

# Dunfermline Solar Farm Wind Loading Report

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## **Geometry**

Structure Height (H): 4 m

Structure Length (L): 3.313 m

Structure Width (W): 4 m

Height above Ground (h): 5 m

## **Site Specific Factors**

Distance from Building to Shoreline (L\_distance\_shore): 30 m

Altitude above Sea Level (A\_altitude): 115 m

Basic Wind Velocity (V\_b\_map\_wind\_velocity): 24.5 m/s

Directional Factor (c\_dir\_factor): 1.0

Season Factor (c\_season\_factor): 1.0

Shape Parameter (K\_shape\_parameter): 0.2

Exponent (n\_exponent): 0.5

Air Density (p\_air\_density): 1.25 kg/m<sup>3</sup>

Probability of Annual Exceedance (p\_probability\_of\_annual\_exceedance): 0.02

Altitude Factor (c\_alt\_factor): 1.115

## **Velocity and Pressure Profile**

Fundamental Wind Velocity ( $V_b_0$ ): 27.32 m/s

Probability Factor ( $c_{prob\_factor}$ ): 1.00

Basic Wind Velocity ( $V_b$ ): 27.32 m/s

Reference Mean Velocity Pressure ( $q_b$ ): 466.40 N/m<sup>2</sup>

Peak Velocity Pressure ( $q_p$ ): 699.61 N/m<sup>2</sup>

Total Wind Force per unit area ( $F_{total}$ ): 699.61 N/m<sup>2</sup>

## **Static Loading**

Total Shear Force on the Structure: 7594.50 N

Total Bending Moment on the Structure: 18986.25 Nm

Total Uplift on the Structure: 5317.73 N