing may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of Bord na Móna Environmental Ltd. This drawing is the property of Bord na Móna Environmental Ltd. and shall remain the property of Bord na Móna Environmental Ltd.		
PROJECT		
DATE		
SCALE	1:50	
DESIGNED BY		
CHECKED BY		
APPROVED BY		
Drawing Title 11.36 CUBIC METER TANK		
STATUS	<input type="checkbox"/> FOR APPROVAL <input type="checkbox"/> FOR CONSTRUCTION <input type="checkbox"/> AS BUILT	DATE ISS.

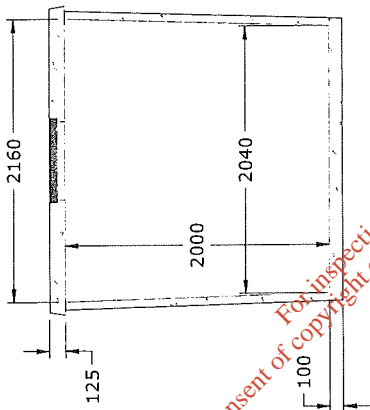
1500 Gallon (6.92 cubic metre) Tank



Roof Plan



Floor Plan



Section

Consent of copyright owner required for any other use.
For inspection purposes only.

Standard opening 600mm diameter with medium duty ductile iron cover.
Other sizes and configurations of opening on request.

Roof design to particular loading requirements.

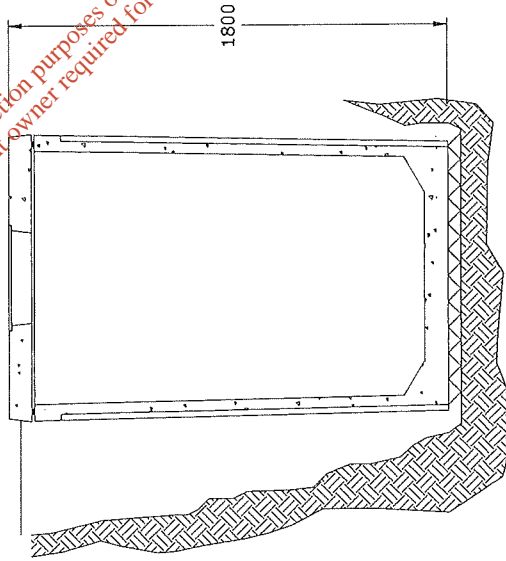
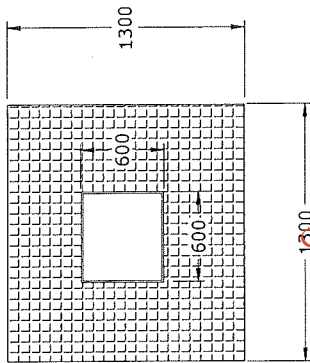
Collars, fittings etc. to customers requirements.

Standard tank weight 3.00 tonnes without lid, 4.40 tonnes including lid.

Working capacity 1525 gallons (6.93 cubic metres).

Tank can be subdivided to form septic tank, interceptor or other to customers requirements.

NO.	DESCRIPTION	DATE
BORD NA MÓNA BORD NA MÓNA ENVIRONMENTAL LIMITED Main St, Newbridge, Co. Kildare Phone 045 432321 Fax 045 432312 www.bnm.ie/environmental Email: ed.info@bnm.ie		
© Copyright Bord na Móna Environmental Ltd. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of Bord na Móna Environmental Ltd. All other rights reserved. This document is the property of Bord na Móna Environmental Ltd.		
PROJECT		
DATE		
DESIGNED BY		
CHECKED BY		
APPROVED BY		
Drawing Title 6.92 CUBIC METER TANK		
SCALE	DATE	DESIGNED BY
DRAWN BY <input type="checkbox"/> R.A.M. <input type="checkbox"/> P.S. <input type="checkbox"/> S.W.	CHECKED BY <input type="checkbox"/> R.A.M. <input type="checkbox"/> P.S. <input type="checkbox"/> S.W.	APPROVED BY <input type="checkbox"/> R.A.M. <input type="checkbox"/> P.S. <input type="checkbox"/> S.W.



For inspection purposes only.
Consent of copyright owner required for any other use.

Doc. No.	DESCRIPTION	DATE
BORD NA MÓNA <small>BORD NA MÓNA ENVIRONMENTAL LIMITED</small> Main St, Newbridge, Co. Kildare Phone 045 433201 Fax 045 433212 www.bnm.ie/environmental Email: ed.linfo@bnm.ie		
<small>© Copyright Bord na Móna Environmental Ltd. This document is the property of Bord na Móna Environmental Ltd. It is to be used for the purposes of the project for which it was prepared. It is not to be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of Bord na Móna Environmental Ltd. All rights reserved. This document is provided for your reference only and is not to be used for any other purpose.</small>		
Project: _____ Date: _____ Approved By: _____		
500 Gallon Pump Chamber		
Order	Size (mm)	Order No.
	1175	
Serial	As ordered	Serial No.
Track	As ordered	Track No.

Appendix 2: Air Blower

For inspection purposes only.
Consent of copyright owner required for any other use.



effepizeta

F.P.Z. effepizeta s.r.l.
Via F.lli Cervi 16/18
20049 Concorezzo - (MI) - ITALIA
Tel. +39 039 604 1820
Fax +39 039 604 1296
E-mail italia@fpz.com

PRESSURE - VACUUM REGENERATIVE BLOWER 'SCL'

INSTRUCTIONS

GB

SN 1473.2

READ ALL INSTRUCTIONS CAREFULLY AND RETAIN

CAUTION!

The 'SCL' blowers - exhausters have been designed and manufactured for use in an industrial environment, operated by qualified personnel and as a unit to be incorporated in a machine which conforms to the CE Machinery Directive.



The 'SCL' blowers - exhausters, like all machinery and equipment with live and moving parts, can be a source of serious hazards unless properly used and protected.



The user is committed to ensure that:

All handling, assembly, installation, connection, maintenance and repair operations are undertaken by qualified personnel. As required by IEC standard 364, such people who by their background, training and experience as well as through their knowledge of statutory regulations, legislation, safety measures and operating conditions are able to carry out any necessary steps avoiding all possible risks to health and damage.

Such personnel shall have received all the instructions and information, including any local legislation, and will follow them during the performance of any operation.

It shall be forbidden for unqualified personnel to carry out any operation, even indirectly, on the machines and equipment.

During the installation, all the prescribed working conditions, including any possible local requirements, shall be observed.

Additionally it is forbidden to put the unit in service before the machines of which they are a part are declared to conform to the CE Machinery Directive.

The user must be aware that in operation:

- the surface temperatures can reach 160°C;
- the unit cannot contain high internal pressures, no greater than Ps referred to in SN 1472;
- there is small loss of the fluid handled;
- the level of noise may be unacceptable in certain applications.

