NA+A2:2022 to BS EN 1997-1:2004+A1:2013

Incorporating Corrigendum No. 1



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UK National Annex to Eurocode 7: Geotechnical design – Part 1: General rules

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Published by BSI Standards Limited 2022

ISBN 978 0 539 19135 6

ICS 91.010.30, 93.020

The following BSI references relate to the work on this document:
Committee reference B/526
Drafts for comment 14/30272166 DC, 21/30443163 DC

Publication history
First published in November 2007

Amendments/corrigenda issued since publication

Amd. no.	Date	Text affected
Corrigendum 1	31 December 2007	Reference in Table NA.1 8.6(4) changed to **A.8.6**, last word of **A.3.3.2** changed to "resistance" and Note A in Table A.NA.7 made same as Tables A.NA.6 and A.NA.8.
Amendment 1	31 July 2014	Implementation of national amendment A1:2014: Clause NA.1, Table NA.1 and Annex A amended.
Amendment 2	28 February 2022	Implementation of national amendment A2:2022: Table NA.1, Table A.NA.20, Table A.NA.21, **NA.4** and **A.6** amended.

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National Annex (informative) to BS EN 1997-1:2004+A1:2013, Eurocode 7: Geotechnical design – Part 1: General rules

Introduction

This National Annex is published by BSI Standards Limited, under licence from the British Standards Institution. This National Annex has been prepared by BSI Technical Committee, B/526, Geotechnics. In the UK it is to be used in conjunction with BS EN 1997-1:2004+A1:2013 and BS EN 1990:2002+A1:2005.

The start and finish of text introduced or altered by National Amendment No. 2 is indicated in the text by tags [A2] 〈A2〉. Minor editorial changes are not tagged.

NA.1 Scope

This National Annex gives:

a) the UK decisions for the Nationally Determined Parameters (see **NA.2**) described in the following subclauses in the body of BS EN 1997-1:2004+A1:2013:

2.1(8)P	**2.4.7.4**(3)P	**7.6.2.4**(4)P	**8.5.1**(2)P	**8.6.2**(2)P
2.4.6.1(4)P	**2.4.7.5**(2)P	**7.6.3.2**(2)P	**8.5.2**(1)P	**8.6.2**(3)P
2.4.6.2(2)P	**2.4.8**(2)	**7.6.3.2**(5)P	**8.5.2**(2)P	**11.5.1**(1)P
2.4.7.1(2)P	**2.4.9**(1)P	**7.6.3.3**(3)P	**8.5.2**(3)P	
2.4.7.1(3)	**2.5**(1)	**7.6.3.3**(4)P	**8.5.2**(5)P	
2.4.7.2(2)P	**7.6.2.2**(8)P	**7.6.3.3**(6)	**8.5.3**(1)P	
2.4.7.3.2(3)P	**7.6.2.2**(14)P	**8.4**(6)P	**8.5.3**(2)P	
2.4.7.3.3(2)P	**7.6.2.3**(4)P	**8.4**(7)P	**8.5.3**(3)P	
2.4.7.3.4.1(1)P	**7.6.2.3**(5)P	**8.5.1**(1)P	**8.5.3**(4)P	

and the following subclauses in Annex A of BS EN 1997-1:2004+A1:2013:

- **A.2.1, A.2.2**
- **A.3.1, A.3.2, A.3.3.1, A.3.3.2, A.3.3.3, A.3.3.5, A.3.3.6**
- **A.4.1, A.4.2**
- **A.5**
- **A.6**;

b) the procedure to be used where alternative procedures are given in BS EN 1997-1:2004+A1:2013 (see **NA.2** first paragraph);

c) the UK decisions on the status of BS EN 1997-1:2004+A1:2013 informative annexes (see **NA.3**); and

d) references to non-contradictory complementary information (see **NA.4**).

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NA.2 Nationally Determined Parameters

National choice is permitted in the use of a Design Approach for the STR and GEO limit states (see BS EN 1997-1:2004+A1:2013, **2.4.7.3.4.1**(1)P). As indicated in Table NA.1, only Design Approach 1 is to be used with this National Annex.

