

### Amendments/Additional Information

- Amended layout of buildings/outside areas
- Additional background information
- Amended design
- Revised access arrangements
- Change of description of proposed development
- Change in site boundaries
- Other (as specified below) - *Application now includes wastewater treatment system.*

Your Ref NYM/2016/0315/FL

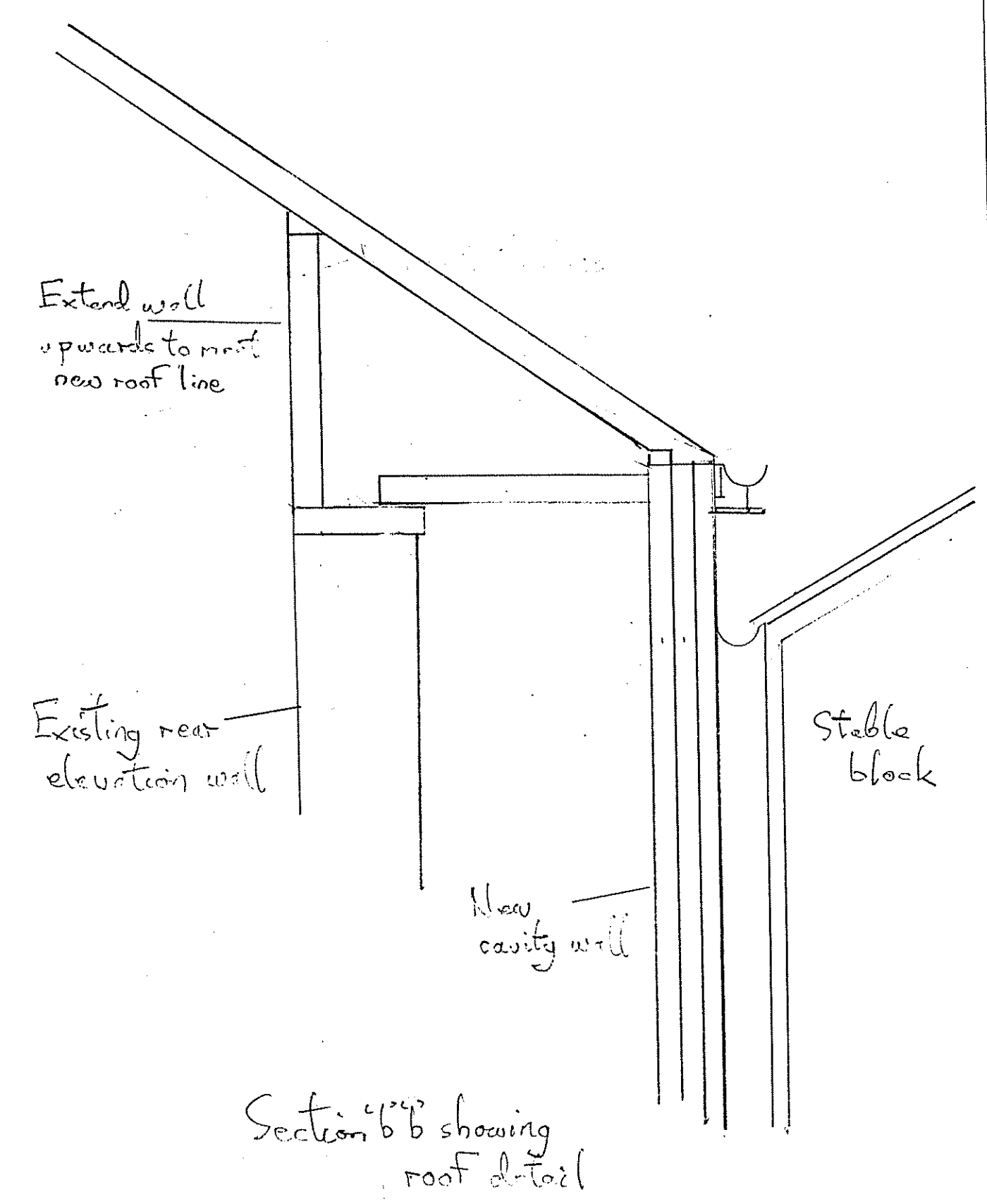
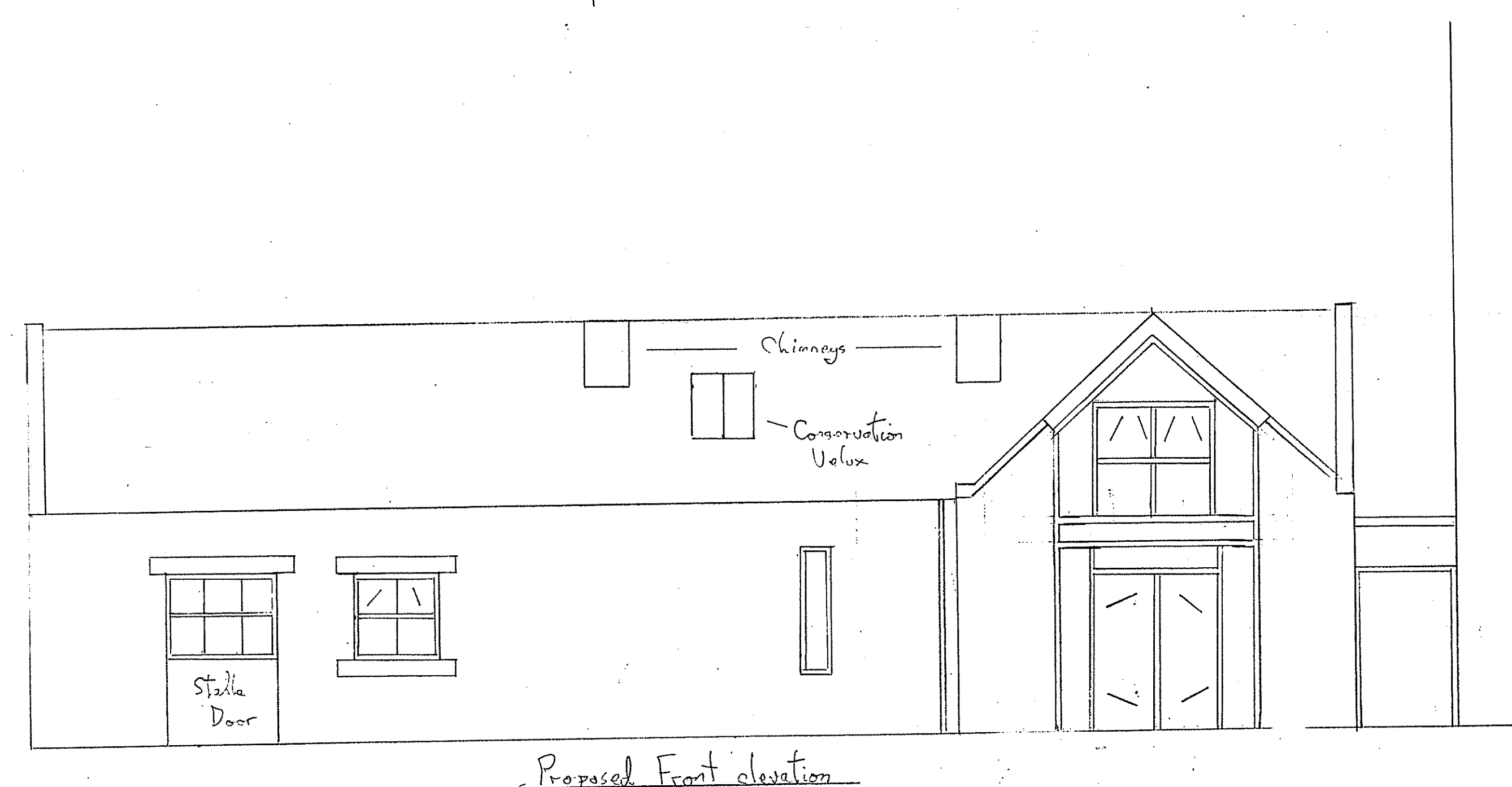
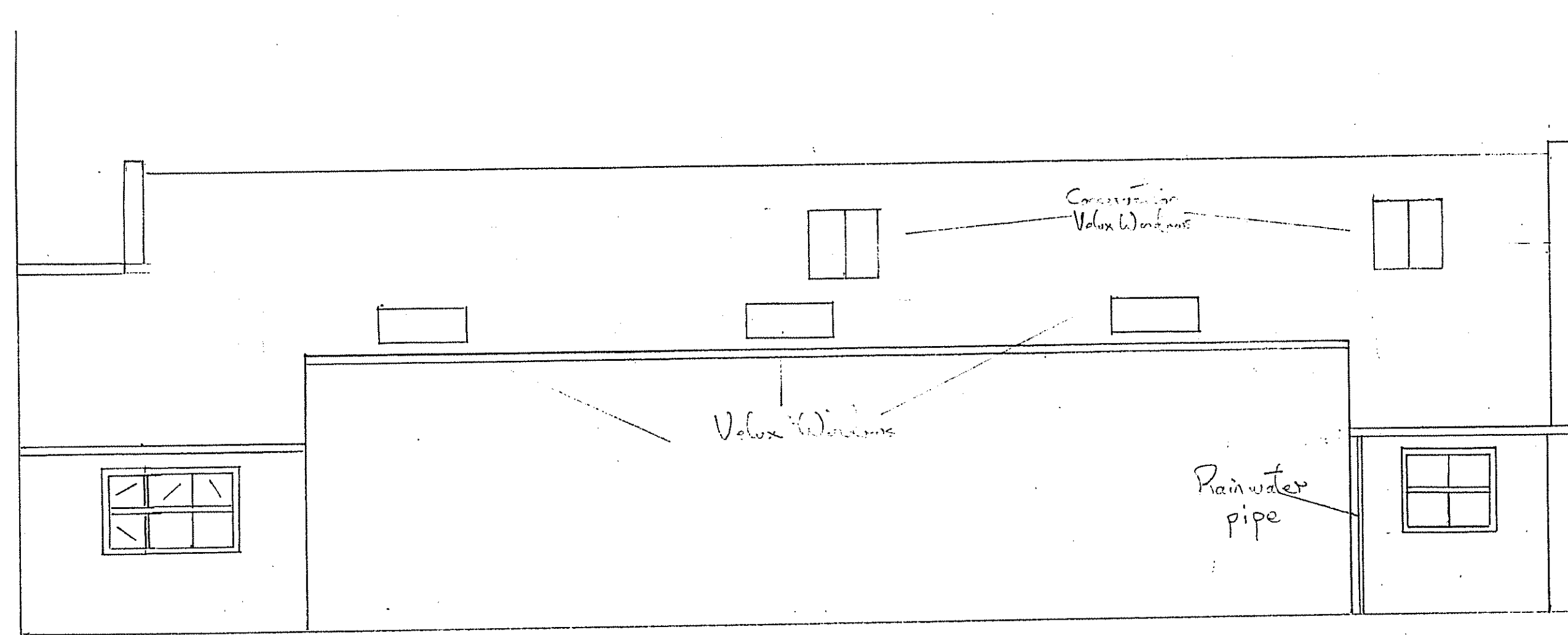
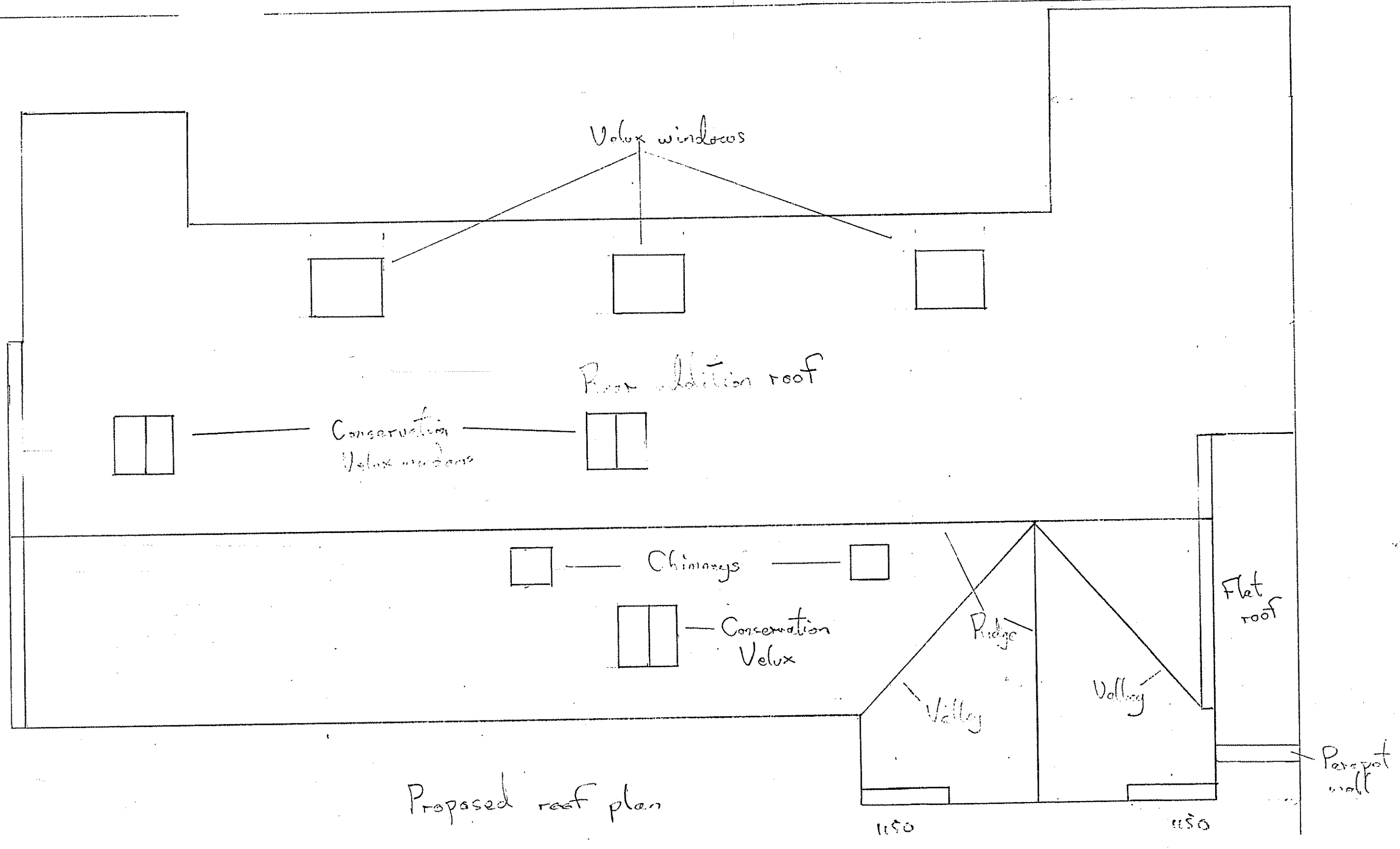
HWE