1. CONDITIONS OF USE

The 'SCL' blowers - exhausters are designed for the continuous movement of air or non-explosive, non-hazardous and non-flammable gases and for service in non-explosive environments.

Solid particules, however small, including dirt can cause serious damage; therefore it is essential that such substances should be removed from the gas by suitable filters upstream of the inlet. (Units which do not have an adequate filter ARE NOT COVERED BY THE GUARANTEE).

The maximum driving pressure must never be exceeded (dPmax of SN 1472).

UNDER NO CIRCUMSTANCES OPERATE THE UNIT WITH THE GAS INLET OR OUTLET CLOSED. IN PARTICULAR THIS APPLIES TO THE UNITS WITH THE CAPACITY FOR HIGHER DRIVING PRESSURES.

Protect the units with an appropriate safety valve.

The performance characteristics are liable to variations due to the following factors:

- Differences of the suction or discharge pressures from the reference conditions;
- Operation in a system with both a low suction pressure and a high back pressure;
- Operation with a gas at a different temperature or of a different specific gravity from the reference data;
- Variations in the rotational velocity of the fan with respect to the reference value.

Both the gas inlet temperature and the ambient temperature must be in the range of -15°C to +40°C.

At the same time, ensure that the unit has good ambient ventilation, especially when subjected to severe operating conditions.

A unit subjected to frequent starting or to high ambient temperatures may be prone to overheating and in such cases further information should be requested.

Similarly, where flammable gases may be present, information must be requested for alternative models certified for the Ex. environment..

2. STORAGE AND SHIPPING

Store the unit in a dry place, preferably in the packaging.

Do not remove the protection plugs from the ports.

Avoid stocking anything on top of the packaging.

To move the packed boxes, use the largest pallet or support base possible to obtain the maximum stability.

Lifting eyes are provided to unpack units weighting more than 25 kg.
(The weight of the unit is m in SN 1472).

On all occasions handle the units with care and avoid sudden impacts.

3. INSTALLATION

3.1 'SCL' BLOWER - EXHAUSTER

It is important that the unit is installed in a well ventilated environment where the temperature does not exceed 40°C.

If outside, protect the unit from direct sunlight and avoid the possibility of water collecting in the external crevices especially when installed with the axis vertical.

IMPORTANT !

Ingress of foreign matter, however small, will cause serious damage.

Such matter includes dust, sand, masonry debris, impurities in the tubes, cutting burrs or filings, welding or soldering slag and splatter, metal burrs and any residues from sealing and making the tube connections.

The unit can be mounted with the axis in any position.

As supplied, the unit is balanced and will not transmit vibrations, however it is recommended that it is mounted on vibration damping supports.

To connect the accessories, remove the flanges from the unit and then seal and tighten.

Do not overtighten remembering that the operating pressures are low.

Tube connections must be made with flexible couplings.

Avoid using rigid couplings which will induce stress and cause harmful vibrations.

Remember to protect the inlet with suitable filters. If it is necessary to regulate the flow, install a bypass valve (refer to section 5).

Only remove the plugs on the ports when making the final connections.

Select the tube size and the couplings to minimize the pressure drop, in particular:

- Do not use tubing of a smaller diameter than the ports of the unit;
- When installing units in parallel, size the manifold and main conduit accordingly;
- Utilise large radius bends and avoid using elbows;
- Avoid using valves which have a reduced orifice relative to the general system;

- Use swing check valves (utilising lightweight discs) which have the lowest pressure drop, rather than spring loaded check valves;
- For oxygenation select low loss diffusers (lowest pressure drop) and note that the pressure drop across plugs and porous membranes will increase over time due to progressive clogging.

A safety relief valve should be installed to avoid overloading the unit as a result of pressure variations.

Make the electrical connections to the motor and check the direction of rotation before connecting the conduit.

The 'SCL' blowers - exhausters are already supplied as standard with silencers in the suction and exhaust ports (the maximum noise levels L_p and L_w , with piped inlet and outlet flow, are detailed in SN 1472).

For operation into free air (either suction or discharge) the free flow noise can be muffled with additional silencers.

In every situation avoid installing the unit on a structure which can transmit or amplify any noise (tanks, sheet metal etc.).

Further information should be requested regarding additional noise reduction by installing the unit in sound proof enclosures.

3.2 ELECTRIC MOTOR

WARNING
BEFORE UNDERTAKING ANY OPERATION ENSURE THAT THE UNIT IS DISCONNECTED FROM THE ELECTRICITY SUPPLY.

The electric motor has been selected for service in an ambient temperature between -15°C and $+40^{\circ}\text{C}$ at an altitude no higher than 1000 m.

Ensure that the information on the name plate is consistent with the supply voltage and frequency. Variations in the supply voltage up to $\pm 10\%$ are acceptable.

Outside the normal operating conditions the motor can not deliver full power and problems can arise with starting, especially for single phase motors.

Make the electrical connections referring to the wiring diagram in the terminal box, connecting an earth cable of adequate capacity to the earth terminal.

The fuses are designed only for short circuit protection and not to safeguard the motor.

Therefore overload cutouts (temperature or current) are essential to guard against the risk of overloads on the motor for example failure of one line in a three phase supply, an excessively high start up frequency, unacceptable variations in the supply voltage, stalled rotor, etc..

Set the overload cutouts at the nominal current specified on the name plate.

The fuses should be rated for the peak currents especially in applications of direct starting.

THE ENTIRE GUARANTEE SHALL CEASE TO APPLY WHEN INADEQUATE PROTECTION IS PROVIDED.

3.2.1 CURRENT MEASUREMENT

The current drawn refers to normal operating conditions.

Departures from the nominal operating conditions can result in variations of 5%.

There can be small differences in the measured value of each phase. These are tolerable up to a maximum deviation of 9% (ref. IEC 34-1).

4. COMMISSIONING

To commission the unit:

- Set the operating pressure or vacuum using a suitable gauge.
 - Check the relieving pressure of the safety valve.
 - Measure the current drawn by the motor and verify that it is within the limit stated on the name plate (refer to para. 3.2.1).
 - Adjust the overload cutouts accordingly.
- After one hour's operation, repeat the current measurements and verify that they are still within the stated limits.

5. OPERATING ADJUSTMENTS

The 'SCL' blowers - exhausters will automatically generate the driving pressure required at the point of use.

Since the power absorbed and the operating temperature are primarily a function of the driving pressure, it is possible that these can exceed the permitted operating conditions for the unit.

Frequently the pressure losses of the tubing are frequently overlooked as the major factor determining the driving pressure.

The driving pressure can be reduced by eliminating all possible obstructions and restrictions in the flow path. If it is still too high, the flow can be reduced by installing a bypass valve (ref. SN 1474).

Never choke the flow by throttling the suction or the discharge.

