SCHEDULE OF RENEWABLE ENERGY ASSETS AND ENERGY EFFICIENCY MEASURES



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ERECTION OF NINETEEN HOLIDAY LODGES, RECEPTION BUILDING, FACILITY MANAGER'S ACCOMMODATION AND MAINTENANCE SHED. FORMATION OF TWO FISHING LAKES AND ASSOCIATED HARD AND SOFT LANDSCAPING. BLEU RAY FARM, MILL GATE, WHAPLODE PE12 6RY

CLIENT ; VMM PROPERTIES LIMITED

DATE ; APRIL 2022

PROJECT REF ; JDA/2022/885

This document is part and parcel of a Full Planning Application submitted to South Holland District Council

1.0 Introduction :

1.1.1 This statement provides an assessment of the proposals by John Dickie Associates for the erection of nineteen holiday lodges, reception building, facility manager's accommodation and maintenance shed. Formation of two fishing lakes and associated hard and soft landscaping. Bleu Ray Farm, Mill Gate, Whaplode PE12 6RR

1.0 Introduction :

This document is part and parcel of a Full Planning Application submitted to South Holland Council for the erection of nineteen holiday lodges, reception building, facility manager's accommodation and

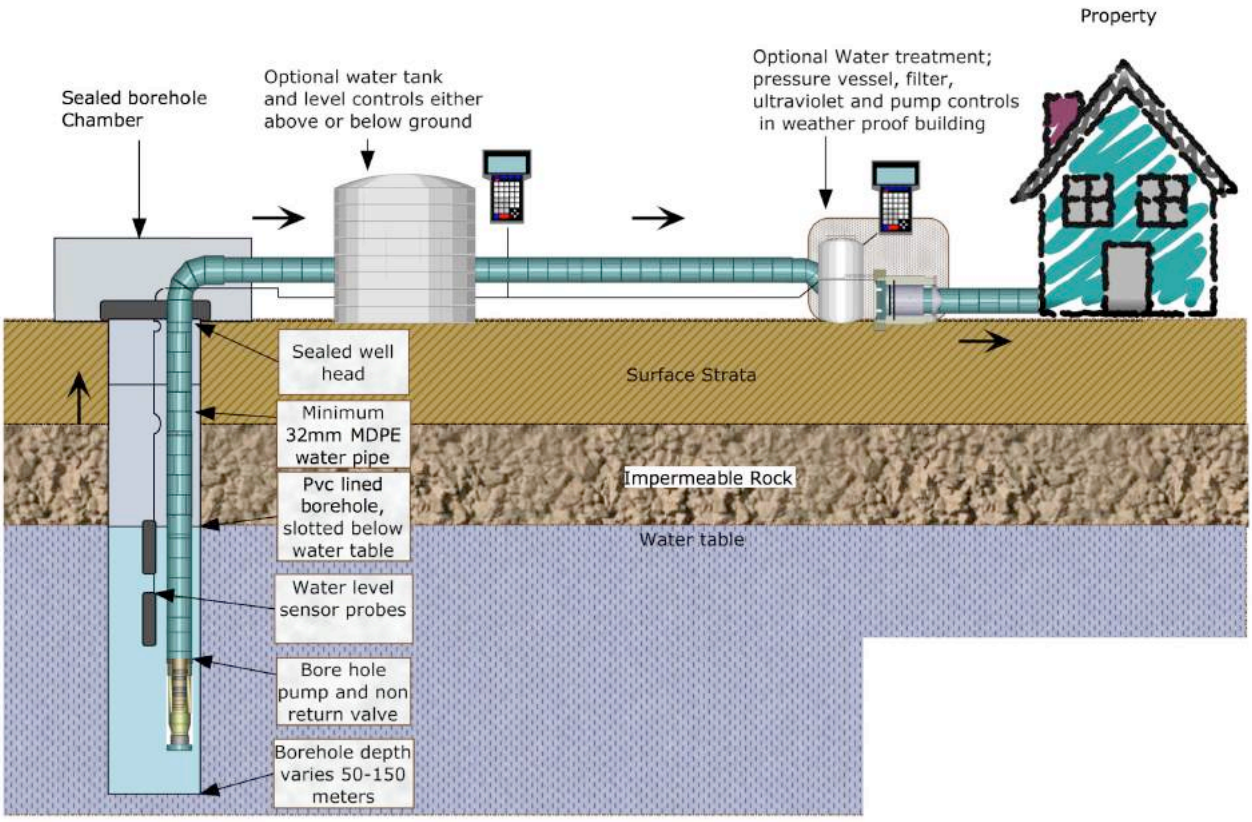
maintenance shed. Formation of two fishing lakes and associated hard and soft landscaping. Bleu Ray Farm, Mill Gate, Whaplode PE12 6RR

It is the purpose of this document to set out detials of the proposed mechanical and electrical installation and all the items to be included in the proposed lodges that would make it both innovative and significantly 'off-grid'.

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WATER SUPPLY

An Abstraction Licence to sequester water from an on-site borehole will be secured from The Environment Agency if required - a license is required to abstract more than 20 cubic metres per day - an average house requires circa 1 cubic metre per day. In England, Wales and Scotland, if the borehole supplies water for domestic use, or to make food or drink that will be sold, then the Environmental Health Department of your Local Authority has an obligation to test the water. The abstracted water will be filtered and stored in order to provide a viable potable water supply to the 19no Lodges and other buildings. A centralised UV filtration system will be installed in the detached Maintenance Shed from which the potable water supply will serve the development – operated and maintained by the Management Company.



BASIC CONFIGURATION FOR WATER ABSTRACTION

NOT TO SCALE

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CAR CHARGING

A car charging point will be provided to serve every property




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AIR SOURCE HEAT PUMPS

It is proposed to install 1no Air Source Heat Pump per unit - to be located where indicated. The unit will be Mitsubishi Ecodan single phase Mitsubishi 14kW R32 1Ph Mono ASHP Zbdn Standalone Pkg or equivalent.

SOUND PRESSURE LEVEL AT 1M (dBA) - 45The system will provide hot water and heating and, in summer months can be switched to provide cooling.



The ASHP Installation will comply with the Domestic Building Service Compliance Guide - Dept for Communities and Local Government 2001 and BS EN15450 Tables C1 & C2 with a Seasonal Performance Factor (SPF) of at least 2.7.

The heating system is to be underfloor with water supply temperatures in the range of 30c to 40c. The Coefficient of Performance (CoP) is to be not less than 2.2 for space heating and 2.0 for domestic hot water. The Seasonal Performance Factor will be no worse than as described in Table C1 of BS EN 15450. The system will meet the minimum requirements for installation and controls in Table 35 for heat pumps.

The water distribution system is to be arranged for reverse return operation or arranged with a low loss manifold system to maximize efficiency and ease commissioning and future maintenance. Pipework not contributing to the space heating system will be insulated to prevent heat loss. External pipework between the unit and the house to be insulated to the TIMSA Guide. The internal water distribution circuit should be protected by an anti freeze solution as recommended by the ASHP manufacturer.

For full heating, the ASHP and any supplementary domestic HW heating should be capable of supplying

water in the range of 60c to 65c. The domestic hot water (DHW) system should include a tank thermostat and a time clock to optimise the time taken to heat the water.

Heat pump unit controls to include :
1. control of water pump operation (internal and external)
2. control of water temperature for the distribution system
3. control of outdoor fan operation
4. defrost control of external airside heat exchanger
5. protection for water flow failure
6. protection for high water temperature
7. protection for high refrigerant pressure
8. protection for air flow failure

External controls to include :
1. room thermostat to regulate the space temperature and interlocked with the heat pump operation
2. timer to maximize the operation of the heat pump

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WOOD BURNER INSTALLATION

Space heating will be augmented by the installation of 1no Clearview 750 14 kw unit per unit - refer to floor layouts. HETAS approved installation. Flue to be fitted in compliance with Approved Document J BS EN 15287, BS EN 1443, BS EN 1806 and manufacturer's details.



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LIMITING THE EFFECTS OF SOLAR HEAT GAINS IN SUMMER

Reasonable provision is to be taken to limit solar gains in compliance Approved Document L1A. Excessive Solar gains to be checked using SAP 2009 Appendix P and consideration given to provision of adequate daylight as detailed in BS 8206 -2 Code of Maintaining Adequate Level of Daylight.