Please find enclosed revised plans for conversion of outbuildings to residential use at Burgate Farm, Harwood Dale, Scarborough, North Yorkshire. Also included are location plans showing site of Water Treatment System and specification sheets.



Proposed conversion of outbuilding to owners accommodation For:-  
 Mr & Mrs J Cook  
 Borge Farm  
 Harwood Dale  
 Scarborough  
 North Yorkshire  
 YO13 0DS  
 Drawing No. 2016080502  
 Scale 1:50

Drawn by:-  
 Mr A. Williamson  
 Millthorpe  
 Arkgate Farm  
 Fylingthorpe  
 North Yorkshire  
 YO22 4QB  
 7th August 2016

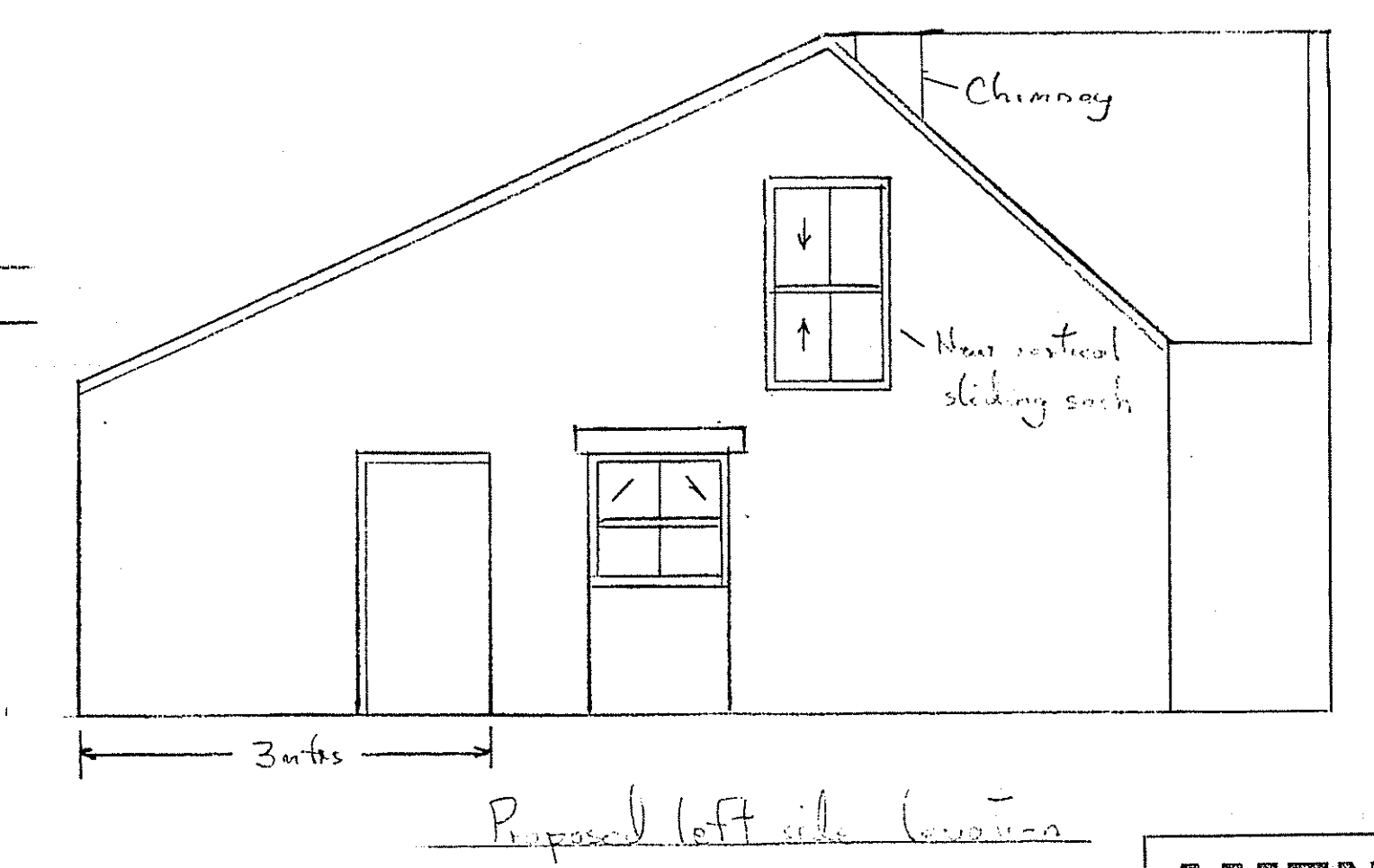
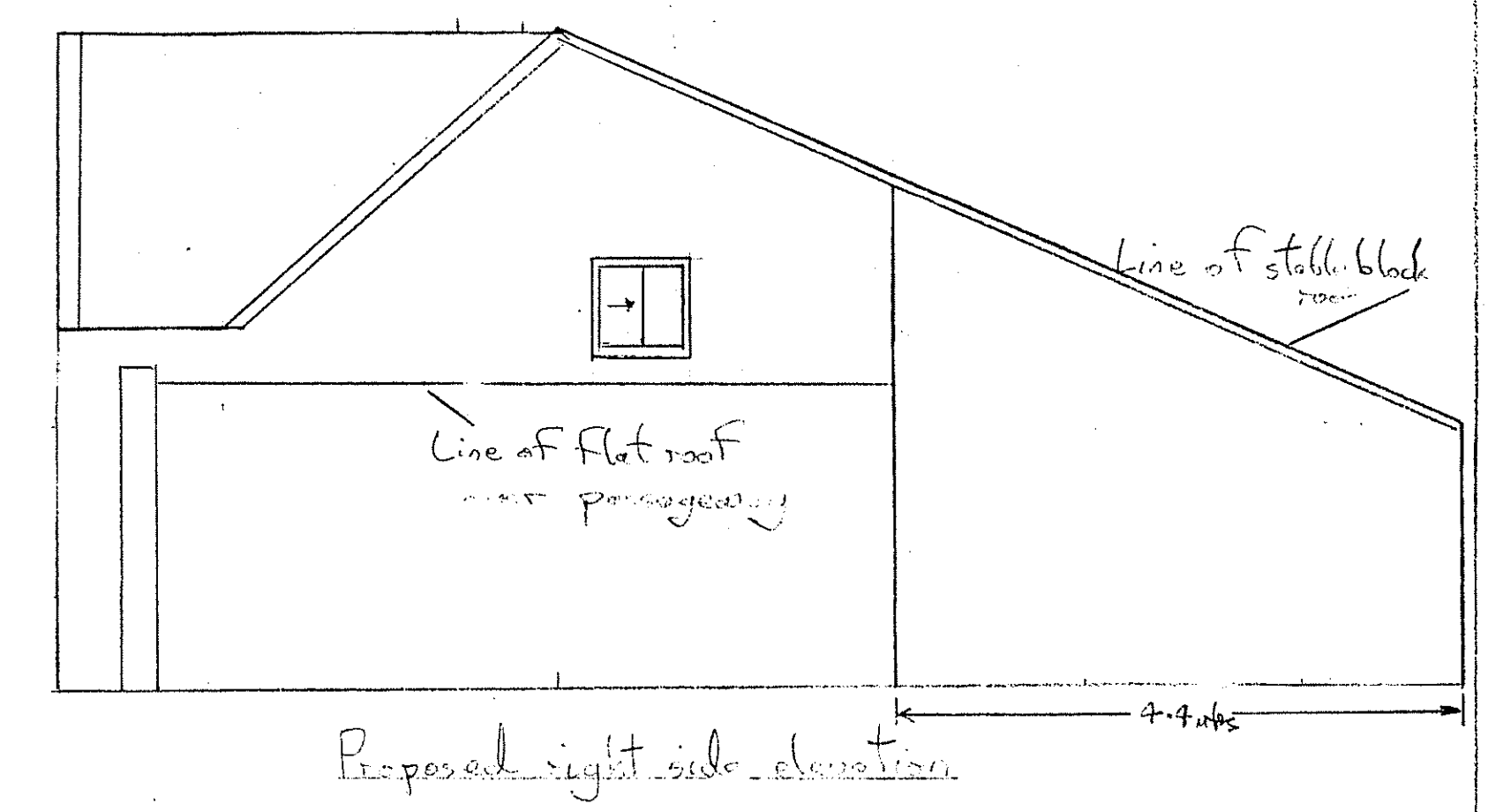
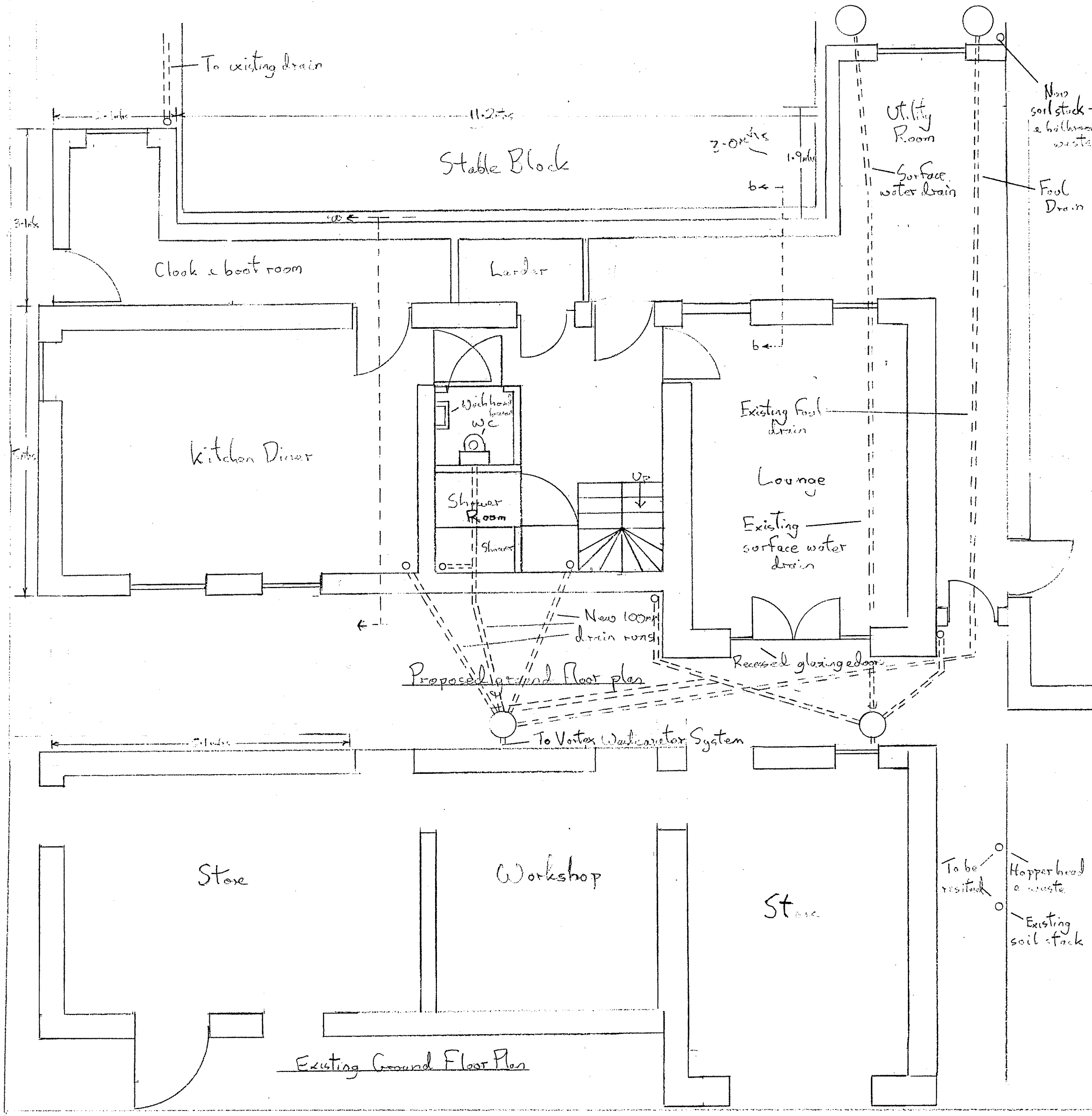
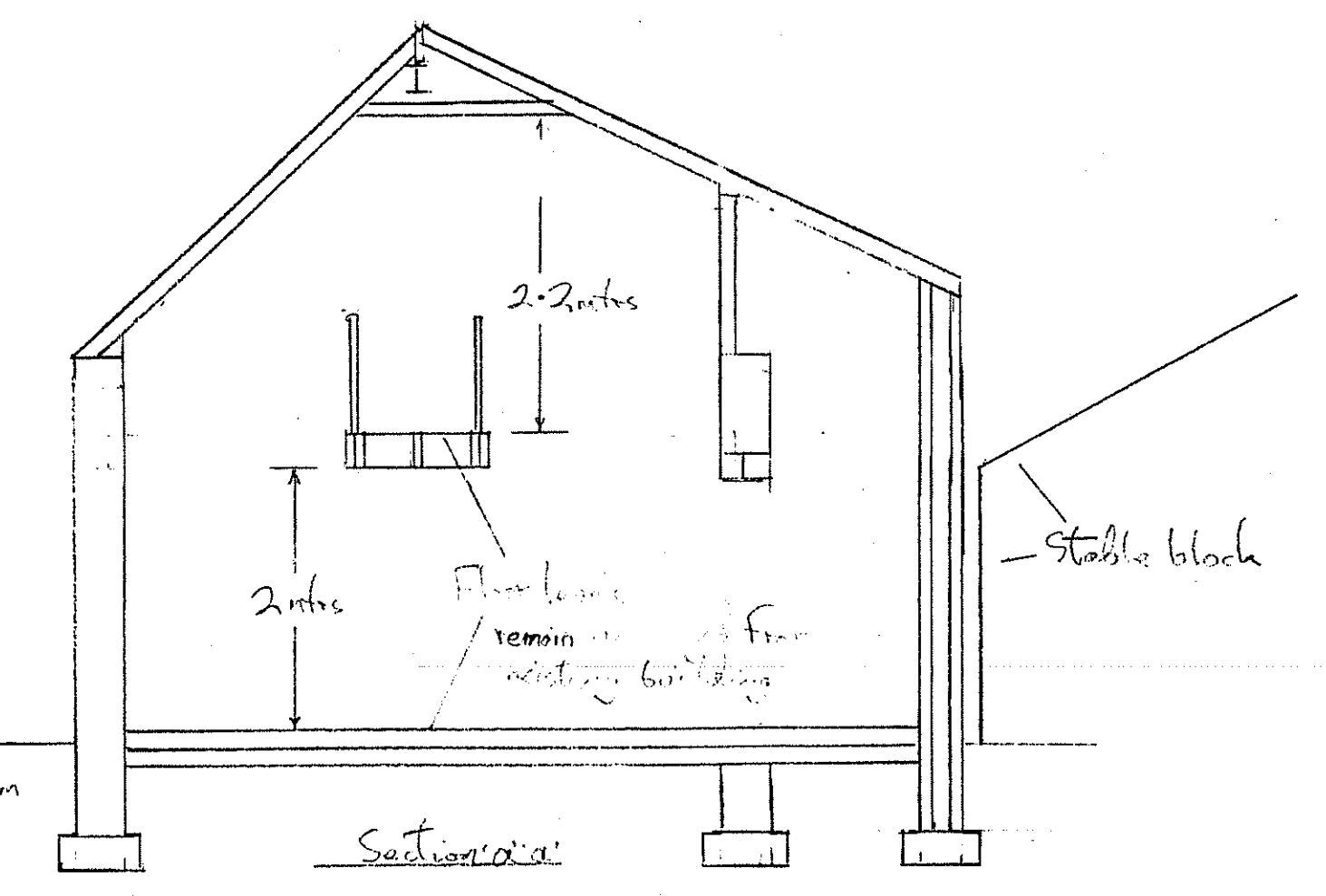
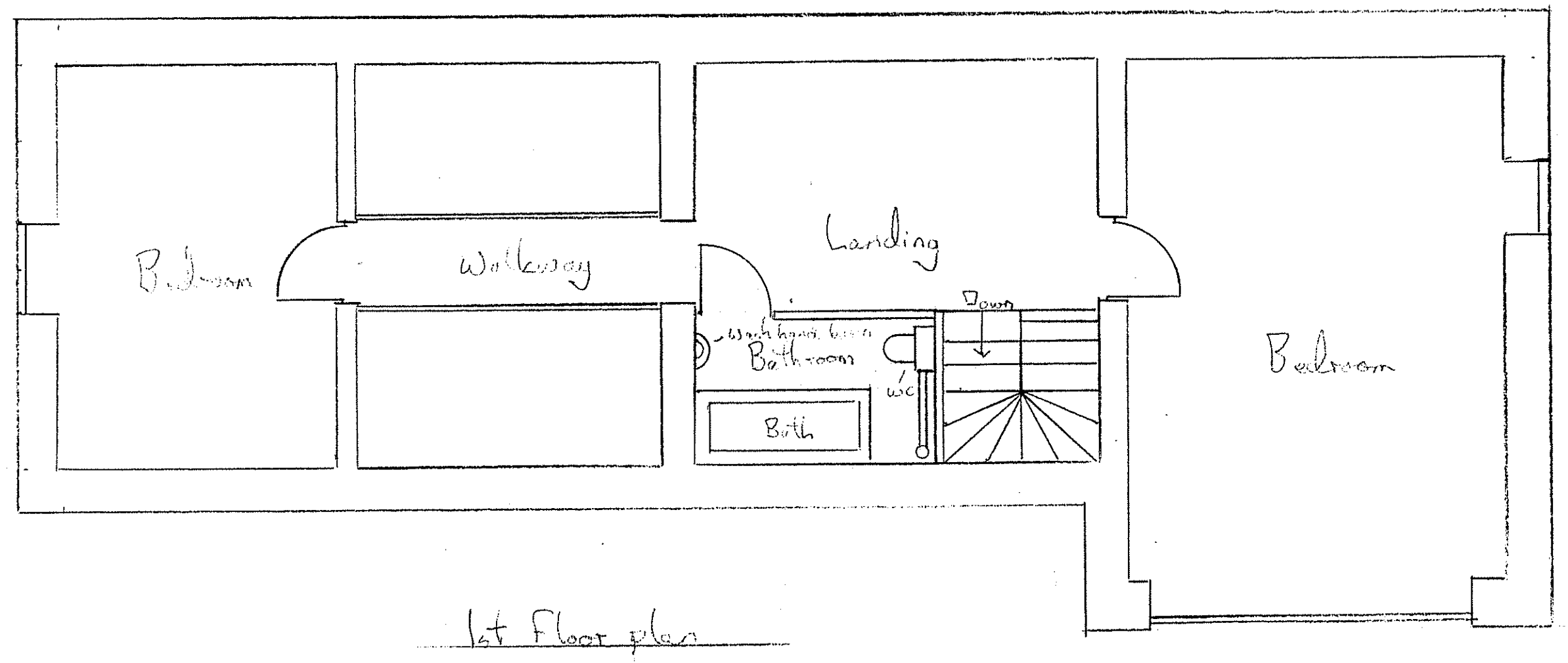