6. MAINTENANCE

After every 10-15 days of use clean the cartridge filter.

Replace the cartridge frequently in dusty environments.

(A dirty filter will create a strong suction resistance and consequently a higher driving pressure, a higher operating temperature and an increase in the absorbed power.)

Check that the driving pressure does not change over time.

Periodically remove any surface deposits which otherwise can cause the operating temperature to rise.

To clean the internal components refer to the additional instructions for disassembly, cleaning and reassembly.

It is important that a unit in service is subjected to periodic inspections by qualified personnel to

insure against failures which, directly or indirectly, could cause damage.

Departures from the normal operating conditions (e.g a rise in the absorbed power, unusual operating noises, vibrations, etc.) are a sign of abnormal operation which can lead to failure.

In the event of difficulties please contact FPZ Effepizeta srl or the relevant sales agent.

Please note that repairs undertaken by a third party will invalidate the guarantee.

Commitments, agreements or legal relationships are governed by the corresponding sales contract. The above items are in no way limited by the contents of this manual.

The quality of the materials and of the workmanship is guaranteed as set out by the standard conditions of sales.

The guarantee is not valid for the following: damage incurred during transport; inadequate storage; faulty installation; incorrect use; exceeding performance limits; electrical or mechanical mis-use.

Store the packaging for possible future use.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

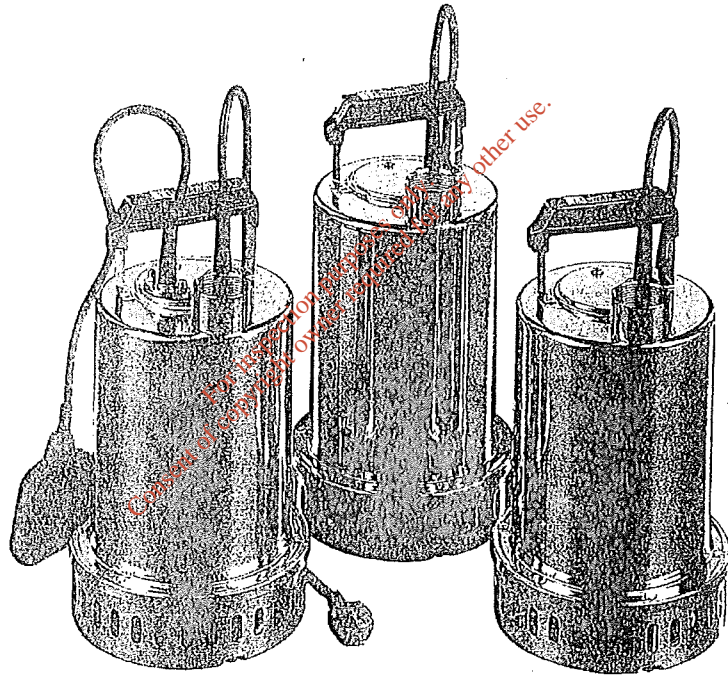
Appendix 3: Effluent/Sludge Pumps

For inspection purposes only.
Consent of copyright owner required for any other use.

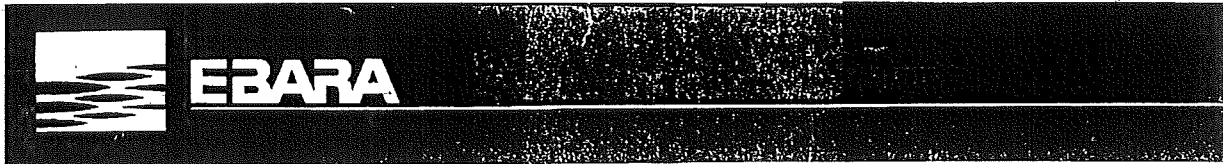


EBARA

ELETTROPOMPE SOMMERGIBILI SERIE BEST 2-3-4-5
SUBMERSIBLE ELECTROPUMPS SERIE BEST 2-3-4-5
ELECTROPOMPES SUBMERSIBLES SERIE BEST 2-3-4-5
ELEKTRISCHE TAUCHPUMPEN SERIE BEST 2-3-4-5
ELECTROBOMBAS SUBMERGIBLES SERIE BEST 2-3-4-5



MANUALE D'ISTRUZIONE ALL'USO E ALLA MANUTENZIONE
USE AND MAINTENANCE INSTRUCTIONS MANUAL
INSTRUCTIONS POUR L'EMPLOI ET L'ENTRETIEN
ANLEITUNGSHEFT FÜR GEBRAUCH UND WARTUNG
LIBRO DE INSTRUCCIONES



APPLICATIONS

DOMESTIC:

Drainage of garages, basements, small and medium sized yards
Fast emptying of swimming pools or other water storage structure
Creation of decorative fountains or water features

AGRICULTURAL:

Removal and disposal of slurry, dirty or semi-dirty waters
Re-oxygenate stale water
Irrigation

INDUSTRIAL:

Drainage of sumps

TECHNICAL FEATURES

Manufactured entirely from stainless steel: pump body, motor casing, volute, suction grid, impeller, motor cover, tie rods, bolts... all in AISI 304 stainless steel.

The pump shaft is made from stainless steel grade AISI 303. Double shaft mechanical seal lubricated in an intermediate oil chamber for enhanced durability: tungsten carbide/ceramic on the pump side, graphite/ceramic on the motor side.

Designed and built for continuous duty operation – even if the pumps are only partially submerged.

TECHNICAL DATA

PUMP:

Max liquid temperature: 50°C
Outlet: 1" 1/2
Max Immersion: 10m
Feeding cable: 10m
Max solid particle size: 10mm

MOTOR:

Protection class: IP5B
Insulation class: F
Continuous duty

Single phase version

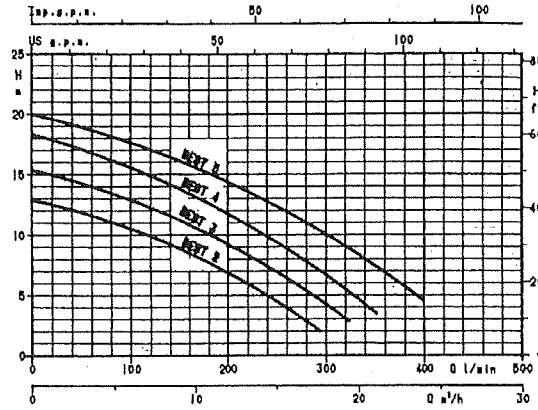
* Standard voltage: 220V - 50Hz. - 2800rpm
Built in overload motor protector with automatic reset
Permanent split capacitor.

