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| --- | --- | --- | --- |
| **Job Name:** |  | **Job Number:** |  |
| **Design Component:** |  | **Date Completed:** |  |
| **Persons Involved in Identification Process:** |  | **Document(s) this information has been transferred to:**Safety in Design Report (………..) |
|  |
| **Job Manager:** |  | **Job Manager Signature:** |  |

***Context:***

*The purpose of these guidewords is to consider how can these issues lead to or cause hazards in any of the phases of life cycle. The life cycle phases include design, construction and commissioning, operations and maintenance and finally disposal. The aim of SID is to minimise the effect of these hazards by the design where possible.*

Issues to be considered during the Design

(Tick **🗸** those issues that are applicable - 🞫 those that have been discounted)

Note: This is **not** a complete list of **Potential Issues**

| **Guideword** | **Potential Issue** | **Tick 🗸 or 🞫****Do not leave blank** |
| --- | --- | --- |
| **During Construction** | **During O&M** |
| **Confined space** | Are there confined spaces created by the design? Has the design minimised the need for confined space entry, looking for alternate methods of accessing and operating equipment?*Have they been indicated on the drawings and are there alternative methods that can be developed/used to eliminate and/or reduce the impacts of confined spaces?*Are the sizes of pits adequate for safe entry?Are work areas and clearances adequate in base of pits to perform maintenance and repair/install equipment?Are davit points included where needed?Are there adequate hardstand areas around lids to ensure safe opening and operation of any equipment?Is there sufficient drainage away from lids and pit walls?Can equipment be operated without entering confined areas? (ie extended valve spindles) |  |  |
| **Guideword** | **Potential Issue** | **Tick 🗸 or 🞫****Do not leave blank** |
| **During Construction** | **During O&M** |
| **Electrical** | Does the design introduce electrical installations and therefore the risk of electric shock?* Underground power cables
* Proximity to exposed cables
* Work near overhead power lines

*Consider risks introduced by electrical services (i.e. contact with power lines or voltage induction by steel pipelines running parallel to overhead services). Consider earthing requirements (including fencing and gates) Consider number and location of power points.* |  |  |
| **Excavation:**Collapse/ Engulfment | Is there a possibility that risks such as excavation collapse or flooding will be introduced?Is the working corridor for the excavation sufficient? Is it been impacted by any external approval constraints?Does the design require deep excavations to pipes for maintenance that may result in an unsafe work environment or that may impact adjacent assets? Can this be avoided? |  |  |
| **Hazardous Substances:**Asbestos | Could asbestos be present, including as material in existing buildings or piping, on or adjacent to, the site? Is asbestos contained or exposed with the possibility of dust formation? Will there be Coal Tar or Bituminous Coated Pipes and can the design be adjusted to avoid working on or around this material? Refer to the guideline “Working on Asbestos Coated Pipes” (Nexus ID #58654270) for more information. If work on the pipeline cannot be avoided ensure the hazard is identified and communicated to the construction contractor.Consider that even when a site has been assessed or inspected by a competent person and no ACM has been identified, further site work may uncover potential ACM in inaccessible areas not previously inspected.  For example by excavation, by lowering water levels or by demolition work. *Consider whether steps have been taken to identify and locate asbestos containing material been documented?**Has the extent and location of asbestos containing material (ACM) on site been established? (through consultation of the asbestos register and desktop analysis of any as constructed drawings)**Note, the Asbestos Register details the location of previously identified ACM, it should not be relied upon to confirm no ACM is present.**Consider the need for an inspection by competent person to be undertaken, if determined necessary. Refer to the following guideline (Nexus ID #58654980) for more information on the type of inspection that may be required.**Consider the management of identified ACM.* *Has the management of previously unidentified ACM that may be uncovered during construction been addressed?* | Use extreme caution and due consideration before placing an x here. | Use extreme caution and due consideration before placing an x here. |
| **Hazardous Substances:**Chemicals/ Dangerous Goods/ (including compressed air receivers and surge vessels) | Does the design use, produce or include the disposal of chemicals? Does the project involve works in close proximity to existing chemicals? Refer: List of Chemicals*Are dangerous goods or hazardous chemicals required? Are there alternatives available that may be less harmful to both people and the environment?**Has the design adequately considered separation of chemicals and pipework, from personnel and segregation from other chemicals? Has the design incorporated chemical barrier protection, storage segregation, separation and bunding? Has the design addressed protection of chemicals from impact, fire and ignition sources? Has spill containment been addressed?* *Has safety shower access been adequately provided?**Location and access to showers, are guard rails required to access showers?**Is there adequate delivery facilities and truck turning circles?**Adequate facilities to transfer chemicals?**Is there PPE storage and SCBA location if required? (Accessible cabinets and good storage location on site)**Is there adequate signage in the design?**Is there a disposal facility?**Is there measurement/monitoring facility?**Are licensing and ERP requirements covered?**Is there ventilation?**Is a wind sock required?**Has DS79 been complied with? (including Appendix 1 - DG requirements, Hazardous Area Classification and Pressure Vessel registration)* |  |  |
