VPS
PROTECT MANAGE MONITOR


# Carbon Handprint.

# overview

VPS stands as Europe's leading provider of temporary security, delivering fully integrated security solutions that facilitate tailored risk mitigation for our customers. This is achieved through a combination of Monitored Technology, Human Intervention, and Physical Protection solutions.

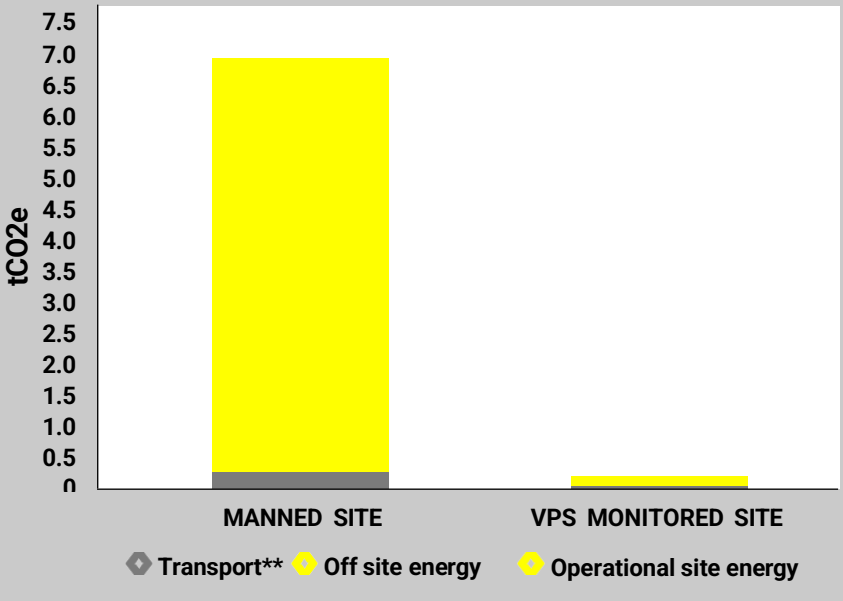
We have developed a comprehensive security solution that has not only supported our growth but also facilitated our expansion into new sectors. Our blended consultative approach to temporary security means we are uniquely placed to partner with our clients, positioning us as their sole provider for all temporary security needs.

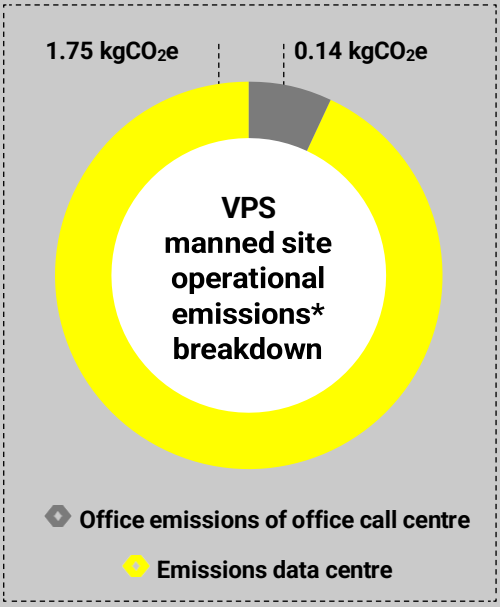
Under our managed services contracts, we offer a cloud-based security monitoring system that utilises advanced software to analyse triggered alarms. Upon activation of an alarm, the software identifies the presence of an individual, after which the video data is securely transmitted to data centres located within the UK. Simultaneously, the software generates a ticket for our Alarm Receiving Operatives. They then review the triggered alarms and promptly dispatch a security guard from the nearest depot to the construction site.

This service is not only cost-effective but also results in lower greenhouse gas (GHG) emissions compared to employing a full-time on-site guard. The following case study is a real-world example of two security options considered by a Welsh transport client. The carbon handprint is created based on carbon emissions factors that are taken from DEFRA 2023. If the time horizon of this study changes, so would the carbon factors, and therefore emissions. Additionally assumptions are based on commercial data as of March 2024. This case study shows our hybrid alarm systems save approximately 6.78 tonnes of Carbon Dioxide equivalent (tCO2e), reduce operational emissions by 96%, and cut transport emissions by 82% compared to a manned solution.