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LIMITING HEAT LOSSES AND GAINS

In accordance with Table 4.4 Approved Document L
Insulation to be provided to:
- Primary circulation pipes for domestic hot water.
- Primary circulation pipes for heating circuits where they pass outside the heated living space and voids to be insulated.

- Pipes connected to hot water storage vessels for at least 1m from the point at which they connect to the vessel. Secondary circulation pipework.

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OVERHEATING
OVERHEATING MITIGATION
Adequate means of removing excess heat and limiting solar gains to be provided.
Compliance to be demonstrated by using either:
- The simplified method for limiting solar gains and providing a means of removing excess heat as set out in Section 1 of Approved Document O. Compliance check list (AD O Appendix B) to be provided to demonstrate compliance, or
- The dynamic thermal modelling method as set out in section 2 of Approved Document O, using the guidance set out in - CIBSE TM59 methodology for predicting overheating risk.
Report to be provided that demonstrates that the building passes CIBSE's TM59 assessment of overheating.
Consideration given to provision of adequate daylight as detailed in BS 8206 -2 Code of Maintaining Adequate Level of Daylight, noise pollution and security.

Solar gains in summer to be limited by any of the following means:
a. Fixed shading devices, comprising any of the following.
i. Shutters.
ii. External blinds.
iii. Overhangs.
iv. Awnings.

Removing Excess Heat
Building with cross ventilation - moderate risk location
Building or parts of the building with cross ventilation to be provided with:
Total minimum free area to be the greater of the following –
a. 9% of the floor area
b. 55% of the glazing area
Bedroom minimum free area to be 4% of the floor area of the room
The equivalent area of the opening to be assessed by either of the following means:
a. Measurement of the product to BS EN 13141-1.
b. Calculation using Appendix D Approved Document L.

Removing Excess Heat
Building with cross ventilation - moderate risk location
Building or parts of the building with cross ventilation to be provided with:
Total minimum free area to be the greater of the following –
a. 9% of the floor area
b. 55% of the glazing area
Bedroom minimum free area to be 4% of the floor area of the room
The equivalent area of the opening to be assessed by either of the following means:
a. Measurement of the product to BS EN 13141-1.
b. Calculation using Appendix D Approved Document L.

Limiting Solar Gains
Maximum allowable glazing of the building or part of the building and the most glazed room are to be determined using Table 1.1 or 1.2 of Approved Document O, using the orientation of the façade with the largest area of glazing.
Appropriate shading for any building in a high risk location to be provided by either:
a. External shutters with means of ventilation.

b. Glazing with a maximum g-value of 0.4 and a minimum light transmittance of 0.7.
c. Overhangs with 50 degrees altitude cut-off on due south-facing façades only.

Dynamic Thermal Modelling
The following guidance to be followed to demonstrate compliance:
a. CIBSE TM59 methodology for predicting overheating risk.
b. The limits on the use of CIBSE TM59 methodology.
c. The acceptable strategies for reducing overheating risk.
Building control to be provided with a report that demonstrates that the building passes CIBSE TM59 assessment of overheating.

Providing Information - Overheating
- The owner of the building to be given information to allow them to use the overheating mitigation strategy,
- Sufficient information about the overheating mitigation strategy and its maintenance requirement to be given to the owner, information to include:
- Overall overheating mitigation strategy
- Location of each element of the strategy
- Instructions for the operation of each element of the strategy
- The time of day the different parts of the strategy should be used
- The time of year the strategy should be used
- Manufacturer's contact details
- The location of controls and instruction for setting of controls
- The location of sensors and how to recalibrate them
- Cleaning and maintenance instructions
- Home User Guide to include a section on 'Staying cool in hot weather'

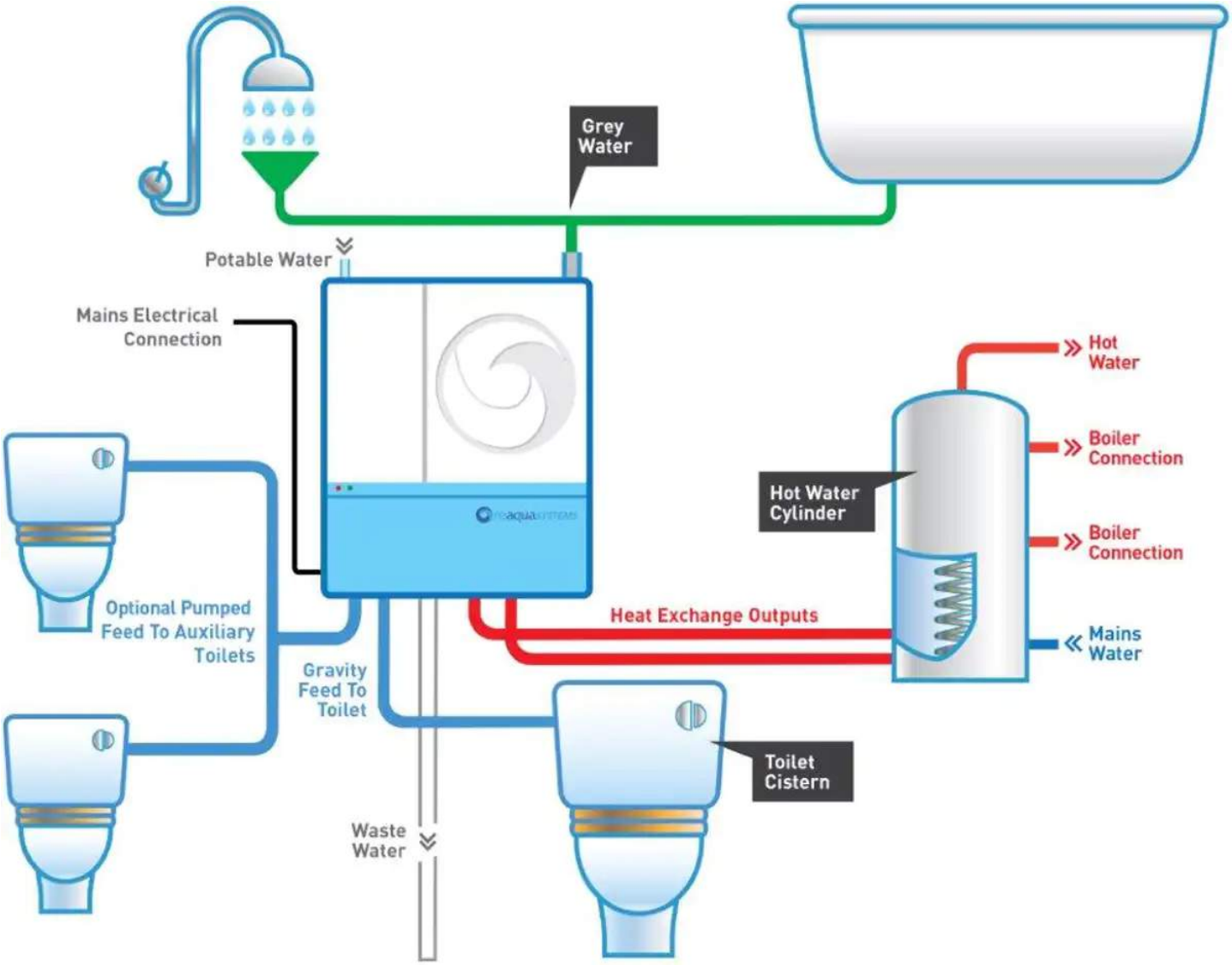
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MECHANICAL VENTILATION WITH HEAT RECOVERY
Mechanical system to be installed in accordance with manufacturer's details. Details of system to be given to BCB.
Minimum extract ventilation extract rates to be:
Kitchen – 13 I/s
Utility room - 8 l/s
Bathroom – 8 l/s
Sanitary accommodation – 6 l/s
The sum of all extract ventilation in the units on its continuous rate, to be at least the whole dwelling ventilation rate given in Table 1.3 Approved Document F.
The minimum whole dwelling ventilation rate for the supply of air to the habitable rooms to be 0.3 litres per second per m2 of internal floor area.
System to include either manual or automatic controls (i.e. humidity sensors) to operate between trickle and boost modes.
Mechanical extract system to be performance tested to BS EN 13141 -7.
Mechanical supply terminals should be located and directed to avoid draughts.
To ensure good transfer of air through the lodges there should be an undercut of minimum area 760mm in all internal doors above the floor finish. This is equivalent to an undercut of 10mm for a standard door.
System to be designed to avoid the moist air from the wet rooms recirculating to the habitable rooms.
To avoid unintended air pathways, background ventilation should not be installed with mechanical ventilation with heat recovery.
Mechanical ventilation system to be designed and installed to minimise noise.
Access to be provided for maintaining and cleaning ventilation systems.
Rigid ducts to be used wherever possible. Flexible ductwork only to be used for final connections, in lengths no more than 1.5m. Ductwork to meet BSRIA's BG 43/2013