W/M/N/P/A  
 11/08/2016

**AMENDED**  
 Notes

Proposed conversion of outbuilding to owners accommodation for:-  
 Mr & Mrs J Cook  
 Burgate Farm  
 Harwood Dale  
 Scarborough  
 North Yorkshire  
 YO13 0DS  
 Scale 1:50  
 Drawing No. 2016030301

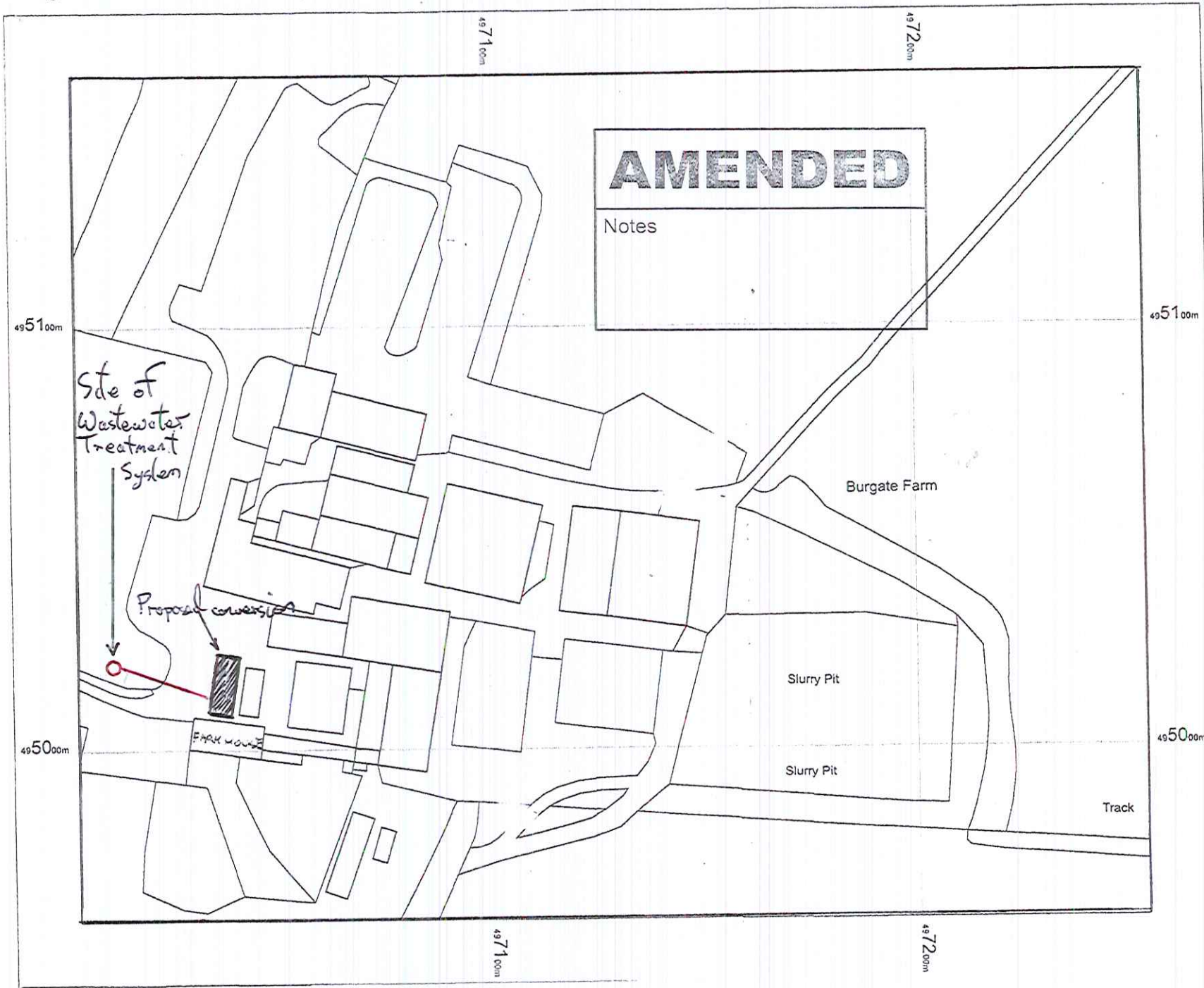
Drawn by:-  
 Mr A. Gillman  
 Millthorpe  
 Scarborough  
 North Yorkshire  
 YO22 1QB  
 9th August 2016



NYMNP  
 11 AUG 2016

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 Notes

# BURGATE FARM, HARWOOD DKE YO13 0DS

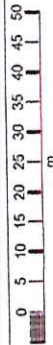


## AMENDED

Notes

Supplied By York Survey Supply

N  
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OS MasterMap 1250/2500/10000 scale  
28 March 2014, ID: M4P-00311302  
York Survey Supplies

1:1250 scale print at A4, Centre: 497129 E, 495060 N

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# ADVANTAGES

- Excellent effluent quality.
- Simple and reliable operation.
- Excellent build quality.
- Low noise.
- Low electricity demand.
- Easy installation.
- CE marked.
- EN 12566-3 certified.
- Excellent value for money.
- Odourless
- Discharge to ground or watercourse
- Internal Sampling Chamber (no extra chamber to buy & install)

## INTRODUCTION

The Vortex is an advanced Activated Sludge Process (ASP) sewage treatment plant.

