Swanage Town Council

Design, supply and installation of photovoltaic panels on Council owned buildings

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Tender for the design, supply and installation of photovoltaic panels on Council owned buildings

Section A - Project Requirements and Deliverables

Tender proposals are sought from suitably qualified and experienced companies to design, supply and install photovoltaic panels to the following Council owned buildings within Swanage.

- Beach Gardens Sports Pavilion
- Swanage Town Council Operations Depot Garage
- Swanage Town Council Operations Garage

Full address details, plans and other relevant information about each location can be found in Project Deliverables below.

Background

In September 2019 Swanage Town Council voted unanimously in favour of declaring a Climate and Ecological Crisis. The Council resolved to establish a working party to use its best endeavours to make Swanage Town Council carbon neutral by 2030.

A copy of the Environmental Action Plan can be found here Swanage Town Council - Climate Crisis This plan is overseen by the Environment Action Plan Working Party and the Environment and Green Spaces Committee.

In 2021 Swanage Town Council engaged Green Energy Consulting to undertake an Energy Audit on Council owned buildings. A copy of the report can be found in Appendix 1.

One of the aspects of this report relates to the provision of onsite renewables and the Council is therefore now seeking to provide photovoltaic panels on several Council-owned buildings.

Project Requirements

Health and Safety

This section sets the general expectations in respect of health and safety and refers to all risks associated with construction within areas occupied and accessible by the public and Swanage Town Council staff. All activities are to be assessed and considered in relation to all occupants. All risks normally associated with repair and maintenance works are to be considered.

Method statements to be prepared as necessary and appropriate to construction works. Note significant risk of working at heights.

Current legislation to be adhered to at all times.

Health and Safety File to be provided.

Works to be carried out planned and executed as programmed so as not to expose the general public and site visitors to construction risk. Carry out the construction works with consideration for all site users maintaining adequate pedestrian (including disabled access) walkways and signage to allow access to all parts of sites remaining in use. Provide adequate barriers to separate pedestrians' walkways from site foot and vehicular traffic. Adequately safeguard the site, the works, products, materials and any existing building affected by the works. Take all reasonable precautions to prevent unauthorised access to the site works. Carefully control access and egress to all areas.

Contractor to carry out the construction works safely and with consideration for all site users, avoiding risks where possible.

Contractor to be aware of and adhere to Swanage Town Council's current fire / emergency evacuation procedures where appropriate. Co-ordination between site and building occupants in the event of an emergency to be addressed and included in the Health and Safety Plan.

All communication to be passed though Gail Percival, Assets and Compliance Manager, Swanage Town Council 01929 766034, 07511 166866.

The location of the contractor's compound (s) and any contactor's parking is to be agreed prior to the start of the works and must be fully securable and enclosed when not in use by the installation of suitable barriers or fencing. Vehicles must not impede the access of other vehicles, including emergency services, into and around the site.

All vehicle movements within the site, and deliveries to site, are to be individually assessed to take into account the activities and vehicle movements taking place within the confines of the site. The main access routes around each site must be kept clear at all times. The use

of a 'banksman' should be considered and used if appropriate.

Areas outside those where the contractor is working will generally be out of bounds unless agreed or notified.

A "No smoking" policy is to be strictly enforced at all sites.

No radios or other audio equipment.

Appropriate dress to be worn at all times.

Foul language not to be used.

In the event of an emergency the contractor shall provide on- site local first aid facilities.

The nearest minor injuries unit is: - Swanage Hospital,
32 Queens Road,
Swanage, Dorset BH19 2ET
Tel: 01929 422282

The nearest Accident & Emergency unit is: - Poole Hospital
48 Longfleet Road Poole
BH15 2JA
Tel: 01202 665511

Permitted Development

All buildings are located outside of Conservation Areas. All installations to meet the requirements of The Town and Country Planning (General Permitted Development) (England) Order 2015 Class J – Installation or alteration etc of solar equipment on non-domestic premises.

Accreditation and Training

Microgeneration Certification Scheme (MCS) accreditation is required for both technology and installation. It is an absolute requirement that the technology and company are MCS accredited.

The organisation and its employees or agents to hold current and appropriate qualifications for the tasks required including all electrical works.

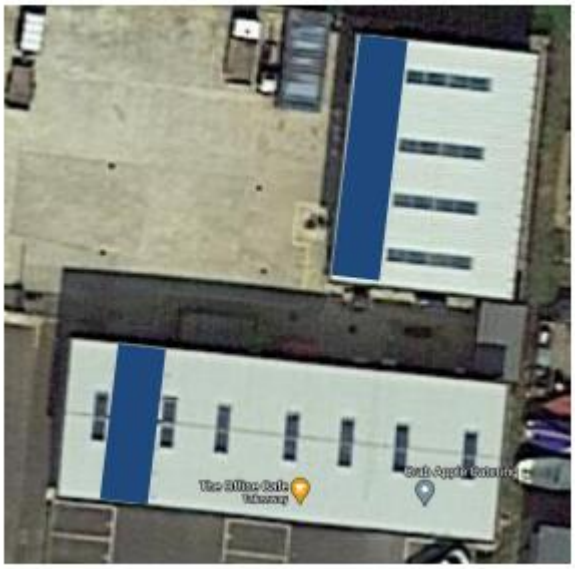
Warranties

The Town Council requires details of all warranties for the variety of components (to include

panels and inverters) and the installation of the systems.

Project Deliverables

Swanage Town Council Operations Depot and Office



Blue denotes potential location of panels

Swanage Town Council, Unit 5 Anvil Centre, Prospect Business Park, Victoria Avenue, Swanage, Dorset BH19 1EJ

Circa 60m^2 solar array on garage roof (building shown below)

Circa 35m^2 solar array on office roof (building shown below)

Parking is available. To note this is a working area for the Council's Grounds and Estates teams. 7.30am-4pm Monday-Friday.

Welfare facilities on site are available to use.

Beach Gardens Pavilion

Blue denotes potential location of panels for 50m2 array

De Moulham Road, Swanage, Dorset BH191PQ

Although a 50m^2 solar array was recommended within the Swanage Town Council – Energy Audit report completed by Green Energy Consulting as shown on the image above, the Council is keen to install a larger array to maximise the solar output noting that the total surface area of roof is circa 240m^2 (building shown below). Tenderers should assess the most feasible maximum m2 of array that can be feasibly installed and reflect this within their submission.

Angle of array to be optimised and facing as close to south as feasible to maximise solar output from the system.

Parking is available on adjacent roads. Public conveniences on site are available for use. Supervised vehicular access can be granted with conditions to the area adjacent to forecourt shown above. To note this is a public park with tennis and other sports facilities.

Swanage Town Council

Design, supply and installation of photovoltaic panels on Council owned buildings

Section B - Information and Instructions for Tenderers

1. Introduction

1.1 Swanage Town Council ("the Council") is seeking Tenders from suitably qualified and experienced persons to provide the works described in the Specification. This document explains some rules you need to follow when preparing your tender, tells you how to submit your tender and alerts you to some things to be aware of if you are awarded the contract. It also gives you some hints and tips to help you submit a successful bid.

1.2 If you do not follow the rules set out below, there is a risk your tender will be rejected.

2. Preparing your tender

Rules you must follow:

2.1 Please register your interest in submitting a tender via email to: procurement@swanage.gov.uk

2.2 Make sure your tender is completed legibly (either typed or in ink), in English, with all prices in Sterling (exclusive of VAT), and that it is signed and dated where required. If you need to make any amendments or corrections to your printed tender before you send it, you must initial these.

2.3 Your tender must be submitted as set out in Section 3 below.

2.4 Your tender must tell us if you are registered for VAT and how this applies to the goods or services you are providing for us - for instance standard, reduced rate, zero, exempt or outside scope.

2.5 As part of your tender, you must provide (on headed paper) full contact details for the legal entity we would be contracting with including the name, registered address (and any alternative address for accounts etc), contact name and numbers, payment and banking details and e-mail and website addresses.

2.6 You must not alter any of our Invitation to Tender documents. The form of

contract will be in accordance with the JCT Minor Works Contract or other appropriate form of contract determined by the Council. Therefore, please don't include your own conditions of contract with your tender.

2.7 We publish details of successful bids as part of the Government's transparency agenda to show how public money is being spent. We may also be required to release details under the Freedom of Information Act 2000 if requested. For these reasons, please do not put general confidentiality clauses in your tender as we can only accept them in very exceptional and narrowly defined circumstances. If you do consider any information to be confidential, please clearly set it out in a separate schedule (along with your reasons).

2.8 Don't tell anyone what your tender price is (even approximately) before the contract is awarded. The only exceptions are when obtaining an insurance quote to include in your tender or when seeking legal advice about the contract - on condition that you give this information in strict confidence.

2.9 Don't try to obtain information about anyone else's tender before the date of contract award or discuss with anyone else whether or not they should tender, or about their (or your) tender price. The only exception is where you are considering a joint or team bid - on condition that all suppliers involved in the discussions are named in your tender.

2.10 If you can see a different way of approaching the requirement to the one we have described in our specification, you can submit an "alternative" tender. But if you do this then you must also submit a separate "primary" tender based strictly on our original specification. You must fully price both options showing clearly how and where costs differ.

2.11 If you decide to join with other suppliers to submit a joint or team bid, be aware that (if successful) the group will need to nominate a lead partner who we can contract with. Alternatively, the group will need to form themselves into a single legal entity before the contract is awarded and you must provide an undertaking with your tender that the group is prepared to do this.

