BHC-P-11.1 Temporary Works

Contents

Revision register		
Date	Version	Description - reason for change
27/08/2013	1	Replace existing procedure BH/SP.36 with a new procedure and new forms.
01/05/2015	2	Replace existing procedure BHSP360001 with a new SMS referenced procedure and new format forms.
22/10/2020	3	Full review and update in line with changes made to BS5979 in 2019. Key changes included introduction of: Summary of key elements in 4.1, standard Governance Arrangements in 4.2, PCTWC role in 4.10, duties for TW designers and suppliers in 4.12-14, standard design solutions in 4.17, Implementation Risk Classes in Apdx 2

Item	Details		Reference	Responsibility
1.0	**Purpose**			
1.1	To ensure that all temporary works are conceived, designed, specified, constructed, used and dismantled in a safe and controlled manner in accordance with the requirements of Section 2 of BS5975 and Berkeley Group Standard BGCS42.		BS5975/ BGCS42	
2.0	**Scope**			
2.1	Applies to all works on site defined as temporary works.			
2.2	This procedure applies under section A where Berkeley acts as the Principal Contractor (PC), and section B where Berkeley acts as the Client only.			
2.3	Where the temporary works structures are to be close to Network Rail or Transport for London infrastructure, the PCTWC and or the Project Director/ Manager must liaise with them to agree requirements.			PCTWC/ Project Director/ Manager
3.0	**Definitions**			
3.1	Temporary Works (TW)	Parts of the works that allow or enable construction of, protect, support or provide access to, the permanent works and which might or might not remain in place at the completion of the works; and An engineered solution used to support or protect either an existing structure or the permanent works during construction, or to support an item of plant or equipment, or the vertical sides or side-slopes of an excavation during construction operations on site, or to provide access.		
	DI	Designated Individual: Senior person within an organisation with responsibility for establishing, implementing and maintaining a procedure for the control of TW.		
	PCTWC	Principal Contractor's TW Coordinator: Competent person appointed by the Principal Contractor on a construction project, with sole responsibility for the co-ordination of all activities related to TW.		
	TWC	Temporary Works Coordinator: Competent person who is appointed by a contractors DI to assist the PCTWC, with responsibility for the co-ordination of all activities related to trade specific contractors TW.		
	TWS	Temporary Works Supervisor: Competent person who is appointed by their organisations DI to assist the TWC overseeing the on-site installation, management and control of TW items.		
	TWD	Temporary Works Designer: Competent person who is appointed by their organisations DI to deliver the requirements of a TW Design Brief.		
	TWDC	Temporary Works Design Checker: Competent person who is appointed by their organisations DI to review and validate the TWD's design output.		
	PWD	Permanent Works Designer: Competent person who is responsible for the permanent works design development and any associated construction method engineering.		

Item	Details	Reference	Responsibility
4.0	**Main requirements**		
4.1	**Summary of key elements within the the TW procedure**		

Phase	Action	By	Section
Pre- construction phase	Appoint a Designated Individual (DI)	MD	4.3
	Prepare an outline schedule of TW for inclusion within the PWD's Scope of Works	Technical Manager	4.7
	Complete due diligence competency and insurance checks before formally appointing the PWD	Technical Manager	4.7
	Appoint a PCTWC and Deputy PCTWC	DI	4.3 / 4.4
	Prepare a schedule of TW for inclusion within the Scope of Works for each trade contractor package	PM/ PCTWC	4.8
	Review Contractor CAQ2 submission and complete TW competency/ insurance checks before each trade Contractor is formally appointed	PM/ PCTWC	4.8
	Confirm identity and formal appointment of DI and provide copy of TW Procedure to the PCTWC	Contractors MD	4.3
	Prepare a Master TW Register to include all TW items included within the PWD and trade Contractors Scope of Works	PCTWC	4.10
	Assign an Implementation Risk classification and Design Check Category to each TW item	PCTWC	6.2 / 6.3

Phase	Action	By	Procedure
Construction phase	Establish monthly TW Review Meeting with PCTWC	PM	4.9
	Formally appoint Contractor's (including Subcontractor's) TWC and TWS and provide evidence of competence to PCTWC	Contractors DI	4.3
	Review Contractor's TWC and TWS appointments. If satisfied with each individual's competence, add their name to the TW Appointments Register	PCTWC	4.10
	Identify Contractor's Designers, Suppliers and Subcontractors. Confirm formal appointment of each organisation's DI and provide copy of their TW Procedure to the PCTWC	Contractors TWC	4.11
	Confirm appointment of Designer's, Supplier's and Subcontractor's TWDs and TWDCs and provide evidence of competence to PCTWC	Contractors TWC	4.11
	Review Designer and Supplier's DI, TWD's and TWDC's appointments. If satisfied with each individual's competence, add their name to the TW Appointments Register.	PCTWC	4.10
	Prepare a Design Brief for each item of TW in the TW Register and issue to the relevant TWD	TWC	4.11
	Develop design in line with the requirements of the Design Brief	TWD	4.12
	Review the TW design to confirm it complies with the requirements of the Design Brief and site. Pass comments back to TWD.	PCTWC/ TWC	4.10 / 4.11
	Issue design drawings marked as 'For Construction' once the Design Check Certificate has been issued by the TWDC	TWD	4.12/ 4.13
	Review the RAMS relating to the TW to ensure the construction methodology is suitably developed and identifies 'Hold Points'	TWC	4.11
	Review RAMS + confirm installation can commence	PCTWC	4.10
	Issue 'For Construction' design, RAMS and Inspection Checklist to TWS	TWC	4.11
	On delivery, inspect materials and components to be used to construct the TW. Notify any defects to TWC and Supplier.	TWS	4.15
	Brief all operatives involved in the construction on the RAMS and 'For Construction' design before starting the installation of the TW	TWS	4.15
	Monitor the construction of the TW. Any deviation from the 'For Construction' design must be approved by the TWC following authorisation by the TWD and TWDC	TWS/ TWC	4.15
	Carry out final inspection of completed TW structure and issue a Permit to Load/ Take into Use to TWC	TWS	4.15
	Ensure the TW Register is updated and all 'Hold Points' observed before giving the TWS/ TWC authorisation to take the TW into use	PCTWC	4.10
	Conduct and record formal inspections of the TW in line with the agreed monitoring regime. Notify any defects to TWC and rectify.	TWS	4.15
	Review RAMS relating to the TW to ensure the dismantling methodology is suitably developed. Ensure permanent structures are self supporting before giving the TWS authorisation to dismantle.	TWC	4.11
	Brief all operatives involved in the dismantling on the RAMS and issue a Permit to Dismantle to the TWC before dismantling the TW .	TWS	4.15

