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## 1. PURPOSE

This procedure and associated guidance describe the management process taken to ensure that temporary works are identified and appropriately designed, installed, checked and removed to guarantee their structural integrity and safety in use while producing the required quality of permanent works at all times.

## 2. SCOPE

This procedure applies to all site activities and specifically to the engineering aspects of temporary works schemes. It includes any temporary effects upon the permanent works resulting from construction operations and phasing of the works.

## 3. REFERENCES (INPUTS)

- Tender submission and build-up
- Contract documentation, e.g. drawings, specifications, HS&E information
- Site investigation reports and borehole logs
- Constraints by 3rd Parties e.g. Planning Conditions, FD01 Flood Defence Consents
- Relevant Standards and Codes of Practice
- Support documentation available from the Technical Reference Library

## 4. ABBREVIATIONS & DEFINITION OF TERMS

Abb.	Definition	Responsibility
HoE	Head of Engineering	Undertakes the duties of the Designated Individual as defined in BS 5975 including establishing, implementing and maintaining this procedure for the control of temporary works (TW). Accepts TWC and, if appropriate, TWS appointments and produces and maintains a register of current TWCs and TWSs. Commissions external designs (although this may also be done by the EDR on the EM's behalf).
EDR	Engineering Department Representative	VolkerStevin (VS), VolkerBrooks (VB), VolkerGround Engineering (VGE) or VolkerInfra (VI) designer assigned as the first point of contact for the project regarding temporary works design requirements. If no EDR is identified the HoE undertakes this role. Works with the TWC and provides advice on TW design requirements. Decides who the designer and checker should be and what level of design check is required. Advises on the design review period required for subcontractor TW designs and undertakes the review of subcontractor designs when received. Co-ordinates design activities for designs and/or checks undertaken externally. May approve changes to TW.
SA	Site Agent	Person in overall control of VS, VB, VGE or VI operations at the location or site. Responsible for ensuring that the requirements of this procedure are implemented and for managing the project as a whole. On VS and VI projects where there is no SA this role may be performed by the Project Manager, Site Manager or Sub Agent. On VB projects this role will be performed by the Operations Manager. On VGE projects this role will be performed by the Construction Manager.

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## 4. ABBREVIATIONS & DEFINITION OF TERMS (CONTINUED)

Abb.	Definition	Responsibility
<b>Checker</b>	Individual who checks the design of the temporary works. Note this may be done internally (VS Engineering Department, VB, VGE or VI) or by an external consultant, subcontractor or specialist.  Undertakes a detailed check of the design calculations to the level specified by the EDR and signs off checked calculations or provides a signed design check certificate.	
<b>CM</b>	Contracts Manager	Nominates the TWC and, if appropriate, TWS.  On completion of the Contract ensures that the appropriate records are archived.  On VS and VI projects if no CM is appointed the Operations Directors shall assume this role.  On VB projects the General Manager will perform this role.  On VGE projects the Construction Manager will perform this role.
<b>Cofferdam</b>	A temporary structure, often constructed using steel sheet piles, whose function is to exclude soil and / or water from an area to facilitate construction of the permanent works.	
<b>Designer</b>	Individual who carries out the design of the TW. Note the design may be done internally (VS Engineering Department, VB, VGE or VI) or by an external consultant, subcontractor or specialist.  Designs the TW and produces design risk assessments, appropriate calculations and drawings. Identifies the checks required, their timing and frequency and produces permits for completion by the TWC / TWS along with check schedules and check lists.	
<b>Falsework</b>	Any temporary structure used to support a permanent structure while it is not self-supporting either in new construction or refurbishment.  Falsework may take many forms including for example temporary bridge support, façade retention and scaffolding around buildings.	
<b>Formwork</b>	The section of the TW used to give the required shape and support to poured concrete until it is able to support itself. It consists primarily of facing material in direct contact with the concrete and bearers that directly support the facing material. It is usually temporary but in some cases may be either wholly or partly permanent.	
<b>Planner</b>	Produces TW schedule at Tender Stage. Includes TW activities on tender and contract programmes.	
<b>Purchasing / QS</b>	Includes in subcontract order whether the subcontractor's or VS / VB / VGE / VI's temporary works procedures are to be followed and advises the subcontractor of the minimum periods to be allowed for review of their TW design calculations.	
<b>Scaffold</b>	A temporarily provided structure that provides access, or from which persons work, or that is used to support material, plant and equipment. Commonly constructed from tube and fittings.	
<b>TW</b>	Temporary Works	Works undertaken during construction to enable the permanent works to be constructed, or to stabilise or protect an existing structure, but that are not required to form part of the finally completed construction works.
<b>TWC</b>	Temporary Works Co-ordinator	Responsible for TW on a project.  A full description of the responsibilities can be found on Q25-01-VS <i>Appointment of Temporary Works Co-ordinator</i> .
<b>TWS</b>	Temporary Works Supervisor	Responsible to and reports to the TWC. Assists the TWC in supervision and checking of TW on a project.  The extent of the TWS duties and responsibilities will vary from project to project and must therefore be clearly defined for the specific project and noted on the Q25-02-VS <i>Appointment of Temporary Works Supervisor</i> .