<u>Important things to be aware of:</u>

2.12 If we refer to an International, European or British Standard in our specification, you can offer an equivalent provided that it offers equivalent guarantees of safety, suitability and fitness for purpose to the one we specified.

2.13 The expense you incur in preparing this tender is a matter for your own commercial judgement. Be aware that exceptionally we may need to withdraw

the tender invitation or re-invite tenders on the same or an alternative basis.

2.14 We reserve the right not to accept the lowest (or any) tender, or to accept any part of your tender without accepting the rest.

2.15 It is not the Council's policy to reimburse tendering costs.

Some hints and tips:

2.16 Please read the documents carefully and make sure you provide all the information we ask for. If you don't, at best you may lose valuable marks, at worst your tender might be disqualified as "non-compliant".

2.17 Pay attention to the evaluation criteria set out in Section D - these tell you what we are looking for. It's helpful if you can use the criteria headings to organise the information in your tender so that the evaluation team can immediately see that you have addressed them.

2.18 Please keep tenders brief and to the point - don't send lots of additional information. We don't award extra marks for expensive paper or glossy photographs and would prefer instead that you simply used less paper and printed on both sides of the page.

2.19 Make sure you properly explain how you propose to undertake the work. If you spot issues that need to be addressed or particular risks cover these too (and tell us what you plan to do about them). This gives us confidence that you have understood our requirement and are capable of delivering it.

2.20 Please provide the price breakdown in the format we have requested. When pricing, each location should be approached as an 'individual project', with total values for each 'project' recorded and accumulated on the Tender Summary sheet (Section E). Not all 'projects' may progress, subject to an assessment of received final tender figures by the Council.

2.21 Don't leave it until the last minute before sending your bid, even if you are using a courier. Unforeseen transport problems can result in your tender missing the deadline and being rejected.

3. Submitting your tender

3.1 The process for submitting tenders is very tightly controlled to make sure everyone is treated equally. Whilst you are welcome to submit information in support of Form D (Quality Questions) by e-mail, all other parts of the tender submission, as listed in paragraph 3.3 below, **must** be submitted by post or courier. The tender submission documents as set out in paragraph 3.3 below are to be returned in a sealed plain

envelope using the form of label supplied in Appendix 2. Your company's name must not be on the envelope or any other packaging or labelling (please make sure your courier is aware of this too).

3.2 The tender return date and time is noon on **20th November 2023** and you **must** make sure it is received by us before then. If the tender is delivered by hand you should ensure that you obtain a receipt from one of our officers. Be aware that late tenders will be rejected even if the reason for the delay is not your fault.

3.3 Your tender submission should include:

- A completed Form of Tender (Section F)
- A fully priced copy of the Summary of Tender sheet (Section E)
- A completed copy of the Economic and Financial Standing Questions (Section C) with supporting financial information as well as (on headed paper) full contact details for the legal entity we would be contracting with including the name, registered address (and any alternative address for accounts etc), contact name and numbers, payment and banking details and e-mail and website addresses
- Responses to the Quality Questions (Section D)
- A completed Anti-Collusion Certificate (Section G)

3.4 Your tender will remain open for acceptance for 3 months (90 calendar days) from the Tender Deadline.

3.5 If, having informed us that you intend to submit a tender, you subsequently decide not to do so, please let us know as soon as possible by sending an email to procurement@swanage.gov.uk It would be helpful to us to know your reasons but you don't have to tell us if you would prefer not to. Do not transfer these tender documents to anyone else without our prior, written agreement.

4. If your tender is successful…

Awarding the contract:

4.1 We will take into account the information provided by you in the tender along with pricing information and any other information specifically related to the evaluation of tenders that we have requested. The information will be evaluated against the following award criteria set out in the tender documentation published on Contracts Finder and summarised below:

Criteria Heading	
Economic and financial standing	Pass or Fail
Have you undertaken previous similar work for a local authority within the last 3 years?	Pass or Fail

Is your company a Microgeneration Certification Scheme (MCS) certified installer?	Pass or Fail
Are the products you are proposing to use accredited by the Microgeneration Certification Scheme?	Pass or Fail
	Weighting
Price Submission	60%
Quality Submission	40%
Quality submission comprised as follows:	
Please describe the size, value and type of work your company carries out.	10%
Please describe your previous experience with undertaking design, supply and installation of photovoltaic panels for a public authority, including details of the approximate project value and when this work was carried out. Please provide at least two suitable references.	20%
Please provide details of all warranties that you are able to provide.	10%

4.2 If on checking the tender, we find arithmetical errors you will be told in writing and given the opportunity to amend your tender to rectify the error so that it is arithmetically correct, to confirm the tender as submitted or to withdraw the offer. The alteration of Tender rates is not permitted.

4.3 If you are successful, we will let you know, formally, in writing.

4.4 The successful tender, together with our written acceptance, shall form a binding agreement in the terms of the Contract Documents and, where there is any discrepancy or difference between the Tender and the (other) Contract Documents, the Contract Documents shall prevail.

4.5 A Purchase Order number may either be issued with, or after, the award letter. You shouldn't start work until you have received a Purchase Order number or, as a minimum, been given the number by the Contract Officer.

5. If you are unhappy with the outcome…

5.1 You are entitled to feedback on your tender if you would like it.

5.2 If you have a complaint about our tender process please write to the Town Clerk as soon as possible and best endeavours will be made to resolve it.

Section C: Swanage Town Council Economic and Financial Standing Questions

	Financial information		
1	**Please provide one of the following to demonstrate your economic/financial standing;** Please indicate your answer with an 'X' in the relevant box.		
	(a)	A copy of the audited accounts for the most recent three years	
	(b)	A statement of the turnover, profit & loss account, current liabilities and assets, and cash flow for the most recent year of trading for this organisation	
	(c)	A statement of the cash flow forecast for the current year and a bank letter outlining the current cash and credit position	
	(d)	Alternative means of demonstrating financial status if any of the above are not available (e.g. Forecast of turnover for the current year and a statement of funding provided by the owners and/or the bank, charity accruals accounts or an alternative means of demonstrating financial status).	
2	**Are you are part of a wider group (e.g. a subsidiary of a holding/parent company)?** If yes, please provide the name below:		▢ Yes ▢ No
	Name of the organisation		
	Relationship to the Supplier completing the Questionnaire		
	If yes, please provide Ultimate / parent company accounts if available. If yes, would the Ultimate / parent company be willing to provide a guarantee if necessary? If no, would you be able to obtain a guarantee elsewhere (e.g from a bank?)		▢ Yes ▢ No ▢ Yes ▢ No

3	**Please provide a copy of your current All Risks insurance policy** Copy attached	☐ Yes ☐ No

Section D – Quality Questions

Swanage Town Council photovoltaic panel design, supply and installation on Council owned buildings

PASS / FAIL QUESTION (PLEASE MARK WITH AN 'X')	Yes	No
Have you undertaken previous similar work for a public authority within the last 3 years?		
Is your company a Microgeneration Certification Scheme (MCS) certified installer?		
Are the products you are proposing to use accredited by the Microgeneration Certification Scheme?		

	Questions – Quality	Max Score
1	Please describe the size, value and type of work your company carries out.	10
2	Please describe your previous experience with undertaking design, supply and installation of photovoltaic panels for a public authority, including details of the approximate project value and when this work was carried out. Please provide at least two suitable references.	20
3	Please provide details of all warranties that you are able to provide.	10
	Total	40

Responses to questions 1,2 and 3 should be provided with a maximum word count of 750 words per question.

Section E – Tender Summary

Swanage Town Council – Design, supply and installation of photovoltaic panels on Council owned buildings

	Array size m2	£	
Swanage Town Council Depot - Garage			
Swanage Town Council Depot - Office			
Beach Gardens Pavilion			
Total Tender Amount (to be forwarded to Form of Tender)			

SWANAGE TOWN COUNCIL

FORM OF TENDER

For: Swanage Town Council – Design, supply and installation of photovoltaic panels on Council buildings

To : Swanage Town Council

I/We having read the Conditions of Contract and Bills of Quantities and/or Specification delivered to me/us and having examined the drawings referred to therein do hereby offer to execute and complete the whole of the works described for the sum of

…..... pounds

……...pence (£ .....)

which sum excludes Value Added Tax, and I/We undertake in the event of your acceptance to execute with you a Form of Contract embodying all the Conditions and Terms contained in this offer.

I/We hereby agree that this tender shall remain open for acceptance for a period of ninety days from the last date for submission of tenders and that written confirmation of the acceptance thereof shall constitute a binding contract. I/We confirm that I/We have signed the Tender Certificate printed overleaf.

I/We understand that the Council do not bind themselves to accept the lowest or any tender or pay any expenses in connection therewith.

The annual renewal date of my/our All Risks Insurance is ……

Signature ……Date……...

For and on behalf of (Name of Firm)……..

Address……
……
……
……
Telephone No……..

This tender shall be submitted by email to **m.snowdon@swanage.gov.uk**

BY 12.00PM ON Monday 20th November 2023

LATE TENDERS/QUOTATIONS CANNOT BE CONSIDERED. It is recommended that tenderers make appropriate arrangements to ensure delivery by the due time and date.

Swanage Town Council

ANTI-COLLUSION CERTIFICATE

1. We certify that this tender is made in good faith and that we have not fixed or adjusted the amount of the tender by or under or in accordance with any agreement or arrangement with any other person. We also certify that we have not and we will undertake that we will not before the award of any contract for the work:-

a) Communicate to any person the amount or approximate amount of the tender or proposed tender, except where the disclosure, in confidence, of the approximate amount of the tender was necessary to obtain insurance premium quotations required for the preparation of the tender.
b) Enter into any agreement or arrangement with any person that they shall refrain from tendering, that they shall withdraw any tender once offered or vary the amount of any tender to be submitted.
c) Canvass any members of the Council or of any committee, either directly or indirectly with regard to this tender.
d) Pay, give or offer to pay or give any sum of money or other valuable consideration directly or indirectly to any person for doing or having done or causing or having caused to be done in relation to any other tender or proposed tender for the work, any act or thing of the sort described at a), b), or c) above.