Any ducting passing through a fire resisting wall/floor or fire compartment to be adequately fire stopped, provided with suitable dampers and/or fire collars or in fire resisting trucking in compliance with Approved Document B.
Mechanical ventilation systems to be commissioned in accordance with Approved Document F. Appendix C, completion checklist, commissioning sheet and air flow rate test results to be given to the Local Authority on completion.
The owner to be provided with information as listed in Approved Document F including:
- information about the building's ventilation system and maintenance requirements
- the operating and maintenance instructions
- the design flow rates
- the completed commissioning sheet
The information should be provided in a non-technical and clear manner.
A Home User Guide to be provided for the lodges containing a section on 'Ventilation' that provides nontechnical advice on the ventilation systems provided.
Systems to ensure that they use no more fuel and power than is reasonable in the circumstances in accordance with Approved Document L.

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GREYWATER RECOVERY SYSTEM
Greywater recovery system to be installed and commissioned in accordance with the manufacturer's details.
All pipework carrying greywater to be clearly marked and labelled in accordance with the Water Regulations Advisory Scheme Information Guidance Note 90-02-05 and BS 1710:1984 'Identification of pipelines and services'
Installation to comply with the Water Supply (Water Fittings) Regulations 1999 and suitable materials to be selected from the Water fittings and Materials Directory. Pipes and fittings to be both recognizable and distinguishable from that supplying mains waste.
The reclaimed water system to be designed, operated and maintained so as to deal adequately with the contaminants, solids and organisms in the source waters. A suitable hazard assessment to be undertaken and the necessary safeguards adopted. The chemical, physical and biological properties of proposed water sources to be measured as part of the design and commissioning of the reclaimed water system. Water quality monitoring and reporting arrangements to be put in place.
Suitable fluid Category 5 level (airgap) of backflow prevention to be provided.
Access points for maintenance and clearing of blockages to be provided and filters to be easily accessible for cleaning.
Adequate ventilation to be provided.
Rainwater storage systems to be covered with screens on both inlets and outlets. Insulation to be provided to minimise heat gain and for frost protection. Periods where water is likely to be static for over a week are to be avoided.
Homeowner to be provided with clearly worded operating, maintenance and safety instructions, including instructions for the safe disposal of treatment chemicals or residues.



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AIR PERMEABILITY AND PRESSURE TESTING

Reasonable provision shall be made to ensure the units are constructed to minimise unwanted air leakage through the new building fabric. The new lodges to be pressure tested by a specialist registered with the British Institute of Non-destructive Testing in compliance with Regulation 43 of the Building Regulations.

The measured air permeability to be not worse than 10 $m^3/(h.m^2)$ at 50 Pa or in compliance with the TER design limits, ensuring the DER calculated using the measured air permeability is not worse than the TER.

Where the buildings are not to be tested an assessed air permeability to the value of 15 $m^3/(h.m^2)$ at 50 Pa is to be assumed for the purpose of the TER.

If the required air permeability is not achieved, then remedial measures should be undertaken and a new test carried out until satisfactory performance is achieved.

A copy of the test results to be sent to Building Control no later than 7 days after the test has been carried out.

The Design Air Pressure target is to be between 3 and 4.

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WATER EFFICIENCY
The estimated water consumption per unit not to exceed 125 litres per person per day in accordance with Approved Document G2. Water Efficiency to be calculated using the 'Water Efficiency Calculator for New Dwellings' and results submitted to building control before works commence on site.
Water calculation to be in compliance with Code for Sustainable Home Level 3/4 as stipulated by the local Planning Authority. Example calculation below;

WC 5/3 (dual flush)
Taps (excluding kitchen taps) 4
Baths 180
Shower 8
Kitchen sink taps 6
Washing machine 8.17 (not supplied)
Dishwasher 1.25 (not supplied)
Water recycling 0 (not supplied)
Predicted per capita consumption (Code) 103.28

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WASTEWATER HEAT RECOVERY SYSTEM (WWHRS)
All showers to connect to instantaneous WWHR with 36% recovery efficiency utilization of 0.98, including showers over baths as detailed in the SAP report.
Recovery system and components to be independently tested and assessed by BRE. All works to be in compliance with Approved Document H and L.
All boxing off to be accordance with NHBC standards and Approved Document E.
Installation and water fittings to be compliant with The Water Supply Regulations 1999 and BS 6920.
Design stage checklist to be completed and system to be installed and commissioned by a qualified plumber.
Operational and maintenance instructions to be given to owner on completion.
System to have factory fixed NCM (SAP) Identifier label. An identical second NCM (SAP) identifier label is also required to a nearby service cupboard.
System to be installed vertically so that it is fitted on the floor below the shower.
WWHR units to be installed inside the building
WWHR unit and the drain connector to have min 10mm clearance from the any adjacent structure.
WWHR system not to be installed in an environment where the ambient temperature in naturally above 25oC to minimise the risk of legionella growth.
Supply temperature of at least 60oC to be maintained from the heat source and/or storage vessel.
An Approved single check valve prevention device providing backflow prevention to at least fluid category 2 to be fitted at the point of connection(s) between the water supply and the fitting or appliance.
Length of drainpipe between shower and WWHR system to be less than 3 meters as far as practicable.
Access points to be provided.
Any shut-off valves for inlet and/or outlet to be full flow (non-restricting) shut off-valves.
WWHR pipe to be the same nominal size as the waste pipe to which it is connecting.
Pipework between the WWHRS preheated water outlet and the water heater and the shower cold-water inlet(s) to be insulated in accordance with the specification for DHW primary circulation pipes defined in 'Domestic Building Services Compliance Guide'.

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AEROBIC FOOD DIGESTER
Sending food waste to landfill produces large quantities of methane, a greenhouse gas that is 25% more efficient than carbon dioxide in trapping heat within the atmosphere. Aerobic digesters accelerate natural processes of decomposition, producing only heat, water and carbon dioxide (a gas that's 1/20th

the potency of methane). Digesters use naturally occurring bacteria to break down waste, and most can process anywhere from 20kg to 500 kg of food waste in a 24 hour period, depending on the size of digester.

The properties will be provided with a domestic scale aerobic food digester - EcoEcosse or the 'Baby Orca' unit as shown below or similar. The digester will divert ALL organic waste produced by the two properties from landfill - the resultant biogenic materiel will be used as an organic fertiliser to be used on the vegetable gardens shown on the site layout.

The digestion process effectively reduces the volume and weight of food waste that would otherwise be sent to landfill. Additionally by dehydrating and grinding the food waste the unit can greatly reduce the amount of greenhouse gas produced from processed food waste.

The dehydrated food waste can act as a soil amendment for household garden and landscaping uses. Research has identified that processed food waste can add beneficial nutrients (phosphorus, nitrogen, and potassium) to soil, which helps promote plant growth.



SOLAR ELECTRIC (PHOTOVOLTAIC)

Installation to be in compliance with all manufacturer's details and specifications, the British Standard Approved Document For Photovoltaic (PV) and BS EN IEC 61730

Installation must not impair the weather tightness of the roofs. All penetrations through the roof to be weatherproofed and covered with suitable flashings, purpose-made tiles, etc.

Installation to have sufficient resistance to wind suction forces for the location. The installer to calculate the wind loads for the location (taking into account the local wind speed, site altitude and topography, building height and roof configuration) and choose components or kits with a declared wind resistance that exceeds those wind loads.

The roof structures to be designed to accommodate the load of the collectors, advice of a structural engineer to be sought if required

All penetrations to be weatherproofed through the roof covering with suitable flashings, purpose-made tiles, etc

All components to have adequate resistance to the external spread of flame in compliance with Part B4 of Approved Document B.

Ensure the panels are not fitted in the shadow of overhanging branches, a chimney or aerial.