| **Hazardous Substances:**Other | Does the project involve exposure to hazardous substances (e.g. bio-waste) and materials, including insulation and decorative materials?*Has such exposure been eliminated or mitigated?* |  |  |
| **Fall Prevention** (Working at heights, falling objects) | Is working at heights an issue for construction or operations/maintenance?Is there a possibility of objects being dropped from heights or into pits where people may be working?*Has the design considered height related impacts and provided adequate and appropriate methods to eliminate and/or reduce those impacts based on the Corporate Standard?**Have adequate fall prevention controls been provided? e.g. guard rails, kick plates, anchorage points for fall prevention systems, allowance for Kennedy Barriers, scaffolding, temporary work platforms, appropriate roof materials and surface characteristics (such as fragility, slip resistance and pitch).**Has protection been included, including barriers to stop objects from falling and covers to protect from objects that have fallen?**Are fall protection grates required in openings to pits?* |  |  |
| **Isolation** | Is isolation a significant risk?*Has the design identified all the energy sources requiring isolation and does the design consider the location and number of isolation points? (especially an issue for brownfield sites where As Constructed information on pipework may not be accurate). Are they operable/fit for purpose?*Are emergency isolation switches in easily accessible locations? (e.g. For electrical isolation of pumps, cranes or isolation points of chemical doing lines)Is there mechanical/physical isolation to protect against exposure to high pressure?Is lock out capability available at all isolation points?Does the design require isolation of existing assets during construction and is that isolation possible? Does the integrity of that isolation need to be checked? |  |  |
| **Lifting Operations**/ **Cranage** | Are heavy lifts/cranage involved?Has the design required delivery of unusually large, awkward or heavy items of equipment (including unusually long pipelines lengths, switchgear, prebuilt machinery or package plants, etc)*Can heavy lifts be removed or minimised? Is there sufficient room to allow access for cranes and for the cranes to operate safely?* |  |  |
| **Mobile plant and equipment** | Is the movement of mobile plant (includes vehicles) required and therefore a source of risk? *Has it been addressed in the design?* |  |  |
| **Road Safety** including Movement of People and Materials | Is movement of people and vehicles (including those moving materials) a significant source of risk?Will the project impact on existing roads and/or traffic?*Can impacts be eliminated and/or reduced?**e.g., service point in road, access of roads, and access for construction, maintenance and operational vehicles, safe entry and exit from site**Is there safe access and egress provided for people and vehicles? (including separation if necessary)**Have traffic routes and control measures been identified if necessary?**Have appropriately sized unloading bays and ramps been provided if necessary?* |  |  |
| Access/egress, access ways, entrances/gates | Is the way people and vehicles enter or exit the site or gain access to individual asset/item a safety issue?Does Vehicle access to the site allow adequate clearances for the types of vehicles expected to service the facility?Are there adequate parking facilities?Are the surfaces adequate for all weather access?Are hazardous areas restricted from vehicles? ie drains, valve pits, operator work areas. Are bollards or other requirements used to restrict as appropriate?Is vehicle access within buildings designed well? ie clearances, protection of operators at doorways, parking restrictions.Has size of doors and gates been considered with respect to ease of operation in strong wind?Is the size and placement of doors and gates appropriate for removal of equipment?Are there fastening points to hold doors and gates in open position?Are handles appropriate so restraint can be applied without hand pinch injuries? |  |  |
| Access covers | Are lid covers appropriate? (“*Gatic” covers used only in traffic areas otherwise lightweight material to reduce manual handling issues*)Are there hardstand around “Gatic” lids to allow use of lifters and space to place lid? Is ground level/no slopes?Is there a locking facility on lightweight lids?Is there internal grate facility to prevent falls? |  |  |
| Adjacent structures | Will structures adjacent to the design affect the design or construction? Will the design affect surrounding structures? e.g. heat, light, shadow, geotech stability, fire, access. |  |  |