Three phase version

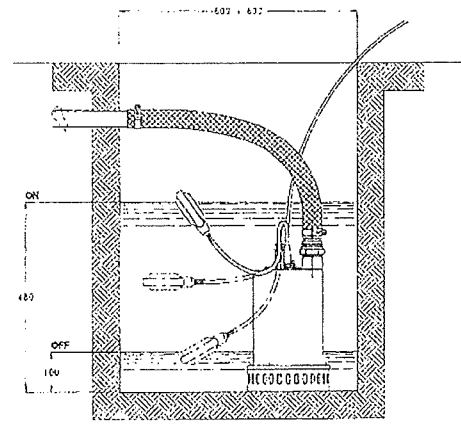
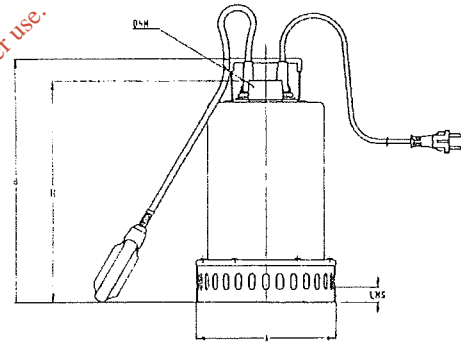
* Standard voltage: 380V - 50Hz. - 2800rpm
Motor protection must be provided by the user.

When using the pump in a sump, the recommended minimum size of the pit is 600mm x 600mm x 600mm to allow unrestricted movement of the automatic float switch.

PUMP TYPE	DIMENSIONS in mm					WEIGHT
	A	B	H	LMS	DMM	Kg
BEST 2	210	362	315	20	1" 1/2	12
BEST 3	210	362	315	20	1" 1/2	12,7
BEST 4	210	377	340	20	1" 1/2	13,6
BEST 5	210	377	340	20	1" 1/2	13,5



For inspection purposes only. Copy of copyright owner required for any other use.



EBARA UK LIMITED

REGAL HOUSE, LONDON ROAD,
TWICKENHAM, MIDDLESEX, TW1 3QS
Tel: 081-892-8971
Facsimile: 081-891-6730

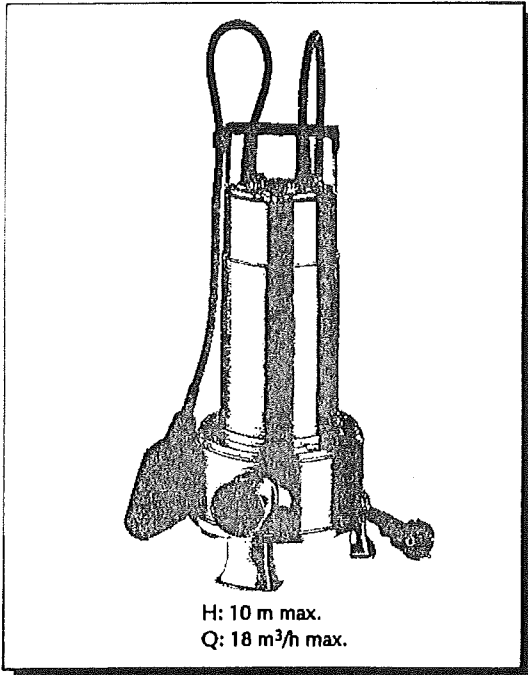
EBARA reserves the right to amend specifications without prior notice.



EBARA RIGHT

SUBMERSIBLE PUMP FOR DIRTY WATER

entirely in stainless steel



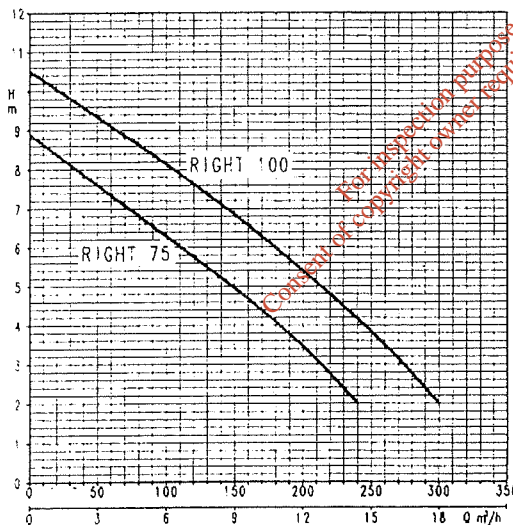
APPLICATIONS

- Construction entirely in stainless steel and with a vortex impeller in a recessed position make these pumps particularly suitable for handling dirty liquids, even with solid and/or filamentous substances in suspension
- Draining filtered water
- Handling drain water
- Emptying cess pits and discharge of the relative waters into the sewers
- Small-scale irrigation
- Emptying pools, cisterns, storage tanks, etc.
- Fountains and water displays
- Automatic dirty water pumping stations

CONSTRUCTION

Pump casing, bottom suction plate.	AISI 304 stainless steel
motor casing	
Motor shaft	AISI 303 stainless steel

Impeller	Recessed, open, in AISI 304 stainless steel
Handle	AISI 304 stainless steel, with insulating coating
Float	Provided with standard single phase version, (absent in 3-phase version and special single phase ones)



PERFORMANCE LIMITS

- Max. liquid temperature: 50°C
- Outlet: 1 1/2" gas
- Max. immersion: 10 m
- Power cable: 10 m
- Passage of solids: max. 35 mm
- Minimum dimensions of the pit for operation with float: 600x600x600 mm

MOTOR

- Insulation: class F
- Protection: IP 68
- Power supply: single phase 230 V 50 Hz
three-phase 400 V 50 Hz
- Built in thermal over load protection with automatic reset and capacitor permanently on in single-phase version; thermal protection to be provided by the customer in 3-phase version



DIMENSIONAL TABLE

Type	H mm	Weight Kg
RIGHT 75M	405	10
RIGHT 75	405	10
RIGHT 100M	430	11.5
RIGHT 100	430	11.5

PERFORMANCE TABLE

Single-phase 230 V 50 Hz	Three-phase 400 V 50 Hz	HP	KW	Capac. µF	Absorbed Intensity (A) single three	Absorbed Power W single three	Q = Capacity							
							L/m ³	40	80	120	160	200	240	300
RIGHT 75M	RIGHT 75	0,75	0,55	20	4,8	2,1	1000	950	7,8	6,8	5,7	4,7	3,4	2
	RIGHT 100	1,0	0,75	31,5	5,7	2,5	1250	1200	9,6	8,6	7,6	6,6	5,3	4,2

H = Total head in metres





**USE AND MAINTENANCE INSTRUCTIONS MANUAL
TO BE KEPT BY THE USER**

**1. MANUFACTURER AND ELECTROPUMP
IDENTIFICATION DATA** (as per EEC 89/392 p. 1.7.4.a)

1.1. MANUFACTURER DATA

EBARA ITALIA S.p.A.

