

## Civil Works (Water and Sewer, eg PS, PRV)

**SEW audits against the relevant codes and standards, these checklists are simply a tool to help in auditing and auditors are not limited to the items in the checklists.**

### 1. Mgmt

1.1. Is the consultant representative on site

1.2. Is the contractor representative on site

1.2.1. Are copies of current design drawings on site

1.2.2. Are copies of standard drawings on site

1.2.3. Are copies of specifications on site

- Relevant WSAA, MRWA codes
- relevant SEWL supplementary manuals to WSAA codes

1.3. Have construction activities commenced in accordance with Pre-Construction Verification form dates

- If NO then close audit

1.4. Are any construction activities external to the development site

1.4.1. Have SEWL customers been notified of the construction work in accordance with SEWL requirements

1.4.2. Are appropriate traffic management controls in place

1.4.3. Have the appropriate affected authorities been notified

- Local council
- Emergency service
- Vic Roads
- Bus companies

1.5. Is water being used on site from SEWL assets

1.5.1.1. Have SEWL been notified

1.5.1.2. Has a SEWL permit been obtained (record permit no)

1.6. Is water being used on site from private property

1.6.1.1. Has permission been obtained

1.7. Are there dining / changing facilities available on site

1.8. Do amenities on site comply with the C of P

1.9. Are there toilet facilities on site

1.10. Are dining / changing / toilet facilities kept in a clean condition

### 2. OH&S - Including but not limited to the following

2.1. Plant & Equipment

2.2. Manual Handling

2.3. First Aid

2.4. Trenching

2.5. Noise

2.6. Temporary electrical installations

2.7. Cranes

2.8. Confined Spaces

2.9. Traffic Management

2.10. Dangerous Goods

2.11. Scaffolding

### 3. Excavation

3.1. Is a nominated mine manager on site

3.2. Are all site personnel wearing appropriate safety apparel are required by OH&S

3.3. Are excavations >1.5m properly supported (according to OH&S)

3.4. Are all excavations close to structures properly supported to prevent movement

3.5. Does ground support comply with OH&S

3.6. Is there a ladder on site to facilitate safe access to the trench

3.7. Has care been taken to ensure that all services near excavations are protected

3.8. Is Clearance between the edge of the excavation and the inner toe of the stockpile > 500mm

3.9. Are affected surfaces in road reserves being maintained

3.10. Has care been taken to avoid the creation of traffic hazards

3.11. Are drains, channels and gutters being kept clear

3.12. Are operations confined to easements, reserves or approved areas where possible

3.13. Has damage to vegetation and trees been kept to a minimum

3.14. Have all services, drains, fences, structures and surfaces affected by the works been restored within the specified time frame
3.15. Are all survey marks maintained and clearly identified
3.16. Is excess excavated material being progressively removed from private properties and road reserves
3.17. Is excavation being dewatered adequately
3.18. Is sediment pollution control on construction site in accordance with EPA guidelines
3.19. Is blasting taking place for this job
3.19.1. Blasting conforms with appropriate statutory regulations and Australian standards
3.19.2. Is there an accredited explosive operator on site
3.19.3. Is a copy of the blasting permit on site
3.19.4. Does blasting comply with the restrictions specified on the design drawings
<b>4. Materials/Products</b>
4.1. Are all Pipes on SEWL approved Products list and according to Design Drawings
4.2. Are all Fittings on SEWL approved Products list and according to Design Drawings
4.3. Are all Backfill materials on SEWL approved Products list and according to Design Drawings
4.4. Are all Concrete materials on SEWL approved Products list and according to Design Drawings and WSAA Purchase Specifications
4.5. Are all Pre cast structures on SEWL approved Products list and according to Design Drawings
4.6. Are all Surface fittings on SEWL approved Products list and according to Design Drawings
<b>5. Concrete</b>
5.1. Has concrete been supplied from an ISO 9001 accredited plant
5.2. Is concrete to WSAA Purchase Specifications
5.3. Does water volume being added to the premix concrete comply with manufacturer specifications
5.4. Has concrete been placed on site within 90 minutes from the commencement of mixing the concrete
5.5. Is the grade of pre mix concrete as ordered (and in accordance with WSAA Purchase Specifications)
5.6. Is the slump within the tolerances in accordance with SEWL requirements
5.7. Are all working surfaces clean and safe for use
5.8. Have all surfaces been washed down before the start of the concrete pour
5.9. Has all forms been coated with an approved form-release agent
5.10. Has the concrete been vibrated in accordance with the Cement and Concrete Association of Australia concrete data sheets
5.11. Has the concrete been placed using a chute
5.12. Has the concrete been placed using a discharge concrete bucket
5.13. Has strength testing taken place in accordance with AS 1012
5.14. Has a slump test been done to required SEWL specs (if No non-con to be issued)
5.14.1. Has a test been undertaken for each sample taken for 28 day strength test
5.14.2. Has one test been taken for every 5 concrete deliveries
5.14.3. Has one test been taken if under 5 concrete deliveries will be made to site
5.15. Has the test been undertaken by a NATA approved tester.
5.16. Has concrete been mixed on site
5.16.1. Has superintendent given written approval?
5.17. Has the concrete been allowed to cure before backfilling
5.18. Is the concrete surface finish of walls F2 or better
5.19. Is steel reinforcement required
5.19.1. Is the steel used for reinforcing to the design drawings
5.19.2. Is the steel stored off the ground
5.19.3. Is the steel supported to prevent distortion
5.19.4. Is the mesh stored flat to prevent distortion
5.19.5. Is the mesh delivered in rolls stored to prevent distortion
5.19.6. Are steel bars cut & bent to specific shapes stored to prevent distortion
5.19.7. Is deformed bars Grade 410Y
5.19.8. Is 1.2mm black annealed wire being used to tie steel
5.19.9. Are the reinforcement steel fixed to correct tolerances to the design drawings
5.19.10. Has the reinforcement bar been welded
5.19.10.1. Has approval be obtained from the superintendent
5.19.11. Has the reinforcement steel been cleaned before concrete placement
5.19.12. Has support chairs, spacers, hangers or ties been used as supports
5.19.12.1. Have they been placed to SEWL requirements
5.20. Have water stops been specified