| Amenities and facilities | Will amenities and facilities be required?*e.g. Is access to various amenities and facilities such as storage, first aid rooms/sick rooms, rest rooms, meal and accommodation areas and drinking water necessary and been provided?* |  |  |
| Biological | Does the design use, produce or dispose of substances known to be biological hazards?Does the construction site potentially include biologically hazardous material? e.g. wastewater treatment solids. |  |  |
| Brownfield Sites | Could existing conditions of the site and existing assets affect the safety of personnel and the new assets that are to be constructed or installed?*Consider whether all the existing utilities assets been identified and located and whether they are fit for purpose to support the new assets?* *Are demolition or decommissioning activities required?**Are personnel adequately separated and protected from existing chemicals or activities? Is emergency response planning affected by construction activities? Would the existing chemicals affect the segregation and storage of the new chemicals? Would they affect the Dangerous Goods (DG) licencing and other regulatory requirements?* |  |  |
| Carcinogens | Does the design use, produce or dispose of substances known to cause cancer? |  |  |
| Commissioning | Could the act of commissioning generate hazards? |  |  |
| Communications, e.g., normal, emergency | Is communication at the site a safety issue?*Does the design consider critical communication events such as emergencies (response time) and is there mobile phone coverage?* |  |  |
| Community/public interaction/access | Is there public access to the site or is there potential community interaction?*Does the design provide sufficient controls to prevent harm to the public?**Does construction vehicle movement pose a risk?* |  |  |
| Construction method | Does the method of construction introduce hazards? *e.g. tilt-up or precast concrete work, post tension concrete work, tunnelling, demolition, etc**What construction options are available?* |  |  |
| Construction interfaces | Does the proposed construction interface with other operating works?*Consider all interfaces that will require a Clearance to Work (CTW) permit. Have these been indicated on the drawings and has the use of a CTW been noted as a mitigation in the Safety in Design Risk Register?**Consider:** *Where coring through existing concrete slab or excavating and there may be concealed services*
* *Pipe cut-ins to existing services*
* *Overhead power lines*
* *Anything else where the operational contact deems it appropriate*

*The location of all such points on the site should be clearly shown on location plan drawings (refer to HK42-3-2 as an example for CTW for cut-ins.)* *For CTW near concealed services the designer shall review relevant services drawings while selecting interface locations to avoid possible clashes with the excavating, coring or drilling and services. Details of CTW points on drawings should specify:** *that the contractor shall check the as-con drawing for all existing services including concealed services;*
* *that the contractor shall detect existing services on site prior to excavating, coring or drilling and mark them on site.*
 |  |  |
| Contamination | Does existing contamination or that introduced by the design or construction pose a risk? *Consider whether contamination from construction, the process or waste streams could be reduced or eliminated**Design Managers should consult Spatial Information Management for existing known locations of contaminated sites.* |  |  |
| Corrosion | Is there a corrosion risk due to either the environment or process? *The design should consider materials selection to reduce the risk.* |  |  |
| Dust/fumes/vapours | Could dust, fumes and/or vapours be produced during construction, commissioning or operations? Is exposure to volatile organic compounds and off-gassing through the use of composite wood products or paints a risk?*How does the design minimise their possibility and consequence?*  |  |  |
| Emergency Response | Is emergency response a special risk for this project?*How does the design consider how to provide emergency response? Aspects to consider include provision of first aid, communication, access for emergency services and evacuation.* |  |  |
| Ergonomics | Are there likely ergonomic risks with the design?*How do humans interact with the design? Are workstations or operator controls designed to allow ease of use for the human body?*Is there adequate clearance around equipment including electrical cabinets to allow maintenance and operation?Is there clearance to remove/install equipment without restricting access?Is there access to any crane/lifting equipment and their controls?Can all equipment be operated safely and at the correct height? |  |  |
| Explosion | Does the design include any substances that could lead to explosion, including gases, liquids or dust? Will explosives be used during construction?Will work be occurring in or adjacent to areas classified as Hazardous (flammable) Areas?*Have sources of ignition been eliminated and monitoring systems been included?* |  |  |
| Erosion | Is there a risk of ground erosion or erosion of piping and plant due to industrial process?*Consider erosion due to stormwater runoff, concentration of flow or wind and process discharge points* |  |  |