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<b>ACTIONS (PROCESS)</b>		<b>RESPONSIBILITY</b>
<b>5.</b>	<b>GENERAL</b>	
5.1	TW are an integral part of most construction and building operations. As failure can cause significant health and safety risks in addition to programme and budget costs, detailed planning, design and implementation of TW is essential.	
5.2	The safe use of TW requires particular engineering and delivery skills. There are also certain legal requirements regarding roles and responsibilities to be discharged.	
5.3	This procedure is based on the requirements of BS5975:2008+A1:2011 but also identifies additional requirements for use specifically on Environment Agency or National Grid contracts.	
<b>6.</b>	<b>APPOINTMENT OF TEMPORARY WORKS CO-ORDINATOR (TWC) AND TEMPORARY WORKS SUPERVISOR (TWS)</b>	
6.1	As soon as practicable the Contracts Manager (or other senior manager) will select an appropriate individual to undertake the role of TWC (required for every project) and, if appropriate, a TWS.	CM
6.2	The individual(s) and Contract Manager shall complete form Q25-01-VS <i>Appointment of Temporary Works Co-ordinator</i> and, if appropriate, form Q25-02-VS <i>Appointment of Temporary Works Supervisor</i> and forward to the HoE for review and acceptance prior to commencement of work on site.	CM / TWC / TWS / HoE
6.3	The individuals as accepting the roles of TWC or TWS must sign the completed form. The original should be kept on site with the TWC or TWS retaining a copy.	TWC / TWS
6.4	If the appointed TWC and / or TWS is transferred from the site or unavailable for any period of time a new TWC / TWS must be nominated and appointed immediately.	CM / HoE
6.5	For smaller contracts where there is not a permanent member of technical staff on site the TWC must be present full time while any TW are being installed or removed. The TWC must visit site daily while any TW are in use, unless agreed otherwise with the HoE. Alternatively a TWS can be appointed to assist and undertake some of the duties of the TWC.	TWC
6.6	On larger projects where there is a significant amount of TW or on multi-site projects it may also be beneficial to appoint a TWS to assist the TWC.	
6.7	It may be desirable to have more than one TWC on a project for example where the TW involved cover a variety of construction skills. Note, however, that this is not allowed on National Grid contracts.	
6.8	Where more than one TWC is to be appointed, each TWC must have clearly defined responsibilities and should be accountable for all the TW related to a specific work type or area to avoid confusion and eliminate the possibility of TW requirements not being identified by any of the TWCs.	
6.9	The HoE is responsible for producing and maintaining Q25-03-VS <i>Register of Temporary Works Co-ordinators and Temporary Works Supervisors</i> for all contracts. This register is held on Workspace (New Information Zone \ Engineering - VolkerStevin \ Temporary Works \ TWC & TWS Register).	HoE

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## ACTIONS (PROCESS) (CONTINUED)

## RESPONSIBILITY

### 7. TRAINING & EXPERIENCE

- 7.1 The TWC and TWS must have sufficient authority, training and experience to fulfil their appointments. They must be experienced enough to recognise the need for TW and have acknowledged relevant experience of the construction methods involved. Most importantly they must know their own limits and know when to ask for help. Further training or assistance can then be provided as necessary.
- 7.2 Generally no specific training qualification is required for the role of TWC but individuals may find a Temporary Works Coordination course beneficial. However, for National Grid contracts formal training in temporary works is mandatory.