For the installation of a grid-connected system, the local Distribution Network Operator (DNO) will need to be notified if the system output exceeds 16A per phase (Engineering Recommendation G83/1).

An electrical fused spur outlet will normally be required. Pumps and controls should be located so that they are accessible for maintenance.

Solar electric panels should be inclined as steeply as possible to ensure that rain and dirt run off quickly.

Ventilation to be provided around the inverter and control equipment.

Fix permanent labels to wiring, junction boxes, etc.

Ensure that the system is commissioned properly and test for correct operation.

Provide operating instructions and maintenance recommendations for the homeowner.

An EPC to be provided with Feed-in Tariff (FIT) application showing the energy efficiency of the building the installation is attached to or wired to provide electricity to is a level D or above.

System to be commissioned and tested for correct operation in accordance with the MCS 012 standard.

All electrical work to be undertaken by a Part P registered Electrician i.e. NAPIT, ELECSA and NICEIC.

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ON – SITE UTILITY BATTERY STORAGE

The renewable energy captured by the solar array will be stored in a Lithium Utility Battery - circa 6.4 kWh with 3.2kWh expansion pack - by LG or similar. This asset will be located in the sheds.

Voltage Range : 45.2 V ~ 58.1 V
6000 cycles at 90% DoD (+25°C)
Maximum discharge current 110A
Nominal voltage (DC) 51.8V
Cooling via natural convection

Excess electricty will be exported to the UKPN asset in Orange Row via a 'two way Meter'. The connection will also provide emergency power back.



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General

A Lodge User Guide will be provided to enable the promotion of energy efficiency within the community of the new development and provide further resources to enable long term carbon and energy reduction by improved education on the use of the proposed Low Carbon Technologies and Local Renewable Energy Sources. They will enable the home user to understand and operate their property efficiently and make the best of what the local area has to offer.

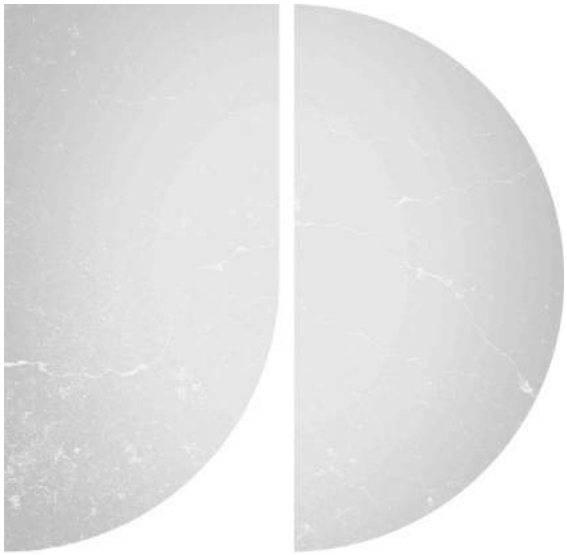
Reducing Energy Use & Increasing Energy Efficiency of Buildings
The proposed holiday lets will produce at least 25% less CO2 than buildings built to current Building Regulation standards. This will be achieved by increasing the thermal performance of the building fabric by utilising Low Carbon technology and building to enhanced robust details to achieve high level of air tightness and controlled ventilation.

101. All major electrical appliances (i.e. refrigerators, freezers, washing machines, tumble dryers, washer/dryers and dishwashers) supplied with the lodges and workspace must be Energy
102. Saving Recommended.
103. The house will be provided with secure external drying spaces.
104. 100% of internal light fittings will be energy efficient.

105. External space lighting and security will be energy efficient. (subject to economic and planning constraints)

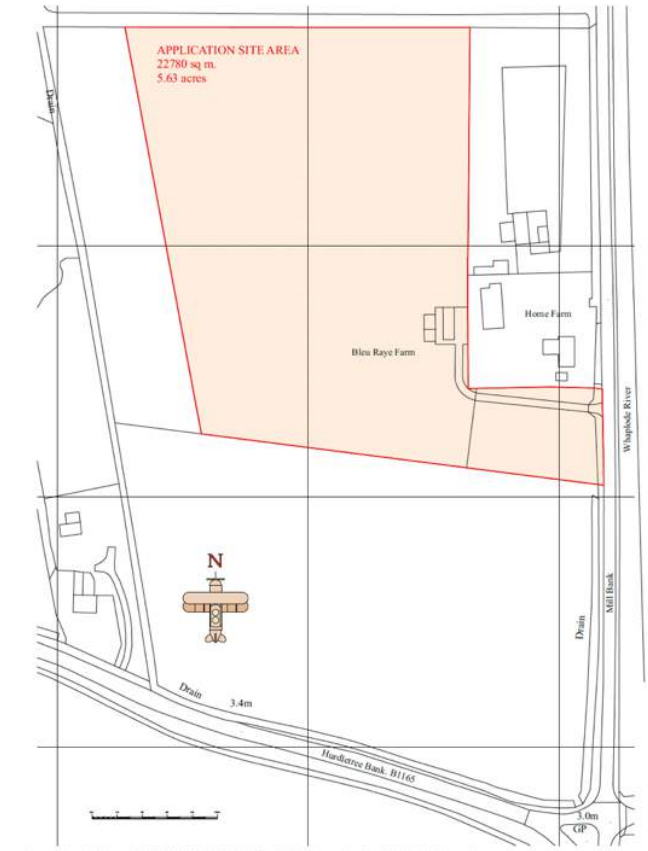
106. An Aerobic food waste digester will be installed to convert organic waste into a fertilizer to be used on the site
107. Passive ventilation systems will be used to minimise electrical consumption
108. Light and movement sensitive external lighting
109. A ventilated space for drying clothes will be provided within the buildings. This could be either
110. An unheated space with good ventilation, or a heated space with adequate, controlled ventilation.

Note ;
The manufacturers of specific M&E plant and equipment is indicative and subject to an equivalent change.



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Appendix A. Scheme Designs



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NOTES
Do NOT scale from this drawing or any other prepared by JDA in connection with this project
This drawing is copyright and may not be altered, traced, copied, photographed or used for any purpose other than for which it has been issued without written permission of the copyright holder.
The Contractor is to check all dimensions on site and report any discrepancies PRIOR TO commencing work.
All details shown on this drawing are based upon typical site conditions relatedto the area. No responsibility can be accepted for abnormal conditions unless theyhave been reported in detail so that design amendments may be considered.
All works and materials are to be in full accordance with current British Standards, Building Regulations, Agrement Certificates and Manufacturers printed instructions.
All Building Regulations inspections are to be carried out at the appropriate stages of work.

RAINWATER DRAINAGE
New rainwater goods to be new 110mm UPVC half round gutters takes and connected into 68mm dia UPVC downpipes. Rainwater taken to new soakaway, situated a min distance of 5.0m away from any building, via 110mm dia UPVC pipes surrounded in 150mm granular fill.
SOAKAWAY USING CRATES
Trench of soakaway to be provided slightly largely than designed depth after porosity test (if required) but just over 1m3 min from invert level of pipe. Provide suitable geotextile over the base and up the sides of the trench over 100mm level and compact bed of coarse sand. Install AquaCell crate units or equivalent as manufacturer's details. Geotextile to be wrapped around crates. Provide 100mm of coarse sand between the trench walls and over the AquaCell structure. Backfill with suitable material.

UNDERGROUND FOUL DRAINAGE
Underground drainage to consist of 110mm diameter UPVC proprietary pipe work to give a 1:40 fall laid on 100mm granular bed conforming to BSSR2 1983, Table 4 and selected as-dug backfill to 1 in 40 gradient to mains connection.
Provide 600mm suitable cover (900mm under drives). Shallow pipes to be covered with 100mm reinforced concrete slab over compressible material. Provide vedding access at all changes of direction and junctions. All below ground drainage to comply with BS EN 1401-1: 2009.
Drains with less than 900mm cover under roads/parking to have reinforced concrete bridging over. Drains with less than 600mm cover not under roads/parking to have concrete paving slabs as bridging over pipes with 75mm granular fill between top of drain and underside of slabs.
PVCU run bends to base of soil stack and trapped back inlet galley (low-back P-trap and square hopper) bedded and surrounded with 100mm concrete.
450mm dia. polypropylene inspection chambers bedded on selected as-dug material with cover and frame, Class A15 (BS-EN 124) cover and frame in paths and planted areas. Class B125 (BS/EN 124) cover and frame in road and parking areas. Concrete bed and surround to cover frames.
Lightweight inspection chamber covers to be of screw down type.
Drains under building encased in 25mm fibreglass and 100mm concrete, cast integrally with floor slab where crown within 300mm of slab underside.
Flexible drain joint to be provided within 150mm of entering building and within 150mm of inspection chamber construction, followed by 600mm long "rocker" pipe.
Protect drains passing through walls from differential settlement with 25mm fibreglass wrap and lintel over.
Fill drain trenches with concrete where within one metre of building and lower than foundation, up to lowest level of foundation. Where further than one metre from building, fill drain trench with concrete up to level below foundation equal to distance from building less 150mm.