| Extreme weather | Is extreme weather a possible factor for the design or construction?*Has the design included the provision of shelter or reduction of the effect of extreme weather on people? Has the design considered loads capable of withstanding the effects of weather, such as high winds, rain, heat and cold?* *Consider impact on plant and equipment (i.e high temperature impacting on electrical equipment)* |  |  |
| Fire | Does the design include flammable or combustible materials? Is there an offsite fire risk? (e.g. neighbouring bush)*Are fire detection systems and fire-fighting systems necessary?* *Have emergency routes and egress been identified? Are any other emergency facilities required? Is there access for fire tenders?**Is the new asset in an area which may be subject to a bushfire risk? If so:** *Is there a cleared 20 meter asset protection zone (non-flammable) between any critical operational structural elements and the standing fuel load;*
* *If unable to achieve a minimum 20m asset protection zone, has the structural fabrication of the asset been assessed for suitability?*

*Are there ember screens; no gutters or downpipes; a skillion, gabled or similar angled roof; all gaps between roller doors and other fenestrations upon the asset are covered.* |  |  |
| Fixed plant and equipment | Are there any risks introduced associated with the location of fixed plant and equipment? |  |  |
| Fatigue | Does the design introduce potential human fatigue issues? |  |  |
| Flow | Are there any risks introduced associated with flow?*Have hazards associated with too much flow, not enough flow or blockages been considered?* |  |  |
| Formwork | Does the design include formwork during construction? *Have hazards such as heights, slips and trips, engulfment and confined spaces been considered? Has the potential for form collapse during concrete pours been managed?* |  |  |
| External/third party activities | Are there any external/third parties issues, including the need for access by local council, service providers or other agencies? |  |  |
| Guarding/fencing/ security | Are there risks introduced relating to guarding / fencing / barriers and/or security?*Is plant and equipment guarded appropriately? e.g. preventing contact with energies, interlock, tamper proof, fails to safe etc. Does the design provide sufficient security measures to protect the asset?* *Has the asset been subject to vandalism or break-in in the past?**Has appropriate security signage been identified and specified? e.g. fencing, alarms, electronic surveillance, etc.* |  |  |
| Ground conditions | Are ground conditions a risk factor?*Does the design take into account the general terrain and type of ground? If the asset should alter the ground conditions, are there any introduced risks?* |  |  |
| Groundwater | Does groundwater produce the possibility of unstable ground, corrosion of underground assets or structural instability? |  |  |
| Hot works | Are hot works during construction and operations a potential source of risk?*Have they been taken into account in the design?* |  |  |
| Inspections | Does the design need to consider the necessity of inspections and allow for access, lighting, guarding, etc? |  |  |
| Instability | Is instability due to structures or geotechnical conditions a risk? Is the new process (e.g. treatment) introducing an instability risk?*Have fail-safe measures been addressed?* |  |  |
| Interference between trades | Is the interaction between the different trades during construction and operation a risk?*Has it been considered in the design?* |  |  |
| Laydown areas | Are laydown areas a source of risk?*Does the laydown area provide sufficient space to allow safe access to equipment and are laydown areas located in positions that provide short and unobstructed travel paths?* |  |  |
| Lifting Devices/ Davits | Are they required?Are they located correctly?Can they function without fowling on other equipment or structure?Are they rated correctly for the purpose?If used for equipment or personnel, are access points correct?Is a hardstand area required as a receival point for loading/unloading?Is the cabling and controls protected from the elements? |  |  |
| Lighting | Is lighting a source of risk?*Has sufficient lighting been provided to allow the design to perform as required and to allow personnel to operate the design as required?* *Has easy maintenance access to lighting been addressed?*Adequate internal and external lighting?Has control of lighting been considered (manual or auto)Has emergency lighting requirements on UPS been included?Is there appropriate access to lighting for maintenance? |  |  |
| Live services | Are live services a source of risk?*Have services such as electricity, gas, compressed air, fuel, water, sewer and telecommunications been identified and isolation or relocation of these services been included in the design? Are they operable/fit for purpose?*  |  |  |
| Location | Is the location of the site itself in relation to the environment and other assets surrounding it a risk?*Have the locations of the assets within the design been considered with respect to each other and any existing assets already in place? Are different sections of a design compatible to be located beside one another?* |  |  |