Item	Details	Reference	Responsibility
4.2	**TW Governance Arrangements** The BHC DI will establish regular TW review meetings to monitor the ongoing management of TW, and ensure that an audit programme is implemented that regularly assesses the implementation of this procedure on each live project. **TW Governance Committee** The TW Governance Committee will: • As a minimum, include the BHC DI, Construction Director, Technical Director and PCTWC as committee members; • Meet at least once every six months; • Review and address the key TW related issues raised by the PCTWC on each project; • Keep up-to-date with engineering and process developments in order to identify potential improvement/ efficiency opportunities within the management of TW; • Review the findings of the TW audit programme to ensure action points have been suitably addressed; • Record all meetings and make minutes available internally to all relevant employees. The committee meetings may be combined with other meetings where relevant. **TW Audit Programme** Regular TW audits will: • Be undertaken at least once a year on every live construction project; • Be conducted by a member of the TW Governance Committee (or competent third party consultant) who is not the PCTWC and formally documented; • Include a desktop assessment of the TW documentation including the TW Register and TW Appointments Register; • Assess the installation of a selected item of TW currently in use on site against the approved 'For Construction' issue drawings; • Include a desktop assessment of the TW documentation relating to the selected item of TW currently in use on site including the TW Design Brief, Design Check Certificate, Approved drawing and Permit to Load; • Review how the procedural controls relating to the management of holes and voids on site are being implemented.	BHC-F-11k	DI TWGC TWGC
4.3	**The DI** The BHC Managing Director must appoint a director or senior manager from a production function as DI. The BHC DI must: • Establish, implement, maintain and regularly review this procedure, in-line with the requirements of BS5975; • Verify the competence and formally appoint a PCTWC, Deputy PCTWC and (if necessary) PC TWS's on every project and review their ongoing performance against this procedure. The PCTWC should not be responsible for the day to day progress of the TW or other commercial / programme project matters; • Respond to concerns raised by those involved in managing TW and take appropriate action to support any PCTWC who seeks assistance due to pressure from site management to achieve production at the expense of structural stability; • Have the authority to take and enforce decisions; • Be responsible for providing resources necessary to implement this procedure. The Managing Director of all contractors, designers and suppliers involved in TW must formally appoint a director or senior manager from a production function as their own DI. Each DI must: • Implement and maintain their own TW procedure, in-line with the requirements of BS5975; • Ensure competent individuals are formally appointed in TW roles; • Ensure the requirements of this procedure are complied with where their own processes are deemed insufficient by the PCTWC.	BHC-F-11q BHC-P-11.1 BHC-F-11c	Managing Director DI Contractor/ Designer/ Supplier MD Contractor/ Designer/ Supplier DI
4.4	**Competencies of a TWC** Every TWC, whether they are appointed by the PC or a Contractor, must have: • The necessary skills, knowledge and experience appropriate to the complexity of the project and anticipated TW; • Attended an accredited TWC course; • The personal qualities to act with the necessary authority.		PCTWC/ TWC

Item	Details	Reference	Responsibility
	Evidence of the TWC's competence must be supplied by submitting a copy of their CV and relevant TW qualification along with the TW Appointment Letter, signed by their organisations DI. For complex TW, the PCTWC should hold a relevant degree or higher national diploma in civil or structural engineering and, preferably, be a chartered civil or structural engineer.	BHC-F-11c	DI/ Contractors DI PCTWC
4.5	**Competencies of a TWS** The TWS must have: • The necessary skills, knowledge and experience appropriate to the complexity and type of TW to be undertaken; • Personal qualities to act with the necessary authority; • Attended a TWS or TWC course (unless written dispensation has been provided by the Head of Health and Safety); • Understood the limitations of their knowledge and have the language and literacy level to raise any query with a more knowledgeable person. Evidence of the TWS's competence must be supplied by submitting a copy of their CV and relevant TW qualification along with the TW Appointment Letter, signed by their organisations DI. Competence must also be in-line with the requirements of the Training, Competence and Induction procedure.	BHC-F-11d BHC-P-03.1	TWS Contractors DI
4.6	**Competencies of Designers and TWDCs** All TWDs, PWDs and TWDCs must have: • The necessary skills, knowledge and experience appropriate to carry out the design, design checking and passing/ receiving of information relevant to any TW (or interfaces with permanent works) with which they are involved; • Hold a degree or higher national diploma in civil or structural engineering. Evidence of each TWD/ PWD/ TWDCs competence must be supplied by submitting a copy of their CV along with the TW Appointment Letter, signed by their organisations DI.	BHC-F-11b	TWD/ PWD/ TWDC Designers DI
	Section A Where Berkeley is the principal contractor		
4.7	**Pre-construction – Technical department** Before engaging with a PWD on a project, the Technical Director and Construction Director must ensure that the Technical Manager has prepared an outline schedule of TW items. This schedule should capture: • All opportunities where there is potential for TW to be designed out; • All envisaged interface assessments required where TW will be acting on the permanent works; • All TW items which fall outside the trade contractors' packages; The Technical Manager must keep the schedule up to date until a PCTWC has been appointed. They must make the schedule available to the project team members as part of the preconstruction information to allow the construction phase planning and trade contactors' procurement to progress. Before the PWD is appointed the Technical Manager and PCTWC must satisfy themselves that: • The outline schedule of interface assessment and TW design items has been included within the PWD Scope of Works; • The proposed consultant has the necessary skills, knowledge, experience and Professional Indemnity/ Employers Liability insurance cover to carry out the TW items outlined in the schedule; • If the consultant proposes the use of any specialist third party to assist in carrying out the TW items outlined in the schedule, they provide the same proof of competence, expertise and insurance cover for that third party; • The proposed consultant has provided a copy of their TW Procedure and evidence that the MD has formally appointed a suitable DI.		Technical Manager Technical Manager PCTWC/ Technical Manager Designers DI
4.8	**Pre-construction – Commercial department** Before engaging with a trade contractor on a project, the Commercial Manager/ Surveyor must ensure that the Project Manager/ PCTWC have included within the Package Scope of Works a schedule of the TW items for the relevant trade activity. This scope of works should capture: • All envisaged trade contractor TW items within their package; • All TW items which fall outside the trade contractors' package.		Commercial Manager / Surveyor