### 8. IDENTIFYING THE NEED FOR TEMPORARY WORKS

8.1 The TWC is responsible for identifying the need for TW and for preparing and maintaining a register using form Q25-04-VS *Temporary Works Register* of all situations where TW is required. The register must include elements of TW being designed and provided by subcontractors and is to be included in and managed through the project *Site Management Plan*.

TWC

8.2 Areas likely to require design input include, **but are not limited to:**

- Soffit support
- Formwork
- Falsework
- Access platforms
- Scaffolding, including:
  - \_ Loading platforms
  - \_ Protection fans
  - \_ Shoring
  - \_ Staircases / access towers
  - \_ Bridging structures
  - \_ Sheeted scaffolds (ref UKBP/TP184)
- Hoardings
- Cabin foundations
- Haul roads
- Working platforms for heavy plant, e.g. cranes & piling rigs
- Crane outrigger support pads
- Temporary bridges
- Tower crane bases
- Cofferdams
- Ground support
- Open excavations - batters and berms required
- Groundwater control / dewatering
- Watercourse diversions
- Trenchless construction including headings, thrust bores and mini tunnels
- Stability checks for floating plant, e.g. crane barges, pontoons, Linkflote pontoons
- Loading of existing structures
- Alteration to existing structures
- Demolition (full or partial) - NOTE requires HSE approval
- Complex construction sequences where the permanent works may not be stable during construction e.g. erection of steel frames or assembly of precast concrete elements to form structure

NOTE: Proprietary equipment (e.g. Redeb for soffit support, soldiers for formwork applications, panel formwork systems, and trench support systems) must also be designed and / or checked for the intended application.

8.3 TW requirements should have been identified, priced and programmed at Tender stage (see Q21 *Planning Standard* and S02 *Estimating*) and any significant requirements discussed at The Tender Handover Meeting.

Planner

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**ACTIONS (PROCESS) (CONTINUED)**
**RESPONSIBILITY**
**8. IDENTIFYING THE NEED FOR TEMPORARY WORKS (CONTINUED)**

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|-----|--|---------------|
| 8.4 | The scale of TW to be provided must be re-assessed at Contract stage to ensure realistic lead times are allowed in working programmes for design, procurement and installation.  | TWC / Planner |
| 8.5 | A programme clearly identifying when design information is required shall be prepared, and along with the TW Register, shall be discussed with the EDR no more than 2 weeks after Tender Handover and ideally at least 4 weeks before the first element of temporary works is required.  | TWC           |
| 8.6 | Based on the timescale and / or complexity of the work the EDR will determine (in conjunction with the HoE if necessary) whether the design should be carried out internally (by VS Engineering Department, VB, VGE or VI) or externally (by a consultant, subcontractor or specialist), the level of check required and who the checker should be. Each of these decisions will be reviewed again when the detailed design brief is produced and the Q25-04-VS <i>Temporary Works Register</i> updated accordingly. | EDR / TWC     |
| 8.7 | Further requirements, which arise during the course of a Contract, should be notified to the EDR as soon as Site becomes aware of a need. Note TW lead in times must be given due consideration when assessing client instigated changes.  | TWC           |

**9. MANAGEMENT OF SUBCONTRACTORS**

- |     |  |                 |
|-----|--|-----------------|
| 9.1 | Prior to any subcontractors starting on site a Post Tender Interview meeting will be held (See P03 <i>Subcontract Procurement</i> ) during which it will be decided if VS / VB / VGE / VI's TW design and installation procedures are to be followed or the Subcontractors own (which must be as equally robust as VS / VB / VGE /VI's). The outcome will be written into the Subcontract Agreement. | Purchasing / QS |
| 9.2 | Designs and drawings produced by subcontractors must be forwarded to the EDR for review and comment prior to installation. This review does not relieve the subcontractor of any responsibility but is to ensure that a design has been carried out and checked and that adequate information regarding the design and any remaining risks is provided.  |                 |
| 9.3 | The EDR will determine the review period for each design. This will be dependent on the complexity of the work and Subcontractors should be advised of the minimum period to be allowed for this review.   | Purchasing / QS |
| 9.4 | VS, VB, VGE or VI's TWC must check the TW themselves or ensure that the subcontractor's appointed person has carried out, and continues to carry out, the necessary checks and inspections.  | TWC             |