Annex A of BS EN 1997-1:2004+A1:2013 lists the partial and correlation factors for ultimate limit states; the values of these factors are nationally determined parameters. Table NA.1 of this National Annex lists the clauses in BS EN 1997-1:2004+A1:2013 where national choice may be exercised in respect of factor values for design in the United Kingdom. Where choice applies, Table NA.1 indicates where values are given, or states a value to be used, or describes the procedure for specifying the factor. The values given in the Tables in Annex A of this National Annex replace the recommended values in Annex A of BS EN 1997-1:2004+A1:2013.

Where reference is made in BS EN 1997-1:2004+A1:2013 to the use of Annex A as a guide to the required levels of safety, this reference should be taken to mean Annex A of this National Annex.

BS EN 1997-1:2004+A1:2013 contains several references to "model factors" without making recommendations for the values to be used. Table NA.1 of this National Annex also lists these references. In some cases, values of the model factors are given in **A.7** of Annex A of this National Annex. Where no values are given, the values should be agreed, where appropriate, with the client and the relevant authorities. Subclauses **2.4.1**(8) and **2.4.1**(9) in BS EN 1997-1:2004+A1:2013 give guidance on how the values of such model factors should be selected. Model factors for pile design are given in **A.3.3.2** of Annex A of this National Annex.

Table NA.1 **Provisions of this National Annex related to Clauses in BS EN 1997-1:2004+A1:2013 where "national choice" is to be exercised**

Subclause	Feature	Provisions of this National Annex
2.1(8)P	Minimum requirements for light and simple structures and small earthworks.	Minimum requirements are not given in this National Annex and should be agreed where appropriate with the client and other relevant authorities.
2.4.6.1(4)P	The value of partial factor γ_F for persistent and transient situations.	Use the values given in **A.2.1** (EQU); **A.3.1** (STR/GEO); **A.4.1** (UPL) and **A.5** (HYD) in Annex A of this National Annex.
2.4.6.1(5)	Directly assessed design values for actions.	Where design values of actions are assessed directly the values of the partial factors for actions given in Annex A of this National Annex should be used as a guide to the required level of safety.
2.4.6.2(2)P	The value of partial factor γ_M for persistent and transient situations.	Use the values given in **A.2.2** (EQU); **A.3.2** (STR/GEO) and **A.4.2** (UPL) in Annex A of this National Annex.
2.4.6.2(3)	Directly assessed design values for geotechnical parameters.	Where design values of soil parameters are assessed directly, the values of the partial factors for soil parameters given in Annex A of this National Annex should be used as a guide to the required level of safety.
2.4.7.1(2)P	The values of partial factors to be used in persistent and transient situations.	Use the values given in the appropriate tables in Annex A of this National Annex.

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Table NA.1 **Provisions of this National Annex related to Clauses in BS EN 1997-1:2004+A1:2013 where "national choice" is to be exercised** *(continued)*

Subclause	Feature	Provisions of this National Annex
2.4.7.1(3)	The value of partial factors for actions to be used in accidental situations.	Take as equal to 1.0.
2.4.7.1(3)	The values of partial factors for ground material strengths and resistances to be used in accidental situations.	Use the square root of values given for persistent and transient design situations in Annex A of this National Annex.
2.4.7.1(3)	The values of partial factors for structural material strengths and resistances to be used in accidental situations.	Use the values given in EN 1992 to EN 1996 and EN 1999.
2.4.7.1(4)	The values of partial factors to be used in cases of abnormal risk or unusual or exceptionally difficult ground or loading conditions.	Values are not provided in this National Annex and should be agreed with the client and relevant authorities, where appropriate, for the specific situation.
2.4.7.1(5)	Reduced values of partial factors to be used for special situations for temporary structures or transient design situations, where the likely consequences justify it.	Values are not provided in this National Annex and should be agreed with the client and relevant authorities, for the specific situation.
2.4.7.1(6)	Values for model factors for resistance and the effects of actions.	See **A.7.1** to **A.7.6** of Annex A of this National Annex.
2.4.7.2(2)P	The values of partial factors to be used in persistent and transient situations for the EQU limit state.	Use the values given in **A.2** in Annex A of this National Annex.
2.4.7.3.2(3)P	The values of partial factors to be used in equations (2.6a) and (2.6b) of BS EN 1997-1:2004+A1:2013 for determining the design effects for STR and GEO limit states.	Use the values given in **A.3** in Annex A of this National Annex.
2.4.7.3.3(2)P	The values of partial factors to be used in equations (2.7a), (2.7b) and (2.7c) of BS EN 1997-1:2004+A1:2013 for determining the design resistances in the STR and GEO limit states.	Use the values given in **A.3.3.1**, **A.3.3.2**, **A.3.3.4**, **A.3.3.5**, **A.3.3.6** and **A.6** in Annex A of this National Annex.
2.4.7.3.4.1(1)P	The particular Design Approach to be used for the STR and GEO limit states.	Use Design Approach 1 only.
2.4.7.4(3)P	The values of partial factors for persistent and transient situations for the UPL limit state.	Use the values given in **A.4** in Annex A of this National Annex.
2.4.7.5(2)P	The values of partial factors for persistent and transient situations for the HYD limit state.	Use the values given in **A.5** in Annex A of this National Annex.
2.4.8(2)	The values of partial factors for serviceability limit states.	Take as equal to 1.0.
2.4.9(1)P	The amounts of permitted foundation movement.	Values are not provided in this National Annex. Advice is given on foundation movements for buildings in Annex H of BS EN 1997-1:2004+A1:2013.

