Site Address

Site Address
Postcode

BS6375-1 Site Location Assessment

Wind load already established and specified to BS6375-1?		Pa
Base Wind Speed Vb		m/s
Building Height (m)		◯ 0 to 3 ◯ 3 to 6 ◯ 6 to 10 ◯ 10 to 15 ◯ 15 +
Distance to Sea (km)		◯ 0 to 1km ◯ 1 to 10km ◯ 10km+
Exposure of site		◯ Sheltered ◯ Exposed
Gradients		◯ Flat <1:20 ◯ Shallow <1:10 ◯ Moderate <1:5 ◯ Steep >1:5
Topographic Zone		◯ N/A Flat ◯ Zone 1 Top of hill ◯ Zone 2 Halfway ◯ Zone 3 Downwind ridge
Altitude		metres
Wind Load at Sea Level	$P_S =$	Pa
Topography Factor	$F_T =$	
Altitude Factor	$F_A =$	
Design Wind Load	$P = P_S \times F_T \times F_A =$	Pa

Annex A (normative) Calculating wind load and selecting exposure category

A.1 General

Either the method specified in **A.2** or the method specified in BS EN 1991-1-4:2005 shall be used for determining the design wind loading for low-rise buildings.

*NOTE 1 The method specified in **A.2** is abbreviated; the one specified in BS EN 1991-1-4:2005 is more detailed and less conservative.*

NOTE 2 The designer or specifier should take into account any other forms of loading to which the window or doorset might be subjected.

The exposure category shall be selected in accordance with **A.3**.

A.2 Abbreviated method of determination of wind load for low-rise buildings

A.2.1 Procedure

To find the wind load the procedure below shall be followed.

a) Using the site location, select the basic wind speed $V_{b,map}$ from Figure A.1. (This is used as the site wind speed in Table A.2.)

b) Select the site terrain category (A, B, C, D, E or F) in accordance with **A.2.2**.

c) Determine the design height (h), which is the height of the wall in which the windows or doorsets are to be installed or the ridge height for dormer windows, and select the design height band to be used [see Note a)].

d) Using the basic wind speed $V_{b,map}$, the site terrain category and the design height (h), select the wind load at sea level in accordance with **A.2.3**.

e) Determine the altitude factor (F_A) in accordance with **A.2.4**.

f) Determine the appropriate A1 orography factor (F_O) A1 in accordance with **A.2.5**.

g) Determine the dormer factor (F_D) (see **A.2.6**).

h) Determine the funnelling factor (F_F) (see **A.2.7**).

i) The wind load is given by Equation A.1:

$$\text{A1 Table A.2 value} \times F_A \times F_O \times F_D \times F_F \text{ A1} \quad \text{(A.1)}$$

where:

F_A is the altitude factor;

A1 F_O is the orography factor; A1

F_D is the dormer factor;

F_F is the funnelling factor.

NOTE Although the wind load determined might not be identical to a loading derived from BS EN 1991-1-4, it is sufficiently accurate to be used for most low-rise buildings. The limitations in this abbreviated method are:

a) the overall design height (h) is limited to a maximum of 15 m;

b) the method assumes a net pressure coefficient ($C_{P,net}$) of 1.1, which takes into account the worst case that normally occurs. Higher coefficients might be experienced at points adjacent to the corners of the building.

An alternative is to use an appropriate figure provided by the building designer. If a design wind loading figure is not available from the designer, an appropriate figure can be determined by the method described in BS EN 1991-1-4:2005. If the complexities are beyond the scope of that standard, further advice should be sought.