2. We further certify that the principles described under 1. above have been, or will be, brought to the attention of all sub-contractors, suppliers, and associated companies providing services or materials connected with the tender and any contract entered into with such sub-contractors, suppliers, or associated companies will be made on the basis of compliance with the above principles by all parties.

3. In this certificate, the word “person” includes any persons and any body or association, corporate or unincorporated; “any agreement or arrangement” includes any transaction, formal or informal, and whether legally binding or not; and “the work” means the Work in relation to which this tender is made.

Dated this……..day of…….20……

Signature……In capacity of…….

Duly authorised to sign tenders for and acknowledge the contents of the Anti-Collusion Certificate for and behalf of:-

Postal address……
……
……
……
……
Telephone No……..Fax No……...

E-Mail……

Swanage Town Council - Energy Audit Report

Green Energy Consulting

Contents

Swanage Town Council

Overview of Energy Consumption

Green Energy Consulting

Introduction

This report summarises the key findings of the energy audits undertaken on a number of Swanage Town Council sites. Potential energy saving solutions are outlined and the feasibility of onsite renewable energy generation is assessed.

Overview of Audited Sites & Consumption

Site	Description of Operations	Annual Electricity Consumption	Associated Annual CO_2e Emissions - Electricity	Annual Gas Consumption	Associated Annual CO2e Emissions - Gas
Depot Office	Office facility for Swanage Town Council operations team.	5,507 kWh	1.3 tCO_2e	20,153 kWh	3.7 tCO_2e
Depot Garage / Workshop	Depot garage & workshop facilities.	11,772 kWh	2.7 tCO_2e	N/A	N/A
Town Hall & Town Hall Annex	Office facilities for town council staff, CAB, registrar & citizens advice. Ceremony facilities for events. Police out of annex.	15,912 kWh	3.7 tCO_2e	97,949 kWh	18.0 tCO_2e
Tourist information Centre	Tourist information area on ground floor and office facilities on first floor.	3,889 kWh	0.9 tCO_2e	18,723 kWh	3.4 tCO_2e

Swanage Town Council

Overview of Energy Consumption

Green Energy Consulting

Overview of Sites Continued

Site	Description of Operations	Annual Electricity Consumption	Associated Annual CO_2e Emissions - Electricity	Annual Gas Consumption	Associated Annual CO2e Emissions - Gas
Beach Gardens Pavilion	Function room / bar area, kitchens and changing facilities for bowling club & tennis club. Also a tea kiosk and public toilets.	8,861 kWh	2.1 tCO_2e	N/A	N/A
Shore Road Beach Huts & Public Toilets	60 beach huts and public toilets.	11,631 kWh	2.7 tCO_2e	N/A	N/A
Burlington Chine Public Toilets	Public toilets.	5,227 kWh	1.2 tCO_2e	N/A	N/A
Battle Gate Public Toilets	Public toilets.	462 kWh	0.1 tCO_2e	N/A	N/A
Main Beach King George Public Toilets	Public toilets.	2,430 kWh	0.6 tCO_2e	N/A	N/A

Overview of Sites Continued

Site	Description of Operations	Annual Electricity Consumption	Associated Annual CO_2e Emissions - Electricity	Annual Gas Consumption	Associated Annual CO2e Emissions - Gas
Heritage Public Toilets	Public toilets.	3,300 kWh	0.8 tCO_2e	N/A	N/A
Peveril Point Public Toilets	Public toilets.	421 kWh	0.1 tCO_2e	N/A	N/A
Mermond Place Public Toilets	Public toilets.	6,816 kWh	1.6 tCO_2e	N/A	N/A
North Beach Public Toilets	Public toilets.	771 kWh	0.2 tCO_2e	N/A	N/A

Please note that associated annual CO_2e emissions throughout this report have been calculated using 2020 UK Government GHG Conversion Factors for Company Reporting. Electricity related emissions have been calculated using a UK location-based figure. The location-based emissions reflect the average emission of the grid where the energy consumption occurs.

Swanage Town Council

Overview of Energy Consumption

Green Energy Consulting

Overview of Energy Consumption

The table below provides an overview of the energy consumption and associated carbon emissions across the audited sites (as outlined in the tables on the previous page).

Total Consumption Across Audited Sites	Annual Electricity Consumption	Associated Annual CO_2e Emissions - Electricity	Annual Gas Consumption	Associated Annual CO2e Emissions - Gas
	76,999 kWh	18.0 tCO_2e	136,825 kWh	25.2 tCO_2e

Significant Energy Consumers (SEC) Breakdown

The following pages provide a breakdown of the significant energy consumers observed during the site energy audits. For the purpose of detailing the breakdowns, the sites have been grouped as follows:

- Depot Site - Depot Office Building & Workshop & Garage Building.
- Town Hall & Annex - Town Hall & Annex.
- Beach Garden Pavilion - Beach Garden Pavilion.
- Tourist Information Centre - Tourist Information Centre.
- Public Toilets - Burlington Chine, Battle Gate, Main Beach King George, Heritage, Shore Road, Peveril Point, Mermond Place & North Beach.

Please note that SEC breakdowns have not been provided for the Beach Huts. Each of the 60 beach huts have one LED light and two power sockets. Customers have full control over what equipment is plugged into the power sockets, for the period of time they are leasing the beach hut.

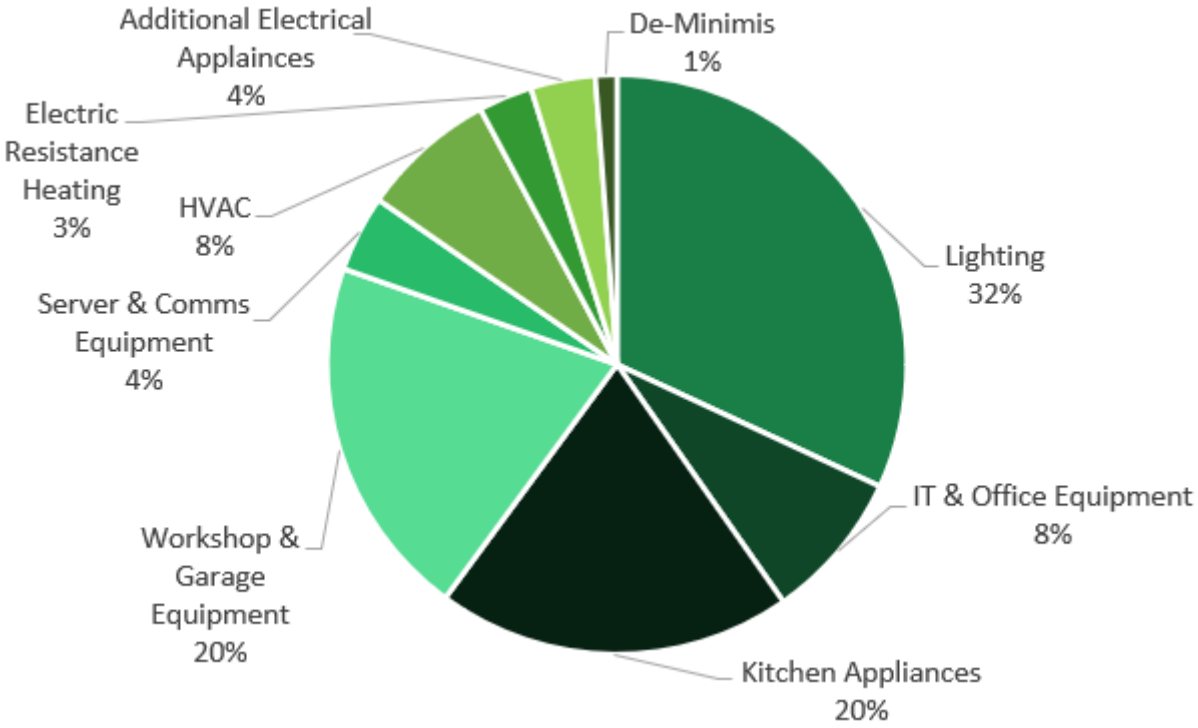
The Depot Site, Town Hall & Annex and Tourist Information Centre also have gas supplies. At all sites gas consumption is 100% boiler usage, therefore gas SEC breakdowns have not been provided.

Swanage Town Council

Depot Site- Significant Energy Consumers

Green Energy Consulting

Electricity SEC Breakdown - Depot Site



SEC	Annual Consumption (kWh)	Associate Carbon Emissions (tCO2e)
Lighting	5,515	1.29
IT & Office Equipment	1,443	0.34
Kitchen Appliances	3,425	0.80
Workshop & Garage Equipment	3,505	0.82
Server & Comms Equipment	736	0.17
HVAC	1,307	0.30
Electric Resistance Heating	520	0.12
Additional Electrical Appliances	623	0.15
De-Minimis	207	0.05
Total	17,279	4.03

Lighting

Lighting onsite is comprised of fluorescent & LED fittings, with the majority of the lighting onsite comprised of fluorescent fittings. In terms of lighting control, the toilet lights and outside lights have PIR sensors.