**10. DEFINING THE PROBLEM**

- |      |   |     |
|------|---|-----|
| 10.1 | A design brief, bringing together all available data, must be prepared for all circumstances where TW design is required regardless of who the designer is. Timely preparation of the brief will allow necessary alternatives to be considered in addition to the design, detailing and procurement processes.<br>The brief should include: <ul style="list-style-type: none"> <li>• Appropriate permanent works drawings</li> <li>• Relevant extracts from the Health &amp; Safety Plan</li> <li>• Relevant Site Investigation Data including ground water level information</li> <li>• Relevant Works Information / Specification requirements</li> <li>• Relevant extracts from the Environmental Action Plan</li> </ul> | TWC |
|------|---|-----|

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## ACTIONS (PROCESS) (CONTINUED)

## RESPONSIBILITY

### 10. DEFINING THE PROBLEM (CONTINUED)

- 10.1
- Relevant 3<sup>rd</sup> Party constraints e.g. Planning Conditions, FD01 Flood Defence Consents
  - Known details of underground services or other artificial conditions if appropriate
  - Special requirements for safety and / or access, which may need to be incorporated
  - An assessment of site specific risks should the TW fail
  - Preferred equipment or materials - if known
  - Known load cases to be considered including plant loading, person access and environmental effects, e.g. water levels, current velocities, wind loading
  - Level of checking required by contract
  - A list of the deliverables required, i.e. drawings, calculations, take off, etc.
  - Key programme dates, i.e. checked design information required by, proposed installation date and proposed removal date

10.2 Although not always appropriate use of one of Design Brief forms Q25-06-VS to Q25-11-VS will assist in preparation of the design brief.

TWC

10.3 The brief must be submitted to the EDR initially for review and the EDR will confirm or amend the initial decision regarding the best individual / party to act as designer and checker and the level of check required.

TWC / EDR

10.4 The EDR is to coordinate all design activities, (unless agreed otherwise with the HoE), i.e. design briefs must be issued to third parties via the EDR and completed designs and checks must be returned to the EDR for review prior to issue to site. External designs and checks are to be commissioned by the HoE or the EDR acting on the HoE's behalf.

EDR

HoE/ EDR

### 11. DESIGN OF TEMPORARY WORKS

11.1 The engineering competence and structural integrity of any solution will be the responsibility of the Designer. They are therefore responsible for ensuring appropriate design standards and methods of analysis are used.

Designer

11.2 On Environment Agency projects the design should be carried out taking cognisance of Environment Agency publications Safety is Paramount - Safety, Health and Environmental (SHE) Code of Practice 300\_10\_SD27 and Safety, Health and Environment (SHE) Handbook for Managing Capital Projects 300\_10.

Designer

11.3 On National Grid projects the design should be carried out taking cognisance of National Grid procedures UKBP/TP184 - Procedural Requirements for the Management of Temporary Works and UKBP/TP188 - Transmission Capital Delivery Electricity - Design Management.

Designer

11.4 Design risk assessments are to be carried out in every instance where design work is undertaken. The risk assessments are to be issued to site and must clearly highlight any remaining risks, special requirements for checking and when and where Q25-15-VS *Permit to Load*, Q25-16-VS *Permit to Excavate* and Q25-17-VS *Permit to Strike / Remove* forms must be completed prior to loading permanent works or loading or dismantling TW.