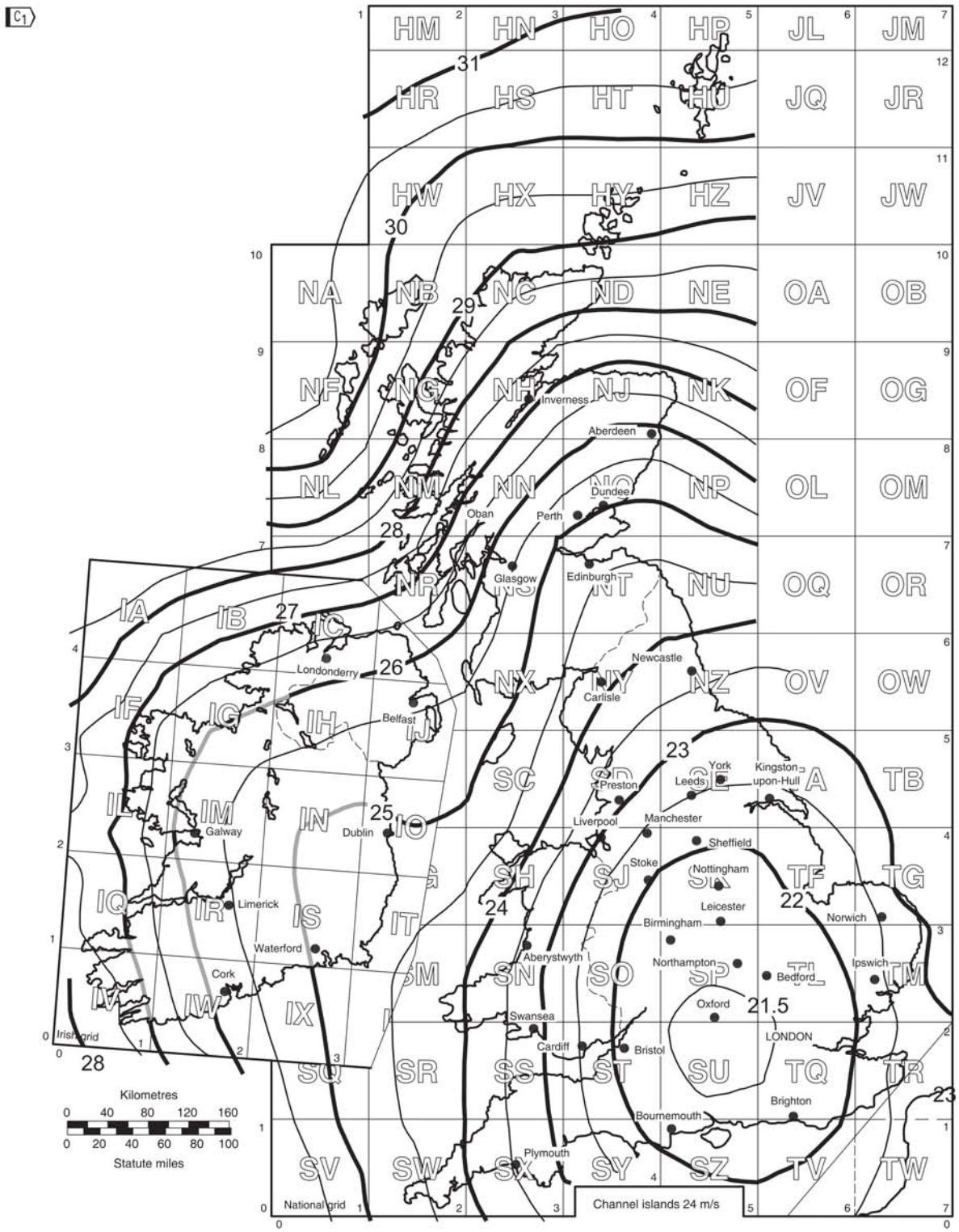
A.2.2 Site terrain categories

Site terrain categories shall be selected from Table A.1.

Table A.1 **Site terrain categories**

	Open country and up to 0.5 km into town	More than 0.5 km in to town
Distance from coast up to 1.0 km	A	D
Distance from coast 1 to 10 km	B	E
Distance from coast more than 10 km	C	F

Figure A.1 **Basic wind speed $V_{b,map}$**



NOTE 1 Taken from NA to BS EN 1991-1-4:2005+A1:2010, Figure NA.1.

NOTE 2 This map is intended for sites in the United Kingdom, Isle of Man and Channel Islands only.

NOTE 3 The isopleths in the Republic of Ireland are shown for purposes of interpolation only. C1

A.2.3 Wind load at sea level (0 m altitude)

Wind load at sea level shall be determined using Table A.2.