Item	Details	Reference	Responsibility
	Before the trade contractor is appointed, the Project Manager and PCTWC must ensure that the contractor has completed the CAQ Stage 2. The information provided within the CAQ Stage 2 and supporting evidence must demonstrate: • The trade contractor has provided a copy of their TW Procedure and that their MD has formally appointed a suitable DI. • The trade contractor has the necessary skills, knowledge, experience and Employers Liability insurance cover to carry out the TW items outlined in the scope of works; • That if the trade contractor proposes the use of any specialist third party designer, engineer or contractor to assist in carrying out the TW items outlined in the scope of works, they must provide the PCTWC with the same proof of competence and expertise for that third party; The Commercial Manager/ Surveyor must ensure that all Project Specific Instructions that involve elements of TW include a clear obligation on the trade contractor to observe the requirements of this procedure.	BHC-F-06a	PM/ PCTWC Commercial Manager / Surveyor
4.9	**Project Director/ Manager** Project Directors/ Managers must: • Provide the PCTWC with the resource and authority to carry out their duties including attendance at formal TW reviews; • Ensure that a TW Register and TW Appointments Register have been produced by the PCTWC and the supporting documentation retained in a suitable filing system before any TW activity takes place on; • Confirm that the TW arrangements on site are compliant with this procedure by completing formally recorded reviews which must: ○ Be undertaken at least every month; ○ Be attended by the PCTWC; ○ Be attended, as necessary, by the TWC's, TWS's and TWD's of trade contractors carrying out TW at the time; ○ Be formally documented by the PCTWC through distributed meeting minutes that include a list of actions to be taken; ○ Review the TW Register in order to identify key upcoming items for inclusion and a review of the current status of TW items on site; ○ Include a review of the existing TW Appointments Register to ensure that all existing and upcoming TW personnel are formally appointed; ○ Include a site assessment to inspect the condition of TW currently in use; ○ Assess how the procedural controls relating to the management of TW items on site are being implemented through a review of the recently issued permits and records of inspection. • Assist the PCTWC in acquiring all the required TW appointment documentation from each trade contractor, designer and supplier before each commences any TW activity; • Assist the PCTWC in acquiring all the required documentation relating to individual items of TW; • Immediately stop all TW activities relevant to a trade contractor if their appointed TWC/ TWS is not present on site. The PCTWC and contractors DI must be notified immediately. • Enforce all hold points indicated by the PCTWC in trade contractors TW activities. • Ensure that if a trade contractor who constructed an item of TW completes their work and leaves the project, the PCTWC is notified so that that arrangements can be made to ensure an inspection regime is maintained.	BHC-F-11f/ BHC-F-11a	Project Director Project Manager
4.10	**PC's TWC** For all TW, the TWC appointed by the PC must: • Produce and maintain a project specific Master TW Register to monitor progress of all TW based on the schedule of TW items create by the Technical Manager. The TW Register should include as a minimum for each item: ○ A unique reference number and short description; ○ Implementation Risk Classification of TW; ○ Design Brief information including date of issue and design check category; ○ Design information including the name of the TWD + TWDC, date design completed, permanent works interface assessment and date Design Check Certificate approved;	BHC-F-11f Appendix 2 Appendix 3	PCTWC

Item	Details	Reference	Responsibility
	○ Construction/ Installation information including the name of the TWS, date risk assessment and method statement (RAMS) reviewed, date permit to load (bring into use) issued; ○ Maintenance, Inspection and removal requirements ○ Date of permit to take out of use/ dismantle.		
	• Ensure that each Designer, Design Checker, Contractor and Supplier has formally appointed their own DI and provided a copy of their own TW procedure for approval before undertaking any TW activity related to the project: ○ For trade contractors this should be undertaken before the contractor is appointed; ○ Where a contractor, design or supplier's procedure does not comply in full to the requirements of section 8, 9 or 10 of BS5975 respectively, they must agree to adopt the requirements of this procedure;	BHC-F-11a	
	• Confirm that all Contractors TWCs (and their Deputies) and all TWSs, TWDs, PWDs and TWDCs have been formally appointed in writing by their employers DI before they undertake any TW activity related to the project: ○ Ensure that the competency of each nominated TWC, TWS, TWD, PWD and TWDC has been reviewed; ○ Ensure the Appointment Letter clearly states their limits of authority; ○ Ensure that each TWC, TWS, TWD and TWDC appointed is aware of this procedure and their specific responsibilities. Once the review process has been completed and the individual's competence has been verified, their name shall be added to the TW Appointments Register;	BHC-F-11b/ BHC-F-11c/ BHC-F-11d BHC-F-11a	
	• Ensure that a TW Engineering Design Brief has been prepared by the organisation, company or trade contractor requiring or installing the TW using a TW Engineering Design Brief form, and that it: ○ Is proportionate to the complexity of the TW; ○ Reflects the actual situation on site; ○ Refers to the assumed method of construction of the permanent works; ○ Contains loading constraints imposed by the permanent works designer; ○ Is approved by the permanent works designer; ○ Identifies the residual risks at the design stage.	BHC-F-11e Appendix 1	
	• Document the review and development of the TWD's design with the Contractor's TWC, from preliminary status through to approval. This must to include: ○ Ensuring that interface assessments are conducted by the PWD where appropriate; ○ Agreeing with the TWD the appropriate design output information required based on the level of complexity within the design (this may include drawings, equipment user guides, erection tolerances, design calculations, etc); ○ The issue of 'For Construction' issue status designs once approved by all parties;		
	• In liaison with the TWD/ Contractors TWC, establish the appropriate level of BS5975 Design Check Category 0-3 for each item on the TW Register and ensure that the TW design is checked in accordance with that Design Check Category: ○ For category 1-3, a TW Design Check Certificate must be issued by the appointed TWDC that verifies the suitability of the TWD's design output. For category 2+3, the TWDC should carry out the check without reference to the TWD's design calculations; ○ For category 0, the TW Design Check Certificate must be issued by the appointed TWS.	Appendix 3	
	• In liaison with the Contractors TWC/ TWS, establish the appropriate level of Implementation Risk Category 0-3 for each item on the TW Register and ensure that the appropriate control measures are implemented and reflected in the contractors RAMS in accordance with that Implementation Risk classification: ○ For category 0 items, a member of the site team should carry out an inspection before the item is taken into use; ○ For category 1 items, a Permit to Load must be signed by an authorised TWS or TWC before the item is taken into use; ○ For category 2 items, a Permit to Load must be signed by the PCTWC or an authorised TWC before the item is taken into use; ○ For category 3 items, a Permit to Load must be signed by the PCTWC before the item is taken into use;	Appendix 2	