Designer

11.5 Critical health and safety information should also be noted on the temporary or permanent works drawings.

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<b>ACTIONS (PROCESS) (CONTINUED)</b>		<b>RESPONSIBILITY</b>
<b>11.</b>	<b>DESIGN OF TEMPORARY WORKS (CONTINUED)</b>	
11.6	Design risk assessments for internal designs will be recorded on form Q25-12-VS <i>Design Risk Assessment</i> but external companies may use their own forms / methods of conveying the information. See Q25-12G-VS <i>Example Design Risk Assessment</i> for guidance on completion of form Q25-12-VS <i>Design Risk Assessment</i> .	
11.7	Drawings and calculations must have the following information clearly noted: <ul style="list-style-type: none"> <li>• Contract title and job number</li> <li>• Company name</li> <li>• Brief title identifying element of work including temporary works reference number</li> <li>• Unique drawing / document reference number</li> <li>• Prepared by: INITIALS OF INDIVIDUAL</li> <li>• Date of preparation</li> <li>• Checked by: INITIALS OF INDIVIDUAL</li> <li>• Date of check</li> <li>• Construction status - for drawings only</li> <li>• Revision status</li> <li>• Residual risks identified in HSEQ box or using hazard map - for drawings only</li> </ul>	
11.8	Q25-15-VS <i>Permit to Load</i> , Q25-16-VS <i>Permit to Excavate</i> and Q25-17-VS <i>Permit to Strike / Remove</i> forms, as appropriate, will be issued by the Designer for completion by site following satisfactory completion of any inspections and checks. The element of TW and stage of construction to which each of these forms relate is to be clearly stated along with cross references to relevant drawings and design risk assessments.	Designer
11.9	Q25-18-VS <i>Checklists</i> identifying the key elements of the structure to be checked and Q25-19-VS <i>Schedule of Checks</i> will also be produced and issued by the Designer.	Designer
11.10	External designers are expected to complete these forms too but if for any reason the information is not provided the TWC must produce the information in conjunction with the EDR if necessary.	TWC
11.11	The TWC must produce their own specific, detailed checks lists etc. based on the information in forms Q25-15-VS to Q25-19-VS.	TWC
11.12	For Category 2 and Category 3 TW (see 12.5 below) a Q25-13-VS <i>Design Certificate</i> must be completed by the Designer for issuing with the drawings to the checking organisation.	Designer
<b>12.</b>	<b>CHECKING OF DESIGN</b>	
12.1	All designs must be checked. The EDR will determine the appropriate level of checking unless specifically defined in the Contract e.g. where Employers or Statutory Authorities such as Network Rail, the Highways Agency and National Grid stipulate levels of checking and types of certification.	EDR
12.2	The appropriate level of checking will be classified as Category 0, 1, 2 or 3 (see Q25-14G-VS <i>Definition of Temporary Works Design Check Categories</i> ).	
12.3	The amount of information (i.e. design calculations and/or drawings) provided to the checker varies for the different categories of check but in all instances the design brief must be provided to the checker.	

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<b>ACTIONS (PROCESS) (CONTINUED)</b>		<b>RESPONSIBILITY</b>
<b>12.</b>	<b>CHECKING OF DESIGN (CONTINUED)</b>	
12.4	It is expected that a design check certificate will be produced for Category 0 and 1 designs but as the checker has sight of the original design calculations in both these situations the checker may alternatively chose to sign or initial each page of the calculations as checked. Note that the signature or initials must be hand written. Electronic versions of drawings signed off this way may have typed checked initials as long as a copy (may be scanned) of the drawing with an original checked signature is kept.	Checker
12.5	Category 2 and 3 checks are undertaken without sight of the original design calculations and a design check certificate must be produced in each of these situations.	Checker
12.6	Although other design check certificates may be used Q25-14-VS <i>Design Check Certificate</i> is applicable for all categories of checks.	
12.7	On National Grid projects Design Verification and Assurance (in accordance with UKBP/TP194 and UKBP/TP188) shall: <ol style="list-style-type: none"> <li>1. Be applied to all TW designs requiring a Category 3 design check and to cable sealing end protection scaffolds and temporary scaffold guards (or Power Line Crossing scaffolds).</li> <li>2. Also apply, at the discretion of the Design Assurance Engineer and, dependent on the outcome of a risk assessment, to TW requiring a Category 2 design check.</li> </ol>	
12.8	On Environment Agency projects the design check should be carried out taking cognisance of Environment Agency publications Safety is Paramount - Safety, Health and Environmental (SHE) Code of Practice 300_10_SD27 and Safety, Health and Environment (SHE) Handbook for Managing Capital Projects 300_10.	
<b>13.</b>	<b>REVIEW OF DESIGN</b>	
13.1	All completed designs and checks must be reviewed by the TWC to ensure that: <ul style="list-style-type: none"> <li>• Designs and checks have been carried out</li> <li>• The design is in accordance with the brief provided and with current conditions on site</li> <li>• All the information requested has been provided</li> <li>• The minimum details required for construction are noted on drawings and calculations</li> <li>• A design risk assessment has been provided with critical information noted or cross referenced on the drawings</li> <li>• The TWC understands any limitations that have been placed on the TW and the on-site checks that are required</li> </ul>	TWC
13.2	For Category 3 temporary works a meeting should be arranged between the TWC, Designer and EDR / HoE as appropriate to go over the design and ensure that the TWC's understanding is the same as the Designer's intention. This is also recommended for Category 2 temporary works.	TWC
<b>14.</b>	<b>INSTALLATION / CHECKING OF TEMPORARY WORKS</b>	
14.1	Q25-05-VS <i>Temporary Works Document Register and Record of Inspections</i> must be produced and maintained for all TW. As a minimum the register must identify: <ul style="list-style-type: none"> <li>• The element of TW</li> <li>• All drawings relating to that element of TW - specific drawing numbers including revision</li> </ul>	TWC

