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Approved By	Brendan McKenna
Position	Director
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Purpose

Brendan McKenna Earthmoving is committed to constructing sewer infrastructure safely, efficiently and in accordance with engineering, environmental and quality requirements.

This procedure establishes the requirements for planning, excavating, installing and testing sewer pipelines and associated maintenance structures to protect workers, underground services, surrounding infrastructure and the environment while ensuring completed sewer systems meet approved project specifications.

This procedure supports compliance with the Work Health and Safety Act 2011 (Qld), Work Health and Safety Regulation 2011 (Qld), Environmental Protection Act 1994 (Qld) and Brendan McKenna Earthmoving's Integrated Management System (IMS).

Scope

This procedure applies to all Brendan McKenna Earthmoving employees and contractors undertaking sewer construction activities at company worksites.

It applies to activities including:

- Survey and set-out.
- Trench excavation.
- Shoring installation.
- Sewer pipe installation.
- Maintenance shaft construction.
- Manhole construction.
- Backfilling.
- Testing and commissioning.
- Associated earthmoving plant operations.

Responsibilities

Role	Responsibilities
Director	Ensure adequate resources, plant and systems are available to safely undertake sewer construction activities.
Operations Manager	Plan sewer construction activities, verify project specifications and ensure this procedure is implemented.
Supervisors / Site Managers	Coordinate sewer construction, verify compliance with this procedure, monitor safety, quality and environmental controls and ensure work is completed in accordance with project specifications.
Health & Safety Representative (HSR)	Participate in worker consultation, assist with hazard identification and support continual improvement of sewer construction activities where required.
Employees / Plant Operators	Operate plant safely, comply with this procedure, report hazards and equipment defects and maintain environmental controls.
Dogger / Spotter (where required)	Assist with lifting operations, guide suspended loads and ensure lifting activities are completed safely in accordance with company procedures.

Procedure

Brendan McKenna Earthmoving shall ensure all sewer construction activities are undertaken using suitable plant, competent personnel and approved engineering controls to achieve safe, compliant and durable sewer infrastructure.

Excavations shall not proceed until appropriate trench support systems, exclusion zones and engineering controls have been implemented in accordance with approved work methods.

1. Planning and Site Preparation

Prior to commencing sewer construction, personnel shall ensure all planning activities have been completed and the work area has been assessed.

This shall include:

- Completing all required site inductions.
- Participating in the daily pre-start meeting.
- Completing a Personal Risk Assessment (Take 5) where required.
- Reviewing the relevant Safe Work Method Statement (SWMS) where applicable.
- Completing a **Dial Before You Dig (1100) / Before You Dig Australia (BYDA)** enquiry and identifying underground and overhead services in accordance with service plans and site investigations.
- Clearly demarcating and delineating the approved work area.
- Reviewing approved sewer construction drawings and confirming pipeline alignment, invert levels and maintenance shaft locations.
- Ordering the required sewer pipes, fittings and maintenance shaft components.
- Ordering **5 mm drainage gravel**.
- Booking surveyors for project set-out and construction verification.
- Confirming approved trench shoring boxes are available before excavation commences.
- Confirming survey control points, benchmarks and access routes.
- Any discrepancies between approved drawings, survey information or site conditions shall be reported to the Site Manager before excavation proceeds.

No person shall enter the sewer construction area unless authorised by the Site Manager.

Only trained, competent and authorised personnel shall undertake sewer construction activities.

2. Sewer Excavation and Pipe Installation

Sewer pipelines shall be installed in accordance with approved engineering drawings and project specifications.

The following construction sequence shall be followed:

- Verify the laser, GPS/UTS equipment and survey benchmarks prior to excavation.
- Reconfirm the surveyor's set-out and benchmarks using a dumpy level before commencing work. **There is no room for error at this stage.**
- Establish a stringline between the upstream and downstream points and mark the excavation alignment.
- Excavate using a bucket sized to accommodate the required trench shoring box.
- Excavate approximately **6 to 8 metres** of trench before installing the shoring box.
- Install the trench shoring box before continuing excavation.
- Check downstream invert levels and alignment prior to installing the first pipe.
- Excavate a further **6 to 8 metres** before continuing installation.
- Place bedding material and **sand approximately the first 12 metres** prior to progressing.
- Install the first length of sewer pipe using a designated spotter at all times.
- Verify and continually monitor line and level using the pipe laser throughout installation.
- Apply grease to the rubber ring located in the socket end of the pipe.
- Install the next length of pipe and push together until the homing markers align.
- Install bends, fittings and maintenance shafts as required.
- Continue this sequence until the required pipeline length has been completed.