Item	Details	Reference	Responsibility
	• Review and evaluate Contractors RAMS that involve TW to ensure that the construction methodology is suitably developed and the control measures detailed within it are appropriate to the assigned Implementation Risk classification and consider: ○ The hold points at which the structure should be checked for conformity; ○ Who is authorised to inspect the structure and issue permits in line with the Implementation Risk classification and hold points; ○ The residual risks identified in the TW design; ○ The safe system of work for the installation, maintenance and removal of the TW; ○ The inspection regime to be observed once the TW has been installed; • With the Contractors TWC, ensure that the TWS only uses designs marked 'For Construction'; • Ensure that no temporary structure is taken into use before the TWS carries out a final inspection and issues a written TW Permit to Load or Take Into Use form: ○ Only the PCTWC is authorised to issue a Permit to Load for complex temporary structures where the PCTWC has identified the Implementation Risk classification as high, such as those comprising of multiple elements constructed by multiple trade contractors; • Monitor trade contractors for compliance with this TW procedure through site visits at a frequency proportionate to the complexity and volume of TW, but at least monthly; • Provide, where necessary, TW design information to the Technical Manager where the TW may impact on other interested parties or assets. e.g. party wall surveyor, local authority, Network Rail, etc; • Participate in formal reviews of the TW arrangements on site at least once a month and distribute formal meeting minutes that include a list of actions to be taken; • If TW are to be used for a purpose that they were not originally designed for (e.g. a piling mat needed to support a mobile crane), a review of the design must be undertaken by a TWD to ensure the design is appropriate for the new application and checked by a TWDC; • In the event that significant changes occur that impact on the approved TW design, issue a Design Change Application Form to the TWD to supersede the original Design Brief and ensure the design is reviewed, amended and approved in line with this procedure. • Ensure that no temporary structure is dismantled until it has been verified it is safe to do so, the TWS has been notified that it is no longer required and a TW Permit to Dismantle has been issued; • Refer to the Project Director/ Manager and DI any TW matters that are not being satisfactorily managed on site. • Seek assistance from their DI if they consider any TWC is being placed under undue pressure to achieve production at the expense of structural stability.	BHC-F-05b Appendix 2 BHC-F-11g/ BHC-F-11o/ BHC-f-11p BHC-F-11h BHC-F-11j	TWD/ TWDC TWS
4.11	**Contractor's TWC** For all TW under their direct control or that of an appointed sub-contractor, a Contractor's TWC must: • Monitor progress of all TW under their control in order that the PCTWC is able to maintain the Master TW Register. • Assist the PCTWC by ensuring that: ○ Each TWD, TWDC and Supplier organisation has formally appointed their own DI and provided a copy of their own TW procedure before undertaking any TW activity related to the project; ○ Where a TWD, TWDC or supplier's procedure does not comply in full to the requirements of section 8 or 10 of BS5975 respectively, they have agreed to adopt the requirements of this procedure; ○ All TWSs, TWDs and TWDCs have been formally appointed in writing by their employers DI and their competency reviewed; ○ Each TWC, TWS, TWD and TWDC they appoint is aware of this procedure and their specific responsibilities.	BHC-F-11f BHC-F-11b/ BHC-F-11c/ BHC-F-11d	Contractors TWC

Item	Details	Reference	Responsibility
	• Ensure that a TW Engineering Design Brief has been prepared that: ○ Is proportionate to the complexity of the TW; ○ Reflects the actual situation on site; ○ Refers to the assumed method of construction of the permanent works; ○ Contains loading constraints imposed by the permanent works designer; ○ Is approved by the permanent works designer if the PCTWC has given authority to facilitate interface assessments; ○ Identifies the residual risks at the design stage. • Document the review and development of their TWD's design from preliminary status through to approval. This must to include: ○ Informing the PCTWC where interface assessments will be required by the PWD; ○ Agreeing with the TWD the appropriate design output information required based on the level of complexity within the design (this may include drawings, equipment user guides, erection tolerances, design calculations, etc); ○ The issue of 'For Construction' issue status designs once approved by all parties; • In liaison with the PCTWC/ TWD, establish the appropriate level of BS5975 Design Check Category 0-3 for each item TW and ensure that the TW design is checked in accordance with that Design Check Category: ○ For category 1-3, a TW Design Check Certificate must be issued by the appointed TWDC that verifies the suitability of the TWD's design output. For category 2+3, the TWDC should carry out the check without reference to the TWD's design calculations; ○ For category 0, the TW Design Check Certificate must be issued by the appointed TWS. • In liaison with the PCTWC/ TWS, establish the appropriate level of Implementation Risk Category 0-3 for each item on the TW Register and ensure that the appropriate control measures are implemented and reflected in the contractors RAMS in accordance with that Implementation Risk classification: ○ For category 0 items, a member of the site team should carry out an inspection before the item is taken into use; ○ For category 1 items, a Permit to Load must be signed by an authorised TWS or TWC before the item is taken into use; ○ For category 2 items, a Permit to Load must be signed by the PCTWC or an authorised TWC before the item is taken into use; ○ For category 3 items, a Permit to Load must be signed by the PCTWC before the item is taken into use; • Review and evaluate all RAMS that involve TW to ensure that the construction methodology is suitably developed and the control measures detailed within it are appropriate to the assigned Implementation Risk classification and consider: ○ The hold points at which the structure should be checked for conformity; ○ Who is authorised to inspect the structure and issue permits in line with the Implementation Risk classification and hold points; ○ The residual risks identified in the TW design; ○ The safe system of work for the installation, maintenance and removal of the TW; ○ The inspection regime to be observed once the TW has been installed; • Ensure that TWS's only use designs marked 'For Construction'; • Ensure that no temporary structure is taken into use before the TWS carries out a final inspection and issues a written TW Permit to Load or Take Into Use form: ○ On complex temporary structures comprising of multiple elements constructed by multiple trade contractors, liaise with the PCTWC. Unless the PCTWC has given the TWC written authorisation, the PCTWC must authorise and issue the TW Permit to Load or Take into Use; • Monitor compliance on site in line with the requirements of their own TW procedure. This must be proportionate to the complexity and volume of TW, but at least monthly; • Participate in formal reviews of the TW arrangements on site as and when required by the PCTWC; • Notify the PCTWC if TW are to be used for a purpose that they were not originally designed for (e.g. a piling mat needed to support a mobile crane), in order that a review	BHC-F-11e Appendix 1 Appendix 3 BHC-F-05b Appendix 2 BHC-F-11g/ BHC-F-11o/ BHC-F-11p	