IT & Office Equipment

IT and office equipment onsite includes the following:

Computer	TV	Printer	Monitor	Shredder

Kitchen Appliances

There are a range of kitchen appliances across the site. Examples of some of the kitchen appliances onsite include the following:

Dishwasher	Fridge	Kettle	Microwave	Electric Oven

Workshop & Garage Equipment

Workshop & garage equipment includes, but is not limited to the following:

Jointer Planer	Angle Grinder	Saw	Electric Roller Shutter Door	EV Charge Point

Server & Communications Equipment

The site contains various server and communications equipment. Examples of this equipment include the below:

Switch	Security Firewall	Alarm System	Fire Control Panel	CCTV System

HVAC

There are three indoor Mitsubishi SRK35ZSP units, utilised to provide cooling in the upstairs office area during the summer months. Each unit is controlled individually.

Electric Resistance Heating

There are two Glen electric resistance heaters, providing a source of heating within the mess room.

Additional Electrical Equipment

In addition to the electrical consumers listed above and overleaf, there is also a range of other electrical equipment present onsite. This includes:

Desk Fan	Radio Charger	Hand dryer	Extraction Fan	Washing Machine

De-Minimis

De-Minimis consumption is energy consumption which has not been accounted for within the SEC breakdown for the site. This could include consumption from the following:

- Temporary electrical consumers such as phone chargers, cleaning equipment, portable heaters etc.
- Consumption associated with existing quantified SEC's whereby operation hours were more extensive than those communicated during the audit.

Gas Boilers

100% of gas consumption onsite is attributed to gas boilers. Within the downstairs kitchen area of the office, there is a 28 kW Worcester Greeenstar 28i Junior Combi MK IV condensing boiler. Additionally there is another Worcester boiler located within the garage kitchen area.

Each boiler is linked to a wall mounted Honeywell thermostat control unit.

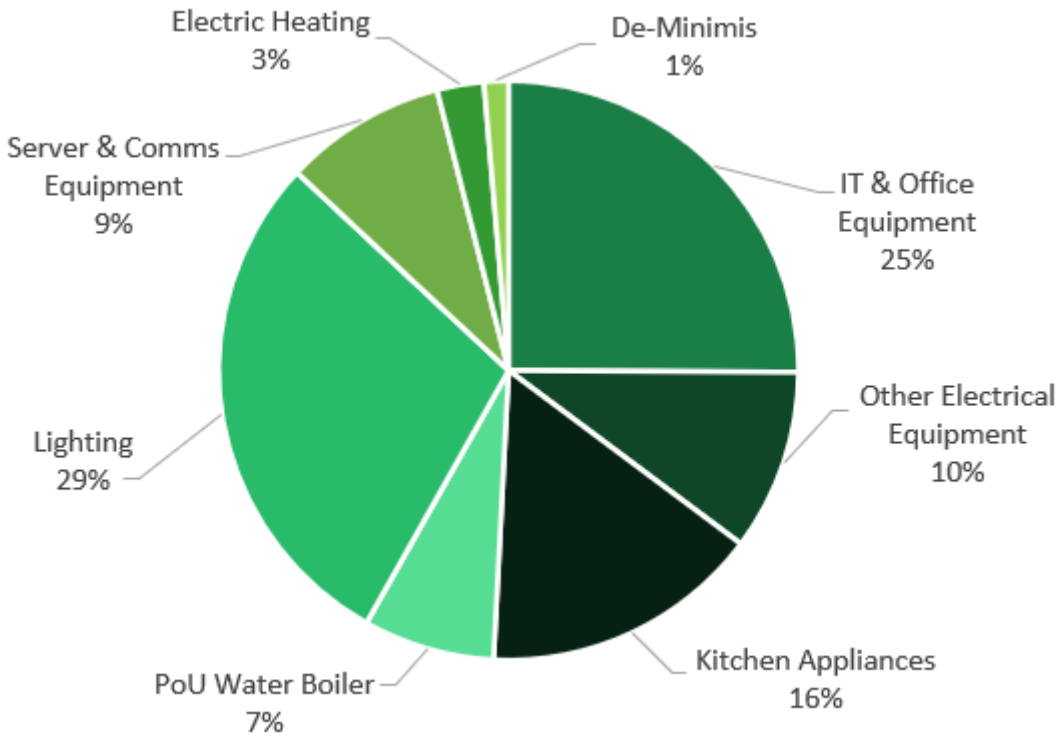
The heat distribution system is a standard wet heating system with radiators. All radiators have TRV's with the exception of the downstairs kitchen and garage kitchen radiators.

Swanage Town Council

Town Hall & Annex - Significant Energy Consumers

Green Energy Consulting

Electricity SEC Breakdown - Town Hall & Annex



SEC	Annual Consumption (kWh)	Associate Carbon Emissions (tCO2e)
IT & Office Equipment	3,993	0.93
Other Electrical Equipment	1,610	0.38
Kitchen Appliances	2,485	0.58
PoU Water Boiler	1,166	0.27
Lighting	4,585	1.07
Server & Comms Equipment	1,440	0.34
Electric Heating	416	0.10
De-Minimis	217	0.05
Total	15,912	3.71

IT & Office Equipment

Within the tenanted areas on each floor, there is a vast array of IT and office equipment. Including the following:

Computer	TV	Printer	Franking Machine	Shredder

Other Electrical Equipment

In addition to the electrical consumers listed above and overleaf, there is also a range of other electrical equipment present onsite. This includes:

Radio Signaller	Clock Mechanism	Hand Dryer	Desk Fan	Boiler Pump

Kitchen Appliances

There are a range of kitchen appliances across the site, with each tenant having their own kitchen area on their respective floors. Examples of just some of the kitchen appliances onsite include the following:

Dishwasher	Instant Hot Water Tap	Water Cooler	Microwave	Toaster

PoU Water Boiler

There are a number of point of use (PoU) hot water boilers located onsite, particularly in toilet and kitchen areas. Examples include the Ariston, Heatrae Sadia and Heatstore models.

Lighting

Lighting onsite is comprised of halogen, incandescent, fluorescent & LED fittings. It was communicated during the audit that when a light fitting fails, it is replaced with a LED. In terms of lighting control, some areas of the site have PIR sensors.

Server & Communications Equipment

The site contains various server and communications equipment, especially within the tenanted areas. Examples of this equipment include the below:

Server	Switch	UPS	Firewall	Fire Alarm Panel

Electric Resistance Heating

There is a Dimplex electric heater located within the CAB office.

De-Minimis

De-Minimis consumption is energy consumption which has not been accounted for within the SEC breakdown for the site. This could include consumption from the following:

- Temporary electrical consumers such as phone chargers, cleaning equipment, portable heaters etc.
- Consumption associated with existing quantified SEC's whereby operation hours were more extensive than those communicated during the audit.

Gas Boilers

100% of gas consumption onsite is attributed to gas boilers. Within the Annex area there is a Promax FSB HE boiler. Additionally, the Town Hall has two Vaillant Ecotec Plus 624 boilers.

The boiler serving the Annex has a Danfoss TS715 control system. The boilers serving the Town Hall has a Drayton Lifestyle LP522 control system.

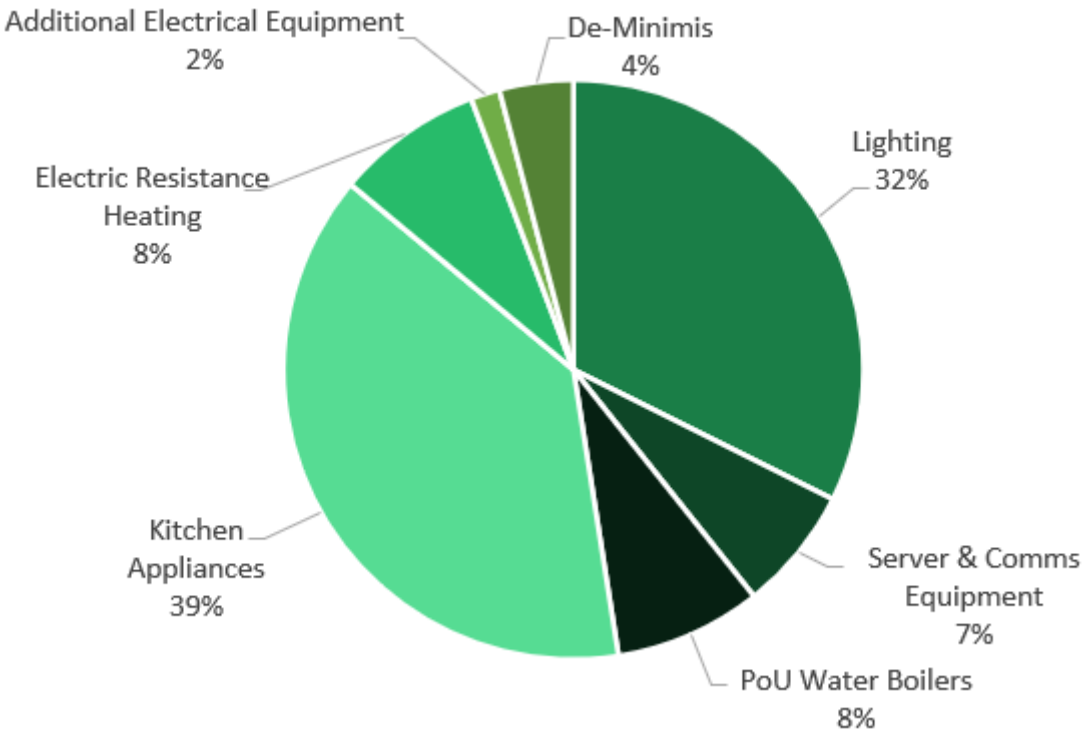
The heat distribution system is a standard wet heating system with radiators. Radiators onsite are a mixture of modern radiators, old cast iron radiators and fan assisted radiators.