| Maintainability | Is maintainability a risk in this case?*Has the design provided for maintenance of the asset with clear working space provided, lifting device/points provided, prevention of falls features and the risk hazard such as electricity, heat, pressure and vibration eliminated or reduced as far as is practicable and that appropriate signage (warning, caution, danger) have been specified in the design?*Are there adequate scouring points for disposal of water during maintenance?Doe the pipework configuration allow for easy removal of valves?Are all underground assets identified so they can be recorded in MyWorld? | This is unlikely to be an x. | This is unlikely to be an x. |
| Manual handling | Is manual handling required by the design?*Has the design considered mechanical devices for lowering and lifting equipment and is the equipment positioned so it can be retrieved/replaced using mechanical devices and does the equipment have designated designed lifting points? Has accessibility for manual handling been adequately addressed?* *e.g. Access and egress paths and doorways to facilitate movement or other mechanical aids.**Have all manual bulk handling tasks been considered for mechanisation? (e.g. Hopper or vacuum fed dosing systems)**Are there any heavy UPS batteries in or outside of cabinets? Is there sufficient open space to allow lifting aids and trolleys to access the batteries so they can be easily removed and installed by maintenance staff?* |  |  |
| Materials of construction | Are there any special materials of construction issues?*Does the design consider the selection of materials relative to the location of the asset (e.g. can it handle bushfires) construction technique required, maintenance requirements (uniformity vs mixing) etc? Does the design consider opportunities to source material through reuse or recycled options?* |  |  |
| Materials/ Chemicals in Contact with Drinking Water | Are there any new materials or chemicals being used?*Chemicals added to drinking water or materials in contact with drinking water must be approved by Department of Health.**Obtain advice from Principal Engineer - Chemicals.* |  |  |
| Movement of machinery/ contaminants | Is the need to have clear paths for machinery (e.g. elevated work platforms, forklifts, etc) movement a source of risk?*Has the design eliminate impacts where possible, or mitigated them where not? This includes impacts with humans, machinery, structures or vehicles.**Are floor slabs designed to take crane loads?* |  |  |
| Noise | Does the design require noisy processes to be used during operations or construction that may affect personnel or neighbours?*Are there ways to eliminate and/or reduce impacts through alternative design measures or by using construction methodologies? Have plant and equipment that create noise been appropriately designed to reduce noise? e.g. ceramic bearings, dampers, isolated, insulated, balanced to reduce vibration, located in rooms with noise attenuation etc.* |  |  |
| Operations/ interactions | Is there a risk with how the new project interfaces with existing assets? |  |  |
| Operations, including work practices | Does the design introduce new working procedures or practices?Is space required for operations related equipment and furniture?(e.g. PPE cabinets, computer desks, refrigerators, chairs and tables, cupboards, etc) |  |  |
| Overhead/ underground services | Does the design potentially interact with existing services? *e.g. striking underground and overhead services (including electricity, gas, communications, water, wastewater etc), access for construction, maintenance and operational vehicles and plant and excavation and can the design be modified to eliminate and/or reduce the impact associated with the existing services?*  |  |  |
| Piling | Is piling a likely requirement for construction?*Have the hazards associated with piling been considered for the piling operation and on the surroundings? Hazards include the stability of piling rig including geotech investigation, dropped weights, heights, excavations, noise and vibration.* |  |  |
| Pollution/ contamination/spills /releases/emissions | Is pollution, contamination, spills, releases, emissions a risk?*Does the design consider these issues to reduce or eliminate the impacts?* |  |  |
| PressureHigh/Low | Has the design identified processes or the use of plant and/or equipment that have the potential for high or low/negative pressure?*Has the impact of those pressures during construction, maintenance and operation of the asset and the controls to prevent uncontrolled release of those pressures whilst carrying out maintenance and/or emergency operations been addressed?**Have sufficient confinement, materials of construction, testing, pressure relief systems and isolation been considered in the design? Are they operable/fit for purpose?*  |  |  |
| Public interference, Security | Is public interference a significant risk?*Has security of the assets been included in the design? Has the level of security required based on public perception been considered?*Do all open pipes (drains, scours and overflows) have mesh security covers?Are all pits covered or railed?Appropriate locked facilities and entry points within the facility eg ladder and stairway security?Appropriate warning Signage? |  |  |
| Programmable Logic Controllers (PLC) | Does the design include a PLC?*Does the design include measures to ensure safe functioning of the asset in the case of PLC failure?* *Have all failsafe conditions been identified and managed?* |  |  |