Item	Details	Reference	Responsibility
	of the design can be undertaken by a TWD to ensure the design is appropriate for the new application and checked by a TWDC; • In the event that significant changes occur that impact on the approved TW design, notify the PCTWC in order that a Design Change Application Form can be issued to the TWD to supersede the original Design Brief and ensure the design is reviewed, amended and approved in line with this procedure. • Ensure that no temporary structure is dismantled until it has been verified it is safe to do so, the TWS has been notified that it is no longer required and a TW Permit to Dismantle has been issued; • Refer to their DI or PCTWC any TW matters that are not being satisfactorily managed on site. • Seek assistance from their DI or the PCTWC if they consider they are being placed under undue pressure to achieve production at the expense of structural stability.	BHC-F-11h BHC-F-11j	
4.12	**Designers** All designers must: • Address the buildability of permanent works, TW, their interfaces, their proposed methods of construction and any related design assumptions using the appropriate design standards and other technical guidance; • Apply the general principals of prevention to the identified risks and highlight any residual risks. Relevant information about the residual risks and any areas of excluded design responsibility must be provided on all drawings (i.e. warning triangles) and within the formal Designers Risk Assessment submitted to the PCTWC/ TWC; • Liaise with the PCTWC/ TWC and respond promptly and clearly to any reasonable request they make, including agreeing the category of TW design check required; • Clearly communicate the design, in the format agreed by the PCTWC/ TWC (this may include drawings, equipment user guides, erection tolerances, design calculations, etc); • Clearly highlight and communicate any areas of TW design responsibility they have excluded from their design and may have implications elsewhere, for whatever reason. **Additional requirements for PWDs** Each PWD must liaise with the Technical Manager to provide all necessary information relevant to any TW or temporary conditions related to their permanent design. Each PWD must liaise with the PCTWC in relation to any interface assessment or TW design allocated to them within the PWD Scope of Works. When considering buildability the PWD must demonstrate that: • The proposed method and sequence of construction has no adverse effect on the permanent works; • The intended construction process has been communicated to all relevant parties, giving particular attention to new or unfamiliar processes; • The stability of existing structures and partially constructed/ erected/ demolished structures has been considered and ascertained; • They have considered where standard industry details are not suitable; • The integrity of adjacent/ existing structures has been considered, particularly during refurbishment; • Suitable consideration has been given to the availability of sufficient space to construct or maintain the structure; and • The loads for which the structure has been designed are clearly identified, including the proposed plant installation loads and plant routes. **Additional requirements for TWDs** For all elements of TW that they design, the TWD must: • Only issue a design for approval following receipt of a written TW Engineering Design brief; ○ The TWD must notify the PCTWC/ TWC immediately if they are not able to fully accommodate the requirements of the design brief; • Ensure that the design details and outline methodologies are accurately translated into the design output, and that the design follows appropriate engineering principles. This	BHC-F-11e	Designer PWD TWD

Item	Details	Reference	Responsibility

	includes any assumed construction methods, sequences, TW requirements, and loads to be either imposed on or supported by the permanent works.
	
	• For each TW design, the TWD should take into account:
	  ○ The various loads that act on the TW together with the combinations in which they are considered and with what stiffness the TW should resist them;
	  ○ The global or partial factors appropriate to the situation, including material quality, certainty of loading and standard of execution of the TW;
	  ○ The global factors incorporated into the allowable working loads given in Section 3 of BS5975 for permissible stress design;
	  ○ The loads provided in accordance with BS EN 1991-1-6 for limit state design and other relevant codes and industry best practice guidance
	  ○ A minimum ultimate limit state of 1.1 when designing steel or aluminium elements;
	  ○ That any local failure within the TW structure does not lead to progressive collapse of the whole, and that this is reflected in the design;
	  ○ The structural strength and stiffness of the individual members and their connections to transmit the applied forces safely including any p-delta or feedback effects;
	  ○ The lateral stability of both individual members and the structure as a whole;
	  ○ The resistance to overturning or rotational failure of the TW structure;
	  ○ Positional stability; and
	  ○ The effects on the permanent works and its surroundings.
	
	• Clearly state the types of materials or components required to construct the temporary structure;
	
	• Highlight to the TWS and TWC any assumptions used for the design;
	
	• Respond to all schedule of queries posed by TWDC's and revise the design output where required.
	
	• Issue a copy of the schedule of responses to the PCTWC/TWC for CAT 2+3 design classification items.
	  ○ References to calculations in the schedule of queries are not allowed but indications on levels of stress in members or forces or ground pressures are acceptable;
	  ○ For CAT 2 design classification items a copy of the schedule of responses must also be issued to the TWDC;
	
	• Mark design drawings as 'For Construction' and issue upon receiving written confirmation that:
	  ○ The design is suitable;
	  ○ The design check has been completed;
	  ○ The design allows for the conditions on site;
	  ○ There are no adverse effects on the permanent structure;
	  ○ That third-party considerations have been considered e.g. Network Rail, Transport for London, Local Authority.
	
	• Consider design changes requested during the construction and dismantling phase using the TW Design Change Application form.
	  ○ Where any alterations to the original design are required the TWD must consult the PCTWC/ TWC on whether another design check certificate is required.
		BHC-F-11h	

4.13	**TWDC** For all elements of TW that they design check, the TWDC must: • Check the design for concept, adequacy, correctness and compliance with the requirements of the design brief to the check category requirements and ensure that they are satisfied the design output is in accordance with the requirements of the design brief: ○ The design must have been produced in accordance with recognised engineering principles, relevant British Standards and other appropriate specialist guidance. • Understand and ensure that their ability and remoteness or independence from the TWD must be greater where new ideas are incorporated or the TW are complex;		TWDC

Item	Details	Reference	Responsibility

	• Ensure the correct information has been supplied by the TWD including the design brief with the relevant design statement, drawings and specification and associated information;
	