Head office and factory
Via Pacinotti, 32
36040 BRENDOLA (VI) ITALY
Telephone: 0444/401145
Telefax: 0444/400018
Telex: 480536

Legal office
Via Campo Sportivo, 30
38023 CLES (TN) ITALY
Telephone: 0463/24500
Telefax: 0463/22782

1.2. ELECTROPUMP DATA

Description:
SUBMERSIBLE ELECTROPUMP
Model:
BEST 2-3-4-5
Year of manufacture:
SEE PLATE ON THE ELECTROPUMP

2. INFORMATION ON TECHNICAL ASSISTANCE

If the malfunction of the electropump is not among those included in the TROUBLESHOOTING table (chapter 14.1), contact the nearest appointed dealer.

3. INTRODUCTION

This publication contains all the necessary information and instructions for use and maintenance of your BEST electropump. Follow the advice given to obtain optimum performance and correct operation of the electropump. For any other information you may require, please contact the nearest appointed dealer.

IT IS STRICTLY FORBIDDEN TO REPRODUCE THE ILLUSTRATIONS AND THE TEXT, EVEN IN PART.

4. CONTENTS

1. MANUFACTURER AND MACHINE IDENTIFICATION DATA (as per EEC 89/392 p.1.7.4.a)	page	6
1.1. Manufacturer data	page	6
1.2. Electropump data	page	6
2. INFORMATION ON TECHNICAL ASSISTANCE	page	6
3. INTRODUCTION	page	6
4. CONTENTS	page	6
5. GENERAL SAFETY WARNINGS	page	6
5.1. Preventive measures to be taken by the user	page	6
5.2. Significant protection and precautions	page	7
6. DESCRIPTION	page	7
6.1. General description	page	7
6.2. Technical and constructive features	page	7
7. TECHNICAL DATA CARD (as per EEC 89/392 p.1.1.2 and 1.7.2; EN 292-2 p.5)	page	7
7.1. Pump technical data	page	7
7.2. Motor technical data	page	7
8. CONTEMPLATED AND NOT CONTEMPLATED USE (as per EEC 89/392 p.1.7.4.a; EN 292-1 p.5.7.1 and EN 292-2 p.5.1.1)	page	7

8.1. Contemplated conditions of use	page	7
8.2. Not contemplated conditions of use	page	7
9. HANDLING AND TRANSPORT (as per EEC 89/392 p.1.7.4.a; EN 292-2 p.5.1.1.a)	page	8
9.1. Unpacking	page	8
9.2. Handling and disinstalling	page	8
9.3. Transport	page	8
10. INSTALLATION (as per EEC 89/392 p.1.7.4.a; EN 292-2 p.5.1.1.b)	page	8
10.1. Fixed installation	page	8
10.2. Temporary installation	page	8
11. ASSEMBLY AND DISASSEMBLY (as per EEC 89/392 p.1.7.4.a)	page	8
12. PREPARATION FOR USE (as per EEC 89/392 p.1.7.4.a; EN 292-2 p.5.1.3)	page	8
12.1. Electric connection	page	8
12.2. Adjusting and registering (as per EEC 89/392 p.1.7.4.a; EN 292-2 p.5.5.1.d)	page	8
13. USE AND START-UP (as per EEC 89/392 p.1.7.4.a; EN 292-2 p.5.5.1.d)	page	8
13.1. Version with float switch	page	8
13.2. Version without float switch	page	8
14. MAINTENANCE AND REPAIRS (as per EEC 89/392 p.1.6; EN 292-2 p.5.5.1.e)	page	9
14.1. Troubleshooting	page	9
15. TECHNICAL DOCUMENTS SUPPLIED	page	22
15.1. Diagram of pump dimensions, packing and weights (fig. 1)	page	22
15.2. Diagram for installation with minimum functional spaces (fig. 2)	page	22
15.3. Wiring diagram for single-phase electropump with float switch (fig. 3)	page	23
15.4. Wiring diagram for single-phase electropump without float switch (fig. 4)	page	24
15.5. Wiring diagram for three-phase electropump (fig. 5)	page	25
15.6. Electropump diagram for adjusting float cable length (fig. 6)	page	26
15.7. Diagram for electropump filter disassembly (fig. 7)	page	26
16. INFORMATION ON AIR-BORNE NOISE (as per EEC 89/392 p.1.7.4.f)	page	27



5. GENERAL SAFETY WARNINGS

FAILURE TO OBSERVE THESE WARNINGS AND/OR TAMPERING WITH THE ELECTROPUMP RELIEVES ERBARA ITALIA S.p.A. OF ANY RESPONSIBILITY IN THE EVENT OF DAMAGE TO PERSONS OR THINGS AND/OR TO THE ELECTROPUMP.

Before starting up the electropump It is indispensable for the user to know how to perform all the operations described in this manual and to apply them at all times during use or maintenance of the electropump.

There are no RESIDUAL RISKS on BEST electropumps. No particular technical skills are required to use a BEST electropump. No personal protections are required to use a BEST electropump.

5.1 PREVENTIVE MEASURES TO BE TAKEN BY THE USER

-  a) The user must absolutely comply with all the accident-prevention regulations in force in the country in which the pump is being used; the indications given in chapters 7.1 and 7.2 must be scrupulously followed.
-  b) If the electropump is being used in a swimming pool, there must be no people in the pool.
- c) During electropump repairs or maintenance, remove the plug from the socket and/or switch off the switch (if provided), thus interrupting the supply of electric power to the electropump. This will prevent accidental starting which could cause damage to persons and/or things.
- d) All maintenance operations, installations or shifting of the



electropump with the electric system live may cause severe and even mortal accidents.

- e) During operation, avoid moving or shifting the electropump.
- f) Before using the electropump, always check that the cable and all the electric devices are efficient.
- g) Never start the electropump (by inserting the plug in the socket and/or switching on the switch) with bare feet or, worse, with your feet in the water, or with wet hands.
- h) The user must not carry out under his own initiative any operations or jobs not contemplated in this manual.

5.2. GENERAL SAFETY WARNINGS
(as per EEC 89/392 p.1.1.2 and 1.7.2; EN 292-2 p.5)



BEST electropumps are designed in such a way that all the moving parts are rendered inoffensive by the use of casings. ERBARA ITALIA S.p.A. declines all responsibility in the event of damage caused as a result of tampering with these devices.



Each lead or live part is electrically insulated to earth; there is also a further safety device in that the accessible conductive parts are connected to an earth lead so that the parts within reach cannot become dangerous in the event of failure of the principal insulation.

6. DESCRIPTION

6.1 GENERAL DESCRIPTION

BEST series electropumps are all similar from the functional and constructive point of view; the only differences are the following:

- power
- flow rate
- head
- electric power supply (single-phase or three-phase)
- weight
- dimensions

BEST series electropumps are used for handling water, even at high temperatures (chapter 7.1). Thanks to their small bulk and ease of transport, they may be used for fixed or temporary installations, with or without automatic start.

These electropumps, made entirely of stainless steel, guarantee long life and constant performance if used according to the indications given in chapter 8 and chapter 14.