It is capable of receiving wastewater from buildings not connected to mains drainage and processing it so that only a clear effluent is discharged into the environment.

**AMENDED**

Notes

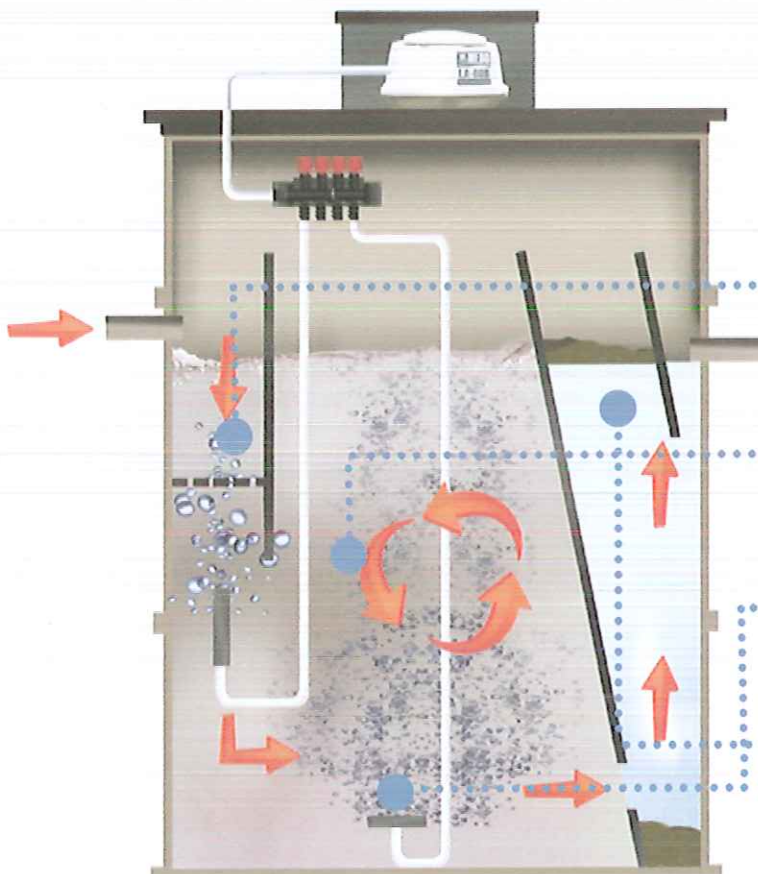
The Vortex is an eco electric sewage treatment plant. Under normal use the air blower is only active for 30 minutes in every 45.

The Vortex has been tested and certified to **EN 12566-3**.

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## HOW THE SYSTEM WORKS



### The Vortex Treatment Process

Unlike most sewage treatment plants the Vortex is designed to treat both the solid and liquid components of wastewater. It does this by using a combination of coarse and fine air bubbles.

Wastewater from the building enters to Vibro Screen. Here coarse air bubbles are used to physically break down solid matter and form a mixed liquor with the water.

The mixed liquor flows into the Aeration Chamber. A bacterial culture is present in the Aeration Chamber which digests the pollutants in the wastewater.

The bacterial culture must have an oxygen supply. This is supplied by an external air blower that supplies air to a fine bubble diffuser at the base of the tank.

The mixed liquor then flows into the Clarification Chamber where it is able to separate into clear, treated effluent and sludge. The clear effluent is able to flow past the scum baffle and out of the tank.

Tank cross sections for graphical representation only

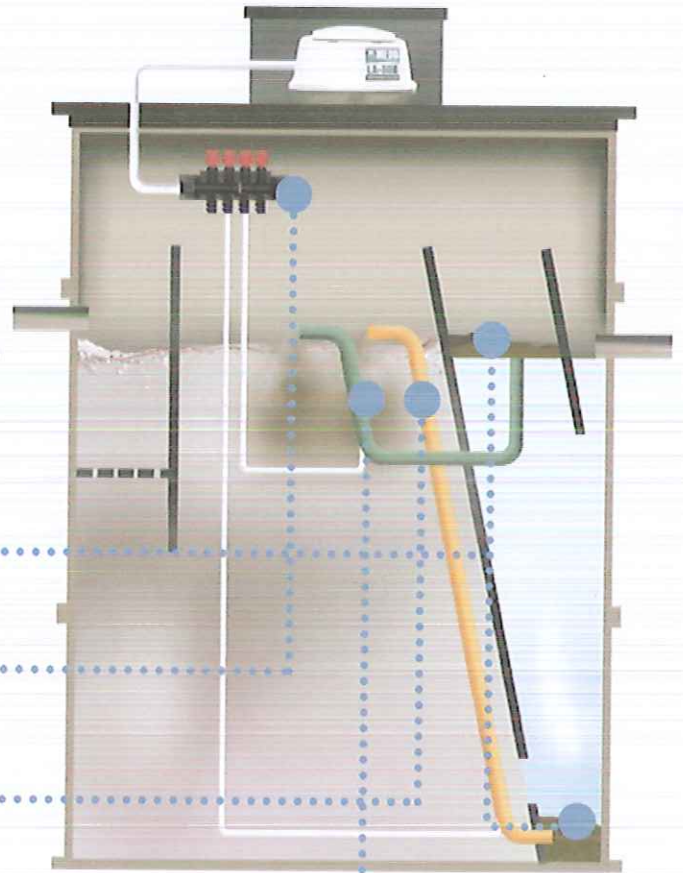
# THE SLUDGE MANAGEMENT SYSTEM

All Activated Sludge Process (ASP) sewage treatment plants produce sludge as part of the treatment process. The vortex's Sludge Management System is one of the elements that make it an advanced ASP.

The sludge is composed of partially digested solid matter. The Vortex is able to return the sludge back to the Aeration Chamber for further digestion by the bacteria.

The recycling of sludge back to the Aeration Chamber gives the bacteria a food supply even when there is little or no wastewater coming from the building. This makes the Vortex better able to handle low occupation stress than other ASP sewage treatment plants.

This recycling of sludge is done without the use of electrical or mechanical components in the tank.



