



**Temporary Works
forum**

Promoting best practice in
the construction industry.

TW21.094 (5.10.21)

TWf Information Sheet No. 14

Considering temporary works early in a project: Reducing cost, improving buildability and reducing risk

An information sheet aimed primarily at any client

The problem facing clients

All construction work requires some form of temporary works (e.g. to support excavations, to support concrete whilst it gains strength, to support tower cranes). Temporary works are often a significant part of a project's construction costs, sometime 50% or more⁽¹⁾. A significant failure may be catastrophic to budget, programme and reputation, as well as to safety.

Even for simple schemes the efficient design, management and installation of temporary works radically improves project delivery. To gain those efficiencies, temporary works need to be considered early in a project. The industry standard for management of temporary works is defined in BS 5975:2019⁽²⁾.

Recommendations

A client can obtain those efficiencies - and improve safety as well as saving money, reducing carbon and obtaining accurate cost and time estimates - by undertaking the following:

1. Project design

Permanent works designers (including Architects) should consider the implications of their design on temporary works and provide an indicative construction sequence, showing how their design can be built safely.

NOTE:

Throughout this information sheet reference to 'permanent works designers' (PWDs) includes a reference to 'Architects'.

-
- TWf:** Clients' guide to temporary works - Recommendations for clients, their representatives, programme managers and others on the design and coordination of temporary works (December 2014) (**Source:** <https://www.twforum.org.uk/viewdocument/clients-guide-to-temporary-works>)
 - BSI:** BS 5975: 2019, Code of practice for temporary works procedures and the permissible stress design of falsework



Whilst the focus of the PWD is usually on producing the permanent works design, attention to detail and decisions taken during that design process can have a significant impact on how easy and safe their structure is to build and, in particular, the requirement for temporary works. Decisions made about the design of the permanent works, even at early stages, have a fundamental impact on the need for and amount of temporary works (and should be explicit in the PWD's scope of works).

HSE advises that⁽³⁾:

"... a designer should address health and safety issues from the very start ..."

and that⁽³⁾:

"... when designing, a designer must consider the risks people may be exposed to through the course of both constructing a building and using it once it is constructed ..."

BSI considers that permanent works designers should⁽²⁾:

"... address the buildability of the permanent works and identify and make provision for any temporary works required by their design and their assumed method of construction ..."

Industry guidance states⁽⁴⁾:

"... Although designers are not expected for normal structures to specify particular construction methods or sequences, they will be expected to have considered possible alternatives when the risks are being identified. If the assumptions of construction method and sequence become inextricably woven into the design, for example such that there is only one reasonable choice, this will have to be explained in pre-construction information ..."

2. Pre-construction: Appoint a Temporary Works Design Consultant (or seek suitable advice from a Contractor)

The consultant(s) can advise on the early consideration of temporary works issues including whether temporary works are actually required.

NOTE:

The TWD Consultant would normally be either an independent Temporary Works Designer (TWD) or a Contractor appointed under an early contractor involvement (ECI) arrangement.

³ HSE: Managing health and safety in construction, Construction (Design and Management) Regulations 2015, L153 ('CDM2015') (Source: <https://www.hse.gov.uk/pubns/priced/l153.pdf>)

⁴ CIRIA: CDM 2015 – construction work sector guidance for designers, fourth edition, C755 (Section 1.7.5)



3. Appoint a Designated Individual (DI)

BS 5975: 2019⁽²⁾ recommends that every organisation that has an involvement with temporary works should appoint a senior person to prepare, maintain and implement the organisation's procedure for the control of temporary works.

This person, usually reporting to the board of directors, is referred to as the Designated Individual (DI). Responsibility for temporary works issues is therefore established.

Ensure, in particular, that all those Contractors appointed have a Designated Individual.

4. Include an initial temporary works register in tender documentation

By developing an initial temporary works register for inclusion in tender documents the key temporary works items can be planned and priced for. The permanent works designer is well placed to do this.