6.2. TECHNICAL AND CONSTRUCTIVE CHARACTERISTICS

BEST series electropumps are designed and built according to the following design and/or construction standards:

RISKS OF A MECHANICAL NATURE (Annex 1, Machines Directive):
- EN 292-1 and EN 292-2

RISKS OF AN ELECTRICAL NATURE (Annex 1, Machines Directive):
- EN 292-1 and EN 292-2
- CEI 61-69 (EN 60 335-2-41)

RISKS OF VARIOUS NATURE (Annex 1, Machines Directive):
- EEC 89/392 - Annex 1

The electric components and their circuits installed on the electropumps comply with standards CEI 44-5.

7. TECHNICAL DATA CARD

(as per EEC 89/392 p.1.1.2 and 1.7.2; EN 292-2 p.5)

7.1. PUMP TECHNICAL DATA UNIT BEST 2 - BEST 3 - BEST 4 - BEST 5

Max. temperature pumped fluid °C	50
Max. dimension suspended solids	mm 10
Max. Immersion depth	m 10
Length of power cable	m 10
Type of Impeller	semi-open
Type of seal on the shaft	double mechanical seal in an oil chamber
Type of bearing	shielded ball bearing
Delivery diameter	inches G 1 1/2
Impeller material	stainless steel
External liner material	stainless steel
Seal cover material	stainless steel
Intake grid material	stainless steel

7.2. MOTOR TECHNICAL DATA UNIT BEST 2 - BEST 3 - BEST 4 - BEST 5

Power	KW	0.55	0.75	1.1	1.5
Type		dry submerged			
Poles	no.	2			
Insulation class		F			
Degree of protection		IP58			
Type of duty		continuous			
Phase - frequency - voltage		single-phase-50Hz-220-240 V±5%			
Phase - frequency - voltage		three-phase-50Hz-380-415 V±5%			
Overload protection		thermal protection (single-phase only)			
Motor structure material		stainless steel			
Shaft material		stainless steel			
Cable material		neoprene			

ERBARA ITALIA S.p.A. RESERVES THE RIGHT TO ALTER THE TECHNICAL DATA IN ORDER TO MAKE IMPROVEMENTS AND BRING THEM UP-TO-DATE.

8. CONTEMPLATED AND NOT CONTEMPLATED

USE (as per EEC 89/392 p.1.7.4.a; EN 292-1 p.5.7.1 and EN 292-2 p.5.1.1)

ATTENTION Failure to respect the prescribed limits constitutes a situation of use that is technically improper and endangers the safety of persons, RELIEVING ERBARA ITALIA S.p.A. OF ANY RESPONSIBILITY IN THE EVENT OF ACCIDENTS TO PERSONS OR DAMAGE TO THINGS OR TO THE ELECTROPUMP, AND ALSO RENDERING THE GUARANTEE INVALID.

8.1. CONTEMPLATED CONDITIONS OF USE

BEST series electropumps may be used for handling clean water or water with suspended bodies with a diameter no greater than 10 mm; for draining garages, cellars, basements, swimming pools, basins, tanks, fountains, rainwater drains, for garden irrigation and for water oxygenation.
Use the electropump in keeping with its technical characteristics (chapter 7).

8.2. NOT CONTEMPLATED CONDITIONS OF USE

BEST series electropumps cannot be used for handling dirty water, water containing acids and corrosive liquids in general, water with temperatures higher than 50°C, sea-water, inflammable and generally dangerous liquids. BEST electropumps must never be allowed to run without water.



9. HANDLING AND TRANSPORT
(as per EEC 89/392 p.1.7.4.a; EN 292-2 p.5.1.1.a)

9.1. UNPACKING

Check that there are no breakages or severe dents in the packing; if there are, point this out immediately to the person who delivers the material. After removing the electropump from the package, check that it has not suffered any damage during transport; if damage is found, inform the dealer within 8 days of delivery. Then check that the characteristics stated on the plate of the electropump are the same as you requested in your order.

9.2. HANDLING AND DISINSTALLATION

ATTENTION - FAILURE TO FOLLOW THESE INSTRUCTIONS MAY CAUSE THE ELECTROPUMP TO FALL, SUFFERING SEVERE DAMAGE.
- ABSOLUTELY DO NOT USE THE POWER CABLE TO LIFT OR DRAG THE ELECTROPUMP.



To handle or disinstall the electropump you must:

- remove the plug from the power socket and/or switch off the switch, if provided;
- roll up and hold the electric power cable in your hand;
- lift the electropump and the delivery pipe with the handle provided.

If the electropump is set up for fixed applications, perform the following operations before handling it:

- remove the plug from the power socket and/or switch off the switch, if provided;
- unscrew any clamps and remove the delivery pipe;
- roll up and hold the electric power cable in your hand;
- lift the electropump and the delivery pipe with the handle provided.

9.3. TRANSPORT

The electropump is packed in a cardboard box for transport; as its total weight and bulk are not excessive (fig. 1), transport presents no problems. However, check the total weight marked on the box.

10. INSTALLATION
(as per EEC 89/392 p.1.7.4.a; EN 292-2 p.5.1.1.b)

ATTENTION TO LIFT OR LOWER THE ELECTROPUMP, USE A ROPE FIXED TO THE HANDLE; NEVER USE THE ELECTRIC POWER CABLE.

10.1. FIXED INSTALLATION

- a) The electropump must be placed on a level surface.
- b) When positioning the electropump, observe the minimum required distances (fig. 2) from walls, from the sides of the drain or other location, so as to allow functioning, use and maintenance operations in safe conditions (as per EN 292-2 p.5.5.1.b).
- c) It is recommended to use G 1 1/2 flexible pipes, with couplings of the same size if required.
- d) It is recommended to fit a no-return valve on the delivery pipe.

10.2. TEMPORARY INSTALLATION (FOR TEMPORARY USE)

- a) The electropump must be placed on a level surface.
- b) When positioning the electropump, observe the minimum required distances (fig. 2) from walls, from the sides of the drain or other location, so as to allow functioning.

8- BEST 2-3-4-5

- c) It is recommended to use G 1 1/2 flexible pipes, with couplings of the same size if required.
- d) It is recommended to fit a no-return valve on the delivery pipe.

11. ASSEMBLY AND DISASSEMBLY
(as per EEC 89/392 p.1.7.4.a)

The electropump has no separate accessories, so no assembly is required for installation.

If the electropump has to be disassembled (due to breakage or any other reason), the user must apply to the dealer or to the assistance service.

FAILURE TO COMPLY WITH THIS RULE RENDERS THE GUARANTEE INVALID.