Swanage Town Council

Beach Gardens Pavilion - Significant Energy Consumers

Green Energy Consulting

Electricity SEC Breakdown - Beach Garden Pavilion



SEC	Annual Consumption (kWh)	Associate Carbon Emissions (tCO2e)
Lighting	2,869	0.67
Server & Comms Equipment	613	0.14
PoU Water Boilers	728	0.17
Kitchen Appliances	3,415	0.80
Electric Resistance Heating	728	0.17
Additional Electrical Equipment	143	0.03
De-Minimis	365	0.09
Total	8,861	2.07

Lighting

Lighting onsite is comprised of halogen, fluorescent and LED fittings. The tennis court halogen floodlights are particularly inefficient.

Server & Communications Equipment

The site contains various server and communications equipment, especially within the tenanted areas. Examples of this equipment include the below:

Alarm System	Wifi Box	Fire Alarm Panel

PoU Water Boiler

There are two Hyco point of use (PoU) hot water boilers located within the kitchen areas.

Kitchen Appliances

There are a range of kitchen appliances across the site, with each tenant having their own kitchen area on their respective floors. Examples of just some of the kitchen appliances onsite include the following:

Fridge	Kettle	Coffee Machine	Microwave	Electric Oven

Electric Resistance Heating

At the site there are four wall mounted electric heaters. These are comprised of two Dimplex models and two Heatstore models.

Additional Electrical Equipment

In addition to the electrical consumers listed above and overleaf, there is also a range of other electrical equipment present onsite. This includes:

Till	Hand Dryer	Radio

De-Minimis

De-Minimis consumption is energy consumption which has not been accounted for within the SEC breakdown for the site. This could include consumption from the following:

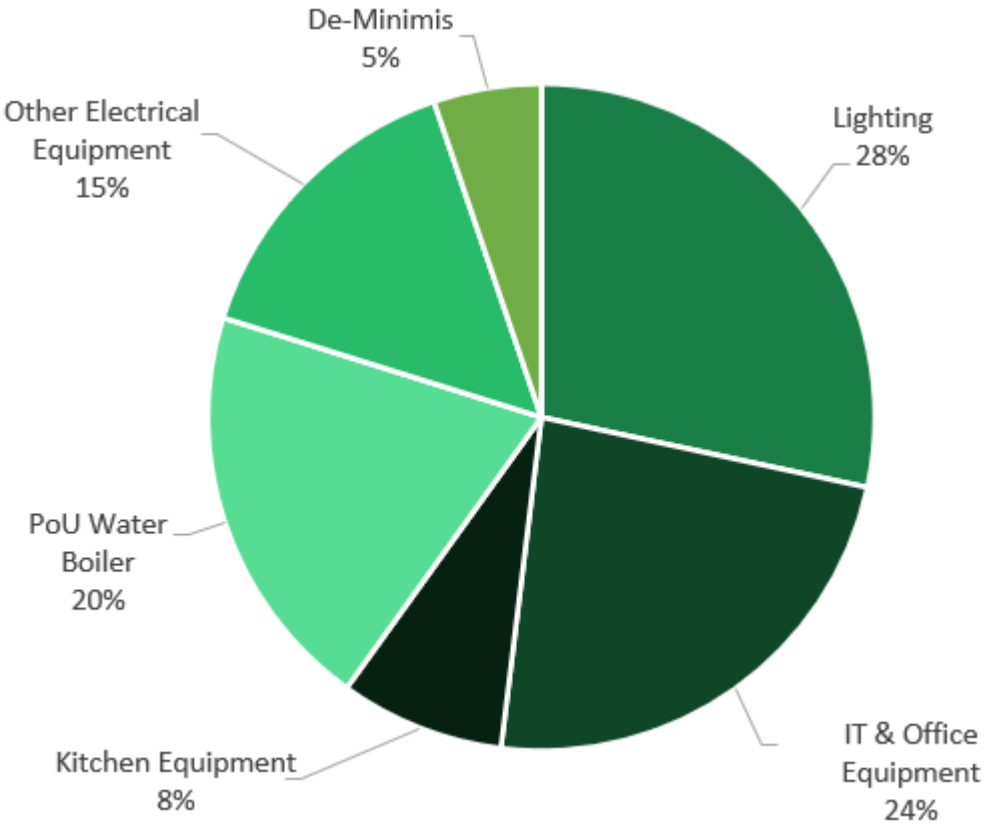
- Temporary electrical consumers such as phone chargers, cleaning equipment, portable heaters etc.
- Consumption associated with existing quantified SEC's whereby operation hours were more extensive than those communicated during the audit.

Swanage Town Council

Green Energy Consulting

Tourist Information Centre - Significant Energy Consumers

Electricity SEC Breakdown - Tourist Information Centre



SEC	Annual Consumption (kWh)	Associate Carbon Emissions (tCO2e)
Lighting	1,104	0.26
IT & Office Equipment	916	0.21
Kitchen Equipment	311	0.07
PoU Water Boiler	774	0.18
Other Electrical Equipment	582	0.14
De-Minimis	203	0.05
Total	3,889	0.91

Lighting

Lighting onsite is comprised of LEDs, this is considered to be the most energy efficient form of lighting.

IT & Office Equipment

Within the tenanted areas on each floor, there is a vast array of IT and office equipment. Including the following:

Computer	Card Machine & Receipt Printer	Printer	Franking Machine	Shredder

Kitchen Appliances

There are a range of kitchen appliances across the site, with each tenant having their own kitchen area on their respective floors. Examples of just some of the kitchen appliances onsite include the following:

Microwave	Fridge	Kettle

PoU Water Boiler

Within the kitchen area there is Heatrae Sadia Hotflo point of use (PoU) hot water boiler, providing hot water to the kitchen taps.

Other Electrical Equipment

In addition to the electrical consumers listed above and overleaf, there is also a range of other electrical equipment present onsite. This includes:

Desk Fan	Alarm System	Fire Alarm Panel	Extraction Fan	Radio Chargers

De-Minimis

De-Minimis consumption is energy consumption which has not been accounted for within the SEC breakdown for the site. This could include consumption from the following:

- Temporary electrical consumers such as phone chargers, cleaning equipment, portable heaters etc.
- Consumption associated with existing quantified SEC's whereby operation hours were more extensive than those communicated during the audit.

Gas Boiler

100% of gas consumption onsite is attributed to the gas boiler. The site has a 24 kW Vaillant boiler.

With regards to control systems, there is a Drayton Lifestyle LP III wall mounted thermostat control. At the time of the audit the thermostat was set at 30°C.

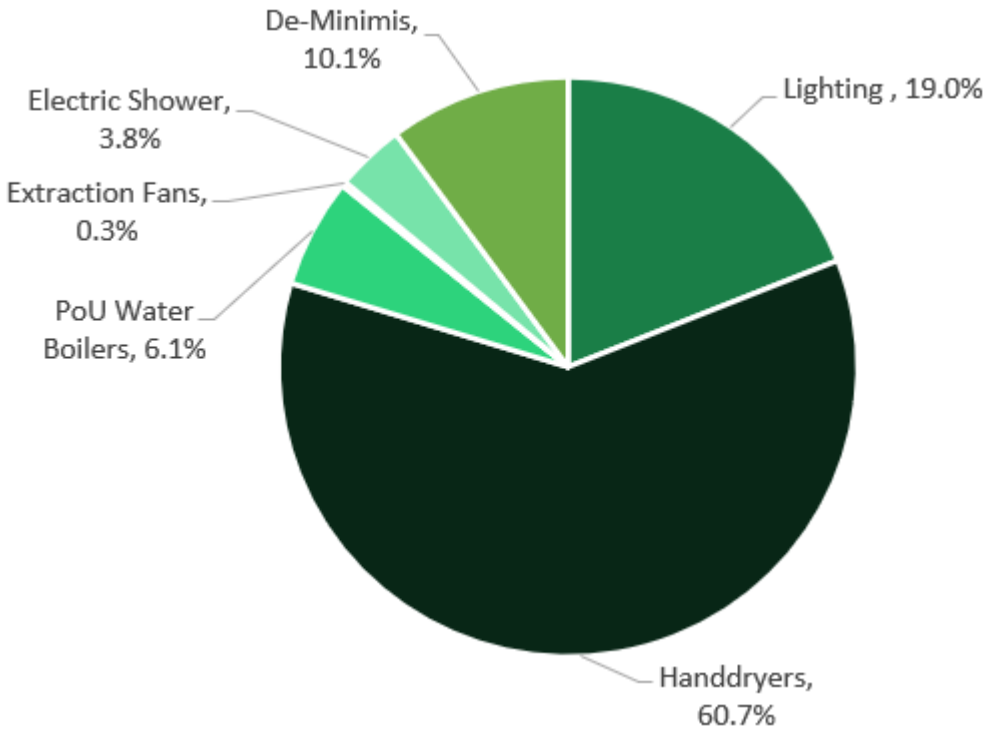
The heat distribution system is a standard wet heating system with radiators. The radiators onsite have TRV's.

Swanage Town Council

Public Toilets - Significant Energy Consumers

Green Energy Consulting

Electricity SEC Breakdown - Public Toilets (combined)



SEC	Annual Consumption (kWh)	Associate Carbon Emissions (tCO2e)
Lighting	5,907	1.38
Hand Dryers	18,837	4.39
PoU Water Boilers	1,893	0.44
Extraction Fans	80	0.02
Electric Shower	1,193	0.28
De-Minimis	3,147	0.73
Total	31,058	7.24

Lighting

Lighting at Shore Road, Burlington Chine, Battle Gate, Heritage, Peveril Point, Mermond Place and North Beach are comprised of LED fittings. The Main Beach King George toilets have fluorescent lights in place.