Excavating / Backfilling :
Lower part of trench :-
Drains under building encased in 25mm fibreglass and 100mm concrete, cast integrally with floor slab where crown within 300mm of slab underside.
Flexible drain joint to be provided within 150mm of entering building and within 150mm of inspection chamber construction, followed by 600mm long "rocker" pipe.
Protect drains passing through walls from differential settlement with 25mm fibreglass wrap and lintel over.
Fill drain trenches with concrete where within one metre of building and lower than foundation, up to lowest level of foundation. Where further than one metre from building, fill drain trench with concrete up to level below foundation equal to distance from building less 150mm.

Excavating / Backfilling :
Lower part of trench :-
From bottom to 300mm above crown of pipe the trench must have vertical sides and be of a width as small as practicable but not less than external diameter of pipe plus100mm or larger dimension if specified.
Formation for bnds generally :-
Excavate to formation immediately before laying bnds or pipes.
Remove mud, such projection, boulders and hard spots and replace with consolidated bedding material.
Harden local soft spots by tamping in bedding material.

HEALTH AND SAFETY
The contractor is reminded of their liability to ensure due care, attention and consideration is given in regard to safe practice in compliance with the Health and Safety at Work Act 1974.
The contractor shall ensure that all health, safety and welfare measures required under or by virtue of the provisions of any enactment or regulations, or the working rules of any industry are strictly complied with.

Hazardous Substances:
When hazardous substances are identified as being either flammable, toxic, corrosive and explosive, arrangements must be made to ensure that the use, handling, storage and transport of such substances is safe and without risk to health. a written assessment must be made and if the substance is identified as hazardous, necessary control methods, protective clothing and monitoring established.
The employees working with hazardous substances must be fully informed on the hazard and suitably instructed on safe handling/use of the substance.
Safe systems of work :
Safe systems of work need to be established for all operations of work by relevant supervisors and management. risk assessments will need to be undertaken and where significant, a method statement completed. these need to be reviewed to ensure that they reflect the hazards, bearing in mind the constantly changing nature of a construction site. Should there be any changes to established safe systems of work, these require to be referred to the originator, whereby revised risk assessments and method statements can be produced.
Adequate arrangements must be made to keep workplaces in a clean, orderly and safe condition.
provide and maintain safe means of access to and from all working areas and keep clearly marked as appropriate.
The environment of the workplace shall be safe and without risk to health. satisfactory levels of lighting, temperature, dust, noise, etc., must be maintained.
The requirements of the health and safety at work etc. act 1974 and all duties and obligations imposed by the act, management of health and safety at work regulations 1992 and the construction (design and management regulations 1994, and all other acts and regulations are to be complied with.
Plant and machinery :
all plant and machinery must be used correctly and be safe and without risk to health. only competent persons may operate plant and machinery and be trained where necessary.
All plant and machinery must be inspected, serviced and maintained as necessary, all of which shall be properly documented.
Statutory tests and thorough examinations will be undertaken where necessary and correct documentation be maintained.
The contractor will provide and maintain a working environment which is safe and without risk to the health of both its employees and persons who may be affected by its employees.

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SOLID WASTE STORAGE (REFUSE)
Bin storage to be in accordance with BS 5906: 2005 Code of Practice for waste management in buildings to ensure that there is suitable space/enclosures for bins.
Adequate provision shall be made for the collection of waste as required by the Waste Collection Authority.
Separate containers are to be provided for recycling and non-recycling household waste. Waste collections that are less than weekly may require increased capacity as agreed with the Waste Collection Authority. If a communal solid waste storage facility is used, storage to have a combined capacity of 0.25m³ per unit or as agreed with the Waste Collection Authority.
Refuse storage areas to be sited within 25m of the waste collection point or as specified by the Waste Collection Authority, and placed so that the householder does not need to carry refuse more than 30m. Refuse storage areas are to be positioned away from any windows and ventilators and are not to impede access into the dwelling.

EXTERNAL SURFACE WATER DRAINAGE
Drainage of paving areas to be carried out in accordance with BS 6367:1983 and Approved Document H.
Hard surfaces around the buildings should be provided with a proprietary non slip permeable surface laid to manufacturer's details and in compliance with BS6717, to allow adequate drainage.
or provided with a non-slip surface and cross fall of 1:40 – 1:60 draining away from the building (for a minimum of 500mm(s) to a suitable soakaway.
Paths, driveways and other narrow areas of paving should be free draining away from any buildings to a pervious area such as grasslands or to a suitable soakaway.

GENERAL
No work to commence until all statutory approvals have been obtained.
All dimensions are to be checked on site by contractor prior to the commencement of work.
Drawings have been prepared solely for the procurement of statutory approvals.
All dimensions are in millimetres.
All levels shown are in metres.
No work is to commence on site until all structural calculations have been approved by the appointed Building Control authority.
Any alterations to the design are to be formally agreed with the Local Authority Planning Department if Town and Country Planning Act legislation applies.
Exact boundary positions are to be determined by reference to the Title Plans and Title documents to the property.
The entire structure is to be built within the legal boundaries of the site with any encroachments over any boundaries formally agreed with adjoining property owners.

ACCESSIBILITY

LEVEL DWELLING (HOLIDAY HOME) APPROACH - WHERE SHOWN
Provide a level approach to the principal entrance door no steeper than 1:20 and at least 900mm wide, with cross falls no greater than 1:40. Approach surface material to be firm and non-slip, capable of supporting the weight of a wheel chair and its user (loose material such as gravel and shingle would not be suitable). Part M compliant ramps where shown.

ACCESSIBLE LEVEL DOOR THRESHOLDS INTO THE BUILDING
Entrance door to have an accessible level threshold provided with a weather bar (maximum height 15mm) with suitable drainage channel. Landings to have a fall of 1:40-1:60 away from the door. Principal entrance door to have a minimum 775mm clear opening between the door leaf and doorstops.

STEPPED ACCESS
3.11 To enable a wide range of people to use them safely, external steps should comply with all of the following.
a. Steps are uniform with a rise of between 150mm and 170mm and a going of between 280mm and 425mm (for tapered steps measured at a point 270mm from the 'inside' (narrow end) of the step).
b. Steps have suitable tread nosings.
c. No individual flight has a rise of more than 1800mm between landings.
d. Every flight has a minimum clear width of 900mm.
e. Top, bottom and, where necessary, intermediate landings are provided and every landing is a minimum 900mm long.
f. Every flight with three or more risers have a suitable grippable handrail on one side of the flight (or to both sides where the flight is wider than 1800mm). This grippable handrail is 850-1000mm above the pitch line of the flight and extends at least 300mm beyond the top and bottom nosings.
g. Single steps are avoided.