In the Clarification Chamber sludge accumulates at the bottom (settled sludge) and top (floating sludge) of the tank.

Air from the blower is spurred from the regulator to two sludge return pipes.

The Settled Sludge Return (SSR) is active all the time. It creates a continuous vacuum that sucks the sludge from the top and bottom of the Clarification Chamber back to the Aeration Chamber.

The Floating Sludge Return (FSR) is activated either manually once a month or automatically on a daily basis if an Automatic FSR Kit is fitted – see below.

Tank cross sections for graphical representation only

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## AUTOMATIC FSR KIT

The automatic FSR Kit enables the Vortex to recycle and manage the floating sludge on a daily basis.

This reduces the need for the owner to manually manage the sludge build up in the tank.

No other ASP sewage treatment plant has this ability to manage its own sludge.

All Vortex sewage treatment plants are manufactured assuming an Automatic FSR Kit will be fitted. The tank can be easily converted back to manual without the need to buy additional components.

**AMENDED**

Notes

# PERFORMANCE

The Vortex has been designed to meet the UK Royal Commission Standard for effluent of:

BOD <sub>5</sub>	20 mg / L
Suspended Solids	30 mg / L
Ammonia	20 mg / L

Due to the Vortex's unique design it far exceeded the above standard during EU testing and achieved the following average effluent quality:

BOD <sub>5</sub>	7.4 mg / L
Suspended Solids	15.2 mg / L
Ammonia	0.4 mg / L

# TECHNICAL DETAILS

**AMENDED**

Model	PE	Tank Diameter (m)	In Ground Depth (m)	Inlet Invert (m)*	Outlet Invert (m) †	Power (Kw)
Vortex 4	4	1.380	2.000	0.650	0.720	0.06
Vortex 6	6	1.480	2.000	0.650	0.720	0.08
Vortex 8	8	1.700	2.000	0.650	0.720	0.10
Vortex 10	10	1.800	2.000	0.650	0.720	0.10
Vortex 15	15	1.800	2.750	0.703	0.750	0.15
Vortex 20	20	2.090	2.550	0.503	0.550	0.08 + 0.12
Vortex 30	30	2.340	2.550	0.503	0.550	0.12 + 0.12

Notes

# INSTALLATION

† Pump stations available

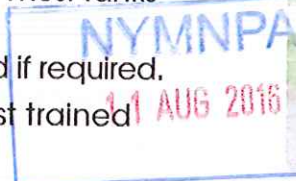
\* Other inlet options available

The Vortex is easy to install and is suitable for high groundwater sites. When installed on dry sites there is no requirement for concrete.

There are shallow and deep inlet options available for most tanks in the range.

The Vortex is capable of being installed above ground if required.

Please contact our office for details on your nearest trained installer.



# MAINTENANCE

The Vortex sewage treatment plant requires servicing every six months.

The servicing is done by trained service engineers to ensure that the system functions correctly giving the owner piece of mind.

Please contact our service partner **Sapphire Environmental** for details on servicing. [www.sapphireservicing.com](http://www.sapphireservicing.com)

# CONTACT



[www.wte-ltd.co.uk](http://www.wte-ltd.co.uk)

E: [info@wte-ltd.co.uk](mailto:info@wte-ltd.co.uk) T: +44 (0) 1759 369915 / 369656

Water Technology Engineering Ltd. Unit 2, Bolton Lane, Bolton, York, YO41 5QX



**CRYSTALTanks**

[www.crystalltanks.com](http://www.crystalltanks.com)



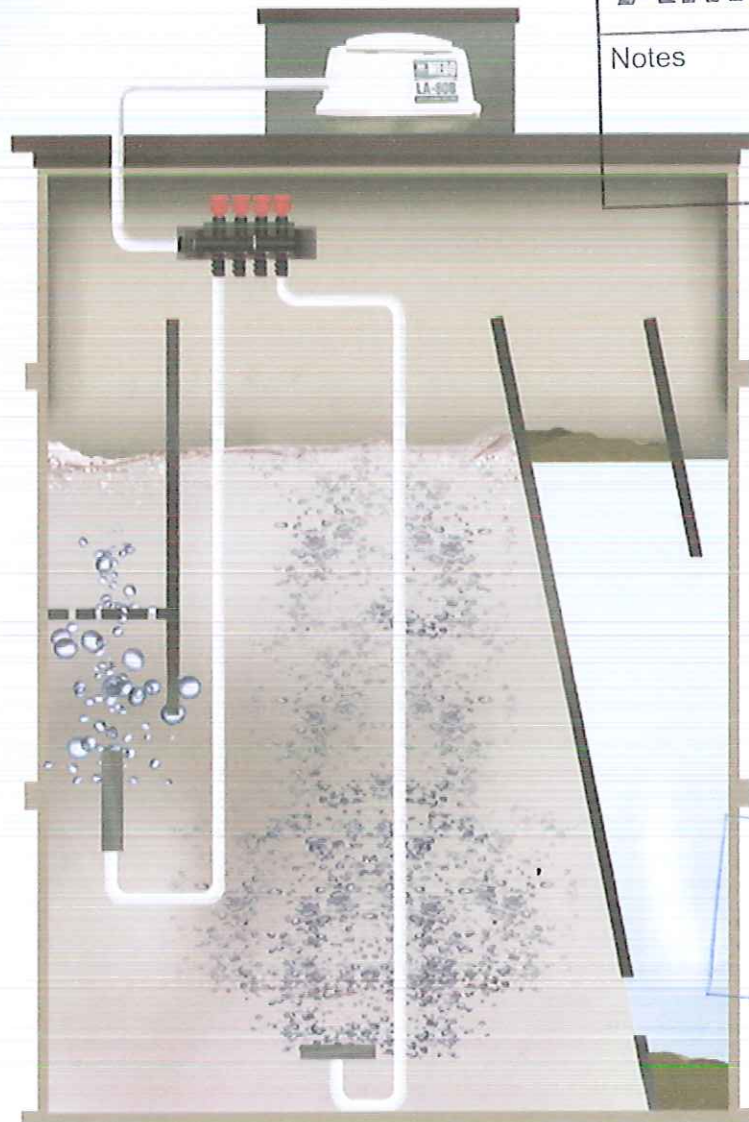


# VORTEX™

WASTEWATER TREATMENT SYSTEM

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Notes



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Electricity Required	Yes
Internal Moving Parts	No
Safe For Discharge To Watercourse	Yes
Average Desludge Interval	12 Months
Average Service Interval	6 - 12 Months
Tank Warranty	10 Years

Your Local Distributor is:

