

Eurocodes evolution: latest developments and UK approach

In an important update, **Steve Denton, David Nethercot, Andrew Bond and Mariapia Angelino** explain the timeframe for publication of the suite of second-generation Eurocodes, and provide clarity over the period in which first- and second-generation codes will co-exist.

Introduction

The first article in this series of updates on the second-generation Eurocodes explained the objectives of the Eurocodes evolution programme and its status, with a particular focus on activities at a European level¹. This second article sets out the latest developments, with a focus on national implementation in UK.

Specifically, this article describes the agreed common European framework for publication of the second-generation Eurocodes and outlines the UK's plans for publication within this framework, including development and publication of the UK National Annexes.

European framework for publication and transition

Overall responsibility for the Eurocodes resides with CEN Technical Committee 250 (CEN/TC 250). CEN, the European Committee for Standardization, has 34 full National Standardisation Body (NSB) members, including the British Standards Institution (BSI). CEN members are bound by CEN rules and all CEN standards, hereinafter indicated as ENs (European Standards), are developed in accordance with CEN's Internal Regulations².

After a new standard has been approved by successfully passing its Formal Vote, the CEN Internal Regulations Part 2 define the following three key dates:

- | **Date of availability (DAV)** – the date when the definitive text of an approved EN is distributed to NSBs by CEN
- | **Date of publication (DoP)** – the latest date by which an EN has to

be implemented at national level by publication of an identical national standard or by endorsement

- | **Date of withdrawal (DoW)** – the latest date by which national standards conflicting with a new EN have to be withdrawn.

In the case of the second-generation Eurocodes, the meaning of the DoW merits particular explanation. While a DoW is assigned to each second-generation Eurocode, the 'national standard conflicting with a new EN' in this case is the corresponding first-generation Eurocode. Thus, the DoW for a second-generation Eurocode is actually the latest date by which the corresponding first-generation Eurocode must be withdrawn by all NSBs.

With the Eurocodes operating as an interdependent suite of standards, CEN/TC 250 recognised the need for a coordinated framework for the treatment of the DoP and DoW across all second-generation Eurocodes. Discussions at CEN/TC 250 also indicated that different countries are likely to take different approaches to the transition and implementation of the second-generation suite, driven by national regulations and industry preference.

- | ensuring a fully compatible suite of standards is available at all times for use by industry, by setting an appropriate DoP and DoW
- | making new and revised Eurocode

parts available to NSBs (DAV) as early as possible

- | ensuring that sufficient time is available between DAV and DoP/DoW for the development of National Annexes
- | ensuring that sufficient time is available between DAV and DoP/DoW to allow for the withdrawal of any conflicting national standards and to update supporting industry guidance material.

Typically, for CEN standards, the DoP and DoW are set automatically based on an elapse time post-DAV. However, because the approvals of the second-generation Eurocode parts will occur over a period of around four years, it was clear that this usual elapse time-based approach could not satisfy CEN/TC 250's agreed principles. Specifically, it would mean that some first-generation Eurocodes would need to be withdrawn before all second-generation Eurocodes had been published, meaning that a fully compatible suite of standards would not be available at all times for use by industry.

A different approach was required that: provided European consistency of DAV, DoP and DoW; satisfied CEN/TC 250's agreed principles; and provided the flexibility required to accommodate necessary differences in national implementation approaches.

To this end, CEN's Technical Board agreed a special derogation for the second-generation Eurocodes allowing a single common DoP and DoW to be set for all second-generation Eurocode parts. This is similar in effect to the March 2010 DoW date that was used

for all first-generation Eurocodes.

The fact that the DoP and DoW define latest dates is important. Setting a common and consistent DoP and DoW across all second-generation Eurocodes does not inhibit NSBs from implementing them earlier. It provides each NSB with the flexibility to adopt their chosen national strategy (such as a 'big bang' approach; 'package-based' transition; or selective early implementation of particular Eurocode parts) within the overall timeframe established by the DoP and DoW backstop dates.

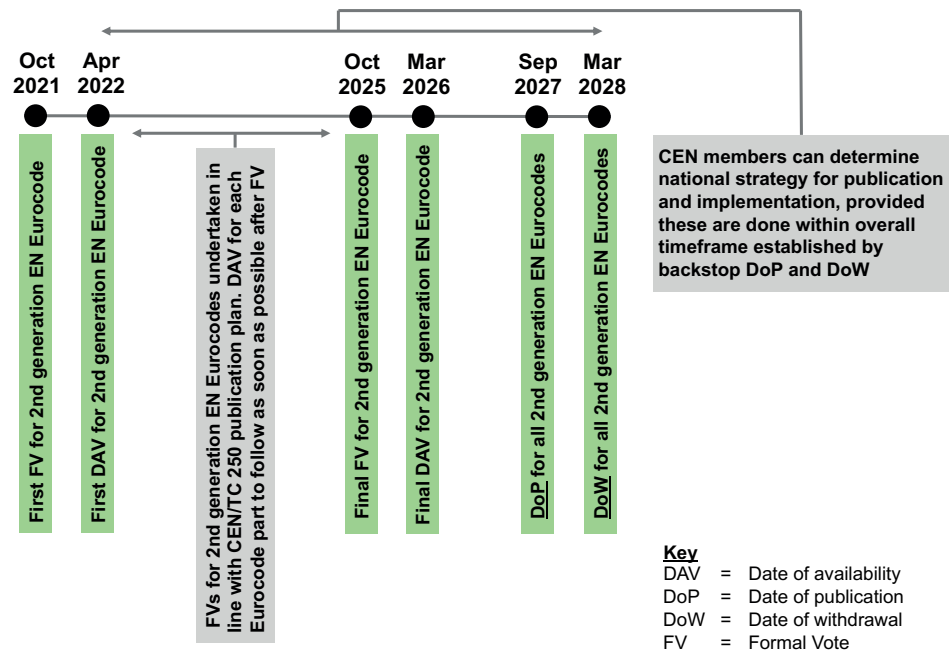
Throughout the evolution of the second-generation Eurocodes, CEN/TC 250 has defined targets and is monitoring progress against a comprehensive publication plan and tracking all stages of the development process for each Eurocode part (see Denton and Angelino¹). As a result, in 2020, CEN/TC 250 was able to set the target date of October 2025 to approve, via Formal Votes, the last second-generation EN parts developed under EC Mandate M/515.

Over the past four years, CEN/TC 250 has held firm to its overall programme. The first second-generation Eurocode part (EN 1996-1-1³) was approved via Formal Vote in October 2021 and made available to NSBs in April 2022. CEN/TC 250 remains on track to achieve its October 2025 final Formal Vote deadline.

A final Formal Vote date of October 2025 corresponds to a final DAV of March 2026. CEN/TC 250 agreed that a suitable minimum time between DAV and DoP is 18 months and the time required between DoP and DoW is six months. On this basis, the end of September 2027 and the end of March 2028 were agreed as the 'backstop' DoP and DoW dates to be used for all second-generation Eurocodes. For all Eurocode parts that gain approval by Formal Vote before October 2025, the time between DAV and DoP will be longer than 18 months.

As summarised in **Figure 1**, the following overall publication framework across Europe was agreed and approved by CEN's Technical Board:

- The definitive text of second-generation Eurocode parts in the official language versions will be distributed by CEN to NSBs as soon as possible after Formal Vote and no later than 30 March 2026 (DAV).
- All second-generation EN Eurocodes will have a DoP of



30 September 2027.
 → All second-generation EN Eurocodes will have a DoW of 30 March 2028.

Publication and status in UK

In the UK, responsibility for the Eurocodes resides with BSI committees B/525, covering buildings and civil engineering structures, and B/526, covering geotechnical design. To assist with the transition to the second-generation Eurocodes and support and guide the strategic planning and delivery of UK Eurocodes projects, BSI has created the Eurocode Strategic Steering Group (ESSG) (B/525/-/6), which includes the Chairs of B/525 and B/526.

B/525 and B/526 have agreed the approach to the publication of the second-generation Eurocodes in UK. This approach fits within the agreed European framework for publication and reflects UK regulatory practice. The approach is set out in the UK National Foreword to each second-generation Eurocode part (see, for example, the National Foreword to BS EN 1996-1-1:2022³).

Typically, National Forewords contain background and procedural information that, while important, has limited direct impact on the day-to-day usage of a standard. This is not the case for the second-generation Eurocodes. **It is imperative that designers are familiar with and understand the UK National**

↑FIGURE 1:
 Overall publication framework for second-generation Eurocodes

Forewords to the second-generation Eurocodes.

The UK National Foreword explains that the second-generation EN Eurocodes are expected to be published in the UK between 2023 and 2026. It continues by explaining that the standards are being published by BSI as soon as possible after they are made available by CEN to enable users to prepare for the transition from the first-generation to the second-generation. Thus, the UK is choosing to bring forward the DoP significantly ahead of the European backstop date of 30 September 2027.

The DoW is also given in the National Foreword and this is set to the European backstop date. Specifically, the National Foreword to each second-generation Eurocode part will state that the corresponding first-generation Eurocode part will be withdrawn at the end of March 2028.

It was recognised that the period between publication of a second-generation Eurocode part and the withdrawal of the corresponding first-generation Eurocode would effectively create a period of coexistence, and therefore that there could be a risk of confusion among designers about whether the first-generation or second-generation Eurocode part should be used.

The UK National Foreword addresses this risk of confusion. It states clearly that, **until 30 March 2028, the first-generation**

standards ‘should be considered as the applicable standards for building and civil engineering works constructed in the UK unless otherwise specified by the relevant authority or in the specification for a particular project’.

Extended periods of coexistence are not common for standards and therefore the terminology used by CEN and National Standards Bodies to explain the status of standards do not account for such a possibility in an entirely intuitive manner. Thus, designers may encounter designations such as ‘current, under review’ or ‘current, superseded’ being used for the status of first-generation Eurocodes, whereas second-generation Eurocodes are typically given a status of ‘current’ only.

The important point here is that, until the end of March 2028, both first- and second-generation Eurocodes have the status of ‘current’, albeit with the first-generation documents being given a special kind of ‘current’ status once the corresponding second-generation Eurocode is published that indicates that they will be withdrawn in due course on a defined date.

The fact that the second-generation Eurocodes are also ‘current’ is recognised in the UK National Foreword. Although, as explained above, the UK National Foreword states that, generally, the first-generation standards should be considered the applicable standards until the end of March 2028, the UK National Foreword further states that the use of provisions in the second-generation Eurocodes in conjunction with first-generation Eurocodes ‘is not precluded’.

However, it is stated that **the use of provisions in the second-generation Eurocodes in conjunction with first-generation Eurocodes ‘should be undertaken with care and should only be done when users are satisfied that it will not result in a lower level of reliability than the minimum level set in the first-generation Eurocodes and associated UK National Annexes’.**

Clearly, this statement places an obligation on designers to satisfy themselves of the appropriateness of using provisions from the second-generation Eurocodes in conjunction with the first-generation Eurocodes. It is hoped that authoritative industry

bodies will develop interim guidance to assist designers, and where relevant approval authorities, in navigating such decisions, especially in cases where the second-generation Eurocodes cover matters that are not dealt with in the first-generation standards, meaning there could be particular benefits in taking advantage of this new content.

Development and publication of UK National Annexes

National Annexes play a fundamental role in the national implementation of the Eurocodes: the Eurocodes set out explicitly where national choices are allowed; and the UK National Annexes contain the decisions on those national choices to be used for building and civil engineering works constructed in the UK.

The development of the National Annexes for the second-generation Eurocodes falls under the responsibility of BSI Committees B/525 and B/526. Usually, the work has been delegated to specialist subcommittees.

Generally, preliminary work on the development of National Annexes commenced as soon as a stable European draft was available, typically a CEN Enquiry draft. Clearly, however, the National Annex cannot be finalised until after a final version of a standard has been approved through a Formal Vote. Inevitably, therefore, the publication of UK National Annexes will lag the publication of each BS EN Eurocode part.

National Annexes for the second-generation Eurocodes will be greatly improved over their first-generation counterpart. ESSG and BSI have developed comprehensive guidelines for the development of National Annexes to improve ease of use and avoid some of the inconsistencies in style evident between first-generation UK National Annexes.

One ease-of-use improvement between first-generation and second-generation National Annexes concerns the inclusion of complementary information. For the first-generation Eurocodes, National Annexes were strictly only allowed to include references to non-contradictory complementary information (NCCI) published separately. This condition has been relaxed by CEN/TC 250 and complementary information can now be included in the second-generation National Annexes themselves, provided it does not alter or contradict any

provisions of the Eurocodes.

The UK intends to take advantage of this change, adding complementary information to National Annexes where it significantly enhances useability. Clearly, a proliferation of complementary information would not be helpful and so guidelines have been agreed on what can and cannot be included. Exclusions include general background information and interpretations of the meaning of Eurocode clauses.

Latest European developments

Further details on European developments can be found on the *Eurocodes: Building the future* website (<https://eurocodes.jrc.ec.europa.eu/>).

Dr Steve Denton MA, PhD, FREng, FStructE, FICE is Head of Civil Engineering, WSP UK; Chairman CEN/TC 250 – Structural Eurocodes; Vice-President, Royal Academy of Engineering; and Visiting Professor, University of Bath, UK.

Professor David Nethercot OBE, DSc, FREng, FStructE, FICE is Emeritus Professor of Civil Engineering at Imperial College London, UK; and Chairman of B/525 Building and Civil Engineering Structures.

Dr Andrew Bond MA, MSc, DIC, PhD, CEng, FICE is the Director of Geocentrix Ltd; Chairman of B/526 Geotechnics; and immediate past-Chair of TC 250/SC 7 Geotechnical Design.

Dr Mariapia Angelino MEng, PGDip, EngD, CEng is Consultant, WSP Italy; and Technical Reviewer and Member of Management Group, CEN/TC 250.

REFERENCES

- 1) Denton S. and Angelino M. (2022)** ‘Eurocodes evolution: preparing for the second generation’, *The Structural Engineer*, 100 (11), pp. 24–26; <https://doi.org/10.56330/WHSC5964>
- 2) CEN-CENELEC (2024) Internal Regulations** [Online] Available at: <https://boss.cenelec.eu/reference-material/refdocs/pages/> (Accessed: February 2024)
- 3) British Standards Institution (2023) BS EN 1996-1-1:2022 Eurocode 6. Design of masonry structures. General rules for reinforced and unreinforced masonry structures**, London: BSI