Personnel shall continually monitor:

- Ground conditions.
- Excavation stability.
- Trench shoring.

- Underground services.
- Plant interaction.
- Exclusion zones.
- Groundwater infiltration and trench water accumulation.
- Weather conditions.
- Environmental controls

Any unsafe condition shall be reported immediately to the Site Manager.

3. Maintenance Shafts and Manhole Construction

Maintenance shafts and manholes shall be constructed in accordance with approved engineering drawings and project specifications.

The following construction sequence shall be followed:

- Pour the manhole floor and benching to achieve the required pipe falls.
- Where precast manholes are utilised, install the first **300 mm riser** while the concrete base remains green to achieve an airtight seal.
- Check the finished structure height, alignment and level before installing additional precast risers.
- Apply **liquorice seal** between each precast section to maintain watertight joints.
- Maintain the top of the structure approximately **350 mm below finished surface level** to allow for the Aspro, neck, lid and frame.
- Install the lid and frame.
- Apply epoxy between the neck and lid to achieve a watertight seal.
- Complete **vacuum testing** and **ovality testing** in accordance with project specifications before the sewer system is placed into service.

4. Plant and Equipment Operations

Sewer construction shall be completed using suitable plant and equipment appropriate for the work activity.

Plant and equipment that may be utilised includes:

- Excavator
- Loader
- GPS / UTS Survey Equipment
- Pipe Laser
- Dumpy Level
- Trench Shoring Boxes
- Concrete Agitator (where required)
- Lifting Equipment and Associated Lifting Gear

All operators shall hold the appropriate licences, competencies or verified training applicable to the plant or equipment being operated.

The Operations Manager or delegated Supervisor shall ensure operator competencies have been verified prior to commencing work.

Validation of Competency records shall be retained with the operator's training records in accordance with company requirements.

Operators and ground personnel shall maintain continual awareness of suspended loads, excavation hazards, trench support systems, surrounding personnel and mobile plant throughout sewer construction activities.

5. Documentation and Completion

Sewer construction activities shall be documented in accordance with company requirements to demonstrate compliance with engineering specifications, quality requirements and the Integrated Management System.

This shall include:

- Completing Pre-start Inspections for all plant and equipment used.
- Completing a Personal Risk Assessment (Take 5) through the MCK Group App where available.

- Completing paper versions of the Pre-start Inspection and Personal Risk Assessment where mobile coverage is unavailable and forwarding completed records once adequate signal is available.
- Completing a Job Hazard Analysis (JHA) where activities fall outside the scope of this procedure or additional risks have been identified.
- Recording survey verification, inspection, vacuum testing and ovality testing results where required.
- Reporting hazards, incidents, near misses and equipment defects in accordance with company procedures.
- Confirming all sewer construction works have been completed in accordance with approved drawings, project specifications and quality requirements before leaving the work area.

Records

The following records may be retained where relevant to sewer construction activities.

Record	Responsibility	Retention Location
Personal Risk Assessments (Take 5)	Employees and Contractors	MCK Group App / Site Records
Plant Pre-start Inspection Records	Plant Operators	Plant Records
Validation of Competency Records	Operations Manager	Training Records
Survey Verification Records	Site Manager	Project Records
Vacuum and Ovality Test Results	Site Manager / Supervisor	Project Quality Records
Construction Inspection Records	Supervisors	Inspection & Audit Register
Incident and Hazard Reports	Employees and Supervisors	Incident Records
Corrective Actions	Operations Manager	Incident / NCR / Corrective Action Register

Related Information

- HS-PR-001 Risk Assessment Procedure
- HS-PR-003 Personal Risk Assessment (Take 5) Procedure
- HS-PR-005 Incident Investigation & Reporting Procedure
- OP-PR-018 Spill Response & Management Procedure
- HS-SWMS-006 Operating Mobile Plant
- HS-SWMS-005 Working in or around Trenches & Excavation
- Environmental Management Plan (where applicable)
- Environmental Aspects & Impacts Register
- Inspection & Audit Register
- Training & Competency Register
- Incident / NCR / Corrective Action Register
- MCK Group App
- Before You Dig Australia (BYDA)
- Work Health and Safety Act 2011 (Qld)
- Work Health and Safety Regulation 2011 (Qld)
- Environmental Protection Act 1994 (Qld)

Review and Revision

This procedure shall be reviewed every two years or earlier following legislative changes, organisational changes, incidents, audit findings, changes to work practices or identified improvement opportunities.