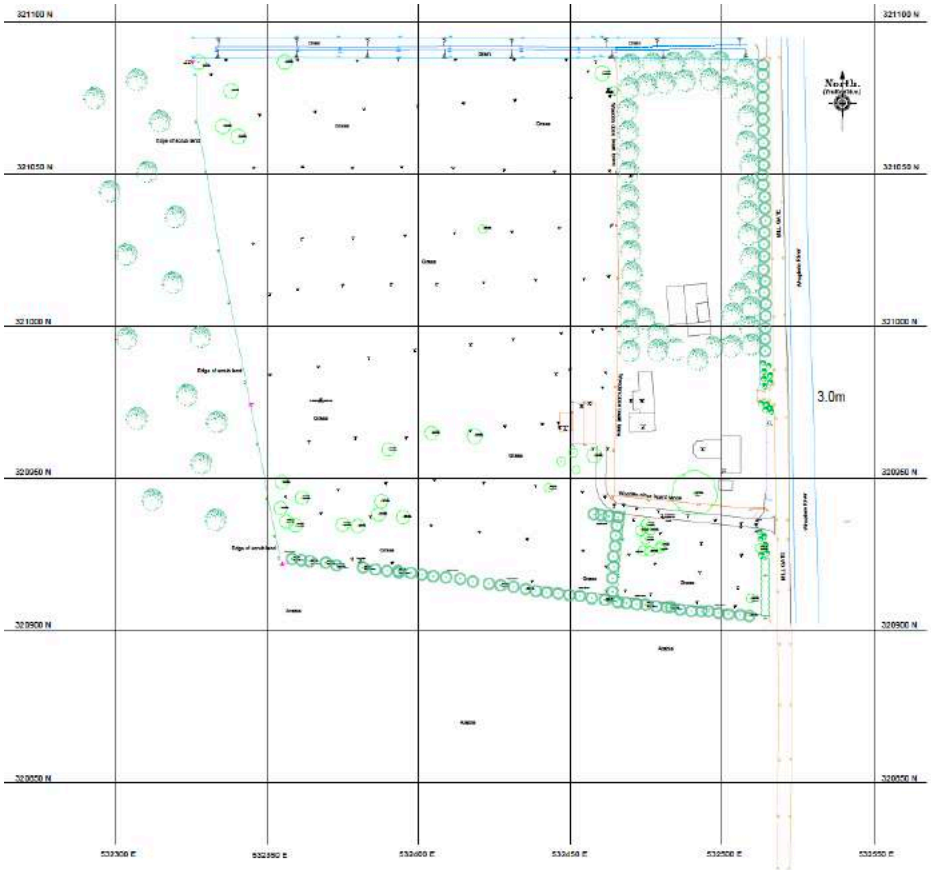
RAMPED ACCESS
3.10 External and internal ramps should comply with all of the following.
a. The gradient is between 1:20 and 1:15.
b. The length of each flight at a given gradient meets the provisions of Diagram 3.1.
c. Flights (whether within a private or communal approach route) have a minimum clear width of 1200mm.
d. Top and bottom landings are provided to every flight.
e. An intermediate landing is provided between individual flights and at any change of direction.
f. Every landing is level and a minimum of 1200mm clear of any door (or gate) swing.

Proposed Holiday Home Development at ;
Blue Ray Farm, Millgate, Whaplode
PE12 6RR

Drawing Title : Site Location
Scale 1 to 1250 at A3 Portrait

Date April 2023

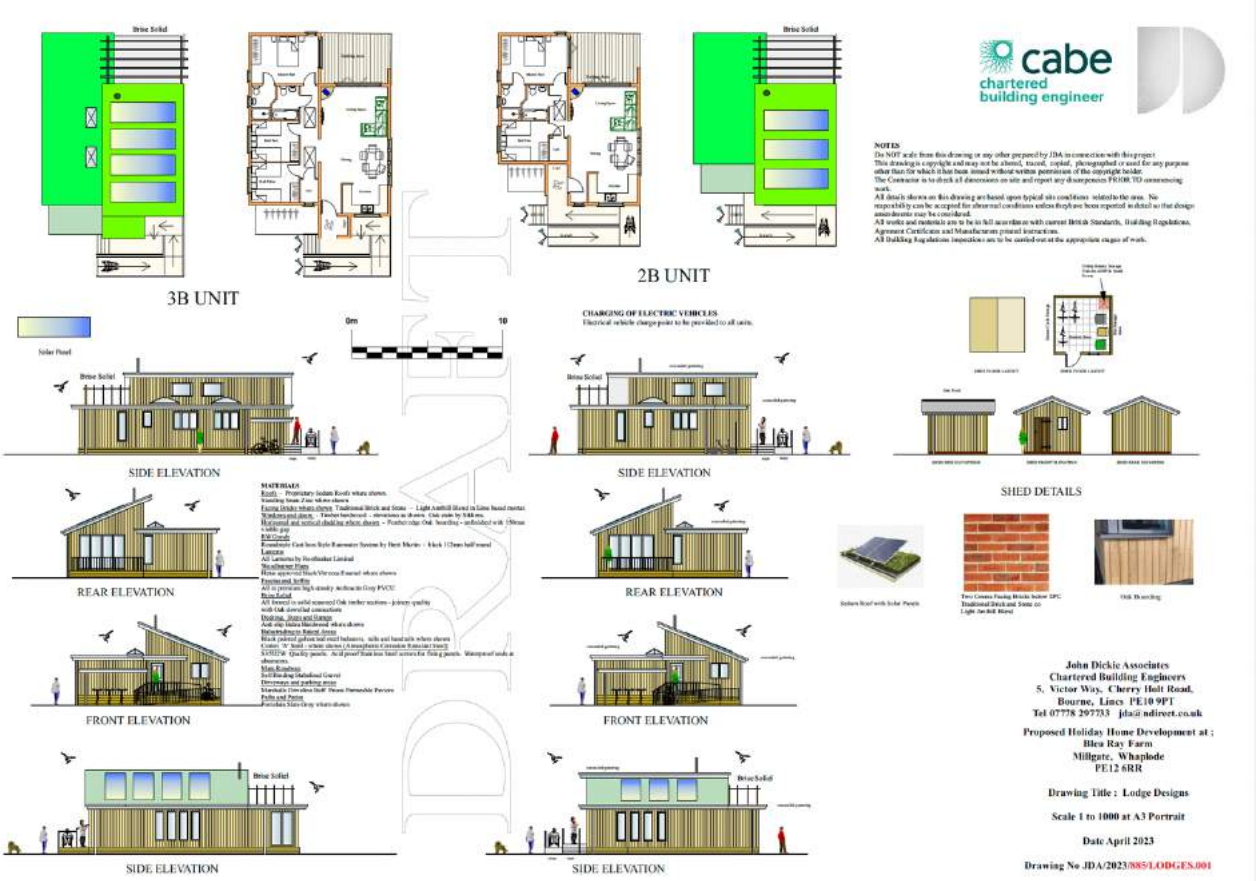
Drawing No JDA/2023/885/OS.001








CHARGING OF ELECTRIC VEHICLES
Electrical vehicle charge point to be provided to all units.
Hot Tub
Wheelie Bins
Air Source Heat Pump
Post and Rail Fencing
2m high Close boarded Fencing
N
POST AND RAIL FENCING BETWEEN HOLIDAY LODGE UNITS
CLOSE BOARDED FENCING - HEDGEHOG FRIENDLY
Mitsubishi 14kW R32 ASHP
Two Course Facing Bricks below DPC
Traditional Brick and Stone co
Light Anthill Blend
Roundstyle Cast Iron Style
Rainwater System by Brett
Martin - black 112mm half round
Oak Boarding
Sedum Roof with Solar Panels
Marshalls Drivelaine Buff
Pitons Permeable Paviors
Stabilised Gravel
cabe
chartered
building engineer
NOTES
MATERIALS
John Dickie Associates
Chartered Building Engineers
5, Victor Way, Cherry Holt Road,
Bourne, Lincs PE10 9PT
Tel 07778 297733 jda@ndirect.co.uk
Proposed Holiday Home Development at :
Bleu Ray Farm
Millgate, Whaplode
PE12 6RR
Drawing Title : Site Layout - DRAFT
Scale 1 to 1000 at A3 Portrait
Date April 2023
Drawing No JDA/2023/885/SITE.001

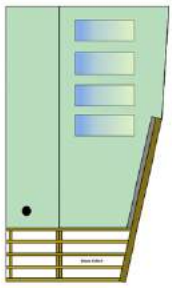

Brise Soliel
3B UNIT
2B UNIT
cabe
chartered
building engineer
NOTES
CHARGING OF ELECTRIC VEHICLES
Electrical vehicle charge point to be provided to all units.
Solar Panel
SIDE ELEVATION
REAR ELEVATION
FRONT ELEVATION
SHED DETAILS
MATERIALS
John Dickie Associates
Chartered Building Engineers
5, Victor Way, Cherry Holt Road,
Bourne, Lincs PE10 9PT
Tel 07778 297733 jda@ndirect.co.uk
Proposed Holiday Home Development at :
Bleu Ray Farm
Millgate, Whaplode
PE12 6RR
Drawing Title : Lodge Designs
Scale 1 to 1000 at A3 Portrait
Date April 2023
Drawing No JDA/2023/885/LODGES.001