12. PREPARATION FOR USE
(as per EEC 89/392 p.1.7.4.a; EN 292-2 p.5.1.3)

On three-phase BEST electropumps, check the direction of rotation of the motor. The impeller must turn in a clockwise direction when viewing the electropump from above (see the arrow on the pump). As it is not possible to check the direction of rotation of the impeller visually, proceed as follows: before anchoring the electropump in the system, connect the power cables to the electric panel and switch on the main switch for a moment; the electropump will start up immediately with a recoil. If the pump is turning in the right direction, the recoil will be anti-clockwise, viewing the pump from the top.

12.1. ELECTRIC CONNECTION

- ATTENTION**
- a) For connection to the power mains, the electropump is provided with a 10-metre cable complying with IEC standards; when connecting, consider the installed power (0.55-1.5 KW), the mains voltage and the number of phases (chapter 7.2).
 - b) The mains must have an efficient earth system complying with the electrical standards in force in the user's country; the installer is responsible for checking this.
 - c) The single-phase version has a plug complying with EEC Publ. 7, with double earth contact (fig. 3); earthing is provided by the plug itself when it is inserted in the socket.
 - d) The three-phase version has a power cable with a yellow/green earth lead (fig. 4); connect the yellow/green lead in the power cable to an efficient earth system which complies with the electrical standards in force in the user's country. The three-phase version has no internal motor protector, so overload protection must be provided by the user. The electropump must be fed by means of an electric panel with a switch, fuses and a magnetothermal switch set at the current absorbed by the electropump. The electric panel must be prepared by a skilled technician or bought from EBARA ITALIA S.p.A.
 - e) For both the three-phase and the single-phase version, we advise fitting a high-sensitivity differential switch in the electric system (0.03 A).

The electric connection must be carried out by a skilled technician.

12.2. ADJUSTING AND REGISTERING
(as per EEC 89/392 p.1.7.4.a; EN 292-2 p.5.5.1.d)

The only thing that needs checking once installation is complete is the length of the cable with float (in both versions that have one) with respect to the minimum and maximum water level (fig. 6).



13. USE AND START-UP
(as per EEC 89/392 p.1.6; EN 292-2 p.5.5.1.e)

13.1. VERSION WITH FLOAT SWITCH

Insert the plug and/or switch on the switch; the electropump starts operating; once the electropump has taken in water up to the minimum level (fig. 2) regulated by the float, it will cut out automatically.

13.2. VERSION WITHOUT FLOAT SWITCH

Insert the plug and/or switch on the switch; the electropump starts operating; once the electropump has taken in water up to the minimum level (fig. 2), remove the plug and/or switch off.

14. MAINTENANCE AND REPAIRS
(as per EEC 89/392 p.1.6; EN 292-2 p.5.5.1.e)

ATTENTION BEFORE CARRYING OUT ANY MAINTENANCE OPERATIONS, DISCONNECT THE PLUG AND/OR SWITCH OFF. THE ELECTROPUMP MUST BE DISMANTLED ONLY BY SKILLED TECHNICIANS. FAILURE TO OBSERVE THIS RULE RENDERS THE GUARANTEE INVALID. THE SAME APPLIES TO REPAIR JOBS AND/OR REPLACEMENTS.



To ensure correct functioning and long life of the electropump, the filter and the impeller must be kept clean at all times; this is the only maintenance required by the electropump.

To dismantle the filter and gain access to the impeller, proceed as follows (fig. 7):

- wear protective gloves to avoid cutting your hands;
- unscrew the three filter retaining screws (1);
- remove the filter (2);
- remove the volute (3), unscrewing the three bolts (4) and the three nuts (5);
- using a small straight screwdriver, remove the nylon washers (6) and change them before reassembly, because they break when the volute is removed;
- remove the O-ring (7).

The impeller is now uncovered; check that it is clean. To reassemble, perform the operations listed above in inverse order.

Check the condition of the electric power cable; if it is damaged, contact the dealer or the assistance service to have it replaced.

14.1. TROUBLESHOOTING

TYPE OF FAULT	
<i>The pump does not work (the motor does not turn over)</i>	
CAUSE	REMEDY
No electric power.	Check the contactor on the electric line.
Plug not inserted.	Check power connection to the line.
Automatic switch has tripped.	Reset the switch and check the cause.
Float blocked.	Check that the float reaches ON level.
Impeller blocked.	Check cause of blockage (ch. 14).
Thermal protection has tripped (single-phase)	This resets automatically (single-phase only).
Protection fuses are burnt out (three-phase).	Replace the fuses with others of the same type.
Faulty motor or capacitor.	Contact the nearest dealer.

TYPE OF FAULT

The pump does not work (the motor turns over)

CAUSE	REMEDY
Intake filter blocked.	Clean the filter (ch. 14).
No-return valve blocked.	Clean the valve and check its operation.

TYPE OF FAULT

The pump works at a low flow rate

CAUSE	REMEDY
Dirty impeller, grid or delivery pipes.	Clean them (ch. 14).
No-return valve blocked.	Clean the valve and check its operation.
Water level too low.	Switch off the pump.
Wrong direction of rotation.	Check the direction of rotation (three-phase only, ch. 12).
Wrong supply voltage.	Feed the pump with the voltage indicated on the data plate.