Hand Dryers

There are a range of hand dryers across the sites. A number of sites have the Wallgate Watermark units, which is a combined hand washing and hand drying system. Although more energy intensive these units provide an enhanced user experience.

PoU Water Boilers

Some sites have point of use (PoU) hot water boilers, providing hot water for the taps onsite.

Extraction Fans

At a number of sites, particularly those without natural ventilation, there are a number of extraction fans present.

Electric Shower

The Main Beach King George site has a Mira Advance electric shower.

De-Minimis

De-Minimis consumption is energy consumption which has not been accounted for within the SEC breakdown for the site. This could include consumption from the following:

- Consumption associated with the Beach Huts - as these are fed from the Shore Roads Toilets meter. Each beach hut has one LED light fitting and two power sockets. The client leasing the beach hut has full control over what equipment is plugged into the power sockets.
- Temporary electrical consumers such as phone chargers, cleaning equipment, portable heaters etc.
- Consumption associated with existing quantified SEC's whereby operation hours were more extensive than those communicated during the audit.

ECM 1: HH Data Monitoring & Analysis

For all meters half-hourly (HH) electricity meters within Swanage Town Council's portfolio, regular monitoring of HH data is advised in order to investigate energy usage patterns, identify waste consumption and find opportunities for change.

HH monitoring at regular intervals (e.g. weekly or monthly) will allow for excess (/unexpected) consumption to be quickly spotted and measures can then be put in place to address the excess consumption.

Additionally , HH data analysis is an effective method of observing the impact of other energy efficiency measures enacted.

Regular data monitoring can typically allow buildings to reduce their energy consumption by up to 5%.

ECM 2: Energy Walk-Around

Across all Swanage Town Council sites, it is recommended that checks are carried out to ensure all non essential equipment is turned off when not in use. This particularly relates to end of day checking as IT equipment may be left on overnight / during the weekends. To practically achieve this, it advised that members of staff at each site are assigned the responsibility to conduct an energy walk-around.

ECM 3: Plug Timers

One potential methodology of automating / speeding up the aforementioned energy walk around process is the installation of plug timers on viable equipment. Plug timers can be programmed to turn off equipment at certain times, ensuring the equipment is not left on overnight. It is possible to procure plug timers for under £10 from a range of online retailors.

ECM 4: Green Energy Supply

In order to minimise Swanage Town Council's environmental impact, it is advised that the council only consider 100% renewable electricity supply contracts and green gas or carbon offset gas supply contracts.

ECM 5: Energy Efficient Equipment Procurement

When equipment comes to the end of its life, it is advised that the energy performance of replacements are considered as part of the procurement process. Most manufacturers list power ratings within the technical specifications of products which will give an indication of typical consumption and running costs.

When weighing up replacement options, it is important to consider the energy performance in order to reduce energy consumption over the lifespan of the equipment. It is recommended that Swanage Town Council consider that potential higher upfront costs for more energy efficient equipment could be repaid in a matter of months from energy cost savings.

ECM 6: Staff Training & Energy Saving Strategy

The below outlines a potential energy saving strategy which is designed to implement the principles of energy management into Swanage Town Council's operations. Typically implementing such strategies can yield a potential energy saving of between 5% and 15%.

Stage	Overview
Creating Baselines & KPI's	This will allow for current performance to be quantified and provide quantifiable and verifiable figures to compare improvements against.
Research	Gain an understand of current energy related practices.
Energy Action Plan	Produce strategy to improve energy performance.
Implementation	Implement changes outlined in action plan.
Responsibility	Assign Green Champion and Green Team.
Staff Training & Energy Awareness	Conduct staff training to inform staff of new strategy.
Review	Review of key performance indicators to quantify effectiveness of action plan.

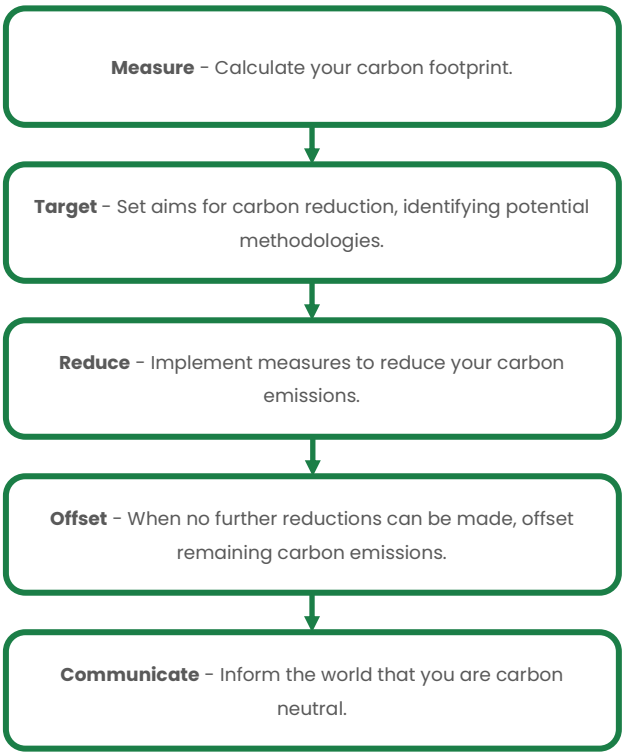
A more detailed breakdown is provided overleaf.

ECM 6: Staff Training & Energy Saving Strategy Continued

Stage of Methodology	Components
Creating Baselines & KPI's	This will allow for current performance to be quantified and provide quantifiable and verifiable figures to compare improvements against. Realistic KPI's can also be produced i.e. reduce total annual electricity consumption by 5% against 2019 baseline.
Research	Conduct initial meeting with senior management to discuss current energy related areas i.e., operating hours of HVAC , staff attitudes and education levels relating to energy management.
Energy Action Plan	This should include specific projects and method to achieve, for example: **Project** - Reduce HVAC based electricity consumption **Methodology** - Reduce operating hours of AC units. Action plans should relate to KPI's outlined above.
Implementation	Implement changes outlined in action plan i.e. modify BMS, install LED lighting.
Responsibility	To ensure action plans are implemented a Green Champion can be appointed as the person with overall responsibility for this . It is also advised that a 'Green Team' is also created. Green Team members can monitor if action plans are being carried out i.e. ensure unoccupied areas are not being lit, computers are turned off etc. This method provides accountability and therefore increases the potential for action plans to succeed.
Staff Training & Energy Awareness	To aid the above staff training can be carried out to inform all staff members of the sites energy strategy. This can be done in a presentation format (5 staff members at time for example) outlining the fundamentals of the scheme, describing green initiatives and introducing the Green Champion and team. Progress presentations/meetings can also be implemented to update staff on achievements or areas for improvement. Lastly, Green strategies can be communicated in future staff inductions to provide an understanding of the scheme from the outset.
Review	Conduct regular review meetings to:- track performance against KPI's, quantify effectiveness of action plans , highlight successes, identify areas for improvements and modify the strategy where necessary.

ECM 7: Carbon Reduction Strategy

The flow chart below provides a brief overview of a standard 'carbon journey' an organisation can take in order to reduce their own impact. Following the flow chart step by step will allow Swanage Town Council to ultimately become carbon neutral.



There are a number of approaches that can be taken during each stage of the flow chart, with this report particularly focusing on action that can be taken within the reduce stage. Upon request Green Energy Consulting can also support Swanage Town Council with the other stage outlined above.

ECM 8: Depot Site - LED Lighting

In order to reduce the sites lighting based electricity consumption the following LED Lighting replacement scheme has been proposed:

Current Type	Proposed LED Fittings	Proposed Quantity	Proposed Wattage (W)	Annual Saving (kWh)	Annual Saving (£)	CAPEX (£)	Payback Period (Yrs)
5ft Fluorescent T5	5ft LED T5	46	20	1,704	£255.65	£1,328.94	5.2
5ft Fluorescent T5	5ft LED T5	22	20	408	£61.13	£635.58	10.4
5ft Fluorescent T8	5ft LED T8	6	20	119	£17.78	£64.44	3.6
Total				**2,230**	**£334.56**	**£2,028.96**	**6.1**

Please note that the above costings are indicative only and are for the supply of LED lights. If Swanage Town Council are interested moving forward with this recommendation, we can provide a full quotation inclusive of installation upon request.

ECM 9: Town Hall & Annex LED Lighting

In order to reduce the sites lighting based electricity consumption the following LED Lighting replacement scheme has been proposed:

Current Type	Proposed LED Fittings	Proposed Quantity	Proposed Wattage (W)	Annual Saving (kWh)	Annual Saving (£)	CAPEX (£)	Payback Period (Yrs)
Halogen Floodlight	LED Floodlight	2	50	125	£18.72	£95.82	5.1
4ft Fluorescent T8	4ft LED T8	8	14.5	86	£12.88	£60.72	4.7
5ft Fluorescent T8	5ft LED T8	6	20	114	£17.07	£64.44	3.8
Fluorescent Bulb	LED Bulb	4	5	147	£22.01	£11.64	0.5
5ft Fluorescent T8	5ft LED T8	16	20	1,992	£298.77	£171.84	0.6
6ft Fluorescent T8	5ft LED T8	8	20	175	£26.21	£85.92	3.3
Total				**2,638**	**£395.66**	**£490.38**	**1.2**

Please note that the above costings are indicative only and are for the supply of LED lights. If Swanage Town Council are interested moving forward with this recommendation, we can provide a full quotation inclusive of installation upon request.