NOTE Annex C explains how the wind loads in Table A.2 were derived.

Table A.2 **Wind load at sea level**

Basic wind speed ($V_{b,map}$) at sea level	**Design height (h)**	**Wind load at sea level for site terrain category (see Table A.1)**					
		A	**B**	**C**	**D**	**E**	**F**
m/s	m	Pa	Pa	Pa	Pa	Pa	Pa
21	≤3	642	568	514	477	460	417
	3–6	752	705	639	666	641	582
	6–10	839	815	740	822	798	726
	10–15	907	904	824	907	904	824
22	≤3	705	623	565	523	505	457
	3–6	826	773	702	731	704	639
	6–10	920	894	813	902	876	796
	10–15	995	992	904	995	992	904
23	≤3	770	681	617	572	552	500
	3–6	902	845	767	799	769	698
	6–10	1 006	977	888	986	958	870
	10–15	1 088	1 084	988	1 088	1 084	988
24	≤3	839	742	672	623	601	544
	3–6	983	921	835	869	838	760
	6–10	1 095	1 064	967	1 073	1 043	948
	10–15	1 185	1 181	1 076	1 185	1 181	1 076
25	≤3	910	805	729	676	652	591
	3–6	1 066	999	906	943	909	825
	6–10	1 188	1 155	1 049	1 165	1 132	1 028
	10–15	1 285	1 281	1 167	1 285	1 281	1 167
26	≤3	985	871	789	731	705	639
	3–6	1 153	1 080	980	1 020	983	892
	6–10	1 285	1 249	1 135	1 260	1 224	1 112
	10–15	1 390	1 386	1 263	1 390	1 386	1 263
27	≤3	1 062	939	850	788	760	689
	3–6	1 244	1 165	1 057	1 100	1 060	962
	6–10	1 386	1 347	1 224	1 358	1 320	1 200
	10–15	1 499	1 494	1 362	1 499	1 494	1 362
28	≤3	1 142	1 010	915	848	818	741
	3–6	1 337	1 253	1 137	1 183	1 140	1 034
	6–10	1 491	1 449	1 316	1 461	1 420	1 290
	10–15	1 612	1 607	1 464	1 612	1 607	1 464
29	≤3	1 225	1 083	981	909	877	795
	3–6	1 435	1 344	1 219	1 269	1 223	1 110
	6–10	1 599	1 554	1 412	1 567	1 523	1 384
	10–15	1 730	1 724	1 571	1 730	1 724	1 571

Table A.2 **Wind load at sea level**

Basic wind speed ($V_{b,map}$) at sea level	Design height (h)	Wind load at sea level for site terrain category (see Table A.1)					
		A	B	C	D	E	F
m/s	m	Pa	Pa	Pa	Pa	Pa	Pa
30	≤3	1 311	1 159	1 050	973	939	850
	3–6	1 535	1 438	1 305	1 359	1 309	1 187
	6–10	1 711	1 663	1 511	1 677	1 630	1 481
	10–15	1 851	1 845	1 681	1 851	1 845	1 681
31	≤3	1 400	1 238	1 121	1 039	1 003	908
	3–6	1 639	1 536	1 393	1 451	1 398	1 268
	6–10	1 827	1 776	1 614	1 791	1 740	1 581
	10–15	1 976	1 970	1 795	1 976	1 970	1 795

NOTE 1 The values are rounded.

NOTE 2 Pa = N/m².

A.2.4 Altitude factor

Altitude factor (F_A) shall be selected from Table A.3 or determined from Equation A.2.

Table A.3 **Table for factor F_A for specific altitudes**

Altitude	Factor F_A	Altitude	Factor F_A
m		m	
0	1.00	225	1.56
25	1.05	250	1.56
50	1.10	275	1.63
75	1.16	300	1.69
100	1.21	325	1.76
125	1.27	350	1.82
150	1.32	375	1.89
175	1.38	400	1.96
200	1.44	425	2.03

$$F_A = \left(1 + \frac{H_A}{1000}\right)^2 \quad \text{(A.2)}$$

where:

H_A is the altitude of the site, in metres (m).