TYPE OF FAULT

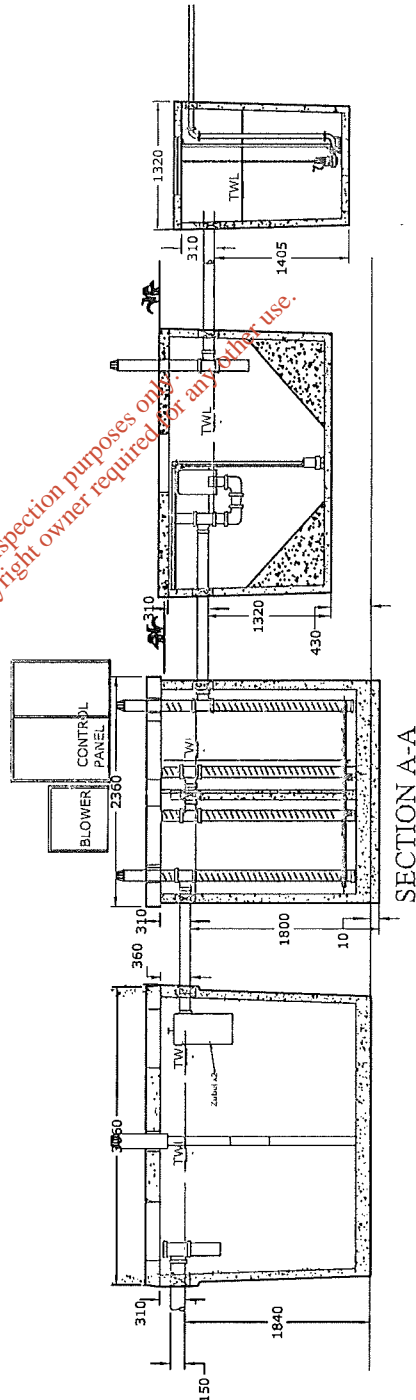
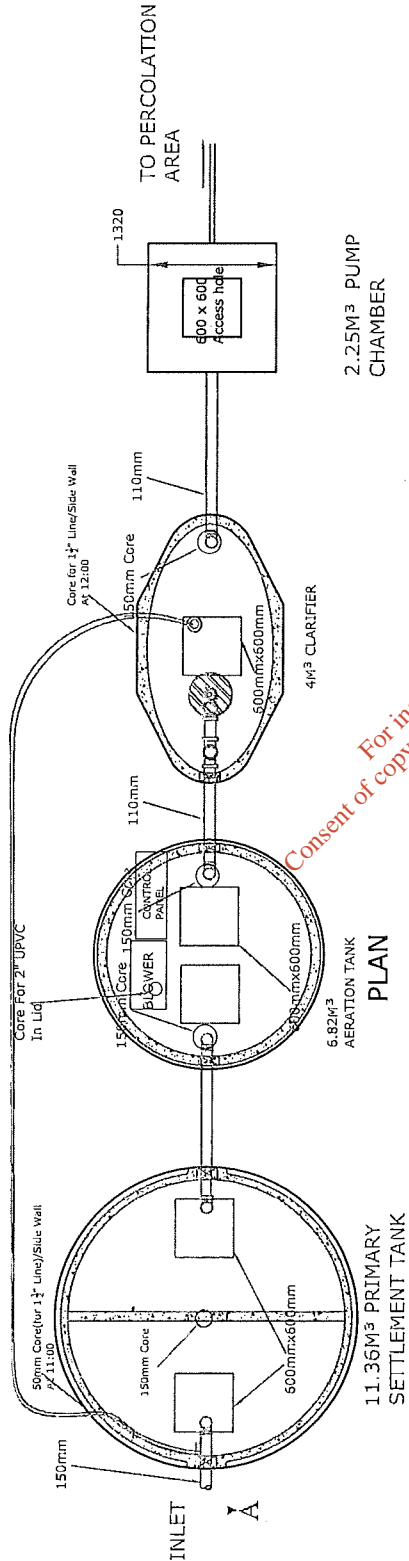
The pump stops after brief periods of operation (tripping of the thermal protection):

CAUSE	REMEDY
Impeller blocked by foreign bodies.	Remove the foreign bodies (ch. 14).
Liquid temperature too high.	The temperature exceeds the technical limits of the pump.
Internal defect.	Contact the nearest dealer.

For inspection purposes only. Consent of the writer owner required for any other use.

Appendix 4: System Drawings

*For inspection purposes only.
Consent of copyright owner required for any other use.*



For inspection purposes only. Consent of copyright owner required for any other use.

Rev.	DESCRIPTION	DATE
BORD NA MÓNA BORD NA MÓNA ENVIRONMENTAL LIMITED Main St, Newbridge, Co. Kildare Phone 045 431201 Fax 045 432312 www.bnm.ie/environmental Email: ed.info@bnm.ie		
© Copyright Bord na Móna Environmental Ltd. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written consent of the copyright owner. The copyright in this publication is vested in Bord na Móna Environmental Ltd. and may be protected by other proceedings for copyright and/or infringement and other laws.		
Project		
Client		
Drawing Title		
CRM Roadstone		
MBBR AR58		
Drawn by	Checked by	Approved by
Scale (A4)	NTS	DP
Status: <input type="checkbox"/> FOR APPROVAL <input type="checkbox"/> FOR CONSTRUCTION <input type="checkbox"/> AS BUILT		
Doc. No.		AR58

DESCRIPTION OF DEVELOPMENT 2

Appendix 2-B Environmental Management System

*For inspection purposes only.
Consent of copyright owner required for any other use.*

Roadstone Wood Ltd.

Master List of Documents

Doc. No. EMS/02

Ref No.	Document Title	Approval	Rev No.	Distribution		
				Electronically		
EMS/01	Master List of Documents	EO	00	EO	LM	NSM
EMS/02	Company Environmental Manual	EO	00	EO	LM	NSM
EMS/03	Annual Environmental Review	EO	00	EO	LM	NSM
EMS/04	Register of Aspects	EO	00	EO	LM	NSM
EMS/05	Assessing Impacts Procedure	EO	00	EO	LM	NSM
EMS/06	Summary of Assessments of Environmental Aspects	EO	00	EO	LM	NSM
EMS/07	Register of Legislation & Other Requirements Procedure	EO	00	EO	LM	NSM
EMS/08	Environmental Improvement Program	EO	00	EO	LM	NSM
EMS/09	Environmental Training Procedure & Plan	EO	00	EO	LM	NSM
EMS/10	Monitoring & Measurement Procedure	EO	00	EO	LM	NSM
EMS/11	Monitoring Matrix	EO	00	EO	LM	NSM
EMS/12	Archaeology, Ecology & Landscaping Procedure	EO	01	EO	LM	NSM
EMS/13	Dust Suppression Guidelines	EO	00	EO	LM	NSM
EMS/14	Noise Abatement Guidelines	EO	00	EO	LM	NSM
EMS/15	Receiving Oil, Fuel & Chemicals Procedure	EO	00	EO	LM	NSM
EMS/16	Maintenance of Bulk fuel Storage & Bund Procedure	EO	00	EO	LM	NSM
EMS/17	Environmental Emergency Response Procedure	EO	00	EO	LM	NSM
EMS/18	Transport Guidelines	EO	00	EO	LM	NSM
EMS/19	Energy Efficiency Guidelines	EO	00	EO	LM	NSM
EMS/20	Communications Procedure	EO	00	EO	LM	NSM

Roadstone Wood Ltd.

Master List of Documents

Doc. No. EMS/02

Ref No.	Document Title	Approval	Rev No.	Distribution		
				Electronically		
EMS/21	Waste Management Procedure	EO	00	EO	LM	NSM
EMS/22	Restoration/after-use Guidelines	EO	00	EO	LM	NSM
EMS/23	Sub-Contractors Green Guide	EO	00	EO	LM	NSM
EMS/24	Screening for New Chemicals	EO	00	EO	LM	NSM
EMS/25	Plant Decommissioning Procedure	EO	00	EO	LM	NSM
EMS/26	Maintenance of settlement tanks	EO	00	EO	LM	NSM
EMS 27	Control of Documents Procedure	EO	00	EO	LM	NSM
EMS 28	Procedure for Non-Conformances	EO	00	EO	LM	NSM
F/01	Waste Register	EO	00	EO	LM	NSM
F/02	Environmental Monthly Report	EO	00	EO	LM	NSM
F/03	Bund Integrity	EO	00	EO	LM	NSM
F/04	Audit Trail	EO	00	EO	LM	NSM

For inspection purposes only. Consent of copyright owner required for any other use.