ECM 10: Beach Garden Pavilion LED Lighting

In order to reduce the sites lighting based electricity consumption the following LED Lighting replacement scheme has been proposed:

Current Type	Proposed LED Fittings	Proposed Quantity	Proposed Wattage (W)	Annual Saving (kWh)	Annual Saving (£)	CAPEX (£)	Payback Period (Yrs)
Halogen Spotlight	LED Spotlight	2	6	46	£6.92	£25.92	3.7
Halogen Floodlight	LED Floodlight	18	50	983	£147.42	£862.38	5.8
5ft Fluorescent T8	5ft LED T8	29	20	963	£144.41	£311.46	2.2
Fluorescent DD	LED Bulkhead	3	13	39	£5.90	£71.06	12.0
Total				**2,031**	**£304.65**	**£1,270.82**	**4.2**

Please note that the above costings are indicative only and are for the supply of LED lights. If Swanage Town Council are interested moving forward with this recommendation, we can provide a full quotation inclusive of installation upon request.

ECM 11: Tourist Information Centre Heating Control

CIBSE guide A recommends a winter operative temperature range of between 21°C-23°C in office areas. In general building areas such as corridors, toilets, kitchens etc, CIBSE guide A recommends a winter operative temperature range of between 19°C-21°C. In a retail environment, such as the ground floor area of the building, CIBSE guide A recommends a winter operative temperature range of between 19°C-21°C.

With regards to the energy consumption of gas boilers, a general rule of thumb is the lower the set temperature the lower the energy consumption. Depending on the age and efficiency of the boiler, savings between 1% & 5% per degree can be made.

It is advised that Swanage Town Council take both energy consumption and CIBSE comfort guidelines into consideration when using the heating & cooling systems onsite. When the boiler at the Tourist information Centre is operational during the winter months, it is recommended that Swanage Town Council set the thermostat to 21°C, satisfying CIBSE comfort guidelines.

At the time of the audit, the thermostat setting was observed to be set above CIBSE comfort guidelines, additionally the windows were open in the upstairs office area as it was deemed to be too warm. With the windows being open, heat will be lost to the outside environment, thus the boiler will work harder to maintain the set temperature indoors and use more energy. It is advised that Swanage Town Council reduce the set temperature on the thermostat, rather than opening the windows.

ECM 12: Main Beach King George Public Toilets LED Lighting

In order to reduce the sites lighting based electricity consumption the following LED Lighting replacement scheme has been proposed:

Current Type	Proposed LED Fittings	Proposed Quantity	Proposed Wattage (W)	Annual Saving (kWh)	Annual Saving (£)	CAPEX (£)	Payback Period (Yrs)
Fluorescent DD	LED Bulkhead	19	13	652	£97.73	£145.64	1.5
Total				**652**	**£97.73**	**£145.64**	**1.5**

Please note that the above costings are indicative only and are for the supply of LED lights. If Swanage Town Council are interested moving forward with this recommendation, we can provide a full quotation inclusive of installation upon request.

Decarbonisation of Heating Systems

The table below outlines the potential measures Swanage Town Council can take to decarbonise heating systems.

Technology	Viability
Biomass Boiler	Biomass is a low carbon form of heating as the carbon dioxide emitted when the wood is burned is assumed to be the same amount that was absorbed over the tree's life when it was growing. Considerable space is needed for a biomass boiler, as the wood chip or wood pellet fuel has to be stored in close proximity to the boiler. The audited sites currently heated by gas boilers are the Depot Site, the Town Hall & Annex and the Tourist Information Centre. Of the three, only the depot has the necessary space for fuel storage. However annual gas consumption is only 20,153 kWh at the site., therefore considering this alongside the high capital expenditure of a Biomass installation, this would not be a financially enticing solution.
Electric Boiler & Green Electricity Procurement	While it would be technically viable to install electric boilers at the Depot Site, Town Hall & Annex and the Tourist Information Centre, from a financial perspective this solution would not be viable. As an example, the ongoing annual running costs of electric boilers would be around five times higher than that of the existing gas boilers.
Ground Source Heat Pump & Green electricity Procurement	Ground source heat pumps extract thermal energy from their surroundings by making use of coils installed below ground. The coils absorb heat stored underground which is subsequently circulated within a compressor cycle. By extracting heat from the surroundings "free" heat is obtained making ground source heat pumps an efficient method of heating. Ground source heat pump Coefficient of Performance (COP) can be as high as 6. In this scenario 1kW of electricity usage would yield 6kW of thermal energy. The additional energy is provided from underground coils. In terms of heat distribution, a heat pump heating system operates at lower temperatures than the existing gas based systems operate. Typically gas boilers have a heating circuit running at 60 -80°C whereas heat pumps operate optimally at a maximum of 45-50°C. As a result of this, heat pump based heating systems tend to require high-surface area low-temperature radiators or underfloor heating to emit heat to the site. Therefore it may be necessary to upgrade the heating infrastructure onsite, should the existing boilers be replaced with ground source heat pumps. The Depot site is the only site with gas boilers that are considered to have the necessary space to install GSHP's. However, giving the need to replace the existing high temperature distribution system with a low temperature heat distribution system, this would not be a financially viable solution.
Air Source Heat Pump & Green Electricity Procurement	Air source heat pumps extract heat from the surrounding air. This is then circulated within a compressor cycle which provides the desired heat to a given space. An air source heat pump works on the exact same principle as an air conditioning unit and is much more efficient than resistance heaters. Air source heat pumps can be used in two primary configurations; air to air (shown in figure 3, below), whereby the treated air is blow into the desired space, air to water/refrigerant, whereby a heat exchanger transfers the heat into a radiator or underfloor heating circuit. Its coefficient of performance (COP) can be as much as three times that of conventional convector heaters. When the existing gas heating systems come towards the end of their working life and need to be replaced, it is advised that Swanage Town Council consider electrifying the heating systems through the installation of an air source heat pump.
Air Conditioners & Green Electricity Procurement	At the Tourist Information site, the instillation of air conditioners, with the capability of both cooling and heating, would be the optimum solution. As during the audit it was communicated that, particularly in the office area upstairs, there is an issue with cooling in the summer months. The system would be comprised of an outdoor condensing unit and indoor wall mounted units. It is advised that when the existing gas boiler comes to the end of its working life, the Tourist Information Centre considered the installation of air conditioners as an alternative option.
Hydrogen	As part of the UK governments 2050 Net-Zero roadmap, there is a big role for hydrogen. The idea being that green hydrogen is fed into the existing UK grid gas network. Though in terms of timescales, this is some way off, therefore one solution could be, maintaining the existing gas systems for when green hydrogen comes into play on a large scale and in the meantime offsetting gas consumption through the purchase of carbon credits.

Onsite Renewables

As a means of reducing carbon emissions, Swanage Town Council can consider generating renewable electricity onsite. The below table provides an overview of different technologies Swanage Town Council could consider and our assessment as to the viability of each option.

Technology	Viability
Solar PV	Solar PV is considered to be a viable means of onsite generation at a number of the audited sites. In particular the Depot Site, Beach Garden Pavilion, Beach Huts, Mermond Place Public Toilets and North Beach Public Toilets.
Wind Power	In terms of suitable locations, there is not a great deal of space at the majority of the audited sites. The depot car park site and a number of the public toilets with car parks would be the most suitable locations. However taking into consideration that Swanage is located within an Area of Outstanding Natural Beauty (Dorset AONB) and the high capital expenditure associated with Wind Power projects, this is not deemed to be a viable solution.

On the following pages, indicative quotations are provided for the sites where Solar PV has been deemed viable. Savings have been calculated based on an assumed unit rate of 15 pence per kWh and the assumption that 70% of energy generated will be used onsite and 30% will be exported to the grid.

Please note that all quotations are indicative only for the supply, installation and commissioning of a Solar PV system. The purpose of the indicative quotations are to provide Swanage Town Council with an understanding of the likely costs and payback of Solar PV projects. We can arrange for a formal Solar PV quotation at any site for Swanage Town council upon request.

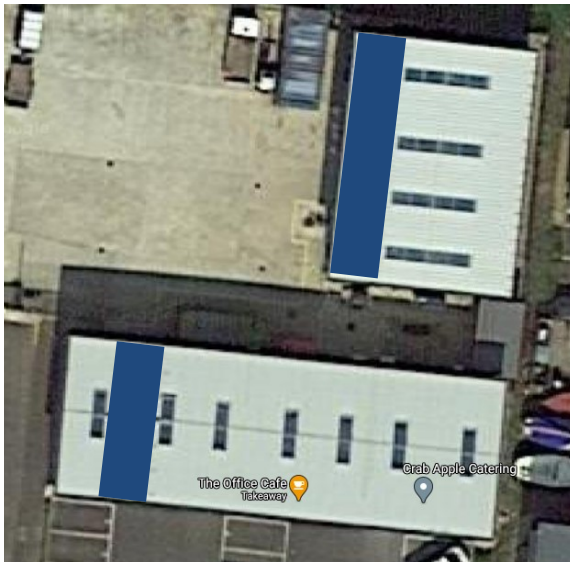
Spa Hill

Swanage Town Council are planning to redevelop the Spa Hill area. Integrating renewables within the site design is typically the most cost effective way of installing renewables. To optimise Solar generation, PV panels facing south and angled at 45° provide the optimum solution. It is advised that Swanage Town Council consider the integration of Solar PV within the site design.