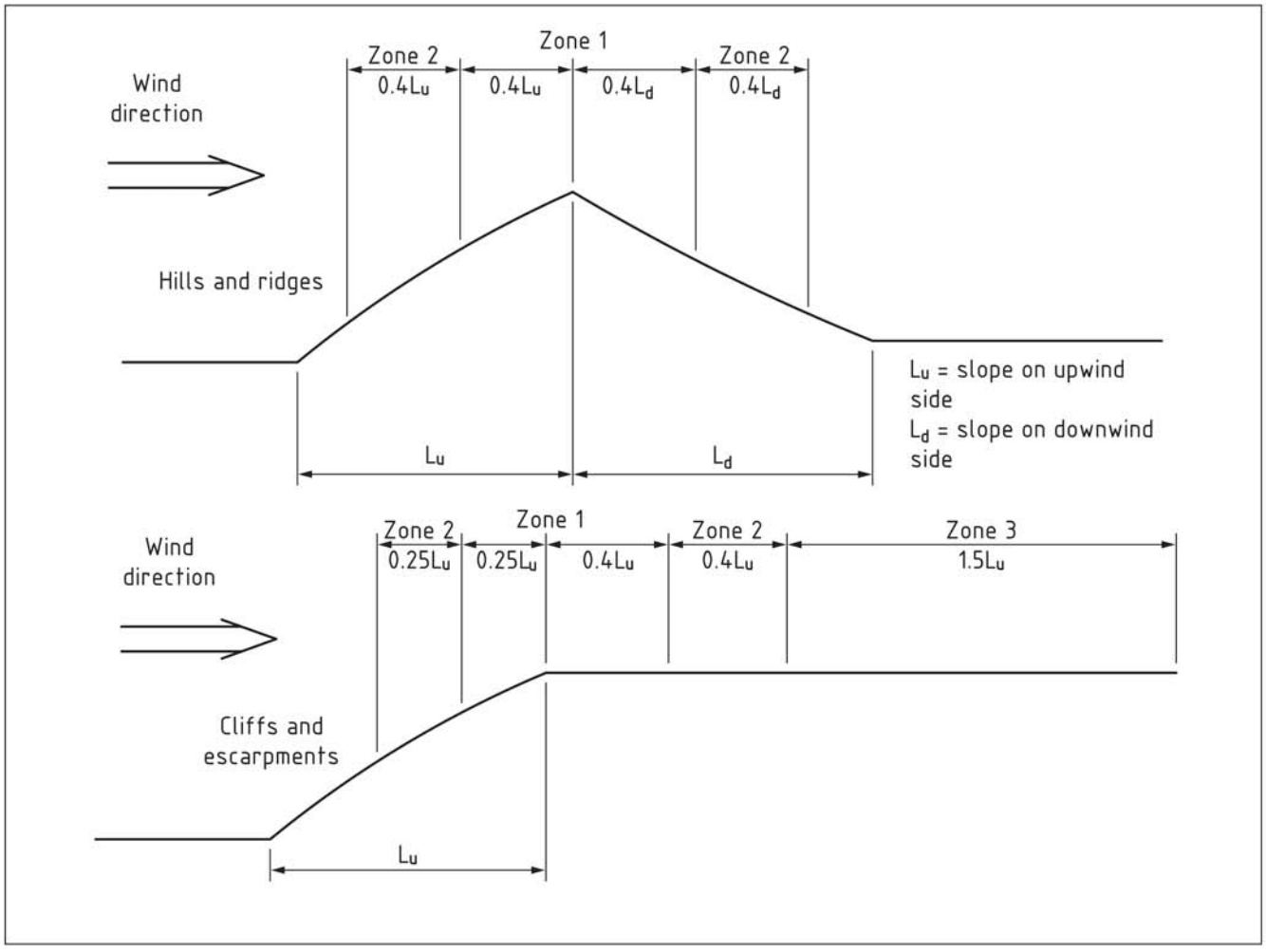
A.2.5 Orography factor

An orography factor (F_O) shall be used where hills, ridges, cliffs and escarpments might have an adverse effect on the wind load on a building. The appropriate orography factor shall be obtained using Table A.4.