	• Carry out design checks with the independence specified in Appendix 3:
	  ○ Where their calculations indicate an element and/ or connections might be overstressed or exceed the allowable load in a proprietary member, or where further or additional detail is required, a schedule of queries must be raised. The TWDC shall:
	  ▪ Liaise directly with the TWD on any queries for CAT 0 and 1 design classification items;
	  ▪ Issue a copy of the schedule of queries to the TWD and PCTWC/ TWC for CAT 2 design classification items.
	  ▪ Issue a copy of the schedule of queries to the PCTWC/ TWC only for CAT 3 design classification items.
	  ▪ Not include references to calculations in the schedule for CAT 2+3 items but indications on levels of stress in members or forces or ground pressures are acceptable.
	  ○ Where their calculations verify the TWDs design, this must be formally recorded through the issuing of a TW Design Check Certificate;
	  ○ The certificate must state the category of check and identify the drawings/sketches, specification and any methodology that are part of the design
	  ○ The certificate must be signed by the TWD and TWDC before it is formally issued to the PCTWC/ TWC;
		Appendix 3
		
		BHC-F-11n	

4.14	**TW Suppliers**
	
	Individual components
	For all components of TW that they supply, TW suppliers must:
	• Either provide the PCTWC/ TWC with published technical data or justify the capacities by specific calculations and certificates;
	
	• Include the following design data in their design output to the PCTWC/ TWC;
	  ○ The intended uses for the components and how they can be identified;
	  ○ Appropriate dimensions, section and material properties and masses;
	  ○ Structural properties for various conditions of use, such as different extensions and eccentricities, together with details of any necessary bracing or lacing
	  ○ A clear statement on whether capacities are in terms of characteristic strength or maximum safe working loads;
	  ○ What factors of safety have been included or assumed;
	  ○ Whether the components conform to the requirements of an appropriate British or European Standard;
	  ○ Details and capacity of connections where loads are received into one or more components, transferred from one to the other, and transmitted to other supports such as foundations; and
	  ○ Any limiting deflection conditions;
	
	• Provide the following to the PCTWC/ TWC and specify any testing, maintenance or inspection regimes;
	  ○ Detailed user guides, in an appropriate format, explaining how items should be used;
	  ○ Information on transportation and safe handling of TW equipment on site, eg. Lifting points, safe stacking etc;
	  ○ Identification of critical items requiring inspections, such as connections or items prone to deterioration over a period of time
	
	CAT 0 Designed Solutions
	For any standard CAT 0 proprietary system (i.e. trench box, heras fencing, airtek handrails), the TW supplier must provide published technical data detailing the limitations and conditions of use and the limitations of their design responsibility:
	• These arrangements, which are often presented in a tabular or readily assimilated format, should relate to the suppliers products only;
	• The suppliers TWD should issue a design check certificate to the PCTWC/ TWC for the individual standard solution;
	• The contractors TWS should counter-sign the design check certificate to verify the on-site application of the solution.
		BHC-F-11n	TW Supplier

Item	Details	Reference	Responsibility
4.15	**TWS** For all elements of TW that they supervise, the TWS's shall: • Cooperate with the appointed PCTWC/ TWC in discharging their duties; • Only begin construction or installation of TW when: ○ A design has been prepared that has been issued 'FOR CONSTRUCTION'; ○ A design check has been successfully completed; ▪ For any standard CAT 0 solution, the TWS should counter-sign the design check certificate to verify the on-site application of the solution: ○ A specific RAMS has been prepared for the construction and dismantling of a temporary structure, which: ▪ includes any sequence or method of construction/ dismantling imposed by the TWD/ PWD/ Supplier; ▪ Mitigates any residual risks highlighted by the TWD/ PWD/ Supplier; ○ The RAMS has been reviewed by the PCTWC/ TWC and the Berkeley Site Manager; ○ The RAMS has been briefed to all operatives involved in the construction and/ or dismantling. • Ensure that the materials and components to be used to construct temporary structures are fit for purpose and comply with the specification of the design. If in doubt, the TWS must consult the PCTWC/ TWC and TWD to resolve the matter prior to constructing the TW; • Carry out inspections at appropriate stages during the construction of the TW to check that TW comply with the design and method statement. Where elements of the TW will not be visible at the end of the installation, an inspection record will be needed before the TW Permit to Load or Take Into Use form is issued; • Obtain written approval from the PCTWC/ TWC for any deviation from the design, before a TW item is brought into use or loaded: ○ Ensure that agreed changes to TW designs, or correction of installation faults, are completed before TW are brought into use or loaded; ○ Where the PCTWC/ TWC determine that the deviation is significant, the TW Design Change Application form should be used; • Carry out a final inspection of completed temporary structures, and only if the TW Register has been updated to reflect authorisation to proceed and the inspection proves satisfactory, issue a written TW Permit to Load or Take Into Use form if authorised to do so. ○ The TWS may only issue permits to load for TW items the PCTWC/ TWC has identified as Implementation Risk category 0 + 1. *Note: Only the PCTWC/ TWC/ TWD is authorised to issue a Permit to Load for temporary structures where the PCTWC/ TWC has identified the Implementation Risk classification as category 2 or 3.* • Carry out inspections and maintenance during the use of TW under their control and record details in the TW Inspection Record form. ○ Inspections will normally be weekly, and also after any event that could affect the stability of the TW. ○ The inspection record must be provided to the PCTWC/ TWC; • Issue written permission to dismantle the TW when the PCTWC/ TWC provided confirmation that it is no longer required and it is safe to do so: ○ Use the TW Permit to Dismantle form, specifying any relevant sequence of dismantling to be followed; ○ TW must be dismantled in accordance with the relevant RAMS; ○ The TWS may only issue permits to dismantle for TW items the PCTWC/ TWC has identified as Implementation Risk category 0 + 1. • Provide information and records needed by the PCTWC/ TWC, to maintain the TW Register; • Refer to the PCTWC/ TWC, line manager, Project Director/ Manager, and/ or DI any TW matters that are not being satisfactorily managed on site;	BHC-F-11n BHC-F-05b BHC-F-11h BHC-F-11g/ BHC-F-11o/ BHC-F-11p BHC-F-11i BHC-F-11j	TWS PCTWC/ TWC/ Site Manger

Item	Details	Reference	Responsibility
	• Attend any formal reviews of TW, as required by the appointed PCTWC/ TWC, Project Director/ Manager.		