5. The pre-construction information should address the information required by temporary works designers (TWDs) as well as that of permanent works designers (PWDs)

The provision of temporary works information as part of pre-construction information – well in advance of construction – ensures that TWDs are in an improved position to assess the best design options.

PWDs and TWDs require relevant information to carry out efficient designs. By engaging TWDs during early stages it can enhance collaboration, opportunities for innovation, and ensure that effective and efficient designs are developed in later stages in the project.

6. Early contractor involvement is encouraged

Early contractor involvement allows specialist, experienced contractors to input ideas at an earlier stage, enabling more effective communication, improving design and reducing risk through eliminating uncertainty. It is also critical for the implementation of design and information management requirements such as Building Information Modelling (BIM).

The Temporary Works Forum (TWf)⁽⁵⁾ has published examples of projects where the benefits of early contractor involvement has been achieved.

⁵ **TWf:** Constructability: A guide to reducing temporary works (October 2020) (**Source:** <https://www.twforum.org.uk/viewdocument/constructability-a-guide-to-reduci>)



7. Integrate 'temporary works' into the programme

Once the initial temporary works register has been established the relevant items should be included in the overall project programme.

In some cases, temporary works designs may impact the permanent works design⁽⁶⁾. If so, it is important to coordinate between all designers.

A lack of coordination at the right time can lead to abortive or additional design work and this can be costly to either (or both) the client and designers.

8. Carry out formal constructability reviews

If constructability and temporary works are not considered from the outset the structure may be very difficult and/or impossible to build, as well as too expensive.

Formal constructability reviews provide a means of addressing this, and should be carried out at a number of stages⁽⁴⁾:

- Pre-project / Initiation (e.g. by the client)
- Option phase (e.g. by the client and permanent works designer)
- Development phase (e.g. by the permanent works designer and contractor)
- Construction phase (e.g. by the contractor)
- End of use and demolition (e.g. by the client and contractor)

As a design is refined more information is available at each stage. However, significant impact can be made with a quick review very early on looking at how a proposal can be built; testing its feasibility for construction and identifying the need to acquire land to facilitate construction.

Review should be undertaken by suitably experienced people.

Conclusion

Planning and budgeting is key. One way to improve the safety of construction, efficient design, and the correct estimating of cost and time, is by having a detailed construction sequence that considers the temporary works requirements throughout the project lifecycle. An early start, with the right partners engaged at the right time, is paramount.

⁶ For example, the propping forces of a flying shore being imposed on a permanent works capping beam in a basement excavation scheme and/or the need to consider the cast in sections of the prop at the capping beam.



Bibliography

Guidance Note: Early Focus on Constructability and Temporary Work. Network Rail. Safe by Design. Buildings & Civils Working Group⁷

Acknowledgements

This information sheet has been prepared by Mike Webster (MPW R+R Ltd) and David Thomas (TWf). Thanks are given to the following who provided input: Anna Wylie (PERI Ltd.), Chris Bennion (Chris Bennion Consultancy Ltd.), James Kidgell (iTW), Jim Tod (Tony Gee and Partners LLP), Steve Deeble (BAM Nuttall) and Steve Williams (Network Rail).

Disclaimer

Although the Temporary Works Forum (TWf) does its best to ensure that any advice, recommendations or information it may give either in this publication or elsewhere is accurate, no liability or responsibility of any kind (including liability for negligence) howsoever and from whatsoever cause arising, is accepted in this respect by the Forum, its servants or agents.

Readers should note that the documents referenced in this TWf Information Sheet may be subject to revision from time to time and should therefore ensure that they are in possession of the latest version.

/

⁷ <https://safety.networkrail.co.uk/wp-content/uploads/2016/04/Safe-by-Design-Early-Focus-on-Constructability-and-Temporary-Works-Guidance-V3-15.5.19.pdf>