| Radiation | Does the design or construction include radioactive material or the generation of x-rays? Does any work occur in proximity to radio or mobile towers, or other sources of non-ionising radiation? *Has the design considered containment, screening/shielding, elimination of the requirement, signage, sufficient space requirements around the radiation source and emergency procedures?* |  |  |
| Railways  | Will construction work occur in close proximity to railways? |  |  |
| Reuse of existing assets | Is the existing asset capable of performing the required function adequately? *Consideration should be given to testing the condition of the asset early in the project to avoid redesign and budget blowout if asset is found to be unsuitable much later in the project*.  |  |  |
| Restricted Areas | Are restricted areas identified marked and protected? * signage,
* handrails,
* bollards,
* floor markings,
* appropriate locks (especially electrical cabinets),
* Arc Flash boundaries
 |  |  |
| Safety factor | Is having a sufficient engineering over design factor a requirement in order to manage risk? |  |  |
| Sanitation/hygiene/waste | Is sanitation/hygiene/waste a risk for the project?*What types of waste should be produced? How should it be collected and disposed of? How can the impacts be reduced?* |  |  |
| Services | Are there services (other than “live services” or overhead/underground – e.g. unused or un-energised) that pose a risk?*Does the design consider the impacts on existing services?* |  |  |
| Slips/trips/falls | Check that all requirements have been identified ie elevation changes around buildings, cabinets, valves, equipment modules. *Anything greater than 300mm may require a working platform and/or steps for safe access.* Has possible paths of movement on the site been considered to determine needs?Is there suitable protection around cable and pipe locations where access over/under them is required?Are all ladders, walkways and platforms are located in the appropriate location and configuration is correct?Do ladder stiles extend past openings? Are top rungs level with platforms?Are ladder slopes, landings and cages appropriate?Are toe boards installed?Is clearance adequate? ie entry, exit and from any other structure or equipmentAre handrails and openings correct, including protection of openings with chains or self-closing gates?Does the design include changes of grade or potential wet areas? *Does the design provide for surfaces that are even and non-slip where necessary and clear walkways?** Avoid elevation changes on site including edges of concrete pads
* No sloping surfaces in maintenance and access areas
 |  |  |
| Storage | Is there a need for storage?*How are storage areas incorporated into the design?* |  |  |
| Stored energy (mechanical, electrical) | Does the design include the potential for stored energy?*Does the design address stored energy impacts and provide adequate and appropriate methods to eliminate or reduce those impacts?* |  |  |
| Start-up/shutdown | Does the method of start-up or shutdown of a process introduce any hazards? *Hazards may include isolations, ignition sources, pressure, gravity, speed and temperature.* |  |  |
| Structures | Does the design incorporate ease of construction and access during operations and maintenance?Does the design incorporate the erection of steelwork or concrete frameworks during construction?Does the design incorporate the erection of temporary structures?*Have load bearing requirements and stability/integrity of structures been adequately considered?* |  |  |
| Temporary works | Does the design/specification detail temporary works requirements *e.g. weights of component, temporary lifting points, permanent formwork vs conventional formwork etc.* |  |  |
| Temperature | Is temperature an issue for the design or construction activities?*Does the design include protection from high and low temperatures, including protection for people and the equipment? Is the temperature necessary in the design? Does ventilation need to be considered?*Is the amount of ventilation is adequate for temperature control?Do ventilation hatches on roofs have internal mesh to eliminate falling hazard?Does any mechanical ventilation meets requirements and includes signage  |  |  |
| Unexploded Ordinances (UXO) | Is UXO a risk?*Has UXO risk been checked? The Department of Fire and Emergency services, and/or the Corporations Spatial information system should be checked for existing known locations of potential unexploded ordinances.*  |  |  |
| Vibration | Does the design include significant levels of vibration?*Have the effects of vibration on the human body and the surrounding assets been considered in the design?* |  |  |
| Visibility | Is lack of visibility an issue for the design? |  |  |
| Water | Does the design consider working in or above water during construction and/or O&M? *e.g. Over water or underwater work, including diving and work in caissons with compressed air supply**Have hazards involved with storm water been considered?* |  |  |
| Waste | Does the design include the potential to generate significant levels of waste?*Has the design considered the reuse of materials and the potential disposal issues of existing material? Have opportunities to reduce waste been incorporated into the design?* |  |  |
| Workplace conditions, extreme temperatures | Does the site involve special work conditions or extreme temperatures?*Does the design address the vulnerability to extreme temperatures and provide adequate and appropriate methods to eliminate or reduce those impacts?* |  |  |
| Other issues identified |  |  |  |