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ACTIONS (PROCESS) (CONTINUED)		RESPONSIBILITY
<b>14.</b>	<b>INSTALLATION / CHECKING OF TEMPORARY WORKS (CONTINUED)</b>	
14.1	<ul style="list-style-type: none"> <li>The relevant method statements - with specific reference numbers including revisions</li> <li>The relevant risk assessments with specific reference numbers including revisions</li> <li>Staged or final site inspection - signed and dated</li> <li>Staged or final permit issued - signed and dated</li> <li>Checks undertaken - signed and dated, findings and corrective actions undertaken</li> </ul>	
14.2	Installation must not commence until sections 1 to 4 of Q25-05-VS <i>Temporary Works Document Register and Record of Inspections</i> are complete. The remaining sections can only be completed as inspections and checks are carried out.	TWC
14.3	All clearances, permits to work, etc. must be obtained from the Employer and Statutory bodies before starting work.	TWC
14.4	Safe systems of work must be implemented to ensure safe access and egress is maintained at all stages of installation.	TWC
14.5	Installation must proceed in accordance with the design and construction sequence drawings. The adequacy of materials to be used must be assessed before incorporation into the works and as work progresses.	TWC
14.6	Variations, omissions or material substitutions <b>must</b> be communicated to, and authorised by, the Designer, EDR or HoE <b>prior</b> to the changes being made on site. Any alterations must be checked in the same manner as the original design. Any agreed changes and revision of design documents must be recorded on Q25-05-VS <i>Temporary Works Document Register and Record of Inspections</i> .	TWC
14.7	TW must not be put into service until a final inspection has been carried out and the relevant permit(s) (issued with the design) have been completed and signed to confirm that the TW have been installed in strict accordance with the drawings.	TWC
14.8	Q25-12-VS <i>Design Risk Assessment</i> and / or construction sequence drawings will identify where Q25-15-VS <i>Permit to Load</i> or Q25-16-VS <i>Permit to Excavate</i> forms need to be completed at various stages of the construction sequence, e.g. excavation stages within a cofferdam. The relevant form must be completed before construction can proceed to the next stage. Hold points must be added to the RAMS to pick up each check stage.	Designer  TWC
14.9	Additional check certificates may be required by third parties, e.g. Working Platform Certificate required by piling subcontractors who are members of the Federation of Piling Specialists (FPS).	
14.10	Completed Permits and any additional check certificates must be retained along with the Q25-05-VS <i>Temporary Works Document Register and Record of Inspections</i> .	TWC
<b>15.</b>	<b>IN-SERVICE MAINTENANCE OF TEMPORARY WORKS</b>	
15.1	TW must be regularly checked during their service life. A schedule defining the frequency of any checks required will have been provided with the design. This will include for any statutory checks required.	TWC
15.2	Additional checks are required following abnormal loading of the TW or extreme environmental conditions, e.g. heavy rain, high wind and severe wave action.	TWC