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Table NA.1 **Provisions of this National Annex related to Clauses in BS EN 1997-1:2004+A1:2013 where "national choice" is to be exercised** *(continued)*

Subclause	Feature	Provisions of this National Annex
2.5(1)	Conventional and generally conservative rules.	The use of prescriptive measures for design should be agreed, where appropriate, with the client and the relevant authorities. (see 2.1(8) above).
7.6.2.2(8)P	The values of correlation factors ξ_1 and ξ_2.	Use the values given in **A.3.3.3** of Annex A of this National Annex.
7.6.2.2(14)P	The values of factors γ_b, γ_s and γ_t.	Use the values given in **A.3.3.2** of Annex A of this National Annex, depending on the type of pile.
7.6.2.3(4)P	The values of factors γ_b and γ_s.	Use the values given in **A.3.3.2** of Annex A of this National Annex, depending on the type of pile.
7.6.2.3(5)P	The values of correlation factors ξ_3 and ξ_4.	Use the values given in **A.3.3.3** of Annex A of this National Annex.
7.6.2.3(8)	The value of a corrective model factor for γ_b and γ_s.	Use the values given in **A.3.3.2** in Annex A of this National Annex.
7.6.2.4(4)P	The values of factors γ_t, ξ_5 and ξ_6.	For γ_t, use the values given in **A.3.3.2** of Annex A of this National Annex, depending on type of pile. For ξ_5 and ξ_6, use the values given in **A.3.3.3** of Annex A of this National Annex.
7.6.3.2(2)P	The value of factor $\gamma_{s;t}$.	For $\gamma_{s;t}$, use the values given in **A.3.3.2** of Annex A of this National Annex, depending on type of pile.
7.6.3.2(5)P	The values of correlation factors ξ_1 and ξ_2.	Use the values given in **A.3.3.3** of Annex A of this National Annex.
7.6.3.3(3)P	The value of factor $\gamma_{s;t}$.	For $\gamma_{s;t}$, use the values given in **A.3.3.2** of Annex A of this National Annex, depending on the type of pile.
7.6.3.3(4)P	The values of correlation factors ξ_3 and ξ_4.	Use the values given in **A.3.3.3** of Annex A of this National Annex.
7.6.3.3(6)	The value of a corrective model factor for $\gamma_{s;t}$.	Use the values given in **A.3.3.2** in Annex A of this National Annex.
8.4(6)	The method of determining the necessary free length.	The necessary free length may be determined by [A2] text deleted [A2] numerical analysis or other methods that examine the overall stability and displacement of the supported structure and surrounding ground.
8.4(7)	The criteria for the necessity to check the group effects.	Group effects should be checked when the centre to centre spacing between the fixed lengths of the anchors is less than 1.5 m or 4 diameters, whichever is greater, following the test procedures of Test Method [A2] 1 [A2] of [A2] BS EN ISO 22477-5:2018 [A2] [A2] text deleted [A2].

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