4.16	**Site Manager**
	
	For all elements of TW that fall within their areas of responsibility, Site Managers shall:
	
	• Cooperate with the appointed PCTWC/ TWC in carrying out their duties;
	
	• Provide information and records needed by the PCTWC to maintain the Master TW Register;
	
	• Ensure that no TW item is taken into use or dismantled before:
	  ○ the Master TW Register has been updated by the PCTWC to reflect authorisation to proceed;
	  ○ A permit to load/ take into use or dismantle has been issued;
	
	• Carry out inspections of TW under BHC control as directed by the PCTWC (e.g. hoarding, holes/ voids, signage, etc.) and record details in the TW Inspection Record form.
	  ○ Inspections will normally be weekly, and also after any event that could affect the stability of the TW.
	  ○ The inspection record must be provided to the PCTWC;
	
	• Refer to the PCTWC, Berkeley Project Director/ Manager, and or DI any TW matters that are not being satisfactorily managed on site;
	
	• Attend any formal reviews of TW, as required by the appointed PCTWC or the Berkeley Project Director/ Manager;
		BHC-F-11f
		
		BHC-F-11f
		BHC-F-11g/ BHC-F-11j
		
		BHC-F-11i/ BHC-F-11m/ BHC-F-08d
			Site Manager

4.17	**BHC Standard Design Solutions: Creation/ Application of Generic Design Details** The following are examples of TW which may be considered as appropriate for standardised design: • Ply hoarding; • Flag poles + signs • Welfare cabin bases • Silo bases, hard standings and haul roads • Scaffold bases • Void covers The DI must ensure that standard designs are produced in line with the requirements of this procedure. • Where a standard design may be used on different projects the TW Design Brief issued by the PCTWC must clearly detail this; • The design output issued by the TWD must list the specific parameters for the design's use; • A Design Check Certificate for the standard design must be issued by the TWDC before the design is issued 'For Construction'. Before authorising the use of a standard design on a project, the PCTWC must ensure that the application on the project falls within the specific parameters detailed on the design: • Where the specific parameters of the design are met, the design can be utilised as a standard CAT 0 solution; • Where the site specific application is not covered by the design parameters, the PCTWC must consult the TWD/ PWD and agree the appropriate category of design check required from the TWDC.	BHC-F-11e BHC-F-11n	DI/ PCTWC PCTWC
	Section B Applies where Berkeley act as the client only		
4.18	**Pre-construction – Commercial department** Before engaging a PC on a project, the Commercial Manager/ Surveyor must ensure that the Project Manager/ DI have included within the Scope of Works a schedule of the TW items expected to fall within the PC's package. Before the PC is appointed, in addition to the standard Stage 2 CAQ Assessment requirements detailed in section 4.8, a member of the health and safety department will complete an on-site assessment of the proposed PC's application of their TW procedure at a site where the contractor is engaged as PC. The assessment will be included within the tender recommendation pack.	BHC-F-06a	Commercial Manager/ Surveyor H+S Manager

Item	Details	Reference	Responsibility
	The Commercial Manager/ Surveyor must ensure before appointing the proposed PC, that the contract documents within the Project Specific Instruction includes clear obligations on the PC to: • Observe the requirements of their own formal, BS5975 compliant written procedure for the management of TW; • Comply with the BHC monitoring arrangements that include all Berkeley Directors' visits, Group Assessment/ Health and Safety department visits and Client TW assessments.		Commercial Manager/ Surveyor
4.19	**PC's TW procedure** Once the PC has been appointed, the Technical Manager must issue the schedule of TW to the PC's DI/ PCTWC as part of the preconstruction information, to allow the construction phase planning and PC's procurement to progress. • The Technical Manager must provide all necessary information to enable the PCTWC to design, construct and remove TW and, where necessary, protect any assets which belong to Berkeley or a third party. Before the PC undertakes any construction activity on site, the DI/ Project Manager must ensure that the PC has: • Formally appointed a competent PCTWC; • Formally appointed competent TWCs, TWDs, TWDCs, and TWSs; • Prepared a TW Register based on the schedule of TW provided by BHC; • An effective TW filing system in place that enables the PCTWC to easily locate all documents relating to items on the TW Register. Regular audits will be undertaken by a member of the TW Governance Committee on all developments in line with the requirements outlined in section 4.2. At the end of the Principal Contractor contract, a formal handover of all TW records and information must take place with the PCTWC and the project management team appointed by any subsequent Principal Contractor. For example the substructure Principal Contractor handing over to the superstructure Principal Contractor.		Technical Manager DI/ Project Manager
4.20	Document records must be retained at each site for audit purposes.		
5.0	**Guidance documents and references**		
5.1	**Legislation and Guidance** Construction Design Management Regulations 2015 BS5975: 2019 Code of practice for temporary works procedures and the permissible stress design of false work		
5.2	**Berkeley Group Standards** BGCS06 Crane Operations BGCS08 Demolition BGCS11 Excavations BGCS17 Hoardings, Gates and Signs BGCS18 Hoists and Mast climbers BGCS19 Holes and Voids BGCS25 Management of Contractors BGCS32 Piling BGCS35 Refurbishment BGCS36 Scaffolding BGCS37 Site Set Up BGCS42 Temporary Works		
6.0	**Appendices**		
6.1	Appendix 1 Information to be considered when preparing the TW Design Brief Appendix 2 Implementation Risk Classes for TW Appendix 3 Categories of Design Check		

Appendix 1 Information to be considered when preparing the TW Design Brief

A design brief should be prepared to serve as the basis for subsequent decisions, design work, calculations, drawings and design checks. All concerned with the construction should contribute towards the preparation of the brief.

The following information should be taken into account for inclusion in the preparation of the brief:

a. Details of the organizations involved in the design of the scheme and their respective responsibilities, including the name and contact details of the PC's TWC, the TWC or both as appropriate;

b. Appropriate details of the permanent works in an agreed format;

c. Appropriate clauses from the specification for the permanent works;

d. Statement of any requirement to design the temporary works in accordance with a particular standard or guidance document;

e. Information on any significant risk residual risk associated with the design of the permanent works;

f. Programme for the construction of the permanent works;

g. Programme for the various phases of the design, design check, any external approvals, procurement and erection of the temporary works;

h. The timing for the removal of the temporary works in relation to the ability of the permanent works to be self-supporting;

i. Any requirements for access onto, under, or around the permanent works or temporary works;

j. Requirements for access for erection, maintenance, use and dismantling of the temporary works and for other site activities;

k. Any requirements for public access, for example a requirement to keep a public footpath open;

l. Equipment and materials available for use in the temporary works;

m. Proposals for any moving and re-use of temporary works;