Sedum Roof with Solar Panels



PROPOSED FLOOR LAYOUT



PROPOSED ROOF LAYOUT



SIDE ELEVATION



SIDE ELEVATION



Oak Boarding

MATERIALS

Roofs - Proprietary Sedum Roofs where shown.
Standing Seam Zinc where shown
Facing Bricks where shown Traditional Brick and Stone - Light Arnhill Blend in Lime based mortar.
Windows and doors - Timber hardwood - elevations as shown. Oak stain by Sikkens.
Horizontal and vertical cladding where shown - Feather edge Oak boarding - unfinished with 150mm visible gap
RW Goods
Roundstyle Cast Iron Style Rainwater System by Brett Martin - black 112mm half round
Lanterns
All Lanterns by Roofmaker Limited
Woodburner Flues
Hetas approved black Vitreous Enamel where shown
Fascias and Soffits
All in prestoken high density Anthracite Grey PVCU
Brise Soleil
All formed in solid seasoned Oak timber sections - joinery quality with Oak dowelled connections
Decking, Steps and Ramps
Anti slip Balau Hardwood where shown
Balustrading to Raised Areas
Black painted galvanised steel balusters, rails and handrails where shown
Corten 'A' Steel - where shown (Atmospheric Corrosion Resistant Steel)
S355J2W Quality panels. Acid proof Stainless Steel screws for fixing panels. Waterproof seals at abutments.
Main Roadway
Self Binding Stabilised Gravel
Driveways and parking areas
Marshalls Drivesline Buff Priora Permeable Pavions
Paths and Patios
Porcelain Slate Grey where shown

0m 10

SOLAR ELECTRIC (PHOTOVOLTAIC)

Installation to be in compliance with all manufacturer's details and specifications, the British Standard Approved Document for Photovoltaic (PV) and BS EN/IEC 61730

Installation must not impair the weather tightness of the roof. All penetrations through the roof to be weatherproofed and covered with suitable flashings, purpose-made tiles, etc.

Installation to have sufficient resistance to wind suction forces for the location. The installer to calculate the wind loads for the location (taking into account the local wind speed, site altitude and topography, building height and roof configuration) and choose components or kits with a declared wind resistance that exceeds those wind loads.

The roof structure to be designed to accommodate the load of the collectors, advice of a structural engineer to be sought if required

All penetrations to be weathergrafted through the roof covering with suitable flashings, purpose-made tiles, etc

All components to have adequate resistance to the external spread of flame in compliance with Part Bii of Approved Document B.

Ensure the panels are not fitted in the shadow of overhanging branches, a chimney or aerial.

For the installation of a grid-connected system, the local Distribution Network Operator (DNO) will need to be notified if the system output exceeds 16A per phase (Engineering Recommendation G83/1).

An electrical fused spur outlet will normally be required. Pumps and controls should be located so that they are accessible for maintenance.

Solar electric panels should be inclined as steeply as possible to ensure that rain and dirt run off quickly.

Ventilation to be provided around the inverter and control equipment.

Fix permanent labels to wiring, junction boxes, etc.

Ensure that the system is commissioned properly and test for correct operation.

Provide operating instructions and maintenance recommendations for the homeowner.

An EPC to be provided with Feed in Tariff (FIT) application showing the energy efficiency of the building the installation is attached to or related to provide electricity to a listed Building or site.

System to be commissioned and tested for correct operation in accordance with the MCS 012 standard.

All electrical work to be undertaken by a Part P registered Electrician i.e. NAPIT, ELECSA and NICEIC.

AIR SOURCE HEAT PUMP - ECODAN (OR EQUIVALENT)

Located outdoors - Mitsubishi Ecodan air pipe phase PUHZ-W85VHA2 or equivalent.
SOUND PRESSURE LEVEL AT 1M (dB(A)) - 45 LOW NOISE MODE (dB(A)) - 40

Air Source Heat Pump Installation will comply with the Domestic Building Service Compliance Guide - Dept for Communities and Local Government 2010 and BS EN 15450 Tables C1 & C2 with a Seasonal Performance Factor (SPF) of at least 2.7.

The heating system is to be underfloor with water supply temperatures in the range of 30c to 40c. The Coefficient of Performance (CoP) is to be not less than 2.2 for space heating and 2.5 for domestic hot water. The Seasonal Performance Factor will be no worse than as described in Table C5 of BS EN 15450. The system will meet the minimum requirements for installation and controls in Table 35 for heat pumps.

The water distribution system is to include a low loss manifold system to maximise efficiency and ease commissioning and future maintenance. Pipework not used during to the space heating system will be insulated to prevent heat loss. Its usual pipework between the unit and the house to be insulated to the TIMSA Guide. The internal water distribution circuit should be protected by an anti-freeze solution as recommended by the heat pump manufacturer.

For full heating, the heat pump and any supplementary domestic HW heating should be capable of supplying water in the range of 60c to 65c. The domestic hot water (DHW) system should include a tank thermostat and a time clock to optimise the time taken to heat the water. Heat pump unit controls to include:

1. control of water pump operation (internal and external)
2. control of water temperature for the distribution system
3. control of emitter flow operation
4. defrost control of external airside heat exchanger
5. protection for water flow failure
6. protection for high water temperature
7. protection for high refrigerant pressure
8. protection for air flow failure

External controls to include:

1. room thermostat to regulate the room temperature and interlocked with the heat pump operation
2. timer to maximise the operation of the heat pump

System Installation by Radiant Heating Ringbeck Mill Lane, Moreton, Grantham Lincs, NG32 2FU. info@heating-solutions.biz 01400 250572

FRONT ELEVATION



AIR SOURCE HEAT PUMPS (ASHPS) GENERAL PERFORMANCE REQUIREMENTS

External pipework between the dwelling and the ground loot exchanger should be insulated following the TIMSA guidance
Pipe sizes should be in accordance to manufacturer's recommendations
The load-bearing capacity of surface to take the heat pump, hot water cylinder and thermal store (where fitted) equipment to be assessed and access for maintenance should be provided.
Increase the rating of the mains electrical power supply if required to accommodate the electrical current drawn by the heat pump.
Fix, pressure/reinstate and flow systems as pipework, valves, etc.
Where the heat pump is to be backed up by another heat source, the control of that source must be interlocked to ensure that it can never operate as the priority or 'lead' device.
Ensure that the system is commissioned properly and tested for correct operation by a member of the Microgeneration Certification Scheme.
All electrical work to be undertaken by a Part P registered Electrician i.e. NAPIT, ELECSA and NICEIC.
Installation to be BS EN 145 11: Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling (vapour), HSCD.
Provide operating instructions and maintenance recommendations for the homeowner.
Health and safety Can should be taken to addressed issues, including: the risk of Legionnaires' disease.

PLANNING CONSENT COMPLIANCE

The soft landscaping scheme shall be carried out as approved no later than the first planting season following the occupation of the dwelling to which it relates or the completion of development, whichever is the earlier. The management plan shall be implemented in accordance with the details contained therein.
Any trees, shrubs or hedges forming part of the approved landscaping that die, are removed, become diseased or unfit for purpose [in the opinion of the LPA] within five years of the implementation of the landscaping scheme shall be replaced during the next available planting season by the Developers, or their successors in title with an equivalent size, number and species being replaced. Any replacement trees, shrubs or hedgerows dying within five years of planting shall themselves be replaced with an equivalent size, number and species.
Thereafter the planting scheme shall be carried out in accordance with the approved details at the first available planting season.

CDM REGULATIONS 2015

The client must abided by the Construction Design and Management Regulations 2015. The client must appoint a contractor, if more than one contractor is to be involved, the client will need to appoint (in writing) a principal designer (to plan, manage and coordinate the planning and design work) and a principal contractor (to plan, manage and coordinate the construction and ensure there are arrangements in place for managing and organising the project).
Domestic clients
The domestic client is to appoint a principal designer and a principal contractor when there is more than one contractor, if not your duties will automatically transferred to the contractor or principal contractor.
The designer can take on the duties, provided there is a written agreement between you and the designer to do so.
The Health and Safety Executive is to be notified as soon as possible before construction work starts if the works:
(a) Last longer than 30 working days and has more than 20 workers working simultaneously at any point in the project, provided to all units.
Or. (b) Exceeds 500 person days.