5.20.1. Is the specified material being used
5.20.2. Is the specified size being used
5.20.3. Has the water stop been joined using an approved method
5.21. Are construction joints shown on design drawing
5.21.1. Are construction joints constructed in accordance with the design drawing
5.21.2. Has the construction joint been cleaned by an approved method before continuing with the next pour
5.21.3. Was a surface retarding agent used on the joint
5.21.3.1. Has all traces of the retardant been removed
<b>6. Backfilling</b>
6.1. Is backfilling being carried out in accordance with standard drawings
6.2. Is impact loading being avoided during backfilling
6.3. Are voids being filled behind the timber ground support
<b>7. Pipe work</b>
7.1. Verify that only DICL pipe work has been used in accordance with SEWL requirements
7.2. Verify adequate pipe supports have been used in accordance with SEWL requirements
7.3. Verify that bolts have been used on flanges in accordance with design drawings
7.4. Verify that pump footstools have been used in accordance with SEWL requirements
7.5. Verify that weep flanges have been used in wall penetrations
7.6. Is the gasket an approved material in accordance with SEWL requirements
7.7. Does the gasket match the flange
7.8. Is the gasket the correct thickness in accordance with SEWL requirements
<b>8. Valve Chamber</b>
8.1. Are all fittings on SEWL approved products list
8.2. Verify that ladders have above ground extensions
8.3. Verify that drainage pipe from the valve chamber is fitted with a flap valve
8.4. Verify that valves are provided with appropriate supports
8.5. Verify 50mm BSP test point tappings and gate valves installed in accordance with Standard drawings
8.6. Verify adequate clearance in the chamber to operate all equipment in accordance with OH&S requirements
<b>9. Surface works</b>
9.1. Verify that hard standing areas and access roads have been constructed in accordance with Standard drawings
9.2. Verify that security fencing has been installed in accordance with the design drawings
<b>10. Mechanical/Services</b>
10.1. Have covers been installed in accordance with the design drawings
10.2. Verify that the correct type of cover has been used
10.3. Verify that all cover markings are visible
10.4. Verify that the covers have been numbered appropriately
10.5. Verify covers have lifting lugs on beams for removal
10.6. Verify all other service conduits have been installed in accordance with Standard drawings
10.7. Have ladders been nominated on the design drawings
10.7.1. Verify that ladders have been installed in accordance with Standard drawings
10.8. Verify that all concrete surfaces have been coated in accordance with SEWL requirements
<b>11. What type of project is this</b>
11.1. Sewer
11.1.1. Is backfilling around MH, IS and property branches being placed evenly to eliminate movement
11.1.2. Verify all valves are clockwise closing
11.1.3. Verify bleeders on non return valves have been installed in accordance with SEWL requirements
11.1.4. Verify that the valve stuffing box has been installed on penstock in accordance with Standard drawings
11.1.5. Verify that the penstock been installed in accordance with Standard drawings
11.2. Water
11.2.1. Verify all valves are anti - clockwise closing
11.2.2. Verify valves have been installed in accordance with SEWL requirements