**Manned site and VPS monitored site tCO2e comparison**

Case study results based on 192 day operational use




* Operational energy consumption is made up of electricity consumption from the electrical devices in the back office and data centres which stores data sent to it from the Sentry tower when an alarm is triggered.

** For the transport whilst we try to use fully electric vehicles for guards that are called to the construction site by Alarm Receiving Operatives as part of the VPS Monitored Solution for this carbon avoidance scenario, it has been assumed that the vehicles used for transportation are a Nissan Micra that has a 1.2 litre engine. This is the same model as the manned scenario and this is our method of creating comparable scenarios.

Table below demonstrating the breakdown in emissions for the case study based on 192-day operational use for both scenarios:

| Life cycle phase | Description | $tCO_2e$ |
|---|---|---|
| Operational emissions of manned site | Electrical consumption and emissions associated with appliances that guards use as part of their shift | 6.66 |
| Transport of manned guard | Transport of guards to the site per a year | 0.44 |
| | TOTAL $tCO_2e$ | 7.10 |

## VPS's carbon efficient solution:

| | VPS Solution Scenario | |
|---|---|---|
| Life cycle phase | Description | $tCO_2e$ |
| Operational emissions of installed electrical hardware | Electrical consumption and emissions associated with appliances that guards use as part of their shift | 0.24 |
| Transport emissions for call out | Transport of guards to the site per a typical contract*** | 0.08 |
| Office emissions of office call centre | Electrical consumption of the Alarm Receiving Operatives who sit in the 'back room' | 0.00014 |
| Emissions of data centre | Electricity consumption of the data centres | 0.0017 |
| | TOTAL $tCO_2e$ | 0.32 |

*** Based on 41 call outs, the number of call outs for the 192 day case study

Key emissions reductions in using VPS monitored technology station:

**96%** reduction in construction site energy related emissions

**82%** reduction in transport emissions as a result of the guard travelling to the construction site

# scenario overview

VPS solutions is collaborating with a Welsh local authority to provide security related services for a train depot that is providing public transport to Cardiff Bay, Treherbert, Aberdare, and Merthyr Tydfil areas. The construction site has an area of 39,198m² and an 652m perimeter.

The carbon handprint considers two guarding scenarios for this construction site, both scenarios are based on 2023 commercial data and carbon factors. The first Managed Site scenario considers an on-site security team where security guards go to the construction site each day. The second VPS Monitored Site scenario is where the site is monitored by an AI alarm-based system that is linked to cameras, a back office which responds to the alarms/tickets, and data centres are used to securely store the information from the cloud-based server when the video data is sent.

More detailed descriptions of the two scenarios:

### 1. MANAGED SITE

This construction site is patrolled by three guards. They travel 5 miles to construction site each day from Caerphilly in a single Nissan Micra that has a 1.2 litre engine. The length of the security contract is 192 days, where three guards perform security services for twelve hours per a day (252 hours per a week). It is assumed that all guards travel back to Caerphilly after they finish work for the day.

### 2. VPS MONITORED SITE

This construction site is not patrolled by guards and instead is monitored by five CCTV (Sentry) towers. These towers are telecommunication masts that have cameras, lights, and alarms on them. The Sentry tower's high-definition camera data is collected by software and stored locally; when an alarm is triggered the Sentry tower sends a 10 second clip to the data centres. The software raises a ticket to the Alarm Receiving Operatives who analyse the 10 second clip. If an intruder is identified by the Alarm Receiving Operatives, they call a guard who travels 4.2 miles to the construction site and back to the security depot in a Nissan Micra that has a 1.2 litre engine. The length of the security contract is 192 days and the number of times a guard travels to the construction site and back to the security depot is 41 within the contracted period.