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<b>ACTIONS (PROCESS) (CONTINUED)</b>		<b>RESPONSIBILITY</b>
<b>15.</b>	<b>IN-SERVICE MAINTENANCE OF TEMPORARY WORKS (CONTINUED)</b>	
15.3	All inspections and checks and their findings must be recorded in writing and retained with Q25-05-VS <i>Temporary Works Document Register and Record of Inspections</i> .	TWC
15.4	Any defects observed must be reported to the SA in writing and prompt action taken to ensure stability is maintained. If necessary the Designer, EDR or HoE should be contacted for advice.	TWC
15.5	Safe means of access must be provided for inspection.	
15.6	No changes in use of the structure or further imposed loads are to be permitted without the prior approval of the Designer, EDR or HoE and any change in use or loading must be checked in the same manner as the original design.	TWC
<b>16.</b>	<b>REMOVAL OF TEMPORARY WORKS</b>	
16.1	It may be necessary for materials, e.g. concrete, to have achieved a certain strength before TW can be removed. In these instances the minimum strength requirements must be clearly noted on the drawings and Q25-17-VS <i>Permit to Strike / Remove</i> form must be completed before dismantling / removal of the TW commences.	TWC
16.2	In general removal of the TW will be a reversal of the installation sequence. Where a specific sequence must be followed drawings will be provided and any Q25-17-VS <i>Permit to Strike / Remove</i> forms required identified.	Designer
16.2	Client approval or other clearances, permits, etc. may be required prior to removal of TW. If this is the case the TWC must include the necessary approvals on Q25-17-VS <i>Permit to Strike / Remove</i> form and obtain those approvals etc. and complete the form before dismantling begins.	TWC
16.3	Safe systems for work must be implemented to ensure safe access and egress is maintained at all stages of dismantling and removal.	
16.4	Conditions during removal may be significantly different than during construction, e.g. access may now be restricted requiring plant to be able to reach greater distances. This should be considered at the installation stage and adequately covered in the original risk assessment and method statement (RAMS) for the works or a separate RAMS must be produced for removal of the TW.	
<b>17.</b>	<b>RECORDS REQUIRED</b>	
17.1	The following records should be retained on site during the construction period: <ul style="list-style-type: none"> <li>• Temporary Works Register (Workspace 4.17)</li> <li>• Temporary Works Document Registers and Record of Inspections (Workspace (4.17)</li> <li>• Design Briefs (Workspace 4.17)</li> <li>• Design Calculations (Workspace 4.17)</li> <li>• Design Risk Assessments (Workspace 4.17)</li> <li>• Temporary Works Drawings (marked up as necessary to record agreed 'As Built' details) (Workspace 4.17)</li> <li>• Installation Records (Workspace 11.7.5)</li> <li>• Permit to Load / Excavate / Strike / Remove Forms (Workspace 11.6)</li> <li>• Statutory inspection records (Workspace 11.7.5)</li> <li>• Photographs (Workspace 4.17)</li> <li>• Feedback (Workspace 4.17)</li> </ul>	TWC

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**ACTIONS (PROCESS) (CONTINUED)**
**RESPONSIBILITY**
**17. RECORDS REQUIRED (CONTINUED)**

- |      |   |     |
|------|---|-----|
| 17.2 | The information should be retained in hard copy format where appropriate but should also be held electronically in the appropriate sections of Workspace as noted above.  | TWC |
| 17.3 | The same records must be retained in the Contract archive when the project is completed.  | CM  |
| 17.4 | The Engineering Department may retain design calculations, etc. following completion of the project for future reference, however, these will not be strictly controlled and the Contract copy will be the official copy. |     |

**18. ASSOCIATED GUIDANCE & INFORMATION**

- Q25-G01-VS *Form Reference and Drawing Numbering System*
- Q25-12G-VS *Example Design Risk Assessment*
- Q25-14G-VS *Definition of Temporary Works Design Check Categories*
- Q25-PM01-VS *Temporary Works Design and Installation*

**19. DOCUMENTATION (OUTPUTS)**

Standard VolkerWessels UK Record Documents are referenced in brackets. Where alternative formats are used, they shall contain the same or additional content.

- (Q25-01-VS *Appointment of Temporary Works Co-ordinator*)
- (Q25-02-VS *Appointment of Temporary Works Supervisor*)
- (Q25-03-VS *Register of Temporary Works Co-ordinators and Temporary Works Supervisors*)
- (Q25-04-VS *Temporary Works Register*)
- (Q25-05-VS *Temporary Works Document Register and Record of Inspections*)
- Design Briefs as appropriate:
  - (Q25-06-VS *Haul Road Design Brief*)
  - (Q25-07-VS *Working Platform Design Brief*)
  - (Q25-08-VS *Cofferdam / Retaining Wall Design Brief*)
  - (Q25-09-VS *Formwork Design Brief*)
  - (Q25-10-VS *General Temporary Works Design Brief*)
  - (Q25-11-VS *Barge Stability Design Brief*)
- (Q25-12-VS *Design Risk Assessment*)
- (Q25-13-VS *Design Certificate*)
- (Q25-14-VS *Design Check Certificate*)
- (Q25-15-VS *Permit to Load*)
- (Q25-16-VS *Permit to Excavate*)
- (Q25-17-VS *Permit to Strike / Remove*)
- (Q25-18-VS *Checklists*)
- (Q25-19-VS *Schedule of Checks*)
- Design calculations
- Specifications
- Statutory inspection records
- Temporary works drawings
- Installation records