John Dickie Associates
Chartered Building Engineers
5, Victor Way, Cherry Holt Road,
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Tel 07778 297733 jda@ndirect.co.uk

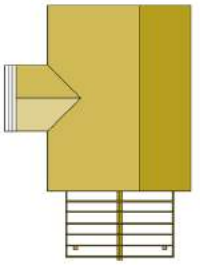
Proposed Holiday Home Development at ;
Bleu Ray Farm
Millgate, Whaplode
PE12 6RR

Drawing Title : Facility Managers Accommodation

Scale 1 to 200 at A3 Portrait

Date April 2023

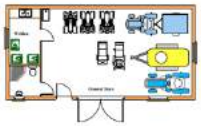
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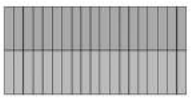
ROOF LAYOUT



FLOOR LAYOUT



GENERAL STORAGE/LANDSCAPING MACHINERY BUILDING FLOOR LAYOUT



GENERAL STORAGE/LANDSCAPING MACHINERY BUILDING ROOF LAYOUT



SIDE ELEVATION/ENTRANCE



Sedum Roof with Solar Panels



FRONT ELEVATION



SIDE ELEVATION - WEST

0m 10



SIDE ELEVATION - EAST



Oak Boarding



REAR ELEVATION



SIDE ELEVATION - EAST



REAR ELEVATION



Two Course Facing Bricks below DPC
Traditional Brick and Stone co
Light Arnhill Blend



FRONT ELEVATION

MATERIALS

Roofs - Proprietary Sedum Roofs where shown.
Standing Seam Zinc where shown
Facing Bricks where shown Traditional Brick and Stone - Light Arnhill Blend in Lime based mortar.
Windows and doors - Timber hardwood - elevations as shown. Oak stain by Sikkens.
Horizontal and vertical cladding where shown - Feather edge Oak boarding - unfinished with 150mm visible gap
RW Goods
Roundstyle Cast Iron Style Rainwater System by Brett Martin - black 112mm half round
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Woodburner Flues
Hetas approved black Vitreous Enamel where shown
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Brise Soleil
All formed in solid seasoned Oak timber sections - joinery quality with Oak dowelled connections
Decking, Steps and Ramps
Anti slip Balau Hardwood where shown
Balustrading to Raised Areas
Black painted galvanised steel balusters, rails and handrails where shown
Corten 'A' Steel - where shown (Atmospheric Corrosion Resistant Steel)
S355J2W Quality panels. Acid proof Stainless Steel screws for fixing panels. Waterproof seals at abutments.
Main Roadway
Self Binding Stabilised Gravel
Driveways and parking areas
Marshalls Drivesline Buff Priora Permeable Pavions
Paths and Patios
Porcelain Slate Grey where shown

CHARGING OF ELECTRIC VEHICLES

Electrical vehicle charge point to be provided to all units.

John Dickie Associates
Chartered Building Engineers
5, Victor Way, Cherry Holt Road,
Bourne, Lincs PE10 9PT
Tel 07778 297733 jda@ndirect.co.uk

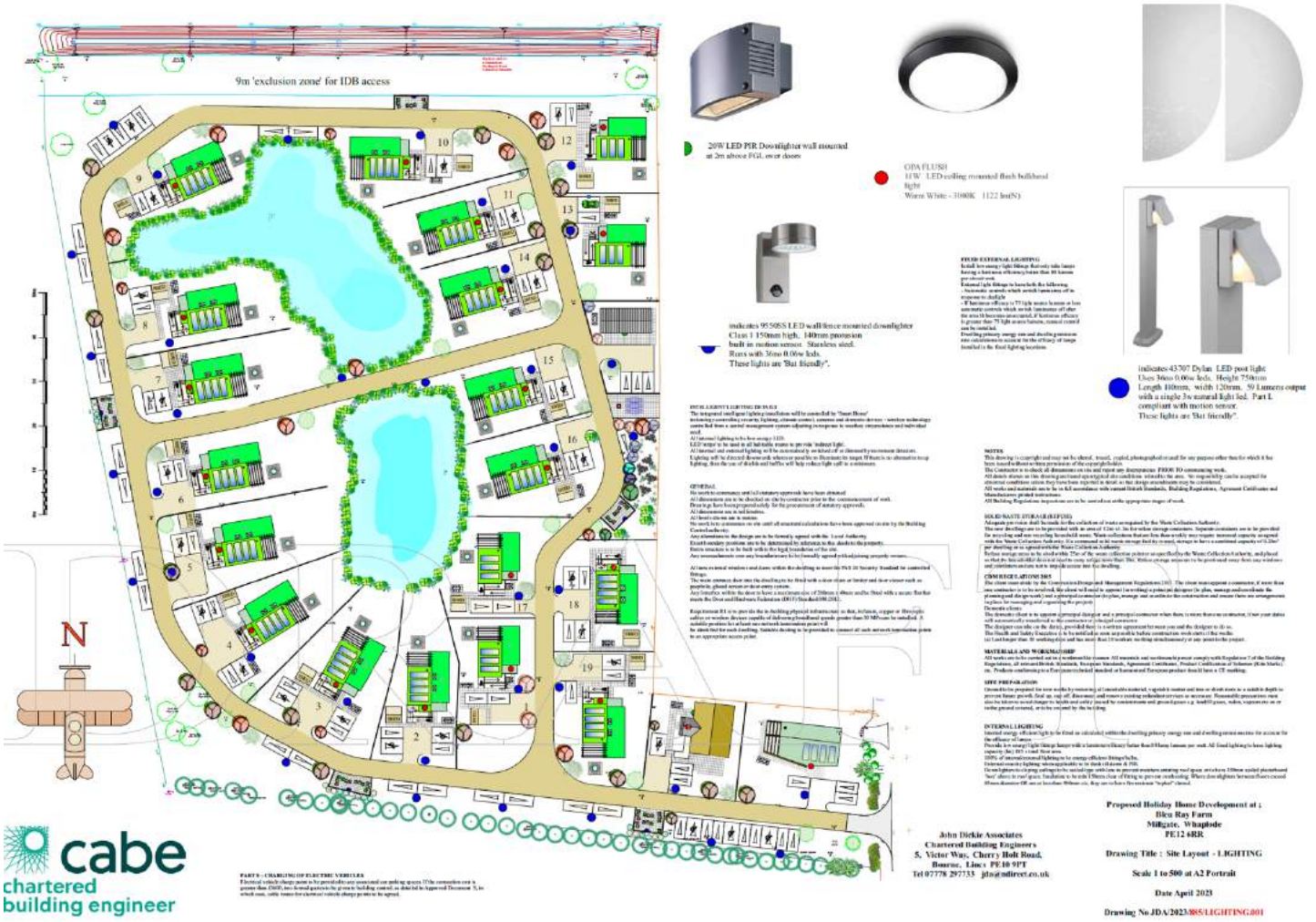
Proposed Holiday Home Development at ;
Bleu Ray Farm
Millgate, Whaplode
PE12 6RR

Drawing Title : Maintenance Shed and Reception Building

Scale 1 to 200 at A3 Portrait

Date April 2023

Drawing No JDA/2023/885/BUILDINGS.001


9m 'exclusion zone' for IDB access
N
cabe
chartered
building engineer
20W LED PIR Downlighter wall mounted
at 2m above FGL over doors
CIPA FLUSH
11W LED ceiling mounted flush bulkhead
light
Warm White - 3000K 1122 lm(SO)
indicates 9550SS LED wall/fence mounted downlighter
Class 1 150mm high, 140mm projection
built in medium sensor. Stainless steel.
Runs with 36no 0.06w leds.
These lights are 'Bat friendly".
indicates 43707 Dylan LED post light
Uses 36no 0.06w leds. Height 750mm
Length 180mm, width 120mm. 59 Lumens output
with a single 3w natural light led. Part L
compliant with motion sensor.
These lights are 'Bat friendly".
John Dickie Associates
Chartered Building Engineers
5, Victor Way, Cherry Holt Road,
Bourne, Lincs PE10 9PT
Tel 07778 297733 jda@ndirect.co.uk
Proposed Holiday Home Development at :
Bleu Ray Farm
Millgate, Whaplode
PE12 6RR
Drawing Title : Site Layout - LIGHTING
Scale 1 to 500 at A2 Portrait
Date April 2023
Drawing No JDA/2023/005/LIGHTING.001