When Swanage Town Council begin to develop plans for the site, we can provide a feasibility study for the integration of Solar PV within the design.

Depot Site Solar PV

It is suggested that a 60m² solar array is installed on roof of the garage building, as shown below, as well as a 35m² solar array on the section of roof above the depot. This solar array would yield an annual solar output of 16,687 kWh, similar to the sites current annual consumption. The calculations have been made with the assumption that the solar panels will face 5° (from South) South West and be angled at 40° to optimise the solar output of the system. There are no obstructions that would result in a shadow being cast across the solar panels at any time of day.



Total Area	95m²
CAPEX (£)	£19,593.75
Size of System (kWp)	16.32
Annual Output (kWh)	16,687
Annual Saving (£)	£2,002.48
Payback (Yrs)	9.8

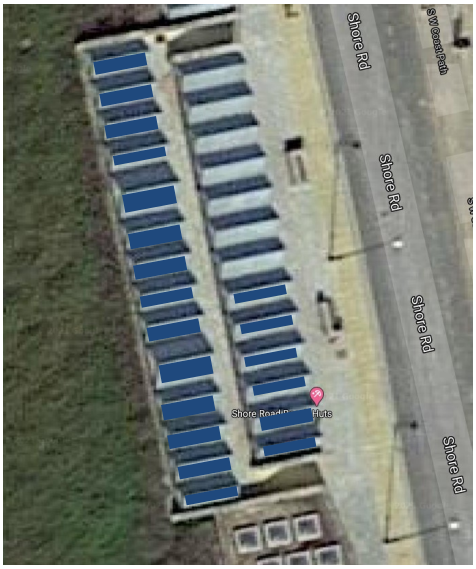
Beach Garden Pavilion Solar PV

It is suggested that a 50m2 solar array is installed on the area of roof identified below. The total roof space could hold up to a 240m2 solar array, however, given the level of consumption at this site, and the total outlay required to install such a large system the smaller 50m2 array is a more feasible option. This solar array would yield an annual solar output of 8,782 kWh, a similar value to the annual energy consumption onsite. The calculations have been made with the assumption that the solar panels will face 5° South East (from South) and be angled at 40° to optimise the solar output of the system. There are no obstructions that would result in a shadow being cast across the solar panels at any time of day.

Total Area	50m²
CAPEX (£)	£10,312.50
Size of System (kWp)	8.59
Annual Output (kWh)	8,782
Annual Saving (£)	£1,053.94
Payback (Yrs)	9.8

Beach Huts Solar PV

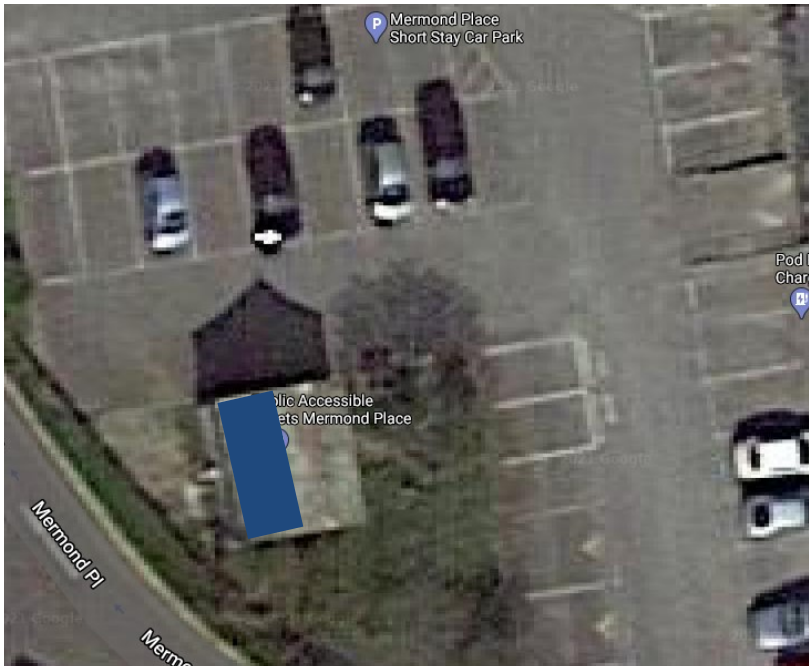
It is suggested that a 110m2 solar array is installed, broken up into 5m2 on the south facing rooves of 20 beach huts. This solar array would yield an annual solar output of 19,227 kWh, possibly creating a surplus of energy, compared to the consumption of the Beach Huts and Shore Road Public Toilets. Not only will it make the site carbon neutral, the surplus energy generated can also be exported back to the grid boosting the income created by the installation. These calculations have been made with the assumption that the solar panels will face 5° South East (from south) and be angled at to optimise the solar output of the system. There are no obstructions that would result in a shadow being cast across the solar panels at any time of day.



Total Area	110m²
CAPEX (£)	£22,687.50
Size of System (kWp)	18.91
Annual Output (kWh)	19,227
Annual Saving (£)	£2,307.32
Payback (Yrs)	9.8

Mermond Place Public Toilets Solar PV

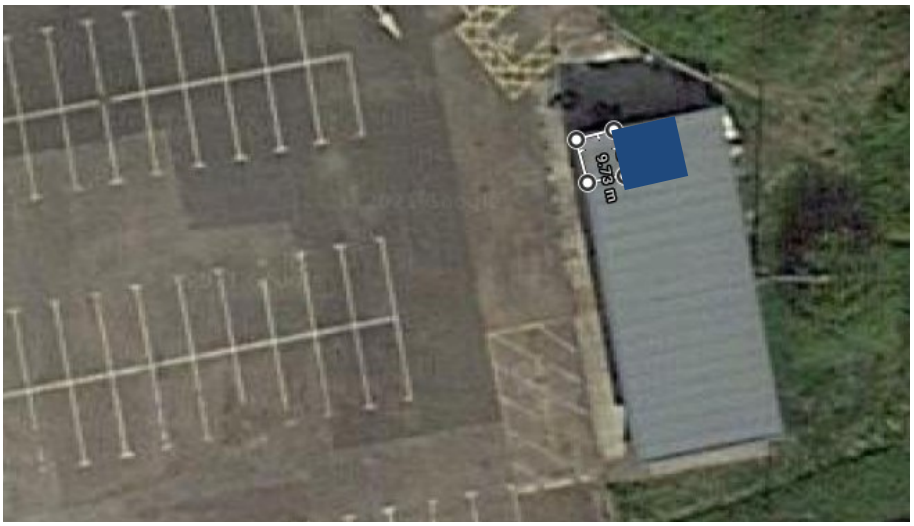
It is suggested that a 15m2 solar array is installed on the area of roof identified below. This solar array would yield an annual solar output of 2,485 kWh, while this is not a large enough array to provide all of the energy consumed here it will offer a significant reduction in energy bills. These calculations have been made with the assumption that the solar panels will face 40° South West and be angled at 45° to the ground to optimise the solar output of the system. There are no obstructions that would result in a shadow being cast across the solar panels at any time of day.



Total Area	15m²
CAPEX (£)	£3,093.75
Size of System (kWp)	2.57
Annual Output (kWh)	2,485
Annual Saving (£)	£372.80
Payback (Yrs)	8.3

North Beach Public Toilets Solar PV

It is suggested that a 5m2 solar array is installed on the area of roof identified below. This solar array would yield an annual solar output of 878 kWh, possibly creating a surplus of energy, compared to the consumption on site, that could be exported back to the grid boosting the income created by the installation. The calculations have been made with the assumption that the solar panels will face 5° South East (from South) and be angled at 40° to the ground to optimise the solar output of the system. There are no obstructions that would result in a shadow being cast across the solar panels at any time of day.



Total Area	5m²
CAPEX (£)	£1,031.25
Size of System (kWp)	0.86
Annual Output (kWh)	878
Annual Saving (£)	£92.22
Payback (Yrs)	11.2

Swanage Town Council

Summary & Next Steps

Green Energy Consulting

Summary of Recommendations

A summary of the costed recommendations are provided in the below the table below.

ECM	Annual Saving (£)	CAPEX (£)	Payback Period (Years)
Depot Site LED Lighting	£334.56	£2,028.96	6.1
Town Hall & Annex LED Lighting	£395.66	£490.38	1.2
Beach Garden Pavilion LED Lighting	£304.65	£1,270.82	4.2
Public Toilets LED Lighting	£97.73	£145.64	1.5
Depot Site Solar PV	£2,002.48	£19,593.75	9.8
Beach Garden Pavilion Solar PV	£1,053.94	£10,312.50	9.8
Beach Huts Solar PV	£2,307.32	£22,687.50	9.8
Mermond Place Toilets Solar PV	£372.80	£3,093.75	8.3
North Beach Toilets Solar PV	£92.22	£1,031.25	11.2
Total	**£6,961.36**	**£60,654.55**	**8.7**

Summary of Recommendations Continued

Non-costed recommendations outlined within this report include:

- HH Data Monitoring & Analysis
- Energy Walk-Around
- Plug Timers
- Green Energy Supply
- Energy Efficient Procurement
- Staff Training & Energy Saving Strategy
- Carbon Reduction Strategy
- Tourist Information Centre Heating Control

At Green Energy Consulting, we can assist in the uptake of all measures identified within this report.

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Tender for Design, supply and installation of photovoltaic panels on Council owned buildings

To be delivered by 20th November 2023

THE CLERK TO THE COUNCIL

SWANAGE TOWN COUNCIL

TOWN HALL

HIGH STREET

SWANAGE

DORSET

BH19 2NZ