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**20. ASSOCIATED DOCUMENTS**
**External Reference Information:**

- BS 5975:2008+A1:2011 - Section 2 - Procedural Control of Temporary Works
- CDM 2015 Regulations 22 to 24
- CIP Construction Health and Safety Manual
- CIRIA C703 - Crane Stability on Site
- EA - Safety is Paramount - Safety, Health and Environmental (SHE) Code of Practice 300\_10\_SD27
- EA - Safety, Health and Environment (SHE) Handbook for Managing Capital Projects 300\_10
- Formwork Failures - Extract from Formwork - A Guide to Good Practice
- FPS Working Platform Certificate
- FPS Working Platform Certificate - Frequently Asked Questions
- HSE - SIM 02/2010/04 - The Management of Temporary Works in the Construction Industry
- HSE Construction Information Sheet 10 - Tower Scaffolds
- HSE Construction Information Sheet 56 - Falsework
- HSE - HSG47 - Avoiding danger from Underground Services
- HSE - HSG185 - Health and Safety in Excavations
- HSE - The Work at Height Regulations 2005 (as amended) - A Brief Guide
- National Grid UKBP/TP184 - Procedural Requirements for the Management of Temporary Works
- National Grid UKBP/TP188 - Transmission Capital Delivery Electricity - Design Management
- The Work at Height Regulations 2005

**21. ISSUE RECORD**

Issue	Date	Comments
1	Apr 2015	<p>Previous procedure ENG1-01 <i>Temporary Works Design and Installation</i> and ENG-02 <i>Technical Reference Library</i> rewritten to incorporate new working practices and to cover VolkerBrooks and VolkerGround Engineering as well as VolkerStevin.</p> <p>Procedure also amended to reflect changes to Construction (Design and Management) Regulations that come into force on 6<sup>th</sup> April 2015 and to allow for the transitional period that runs until 6<sup>th</sup> October 2015.</p> <p>Procedure renumbered as part of overall procedures review.</p>
2	Dec 2016	<p>Q25 family of documents has now been re-referenced to Q25-VS. Q25-VS family is now also applicable to VolkerInfra.</p> <p>Procedure and forms Q25-01-VS, Q25-02-VS, Q25-04-VS and Q25-19-VS updated to remove reference to CDM Co-ordinator and CDM 2007 following end of six month transition period.</p> <p>Paragraph 14.8 within this procedure has been amended to include need to add hold points in RAMS to pick up every check stage.</p> <p>Q25-07-VS renamed to Q25-07-VS <i>Working Platform Design Brief</i> and section added to provide loading details for plant other than cranes and piling rigs.</p> <p>Q25-12-VS and Q25-12G-VS amended to include explanatory note.</p>
3	Jan 2017	Title of Engineering Manager changed to Head of Engineering.

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**22. WHAT HAS CHANGED IN THIS LATEST ISSUE AND WHY**

Title of Engineering Manager (EM) changed to Head of Engineering (HoE). All references to EM updated to HoE but otherwise procedure unchanged.

**23. BRIEFING REQUIREMENTS**

All new employees will receive an introduction to the Integrated Management System (IMS) at induction, according to the nature of their role.

All employees with an email address receive the 'Record of Revisions' each month, which details changes to the IMS. All Line Managers retain the responsibility to ensure their staff are briefed on changes as appropriate.

The following table defines how revised issues of this document are briefed to existing employees according to related specific responsibilities.

Job role, department, function	Method of briefing revised issue
Head of Engineering	Document owner, approves changes, briefs members of the VS Engineering Department, VB, VGE and VI designers, TWCs and TWSs.
All Employees	Record of Revisions and cascade briefings as appropriate.

**24. IMS AUTHORISATION**
**Document owner approval:**

Eleanor Inglis, Head of Engineering

**Approval for IMS:**

Angela Saini, Senior IMS Manager

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