## MANAGED SITE SCENARIO CALCULATIONS

### 1. Operational Energy Emissions

The operational energy for the managed site is assumed to be the electricity consumption for the devices used by the guards when on shift and is detailed in the table below:

| | | Typical consumption per 12-hour shift (winter) | | Typical consumption per 12-hour shift (summer) | |
|---|---|---|---|---|---|
| Power consumption (watts) / equipment description | | Hours in use (winter) | Energy consumption in watts (winter) | Hours in use (summer) | Energy consumption in watts (summer) |
| 30 | Cabin light | 12 | 360 | 10 | 300 |
| 1,500 | Cabin heater | 12 | 18,000 | 6 | 9,000 |
| 250 | External security lights x 4 | 12 | 3,000 | 8 | 2,000 |
| 1.5 | Walkie talkie charger dock | 12 | 18 | 12 | 18 |
| 3 | Torch charger | 3 | 9 | 2 | 6 |
| 3,000 | Kettle | 0.5 | 1,500 | 0.5 | 1,500 |
| 800 | Microwave | 0.5 | 400 | 0.5 | 1,500 |
| 8.5 | Radio | 12 | 102 | 12 | 102 |
| 5 | Phone charger | 6 | 30 | 6 | 30 |

The total power consumption is 18.94 kWh. The formula below is used to calculate the emissions:

**Emissions ($tCO_2e$) = energy consumption per an electrical unit X use time X emissions factor[1]**

### 2. Transport Emissions

To calculate the emissions associated with the transportation of a guard to the construction site and back to the head office for each contracted day the below formula is used.

**Emissions ($tCO_2e$) = distance travelled (miles) X emissions factor[1]**

[1] Emission factors sourced from DEFRA 2023 (https://www.gov.uk/government/publications/ greenhouse-gas-reporting-conversion-factors-2023)

## VPS MONITORED SITE SCENARIO CALCULATIONS

VPS Monitored Site's operational energy consumption is broken down into different parts as below:

1. Five Sentry towers that use  power to monitor, and send data back to the data centre when the software identifies a person/intruder
2. Office location where the Alarm Receiving Operatives utilise a variety of electrical equipment to call the guard to the construction site
3. Data room and centre where servers securely store the data that is provided by the Sentry towers

### 1. Construction Site's Energy Consumption

The energy consumption for the construction site is 230.4 kWh. The emissions are calculated based on the electrical consumption of five Sentry towers.

**Energy consumption of five Sentry towers = electricity consumption X use time[1]**

**Emissions (tCO2e) = energy consumption of five Sentry towers (kWh) X emissions factor[1]**

### 2. Office Equipment's Energy Consumption

The energy consumption for the office used to support the Alarm Receiving Operatives is based on the electrical equipment's power consumption. It is calculated for a 24 hour and 192 day serviced contract. It has been assumed that calling a regional engineer would use comparable energy consumption as calling a guard to the construction site by an Alarm Receiving Operative. The below table represents the office equipment that the Alarm Receiving Operatives use.

| Electrical Asset Name | Quantity | Electricity usage (w/min) | Use time per call out | Unit | Total use time within contract | Unit |
|---|---|---|---|---|---|---|
| Telephone | 2 | 0.042 | 5 | Minutes | 205 | Minutes |
| Laptop | 2 | 0.83 | 5 | Minutes | 205 | Minutes |
| Screens | 2 | 1.4 | 5 | Minutes | 205 | Minutes |
| Mobile phone | 2 | 0.067 | 5 | Minutes | 205 | Minutes |

The total energy consumption for the office equipment is 16.00 kWh. The emissions were then calculated using the below formulas:

**Energy consumption = electricity consumption X time**

**Emissions (tCO2e) = energy consumption of all equipment X emissions factor[1]**

[1] Emission factors sourced from DEFRA 2023 (https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023)

### 3. Data Centre Energy Consumption

The total energy consumption for the data centres is 8.44 kWh per construction site for the 192 day services contract. To calculate the energy associated with the data centres, we have used the below energy consumption for the data centres:

| Description | Value | Units |
|---|---|---|
| **VPS owned and controlled data centre** | **2.3** | **kW/h** |
| **Chadderton** | **0.6** | **kW/h** |

The energy consumption is apportioned to energy used throughout the 192 day contract length and allocated to a single construction site.

**Emissions (tCO2e) = energy consumption of data centre x emission factor[1]**

### 4. Transport Emissions

To calculate the emissions associated with the transportation of a guard to the construction site and back to the security depot, the below formula was used.

**Emissions (tCO2e) = distance travelled x emissions factor[1]**

The assumptions are based on a guard traveling to the construction site in response to a ticket analysed by the Alarm Receiving Operatives.

[1] Emission factors sourced from DEFRA 2023 (https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023)

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