n. Environmental information such as the location, altitude and topography of the site, the distance from the nearest sea, rainfall, water levels and current velocities;

o. Site investigation data and reports relating to the areas under and adjacent to the foundations of the temporary works or proposed excavations; this should include information on all underground and over-head services;

p. Specific requirements including any limitations on the staged construction of the works due to positioning of construction joints, sequence of separate pours, rate of successive pours, timing of post-tensioning and removal of supports;

q. Any requirements for pre-cambering or residual camber;

r. Loads that might be induced in the temporary works by permanent works that have been completed, such as the application of staged post-tensioning, load re-distribution and any the permanent works as load is progressively increased;

s. Any limitations stated by the PWD on the position and extent of loads imposed by the temporary works onto elements of the permanent works which have been constructed, such as loads permanent foundations required to support the temporary works;

t. Any limitations on the positioning of loads from temporary works over underground services or voids, adjacent to excavations or retaining walls forming part of the permanent works;

u. Proposals for the protection of the temporary works, including its foundations, against disturbance or impact;

v. Limitations imposed by various authorities in relation to working within or adjacent to railways, highways, water-courses, etc.;

w. Any environmental constraints placed on the site by the local authority or other body, for example a requirement by the local authority to limit noise to certain hours of the day;

x. Details of obstructions that may preclude or influence the position of the temporary works;

y. Requirements for design deliverables from the TWD and the format of the design output; and

z. Proposed level of design check category.

Appendix 2 Implementation Risk Classes for TW

The risks associated with TW can be considered to arise from their design, their construction and use (execution risks), and the consequences of their failure.

While design risk relates to the complexity of the design and is mitigated through the selection of the category of design check (see Appendix 3), for each item of TW an assessment of execution risks and consequence of failure must be completed in order to determine the 'Implementation Risk' and ensure appropriate procedures are adopted to control those risks.

The PCTWC is responsible for classifying TW in consultation with the construction team and/or the design team where an interface exists between contractors.

- The Execution Risk should consider aspects such as workmanship, materials, experience and manner of use in the construction, use and removal of the TW item.
- Risks associate with the consequence of failure come from the location of the TW and what and who might be affected by the failure.

An appointed TWC may be responsible for classifying the Implementation Risk in consultation with the construction team and/or the design team where no interface exists between contractors and agreed by the PCTWC.

Rating the Execution Risks and Consequence of failure

Execution Risks		
Rating	Description	Definition
1	Very Low	• No identified practical mode of failure
2	Low	• Minor structures with high level of robustness. • Very experienced workforce.
3	Medium	• Conventional structures. Conventional construction methods. • Relatively experienced workforce
4	High	• Schemes with dependency on critical structural details, with little or no redundancy, or with stability reliant on critical elements. • Schemes with complex interfaces where various items of temporary works impact on one another • Inexperienced workforce. • Unfamiliar processes or equipment.

Consequence of failure		
Rating	Severity	Description
1	None	• No impact if failure occurs
2	Slight	• Failure is entirely within the site, of low impact • Inconvenient but personal injury unlikely.
3	Serious	• Failure would be major, potentially involving injury, fatality or significant economic loss. • Would not initiate secondary events.
4	Catastrophic	• Failure would be catastrophic in its own right, or if minor might initiate a secondary or chain reaction of major or catastrophic events

Calculating the Implementation Risk Class

		Consequence of Failure			
		1 None	2 Slight	3 Serious	4 Catastrophic
Execution Risk	1 Very Low	1	2	3	4
	2 Low	2	4	6	8
	3 Medium	3	6	9	12
	4 High	4	8	12	16

Implementation Risk Class Control Measures

Implementation Risk Category	Implementation Risk	Permits required	Other control measures
0	1 - 2	n/a	• Control via RAMS. • Inspection carried out by member of the site team.
1	3 - 5	• Permits can be signed by a TWC or authorized TWS	• Follow company procedures • Contractor RAMS to including inspection and test plan • Inspection carried out by authorised TWS or TWC
2	6 - 9	• Permits can be signed by the PCTWC or an authorized TWC	• Follow company procedures • Contractor RAMS to including inspection and test plan • Inspection carried out by authorised TWC or PCTWC
3	10 - 16	• Permits signed by PCTWC.	• Follow company procedures, including inspection and test plan • PC's DI to ensure the scheme is reviewed

Appendix 3 Categories of Design Check

Category	Scope	Examples	Comment	Independence of checker
0	Restricted to standard solutions only, to ensure the site conditions do not conflict with the scope or limitations of the chosen standard solution.	These may include standard trench boxes	TW items can be classed as an acceptable standard CAT 0 solutions if; • The solution assumes that the equipment specified is used, without substitutions; • Concept is acceptable for the location; • Conditions of use and limitations on use are within the specified limits; • The assembly can erected to the expected tolerances; • Solution is within the experience of the workforce and its supervision; • Equipment is not damaged and does not show signs of excessive wear; • Method of loading the system is as stated in the standard solution; • Ancillary items, or additional temporary works, by others have been designed and supplied as required; • The arrangement, prior to use, has been separately checked for compliance with the guidance provided by the supplier or organisation responsible for the standard solution. This applies to the use of standard solutions and not the original design, which will require both structural calculation and checking to category 1, 2 or 3 (from BS5975), as appropriate.	Because this is a site issue, the check may be carried out by another member of the site or design team such as the TWS or TWC.
1	For simple designs.	These may include: formwork; falsework (where top restraint is not assumed); needling and propping to brickwork openings in single storey construction.	Such designs would be undertaken using simple methods of analysis and be in accordance with the relevant standards, supplier's technical literature or other reference publications.	The check may be carried out by another member of the design team.
2	On more complex or involved designs.	Designs for excavations including excavation support using sheet piles, for foundations, for structural steelwork connections, for reinforced concrete. Designs where stability is obtained by restraint at the top of the temporary works (e.g. top restrained falsework	Category 2 checks would include designs where a considerable degree of interpretation of loading or soils' information is required before the design of the foundation or excavation support or slope.	The check should be carried out by an individual not involved in the design and not consulted by the designer.
3	For complex or innovative designs, which result in complex sequences of moving and/or construction of either the temporary works or permanent works.	Tower Crane and Hoist bases It also includes basement excavations and tunnels	These designs include unusual designs or where significant departures from standards, novel methods of analysis or considerable exercise of engineering judgement are involved.	The check should be carried out by another organisation.