Table A.4 **Orography factor**

Orographic category and description	Factor F_O according to zone from Figure A.2		
	Zone 1	Zone 2	Zone 3
Category 1: Nominally flat terrain, average slope < 1/20	1.0	1.0	1.0
Category 2: Shallow terrain, average slope < 1/10	1.25	1.14	1.10
Category 3: Moderately steep terrain, average slope ≤ 1/5	1.54	1.28	1.21
Category 4: Steep terrain, average slope > 1/5	1.85	1.44	1.32

Figure A.2 **Orographic zones**



A.2.6 Dormer factor

To allow for the fact that any form of vertical roof glazing, such as dormer windows, might be subject to higher loads than those on a vertical face, the wind load shall be multiplied by a dormer factor of 1.6 for windows in these locations. For all other situations a dormer factor of 1.0 shall be used.

A.2.7 Funnelling factor

Where the two buildings under consideration are sheltered by upwind buildings that are of similar height (or higher) and spaced at not more than three building heights away then funnelling may be disregarded. Otherwise, where the walls of two buildings face each other and the gap between them is less than either the building width or twice the building height, then the design wind load for doorsets and windows in the facing walls shall be multiplied by a funnelling factor of 1.35.

NOTE NA to BS EN 1991-1-4:2005, NA.2.27 gives more information on funnelling.

A.3 Selection of the exposure category

Using the wind load determined from BS EN 1991-1-4:2005 or by Equation A.1, round up to the nearest P1 value as detailed in Table 1 and select the appropriate exposure category. Where more than one exposure category is available at a given P1 value, the water tightness and air permeability requirements shall be used to select the exposure category.

Table 1 **Exposure categories and classifications**

UK exposure categories[A) B)]	Air permeability (see Clause 6)		[C1] Watertightness [C1] (see Clause 7)		Resistance to wind load (see Clause 8)			
	Class [C)]	Maximum test pressure	Class	Maximum test pressure	Class [D)]	P1	P2 [E)]	P3
Doorsets								
800 U	Class 0	No test	Class 0	No test	Class A2	800 Pa	400 Pa	1 200 Pa
800 X	Class 1	150 Pa	Class 2A	50 Pa	Class A2	800 Pa	400 Pa	1 200 Pa
800	Class 2	300 Pa	Class 3A	100 Pa	Class A2	800 Pa	400 Pa	1 200 Pa
1 200	Class 2	300 Pa	Class 3A	100 Pa	Class A3	1 200 Pa	600 Pa	1 800 Pa
Windows								
800	Class 2	300 Pa	Class 3A	100 Pa	Class A2	800 Pa	400 Pa	1 200 Pa
1 200	Class 2	300 Pa	Class 3A	100 Pa	Class A3	1 200 Pa	600 Pa	1 800 Pa
1 600	Class 2	300 Pa	Class 5A	200 Pa	Class A4	1 600 Pa	800 Pa	2 400 Pa
2 000	Class 2	300 Pa	Class 5A	200 Pa	Class A5	2 000 Pa	1 000 Pa	3 000 Pa
2 000 +	Class 2	300 Pa	Class 7A	300 Pa	Class AE	(xxxx)	(xxxx) × 0.5	(xxxx) × 1.5

For the purpose of selecting the appropriate exposure category the following procedure should be used.
a) Calculate the wind load for the given location (see Annex A).
b) Select the exposure category (see Table 1) equal to or exceeding the determined wind load.

NOTE Specimens tested with wind load above Class 5 are classified Class E xxxx – where xxxx is the actual test pressure P1 (e.g. when P1 = 2 350 Pa this is classified as Class E 2 350, etc.).

A) UK exposure category is specified by the design wind load, calculated in accordance with Annex A.

B) Products designed to meet the accessibility requirements of UK building regulations are unlikely to exceed category 800 X.

C) Air permeability test pressures above Class 2 (up to 600 Pa) are available when stringent levels of performance are required, for example when exceptionally airtight windows or doorsets are necessary, as in air-conditioned buildings.

D) Combination of test pressure and frame deflection (see BS EN 12210).

E) This pressure having been repeated 50 times.

